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SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

VALLEY VILLAGE
10243 State Route 85
Kittanning, PA 16201
Facility I.D. No. 03-06500
USTIF No. 2014-0036(S)

Prepared for

Pennsylvania Department of Environmental Protection
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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
COCs	contaminants of concern
CSM	Conceptual Site Model
DPVE	dual phase vacuum extraction
EC	environmental covenant
MSC	Medium Specific Concentration
MSC_{IAQ}	Medium Specific Concentration for Indoor Air Quality
MSC_{SG}	Medium Specific Concentration for Soil Gas
MTBE	methyl tert-butyl ether
NQD	New Quick Domenico
ORC	oxygen releasing compound
OSHA	Occupational Safety and Health Administration
PADEP	Pennsylvania Department of Environmental Protection
PennDOT	Pennsylvania Department of Transportation
PID	photoionization detector
PNDI	Pennsylvania Natural Diversity Index
POC	Point of Compliance
QA/QC	Quality Assurance / Quality Control
RACR	Remedial Action Completion Report
RAPR	Remedial Action Progress Report
RAP	Remedial Action Plan
SCR	Site Characterization Report
SHS-RUA	Statewide Health Standard, Residential, Used Aquifer
SPL	separate phase liquid
SSS	Site Specific Standard
SVE	soil vapor extraction
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank

Executive Summary

Insite Group, Inc. (IGI), on behalf of on Mr. Joseph Buffone of JBRL Development Corp., the property owner, provides this SCR / RAP for the Valley Village facility located at 10243 SR 85 Kittanning, Pennsylvania, in Cowanshannock Township, Armstrong County, Kittanning, PA. Strong petroleum odors and SPL were discovered in the area of the sump on Tank 003 during an upgrade of the UST system in March 2014. A release of unleaded gasoline was reported on March 19, 2014. The SHS-RUA is selected as the cleanup standard for soil and groundwater.

Site characterization activities were initiated. A total of 10 soil borings, 12 monitoring wells, and 3 soil vapor monitoring points were completed on the subject property and the adjacent downgradient property owned by the Cowanshannock Creek Watershed Association (CCWA). Impacts to soil and groundwater extend onto the CCWA property and the groundwater plume likely extends onto the next downgradient property owned by Consol Energy. Consol Energy denied IGI's request for an access agreement to install monitoring wells on their property. Therefore, the extent of impact to groundwater is not fully delineated in the downgradient direction. Fate and transport modeling was used to predict the downgradient extent of the groundwater plume. The results of fate and transport modeling indicate that contaminant concentrations in groundwater decrease below the SHS-RUA between 108 and 115 feet downgradient of the UST cavity. Contaminant concentrations in groundwater decrease below the SHS-RUA before reaching Cowanshannock Creek, which is located approximately 235 feet south of the UST cavity.

The subsurface consists primarily of silty clay. The first water bearing zone at the site is a perched aquifer that occurs between approximately 2 and 6 feet bgs. The thickness of this zone ranges from approximately 0.5 to 1.5 feet. In some borings, groundwater was also encountered at deeper intervals. This deeper zone appears to be discontinuous, and the lateral movement of groundwater is primarily through the shallow, perched aquifer.

Pilot testing was completed to evaluate potential remedial options. A chemical oxidant, PersulfOx, showed promising results for treatment of adsorbed phase mass below the water table. The low permeability of the silty clay soil at the site limits remedial options, and remedial technologies such as dual-phase vacuum extraction and soil vapor extraction are not likely to be effective.

The proposed remediation includes excavation of impacted soil above the water table and a portion of the adsorbed phase mass below the water table, in situ chemical oxidation using PersulfOx to remediate additional adsorbed phase mass below the water table, in situ chemical oxidation using RegenOx and vacuum extraction to desorb and recover adsorbed mass in the UST cavity, and installation of a PlumeStop Colloidal Biomatrix barrier to prevent offsite migration of the remaining dissolved phase plume.

1.0 INTRODUCTION

IGI, on behalf of Mr. Joseph Buffone, provides this SCR / RAP for the Valley Village Keystone facility located at 10243 SR 85, Kittanning, Pennsylvania in Cowanshannock Township, Armstrong County. This report provides a summary of the reported release, the completion of site investigation activities to define the extent of impact to soil and groundwater, and a plan for remediation.

A topographic map is provided as Figure 1, and a site map is provided as Figure 2. This Revised SCR / RAP was completed in accordance with Title 25 PA Code § 245.310(a) and § 245.311.

2.0 SITE DESCRIPTION

2.1 Property Location and Description

The facility is located on SR 85 just west of Yatesboro, PA. The subject property was first developed as a gasoline retail station and convenience store in 1985. Mr. Buffone purchased the facility in 1993 and continued the operations. Site features include a one-story building with a basement, one overhead canopy and a UST system consisting of two dispenser islands and three USTs. The surface is mainly asphalt and concrete with some areas of gravel and grass.

The natural topography slopes moderately downward toward the south to Cowanshannock Creek. Surface water runoff is directed southward. Historically, fill materials were placed on the property to make the land more useable.

2.2 Surrounding Land Use

Surrounding land use includes two commercial establishments (ACMH Primary Care Center & Phoenix Physical Therapy to the west and Valley Getaway Bar and Grill to the north) and numerous residential properties within a 1,000 foot radius of Valley Village. All are located north or west of the facility. The property adjoining to the west is undeveloped. Property to the south is woodland. A former rail line borders the south property boundary. An aerial photograph showing the site and the surrounding area is provided as Attachment A.

Historically, strip and deep mining occurred in the area[1]. Strip mines are shown to the north, south and southwest of the facility on the USGS topographic map. The eMapPA database also references deep mines in the area, including deep mines in the Upper Freeport coal seam located east and south of the site.

2.3 Property History

The subject property was open land until 1985 when it was developed as a gasoline retail station and convenience store. The USTs were installed at that time.

[1] www.emappa.dep.state.pa.us/

2.4 Geology and Hydrogeology

2.4.1 Regional Geology and Hydrogeology

The site is located in the Intermontane Pittsburgh Low Plateau Section of the Allegheny Plateau Physiographic Province. The Appalachian Plateau Province extends in a northeast direction from northern Alabama to New York. In Pennsylvania it occupies more than 26,000 square miles, nearly 60 percent of the total area of the state. This province is characterized by folded bedrock where the ridges are supported by anticlines and the valleys are underlain by synclines. The province in Pennsylvania is divided into seven sections, based on the elevations along the ridges and the depth of erosion. The bedrock in the Pittsburgh Low Plateau is gently folded with dips seldom exceeding five degrees. The rock types are mostly shale with sandstone, siltstone and limestone occurring locally.[2]

The site is underlain by rocks of Pennsylvanian age. Stratigraphically, the highest geologic formation is the Casselman Formation, which outcrops on ridge tops east of the site. The extent and thickness of this formation is limited. The formation below the Casselman is the Glenshaw Formation. This unit consists primarily of marine shale and limestones, with locally mined coal deposits. Documented strip mining activity took place in the area between 1990 and 2005.

The Allegheny Formation underlies the site, SR 85 west of Yatesborough, PA and portions of Cowanshannock Creek. The Allegheny Formation includes repeating cycles of coal, limestone and sediments ranging from claystone to coarse sandstone. This unit was defined to include all the economically significant coal seam in the area. The Upper Freeport is defined as the upper boundary of the Allegheny and has been extensively deep mined south and east of the site. The mining took place between 1896 and 1931 in the Yatesborough Number 2 and Number 3 mines.[3]

Structurally the site sits between the axes of two anticlines and is near the axis of a syncline.[4] The anticipated dip of the rock is expected to be near zero.

2.4.2 Site Specific Geology and Hydrogeology

Soil samples indicated a topmost layer of soft to medium dense silty clay with weathered sandstone and shale fragments, some scoria (burned shale and sandstone) and some possible brick fragments. This layer was encountered to a depth of 15 to 25 feet deep. The disoriented texture and varied composition resembled a fill, or possibly a colluvial soil. The densities ranged from very soft to hard. Soils identified as residual were only identified in MW-1/B-1 and consisted of weathered shale and sandstone and weathered carbonaceous shale occurring between 19 and 27 feet below the surface. A geologic cross section is provided as Figure 3. Soil boring logs are provided as Attachment B.

[2] Shultz, Charles H, ed. The Geology of Pennsylvania, the Pennsylvania Geological Survey and the Pittsburgh Geological Society, 1999
[3] www.emappa.dep.state.pa.us/
[4] Berg, T.M., Edmunds, W.E., et. al., Geologic map of Pennsylvania, second ed. Pennsylvania geologic Survey, 1980

Soil samples indicated that the first water bearing zone below the surface is thin, and to a degree, discontinuous. In several instances the monitoring well was set while the test boring was still dry. Well development indicated the wells recovered very slowly and slug test results indicated that the permeability ranged from 0.4 feet per day in MW-1, located in close proximity to the UST cavity, to 0.004 feet per day in MW-8, located farther downgradient.

A trench was excavated just south of the UST cavity to 5.5-feet deep in November 2014 as part of a pilot test. This excavation showed the presence of compacted coarse sand and gravel followed by cobbles, as sandstone, to 3.0-feet followed by dark brown organic sandy clay with abundant rootlets to 4.0 feet and light brown clay to 5.5 feet. A perched groundwater zone was identified at 3 feet bgs at the contact with the cobbles and underlying organic clay. A discontinuous layer of SPL was present on the water table as unleaded gasoline having a strong odor. The source of this water and SPL is perceived to be the UST cavity located immediately north of the trench. A trace of SPL is present in EW-1 adjoining the UST cavity to the south.

The UST cavity dissects the perched aquifer and has become saturated from approximately 2 feet bgs to the bottom of the pea gravel fill at 12 feet bgs. It contains an estimated 12,000 gallons of groundwater. Groundwater across the site occurs from approximately 2 to 6 feet bgs. Because the aquifer thickness ranges from 0.5 to 1.5 feet, the groundwater volume across the site is relatively much lower. Groundwater is sometimes detected at deeper intervals, but the lateral movement of mass in the aquifer is believed to be through the shallow perched zone. Generally, groundwater flows southward toward Cowanshannock Creek, which is the likely groundwater receptor and topographically the lowest point south of the UST cavity. A groundwater contour map is provided as Figure 4.

2.4.3 Surface Water

Cowanshannock Creek is located approximately 235 feet south of the UST cavity and is the nearest surface water feature. Groundwater at the site flows south toward the creek. According to elevations measured in Google Earth, the elevation of the creek is approximately 40 feet lower than that of the UST cavity.

Other surface water features in the vicinity include a wetland located south of Cowanshannock Creek, and several man-made ponds located south of the wetland area.

2.5 Utilities

The locations of known utilities are shown on the site map, provided as Figure 2. A summary of known utilities is provided below.

Potable Water: Potable water is obtained from the local public water supply. A water line conveys water from the main line located along the north side of SR 85 southward to the east side of the building.

Sewage: Public sewage is provided by the local sewer authority. The sewer lateral exits the south side of the building at the southwest corner and conveys sewage south to the main line along the railroad right-of-way. A former

septic tank is located south of the building.

Heating: Propane is used as the heating fuel for the building. Two propane tanks are located along the south side of the building.

Electric: Electric power is routed overhead and enters from the southwest corner of the property and connects to the south side of the building.

Storm Sewers: One storm sewer catch basin is located at the northwest corner of the property near SR 85. The remaining flow across the site is sheet flow towards the south.

The main utility lines for the area, including the buried natural gas mains are located along the north side of SR 85 and along the former railroad right-of-way along the southern property boundary.

3.0 UST SYSTEM INFORMATION AND REPORTED RELEASES

3.1 Registered Storage Tanks

The three existing registered USTs were installed at the site in 1985. A 4,000-gallon diesel fuel tank was removed in 1998. A summary of USTs at the facility is provided below:

Tank Number	*Tank Type*	*Capacity (gallons)*	*Stored product*	*Installation Date*	*Tank Status*
001	UST	6,000	Unleaded Gasoline	November 1, 1985	In Use
002	UST	6,000	Unleaded Gasoline	November 1, 1985	In Use
003	UST	4,000	Premium Unleaded Gasoline	November 1, 1985	In Use
004	UST	4,000	Diesel Fuel	November 1, 1985	Removed (1998)

3.2 Summary of Reported Releases

A release of unleaded gasoline was reported on March 19, 2014, during the upgrade of the tank tops. Strong odors were noted in the area of the sump on Tank 003, and SPL was observed on top of the pit water. Two soil samples and one groundwater sample were collected and submitted for laboratory analysis of unleaded gasoline parameters. The results are summarized in Table 1.0. Concentrations of benzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene exceeded their respective SHS-RUA values in soil, and concentrations of benzene, naphthalene, ,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and toluene exceeded their respective SHS-RUA values in groundwater.

4.0 SITE CHARACTERIZATION ACTIVITIES

4.1 Drilling and Well Installation

Standard drilling procedures and well construction methods were utilized unless otherwise noted. All drilling locations were cleared to 5 feet bgs using soft dig techniques, which included the use of a hand auger, an air knife, and a vaxcavator. Soil samples were collected using split spoons or Macro-Core direct push sampling tubes.

Monitoring wells were drilled using hollow stem augers with center plugs. Upon establishing the borehole to the desired depth, the center plug was extracted and a two-inch diameter PVC well screen and casing lowered inside the auger to the bottom and centered. The well screen was installed so that it bisected the water table. Clean sand was placed in the borehole annulus of each well to a height of one to two feet (see well construction logs) above the top of the well screen. Depth measurements were recorded frequently as the sand was slowly poured into the annulus. Bentonite pellets were placed on top of the sand to a minimum thickness of two-feet and hydrated with potable water. The remainder of the well casing was grouted using bentonite chips and hydrated with potable water.

All monitoring wells are constructed of two-inch diameter PVC with ten feet of 0.020-inch machine slotted screen. Each well has a PVC slip cap secured in place on the bottom with a lockable expansion cap on the top of the well casing. All wells were sealed at grade using a traffic-bearing flushmount protective surface casing or a steel stick-up protective surface casing. The flushmount protective surface casing has an 18-inch deep metal skirt that is centered on the well casing and sealed in place using concrete. The surface casing has a bolt-down metal cover with gasket to prevent surface water entry. The stick-up construction includes embedding the steel casing approximately 2-feet deep into concrete. Each protective surface casing is centered over the well and constructed with a 2 X 2 foot concrete well pad.

Soil cuttings were placed on plastic sheeting and covered with plastic at the end of each day.

4.2 Summary of Subsurface Investigations

IGI utilized standard soil and groundwater sampling procedures during site characterization activities. The analytical methods are listed below.

- Soil – PADEP short list of unleaded gasoline parameters: benzene, toluene, ethylbenzene, xylenes, cumene, MTBE, naphthalene, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene by EPA Method 5035/8260B.
- Groundwater – PADEP short list of unleaded gasoline parameters: benzene, toluene, ethylbenzene, xylenes, cumene, MTBE, naphthalene, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene by EPA Method 5030/8260B.

Soil and groundwater analytical results associated with the investigation of this release are summarized in Tables 2.0 and 3.0, respectively. Measurements of pH, oxidation-reduction potential and dissolved oxygen recorded during well purging are summarized in Table 4.0. Soil boring and monitoring well locations are shown on Figure 2. Soil boring logs / well construction diagrams are provided as Attachment B. Laboratory analytical reports for soil and groundwater are provided as Attachments C and D, respectively.

4.2.1 Soil and Groundwater Investigation – June 2014

On June 17 through 19, 2014, IGI completed five soil borings (B-1, B-2, B-3, B-4 and B-5), installed one nested vapor monitoring point (VM-1, 2 - 3 feet bgs and 4 - 5 feet bgs screened intervals) and installed five monitoring wells (MW-1, MW-2, MW-3, MW-4 and MW-5). The monitoring wells were installed at locations expected to be upgradient, cross-gradient and downgradient of the release.

IGI collected a total of fourteen soil samples for laboratory analysis of unleaded gasoline parameters: MW-1, 4 - 5 feet, 7 - 9 feet and 13 - 15 feet bgs, MW-2, 5 - 7 feet bgs, MW-3, 4 feet and 15 - 17 feet bgs, MW-4, 4 feet and 9 - 11 feet bgs, MW-5, 4 feet bgs, B-2, 4 feet and 15 - 17 feet bgs, B-4, 3 feet bgs, B-5, 3 feet and 11 - 13 feet bgs and VM-1, 3 feet bgs. The following parameters exceeded their respective SHS-RUA Soil to Groundwater values:

- The benzene concentration was reported as follows: MW-1, 4 - 5 feet (3.2 mg/kg) and 7 - 9 feet bgs (3.3 mg/kg, MW-3, 4 feet bgs (15 mg/kg), MW-4, 4 feet bgs (0.72 mg/kg) and 9 - 11 feet bgs (4.8 mg/kg), B-2, 4 feet bgs (1.6 mg/kg) and 15 - 17 feet bgs (1.3 mg/kg) and B-5, 11 - 13 feet bgs (1.1 mg/kg).
- The 1, 2, 4-trimethylbenzene concentration was reported as follows: MW-3, 4 feet bgs (16 mg/kg) and B-2, 15 - 17 feet bgs (18 mg/kg).
- The 1, 3, 5-trimethylbenzene concentration was reported as follows: MW-3, 4 feet bgs (4.3 mg/kg) and B-2, 15 - 17 feet bgs (6.4 mg/kg).

One soil sample was submitted for laboratory analysis of fractional organic carbon and fractional organic matter. The results are summarized in Table 5.0. The fractional organic carbon is <0.10 g carbon / g soil, and the fractional organic matter is 2%. This information was collected for use in fate and transport modeling.

IGI developed monitoring wells MW-1, MW-2, MW-3, MW-4 and MW-5 on June 26, 2014. On July 10, 2014, groundwater samples were collected for laboratory analysis from these same wells using the low flow sampling method. One duplicate sample was collected from MW-1 for quality assurance purposes. The following parameters exceeded their respective SHS-RUA values for groundwater.

- The benzene concentration in MW-1, MW-3 and MW-4 ranged from 4,600 to 14,000 ug/L.
- The ethylbenzene concentration in MW-1 was 1,800 ug/L.
- The MTBE concentration in MW-1, MW-3 and MW-4 ranged from <92 to 430 ug/L.
- The naphthalene concentration in MW-1 and MW-4 ranged from <250 to 200 ug/L, respectively.
- The toluene concentration in MW-1, MW-3 and MW-4 ranged from 1,300 to 17,000 ug/L.
- The 1,2,4-trimethylbenzene concentration in MW-1, MW-3 and MW-4 ranged from 650 to 1,400 ug/L.
- The 1,3,5-trimethylbenzene concentration in MW-1, MW-3 and MW-4 ranged from 230 to 370 ug/L

There were no detections of any contaminants in monitoring wells MW-2 and MW-5.

The data indicated that the extent of impact to both soil and groundwater extended off the property in the downgradient direction (south). The extent of impact to soil was also not fully delineated in the upgradient direction.

4.2.2 Soil and Groundwater Investigation – August 2014

IGI established a property access agreement with Cowanshannock Creek Watershed Association (CCWA), owner of the adjacent downgradient property. A copy of the agreement is provided as Attachment E. The property is a former railroad corridor.

On August 4 and 5, 2014, IGI completed five soil borings (B-6, B-7, B-8, B-9 and B-10) and installed six monitoring wells (MW-6, MW-7, MW-8, MW-9, MW-10 and MW-11) and one pilot test well (PT-1). MW-6 was installed on the Valley Village property northeast of the UST system to define the extent of impact to groundwater in the upgradient direction. B-6 was completed north of the UST system to define the extent of impact to soil in the upgradient direction. MW-7 was installed on the Valley Village property along the southern property boundary southwest of the UST system to define the extent of impact to groundwater to the west. Soil borings B-7 through B-10 were completed and monitoring wells MW-8 through MW-11 were installed on the downgradient CCWA property.

IGI collected a total of nine soil samples for laboratory analysis: B-6, 7.5 - 10 feet bgs, B-7, 12.5 - 15 feet bgs, B-8, 2.5 - 5 feet bgs, B-9, 5 - 7.5 feet bgs, B-10, 12.5 - 15 feet bgs, MW-6, 4 feet bgs, MW-7, 4 feet bgs, MW-8, 4 feet bgs and PT-1, 10 - 12.5 feet bgs. The following parameters exceeded their respective SHS-RUA Soil to Groundwater values:

- The benzene concentration was reported as follows: B-10, 12.5 - 15 feet bgs (0.90 mg/kg.
- The 1, 2, 4-trimethylbenzene concentration was reported as follows: B-6, 7.5 - 10 feet bgs (11 mg/kg) and PT-1, 10 - 12.5 feet bgs (11 mg/kg).
- The 1, 3, 5-trimethylbenzene concentration was reported as follows: B-6, 7.5 - 10 feet bgs (3.4 mg/kg) and PT-1, 10 - 12.5 feet bgs (4 mg/kg).

IGI developed monitoring wells MW-6, MW-7, MW-8, MW-9, MW-10 and MW-11 and PT-1 on August 19, 2014. On September 3, 2014, groundwater samples were collected for laboratory analysis from these same wells using the low flow sampling method. One duplicate sample was collected from MW-8 for quality assurance purposes. The following parameters exceeded the SHS-RUA for groundwater.

- The benzene concentration in MW-8 and PT-1 ranged from 30 to 2,800 ug/L, respectively.
- The MTBE concentration in MW-8, MW-10 and PT-1 ranged from 84 to 340 ug/L.
- The toluene concentration in PT-1 was 6,400 ug/L.
- The 1,2,4-trimethylbenzene concentration in PT-1 was 660 ug/L.
- The 1,3,5-trimethylbenzene concentration in PT-1 was 260 ug/L.

There were no detections of any contaminants in monitoring wells MW-6, MW-7, MW-9 and MW-11 with the exception of MTBE in MW-7 (1.5 ug/L).

During this investigation, the extent of impact to soil was not fully delineated to the north or southeast, and the extent of impact to groundwater was not fully delineated to the south (downgradient).

4.2.3 Soil and Groundwater Investigation – December 2014

IGI requested a property access agreement with Consol Energy, owner of the next property downgradient from the CCWA property. Consol Energy denied the request in an email dated November 11, 2014. A copy of the email is included in Attachment E. Therefore, no additional wells could be installed downgradient of MW-10, and the extent of impact to groundwater could not be fully delineated in the downgradient direction.

On December 15 and 22, 2014, IGI completed two soil borings (B-11 and B-12) and installed one monitoring wells (MW-12), one extraction well (EW-1), and four UST cavity injection wells (CP-1 through CP-4). A PennDOT Highway Occupancy Permit was obtained for the completion of B-11 within the PennDOT right-of-way of SR 85.

IGI collected a total of four soil samples for laboratory analysis: B-11 (10-12.5 feet bgs), B-12 (5-7.5 feet bgs), MW-12 (7.5-10 feet bgs), and MW-12 (12.5-15 feet bgs). None of the contaminant concentrations exceeded their respective SHS-RUA values.

IGI developed and sampled monitoring well MW-12 on December 23, 2014. The results did not exceed their respective SHS-RUA values.

During this investigation, the extent of impact to soil was fully delineated. The extent of impact to groundwater is not fully delineated to the south (downgradient) because Consol Energy will not permit access to the downgradient property for monitoring well installation.

4.2.4 Groundwater Monitoring – January 2015

A groundwater sampling event was completed on January 15, 2015. All of the monitoring wells installed at the site were included in this event.

The wells were purged, and groundwater samples were collected from all 12 monitoring wells (MW-1 through MW-12), the pilot test well (PT-1), and the standpipe installed in the PersulfOx pilot test trench. One duplicate sample was collected for quality assurance purposes. The samples were submitted for laboratory analysis of unleaded gasoline parameters by method 5030/8260B.

The results are summarized in Table 6.0. Multiple constituents exceed their respective SHS-RUA values in MW-1, MW-3, and MW-4. Benzene and MTBE concentrations exceed their respective SHS-RUA value in MW-8. Only MTBE exceeds the SHS-RUA value in MW-10. Unleaded gasoline parameters were not detected in MW-2, MW-5, MW-6, MW-7, MW-9, MW-11, and MW-12.

4.3 Soil Disposal

Drill cuttings and soil from the pilot test were profiled with Republic Services. On February 3, 2015, a total of 28.65 tons of soil was transported and disposed at Carbon Limestone Landfill. Copies of the waste disposal manifests are provided as Attachment F.

4.4 Surveying

A survey of the subject property was completed on August 20, 2014 under the supervision of Robert R. Deglau of Allstate Surveying-Mapping Inc., a Professional Land Surveyor licensed in Pennsylvania. The survey included the location and elevation of site monitoring wells, the soil vapor well, soil borings and pertinent site features, such as property boundaries, structures, utilities, adjacent roadways, paved surfaces, etc. Mr. Deglau's survey map was used as the base map for the maps included in this report.

4.5 Soil Vapor Sampling

Three vapor monitoring points were installed on the property (VM-1 on June 18, 2014 and VM-2 on December 15, 2014, and VM-3 on December 22, 2014). The locations are shown on Figure 2. The vapor points were installed to evaluate soil vapors in the source area and potential preferred pathways between the UST cavity and the convenience store building. VM-1 is located adjacent to the convenience store building between the building and the UST cavity. VM-2 and VM-3 are located east and south of the UST cavity in areas exhibiting high concentrations of soil and groundwater contaminants.

VM-1 consists of a nested vapor monitoring well having 1 foot screened intervals from 2 to 3 feet and 4 to 5 feet bgs. VM-2 and VM-3 consist of a single screened interval from 0.5 to 1.5 feet bgs. Vapor monitoring point construction diagrams are included in Attachment B.

Soil vapor samples were collected from VM-1 (2 to 3 feet) and VM-1 (4 to 5 feet) on September 3 and December 23, 2014. Soil vapor samples were collected from VM-2 and VM-3 on December 23, 2014, and January 15, 2015. Samples were collected using laboratory-provided 6-liter Summa canisters. Each vapor point was purged prior to sample collection. One duplicate sample was collected during each sampling event for QA/QC purposes. The samples were submitted for laboratory analysis of unleaded gasoline parameters by Method TO-15A.

The soil vapor analytical results are summarized in Table 7.0. Contaminant concentrations do not exceed their respective Nonresidential MSC_{SG} values in any of the soil vapor monitoring points. The benzene concentration exceeded the Residential MSC_{SG} value in VM-3 (installed in the source area) during the first of two sampling events for this soil vapor point. The laboratory analytical reports are provided as Attachment G.

4.6 Slug Testing

Slug tests were completed in monitoring wells MW-1, MW-8 and MW-10 on September 18, 2014. A pressure transducer /data logger was used to record changes in groundwater elevation while a slug of a known volume was removed (slug-out or rising head test). Slug tests were

also attempted in monitoring wells MW-2 and MW-4, but the static groundwater elevation continued to rise throughout the day and did not stabilize.

The data were downloaded from the pressure transducers /data loggers using InSitu® software. These data were then incorporated into spreadsheets provided by the US Geological Survey (USGS) for use in single well analyses using the Bouwer-Rice Method. Permeability was calculated to be 0.4 feet/day (MW-1), 0.004 feet/day (MW-8), and 0.005 feet/day (MW-10). Slug test results are summarized in Table 8.0. The Bouwer-Rice spreadsheets are provided as Attachment H.

5.0 CONCEPTUAL SITE MODEL

CSM illustrations depicting contaminant migration pathways and potential exposure pathways under current site conditions are provided as Figure 5. The models depict a generalized cross-section of the site from north to south and from west to east.

5.1 Contaminant Source and Migration

The source of the release is believed to be a broken sump on Tank 003. The release was likely ongoing. The depth to groundwater in the UST cavity varies. During recent site characterization activities, the depth to water in this area of the property has been approximately 2 to 3 feet. However, at the time of UST closure in 1998, no water was present in the UST cavity. Such fluctuations in the water table have influenced contaminant migration. During periods when the water table was high, SPL and dissolved phase contaminants moved laterally across the top of the water table in the UST cavity and outward from the UST cavity through a shallow, perched zone (approximately 3 to 4 feet bgs). During periods when the water table was low, the released product migrated downward through the porous fill in the UST cavity until it reached the groundwater table and then migrated laterally outward from the UST cavity.

5.2 Nature and Extent of Contamination

5.2.1 Extent of Impact to Soil

For regulatory purposes, the extent of impact to soil is the area of adsorbed phase mass that occurs above the water table. Adsorbed phase mass below the water table is considered to be a groundwater issue. The maximum depth to water in nearby monitoring wells was used to determine the separation between these two zones. The depth to water varies by several feet across the site.

The extent of impact to soil above the water table is shown on Figure 6. The area is located around MW-3 and MW-4 south of the UST cavity. The total area is approximately 1,300 square feet. The depth of soil impact above the water table is approximately 3 to 4 feet in the area of MW-3 and 3 to 5 feet in the area of MW-4.

Assuming an average thickness of approximately 2 feet, the total volume of impacted soil is approximately 96 cubic yards (approximately 144 tons). Assuming an average total contaminant concentration (benzene, ethylbenzene, cumene, MTBE, naphthalene, toluene,

1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and total xylenes) of 72.5 mg/kg, the total adsorbed phase contaminant mass above the water table is estimated to be approximately 21 pounds.

5.2.2 Extent of Adsorbed Phase Contaminant Mass Below the Water Table

The extent of adsorbed phase mass below the water table is also shown on Figure 6. The area of adsorbed phase mass below the water table is approximately 5,800 square feet and includes areas north, east, and south of the UST cavity. The zone of impact occurs between 4 and 19 feet bgs, but the actual depth and thickness of impact varies across the site. A diagram depicting the depth of impact in each soil boring is provided as Figure 7. Within the UST cavity, impacts occur from approximately 3 to 12 feet bgs.

The total volume of impacted soil below the water table is approximately 1,552 cubic yards. Average total contaminant concentrations (benzene, ethylbenzene, cumene, MTBE, naphthalene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and total xylenes) range from approximately 27 mg/kg to 50 mg/kg in different areas. The total adsorbed phase contaminant mass below the water table is estimated to be approximately 170 pounds.

5.2.3 Extent of Impact to Groundwater

The dissolved phase plume originates in the UST cavity and has migrated primarily southward in the direction of groundwater flow. A lesser component of the dissolved phase plume has migrated eastward due to radial flow from the UST cavity. The dissolved phase plume extends southward onto the adjacent property, a former railroad corridor currently owned by the CCWA. The dissolved phase plume also likely extends onto the next downgradient property, a large forestland property and former coal mining property owned by Consol Energy. Consol Energy denied IGI's request to install monitoring wells on their property.

The highest dissolved phase contaminant concentrations are present in monitoring wells installed near the source area (MW-1, MW-3, and MW-4). Concentrations of benzene, MTBE, ethylbenzene, naphthalene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and total xylenes exceed their respective SHS-RUA values. In this area of the site, benzene concentrations range from 4,600 to 14,000 ug/L, and MTBE concentrations range from 18 to 430 ug/L. In the next monitoring well downgradient (MW-8), which is located approximately 43 feet downgradient of the UST cavity, only benzene (<1.0 to 370 ugL) and MTBE (27 to 350 ugL) exceed their respective SHS-RUA values. In the most downgradient monitoring well (MW-10), which is located approximately 75 feet downgradient of the UST cavity, only MTBE (<1.0 to 120 ug/L) exceeds its SHS-RUA value. Isoconcentration maps for the most recent groundwater sampling event are provided as Figures 8 through 15.

Contaminant concentration trend graphs are provided as Figure 16.

The total aerial extent of the dissolved phase plume is approximately 8,500 square feet and includes the UST cavity (approximately 700 square feet). Within the UST cavity, the porous gravel backfill is saturated from approximately 2 feet bgs to the bottom of the cavity (approximately 12 feet bgs). Outside the UST cavity, the first water bearing zone ranges from 0.5 to 1.5 feet in thickness and occurs between 4 and 6 feet bgs. After accounting for UST

volumes, the volume of saturated fill material in the UST cavity is approximately 4,611 cubic feet. Adjusted for a porosity of 0.32, the total volume of impacted groundwater in the UST cavity is approximately 12,000 gallons. Adjusting for a porosity of 0.4, the total volume of impacted groundwater outside of the UST cavity is approximately 23,000 gallons. Assuming an average dissolved phase contaminant concentration of 27,000 ug/L, the total dissolved phase contaminant mass in the UST cavity is approximately 2.6 pounds. Assuming an average dissolved phase contaminant concentration of 27,000 ug/L in the source area (MW-1, MW-3, MW-4) and 250 ug/L in the downgradient portions of the plume (MW-8 and MW-10), the total dissolved phase contaminant mass outside of the UST cavity is approximately 2.4 pounds. The total dissolved phase contaminant mass is approximately 5.0 pounds.

5.2.4 Fate and Transport Analysis

The spreadsheet program, New Quick Domenico (NQD), was used to estimate the migration of MTBE downgradient of MW-10. NQD calculates the concentration of a dissolved organic contaminant at any time and any point downgradient of the source area. The model allows for first order decay, retardation and three-dimensional dispersion. The program plots contaminant concentrations versus distance for both the estimated contaminant decay determined by the program and the actual contaminant concentrations from analytical testing. The NQD program assumes the source is constant, making it a conservative estimate.

NQD modeling was completed in accordance with PADEP's User's Manual for the Quick Domenico Groundwater Fate-and-Transport Model, Version No. 3b, February 28, 2014 (PADEP's QD Manual).

MTBE was selected for fate and transport modeling because it is the only unleaded gasoline constituent that currently exceeds the SHS in the most downgradient monitoring well, MW-10. Secondly, MTBE has a relatively low KOC value and therefore travels more readily in water as compared to other unleaded gasoline constituents.

Model inputs are summarized below:

- MW-4 was selected as the source area for the NQD model because it represents the downgradient limit of the source area identified as the area of maximum groundwater concentrations. PADEP's QD Manual recommends using an average of a few quarters of data. Therefore, the average MTBE concentration in MW-4 was utilized as the source area concentration (343 ug/l or 0.343 mg/L).
- PADEP's QD Manual recommends an initial value for longitudinal dispersivity (α_x) be calculated as $\alpha_x = 0.1x$, where x is the distance to a calibration point, the nearest receptor, or the plume length, depending on the scale of concern. In this case, an estimate of plume length (80 feet) was used as x. Therefore, 8 feet was used as the initial estimate for longitudinal dispersivity. Longitudinal dispersivity was then used as a calibration parameter, as discussed below.
- Transverse dispersivity (α_y) was calculated as $\alpha_y = 0.1\alpha_x$, as recommended in PADEP's QD Manual.
- Vertical dispersivity (α_z) was estimated at 0.001 feet, as recommended in PADEP's QD Manual.
- The initial decay constant (λ) was obtained from 25 PA Code Chapter 250, Appendix A, Table 5A – Physical and Toxicological Properties – Organic Regulated Substances. The

decay constant (λ) was then used as a calibration parameter, as discussed below.

- The source width and thickness were estimated to be 75 feet and 2 feet, respectively, based on the available site data.
- The age of the plume is unknown. Therefore, a conservative estimate of time (10950 days) was selected to ensure steady state conditions in the model.
- The initial estimate of hydraulic conductivity was 0.14 foot/day, based on the average of slug test results (discussed in section 4.6). Hydraulic conductivity was then used as a calibration parameter, as discussed below.
- The hydraulic gradient (0.092 feet / feet) was measured using the current groundwater contour map (Figure 4).
- The effective porosity was estimated at 40%, which is within the published ranges for silt and clay.
- Soil bulk density was estimated at 1.7 g/cm^3, a typical value for unconsolidated materials.
- The organic carbon partition coefficient (K_{OC}) value for MTBE is 12, as shown in 25 PA Code Chapter 250, Appendix A, Table 5A – Physical and Toxicological Properties – Organic Regulated Substances.
- The fraction of organic carbon value (0.02) is based on laboratory analysis of soil collected from an area of the site outside the area of contamination.

Analytical data for MW-4 (source area), MW-8 (downgradient well), and MW-10 (downgradient well) was used to calibrate the model. An average MTBE concentration was calculated for each well, in accordance with PADEP's QD Manual recommendations. The average MTBE concentrations are 343 ug/L (0.343 mg/L) in MW-4, 288 ug/L (0.288 mg/L) in MW-8, and 65 ug/L (0.065 mg/L) in MW-10. A map showing the groundwater plume is included in Attachment I.

The model was calibrated using the systematic approach described in PADEP's QD Manual. Three variables were used in calibration: hydraulic conductivity (K), longitudinal dispersivity (α_x), and decay rate (λ). Uncertainty in longitudinal dispersivity (α_x) and decay rate (λ) is assumed to be a factor of 10. Therefore the calibration ranges are K = 0.014 to 1.4 ft/day and α_x = 0.8 to 8 ft. Adjustment of the decay rate (λ) was used to match the model to the existing site data. The various combinations of calibration parameters used are summarized in table form in Attachment I. This approach generated seven possible models (Models 3 through 9) that fit the calibration data. The NQD model spreadsheets are also included in Attachment I.

The model predicts that the MTBE concentration decreases to a concentration below the SHS-RUA between 87 and 94 feet downgradient of MW-4. This point is approximately 108 to 115 feet downgradient of the UST cavity. The model predicts that the MTBE concentration reaching Cowanshannock Creek is between 0 and 0.001 mg/L (1 ug/L). This concentration is below the SHS-RUA value for MTBE (20 ug/L) and the default water quality criteria for MTBE used in the PentoxSD model (20 ug/L). No Chapter 93 Water Quality Criteria are available for MTBE.

5.3 Evaluation of Potential Sensitive Receptors and Pathways

5.3.1 Water Well Survey

A search of the Pennsylvania Groundwater Information System (PaGWIS) database identified three water wells within 0.25 miles of the site. All three wells are located are located northwest and upgradient/crossgradeint of the site. The nearest well is approximately 700 feet from the site. None of these wells is likely to be impacted by the release at the site. The results of the Water Well Survey are provided as Attachment J.

5.3.2 Municipal Water Supply

The facility is serviced by public water supplied by the Cowanshannock Township Municipal Authority. Valley Village is the last customer on the water line. Properties to the east receive public water from the Rural Valley Municipal Authority.

Cowanshannock Township Municipal Authority obtains its water from a number of wells located greater than 1.5 miles north of SR 85. The wells are greater than 150 feet in depth. Rural Valley Municipal Authority obtains its water several wells and springs. Most of these are located greater than one mile from Valley Village. One well is located 200 yards south of State Route 85 and approximately 0.5 miles east of Valley Village. The wells are greater than 150 feet in depth. All of these wells are located upgradient or crossgradient of the property and are not likely to be impacted to be impacted by the release at the site.

There is no ordinance in Cowanshannock Township restricting private water wells and many residences continue to use water wells. The township does not maintain a list of private water well users.

5.3.3 Surface Water

Cowanshannock Creek is located approximately 250 feet south of the UST cavity and is the nearest surface water feature. Groundwater at the site flows south toward the creek. Fate and transport modeling predicts that the MTBE concentration reaching Cowanshannock Creek is between 0 and 0.001 mg/L (1 ug/L). This concentration is below the SHS-RUA value for MTBE (20 ug/L) and the default water quality criteria for MTBE used in the PentoxSD model (20 ug/L). Therefore, no adverse effects to stream quality are anticipated.

5.3.4 Evaluation of Ecological Receptors

An evaluation of ecological receptors was not conducted for the site. This site is exempt from completing the survey per 250.311(b)(1): jet fuel, gasoline, kerosene, number two fuel oil or diesel fuel are the only constituents detected on site.

5.3.5 Preferential Pathways

One potential preferred pathway was identified. Underground conduits are present between the UST cavity and the convenience store building. These conduits may provide a preferential pathway for vapor migration. A nested set of soil vapor monitoring points (VP-1) was installed

adjacent to these conduits to evaluate this pathway. Contaminant concentrations in soil vapor in VP-1 do not exceed their respective Nonresidential MSC_{SG} values.

5.4 Evaluation of Potential Exposure Pathways

The exposure pathways of potential concern to humans include the following:

- Ingestion of or direct contact with surface water.
- Ingestion of or direct contact with groundwater.
- Incidental ingestion of or direct contact with soil.
- Inhalation of vapors emanating from contaminated soil or groundwater.

The exposure pathways were evaluated with respect to several receptors, including indoor workers, outdoor workers, construction workers, visitors or trespassers, and residents. The evaluation rationale is summarized below.

5.4.1 Ingestion of or Direct Contact with Surface Water

Cowanshannock Creek is located approximately 250 feet south of the UST cavity and is the nearest surface water feature. Fate and transport modeling predicts that dissolved phase contaminant concentrations do not reach Cowanshannock Creek at concentrations that exceed the SHS-RUA value or applicable water quality criteria. Therefore, this exposure pathway may be considered incomplete.

5.4.2 Ingestion of or Direct Contact with Groundwater

There are currently no water wells located within or downgradient of the groundwater plume. The Valley Village property utilizes public water. Downgradient properties are undeveloped. Therefore, this exposure pathway may be considered incomplete.

5.4.3 Incidental Ingestion of or Direct Contact with Soil

The area of impacted soil occurs below 2 feet bgs. Therefore, indoor workers, outdoor workers, visitors or trespassers, and residents are not likely to contact contaminated soil at the site. Therefore, this exposure pathway may be considered incomplete for these receptors. Construction workers could be exposed in the future if impacted soils were encountered during excavation or construction activities. However, if construction workers comply with OSHA regulations, the risk associated with direct contact is negligible.

5.4.4 Inhalation of Vapors

Contaminant concentrations in soil vapors do not exceed Nonresidential MSC_{SG} values. Therefore, the risk associated with vapor intrusion into the convenience store building is negligible.

The benzene concentration exceeded the Residential MSC_{SG} value in the first sample collected from VP-3. However, there are currently no residential structures located within 100 feet of contamination at the site. Therefore, this exposure pathway is currently incomplete.

6.0 CLEANUP STANDARDS

The most stringent cleanup standards are selected, as listed below.

6.1 Selected Cleanup Standards

Soil: **Statewide Health Standard, Soil to Groundwater Numeric Values, Residential, Used Aquifer, TDS ≤2500.** *(25 PA Code Chapter 250 Appendix A, Table 3B – MSCs for Organic Regulated Substances in Soil, Soil to Groundwater Numeric Values)*

Statewide Health Standard, Direct Contact Numeric Values, Residential, 0-15 feet. *(25 PA Code Chapter 250 Appendix A, Table 3A – MSCs for Organic Regulated Substances in Soil, Direct Contact Numeric Values)*

Groundwater: **Statewide Health Standard, Residential, Used Aquifer, TDS ≤2500.** *(25 PA Code Chapter 250 Appendix A, Table 1 – MSCs for Organic Regulated Substances in Groundwater)*

6.2 Other Applicable Standards

Surface Water: **Water Quality Standards, Fish and Aquatic Life Criteria, Continuous Concentrations.** *(25 PA Code Chapter 93 Water Quality Standards Table 5 – Water Quality Criteria for Toxic Substances)*

Water Quality Standards, Fish and Aquatic Life Criteria, Maximum Concentrations. *(25 PA Code Chapter 93 Water Quality Standards Table 5 – Water Quality Criteria for Toxic Substances)*

Water Quality Standards, Human Health Criteria. *(25 PA Code Chapter 93 Water Quality Standards Table 5 – Water Quality Criteria for Toxic Substances)*

Statewide Health Standard, Residential, Used Aquifer, TDS ≤2500. *(25 PA Code Chapter 250 Appendix A, Table 1 – MSCs for Organic Regulated Substances in Groundwater)*

Soil Vapor: **Residential MSC_{SG}.** *(Calculated as $MSC_{SG} = MSC_{IAQ} / 0.01$ in accordance with Land Recycling Program Technical Guidance Manual- Section IV.A.4. Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard. MSC_{IAQ} values found in Table 3 Indoor Air Criteria and Odor Thresholds)*

6.3 Point of Compliance Wells

The POC wells are defined based on perceived direction of contaminant transport, the groundwater flow direction and the property boundary at the time of the release. The proposed POC wells include monitoring wells installed along the downgradient property boundary (MW-3, and MW-4) and monitoring wells installed on the adjacent downgradient property (MW-8 and MW-10, and two new proposed wells MW-13 and MW-14 (See figure 2).

7.0 PILOT TESTING

Two pilot tests were considered for remediation at the site:

1) In situ chemical oxidation (ISCO) to evaluate treatment of soil and groundwater outside the UST cavity. This would be accomplished by applying and mixing an oxidant directly into soil and groundwater in a test pit.

2) Vacuum extraction coupled with injection of ORC into the UST cavity to evaluate treatment of the source area.

The two pilot studies are summarized below.

7.1 In Situ Chemical Oxidation

ISCO was considered as a remedial technology because substantial mass resides in the saturated zone. The chemicals used for ISCO are powerful oxidants. Of the available products, PersulfOx, manufactured by Regenesis, was selected for a pilot study because it uses silica to act as a catalyst, eliminating the need for using an activator such as sodium hydroxide, hydrogen peroxide or heat. The activation of PersulfOx continues over a period of two to three weeks. In addition, the concomitant application of ORC Advanced (ORC) was planned to facilitate biodegradation of contaminants over a longer period of time, up to six months.

The action of PersulfOx is twofold: 1) desorption of soil contaminants under high pH (alkaline) conditions created when PersulfOx contacts groundwater, and 2) direct destruction of soil and groundwater contaminants by free radicals liberated when PersulfOx reacts with groundwater. A Material Safety Data Sheet and technical information for PersulfOx is included in Attachment K.

The purpose of this pilot study was to: 1) establish the efficacy of PersulfOx as a remedial technology in the saturated zone, 2) evaluate the oxidant application/soil mixing process, 3) determine if PersulfOx breakdown products (sodium and sulfate) migrate to downgradient wells, and 4) refine the oxidant dosage calculations for full-scale implementation of ISCO.

7.1.1 Preliminary Work

IGI submitted a request for Rule Authorization for the injection of PersulfOx and ORC Advanced into the subsurface from the United States Environmental Protection Agency, Region 3. A copy of the granted Rule Authorization is provided as Attachment L.

IGI shared analytical data and site conditions with Regenesis, the manufacturer of PersulfOx, who then provided the dosage calculations for the application of PersulfOx and ORC Advanced for the pilot test. A copy of the pilot test design provided by Regenesis is included in Attachment K.

7.1.2 Baseline Groundwater Monitoring

Prior to excavating the test pit, IGI collected baseline samples for laboratory analysis of unleaded gasoline parameters from wells MW-3, MW-8 and MW-10. Samples were also analyzed for conductivity, pH, oxidation- reduction potential (ORP), dissolved oxygen (DO), sodium and sulfate. Sodium and sulfate are byproducts of PersulfOx breakdown. The analytical methods are listed below.

Analyte	Method	Laboratory/Field
pH	150.1	Field
ORP	Electrometric	Field

DO	D888-87	Field
Conductivity	120.1	Field
Sulfate	9056MOD	Laboratory
Sodium	6010B	Laboratory
Unleaded gasoline parameters	8260	Laboratory

The analytical data for baseline monitoring of groundwater are summarized in Tables 9.0 and 10.0. Laboratory analytical reports are provided as Attachment D. Analytical data for July 2014 and September 2014 groundwater sampling events are also included in Table 9.0 for comparison with historic data.

7.1.3 Test Pit Excavation and Application of PersulfOx

A test pit measuring 10 feet long by 2 feet wide and 5.5 feet deep was excavated into the groundwater table. The location of the test pit was selected based on soil and groundwater analytical results and the location of the UST cavity. This location represented the most likely location to contact highly impacted soil and groundwater on the property. The location of the test pit is shown on Figure 17 and the construction is shown on Figure 18.

Soil exhibiting strong gasoline odors was encountered at 2 feet bgs. Groundwater and residual SPL as unleaded gasoline having a brown color entered the trench at 3 feet bgs. The water entered from the north and upgradient side wall at the contact of the cobbles with the underlying organic clay layer and accumulated at the bottom of the trench on top of the clay layer.

Impacted soil was transported across the site and staged on plastic sheeting on the west end of the property and covered with plastic. Clean soil was staged next to the trench for reuse.

Four baseline soil samples, Pit-1, Pit-2, Pit-3 and Pit-4, were collected from a depth of 4 feet bgs along the north and south walls of the test pit prior to the application of oxidants and submitted for laboratory analysis of unleaded gasoline parameters by EPA Method 8260. The analytical results are summarized in Table 11.0 and a copy of the laboratory analytical report is included in Attachment C. The test pit and soil sampling locations are shown on Figure 17.

IGI employed protective clothing and safety gear in accordance with the manufacturer's recommendations to properly handle the PersulfOx. IGI placed approximately 115 pounds of PersulfOx, in powder form, into the track hoe bucket in batches, which was then conveyed to the bottom of the excavation and mixed with 2B limestone gravel. The product was applied evenly and then thoroughly mixed into the saturated zone of the trench from 5.5 to 3 feet bgs. PersulfOx is immediately activated upon contact with groundwater. The same application procedure was then repeated, adding 45 pounds of ORC Advanced in powder form to the excavation followed by mixing.

Prior to backfilling the excavation, a 2-inch diameter PVC standpipe with 3-foot, .020 machine slotted screened interval and solid riser was installed to a depth of 5.5 feet in the excavation (see Figure 18). The excavation was then backfilled and compacted in 12-inch lifts to grade. A layer of fabric was placed at 3-feet bgs, followed by placement of reuse soil on top of this layer and a final cover of 3/4-inch limestone.

7.1.4 Post-Oxidant Application Monitoring

7.1.4.1 Groundwater

A groundwater sample was collected from MW-3 at one hour post-PersulfOx application. In addition, samples were collected from MW-3, MW-8, MW-10 and the standpipe at one week, two weeks and three weeks post-PersulfOx application. The samples were analyzed in the field or submitted to a laboratory for analyses described under section 7.1.2. The results are summarized in Tables 9.0 and 10.0.

7.1.4.2 Soil

At three weeks post-PersulfOx application, IGI collected two saturated soil samples, Trench-Post 1 and Trench-Post 2, from borings located six inches from the downgradient sides of the test pit. These samples were collected using a drill rig to advance a split spoon sampling device to approximately 4 feet bgs to collect undisturbed samples. The samples were submitted for laboratory analysis of unleaded gasoline parameters. The analytical results are summarized in Table 11.0 and the laboratory report is included in Attachment C. The soil sampling locations are shown on Figure 17.

7.1.5 Discussion of Results

7.1.5.1 Groundwater

The wells selected for evaluating the impact to groundwater from PersulfOx application, MW-3, MW-8 and MW-10, are located 3 feet, 27 feet and 60 feet downgradient of the test pit, respectively. Analysis of the data in Tables 9.0 and 10.0, indicates the following:

- No baseline analytical data is available for the standpipe because it was installed following PersulfOx application. However, it is reasonable to assume that baseline contaminant concentrations in the standpipe would be equal to those in MW-3, located three feet downgradient. Based on that assumption, there was a 100 percent reduction in contaminant concentrations in groundwater in the test pit.

- Two baseline sampling events of groundwater in MW-3, located three feet downgradient of the test pit, show total contaminant concentrations to range from 10,951 ug/L to 18,128 ug/L. The total contaminant concentration at three weeks post-PersulfOx application was 19,140 ug/l, indicating that PersulfOx application had no beneficial impact on dissolved phase contaminant concentrations downgradient of the test pit.

- Contaminant concentrations is MW-8 and MW-10, located further downgradient of the test pit, show no beneficial impact from the PersulfOx application. While the benzene concentration in MW-8 appears to have increased, the MTBE concentration did not, suggesting that there may be a large fluctuation in benzene concentrations in this well. There is insufficient data to conclude that the increase in benzene concentration is the result of PersulfOx application.

- As shown in Table 10.0, at one week post-PersulfOx application, sodium persulfate was detected in MW-3, MW-8 and MW-10 at concentrations of 42 ug/L, 7.0 ug/L and 1.4 ug/L, respectively. This indicates that some of the oxidant remained suspended in groundwater and it moved downgradient of the test pit. These concentrations are so low that they were unable to oxidize contaminants in those wells.

- Sodium and sulfate are breakdown products of PersulfOx. Over the three week period following PersulfOx application, sodium and sulfate concentrations increased in MW-3, MW-8 and MW-10. The sulfate concentration in MW-3 increased to levels that exceed the SHS. This occurred because there is a small volume of water in the perched aquifer and dilution is limited.

- PersulfOx raises the pH of water upon contact. The pH also increased in the MW-3, MW-8 and MW-10 during the three week monitoring period.

- DO increased in MW-3, but not MW-8 or MW-10 following PersulfOx application.

7.1.5.2 Soil

As shown on Table 11.0, soil contaminant concentrations are higher on the east end of the test pit than on the west end. Therefore the data comparisons are made for each end of the excavation.

- As shown on Table 12.0, the total contaminant reduction on the west and east ends of the test pit at four weeks following PersulfOx application are 44 and 57 percent, respectively. It is reasonable to expect that the reduction within the trench was greater. However, it was expected that the extent of PersulfOx impact would have extended laterally more than one foot.

- All of the detected contaminants showed reductions in response to PersulfOx, confirming that PersulfOx is not selective in its oxidation of contaminants.

7.1.6 PersulfOx Pilot Study Conclusions

The pilot study showed that PersulfOx was able to oxidize gasoline contaminants in both soil and groundwater. However, there was little effect on contaminant concentrations downgradient of the test pit. This is likely due to the large amount of adsorbed phase contaminant mass at the site.

PersulfOx application resulted in the formation of a byproduct plume. The use of a higher application rate (>62 pounds/cubic yard) of PersulfOx could be expected to result in an expanded plume extending beyond the Cowanshannock Creek Watershed Association property with concentrations of sulfate exceeding the SHS.

If used as a standalone technology, a much higher application rate of PersulfOx would be required to successfully remediate soil and groundwater impacts. Therefore, IGI concludes that the contaminant mass is too high to use an oxidant as the primary remedial technology.

However, PersulfOx could be expected to successfully treat residual soil impacts following excavation.

7.2 Installation of Tank Cavity Monitoring Points and Vacuum Extraction

The adsorbed product on pea gravel in the UST cavity continues to serve as an emitting source of globules of product on groundwater and a dissolved phase plume. Vacuum extraction coupled with injection of ORC Advanced into the UST cavity was proposed to evaluate treatment of the source area.

ORC Advanced, upon contact with water, raises the pH to the 11- 12 range, which results in 1) desorption of contaminants from pea gravel, and 2) direct oxidation of the contaminants. As a result of the injection of ORC Advanced into the UST cavity, contaminant concentrations in groundwater in the cavity would be expected to initially increase, but then decrease slowly over time.

On December 15, 2014, IGI installed four points in the UST cavity including CP-1 through CP-4, plus one extraction well EW-1 adjacent to the south end of the UST cavity using soft dig techniques. The points were installed into the pea gravel backfill to depths ranging from 38 and 46-inches deep. The locations of the cavity points are shown on Figure 17. These points, in addition to MW-1 and PT-1, were planned for use as recovery points for residual SPL and dissolved phase mass in the source area. CP-1 through CP-4 were also planned to be used as points for direct injection of ORC Advanced.

On December 18, 2014, IGI completed vacuum extraction from wells EW-1, MW-1, CP-4 and PT-1 to enhance the recovery of SPL and dissolved phase mass in and around the UST cavity. A total of 338 gallons of groundwater and product globules was extracted by McCutcheon Enterprises, Inc. and transported to Danco Industries in Harrisville, PA for recycling/disposal.

The final step of the test, the application of ORC into the UST cavity was not performed due large amount of contaminant mass present in the UST cavity. Rather, oxidant injection into the UST cavity through points CP-1, 2, 3 and 4 is proposed as remediation to occur after impacted soil adjacent to the UST cavity has been excavated and the depth of the collection sump, EW-1, has been increased.

8.0 REMEDIAL OPTIONS ASSESSMENT

A remedial options assessment was completed to evaluate options for remediation of soil and groundwater. The options assessment takes into account the following conditions and information summarized below.

Adsorbed Phase Mass Above the Water Table (Extent of Impact to Soil) – The area of adsorbed phase mass above the water table is located south of the UST cavity around monitoring wells MW-3 and MW-4 between 3 and 5 feet bgs. The area likely extends onto the adjacent CCWA property to the south. The soil consists of silty clay with trace gravel. This area is accessible for excavation, and the CCWA has indicated that they are willing to grant property access for

excavation of impacted soil. Approximately 21 pounds of contaminant mass is present in this zone.

Adsorbed Phase Mass Below the Water Table – Approximately 170 pounds of contaminant mass is present as adsorbed phase mass below the water table. This accounts for approximately 87% of the contaminant mass present at the site. The adsorbed phase mass below the water table continues to dissolve into the groundwater. In order to achieve attainment of the SHS-RUA for groundwater, the adsorbed phase mass below the water table must be addressed. The zone of impact occurs between 4 and 19 feet bgs, but the actual depth and thickness of impact varies across the site. This area also extends onto the adjacent CCWA property. The soil consists primarily of silty clay. A portion of this area is accessible for excavation.

Groundwater – A dissolved phase groundwater plume originates in the UST cavity and has migrated downgradient to the south onto the adjacent CCWA property and likely the next downgradient property owned by Consol Energy. A trace of SPL (product globules and product sheen) is present on the groundwater surface near the UST cavity, and high dissolved phase contaminant concentrations are present in this area of the plume. Currently POC wells MW-3, MW-4, MW-8 and MW-10 exceed the SHS-RUA while POC wells MW-7, MW-9 and MW-11 meet the SHS-RUA.

Contaminant Mass in the UST Cavity – A significant amount of contaminant mass is present in the active UST cavity in the form of residual SPL, adsorbed phase mass, and dissolved phase mass. Because of the permeable nature of the pea gravel backfill in the UST cavity as compared to the thin nature of the perched aquifer (0.5 to 1.5 feet thick), the cavity stores a significantly greater volume of groundwater per area (12,000 gallons within 700 square feet) as compared to the estimated groundwater volume in the aquifer impacted by the dissolved phase plume away from the UST cavity (23,000 gallons in 7,800 square feet). This assumes the perched aquifer is laterally continuous. Natural groundwater fluctuations in the UST cavity liberate additional dissolved phase mass into the aquifer.

Vapors: Contaminant concentrations in soil vapors do not exceed Nonresidential MSC_{SG} values, but the benzene concentration exceeded the Residential MSC_{SG} value in the first sample collected from VP-3. The SHS-RUA is selected as the cleanup standard for soil and groundwater at the site. Therefore, the Residential MSC_{SG} is the remedial objective for soil vapors.

Technology	Advantages	Disadvantages
Dual Phase Vacuum Extraction		• Impacted silty clay soils are low permeability and are not conducive to dual phase vacuum extraction. • Not likely to achieve SHS-RUA for soil or groundwater.
Soil Vapor Extraction		• Impacted silty clay soil has low permeability and is not conducive to soil vapor extraction. • Not likely to achieve SHS-RUA for soil or groundwater.
Air Sparging	• May be effective at treating groundwater impacts in the pea gravel-filled UST cavity.	• Aquifer is thin and perched and air sparging away from the UST cavity would not likely have an effect beyond the sparging point.

Technology	Advantages	Disadvantages
Groundwater Pump and Treat	• May provide hydrogeologic control of the dissolved phase groundwater plume.	• Does not address soil impacts above the water table. • Does not address adsorbed phase mass below the water table. • Will not achieve SHS-RUA for soil or groundwater.
Excavation of Impacted Soil Above the Water Table	• Removes the most mass in the shortest time frame. • The entire area of impacted soil above the water table is accessible for excavation. • Likely to achieve SHS-RUA for soil.	• Does not address the dissolved-phase groundwater plume.
Excavation of Adsorbed Phase Mass Below the Water Table	• Removes the most mass in the shortest time frame. • Removes mass that continues to contribute to the dissolved phase plume. • The aquifer is mainly a perched aquifer and soil conditions below the water table are not fully saturated. Therefore, this soil is amenable to excavation and disposal.	• Not all of the adsorbed phase mass below the water table is accessible for excavation. • Not likely to achieve SHS-RUA for groundwater if used as a standalone technology.
PersulfOx Application	• Pilot test results indicate that this product desorbs adsorbed phase contaminants and destroys the contaminant mass in groundwater effectively. • If combined with excavation, the PersulfOx treatment zone is readily accessible.	• Not effective for impacted soil above the water table. • Not recommended for use in the active UST cavity. • May form a byproduct plume if used as a standalone technology.
RegenOx Application in the UST Cavity Followed By Vacuum Extraction	• Promotes desorption of adsorbed phase contaminants. • Oxidizes both adsorbed phase and dissolved phase contaminant mass. • Safe for use in the UST cavity. • Can be effectively delivered to the porous fill material in the UST cavity by injection into existing cavity injection wells CP-1 through CP-4. • Vacuum extraction will recover desorbed mass that is not directly destroyed by the product.	• Only addresses contaminant mass in the UST cavity. • May require multiple applications.
Installation of a PlumeStop Barrier	• Creates a groundwater treatment barrier to prevent offsite migration of the dissolved phase plume. • Lasts a long period of time and can be aided with small-scale ORC applications to maintain high dissolved oxygen levels.	•
Monitored Natural Attenuation		• May never achieve remedial standards because current concentrations of dissolved hydrocarbons are more than 10 times the SHS-RUA. Groundwater concentrations are currently too high to consider this alternative.

9.0 REMEDIAL ACTION PLAN

The remedial approach addresses soil, groundwater, and vapors primarily through excavation and in situ chemical oxidation.

- The area of impact to soil above the water table will be addressed through excavation.
- A portion of the adsorbed phase contaminant mass in soil below the water table will be also be excavated in order to remove contaminant mass that continues to contribute to the dissolved phase plume.
- Additional adsorbed phase contaminant mass in soil that contributes to the dissolved phase plume will be addressed through in-situ chemical oxidation by application of PersulfOx into the bottom of the excavation. The mass that will remain at depth is at

lower concentrations and should be amenable to in-situ treatment versus an additional deeper excavation.

- Adsorbed phase and dissolved phase contaminant mass in the UST cavity will be addressed through in-situ chemical oxidation using RegenOx Part A and vacuum extraction. RegenOx Part A will also promote desorption of adsorbed phase mass. A vacuum truck will be used to recover the liberated mass from EW-1. During the excavation of Area A (See Figure 19) the depth of EW-1 will be increased to more effectively dewater the UST cavity.
- A portion of the adsorbed phase mass below the water table is not accessible for excavation or oxidant application. This adsorbed phase mass acts as a continually emitting source for the dissolved phase plume. PlumeStop Colloidal Biomatrix will be used to capture and degrade dissolved phase contaminants to prevent offsite migration.
- The proposed remediation will also address soil vapors via source removal of impacted soil.

A summary of the proposed remediation technologies and the estimated total contaminant mass to be addressed by each is provided below:

Contaminant Source	Proposed Remediation	Estimated Total Contaminant Mass
Adsorbed Phase Mass Above Water Table (Extent of Impact to Soil)	Excavation	21 pounds
Adsorbed Phase Mass Below the Water Table	Excavation to the Extent Feasible	55 pounds
	Mix with PersulfOx to the Extent Feasible	33 pounds
	Adsorbed Phase Mass Left in Place will be Addressed with a PlumeStop Barrier	47 pounds
Adsorbed Phase Mass in the UST Cavity	Treat with RegenOx and Vacuum Extraction	35 pounds
Dissolved Phase Mass in UST Cavity	Treat with RegenOx and Vacuum Extraction	2.6 pounds
Dissolved Phase Mass in the Rest of the Groundwater Plume	Excavation / Mix with PersulfOx / PlumeStop Barrier	2.4 pounds
TOTAL Contaminant Mass		196 pounds

Material Safety Data Sheets and product information sheets for all of the products to be applied are included in Attachment K.

9.1 Soil Excavation

IGI will complete a site visit to mark the excavation boundary with white paint and notify the PA One-Call Systems, Inc. a minimum of three business days prior to the start of excavation.

The proposed areas of excavation are shown on Figure 19 as Areas A, B and C. The total area of excavation is approximately 2,480 square feet, and total depth of the excavation will range from 5 to 11 feet in Areas A and B (south of the UST cavity), from 9 to 12½ feet in Area C (east of the UST cavity).

Excavated soil will be screened using visual observations, odor and measurements with a PID meter to segregate "impacted" soil from "presumably clean" soil. A target PID level of 100 ppm may be applied. However, analytical data will be the final determining factor for determining impacted versus presumably clean soil because it is a more reliable approach. Impacted soil will be staged on plastic and covered with plastic at the end of each day and remain in this condition until profiling for disposal is complete.

The excavation plan will be developed with the excavation contractor onsite. In Area C, approximately 5 feet of clay deposits adjoining the east side of the UST cavity will remain in place as a barrier during the excavation on the east side of the cavity. This will prevent migration of PersulfOx into the UST cavity. Following backfilling with clay, an attempt will be made to excavate the soil barrier adjacent to the UST cavity to a depth of approximately 4 feet. This will address residual SPL identified in soil from 3 to 4 feet bgs when installing CP-4. Excavation deeper than 4-feet adjacent to the UST cavity is not recommended due to the potential to undermine the UST cavity containing pea gravel backfill.

The estimated volume of impacted soil to be excavated is approximately 459 cubic yards (approximately 689 tons).

9.1.1 Confirmatory and Reuse Soil Sampling

Twelve confirmatory soil samples will be collected from the sidewalls of the excavated area above the water table in accordance with a systematic randomized confirmatory soil sampling plan plus one sample for QA/QC purposes. No samples will be collected from the floor of the excavation because of saturated conditions. Four soil samples will be collected from the "presumably clean" soil piles for reuse. Soil samples will be submitted to a certified laboratory for analysis of unleaded gasoline parameters (post-2008 short list: benzene, ethylbenzene, cumene, MTBE, naphthalene, toluene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene, and total xylenes) by EPA method 5035/8260B.

9.1.2 Backfill

In Area A, clay backfill will be applied from the bottom of the excavation to approximately 5 feet bgs, followed by placement of a permeable zone approximately 3 feet thick followed compactable fill to grade. The permeable backfill in Area A will provide for a shallow permeable zone downgradient of the UST cavity that will act as a long term treatment zone for dissolved phase contaminants that may migrate from the UST cavity in the future, as discussed in section 9.4 below. It will also allow the perched aquifer to continue its natural movement southward and downgradient from the UST cavity.

In Area B, clay backfill will be applied from the bottom of the excavation to approximately 5 feet bgs, followed by placement of 2A modified stone approximately 3 feet thick followed compactable fill to grade.

In Area C, clay backfill will be applied from the bottom of the excavation to near surface. This will discourage flow of the perched aquifer towards the east, or encourage its current movement towards the south through a constructed treatment zone.
Backfill will be compacted in one foot lifts.

Asphalt surfaces will be restored with new asphalt including a base coat approximately 3 inches thick followed by a 1.5-inch thick topcoat. The gravel surface of the driveway with be restored with 3/4-inch limestone, and grassy areas will graded, reseeded and covered with straw.

9.1.3 Profile, Load, Transport and Dispose Impacted Soil

Excavated soil will be profiled with a permitted facility. Following approval of the profile, the staged impacted soil will then be loaded into placarded trucks and transported to the landfill for disposal. The final determination of the tonnage transported will be based on weights measured on landfill certified scales.

9.1.4 Installation of Monitoring Wells and Soil Vapor Monitoring Points

Monitoring wells MW-1, MW-3, and MW-4 and vapor monitoring points VM-2 and VM-3 will be destroyed during excavation and reinstalled after backfilling is completed. Replacement monitoring wells MW-3R and MW-4R will be installed at the southern property boundary downgradient of the PlumeStop treatment zone. Monitoring well MW-1R and vapor monitoring points VM-2R and VM-3R shall be reinstalled at their original locations.

Two additional monitoring wells, MW-13 and MW-14, will be installed downgradient of the area of excavation and oxidant application, as requested by the PADEP case manager. The proposed well locations are shown on Figure 19. These wells will be used for post-oxidant application monitoring.

9.2 In Situ Chemical Oxidation of Adsorbed Phase Mass At Depth

Within the area of excavation, PersulfOx will be mixed with soil on the bottom of the excavation (Areas A, B, and C) to address the remaining adsorbed phase contaminant mass present beneath the area of proposed soil excavation. The depth of PersulfOx application will vary depending on the soil profile in each area. The anticipated depths are 10 to 13 feet near B-2, 9 to 11 feet near MW-1, 12½ to 15 feet near PT-1, and 11 to 15 feet near MW-4. The proposed quantities and application rates for PersulfOx recommended by Regenesis are summarized below:

Area	Application Rate (Pounds of PersulfOx per Cubic Yard of Soil)	Total Quantity of PersulfOx (pounds)
Area A	13.4	937
Area B	12.8	1,873
Area C	15.6	1,984
TOTAL		**4,794**

Because the most grossly contaminated soil will be excavated for disposal first, the proposed PersulfOx application rates proposed are lower than the rate used for the pilot study (62.2

pounds of PersulfOx per cubic yard of soil). As a result of the lower application rate, the concentrations of byproducts such as sulfate are expected to be lower.

Post PersulfOx Application Monitoring

The impact of oxidant application will be monitored in selected wells during and following PersulfOx application according to the following schedule:

Location	Days Post-Initial Oxidant Injection									
	Baseline	1	2	3	4	5	8	9	16	26
Parameters: pH, DO, ORP, Persulfate, Conductivity, Sulfate (Field Testing)										
MW-1R									X	X
MW-3R									X	X
MW-4R									X	X
MW-5	X							X	X	X
MW-8	X	X	X	X	X	X	X	X	X	X
MW-9	X	X	X	X	X	X	X	X	X	X
MW-10	X	X	X	X	X	X	X	X	X	X
MW-11	X	X	X	X	X	X	X	X	X	X
MW-12	X							X	X	X
MW-13	X	X	X	X	X	X	X	X	X	X
MW-14	X	X	X	X	X	X	X	X	X	X
Parameters: Unleaded Gasoline Parameters (Laboratory)										
MW-1R										X
MW-3R										X
MW-4R										X
MW-5										X
MW-8										X
MW-9										X
MW-10										X
MW-11										X
MW-12										X
MW-13	X									X
MW-14	X									X
Parameters: Sodium, Sulfate (Laboratory)										
MW-5	X									X
MW-8	X									X
MW-9	X									X
MW-10	X									X
MW-11	X									X
MW-12	X									X
MW-13	X									X
MW-14	X									X

The analytical methods to be used for post-oxidant application monitoring are listed below:

Analyte	Method	Laboratory/Field
pH	150.1	Field
ORP	Electrometric	Field
DO	D888-87	Field
Conductivity	120.1	Field
Sulfate	9056MOD	Laboratory
Sodium	6010B	Laboratory
Persulfate	Ferric thiocyanate	Field
Unleaded gasoline parameters	8260	Laboratory

9.3 In Situ Chemical Oxidation in the UST Cavity

Adsorbed and dissolved phase mass is present in the UST cavity. IGI proposes injection of RegenOx Part A into the UST cavity (Area D, as shown on Figure 19) to desorb and oxidize contaminants.

During excavation near the existing extraction well EW-1, a new slotted PVC pipe shall be installed to a target depth of 12 feet bgs so that the well can be used to effectively dewater the UST cavity. The static water level in the cavity is approximately 2 feet bgs.

Prior to oxidant injection into the UST cavity, groundwater will be extracted from EW-1 in order to dewater the cavity. Then, approximately 600 pounds of RegenOx Part A (in slurry form) will be injected into the UST cavity through CP-1 through CP-4. The groundwater level will be allowed to recover, dispersing the oxidant vertically throughout the UST cavity. Approximately two weeks after RegenOx injection, groundwater will again be extracted from EW-1 to remove the liberated contaminant mass. Extracted groundwater will be transported to a permitted facility for disposal.

9.4 PlumeStop Application

During backfilling of the excavation in Area A, PlumeStop Colloidal Biomatrix and ORC Advanced Pellets will be applied from 2 to 5 feet bgs in the porous 2B backfill (See Figure 19). It will be applied into the backfill using the excavator. 2B backfill will be placed in three, 1-foot lifts. With each lift, the PlumeStop will be mixed into the saturated stone layer. If there is not sufficient groundwater, then potable water shall be added to the backfill during the mixing process. A representative of Regenesis, the manufacturer of PlumeStop, will be on site to provide assistance for its proper application. A total of 1,200 pounds of PlumeStop and 160 pounds of ORC Advanced Pellets are proposed for application in Area A.

9.5 Post Remediation Groundwater Monitoring and Reporting

Following excavation and oxidant application, four quarters of post-remediation groundwater monitoring will be completed. All site monitoring wells (14 wells total) will be included in post-remediation groundwater monitoring. Groundwater samples will be submitted to a certified laboratory for analysis of unleaded gasoline parameters (post-2008 short list: benzene, ethylbenzene, cumene, MTBE, naphthalene, toluene, 1,2,4-trimethylbenzene, 1,3,5-

trimethylbenzene, and total xylenes) by EPA method 5030B/8260B. IGI will employ appropriate chain-of-custody procedures, and samples will be stored and shipped on ice to maintain proper temperature.

The progress shall be summarized in quarterly RAPRs, which will be submitted to the PADEP within 30 days after the end of each quarter, in accordance with 25 PA Code § 245.312. Each RAPR will be sealed by a Professional Geologist.

After four quarters, if attainment of the SHS-RUA appears likely in POC monitoring wells, IGI will proceed with groundwater attainment monitoring.

10.0 HEALTH AND SAFETY / QA/QC PROCEDURES

Groundwater sampling, labeling, field-testing and calibration procedures, and decontamination protocols followed industry standards. Quality assurance and control is addressed in the IGI Sampling and Quality Assurance Plan provided as Attachment M. Waste handling is also addressed in the Plan.

IGI personnel who work at this Site are trained in accordance with OSHA 29 CFR1910.120 regulations. A site specific Health & Safety Plan is provided as Attachment N.

11.0 CONCLUSIONS

This SCR/RAP was prepared in accordance with Title 25 PA Code § 245.310(a) and § 245.311. The conclusions of this investigation are summarized below:

- Contaminant concentrations in soil and groundwater exceed their respective SHS-RUA values. Soil and groundwater impacts extend offsite onto the adjacent downgradient property.
- Fate and transport modeling predicts that the dissolved phase plume does not impact Cowanshannock Creek.
- Contaminant concentrations in soil vapor meet the Nonresidential MSC_{SG} but exceed the Residential MSC_{SG}.
- The proposed remediation includes excavation of impacted soil above the water table and a portion of the adsorbed phase mass below the water table, in situ chemical oxidation of additional adsorbed phase mass and dissolved phase contaminants using PersulfOx and RegenOx, and installation of a PlumeStop barrier to prevent offsite migration of the remaining dissolved phase plume. The proposed remediation is expected to achieve attainment of the SHS-RUA for both soil and groundwater and attainment of the MSC_{SG} for soil vapor.

FIGURES

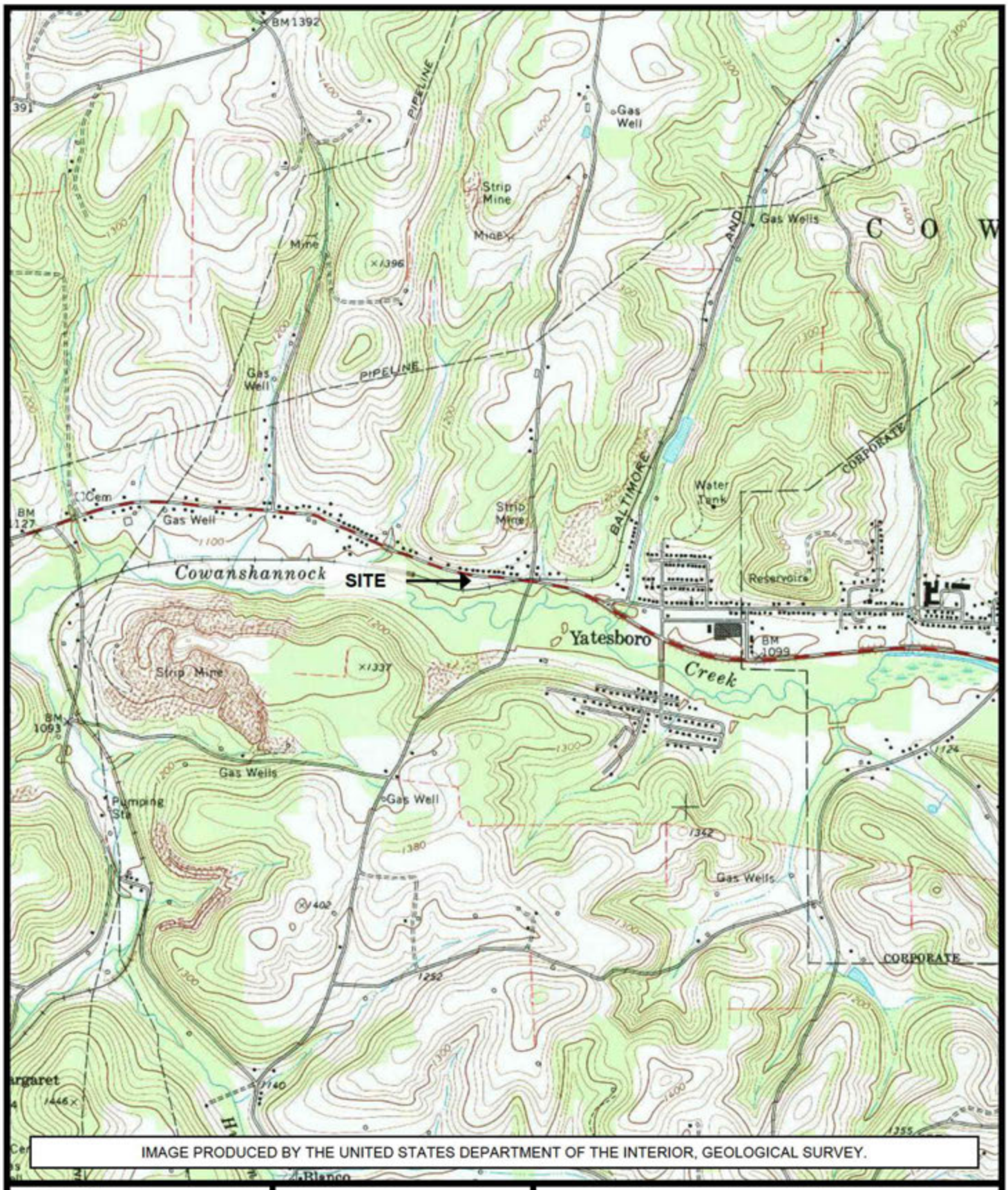

IMAGE PRODUCED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY.

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611 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

RURAL VALLEY, PA QUADRANGLE
1969
PHOTOINSPECTED 1990

7.5-MINUTE SERIES
CONTOUR INTERVAL 20 FEET

FIGURE 1
TOPOGRAPHIC MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201-8165
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

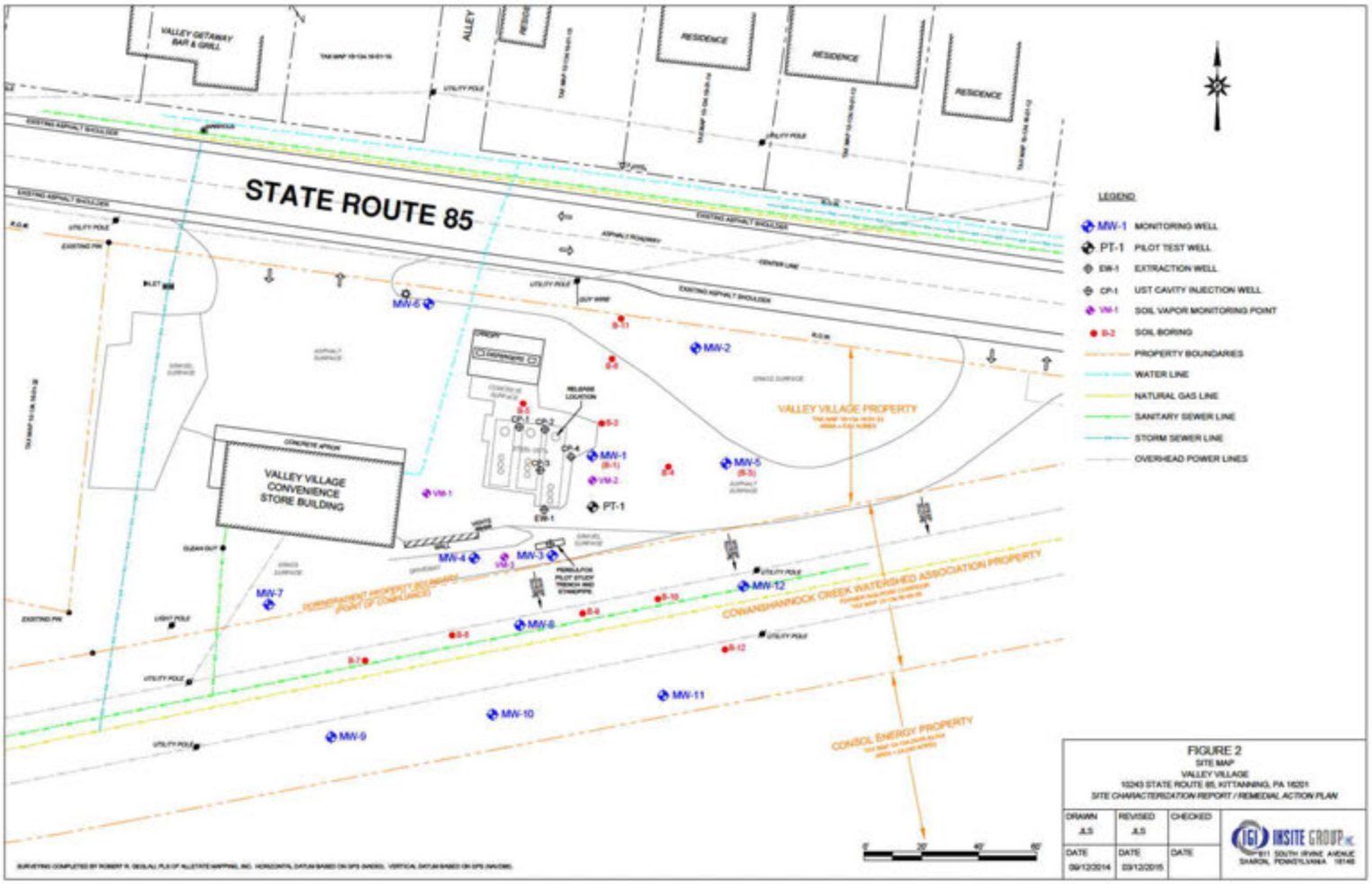
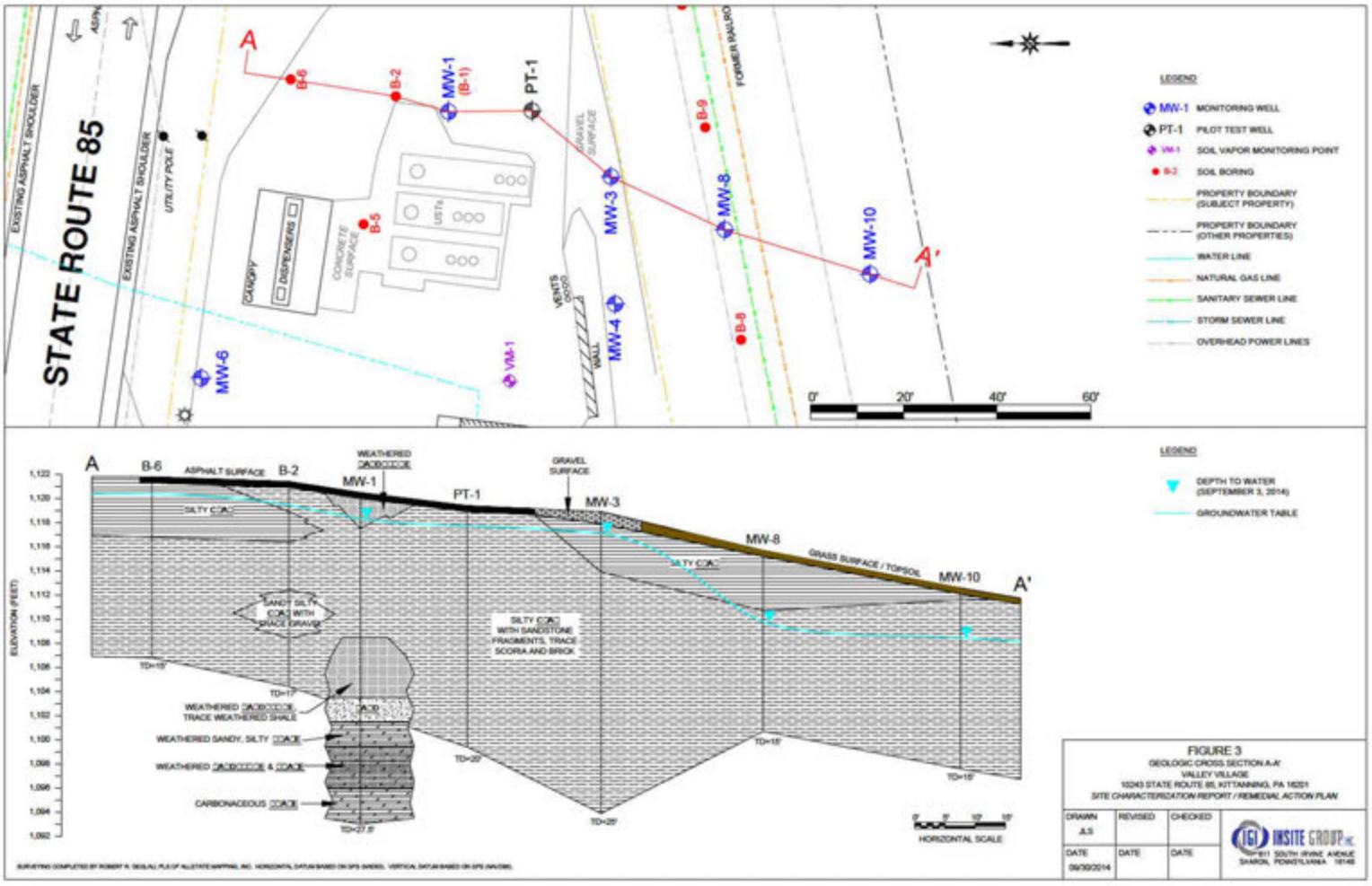


FIGURE 2
SITE MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
JLS	JLS	
DATE	DATE	DATE
09/12/2014	03/12/2015	

INSITE GROUP, INC.
911 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146



SURVEYING COMPLETED BY ROBERT A. DEGLAU, PLS OF ALLSTATE MAPPING, INC. HORIZONTAL DATUM BASED ON GPS (NAD83). VERTICAL DATUM BASED ON GPS (NAVD88).

FIGURE 3

GEOLOGIC CROSS SECTION A-A'
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
JLS		
DATE	DATE	DATE
09/30/2014		

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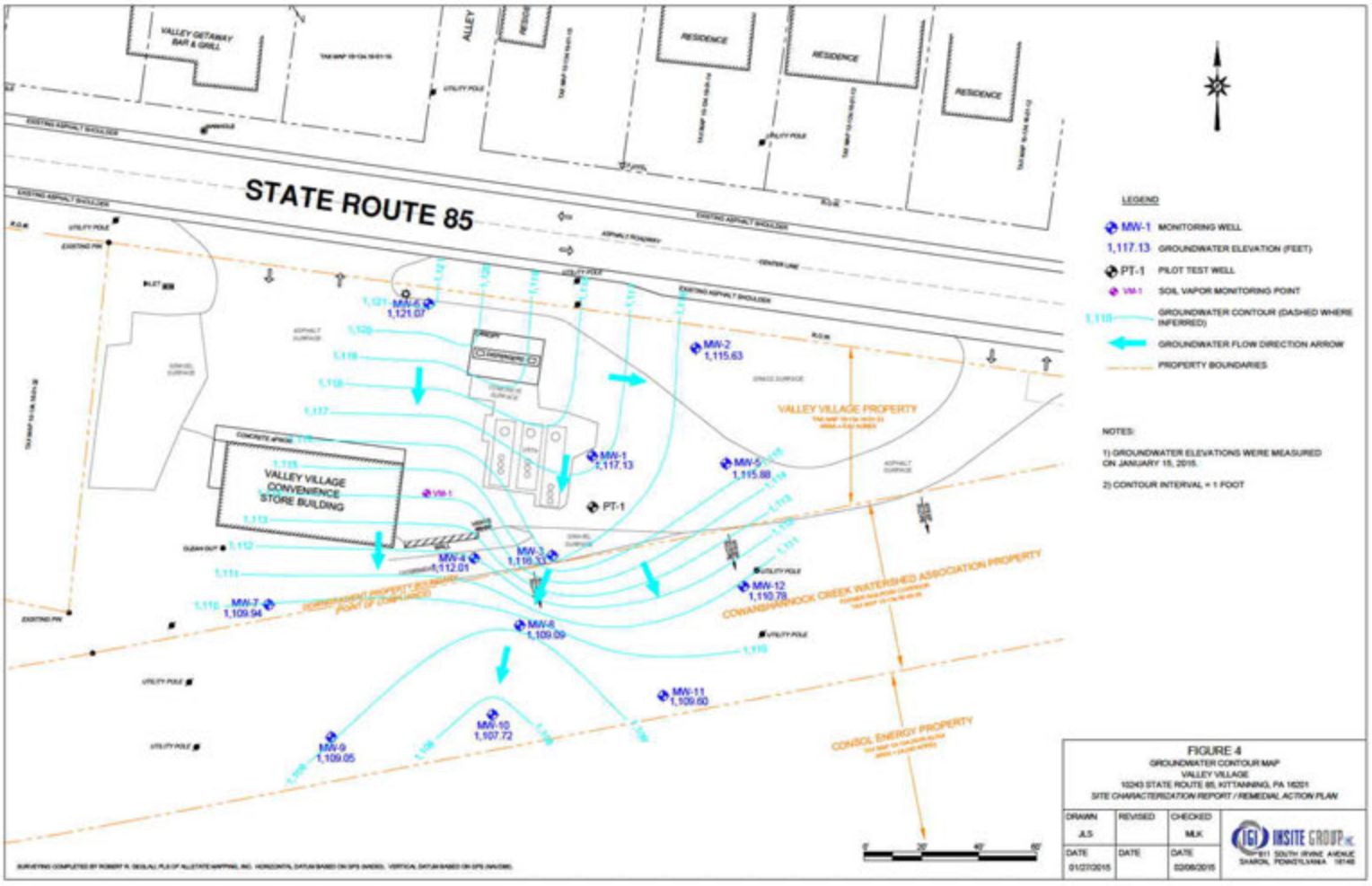
911 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146



SURVEYING COMPLETED BY ROBERT A. SEGLIA, PLS OF ALLSTATE MAPPING, INC. HORIZONTAL DATUM BASED ON GPS (NAD83). VERTICAL DATUM BASED ON GPS (NAVD88).

FIGURE 4
GROUNDWATER CONTOUR MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
JLS		MJK
DATE	DATE	DATE
01/27/2015		02/06/2015

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911 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

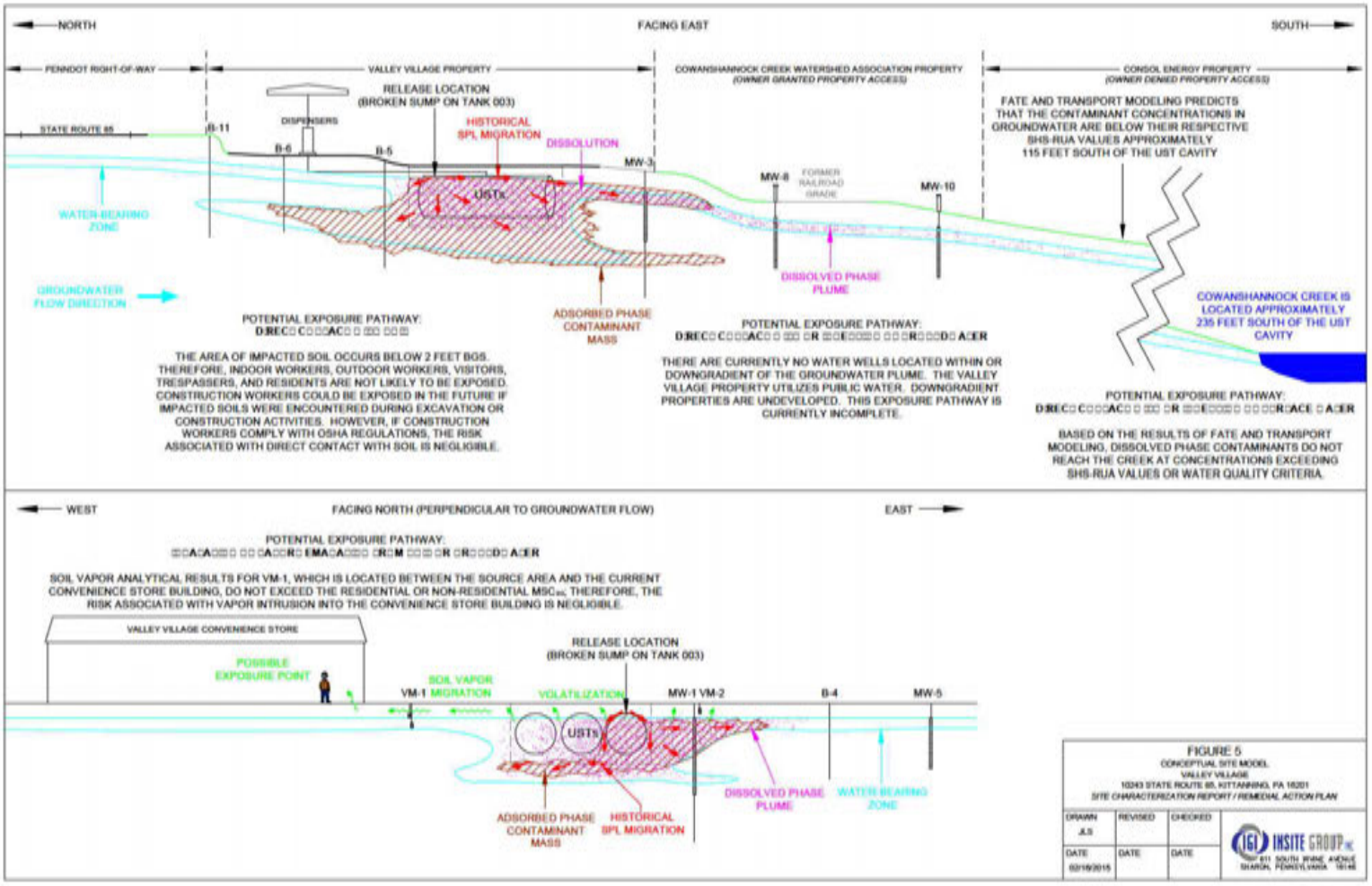

FIGURE 5
CONCEPTUAL SITE MODEL
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
JLS		
DATE	DATE	DATE
02/16/2015		

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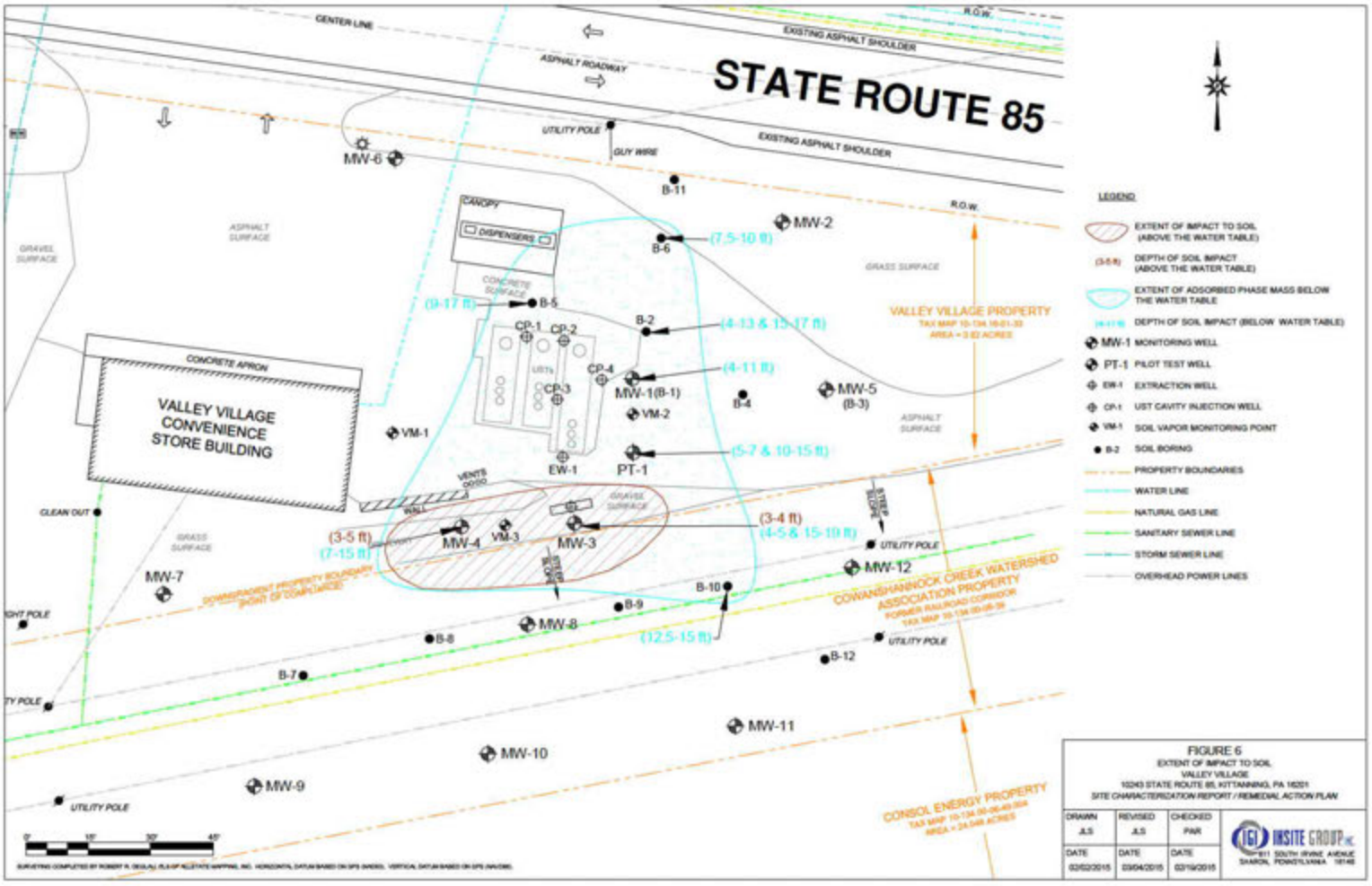

FIGURE 6
EXTENT OF IMPACT TO SOIL
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
JLS	JLS	PAR
DATE	DATE	DATE
02/02/2015	03/04/2015	03/19/2015

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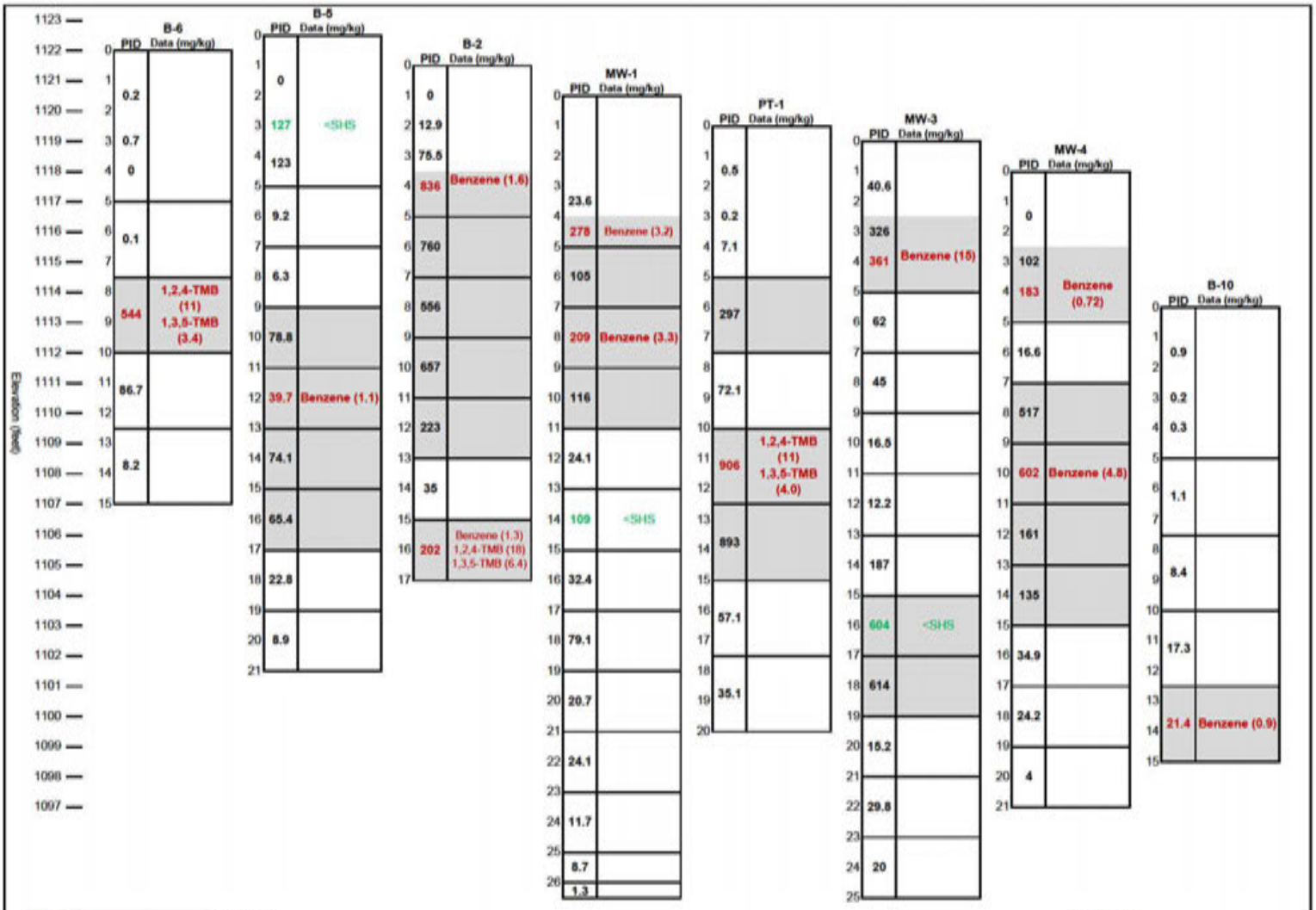
SHARON, PENNSYLVANIA 16146



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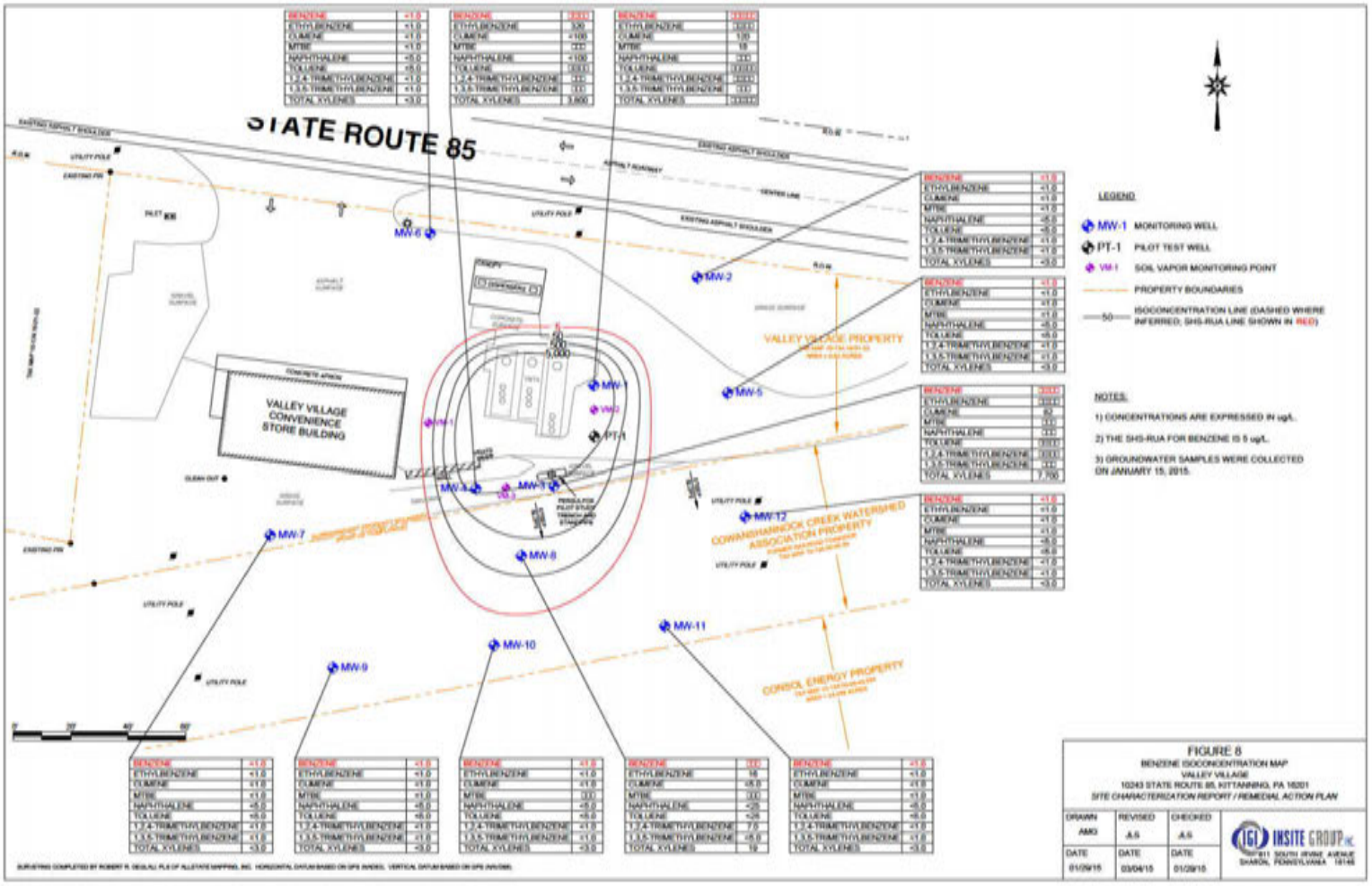
SHARON, PENNSYLVANIA 16154

Notes:
1) Analytical results that exceed the SHS-RUA and the corresponding PID readings are shown in Red.
2) Analytical results that do not exceed the SHS-RUA and the corresponding PID readings are shown in Green.
3) The estimated zone of adsorbed phase contamination based on analytical data and PID readings is shown in gray.

FIGURE 7
SOIL IMPACT DEPTH DIAGRAM
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN


STATE ROUTE 85
VALLEY VILLAGE CONVENIENCE STORE BUILDING
VALLEY VILLAGE PROPERTY
CONWAY-HARROCK CREEK WATERSHED ASSOCIATION PROPERTY
CONSOL ENERGY PROPERTY
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
VM-1
VM-2
VM-3
PT-1
LEGEND
MW-1 MONITORING WELL
PT-1 PILOT TEST WELL
VM-1 SOIL VAPOR MONITORING POINT
PROPERTY BOUNDARIES
50 ISOCONCENTRATION LINE (DASHED WHERE INFERRED; SHS-RUA LINE SHOWN IN RED)
NOTES:
1) CONCENTRATIONS ARE EXPRESSED IN ug/L.
2) THE SHS-RUA FOR BENZENE IS 5 ug/L.
3) GROUNDWATER SAMPLES WERE COLLECTED ON JANUARY 15, 2015.
FIGURE 8
BENZENE ISOCONCENTRATION MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN
DRAWN AMG
REVISED AS
CHECKED AS
DATE 01/29/15
DATE 03/04/15
DATE 01/29/15
INSITE GROUP, INC.
1011 SOUTH BYRNE AVENUE
SHARON, PENNSYLVANIA 16146

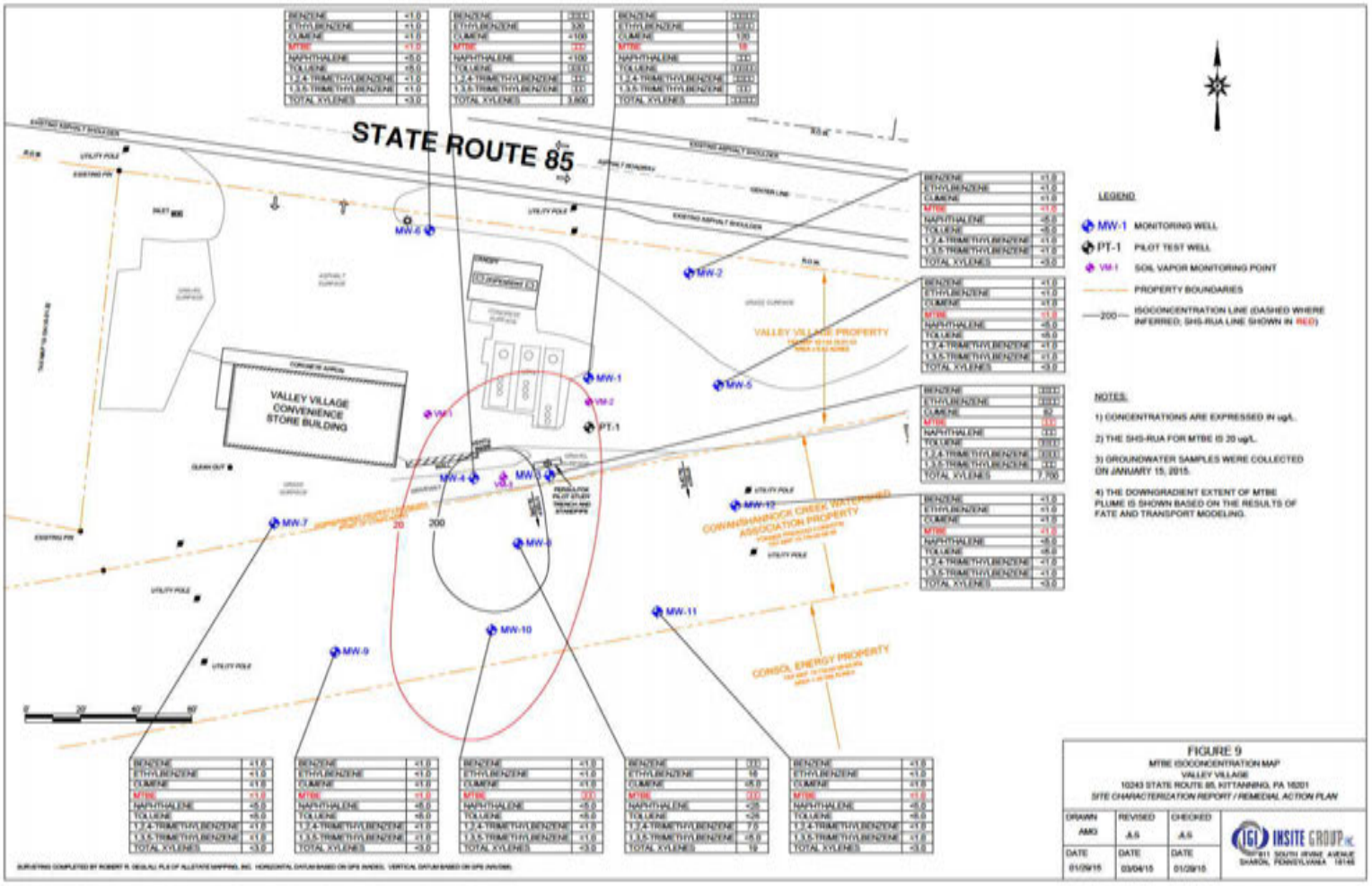


FIGURE 9
MTBE ISOCONCENTRATION MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
AMG	AS	AS
DATE	DATE	DATE
01/29/15	03/04/15	01/29/15

INSITE GROUP INC
911 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

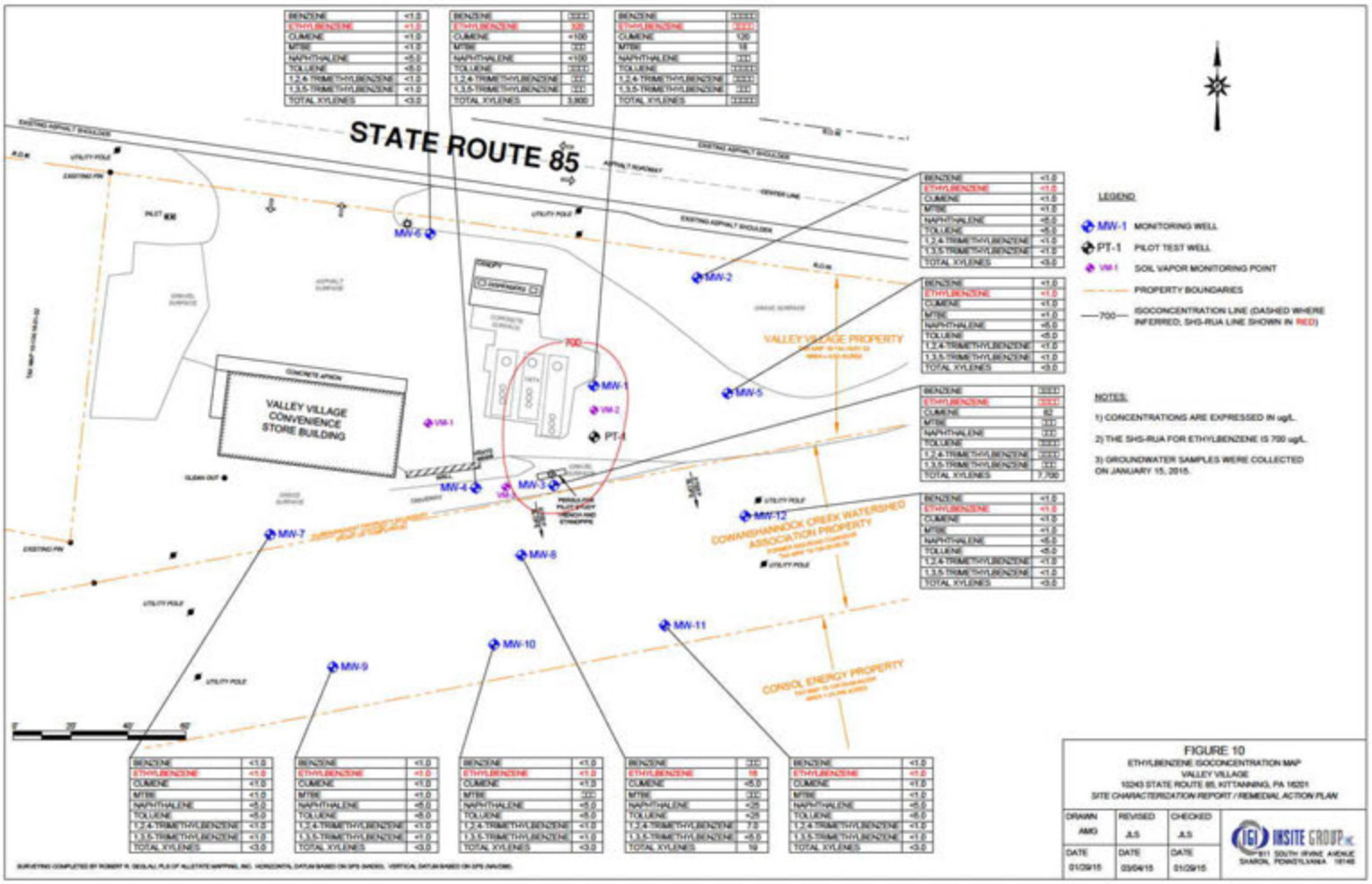


FIGURE 10

ETHYLBENZENE ISOCONCENTRATION MAP

VALLEY VILLAGE

10243 STATE ROUTE 85, KITTANNING, PA 16201

SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
AMG	JLS	JLS
DATE	DATE	DATE
01/29/15	03/04/15	01/29/15

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911 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

SURVEYING COMPLETED BY ROBERT A. DEGULA, PLS OF ALLSTATE MAPPING, INC. HORIZONTAL DATUM BASED ON GPS (NAD83). VERTICAL DATUM BASED ON GPS (NAVD88).

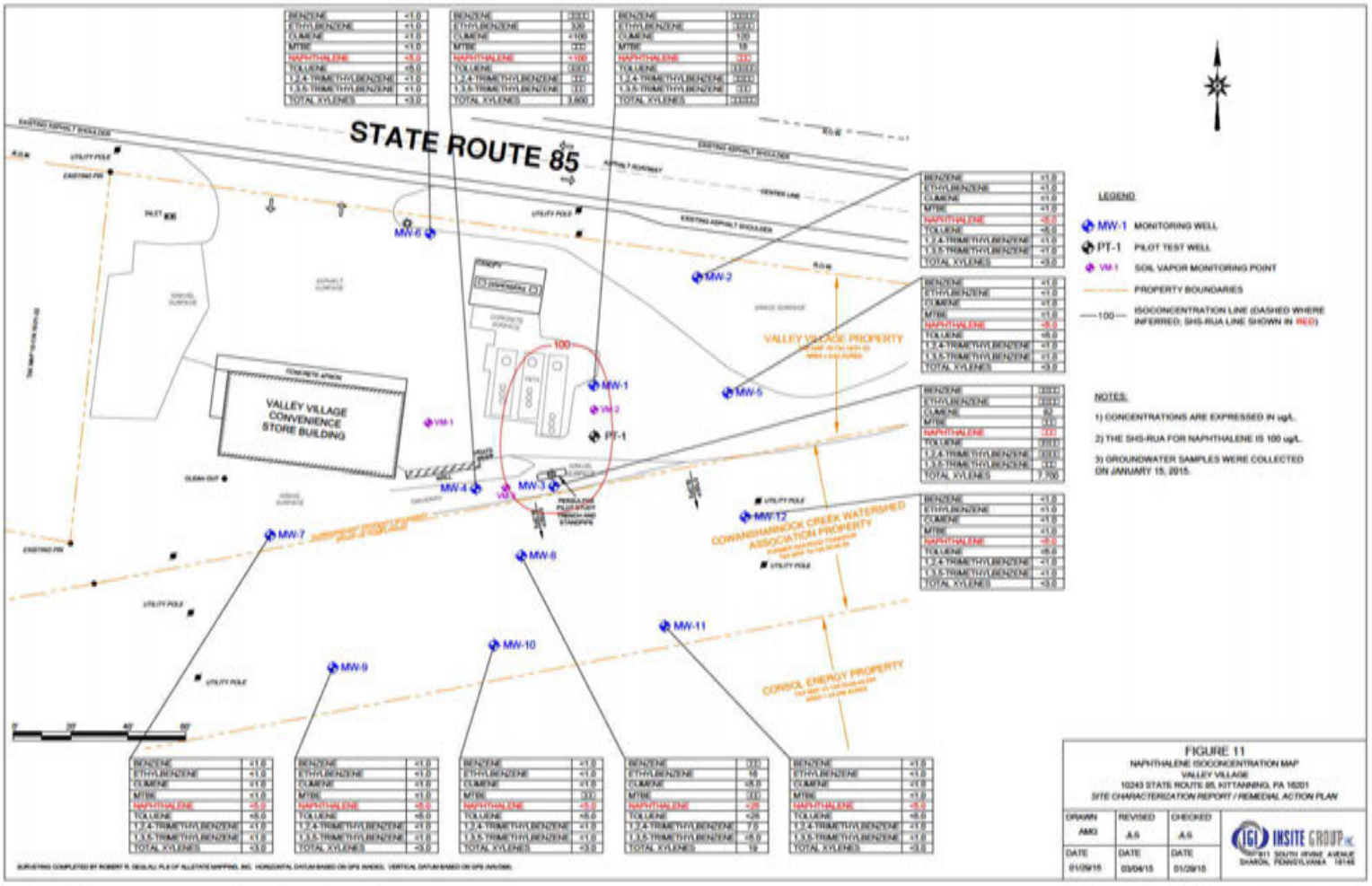
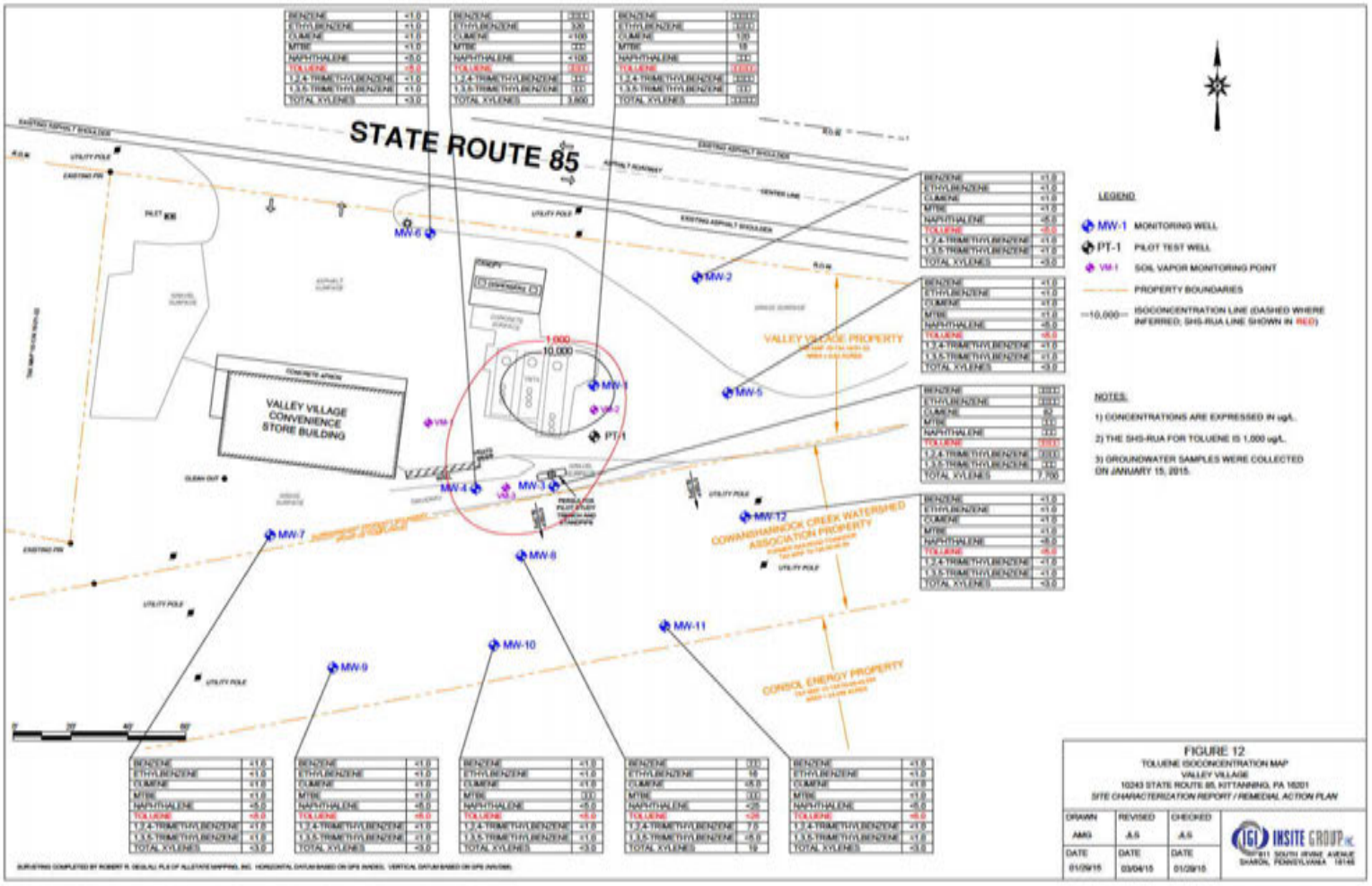


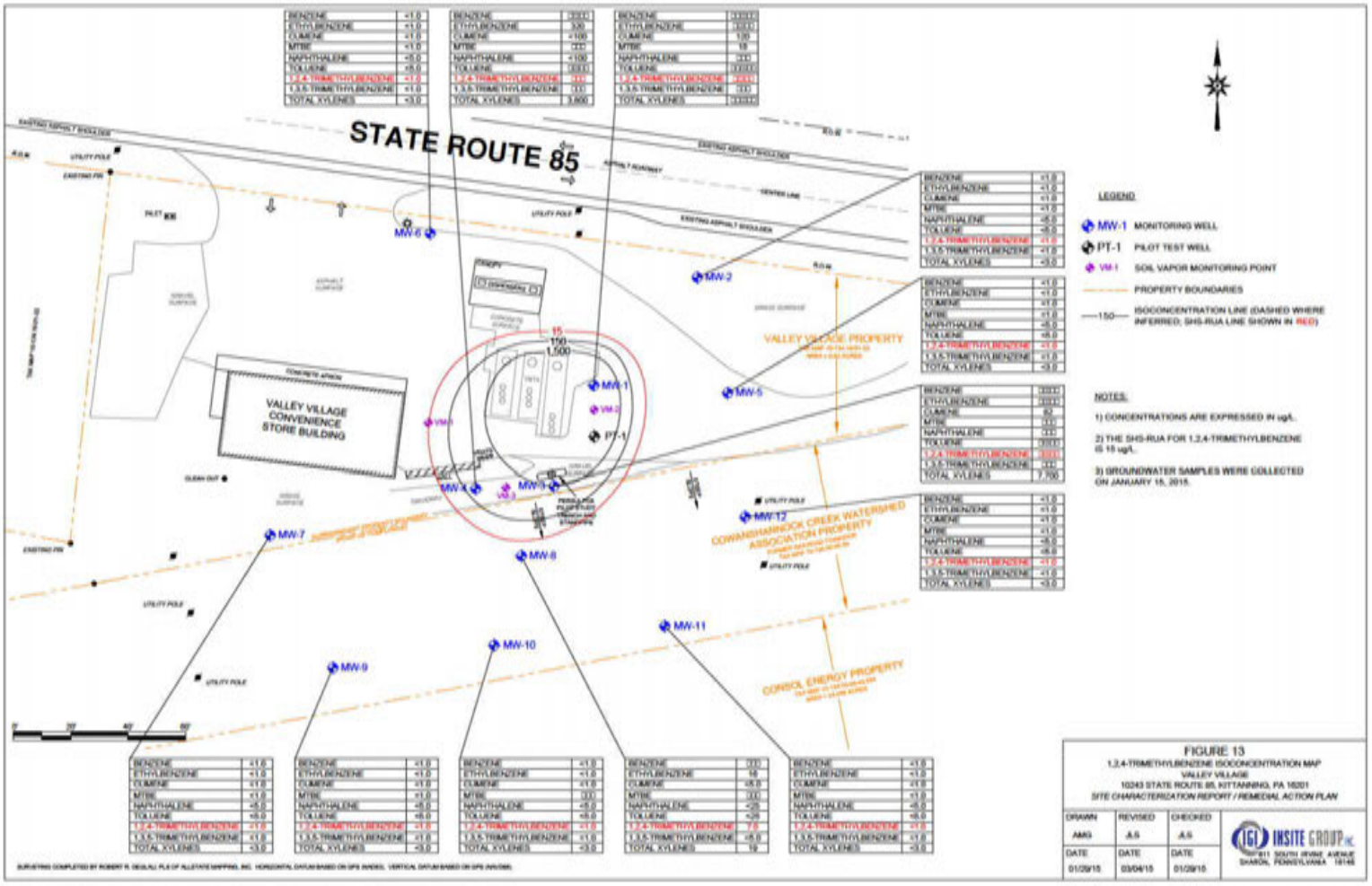
FIGURE 11
NAPHTHALENE ISOCONCENTRATION MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

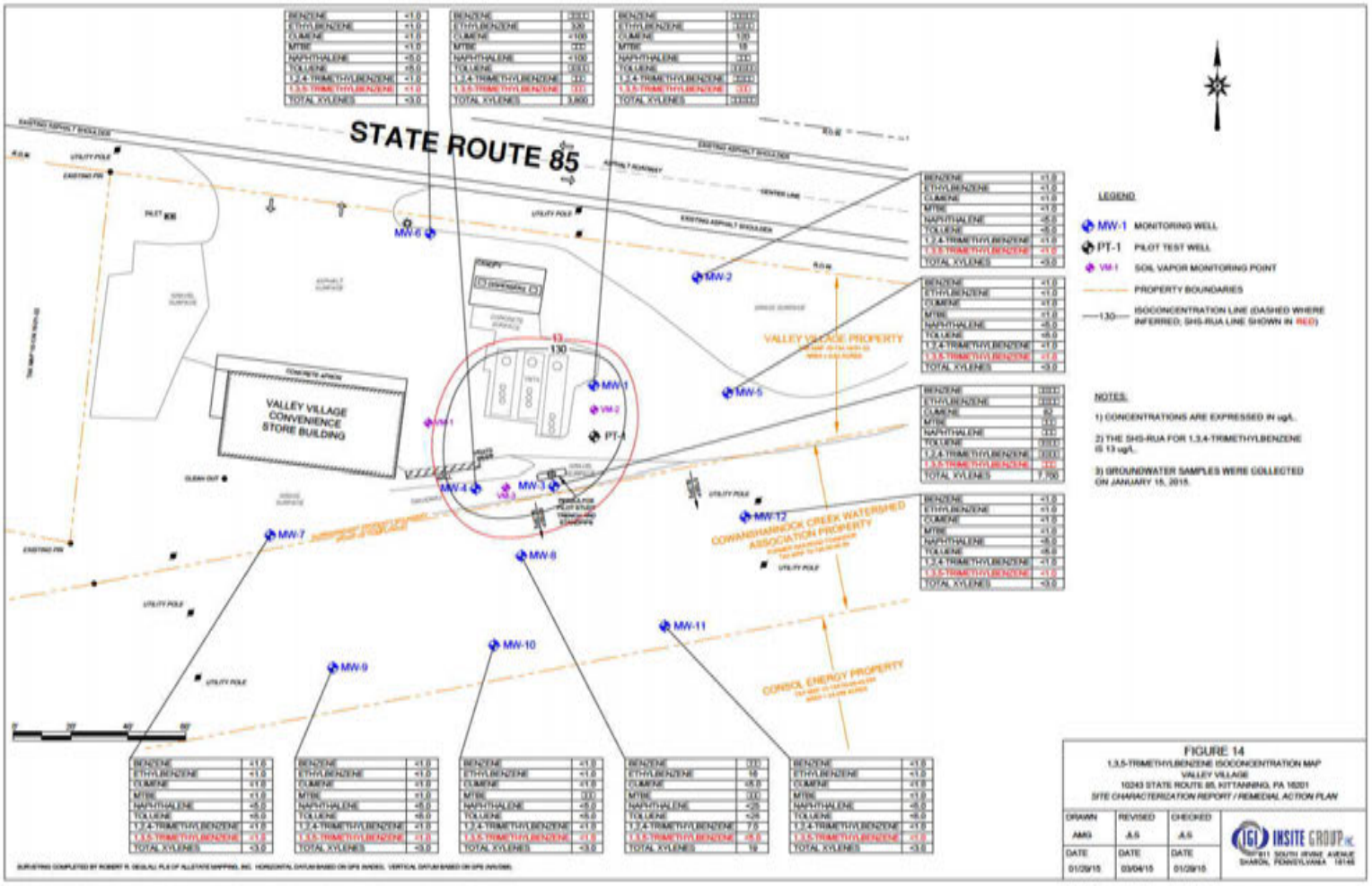
DRAWN	REVISED	CHECKED
AMO	AS	AS
DATE	DATE	DATE
01/29/15	03/04/15	01/29/15

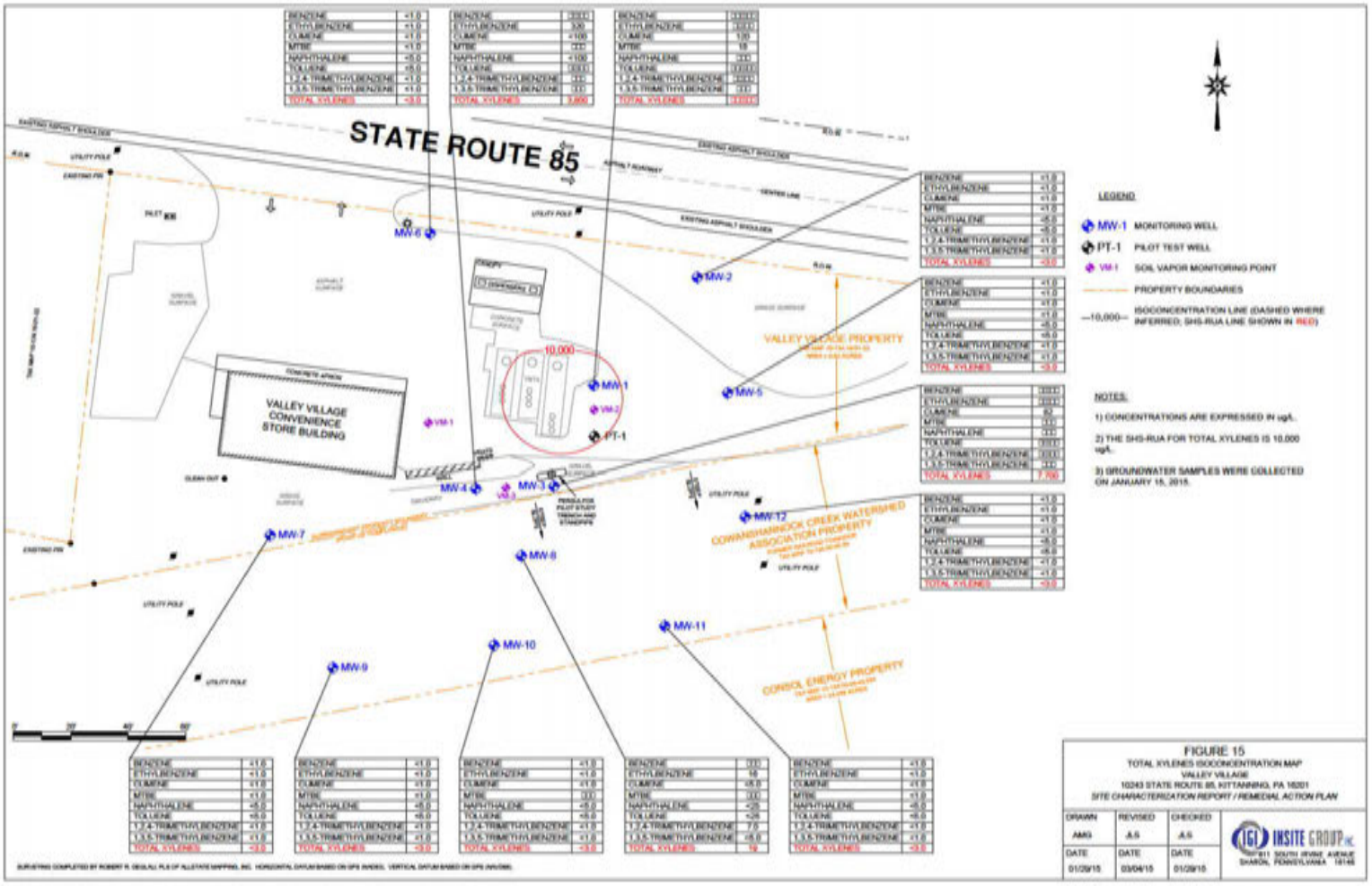
INSITE GROUP, PC
911 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

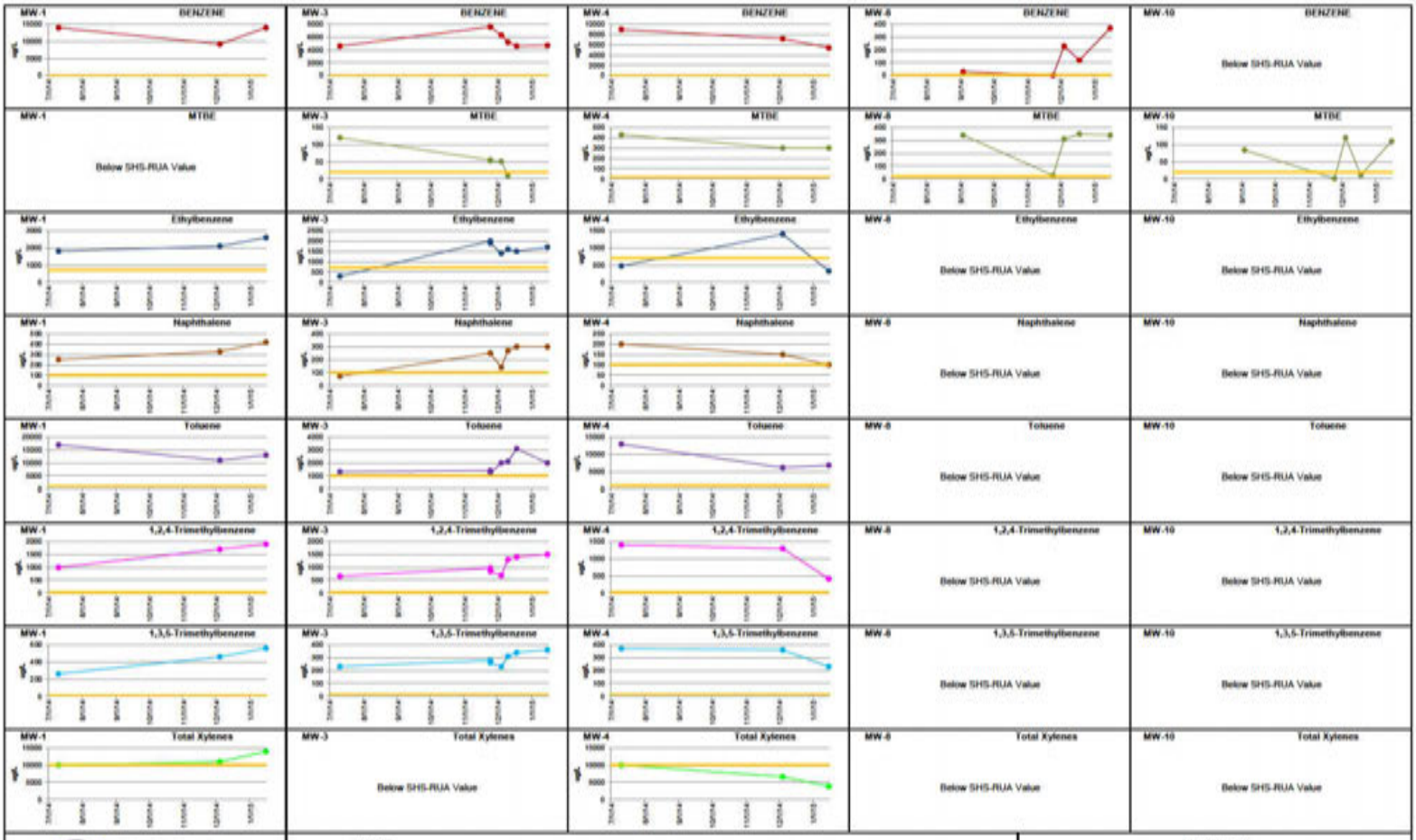
SURVEYING COMPLETED BY ROBERT R. DEGLAU PLS OF ALLSTATE MAPPING, INC. HORIZONTAL DATUM BASED ON GPS (NAD83). VERTICAL DATUM BASED ON GPS (NAVD88).


STATE ROUTE 85
VALLEY VILLAGE CONVENIENCE STORE BUILDING
VALLEY VILLAGE PROPERTY
COWANSHANNOCK CREEK WATERSHED ASSOCIATION PROPERTY
CONSOL ENERGY PROPERTY
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
PT-1
VM-1
VM-2
VM-3
1,000
10,000
LEGEND
MW-1 MONITORING WELL
PT-1 PILOT TEST WELL
VM-1 SOIL VAPOR MONITORING POINT
PROPERTY BOUNDARIES
10,000 ISOCONCENTRATION LINE (DASHED WHERE INFERRED; SHS-RUA LINE SHOWN IN RED)
NOTES:
1) CONCENTRATIONS ARE EXPRESSED IN ug/L.
2) THE SHS-RUA FOR TOLUENE IS 1,000 ug/L.
3) GROUNDWATER SAMPLES WERE COLLECTED ON JANUARY 15, 2015.
FIGURE 12
TOLUENE ISOCONCENTRATION MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN
DRAWN AMG
REVISED AS
CHECKED AS
DATE 01/29/15
DATE 03/04/15
DATE 01/29/15
INSITE GROUP, INC.
1011 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146


STATE ROUTE 85
VALLEY VILLAGE CONVENIENCE STORE BUILDING
VALLEY VILLAGE PROPERTY
CONWAY-HARROCK CREEK WATERSHED ASSOCIATION PROPERTY
CONSOL ENERGY PROPERTY
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
PT-1
VM-1
VM-2
VM-3
15
150
1,500
LEGEND
MW-1 MONITORING WELL
PT-1 PILOT TEST WELL
VM-1 SOIL VAPOR MONITORING POINT
PROPERTY BOUNDARIES
150 ISOCONCENTRATION LINE (DASHED WHERE INFERRED; SHS-RUA LINE SHOWN IN RED)
NOTES:
1) CONCENTRATIONS ARE EXPRESSED IN ug/L.
2) THE SHS-RUA FOR 1,2,4-TRIMETHYLBENZENE IS 15 ug/L.
3) GROUNDWATER SAMPLES WERE COLLECTED ON JANUARY 15, 2015.
FIGURE 13
1,2,4-TRIMETHYLBENZENE ISOCONCENTRATION MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN
DRAWN AMG
REVISED AS
CHECKED AS
DATE 01/29/15
DATE 03/04/15
DATE 01/29/15
INSITE GROUP, INC.
811 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146


STATE ROUTE 85
VALLEY VILLAGE CONVENIENCE STORE BUILDING
VALLEY VILLAGE PROPERTY
COWANSHANNOCK CREEK WATERSHED ASSOCIATION PROPERTY
CONSOL ENERGY PROPERTY
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
VM-1
VM-2
VM-3
PT-1
13
130
LEGEND
MW-1 MONITORING WELL
PT-1 PILOT TEST WELL
VM-1 SOIL VAPOR MONITORING POINT
PROPERTY BOUNDARIES
130 ISOCONCENTRATION LINE (DASHED WHERE INFERRED; SHS-RUA LINE SHOWN IN RED)
NOTES:
1) CONCENTRATIONS ARE EXPRESSED IN ug/L.
2) THE SHS-RUA FOR 1,3,4-TRIMETHYLBENZENE IS 13 ug/L.
3) GROUNDWATER SAMPLES WERE COLLECTED ON JANUARY 15, 2015.
FIGURE 14
1,3,5-TRIMETHYLBENZENE ISOCONCENTRATION MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN
DRAWN AMG
REVISED AS
CHECKED AS
DATE 01/29/15
DATE 03/04/15
DATE 01/29/15
INSITE GROUP, INC.
911 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146


STATE ROUTE 85
VALLEY VILLAGE CONVENIENCE STORE BUILDING
VALLEY VILLAGE PROPERTY
COWANSHANNOCK CREEK WATERSHED ASSOCIATION PROPERTY
CONSOL ENERGY PROPERTY
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
PT-1
VM-1
VM-2
VM-3
10,000
LEGEND
MW-1 MONITORING WELL
PT-1 PILOT TEST WELL
VM-1 SOIL VAPOR MONITORING POINT
PROPERTY BOUNDARIES
10,000 ISOCONCENTRATION LINE (DASHED WHERE INFERRED; SHS-RUA LINE SHOWN IN RED)
NOTES:
1) CONCENTRATIONS ARE EXPRESSED IN ug/L.
2) THE SHS-RUA FOR TOTAL XYLENES IS 10,000 ug/L.
3) GROUNDWATER SAMPLES WERE COLLECTED ON JANUARY 15, 2015.
FIGURE 15
TOTAL XYLENES ISOCONCENTRATION MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN
DRAWN AMG
REVISED AS
CHECKED AS
DATE 01/29/15
DATE 03/04/15
DATE 01/29/15
INSITE GROUP, INC.
1011 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146



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SHARON, PENNSYLVANIA 16514

Legend:

SHS-RUA Value

FIGURE 16
CONTAMINANT CONCENTRATION TREND GRAPHS
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

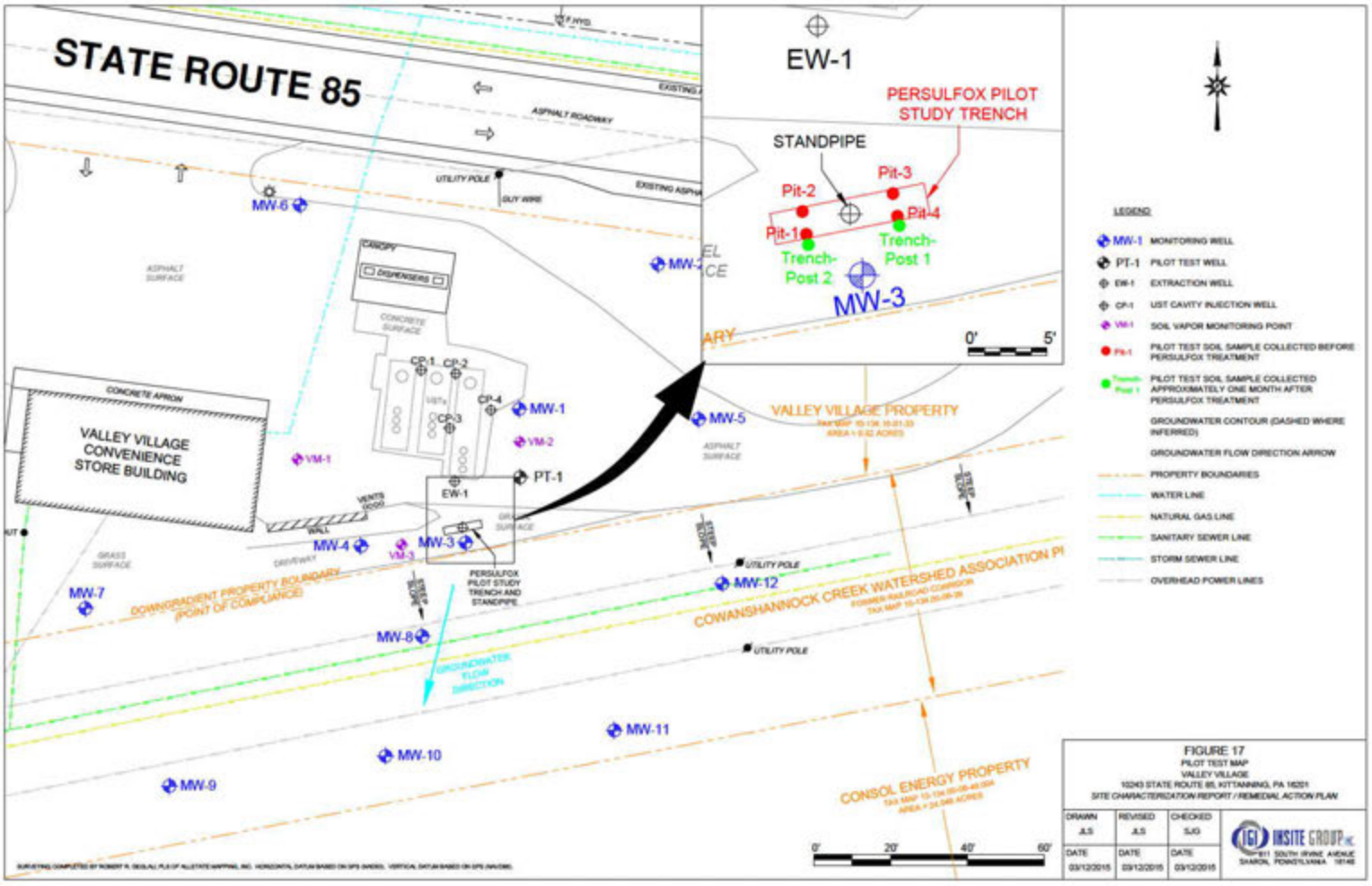
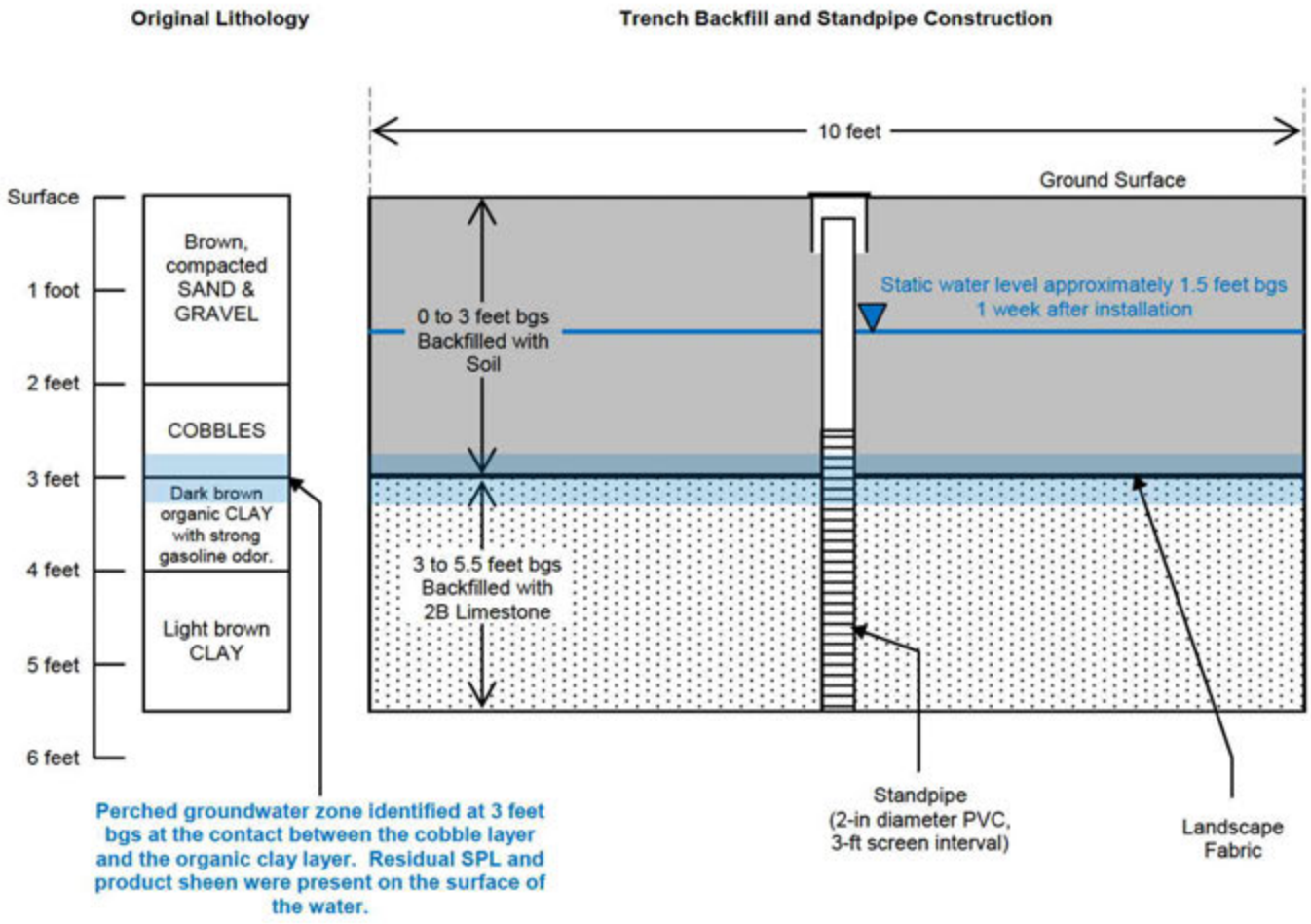


FIGURE 17
PILOT TEST MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

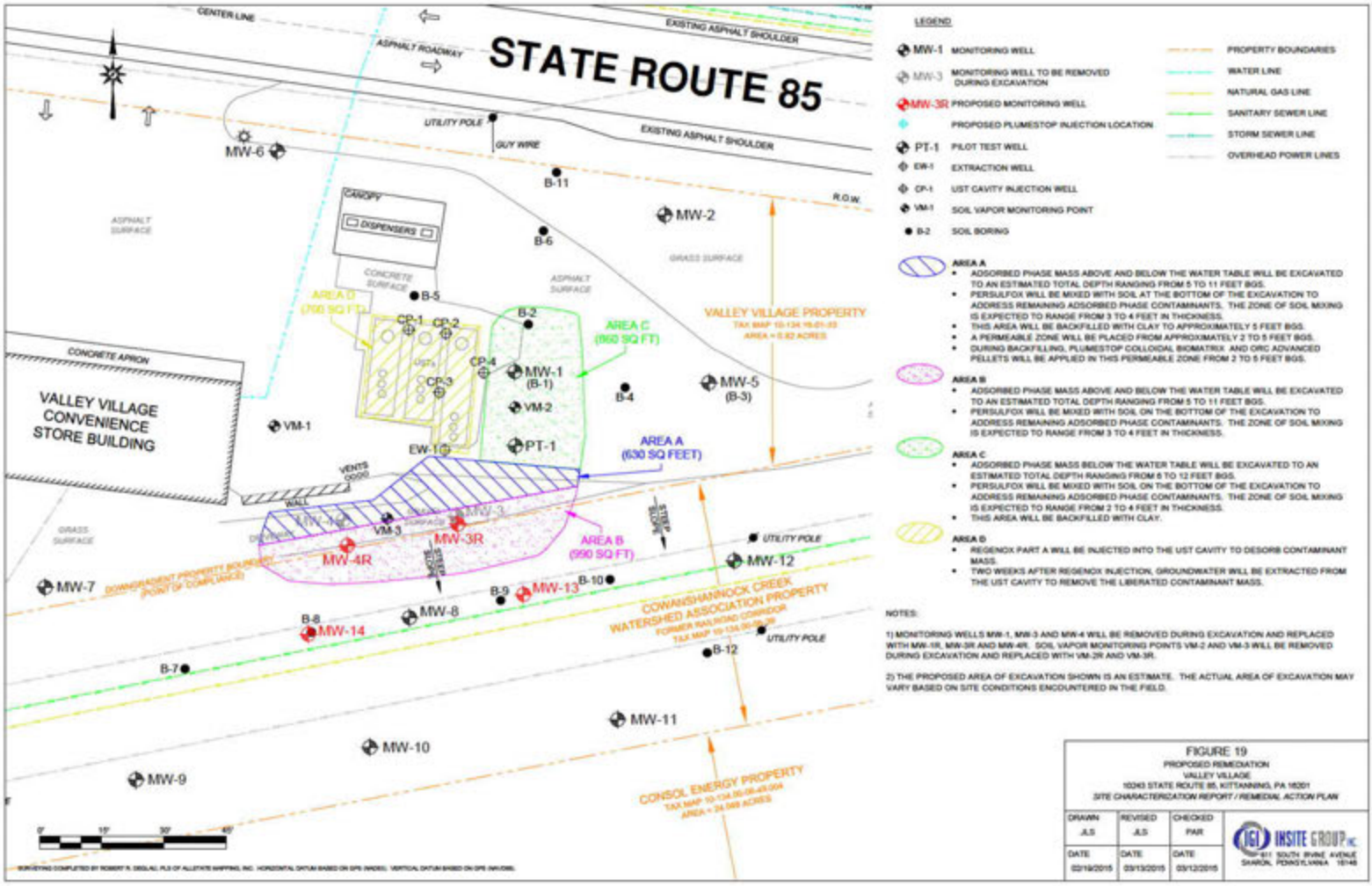
DRAWN	REVISED	CHECKED
JLS	JLS	SJG
DATE	DATE	DATE
03/12/2015	03/12/2015	03/12/2015

INSITE GROUP, INC.
911 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146



INSITE GROUP, INC.
611 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

FIGURE 18
TEST PIT DIAGRAM
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN



LEGEND

- MW-1 MONITORING WELL
- MW-3 MONITORING WELL TO BE REMOVED DURING EXCAVATION
- MW-3R PROPOSED MONITORING WELL
- PROPOSED PLUMESTOP INJECTION LOCATION
- PT-1 PILOT TEST WELL
- EW-1 EXTRACTION WELL
- CP-1 UST CAVITY INJECTION WELL
- VM-1 SOIL VAPOR MONITORING POINT
- B-2 SOIL BORING

- PROPERTY BOUNDARIES
- WATER LINE
- NATURAL GAS LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- OVERHEAD POWER LINES

AREA A
- ADSORBED PHASE MASS ABOVE AND BELOW THE WATER TABLE WILL BE EXCAVATED TO AN ESTIMATED TOTAL DEPTH RANGING FROM 5 TO 11 FEET BGS.
- PERSULFOX WILL BE MIXED WITH SOIL AT THE BOTTOM OF THE EXCAVATION TO ADDRESS REMAINING ADSORBED PHASE CONTAMINANTS. THE ZONE OF SOIL MIXING IS EXPECTED TO RANGE FROM 3 TO 4 FEET IN THICKNESS.
- THIS AREA WILL BE BACKFILLED WITH CLAY TO APPROXIMATELY 5 FEET BGS.
- A PERMEABLE ZONE WILL BE PLACED FROM APPROXIMATELY 2 TO 5 FEET BGS.
- DURING BACKFILLING, PLUMESTOP COLLOIDAL BIOMATRIX AND ORC ADVANCED PELLETS WILL BE APPLIED IN THIS PERMEABLE ZONE FROM 2 TO 5 FEET BGS.

AREA B
- ADSORBED PHASE MASS ABOVE AND BELOW THE WATER TABLE WILL BE EXCAVATED TO AN ESTIMATED TOTAL DEPTH RANGING FROM 5 TO 11 FEET BGS.
- PERSULFOX WILL BE MIXED WITH SOIL ON THE BOTTOM OF THE EXCAVATION TO ADDRESS REMAINING ADSORBED PHASE CONTAMINANTS. THE ZONE OF SOIL MIXING IS EXPECTED TO RANGE FROM 3 TO 4 FEET IN THICKNESS.

AREA C
- ADSORBED PHASE MASS BELOW THE WATER TABLE WILL BE EXCAVATED TO AN ESTIMATED TOTAL DEPTH RANGING FROM 6 TO 12 FEET BGS.
- PERSULFOX WILL BE MIXED WITH SOIL ON THE BOTTOM OF THE EXCAVATION TO ADDRESS REMAINING ADSORBED PHASE CONTAMINANTS. THE ZONE OF SOIL MIXING IS EXPECTED TO RANGE FROM 2 TO 4 FEET IN THICKNESS.
- THIS AREA WILL BE BACKFILLED WITH CLAY.

AREA D
- REGENOX PART A WILL BE INJECTED INTO THE UST CAVITY TO DESORB CONTAMINANT MASS.
- TWO WEEKS AFTER REGENOX INJECTION, GROUNDWATER WILL BE EXTRACTED FROM THE UST CAVITY TO REMOVE THE LIBERATED CONTAMINANT MASS.

NOTES:

1) MONITORING WELLS MW-1, MW-3 AND MW-4 WILL BE REMOVED DURING EXCAVATION AND REPLACED WITH MW-1R, MW-3R AND MW-4R. SOIL VAPOR MONITORING POINTS VM-2 AND VM-3 WILL BE REMOVED DURING EXCAVATION AND REPLACED WITH VM-2R AND VM-3R.

2) THE PROPOSED AREA OF EXCAVATION SHOWN IS AN ESTIMATE. THE ACTUAL AREA OF EXCAVATION MAY VARY BASED ON SITE CONDITIONS ENCOUNTERED IN THE FIELD.

SURVEYING COMPLETED BY ROBERT R. DEGLAU, PLS OF ALLSTATE MAPPING, INC. HORIZONTAL DATUM BASED ON GPS (NAD83). VERTICAL DATUM BASED ON GPS (NAVD88).

FIGURE 19
PROPOSED REMEDIATION
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
JLS	JLS	PAR
DATE	DATE	DATE
02/19/2015	03/13/2015	03/12/2015

INSITE GROUP INC
1397-311 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

TABLES

Table 1.0: UST Upgrade Analytical Results

Sample ID	Depth (feet)	Date	Unleaded Gasoline Parameters								
			Benzene	**Ethyl-benzene**	**Cumene**	**MTBE**	**Naph-thalene**	**1,2,4-Trimethyl-benzene**	**1,3,5-Trimethyl-benzene**	**Toluene**	**Xylenes**
Soil (mg/kg)											
Statewide Health Standard, Direct Contact, Residential 0-15 feet			*57*	*10,000*	*7,700*	*1,700*	*4,400*	*10,000*	*130*	*110*	*1,900*
Statewide Health Standard, Soil to GW, Residential, Used Aquifer			*0.5*	*70*	*600*	*2*	*25*	*8.4*	*2.3*	*100*	*1,000*
3614	3.5	3/20/2014	**1.19**	<0.357	<0.357	<0.357	<0.357	<0.357	<0.357	0.457	1.12
3615	3.5	3/20/2014	**4.64**	9.81	1.10	<0.308	4.81	**23.2**	**6.10**	19.9	57.3
Groundwater (ug/L)											
Statewide Health Standard, Residential, Used Aquifer			*5*	*700*	*840*	*20*	*100*	*15*	*13*	*1,000*	*10,000*
3616	--	3/20/2014	**755**	443	37.7	<5	**490**	**2,380**	**625**	**2,670**	9,350

Notes: 1) Concentrations exceeding their respective SHS-RUA values are shown in **bold**.

Table 2.0: Soil Analytical Results

Sample ID	Depth (feet)	Date	Unleaded Gasoline Parameters (mg/kg)								
			Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Xylenes (total)
Statewide Health Standard, Direct Contact, Residential 0-15 feet			*57*	*10,000*	*7,700*	*1,700*	*4,400*	*10,000*	*130*	*110*	*1,900*
Statewide Health Standard, Soil to GW, Residential, Used Aquifer			*0.5*	*70*	*600*	*2*	*25*	*100*	*8.4*	*2.3*	*1,000*
MW-1	4 to 5	06/17/14	**3.2**	3.5	<0.40	<0.40	<2.0	6.0	6.6	1.9	18
MW-1	7 to 9	06/17/14	**3.3**	0.16	0.013	<0.0012	0.0098	2.0	0.12	0.037	6.6
MW-1	13 to 15	06/17/14	0.031	0.017	0.0013	<0.0012	<0.0058	0.062	0.016	0.0053	0.085
MW-2	5 to 7	06/19/14	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<0.0057	<0.0011	<0.0011	<0.0034
MW-3	4	06/17/14	**15**	12	0.82	<0.66	2.4	29	**16**	**4.3**	63
MW-3	15 to 17	06/17/14	0.17	0.65	0.21	<0.022	0.73	0.61	4.8	1.4	3.6
MW-4	4	06/18/14	**0.72**	0.15	0.011	<0.0012	0.036	0.90	0.14	0.044	0.44
MW-4	9 to 11	06/18/14	**4.8**	3.6	0.34	0.11	1.4	18	7.4	2.1	21
B-2	4	06/17/14	**1.6**	1.7	0.15	<0.024	1.5	8.9	4.0	0.90	11
B-2	15 to 17	06/17/14	**1.3**	7.5	1.1	<0.094	3.1	16	**18**	**6.4**	45
B-4	3	06/18/14	0.0051	<0.0012	<0.0012	<0.0012	<0.0061	<0.0061	<0.0012	<0.0012	<0.0037
B-5	3	06/18/14	0.0022	0.0022	<0.0011	<0.0011	0.0069	0.0082	0.013	0.010	0.030
B-5	11 to 13	06/19/14	**1.1**	0.30	0.033	<0.022	0.11	1.4	0.62	0.18	1.5
VM-1	3	06/18/14	<0.0012	<0.0012	<0.0012	<0.0012	<0.0062	<0.0062	<0.0012	<0.0012	<0.0037
B-6	7.5-10	08/04/14	<0.033	0.49	0.43	<0.033	0.71	<0.16	**11**	**3.4**	3.3
B-7	12.5-15	08/05/14	<0.0011	<0.0011	<0.0011	<0.0011	<0.0056	<0.0056	<0.0011	<0.0011	<0.0034
B-8	2.5-5	08/04/14	<0.0012	<0.0012	<0.0012	<0.0012	<0.0062	<0.0062	<0.0012	<0.0012	<0.0037
B-9	5-7.5	08/05/14	0.0019	<0.0012	<0.0012	0.029	<0.0058	<0.0058	<0.0012	<0.0012	<0.0035
B-10	12.5-15	08/05/14	**0.90**	<0.0011	0.0065	0.010	0.010	<0.0057	<0.0011	<0.0011	<0.0034
MW-6	4	08/04/14	<0.0012	0.0012	<0.0012	<0.0012	<0.0059	<0.0059	0.0028	<0.0012	0.0072
MW-7	4	08/04/14	<0.0012	<0.0012	<0.0012	<0.0012	<0.0060	<0.0060	<0.0012	<0.0012	<0.0036
MW-8	4	08/04/14	0.0038	0.0012	<0.0012	<0.0012	<0.0058	<0.0058	0.0012	<0.0012	0.0063
PT-1	10-12.5	08/04/14	0.43	4.6	0.65	<0.056	2.3	9.6	**11**	**4.0**	28
B-11	10-12.5	12/22/14	<0.0012	<0.0012	<0.0012	<0.0012	<0.0058	<0.0058	<0.0012	<0.0012	0.0057
B-12	5-7.5	12/22/14	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<0.0057	<0.0011	<0.0011	<0.0034
MW-12	7.5-10	12/22/14	<0.0012	<0.0012	<0.0012	<0.0012	<0.0058	<0.0058	<0.0012	<0.0012	<0.0035
MW-12	12.5-15	12/22/14	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<0.0057	<0.0011	<0.0011	<0.0034

Notes: 1) Concentrations exceeding their respective SHS-RUA values are shown in **bold**.
2) Samples were analyzed by EPA Method 5035 / 8260B.

Table 3.0: Historical Groundwater Analytical Results (page 1 of 2)

Sample ID	Date	Depth to Water (feet)	GW Elevation (feet)	Unleaded Gasoline Parameters (ug/L)								
				Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Total Xylenes
Statewide Health Standard, Residential, Used Aquifer				*5*	*700*	*840*	*20*	*100*	*1,000*	*15*	*13*	*10,000*
MW-1	07/10/14	2.49	1,118.01	**14,000**	**1,800**	<250	**<92**	**<250**	**17,000**	**990**	**260**	10,000
DUP	--	--	--	14,000	1,900	<100	<37	270	17,000	1,200	290	11,000
MW-1	12/04/14	2.59	1,117.91	**9,200**	**2,100**	<250	**<92**	**330**	**11,000**	**1,700**	**460**	**11,000**
MW-1	01/15/15	3.37	1,117.13	**14,000**	**2,600**	120	18	**420**	**13,000**	**1,900**	**560**	**14,000**
MW-2	07/10/14	9.70	1,113.90	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-2	12/04/14	10.59	1,113.01	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-2	01/15/15	7.97	1,115.63	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-3	07/10/14	2.99	1,115.94	**4,600**	280	<25	**120**	71	**1,300**	**650**	**230**	3,700
MW-3	11/24/14	3.58	1,115.35	**7,600**	**2,000**	73	**55**	**250**	**1,400**	**970**	**280**	5,500
MW-3	12/04/14	3.10	1,115.83	**6,300**	**1,400**	<100	**51**	**140**	**2,000**	**680**	**230**	3,800
DUP	12/04/14	--	--	6,900	1,500	55	50	200	2,000	730	220	3,700
MW-3	12/10/14	1.89	1,117.04	**5,200**	**1,600**	73	<9.2	**270**	**2,100**	**1,300**	**310**	7,800
MW-3	12/18/14	2.22	1,116.71	**4,600**	**1,500**	<250	**<92**	**300**	**3,100**	**1,400**	**340**	7,900
MW-3	01/15/15	2.60	1,116.33	**4,700**	**1,700**	82	**<37**	**300**	**2,000**	**1,500**	**360**	7,700
DUP	01/15/15	--	--	5,400	1,800	<100	<37	360	2,400	1,600	390	7,800
MW-4	07/10/14	8.39	1,109.34	**9,000**	470	<100	**430**	**200**	**13,000**	**1,400**	**370**	10,000
MW-4	12/04/14	5.78	1,111.95	**7,200**	**1,400**	<100	**300**	**150**	**6,100**	**1,300**	**360**	6,600
MW-4	01/15/15	5.72	1,112.01	**5,400**	**320**	<100	**300**	<100	**6,800**	**410**	**230**	3,800
MW-5	07/10/14	2.99	1,116.00	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-5	12/04/14	3.97	1,115.02	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-5	01/15/15	3.11	1,115.88	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-6	09/03/14	4.33	1,119.12	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-6	12/04/14	2.63	1,120.82	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-6	01/15/15	2.38	1,121.07	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-7	09/03/14	3.15	1,111.05	<1.0	<1.0	<1.0	1.5	<5.0	<5.0	<1.0	<1.0	<3.0
MW-7	12/04/14	5.04	1,109.16	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-7	01/15/15	4.26	1,109.94	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0

Notes: 1) Concentrations exceeding the SHS are shown in **bold**.
2) DUP = blind duplicate sample.
3) Samples were analyzed by EPA Method 5030B / 8260B.

Table 3.0: Historical Groundwater Analytical Results (page 2 of 2)

Sample ID	Date	Depth to Water (feet)	GW Elevation (feet)	Unleaded Gasoline Parameters (ug/L)								
				Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Total Xylenes
Statewide Health Standard, Residential, Used Aquifer				*5*	*700*	*840*	*20*	*100*	*1,000*	*15*	*13*	*10,000*
MW-8	09/03/14	5.91	1,109.76	**30**	<1.0	<1.0	**340**	<5.0	<5.0	<1.0	<1.0	<3.0
DUP	--	--	--	31	<1.0	<1.0	360	<5.0	<5.0	<1.0	<1.0	<3.0
MW-8	11/24/14	7.34	1,108.33	<1.0	<1.0	<1.0	**27**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-8	12/04/14	7.15	1,108.52	**230**	6.1	<5.0	**310**	<25	<25	<5.0	<5.0	<15
MW-8	12/18/14	6.48	1,109.19	**120**	<50	<50	**350**	<50	<250	<19	<19	<150
MW-8	01/15/15	6.58	1,109.09	**370**	16	<5.0	**340**	<25	<25	7.0	<5.0	19
MW-9	09/03/14	4.36	1,109.46	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-9	12/04/14	4.26	1,109.56	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-9	01/15/15	4.77	1,109.05	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	09/03/14	5.18	1,108.45	<1.0	<1.0	<1.0	**84**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	11/24/14	6.23	1,107.40	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	12/04/14	6.27	1,107.36	<1.0	<1.0	<1.0	**120**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	12/18/14	5.67	1,107.96	<1.0	<1.0	<1.0	11	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	01/15/15	5.91	1,107.72	<1.0	<1.0	<1.0	**110**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-11	09/03/14	3.81	1,110.22	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-11	12/04/14	3.81	1,110.22	<1.0	<1.0	<1.0	1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-11	01/15/15	4.43	1,109.60	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-12	12/22/14	18.80	1,098.77	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-12	01/15/15	6.79	1,110.78	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
EW-1	02/11/15	2.18	--	**975**	**1,040**	115	**66.7**	**983**	**2,620**	**2,020**	**602**	8,800
PT-1	09/03/14	4.67	--	**2,800**	170	24	**160**	<50	**6,400**	**660**	**260**	4,600
PT-1	12/04/14	4.54	--	**1,800**	**710**	52	**240**	**110**	**1,100**	**910**	**300**	3,600
PT-1	01/15/15	4.42	--	**1,600**	**220**	18	**420**	<50	**1,200**	**250**	**140**	1,500
Standpipe	12/04/14	1.23	--	**29**	51	6.7	<1.0	<5.0	32	**24**	<1.0	120
Standpipe	12/10/14	1.10	--	**10**	14	1.2	<1.0	<5.0	8.5	2.4	1.3	66
Standpipe	12/18/14	1.23	--	2.1	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
Standpipe	01/15/15	2.12	--	**8.8**	16	3.2	<1.0	5.9	17	**34**	12	78

Notes: 1) Concentrations exceeding the SHS are shown in **bold**.
2) DUP = blind duplicate sample.
3) Samples were analyzed by EPA Method 5030B / 8260B.

Table 4.0: Historical Groundwater Chemistry Results (page 1 of 2)

Sample ID	Date	Dissolved Oxygen	Temperature	pH	Conductivity	ORP
		ppm	deg. C.	S.U.	ppm	mV
MW-1	06/26/14	--	14.9	6.6	1,118	102
MW-1	07/10/14	1.0	21.0	6.5	1,030	34
MW-1	12/04/14	1.5	11.0	7.7	1,173	75
MW-1	01/15/15	<1.0	6.9	7.2	1140	155
MW-2	06/26/14	--	13.5	8.0	343	125
MW-2	07/10/14	5.0	17.5	5.5	267	160
MW-2	12/04/14	3.0	14.0	10.5	282	164
MW-2	01/15/15	6.0	11.2	7.2	524	160
MW-3	06/26/14	--	14.9	7.2	670	84
MW-3	07/10/14	1.0	19.9	6.1	1046	116
MW-3	12/04/14	2.5	12.5	7.3	1460	112
MW-3	12/10/14	4.0	--	9.0	1870	143
MW-3	12/18/14	3.0	--	8.0	1248	92
MW-3	01/15/15	4.5	8.3	7.0	1369	151
MW-4	06/26/14	--	14.2	6.6	813	91
MW-4	07/10/14	3.0	18.3	5.8	846	131
MW-4	12/04/14	1.0	12.9	--	695	171
MW-4	01/15/15	3.5	1.1	7.4	981	130
MW-5	06/26/14	--	14.2	6.9	446	120
MW-5	07/10/14	6.0	19.7	6.1	419	131
MW-5	12/04/14	2.0	13.6	--	350	171
MW-5	01/15/15	4.0	9.7	6.6	531	167
MW-6	09/03/14	7.0	20.9	5.5	1100	143
MW-6	12/04/14	6.0	14.2	--	1050	165
MW-6	01/15/15	5.0	11.1	6.9	1610	173
MW-7	09/03/14	5.5	18.3	5.7	680	137
MW-7	12/04/14	3.0	12.2	--	424	166
MW-7	01/15/15	3.0	9.6	6.0	608	157
MW-8	09/03/14	4.0	18.6	6.0	967	133
MW-8	12/04/14	1.0	12.2	6.7	845	66
MW-8	12/10/14	2.5	--	8.8	776	99
MW-8	12/18/14	3.0	--	11.0	691	214
MW-8	01/15/15	1.5	10.2	6.0	834	153
MW-9	09/03/14	6.0	16.5	5.6	104	155
MW-9	12/04/14	6.0	10.2	--	168	144
MW-9	01/15/15	5.0	8.7	6.5	199	127
MW-10	09/03/14	5.0	16.2	5.8	419	143
MW-10	12/04/14	1.5	11.4	6.8	337	66
MW-10	12/10/14	4.0	--	9.0	316	95
MW-10	12/18/14	3.5	--	10.3	314	221
MW-10	01/15/15	3.0	9.4	7.0	368	124

Table 4.0: Historical Groundwater Chemistry Results (page 2 of 2)

Sample ID	Date	Dissolved Oxygen	Temperature	pH	Conductivity	ORP
		ppm	deg. C.	S.U.	ppm	mV
MW-11	09/03/14	4.5	15.9	5.0	165	188
MW-11	12/04/14	9.0	10.3	6.3	206	92
MW-11	01/15/15	7.0	8.6	6.7	246	139
MW-12	12/23/14	8.0	13.6	11.1	433	146
MW-12	01/15/15	7.0	10.3	8.0	547	162
PT-1	09/03/14	1.5	21.1	5.8	820	95
PT-1	12/04/14	1.5	13.8	6.3	836	78
PT-1	12/10/14					
PT-1	01/15/15	1.5	9.9	7.7	949	138
Standpipe	12/04/14	10.0	5.8	10.4	1800	191
Standpipe	12/10/14	10.0	--	9.6	897	169
Standpipe	12/18/14	10.0	--	9.2	690	161
Standpipe	01/15/15	9.0	2.9	7.0	3850	143

Table 5.0: Soil Analytical Results –Organic Carbon

Sample ID	Depth (feet)	Date	Fractional Organic Carbon (g C / g soil)	Fractional Organic Matter (%)
MW-5	4	06/17/14	<0.10	2

Table 6.0: Recent Groundwater Analytical Results (January 15, 2015)

Sample ID	Date	Depth to Water (feet)	GW Elevation (feet)	Unleaded Gasoline Parameters (ug/L)								
				Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Total Xylenes
Statewide Health Standard, Residential, Used Aquifer				*5*	*700*	*840*	*20*	*100*	*1,000*	*15*	*13*	*10,000*
MW-1	01/15/15	3.37	1,117.13	**14,000**	**2,600**	120	18	**420**	**13,000**	**1,900**	**560**	**14,000**
MW-2	01/15/15	7.97	1,115.63	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-3	01/15/15	2.60	1,116.33	**4,700**	**1,700**	82	**<37**	**300**	**2,000**	**1,500**	**360**	7,700
MW-4	01/15/15	5.72	1,112.01	**5,400**	**320**	<100	**300**	<100	**6,800**	**410**	**230**	3,800
MW-5	01/15/15	3.11	1,115.88	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-6	01/15/15	2.38	1,121.07	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-7	01/15/15	4.26	1,109.94	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-8	01/15/15	6.58	1,109.09	**370**	16	<5.0	**340**	<25	<25	7.0	<5.0	19
MW-9	01/15/15	4.77	1,109.05	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	01/15/15	5.91	1,107.72	<1.0	<1.0	<1.0	**110**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-11	01/15/15	4.43	1,109.60	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-12	01/15/15	6.79	1,110.78	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
EW-1	02/11/15	2.18	--	**975**	**1,040**	115	**66.7**	**983**	**2,620**	**2,020**	**602**	8,800
PT-1	01/15/15	4.42	--	**1,600**	**220**	18	**420**	<50	**1,200**	**250**	**140**	1,500
Standpipe	01/15/15	2.12	--	**8.8**	16	3.2	<1.0	5.9	17	**34**	12	78

Notes: 1) Concentrations exceeding the SHS are shown in **bold**.
2) DUP = blind duplicate sample.
3) Samples were analyzed by EPA Method 5030B / 8260B.

Table 7.0: Soil Vapor Analytical Results

Sample ID	Screen Interval	Date	Parameters (mg/m^3)										
			Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Toluene	m&p-Xylene	o-Xylene	Xylenes (total)
Nonresidential MSC_{IAQ}:			*0.011*	*0.073*	*1.1*	*0.31*	*0.0088*	*0.017*	*0.017*	*1.2*	--	--	*0.3*
Nonresidential MSC_{SG}:			***1.1***	***7.3***	***110***	***31***	***0.88***	***1.7***	***1.7***	***120***	--	--	***30***
Residential MSC_{IAQ}:			*0.0027*	*0.019*	*0.54*	*0.081*	*0.0042*	*0.0083*	*0.0083*	*0.56*	--	--	*0.14*
Residential MSC_{SG}:			***0.27***	***1.9***	***54***	***8.1***	***0.42***	***0.83***	***0.83***	***56***	--	--	***14***
VM-1	2 to 3	09/03/14	<0.00064	0.0015	<0.00098	<0.00072	0.0052	0.0069	0.0014	0.0053	0.0078	0.0029	0.0107
DUP	--	--	<0.00064	0.0013	<0.00098	<0.00072	0.0052	0.0059	0.0012	0.0037	0.0061	0.0023	0.0084
VM-1	2 to 3	12/23/14	0.0018	0.0036	<0.00098	<0.00072	<0.0033	0.0074	0.0020	0.016	0.016	0.0056	0.0220
VM-1	4 to 5	09/03/14	0.0013	0.0028	<0.00098	0.0011	0.0043	0.012	0.0025	0.0087	0.014	0.0052	0.019
VM-1	4 to 5	12/23/14	0.0010	0.0016	<0.00098	<0.00072	<0.0033	0.0039	<0.00098	0.0053	0.0065	0.0025	0.0090
VM-2	0.5 to 1.5	12/23/14	0.031	0.0043	<0.00098	<0.00072	<0.0033	0.0048	0.0012	0.0072	0.0087	0.0031	0.0118
DUP	--	--	0.042	0.0056	0.00098	<0.00072	<0.0033	0.0046	0.0013	0.0068	0.0082	0.0031	0.0113
VM-2	0.5 to 1.5	01/15/15	0.0067	<0.0017	<0.0020	<0.0014	<0.0066	0.0027	<0.0020	0.0049	0.0043	<0.0017	<0.0060
DUP	--	--	0.021	0.0013	<0.00098	<0.00072	<0.0033	0.0074	0.0020	0.0025	0.0035	0.0016	0.0051
VM-3	0.5 to 1.5	12/23/14	**0.45**	<0.17	<0.20	<0.14	<0.66	<0.20	<0.20	0.60	<0.35	<0.17	<0.52
VM-3	0.5 to 1.5	01/15/15	<0.13	<0.17	<0.20	<0.14	<0.66	<0.20	<0.20	0.32	<0.35	<0.17	<0.52

Notes: 1) Concentrations exceeding the Residential or Nonresidential MSC_{SG} are shown in **bold**.
2) DUP = blind duplicate sample.
3) MSC_{SG} calculated as follows: $MSC_{SG} = MSC_{IAQ} / TF$, where TF = 0.01.
4) Samples were analyzed by EPA Method TO-15.

Table 8.0: Slug Test Results

Well ID	Hydraulic Conductivity (K) *(feet / day)*
MW-1	0.4
MW-8	0.004
MW-10	0.005
Average	*0.14*

Table 9.0: Pilot Study Groundwater Analytical Results (Unleaded Gasoline Parameters)

Sample ID	Date	Time After Application	Distance from Test Pit	Depth to Water	Unleaded Gasoline Parameters									TOTAL COCs
					Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-TMB	1,3,5-TMB	Xylenes (total)	
Units			(feet)	(feet)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SHS-RUA			--	--	*5*	*700*	*840*	*20*	*100*	*1,000*	*15*	*13*	*10,000*	--
Standpipe	12/04/14	1 week	0	1.23	**29**	51	6.7	<1.0	<5.0	32	**24**	<1.0	120	263
Standpipe	12/10/14	2 weeks	0	1.10	**10**	14	1.2	<1.0	<5.0	8.5	2.4	1.3	66	103
Standpipe	12/18/14	3 weeks	0	1.23	2.1	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0	2
MW-3	07/10/14	Baseline	3	2.99	**4,600**	280	<25	**120**	71	**1,300**	**650**	**230**	3,700	10,951
MW-3	11/24/14	Baseline	3	3.58	**7,600**	**2,000**	73	**55**	**250**	**1,400**	**970**	**280**	5,500	18,128
MW-3	11/24/14	~1 hour	3	3.90	**7,600**	**1,900**	72	**53**	**250**	**1,200**	**840**	**260**	4,700	16,875
MW-3	12/04/14	1 week	3	3.10	**6,300**	**1,400**	<100	**51**	**140**	**2,000**	**680**	**230**	3,800	14,601
MW-3	12/10/14	2 weeks	3	1.89	**5,200**	**1,600**	73	<9.2	**270**	**2,100**	**1,300**	**310**	7,800	18,653
MW-3	12/18/14	3 weeks	3	2.22	**4,600**	**1,500**	<250	<92	**300**	**3,100**	**1,400**	**340**	7,900	19,140
MW-8	09/13/14	Baseline	27	5.91	**30**	<1.0	<1.0	**340**	<5.0	<5.0	<1.0	<1.0	<3.0	370
MW-8	11/24/14	Baseline	27	7.34	<1.0	<1.0	<1.0	**27**	<5.0	<5.0	<1.0	<1.0	<3.0	27
MW-8	12/04/14	1 week	27	7.15	**230**	6.1	<5.0	**310**	<25	<25	<5.0	<5.0	<15	546
MW-8	12/18/14	3 weeks	27	6.48	**120**	<50	<50	**350**	<50	<250	<19	<19	<150	470
MW-10	09/13/14	Baseline	60	5.81	<1.0	<1.0	<1.0	**84**	<5.0	<5.0	<1.0	<1.0	<3.0	84
MW-10	11/24/14	Baseline	60	6.23	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0	0
MW-10	12/04/14	1 week	60	6.27	<1.0	<1.0	<1.0	**120**	<5.0	<5.0	<1.0	<1.0	<3.0	120
MW-10	12/18/14	3 weeks	60	5.67	<1.0	<1.0	<1.0	11	<5.0	<5.0	<1.0	<1.0	<3.0	11

Notes: 1) Samples were analyzed by EPA Method 5030B / 8260B.

Table 10.0: Pilot Study Groundwater Results (Other Parameters)

Sample ID	Date	Time After Application	Distance from Test Pit	Depth to Water	Other Parameters						
					pH (test strip)	ORP	Conduc-tivity	Dissolved Oxygen	Sodium Persulfate	Sodium	Sulfate
Units			(feet)	(feet)	S.U.		ppm	ppm	ppm	ug/L	ug/L
SHS-RUA			--	--	--	--	--	--	--		250,000
Standpipe	12/04/14	1 week	0	1.23	11.0	191	1,800	10.0	1,400	670,000	**310,000**
Standpipe	12/10/14	2 weeks	0	1.10	10.0	169	897	10.0	350	210,000	230,000
Standpipe	12/18/14	3 weeks	0	1.23	8.5	161	690	10.0	140	340,000	180,000
MW-3	11/24/14	Baseline	3	3.58	6.3	112	1680	0.5	0	370,000	1,400
MW-3	11/24/14	~1 hour	3	3.90	6.3	118	958	1.0	0	370,000	940
MW-3	12/04/14	1 week	3	3.10	7.5	112	1460	2.5	42	--	190,000
MW-3	12/10/14	2 weeks	3	1.89	8.5	143	1870	4.0	4.2	780,000	**1,200,000**
MW-3	12/18/14	3 weeks	3	2.22	7.5	92	1248	3.0	2.8	660,000	**820,000**
MW-8	11/24/14	Baseline	27	7.34	7.0	102	818	4.5	0	140,000	30,000
MW-8	12/04/14	1 week	27	7.15	6.5	66	845	1.0	7.0	--	--
MW-8	12/10/14	2 weeks	27	6.16	8.0	99	776	2.5	0.7	--	--
MW-8	12/18/14	3 weeks	27	6.48	8.0	214	691	3.0	<0.7	190,000	32,000
MW-10	11/24/14	Baseline	60	6.23	7.1	104	242	5.5	0	29,000	19,000
MW-10	12/04/14	1 week	60	6.27	6.0	66	337	1.5	1.4	--	--
MW-10	12/10/14	2 weeks	60	5.37	7.0	95	316	4.0	<0.7	--	--
MW-10	12/18/14	3 weeks	60	5.67	8.0	314	221	3.5	<0.7	41,000	45,000
MW-4	12/04/14	1 week		5.78	--	191	695	1.0	0	--	--

Table 11.0: Pilot Study Soil Analytical Results

Sample Location	Date	Parameters (mg/kg)									TOTAL COCs (mg/kg)
		Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes	
SHS-RUA		*0.5*	*70*	*600*	*2*	*25*	*100*	*8.4*	*2.3*	*1,000*	--
Baseline Samples Collected From Open Test Pit Before PersulfOx Application											
West End											
Pit-1	11/24/14	**5.2**	3.2	0.23	<0.023	0.88	8.5	4.3	1.2	18	41.51
Pit-2	11/24/14	**12**	20	2.5	<0.56	6.3	38	**50**	**15**	99	242.8
***AVERAGE** (West End)*		*8.6*	*11.6*	*1.365*	*0*	*3.59*	*23.25*	*27.15*	*8.1*	*58.5*	*142.155*
East End											
Pit-3	11/24/14	**23**	9.8	0.46	<0.036	1.6	49	**9.3**	2.2	54	149.36
Pit-4	11/24/14	**20**	64	7.6	<0.11	16	**160**	**150**	**45**	360	822.6
***AVERAGE** (East End)*		*21.5*	*36.9*	*4.03*	*0*	*8.8*	*104.5*	*79.65*	*23.6*	*207*	*485.98*
Samples Collected One Month After PersulfOx Application											
Trench-Post 2 (West End)	12/22/14	**6.0**	8.4	0.98	<0.054	2.1	3.9	**17**	**5.5**	36	79.88
Trench-Post 1 (East End)	12/22/14	**9.2**	21	2.0	<0.11	5.9	41	**29**	**11**	91	210.1

Notes: 1) Samples were analyzed by EPA Method 5035 / 8260B.

Table 12.0: Pilot Study Soil Concentration Reductions

Sample Location	Date	Parameters (mg/kg)									TOTAL COCs (mg/kg)
		Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes	
WEST END OF TRENCH											
Baseline Average (West End)	11/24/14	8.6	11.6	1.365	ND	3.59	23.25	27.15	8.1	58.5	**142.155**
Trench-Post 2 (West End)	12/22/14	6.0	8.4	0.98	ND	2.1	3.9	17	5.5	36	**79.88**
Percent Reduction		***30.2%***	***27.6%***	***28.2%***		***41.5%***	***83.2%***	***37.4%***	***32.1%***	***38.5%***	***43.8%***
EAST END OF TRENCH											
Baseline Average (East End)	11/24/14	21.5	36.9	4.03	ND	8.8	104.5	79.65	23.6	207	**485.98**
Trench-Post 1 (East End)	12/22/14	9.2	21	2.0	ND	5.9	41	29	11	91	**210.1**
Percent Reduction		***57.2%***	***43.1%***	***50.4%***		***33.0%***	***60.8%***	***63.6%***	***53.4%***	***56.0%***	***56.8%***

ATTACHMENT A

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TN

MN (9.8°W)

Scale 1 : 3,600

1" = 300.0 ft

Data Zoom 15-7

ATTACHMENT B

Project: Valley Village	**Boring/Well ID: MW-1 / B-1**	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 27.3 ft. Date Started: 06/17/14 Date Completed: 06/17/14	Monitoring Well Construction Depth of Well 18.7 ft. Diameter of Casing 2.0 in. Well Screen 15' length 0.020 Slot TOC Elev. 1,118.60

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Asphalt			End Cap
1					Dark gray GRAVEL, moist, dense.			Washed Sand
2		Air Knife			Brown weathered SANDSTONE, moist, dense to very dense. (Fill)			Bentonite Chips Water at 1.90' on 06/26/14.
3								Wet zone from 3 to 10 feet.
4	S-1	1 1 1 2	1.8	23.6 278 LAB	Brown silty CLAY, wet, very soft.			Bentonite Pellets 2" dia. Schedule 40, PVC Riser
5								
6	S-2	WOH WOH 1 2	0.6	105	Brown silty CLAY, wet, very soft, traces of GRAVEL and SAND.			
7								
8	S-3	1 1 2 3	1.1	209 LAB				
9								
10	S-4	1 1 2 8	1.1	116	Brown silty CLAY, moist, very soft, traces of GRAVEL and SAND.			
11								
12	S-5	7 10 14 22	2.0	24.1				
13								
14	S-6	14 7 9 10	1.1	109 LAB	Tan, weathered SANDSTONE, moist, wet zone from 14 to 16 feet, dense, trace weathered SHALE from 14 to 17 feet.			Wet zone from 14 to 16 feet.
15								Washed Sand
16	S-7	1 4 8 9	1.7	32.4				
17								2" dia. 0.010 Slot, PVC Screen
18	S-8	17 14 17 17	2.0	79.1	Light brown SAND (SP), moist, medium dense (alluvial).			
19					Gray and tan weathered SANDSTONE and SHALE, moist (residual).			
20	S-9	5 4 8 10	1.7	20.7	Brown and red,weathered, sandy, silty SHALE, moist, medium dense (residual).			
21								
22	S-10	14 14 14 12	1.1	24.1	Tan and gray weathered SANDSTONE and SHALE, moist, medium dense (residual).			
23								
24	S-11	2 6 7 8	1.2	11.7				Bentonite Chips
25								
26	S-12	2 7 13 13	0.9	8.7	Dark gray carbonaceous SHALE, moist, medium to very dense (residual).			
27	S-13	50/3	0.3	1.3				
28					Total Depth 27.3 feet			

Project: Valley Village	Boring/Well ID: MW-2	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 19 ft. Date Started: 06/17/14 Date Completed: 06/19/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1,114.26

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					GRAVEL / ROCK fill.			End Cap
1				1.9				Washed Sand
2	Air Knife				Gray brown silty CLAY, moist, with metal fragements and burnpile material. (Fill)			Bentonite Chips
3				1.2				Bentonite Pellets
4				0.2				2" dia. Schedule 40, PVC Riser
5								
6	S-1	1 6 8 13	1.7	2.5 LAB				
7								
8	S-2	16 17 20 25	0.8	3.1				Washed Sand
9								Water at 9.34' on 06/26/14.
10	S-3	10 15 18 14		1.2				2" dia. 0.010 Slot, PVC Screen
11					Brown silty CLAY, moist, medium dense to dense, trace SANDSTONE fragments.			
12	S-4	12 9 14 9	0.7	1.8				
13								
14	S-5	10 10 14 9	2.0	1.7				
15								Bentonite Chips
16	S-6	4 5 9 9	1.7	2.2				
17								
18	S-7	12 16 18 16	1.7	1.7				
19								
20					Total Depth 19'			
21								
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: MW-3	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 25 ft. Date Started: 06/17/14 Date Completed: 06/17/14	Monitoring Well Construction Depth of Well 13.7 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1,116.37

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					SAND and GRAVEL, moist, dense.			End Cap
1								Washed Sand
2				40.6				Bentonite Chips
3	Air Knife			362	Brown silty CLAY, moist, wet at 4.5 feet. (Fill)			Water at 2.56' on 06/26/14. Bentonite Pellets
4				361 LAB				2" dia. Schedule 40, PVC Riser
5								Wet zone from 4.5 to 5.5 feet.
6	S-1	2 4 7 9	1.5	62	Gray silty CLAY (CL), moist, iron stained, medium dense, some weathered SANDSTONE fragments.			
7	S-2	7 9 13 10	0.8	45				Washed Sand
8								
9	S-3	7 12 17 12	1.7	16.5				
10								2" dia. 0.010 Slot, PVC Screen
11	S-4	8 10 10 15	1.1	12.2				
12								
13	S-5	6 8 12 17	1.8	187				
14								
15	S-6	7 9 10 10	1.6	604 LAB				Bentonite Chips
16								
17	S-7	15 14 13 14	1.3	614	Brown silty CLAY, moist, medium dense, trace SCORIA, some weathered SANDSTONE fragments.			
18								
19	S-8	5 8 12 11	1.1	15.2				
20								
21	S-9	7 10 10 10	1.3	29.8				
22								
23	S-10	9 7 8 9	1.6	20				
24								
25								
26					Total Depth 25'			
27								
28								

Project: Valley Village	Boring/Well ID: MW-4	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 25 ft. Date Started: 06/17/14 Date Completed: 06/18/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1,107.38

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0-5	Air Knife			0 102 183 LAB	Gray and brown silty CLAY and GRAVEL, coarse.		End Cap Washed Sand Bentonite Pellets 2" dia. Schedule 40, PVC Riser	
5-7	S-1	4 8 7 10	1.9	16.6	Brown silty CLAY, trace GRAVEL and weathered SANDSTONE fragments, medium dense, moist.		Water at 5.78' on 12/04/14.	
7-9	S-2	14 14 11 10	1.5	517			Washed Sand 2" dia. 0.010 Slot, PVC Screen	
9-11	S-3	6 10 14 16	1.8	602 LAB				
11-13	S-4	15 20 22 29	1.7	161	Tan weathered SANDSTONE and brown silty CLAY, dense, moist.			
13-15	S-5	15 13 12 11	1.5	135	Brown silty CLAY with rock fragments, trace SCORIA, medium dense, moist.		Bentonite Chips	
15-17	S-6	3 4 5 16	1.3	34.9				
17-19	S-7	12 15 14 12	2.0	24.2				
19-21	S-8	3 3 6 7	1.5	4.0	Gray silty CLAY, trace SCORIA, medium dense, moist.			
21-28					Total Depth 21'			

Project: Valley Village	Boring/Well ID: MW-5 / B-3	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 06/17/14 Date Completed: 06/18/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1,117.10

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Asphalt			End Cap
1				0.7	Tan silty CLAY and GRAVEL, moist.			Washed Sand Bentonite Pellets Water at 1.89' on 06/26/14.
2	Air Knife							
3				0	Gray and brown silty CLAY, moist.			2" dia. Schedule 40, PVC Riser
4				0 LAB	Tan silty CLAY, moist.			Water encountered 4.5 to 5 feet.
5								
6	S-1	4 8 9 9	1.4	1.4	Brown silty CLAY with GRAVEL and SANDSTONE fragments, moist, medium dense.			
7								Washed Sand
8	S-2	9 12 16 17	1.1	0.7				2" dia. 0.010 Slot, PVC Screen
9								
10	S-3	3 6 9 12	1.1	0	Brown silty CLAY with trace SAND, moist, medium dense.			
11								
12	S-4	9 10 20 17	1.8	0	Tan silty CLAY, trace GRAVEL, SCORIA, and SANDSTONE, dense to very dense.			
13								
14	S-5	19 21 19 24	0.5	0				Bentonite Chips
15								
16					Total Depth 15'			
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: MW-6	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 20 ft. Date Started: 08/04/14 Date Completed: 08/04/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1123.45'

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Asphalt surface			End Cap
1				0				Washed Sand
2	Air Knife							Bentonite Pellets
3				0	Brown silty CLAY, moist, wet at 4.5 feet.			2" dia. Schedule 40, PVC Riser
4				0 LAB				Wet from 4.5 to 7.4 feet. Water at 4.33 feet on 09/09/2014.
5								
6				0				
7			4.5		Brown silty CLAY with sandstone fragments, some sand, medium dense, moist, wet from 5 to 7.4 feet.			2" dia. 0.010 Slot, PVC Screen
8								
9				0				
10								
11								Washed Sand
12	GEOPROBE		1.9	0				
13								
14								
15					Brown silty CLAY with sandstone fragments, trace red scoria, medium dense to dense, moist.			
16								
17								
18			2.2	0				
19								Backfill with Bentonite Chips
20								
21					Total Depth 20'			
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	**Boring/Well ID: MW-7**	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/06/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1114.20'

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0–5	Air Knife			0 0 0 LAB	Topsoil. Brown and gray mottled silty CLAY, moist, wet from 4.5 to 5 feet.			End Cap Washed Sand 2" dia. Schedule 40, PVC Riser Bentonite Pellets Water at 3.15 feet on 09/03/2014. Wet from 4.5 to 6 feet.
5–10	GEOPROBE / AUGER		5.0	2.2 1.9	Brown-gray silty CLAY with sandstone fragments, medium dense, moist, wet zones from 5 to 6 feet and 9 to 10 feet.			2" dia. 0.010 Slot, PVC Screen Wet from 9 to 10 feet.
10–15			3.3	3.1 2.8				Washed Sand

Total Depth 15'

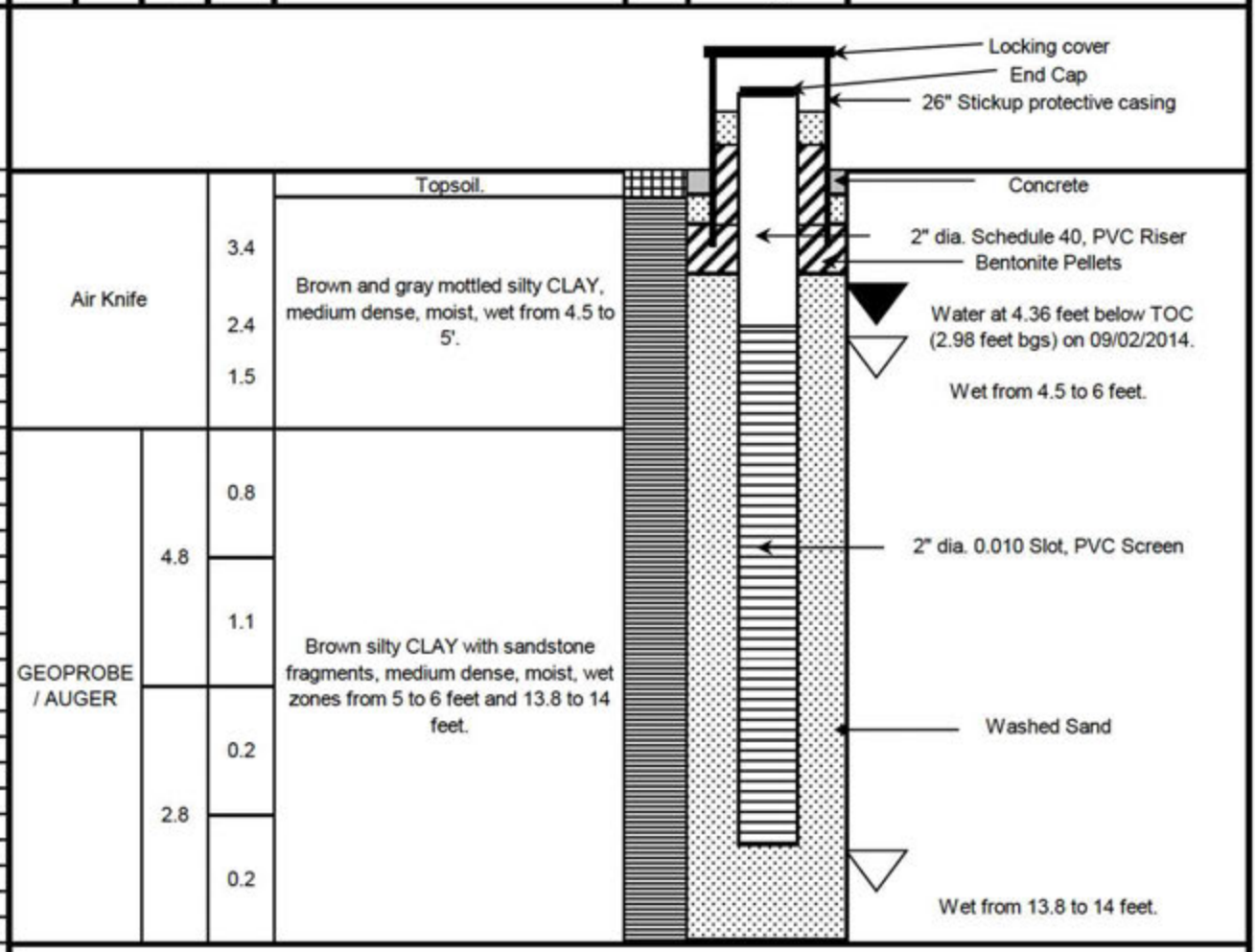
Note: 1-inch diameter conduits encountered at approximately 1.5 feet bgs, oriented parallel to former railroad corridor.

Project: Valley Village	Boring/Well ID: MW-8	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/05/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1115.67'

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0								Locking cover End Cap 28" Stickup protective casing
0					Topsoil.			Concrete
1				0				
2	Air Knife				Brown and gray mottled silty CLAY, moist, wet from 4.5 to 5 feet.			Bentonite Pellets 2" dia. Schedule 40, PVC Riser
3				0				Water at 5.91 feet below TOC (4.08 feet bgs) on 09/03/2014. Wet from 4.5 to 6 feet bgs.
4				0.1 LAB				
5								
6				5.5				
7			5.0					Washed Sand
8				1.9				2" dia. 0.010 Slot, PVC Screen
9								
10	GEOPROBE / AUGER				Brown silty CLAY with sandstone fragments, medium dense, moist, wet from 5 to 6 feet.			
11				3.6				
12			4.6					
13								
14				1.4				
15								
16					Total Depth 15'			
17								
18								
19								
20								
21								
22								
23								
24								
25								

Project: Valley Village	**Boring/Well ID: MW-9**	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/06/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1113.82'

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0–5	Air Knife			3.4 2.4 1.5	Topsoil. Brown and gray mottled silty CLAY, medium dense, moist, wet from 4.5 to 5'.			
5–15	GEOPROBE / AUGER		4.8 2.8	0.8 1.1 0.2 0.2	Brown silty CLAY with sandstone fragments, medium dense, moist, wet zones from 5 to 6 feet and 13.8 to 14 feet.			



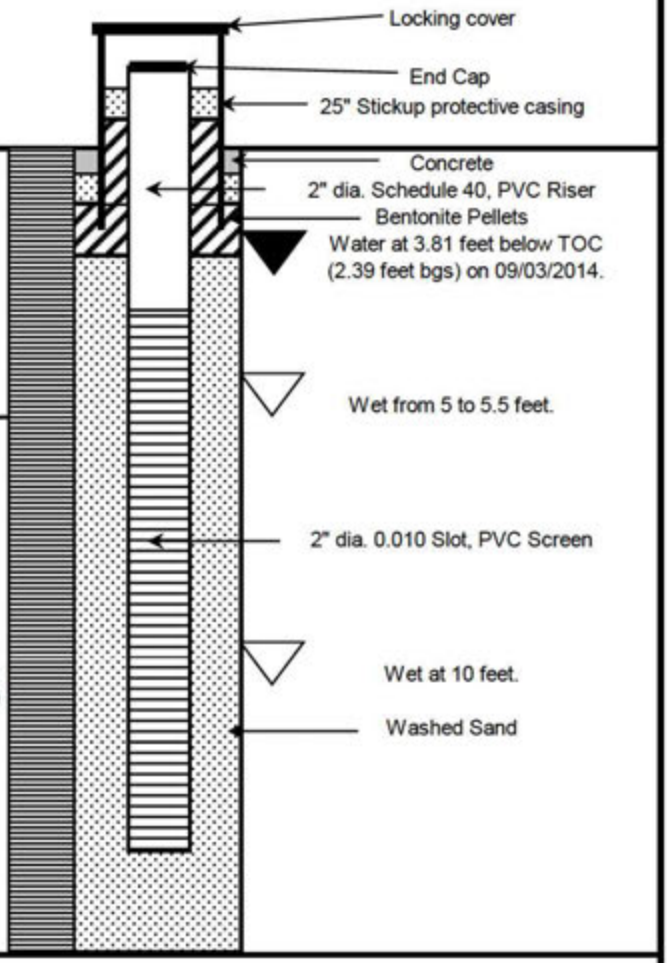
Total Depth 15'

Project: Valley Village	Boring/Well ID: MW-10	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/06/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1108.45'

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0	Air Knife			0.8	Dark gray COAL and silty CLAY, soft, moist.		Locking cover End Cap 25" Stickup protective casing Concrete	
1								
2							Bentonite Pellets 2" dia. Schedule 40, PVC Riser	
3				1.6				
4							Water at 5.18 feet below TOC (4.10 feet bgs) on 09/03/2014	
5								
6	GEOPROBE / AUGER		5.0	0.9	Brown to gray silty CLAY with rock fragments, trace scoria fragments at 9 feet, medium dense, moist.		No water bearing zone identified during drilling	
7								
8				0.5			Washed Sand 2" dia. 0.010 Slot, PVC Screen	
9								
10								
11			5.0	1.1				
12								
13				2.5				
14								
15								
16					Total Depth 15'			
17								
18								
19								
20								
21								
22								
23								
24								
25								

Project: Valley Village	Boring/Well ID: MW-11	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/06/14	Monitoring Well Construction Depth of Well 13 ft. Diameter of Casing 2.0 in. Well Screen 10' length 0.020 Slot TOC Elev. 1114.03'

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0–5	Air Knife			0.8 1.1 0.8	Brown and gray silty CLAY, moist.			
5–15	GEOPROBE / AUGER		4.2 3.2	1.5 0.3 0.1 0.4	Brown and gray silty CLAY with rock fragments, medium dense, moist with wet zones from 5 to 5.5 feet and at 10 feet.			



Total Depth 15'

Project: Valley Village	Boring/Well ID: MW-12	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Logan Logged By: Paul Rogers	Depth of Boring: 20 ft. Date Started: 12/22/14 Date Completed: 12/22/14	Monitoring Well Construction Depth of Well 18 ft. Diameter of Casing 2.0 in. Well Screen 15' length 0.020 Slot TOC Elev.

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0–5	Air Knife				Black cinders (fill). Brown silty CLAY, moist.		Locking cover End Cap Stickup protective casing Concrete Bentonite Pellets 2" dia. Schedule 40, PVC Riser	
5–6	GEOPROBE / AUGER		5.0	1.3	Brown and gray silty CLAY with rock fragments, medium dense to hard, moist with wet zones from 5 to 5.5 feet and 10 to 11 feet.		Wet from 5 to 5.5 feet. Water at 6.79 feet below TOC (~5.3 feet bgs) on 01/15/2015.	
6–8				1.7 LAB			2" dia. 0.020 Slot, PVC Screen	
8–10			5.0	1.5			Wet from 10 to 11 feet.	
10–12				0.7 LAB			Washed Sand	
12–15			5.0	1.1				
15–20				1.5				
20–25					Total Depth 20'			

Project: Valley Village	Boring/Well ID: B-2	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 17 ft. Date Started: 06/17/14 Date Completed: 06/17/14	Monitoring Well Construction Depth of Well n/a ft. Diameter of Casing ____in. Well Screen ____ length ____Slot TOC Elev. _____

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Asphalt		No well installed. Backfilled with bentonite chips.	Wet from 4.5 to 5.5 feet.
1				0	Dark gray weathered SHALE, GRAVEL, and silty CLAY, moist, medium dense. (Fill)			
2	Air Knife			12.9				
3				75.5	Gray and brown silty CLAY,moist, wet zone from 4.5 to 5 feet, medium dense to soft.			
4				836 LAB				
5								
6	S-1	7 10 10 15	1.5	760	Tan silty CLAY and weathered SANDSTONE, moist, wet zone from 5 to 5.5 feet, medium dense to dense.			
7								
8	S-2	15 15 15 15	1.4	556				
9								
10	S-3	6 7 13 12	1.0	657	Brown, sandy, silty CLAY, trace gravel, moist, medium dense, slight odor.			
11								
12	S-4	16 20 20 14	2.0	223				
13								
14	S-5	8 14 11 9	1.8	35	Brown silty CLAY with gray sandstone, shale, and scoria fragments moist, medium dense.			
15								
16	S-6	2 5 8 8		202 LAB				
17								
18					Total Depth 17'			
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: B-4	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 06/18/14 Date Completed: 06/18/14	Monitoring Well Construction Depth of Well n/a ft. Diameter of Casing ____in. Well Screen ____ length ____Slot TOC Elev. _____

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Asphalt		No well installed. Backfilled with bentonite chips.	Wet zone at 5 feet.
1	Air Knife			0	Light brown silty CLAY, moist, stiff. (Fill)			
2								
3				20.3 LAB	Gray silty CLAY with trace sand, moist, medium stiff. (Fill)			
4				6.6				
5								
6	S-1	3 5 8 12	1.4	0.2				
7								
8	S-2	2 7 10 12	1.1	0	Brown silty CLAY with sand and gravel, trace scoria, moist, wet zone at 5 feet, medium stiff.			
9								
10	S-3	7 10 15 13	0.9	0				
11								
12	S-4	10 17 18 14	1.1	0				
13								
14	S-5	10 14 12 18	1.4	10				
15								
16								
17								
18					Total Depth 15'			
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: B-5	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 21 ft. Date Started: 06/18/14 Date Completed: 06/19/14	Monitoring Well Construction Depth of Well n/a ft. Diameter of Casing ____in. Well Screen ____ length ____Slot TOC Elev. _____

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Concrete.		No well installed. Backfilled with bentonite chips.	
1				0				
2	Air Knife							
3				127 LAB	Brown GRAVEL and silty CLAY, moist. (Fill)			
4				123				
5								
6	S-1	4 12 19 18	1.6	9.2				
7								
8	S-2	15 29 24 14	1.2	6.3				
9								
10	S-3	5 7 9 11	1.4	78.8				
11								
12	S-4	10 10 11 10	1.4	39.7 LAB	Brown silty CLAY with weathered rock fragments, moist, wet zone at 17.1 feet, medium dense to dense.			
13								
14	S-5	10 11 15 15	1.2	74.1				
15								
16	S-6	3 7 9 8	1.4	65.4				Wet zone at 17.1 feet.
17								
18	S-7	8 9 11 13	1.7	22.8				
19								
20	S-8	4 7 7 5	1.2	8.9				
21								
22					Total Depth 21'			
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: B-6	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/04/14	Monitoring Well Construction No Well Installed

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Asphalt surface		No well installed. Backfilled with bentonite chips.	
1	Air Knife			0.2	Brown silty CLAY, moist, then wet from 4.5 to 5.5 feet. (Fill)			
2								
3				0.7				
4				0				Wet from 4.5 to 5.5 feet. Water Level at 4.7 feet - 08/04/14
5								
6	GEOPROBE		4.2	0.1	Brown silty CLAY with sandstone fragments and coal, trace scoria at 11 feet, medium dense, moist, 1-inch wet zone at 13 feet.			
7								
8				544 LAB				
9								
10								
11			4.5	86.7				
12								
13								Wet zone at 13 feet.
14				8.2				
15								
16					Total Depth 15'			
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: B-7	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/05/14	Monitoring Well Construction No Well Installed

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Topsoil		No well installed. Backfilled with bentonite chips.	Wet from 4.5 to 5.5 feet. Water Level at 4.5 feet - 08/04/14
1	Air Knife			0	Brown silty CLAY, moist, wet at 4.5'. (Fill)			
2								
3				0				
4				0				
5								
6	GEOPROBE		3.6	1.8	Brown and gray silty CLAY with sandstone fragments, medium dense, wet from 5 to 6 feet, otherwise moist.			
7								
8				1.7				
9								
10			2.4	1.5				
11								
12								
13				2.1 LAB				
14								
15								
16					Total Depth 15'			
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: B-8	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/05/14	Monitoring Well Construction No Well Installed

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0	Air Knife			0.6	Gray GRAVEL (railroad ballast), moist. (Fill)		No well installed. Backfilled with bentonite chips.	
1								
2								
3				1.5 LAB				
4								
5	GEOPROBE		4.0	0.6				Wet from 5 to 6.5 feet.
6								
7					Brown silty CLAY with sandstone fragments and coal, medium dense, moist, wet zones from 5' to 6.5' and at 14'.			
8								
9				0.1				
10			3.0	2.8				
11								
12								
13				3.1				Wet zone at 14 feet.
14								
15								
16					Total Depth 15'			
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: B-9	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/05/14	Monitoring Well Construction No Well Installed

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0								
1	Air Knife			8.7	Black coal and railroad ballast, moist. (Fill)		No well installed. Backfilled with bentonite chips.	
2								
3				0.8	Brown gray silty CLAY with sandstone fragments, medium dense, moist.			
4								
5								
6	GEOPROBE			3.3 LAB				
7					Brown sandy, silty CLAY with sandstone fragments, medium dense, moist.			
8				2				
9								
10								
11				1.4				
12			5.0		Brown silty CLAY with sandstone fragments, medium dense, moist.			
13								
14				2.1				
15								
16					Total Depth 15'			
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: B-10	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 15 ft. Date Started: 08/04/14 Date Completed: 08/05/14	Monitoring Well Construction No Well Installed

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0	Air Knife			0.9	Brown and gray silty CLAY grades to brown at 5', with sandstone and scoria fragments, medium dense to dense, moist, wet zone from 4 to 6 feet.		No well installed. Backfilled with bentonite chips.	Wet from 4.5 to 6 feet.
1				0.2				
2				0.3				
3								
4								
5	GEOPROBE		3.8	1.1				
6								
7				8.4				
8								
9								
10			3.1	17.3				
11								
12								
13				21.4 LAB				
14								
15					Total Depth 15'			
16								
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18								
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25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: B-11	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Logan Logged By: Paul Rogers	Depth of Boring: 20 ft. Date Started: 12/22/14 Date Completed: 12/22/14	Monitoring Well Construction No Well Installed

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0–5	Air Knife				Brown silty CLAY with sandstone fragments, medium dense, moist, wet zone at 5 feet.		No well installed. Backfilled with bentonite chips.	Wet zone at 5 feet.
5–10	GEOPROBE		5	2	Brown and gray silty CLAY with rock fragments, medium dense to hard, moist with wet zones at 5 and 10 feet.			
				2.6				Wet zone at 10 feet.
10–15			5	13.8 LAB				
				8				
15–20			5	0.2				
				1.1				
20					Total Depth 20'			

Project: Valley Village	Boring/Well ID: B-12	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Logan Logged By: Paul Rogers	Depth of Boring: 20 ft. Date Started: 12/22/14 Date Completed: 12/22/14	Monitoring Well Construction No Well Installed

Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0–5	Air Knife				Brown silty CLAY with sandstone fragments, medium dense, moist, wet zone at 5 feet.		No well installed. Backfilled with bentonite chips.	Wet zone at 5 feet.
5–7	GEOPROBE		5	1.8 LAB	Brown and gray silty CLAY with rock fragments, medium dense to hard, moist with wet zones at 5 and 15 feet.			
7–10				2				
10–12			5	1.3				
12–15				1				Wet zone at 15 feet.
15–18			5	1.2				
18–20				1.5				
20	Total Depth 20'							

Project: Valley Village	Boring/Well ID: PT-1	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring: 20 ft. Date Started: 08/04/14 Date Completed: 08/04/14	Monitoring Well Construction Depth of Well 17 ft. Diameter of Casing 2.0 in. Well Screen 14' length 0.020 Slot

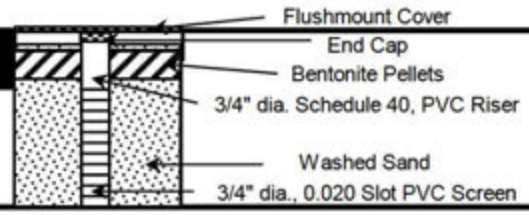
Depth (feet)	Sample No.	Blows/.5 ft	Recovery- ft	PID - ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Asphalt surface			End Cap
1				0.5				Washed Sand
2		Air Knife						Bentonite Pellets
3				0.2	Brown silty CLAY with gravel, moist.			2" dia. Schedule 40, PVC Riser
4				7.1				Water at 4.67 feet on 09/03/2014.
5								No water bearing zone identified during drilling
6				297				
7			5.0					Washed Sand
8				72.1				2" dia. 0.010 Slot, PVC Screen
9								
10				906 LAB				
11								
12		GEOPROBE / AUGER	5.0		Brown silty CLAY with sandstone fragments, medium dense, moist.			
13								
14				893				
15								
16				57.1				
17								
18								
19				35.1				Backfill with Bentonite Chips
20								
21					Total Depth 20'			
22								
23								
24								
25								
26								
27								
28								

Project: Valley Village	Boring/Well ID: VM-1	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: Aaron Hughes Logged By: Mike Keeliher	Depth of Boring 5 ft. Date Started: 06/18/14 Date Completed: 06/18/14	Well Construction Depth of Well 3 ft, 5 ft nested set Diameter of Casing 3/4 in. Well Screen 0.020 Slot: Length: 1 ft.

Depth (feet)	Sample No/type	Blows/.5 ft	Recovery- feet	PID Reading-ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0								Flushmount Cover
					Asphalt surface.			End Caps
1					Brown sandy GRAVEL, moist, medium dense. (Fill)			Washed Sand
				0				3/4" dia. Schedule 40, PVC Riser
2								Bentonite Pellets
	Air Knife							Washed Sand
3				0				3/4" dia., 0.020 Slot PVC Screen
					Brown silty CLAY with some GRAVEL, moist, no free water noted.			3/4" dia. Schedule 40, PVC Riser
4								Bentonite Pellets
				0				Washed Sand
5								3/4" dia., 0.020 Slot PVC Screen
				0				
6					Total Depth 5'			
					Note: water noted in VM-1 4-5' at 3.79' on 06/26/14.			
7								
8								
9								
10								
11								

Project: Valley Village	Boring/Well ID: VM-2	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: _____ Logged By: Paul Rogers	Depth of Boring 1.5 ft. Date Started: 12/15/14 Date Completed: 12/15/14	Well Construction Depth of Well 1.5 ft Diameter of Casing 3/4 in. Well Screen 0.020 Slot: Length: 1 ft.

Depth (feet)	Sample No/type	Blows/.5 ft	Recovery- feet	PID Reading-ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0								
					Asphalt surface.			
1	Air Knife							
2					Total Depth 1.5'			
3								
4								
5								
6								
7								
8								
9								
10								
11								



Project: Valley Village	Boring/Well ID: VM-3	Page 1 of 1
Location: Rural Valley, PA Drilling Co.: Chatfield Drilling Driller: _____ Logged By: Paul Rogers	Depth of Boring 1.5 ft. Date Started: 12/22/14 Date Completed: 12/22/14	Well Construction Depth of Well 1.5 ft Diameter of Casing 3/4 in. Well Screen 0.020 Slot: Length: 1 ft.

Depth (feet)	Sample No/type	Blows/.5 ft	Recovery- feet	PID Reading-ppm	DESCRIPTION	Lithology	Well Construction	Comments/Details
0					Gravel surface.		Flushmount Cover End Cap Bentonite Pellets 3/4" dia. Schedule 40, PVC Riser Washed Sand 3/4" dia., 0.020 Slot PVC Screen	
1					Hand Dig			
2					Total Depth 1.5'			
3								
4								
5								
6								
7								
8								
9								
10								
11								

ATTACHMENT C

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Est. 1970

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Wednesday July 02, 2014

Report Number: L706435
Samples Received: 06/24/14
Client Project: VALLEY VILLAGE

Description: Soil

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 02,2014

ESC Sample # : L706435-01

Date Received : June 24, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-1 4-5FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/17/14 09:22

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	83.8	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	3.2	0.092	0.40	mg/kg		8260B	06/28/14	340
Ethylbenzene	3.5	0.10	0.40	mg/kg		8260B	06/28/14	340
Isopropylbenzene	0.32	0.083	0.40	mg/kg	J	8260B	06/28/14	340
Methyl tert-butyl ether	U	0.072	0.40	mg/kg		8260B	06/28/14	340
Naphthalene	1.0	0.34	2.0	mg/kg	J	8260B	06/28/14	340
Toluene	6.0	0.15	2.0	mg/kg		8260B	06/28/14	340
1,2,4-Trimethylbenzene	6.6	0.072	0.40	mg/kg		8260B	06/28/14	340
1,3,5-Trimethylbenzene	1.9	0.090	0.40	mg/kg		8260B	06/28/14	340
Xylenes, Total	18.	0.24	1.2	mg/kg		8260B	06/28/14	340
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	06/28/14	340
Dibromofluoromethane	90.4			% Rec.		8260B	06/28/14	340
4-Bromofluorobenzene	99.8			% Rec.		8260B	06/28/14	340

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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The reported analytical results relate only to the sample submitted
Reported: 07/02/14 08:21 Printed: 07/02/14 08:22

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 02,2014

ESC Sample # : L706435-02

Date Received : June 24, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-1 7-9FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/17/14 09:33

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	81.9	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	3.3	0.0070	0.031	mg/kg		8260B	07/01/14	25.75
Ethylbenzene	0.16	0.00030	0.0012	mg/kg		8260B	06/28/14	1
Isopropylbenzene	0.013	0.00024	0.0012	mg/kg		8260B	06/28/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	06/28/14	1
Naphthalene	0.0098	0.0010	0.0061	mg/kg		8260B	06/28/14	1
Toluene	2.0	0.011	0.16	mg/kg		8260B	07/01/14	25.75
1,2,4-Trimethylbenzene	0.12	0.00021	0.0012	mg/kg		8260B	06/28/14	1
1,3,5-Trimethylbenzene	0.037	0.00027	0.0012	mg/kg		8260B	06/28/14	1
Xylenes, Total	6.6	0.018	0.094	mg/kg		8260B	07/01/14	25.75
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	06/28/14	1
Dibromofluoromethane	90.3			% Rec.		8260B	06/28/14	1
4-Bromofluorobenzene	88.7			% Rec.		8260B	06/28/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 02,2014

ESC Sample # : L706435-03

Date Received : June 24, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-1 13-15FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/17/14 10:06

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	86.0	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	0.031	0.00027	0.0012	mg/kg		8260B	06/28/14	1
Ethylbenzene	0.017	0.00030	0.0012	mg/kg		8260B	06/28/14	1
Isopropylbenzene	0.0013	0.00024	0.0012	mg/kg		8260B	06/28/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	06/28/14	1
Naphthalene	0.0019	0.0010	0.0058	mg/kg	J	8260B	06/28/14	1
Toluene	0.062	0.00043	0.0058	mg/kg		8260B	06/28/14	1
1,2,4-Trimethylbenzene	0.016	0.00021	0.0012	mg/kg		8260B	06/28/14	1
1,3,5-Trimethylbenzene	0.0053	0.00027	0.0012	mg/kg		8260B	06/28/14	1
Xylenes, Total	0.085	0.00070	0.0035	mg/kg		8260B	06/28/14	1
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/28/14	1
Dibromofluoromethane	97.6			% Rec.		8260B	06/28/14	1
4-Bromofluorobenzene	93.5			% Rec.		8260B	06/28/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 02,2014

ESC Sample # : L706435-04

Date Received : June 24, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-2 4FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/17/14 10:02

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	82.1	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	1.6	0.0054	0.024	mg/kg		8260B	07/01/14	20
Ethylbenzene	1.7	0.0059	0.024	mg/kg		8260B	07/01/14	20
Isopropylbenzene	0.15	0.0049	0.024	mg/kg		8260B	07/01/14	20
Methyl tert-butyl ether	U	0.0042	0.024	mg/kg		8260B	07/01/14	20
Naphthalene	1.5	0.020	0.12	mg/kg		8260B	07/01/14	20
Toluene	8.9	0.035	0.49	mg/kg		8260B	07/01/14	80
1,2,4-Trimethylbenzene	4.0	0.0042	0.024	mg/kg		8260B	07/01/14	20
1,3,5-Trimethylbenzene	0.90	0.0053	0.024	mg/kg		8260B	07/01/14	20
Xylenes, Total	11.	0.014	0.073	mg/kg		8260B	07/01/14	20
Surrogate Recovery								
Toluene-d8	97.9			% Rec.		8260B	07/01/14	20
Dibromofluoromethane	86.4			% Rec.		8260B	07/01/14	20
4-Bromofluorobenzene	89.1			% Rec.		8260B	07/01/14	20

Results listed are dry weight basis.
U = ND (Not Detected)
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
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July 02,2014

ESC Sample # : L706435-05

Date Received : June 24, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-2 15-17FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/17/14 13:23

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	86.1	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	1.3	0.022	0.094	mg/kg		8260B	06/28/14	81
Ethylbenzene	7.5	0.024	0.094	mg/kg		8260B	06/28/14	81
Isopropylbenzene	1.1	0.020	0.094	mg/kg		8260B	06/28/14	81
Methyl tert-butyl ether	U	0.017	0.094	mg/kg		8260B	06/28/14	81
Naphthalene	3.1	0.081	0.47	mg/kg		8260B	06/28/14	81
Toluene	16.	0.035	0.47	mg/kg		8260B	06/28/14	81
1,2,4-Trimethylbenzene	18.	0.085	0.47	mg/kg		8260B	07/01/14	405
1,3,5-Trimethylbenzene	6.4	0.022	0.094	mg/kg		8260B	06/28/14	81
Xylenes, Total	45.	0.056	0.28	mg/kg		8260B	06/28/14	81
Surrogate Recovery								
Toluene-d8	108.			% Rec.		8260B	06/28/14	81
Dibromofluoromethane	94.9			% Rec.		8260B	06/28/14	81
4-Bromofluorobenzene	103.			% Rec.		8260B	06/28/14	81

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
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July 02,2014

ESC Sample # : L706435-06

Date Received : June 24, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-3 4FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/17/14 11:33

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	74.7	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	15.	0.13	0.66	mg/kg		8260B	07/01/14	495
Ethylbenzene	12.	0.15	0.66	mg/kg		8260B	07/01/14	495
Isopropylbenzene	0.82	0.12	0.66	mg/kg		8260B	07/01/14	495
Methyl tert-butyl ether	U	0.10	0.66	mg/kg		8260B	07/01/14	495
Naphthalene	2.4	0.50	3.3	mg/kg	J	8260B	07/01/14	495
Toluene	29.	0.21	3.3	mg/kg		8260B	07/01/14	495
1,2,4-Trimethylbenzene	16.	0.10	0.66	mg/kg		8260B	07/01/14	495
1,3,5-Trimethylbenzene	4.3	0.13	0.66	mg/kg		8260B	07/01/14	495
Xylenes, Total	63.	0.34	2.0	mg/kg		8260B	07/01/14	495
Surrogate Recovery								
Toluene-d8	99.6			% Rec.		8260B	07/01/14	495
Dibromofluoromethane	88.7			% Rec.		8260B	07/01/14	495
4-Bromofluorobenzene	95.1			% Rec.		8260B	07/01/14	495

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 02, 2014

ESC Sample # : L706435-07

Date Received : June 24, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-3 15-17FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/17/14 14:54

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	87.2	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	0.17	0.0051	0.022	mg/kg		8260B	06/28/14	18.75
Ethylbenzene	0.65	0.0056	0.022	mg/kg		8260B	06/28/14	18.75
Isopropylbenzene	0.21	0.0046	0.022	mg/kg		8260B	06/28/14	18.75
Methyl tert-butyl ether	U	0.0040	0.022	mg/kg		8260B	06/28/14	18.75
Naphthalene	0.73	0.019	0.11	mg/kg		8260B	06/28/14	18.75
Toluene	0.61	0.0081	0.11	mg/kg		8260B	06/28/14	18.75
1,2,4-Trimethylbenzene	4.8	0.021	0.11	mg/kg		8260B	07/01/14	100
1,3,5-Trimethylbenzene	1.4	0.0050	0.022	mg/kg		8260B	06/28/14	18.75
Xylenes, Total	3.6	0.013	0.064	mg/kg		8260B	06/28/14	18.75
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/28/14	18.75
Dibromofluoromethane	93.5			% Rec.		8260B	06/28/14	18.75
4-Bromofluorobenzene	94.5			% Rec.		8260B	06/28/14	18.75

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 02, 2014

ESC Sample # : L706435-08

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : June 24, 2014
Description : Soil

Sample ID : MW-5

Collected By : Adam Gaines
Collection Date : 06/17/14 13:22

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Fractional Organic Carbon	BDL	0.10	g C/g soil	D2974	06/27/14	1
Fractional Organic Matter	2.0	0.10	%	D2974	06/27/14	1
Total Solids	78.8	0.100	%	2540 G-2011	06/27/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L706435-01	WG728430	SAMP	Isopropylbenzene	R2951966	J
	WG728430	SAMP	Naphthalene	R2951966	J
L706435-03	WG728430	SAMP	Naphthalene	R2951966	J
L706435-06	WG729561	SAMP	Naphthalene	R2953326	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information: INSITE 021113S

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Soil
City/State Collected: Kittanning, PA
Phone: 724 347 2101
FAX: 724 347 2139
Client Project #: Valley Village
ESC Key: INSITE 021113S
Collected by: Adam Gaines
Site/Facility ID#: 03-06500
P.O.#:
Collected by (signature):
Packed on Ice: N Y X

Rush? (Lab MUST Be Notified)
___ Same Day.....200%
___ Next Day.....100%
___ Two Day.....50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / NaBIS/Syr/MeOH	VOC Screen / 2ozClr / no pres	Total Solids / 4ozClr / no pres	Fraction Organic Carbon / 4ozClr / no pres	Remarks/Contaminant	Sample # (lab only)
MW-1 (4-5 FT)	Grab	SS		06/17/14	0922	5	X	X	X			L706435-01
MW-1 (7-9 FT)	Grab	SS		06/17/14	0933	5	X	X	X			-02
MW-1 (13-15 FT)	Grab	SS		06/17/14	1006	5	X	X	X			-03
B-2 (4 FT)	Grab	SS		06/17/14	1002	5	X	X	X			-04
B-2 (15-17 FT)	Grab	SS		06/17/14	1323	5	X	X	X			-05
MW-3 (4 FT)	Grab	SS		06/17/14	1133	5	X	X	X			-06
MW-3 (15-17 FT)	Grab	SS		06/17/14	1454	5	X	X	X			-07
MW-5	Grab	SS	X	06/17/14	1322	~~1~~ 2				X		-08

Chain of Custody Page 1 of 1

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ENVIRONMENTAL SCIENCE CORP.
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Phone (615) 758-5858
Phone (800) 767-5859
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F002

CoCode (lab use only)
Template/Prelogin
Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

pH _____ Temp _____
Flow _____ Other _____

Remarks: DI Priority Quote # INSITE 021113S 5990 1136 3591

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Justin Kelley	6/23/14	1443	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 2.4°C
Bottles Received: 39
Date: 6/24/14
Time: 0900

Condition: (lab use only) 323
pH Checked:
NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Tuesday July 01, 2014

Report Number: L706431
Samples Received: 06/24/14
Client Project: VALLEY VILLAGE

Description: Soil

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 01,2014

ESC Sample # : L706431-01

Date Received : June 24, 2014
Description : Soil

Site ID : 03-6500

Sample ID : B-4 3 FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/18/14 08:57

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	81.8	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	0.0051	0.00027	0.0012	mg/kg		8260B	06/27/14	1
Ethylbenzene	0.00082	0.00030	0.0012	mg/kg	J	8260B	06/27/14	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	06/27/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	06/27/14	1
Naphthalene	U	0.0010	0.0061	mg/kg		8260B	06/27/14	1
Toluene	0.0022	0.00043	0.0061	mg/kg	J	8260B	06/27/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0012	mg/kg		8260B	06/27/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0012	mg/kg		8260B	06/27/14	1
Xylenes, Total	0.0017	0.00070	0.0037	mg/kg	J	8260B	06/27/14	1
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	06/27/14	1
Dibromofluoromethane	101.			% Rec.		8260B	06/27/14	1
4-Bromofluorobenzene	91.5			% Rec.		8260B	06/27/14	1

Results listed are dry weight basis.
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MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 01,2014

ESC Sample # : L706431-02

Date Received : June 24, 2014
Description : Soil

Site ID : 03-6500

Sample ID : MW-4 4 FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/18/14 10:10

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	80.8	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	0.72	0.0068	0.031	mg/kg		8260B	07/01/14	25
Ethylbenzene	0.15	0.00030	0.0012	mg/kg		8260B	06/27/14	1
Isopropylbenzene	0.011	0.00024	0.0012	mg/kg		8260B	06/27/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	06/27/14	1
Naphthalene	0.036	0.0010	0.0062	mg/kg		8260B	06/27/14	1
Toluene	0.90	0.011	0.15	mg/kg		8260B	07/01/14	25
1,2,4-Trimethylbenzene	0.14	0.00021	0.0012	mg/kg		8260B	06/27/14	1
1,3,5-Trimethylbenzene	0.044	0.00027	0.0012	mg/kg		8260B	06/27/14	1
Xylenes, Total	0.44	0.00070	0.0037	mg/kg		8260B	06/27/14	1
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	06/27/14	1
Dibromofluoromethane	92.9			% Rec.		8260B	06/27/14	1
4-Bromofluorobenzene	96.6			% Rec.		8260B	06/27/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 01,2014

ESC Sample # : L706431-03

Date Received : June 24, 2014
Description : Soil

Site ID : 03-6500

Sample ID : MW-4 9-11 FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/18/14 14:58

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	87.3	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	4.8	0.024	0.10	mg/kg		8260B	07/01/14	90
Ethylbenzene	3.6	0.027	0.10	mg/kg		8260B	07/01/14	90
Isopropylbenzene	0.34	0.022	0.10	mg/kg		8260B	07/01/14	90
Methyl tert-butyl ether	0.11	0.019	0.10	mg/kg		8260B	07/01/14	90
Naphthalene	1.4	0.090	0.52	mg/kg		8260B	07/01/14	90
Toluene	18.	0.039	0.52	mg/kg		8260B	07/01/14	90
1,2,4-Trimethylbenzene	7.4	0.019	0.10	mg/kg		8260B	07/01/14	90
1,3,5-Trimethylbenzene	2.1	0.024	0.10	mg/kg		8260B	07/01/14	90
Xylenes, Total	21.	0.063	0.31	mg/kg		8260B	07/01/14	90
Surrogate Recovery								
Toluene-d8	97.0			% Rec.		8260B	07/01/14	90
Dibromofluoromethane	90.3			% Rec.		8260B	07/01/14	90
4-Bromofluorobenzene	96.3			% Rec.		8260B	07/01/14	90

Results listed are dry weight basis.
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 01,2014

ESC Sample # : L706431-04

Date Received : June 24, 2014
Description : Soil

Site ID : 03-6500

Sample ID : VM-1 3 FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/18/14 13:15

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	81.3	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	U	0.00027	0.0012	mg/kg		8260B	07/01/14	1
Ethylbenzene	U	0.00030	0.0012	mg/kg		8260B	07/01/14	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	07/01/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	07/01/14	1
Naphthalene	U	0.0010	0.0062	mg/kg		8260B	07/01/14	1
Toluene	U	0.00043	0.0062	mg/kg		8260B	07/01/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0012	mg/kg		8260B	07/01/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0012	mg/kg		8260B	07/01/14	1
Xylenes, Total	U	0.00070	0.0037	mg/kg		8260B	07/01/14	1
Surrogate Recovery								
Toluene-d8	98.7			% Rec.		8260B	07/01/14	1
Dibromofluoromethane	98.2			% Rec.		8260B	07/01/14	1
4-Bromofluorobenzene	91.0			% Rec.		8260B	07/01/14	1

Results listed are dry weight basis.
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RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 01,2014

ESC Sample # : L706431-05

Date Received : June 24, 2014
Description : Soil

Site ID : 03-6500

Sample ID : B-5 3 FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/18/14 12:07

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	88.9	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	0.0022	0.00027	0.0011	mg/kg		8260B	06/28/14	1
Ethylbenzene	0.0022	0.00030	0.0011	mg/kg		8260B	06/28/14	1
Isopropylbenzene	U	0.00024	0.0011	mg/kg		8260B	06/28/14	1
Methyl tert-butyl ether	U	0.00021	0.0011	mg/kg		8260B	06/28/14	1
Naphthalene	0.0069	0.0010	0.0056	mg/kg		8260B	06/28/14	1
Toluene	0.0082	0.00043	0.0056	mg/kg		8260B	06/28/14	1
1,2,4-Trimethylbenzene	0.013	0.00021	0.0011	mg/kg		8260B	06/28/14	1
1,3,5-Trimethylbenzene	0.010	0.00027	0.0011	mg/kg		8260B	06/28/14	1
Xylenes, Total	0.030	0.00070	0.0034	mg/kg		8260B	06/28/14	1
Surrogate Recovery								
Toluene-d8	112.			% Rec.	J1	8260B	06/28/14	1
Dibromofluoromethane	97.4			% Rec.		8260B	06/28/14	1
4-Bromofluorobenzene	97.9			% Rec.		8260B	06/28/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 01,2014

ESC Sample # : L706431-06

Site ID : 03-6500

Project # : VALLEY VILLAGE

Date Received : June 24, 2014
Description : Soil

Sample ID : B-5 11-13 FT

Collected By : Adam Gaines
Collection Date : 06/18/14 09:03

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	90.9	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	1.1	0.0054	0.022	mg/kg		8260B	07/01/14	20
Ethylbenzene	0.30	0.0059	0.022	mg/kg		8260B	07/01/14	20
Isopropylbenzene	0.033	0.0049	0.022	mg/kg		8260B	07/01/14	20
Methyl tert-butyl ether	0.0075	0.0042	0.022	mg/kg	J	8260B	07/01/14	20
Naphthalene	0.11	0.020	0.11	mg/kg		8260B	07/01/14	20
Toluene	1.4	0.0087	0.11	mg/kg		8260B	07/01/14	20
1,2,4-Trimethylbenzene	0.62	0.0042	0.022	mg/kg		8260B	07/01/14	20
1,3,5-Trimethylbenzene	0.18	0.0053	0.022	mg/kg		8260B	07/01/14	20
Xylenes, Total	1.5	0.014	0.066	mg/kg		8260B	07/01/14	20
Surrogate Recovery								
Toluene-d8	98.0			% Rec.		8260B	07/01/14	20
Dibromofluoromethane	88.7			% Rec.		8260B	07/01/14	20
4-Bromofluorobenzene	91.1			% Rec.		8260B	07/01/14	20

Results listed are dry weight basis.
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 01,2014

ESC Sample # : L706431-07

Date Received : June 24, 2014
Description : Soil

Site ID : 03-6500

Sample ID : MW-2 5-7 FT

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 06/18/14 10:09

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	87.8	0.0333		%		2540 G-2	06/27/14	1
Volatile Organics								
Benzene	0.00036	0.00027	0.0011	mg/kg	J	8260B	07/01/14	1
Ethylbenzene	U	0.00030	0.0011	mg/kg		8260B	07/01/14	1
Isopropylbenzene	U	0.00024	0.0011	mg/kg		8260B	07/01/14	1
Methyl tert-butyl ether	U	0.00021	0.0011	mg/kg		8260B	07/01/14	1
Naphthalene	U	0.0010	0.0057	mg/kg		8260B	07/01/14	1
Toluene	0.00073	0.00043	0.0057	mg/kg	J	8260B	07/01/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0011	mg/kg		8260B	07/01/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0011	mg/kg		8260B	07/01/14	1
Xylenes, Total	U	0.00070	0.0034	mg/kg		8260B	07/01/14	1
Surrogate Recovery								
Toluene-d8	99.4			% Rec.		8260B	07/01/14	1
Dibromofluoromethane	103.			% Rec.		8260B	07/01/14	1
4-Bromofluorobenzene	92.4			% Rec.		8260B	07/01/14	1

Results listed are dry weight basis.
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MDL = Minimum Detection Limit = LOD = TRRP SDL
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L706431-01	WG728430	SAMP	Ethylbenzene	R2951966	J
	WG728430	SAMP	Toluene	R2951966	J
	WG728430	SAMP	Xylenes, Total	R2951966	J
L706431-05	WG728430	SAMP	Toluene-d8	R2951966	J1
L706431-06	WG729561	SAMP	Methyl tert-butyl ether	R2953326	J
L706431-07	WG729561	SAMP	Benzene	R2953326	J
	WG729561	SAMP	Toluene	R2953326	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information: INSITE 021113S

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Soil

City/State Collected: Kittanning, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: Valley Village

ESC Key: INSITE 021113S

Collected by: Adam Gaines

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y X

Rush? (Lab MUST Be Notified)
___ Same Day.....200%
___ Next Day.....100%
___ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs.	V8260UGPA / 40mlAmb / NaBIS/Syr/MeOH	VOC Screen / 2ozClr / no pres	Total Solids / 4ozClr / no pres	Fraction Organic Carbon / 4ozClr / no pres	Remarks/Contaminant	Sample # (lab only)
B-4 (3 FT)	Grab	SS		06/18/14	0857	5	X	X	X			L706491-01
MW-4 (4 FT)	Grab	SS		06/18/14	1010	5	X	X	X			02
MW-4 (9-11 FT)	Grab	SS		06/18/14	1458	5	X	X	X			03
VM-1 (3 FT)	Grab	SS		06/18/14	1315	5	X	X	X			04
B-5 (3 FT)	Grab	SS		06/18/14	1207	5	X	X	X			05
B-5 (11-13 FT)	Grab	SS		06/19/14	0903	5	X	X	X			06
MW-2 (5-7 FT)	Grab	SS		06/19/14	1009	5	X	X	X			07

Chain of Custody Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

F005

CoCode (lab use only)

Template/Prelogin

Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: D1 Priority Quote # INSITE 021113S 5990 1136 3569

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.2 / Bottles Received: 35	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6/24/14 / Time: 0900	pH Checked: / NCF:

6/23/14 1443

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Thursday August 14, 2014

Report Number: L714125
Samples Received: 08/06/14
Client Project: VALLEY VILLAGE

Description: Soil

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Alan Harvill

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 14,2014

ESC Sample # : L714125-01

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-6 4 FT

Project # : VALLEY VILLAGE

Collected By : A. Gaines
Collection Date : 08/04/14 09:13

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	84.9	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	0.00038	0.00027	0.0012	mg/kg	J	8260B	08/10/14	1
Ethylbenzene	0.0012	0.00030	0.0012	mg/kg		8260B	08/10/14	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	08/10/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	08/13/14	1
Naphthalene	U	0.0010	0.0059	mg/kg		8260B	08/10/14	1
Toluene	0.0045	0.00043	0.0059	mg/kg	J	8260B	08/10/14	1
1,2,4-Trimethylbenzene	0.0028	0.00021	0.0012	mg/kg		8260B	08/10/14	1
1,3,5-Trimethylbenzene	0.00084	0.00027	0.0012	mg/kg	J	8260B	08/10/14	1
Xylenes, Total	0.0072	0.00070	0.0035	mg/kg		8260B	08/10/14	1
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	08/10/14	1
Dibromofluoromethane	93.0			% Rec.		8260B	08/10/14	1
4-Bromofluorobenzene	96.8			% Rec.		8260B	08/10/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 14,2014

ESC Sample # : L714125-02

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-7 4 FT

Project # : VALLEY VILLAGE

Collected By : A. Gaines
Collection Date : 08/04/14 11:39

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	83.8	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	U	0.00027	0.0012	mg/kg		8260B	08/10/14	1
Ethylbenzene	0.00066	0.00030	0.0012	mg/kg	J	8260B	08/10/14	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	08/10/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	08/13/14	1
Naphthalene	U	0.0010	0.0060	mg/kg		8260B	08/10/14	1
Toluene	0.0035	0.00043	0.0060	mg/kg	J	8260B	08/10/14	1
1,2,4-Trimethylbenzene	0.00037	0.00021	0.0012	mg/kg	J	8260B	08/10/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0012	mg/kg		8260B	08/10/14	1
Xylenes, Total	0.0035	0.00070	0.0036	mg/kg	J	8260B	08/10/14	1
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	08/10/14	1
Dibromofluoromethane	93.3			% Rec.		8260B	08/10/14	1
4-Bromofluorobenzene	98.8			% Rec.		8260B	08/10/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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Est. 1970

REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 14,2014

ESC Sample # : L714125-03

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-8 4 FT

Project # : VALLEY VILLAGE

Collected By : A. Gaines
Collection Date : 08/04/14 13:25

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	85.9	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	0.0038	0.00027	0.0012	mg/kg		8260B	08/10/14	1
Ethylbenzene	0.0012	0.00030	0.0012	mg/kg		8260B	08/10/14	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	08/10/14	1
Methyl tert-butyl ether	0.00079	0.00021	0.0012	mg/kg	J	8260B	08/13/14	1
Naphthalene	U	0.0010	0.0058	mg/kg		8260B	08/10/14	1
Toluene	0.0052	0.00043	0.0058	mg/kg	J	8260B	08/10/14	1
1,2,4-Trimethylbenzene	0.0012	0.00021	0.0012	mg/kg		8260B	08/10/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0012	mg/kg		8260B	08/10/14	1
Xylenes, Total	0.0063	0.00070	0.0035	mg/kg		8260B	08/10/14	1
Surrogate Recovery								
Toluene-d8	108.			% Rec.		8260B	08/10/14	1
Dibromofluoromethane	91.5			% Rec.		8260B	08/10/14	1
4-Bromofluorobenzene	96.8			% Rec.		8260B	08/10/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 14,2014

ESC Sample # : L714125-04

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : PT-1 10-12.5 FT

Project # : VALLEY VILLAGE

Collected By : A. Gaines
Collection Date : 08/04/14 14:08

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	88.2	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	0.43	0.013	0.056	mg/kg		8260B	08/13/14	49
Ethylbenzene	4.6	0.014	0.056	mg/kg		8260B	08/13/14	49
Isopropylbenzene	0.65	0.012	0.056	mg/kg		8260B	08/13/14	49
Methyl tert-butyl ether	U	0.010	0.056	mg/kg		8260B	08/13/14	49
Naphthalene	2.3	0.049	0.28	mg/kg		8260B	08/13/14	49
Toluene	9.6	0.021	0.28	mg/kg		8260B	08/13/14	49
1,2,4-Trimethylbenzene	11.	0.10	0.56	mg/kg		8260B	08/10/14	490
1,3,5-Trimethylbenzene	4.0	0.013	0.056	mg/kg		8260B	08/13/14	49
Xylenes, Total	28.	0.034	0.17	mg/kg		8260B	08/13/14	49
Surrogate Recovery								
Toluene-d8	93.2			% Rec.		8260B	08/13/14	49
Dibromofluoromethane	83.2			% Rec.		8260B	08/13/14	49
4-Bromofluorobenzene	96.3			% Rec.		8260B	08/13/14	49

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 14,2014

ESC Sample # : L714125-05

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-6 7.5-10 FT

Project # : VALLEY VILLAGE

Collected By : A. Gaines
Collection Date : 08/04/14 13:37

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	87.7	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	U	0.0078	0.033	mg/kg		8260B	08/13/14	29
Ethylbenzene	0.49	0.0086	0.033	mg/kg		8260B	08/13/14	29
Isopropylbenzene	0.43	0.0070	0.033	mg/kg		8260B	08/13/14	29
Methyl tert-butyl ether	U	0.0061	0.033	mg/kg		8260B	08/13/14	29
Naphthalene	0.71	0.029	0.16	mg/kg		8260B	08/13/14	29
Toluene	0.032	0.012	0.16	mg/kg	J	8260B	08/13/14	29
1,2,4-Trimethylbenzene	11.	0.061	0.33	mg/kg		8260B	08/13/14	290
1,3,5-Trimethylbenzene	3.4	0.0077	0.033	mg/kg		8260B	08/13/14	29
Xylenes, Total	3.3	0.020	0.099	mg/kg		8260B	08/13/14	29
Surrogate Recovery								
Toluene-d8	90.6			% Rec.		8260B	08/13/14	29
Dibromofluoromethane	83.4			% Rec.		8260B	08/13/14	29
4-Bromofluorobenzene	91.6			% Rec.		8260B	08/13/14	29

Results listed are dry weight basis.
U = ND (Not Detected)
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RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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L714125-05 (V8260UGPA) - Target compounds too high to run lower.

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 14,2014

ESC Sample # : L714125-06

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-8 2.5-5 FT

Project # : VALLEY VILLAGE

Collected By : A. Gaines
Collection Date : 08/04/14 17:23

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	80.2	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	U	0.00027	0.0012	mg/kg		8260B	08/10/14	1
Ethylbenzene	U	0.00030	0.0012	mg/kg		8260B	08/10/14	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	08/10/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	08/13/14	1
Naphthalene	U	0.0010	0.0062	mg/kg		8260B	08/10/14	1
Toluene	0.0014	0.00043	0.0062	mg/kg	J	8260B	08/10/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0012	mg/kg		8260B	08/10/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0012	mg/kg		8260B	08/10/14	1
Xylenes, Total	U	0.00070	0.0037	mg/kg		8260B	08/10/14	1
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	08/10/14	1
Dibromofluoromethane	90.8			% Rec.		8260B	08/10/14	1
4-Bromofluorobenzene	96.7			% Rec.		8260B	08/10/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L714125-01	WG735958	SAMP	Benzene	R2975446	J
	WG735958	SAMP	Toluene	R2975446	J
	WG735958	SAMP	1,3,5-Trimethylbenzene	R2975446	J
L714125-02	WG735958	SAMP	Ethylbenzene	R2975446	J
	WG735958	SAMP	Toluene	R2975446	J
	WG735958	SAMP	1,2,4-Trimethylbenzene	R2975446	J
	WG735958	SAMP	Xylenes, Total	R2975446	J
L714125-03	WG736919	SAMP	Methyl tert-butyl ether	R2975708	J
	WG735958	SAMP	Toluene	R2975446	J
L714125-05	WG736919	SAMP	Toluene	R2975708	J
L714125-06	WG735958	SAMP	Toluene	R2975446	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

G195

Chain of Custody Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
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CoCode (lab use only)
Template/Prelogin
Shipped Via:

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Soil
City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE
ESC Key: INSITE 021113S

Collected by: A. GAINES
Site/Facility ID#: 03-06500
P.O.#:

Collected by (signature): A. Gaines
Packed on Ice: N Y X

Rush? (Lab MUST Be Notified)
___ Same Day.....200%
___ Next Day.....100%
___ Two Day.....50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / NaBiS/Syr/MeOH	VOC Screen / 2ozClr / no pres	Total Solids / 4ozClr / no pres	Remarks/Contaminant	Sample # (lab only)
MW-6 (4 FT)	Grab	SS		08/04/14	09:13	5	X	X	X		L714125-01
MW-7 (4 FT)	Grab	SS		08/04/14	11:39	5	X	X	X		02
MW-8 (4 FT)	Grab	SS		08/04/14	13:25	5	X	X	X		03
PT-1 (10 - 12.5 FT)	Grab	SS		08/04/14	14:08	5	X	X	X		04
B-6 (7.5 - 10 FT)	Grab	SS		08/04/14	13:37	5	X	X	X		05
B-8 (2.5 - 5 FT)	Grab	SS		08/04/14	17:23	5	X	X	X		06

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks: D1 Priority Quote # INSITE 021113S 6089716818626

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Sheila Seely	8/5/14	1501	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐

Temp: 3.4 Bottles Received: 30

Date: 8-6-14 Time: 0900

Condition: (lab use only) OK

pH Checked: NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Monday August 11, 2014

Report Number: L714084
Samples Received: 08/06/14
Client Project: VALLEY VILLAGE

Description: Soil

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Alan Harvill

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 11,2014

ESC Sample # : L714084-01

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-7 12.5-15FT

Project # : VALLEY VILLAGE

Collected By : Paul Rogers
Collection Date : 08/05/14 09:52

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	88.4	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	0.00067	0.00027	0.0011	mg/kg	J	8260B	08/09/14	1
Ethylbenzene	U	0.00030	0.0011	mg/kg		8260B	08/09/14	1
Isopropylbenzene	U	0.00024	0.0011	mg/kg		8260B	08/09/14	1
Methyl tert-butyl ether	0.00066	0.00021	0.0011	mg/kg	J	8260B	08/09/14	1
Naphthalene	U	0.0010	0.0056	mg/kg		8260B	08/09/14	1
Toluene	0.0018	0.00043	0.0056	mg/kg	J	8260B	08/09/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0011	mg/kg		8260B	08/09/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0011	mg/kg		8260B	08/09/14	1
Xylenes, Total	U	0.00070	0.0034	mg/kg		8260B	08/09/14	1
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	08/09/14	1
Dibromofluoromethane	103.			% Rec.		8260B	08/09/14	1
4-Bromofluorobenzene	95.1			% Rec.		8260B	08/09/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 11,2014

ESC Sample # : L714084-02

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-9 5-7.5FT

Project # : VALLEY VILLAGE

Collected By : Paul Rogers
Collection Date : 08/05/14 09:24

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	85.7	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	0.0019	0.00027	0.0012	mg/kg		8260B	08/09/14	1
Ethylbenzene	U	0.00030	0.0012	mg/kg		8260B	08/09/14	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	08/09/14	1
Methyl tert-butyl ether	0.029	0.00021	0.0012	mg/kg		8260B	08/09/14	1
Naphthalene	U	0.0010	0.0058	mg/kg		8260B	08/09/14	1
Toluene	0.0013	0.00043	0.0058	mg/kg	J	8260B	08/09/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0012	mg/kg		8260B	08/09/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0012	mg/kg		8260B	08/09/14	1
Xylenes, Total	U	0.00070	0.0035	mg/kg		8260B	08/09/14	1
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	08/09/14	1
Dibromofluoromethane	99.3			% Rec.		8260B	08/09/14	1
4-Bromofluorobenzene	91.7			% Rec.		8260B	08/09/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

August 11,2014

ESC Sample # : L714084-03

Date Received : August 06, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-10 12.5-15FT

Project # : VALLEY VILLAGE

Collected By : Paul Rogers
Collection Date : 08/05/14 09:05

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	87.8	0.0333		%		2540 G-2	08/08/14	1
Volatile Organics								
Benzene	0.90	0.0076	0.032	mg/kg		8260B	08/11/14	28
Ethylbenzene	0.00059	0.00030	0.0011	mg/kg	J	8260B	08/09/14	1
Isopropylbenzene	0.0065	0.00024	0.0011	mg/kg		8260B	08/09/14	1
Methyl tert-butyl ether	0.010	0.00021	0.0011	mg/kg		8260B	08/09/14	1
Naphthalene	0.010	0.0010	0.0057	mg/kg		8260B	08/09/14	1
Toluene	0.0017	0.00043	0.0057	mg/kg	J	8260B	08/09/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0011	mg/kg		8260B	08/09/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0011	mg/kg		8260B	08/09/14	1
Xylenes, Total	U	0.00070	0.0034	mg/kg		8260B	08/09/14	1
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	08/09/14	1
Dibromofluoromethane	95.5			% Rec.		8260B	08/09/14	1
4-Bromofluorobenzene	89.6			% Rec.		8260B	08/09/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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The reported analytical results relate only to the sample submitted
Reported: 08/11/14 10:44 Printed: 08/11/14 10:45

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L714084-01	WG735911	SAMP	Benzene	R2974215	J
	WG735911	SAMP	Methyl tert-butyl ether	R2974215	J
	WG735911	SAMP	Toluene	R2974215	J
L714084-02	WG735911	SAMP	Toluene	R2974215	J
L714084-03	WG735911	SAMP	Ethylbenzene	R2974215	J
	WG735911	SAMP	Toluene	R2974215	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

G193

Chain of Custody Page 1 of 1

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Soil

City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE 021113S

Collected by: Paul Rogers

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y X

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Analysis/Container/Preserv.

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40ml/Amb / NaBIS/Syr/MeOH	VOC Screen / 2oz/Clr / no pres	Total Solids / 4oz/Clr / no pres	Remarks/Contaminant	Sample # (lab only)
B-7 (12.5 -15 FT)	Grab	SS		08/05/14	0952	5	X	X	X		-01
B-9 (5 - 7.5 FT)	Grab	SS		08/05/14	0924	5	X	X	X		-02
B-10 (12.5 - 15 FT)	Grab	SS		08/05/14	0905	5	X	X	X		-03

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

CoCode (lab use only)

Template/Prelogin

Shipped Via: L714084

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: DI Priority Quote # INSITE 021113S 6089716811196 Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Kristin Kelly	8/14/15	1515	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____

Temp: 3.9

Bottles Received: 15

Date: 8-6-14

Time: 0900

Condition: (lab use only) OK

pH Checked:

NCF:

ESC
L·A·B S·C·I·E·N·C·E·S
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Est. 1970

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Sunday December 07, 2014

Report Number: L736041
Samples Received: 11/26/14
Client Project: VALLEY VILLAGE

Description: Pilot Test

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 07,2014

ESC Sample # : L736041-01

Date Received : November 26, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : PIT-1

Project # : VALLEY VILLAGE

Collected By : Sara Giordano
Collection Date : 11/24/14 10:30

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	78.7	0.0333		%		2540 G-2	12/03/14	1
Volatile Organics								
Benzene	5.2	0.020	0.095	mg/kg		8260B	12/05/14	75
Ethylbenzene	3.2	0.0054	0.023	mg/kg		8260B	12/04/14	18.25
Isopropylbenzene	0.23	0.0044	0.023	mg/kg		8260B	12/04/14	18.25
Methyl tert-butyl ether	0.0090	0.0039	0.023	mg/kg	J	8260B	12/04/14	18.25
Naphthalene	0.88	0.018	0.12	mg/kg		8260B	12/04/14	18.25
Toluene	8.5	0.032	0.48	mg/kg		8260B	12/05/14	75
1,2,4-Trimethylbenzene	4.3	0.0038	0.023	mg/kg		8260B	12/04/14	18.25
1,3,5-Trimethylbenzene	1.2	0.0048	0.023	mg/kg		8260B	12/04/14	18.25
Xylenes, Total	18.	0.052	0.28	mg/kg		8260B	12/05/14	75
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	12/04/14	18.25
Dibromofluoromethane	96.2			% Rec.		8260B	12/04/14	18.25
4-Bromofluorobenzene	89.9			% Rec.		8260B	12/04/14	18.25

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 07,2014

ESC Sample # : L736041-02

Date Received : November 26, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : PIT-2

Project # : VALLEY VILLAGE

Collected By : Sara Giordano
Collection Date : 11/24/14 10:35

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	79.8	0.0333		%		2540 G-2	12/03/14	1
Volatile Organics								
Benzene	12.	0.12	0.56	mg/kg		8260B	12/04/14	450
Ethylbenzene	20.	0.13	0.56	mg/kg		8260B	12/04/14	450
Isopropylbenzene	2.5	0.11	0.56	mg/kg		8260B	12/04/14	450
Methyl tert-butyl ether	U	0.095	0.56	mg/kg		8260B	12/04/14	450
Naphthalene	6.3	0.45	2.8	mg/kg		8260B	12/04/14	450
Toluene	38.	0.20	2.8	mg/kg		8260B	12/04/14	450
1,2,4-Trimethylbenzene	50.	0.095	0.56	mg/kg		8260B	12/04/14	450
1,3,5-Trimethylbenzene	15.	0.12	0.56	mg/kg		8260B	12/04/14	450
Xylenes, Total	99.	0.31	1.7	mg/kg		8260B	12/04/14	450
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	12/04/14	450
Dibromofluoromethane	96.6			% Rec.		8260B	12/04/14	450
4-Bromofluorobenzene	95.0			% Rec.		8260B	12/04/14	450

Results listed are dry weight basis.
U = ND (Not Detected)
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RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 07,2014

ESC Sample # : L736041-03

Date Received : November 26, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : PIT-3

Project # : VALLEY VILLAGE

Collected By : Sara Giordano
Collection Date : 11/24/14 10:40

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	77.4	0.0333		%		2540 G-2	12/03/14	1
Volatile Organics								
Benzene	23.	0.15	0.72	mg/kg		8260B	12/05/14	555
Ethylbenzene	9.8	0.16	0.72	mg/kg		8260B	12/05/14	555
Isopropylbenzene	0.46	0.0067	0.036	mg/kg		8260B	12/04/14	27.75
Methyl tert-butyl ether	0.017	0.0059	0.036	mg/kg	J	8260B	12/04/14	27.75
Naphthalene	1.6	0.028	0.18	mg/kg		8260B	12/04/14	27.75
Toluene	49.	0.24	3.6	mg/kg		8260B	12/05/14	555
1,2,4-Trimethylbenzene	9.3	0.12	0.72	mg/kg		8260B	12/05/14	555
1,3,5-Trimethylbenzene	2.2	0.0074	0.036	mg/kg		8260B	12/04/14	27.75
Xylenes, Total	54.	0.39	2.2	mg/kg		8260B	12/05/14	555
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	12/04/14	27.75
Dibromofluoromethane	95.5			% Rec.		8260B	12/04/14	27.75
4-Bromofluorobenzene	85.7			% Rec.		8260B	12/04/14	27.75

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RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 07,2014

ESC Sample # : L736041-04

Date Received : November 26, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : PIT-4

Project # : VALLEY VILLAGE

Collected By : Sara Giordano
Collection Date : 11/24/14 10:45

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	80.2	0.0333		%		2540 G-2	12/03/14	1
Volatile Organics								
Benzene	20.	0.024	0.11	mg/kg		8260B	12/03/14	91
Ethylbenzene	64.	0.54	2.3	mg/kg		8260B	12/04/14	1820
Isopropylbenzene	7.6	0.022	0.11	mg/kg		8260B	12/03/14	91
Methyl tert-butyl ether	U	0.019	0.11	mg/kg		8260B	12/03/14	91
Naphthalene	16.	0.091	0.57	mg/kg		8260B	12/03/14	91
Toluene	160	0.79	11.	mg/kg		8260B	12/04/14	1820
1,2,4-Trimethylbenzene	150	0.38	2.3	mg/kg		8260B	12/04/14	1820
1,3,5-Trimethylbenzene	45.	0.48	2.3	mg/kg		8260B	12/04/14	1820
Xylenes, Total	360	1.3	6.8	mg/kg		8260B	12/04/14	1820
Surrogate Recovery								
Toluene-d8	92.9			% Rec.		8260B	12/03/14	91
Dibromofluoromethane	85.4			% Rec.		8260B	12/03/14	91
4-Bromofluorobenzene	120.			% Rec.		8260B	12/03/14	91

Results listed are dry weight basis.
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MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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Reported: 12/07/14 20:43 Printed: 12/07/14 20:44

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L736041-01	WG758263	SAMP	Methyl tert-butyl ether	R3008284	J
L736041-03	WG758263	SAMP	Methyl tert-butyl ether	R3008284	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

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Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:
INSITE080614S

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Pilot Test
City/Sate Collected: KITTANNING, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE
ESC Key: INSITE080614S

Collected by: Sara Giordano
Site/Facility ID#: 03-06500
P.O.#:

Collected by (signature): Sara Giordano
Packed on Ice N (Y)

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA 40mL Amb/ NaBIS/SyrMeOH	Total Solids4oz clear	VOC Screen 2 oz clear	Remarks/Contaminant	Sample # (lab only)
Pit-1	Grab	SS		11-24-14	10:30	5	X	X	X	L736041	-01
Pit-2	Grab	SS		11-24-14	10:35	5	X	X	X		-02
Pit-3	Grab	SS		11-24-14	10:40	5	X	X	X		-03
Pit-4	Grab	SS		11-24-14	10:45	5	X	X	X		-04

Analysis/Container/Preservative

Chain of Custody
Page 1 of 1

Prepared by:
ENVIRONMENTAL SCIENCE CORP.
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Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
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D172

CoCode (lab use only)
Template/Prelogin
Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Justin Kelley	11/25/14	1316	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____
Temp: 2.4°C
Bottles Received: 20
Date: 11/26/14
Time: 09:00

Condition: COC'S OK (lab use only) 903
pH Checked:
NCF:

ESC
L·A·B S·C·I·E·N·C·E·S
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Est. 1970

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Friday January 02, 2015

Report Number: L740651
Samples Received: 12/23/14
Client Project: VALLEY VILLAGE

Description: Soil

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 02,2015

ESC Sample # : L740651-01

Date Received : December 23, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-11 10-12.5FT

Project # : VALLEY VILLAGE

Collected By : Swogger/Rogers
Collection Date : 12/22/14 09:40

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	86.0	0.0333		%		2540 G-2	12/30/14	1
Volatile Organics								
Benzene	U	0.00027	0.0012	mg/kg		8260B	01/02/15	1
Ethylbenzene	0.0011	0.00030	0.0012	mg/kg	J	8260B	01/02/15	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	01/02/15	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	01/02/15	1
Naphthalene	U	0.0010	0.0058	mg/kg		8260B	01/02/15	1
Toluene	0.00094	0.00043	0.0058	mg/kg	J	8260B	01/02/15	1
1,2,4-Trimethylbenzene	0.0011	0.00021	0.0012	mg/kg	J	8260B	01/02/15	1
1,3,5-Trimethylbenzene	0.00049	0.00027	0.0012	mg/kg	J	8260B	01/02/15	1
Xylenes, Total	0.0057	0.00070	0.0035	mg/kg		8260B	01/02/15	1
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	01/02/15	1
Dibromofluoromethane	92.2			% Rec.		8260B	01/02/15	1
4-Bromofluorobenzene	100.			% Rec.		8260B	01/02/15	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 02,2015

ESC Sample # : L740651-02

Date Received : December 23, 2014
Description : Soil

Site ID : 03-06500

Sample ID : B-12 5-7.5FT

Project # : VALLEY VILLAGE

Collected By : Swogger/Rogers
Collection Date : 12/22/14 10:30

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	87.8	0.0333		%		2540 G-2	12/30/14	1
Volatile Organics								
Benzene	U	0.00027	0.0011	mg/kg		8260B	12/30/14	1
Ethylbenzene	U	0.00030	0.0011	mg/kg		8260B	12/30/14	1
Isopropylbenzene	U	0.00024	0.0011	mg/kg		8260B	12/30/14	1
Methyl tert-butyl ether	U	0.00021	0.0011	mg/kg		8260B	12/30/14	1
Naphthalene	U	0.0010	0.0057	mg/kg		8260B	12/30/14	1
Toluene	U	0.00043	0.0057	mg/kg		8260B	12/30/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0011	mg/kg		8260B	12/30/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0011	mg/kg		8260B	12/30/14	1
Xylenes, Total	U	0.00070	0.0034	mg/kg		8260B	12/30/14	1
Surrogate Recovery								
Toluene-d8	98.9			% Rec.		8260B	12/30/14	1
Dibromofluoromethane	98.8			% Rec.		8260B	12/30/14	1
4-Bromofluorobenzene	104.			% Rec.		8260B	12/30/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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Est. 1970

REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 02,2015

ESC Sample # : L740651-03

Date Received : December 23, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-12 7.5-10FT

Project # : VALLEY VILLAGE

Collected By : Swogger/Rogers
Collection Date : 12/22/14 11:12

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	85.8	0.0333		%		2540 G-2	12/30/14	1
Volatile Organics								
Benzene	U	0.00027	0.0012	mg/kg		8260B	12/30/14	1
Ethylbenzene	U	0.00030	0.0012	mg/kg		8260B	12/30/14	1
Isopropylbenzene	U	0.00024	0.0012	mg/kg		8260B	12/30/14	1
Methyl tert-butyl ether	U	0.00021	0.0012	mg/kg		8260B	12/30/14	1
Naphthalene	U	0.0010	0.0058	mg/kg		8260B	12/30/14	1
Toluene	U	0.00043	0.0058	mg/kg		8260B	12/30/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0012	mg/kg		8260B	12/30/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0012	mg/kg		8260B	12/30/14	1
Xylenes, Total	U	0.00070	0.0035	mg/kg		8260B	12/30/14	1
Surrogate Recovery								
Toluene-d8	99.9			% Rec.		8260B	12/30/14	1
Dibromofluoromethane	98.5			% Rec.		8260B	12/30/14	1
4-Bromofluorobenzene	103.			% Rec.		8260B	12/30/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 02,2015

ESC Sample # : L740651-04

Date Received : December 23, 2014
Description : Soil

Site ID : 03-06500

Sample ID : MW-12 12.5-15FT

Project # : VALLEY VILLAGE

Collected By : Swogger/Rogers
Collection Date : 12/22/14 11:27

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	88.3	0.0333		%		2540 G-2	12/30/14	1
Volatile Organics								
Benzene	U	0.00027	0.0011	mg/kg		8260B	12/30/14	1
Ethylbenzene	U	0.00030	0.0011	mg/kg		8260B	12/30/14	1
Isopropylbenzene	U	0.00024	0.0011	mg/kg		8260B	12/30/14	1
Methyl tert-butyl ether	U	0.00021	0.0011	mg/kg		8260B	12/30/14	1
Naphthalene	U	0.0010	0.0057	mg/kg		8260B	12/30/14	1
Toluene	U	0.00043	0.0057	mg/kg		8260B	12/30/14	1
1,2,4-Trimethylbenzene	U	0.00021	0.0011	mg/kg		8260B	12/30/14	1
1,3,5-Trimethylbenzene	U	0.00027	0.0011	mg/kg		8260B	12/30/14	1
Xylenes, Total	U	0.00070	0.0034	mg/kg		8260B	12/30/14	1
Surrogate Recovery								
Toluene-d8	98.7			% Rec.		8260B	12/30/14	1
Dibromofluoromethane	101.			% Rec.		8260B	12/30/14	1
4-Bromofluorobenzene	104.			% Rec.		8260B	12/30/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L740651-01	WG762654	SAMP	Ethylbenzene	R3013012	J
	WG762654	SAMP	Toluene	R3013012	J
	WG762654	SAMP	1,2,4-Trimethylbenzene	R3013012	J
	WG762654	SAMP	1,3,5-Trimethylbenzene	R3013012	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Soil

City/State Collected: Kittanning, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE-SS

Collected by: Swogger & Rogers

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day..... 200%
___ Next Day..... 100%
___ Two Day..... 50%

Date Results Needed:

Email? ___No ✓Yes

FAX? ✓No ___Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40ml/Amb / NaBIS/Syr/MeOH	VOC Screen / 2ozClr / no pres	Total Solids / 4ozClr / no pres	Remarks/Contaminant	Sample # (lab only)
B-11 (10 - 12.5 FT)	Grab	SS		12/22/14	09:40	5	X	X	X		L740651-01
B-12 (5 - 7.5 FT)	Grab	SS		12/22/14	10:30	5	X	X	X		-02
MW-12 (7.5 - 10 FT)	Grab	SS		12/22/14	11:12	5	X	X	X		-03
MW-12 (12.5 - 15 FT)	Grab	SS		12/22/14	11:27	5	X	X	X		-04

Chain of Custody Page 1 of 1

Prepared by:

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Phone (800) 767-5859
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CoCode (lab use only)

Template/Prelogin

Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: D1 Priority 6171 2091 3527

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	12-22-14	15:3	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 2.1°C

Bottles Received: 20

Date: 12/23/14

Time: 0900

Condition: (lab use only) (OK) TOL COC Sec

pH Checked:

NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Monday January 05, 2015

Report Number: L740649
Samples Received: 12/23/14
Client Project: VALLEY VILLAGE

Description: Pilot Test Soil

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 05,2015

ESC Sample # : L740649-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 23, 2014
Description : Pilot Test Soil

Sample ID : TRENCH-POST 1

Collected By : Swogger/Rogers
Collection Date : 12/22/14 09:00

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	75.7	0.0333		%		2540 G-2	12/30/14	1
Volatile Organics								
Benzene	9.2	0.022	0.11	mg/kg		8260B	12/30/14	81
Ethylbenzene	21.	0.024	0.11	mg/kg		8260B	12/30/14	81
Isopropylbenzene	2.0	0.020	0.11	mg/kg		8260B	12/30/14	81
Methyl tert-butyl ether	U	0.017	0.11	mg/kg		8260B	12/30/14	81
Naphthalene	5.9	0.081	0.54	mg/kg		8260B	12/30/14	81
Toluene	41.	0.35	5.4	mg/kg		8260B	01/02/15	810
1,2,4-Trimethylbenzene	29.	0.17	1.1	mg/kg		8260B	01/02/15	810
1,3,5-Trimethylbenzene	11.	0.022	0.11	mg/kg		8260B	12/30/14	81
Xylenes, Total	91.	0.56	3.2	mg/kg		8260B	01/02/15	810
Surrogate Recovery								
Toluene-d8	97.1			% Rec.		8260B	12/30/14	1
Dibromofluoromethane	90.5			% Rec.		8260B	12/30/14	1
4-Bromofluorobenzene	113.			% Rec.		8260B	12/30/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 05,2015

ESC Sample # : L740649-02

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 23, 2014
Description : Pilot Test Soil

Sample ID : TRENCH-POST 2

Collected By : Swogger/Rogers
Collection Date : 12/22/14 09:20

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	76.6	0.0333		%		2540 G-2	12/30/14	1
Volatile Organics								
Benzene	6.0	0.011	0.054	mg/kg		8260B	12/30/14	41
Ethylbenzene	8.4	0.012	0.054	mg/kg		8260B	12/30/14	41
Isopropylbenzene	0.98	0.010	0.054	mg/kg		8260B	12/30/14	41
Methyl tert-butyl ether	U	0.0087	0.054	mg/kg		8260B	12/30/14	41
Naphthalene	2.1	0.041	0.27	mg/kg		8260B	12/30/14	41
Toluene	3.9	0.018	0.27	mg/kg		8260B	12/30/14	41
1,2,4-Trimethylbenzene	17.	0.086	0.54	mg/kg		8260B	01/02/15	410
1,3,5-Trimethylbenzene	5.5	0.011	0.054	mg/kg		8260B	12/30/14	41
Xylenes, Total	36.	0.29	1.6	mg/kg		8260B	01/02/15	410
Surrogate Recovery								
Toluene-d8	95.0			% Rec.		8260B	12/30/14	1
Dibromofluoromethane	91.0			% Rec.		8260B	12/30/14	1
4-Bromofluorobenzene	107.			% Rec.		8260B	12/30/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Pilot Test Soil

City/Sate Collected: Kittanning, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE-SS

Collected by: Swogger & Rogers

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y X

Rush? (Lab MUST be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / NaBIS/Syr/MeOH	VOC Screen / 2ozClr / no pres	Total Solids / 4ozClr / no pres	Remarks/Contaminant	Sample # (lab only)
Trench-Post 1	Grab	SS		12/22/14	09:00	5	X	X	X		L770649-01
Trench-Post 2	Grab	SS		12/22/14	09:20	5	X	X	X		-02

Analysis/Container/Preservative

Chain of Custody Page 1 of 1

Prepared by:

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Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
B205

CoCode (lab use only)

Template/Prelogin

Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: DI Priority 6171 2091 3527

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	12-22-14	15:30	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____

Temp: 2.1°C | Bottles Received: 10

Date: 12/23/14 | Time: 0900

Condition: (OK) (lab use only) TD

COC SE

pH Checked: | NCF:

ATTACHMENT D

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Tuesday July 22, 2014

Report Number: L710065
Samples Received: 07/15/14
Client Project: VALLEY VILLAGE

Description: Groundwater

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 22, 2014

ESC Sample # : L710065-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : July 15, 2014
Description : Groundwater

Sample ID : MW-1

Collected By : George Mueller
Collection Date : 07/10/14 13:18

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	14000	83.	250	ug/l		8260B	07/16/14	250
Ethylbenzene	1800	96.	250	ug/l		8260B	07/16/14	250
Isopropylbenzene	U	82.	250	ug/l		8260B	07/16/14	250
Methyl tert-butyl ether	U	92.	250	ug/l		8260B	07/16/14	250
Naphthalene	U	250	1300	ug/l		8260B	07/16/14	250
Toluene	17000	200	1300	ug/l		8260B	07/16/14	250
1,2,4-Trimethylbenzene	990	93.	250	ug/l		8260B	07/16/14	250
1,3,5-Trimethylbenzene	260	97.	250	ug/l		8260B	07/16/14	250
Xylenes, Total	10000	260	750	ug/l		8260B	07/16/14	250
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	07/16/14	250
Dibromofluoromethane	100.			% Rec.		8260B	07/16/14	250
4-Bromofluorobenzene	102.			% Rec.		8260B	07/16/14	250

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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.
Reported: 07/22/14 12:11 Printed: 07/22/14 12:11

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 22, 2014

ESC Sample # : L710065-02

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : July 15, 2014
Description : Groundwater

Sample ID : MW-2

Collected By : George Mueller
Collection Date : 07/10/14 15:09

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	07/16/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	07/16/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	07/16/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	07/16/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	07/16/14	1
Toluene	U	0.78	5.0	ug/l		8260B	07/16/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	07/16/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	07/16/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	07/16/14	1
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	07/16/14	1
Dibromofluoromethane	106.			% Rec.		8260B	07/16/14	1
4-Bromofluorobenzene	102.			% Rec.		8260B	07/16/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 22, 2014

ESC Sample # : L710065-03

Date Received : July 15, 2014
Description : Groundwater

Site ID : 03-06500

Sample ID : MW-3

Project # : VALLEY VILLAGE

Collected By : George Mueller
Collection Date : 07/10/14 16:50

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	4600	8.3	25.	ug/l		8260B	07/16/14	25
Ethylbenzene	280	9.6	25.	ug/l		8260B	07/16/14	25
Isopropylbenzene	14.	8.2	25.	ug/l	J	8260B	07/16/14	25
Methyl tert-butyl ether	120	9.2	25.	ug/l		8260B	07/16/14	25
Naphthalene	71.	25.	130	ug/l	J	8260B	07/16/14	25
Toluene	1300	20.	130	ug/l		8260B	07/16/14	25
1,2,4-Trimethylbenzene	650	9.3	25.	ug/l		8260B	07/16/14	25
1,3,5-Trimethylbenzene	230	9.7	25.	ug/l		8260B	07/16/14	25
Xylenes, Total	3700	26.	75.	ug/l		8260B	07/16/14	25
Surrogate Recovery								
Toluene-d8	100.			% Rec.		8260B	07/16/14	25
Dibromofluoromethane	93.7			% Rec.		8260B	07/16/14	25
4-Bromofluorobenzene	106.			% Rec.		8260B	07/16/14	25

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 22, 2014

ESC Sample # : L710065-04

Date Received : July 15, 2014
Description : Groundwater

Site ID : 03-06500

Sample ID : MW-4

Project # : VALLEY VILLAGE

Collected By : George Mueller
Collection Date : 07/10/14 16:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	9000	33.	100	ug/l		8260B	07/19/14	100
Ethylbenzene	470	38.	100	ug/l		8260B	07/19/14	100
Isopropylbenzene	38.	33.	100	ug/l	J	8260B	07/19/14	100
Methyl tert-butyl ether	430	37.	100	ug/l		8260B	07/19/14	100
Naphthalene	200	100	500	ug/l	J	8260B	07/19/14	100
Toluene	13000	78.	500	ug/l		8260B	07/19/14	100
1,2,4-Trimethylbenzene	1400	37.	100	ug/l		8260B	07/19/14	100
1,3,5-Trimethylbenzene	370	39.	100	ug/l		8260B	07/19/14	100
Xylenes, Total	10000	110	300	ug/l		8260B	07/19/14	100
Surrogate Recovery								
Toluene-d8	97.4			% Rec.		8260B	07/19/14	100
Dibromofluoromethane	89.6			% Rec.		8260B	07/19/14	100
4-Bromofluorobenzene	96.1			% Rec.		8260B	07/19/14	100

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 22, 2014

ESC Sample # : L710065-05

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : July 15, 2014
Description : Groundwater

Sample ID : MW-5

Collected By : George Mueller
Collection Date : 07/10/14 14:17

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	07/18/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	07/18/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	07/18/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	07/18/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	07/18/14	1
Toluene	U	0.78	5.0	ug/l		8260B	07/18/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	07/18/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	07/18/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	07/18/14	1
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	07/18/14	1
Dibromofluoromethane	102.			% Rec.		8260B	07/18/14	1
4-Bromofluorobenzene	106.			% Rec.		8260B	07/18/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

July 22, 2014

ESC Sample # : L710065-06

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : July 15, 2014
Description : Groundwater

Sample ID : MW-51

Collected By : George Mueller
Collection Date : 07/10/14 13:30

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	14000	33.	100	ug/l		8260B	07/19/14	100
Ethylbenzene	1900	38.	100	ug/l		8260B	07/19/14	100
Isopropylbenzene	63.	33.	100	ug/l	J	8260B	07/19/14	100
Methyl tert-butyl ether	U	37.	100	ug/l		8260B	07/19/14	100
Naphthalene	270	100	500	ug/l	J	8260B	07/19/14	100
Toluene	17000	78.	500	ug/l		8260B	07/19/14	100
1,2,4-Trimethylbenzene	1200	37.	100	ug/l		8260B	07/19/14	100
1,3,5-Trimethylbenzene	290	39.	100	ug/l		8260B	07/19/14	100
Xylenes, Total	11000	110	300	ug/l		8260B	07/19/14	100
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	07/19/14	100
Dibromofluoromethane	97.9			% Rec.		8260B	07/19/14	100
4-Bromofluorobenzene	95.0			% Rec.		8260B	07/19/14	100

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L710065-03	WG731900	SAMP	Isopropylbenzene	R2964111	J
	WG731900	SAMP	Naphthalene	R2964111	J
L710065-04	WG732560	SAMP	Isopropylbenzene	R2965526	J
	WG732560	SAMP	Naphthalene	R2965526	J
L710065-06	WG732581	SAMP	Isopropylbenzene	R2966165	J
	WG732581	SAMP	Naphthalene	R2966165	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Groundwater

City/State Collected: Kittanning, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: Valley Village

ESC Key: INSITE-GW

Collected by: George Mueller

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature): George Mueller

Packed on Ice: N (Y)

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Analysis/Container/Preservative

Chain of Custody Page 1 of 1

Prepared by: A028

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CoCode (lab use only)

Template/Prelogin

Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / HCl	Remarks/Contaminant	Sample # (lab only)
MW-1	Grab	GW		07/10/14	1318	2	X	L710065	-01
MW-2	Grab	GW		07/10/14	1509	2	X		-02
MW-3	Grab	GW		07/10/14	1650	2	X		-03
MW-4	Grab	GW		07/10/14	1600	2	X		-04
MW-5	Grab	GW		07/10/14	1417	2	X		-05
MW-51	Grab	GW		07/10/14	1330	2	X		-06
									-07
									-08

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____

Remarks: D1 Priority 6089 7168 1921

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____	Condition: (lab use only)
Justin Kelly	7/14/14	1436			DK JWS cec 93
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.7 / Bottles Received: 12VP	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 7-15-14 / Time: 0900	pH Checked: / NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Friday September 12, 2014

Report Number: L720098
Samples Received: 09/05/14
Client Project: VALLEY VILLAGE

Description: Groundwater

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 12, 2014

ESC Sample # : L720098-01

Date Received : September 05, 2014
Description : Groundwater

Site ID : 03-06500

Sample ID : MW-6

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 09/03/14 12:17

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	09/08/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	09/08/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	09/08/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	09/08/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	09/08/14	1
Toluene	U	0.78	5.0	ug/l		8260B	09/08/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	09/08/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	09/08/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	09/08/14	1
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	09/08/14	1
Dibromofluoromethane	102.			% Rec.		8260B	09/08/14	1
4-Bromofluorobenzene	104.			% Rec.		8260B	09/08/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 12, 2014

ESC Sample # : L720098-02

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : September 05, 2014
Description : Groundwater

Sample ID : MW-7

Collected By : Adam Gaines
Collection Date : 09/03/14 13:34

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	09/08/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	09/08/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	09/08/14	1
Methyl tert-butyl ether	1.5	0.37	1.0	ug/l		8260B	09/08/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	09/08/14	1
Toluene	U	0.78	5.0	ug/l		8260B	09/08/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	09/08/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	09/08/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	09/08/14	1
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	09/08/14	1
Dibromofluoromethane	101.			% Rec.		8260B	09/08/14	1
4-Bromofluorobenzene	107.			% Rec.		8260B	09/08/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 12, 2014

ESC Sample # : L720098-03

Date Received : September 05, 2014
Description : Groundwater

Site ID : 03-06500

Sample ID : MW-8

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 09/03/14 15:54

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	30.	0.33	1.0	ug/l		8260B	09/08/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	09/08/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	09/08/14	1
Methyl tert-butyl ether	340	3.7	10.	ug/l		8260B	09/11/14	10
Naphthalene	U	1.0	5.0	ug/l		8260B	09/08/14	1
Toluene	U	0.78	5.0	ug/l		8260B	09/08/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	09/08/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	09/08/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	09/08/14	1
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	09/08/14	1
Dibromofluoromethane	99.6			% Rec.		8260B	09/08/14	1
4-Bromofluorobenzene	104.			% Rec.		8260B	09/08/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 12, 2014

ESC Sample # : L720098-04

Date Received : September 05, 2014
Description : Groundwater

Site ID : 03-06500

Sample ID : MW-9

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 09/03/14 14:12

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	09/08/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	09/08/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	09/08/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	09/08/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	09/08/14	1
Toluene	U	0.78	5.0	ug/l		8260B	09/08/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	09/08/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	09/08/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	09/08/14	1
Surrogate Recovery								
Toluene-d8	98.3			% Rec.		8260B	09/08/14	1
Dibromofluoromethane	97.0			% Rec.		8260B	09/08/14	1
4-Bromofluorobenzene	92.4			% Rec.		8260B	09/08/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 12, 2014

ESC Sample # : L720098-05

Date Received : September 05, 2014
Description : Groundwater

Site ID : 03-06500

Sample ID : MW-10

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 09/03/14 14:41

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	09/10/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	09/10/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	09/10/14	1
Methyl tert-butyl ether	84.	0.37	1.0	ug/l		8260B	09/10/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	09/10/14	1
Toluene	U	0.78	5.0	ug/l		8260B	09/10/14	1
1,2,4-Trimethylbenzene	0.52	0.37	1.0	ug/l	J	8260B	09/10/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	09/10/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	09/10/14	1
Surrogate Recovery								
Toluene-d8	97.0			% Rec.		8260B	09/10/14	1
Dibromofluoromethane	99.9			% Rec.		8260B	09/10/14	1
4-Bromofluorobenzene	97.1			% Rec.		8260B	09/10/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 12, 2014

ESC Sample # : L720098-06

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : September 05, 2014
Description : Groundwater

Sample ID : MW-11

Collected By : Adam Gaines
Collection Date : 09/03/14 15:20

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	09/10/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	09/10/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	09/10/14	1
Methyl tert-butyl ether	0.45	0.37	1.0	ug/l	J	8260B	09/10/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	09/10/14	1
Toluene	U	0.78	5.0	ug/l		8260B	09/10/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	09/10/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	09/10/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	09/10/14	1
Surrogate Recovery								
Toluene-d8	96.9			% Rec.		8260B	09/10/14	1
Dibromofluoromethane	96.2			% Rec.		8260B	09/10/14	1
4-Bromofluorobenzene	95.8			% Rec.		8260B	09/10/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 12, 2014

ESC Sample # : L720098-07

Date Received : September 05, 2014
Description : Groundwater

Site ID : 03-06500

Sample ID : MW-51

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 09/03/14 16:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	31.	0.33	1.0	ug/l		8260B	09/10/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	09/10/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	09/10/14	1
Methyl tert-butyl ether	360	3.7	10.	ug/l		8260B	09/12/14	10
Naphthalene	U	1.0	5.0	ug/l		8260B	09/10/14	1
Toluene	U	0.78	5.0	ug/l		8260B	09/10/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	09/10/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	09/10/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	09/10/14	1
Surrogate Recovery								
Toluene-d8	97.2			% Rec.		8260B	09/10/14	1
Dibromofluoromethane	95.4			% Rec.		8260B	09/10/14	1
4-Bromofluorobenzene	97.0			% Rec.		8260B	09/10/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 12, 2014

ESC Sample # : L720098-08

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : September 05, 2014
Description : Groundwater

Sample ID : PT-1

Collected By : Adam Gaines
Collection Date : 09/03/14 13:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	2800	16.	50.	ug/l		8260B	09/12/14	50
Ethylbenzene	170	3.8	10.	ug/l		8260B	09/08/14	10
Isopropylbenzene	24.	3.3	10.	ug/l		8260B	09/08/14	10
Methyl tert-butyl ether	160	3.7	10.	ug/l		8260B	09/08/14	10
Naphthalene	29.	10.	50.	ug/l	J	8260B	09/08/14	10
Toluene	6400	39.	250	ug/l		8260B	09/12/14	50
1,2,4-Trimethylbenzene	660	3.7	10.	ug/l		8260B	09/08/14	10
1,3,5-Trimethylbenzene	260	3.9	10.	ug/l		8260B	09/08/14	10
Xylenes, Total	4600	11.	30.	ug/l		8260B	09/08/14	10
Surrogate Recovery								
Toluene-d8	99.4			% Rec.		8260B	09/08/14	10
Dibromofluoromethane	88.7			% Rec.		8260B	09/08/14	10
4-Bromofluorobenzene	93.9			% Rec.		8260B	09/08/14	10

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L720098-05	WG741960	SAMP	1,2,4-Trimethylbenzene	R2987867	J
L720098-06	WG741960	SAMP	Methyl tert-butyl ether	R2987867	J
L720098-08	WG741527	SAMP	Naphthalene	R2986818	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Groundwater
City/Sate Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139
Client Project #: Valley Village
ESC Key: INSITE-GW

Collected by: Adam Gaines
Site/Facility ID#: 03-06500
P.O.#:

Collected by (signature):
Picked on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day. 200%
____ Next Day. 100%
____ Two Day 50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	v8260 UGPA / 40 mL Amb / HCl	Remarks/Contaminant	Sample # (lab only)
MW-6	Grab	GW		09/03/14	1217	2	X		L720048-01
MW-7	Grab	GW		09/03/14	1334	2	X		-02
MW-8	Grab	GW		09/03/14	1554	2	X		-03
MW-9	Grab	GW		09/03/14	1412	2	X		-04
MW-10	Grab	GW		09/03/14	1441	2	X		-05
MW-11	Grab	GW		09/03/14	1520	2	X		-06
MW-51	Grab	GW		09/03/14	1600	2	X		-07
PT-1	Grab	GW		09/03/14	1300	2	X		-08

Chain of Custody Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
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Mt. Juliet, TN 37122
Phone (615) 758-5858
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FAX (615) 758-5859

1053

CoCode (lab use only)
Template/Prelogin
Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: D1 Priority

6089 7168 1163

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	9/4/14	1330	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐

Temp: 3.7° Bottles Received: 16 VPE 16

Condition: 5 (lab use only) GW

Date: 9/5/14 Time: 0900

pH Checked: NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Friday December 05, 2014

Report Number: L735997
Samples Received: 11/26/14
Client Project: VALLEY VILLAGE

Description: Pilot Test

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 05, 2014

ESC Sample # : L735997-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : November 26, 2014
Description : Pilot Test

Sample ID : MW-3

Collected By : Sara Giordano
Collection Date : 11/24/14 09:15

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	1400	77.	5000	ug/l	J	9056MOD	12/04/14	1
Sodium	370000	98.	1000	ug/l		6010B	12/02/14	1
Volatile Organics								
Benzene	7600	16.	50.	ug/l		8260B	12/02/14	50
Ethylbenzene	2000	19.	50.	ug/l		8260B	12/02/14	50
Isopropylbenzene	73.	16.	50.	ug/l		8260B	12/02/14	50
Methyl tert-butyl ether	55.	18.	50.	ug/l		8260B	12/02/14	50
Naphthalene	250	50.	250	ug/l	J	8260B	12/02/14	50
Toluene	1400	39.	250	ug/l		8260B	12/02/14	50
1,2,4-Trimethylbenzene	970	19.	50.	ug/l		8260B	12/02/14	50
1,3,5-Trimethylbenzene	280	19.	50.	ug/l		8260B	12/02/14	50
Xylenes, Total	5500	53.	150	ug/l		8260B	12/02/14	50
Surrogate Recovery								
Toluene-d8	112.			% Rec.	J1	8260B	12/02/14	50
Dibromofluoromethane	83.0			% Rec.		8260B	12/02/14	50
4-Bromofluorobenzene	107.			% Rec.		8260B	12/02/14	50

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 05, 2014

ESC Sample # : L735997-02

Date Received : November 26, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : MW-3

Project # : VALLEY VILLAGE

Collected By : Sara Giordano
Collection Date : 11/24/14 12:20

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	940	77.	5000	ug/l	J	9056MOD	12/04/14	1
Sodium	370000	98.	1000	ug/l		6010B	12/02/14	1
Volatile Organics								
Benzene	7600	66.	200	ug/l		8260B	12/04/14	200
Ethylbenzene	1900	9.6	25.	ug/l		8260B	12/02/14	25
Isopropylbenzene	72.	8.2	25.	ug/l		8260B	12/02/14	25
Methyl tert-butyl ether	53.	9.2	25.	ug/l		8260B	12/02/14	25
Naphthalene	250	25.	130	ug/l		8260B	12/02/14	25
Toluene	1200	20.	130	ug/l		8260B	12/02/14	25
1,2,4-Trimethylbenzene	840	9.3	25.	ug/l		8260B	12/02/14	25
1,3,5-Trimethylbenzene	260	9.7	25.	ug/l		8260B	12/02/14	25
Xylenes, Total	4700	26.	75.	ug/l		8260B	12/02/14	25
Surrogate Recovery								
Toluene-d8	110.			% Rec.		8260B	12/02/14	25
Dibromofluoromethane	81.2			% Rec.		8260B	12/02/14	25
4-Bromofluorobenzene	105.			% Rec.		8260B	12/02/14	25

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 05, 2014

ESC Sample # : L735997-03

Date Received : November 26, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : MW-8

Project # : VALLEY VILLAGE

Collected By : Sara Giordano
Collection Date : 11/24/14 09:31

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	30000	77.	5000	ug/l		9056MOD	12/04/14	1
Sodium	140000	98.	1000	ug/l		6010B	12/02/14	1
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/02/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/02/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/02/14	1
Methyl tert-butyl ether	27.	0.37	1.0	ug/l		8260B	12/02/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/02/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/02/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/02/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/02/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/02/14	1
Surrogate Recovery								
Toluene-d8	111.			% Rec.		8260B	12/02/14	1
Dibromofluoromethane	91.2			% Rec.		8260B	12/02/14	1
4-Bromofluorobenzene	106.			% Rec.		8260B	12/02/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 05, 2014

ESC Sample # : L735997-04

Date Received : November 26, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : MW-10

Project # : VALLEY VILLAGE

Collected By : Sara Giordano
Collection Date : 11/24/14 09:41

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	29000	77.	5000	ug/l		9056MOD	12/04/14	1
Sodium	19000	98.	1000	ug/l		6010B	12/02/14	1
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/02/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/02/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/02/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	12/02/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/02/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/02/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/02/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/02/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/02/14	1
Surrogate Recovery								
Toluene-d8	114.			% Rec.	J1	8260B	12/02/14	1
Dibromofluoromethane	87.0			% Rec.		8260B	12/02/14	1
4-Bromofluorobenzene	106.			% Rec.		8260B	12/02/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L735997-01	WG757177	SAMP	Naphthalene	R3007986	J
	WG757177	SAMP	Toluene-d8	R3007986	J1
	WG758096	SAMP	Sulfate	R3008277	J
L735997-02	WG758096	SAMP	Sulfate	R3008277	J
L735997-04	WG757177	SAMP	Toluene-d8	R3007986	J1

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information: INSITE0800614S

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Pilot Test

City/State Collected: KITTANNING, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE080614S

Collected by: Sara Giordano

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature): Sara Giordano

Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / HCl	Sodium / 250mLHEDP/HNO3	Sulfate/250 HDPE / no pres	Remarks/Contaminant	Sample # (lab only)
MW-3	Grab	GW		11-24-14	9:15	4	X	X	X		L735997-01
MW-3	Grab	GW		11-24-14	12:20	4	X	X	X		02
MW-8	Grab	GW		11-24-14	9:31	4	X	X	X		03
MW-10	Grab	GW		11-24-14	9:41	4	X	X	X		04

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Chain of Custody Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

D169

CoCode (lab use only)

Template/Prelogin

Shipped Via:

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature) 617 2091 3582
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 2.4°C

Bottles Received: 16

Date: 11/26/14

Time: 09:20

Condition: COC'd (lab use only)

pH Checked: 4.2

NCF:

ESC
L·A·B S·C·I·E·N·C·E·S
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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Wednesday December 17, 2014

Report Number: L738151
Samples Received: 12/10/14
Client Project: VALLEY VILLAGE

Description: Quarterly Groundwater Monitoring

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-01

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-1

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 16:16

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	9200	83.	250	ug/l		8260B	12/12/14	250
Ethylbenzene	2100	96.	250	ug/l		8260B	12/12/14	250
Isopropylbenzene	100	82.	250	ug/l	J	8260B	12/12/14	250
Methyl tert-butyl ether	U	92.	250	ug/l		8260B	12/12/14	250
Naphthalene	330	250	1300	ug/l	J	8260B	12/12/14	250
Toluene	11000	200	1300	ug/l		8260B	12/12/14	250
1,2,4-Trimethylbenzene	1700	93.	250	ug/l		8260B	12/12/14	250
1,3,5-Trimethylbenzene	460	97.	250	ug/l		8260B	12/12/14	250
Xylenes, Total	11000	260	750	ug/l		8260B	12/12/14	250
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	12/12/14	250
Dibromofluoromethane	98.5			% Rec.		8260B	12/12/14	250
4-Bromofluorobenzene	98.5			% Rec.		8260B	12/12/14	250

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-02

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-2

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 15:37

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/12/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/12/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/12/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	12/12/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/12/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/12/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/12/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/12/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/12/14	1
Surrogate Recovery								
Toluene-d8	99.3			% Rec.		8260B	12/12/14	1
Dibromofluoromethane	101.			% Rec.		8260B	12/12/14	1
4-Bromofluorobenzene	98.3			% Rec.		8260B	12/12/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-03

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-3

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 15:34

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	6300	33.	100	ug/l		8260B	12/16/14	100
Ethylbenzene	1400	38.	100	ug/l		8260B	12/16/14	100
Isopropylbenzene	52.	33.	100	ug/l	J	8260B	12/16/14	100
Methyl tert-butyl ether	51.	37.	100	ug/l	J	8260B	12/16/14	100
Naphthalene	140	100	500	ug/l	J	8260B	12/16/14	100
Toluene	2000	78.	500	ug/l		8260B	12/16/14	100
1,2,4-Trimethylbenzene	680	37.	100	ug/l		8260B	12/16/14	100
1,3,5-Trimethylbenzene	230	39.	100	ug/l		8260B	12/16/14	100
Xylenes, Total	3800	110	300	ug/l		8260B	12/16/14	100
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/16/14	100
Dibromofluoromethane	88.8			% Rec.		8260B	12/16/14	100
4-Bromofluorobenzene	98.4			% Rec.		8260B	12/16/14	100

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-04

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-4

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 15:58

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	7200	33.	100	ug/l		8260B	12/16/14	100
Ethylbenzene	1400	38.	100	ug/l		8260B	12/16/14	100
Isopropylbenzene	70.	33.	100	ug/l	J	8260B	12/16/14	100
Methyl tert-butyl ether	300	37.	100	ug/l		8260B	12/16/14	100
Naphthalene	150	100	500	ug/l	J	8260B	12/16/14	100
Toluene	6100	78.	500	ug/l		8260B	12/16/14	100
1,2,4-Trimethylbenzene	1300	37.	100	ug/l		8260B	12/16/14	100
1,3,5-Trimethylbenzene	360	39.	100	ug/l		8260B	12/16/14	100
Xylenes, Total	6600	110	300	ug/l		8260B	12/16/14	100
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/16/14	100
Dibromofluoromethane	88.4			% Rec.		8260B	12/16/14	100
4-Bromofluorobenzene	98.8			% Rec.		8260B	12/16/14	100

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-05

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-5

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 15:48

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	0.36	0.33	1.0	ug/l	J	8260B	12/16/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/16/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/16/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	12/16/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/16/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/16/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/16/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/16/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/16/14	1
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/16/14	1
Dibromofluoromethane	93.5			% Rec.		8260B	12/16/14	1
4-Bromofluorobenzene	98.4			% Rec.		8260B	12/16/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-06

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-6

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 15:25

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/16/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/16/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/16/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	12/16/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/16/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/16/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/16/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/16/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/16/14	1
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/16/14	1
Dibromofluoromethane	92.2			% Rec.		8260B	12/16/14	1
4-Bromofluorobenzene	97.5			% Rec.		8260B	12/16/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-07

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-7

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 16:19

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/16/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/16/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/16/14	1
Methyl tert-butyl ether	0.65	0.37	1.0	ug/l	J	8260B	12/16/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/16/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/16/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/16/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/16/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/16/14	1
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	12/16/14	1
Dibromofluoromethane	92.3			% Rec.		8260B	12/16/14	1
4-Bromofluorobenzene	100.			% Rec.		8260B	12/16/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-08

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-8

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 15:51

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	230	1.6	5.0	ug/l		8260B	12/16/14	5
Ethylbenzene	6.1	1.9	5.0	ug/l		8260B	12/16/14	5
Isopropylbenzene	2.9	1.6	5.0	ug/l	J	8260B	12/16/14	5
Methyl tert-butyl ether	310	1.8	5.0	ug/l		8260B	12/16/14	5
Naphthalene	U	5.0	25.	ug/l		8260B	12/16/14	5
Toluene	U	3.9	25.	ug/l		8260B	12/16/14	5
1,2,4-Trimethylbenzene	U	1.9	5.0	ug/l		8260B	12/16/14	5
1,3,5-Trimethylbenzene	U	1.9	5.0	ug/l		8260B	12/16/14	5
Xylenes, Total	U	5.3	15.	ug/l		8260B	12/16/14	5
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/16/14	5
Dibromofluoromethane	89.9			% Rec.		8260B	12/16/14	5
4-Bromofluorobenzene	95.7			% Rec.		8260B	12/16/14	5

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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Est. 1970

REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-09

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-9

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 16:09

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/16/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/12/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/12/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	12/16/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/12/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/12/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/12/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/12/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/12/14	1
Surrogate Recovery								
Toluene-d8	99.9			% Rec.		8260B	12/12/14	1
Dibromofluoromethane	101.			% Rec.		8260B	12/12/14	1
4-Bromofluorobenzene	99.3			% Rec.		8260B	12/12/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-10

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-10

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 16:03

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/16/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/12/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/12/14	1
Methyl tert-butyl ether	120	0.37	1.0	ug/l		8260B	12/12/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/12/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/12/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/12/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/12/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/12/14	1
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/12/14	1
Dibromofluoromethane	100.			% Rec.		8260B	12/12/14	1
4-Bromofluorobenzene	101.			% Rec.		8260B	12/12/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-11

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-11

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 16:29

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/16/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/12/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/12/14	1
Methyl tert-butyl ether	1.0	0.37	1.0	ug/l		8260B	12/12/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/12/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/12/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/12/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/12/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/12/14	1
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/12/14	1
Dibromofluoromethane	100.			% Rec.		8260B	12/12/14	1
4-Bromofluorobenzene	98.8			% Rec.		8260B	12/12/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-12

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Sample ID : MW-51

Collected By : Gaines and Mueller
Collection Date : 12/04/14 15:45

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	6900	33.	100	ug/l		8260B	12/16/14	100
Ethylbenzene	1500	3.8	10.	ug/l		8260B	12/12/14	10
Isopropylbenzene	55.	3.3	10.	ug/l		8260B	12/12/14	10
Methyl tert-butyl ether	50.	3.7	10.	ug/l		8260B	12/12/14	10
Naphthalene	200	10.	50.	ug/l		8260B	12/12/14	10
Toluene	2000	7.8	50.	ug/l		8260B	12/12/14	10
1,2,4-Trimethylbenzene	730	3.7	10.	ug/l		8260B	12/12/14	10
1,3,5-Trimethylbenzene	220	3.9	10.	ug/l		8260B	12/12/14	10
Xylenes, Total	3700	11.	30.	ug/l		8260B	12/12/14	10
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/12/14	10
Dibromofluoromethane	87.1			% Rec.		8260B	12/12/14	10
4-Bromofluorobenzene	104.			% Rec.		8260B	12/12/14	10

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 17, 2014

ESC Sample # : L738151-13

Date Received : December 10, 2014
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : PT-1

Project # : VALLEY VILLAGE

Collected By : Gaines and Mueller
Collection Date : 12/04/14 16:22

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	1800	3.3	10.	ug/l		8260B	12/12/14	10
Ethylbenzene	710	3.8	10.	ug/l		8260B	12/12/14	10
Isopropylbenzene	52.	3.3	10.	ug/l		8260B	12/12/14	10
Methyl tert-butyl ether	240	3.7	10.	ug/l		8260B	12/12/14	10
Naphthalene	110	10.	50.	ug/l		8260B	12/12/14	10
Toluene	1100	7.8	50.	ug/l		8260B	12/12/14	10
1,2,4-Trimethylbenzene	910	3.7	10.	ug/l		8260B	12/12/14	10
1,3,5-Trimethylbenzene	300	3.9	10.	ug/l		8260B	12/12/14	10
Xylenes, Total	3600	11.	30.	ug/l		8260B	12/12/14	10
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	12/12/14	10
Dibromofluoromethane	93.1			% Rec.		8260B	12/12/14	10
4-Bromofluorobenzene	101.			% Rec.		8260B	12/12/14	10

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L738151-01	WG759277	SAMP	Isopropylbenzene	R3010053	J
	WG759277	SAMP	Naphthalene	R3010053	J
L738151-03	WG760145	SAMP	Isopropylbenzene	R3010285	J
	WG760145	SAMP	Methyl tert-butyl ether	R3010285	J
	WG760145	SAMP	Naphthalene	R3010285	J
L738151-04	WG760145	SAMP	Isopropylbenzene	R3010285	J
	WG760145	SAMP	Naphthalene	R3010285	J
L738151-05	WG760145	SAMP	Benzene	R3010285	J
L738151-07	WG760145	SAMP	Methyl tert-butyl ether	R3010285	J
L738151-08	WG760145	SAMP	Isopropylbenzene	R3010285	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information: INSITE080614S

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: QUARTERLY GROUNDWATER MONITORING

City/State Collected: KITTANNING, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE080614S

Collected by: Gaines and Mueller

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day..... 200%
____ Next Day..... 100%
____ Two Day..... 50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Analysis/Container/Preservative: V8260UGPA / 40mlAmb / HCl	Remarks/Contaminant	Sample # (lab only)
MW-1	Grab	GW		12/04/14	1616	2	X		-01
MW-2	Grab	GW		12/04/14	1537	2	X		-02
MW-3	Grab	GW		12/04/14	1534	2	X		-03
MW-4	Grab	GW		12/04/14	1558	2	X		-04
MW-5	Grab	GW		12/04/14	1548	2	X		-05
MW-6	Grab	GW		12/04/14	1525	2	X		-06
MW-7	Grab	GW		12/04/14	1619	2	X		-07
MW-8	Grab	GW		12/04/14	1551	2	X		-08
MW-9	Grab	GW		12/04/14	1609	2	X		-09

Chain of Custody Page 1 of 2

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

J209

CoCode (lab use only)

Template/Prelogin

Shipped Via: L778151

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: D1 PRIORITY

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	12/8/14	1532	6171 2086 9443
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1

Bottles Received: 26 VP

Date: 12/10/14

Time: 09:00

Condition: (lab use only) JWS COC'S OK

pH Checked:

NCF:

Chain of Custody Page 2 of 2

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information: INSITE080614S

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: QUARTERLY GROUNDWATER MONITORING

City/State Collected: KITTANNING, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE080614S

Collected by: Gaines and Mueller

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes
FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / HCl	Remarks/Contaminant	Sample # (lab use only)
MW-10	Grab	GW		12/04/14	1603	2	X		-10
MW-11	Grab	GW		12/04/14	1629	2	X		-11
MW-51	Grab	GW		12/04/14	1545	2	X		-12
PT-1	Grab	GW		12/04/14	1622	2	X		-13

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
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Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

CoCode (lab use only)
Template/Prelogin
Shipped Via: 173151

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____
Flow _____ Other _____

Remarks: D1 PRIORITY

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Kristin Kelly	12/8/14	1522	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐_____

Temp: 3.1 Bottles Received: 26 VP

Date: 12/10/14 Time: 09:40

Condition: (lab use only) JWS COC52

pH Checked: NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Tuesday December 16, 2014

Report Number: L738121
Samples Received: 12/10/14
Client Project: VALLEY VILLAGE

Description: Pilot Test

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 16, 2014

ESC Sample # : L738121-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 10, 2014
Description : Pilot Test

Sample ID : STANDPIPE

Collected By : Adam Gaines
Collection Date : 12/04/14 15:11

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	310000	770	50000	ug/l		9056MOD	12/16/14	10
Sodium	670000	490	5000	ug/l		6010B	12/12/14	5
Volatile Organics								
Benzene	29.	0.33	1.0	ug/l		8260B	12/12/14	1
Ethylbenzene	51.	0.38	1.0	ug/l		8260B	12/12/14	1
Isopropylbenzene	6.7	0.33	1.0	ug/l		8260B	12/12/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	12/12/14	1
Naphthalene	2.5	1.0	5.0	ug/l	J	8260B	12/12/14	1
Toluene	32.	0.78	5.0	ug/l		8260B	12/12/14	1
1,2,4-Trimethylbenzene	24.	0.37	1.0	ug/l		8260B	12/12/14	1
1,3,5-Trimethylbenzene	0.69	0.39	1.0	ug/l	J	8260B	12/12/14	1
Xylenes, Total	120	1.1	3.0	ug/l		8260B	12/12/14	1
Surrogate Recovery								
Toluene-d8	100.			% Rec.		8260B	12/12/14	1
Dibromofluoromethane	98.6			% Rec.		8260B	12/12/14	1
4-Bromofluorobenzene	99.9			% Rec.		8260B	12/12/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 16, 2014

ESC Sample # : L738121-02

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 10, 2014
Description : Pilot Test

Sample ID : MW-3

Collected By : Adam Gaines
Collection Date : 12/04/14 15:34

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	190000	770	50000	ug/l		9056MOD	12/16/14	10

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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Reported: 12/16/14 18:18 Printed: 12/16/14 18:18

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L738121-01	WG759280	SAMP	Naphthalene	R3010041	J
	WG759280	SAMP	1,3,5-Trimethylbenzene	R3010041	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Chain of Custody Page 1 of 1

Prepared by: J208

ENVIRONMENTAL SCIENCE CORP.
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Phone (800) 767-5859
FAX (615) 758-5859

CoCode (lab use only)
Template/Prelogin
Shipped Via:

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Pilot Test
City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139
Client Project #: Valley Village
ESC Key: INSITE-GW

Collected by: Adam Gaines
Site/Facility ID#: 03-06500
P.O.#:

Collected by (signature):
Packed on Ice N Y X

Rush? (Lab MUST Be Notified)
___ Same Day.....200%
___ Next Day.....100%
___ Two Day.....50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / HCl	Sulfate / 250 mL HDPE / no pres	Sodium / 250 mL HDPE / HNO3	Remarks/Contaminant	Sample # (lab only)
Standpipe	Grab	GW		12/04/14	1511	4	X	X	X		L738126-01
MW-3	Grab	GW		12/04/14	1534	1		X			02

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____
Flow _____ Other _____

Remarks: DI Priority

Relinquished by: (Signature) Kristin Kelly	Date: 12/4/14	Time: 1522	Received by: (Signature) (671 2086 7443	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐	Condition: (lab use only) JWS COC52
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.1 / Bottles Received: 5	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 12/5/14 / Time: 09:00	pH Checked: / NCF:

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Est. 1970

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Monday January 05, 2015

Report Number: L740649
Samples Received: 12/23/14
Client Project: VALLEY VILLAGE

Description: Pilot Test Soil

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 05,2015

ESC Sample # : L740649-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 23, 2014
Description : Pilot Test Soil

Sample ID : TRENCH-POST 1

Collected By : Swogger/Rogers
Collection Date : 12/22/14 09:00

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	75.7	0.0333		%		2540 G-2	12/30/14	1
Volatile Organics								
Benzene	9.2	0.022	0.11	mg/kg		8260B	12/30/14	81
Ethylbenzene	21.	0.024	0.11	mg/kg		8260B	12/30/14	81
Isopropylbenzene	2.0	0.020	0.11	mg/kg		8260B	12/30/14	81
Methyl tert-butyl ether	U	0.017	0.11	mg/kg		8260B	12/30/14	81
Naphthalene	5.9	0.081	0.54	mg/kg		8260B	12/30/14	81
Toluene	41.	0.35	5.4	mg/kg		8260B	01/02/15	810
1,2,4-Trimethylbenzene	29.	0.17	1.1	mg/kg		8260B	01/02/15	810
1,3,5-Trimethylbenzene	11.	0.022	0.11	mg/kg		8260B	12/30/14	81
Xylenes, Total	91.	0.56	3.2	mg/kg		8260B	01/02/15	810
Surrogate Recovery								
Toluene-d8	97.1			% Rec.		8260B	12/30/14	1
Dibromofluoromethane	90.5			% Rec.		8260B	12/30/14	1
4-Bromofluorobenzene	113.			% Rec.		8260B	12/30/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 05,2015

ESC Sample # : L740649-02

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 23, 2014
Description : Pilot Test Soil

Sample ID : TRENCH-POST 2

Collected By : Swogger/Rogers
Collection Date : 12/22/14 09:20

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	76.6	0.0333		%		2540 G-2	12/30/14	1
Volatile Organics								
Benzene	6.0	0.011	0.054	mg/kg		8260B	12/30/14	41
Ethylbenzene	8.4	0.012	0.054	mg/kg		8260B	12/30/14	41
Isopropylbenzene	0.98	0.010	0.054	mg/kg		8260B	12/30/14	41
Methyl tert-butyl ether	U	0.0087	0.054	mg/kg		8260B	12/30/14	41
Naphthalene	2.1	0.041	0.27	mg/kg		8260B	12/30/14	41
Toluene	3.9	0.018	0.27	mg/kg		8260B	12/30/14	41
1,2,4-Trimethylbenzene	17.	0.086	0.54	mg/kg		8260B	01/02/15	410
1,3,5-Trimethylbenzene	5.5	0.011	0.054	mg/kg		8260B	12/30/14	41
Xylenes, Total	36.	0.29	1.6	mg/kg		8260B	01/02/15	410
Surrogate Recovery								
Toluene-d8	95.0			% Rec.		8260B	12/30/14	1
Dibromofluoromethane	91.0			% Rec.		8260B	12/30/14	1
4-Bromofluorobenzene	107.			% Rec.		8260B	12/30/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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Reported: 01/05/15 09:23 Printed: 01/05/15 09:23

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Pilot Test Soil

City/Sate Collected: Kittanning, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE-SS

Collected by: Swogger & Rogers

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y X

Rush? (Lab MUST be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / NaBIS/Syr/MeOH	VOC Screen / 2ozClr / no pres	Total Solids / 4ozClr / no pres	Remarks/Contaminant	Sample # (lab only)
Trench-Post 1	Grab	SS		12/22/14	09:00	5	X	X	X		L770649-01
Trench-Post 2	Grab	SS		12/22/14	09:20	5	X	X	X		-02

Analysis/Container/Preservative

Chain of Custody Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
B205

CoCode (lab use only)

Template/Prelogin

Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: DI Priority 6171 2091 3527

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	12-22-14	15:30	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____

Temp: 2.1°C | Bottles Received: 10

Date: 12/23/14 | Time: 0900

Condition: (OK) (lab use only) TD

COC SE

pH Checked: | NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Wednesday December 31, 2014

Report Number: L740125
Samples Received: 12/19/14
Client Project: VALLEY VILLAGE

Description: Pilot Test

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

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FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 31, 2014

ESC Sample # : L740125-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 19, 2014
Description : Pilot Test

Sample ID : MW-3

Collected By : Adam Gaines
Collection Date : 12/18/14 09:07

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	820000	3900	250000	ug/l		9056MOD	12/26/14	50
Sodium	660000	98.	1000	ug/l		6010B	12/22/14	1
Volatile Organics								
Benzene	4600	83.	250	ug/l		8260B	12/27/14	250
Ethylbenzene	1500	96.	250	ug/l		8260B	12/27/14	250
Isopropylbenzene	U	82.	250	ug/l		8260B	12/27/14	250
Methyl tert-butyl ether	U	92.	250	ug/l		8260B	12/27/14	250
Naphthalene	300	250	1300	ug/l	J	8260B	12/27/14	250
Toluene	3100	200	1300	ug/l		8260B	12/27/14	250
1,2,4-Trimethylbenzene	1400	93.	250	ug/l		8260B	12/27/14	250
1,3,5-Trimethylbenzene	340	97.	250	ug/l		8260B	12/27/14	250
Xylenes, Total	7900	260	750	ug/l		8260B	12/27/14	250
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	12/27/14	1
Dibromofluoromethane	103.			% Rec.		8260B	12/27/14	1
4-Bromofluorobenzene	93.4			% Rec.		8260B	12/27/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 31, 2014

ESC Sample # : L740125-02

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 19, 2014
Description : Pilot Test

Sample ID : MW-8

Collected By : Adam Gaines
Collection Date : 12/18/14 09:23

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	32000	77.	5000	ug/l		9056MOD	12/26/14	1
Sodium	190000	98.	1000	ug/l		6010B	12/22/14	1
Volatile Organics								
Benzene	120	16.	50.	ug/l		8260B	12/27/14	50
Ethylbenzene	U	19.	50.	ug/l		8260B	12/27/14	50
Isopropylbenzene	U	16.	50.	ug/l		8260B	12/27/14	50
Methyl tert-butyl ether	350	18.	50.	ug/l		8260B	12/27/14	50
Naphthalene	U	50.	250	ug/l		8260B	12/27/14	50
Toluene	U	39.	250	ug/l		8260B	12/27/14	50
1,2,4-Trimethylbenzene	U	19.	50.	ug/l		8260B	12/27/14	50
1,3,5-Trimethylbenzene	U	19.	50.	ug/l		8260B	12/27/14	50
Xylenes, Total	U	53.	150	ug/l		8260B	12/27/14	50
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	12/27/14	1
Dibromofluoromethane	106.			% Rec.		8260B	12/27/14	1
4-Bromofluorobenzene	97.2			% Rec.		8260B	12/27/14	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 31, 2014

ESC Sample # : L740125-03

Date Received : December 19, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : MW-10

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 12/18/14 09:36

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	45000	77.	5000	ug/l		9056MOD	12/26/14	1
Sodium	41000	98.	1000	ug/l		6010B	12/22/14	1
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	12/27/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/27/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/27/14	1
Methyl tert-butyl ether	11.	0.37	1.0	ug/l		8260B	12/27/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/27/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/27/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/27/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/27/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/27/14	1
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	12/27/14	1
Dibromofluoromethane	106.			% Rec.		8260B	12/27/14	1
4-Bromofluorobenzene	95.9			% Rec.		8260B	12/27/14	1

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

December 31, 2014

ESC Sample # : L740125-04

Date Received : December 19, 2014
Description : Pilot Test

Site ID : 03-06500

Sample ID : STANDPIPE

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 12/18/14 08:17

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Sulfate	180000	390	25000	ug/l		9056MOD	12/30/14	5
Sodium	340000	98.	1000	ug/l		6010B	12/22/14	1
Volatile Organics								
Benzene	2.1	0.33	1.0	ug/l		8260B	12/27/14	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	12/27/14	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	12/27/14	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	12/27/14	1
Naphthalene	U	1.0	5.0	ug/l		8260B	12/27/14	1
Toluene	U	0.78	5.0	ug/l		8260B	12/27/14	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	12/27/14	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	12/27/14	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	12/27/14	1
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	12/27/14	1
Dibromofluoromethane	113.			% Rec.		8260B	12/27/14	1
4-Bromofluorobenzene	95.1			% Rec.		8260B	12/27/14	1

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RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L740125-01	WG761375	SAMP	Naphthalene	R3012307	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

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Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

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TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Pilot Test
City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139
Client Project #: Valley Village
ESC Key: INSITE-GW

Collected by: Adam Gaines
Site/Facility ID#: 03-06500
P.O.#:

Collected by (signature): Adam Gaines
Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day..... 200%
____ Next Day..... 100%
____ Two Day..... 50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	v8260 UGPA - 40 mL Amb - HCl	Sodium - 250 mL HDPE - HNO3	Sulfate - 250 mL HDPE - no pres	Remarks/Contaminant	Sample # (lab only)
MW-3	Grab	GW		12/18/14	0907	4	X	X	X		-01
MW-8	Grab	GW		12/18/14	0923	4	X	X	X		-02
MW-10	Grab	GW		12/18/14	0936	4	X	X	X		-03
Standpipe	Grab	GW		12/18/14	0917	4	X	X	X		-04

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks: 6071 2086 7487

pH _____ Temp _____
Flow _____ Other _____

Chain of Custody Page 1 of 1

Prepared by: A048

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Phone (800) 767-5859
FAX (615) 758-5859

CoCode (lab use only)
Template/Prelogin
Shipped Via: L740175

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Kristen Kelly	12/18/14	1349	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☒ FedEx ☐ Courier ☐ UPS ____

Temp: 2.4°C | Bottles Received: 16 | Date: 12/19/14 | Time: 0900

Condition: (lab use only) TDI (CCSI OK)

pH Checked: 2 | NCF:

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Est. 1970

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Friday January 02, 2015

Report Number: L740794
Samples Received: 12/24/14
Client Project: VALLEY VILLAGE

Description: Quarterly Groundwater Montoring

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 02, 2015

ESC Sample # : L740794-01

Date Received : December 24, 2014
Description : Quarterly Groundwater Montoring

Site ID :

Sample ID : MW-12

Project # : VALLEY VILLAGE

Collected By : Adam Gains
Collection Date : 12/23/14 11:40

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/02/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/02/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/02/15	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	01/02/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/02/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/02/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/02/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/02/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/02/15	1
Surrogate Recovery								
Toluene-d8	113.			% Rec.	J1	8260B	01/02/15	1
Dibromofluoromethane	98.3			% Rec.		8260B	01/02/15	1
4-Bromofluorobenzene	97.3			% Rec.		8260B	01/02/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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Reported: 01/02/15 16:36 Printed: 01/02/15 16:51

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L740794-01	WG762190	SAMP	Toluene-d8	R3013060	J1

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information: INSITE080614S

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: QUARTERLY GROUNDWATER MONITORING

City/State Collected: KITTANNING, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE080614S

Collected by: Adam Gaines

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y X

Rush? (Lab MUST Be Notified)
____ Same Day..... 200%
____ Next Day..... 100%
____ Two Day..... 50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / HCl	Remarks/Contaminant	Sample # (lab only)
MW-12	Grab	GW		12/23/14	1140	2	X		L740794-01

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks: D1 PRIORITY

pH _____ Temp _____

Flow _____ Other _____

Chain of Custody Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
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Mt. Juliet, TN 37122
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Phone (800) 767-5859
FAX

C013

CoCode (lab use only)

Template/Prelogin

Shipped Via:

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐	Condition: (lab use only)
	12/23/14	1500	No Tracking #		COC
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.4c / Bottles Received: 2 VP	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 12/24/14 / Time: 09:30	pH Checked: / NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Wednesday January 28, 2015

Report Number: L744566
Samples Received: 01/21/15
Client Project: VALLEY VILLAGE

Description: Quarterly Groundwater Monitoring

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-01

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-1

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:28

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	14000	33.	100	ug/l		8260B	01/28/15	100
Ethylbenzene	2600	38.	100	ug/l		8260B	01/28/15	100
Isopropylbenzene	120	3.3	10.	ug/l		8260B	01/24/15	10
Methyl tert-butyl ether	18.	3.7	10.	ug/l		8260B	01/24/15	10
Naphthalene	420	10.	50.	ug/l		8260B	01/24/15	10
Toluene	13000	78.	500	ug/l		8260B	01/28/15	100
1,2,4-Trimethylbenzene	1900	3.7	10.	ug/l		8260B	01/24/15	10
1,3,5-Trimethylbenzene	560	3.9	10.	ug/l		8260B	01/24/15	10
Xylenes, Total	14000	110	300	ug/l		8260B	01/28/15	100
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	01/24/15	1
Dibromofluoromethane	131.			% Rec.	J1	8260B	01/24/15	1
4-Bromofluorobenzene	103.			% Rec.		8260B	01/24/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-02

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-2

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:08

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/24/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/24/15	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	01/24/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/24/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/24/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/24/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/24/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/24/15	1
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	01/24/15	1
Dibromofluoromethane	96.5			% Rec.		8260B	01/24/15	1
4-Bromofluorobenzene	107.			% Rec.		8260B	01/24/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-03

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-3

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:50

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	4700	33.	100	ug/l		8260B	01/24/15	100
Ethylbenzene	1700	38.	100	ug/l		8260B	01/24/15	100
Isopropylbenzene	82.	33.	100	ug/l	J	8260B	01/24/15	100
Methyl tert-butyl ether	U	37.	100	ug/l		8260B	01/24/15	100
Naphthalene	300	100	500	ug/l	J	8260B	01/24/15	100
Toluene	2000	78.	500	ug/l		8260B	01/24/15	100
1,2,4-Trimethylbenzene	1500	37.	100	ug/l		8260B	01/24/15	100
1,3,5-Trimethylbenzene	360	39.	100	ug/l		8260B	01/24/15	100
Xylenes, Total	7700	110	300	ug/l		8260B	01/24/15	100
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	01/24/15	1
Dibromofluoromethane	98.3			% Rec.		8260B	01/24/15	1
4-Bromofluorobenzene	106.			% Rec.		8260B	01/24/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-04

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-4

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 16:05

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	5400	33.	100	ug/l		8260B	01/24/15	100
Ethylbenzene	320	38.	100	ug/l		8260B	01/24/15	100
Isopropylbenzene	U	33.	100	ug/l		8260B	01/24/15	100
Methyl tert-butyl ether	300	37.	100	ug/l		8260B	01/24/15	100
Naphthalene	U	100	500	ug/l		8260B	01/24/15	100
Toluene	6800	78.	500	ug/l		8260B	01/24/15	100
1,2,4-Trimethylbenzene	410	37.	100	ug/l		8260B	01/24/15	100
1,3,5-Trimethylbenzene	230	39.	100	ug/l		8260B	01/24/15	100
Xylenes, Total	3800	110	300	ug/l		8260B	01/24/15	100
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	01/24/15	1
Dibromofluoromethane	98.7			% Rec.		8260B	01/24/15	1
4-Bromofluorobenzene	106.			% Rec.		8260B	01/24/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-05

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-5

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:21

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/24/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/24/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/24/15	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	01/24/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/24/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/24/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/24/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/24/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/24/15	1
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	01/24/15	1
Dibromofluoromethane	96.3			% Rec.		8260B	01/24/15	1
4-Bromofluorobenzene	105.			% Rec.		8260B	01/24/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
The reported analytical results relate only to the sample submitted.
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Reported: 01/28/15 17:39 Printed: 01/28/15 17:40

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-06

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-6

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 14:50

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/28/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	01/28/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/28/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/28/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/28/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/28/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/28/15	1
Surrogate Recovery								
Toluene-d8	99.1			% Rec.		8260B	01/28/15	1
Dibromofluoromethane	102.			% Rec.		8260B	01/28/15	1
4-Bromofluorobenzene	101.			% Rec.		8260B	01/28/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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Reported: 01/28/15 17:39 Printed: 01/28/15 17:40

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-07

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-7

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 16:13

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/28/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Methyl tert-butyl ether	0.76	0.37	1.0	ug/l	J	8260B	01/28/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/28/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/28/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/28/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/28/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/28/15	1
Surrogate Recovery								
Toluene-d8	99.6			% Rec.		8260B	01/28/15	1
Dibromofluoromethane	105.			% Rec.		8260B	01/28/15	1
4-Bromofluorobenzene	104.			% Rec.		8260B	01/28/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-08

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-8

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:57

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	370	1.6	5.0	ug/l		8260B	01/28/15	5
Ethylbenzene	16.	1.9	5.0	ug/l		8260B	01/28/15	5
Isopropylbenzene	3.3	1.6	5.0	ug/l	J	8260B	01/28/15	5
Methyl tert-butyl ether	340	1.8	5.0	ug/l		8260B	01/28/15	5
Naphthalene	U	5.0	25.	ug/l		8260B	01/28/15	5
Toluene	15.	3.9	25.	ug/l	J	8260B	01/28/15	5
1,2,4-Trimethylbenzene	7.0	1.9	5.0	ug/l		8260B	01/28/15	5
1,3,5-Trimethylbenzene	2.0	1.9	5.0	ug/l	J	8260B	01/28/15	5
Xylenes, Total	19.	5.3	15.	ug/l		8260B	01/28/15	5
Surrogate Recovery								
Toluene-d8	98.8			% Rec.		8260B	01/28/15	1
Dibromofluoromethane	101.			% Rec.		8260B	01/28/15	1
4-Bromofluorobenzene	105.			% Rec.		8260B	01/28/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-09

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-9

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:24

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/28/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	01/28/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/28/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/28/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/28/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/28/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/28/15	1
Surrogate Recovery								
Toluene-d8	97.6			% Rec.		8260B	01/28/15	1
Dibromofluoromethane	103.			% Rec.		8260B	01/28/15	1
4-Bromofluorobenzene	108.			% Rec.		8260B	01/28/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-10

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-10

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:13

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/28/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Methyl tert-butyl ether	110	0.37	1.0	ug/l		8260B	01/28/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/28/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/28/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/28/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/28/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/28/15	1
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	01/28/15	1
Dibromofluoromethane	93.7			% Rec.		8260B	01/28/15	1
4-Bromofluorobenzene	110.			% Rec.		8260B	01/28/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-11

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Sample ID : MW-11

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:02

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/28/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Methyl tert-butyl ether	0.38	0.37	1.0	ug/l	J	8260B	01/28/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/28/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/28/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/28/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/28/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/28/15	1
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	01/28/15	1
Dibromofluoromethane	102.			% Rec.		8260B	01/28/15	1
4-Bromofluorobenzene	102.			% Rec.		8260B	01/28/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-12

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-12

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:47

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Ethylbenzene	U	0.38	1.0	ug/l		8260B	01/28/15	1
Isopropylbenzene	U	0.33	1.0	ug/l		8260B	01/28/15	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	01/28/15	1
Naphthalene	U	1.0	5.0	ug/l		8260B	01/28/15	1
Toluene	U	0.78	5.0	ug/l		8260B	01/28/15	1
1,2,4-Trimethylbenzene	U	0.37	1.0	ug/l		8260B	01/28/15	1
1,3,5-Trimethylbenzene	U	0.39	1.0	ug/l		8260B	01/28/15	1
Xylenes, Total	U	1.1	3.0	ug/l		8260B	01/28/15	1
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	01/28/15	1
Dibromofluoromethane	101.			% Rec.		8260B	01/28/15	1
4-Bromofluorobenzene	105.			% Rec.		8260B	01/28/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-13

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : MW-51

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 16:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	5400	33.	100	ug/l		8260B	01/24/15	100
Ethylbenzene	1800	38.	100	ug/l		8260B	01/24/15	100
Isopropylbenzene	87.	33.	100	ug/l	J	8260B	01/24/15	100
Methyl tert-butyl ether	U	37.	100	ug/l		8260B	01/24/15	100
Naphthalene	360	100	500	ug/l	J	8260B	01/24/15	100
Toluene	2400	78.	500	ug/l		8260B	01/24/15	100
1,2,4-Trimethylbenzene	1600	37.	100	ug/l		8260B	01/24/15	100
1,3,5-Trimethylbenzene	390	39.	100	ug/l		8260B	01/24/15	100
Xylenes, Total	7800	110	300	ug/l		8260B	01/24/15	100
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	01/24/15	1
Dibromofluoromethane	109.			% Rec.		8260B	01/24/15	1
4-Bromofluorobenzene	92.7			% Rec.		8260B	01/24/15	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-14

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : PT-1

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 15:38

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	1600	3.3	10.	ug/l		8260B	01/24/15	10
Ethylbenzene	220	3.8	10.	ug/l		8260B	01/24/15	10
Isopropylbenzene	18.	3.3	10.	ug/l		8260B	01/24/15	10
Methyl tert-butyl ether	420	3.7	10.	ug/l		8260B	01/24/15	10
Naphthalene	22.	10.	50.	ug/l	J	8260B	01/24/15	10
Toluene	1200	7.8	50.	ug/l		8260B	01/24/15	10
1,2,4-Trimethylbenzene	250	3.7	10.	ug/l		8260B	01/24/15	10
1,3,5-Trimethylbenzene	140	3.9	10.	ug/l		8260B	01/24/15	10
Xylenes, Total	1500	11.	30.	ug/l		8260B	01/24/15	10
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	01/24/15	1
Dibromofluoromethane	110.			% Rec.		8260B	01/24/15	1
4-Bromofluorobenzene	92.5			% Rec.		8260B	01/24/15	1

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RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 28, 2015

ESC Sample # : L744566-15

Date Received : January 21, 2015
Description : Quarterly Groundwater Monitoring

Site ID : 03-06500

Sample ID : STANDPIPE

Project # : VALLEY VILLAGE

Collected By : Gaines/Mueller
Collection Date : 01/15/15 14:45

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Benzene	8.8	0.33	1.0	ug/l		8260B	01/24/15	1
Ethylbenzene	16.	0.38	1.0	ug/l		8260B	01/24/15	1
Isopropylbenzene	3.2	0.33	1.0	ug/l		8260B	01/24/15	1
Methyl tert-butyl ether	U	0.37	1.0	ug/l		8260B	01/24/15	1
Naphthalene	5.9	1.0	5.0	ug/l		8260B	01/24/15	1
Toluene	17.	0.78	5.0	ug/l		8260B	01/24/15	1
1,2,4-Trimethylbenzene	34.	0.37	1.0	ug/l		8260B	01/24/15	1
1,3,5-Trimethylbenzene	12.	0.39	1.0	ug/l		8260B	01/24/15	1
Xylenes, Total	78.	1.1	3.0	ug/l		8260B	01/24/15	1
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	01/24/15	1
Dibromofluoromethane	101.			% Rec.		8260B	01/24/15	1
4-Bromofluorobenzene	91.3			% Rec.		8260B	01/24/15	1

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RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
MDL = Minimum Detection Limit = LOD = TRRP SDL
Note:
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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L744566-01	WG765954	SAMP	Dibromofluoromethane	R3016853	J1
L744566-03	WG765954	SAMP	Isopropylbenzene	R3016853	J
	WG765954	SAMP	Naphthalene	R3016853	J
L744566-07	WG766442	SAMP	Methyl tert-butyl ether	R3016911	J
L744566-08	WG766442	SAMP	Isopropylbenzene	R3016911	J
	WG766442	SAMP	Toluene	R3016911	J
	WG766442	SAMP	1,3,5-Trimethylbenzene	R3016911	J
L744566-11	WG767052	SAMP	Methyl tert-butyl ether	R3016770	J
L744566-13	WG765958	SAMP	Isopropylbenzene	R3016591	J
	WG765958	SAMP	Naphthalene	R3016591	J
L744566-14	WG765958	SAMP	Naphthalene	R3016591	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

B020

Chain of Custody Page 1 of 2

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information: INSITE080614S

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: QUARTERLY GROUNDWATER MONITORING

City/State Collected: KITTANNING, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE080614S

Collected by: Gaines and Mueller

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y

Rush? (Lab MUST be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes
FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40mlAmb / HCl	Remarks/Contaminant	Sample # (lab only)
MW-1	Grab	GW		01/15/15	1528	2	X		-01
MW-2	Grab	GW		01/15/15	1508	2	X		-02
MW-3	Grab	GW		01/15/15	1550	2	X		-03
MW-4	Grab	GW		01/15/15	1605	2	X		-04
MW-5	Grab	GW		01/15/15	1521	2	X		-05
MW-6	Grab	GW		01/15/15	1450	2	X		-06
MW-7	Grab	GW		01/15/15	1613	2	X		-07
MW-8	Grab	GW		01/15/15	1557	2	X		-08
MW-9	Grab	GW		01/15/15	1524	2	X		-09

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
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Template/Prelogin
Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

pH _____ Temp _____
Flow _____ Other _____

Remarks: D1 PRIORITY

6272 8605 7595

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	1/20/15	1550	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 36 | Bottles Received: 20

Date: 1-21-15 | Time: 0900

Condition: (lab use only) NCF

OK

pH Checked: | NCF:

Chain of Custody Page 2 of 2

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information: INSITE080614S

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: QUARTERLY GROUNDWATER MONITORING

City/State Collected: KITTANNING, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: VALLEY VILLAGE

ESC Key: INSITE080614S

Collected by: Gaines and Mueller

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y X

Rush? (Lab MUST Be Notified)
____ Same Day..... 200%
____ Next Day..... 100%
____ Two Day..... 50%

Date Results Needed:

Email? __No ✓Yes
FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260UGPA / 40ml/Amb / HCl	Remarks/Contaminant	Sample # (lab only)
MW-10	Grab	GW		01/15/15	1513	2	X		-10
MW-11	Grab	GW		01/15/15	1502	2	X		-11
MW-12	Grab	GW		01/15/15	1547	2	X		-12
MW-51	Grab	GW		01/15/15	1600	2	X		-13
PT-1	Grab	GW		01/15/15	1538	2	X		-14
Standpipe	Grab	GW		01/15/15	1445	2	X		-15

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks: D1 PRIORITY

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859
L744566

CoCode (lab use only)
Template/Prelogin
Shipped Via:

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Kristen Kelley	1/20/15	1350	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.6 °C | Bottles Received: 30x2

Date: 1-21-15 | Time: 0906

Condition: (lab use only) A/S BK COOL

pH Checked: | NCF:

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

February 24, 2015

Ms. Sara Giordano
Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

RE: Project: 03-06500 Valley Village
Pace Project No.: 30140852

Dear Ms. Giordano:
Enclosed are the analytical results for sample(s) received by the laboratory on February 13, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Samantha Bayura

Samantha Bayura
samantha.bayura@pacelabs.com
Project Manager

Enclosures

cc: Insite Group, Insite Group, Inc.

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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 03-06500 Valley Village
Pace Project No.: 30140852

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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Greensburg, PA 15601
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SAMPLE ANALYTE COUNT

Project: 03-06500 Valley Village
Pace Project No.: 30140852

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30140852001	EW-1	EPA 8260B	CLG	12	PASI-PA

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 03-06500 Valley Village
Pace Project No.: 30140852

Sample: EW-1 **Lab ID: 30140852001** Collected: 02/11/15 13:20 Received: 02/13/15 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260B							
Benzene	**975**	ug/L	50.0	50		02/20/15 01:33	71-43-2	
Ethylbenzene	**1040**	ug/L	50.0	50		02/20/15 01:33	100-41-4	
Isopropylbenzene (Cumene)	**115**	ug/L	1.0	1		02/20/15 01:08	98-82-8	
Methyl-tert-butyl ether	**66.7**	ug/L	1.0	1		02/20/15 01:08	1634-04-4	
Naphthalene	**983**	ug/L	100	50		02/20/15 01:33	91-20-3	
Toluene	**2620**	ug/L	50.0	50		02/20/15 01:33	108-88-3	
1,2,4-Trimethylbenzene	**2020**	ug/L	50.0	50		02/20/15 01:33	95-63-6	
1,3,5-Trimethylbenzene	**602**	ug/L	50.0	50		02/20/15 01:33	108-67-8	
Xylene (Total)	**8800**	ug/L	150	50		02/20/15 01:33	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	79-118	1		02/20/15 01:08	2037-26-5	
4-Bromofluorobenzene (S)	120	%	84-113	1		02/20/15 01:08	460-00-4	S2
1,2-Dichloroethane-d4 (S)	124	%	84-124	1		02/20/15 01:08	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: 03-06500 Valley Village
Pace Project No.: 30140852

QC Batch: MSV/22543
QC Batch Method: EPA 8260B
Analysis Method: EPA 8260B
Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 30140852001

METHOD BLANK: 855934 Matrix: Water
Associated Lab Samples: 30140852001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	02/19/15 23:28	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	02/19/15 23:28	
Benzene	ug/L	ND	1.0	02/19/15 23:28	
Ethylbenzene	ug/L	ND	1.0	02/19/15 23:28	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	02/19/15 23:28	
Methyl-tert-butyl ether	ug/L	ND	1.0	02/19/15 23:28	
Naphthalene	ug/L	ND	2.0	02/19/15 23:28	
Toluene	ug/L	ND	1.0	02/19/15 23:28	
Xylene (Total)	ug/L	ND	3.0	02/19/15 23:28	
1,2-Dichloroethane-d4 (S)	%	97	84-124	02/19/15 23:28	
4-Bromofluorobenzene (S)	%	92	84-113	02/19/15 23:28	
Toluene-d8 (S)	%	93	79-118	02/19/15 23:28	

LABORATORY CONTROL SAMPLE: 855935

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	17.3	86	70-123	
1,3,5-Trimethylbenzene	ug/L	20	17.3	87	67-123	
Benzene	ug/L	20	16.5	83	69-123	
Ethylbenzene	ug/L	20	16.9	84	70-123	
Isopropylbenzene (Cumene)	ug/L	20	17.0	85	66-136	
Methyl-tert-butyl ether	ug/L	20	19.7	98	69-133	
Naphthalene	ug/L	20	18.2	91	65-134	
Toluene	ug/L	20	16.8	84	73-123	
Xylene (Total)	ug/L	60	52.1	87	70-123	
1,2-Dichloroethane-d4 (S)	%			102	84-124	
4-Bromofluorobenzene (S)	%			99	84-113	
Toluene-d8 (S)	%			97	79-118	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 856691 856692

Parameter	Units	30140537008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	18.9	19.2	94	96	70-123	2	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	18.7	19.5	93	97	67-123	4	
Benzene	ug/L	ND	20	20	17.9	19.2	89	96	69-123	7	
Ethylbenzene	ug/L	ND	20	20	18.0	19.4	90	97	70-123	8	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	19.2	19.6	96	98	66-136	3	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 03-06500 Valley Village
Pace Project No.: 30140852

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 856691 856692

Parameter	Units	30140537008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Methyl-tert-butyl ether	ug/L	ND	20	20	16.9	17.1	85	85	69-133	1	
Naphthalene	ug/L	ND	20	20	16.9	17.1	85	86	65-134	1	
Toluene	ug/L	ND	20	20	18.4	19.7	92	98	73-123	7	
Xylene (Total)	ug/L	ND	60	60	55.3	59.6	92	99	70-123	7	
1,2-Dichloroethane-d4 (S)	%						102	98	84-124		
4-Bromofluorobenzene (S)	%						99	97	84-113		
Toluene-d8 (S)	%						94	97	79-118		

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: 03-06500 Valley Village
Pace Project No.: 30140852

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 03-06500 Valley Village
Pace Project No.: 30140852

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30140852001	**EW-1**	EPA 8260B	MSV/22543		

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: / of /

Section A Required Client Information:

Company:	Insite Group, Inc
Address:	611 South Irvine Avene
	Sharon, PA 16146
Email To:	lab@insitegroup.org
Phone: 724-347-2101	Fax: 724-347-2139
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Sara Giordano
Copy To:	
Purchase Order No.:	
Project Name:	Valley Village
Project Number:	03-06500

Section C Invoice Information:

Attention:	Sara Giordano
Company Name:	Insite Group, Inc.
Address:	(same)
Pace Quote Reference:	
Pace Project Manager:	Samantha Bayura
Pace Profile #:	

REGULATORY AGENCY

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

Site Location STATE: Rural Valley PA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	VOA 8260 Volatiles (New PA UST shortlist - unloaded)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	EW-1	WT	G			02/11/15	13:20		3				X					X	X		30140852 001
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Kristen Keeley	2/12/15	1418	Pace	2/13/15	1000	4.5	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: ADAM GILLES

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 2/11/15

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

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Sample Condition Upon Receipt

Pace Analytical

Client Name: Insite Group Project # 30140852

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

Tracking #: 8029 4190 8428

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap ☑ Bubble Bags ___ None ___ Other _____

Thermometer Used 7 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: 4.6 °C Correction Factor: -0.1 °C Final Temp: 4.5 °C

Date and Initials of person examining contents: [illegible] 2/13/15

Temp should be above freezing to 6°C

			Comments:
Chain of Custody Present:	☑Yes	☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No ☐N/A	7.
Sufficient Volume:	☑Yes	☐No ☐N/A	8.
Correct Containers Used:	☑Yes	☐No ☐N/A	9.
-Pace Containers Used:	☑Yes	☐No ☐N/A	
Containers Intact:	☐Yes	☑No ☐N/A	10. 1 of 3 vials in #8 broken (frozen)
Filtered volume received for Dissolved tests	☐Yes	☐No ☑N/A	11.
Sample Labels match COC:	☑Yes	☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT			
All containers needing preservation have been checked.	☐Yes	☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No ☑N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☑Yes	☐No	Initial when completed [illegible] Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No ☑N/A	15.
Trip Blank Present:	☐Yes	☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____			

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Samantha D Bayne **Date:** 2/16/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

page 2

Project Number: 30140852

Client Name: Lasik Group

Item No.	(3)											
Matrix Code	WT											
Glass Jar (120 / 250 / 500 / 1L)												
Soil Kit (2 SB, 1M, soil jar)												
Chemistry (250 / 500 / 1L)												
Organics (1L)												
Nutrient (250 / 500)												
Phenolics (250 ml)												
TOC (40 ml / 250 ml)												
TOX (250 ml)												
Total Metals												
Dissolved Metals preserved Y N												
O & G (1L)												
TPH (1L)												
VOA (40 ml 30 ml)	2											
Cyanide (250 ml)												
Sulfide (500 ml)												
Bacteria (120 ml)												
Wipes / swipe/ smear/ filter												
Radchem Nalgene (125 / 250 / 500 / 1L)												
Radchem Nalgene (1/2 gal. / 1 gal.L)												
Cubitainer (500 ml / 4L)												
Ziploc												
Other												
Other												

SCURF Back (C016-4 15May2012).xls

ATTACHMENT E

IGI INSITE GROUP, INC.

July 9, 2014

Ms. Pam Meade
President, Board of Directors
Cownashannock Creek Watershed Association
265 Hollow Road
Dayton, PA 16222

RE: Authorization to Access CCWA Property
Former Rail Line
Cowanshannock Township, PA

Dear Ms. Meade:

Insite Group, Inc. (IGI), on behalf of Mr. Joseph Buffone, owner of the Valley Village Convenience Store, is requesting permission to access your property at a location parallel to State Route 85 in Cowanshannock Township near the border with Rural Valley Borough. Valley Village reported a release of unleaded gasoline to the Pennsylvania Department of Environmental Protection (PADEP) in March 2014. PADEP requires that Mr. Buffone conduct a site characterization and submit a report of findings to PADEP by September 15, 2014. In order to complete the site characterization, IGI is required to collect soil and groundwater samples on the adjacent property to the south of Valley Village, which is owned by Cowanshannock Creek Watershed Association (CCWA).

We are requesting authorization to access your property to drill four soil borings and install four groundwater monitoring wells. An aerial photograph showing the approximate proposed drilling locations is provided as Figure 1. We understand that a sanitary sewer line and a natural gas pipeline are located on the CCWA property. We will use vacuum extraction, a minimally disruptive technology, to clear the drilling points to a depth of five feet to ensure protection of the utility lines. A truck-mounted drilling rig will be used to advance the boreholes to an approximate depth of 15 feet. PVC casings will be inserted into some boreholes to serve as groundwater monitoring wells. The finished wells will include a flush-to-grade well cover or a three-foot high protective metal casing. Representative pictures of each type of well are provided as Attachment A. The wells will be monitored for approximately two to three years.

Some brush and/or small trees may have to be removed on the southern portion of CCWA property in order to access the drilling locations. IGI will restore the site to original conditions at the conclusion of our work. A copy of our certificate of insurance is provided as Attachment B.

Prior to commencing the work we will notify you at least two days in advance. We will also mark the boring locations in advance and notify the One-Call Utility Protection Service a

611 S. Irvine Avenue, Sharon, PA 16146
724.347.2101 phone 724.347.2139 fax

minimum of four days prior to starting the drilling. They will mark the locations of utilities in the former railroad corridor.

You may contact me at (724) 347-2101 if you have any questions or comments. If you agree to grant access, please sign in the space provided below and return the authorization to my office in the self-addressed envelope. You may also fax it to our office at (724) 347-2139. Thank you for assisting us with this site characterization.

Respectfully,

Sara Giordano

Sara Giordano
Project Coordinator

Attachments

Figure 1: Proposed Drilling Locations Map
Attachment A: Representative Photographs of Monitoring Wells
Attachment B: Certificate of Insurance

cc: Joseph Buffone, Valley Village

I hereby authorize property access to Cowanshannock Creek Watershed Association property to conduct environmental drilling, as shown on Figure 1.

_____ Date: _____
Signature

_____
Printed Name

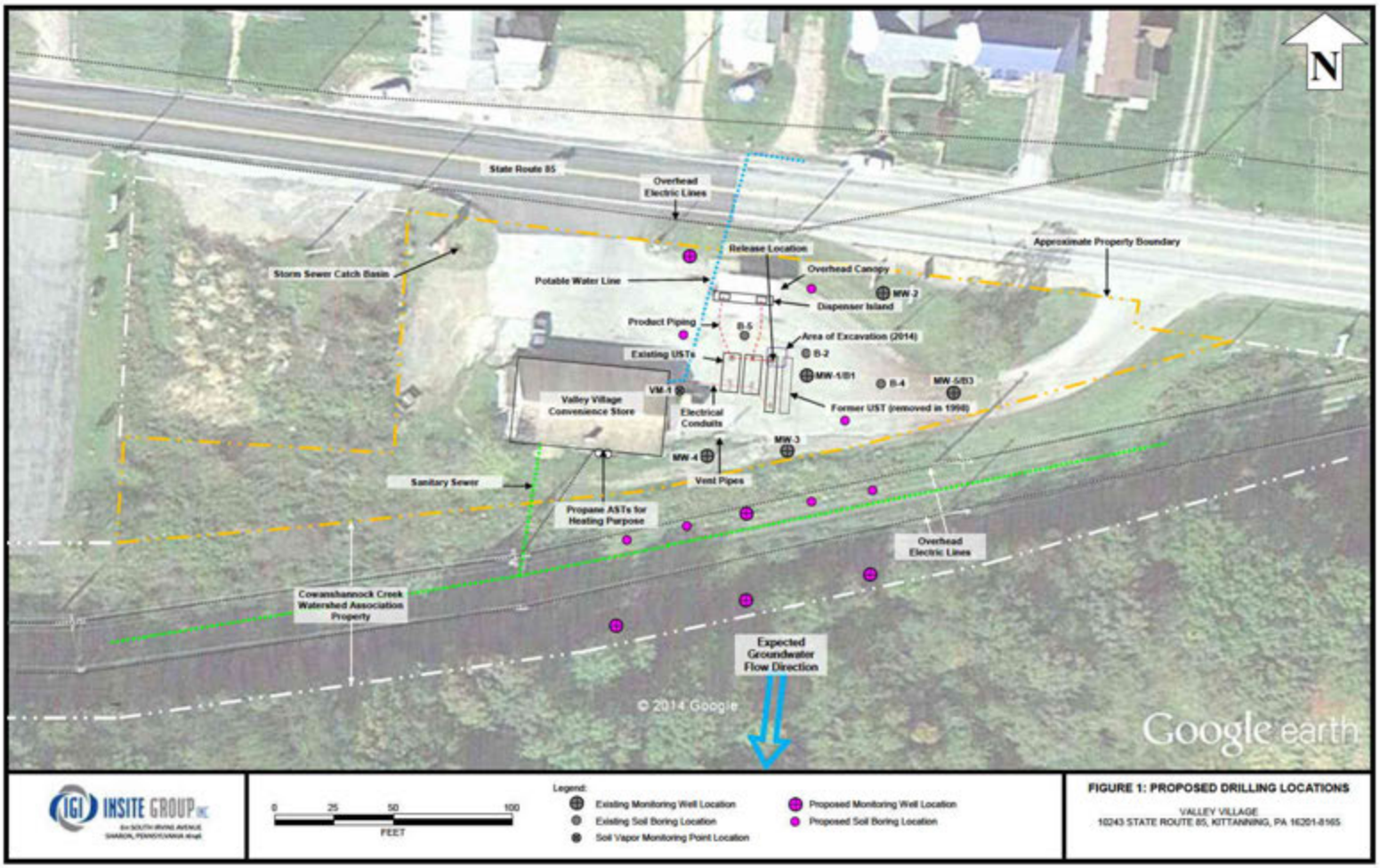
I hereby authorize property access to Cowanshannock Creek Watershed Association property to conduct environmental drilling, as shown on Figure 1.

Signature

Date: July 20, 2014

Pamela C. Meade
Printed Name

FIGURES



INSITE GROUP INC

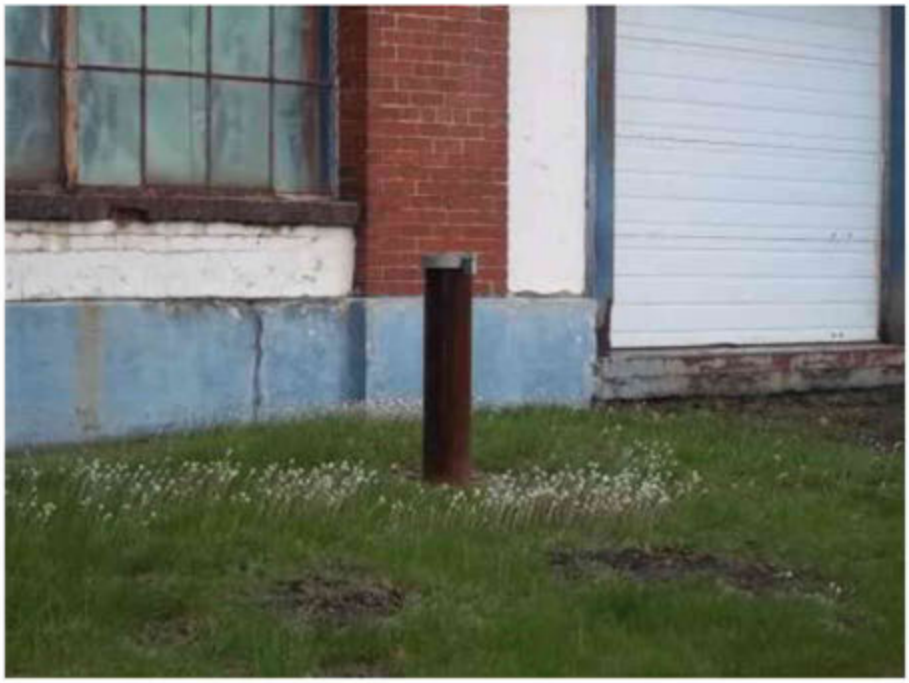
0 25 50 100
FEET

Legend:
- Existing Monitoring Well Location
- Existing Soil Boring Location
- Soil Vapor Monitoring Point Location
- Proposed Monitoring Well Location
- Proposed Soil Boring Location

FIGURE 1: PROPOSED DRILLING LOCATIONS

VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201-8165

ATTACHMENT A



11/24/2010

ATTACHMENT B

Policy Number:

Date Entered: 01/16/2013

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 8/16/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Ralph C. Mehler Agency, Inc. 62 E. Shenango Street Sharpsville, PA 16150	CONTACT NAME: PHONE (A/C, No, Ext): (724) 962-5757 FAX (A/C, No): (724) 962-0228 E-MAIL ADDRESS: service@mehlerinsurance.com
INSURED Insite Group, Inc. 611 S. Irvine Avenue Sharon, PA 16146	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A: Evanston Insurance Company INSURER B: Erie Insurance Exchange INSURER C: Erie Insurance Co. Of New York INSURER D: INSURER E: INSURER F:

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [ ] PRO-JECT [ ] LOC			13PKGNE60140	8/15/2013	8/15/2014	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS			Q08-2930270E7	08/29/2013	08/29/2014	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
	[ ] UMBRELLA LIAB [ ] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [N] (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		Q92-7900098E	08/29/2013	08/29/2014	[ ] WC STATU-TORY LIMITS [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
A	Pollution			13PKGNE60140	08/15/2013	08/15/2014		1,000,000
A	Professional			13PKGNE60140	08/15/2013	08/15/2014		1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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INSITE GROUP, INC.

February 13, 2015

Ms. Pam Meade
President, Board of Directors
Cownashannock Creek Watershed Association
265 Hollow Road
Dayton, PA 16222

RE: Authorization to Excavate on CCWA Property
Cowanshannock Township, PA

Dear Ms. Meade:

Insite Group, Inc. (IGI), on behalf of Mr. Joseph Buffone, wishes to thank the Cowanshannock Creek Watershed Association (CCWA) for granting us access to your property to conduct a site characterization as required by the Pennsylvania Department of Environmental Protection (PADEP). That investigation is complete and we have identified residual impacts to soil and groundwater on your property as a result of a release of unleaded gasoline on Mr. Buffone's property. Soil and groundwater analytical data for soil borings and monitoring wells on your property are summarized in Tables 1.0 and 2.0, respectively, and the estimated extent of impact to soil and groundwater is shown on Figure 1.

We are planning to remediate the contamination in soil and groundwater on Mr. Buffone's property. This will be accomplished by excavating impacted soil and treating groundwater with an oxidant that will break down the contamination, leaving carbon dioxide and water as byproducts. At the same time, we are requesting your permission to access your property to remediate impacted soil and groundwater in the same manner. We expect that a portion of the trail in this area may be closed for three or four days during this process. The depth of the excavation is estimated at 6 feet and the estimated volume of soil to be excavated is 117 cubic yards. The zone of impact occurs at 3-5 feet below ground surface and contains an estimated 59 tons of contaminated soil. We expect that the work will be performed in July 2015. CCWA will incur no expense for remediation of the contamination. Following the completion of excavation, the corridor will be backfilled with clean fill, graded and seeded.

Prior to commencing the work, we will notify you at least two days in advance. We will also mark the area of excavation in advance and notify the One-Call Utility Protection Service a minimum of four days prior to starting the excavation. They will mark the locations of utilities in the former railroad corridor.

611 S. Irvine Avenue, Sharon, PA 16146
724.347.2101 phone 724.347.2139 fax

You may contact me at (724) 347-2101 if you have any questions or comments. If you agree to grant access for remediation of contamination on your property, please sign in the space provided below and return the authorization to my office in the self-addressed envelope. You may also fax it to our office at (724) 347-2139. Thank you for assisting us with this remediation project.

Respectfully,

Sara Giordano

Sara Giordano
Project Coordinator

Attachments
- Table 1.0: Soil Analytical Results
- Table 2.0: Groundwater Analytical Results
- Figure 1: Extent of Impact on CCWA Property

cc: Joseph Buffone, Valley Village

I hereby authorize property access to Cowanshannock Creek Watershed Association property to conduct remediation of soil and groundwater contamination emanating from the Valley Village property owned by Mr. Joseph Buffone. I understand that CCWA will incur no expense for this remediation project.

Signature

Date: 2/18/15

Pamela C. Meade

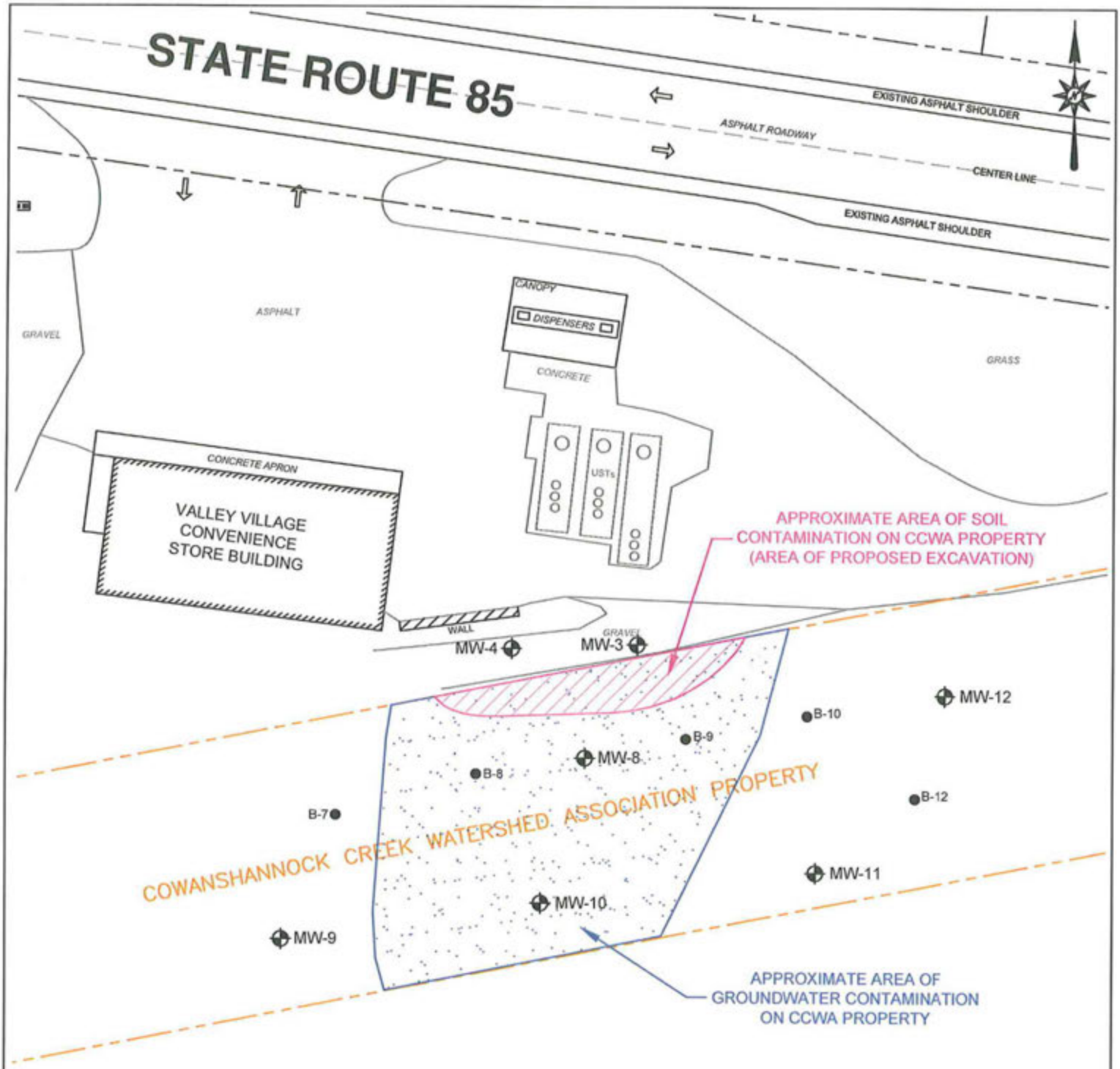
Printed Name

Table 1.0: Soil Analytical Results

Sample ID	Depth (feet)	Date	Unleaded Gasoline Parameters (mg/kg)								
			Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Xylenes (total)
Statewide Health Standard, Direct Contact, Residential 0-15 feet			*57*	*10,000*	*7,700*	*1,700*	*4,400*	*10,000*	*130*	*110*	*1,900*
Statewide Health Standard, Soil to Groundwater Values, Residential, Used Aquifer			*0.5*	*70*	*600*	*2*	*25*	*100*	*8.4*	*2.3*	*1,000*
Valley Village Property											
MW-3	4	06/17/14	**15**	12	0.82	<0.66	2.4	29	**16**	**4.3**	63
MW-4	4	06/18/14	**0.72**	0.15	0.011	<0.0012	0.036	0.90	0.14	0.044	0.44
Cowanshannock Creek Watershed Association Property											
B-8	2.5-5	08/04/14	<0.0012	<0.0012	<0.0012	<0.0012	<0.0062	<0.0062	<0.0012	<0.0012	<0.0037
B-9	5-7.5	08/05/14	0.0019	<0.0012	<0.0012	0.029	<0.0058	<0.0058	<0.0012	<0.0012	<0.0035
MW-8	4	08/04/14	0.0038	0.0012	<0.0012	<0.0012	<0.0058	<0.0058	0.0012	<0.0012	0.0063
B-12	5-7.5	12/22/14	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<0.0057	<0.0011	<0.0011	<0.0034
MW-12	7.5-10	12/22/14	<0.0012	<0.0012	<0.0012	<0.0012	<0.0058	<0.0058	<0.0012	<0.0012	<0.0035

Table 2.0: Groundwater Analytical Results

Sample ID	Date	Depth to Water (feet)	GW Elevation (feet)	Unleaded Gasoline Parameters (ug/L)								
				Benzene	Ethyl-benzene	Cumene	MTBE	Naph-thalene	Toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Total Xylenes
Statewide Health Standard for a Residential, Used Aquifer				*5*	*700*	*840*	*20*	*100*	*1,000*	*15*	*13*	*10,000*
Valley Village Property												
MW-3	07/10/14	2.99	1,115.94	**4,600**	280	<25	**120**	71	**1,300**	**650**	**230**	3,700
MW-3	11/24/14	3.58	1,115.35	**7,600**	**2,000**	73	**55**	**250**	**1,400**	**970**	**280**	5,500
MW-3	11/24/14	3.90	1,115.03	**7,600**	**1,900**	72	**53**	**250**	**1,200**	**840**	**260**	4,700
MW-3	12/04/14	3.10	1,115.83	**6,300**	**1,400**	<100	**51**	**140**	**2,000**	**680**	**230**	3,800
MW-3	12/10/14	1.89	1,117.04	**5,200**	**1,600**	73	<9.2	**270**	**2,100**	**1,300**	**310**	7,800
MW-3	12/18/14	2.22	1,116.71	**4,600**	**1,500**	<250	**<92**	**300**	**3,100**	**1,400**	**340**	7,900
MW-3	01/15/15	2.60	1,116.33	**4,700**	**1,700**	82	**<37**	**300**	**2,000**	**1,500**	**360**	7,700
MW-4	07/10/14	8.39	1,109.34	**9,000**	470	<100	**430**	**200**	**13,000**	**1,400**	**370**	10,000
MW-4	12/04/14	5.78	1,111.95	**7,200**	**1,400**	<100	**300**	**150**	**6,100**	**1,300**	**360**	6,600
MW-4	01/15/15	5.72	1,112.01	**5,400**	320	<100	**300**	<100	**6,800**	**410**	**230**	3,800
Cowanshannock Creek Watershed Association Property												
MW-8	09/03/14	5.91	1,109.76	**30**	<1.0	<1.0	**340**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-8	11/24/14	7.34	1,108.33	<1.0	<1.0	<1.0	**27**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-8	12/04/14	7.15	1,108.52	**230**	6.1	<5.0	**310**	<25	<25	<5.0	<5.0	<15
MW-8	12/18/14	6.48	1,109.19	**120**	<50	<50	**350**	<50	<250	<19	<19	<150
MW-8	01/15/15	6.58	1,109.09	**370**	16	<5.0	**340**	<25	<25	7.0	<5.0	19
MW-9	09/03/14	4.36	1,109.46	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-9	12/04/14	4.26	1,109.56	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-9	01/15/15	4.77	1,109.05	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	09/03/14	5.18	1,108.45	<1.0	<1.0	<1.0	**84**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	11/24/14	6.23	1,107.40	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	12/04/14	6.27	1,107.36	<1.0	<1.0	<1.0	**120**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	12/18/14	5.67	1,107.96	<1.0	<1.0	<1.0	11	<5.0	<5.0	<1.0	<1.0	<3.0
MW-10	01/15/15	5.91	1,107.72	<1.0	<1.0	<1.0	**110**	<5.0	<5.0	<1.0	<1.0	<3.0
MW-11	09/03/14	3.81	1,110.22	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-11	12/04/14	3.81	1,110.22	<1.0	<1.0	<1.0	1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-11	01/15/15	4.43	1,109.60	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-12	12/22/14	18.80	1,098.77	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0
MW-12	01/15/15	6.79	1,110.78	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<3.0



INSITE GROUP INC. 611 SOUTH IRVINE AVENUE SHARON, PENNSYLVANIA 16148	DRAWN JLS	REVISED	CHECKED SJG
	DATE 02/12/2015	DATE	DATE 02/12/2015

FIGURE 1
EXTENT OF IMPACT ON CCWA PROPERTY
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201

From: Miller, Josh [JoshuaMiller@consolenergy.com]
Sent: Sunday, November 16, 2014 1:30 AM
To: Sara Giordano
Cc: Miller, Josh
Subject: RE: Request for Access

Sara,
Sorry, but we are not interested in granting this request on our Property at this point in time.
Thanks,

Josh Miller
Manager-Leased Mineral Resources

CONSOL ENERGY
CNX Land LLC
1000 CONSOL Energy Drive
Canonsburg, PA 15317

Office: 724-485-4553
Cell: 412-951-1767

Email: joshmiller@consolenergy.com

From: Sara Giordano [mailto:sgiordano@insitegroup.org]
Sent: Friday, October 31, 2014 1:24 PM
To: Miller, Josh
Subject: RE: Request for Access

Thanks, Josh. Hope you have a nice weekend.
Sara

From: Miller, Josh [mailto:JoshuaMiller@consolenergy.com]
Sent: Friday, October 31, 2014 10:36 AM
To: Sara Giordano
Cc: Miller, Josh
Subject: RE: Request for Access

Sara,
We are currently in the process of reviewing this request and should have more info for you shortly.
Thanks,

Josh Miller
Manager-Leased Mineral Resources

CONSOL ENERGY
CNX Land LLC
1000 CONSOL Energy Drive
Canonsburg, PA 15317

Office: 724-485-4553
Cell: 412-951-1767

Email: joshmiller@consolenergy.com

From: Sara Giordano [mailto:sgiordano@insitegroup.org]
Sent: Thursday, September 25, 2014 11:25 AM
To: Miller, Josh
Subject: Request for Access

Hello Josh,

We are completing a Site Characterization for the Valley Village property located at 10243 State Route 85 in Cowanshannock Township, PA. The site is about 9 miles east of Kittanning near Rural Valley, PA. A release of unleaded gasoline was reported in March of this year. We are currently defining the extent of the groundwater plume. We are requesting your authorization to install a groundwater monitoring well on the former Rochester and Pittsburgh Coal Co (now owned by Consol) property. I have attached the tax map information for your property and a site map showing the location of the proposed monitoring well. We have a streamlined access agreement document that I could send you, but I would imagine that Consol has an agreement form of its own.

Accessing your property would involve removal of some brush, saplings and trees. The Pennsylvania Department of Environmental Protection requires that we request access to fully delineate the extent of groundwater contamination. We understand that some landowners are opposed to granting access for a variety of reasons, and if that is the case in this instance, I would appreciate your indicating so in a return email.

Thank you for your consideration of our request. Please feel free to contact me by phone or email.

Sara

Sara Giordano
Project Coordinator

IGI INSITE GROUP INC
611 S. Irvine Ave.
Sharon, PA 16146
P. 724.347.2101
F. 724.347.2139
sgiordano@insitegroup.org

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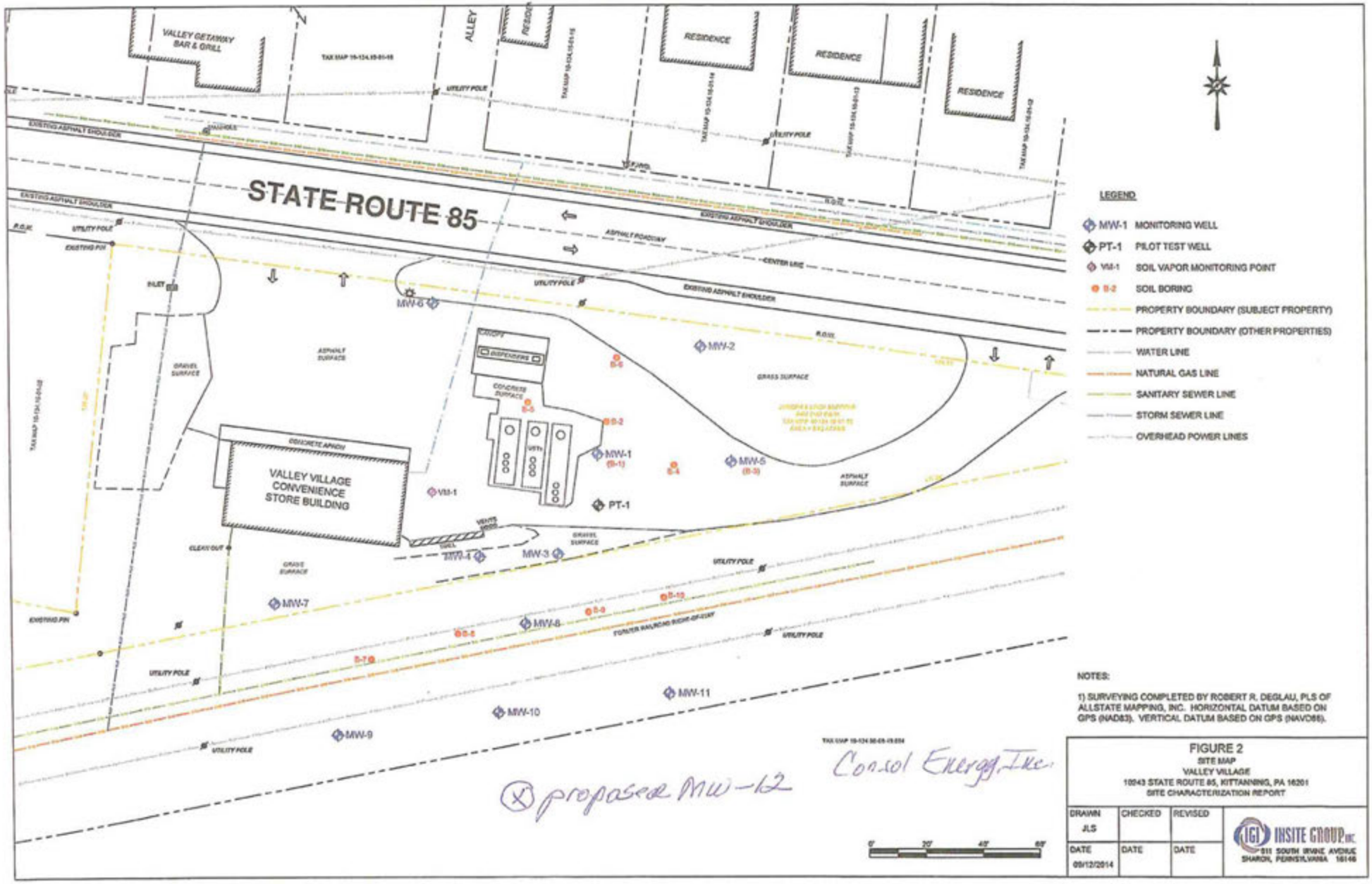

NOTES:

1) SURVEYING COMPLETED BY ROBERT R. DEGLAU, PLS OF ALLSTATE MAPPING, INC. HORIZONTAL DATUM BASED ON GPS (NAD83). VERTICAL DATUM BASED ON GPS (NAVD88).

FIGURE 2
SITE MAP
VALLEY VILLAGE
10043 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT

DRAWN	CHECKED	REVISED	
JLS			
DATE	DATE	DATE	
09/12/2014			

INSITE GROUP, INC.
311 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

ATTACHMENT F

CARBON LIMESTONE LANDFILL
8100 S. Stateline Rd
Lowellville, OH 44436 330-536-8013

ISTOMER
897750.
INSITE GROUP INC.
611 S. IRVINE AVENUE
SHARON, PA 16146
50761422024

SITE	TICKET #	CELL
Y1	1041825	

WEIGHMASTER: IN - Sheryl H. OUT - Robert S.

DATE/TIME IN	DATE/TIME OUT
02-03-2015 1:04 pm	02-3-2015 1:44 pm

VEHICLE	CONTAINER
NEW	

REFERENCE: 23 INVOICE

BILL OF LADING: 2171355

SCALE IN	GROSS WEIGHT	62,420	NET TONS	16.44
SCALE OUT	TARE WEIGHT	29,540	NET WEIGHT	32,880

INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
60.00	YD	TRACKING QTY				
16.44	TN	SW-CONT SOIL W/FUEL ARMSTRONG-PA				
1.00		ENVIRONMENTAL FEE 1				

Hours of operation:
M-F 8:00 AM to 3:00 PM
Sat 8:00 AM to 12:00 PM
THANK YOU FOR YOUR BUSINESS!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

-F042UPR (07/12)

SIGNATURE David R Jarnesh

NET AMOUNT
TENDERED
CHANGE
CHECK#

REPUBLIC SERVICES

NON-HAZARDOUS WASTE MANIFEST

2171355

Please print or type.

1. Generator's US EPA ID Number	Manifest Document Number	2. Page 1 of

GENERATOR

3. Generator's Name and Mailing Address	5. Generating Location (if different)
Valley Village 10243 State Route 85 Kittanning, Pa 16201 4. Phone ( ) 724 783 6684	same Armstrong County, Pa 6. Phone ( )

7. Transporter #1 Company Name	8. US EPA ID Number	9. Transporter #1's Phone
SHOCKEY EXCAVATING	[illegible]	724 254 3669
10. Transporter #2 Company Name	11. US EPA ID Number	12. Transporter #2's Phone

13. Designated T/S/D Facility Name and Site Address	14. US EPA ID Number	15. Facility's Phone
Carbon Limestone Landfill 8100 S. Stateline Road Lowellville, OH 44436	OHD987048212	330-536-6013

16. Waste Shipping Name and Description	17. Republic Services Approval # and Exp. Date	18. Containers No.	18. Containers Type	19. Total Quantity	20. Unit Wt/Vol
a. Unleaded Gasoline Cont. Debris	6076 14 22024	001	CM	20	Tons
b.					
c.					

21. Additional Descriptions for Materials Listed Above

22. Special Handling Instructions and Additional Information

23. **GENERATOR'S CERTIFICATION:** I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

Printed/Typed Name	Signature	Month	Day	Year
PAUL ROGERS	[signature]	2	03	15

TRANSPORTER

24. **Transporter #1:** Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
DAVID R GRUSECK	[signature]	2	03	15

25. **Transporter #2:** Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

T/S/D FACILITY

26. Discrepancy Indication Space

27. **Facility Owner or Operator:** Certification of receipt of waste materials covered by this manifest (except as noted in Item 19)

Carbon Limestone Landfill (330) 536-6013
8101 S. Stateline Rd. Lowellville, OH 44436

Printed/Typed Name	Signature	Month	Day	Year

TRANSPORTER #1

COM000033

CARBON LIMESTONE LANDFILL
8100 S. Stateline Rd
Lowellville, OH 44436 330-536-8013

STOMER
897750
INSITE GROUP INC.
611 S. IRVINE AVENUE
SHARON, PA 16146
50761422024

SITE	TICKET #	CELL
Y1	1042056	

WEIGHMASTER: IN - Sheryl H. OUT - Robert S.

DATE/TIME IN	DATE/TIME OUT
02-04-2015 1:19 pm	02-4-2015 2:05 pm

VEHICLE	CONTAINER
NEW	

REFERENCE: 25/SHOCKEY INVOICE
BILL OF LADING: 2171354

SCALE IN	GROSS WEIGHT	46,560	NET TONS	12.21
SCALE OUT	TARE WEIGHT	22,140	NET WEIGHT	24,420

INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
60.00	YD	TRACKING QTY				
12.21	TN	SW-CONT SOIL W/FUEL ARMSTRONG-PA				
1.00		ENVIRONMENTAL FEE 1				

Hours of operation:
M-F 8:00 AM to 3:00 PM
Sat 8:00 AM to 12:00 PM
THANK YOU FOR YOUR BUSINESS!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

SIGNATURE David R Green

NET AMOUNT
TENDERED
CHANGE
CHECK#

-F042UPR (07/12)

REPUBLIC SERVICES

NON-HAZARDOUS WASTE MANIFEST

2171354

Please print or type.

1. Generator's US EPA ID Number	Manifest Document Number	2. Page 1 of

GENERATOR

3. Generator's Name and Mailing Address	5. Generating Location (if different)
Valley Village 10243 State Route 85 Kittanning, Pa 16201 4. Phone ( ) 724-783-6864	same Armstrong County, Pa 6. Phone ( )

7. Transporter #1 Company Name	8. US EPA ID Number	9. Transporter #1's Phone
SHOCKEY EXCAVATING	25	724 282 3669
10. Transporter #2 Company Name	11. US EPA ID Number	12. Transporter #2's Phone

13. Designated T/S/D Facility Name and Site Address	14. US EPA ID Number	15. Facility's Phone
Carbon Limestone Landfill 8100 S. Stateline Road Lowellville, OH 44436	OHD987048212	330-536-6013

16. Waste Shipping Name and Description	17. Republic Services Approval # and Exp. Date	18. Containers No.	18. Containers Type	19. Total Quantity	20. Unit Wt/Vol
a. Unleaded Gasoline Cont. Debris	5076 14 22024	001	CM	~20	TONS
b.					
c.					

21. Additional Descriptions for Materials Listed Above

22. Special Handling Instructions and Additional Information

23. **GENERATOR'S CERTIFICATION:** I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

Printed/Typed Name	Signature	Month	Day	Year
PAUL ROGERS	P. Rogers	2	3	15

TRANSPORTER

24. **Transporter #1:** Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
DAVID R GRUSCOE	David R Gruscoe	2	4	15

25. **Transporter #2:** Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

T/S/D FACILITY

26. Discrepancy Indication Space

27. **Facility Owner or Operator:** Certification of receipt of waste materials covered by this manifest (except as noted in Item 19)

Carbon Limestone Landfill (330) 536-6013
8100 S Stateline Rd., Lowellville, OH 44436

Printed/Typed Name	Signature	Month	Day	Year
[illegible]	[illegible]	2	4	15

TRANSPORTER #1

COM000033

REV 01/14

RS-F15

ATTACHMENT G

ESC
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Est. 1970

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Tuesday September 09, 2014

Report Number: L720137
Samples Received: 09/05/14
Client Project: VALLEY VILLAGE

Description: Soil Gas

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Alan Harvill

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 09, 2014

ESC Sample # : L720137-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : September 05, 2014
Description : Soil Gas

Sample ID : VM-1 2-3FT

Collected By : Adam Gaines
Collection Date : 09/03/14 16:38

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000200	< 0.00020	< 0.00064	TO-15	09/06/14	1
Ethylbenzene	106	0.000200	0.000350	0.0015	TO-15	09/06/14	1
Isopropylbenzene	120.2	0.000200	< 0.00020	< 0.00098	TO-15	09/06/14	1
MTBE	88.1	0.000200	< 0.00020	< 0.00072	TO-15	09/06/14	1
Naphthalene	128	0.000630	0.000990	0.0052	TO-15	09/06/14	1
1,2,4-Trimethylbenzene	120	0.000200	0.00140	0.0069	TO-15	09/06/14	1
1,3,5-Trimethylbenzene	120	0.000200	0.000280	0.0014	TO-15	09/06/14	1
Toluene	92.1	0.000200	0.00140	0.0053	TO-15	09/06/14	1
m&p-Xylene	106	0.000400	0.00180	0.0078	TO-15	09/06/14	1
o-Xylene	106	0.000200	0.000660	0.0029	TO-15	09/06/14	1
1,4-Bromofluorobenzene			117.	% Rec.	TO-15	09/06/14	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.
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.
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 09, 2014

ESC Sample # : L720137-02

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : September 05, 2014
Description : Soil Gas

Sample ID : VM-51

Collected By : Adam Gaines
Collection Date : 09/03/14 16:45

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000200	< 0.00020	< 0.00064	TO-15	09/06/14	1
Ethylbenzene	106	0.000200	0.000290	0.0013	TO-15	09/06/14	1
Isopropylbenzene	120.2	0.000200	< 0.00020	< 0.00098	TO-15	09/06/14	1
MTBE	88.1	0.000200	< 0.00020	< 0.00072	TO-15	09/06/14	1
Naphthalene	128	0.000630	0.00100	0.0052	TO-15	09/06/14	1
1,2,4-Trimethylbenzene	120	0.000200	0.00120	0.0059	TO-15	09/06/14	1
1,3,5-Trimethylbenzene	120	0.000200	0.000240	0.0012	TO-15	09/06/14	1
Toluene	92.1	0.000200	0.000980	0.0037	TO-15	09/06/14	1
m&p-Xylene	106	0.000400	0.00140	0.0061	TO-15	09/06/14	1
o-Xylene	106	0.000200	0.000530	0.0023	TO-15	09/06/14	1
1,4-Bromofluorobenzene			114.	% Rec.	TO-15	09/06/14	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.
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Reported: 09/09/14 09:36 Printed: 09/09/14 09:43

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Soil Gas

City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: Valley Village

ESC Key: INSITE TO-15 TMB

Collected by: Adam Gaines

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes

FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TO-15 / Summa Canister	Remarks/Contaminant	Sample # (lab only)
VM-1 2-3'	Grab	Air		09/03/14	1638	1	X		L720137-01
VM-51	Grab	Air		09/03/14	1645	1	X		-02

Analysis/Container/Preservative

Chain of Custody Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
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Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

L203

CoCode (lab use only)

Template/Prelogin

Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: DI Priority

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	9/4/14	1330	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
			6089 7180 7940
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: Amb

Bottles Received: 2

Date: 9/5/14

Time: 0900

Condition: (lab use only) OK

pH Checked:

NCF:

ESC
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Est. 1970

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Tuesday September 09, 2014

Report Number: L720141
Samples Received: 09/05/14
Client Project: VALLEY VILLAGE

Description: Soil Gas (2)

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Alan Harvill

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

September 09, 2014

ESC Sample # : L720141-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : September 05, 2014
Description : Soil Gas (2)

Sample ID : VM-1 4-5FT

Collected By : Adam Gaines
Collection Date : 09/03/14 16:57

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000200	0.000400	0.0013	TO-15	09/06/14	1
Ethylbenzene	106	0.000200	0.000640	0.0028	TO-15	09/06/14	1
Isopropylbenzene	120.2	0.000200	< 0.00020	< 0.00098	TO-15	09/06/14	1
MTBE	88.1	0.000200	0.000310	0.0011	TO-15	09/06/14	1
Naphthalene	128	0.000630	0.000830	0.0043	TO-15	09/06/14	1
1,2,4-Trimethylbenzene	120	0.000200	0.00240	0.012	TO-15	09/06/14	1
1,3,5-Trimethylbenzene	120	0.000200	0.000510	0.0025	TO-15	09/06/14	1
Toluene	92.1	0.000200	0.00230	0.0087	TO-15	09/06/14	1
m&p-Xylene	106	0.000400	0.00320	0.014	TO-15	09/06/14	1
o-Xylene	106	0.000200	0.00120	0.0052	TO-15	09/06/14	1
1,4-Bromofluorobenzene			128.	% Rec.	TO-15	09/06/14	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.
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Chain of Custody

Page 1 of 1

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano

Email to: lab@insitegroup.org

Project Description: Soil Gas (2)

City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139

Client Project #: Valley Village

ESC Key: INSITE TO-15 TMB

Collected by: Adam Gaines

Site/Facility ID#: 03-06500

P.O.#:

Collected by (signature):

Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes
FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Analysis/Container/Preservative: TO-15 / Summa Canister	Remarks/Contaminant	Sample # (lab only)
VM-1 4-5'	Grab	Air		09/03/14	1657	1	X		L720141-01

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____

Remarks: D/Priority

Flow _____ Other _____

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
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Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

L204

CoCode (lab use only)

Template/Prelogin

Shipped Via:

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	9/4/14	1330	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
			6089 7180 7940
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: Amb

Bottles Received: 1T, 1RE, 1WA3L0

Date: 9/5/14

Time: 0900

Condition: 5' (lab use only) OK

pH Checked:

NCF:

ESC
L·A·B S·C·I·E·N·C·E·S
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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Sunday January 04, 2015

Report Number: L740813
Samples Received: 12/24/14
Client Project: VALLEY VILLAGE

Description: Soil Vapor (1)

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 04, 2015

ESC Sample # : L740813-01

Site ID : 03-6500

Project # : VALLEY VILLAGE

Date Received : December 24, 2014
Description : Soil Vapor (1)

Sample ID : VM-1 2-3 FT

Collected By : Adam Gaines
Collection Date : 12/23/14 11:04

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000200	0.000560	0.0018	TO-15	01/01/15	1
Ethylbenzene	106	0.000200	0.000830	0.0036	TO-15	01/01/15	1
Isopropylbenzene	120.2	0.000200	< 0.00020	< 0.00098	TO-15	01/01/15	1
MTBE	88.1	0.000200	< 0.00020	< 0.00072	TO-15	01/01/15	1
Naphthalene	128	0.000630	< 0.00063	< 0.0033	TO-15	01/01/15	1
1,2,4-Trimethylbenzene	120	0.000200	0.00150	0.0074	TO-15	01/01/15	1
1,3,5-Trimethylbenzene	120	0.000200	0.000400	0.0020	TO-15	01/01/15	1
Toluene	92.1	0.000200	0.00420	0.016	TO-15	01/01/15	1
m&p-Xylene	106	0.000400	0.00360	0.016	TO-15	01/01/15	1
o-Xylene	106	0.000200	0.00130	0.0056	TO-15	01/01/15	1
1,4-Bromofluorobenzene			100.	% Rec.	TO-15	01/01/15	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 04, 2015

ESC Sample # : L740813-02

Site ID : 03-6500

Project # : VALLEY VILLAGE

Date Received : December 24, 2014
Description : Soil Vapor (1)

Sample ID : VM-1 4-5 FT

Collected By : Adam Gaines
Collection Date : 12/23/14 11:11

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000200	0.000320	0.0010	TO-15	01/02/15	1
Ethylbenzene	106	0.000200	0.000360	0.0016	TO-15	01/02/15	1
Isopropylbenzene	120.2	0.000200	< 0.00020	< 0.00098	TO-15	01/02/15	1
MTBE	88.1	0.000200	< 0.00020	< 0.00072	TO-15	01/02/15	1
Naphthalene	128	0.000630	< 0.00063	< 0.0033	TO-15	01/02/15	1
1,2,4-Trimethylbenzene	120	0.000200	0.000790	0.0039	TO-15	01/02/15	1
1,3,5-Trimethylbenzene	120	0.000200	< 0.00020	< 0.00098	TO-15	01/02/15	1
Toluene	92.1	0.000200	0.00140	0.0053	TO-15	01/02/15	1
m&p-Xylene	106	0.000400	0.00150	0.0065	TO-15	01/02/15	1
o-Xylene	106	0.000200	0.000580	0.0025	TO-15	01/02/15	1
1,4-Bromofluorobenzene			95.4	% Rec.	TO-15	01/02/15	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.
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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 04, 2015

ESC Sample # : L740813-03

Site ID : 03-6500

Project # : VALLEY VILLAGE

Date Received : December 24, 2014
Description : Soil Vapor (1)

Sample ID : VM-2

Collected By : Adam Gaines
Collection Date : 12/23/14 10:54

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000200	0.00960	0.031	TO-15	01/01/15	1
Ethylbenzene	106	0.000200	0.00100	0.0043	TO-15	01/01/15	1
Isopropylbenzene	120.2	0.000200	< 0.00020	< 0.00098	TO-15	01/01/15	1
MTBE	88.1	0.000200	< 0.00020	< 0.00072	TO-15	01/01/15	1
Naphthalene	128	0.000630	< 0.00063	< 0.0033	TO-15	01/01/15	1
1,2,4-Trimethylbenzene	120	0.000200	0.000970	0.0048	TO-15	01/01/15	1
1,3,5-Trimethylbenzene	120	0.000200	0.000250	0.0012	TO-15	01/01/15	1
Toluene	92.1	0.000200	0.00190	0.0072	TO-15	01/01/15	1
m&p-Xylene	106	0.000400	0.00200	0.0087	TO-15	01/01/15	1
o-Xylene	106	0.000200	0.000720	0.0031	TO-15	01/01/15	1
1,4-Bromofluorobenzene			104.	% Rec.	TO-15	01/01/15	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
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Est. 1970

REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 04, 2015

ESC Sample # : L740813-04

Site ID : 03-6500

Project # : VALLEY VILLAGE

Date Received : December 24, 2014
Description : Soil Vapor (1)

Sample ID : VM-51

Collected By : Adam Gaines
Collection Date : 12/23/14 11:27

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000200	0.0130	0.042	TO-15	01/01/15	1
Ethylbenzene	106	0.000200	0.00130	0.0056	TO-15	01/01/15	1
Isopropylbenzene	120.2	0.000200	0.000200	0.00098	TO-15	01/01/15	1
MTBE	88.1	0.000200	< 0.00020	< 0.00072	TO-15	01/01/15	1
Naphthalene	128	0.000630	< 0.00063	< 0.0033	TO-15	01/01/15	1
1,2,4-Trimethylbenzene	120	0.000200	0.000930	0.0046	TO-15	01/01/15	1
1,3,5-Trimethylbenzene	120	0.000200	0.000260	0.0013	TO-15	01/01/15	1
Toluene	92.1	0.000200	0.00180	0.0068	TO-15	01/01/15	1
m&p-Xylene	106	0.000400	0.00190	0.0082	TO-15	01/01/15	1
o-Xylene	106	0.000200	0.000720	0.0031	TO-15	01/01/15	1
1,4-Bromofluorobenzene			109.	% Rec.	TO-15	01/01/15	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
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Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Analysis/Container/Preservative

Chain of Custody
Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

L107

CoCode (lab use only)
Template/Prelogin
Shipped Via:

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Soil Vapor (1)
City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139
Client Project #: Valley Village
ESC Key: INSITE TO-15 TMB

Collected by: Adam Gaines
Site/Facility ID#: 03-06500
P.O.#:

Collected by (signature):
Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day..... 200%
____ Next Day..... 100%
____ Two Day..... 50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TO-15 / Summa / no pres	Remarks/Contaminant	Sample # (lab only)
VM-1 (2-3')	Grab	Air		12/23/14	1104	1	X		L740830-01
VM-1 (4-5')	Grab	Air		12/23/14	1111	1	X		02
VM-2	Grab	Air		12/23/14	1054	1	X		03
VM-51	Grab	Air		12/23/14	1127	1	X		04

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks: DI Prior to 4 (617) 209-3766

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐	Condition:	(lab use only)
Kristin Kelly	12/23/14	1502			F	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4+4	Bottles Received: 4+3ST+1F	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 12-24-14	Time: 0930	pH Checked: NCF:

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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Sunday January 04, 2015

Report Number: L740814
Samples Received: 12/24/14
Client Project: VALLEY VILLAGE

Description: Soil Vapor (2)

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 04, 2015

ESC Sample # : L740814-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : December 24, 2014
Description : Soil Vapor (2)

Sample ID : VM-3

Collected By : Adam Gaines
Collection Date : 12/23/14 10:59

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.0400	0.140	0.45	TO-15	01/02/15	200
Ethylbenzene	106	0.0400	< 0.040	< 0.17	TO-15	01/02/15	200
Isopropylbenzene	120.2	0.0400	< 0.040	< 0.20	TO-15	01/02/15	200
MTBE	88.1	0.0400	< 0.040	< 0.14	TO-15	01/02/15	200
Naphthalene	128	0.126	< 0.13	< 0.66	TO-15	01/02/15	200
1,2,4-Trimethylbenzene	120	0.0400	< 0.040	< 0.20	TO-15	01/02/15	200
1,3,5-Trimethylbenzene	120	0.0400	< 0.040	< 0.20	TO-15	01/02/15	200
Toluene	92.1	0.0400	0.160	0.60	TO-15	01/02/15	200
m&p-Xylene	106	0.0800	< 0.080	< 0.35	TO-15	01/02/15	200
o-Xylene	106	0.0400	< 0.040	< 0.17	TO-15	01/02/15	200
1,4-Bromofluorobenzene			99.2	% Rec.	TO-15	01/02/15	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.
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Reported: 01/04/15 20:33 Printed: 01/04/15 21:03

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Soil Vapor (2)
City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139
Client Project #: Valley Village
ESC Key: INSITE TO-15 TMB

Collected by: Adam Gaines
Site/Facility ID#: 03-06500
P.O.#:

Collected by (signature):
Packed on Ice: N Y

Rush? (Lab MUST Be Notified)
___ Same Day..... 200%
___ Next Day..... 100%
___ Two Day..... 50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TO-15 / Summa / no pres	Remarks/Contaminant	Sample # (lab only)
VM-3	Grab	Air		12/23/14	1059	1	X		L740214-01

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other (611 | 207 | 341)

Remarks: DL Priority

Relinquished by: (Signature) — Date: 12/23/14 Time: 1502 — Received by: (Signature)
Relinquished by: (Signature) — Date: Time: — Received by: (Signature)
Relinquished by: (Signature) — Date: Time: — Received for lab by: (Signature) — Date: 12-24-14 Time: 0930

Analysis/Container/Preservative

Chain of Custody Page 1 of 1

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ENVIRONMENTAL SCIENCE CORP.
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Phone (800) 767-5859
FAX (615) 758-5859
L106

CoCode (lab use only)
Template/Prelogin
Shipped Via:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____
Temp: 4w3 Bottles Received: 14E+2T
Condition: a (lab use only)
pH Checked: NCF:

ESC
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Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

Report Summary

Tuesday January 27, 2015

Report Number: L744594
Samples Received: 01/21/15
Client Project: VALLEY VILLAGE

Description: Soil Vapor

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Craig Cothron , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 27, 2015

ESC Sample # : L744594-01

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : January 21, 2015
Description : Soil Vapor

Sample ID : VM-2

Collected By : Adam Gaines
Collection Date : 01/15/15 15:00

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000400	0.00210	0.0067	TO-15	01/24/15	2
Ethylbenzene	106	0.000400	< 0.00040	< 0.0017	TO-15	01/24/15	2
Isopropylbenzene	120.2	0.000400	< 0.00040	< 0.0020	TO-15	01/24/15	2
MTBE	88.1	0.000400	< 0.00040	< 0.0014	TO-15	01/24/15	2
Naphthalene	128	0.00126	< 0.0013	< 0.0066	TO-15	01/24/15	2
1,2,4-Trimethylbenzene	120	0.000400	0.000540	0.0027	TO-15	01/24/15	2
1,3,5-Trimethylbenzene	120	0.000400	< 0.00040	< 0.0020	TO-15	01/24/15	2
Toluene	92.1	0.000400	0.00130	0.0049	TO-15	01/24/15	2
m&p-Xylene	106	0.000800	0.00100	0.0043	TO-15	01/24/15	2
o-Xylene	106	0.000400	< 0.00040	< 0.0017	TO-15	01/24/15	2
1,4-Bromofluorobenzene			99.5	% Rec.	TO-15	01/24/15	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 27, 2015

ESC Sample # : L744594-02

Site ID : 03-06500

Project # : VALLEY VILLAGE

Date Received : January 21, 2015
Description : Soil Vapor

Sample ID : VM-3

Collected By : Adam Gaines
Collection Date : 01/15/15 15:13

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.0400	< 0.040	< 0.13	TO-15	01/25/15	200
Ethylbenzene	106	0.0400	< 0.040	< 0.17	TO-15	01/25/15	200
Isopropylbenzene	120.2	0.0400	< 0.040	< 0.20	TO-15	01/25/15	200
MTBE	88.1	0.0400	< 0.040	< 0.14	TO-15	01/25/15	200
Naphthalene	128	0.126	< 0.13	< 0.66	TO-15	01/25/15	200
1,2,4-Trimethylbenzene	120	0.0400	< 0.040	< 0.20	TO-15	01/25/15	200
1,3,5-Trimethylbenzene	120	0.0400	< 0.040	< 0.20	TO-15	01/25/15	200
Toluene	92.1	0.0400	0.0850	0.32	TO-15	01/25/15	200
m&p-Xylene	106	0.0800	< 0.080	< 0.35	TO-15	01/25/15	200
o-Xylene	106	0.0400	< 0.040	< 0.17	TO-15	01/25/15	200
1,4-Bromofluorobenzene			99.2	% Rec.	TO-15	01/25/15	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.
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REPORT OF ANALYSIS

Ms. Sara Giordano
Insite Group
611 S. Irvine Avenue
Sharon, PA 16146-1165

January 27, 2015

ESC Sample # : L744594-03

Date Received : January 21, 2015
Description : Soil Vapor

Site ID : 03-06500

Sample ID : VM-51

Project # : VALLEY VILLAGE

Collected By : Adam Gaines
Collection Date : 01/15/15 15:34

Parameter	Mol Wght	RDL(ppmv)	Result(ppmv)	mg/m3	Method	Date	Dil.
Volatile Organics							
Benzene	78.1	0.000200	0.00660	0.021	TO-15	01/27/15	1
Ethylbenzene	106	0.000200	0.000300	0.0013	TO-15	01/27/15	1
Isopropylbenzene	120.2	0.000200	< 0.00020	< 0.00098	TO-15	01/27/15	1
MTBE	88.1	0.000200	< 0.00020	< 0.00072	TO-15	01/27/15	1
Naphthalene	128	0.000630	< 0.00063	< 0.0033	TO-15	01/27/15	1
1,2,4-Trimethylbenzene	120	0.000200	0.00150	0.0074	TO-15	01/27/15	1
1,3,5-Trimethylbenzene	120	0.000200	0.000410	0.0020	TO-15	01/27/15	1
Toluene	92.1	0.000200	0.000660	0.0025	TO-15	01/27/15	1
m&p-Xylene	106	0.000400	0.000800	0.0035	TO-15	01/27/15	1
o-Xylene	106	0.000200	0.000380	0.0016	TO-15	01/27/15	1
1,4-Bromofluorobenzene			104.	% Rec.	TO-15	01/27/15	1

RDL - Reported Detection Limit
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.
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Reported: 01/27/15 13:11 Printed: 01/27/15 13:12

Insite Group, Inc.
611 S. Irvine Ave.
Sharon, PA 16146

Alternate billing information:

Report to: Sara Giordano
Email to: lab@insitegroup.org

Project Description: Soil Vapor
City/State Collected: Rural Valley, PA

Phone: 724 347 2101
FAX: 724 347 2139
Client Project #: Valley Village
ESC Key: INSITE TO-15 TMB

Collected by: Adam Gaines
Site/Facility ID#: 03-06500
P.O.#:

Collected by (signature):
Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day..... 200%
____ Next Day..... 100%
____ Two Day..... 50%

Date Results Needed:
Email? __No ✓Yes
FAX? ✓No __Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TO-15 (BTEXMNi) / Summa / no pres	Remarks/Contaminant	Sample # (lab only)
VM-2	Grab	Air		01/15/15	1500	1	X		-01
VM-3	Grab	Air		01/15/15	1513	1	X		-02
VM-51	Grab	Air		01/15/15	1534	1	X		-03

Chain of Custody Page 1 of 1
Prepared by: L178

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Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

CoCode (lab use only)
Template/Prelogin
Shipped Via: L744594

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks: DL Priority

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature) 6272 8625 7621	Temp: A/No. Bottles Received: 3 + lenty	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 1-21-15 Time: 0900	pH Checked: NCF:

Christa Kelly 1/20/15 1250

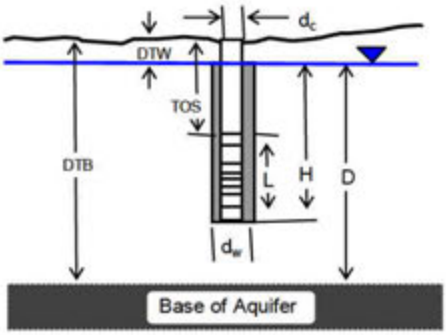
ATTACHMENT H

WELL ID: MW-1 (Slug-Out)

Local ID: Valley Village
Date: 9/18/2014
Time: 0:00

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	8.25 Inch
Screen Length (L)	15 Feet
Depths to:	
water level (DTW)	2.75 Feet
top of screen (TOS)	3.7 Feet
Base of Aquifer (DTB)	18.7 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine-Grained Sandstor



COMPUTED

L_{wetted}	15 Feet
D =	15.95 Feet
H =	15.95 Feet
L/r_w =	43.64
$y_{0\text{-DISPLACEMENT}}$ =	1.75 Feet
$y_{0\text{-SLUG}}$ =	2.11 Feet

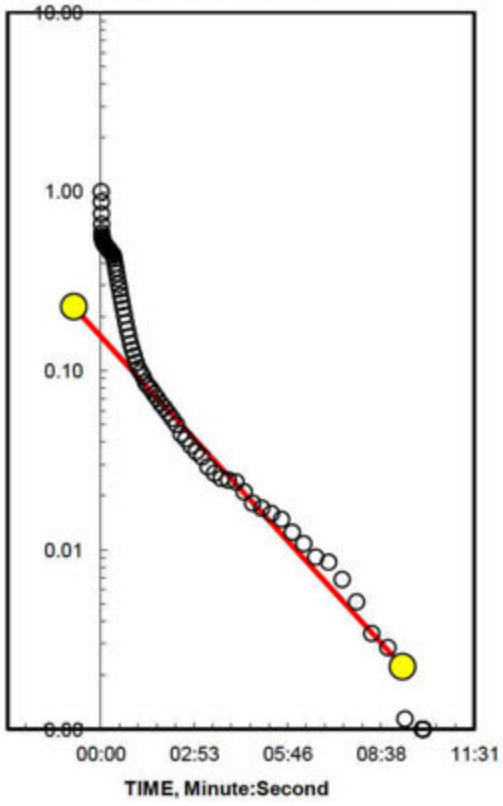
From look-up table using L/r_w

Fully penetrate C =	2.563
ln(Re/rw) =	2.895
Re =	6.22 Feet
Slope =	0.003303 $\log_{10}$/sec
$t_{90\%}$ recovery =	303 sec

Input is consistent.

K = 0.4 Feet/Day

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Reduced Data

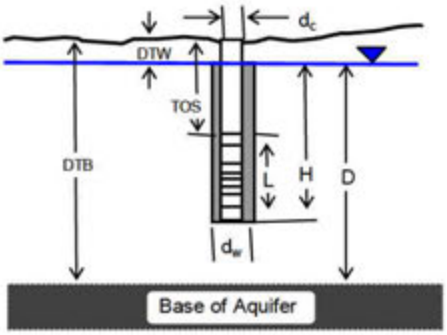
Entry	Time, Hr:Min:Sec	Water Level
1	0:00:01.2	4.51
2	0:00:01.8	4.07
3	0:00:02.4	3.79
4	0:00:03.0	3.73
5	0:00:03.6	3.71
6	0:00:04.2	3.69
7	0:00:04.8	3.68
8	0:00:05.4	3.67
9	0:00:06.0	3.66
10	0:00:06.7	3.66
11	0:00:07.5	3.65
12	0:00:08.4	3.64
13	0:00:09.5	3.63
14	0:00:10.6	3.62
15	0:00:11.9	3.61
16	0:00:13.4	3.60
17	0:00:15.0	3.59
18	0:00:16.8	3.58
19	0:00:18.9	3.56
20	0:00:21.2	3.54
21	0:00:23.8	3.52
22	0:00:26.7	3.45
23	0:00:29.8	3.37
24	0:00:33.3	3.29
25	0:00:37.3	3.22
26	0:00:41.8	3.14
27	0:00:46.9	3.08
28	0:00:52.6	3.03
29	0:00:59.0	2.98
30	0:01:06.2	2.95
31	0:01:14.3	2.93
32	0:01:23.4	2.91
33	0:01:33.7	2.89
34	0:01:45.2	2.88
35	0:01:58.1	2.86
36	0:02:12.6	2.85
37	0:02:28.9	2.83
38	0:02:47.2	2.82
39	0:03:07.8	2.81
40	0:03:30.9	2.80
41	0:03:56.8	2.80
42	0:04:25.8	2.79
43	0:04:58.4	2.78
44	0:05:35.0	2.78
45	0:06:16.0	2.77

WELL ID: MW-10 (Slug-Out)

Local ID: Valley Village
Date: 9/18/2014
Time: 0:00

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	8.25 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	6.94 Feet
top of screen (TOS)	4.5 Feet
Base of Aquifer (DTB)	14.5 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Silt, Loess



COMPUTED

L_{wetted}	7.56 Feet
D =	7.56 Feet
H =	7.56 Feet
L/r_w =	21.99
$y_{0\text{-DISPLACEMENT}}$ =	2.23 Feet
$y_{0\text{-SLUG}}$ =	2.21 Feet

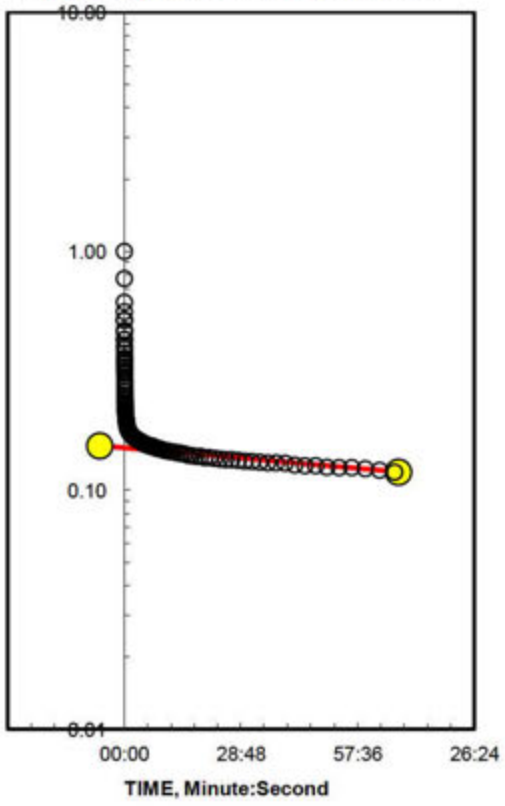
From look-up table using L/r_w

Fully penetrate C =	1.804
ln(Re/rw) =	2.283
Re =	3.37 Feet
Slope =	2.49E-05 $\log_{10}$/sec
$t_{90\%}$ recovery =	40215 sec

Input is consistent.

K =	0.005 Feet/Day

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Reduced Data

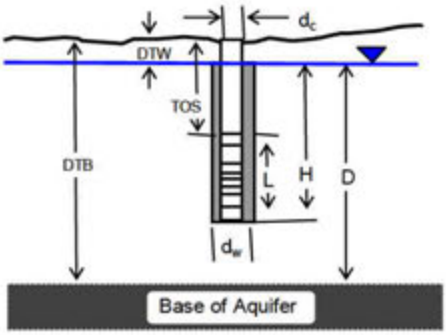
Entry	Time, Hr:Min:Sec	Water Level
1	0:00:01.2	9.17
2	0:00:02.4	8.31
3	0:00:03.0	8.09
4	0:00:03.6	7.96
5	0:00:04.2	7.90
6	0:00:04.8	7.84
7	0:00:05.4	7.78
8	0:00:06.0	7.73
9	0:00:06.7	7.70
10	0:00:07.5	7.66
11	0:00:08.4	7.63
12	0:00:09.5	7.59
13	0:00:10.6	7.54
14	0:00:11.9	7.50
15	0:00:13.4	7.47
16	0:00:15.0	7.45
17	0:00:16.8	7.43
18	0:00:18.9	7.42
19	0:00:21.2	7.40
20	0:00:23.8	7.39
21	0:00:26.7	7.39
22	0:00:29.8	7.38
23	0:00:33.3	7.37
24	0:00:37.3	7.36
25	0:00:41.8	7.36
26	0:00:46.9	7.35
27	0:00:52.6	7.35
28	0:00:59.0	7.34
29	0:01:06.2	7.34
30	0:01:14.3	7.33
31	0:01:23.4	7.33
32	0:01:33.7	7.33
33	0:01:45.2	7.32
34	0:01:58.1	7.32
35	0:02:12.6	7.32
36	0:02:28.9	7.31
37	0:02:47.2	7.31
38	0:03:07.8	7.31
39	0:03:30.9	7.30
40	0:03:56.8	7.30
41	0:04:25.8	7.30
42	0:04:58.4	7.29
43	0:05:35.0	7.29
44	0:06:16.0	7.28
45	0:07:02.1	7.28

WELL ID: MW-8 (Slug-Out)

Local ID: Valley Village
Date: 9/18/2014
Time: 0:00

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	8.25 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	7.66 Feet
top of screen (TOS)	5 Feet
Base of Aquifer (DTB)	15 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Silt, Loess



COMPUTED

L_{wetted} =	7.34 Feet
D =	7.34 Feet
H =	7.34 Feet
L/r_w =	21.35
$y_{0\text{-DISPLACEMENT}}$ =	1.60 Feet
$y_{0\text{-SLUG}}$ =	1.95 Feet

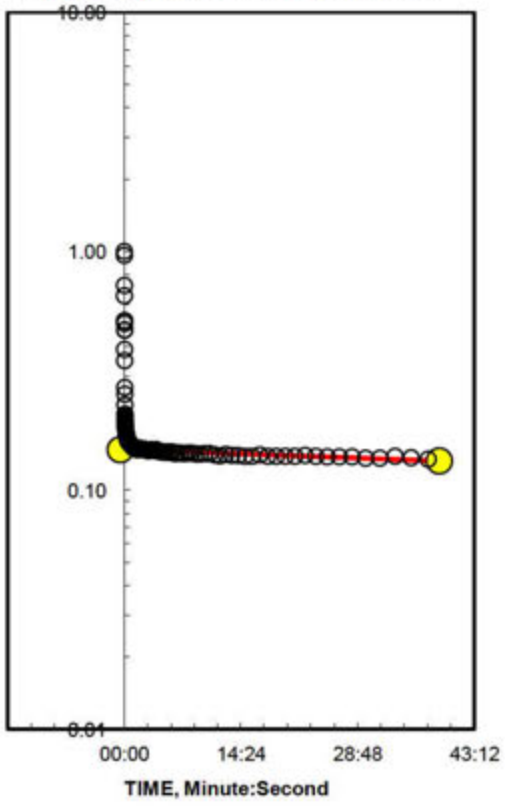
From look-up table using L/r_w

Fully penetrate C =	1.780
ln(Re/rw) =	2.259
Re =	3.29 Feet
Slope =	1.99E-05 $\log_{10}$/sec
$t_{90\%}$ recovery =	50259 sec

Input is consistent.

K = 0.004 Feet/Day

Adjust slope of line to estimate K



REMARKS:

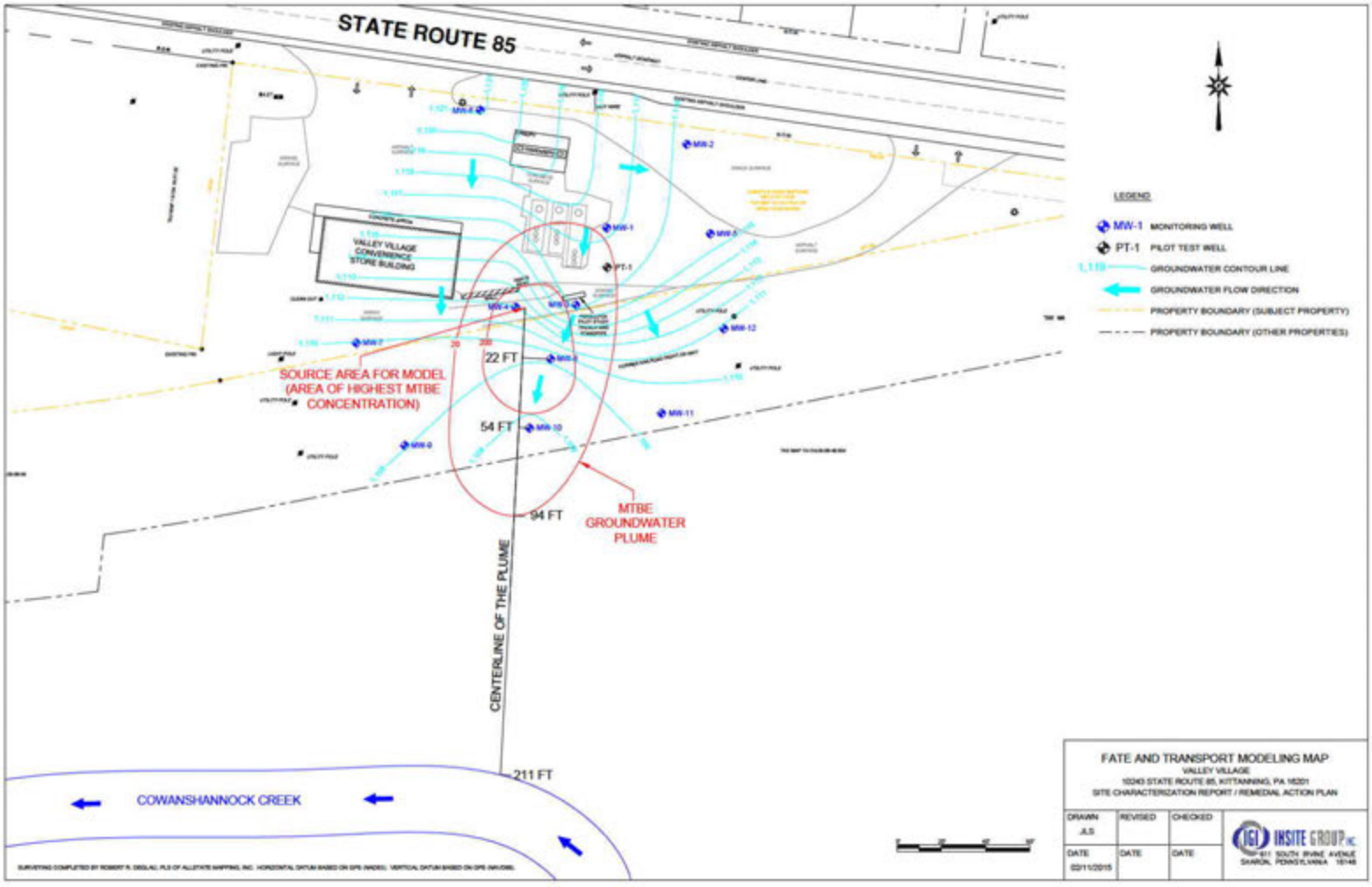
Bouwer and Rice analysis of slug test, WRR 1976

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:01.2	9.26
2	0:00:01.8	8.70
3	0:00:02.4	8.48
4	0:00:03.0	8.28
5	0:00:03.6	8.48
6	0:00:04.2	8.41
7	0:00:04.8	8.06
8	0:00:05.4	8.02
9	0:00:06.0	7.99
10	0:00:06.7	7.98
11	0:00:07.5	7.97
12	0:00:08.4	7.96
13	0:00:09.5	7.95
14	0:00:10.6	7.95
15	0:00:11.9	7.94
16	0:00:13.4	7.94
17	0:00:15.0	7.94
18	0:00:16.8	7.93
19	0:00:18.9	7.93
20	0:00:21.2	7.92
21	0:00:23.8	7.92
22	0:00:26.7	7.92
23	0:00:29.8	7.92
24	0:00:33.3	7.92
25	0:00:37.3	7.91
26	0:00:41.8	7.91
27	0:00:46.9	7.91
28	0:00:52.6	7.91
29	0:00:59.0	7.91
30	0:01:06.2	7.90
31	0:01:14.3	7.90
32	0:01:23.4	7.90
33	0:01:33.7	7.90
34	0:01:45.2	7.90
35	0:01:58.1	7.90
36	0:02:12.6	7.90
37	0:02:28.9	7.90
38	0:02:47.2	7.90
39	0:03:07.8	7.90
40	0:03:30.9	7.90
41	0:03:56.8	7.90
42	0:04:25.8	7.89
43	0:04:58.4	7.89
44	0:05:35.0	7.89
45	0:06:16.0	7.89

ATTACHMENT I

Fate and Transport Modeling
Calibration Data and Model Outputs
Valley Village
10243 State Route 85, Kittanning, PA 16201
February 11, 2015

Model Run	Quick Domenico				
	Calibration Input			Model Output	
	K (ft/day)	α_x (ft)	λ (day^{-1})	Distance Dowgradient from MW-4 at Which MTBE Concetration is <20 ug/L	MTBE Concentration at Cowanshannock Creek (211 feet Downgradient from MW-4)
Initial Value:	0.14	8	0.0019		
Range:	0.014 - 1.4	0.8 - 80	>0		
Model 1	0.014	0.8	Model Does Not Calibrate		
Model 2	0.014	8	Model Does Not Calibrate		
Model 3	0.014	80	0.00005	87 feet	0.000 mg/L
Model 4	0.14	0.8	0.00051	92 feet	0.000 mg/L
Model 5	0.14	8	0.00063	91 feet	0.000 mg/L
Model 6	**0.14**	**80**	**0.0013**	**94 feet**	**0.001 mg/L**
Model 7	1.4	0.8	0.0051	92 feet	0.000 mg/L
Model 8	1.4	8	0.0063	91 feet	0.000 mg/L
Model 9	**1.4**	**80**	**0.014**	**91 feet**	**0.001 mg/L**


STATE ROUTE 85
VALLEY VILLAGE CONVENIENCE STORE BUILDING
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
PT-1
SOURCE AREA FOR MODEL (AREA OF HIGHEST MTBE CONCENTRATION)
22 FT
54 FT
94 FT
MTBE GROUNDWATER PLUME
CENTERLINE OF THE PLUME
211 FT
COWANSHANNOCK CREEK
LEGEND
MW-1 MONITORING WELL
PT-1 PILOT TEST WELL
1,110 GROUNDWATER CONTOUR LINE
GROUNDWATER FLOW DIRECTION
PROPERTY BOUNDARY (SUBJECT PROPERTY)
PROPERTY BOUNDARY (OTHER PROPERTIES)
FATE AND TRANSPORT MODELING MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN
DRAWN JLS
REVISED
CHECKED
DATE 02/11/2015
DATE
DATE
INSITE GROUP INC
1597-811 SOUTH IRVINE AVENUE
SHARON, PENNSYLVANIA 16146

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village							
Date:	2/11/2015	Prepared by:	JLS					
		Contaminant:	MTBE - Model 1					
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)	
0.343	8.00E-01	8.00E-02	1.00E-04	0	75	2	10950	
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)	
1.40E-02	0.092	0.4	1.7	12	2.00E-02	2.02	0.001594059	

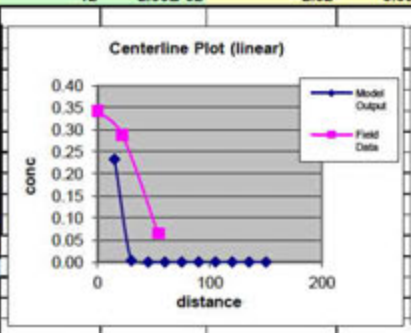
NEW QUICK_DOMENICO.XLS

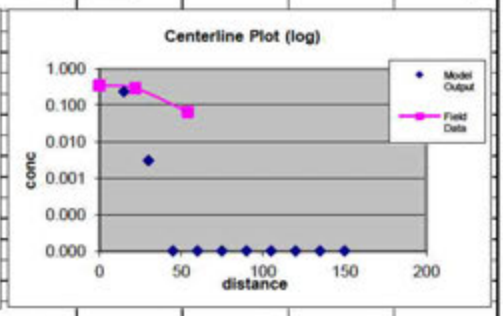
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
26	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	26	0	0
at	10950	days =	
			0.018
			mg/l





	AREAL MODEL	CALCULATION DOMAIN								
	Length (ft)	150								
	Width (ft)	100								
	15	30	45	60	75	90	105	120	135	150
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.233	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data:	Centerline C	Concentration		0.343	0.288	0.065				
	Distance from Source			0	22	54				

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village										
Date:	2/11/2015	Prepared by:	JLS								
		Contaminant:	MTBE - Model 2								
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)				
0.343	8.00E+00	8.00E-01	1.00E-04	0	75	2	10950				
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)				
1.40E-02	0.092	0.4	1.7	12	2.00E-02	2.02	0.001594059				

NEW QUICK_DOMENICO.XLS

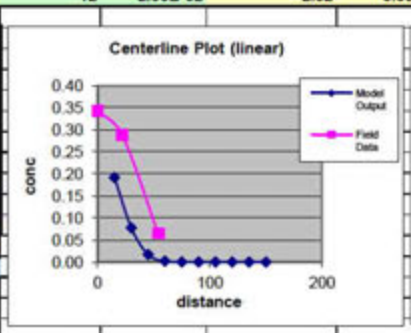
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

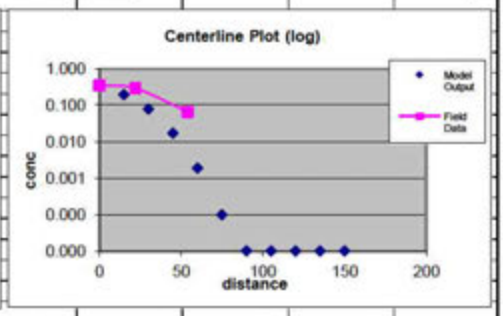
Point Concentration

x(ft)	y(ft)	z(ft)
44	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	44	0	0
at	10950	days =	

0.019 mg/l





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	150									
	Width (ft)	100									
	15	30	45	60	75	90	105	120	135	150	
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
50	0.001	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0	0.192	0.078	0.017	0.002	0.000	0.000	0.000	0.000	0.000	0.000	
-50	0.001	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Field Data:	Centerline C	Concentration		0.343	0.288	0.065					
	Distance from Source			0	22	54					

NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village						
Date:	2/11/2015	Prepared by:	JLS				
		Contaminant:	MTBE - Model 3				
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.343	8.00E+01	8.00E+00	1.00E-04	0.00005	75	2	10950
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.40E-02	0.092	0.4	1.7	12	2.00E-02	2.02	0.001594059

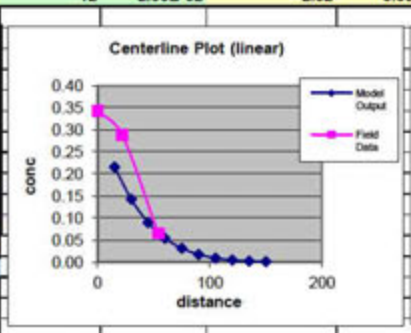
NEW QUICK_DOMENICO.XLS

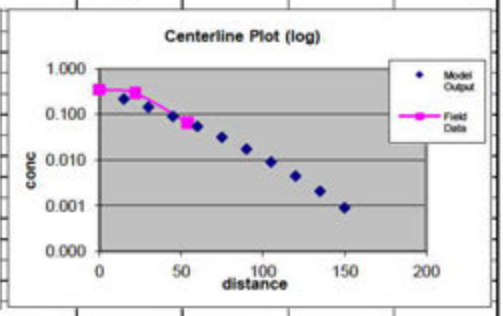
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
87	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	87	0	0
at	10950	days =	
			0.019
			mg/l





	AREAL MODEL	CALCULATION DOMAIN
	Length (ft)	150
	Width (ft)	100

	15	30	45	60	75	90	105	120	135	150
100	0.000	0.000	0.001	0.002	0.002	0.001	0.001	0.001	0.000	0.000
50	0.046	0.044	0.034	0.024	0.015	0.009	0.005	0.003	0.001	0.001
0	0.215	0.142	0.089	0.054	0.031	0.017	0.009	0.004	0.002	0.001
-50	0.046	0.044	0.034	0.024	0.015	0.009	0.005	0.003	0.001	0.001
-100	0.000	0.000	0.001	0.002	0.002	0.001	0.001	0.001	0.000	0.000
Field Data:	Centerline C Concentration			0.343	0.288	0.065				
	Distance from Source			0	22	54				

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village							
Date:	2/11/2015	Prepared by:	JLS					
		Contaminant:	MTBE - Model 4					
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)	
0.343	8.00E-01	8.00E-02	1.00E-04	0.00051	75	2	10950	
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)	
1.40E-01	0.092	0.4	1.7	12	2.00E-02	2.02	0.015940594	

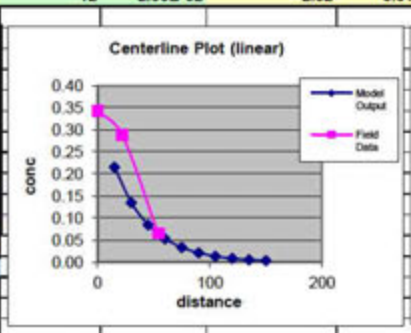
NEW QUICK_DOMENICO.XLS

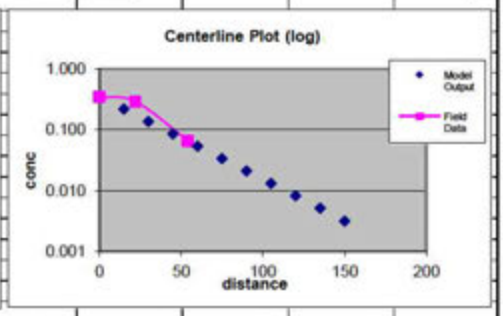
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
92	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	92	0	0
at	10950	days =	
			0.019
			mg/l





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	150									
	Width (ft)	100									
	15	30	45	60	75	90	105	120	135	150	
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0	0.215	0.134	0.084	0.053	0.033	0.021	0.013	0.008	0.005	0.003	
-50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Field Data:	Centerline C Concentration			0.343	0.288	0.065					
	Distance from Source			0	22	54					

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village							
Date:	2/11/2015	Prepared by:	JLS					
		Contaminant:	MTBE - Model 5					
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)	
0.343	8.00E+00	8.00E-01	1.00E-04	0.00063	75	2	10950	
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)	
1.40E-01	0.092	0.4	1.7	12	2.00E-02	2.02	0.015940594	

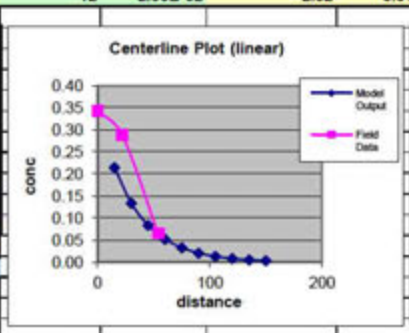
NEW QUICK_DOMENICO.XLS

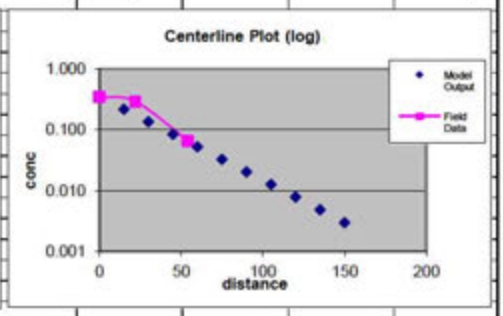
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
91	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	91	0	0
at	10950	days =	
			0.019
			mg/l





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	150									
	Width (ft)	100									
	15	30	45	60	75	90	105	120	135	150	
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
50	0.001	0.005	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0.001	
0	0.214	0.133	0.083	0.052	0.032	0.020	0.012	0.008	0.005	0.003	
-50	0.001	0.005	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0.001	
-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Field Data:	Centerline C	Concentration		0.343	0.288	0.065					
	Distance from Source			0	22	54					

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village							
Date:	2/11/2015	Prepared by:	JLS					
		Contaminant:	MTBE - Model 6A					
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)	
0.343	8.00E+01	8.00E+00	1.00E-04	0.0013	75	2	10950	
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)	
1.40E-01	0.092	0.4	1.7	12	2.00E-02	2.02	0.015940594	

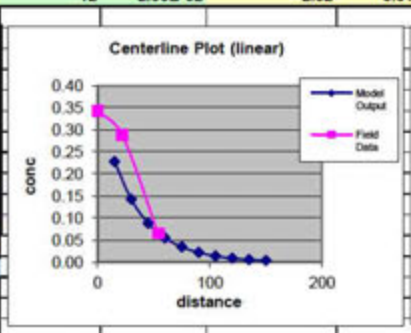
NEW QUICK_DOMENICO.XLS

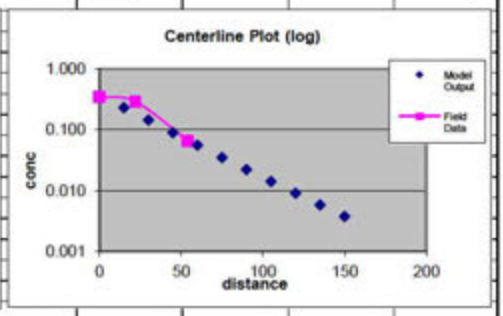
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
94	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	94	0	0
at	10950	days =	
			0.019
			mg/l





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	150									
	Width (ft)	100									
	15	30	45	60	75	90	105	120	135	150	
100	0.000	0.000	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.001	
50	0.049	0.044	0.034	0.024	0.017	0.012	0.008	0.005	0.004	0.002	
0	0.228	0.142	0.088	0.055	0.034	0.022	0.014	0.009	0.006	0.004	
-50	0.049	0.044	0.034	0.024	0.017	0.012	0.008	0.005	0.004	0.002	
-100	0.000	0.000	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.001	
Field Data:	Centerline C Concentration			0.343	0.288	0.065					
	Distance from Source			0	22	54					

NEW QUICK DOMENICO

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village						
Date:	2/11/2015	Prepared by:	JLS				
		Contaminant:	MTBE - Model 6B				

SOURCE CONC	Ax	Ay	Az	LAMBDA	SOURCE WIDTH	SOURCE THICKNESS	Time (days)
(MG/L)	(ft)	(ft)	(ft)		(ft)	(ft)	(days)
			>=.001	day-1			
0.343	8.00E+01	8.00E+00	1.00E-04	0.0013	75	2	10950

Hydraulic Cond	Hydraulic Gradient	Porosity	Soil Bulk Density	KOC	Frac. Org. Carb.	Retard-ation	V (=K*i/n*R)
(ft/day)	(ft/ft)	(dec. frac.)	(g/cm³)			(R)	(ft/day)
1.40E-01	0.092	0.4	1.7	12	2.00E-02	2.02	0.015940594

NEW QUICK_DOMENICO.XLS

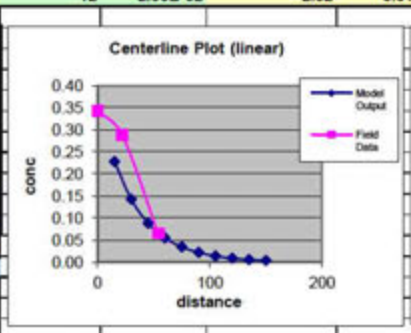
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

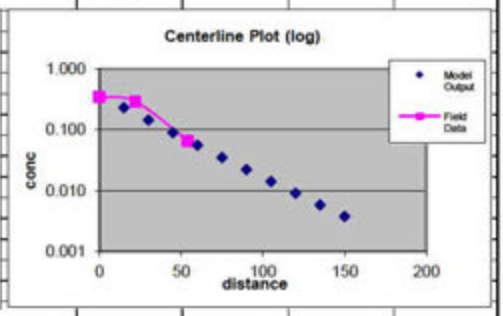
Point Concentration

x(ft)	y(ft)	z(ft)
211	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	211	0	0
at	10950	days =	

0.001 mg/l





	AREAL MODEL	CALCULATION DOMAIN
	Length (ft)	150
	Width (ft)	100

	15	30	45	60	75	90	105	120	135	150
100	0.000	0.000	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.001
50	0.049	0.044	0.034	0.024	0.017	0.012	0.008	0.005	0.004	0.002
0	0.228	0.142	0.088	0.055	0.034	0.022	0.014	0.009	0.006	0.004
-50	0.049	0.044	0.034	0.024	0.017	0.012	0.008	0.005	0.004	0.002
-100	0.000	0.000	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.001
Field Data:	Centerline C Concentration			0.343	0.288	0.065				
	Distance from Source			0	22	54				

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village						
Date:	2/11/2015	Prepared by:	JLS				
		Contaminant:	MTBE - Model 7				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.343	8.00E-01	8.00E-02	1.00E-04	0.0051	75	2	10950

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.40E+00	0.092	0.4	1.7	12	2.00E-02	2.02	0.159405941

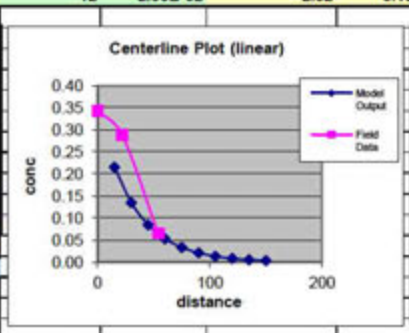
NEW QUICK_DOMENICO.XLS

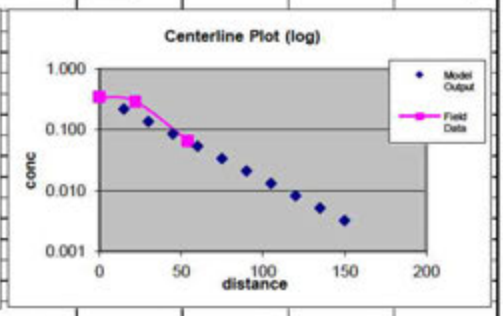
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
92	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	92	0	0
at	10950	days =	
			0.019
			mg/l





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	150									
	Width (ft)	100									
	15	30	45	60	75	90	105	120	135	150	
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0	0.215	0.134	0.084	0.053	0.033	0.021	0.013	0.008	0.005	0.003	
-50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Field Data:	Centerline C Concentration			0.343	0.288	0.065					
	Distance from Source			0	22	54					

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village							
Date:	2/11/2015	Prepared by:	JLS					
		Contaminant:	MTBE - Model 8					
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)	
0.343	8.00E+00	8.00E-01	1.00E-04	0.0063	75	2	10950	
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)	
1.40E+00	0.092	0.4	1.7	12	2.00E-02	2.02	0.159405941	

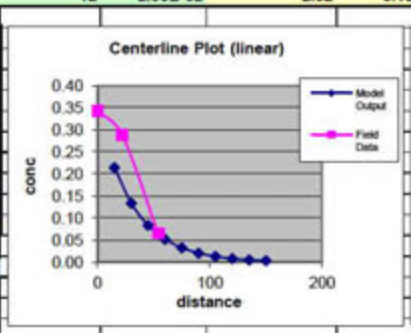
NEW QUICK_DOMENICO.XLS

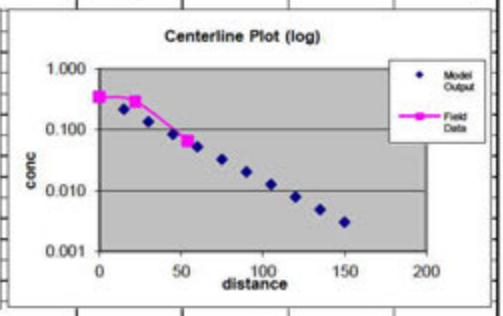
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
91	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	91	0	0
at	10950	days =	
			0.019
			mg/l





	AREAL MODEL	CALCULATION DOMAIN								
	Length (ft)	150								
	Width (ft)	100								
	15	30	45	60	75	90	105	120	135	150
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.001	0.005	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0.001
0	0.214	0.133	0.083	0.052	0.032	0.020	0.012	0.008	0.005	0.003
-50	0.001	0.005	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0.001
-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data:	Centerline C Concentration			0.343	0.288	0.065				
	Distance from Source			0	22	54				

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village							
Date:	2/11/2015	Prepared by:	JLS					
		Contaminant:	MTBE - Model 9A					
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)	
0.343	8.00E+01	8.00E+00	1.00E-04	0.014	75	2	10950	
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)	
1.40E+00	0.092	0.4	1.7	12	2.00E-02	2.02	0.159405941	

NEW QUICK_DOMENICO.XLS

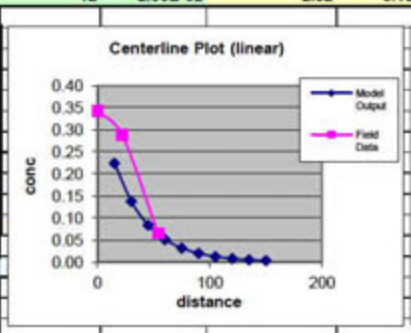
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

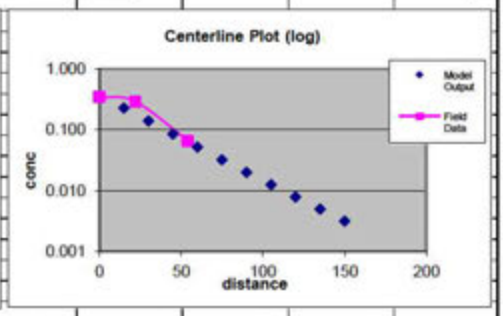
Point Concentration

x(ft)	y(ft)	z(ft)
91	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	91	0	0
at	10950	days =	

0.019 mg/l





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	150									
	Width (ft)	100									
	15	30	45	60	75	90	105	120	135	150	
100	0.000	0.000	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	
50	0.048	0.043	0.032	0.023	0.015	0.010	0.007	0.005	0.003	0.002	
0	0.224	0.137	0.083	0.051	0.032	0.020	0.012	0.008	0.005	0.003	
-50	0.048	0.043	0.032	0.023	0.015	0.010	0.007	0.005	0.003	0.002	
-100	0.000	0.000	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	
Field Data:	Centerline C	Concentration		0.343	0.288	0.065					
	Distance from Source			0	22	54					

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Valley Village										
Date:	2/11/2015	Prepared by:	JLS								
		Contaminant:	MTBE - Model 9B								
SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)				
0.343	8.00E+01	8.00E+00	1.00E-04	0.014	75	2	10950				
Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm³)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)				
1.40E+00	0.092	0.4	1.7	12	2.00E-02	2.02	0.159405941				

NEW QUICK_DOMENICO.XLS

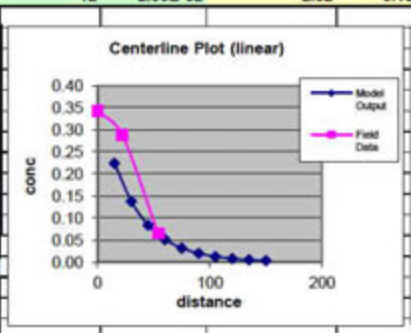
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

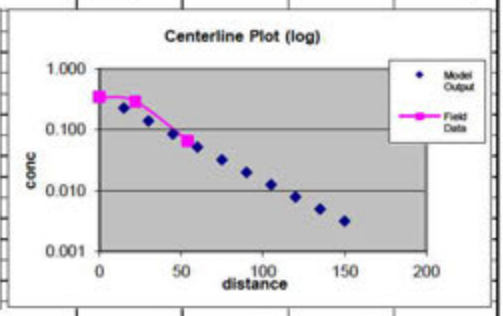
Point Concentration

x(ft)	y(ft)	z(ft)
211	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	211	0	0
at	10950	days =	

0.001 mg/l





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	150									
	Width (ft)	100									
	15	30	45	60	75	90	105	120	135	150	
100	0.000	0.000	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	
50	0.048	0.043	0.032	0.023	0.015	0.010	0.007	0.005	0.003	0.002	
0	0.224	0.137	0.083	0.051	0.032	0.020	0.012	0.008	0.005	0.003	
-50	0.048	0.043	0.032	0.023	0.015	0.010	0.007	0.005	0.003	0.002	
-100	0.000	0.000	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	
Field Data:	Centerline C	Concentration		0.343	0.288	0.065					
	Distance from Source			0	22	54					

ATTACHMENT J

PaGWIS Search
0.25 mile search radius

Valley Village
10243 State Route 85, Kittanning, PA 16201-8165

Record No.	1	2	3
Well ID	51900	51906	51907
Date Drilled	10/6/1982	8/10/1982	8/9/1982
Type Of Activity	NEW WELL	NEW WELL	NEW WELL
Well Address			
Well Zip Code			
County	ARMSTRONG	ARMSTRONG	ARMSTRONG
Quad Name	RURAL VALLEY	RURAL VALLEY	RURAL VALLEY
Municipality	COWANSHANNOCK TWP.	COWANSHANNOCK TWP.	COWANSHANNOCK TWP.
Latitude DD	40.80222	40.80222	40.80222
Longitude DD	-79.34667	-79.34556	-79.34611
Drillers Well ID			
Local Well Number	0510N	0517N	0518N
Driller	704	704	704
Licensee	TOY DRILLING CO INC	TOY DRILLING CO INC	TOY DRILLING CO INC
Owner	MOORE R	FISHER F	COGLEY H
Well Depth	60	165	145
Depth To Bedrock	2	7	9
Saltwater Zone			
Yield Measurement Method			
Well Yield	10	2.5	5
Static Water Level			
Water Level After Yield Test			
Length Of Test			
Well Use	WITHDRAWAL	WITHDRAWAL	WITHDRAWAL
Water Use	DOMESTIC	DOMESTIC	DOMESTIC

Google earth

feet 2000

meters 800

ATTACHMENT K

REGENESIS

Remedial Cost Proposal

To: Client (Firm) **Date:** October 13, 2014

From: Doug Davis - Central Region Technical Manager
ddavis@regenesis.com 614-447-0492

Subject: ***Preliminary Design and Cost Estimate - Pilot Test Application of ORC Advanced and PersulfOx***

Site: *Valley Village*

Location: UST Pit Application

Applicable Product(s)	Link(s) to View/Download Product Information
PersulfOx	PersulfOx
ORC Advanced	ORC Advanced

REGENESIS is pleased to present you with this design and cost estimate for the proposed treatment at the Valley Village site utilizing the products referenced above. Included within this document you will find the following attachments containing information regarding the proposed approach:

- Map Depicting Treatment Area
- Remedial Design and Cost Estimate
- Suggested Performance Monitoring Parameters for Aerobic Bioremediation

Summary of Design

The attached remedial design is for a pilot test application of 1) ORC Advanced in the upgradient section of the active UST cavity and 2) trench application(s) of PersulfOx in the vicinity of monitoring wells MW-3 and MW-4. In addition to the PersulfOx, I have also estimated ORC Advanced loading rates on a per trench basis for your consideration.

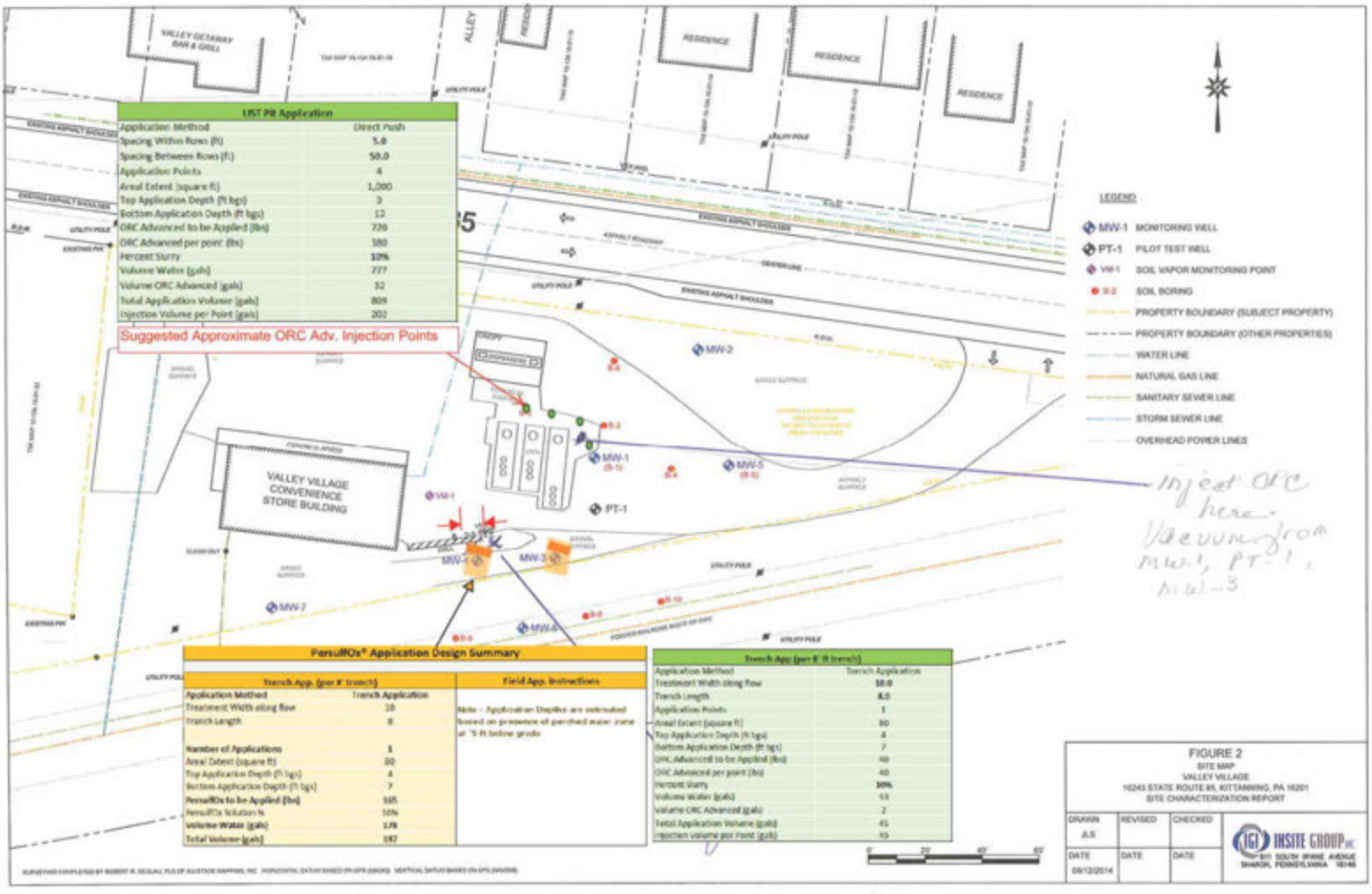
For the ORC Advanced application, I determined dosing based on affecting an approximate 1,000 square ft area through a combination of ORC Advanced application and groundwater pumping. For the PersulfOx application I have assumed a 10 ft treatment width parallel to flow for each trench and a 3 ft vertical treatment thickness.

Assumptions

In generating this design proposal REGENESIS relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site. The attached design summary tables specify the assumptions used in preparation of this technical design. We request that these modeling input assumptions be verified by your firm.

Closing

Please feel free to contact me if you need additional information or have any questions regarding our evaluation and/or this correspondence (contact info listed above). Thank you for considering REGENESIS as part or your remedial solution for this project.



LIST PR Application	
Application Method	Direct Push
Spacing Within Rows (ft)	5.0
Spacing Between Rows (ft)	50.0
Application Points	4
Areal Extent (square ft)	1,000
Top Application Depth (ft bgs)	3
Bottom Application Depth (ft bgs)	12
ORC Advanced to be Applied (lbs)	720
ORC Advanced per point (lbs)	180
Percent Slurry	10%
Volume Water (gals)	777
Volume ORC Advanced (gals)	32
Total Application Volume (gals)	809
Injection Volume per Point (gals)	202

Suggested Approximate ORC Adv. Injection Points

PersulfOx® Application Design Summary

Trench App. (per 8' trench)		Field App. Instructions
Application Method	Trench Application	
Treatment Width along flow	10	Note - Application Depths are estimated based on presence of perched water zone at ~5 ft below grade
Trench Length	8	
Number of Applications	1	
Areal Extent (square ft)	80	
Top Application Depth (ft bgs)	4	
Bottom Application Depth (ft bgs)	7	
PersulfOx to be Applied (lbs)	165	
PersulfOx Solution %	10%	
Volume Water (gals)	178	
Total Volume (gals)	182	

Trench App (per 8' ft trench)	
Application Method	Trench Application
Treatment Width along flow	10.0
Trench Length	8.0
Application Points	1
Areal Extent (square ft)	80
Top Application Depth (ft bgs)	4
Bottom Application Depth (ft bgs)	7
ORC Advanced to be Applied (lbs)	40
ORC Advanced per point (lbs)	40
Percent Slurry	10%
Volume Water (gals)	13
Volume ORC Advanced (gals)	2
Total Application Volume (gals)	45
Injection Volume per Point (gals)	45

SURVEYING COMPLETED BY ROBERT R. DEGLAU, PLS OF ALLSTATE MAPPING, INC. HORIZONTAL DATUM BASED ON GPS (WGS84). VERTICAL DATUM BASED ON GPS (NAVD88).

FIGURE 2
SITE MAP
VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT

DRAWN	REVISED	CHECKED
AJS		
DATE	DATE	DATE
08/12/2014		

INSITE GROUP INC
911 SOUTH IRWIN AVENUE
SHARON, PENNSYLVANIA 16146

REGENESIS

Project Info		
Valley Village		
Kittanning, PA		
UST Pit Application		
Prepared For:		
Client (Firm)		
Target Treatment Zone (TTZ) Info	**Unit**	**Value**
Treatment Area	ft^2	1,000
Top Treat Depth	ft	3.0
Bot Treat Depth	ft	12.0
Vertical Treatment Interval	ft	9.0
Treatment Zone Volume	ft^3	9,000
Treatment Zone Volume	cy	333
Soil Type	—	clay
Porosity	cm^3/cm^3	0.45
Effective Porosity	cm^3/cm^3	0.10
Treatment Zone Pore Volume	gals	30,296
Treatment Zone Effective Pore Volume	gals	6,732
Fraction Organic Carbon (foc)	g/g	0.005
Soil Density	g/cm^3	1.5
Soil Density	lb/ft^3	94
Soil Weight	lbs	8.4E+05
Hydraulic Conductivity	ft/day	0.0
Hydraulic Conductivity	cm/sec	3.53E-07
Hydraulic Gradient	ft/ft	0.100
GW Velocity	ft/day	0.00
GW Velocity	ft/yr	0
Sources of Oxygen Demand	**Unit**	**Value**
Dissolved Phase Contaminant Mass	lbs	6
Sorbed Phase Contaminant Mass	lbs	25
Reduced Metals (Fe2+ and Mn2+) Mass	lbs	8
BOD mass equivalent	lbs	0
COD mass equivalent	lbs	0
Total Mass Contributing to O_2 Demand	**lbs**	**39**
Stoichiometric Demand	**Unit**	**Value**
Stoichiometric O_2 Demand	lbs	99
Stoichiometric ORC Advanced Demand	**lbs**	**580**
Application Dosing	**Unit**	**Value**
Efficiency/Safety Factor	---	**1.2**
ORC Advanced to be Applied	lbs	720.0

ORC Advanced® Application Design Summary

UST Pit Application	
Application Method	Direct Push
Spacing Within Rows (ft)	5.0
Spacing Between Rows (ft)	50.0
Application Points	4
Areal Extent (square ft)	1,000
Top Application Depth (ft bgs)	3
Bottom Application Depth (ft bgs)	12
ORC Advanced to be Applied (lbs)	720
ORC Advanced per point (lbs)	180
Percent Slurry	10%
Volume Water (gals)	777
Volume ORC Advanced (gals)	32
Total Application Volume (gals)	809
Injection Volume per Point (gals)	202

Field App Instructions

Field Mixing Ratios	
Water per Pt (gals)	194
ORC Advanced per Pt (lbs)	180
Total Volume per Pt (gals)	202

Technical Notes/Discussion

Prepared By: Doug Davis - Central Region Technical Manager

Date: 10/13/2014

Assumptions/Qualifications

In generating this preliminary estimate, Regenesis relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

REGENESIS

Purchasing Information

Valley Village	--	UST Pit Application
ORC Advanced Required	**lbs**	**720.0**
ORC Advanced Cost*	**$**	**$6,444**
Estimated Tax and Freight %	%	15%
Estimated Tax and Freight Cost	$	$967
Estimated Total Product Cost	**$**	**$7,411**

***Note that the combined tax and freight costs are preliminary estimates only. Please contact your local sales manager or Customer Service at 949-366-8000 to obtain a shipping quote. You will be asked to provide a ship-to address and estimated time of delivery.**

Currently Available Packaging Options

Package Type**	# of packages	lbs required
40 lb poly lined bags	#REF!	#REF!
250 lb cardboard drums	3	750

****Available Package Types are subject to change.**

REGENESIS

Project Information

Valley Village
Kittanning, PA
Trench App. (per 8' trench)
Prepared For:
Client (Firm)

Target Treatment Zone (TTZ) Info	Unit	Value
Treatment Area	ft^2	80
Top Treat Depth	ft	4.0
Bot Treat Depth	ft	7.0
Vertical Treatment Interval	ft	3.0
Treatment Zone Volume	ft^3	240
Treatment Zone Volume	cy	9
Soil Type	---	clay
Porosity	cm^3/cm^3	0.45
Effective Porosity	cm^3/cm^3	0.10
Treatment Zone Pore Volume	gals	808
Treatment Zone Effective Pore Volume	gals	180
Fraction Organic Carbon (foc)	g/g	0.010
Soil Density	g/cm^3	1.5
Soil Density	lb/ft^3	94
Soil Weight	lbs	2.2E+04
Hydraulic Conductivity	ft/day	0.0
Hydraulic Conductivity	cm/sec	3.53E-07
Hydraulic Gradient	ft/ft	0.100
GW Velocity	ft/day	0.00
GW Velocity	ft/yr	0
Sources of Oxidant Demand	**Unit**	**Value**
Sorbed Phase Contaminant Mass	lbs	1
Dissolved Phase Contaminant Mass	lbs	0.2
Total Contaminant Mass	lbs	2
Stoichiometric PersulfOx Demand	lbs	51
Efficiency/Safety Factor	---	**2.0**
Stoichiometric PersulfOx Required	lbs	101
Additional Soil Oxidant Demand	g/kg	2.0
SOD PersulfOx Required	lbs	50
Total PersulfOx Required	**lbs**	**151**

Application Dosing

PersulfOx Required (per 8' trench)	**lbs**	**165**

PersulfOx® Application Design Summary

Trench App. (per 8' trench)	
Application Method	**Trench Application**
Treatment Width along flow	10
Trench Length	8
Number of Applications	**1**
Areal Extent (square ft)	80
Top Application Depth (ft bgs)	4
Bottom Application Depth (ft bgs)	7
PersulfOx to be Applied (lbs)	**165**
PersulfOx Solution %	10%
Volume Water (gals)	**178**
Total Volume (gals)	**187**

Field App. Instructions

Note - Application Depths are estimated based on presence of perched water zone at ~5 ft below grade

Technical Notes/Discussion

1) Suggested Application Volumes Shown. Additional water can be added as needed to create a greater hydraulic head within the trench.

2) Application Depths are estimated based on presence of perched water zone at ~5 ft below grade.

3) Trench dosing based on assuming a 10 ft treatment width along flow.

Prepared By: Doug Davis - Central Region Technical Manager
Date: 10/13/2014

Assumptions/Qualifications

In generating this preliminary estimate, Regenesis relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

REGENESIS

Purchasing Information

Valley Village	--	Trench App. (per 8' trench)
PersulfOx Required (per trench)	lbs	165
Number of Trenches		2
Total PersulfOx Required		331
PersulfOx Cost	$	$827
Estimated Tax and Freight %	%	15%
Estimated Tax and Freight Cost	$	$124
Estimated Total Product Cost	$	$950

*Note that the combined tax and freight costs are preliminary estimates only. Please contact your local sales manager or Customer Service at 949-366-8000 to obtain a shipping quote. You will be asked to provide a ship-to address and estimated time of delivery.

Currently Available Packaging Options

PersulfOx Package Type**	# of packages	lbs required
55.1 lb poly-lined bag	3	165
2,204 lb supersacks	1	165

**Available Package Types are subject to change.

REGENESIS

Project Info		
Valley Village		
Kittanning, PA		
Trench App (per 8' ft trench)		
Prepared For:		
Client (Firm)		
Target Treatment Zone (TTZ) Info	**Unit**	**Value**
Treatment Area	ft^2	80
Top Treat Depth	ft	4.0
Bot Treat Depth	ft	7.0
Vertical Treatment Interval	ft	3.0
Treatment Zone Volume	ft^3	240
Treatment Zone Volume	cy	9
Soil Type	—	clay
Porosity	cm^3/cm^3	0.45
Effective Porosity	cm^3/cm^3	0.10
Treatment Zone Pore Volume	gals	808
Treatment Zone Effective Pore Volume	gals	180
Fraction Organic Carbon (foc)	g/g	0.005
Soil Density	g/cm^3	1.5
Soil Density	lb/ft^3	94
Soil Weight	lbs	2.2E+04
Hydraulic Conductivity	ft/day	0.0
Hydraulic Conductivity	cm/sec	3.53E-07
Hydraulic Gradient	ft/ft	0.100
GW Velocity	ft/day	0.00
GW Velocity	ft/yr	0
Sources of Oxygen Demand	**Unit**	**Value**
Dissolved Phase Contaminant Mass	lbs	0
Sorbed Phase Contaminant Mass	lbs	1
Reduced Metals (Fe2+ and Mn2+) Mass	lbs	0
BOD mass equivalent	lbs	0
COD mass equivalent	lbs	0
Total Mass Contributing to O_2 Demand	**lbs**	**1**
Stoichiometric Demand	**Unit**	**Value**
Stoichiometric O_2 Demand	lbs	3
Stoichiometric ORC Advanced Demand	**lbs**	**15**
Application Dosing	**Unit**	**Value**
Efficiency/Safety Factor	---	**1.2**
ORC Advanced to be Applied (per trench)	lbs	40.0

ORC Advanced® Application Design Summary

Trench App (per 8' ft trench)	
Application Method	Trench Application
Treatment Width along flow	10.0
Trench Length	8.0
Application Points	1
Areal Extent (square ft)	80
Top Application Depth (ft bgs)	4
Bottom Application Depth (ft bgs)	7
ORC Advanced to be Applied (lbs)	40
ORC Advanced per point (lbs)	40
Percent Slurry	10%
Volume Water (gals)	43
Volume ORC Advanced (gals)	2
Total Application Volume (gals)	45
Injection Volume per Point (gals)	45

Field App Instructions

Technical Notes/Discussion

Prepared By: Doug Davis - Central Region Technical Manager

Date: 10/13/2014

Assumptions/Qualifications

In generating this preliminary estimate, Regenesis relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

REGENESIS

Purchasing Information

Valley Village	--	Trench App (per 8' ft trench
ORC Advanced Required	lbs	40.0
Number of Trenches		2.0
Total ORC Advanced Required	lbs	80.0
ORC Advanced Cost*	$	$716
Estimated Tax and Freight %	%	15%
Estimated Tax and Freight Cost	$	$107
Estimated Total Product Cost	$	$823

*Note that the combined tax and freight costs are preliminary estimates only. Please contact your local sales manager or Customer Service at 949-366-8000 to obtain a shipping quote. You will be asked to provide a ship-to address and estimated time of delivery.

Currently Available Packaging Options

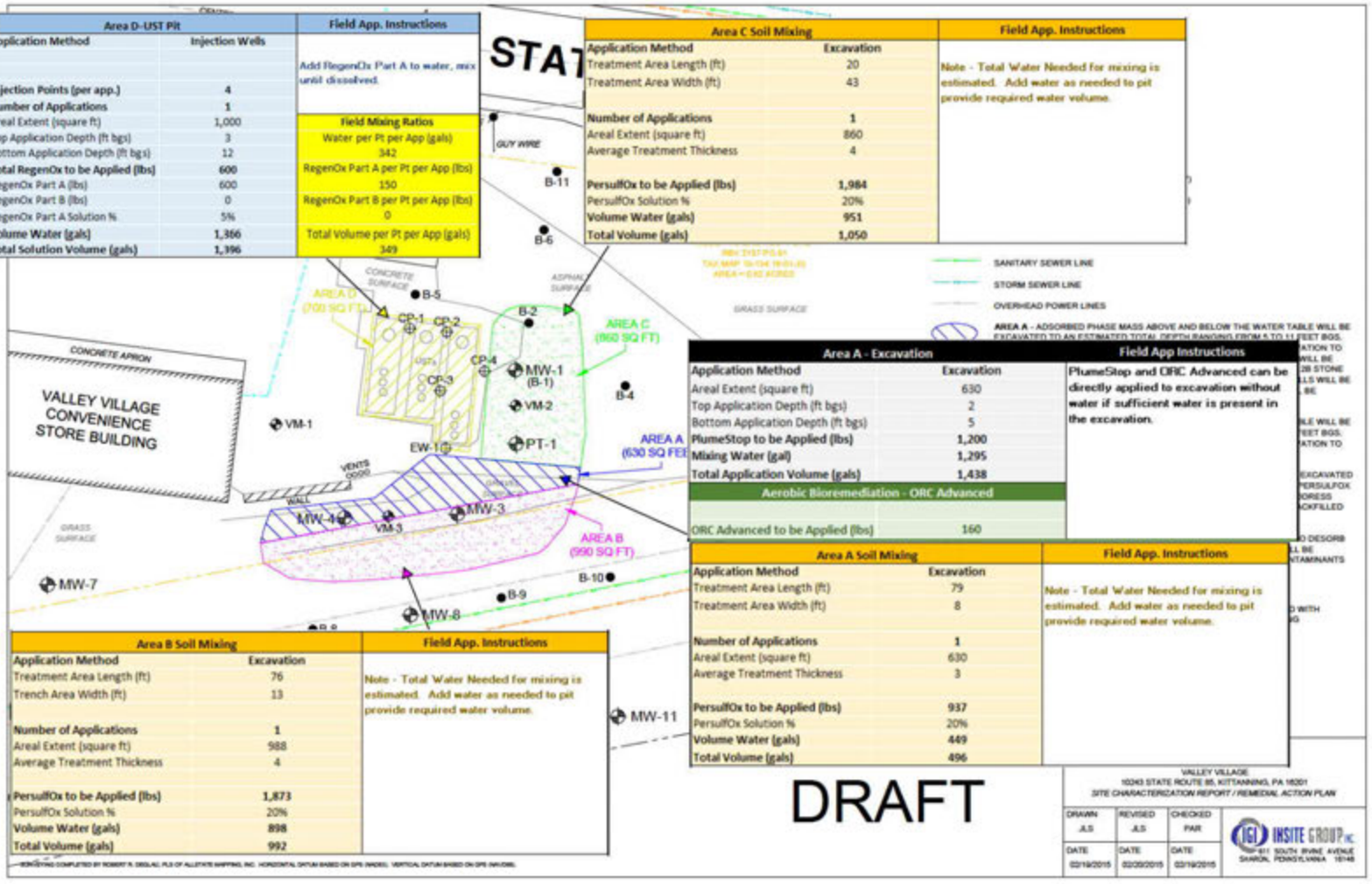
Package Type**	# of packages	lbs required
40 lb poly lined bags	#REF!	#REF!
250 lb cardboard drums	1	250

**Available Package Types are subject to change.

REGENESIS

In-Situ Aerobic Bioremediation Performance Monitoring Parameters

Analytical Parameter	Method
Contaminants of Concern (COC's)	Varies
pH	Meter reading taken in flow-through cell (DO can also be measured with a Hach kit)
Dissolved Oxygen (DO)	
Oxidation Reduction Potential (ORP)	
Total Fe	Colorimetric Hach Method or EPA 6000 series with filtered and unfiltered samples
Total Mn	
Dissolved Fe	
Dissolved Mn	
Sulfate	EPA 375.3 or EPA 9056
Nitrate	EPA 353.1 or EPA 9056
Total Organic Carbon (TOC)	EPA 415.1 or EPA 9060
Chemical Oxygen Demand (COD)	EPA 410.1-.2
Biological Oxygen Demand (BOD)	EPA 5210B
Alkalinity	EPA 310.2
Methane, CO2	ASTM D1945



Area D-UST Pit		Field App. Instructions
Application Method	Injection Wells	
		Add RegenOx Part A to water, mix until dissolved.
Injection Points (per app.)	4	
Number of Applications	1	
Areal Extent (square ft)	1,000	Field Mixing Ratios
Top Application Depth (ft bgs)	3	Water per Pt per App (gals)
Bottom Application Depth (ft bgs)	12	342
Total RegenOx to be Applied (lbs)	600	RegenOx Part A per Pt per App (lbs)
RegenOx Part A (lbs)	600	150
RegenOx Part B (lbs)	0	RegenOx Part B per Pt per App (lbs)
RegenOx Part A Solution %	5%	0
Volume Water (gals)	1,366	Total Volume per Pt per App (gals)
Total Solution Volume (gals)	1,396	349

Area C Soil Mixing		Field App. Instructions
Application Method	Excavation	
Treatment Area Length (ft)	20	Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.
Treatment Area Width (ft)	43	
Number of Applications	1	
Areal Extent (square ft)	860	
Average Treatment Thickness	4	
PersulfOx to be Applied (lbs)	1,984	
PersulfOx Solution %	20%	
Volume Water (gals)	951	
Total Volume (gals)	1,050	

Area A - Excavation		Field App Instructions
Application Method	Excavation	PlumeStop and ORC Advanced can be directly applied to excavation without water if sufficient water is present in the excavation.
Areal Extent (square ft)	630	
Top Application Depth (ft bgs)	2	
Bottom Application Depth (ft bgs)	5	
PlumeStop to be Applied (lbs)	1,200	
Mixing Water (gal)	1,295	
Total Application Volume (gals)	1,438	
Aerobic Bioremediation - ORC Advanced		
ORC Advanced to be Applied (lbs)	160	

Area A Soil Mixing		Field App. Instructions
Application Method	Excavation	
Treatment Area Length (ft)	79	Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.
Treatment Area Width (ft)	8	
Number of Applications	1	
Areal Extent (square ft)	630	
Average Treatment Thickness	3	
PersulfOx to be Applied (lbs)	937	
PersulfOx Solution %	20%	
Volume Water (gals)	449	
Total Volume (gals)	496	

Area B Soil Mixing		Field App. Instructions
Application Method	Excavation	
Treatment Area Length (ft)	76	Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.
Trench Area Width (ft)	13	
Number of Applications	1	
Areal Extent (square ft)	988	
Average Treatment Thickness	4	
PersulfOx to be Applied (lbs)	1,873	
PersulfOx Solution %	20%	
Volume Water (gals)	898	
Total Volume (gals)	992	

VALLEY VILLAGE
10243 STATE ROUTE 85, KITTANNING, PA 16201
SITE CHARACTERIZATION REPORT / REMEDIAL ACTION PLAN

DRAWN	REVISED	CHECKED
JLS	JLS	PAR
DATE 02/19/2015	DATE 02/20/2015	DATE 02/19/2015

INSITE GROUP INC

REGENESIS

Total Product Cost Summary
Insite Group - Valley Village Site
3/9/2015

Treatment Unit	Treatment Surface Area (sq ft)	Treatment Thickness (ft)	Cubic Yards (cy)	Technology	Product Quantity (lbs)	Volume (gals)
Area A Soil Mixing	630	3	70	**PersulfOx**	937	496
Area B Soil Mixing	988	4	146	**PersulfOx**	1,873	992
Area C Soil Mixing	860	4	127	**PersulfOx**	1,984	1,050

Total PersulfOx (lbs) ***4,794*** ***$12,703***

Treatment Unit	Treatment Surface Area (sq ft)	Treatment Thickness (ft)	Cubic Yards (cy)	Technology	Product Quantity (lbs)	Volume (gals)
Area A Perched Water Exc	630	3	70	**PlumeStop**	1,200	1,438
Area A Perched Water Exc	630	3	70	**ORC Advanced Pellets**	160	8

Total PlumeStop (lbs) ***1,200*** ***$2,700***
Total ORC Advanced Pellets (lbs) ***160*** ***$1,432***

Treatment Unit	Treatment Surface Area (sq ft)	Treatment Thickness (ft)	Cubic Yards (cy)	Technology	Product Quantity (lbs)	Injection Volume (gals)
Area D-UST Pit	1,000	9	333	**RegenOx**	600	1,396

Total RegenOx (lbs) ***600*** ***$1,560***

Total Product Cost ***$18,395***
Estimated Tax/Freight $3,311
Total Product Cost w/ Estimated Tax/Freight ***$21,706***

REGENESIS

Project Info		
Valley Village		
Kittanning, PA		
Area A - Excavation		
Prepared For:		
Client (Firm)		
Target Treatment Zone (TTZ) Info	**Unit**	**Value**
Treatment Area	ft^2	630
Top Treat Depth	ft	2.0
Bot Treat Depth	ft	5.0
Vertical Treatment Interval	ft	3.0
Treatment Zone Volume	ft^3	1,891
Treatment Zone Volume	cy	70
Soil Type	---	clay
Porosity	cm^3/cm^3	0.33
Effective Porosity	cm^3/cm^3	0.10
Treatment Zone Pore Volume	gals	4,669
Treatment Zone Effective Pore Volume	gals	1,415
Fraction Organic Carbon (foc)	g/g	0.010
Soil Density	g/cm^3	1.5
Soil Density	lb/ft^3	94
Soil Weight	lbs	1.8E+05
Hydraulic Conductivity	ft/day	0.0
Hydraulic Conductivity	cm/sec	3.53E-07
Hydraulic Gradient	ft/ft	0.100
GW Velocity	ft/day	0.00
GW Velocity	ft/yr	0
Sources of Oxygen Demand	**Unit**	**Value**
Dissolved Phase Contaminant Mass	lbs	1
Sorbed Phase Contaminant Mass	lbs	0
Reduced Metals (Fe2+ and Mn2+) Mass	lbs	1
BOD mass equivalent	lbs	0
COD mass equivalent	lbs	2
Total Mass Contributing to O_2 Demand	**lbs**	**4**
Stoichiometric Demand	**Unit**	**Value**
Stoichiometric O_2 Demand	lbs	5
Stoichiometric ORC Advanced Demand	**lbs**	**29**
Application Dosing	**Unit**	**Value**
Plume Stop to be Applied	**lbs**	**1,200**
ORC Advanced to be Applied	**lbs**	**160**

PlumeStop® Application Design Summary

Area A - Excavation	
Application Method	**Excavation**
Areal Extent (square ft)	630
Top Application Depth (ft bgs)	2
Bottom Application Depth (ft bgs)	5
PlumeStop to be Applied (lbs)	**1,200**
Mixing Water (gal)	**1,295**
Total Application Volume (gals)	**1,438**
Aerobic Bioremediation - ORC Advanced	
ORC Advanced to be Applied (lbs)	160

Field App Instructions

PlumeStop and ORC Advanced can be directly applied to excavation without water if sufficient water is present in the excavation.

Technical Notes/Discussion

Prepared By: Doug Davis - Central Region Technical Manager
Date: 3/9/2015

Assumptions/Qualifications

In generating this preliminary estimate, Regenesis relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

REGENESIS

Dissolved Phase Geochemistry, Contaminant Mass and Product Demand Summary

Valley Village

Area A - Excavation

Petroleum VOCs-Dissolved Phase	Unit	Value	Mass in GW (lbs)	O_2 stoich wtO_2/wt cont.	ORC Advanced Required (lbs)
Benzene	µg/L	7000	0.3	3.1	5.0
Toluene	µg/L	8000	0.3	3.1	5.7
Ethylbenzene	µg/L	800	0.0	3.2	0.6
Xylenes	µg/L	6000	0.2	3.2	4.4
Naphthalene	µg/L	70	0.0	3.0	0.0
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/L	1000	0.0	3.2	0.7
		subtotal PHC VOCs	*0.9*	---	*16.4*

Oxygenates-Dissolved Phase	Unit	Value	Mass in GW (lbs)	O_2 stoich wtO_2/wt cont.	ORC Advanced Required (lbs)
MTBE	µg/L	100	0.0	2.7	0.1
		subtotal oxygenates	*0.0*	---	*0.1*

Total Dissolved Cont. Mass and Demand (lbs)----------->			1	---	*16*

Sorbed Phase Contaminant Mass and Product Demand Summary

Valley Village

Area A - Excavation

Petroleum VOCs-Sorbed Phase	Unit	Value	Mass in Soil (lbs)	O_2 stoich wtO_2/wt cont.	ORC Advanced Required (lbs)
Benzene	µg/kg		0.0	3.10	0.0
Toluene	µg/kg		0.0	3.10	0.0
Ethylbenzene	µg/kg		0.0	3.20	0.0
Xylenes	µg/kg		0.0	3.20	0.0
Naphthalene	µg/kg		0.0	3.00	0.0
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/kg		0.0	3.20	0.0
		subtotal PHC VOCs	*0.0*	---	*0.0*

Total Sorbed Mass and Demand	*lbs*	*0.0*	*0.0*	---	*0.0*

Notes

1) Groundwater Values from MW-3 (Dec 2014).

2) Soil Values not entered - clean backfill assumed

REGENESIS

Project Information

Valley Village
Kittanning, PA
Area A Soil Mixing

Prepared For:
Sara Giordano (Insite)

Target Treatment Zone (TTZ) Info	Unit	Value
Treatment Area	ft^2	630
Top Treat Depth	ft	8.0
Bot Treat Depth	ft	11.0
Vertical Treatment Interval	ft	3.0
Treatment Zone Volume	ft^3	1,891
Treatment Zone Volume	cy	70
Soil Type	---	clay
Porosity	cm^3/cm^3	0.45
Effective Porosity	cm^3/cm^3	0.10
Treatment Zone Pore Volume	gals	6,366
Treatment Zone Effective Pore Volume	gals	1,415
Fraction Organic Carbon (foc)	g/g	0.010
Soil Density	g/cm^3	1.5
Soil Density	lb/ft^3	94
Soil Weight	lbs	1.8E+05
Hydraulic Conductivity	ft/day	0.0
Hydraulic Conductivity	cm/sec	3.53E-07
Hydraulic Gradient	ft/ft	0.100
GW Velocity	ft/day	0.00
GW Velocity	ft/yr	0
Sources of Oxidant Demand	**Unit**	**Value**
Sorbed Phase Contaminant Mass	lbs	6
Dissolved Phase Contaminant Mass	lbs	0.8
Total Contaminant Mass	lbs	7
Stoichiometric PersulfOx Demand	lbs	251
Efficiency/Safety Factor	---	**2.0**
Stoichiometric PersulfOx Required	lbs	503
Additional Soil Oxidant Demand	g/kg	2.0
SOD PersulfOx Required	lbs	393
Total PersulfOx Required	**lbs**	**896**

Application Dosing

PersulfOx Required (per 8' trench)	**lbs**	**937**

PersulfOx® Application Design Summary

Area A Soil Mixing	
Application Method	**Excavation**
Treatment Area Length (ft)	79
Treatment Area Width (ft)	8
Number of Applications	**1**
Areal Extent (square ft)	630
Average Treatment Thickness	3
PersulfOx to be Applied (lbs)	**937**
PersulfOx Solution %	20%
Volume Water (gals)	**449**
Total Volume (gals)	**496**

Field App. Instructions

Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.

Technical Notes/Discussion

Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.

Prepared By: Doug Davis - Central Region Technical Manager
Date: 3/9/2015

Assumptions/Qualifications

In generating this preliminary estimate, Regenesis relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

REGENESIS

Dissolved Phase Geochemistry, Contaminant Mass and Product Demand Summary
Valley Village
Area A Soil Mixing

Petroleum VOCs-Dissolved Phase	Unit	Value	Mass in GW (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
Benzene	µg/L	7000	0.4	29.2	10.9
Toluene	µg/L	2000	0.1	27.4	2.9
Ethylbenzene	µg/L	2000	0.1	36.1	3.8
Xylenes	µg/L	3700	0.2	36.1	7.1
Naphthalene	µg/L	200	0.0	26.2	0.3
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/L	1000	0.1	19.3	1.0
		subtotal PHC VOCs	*0.8*	---	*26.0*

Oxygenates-Dissolved Phase	Unit	Value	Mass in GW (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
MTBE	µg/L	50	0.0	26.8	0.1
		subtotal oxygenates	*0.0*	---	*0.1*

Total Dissolved Cont. Mass and Demand (lbs)----------->	*1*	---	*26.1*

Sorbed Phase Contaminant Mass and Product Demand Summary
Valley Village
Area A Soil Mixing

Petroleum VOCs-Sorbed Phase	Unit	Value	Mass in Soil (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
Benzene	µg/kg	3750	0.7	29.2	19.4
Toluene	µg/kg	7250	1.3	27.4	35.1
Ethylbenzene	µg/kg	3000	0.5	36.1	19.2
Xylenes	µg/kg	15750	2.8	36.1	100.7
Naphthalene	µg/kg	600	0.1	22.5	2.4
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/kg	5075	0.9	26.0	23.4
		subtotal PHC VOCs	*6.3*	---	*200.2*

Oxygenates - Sorbed Phase	Unit	Value	Mass in Soil (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
MTBE	µg/kg	6	0.0	26.8	0.0
		subtotal oxygenates	*0.0*	---	*0.0*

Total Sorbed Mass and Demand (lbs)----------->	*6.3*	---	*200*

Notes
1) Groundwater Values from MW-3 (Dec 2014).
2) Soil Values from MW-3 x 25% correction factor assuming 75% mass removal during excavation

REGENESIS

Project Information		
Valley Village		
Kittanning, PA		
Area B Soil Mixing		
Prepared For:		
Sara Giordano (Insite)		
Target Treatment Zone (TTZ) Info	**Unit**	**Value**
Treatment Area	ft^2	988
Top Treat Depth	ft	7.0
Bot Treat Depth	ft	11.0
Vertical Treatment Interval	ft	4.0
Treatment Zone Volume	ft^3	3,952
Treatment Zone Volume	cy	146
Soil Type	---	clay
Porosity	cm^3/cm^3	0.45
Effective Porosity	cm^3/cm^3	0.10
Treatment Zone Pore Volume	gals	13,303
Treatment Zone Effective Pore Volume	gals	2,956
Fraction Organic Carbon (foc)	g/g	0.010
Soil Density	g/cm^3	1.5
Soil Density	lb/ft^3	94
Soil Weight	lbs	3.7E+05
Hydraulic Conductivity	ft/day	0.0
Hydraulic Conductivity	cm/sec	3.53E-07
Hydraulic Gradient	ft/ft	0.100
GW Velocity	ft/day	0.00
GW Velocity	ft/yr	0
Sources of Oxidant Demand	**Unit**	**Value**
Sorbed Phase Contaminant Mass	lbs	13
Dissolved Phase Contaminant Mass	lbs	1.8
Total Contaminant Mass	lbs	15
Stoichiometric PersulfOx Demand	lbs	525
Efficiency/Safety Factor	---	**2.0**
Stoichiometric PersulfOx Required	lbs	1,051
Additional Soil Oxidant Demand	g/kg	2.0
SOD PersulfOx Required	lbs	822
Total PersulfOx Required	**lbs**	**1,873**
Application Dosing		
PersulfOx Required (per 8' trench)	**lbs**	**1,873**

PersulfOx® Application Design Summary

Area B Soil Mixing	
Application Method	**Excavation**
Treatment Area Length (ft)	76
Treatment Area Width (ft)	13
Number of Applications	**1**
Areal Extent (square ft)	988
Average Treatment Thickness	4
PersulfOx to be Applied (lbs)	**1,873**
PersulfOx Solution %	20%
Volume Water (gals)	**898**
Total Volume (gals)	**992**

Field App. Instructions

Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.

Technical Notes/Discussion

Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.

Prepared By: Doug Davis - Central Region Technical Manager
Date: 3/9/2015

Assumptions/Qualifications

In generating this preliminary estimate, Regenesis relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

REGENESIS

Dissolved Phase Geochemistry, Contaminant Mass and Product Demand Summary
Valley Village
Area B Soil Mixing

Petroleum VOCs-Dissolved Phase	Unit	Value	Mass in GW (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
Benzene	µg/L	7000	0.8	29.2	22.7
Toluene	µg/L	2000	0.2	27.4	6.1
Ethylbenzene	µg/L	2000	0.2	36.1	8.0
Xylenes	µg/L	3700	0.4	36.1	14.8
Naphthalene	µg/L	200	0.0	26.2	0.6
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/L	1000	0.1	19.3	2.1
		subtotal PHC VOCs	*1.8*	---	*54.4*

Oxygenates-Dissolved Phase	Unit	Value	Mass in GW (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
MTBE	µg/L	50	0.0	26.8	0.1
		subtotal oxygenates	*0.0*	---	*0.1*

Total Dissolved Cont. Mass and Demand (lbs)----------->	*2*	---	*54.5*

Sorbed Phase Contaminant Mass and Product Demand Summary
Valley Village
Area B Soil Mixing

Petroleum VOCs-Sorbed Phase	Unit	Value	Mass in Soil (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
Benzene	µg/kg	3750	1.4	29.2	40.5
Toluene	µg/kg	7250	2.7	27.4	73.4
Ethylbenzene	µg/kg	3000	1.1	36.1	40.1
Xylenes	µg/kg	15750	5.8	36.1	210.5
Naphthalene	µg/kg	600	0.2	22.5	5.0
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/kg	5075	1.9	26.0	48.8
		subtotal PHC VOCs	*13.1*	---	*418.4*

Oxygenates - Sorbed Phase	Unit	Value	Mass in Soil (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
MTBE	µg/kg	6	0.0	26.8	0.1
		subtotal oxygenates	*0.0*	---	*0.1*

Total Sorbed Mass and Demand (lbs)----------->	*13.1*	---	*418*

Notes
1) Groundwater Values from MW-3 (Dec 2014).
2) Soil Values from MW-3 x 25% correction factor assuming 75% mass removal during excavation

REGENESIS

Project Information

Valley Village
Kittanning, PA
Area C Soil Mixing

Prepared For:
Sara Giordano (Insite)

Target Treatment Zone (TTZ) Info	Unit	Value
Treatment Area	ft^2	860
Top Treat Depth	ft	7.0
Bot Treat Depth	ft	11.0
Vertical Treatment Interval	ft	4.0
Treatment Zone Volume	ft^3	3,440
Treatment Zone Volume	cy	127
Soil Type	---	clay
Porosity	cm^3/cm^3	0.45
Effective Porosity	cm^3/cm^3	0.10
Treatment Zone Pore Volume	gals	11,580
Treatment Zone Effective Pore Volume	gals	2,573
Fraction Organic Carbon (foc)	g/g	0.010
Soil Density	g/cm^3	1.5
Soil Density	lb/ft^3	94
Soil Weight	lbs	3.2E+05
Hydraulic Conductivity	ft/day	0.0
Hydraulic Conductivity	cm/sec	3.53E-07
Hydraulic Gradient	ft/ft	0.100
GW Velocity	ft/day	0.00
GW Velocity	ft/yr	0
Sources of Oxidant Demand	**Unit**	**Value**
Sorbed Phase Contaminant Mass	lbs	13
Dissolved Phase Contaminant Mass	lbs	4.5
Total Contaminant Mass	lbs	17
Stoichiometric PersulfOx Demand	lbs	608
Efficiency/Safety Factor	---	**2.0**
Stoichiometric PersulfOx Required	lbs	1,216
Additional Soil Oxidant Demand	g/kg	2.0
SOD PersulfOx Required	lbs	716
Total PersulfOx Required	**lbs**	**1,931**

Application Dosing

PersulfOx Required (per 8' trench)	**lbs**	**1,984**

PersulfOx® Application Design Summary

Area C Soil Mixing	
Application Method	**Excavation**
Treatment Area Length (ft)	20
Treatment Area Width (ft)	43
Number of Applications	**1**
Areal Extent (square ft)	860
Average Treatment Thickness	4
PersulfOx to be Applied (lbs)	**1,984**
PersulfOx Solution %	20%
Volume Water (gals)	**951**
Total Volume (gals)	**1,050**

Field App. Instructions

Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.

Technical Notes/Discussion

Note - Total Water Needed for mixing is estimated. Add water as needed to pit provide required water volume.

Prepared By: Doug Davis - Central Region Technical Manager
Date: 3/9/2015

Assumptions/Qualifications

In generating this preliminary estimate, Regenesis relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

REGENESIS

Dissolved Phase Geochemistry, Contaminant Mass and Product Demand Summary
Valley Village
Area C Soil Mixing

Petroleum VOCs-Dissolved Phase	Unit	Value	Mass in GW (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
Benzene	µg/L	14000	1.4	29.2	39.5
Toluene	µg/L	13000	1.3	27.4	34.4
Ethylbenzene	µg/L	2600	0.3	36.1	9.1
Xylenes	µg/L	14000	1.4	36.1	48.8
Naphthalene	µg/L	420	0.0	26.2	1.1
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/L	2500	0.2	19.3	4.7
		subtotal PHC VOCs	*4.5*	---	*137.6*

Oxygenates-Dissolved Phase	Unit	Value	Mass in GW (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
MTBE	µg/L	18	0.0	26.8	0.0
		subtotal oxygenates	*0.0*	---	*0.0*

Total Dissolved Cont. Mass and Demand (lbs)----------->	*4*	---	*137.6*

Sorbed Phase Contaminant Mass and Product Demand Summary
Valley Village
Area C Soil Mixing

Petroleum VOCs-Sorbed Phase	Unit	Value	Mass in Soil (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
Benzene	µg/kg	3300	1.1	29.2	31.1
Toluene	µg/kg	6000	1.9	27.4	52.9
Ethylbenzene	µg/kg	3500	1.1	36.1	40.7
Xylenes	µg/kg	18000	5.8	36.1	209.4
Naphthalene	µg/kg		0.0	22.5	0.0
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/kg	9000	2.9	26.0	75.4
		subtotal PHC VOCs	*12.8*	---	*409.4*

Oxygenates - Sorbed Phase	Unit	Value	Mass in Soil (lbs)	stoich - wt ox/wt cont	Persulfate Oxidant Required (lbs)
MTBE	µg/kg		0.0	26.8	0.0
		subtotal oxygenates	*0.0*	---	*0.0*

Total Sorbed Mass and Demand (lbs)----------->	*12.8*	---	*409*

Notes
1) Groundwater Values from MW-1 (Dec 2014).
2) Soil Values from MW-1 (June 2014).

REGENESIS

Project Information		
Valley Village		
Kittanning, PA		
Area D-UST Pit		
Prepared For:		
Client (Firm)		
Target Treatment Zone (TTZ) Info	**Unit**	**Value**
Treatment Area	ft^2	1,000
Top Treat Depth	ft	3.0
Bot Treat Depth	ft	12.0
Vertical Treatment Interval	ft	9.0
Treatment Zone Volume	ft^3	9,000
Treatment Zone Volume	cy	333
Soil Type	---	gravel
Porosity	cm^3/cm^3	0.30
Effective Porosity	cm^3/cm^3	0.25
Treatment Zone Pore Volume	gals	20,197
Treatment Zone Effective Pore Volume	gals	16,831
Fraction Organic Carbon (foc)	g/g	0.001
Soil Density	g/cm^3	1.8
Soil Density	lb/ft^3	112
Soil Weight	lbs	1.0E+06
Hydraulic Conductivity	ft/day	2.0
Hydraulic Conductivity	cm/sec	1.76E-01
Hydraulic Gradient	ft/ft	0.001
GW Velocity	ft/day	2.00
GW Velocity	ft/yr	731
Sources of Oxidant Demand	**Unit**	**Value**
Sorbed Phase Contaminant Mass	lbs	13
Dissolved Phase Contaminant Mass	lbs	7.9
Total Contaminant Mass	lbs	21
Stoichiometric RegenOx Oxidant Demand	lbs	363
Efficiency/Safety Factor	---	**1.0**
Stoichiometric RegenOx Required	lbs	363
Additional Soil Oxidant Demand (SOD)	g/kg	0.0
RegenOx Required for Additional SOD	lbs	0
Total RegenOx Oxidant Required	**lbs**	**363**
Application Dosing		
RegenOx to be Applied	lbs	600
RegenOx Part A to be Applied	**lbs**	**600**
RegenOx Part B to be Applied	**lbs**	**0**

RegenOx® Application Design Summary

Area D-UST Pit		Field App. Instructions
Application Method	**Injection Wells**	
		Add RegenOx Part A to water, mix until dissolved.
Injection Points (per app.)	**4**	
Number of Applications	**1**	
Areal Extent (square ft)	1,000	**Field Mixing Ratios**
Top Application Depth (ft bgs)	3	Water per Pt per App (gals)
Bottom Application Depth (ft bgs)	12	342
Total RegenOx to be Applied (lbs)	**600**	RegenOx Part A per Pt per App (lbs)
RegenOx Part A (lbs)	600	150
RegenOx Part B (lbs)	0	RegenOx Part B per Pt per App (lbs)
RegenOx Part A Solution %	5%	0
Volume Water (gals)	**1,366**	Total Volume per Pt per App (gals)
Total Solution Volume (gals)	**1,396**	349
		39
		Volume per vertical ft gals)

Technical Notes/Discussion

Prepared By: Doug Davis - Central Region Technical Manager
Date: 3/9/2015

Assumptions/Qualifications

In generating this preliminary estimate, Regenesis relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

REGENESIS

Dissolved Phase Geochemistry, Contaminant Mass and Product Demand Summary
Valley Village
Area D-UST Pit

Petroleum VOCs-Dissolved Phase	Unit	Value	Mass in GW (lbs)	stoich - wt ox/wt cont	RegenOx Oxidant Required (lbs)
Benzene	µg/L	14000	2.4	12.7	39.0
Toluene	µg/L	13000	2.2	11.9	33.9
Ethylbenzene	µg/L	2600	0.4	15.7	8.9
Xylenes	µg/L	14000	2.4	15.7	48.2
Naphthalene + Cumene	µg/L	540	0.1	9.8	1.2
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/L	2460	0.4	11.3	6.1
		subtotal PHC VOCs	*7.9*	---	*137.2*

Oxygenates-Dissolved Phase	Unit	Value	Mass in GW (lbs)	stoich - wt ox/wt cont	RegenOx Oxidant Required (lbs)
MTBE	µg/L	100	0.0	9.6	0.2
		subtotal oxygenates	*0.0*	---	*0.2*

Total Dissolved Cont. Mass and Demand (lbs)----------->	*8*	---	*137*

Sorbed Phase Contaminant Mass and Product Demand Summary
Valley Village
Area D-UST Pit

Petroleum VOCs-Sorbed Phase	Unit	Value	Mass in Soil (lbs)	stoich - wt ox/wt cont	RegenOx Oxidant Required (lbs)
Benzene	µg/kg	1722	1.7	12.7	28.8
Toluene	µg/kg	3471	3.5	11.9	54.3
Ethylbenzene	µg/kg	850	0.9	15.7	17.5
Xylenes	µg/kg	4172	4.2	15.7	86.1
Naphthalene	µg/kg	540	0.5	9.8	7.0
Trimethylbenzenes (1,2,4+1,3,5 TMBs)	µg/kg	2175	2.2	11.3	32.3
		subtotal PHC VOCs	*13.1*	---	*226.0*

Oxygenates - Sorbed Phase	Unit	Value	Mass in Soil (lbs)	stoich - wt ox/wt cont	RegenOx Oxidant Required (lbs)
MTBE	µg/kg	1	0.0	9.6	0.0
		subtotal oxygenates	*0.0*	---	*0.0*

Total Sorbed Mass and Demand (lbs)----------->	*13*	---	*226*

Notes
1) Groundwater Values from MW-1.
2) Soil Values are estimated from groundwater concentrations by equation: Concgw x foc x KOC.

PersulfOx

Material Safety Data Sheet (MSDS)

Last Revised: February 8, 2013

Section 1 – Supplier Information and Material Identification

Supplier:

REGENESIS
1011 Calle Sombra
San Clemente, CA 92673
Telephone: 949.366.8000
Fax: 949.366.8090
E-mail: info@regenesis.com

Chemical Synonyms:	A mixture of Sodium Persulfate [$Na_2S_2O_8$] and Sodium Silicate [Na_2SiO_3].
Chemical Family:	Inorganic Chemicals
Trade Name:	PersulfOx™
Product Use:	Used to remediate contaminated soil and groundwater (environmental remediation applications)

Section 2 – Chemical Information/Other Designations

CAS No.	Chemical	Percentage
7775-27-1	Sodium Persulfate	90%
1344-09-8	Sodium Silicate	10%

Section 3 – Physical Data	
Form:	Solid, free-flowing powder
Color:	White
Odor:	Odorless
Melting Point:	NA
Boiling Point:	NA
Flammability/Flash Point:	Non-combustible
Vapor Pressure:	NA
Bulk Density:	NA
Viscosity:	NA
pH (10% solution):	≈ 7.0 – 11.5 @ 25 °C
Decomposition Temperature:	Decomposition will occur upon heating.

Section 4 – Reactivity Data	
Stability:	Stable under normal conditions. Stability decreases in the presence of heat, moisture and/or contamination.
Conditions to Avoid/Incompatibility:	Acids, alkalis, halides (fluorides, chlorides, bromides and iodides), Combustible materials, most metals and heavy metals, oxidizable materials, other oxidizers, reducing agents, cleaners, and organic or carbon containing compounds, moisture, heat, flame. Contact with incompatible materials can result in a material decomposition or other uncontrolled reactions.
Hazardous Decomposition Products:	Oxygen that supports combustion and oxides of sulfur.
Polymerization	Will not occur

Section 5 – Regulations

UNITED STATES

SARA TITLE III (SUPERFUND ADMENDMENTS AND REAUTHORIZATION ACT)

Section 302 Extremely Hazardous Substances (40 CFR 335, Appendix A):	N/A
Section 311 Hazard Categories (40 CFR 370):	Fire Hazard, Immediate (Acute) Health Hazard
Section 312 Threshold Planning Quantity (40 CFR 370):	The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.: None
Section 313 Reportable Ingredients (40 CFR 372):	Not Listed

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA Designation & Reportable Quantities (RQ) (40 CFR 302.4):	Unlisted, RQ = 100 lbs., Ignitability

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:

Oxidizer. Store in a cool, clean, and well ventilated area away from all sources of ignition and out of the direct sunlight. Store in a dry location away from heat and in temperatures less than 40 ˚C.

Keep away from incompatible materials and keep lids tightly closed. Do not store in improperly labeled containers.

Protect from moisture. Do not store near combustible materials. Keep containers well sealed.

Store separately from reducing materials. Avoid contamination which may lead to decomposition.

Handling:

Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Wear respiratory protection if ventilation is inadequate or not available. Use eye and skin protection. Use clean plastic or stainless steel scoops only.

Do not swallow. Avoid breathing vapors, mists or dust. Do not eat, drink or smoke in the work area. Wash hands thoroughly after handling.

Label containers and keep them tightly closed when not in use.

Personal Protective Equipment (PPE)

Engineering Controls:

General room ventilation is required if used indoors. Local exhaust ventilation, process enclosures or other engineering controls may be needed to maintain airborne levels below recommended exposure limits. Avoid creating dust or mists. Maintain adequate ventilation at all times. Do not use in confined areas. Keep levels below recommended exposure limits. To determine actual exposure limits, monitoring should be performed on a routine basis. General use of persulfates will generate thermal and pressure regimes which need to mitigated during application as a precautionary measure.

Respiratory Protection:

Use NIOSH(P100) approved respirator when airborne dust is expected.

Exposure Limit

0.1 mg/m^3 (TWA) - ACGIH

Hand Protection:

Wear chemical resistant gloves (neoprene, rubber, or PVC). Thoroughly wash the outside of gloves with soap and water prior to removal.

Section 6 – Protective Measures, Storage and Handling (cont)

Eye Protection:	Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.
Skin Protection:	Try to avoid skin contact with this product. Chemical resistant gloves (neoprene, PVC or rubber) and protective clothing should be worn during use.
Protection Against Fire & Explosion:	Product is non-explosive. In case of fire, evacuate all non-essential personnel, wear protective clothing and a self-contained breathing apparatus, stay upwind of fire, and use water to spray cool fire-exposed containers. Presence of water accelerates decomposition.

Section 7 – Hazards Identification

Potential Health Effects

Inhalation:	May be harmful and irritating.
Eye Contact:	Non-irritating (rabbit)
Skin Contact:	Non-irritating (rabbit)
Ingestion:	May be harmful if swallowed (vomiting and diarrhea).
Target Organs:	Eyes, skin, respiratory passages

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage:	Spilled material should be collected and put in approved DOT container and isolated for disposal. Isolated material should be monitored for signs of decomposition (fuming/smoking). If spilled material is wet, dissolve with large quantity of water and dispose as a hazardous waste. All disposals should be carried out according to regulatory agencies procedures.
Extinguishing Media:	Water; Do not use carbon dioxide or other gas filled fire extinguishers; they will have no effect on decomposing persulfates. Wear full protective clothing and self contained breathing apparatus.
	First Aid
Eye Contact:	Flush eyes with running water for at least 15 minutes with eyelids held open. Seek a specialist.
Inhalation:	Remove affected person to fresh air. Seek medical attention if the effects persist.
Ingestion:	Rinse mouth with water, give two-four cups of water to dilute the chemical and seek medical attention immediately. Never give anything by mouth to an unconscious person. **Do Not** induce vomiting.
Skin Contact:	Wash affected areas with soap and a mild detergent and large amounts of water. Seek medical attention if irritation occurs or persists.

Notes to Medical Doctor: This product has low oral toxicity and is not irritating to the eyes and skin. Flooding of exposed areas with water is suggested, but gastric lavage or emesis induction for ingestions must consider possible aggravation of esophageal injury and the expected absence of system effects. Treatment is controlled removal of exposure followed by symptomatic and supportive care.

Section 9 – Accidental Release Measures

Precautions:

Cleanup Methods: Spilled material should be collected and put in approved DOT container and isolated for disposal. Isolated material should be monitored for signs of decomposition (fuming/smoking). If spilled material is wet, dissolve with large quantity of water and dispose as a hazardous waste. All disposals should be carried out according to local regulatory agencies procedures.

Section 10 – Information on Toxicology

Toxicity Data

Oral LD_{50} (rat):	895 mg/kg
Dermal LD_{50} (rabbit):	> 10 g/kg
Inhalation LD_{50} (rat):	5.1 mg/kg

Section 11 – Information on Ecology

Ecotoxicological Information

Bluegill sunfish, 96-hour LC_{50} = 771 mg/L

Rainbow trout, 96-hour LC_{50} = 163 mg/L

Daphnia, 48-hour LC_{50} = 133 mg/L

Grass shrimp, 96-hour LC_{50} = 519 mg/L

Biotic Degradation: N/A.

Section 12 – Disposal Considerations

Waste Disposal Method: Dispose of in an approved waste facility operated by an authorized contactor in compliance with local, state and federal regulations.

Section 13 – Shipping/Transport Information

D.O.T. Shipping Name:	Oxidizing Solid, n.o.s. (a mixture of Sodium persulfate, sodium metasilicate and silicon dioxide)
UN Number:	UN 1479
Hazard Class:	5.1 (Oxidizer)
Labels:	5.1 (Oxidizer)
Packaging Group:	III

Section 14 – Other Information

HMIS® Rating	Health – 1 (Slight)	Physical Hazard – 1 (Slight)
	Flammability – 0 (None)	Lab PPE – goggles, gloves, apron, dust respirator

HMIS® is a registered trademark of the National Painting and Coating Association.

NFPA	Health – 1 (Slight)	Reactivity – 1 (Slight)
	Flammability – 0 (None)	Special - Oxidizer

Section 15 – Further Information

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

PersulfOx™
CATALYZED PERSULFATE

Advantages of the PersulfOx™ Catalyst

When combined with an appropriate activation or catalysis technology, sodium persulfate ($Na_2S_2O_8$) is known to be an effective oxidant for organic contaminants in soil and groundwater. This *in situ* chemical oxidation (ISCO) process is chemically complex and can vary in effectiveness, ease of application, and safety profile depending on the activation technology selected. In addition, there are both catalytic and stoichiometric (sacrificial) methods of activating persulfate. This bulletin outlines the primary commercially-available activation technologies and distinguishes the advantages of using Regenesis' PersulfOx- a catalyzed sodium persulfate ISCO product.

PersulfOx™ Catalysis

PersulfOx is composed of the oxidant sodium persulfate, mixed with a patented silica-based heterogeneous catalyst for contaminant oxidation. The term "heterogeneous" refers to the fact that the catalyst is composed of microscopic solid particles rather than a dissolved species. Liquid-phase oxidation reactions are facilitated repeatedly on the surface of the catalyst. This catalyst is related to the RegenOx™ technology and has the ability to perform the following functions:

- Generates sulfate radical and other oxidizing species
- Adsorbs both contaminant molecules and oxidizing species on its surface to accelerate oxidation
- Catalyzes direct and free-radical-mediated oxidation of contaminants by sodium persulfate
- Is a true catalyst, and is therefore considered to be "green" under the USEPA Green Chemical definition

Alkaline Activation

The use of caustic sodium hydroxide is sometimes employed in field ISCO applications to activate sodium persulfate. Alkaline activation requires the pH of the aquifer to be maintained above pH 11, which can be challenging given the high buffering capacity of many soils and the generation of acids by persulfate oxidation. This method is a stoichiometric process by which hydroxide ions are consumed as sulfate radical and other oxidizing species are formed. Because of the sacrificial nature of alkaline activation, this process may deactivate as pH is lowered. There are also significant health and safety concerns surrounding on-site handling of 25% sodium hydroxide, a strongly caustic material.

Hydrogen Peroxide Activation

In this method of activation, hydrogen peroxide is mixed with sodium persulfate in water before injection into the subsurface. The mechanisms of this process are not well known, however it is postulated that soil minerals may play a part in hydrogen peroxide reactivity. In addition, the temperature increase associated with hydrogen peroxide decomposition may actually provide some thermal activation of the persulfate.

Hydrogen peroxide is an unstable and sacrificial activator which will be totally depleted in most sites within 1 to 2 days. In addition, the heat and gas pressure associated with hydrogen peroxide injection can present significant health and safety concerns as they have with traditional Fenton's ISCO applications.

Heat Activation

It is well known in the chemical and environmental literature that heating persulfate in water causes generation of sulfate radicals and aggressive promotes oxidation of most organics. However, in the remediation industry this has very little practicality due to the high costs of infrastructure and energy required to heat soil and groundwater in situ.

Chelated Iron Activation

Ferrous iron (Fe^{2+}) can react with sodium persulfate to generate sulfate radicals. This reaction is the basis for chelated iron activation – another commercially available method of persulfate activation for ISCO. The term "chelated" refers to the fact that the iron is stabilized by a ligand or "chelator", usually an organic molecule like EDTA (ethylene diamine tetraacetate). The purpose of the chelation is to keep the iron in solution and allow continuous repeated activation of persulfate. Chelated iron is a catalytic activation technology.

There are a couple conceptual limitations to the chelated iron activation approach. Chelated iron has the ability to oxidize a limited range of contaminants. For example it is not effective for destruction of aliphatic hydrocarbons or chlorinated ethanes. In addition, the chelating agent is an organic compound that can be degraded by the activated persulfate. This can cause loss of efficacy over time.

Sacrificial Activation vs. Catalysis

There is an important distinction among persulfate activation technologies in that some are catalytic while others are stoichiometric (sacrificial). The following definitions are based in chemistry and the specific context of persulfate-based ISCO:

activation: *n.* the process of facilitating the oxidation of contaminants by persulfate. This is a general term that may refer to either catalytic or stoichiometric transformations.

catalysis: *n.* the process of facilitating the oxidation of contaminants by persulfate, specifically using a chemical (catalyst) that is conserved in the reactions. The catalyst is neither created or destroyed and can be recycled indefinitely. It is not depleted over time.

With these definitions in mind, one can see several advantages of a catalyst over a sacrificial activation technology. For example, regardless of how long the ISCO process takes in a given site, the PersulfOx catalyst will persist and be active toward contaminant and oxidant. In contrast, alkaline activation consumes hydroxide ions with each molecule of sodium persulfate activated. Over time the oxidation reactions can be inhibited by the absence of hydroxide ions and the corresponding drop in pH.

Conclusions

In summary, the PersulfOx catalyst effectively facilitates oxidation of a wide range of groundwater and soil contaminants. Catalytic oxidation by PersulfOx is persistent over time, as the catalyst is reusable and not depleted in the subsurface over many oxidation cycles. In contrast, alkaline activation is subject to the limitations of stoichiometric activation. The combination of high buffering capacity in soils and the depletion of hydroxide activator over time can limit the ability to establish and maintain necessary pH conditions for contaminant oxidation. Table 1 below summarizes some of the attributes discussed here for each ISCO persulfate activation technology.

Table 1. Comparison of Persulfate Activation Technologies

	Reactive Species					Contaminants Treated				
Activation Technology	Sulfate Radicals	Other Oxygen Radicals	Cost Prohibitive	Catalytic	Sacrificial	Aliphatic Hydrocarbons (TPH)	BTEX	Chlorinated Ethenes	Chlorinated Ethanes	Oxygenates
PersulfOx™	✓	✓		✓		✓	✓	✓	✓	✓
Heat	✓	✓	✓			✓	✓	✓	✓	✓
Alkaline	✓	✓			✓	✓	✓	✓	✓	✓
Chelated Iron	✓	✓		✓			✓	✓		✓
Hydrogen Peroxide	✓	✓			✓	✓	✓	✓	✓	✓

PersulfOx™
CATALYZED PERSULFATE

Contaminant Oxidation Data

PersulfOx™ is a catalyzed form of sodium persulfate ($Na_2S_2O_8$) for use in destruction of groundwater and soil contaminants. Commonly encountered contaminants that can be treated by PersulfOx include hydrocarbons, chlorinated ethenes, oxygenates, and chlorinated ethanes. In order to demonstrate the efficacy of PersulfOx for treating these compounds, a series of laboratory contaminant oxidation experiments were performed on representative contaminants.

Experimental Procedure For each contaminant test: A contaminant stock solution was prepared in distilled water to deliver between 100 mg/L and 250 mg/L of a given contaminant into the test vials. A stock mixture of PersulfOx (1.0 M as sodium persulfate) was also prepared in distilled water. A control condition and a PersulfOx-treated condition were run in parallel for each study, and these conditions were run in triplicate. For the test 10 mL of the contaminant stock solution and 10 mL of the PersulfOx mixture were added to each vial yielding a final persulfate concentration of 0.5 M. For each control vial, the 10 mL of contaminant solution was combined with 10 mL of distilled water. The vials were then stored in the dark at room temperature. After 7 days, the contaminant concentrations in water were measured. The data are reported in table 1, as averages of the triplicate samples.

Table 1. Contaminant Oxidation Data

Contaminant	Starting Concentration (mg/L)	Control 7 d (mg/L)	PersulfOx 7 d (mg/L)	% Oxidized vs. Control
BTEX	232	204	7	96%
trichloroethene (TCE)	226	144	< 1	> 99%
1,4-dioxane[1]	175	105	< 1	> 99%
1,2-dichloroethane (DCA)	101	87	< 10	> 88%

Summary

The data in Table 1 demonstrates the efficacy of PersulfOx for oxidation of the common classes of organic groundwater contaminants: hydrocarbons, chlorinated ethenes, chlorinated ethanes, and oxygenates. As described in PersulfOx Tech bulletin 1.0, PersulfOx is widely applicable to treat a range of organic contaminants, and provides significant safety, convenience, and efficacy benefits in comparison with other persulfate activation technologies.

Oxygen Release Compound – Advanced Pellets (ORC Advanced® Pellets)
MATERIAL SAFETY DATA SHEET (MSDS)

Last Revised: March 28, 2011

Section 1 - Material Identification

Supplier:

REGENESIS

1011 Calle Sombra
San Clemente, CA 92673

Phone:	**949.366.8000**
Fax:	**949.366.8090**
E-mail:	**info@regenesis.com**

Chemical Description:	A mixture of Calcium OxyHydroxide [$CaO(OH)_2$] and Calcium Hydroxide [$Ca(OH)_{2;}$].
Chemical Family:	Inorganic Chemical
Trade Name:	Advanced Formula Oxygen Release Compound (ORC Advanced® Pellets)
Chemical Synonyms	Calcium Hydroxide Oxide; Calcium Oxide Peroxide
Product Use:	Used to remediate contaminated soil and groundwater (environmental applications)

Section 2 – Composition

CAS No.	Chemical
682334-66-3	**Calcium Hydroxide Oxide [$CaO(OH)_2$]**
1305-62-0	**Calcium Hydroxide [$Ca(OH)_2$]**
7758-11-4	**Dipotassium Phosphate (HK_2O_4P)**
7783-28-0	**Ammonium Phosphate Dibasic [(NH4)HPO4]**

Section 3 – Physical Data	
Form:	tablets
Color:	White to Pale Yellow
Odor:	Odorless
Melting Point:	527 °F (275 °C) – Decomposes
Boiling Point:	Not Applicable (NA)
Flammability/Flash Point:	NA
Auto-Flammability:	NA
Vapor Pressure:	NA
Self-Ignition Temperature:	NA
Thermal Decomposition:	527 °F (275 °C) – Decomposes
Bulk Density:	0.5 – 0.65 g/ml (Loose Method)
Solubility:	1.65 g/L @ 68° F (20° C) for calcium hydroxide.
Viscosity:	NA
pH:	11-13 (saturated solution)
Explosion Limits % by Volume:	Non-explosive
Hazardous Decomposition Products:	Oxygen, Hydrogen Peroxide, Steam, and Heat
Hazardous Reactions:	None

Section 4 – Reactivity Data

Stability:	Stable under certain conditions (see below).
Conditions to Avoid:	Heat and moisture.
Incompatibility:	Acids, bases, salts of heavy metals, reducing agents, and flammable substances.
Hazardous Polymerization:	Does not occur.

Section 5 – Regulations

TSCA Inventory List:	Listed

CERCLA Hazardous Substance (40 CFR Part 302)

Listed Substance:	No
Unlisted Substance:	Yes
Reportable Quantity (RQ):	100 pounds
Characteristic(s):	Ignitibility
RCRA Waste Number:	D001

SARA, Title III, Sections 302/303 (40 CFR Part 355 – Emergency Planning and Notification)

Extremely Hazardous Substance:	No

SARA, Title III, Sections 311/312 (40 CFR Part 370 – Hazardous Chemical Reporting: Community Right-To-Know

Hazard Category:	Immediate Health Hazard Fire Hazard

Threshold Planning Quantity:	10,000 pounds

Section 5 – Regulations (cont)

SARA, Title III, Section 313 (40 CFR Part 372 – Toxic Chemical Release Reporting: Community Right-To-Know

Extremely Hazardous Substance:	No	
WHMIS Classification:	C	Oxidizing Material Poisonous and Infectious Material
	D	Material Causing Other Toxic Effects – Eye and Skin Irritant
Canadian Domestic Substance List:	Not Listed	

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	Keep in tightly closed container. Store in dry area, protected from heat sources and direct sunlight.
Handling:	Clean and dry processing pipes and equipment before operation. Never return unused product to the storage container. Keep away from incompatible products. Containers and equipment used to handle this product should be used exclusively for this material. Avoid contact with water or humidity.

Section 6 – Protective Measures, Storage and Handling (cont)

Personal Protective Equipment (PPE)

Engineering Controls:	Calcium Hydroxide ACGIH® TLV® (2000) 5 mg/m^3 TWA OSHA PEL Total dust–15 mg/m^3 TWA Respirable fraction– 5 mg/m^3 TWA NIOSH REL (1994) 5 mg/m^3
Respiratory Protection:	For many conditions, no respiratory protection may be needed; however, in dusty or unknown atmospheres use a NIOSH approved dust respirator.
Hand Protection:	Impervious protective gloves made of nitrile, natural rubbber or neoprene.
Eye Protection:	Use chemical safety goggles (dust proof).
Skin Protection:	For brief contact, few precautions other than clean clothing are needed. Full body clothing impervious to this material should be used during prolonged exposure.
Other:	Safety shower and eyewash stations should be present. Consultation with an industrial hygienist or safety manager for the selection of PPE suitable for working conditions is suggested.
Industrial Hygiene:	Avoid contact with skin and eyes.
Protection Against Fire & Explosion:	NA

Section 7 – Hazards Identification

Emergency Overview:	Oxidizer – Contact with combustibles may cause a fire. This material decomposes and releases oxygen in a fire. The additional oxygen may intensify the fire.

Potential Health Effects:	Irritating to the mucous membrane and eyes. If the product splashes in ones face and eyes, treat the eyes first. Do not dry soiled clothing close to an open flame or heat source. Any clothing that has been contaminated with this product should be submerged in water prior to drying.
Inhalation:	High concentrations may cause slight nose and throat irritation with a cough. There is risk of sore throat and nose bleeds if one is exposed to this material for an extended period of time.
Eye Contact:	Severe eye irritation with watering and redness. There is also the risk of serious and/or permanent eye lesions.
Skin Contact:	Irritation may occur if one is exposed to this material for extended periods.
Ingestion:	Irritation of the mouth and throat with nausea and vomiting.

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage/Gas Leakage:	Collect in suitable containers. Wash remainder with copious quantities of water.
Extinguishing Media:	See next.
Suitable:	Large quantities of water or water spray. In case of fire in close proximity, all means of extinguishing are acceptable.
Further Information:	Self contained breathing apparatus or approved gas mask should be worn due to small particle size. Use extinguishing media appropriate for surrounding fire. Apply cooling water to sides of transport or storage vessels that are exposed to flames until the fire is extinguished. Do not approach hot vessels that contain this product.
First Aid:	After contact with skin, wash immediately with plenty of water and soap. In case of contact with eyes, rinse immediately with plenty of water and seek medical attention. Consult an opthalmologist in all cases.

Section 8 – Measures in Case of Accidents and Fire

Eye Contact:	Flush eyes with running water for 15 minutes, while keeping the eyelids wide open. Consult with an ophthalmologist in all cases.
Inhalation:	Remove subject from dusty environment. Consult with a physician in case of respiratory symptoms.
Ingestion:	If the victim is conscious, rinse mouth and admnister fresh water. DO NOT induce vomiting. Consult a physician in all cases.
Skin Contact:	Wash affected skin with running water. Remove and clean clothing. Consult with a physician in case of persistent pain or redness.
Special Precautions:	Evacuate all non-essential personnel. Intervention should only be done by capable personnel that are trained and aware of the hazards associated with this product. When it is safe, unaffected product should be moved to safe area.
Specific Hazards:	Oxidizing substance. Oxygen released on exothermic decomposition may support combustion. Confined spaces and/or containers may be subject to increased pressure. If product comes into contact with flammables, fire or explosion may occur.

Section 9 – Accidental Release Measures

Precautions:	Observe the protection methods cited in Section 3. Avoid materials and products that are incompatible with product. Immediately notify the appropriate authorities in case of reportable discharge (> 100 lbs).
Cleanup Methods:	Collect the product with a suitable means of avoiding dust formation. All receiving equipment should be clean, vented, dry, labeled and made of material that this product is compatible with. Because of the contamination risk, the collected material should be kept in a safe isolated place. Use large quantities of water to clean the impacted area. See Section 12 for disposal methods.

Section 10 – Information on Toxicology

Toxicity Data

Acute Toxicity:	Oral Route, LD_{50}, rat, > 2,000 mg/kg (powder 50%) Dermal Route, LD_{50}, rat, > 2,000 mg/kg (powder 50%) Inhalation, LD_{50}, rat, > 5,000 mg/m^3 (powder 35%)
Irritation:	Rabbit (eyes), severe irritant
Sensitization:	No data
Chronic Toxicity:	In vitro, no mutagenic effect (Powder 50%)
Target Organ Effects:	Eyes and respiratory passages.

Section 11 – Information on Ecology

Ecology Data

Acute Exotoxicity:	10 mg $Ca(OH)_2$/L: pH = 9.0 100 mg $Ca(OH)_2$/L: pH = 10.6 Fishes, Cyprinus carpio, LC_{50}, 48 hrs, 160 mg/L Crustaceans, Daphnia sp., EC_{50}, 24 hours, 25.6 mg/L (Powder 16%)
Mobility:	Low Solubility and Mobility
Abiotic Degradation:	Water – Slow Hydrolysis. Degradation Products: Calcium Hydroxide Water/soil – complexation/precipitation. Carbonates/sulfates present at environmental concentrations. Degradation products: carbonates/sulfates sparingly soluble
Biotic Degradation:	NA (inorganic compound)
Potential for Bioaccumulation:	NA (ionizable inorganic compound)

Section 11 – Information on Ecology (cont)

Comments:	Observed effects are related to alkaline properties of the product. Hazard for the environment is limited due to the product properties of: • No bioaccumulation • Weak solubility and precipitation as carbonate or sulfate in an aquatic environment. Diluted product is rapidly neutralized at environmental pH.
Further Information:	NA

Section 12 – Disposal Considerations

Waste Disposal Method:	Consult current federal, state and local regulations regarding the proper disposal of this material and its emptied containers.

Section 13 – Shipping/Transport Information

D.O.T Shipping Name:	Oxidizing Solid, N.O.S [A mixture of Calcium OxyHydroxide [$CaO(OH)_2$] and Calcium Hydroxide [$Ca(OH)_2$].
UN Number:	1479
Hazard Class:	5.1
Label(s):	5.1 (Oxidizer)
Packaging Group:	II
STCC Number:	4918717

Section 14 – Other Information

HMIS® Rating	Health – 2 Flammability – 0	Reactivity – 1 PPE - Required

HMIS® is a registered trademark of the National Painting and Coating Association.

NFPA® Rating	Health – 2 Flammability – 0	Reactivity – 1 OX

NFPA® is a registered trademark of the National Fire Protection Association.

Reason for Issue: Update toxicological and ecological data

Section 15 – Further Information

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Regen OX – Part A (Oxidizer Complex)

Material Safety Data Sheet (MSDS)

Last Revised: November 7, 2005

Section 1 – Supplier Information and Material Identification

Supplier:

REGENESIS
1011 Calle Sombra
San Clemente, CA 92673
Telephone: 949.366.8000
Fax: 949.366.8090
E-mail: info@regenesis.com

Chemical Description:	A mixture of sodium percarbonate [$2Na_2CO_3 \cdot 3H_2O_2$], sodium carbonate [Na_2CO_3], sodium silicate and silica gel.
Chemical Family:	Inorganic Chemicals
Trade Name:	Regen Ox – Part A (Oxidizer Complex)
Product Use:	Used to remediate contaminated soil and groundwater (environmental applications)

Section 2 – Chemical Information/Other Designations

CAS No.	Chemical
15630-89-4	Sodium Percarbonate
5968-11-6	Sodium Carbonate Monohydrate
1344-09-8	Silicic Acid, Sodium Salt, Sodium Silicate
63231-67-4	Silica Gel

Section 3 – Physical Data

Form:	Powder
Color:	White
Odor:	Odorless
Melting Point:	NA
Boiling Point:	NA

Section 3 – Physical Data (cont)

Flammability/Flash Point:	NA
Vapor Pressure:	NA
Bulk Density:	0.9 – 1.2 g/cm^3
Solubility:	Min 14.5g/100g water @ 20 °C
Viscosity:	NA
pH (3% solution):	~ 10.5
Decomposition Temperature:	Self-accelerating decomposition with oxygen release starts at 50 °C.

Section 4 – Reactivity Data

Stability:	Stable under normal conditions
Conditions to Avoid/Incompatibility:	Acids, bases, salts of heavy metals, reducing agents, and flammable substances
Hazardous Decomposition Products:	Oxygen. Contamination with many substances will cause decomposition. The rate of decomposition increases with increasing temperature and may be very vigorous with rapid generation of oxygen and steam.

Section 5 – Regulations

TSCA Inventory Listed:	Yes
CERCLA Hazardous Substance (40 CFR Part 302)	
Listed Substance:	*No*
Unlisted Substance:	*Yes*
SARA, Title III, Sections 313 (40 CFR Part 372) – Toxic Chemical Release Reporting: Community Right-To-Know	
Extremely Hazardous Substance:	No
WHMIS Classification:	C, D2B
Canadian Domestic Substance List:	Appears

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	Oxidizer. Store in a cool, well ventilated area away from all sources of ignition and out of the direct sunlight. Store in a dry location away from heat and in temperatures less than 40 °C.
	Keep away from incompatible materials and keep lids tightly closed. Do not store in improperly labeled containers.
	Protect from moisture. Do not store near combustible materials. Keep containers well sealed.
	Store separately from reducing materials. Avoid contamination which may lead to decomposition.
Handling:	Avoid contact with eyes, skin and clothing. Use with adequate ventilation.
	Do not swallow. Avoid breathing vapors, mists or dust. Do not eat, drink or smoke in the work area.
	Label containers and keep them tightly closed when not in use.
	Wash hands thoroughly after handling.

Personal Protective Equipment (PPE)

Engineering Controls:	General room ventilation is required if used indoors. Local exhaust ventilation, process enclosures or other engineering controls may be needed to maintain airborne levels below recommended exposure limits. Avoid creating dust or mists. Maintain adequate ventilation at all times. Do not use in confined areas. Keep levels below recommended exposure limits. To determine actual exposure limits, monitoring should be performed on a routine basis.
Respiratory Protection:	For many conditions, no respiratory protection is necessary; however, in dusty or unknown conditions or when exposures exceed limit values a NIOSH approved respirator should be used.
Hand Protection:	Wear chemical resistant gloves (neoprene, rubber, or PVC).

Section 6 – Protective Measures, Storage and Handling (cont)

Eye Protection:	Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.
Skin Protection:	Try to avoid skin contact with this product. Chemical resistant gloves (neoprene, PVC or rubber) and protective clothing should be worn during use.
Other:	Eye wash station.
Protection Against Fire & Explosion:	Product is non-explosive. In case of fire, evacuate all non-essential personnel, wear protective clothing and a self-contained breathing apparatus, stay upwind of fire, and use water to spray cool fire-exposed containers.

Section 7 – Hazards Identification

Potential Health Effects	
Inhalation:	Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath, and irritations to mucous membranes, nose and throat.
Eye Contact:	Causes irritation, redness and pain.
Skin Contact:	Causes slight irritation.
Ingestion:	May be harmful if swallowed (vomiting and diarrhea).

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage:	Eliminate all ignition sources. Evacuate unprotected personnel and never exceed any occupational exposure limit. Shovel or sweep spilt material into plastic bags or vented containers for disposal. Do not return spilled or contaminated material to the inventory.
Extinguishing Media:	Water
First Aid	
Eye Contact:	Flush eyes with running water for at least 15 minutes with eyelids held open. Seek a specialist.
Inhalation:	Remove affected person to fresh air. Seek medical attention if the effects persist.
Ingestion:	If the individual is conscious and not convulsing, give two-four cups of water to dilute the chemical and seek medical attention immediately. **Do Not** induce vomiting.

Section 8 – Measures in Case of Accidents and Fire (cont)

Skin Contact:	Wash affected areas with soap and a mild detergent and large amounts of water.

Section 9 – Accidental Release Measures

Precautions:	
Cleanup Methods:	Shovel or sweep spilt material into plastic bags or vented containers for disposal. Do not return spilled or contaminated material to the inventory.

Section 10 – Information on Toxicology

Toxicity Data	
LD50 Oral (rat):	2,400 mg/kg
LD50 Dermal (rabbit):	Min 2,000 mg/kg
LD50 Inhalation (rat):	Min 4,580 mg/kg

Section 11 – Information on Ecology

Ecology Data	
Ecotoxicological Information:	NA

Section 12 – Disposal Considerations

Waste Disposal Method	
Waste Treatment:	Dispose of in an approved waste facility operated by an authorized contactor in compliance with local regulations.
Package (Pail) Treatment:	The empty and clean containers are to be recycled or disposed of in conformity with local regulations.

Section 13 – Shipping/Transport Information

D.O.T. Shipping Name:	Oxidizing Solid, N.O.S. [A mixture of sodium percarbonate [$2Na_2CO_3 \cdot 3H2O_2$], sodium carbonate [Na_2CO_3], sodium silicate and silica gel.]
UN Number:	1479
Hazard Class:	5.1
Labels:	5.1 (Oxidizer)
Packaging Group:	III

Section 14 – Other Information

HMIS® Rating	Health – 1 (slight)	Reactivity – 1 (slight)
	Flammability – 0 (none)	Lab PPE – goggles, gloves, and lab coat

HMIS® is a registered trademark of the National Painting and Coating Association.

Section 15 – Further Information

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RegenOx™

Advanced Chemical Oxidation

Treatment of Petroleum Hydrocarbons: When to use RegenOx™ vs. ORC Advanced®

Introduction

The in-situ treatment of petroleum hydrocarbon contamination in soil and groundwater presents a unique set of conditions. This is due not only to the variability and complexities inherent in the subsurface environment, but also to the variable nature of the contaminants themselves. When one refers to contamination generally as "petroleum hydrocarbons," they are referring to a very broad range of chemicals including very short- to very long-chain alkanes, and single-ring, soluble aromatic structures to multiple-ring, less soluble polyaromatic structures. It is important to understand what specific range of hydrocarbons is to be the target of an in-situ treatment program and to select a remedy that best achieves the overall goal of the remediation.

Total Petroleum Hydrocarbons

The term "total petroleum hydrocarbons" or "TPH" does not describe a compound, but theoretically describes a group of chemicals. TPH is also an acronym used to describe a group of analytical methods used in the environmental industry to measure the entire suite of petroleum-derived compounds potentially available in one sample. Laboratories perform TPH analyses differently depending on their location, applicable regulatory requirements, sample type, and client preferences.

Unfortunately, TPH analyses often measure not only the petroleum-derived compounds present, but also natural background organic matter in the sample (containing organics such as organic acids). Sometimes a "silica gel cleanup" of the sample is performed prior to the analysis to minimize the effects of naturally occurring organic matter. Employing this technique results in a more accurate estimate of the petroleum-derived compounds. (A more detailed description of TPH analysis is presented in the Regenesis Technical Bulletin 10.0 TPH Analysis: Analytical Challenges and Recommendations)

Biodegradation: Use of ORC Advanced®

ORC Advanced® stimulates the in-situ aerobic biodegradation of petroleum hydrocarbons. This approach is a well-documented, robust treatment that efficiently degrades bio-available (soluble) contaminants dissolved in the groundwater and sorbed onto soil in contact with groundwater. The use of ORC Advanced on a complex mixture of hydrocarbons, as measured by TPH analysis, will degrade the more bio-available contaminants in contact with groundwater, leaving the more insoluble fractions behind after the oxygen release is complete. Serial applications of ORC Advanced at a site will continually degrade the more soluble fractions of contaminants, leaving less and less soluble fractions evident by the results of TPH analysis.

The use of ORC Advanced to stimulate the in-situ biodegradation of short- to moderate-chain alkane-type TPH-range contaminants (gasoline-diesel range) is a very sound approach when low to moderate concentrations of these contaminants are present in the groundwater, and when the sorbed mass of these contaminants (the source of the dissolve contaminants) is thought to be low. Where high concentrations of contaminants are sorbed to the subsurface soil (either because of the adsorptive capacities of the soil matrix or because the TPH contaminants are long-chained, slower-to-desorb compounds), the use of ORC Advanced may require too much time and expense to treat by biodegradation compared to other remedial alternatives.

Chemical Oxidation: Use of RegenOx

Chemical oxidation of gasoline or diesel fuel contamination using any oxidation reagent is a very complex phenomenon, resulting in a myriad of partial oxidation products and contaminant mass equilibrium shifts (from sorbed to dissolved phase). Certain species, such as the aromatic hydrocarbons (e.g., benzene, toluene, ethylbenzene, and xylenes [BTEX], polyaromatic hydrocarbons [PAHs]), are rapidly activated and oxidized partially, if not entirely. Conversely, alkanes are slower to activate and oxidize, leaving a greater proportion of partially oxidized alkanes present. As a result of oxidation and pH shifts, as well as changes in contaminant and soil matrix chemistry, a temporary increase in the soluble fractions may occur post-application.

From an analytical standpoint, if one were simply focusing on the benzene and toluene constituents within a gasoline spill in groundwater subjected to RegenOx treatment, one could expect to see a rapid degradation of the target constituents. RegenOx, in adequate supply, would activate and oxidize the more easily degraded benzene and toluene. A scan of the aromatic fractions by typical volatile organic compound (VOC) methods (e.g., USEPA Method 8260-GC/MS) usually shows a decrease in BTEX compounds.

If, instead, one were to measure the same treatment results using a TPH-type analysis of groundwater, a much different result could be obtained. The TPH-type analysis, instead of showing degradation of the dissolved benzene and toluene, could show an increase in the total dissolved mass of "total petroleum hydrocarbons." The increase in TPH would likely be due to partial oxidation of sorbed contaminants bound to the soil matrix that were transformed via RegenOx (or another chemical oxidant) to more soluble hydrocarbons in groundwater. This results in the increase in soluble compounds measured by the TPH-type analysis.

For project sites where TPH-type analyses are to be used to measure remediation performance, some adjustments to customer expectations should be made. First, the customer should be made aware of the vagaries of typical TPH analyses and how they are impacted by RegenOx chemistry. Second, because RegenOx (or any chemical oxidant) is best used to reduce sorbed or soil-matrix-bound contaminant mass, soil samples should be analyzed as well as groundwater. By employing RegenOx, the sorbed contamination is oxidized (for some constituents more than others) and drawn into the dissolved phase by increasing the solubility. Once in the soluble, more-bio-available state, the partially oxidized contaminants are readily biodegraded given adequate remaining oxygen from the RegenOx application and/or from a subsequent ORC-Advanced application. This will take time, possibly months, depending on site conditions. Therefore, monitoring both soil and groundwater for several months after RegenOx treatment may be required to accurately assess treatment performance.

Product Recommendation

When treating petroleum hydrocarbons in groundwater, each site has specific conditions and project goals. There are no hard-and-fast rules for when to use RegenOx™ and when to use ORC-Advanced™ for these sites. However, based on sound science and project experience, Regenesis has developed the following recommendations for the use of its products for petroleum hydrocarbon remediation.

Recommended Product Selection
Based on Groundwater Contaminant Concentrations (mg/L)

	ORC Advanced	RegenOx and ORCAdvanced
BTEX (C6-C12)	≤20	>20
TPH-low (<C12)	≤20	>20
TPH-high (>C20)	≤10	>10
PAH (>C10; e.g., phenanthrene, etc.)	≤1	>1

For more information on RegenOx or a free application design and cost estimate contact Regenesis at 949-366-8000 or visit www.regenesis.com.

PlumeStop™
Material Safety Data Sheet (MSDS)

Last Revised: July, 1 2014

Section 1 – Supplier Information and Material Identification

Supplier:

REGENESIS
1011 Calle Sombra
San Clemente, CA 92673
Telephone: 949.366.8000
Fax: 949.366.8090
E-mail: info@regenesis.com

Chemical Description:	An aqueous mixture of activated carbon and other food grade additives
Trade Name:	PlumeStop™
Product Use:	Used to remediate contaminated soil and groundwater (environmental applications)

Section 2 – Chemical Information/Other Designations

CAS No.	Chemical	Weight %
7440-44-0	Colloidal activated carbon ≤2.5 µm	< 25
7732-18-5	Water	> 75
	Proprietary additives	≤ 2

Section 3 – Physical Data

Form:	Aqueous suspension
Color:	Black
Odor:	Odorless
Melting Point:	0°C
Boiling Point:	NA
Flammability/Flash Point:	NA
Vapor Pressure:	NA
Bulk Density:	NA
Solubility:	NA
Viscosity:	NA
pH (1% solution)	8-10
Decomposition Temperature:	NA

Section 4 – Reactivity Data

Stability:	Stable under recommended storage conditions.
Conditions to Avoid/Incompatibility:	Avoid contact with alkali metals and strong oxidizing agents.
Possibility of Hazardous Reactions:	Hazardous polymerization will not occur.
Hazardous Decomposition Products:	Hazardous decomposition products formed under fire conditions. Carbon oxides.

Section 5 – Regulations

TSCA Inventory:	Listed (activated carbon)
OSHA Hazards:	Not regulated
CERCLA Reportable Quantity:	NA
Canadian Domestic Substance List:	Listed (activated carbon)
WHMIS Classification:	Listed (activated carbon)
SARA 302 Components:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components:	This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting limits established by SARA Title III, Section 313.

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	Keep container tightly closed in the original container. Do not allow product to freeze.
Handling:	As with any chemical product, use good laboratory/workplace procedures. Avoid contact with skin and eyes. Wash thoroughly after handling this product.

Personal Protective Equipment (PPE)

Exposure Limits	Contains no substances with occupational exposure limit values.
Engineering Controls:	Local exhaust ventilation is recommended.
Respiratory Controls:	Not required for routine handling. A NIOSH approved respirator should be used if handling dust that results in the event that water evaporates from product.
Eye Protection:	Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.

Section 6 – Protective Measures, Storage and Handling, continued

Hand Protection:	Wear chemical resistant gloves (neoprene, rubber or PVC). Dispose of used gloves in accordance with good laboratory practices. Wash and dry hands after handling.
Skin Protection:	Try to avoid skin contact with this product. Chemical resistant gloves and protective clothing should be worn during use.
Protection Against Fire & Explosion:	Product is non-explosive and non-flammable. In the unlikely event that all water is evaporated, residual dust is flammable.

Section 7 – Hazards Identification

Potential Health Effects

Inhalation:	Not applicable.
Eye Contact:	May cause eye irritation.
Skin Contact:	May cause skin irritation.
Ingestion:	May be harmful if swallowed.

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage:	Contain spill with absorbent material. Vacuum or sweep into suitable, closed container for disposal. Do not return spilled or contaminated material to the inventory.
Extinguishing Media:	Water, alcohol-resistant foam, dry chemical or carbon dioxide.
Eye Contact:	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Inhalation:	If affected, move person to fresh air. Get medical attention if symptoms occur.
Ingestion:	Rinse mouth with water. Get medical aid if symptoms occur.
Skin Contact:	Wash off with soap and water to remove the activated carbon.

Section 9 – Accidental Release Measures

Cleanup Methods:	Contain spill with absorbent material. Vacuum or sweep into suitable, closed container for disposal.

Section 10 – Information on Toxicology

Oral LD50:	No data available.
Dermal LD50:	No data available.
Carcinogenicity:	No component of this product is identified as a probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP, OSHA or CA Prop 65.

Section 11 – Information on Ecology

No data available.

Section 12 – Disposal Considerations

Waste Treatment:	Dispose of in an approved waste facility operated by an authorized contractor in compliance with local regulations.
Package (Pail) Treatment:	The empty and clean containers are to be recycled or disposed of in conformity with local regulations.

Section 13 – Shipping/Transport Information

D.O.T. Shipping Name:	Not dangerous goods.
IMDG, IATA	Not dangerous goods

Section 14 – Other Information

NFPA Rating:	Health – 0	Flammability – 0	Reactivity Hazards – 0

Section 15 – Further Information

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

PlumeStop™
COLLOIDAL BIOMATRIX

plumestop.com

PlumeStop liquid-based remediation substrate

PlumeStop provides remediation professionals with these additional benefits:

- Eliminates problematic back-diffusing contaminants and associated rebound
- Distributes widely into contaminated zones under low injection pressures (a clear advantage over hard to distribute, powdered activated carbon products)
- Effectively treats a range of petroleum and chlorinated hydrocarbons
- Packaged in liquid form for clean and simple subsurface injection

PlumeStop™ is an innovative, in situ remediation substrate which quickly and effectively treats contaminated groundwater. It does this through the use of highly dispersible, fast-acting, sorption-based technology which captures and concentrates dissolved-phase contaminants within its structure. Once contaminants are sorbed, biodegradation processes proceed at an accelerated rate.

PlumeStop is an environmentally friendly, patent-pending product based on the use of unique, biologically enriching polymers to suspend a colloidal-scale solid sorbent material. This highly dispersible sorbent pulls contaminants directly from groundwater and stimulates their biodegradation in situ.

Once in place PlumeStop is expected to last for decades with minimal impact on aquifer oxidation-reduction potential or geochemistry.

To learn more about PlumeStop visit plumestop.com or contact your local REGENESIS Remediation Technologies representative.

REGENESIS

regenesis.com

ATTACHMENT L

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Wheeling Field Office
1060 Chapline Street
Wheeling, West Virginia 26003

October 16, 2014

Ms. Sara Giordano, Project Coordinator
Insite Group, Inc.
611 S. Irvine Avenue
Sharon, Pennsylvania 16146

Re: Aquifer Remediation Related Injection Wells
Multiple Sites (see list below)

Dear Ms. Giordano:

We have received correspondence from you dated October 10, 2014 describing ground water remediation plans at the facilities listed below. We understand that you intend to utilize enhanced in-situ bioremediation 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 oxygen release compounds to stimulate microbial growth and facilitate biodegradation 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 facility listed below have 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

Rule Authorized Injection Wells

Valley Village
10243 State Route 85
Kittaning, Armstrong County, PA 16201

Hafer's Exit 141 Truck Stop
17458 Smock Drive
Cochranton, Crawford County, PA 16314

Milk Transport, Inc.
99 Cranberry Road
Grove City, Mercer County, PA

ATTACHMENT M

SAMPLING AND QUALITY ASSURANCE PLAN

Insite Group, Inc.
611 South Irvine Avenue
Sharon, PA 16146

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1.0 FIELD LOG DOCUMENTATION

1.1 Field Notebook

Objective

- Establish a permanent record of activities occurring at the site in a bound field notebook.

Procedure

Record all field activities in ink in the dedicated field notebook for the site. The information to be recorded includes the following:

- Date
- Weather conditions and estimated air temperature
- Arrival and departure times
- Purpose of site visit
- Name of IGI personnel on site
- Name and purpose of others visiting the site
- Sampling/task information
- Descriptive information
- Instructions to visitors
- Incidents
- Results of field analytical testing

1.2 Equipment Log

Objective

- Document usage of equipment and supplies at the site on a daily equipment log sheet.

Procedure

It is the responsibility of the task supervisor to complete the form by providing the following information:

- Client name
- Site name
- Description of work performed and task code
- Date
- Quantities of equipment and supplies used
- Number of in-field tests performed
- Number of samples collected for laboratory analytical testing
- Mileage
- Printed name and signature of field supervisor

2.0 SOIL AND ROCK SAMPLING

2.1 Naming Soil Borings

Objective

- Name each soil boring with a unique and systematic identification code.

Procedure

- Chose a category designation for the series of soil borings to be drilled. Common designation are listed below:
  - B (boring)
  - SB (soil boring)
  - MW (monitoring well)
  - GP (GeoProbe location)
  - SS (soil sampling location)
  - CS (confirmatory soil sampling location)
- Assign each soil boring with a number, sequentially.
- Pair the designation and number to form the unique identification (i.e. B-1).
- For each category designation, numbering shall begin with 1 (i.e. Borings B-1, B-2, B-3, MW-1, MW-2, MW-3).
- If previous soil borings with the same category designation have been completed at the site, begin with the next sequential number. (i.e. If borings B-1, B-2, B-3 were completed previously, then the boring number starts with B-4)

2.2 Drilling and Logging

Objectives

- Obtain as much information as possible to generate accurate test boring logs, cross sections, and data for fate and transport models.
- Establish consistent practices through the use of ASTM (American Society for Testing Materials) methodologies and USCS (Unified Soil Classification System) descriptions.

2.2.1 Soil

Procedure

- Record the date of the drilling event in the field notebook and on the boring log. Also record the times at which individual samples are collected from the boring.
- The driller advances the hollow stem augers and center plug to the beginning of the sampling interval and removes the center plug. Hollow stem augers range from 3¼ to 6-inch inside diameter. A center plug is used to keep the hollow stem clear of soil while it is advanced to the next sampling interval.
- The driller drives a 24 inch long, 2 inch diameter split spoon to collect an undisturbed soil sample. Spoons are advanced using the standard 140 lb hammer falling 30 inches. Split spoon samples are collected in accordance with ASTM Standard 1587.
- Record blow counts for every six inches of advance of the split spoon. In soft material, the weight of the rods (WOR) or the weight of the hammer (WOH) may be sufficient to advance the split spoon (i.e., WOH/1.0'). Stop the drive if the blow count has reached 50 blows for 0.5 foot or less (i.e. 50/0.4').
- Record the sampling interval (i.e. 4 – 6 feet).
- Record soil recovery on the log to the nearest 0.1-foot. Make the distinction between cuttings that have fallen into the hole prior to collecting the sample and soil that was collected *in-situ*. Note on the log the cause of poor recovery, if known (i.e., very loose soil or rock stuck in drive shoe).
- Describe the soil sample on the boring log.
  - Use Unified Soil Classification System (USCS) terminology to describe the soil sample. Well graded means there is a range of particle sizes in the sample;

poorly graded means there is mostly one particle size in the sample. Fat clays are highly plastic, lean clays have low plasticity.

- Soil Type: clay, silt, sand, gravel.
- Color: gray, black, brown, and olive green as well as shades such as light, medium and dark. A green tint in soils may indicate that the soil has been affected by petroleum.
- Moisture: dry, damp, moist, wet.
- Consistency / Density: Use blow counts to determine the consistency in clays and silts or density in sands and gravels. The consistencies and densities indicated in the blow count for a given soil type are provided below. Note that the terminology is based on a blow/foot and the blows are written on the log every 6 inches. Add the middle two blow counts to calculate the blows/foot.

Silts and Clays	
Blows/ft	*Consistency*
< 2	Very Soft
2 to 4	Soft
4 to 8	Medium Stiff
8 to 15	Stiff
15 to 30	Very Stiff
> 30	Hard

Sands and Gravels	
Blows/ft	*Density*
0 to 4	Very Loose
5 to 10	Loose
11 to30	Medium dense
31 to 50	Dense
> 50	Very Dense

- Sand Size: fine, medium, coarse.
- Gravel Size: fine, medium, coarse.
- Gravel Angularity: well-rounded, sub-angular, angular.
- Origin: residual, alluvial, colluvial, fill.
- Odors: gasoline, diesel.
- Staining: petroleum staining, iron staining.
- Type of gravel or rock fragments: quartzite, sandstone, limestone
- Type of Contact: sharp or gradational.

- The driller advances the augers and center plug to the beginning of the next sampling interval, removes the center plug and then drives the split spoon, in accordance with ASTM standards.

2.2.2 Rock

Background

There are two basic types of rock coring, conventional and wire line. Both types use a double or triple–tube core barrel. The outside barrel is tipped with a diamond bit and is rotated by the drill bit. The inner barrel rotates independently of the outer barrel and accepts the core as it is drilled.

Conventional coring uses standard heavy-duty drilling rods to turn the core barrel. Each time the inner core barrel is filled, the rods and core barrel must be taken out of the hole. The core barrel is disassembled, the core is removed from the hole, the barrel is reassembled and the core barrel and drilling rods are placed back down the hole.

A wire line core assembly allows the inner barrel to be removed from the hole and emptied without retrieving the outer barrel or any of the drilling rods. This makes the coring operation advance at a faster pace and allows the hole to remain open in unstable rock.

Core barrel assemblies come in various lengths. Five or ten foot lengths are commonly used in the environmental and geotechnical industry. Core diameters range from 1 3/8" to 6 inches. NX core(1-3/8") is commonly used.

Water or air is circulated to lift the rock cuttings out of the hole and to cool the bit. Water is pumped through the inside of the drilling rods, inside the core barrel and out the tip of the bit. Water and cuttings are then pushed to the surface. The amount of water fed into the hole, the down pressure, and the rotation of the drill rods can be varied.

Procedure

- Watch for a constant and steady return of cuttings and water.
  - Note any water loss (indicative of large fractures, voids, mines, etc.)
  - Note change of color of the cuttings.
  - Note zones where the core barrel becomes plugged, (indicative of clay seams, highly fractured zones or zones of high-angle fractures)
- Place the rock core into a core box with partitions for the core. Place the top of the rock at the upper left hand corner of the box. The core from top to bottom will read like a book, from left to right and top to bottom. Mark on the box the top and bottom depth of the run.
- Measure and record the length of the core recovered. The recovery is the total length of core recovered for a single run and may be expressed as a percentage by dividing the length of core recovered by the length of the core run.
- Measure and record the Rock Quality Designation (RQD), which is defined as the total length of all rock in the core run with lengths of over 0.4 feet divided by the total length of the run. The breaks in the rock are "natural breaks" and not those caused by handling. A break caused by handling is fresh and unweathered. These types of breaks may often be along bedding planes. A natural break frequently has staining or some deposit on the joint surface. They frequently occur along bedding planes but may occur in any orientation.
- Describe the rock core.
  - Color: Describe the color of the core when it is dry.
  - Major Lithology: Sandstone, shale, limestone, coal, fireclay
  - Bedding: Bedding can be very thin to massive, flat, rippled, cross-bedded, or disrupted.
  - Fossils: These include plant and invertebrate marine fossils. Vertebrate fossils are extremely rare. Bioturbated zones may be common in some sandy shales.
  - Contacts: Contacts are either gradational or sharp. A sharp contact implies erosion prior to the deposition of the upper rock unit. A gradational contact is either coarsing upward or fining upward. A coarsing upward sequence implies an infilling of an embayment. A fining upward sequence may indicate a channel/floodplain deposit.
  - Nodules: Ironstone nodules are prevalent in some shales. Pyrite crystals may occur in limestones and shales.
  - Dip: Dip can be described in terms of the attitude of bedding planes relative to the horizontal. A flat-lying bed dips zero degrees; a vertical bed dips 90 degrees. Joints and fractures also exhibit dip. Some dip features are primary, such as cross bedding in sandstones and slump features in shale. A measured dip in core is a relative dip because the core loses its orientation when it enters the core barrel.
  - Joints and Fractures: A description of joints and fractures in a core log is important because they serve as pathways for fluids in competent rock and planes of

weakness. A joint is a planar parting in a rock. A fracture is also a planar parting in a rock that exhibits evidence of movement along the planar surface. Slickensides is a good example of a fracture. Unless there is evidence of movement, such as striations or offset bedding, consider it a joint. Heavy ironstaining or mineral deposition on joint surfaces is an indication of water movement through the joint. Joints that have been filled with calcite are quite old and now act as the rock unit. Clay seams in shales and limestones were probably once open joints.

- Voids: Voids are very important features in limestones and can vary in size from less than an inch to many tens of feet.

2.3 Soil Sampling

Objectives

- Qualitatively assess the vertical gradient of contamination in a soil boring.
- Quantitatively determine the contaminant concentration at one or more depth intervals.

Equipment

- Photoionization Detector (PID)
- Soil sampling containers, provided by the laboratory
- Soil sampling device (i.e. T bar, open ended syringe), provided by the laboratory
- Sample labels
- Latex gloves
- Plastic zipper bags (1-gallon size)
- Paper towels

Procedure

- After describing the soil sample, divide the sample (80%, 20%) and place each portion in a re-sealable container such as a plastic zipper bag or a jar.
- Label each container with the site name, boring name, date, time and sampling depth interval.
- Use the smaller portion for headspace PID readings.
- Use the larger portion for analytical testing.

Headspace readings

- Allow the sample container to sit in a warm location for 15 minutes to facilitate volatilization of organic compounds.
- Follow the procedure for using PID meter (see section 9.1.1).
- Dispose of the sample in the drill cuttings container.

Analytical Testing

- Don new pair of disposable latex gloves for each sample to prevent cross contamination of samples.
- Fill sample vials or bottles according to directions provided by the laboratory.
- Prepare sample labels including the project name, sample ID, analysis required, date and time of collection. Affix the sample labels to the containers.
- Place analytical samples containers in a plastic bag and store on ice.
- Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.

3.0 GROUNDWATER SAMPLING

Objectives

- Quantitatively assess the contamination in groundwater.

Equipment

- Field notebook
- Site map
- Pens
- Sample labels
- Calculator
- Detergent water
- Rinse water
- De-ionized water
- DO kit and ampoules
- Camera
- Latex gloves
- Paper towels
- Rope
- Plastic cups
- Plastic zipper bags
- pH meter
- ORP meter
- Conductivity meter
- Temperature meter
- Sample containers
- Bio-sample containers
- Cooler
- Ice packs
- Submersible well pumps
- Disposable tubing
- 12V deep cycle battery
- Battery cart
- Bailers (3'x1.5", 4'x1.5" or 3'x0.75")
- Water level indicator
- Interface probe
- Toolbox
- Cones
- 5 gallon buckets
- Broom
- Shovel
- Ice chipping tools
- Metal detector
- Drums (open top)
- 1 um particulate filters (bag style)
- Carbon unit

Procedure

- Determine which wells are to be sampled. Consult the equipment list for the site to determine the type and quantity of supplies and equipment needed. Load the vehicle accordingly.
- Upon arrival at the site, note the date, time, weather conditions and the day's goals in the field notebook. Notify the site owner/store manager upon arrival at the site.
- Set up the table in the field notebook. Table headings should be: total depth (TD), depth to water (DTW), water column height (HT), 3 volumes (3 vol), depth to water after purge (DTW AP), final depth to water (Final DTW), sample time (ST), dissolved oxygen (DO), ORP and pH (parameters to be checked are site specific, refer to the site equipment list).
- Open the flushmounts. There may be water and mud in the flushmounts that will need to be removed. Remove the well caps and allow the water to equilibrate. Do not allow any surface water to infiltrate the wells.
- Measure the initial depth to water in the wells to the nearest 0.01 feet. Depth to water is to be measured from a marked location (black marker) on the Top of Casing (TOC). If there is no mark on the TOC, measure DTW on the north side of the casing. The water level indicator should be cleaned and a new pair of latex gloves should be worn for each well to prevent cross contamination.
- Calculate the volume to purge from each well. HT = TD-DTW. The conversion factor for a one-inch well is 0.0408, for a two-inch well is 0.1632, and for a four inch-well is

0.6528 gallons per linear foot. One well volume for a well, in gallons, is HT x conversion factor. Three well volumes are typically purged for sampling purposes.
  - The complete formula is (3 vol = (TD – DTW) x conversion factor x 3). This is the volume to purge from the well in gallons.
  - If there is less than one foot of water in the well, it is not to be sampled.
  - For initial well development, a minimum of five well volumes are to be purged.
  - Following excavation, a minimum of 10 well volumes are to be purged.
- Purge the wells (Bailing).
  - Measure enough rope to reach the bottom of the well. Tie one end of the rope to the bailer (bowline) and on the other end tie a slipknot. Anchor the slipknot end of the rope to a cone or to your wrist. Gently lower the bailer into the top of the water column and remove one bailer of water.
  - Note the conditions of the water and if any product is present. Continue to purge the well, surging the screened interval with the bailer in the process. Place purge water in buckets.
  - Bail until three well volumes, as previously calculated, are purged or until the well goes dry.
    - For one-inch wells, us a three foot, 0.75" diameter bailer.
    - For two-inch wells, use a three foot, 1.5" diameter bailer.
    - If the volume to be purged is greater than 10 gallons, a four foot, 1.5" diameter bailer may be used.
- Purge the wells (Pumping).
  - For four-inch wells and deep two-inch wells, use battery powered submersible well pumps for purging.
  - Lower a clean pump with attached disposable tubing to the bottom of the well. Lift the pump off of the bottom of the well approximately one foot. Connect the pump to a 12 volt battery and begin pumping into buckets.
  - Note the conditions of the water and if any product is present.
  - As the well is being purged, surge the screened interval using the pump, being careful not to hit the bottom of the well with the pump.
  - Pump until three well volumes, as calculated earlier, are purged or until the well goes dry.
- Collect samples of the purge water to measure pH, ORP, conductivity and temperature (see Section 9.0). Record the values in the field notebook table. Purging is considered complete when these parameters agree within 10 percent in consecutive well volumes.
- Measure the depth to water after purging is complete to measure drawdown and note it in the field notebook table (DTW AP).
- In the field notebook, note the time purging was completed, personnel who purged the well, the purging method (bail or pump), the volume purged, water clarity and color, if there was any odor or sheen present in the water, and any other relevant information.
- Filter purge water through a particulate filter (1 um bag filters) into an open top drum. Hang the filter on the drum using a metal pipe or broom handle.
  - Once the purge water has been filtered for sediments, treat it by pumping it through a carbon unit. Discharge to the surface.
  - Collect a discharge sample for laboratory analysis.
- Allow enough time for the water columns to recover. Only sample a well after the water columns have recovered to at least 70% of their initial height.

- Using a bailer, collect a sample from each well from the top of the water column for laboratory analysis. Fill the VOA sample containers completely, from the top of the bailer, leaving no head space in the containers. Collect one duplicate sample for QA/QC purposes. Label the sample MW-51.
- Collect a sample for analysis of dissolved oxygen (see section 9.1.4)
- Measure the depth to water after the sample is collected and record it in the field notebook (Final DTW).
- Replace the well cap, and close and bolt the flushmount lid on each well.
- Record the sample time in the field notebook.
- Prepare a sample label including the project name, sample ID, analysis required, date and time of collection. Affix sample labels to the sample containers.
- Place samples in a plastic zipper bag in a cooler, on ice.
- Upon departure from the site, notify the owner/store manager.
- Upon return to the IGI office, place samples in the sample refrigerator, complete a time sheet and equipment log.
- Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.
- Decontaminate all equipment used (pumps, water level indicators, buckets).
- Spent filters are to be dried and placed in client specific containers at the IGI Office.
- Fill out the Job order and equipment log. Enter field data in the electronic files.
- Upon receipt of the laboratory analytical report, enter analytical data in electronic files.

4.0 VAPOR INTRUSION TESTING

The purpose of this section is to summarize the process of assessing the potential for vapor intrusion into a building and to provide direction for collecting samples and analyzing data. Detailed information is available in the Pennsylvania Vapor Intrusion Technical Guidance Document No. 253-0300-100 and the Massachusetts Indoor Air Sampling and Evaluation Guide. Both documents are available in the Insite Group, Inc. (IGI) office.

4.1 Screening to Assess the Potential for Vapor Intrusion

Contamination in either soil or groundwater can result in the intrusion of vapor phase contamination into a building. Therefore, both soil and groundwater media must be evaluated to determine if they pose a risk to indoor air quality.

The Pennsylvania Guidance Document provides decision matrices for soil and groundwater that serve as flowcharts for the screening process. These are included as attachments to this plan. In order to use the decision matrices, review site data and gather the following information:

- Determine if inhabited buildings exist within 100 feet of contaminated groundwater or soil.
- Determine if preferential pathways exist. If preferential pathways exist, the decision matrices for soil and groundwater are not applicable, and direct analysis of soil vapors or indoor air or mitigation is required.
- Determine if inhabited buildings have basements.
- Determine if separate phase liquid is present.
- Calculate average depth to groundwater.

- Establish a vertical profile of soil contamination.

Use the above information to answer questions in the decision matrices for every inhabited building within 100 feet of contamination.

The result of the screening process will be one of the following:
- Negligible risk for vapor intrusion is established. No further action required.
- A risk for vapor intrusion is established. Further action required.
- Sample soil vapor or indoor air or mitigate vapors.

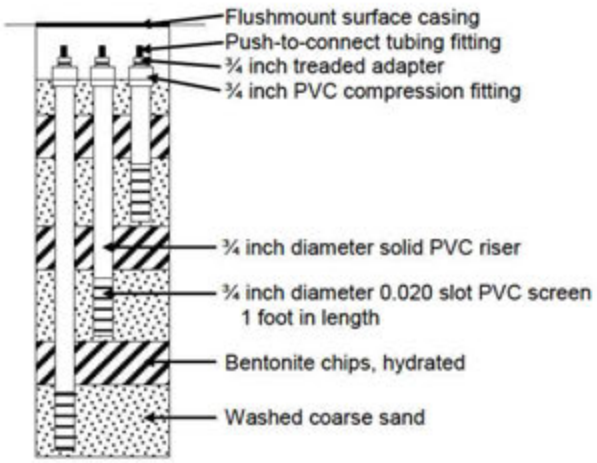
4.2 Soil Vapor Sampling

4.2.1 Soil Vapor Monitoring Well Installation

Objective
Install a soil vapor monitoring well that is representative of soil vapors that could potentially enter nearby buildings.

Equipment
- Drill rig
- Prefabricated ¾ inch diameter PVC soil vapor monitoring well with one foot of 0.020 slot PVC screen
- Washed, coarse sand
- Coarse powdered bentonite
- ¾ inch male treaded PVC cap
- Steel flushmount protective cover

Procedure
- Select the locations for installation of soil vapor monitoring wells. The wells shall be installed between the source area and nearby buildings or utility conduits.
- Determine the appropriate screen intervals. Soil vapor monitoring wells may be installed as nested sets or as single wells. Nested sets of wells provided additional data that may be used for risk assessment. If nested sets are installed, install the deepest screen interval approximately one to two feet above the water table.
- Drill a borehole using hollow stem augers or solid augers.
- Remove the augers and install the soil vapor monitoring wells.
- Pour washed, coarse sand into the borehole so that the entire well screen and several inches above and below the wells screen is in the sand.
- Pour bentonite chips into the borehole and hydrate to create a seal between well screen intervals and between the shallowest well screen and the surface.



- Install several inches of sand to grade.
- Install a flushmount protective surface casing using cement.
- Remove the ¾ inch threaded adapter and push-to-connect tube fitting and install a ¾ inch male threaded PVC cap.
- A diagram of a typical soil vapor monitoring well construction is shown at right.

4.2.2 Soil Vapor Sampling

Objective

- To collect a sample of soil vapor for the laboratory analysis of volatile organic compounds.

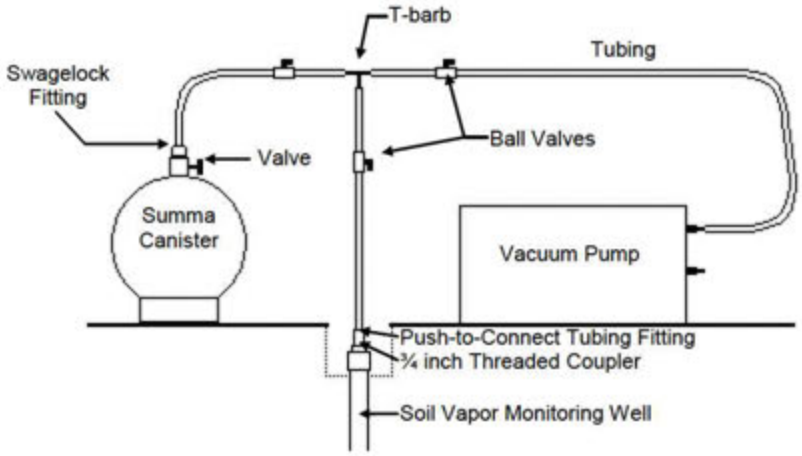
Equipment

- Passivated stainless steel vacuum sampling vessel (summa canister), provided by the laboratory
- Vacuum pump and associated tubing
- Teflon tubing with Swagelock fittings, provided by the laboratory
- One set of air sampling tubing and valves for each well. Each set contains:
  - 3/8 inch outside diameter, ¼ inch inside diameter tubing
  - ¼ inch outside diameter, 3/16 inch inside diameter tubing
  - 3 push-to-connect ball valves
  - ¼ inch "T" barb
  - ¾" male threaded coupler with push-to-connect tubing fitting
- Latex gloves
- Tools to access well
- Large crescent wrench or Channellock pliers
- Sample labels
- Cones
- Water level indicator
- Timer

Procedure:

- Calculate the total volume to be purged from each well.
  $V = h \pi r^2$, where V is the volume of the well, h is the total depth of the well (feet), r is the radius of the well (feet). Covert from cubic feet to liters (1 cubic foot = 28.32 liters)
- Determine the air flow rate of the vacuum pump to be used.
- Calculate the time required to purge the necessary volume.
  Volume (liters) / Air Flow Rate (liters per minute) = Purge Time (minutes)
- Place cones around the well to be sampled.
- Open the flushmount and remove the well cap (threaded plug) using the crescent wrench or Channellock pliers. Make sure that the PVC compression fitting remains in place.
- Check for water in the well using the water level indicator. If water is present in the well, do not sample the well.
- Fit well cap with push-to-connect tubing fitting onto soil vapor monitoring well.
- Remove the cap on the summa canister using a crescent wrench.

- Attach tubing to the soil vapor monitoring well, to the Summa canister, and to the inlet of the vacuum as shown below:



- All valves, both on summa canisters and ball valves should be closed.
- Open the ball valve to the well and open the ball valve to the vacuum pump.
- Turn on the vacuum pump to purge the well. Allow the vacuum pump to run for the calculated time period.
- Turn off the vacuum pump.
- Close the ball valve to the vacuum pump.
- Open the ball valve to the summa canister.
- Slowly open the valve on the summa canister to collect the sample. You will hear a hissing sound while the summa is filling. Slowly, open the valve on the summa canister completely. When the summa canister is filled, the hissing sound will stop. If a sample is to be collected over a time period e.g.,30 min or 6 hours, a precalibrated regulator is attached to the summa canister to control the flow rate.
- When the summa canister is filled, close the valve on the summa canister.
- Disconnect the tubing from the summa canister.
- Replace the cap on the summa canister and tighten using a crescent wrench.
- Prepare a sample label including the project name, sample ID, analysis required, date and time of collection. Affix the sample label to the tag on the summa canister (do not affix the label to the summa canister itself).
- Remove the tubing from the soil vapor monitoring well and the vacuum pump. All tubing and fittings will need to be decontaminated before it is used again.
- Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.

4.3 Indoor Air Sampling

Objective

- To collect a sample of indoor air for the laboratory analysis of volatile organic compounds.

Equipment

- Passivated stainless steel vacuum sampling vessel (summa canister), provided by the laboratory
- Pre-calibrated flow regulator, provided by the laboratory
- Timer

Procedure

- Complete indoor air sampling when conditions are optimal for vapor intrusion. Prepare the structure for sampling in accordance with regulatory guidelines. The intrusion of vapors into a building is facilitated when the outdoor temperature is less than the indoor temperature, during rain events, and on windy days.
- Determine the desired sampling time interval. As a general rule, longer sampling intervals provide more representative samples.
- At the sampling location, remove the protective cap on the summa canister and replace it with the pre-calibrated flow regulator.
- Open the valve on the summa canister. Open the valve on the regulator. Note the start time.
- The summa canister will collect a sample for the time period determined by the pre-calibrated flow regulator.
- At the end of the sampling interval, close the valve on the regulator and on the summa canister. Remove the regulator from the canister and replace it with the protective cap.
- Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.

5.0 BIOLOGICAL SAMPLING

5.1 Heterotrophic Plate Counts

Objective

- Quantitatively assess the microbial population present in groundwater.

Equipment

- Bio sample containers
- Latex gloves
- Bailers
- Rope

Procedure

- Purge each well as described in Section 3.0.
- Don a new pair of latex gloves for each sample.
- Using a bailer, collect a sample of groundwater from the well. Fill the bio sample container to the fill line marked on the container. Close and seal container.
- Label the container with the site name, sample ID, date and time.
- Store samples in a cooler on ice.
- Deliver directly to the laboratory.

5.2 PCR Testing

Objective

- Quantitatively assess RNA expression of two enzymes, PHE and PM-1, associated with aerobic biodegradation of benzene and MTBE, respectively.

Equipment

- Peristaltic pump with tubing
- Sample filters, including luer-lock adapter, red rubber cap and clear luer plug, provided by the laboratory
- Sample labels, provided by the laboratory
- Preservative, provided by the laboratory
- Syringe, provided by the laboratory
- Falcon tube, provided by the laboratory
- Sterilized plastic two liter containers
- Sterilized plastic one liter graduated cylinders
- Nitrile gloves
- Distilled water
- Detergent
- Paper towels
- Bailers
- Rope

Procedure

- Purge each well as described in Section 3.0.
- Don a new pair of nitrile gloves for each sample.
- Using a bailer, gently collect a sample of groundwater from the well to minimize the turbidity of the sample. Fill two sterilized plastic two liter containers.
- Attach the luer-lock adapter to the influent end of the sample filter
- Attach the hose barb end of the adapter to the effluent tubing from the peristaltic pump.
- Insert the influent tubing from the peristaltic pump into the first container of sample water.
- Turn on the peristaltic pump.
- Use a graduated cylinder to measure the volume of water passed through the filter.
- Filter one to two liters of water. Record the volume of water filtered.
- If the filter clogs before one liter has been filtered, record how much water was passed through the first filter, and then collect an additional filter, also recording the volume of water that went through the second filter. Do not use more than four filters.
- Turn off the peristaltic pump.
- Remove the filter from the tubing and remove the luer-lock adapter from the filter.
- Use a syringe to inject three milliliters of preservative through each filter.
- Cap the effluent end of the filter using the red rubber cap.
- Cap the influent end of the filter using the clear luer plug.
- Place the filter in the falcon tube provided by the laboratory
- Label the falcon tube with the site name, sample ID, requested analysis, volume filtered, date and time.
- Store sample filters in a cooler on ice. Samples must be received by the laboratory within 24 hours.
- Decontaminate the peristaltic pump with detergent after each sample. Rinse with copious amounts of deionized water.
- Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.

6.0 DISCHARGE MONITORING

6.1 Water

Objectives

- Quantitatively assess contaminant concentrations in the groundwater influent, midfluent and effluent of the remediation system to evaluate system performance, mass removal and carbon consumption and to meet applicable discharge permit requirements.

Equipment

- Sample containers
- pH meter
- Sample labels
- Latex gloves
- Plastic cups

Procedure

- Determine the parameters to be analyzed in accordance with the discharge permit or NPDES permit.
- If the remediation system is not actively discharging, set the system to discharge. Refer to the system operation and maintenance manual.
- Don a new pair of latex gloves for each sample.
- Open the effluent sample port and collect the sample in a plastic cup. Discard the first cup of water collected.
- Use the second cup of water to fill the sample containers.
- Measure the pH of the sample (see section 9.1.3).
- Prepare sample labels including the project name, sample ID, analysis required, date and time of collection. Affix the sample labels to the sample containers.
- Follow the same procedure for collection of influent and midfluent samples, using a clean plastic cup for each sample.
- Store samples in a cooler on ice.
- Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.

6.2 Air

Objectives

- Quantitatively assess contaminant concentrations in the groundwater influent, midfluent and effluent of the remediation system to evaluate system performance, mass removal and carbon consumption

Equipment

- 22 cc evacuated sample containers, provided by the laboratory
- 50 cc disposable syringe and needle, provided by the laboratory
- Sample labels, provided by the laboratory
- Latex gloves

Procedure

- Attach syringe needle to the syringe. If the sampling location is under vacuum, attach a stopcock between the syringe and the needle.
- Insert the needle through the septum of the effluent sample port into the air stream.
- Take 50 cc sample and discard.
- Take 40 cc sample into the syringe.
- Immediately insert syringe needle through the septum of the sample container. Compress all of the 40 cc sample into the sample container.
- With the plunger compressed, quickly remove the syringe from the septum, keeping the needle in line so as not to increase the size of the puncture.
- Follow the same procedure for collection of influent and midfluent samples.
- Store samples at ambient air temperature.
- Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.

7.0 SAMPLE SHIPMENT

7.1 Chain-of-Custody Forms

Objective

- Prepare a chain-of-custody form to accompany the samples to the laboratory.

Equipment

- Blank chain-of-Custody (COC) form

Procedure

Complete the laboratory-provided chain-of-custody form with the following information:

- Name of IGI contact
- City/State collected
- Site name
- Facility ID#
- Name and signature of individual responsible for sample collection
- List of sample IDs
- Type of media (i.e. groundwater, soil, air)
- Date and time of collection for each sample
- Number of containers per sample
- Analysis required / container size and type / preservative
- Date and time of relinquishment to shipper
- Signature of relinquisher

Retain one copy of the form. Ship the original form with the samples to the laboratory (see section 7.2).

7.2 Shipping

Objective

- Ship samples to the laboratory for analysis.

Equipment

- Samples

- Completed chain-of-custody form
- Cooler (groundwater samples, soil samples, air samples in Tedlar bags or glass vials)
- Cardboard box (air samples in summa canisters)
- Ice (for groundwater or soil samples)
- Bubble wrap
- Cooler liner
- Plastic zipper bags (1-gallon size)
- Zip ties
- Shipping labels
- Packing tape

Procedure

- Store soil and groundwater samples on ice or in a refrigerator until shipment. Air samples do not need to be refrigerated.
- For samples to be shipped in a cooler:
    - Line the cooler with bubble wrap to prevent breakage of sample containers during shipment.
    - Place a heavy gauge plastic bag (cooler liner) inside the cooler to prevent water leakage.
    - Place samples in plastic zipper bags inside the liner.
    - Fill the remaining void space in the cooler with ice (soil and groundwater samples only).
    - Twist the top of the cooler liner to seal it and use a zip tie to hold the cooler liner shut.
    - Place the chain of custody form in a plastic bag and attach it to the inner lid of the cooler.
    - Place a signed custody seal over the cooler seal.
- For summa canisters:
    - Wrap each summa canister with bubble wrap and place it in the cardboard box.
    - Fill the remaining void space with extra bubble wrap
- Seal the cooler or box with packing tape.
- Affix the shipping label to the cooler or box.
- Ship the cooler to the laboratory via overnight courier service.

8.0 ANALYTICAL LABORATORY QUALITY CONTROL

Objective

- Ensure that contracted analytical testing is performed in accordance with EPA guidelines.
- Ensure that analytical results meet quality standards.
- Measure parameters to the lowest practical quantitation limit.
- Ensure that data is accurately transferred from lab reports to project files.

Practices in Place

- Contract laboratories must maintain Pennsylvania certification for environmental testing.

- IGI reviews laboratory reports to confirm that surrogate recoveries are within acceptable limits. Acceptable limits for 8260 VOC surrogate recoveries are shown below:

Analyte	Acceptable Recovery Soils	Acceptable Recovery Groundwater
Dibromofluoromethane	79 – 126%	83 – 119%
4-Bromofluorbenzene	65 – 129%	72 – 126%
Toluene-d8	81 – 114%	82 – 116%

- After analytical data is electronically entered into the project file, a second individual verifies that the electronic data agrees with the laboratory report.
- Analytical data is stored in a historical project summary table. Trends are readily apparent in this format. The project manager may request a test rerun by the analytical laboratory if a value appears to be out-of line.
- Analytical reports are reviewed with respect to detection limits. Detection limits should be no higher that the action level for each parameter. The project manager may request that the test be rerun on a lower dilution of the sample.
- Duplicate samples are collected in the field to ensure that sampling is performed in a reproducible manner.

9.0 FIELD TESTING AND EQUIPMENT CALIBRATION

9.1 Field Testing

9.1.1 Photoionization Detectors

Objective

- Qualitatively measure relative concentrations of VOCs in soil samples.
- Establish a vertical profile of contaminant concentrations in a soil boring.

Equipment

- Photoionization Detector (model Hnu P1 101 or model Mini Rae Lite PGM7300)

Procedure (Hnu P1 101)

- Charge the unit prior to field use by plugging it into an AC outlet for 8-12 hours, using the AC adaptor.
- Attach the probe to the lamp unit.
- Attach the lamp unit to the meter unit.
- Turn the instrument on to the BATT setting. The needle on the meter will deflect to BATT CHK, verifying that the unit is charged.
- Turn the dial to STANDBY and allow the unit to warm up for five minutes.
- Zero the meter using the zero knob.
- The instrument is now ready for use.
- Make a small opening in the sample bag closure and insert the tip of the probe into the bag without touching the sample.
- Adjust the sensitivity settings, if needed, to read a value on the scale.

- Record the concentration corresponding to the maximum deflection of the needle on the meter.
- Record results in the field notebook or boring log.
- Allow the meter to return to zero before performing additional analyses.

Procedure (Mini Rae Lite PGM7300)

- Charge the unit prior to field use by plugging it into an AC outlet for 8-12 hours, using the AC adaptor and charging stand. The message "Fully charged!" is displayed when the unit is fully charged.
- Attach the probe to the unit. Attach a moisture filter to the end of the probe.
- There are four keys on the unit
  - Yes / increase key (Y/+)
  - No / decrease key (N/-)
  - Mode key ( )
  - Flashlight on/off key ( )
- In addition to their labeled functions, the Yes, No and Mode keys act as "soft keys" that control different parameters and make different selections within the unit's menus.
- Press and hold the Mode key to turn the unit on. The unit will run a self test.
- The display will show "Ready… Start sampling?"
- Press the Yes key to begin sampling. Make sure that the probe inlet and the gas outlet are free of obstructions.
- The display will show a value in ppm. The unit has a measuring range of 0.1 to 5,000 ppm.
- Make a small opening in the sample bag closure and insert the tip of the probe into the bag without touching the sample.
- Record the concentration corresponding to the maximum value shown on the display.
- Record the results in the field notebook or boring log.
- Allow the meter to return to zero before performing additional analyses.
- Press the No key to stop sampling. The display will show "Stop sampling?" Press the Yes key to stop the pump.
- Press and hold the Mode key for five seconds to turn the unit off.

9.1.2 Air Velocity Meter

Objectives

- Quantitatively measure air flow rate and temperature in treatment system air streams.

Equipment

- VelociCalc® Air Velocity Meter, model 9535
- Field notebook

Procedure -measures in ACFM

- The unit is powered by four AA size batteries
- Determine what size diameter pipe (inner diameter) is being tested.
- Press and hold the Power ( ) key to turn the unit on.
- In addition to their labeled functions, the top row of three keys act as "soft keys" that control different parameters and make different selections within the unit's menus.
- Press the menu key, the middle of the top keys, to access the menu. Press the Enter (key to access the Display Setup menu. Make sure the Flow and Temperature

parameters are on, and the Velocity parameter is off. Switch between parameters by using the up and down arrow keys. Turn the parameters on or off by using the left and right soft keys. Only two of the three parameters can be on at any one time. Press the Enter key to save any changes made.

- In the main menu, scroll down to access the "Flow Setup" menu. Press Enter. The Flow type should be "Round duct." If it is not set on "Round Duct," press the Enter key with "Flow Type" highlighted and scroll up or down until "Round Duct" is selected, and press Enter.
- In the Flow Setup menu, scroll down until "Enter Settings" is highlighted. Press Enter. Using the up and down keys, change the value on this screen to match the diameter of the pipe being measured. The value can change from 1 to 500 inches. Press Enter to save any changes.
- Press the Escape (ESC) key to exit the Flow Setup menu.
- Press Escape to exit the Menu and access the data screen.
- Extend the probe. Do not hold the cable while extending the probe as this prevents the probe from extending.
- At the sample port, there is a ¼" ball valve. Open the valve and insert the end of the probe. The probe is directional. There is a dimple on the threads at one end of the probe. The dimple is to face upstream.
- The Display should show "Actual" in the top left corner, a battery bar in the top right corner and two data values, air flow rate (actual cubic feet per minute or ACFM) and temperature (^{O}F).
- Take three readings at each sample location. Record the readings in the field notebook.
- Press and hold the Power key to turn the unit off.
- Retract the probe.

9.1.3 Portable Water Quality Meters

Objectives

- pH - Measure relative acidity or alkalinity in groundwater as indicated by a logarithmic scale of Hydrogen ion concentration.
- Conductivity - Measure the concentration of dissolved solids in a groundwater sample as a function of current conduction.
- ORP - Measure relative oxidizing or reducing capability of groundwater by measuring voltage at an electrode.
- Temperature - Measure groundwater temperature.

Equipment

- Portable water quality meters as listed below
- Plastic cup
- Paper towels
- Rinse water
- Water sample

Procedures

Oakton ECO Tester pH2 (pH)

- Remove the protective cap at the tip of the instrument to expose the electrode. Rinse the tip with tap water to remove storage solution and blot with a paper towel to remove excess liquid.
- Immerse the electrode in 20 mm of sample.
- Press and release the bottom button (Ŏ) to turn on the meter.
- Swirl gently to clear any trapped air bubbles and create a homogenous sample and allow the reading to stabilize.
- Record the pH reading.
- Press and release the bottom button (Ŏ) to turn off the meter.
- Rinse the tip of the instrument with tap water and blot with a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

Hanna pHep® Meter HI98127 (pH and Temperature)

- Remove the protective cap at the tip of the instrument to expose the electrode. Rinse the tip with tap water to remove storage solution and blot with a paper towel to remove excess liquid.
- Immerse the electrode in 20 mm of sample.
- Press and release the left button (Ŏ/MODE) to turn on the meter.
- Swirl gently to clear any trapped air bubbles and create a homogenous sample.
- Allow the reading to stabilize. The value is stabilized when the clock icon disappears.
- Record the pH and temperature readings.
- To change ◦C/◦F, press and hold the left button (Ŏ /MODE) until "OFF" on the display is replaced by "TEMP". Use the right button (SET/HOLD) to change ◦C/◦F.
- Press and release the bottom button (Ŏ/MODE) to turn off the meter.
- Rinse the tip of the instrument with tap water and blot with a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

Oakton TDSTestr 11+ Meter (Conductivity and Temperature)

- Remove the protective cap at the tip of the instrument to expose the electrode. Rinse the electrode with de-ionized water prior to use. Blot dry with a paper towel.
- Immerse the electrode in the test solution making sure that it is fully immersed.
- Press the middle button (ON/OFF) to turn on the meter.
- Swirl gently to clear any trapped air bubbles and create a homogenous sample.
- Allow the reading to stabilize.
- The upper display shows the measured conductivity / TDS reading and the lower display shows the temperature reading.
- To change the temperature reading between Celsius and Fahrenheit, press the left button (°C/°F).
- Record the conductivity and temperature readings.
- Press the middle button (ON/OFF) to turn off the meter.
- Rinse the electrode with deionized water to prevent cross contamination between measurements and blot with a paper towel to dry.
- Place the protective cap on the instrument. THIS INSTRUMENT IS STORED DRY.

Oakton ORPTestr 10 Meter (ORP)

- Remove the protective cap at the tip of the instrument to expose the electrode. Rinse the tip with tap water to remove storage solution and blot with a paper towel to remove excess liquid.
- Immerse the electrode about 20-30 mm in the sample to be measured.
- Press and release the middle button (ON/OFF) to turn on the meter.
- Stir once and let the reading stabilize for 2 to 5 minutes.
- Record the ORP reading.
- Press and release the middle button (ON/OFF) to turn off the meter.
- Rinse the tip of the electrode with tap water and blot with a paper towel to remove excess liquid.
- Make sure there is storage solution in the protective cap and place it on the instrument.

Hanna Combo Meter HI98129 (pH, Conductivity, and Temperature)

- Remove the protective cap at the tip of the instrument to expose the electrode and rinse with tap water to remove storage solution. Blot with paper towel to remove excess liquid.
- Immerse the electrode in the sample.
- Press and release the left button (Ŏ/MODE) to turn the meter on.
- Confirm that the CAL indicator is steady and not blinking. This means that the meter is calibrated.
- Press and release the right button (SET/HOLD) repeatedly until pH appears in the upper right of the display.
- When the clock-face symbol disappears, record the pH and temperature readings.
- Press and release the right button (SET/HOLD) repeatedly until ppm appears in the upper right of the display.
- When the clock-face symbol disappears, record the conductivity reading in ppm.
- Press and release the left button (Ŏ/MODE) to turn the meter off.
- Rinse the tip of the instrument in water and blot on a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

Hanna Combo Meter HI98121 (pH, ORP, and Temperature)

- Remove the protective cap at the tip of the instrument to expose the electrode and rinse with tap water to remove storage solution. Blot with paper towel to remove excess liquid.
- Immerse the electrode in the sample.
- Press and release the left button (Ŏ/MODE) to turn the meter on.
- Confirm that the CAL indicator is steady and not blinking. This means that the meter is calibrated.
- Press and release the right button (SET/HOLD) repeatedly until pH appears in the upper right of the display.
- When the clock-face symbol disappears, record the pH and temperature readings.
- Press and release the right button (SET/HOLD) repeatedly until mV appears in the upper right of the display.
- When the clock-face symbol disappears, record the ORP reading in mV.
- Press and release the left button (Ŏ/MODE) to turn the meter off.

- Rinse the tip of the instrument in water and blot on a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

9.1.4 CHEMetrics Field Test Kits

Objectives

- Quantitatively measure the concentration of dissolved oxygen, dissolved iron, total iron, manganese, nitrate and / or phosphate in a groundwater sample.

Equipment

- CHEMetrics Dissolved Oxygen kit (K-7512)
- CHEMetrics Iron kit (K-6010)
- CHEMetrics Manganese kit (K-6502)
- CHEMetrics Nitrate kit (K-6904)
- CHEMetrics Phosphate kit (K-8510)
- Bailer
- Rope
- Plastic cup
- Latex gloves
- Protective eyewear

Procedures

- Don latex gloves and protective glasses. For each sample collected, don a new pair of latex gloves.
- Keep all ampoules and Comparators out of direct sunlight.
- Slowly and carefully remove a bailer full of water from the well.
- Collect a sample from the bottom of the bailer by placing the bailer drain insert (provided with each bailer) into the bottom of the bailer to dislodge the bailer float ball. The goal is to provide a gentle stream of water into the sample cup, as a fast stream of water will affect the amount of oxygen in the sample.
- Place spent ampoules in a sharps container.

Dissolved Oxygen (K-7512)

- Immediately upon filling the cup, immerse the ampoule in the sample and snap the tip. The ampoule contains a reagent and a vacuum, so the proper amount of water is pulled into the ampoule.
- Tilt the ampoule back and forth so that the air bubble inside goes from end to end four times. Wait two minutes for color development.
- The ampoules in the Comparator correspond to different dissolved oxygen concentrations. Compare the test ampoule to the ampoules in the Comparator to find a color match. Record the corresponding concentration in the field notebook.

Dissolved Iron (K-6010)

- Immerse the ampoule in the sample and snap the tip. The ampoule contains a reagent and a vacuum, so the proper amount of water is pulled into the ampoule.
- Tilt the ampoule back and forth so that the air bubble inside goes from end to end four times. Wait one minute for color development.

- The ampoules in the Comparator correspond to different dissolved iron concentrations. Compare the test ampoule to the ampoules in the Comparator to find a color match. Record the corresponding concentration in the field notebook.

Total Iron (K-6010)

- Fill the sample cup from the kit to the 25 mL mark with the sample.
- Add 5 drops of A-6000 activator solution from the kit. Stir briefly.
- After four minutes, stir the sample once again
- Immerse the ampoule in the sample and snap the tip. The ampoule contains a reagent and a vacuum, so the proper amount of water is pulled into the ampoule.
- Tilt the ampoule back and forth so that the air bubble inside goes from end to end four times. Wait one minute for color development.
- The ampoules in the Comparator correspond to different total iron concentrations. Compare the test ampoule to the ampoules in the Comparator to find a color match. Record the corresponding concentration in the field notebook.

Manganese (K-6502)

- Fill the sample cup from the kit to the 5 mL mark with the sample.
- Add 5 drops of A-6500 activator solution from the kit. Stir briefly with the tip of the ampoule to mix the contents of the sample cup.
- Immerse the ampoule in the sample and snap the tip. The ampoule contains a reagent and a vacuum, so the proper amount of water is pulled into the ampoule.
- Tilt the ampoule back and forth so that the air bubble inside goes from end to end four times. Wait one minute for color development.
- The ampoules in the Comparator correspond to different manganese concentrations. Compare the test ampoule to the ampoules in the Comparator to find a color match. Record the corresponding concentration in the field notebook.

Nitrate (K-6904)

- Fill the reaction tube from the kit to the 15 mL mark with the sample.
- Empty the contents of one Cadmium Foil Pack from the kit into the reaction tube. Cap the reaction tube and shake it vigorously for exactly three minutes. Allow the sample to sit undisturbed for two minutes. WARNING: CADMIUM IS POISONOUS. Spent cadmium foil packs should be placed in a dedicated container until disposal.
- Pour 10 mL of the sample into the sample cup from the kit, being careful not to transfer any of the cadmium particles to the sample cup.
- Immerse the ampoule in the sample and snap the tip. The ampoule contains a reagent and a vacuum, so the proper amount of water is pulled into the ampoule.
- Tilt the ampoule back and forth so that the air bubble inside goes from end to end four times. Wait 10 minutes for color development.
- The ampoules in the Comparator correspond to different nitrate concentrations. Compare the test ampoule to the ampoules in the Comparator to find a color match. Record the corresponding concentration in the field notebook.

Phosphate (K-8510)

- Fill the sample cup from the kit to the 25 mL mark with the sample.
- Add 2 drops of A-8500 activator solution from the kit. Cap the sample cup and shake it to mix the contents well.

- Immerse the ampoule in the sample and snap the tip. The ampoule contains a reagent and a vacuum, so the proper amount of water is pulled into the ampoule.
- Tilt the ampoule back and forth so that the air bubble inside goes from end to end four times. Wait two minutes for color development.
- The ampoules in the Comparator correspond to different phosphate concentrations. Compare the test ampoule to the ampoules in the Comparator to find a color match. Record the corresponding concentration in the field notebook.

9.2 Equipment Calibration and Maintenance

Objective

- Confirm that field equipment is functioning as designed.
- Ensure that data obtained using the equipment is accurate.
- Ensure that equipment is functioning properly prior to going into the field.

9.2.1 Photoionization Detectors

Equipment

- Photoionization Detector (model Hnu P1 101 or Mini Rae Lite PGM7300)
- Calibration gas—Isolbutylene 100ppm
- Regulator
- Equipment Calibration Log

Procedure:

Hnu P1 101

- Attach the lamp unit and probe to the meter unit and turn the instrument on.
- Allow the instrument to warm up for five minutes on the standby setting.
- Turn the detector dial to 0-200.
- Using the zero knob, adjust the needle to read zero on the scale.
- Attach the regulator to the calibration gas cylinder.
- Place the open end of the tubing attached to the regulator onto the tip of the probe.
- Open the valve on the regulator to allow the gas to flow into the probe.
- Adjust the span knob such that the reading on the dial is 67 ppm.
- The instrument is now calibrated for benzene detection.
- Close the regulator valve and detach the tubing from the probe.
- Allow the probe to equilibrate to zero in ambient air before turning the unit off or to standby.
- Record the date, instrument, calibration reading, lot number of calibration gas and initials of performer on the Log Sheet.

Mini Rae Lite PGM7300

- Attach the probe to the unit and turn the instrument on, as described in section 9.1.1.
- Press and hold the Mode and No keys simultaneously to enter the calibration menu.
- The unit will ask for a password. Press the Mode key to bypass this screen (a password is not necessary to calibrate).

- The unit will display "Zero Calib" and "Span Calib." With Zero Calib highlighted, press the Yes key to begin zero calibration. The display will show "Apply zero Gas…" Press Yes to begin calibrating. The unit will calibrate for 30 seconds.
- Once the unit has been calibrated to zero, "Span Calib" will be highlighted. Apply the calibration gas to the probe. Press Yes to begin span calibration. The display will show "C. Gas = Isobutene Span = 100 ppm Please apply gas 1…" Press Yes to begin calibrating. The unit will calibrate for 30 seconds.
- Once the unit has been calibrated to Isobutene, press Mode to return to the main screen.
- Record the date, instrument, calibration reading, lot number of calibration gas and initials of performer on the Log Sheet.

9.2.2 Air Velocity Meter

The VelociCalc® Air Velocity Meter, model 9535, must be returned to the manufacturer for recalibration: TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126-3396, (800) 874-2811.

9.2.3 Portable Water Quality Meters

Equipment

- Portable water quality meters
- Equipment Calibration Log
- Calibration solutions (pH 7.0, pH 4.0, conductivity 1382 ppm, ORP 200-275mV, TDS 1413 µS)
- Thermometer
- Soapy water
- Tap water
- Deionized water
- Plastic cup
- Paper towels
- Battery tester
- Batteries – size 357

Procedure

- Dip a paper towel in soapy solution, squeeze out excess liquid and wipe the meter casing. Next wipe the meter with a damp paper towel to remove any soapy residue. Dry the outside of the meter using a dry paper towel.
- Check the batteries monthly and replace them quarterly or as indicated on the meter display. All meters use 4 - size 357 batteries. Turn on the battery tester by turning the dial indicator to 20V. Remove the caps from the red (positive) and black (negative) electrodes. Place the electrodes on their respective ends of the battery. The new batteries should register over 1.5 volts. Any batteries registering less than 1.5 should be replaced. Do not put new batteries with old ones.
- Remove the protective cap at the tip of the instrument to expose the electrode. Rinse the protective cap and the tip of the electrode with tap water to remove storage solution and silt deposits from use in the field. If the deposits are still evident, use Q-tips and dampened paper towels to remove them. Blot with a dry paper towel to remove excess liquid.

- After cleaning, condition the ORP meters, if necessary, by immersing the meter in a reducing (HI7091) or oxidizing (HI7092) solution for 30 minutes.
- Calibrate the meters as described in the separate calibration procedures below.
- If a meter fails to calibrate properly, immerse the electrode in cleaning solution for five minutes. Rinse using copious amounts of tap water and then proceed to calibrate. (In rare cases, the meter may need to be immersed in cleaning solution for 30 minutes.)

Oakton ECO Tester pH2

- Calibration Solutions: pH 7 Standard, pH 4 Standard
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in 20 mm of 7.0 pH calibration standard.
- Press and release the bottom button (Ŏ) to turn on the meter.
- Gently stir the meter in the pH 7.0 standard and wait for the value to stabilize at or near pH 7.0.
- Press and release the middle button (cal). The display will flash CAL, then show a flashing default reading.
- To confirm the calibration, press and release the top button (hold/ent). Wait for the auto confirmation (ENT). You have successfully completed the first calibration point.
- Rinse the tip to remove pH 7.0 standard solution and blot with a paper towel to remove excess liquid.
- Immerse the electrode in 20 mm of 4.0 pH calibration standard. Gently stir and wait for the value to stabilize at or near pH 4.0.
- Press and release the middle button (cal). The display will flash CAL, then show a flashing default reading.
- To confirm the calibration, press and release the top button. Wait for the auto confirmation (ENT). You have successfully completed the second calibration point.
- In the calibration log, record the date, calibration standard value, calibration standard lot number, instrument reading after calibration, and initials of personnel completing the calibration.
- Turn the instrument off by depressing the bottom button.
- Rinse the tip of the instrument in water and blot with a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

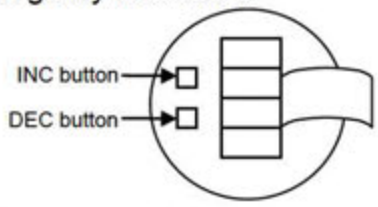
Hanna pHep® Meter HI98127

- Calibration Solutions: pH 7 Standard, pH 4 Standard
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in 20 mm of 7.0 pH calibration standard.
- Press and release the left button (Ŏ /MODE) to turn on the meter.
- Gently stir the meter in the pH 7.0 standard and wait for the value to stabilize at or near pH 7.0.
- Press and hold the left button (Ŏ /MODE) until "OFF" on the display is replaced by "CAL". Release the button. The display will read "pH 7.01 USE". After the buffer is recognized and accepted, the display will read "pH 4.01 USE". You have successfully completed the first calibration point.
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in 20 mm of 4.0 pH calibration standard. Gently stir and wait for the value to stabilize at or near pH 4.0.

- Once the pH 4.0 buffer is recognized and accepted, the value will be displayed with the "OK 2" message. The meter will then return to normal measuring mode. When the calibration is completed, the "CAL" tag is turned on.
- Rinse the tip to remove pH 4.0 standard solution and blot with a paper towel to remove excess liquid.
- Immerse the electrode in 20 mm of tap water in a cup. Place thermometer in cup to compare readings.
- Gently stir the meter in the water and wait for the temperature value to stabilize.
- To change ◦C/◦F, press and hold the left button (Ŏ /MODE) until "OFF" on the display is replaced by "TEMP". Use the right button (SET/HOLD) to change ◦C/◦F.
- Press the left button (Ŏ /MODE) twice to enter the normal measuring mode.
- In the calibration log, record the date, calibration standard value, calibration standard lot number, instrument reading after calibration, and initials of personnel completing the calibration.
- Turn the instrument off by depressing the left button (Ŏ /MODE).
- Rinse the tip of the instrument in water and blot with a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

Oakton TDSTestr 11+Meter

- Calibration Solution: 1382 ppm
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in 20 mm of 1382ppm calibration standard.
- Press the middle button (On/OFF) to turn on the tester. Swirl gently to create a homogenous sample and allow the reading to stabilize.
- Unscrew and remove the lid from the meter. Locate two white buttons beside the battery compartment. These buttons are used to increase (INC) and decrease (DEC) the display values.



- Press the INC or DEC button to enter calibration mode. "CAL" appears in the screen. The upper display shows the measured conductivity/TDS reading of the solution based on previous calibration and the lower display shows the default (uncalibrated) conductivity/TDS reading.
- Adjust the upper display to the conductivity/TDS calibration solution value by pressing the INC or DEC button.
- Wait 5 seconds for the tester to automatically confirm the calibration by displaying "CO" and return to measurement mode.
- Rinse the electrode with deionized water to remove standard solution and blot with a paper towel to dry.
- Immerse the electrode in 20 mm of a solution of known temperature. Press the middle button to turn on the tester. Swirl gently to remove bubbles and create a homogenous sample and allow the reading to stabilize.
- Press the left button to select the desired unit of measurement (◦C/◦F).
- Press the INC or DEC button to enter calibration mode. "CAL" appears in the screen. Immediately press the (◦C/◦F) button to switch to the temperature calibration mode. The upper display shows the measured temperature reading of the solution based on previous calibration and the lower display shows the default (uncalibrated) temperature reading.

- Adjust the upper display to the temperature calibration solution value by pressing the INC or DEC button.
- Wait 5 seconds for the tester to automatically confirm the calibration by displaying "CO" and return to measurement mode.
- In the calibration log, record the date, calibration standard value, calibration standard lot number, instrument reading after calibration, and initials of personnel completing the calibration.
- Replace the lid on the meter over battery compartment.
- Press the middle button (On/OFF) to turn off the tester.
- Rinse the tip of the instrument in water and blot with a paper towel.
- Place the protective cap on the instrument. THIS INSTRUMENT IS STORED DRY.

Oakton ORPTestr 10 Meter

- Calibration Solution: ORP 200-275mV
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in ORP calibration standard.
- Press and release the middle button (ON/OFF) to turn on the meter.
- Leave the ORP meter in the calibration solution for 2 to 5 minutes until the readings stabilize. Be sure the whole sensor is immersed.
- Press the left button (CAL) to enter the calibration mode. The screen will switch to a dual display with the upper display flashing the relative mV value to be calibrated and the lower display showing the default measurement value of the sample. "CAL" replaces "MEAS" on the display to indicate that the tester is in calibration mode.
- Immediately press and hold the right button (HOLD/ENT) to scroll the reading to match the value of the calibration standard. This value only scrolls up. Once the value reaches its maximum, it will resume scrolling up from zero.
- To complete the calibration, release the right button (HOLD/ENT) and wait for 5 seconds for automatic confirmation. The upper display will stop flashing and the lower display will read "CO" before the screen returns to the single display measurement mode. This means that the machine is calibrated.
- In the calibration log, record the date, calibration standard value, calibration standard lot number, instrument reading after calibration, and initials of personnel completing the calibration.
- Press and release the middle button (ON/OFF) to turn off the meter.
- Rinse the tip of the instrument in water and blot with a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

Hanna Combo Meter HI98129 (pH, Conductivity, and Temperature)

- Calibration Solutions: pH 7 Standard, pH 4 Standard, 1413 µS Standard, 1382 ppm Standard
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in 7.0 pH calibration standard.
- Press and release the left button (Ŏ /MODE) to turn on the meter.
- Select "pH" as the desired testing parameter by depressing and releasing the right button (SET/HOLD) repeatedly until pH appears in the upper right of the display.
- When the clock-face symbol disappears, press and hold the left button until CAL is displayed in the lower screen. Release the button. The display will read pH 7.01 USE. After recognition of the buffer the meter will display pH 4.01 USE. Rinse the

electrode thoroughly and blot with a paper towel to remove excess liquid. Immerse the electrode in 4.0 pH standard. When the second buffer is recognized, the meter will display OK for 1 second and the meter will return to normal measuring mode.

- Confirm that the CAL is steady and not blinking. This means that the machine is calibrated.
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in 1413 µS/cm calibration standard.
- Select "ppm" as the desired testing parameter by depressing and releasing the right button (SET/HOLD) repeatedly until ppm appears in the upper right of the display.
- When the clock-face symbol disappears, press and hold the left button until CAL is displayed in the lower screen. Release the button. The display will read 1382 USE. After recognition of the buffer the meter will display OK for one second and the meter will return to normal measurement mode.
- Confirm that the CAL is steady and not blinking. This means that the machine is calibrated.
- Select "µS" as the desired testing parameter by depressing and releasing the right button (SET/HOLD) repeatedly until µS appears in the upper right of the display.
- When the clock-face symbol disappears, press and hold the left button until CAL is displayed in the lower screen. Release the button. The display will read 1413 USE. After recognition of the buffer the meter will display OK for 1 second and the meter will return to normal measurement mode.
- Confirm that the CAL is steady and not blinking. This means that the machine is calibrated.
- Rinse the tip of the instrument in water and blot on a paper towel.
- Immerse the electrode in a cup of tap water with a thermometer.
- When the clock-face symbol disappears, record the temperature that appears in the lower right of the display and compare it with the known temperature on the thermometer.
- To change the temperature unit (from ◦C to ◦F), press and hold the left button until TEMP and the current temperature unit are displayed on the screen (E.g. TEMP ◦C). Use the right button to change the temperature unit and then press the left button twice to return to normal measuring.
- In the calibration log, record the date, calibration standard value, calibration standard lot number, instrument reading after calibration, and initials of personnel completing the calibration.
- Turn the instrument off by depressing the left button.
- Rinse the tip of the instrument in water and blot with a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

Hanna Combo Meter HI98121 (pH, ORP, and Temperature)

- Calibration Solutions: pH 7 Standard, pH 4 Standard, ORP 200-275 mV
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in 7.0 pH calibration standard.
- Press and release the left button (Ŏ /MODE) to turn on the meter.
- Select "pH" as the desired testing parameter by depressing and releasing the right button (SET/HOLD) repeatedly until pH appears in the upper right of the display.

- When the clock-face symbol disappears, press and hold the left button (Ŏ /MODE) until CAL is displayed in the lower screen. Release the button. The display will read pH 7.01 USE. After recognition of the buffer the meter will display pH 4.01 USE.
- Rinse the electrode thoroughly and blot with a paper towel to remove excess liquid. Immerse the electrode in 4.0 pH standard. When the second buffer is recognized, the meter will display OK for 1 second and the meter will return to normal measuring mode.
- Confirm that the CAL is steady and not blinking. This means that the machine is calibrated.
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in 200-275 mV calibration standard.
- Select "mV" as the desired testing parameter by depressing and releasing the right button (SET/HOLD) repeatedly until mV appears in the upper center of the display.
- When the clock-face symbol disappears, the meter should read within the standard range of 200-275 mV.
- The ORP range is factory calibrated. Contact the nearest Hanna Service Center if ORP recalibration is needed. .
- Rinse the tip of the instrument in water and blot with a paper towel.
- Immerse the electrode in a cup of tap water with a thermometer.
- When the clock-face symbol disappears, record the temperature that appears in the lower right of the display and compare it with the known temperature on the thermometer.
- To change the temperature unit (from ◦C to ◦F), from the measurement mode press and hold the left button (Ŏ /MODE) until TEMP and the current temperature unit are displayed on the screen (e.g. TEMP ◦C). Use the right button (SET/HOLD) to change the temperature unit and then press the left button (Ŏ /MODE) twice to return to normal measuring.
- In the calibration log, record the date, calibration standard value, calibration standard lot number, instrument reading after calibration, and initials of personnel completing the calibration.
- Turn the instrument off by depressing the left button (Ŏ /MODE).
- Rinse the tip of the instrument in water and blot with a paper towel.
- Make sure there is storage solution in the protective cap and place it on the instrument.

10.0 AQUIFER TESTING AND PILOT TESTING

10.1 Slug Testing

Objective

- Complete slug in and slug out tests to estimate the permeability of the aquifer.

Equipment

- In-Situ Mini-Troll in-well data logging pressure transducer with cable
- Laptop with Win-Situ software installed
- In-Situ ComIT Adapter
- Extra AA batteries for the Mini-Trolls (each Mini-Troll uses two)
- Extra CV2 battery for the ComIT Adapter

- Slug of a known volume (1" or 2" diameter PVC, filled with water and capped on both ends)
- Water level indicator
- Latex gloves
- Tape measure
- Rope
- Cones
- Decontamination materials

Procedure

- Don latex gloves.
- Measure the depth to water.
- Measure the total depth of the well.
- Calculate the thickness of the water column.
- Lower the Mini-Troll into the well so that the bottom of the troll is 6 inches to 1 foot above the bottom of the well. Verify that the Mini-Troll is not in contact with sediment at the bottom of the well.
- Secure the cable to the flush mount to prevent movement within the well.
- Connect the cable to the computer via the communication interface. Define the test parameters for the slug-in phase of the test. Use the logarithmic scale for data collection.
- Tie rope or string to the slug and lower it into the well so that the bottom of the slug is just above the water surface. Begin data collection by the Mini-Troll.
- Immediately lower the slug quickly but smoothly into the water column so that the top of the slug remains just below the water surface. The string is then tied to the flush mount to prevent movement within the water column. This is termed a "slug-in" test.
- When the depth to water has returned to its original static level, end data collection by the Mini-Troll.
- Define a new test with the computer for the slug-out phase of the slug test.
- Begin data collection by the Mini-Troll.
- Immediately remove the slug quickly but smoothly from the well. This is termed a "slug-out" test.
- When the depth to water has returned to its original static level, end data collection by the mimiTROLL.
- Download data from the Mini-Troll onto the computer for analysis. Disconnect the Mini-Troll from the laptop computer and remove the Mini-Troll from the well.
- Decontaminate the slug and Mini-Troll using a soap scrub followed by multiple water rinses.
- Transfer the data into spreadsheets provided by the US Geological Survey (USGS) for use in single well analyses using the Bouwer-Rice Method to calculate permeability.

10.2 Pump Testing

10.2.1 Step Test

Objectives

- Conduct a step test to determine the maximum sustainable flow rate in preparation for a constant rate pump test.

Equipment

- In-Situ Mini-Troll in-well data logging pressure transducers with cable
- Laptop with Win-Situ software installed
- In-Situ ComIT Adapter
- Extra AA batteries for the Mini-Trolls (each Mini-Troll uses two)
- Extra CV2 battery for the ComIT Adapter
- Water level indicator
- Pump (i.e. submersible well pump, air-diaphragm pump, etc.)
- Power supply (12V deep cycle battery for submersible well pumps, air compressor and electrical connection for air-diaphragm pumps)
- Tubing or hose
- Large graduated cylinder
- Stopwatch
- 55-gallon drums
- Decontamination materials

Procedure

- Done latex gloves.
- Measure the depth to water of the pumping well.
- Lower the Mini-Troll into the well so that the bottom of the troll is 6 inches to 1 foot above the bottom of the well. Verify that the Mini-Troll is not in contact with sediment at the bottom of the well.
- Secure the cable to the flush mount to prevent movement within the well.
- Connect the cable to the computer via the communication interface.
- Program the Mini-Troll to begin recording data prior to the start of the pump test.
- Lower the pump into the pumping well to a level several feet above the bottom of the well and secure it to the top of the well.
- Begin pumping at a slow rate. The initial rate shall be determined in advance based on soil conditions and expected flow rates. Record the time.
- Measure the flow rate using a graduated cylinder and a stop watch. Record the flow rate in the field notebook.
- Measure the depth to water in the pumping well regularly using the water level indicator and record the measurement and the time in the field notebook.
- After a period of time, increase the flow rate. Continue to measure the flow rate and the depth to water in the pumping well.
- Continue to increase the flow rate in increments until either the maximum rate of the pump is reached or the well is dewatered.
- Stop pumping.
- Stop the test and download the data from from Mini-Troll.
- Stage the water generated during the pump test on site in 55-gallon drums for future disposal or treat with carbon and discharge in accordance with the discharge permit, if applicable.
- Decontaminate the pump and Mini-Trolls using a soap scrub followed by multiple water rinses.
- Evaluate the data to determine an appropriate sustainable pumping rate for a constant rate pump test. The goal is to induce drawdown in the well without causing the well to run dry.

10.2.2 Constant Rate Test

Objectives

- Conduct a constant rate pump test to determine the permeability of the aquifer, the maximum sustainable flow rate and radius of influence.

Equipment

- In-Situ Mini-Troll in-well data logging pressure transducers with cable
- Laptop with Win-Situ software installed
- In-Situ ComIT Adapter
- Extra AA batteries for the trolls (each troll uses two)
- Extra CV2 battery for the ComIT Adapter
- Mobile groundwater pump and treat system OR a pump (i.e. submersible well pump), power supply (i.e. 12V deep cycle battery), tubing or hose and 55-gallon drums.
- Water level indicator
- Large graduated cylinder
- Stopwatch
- Decontamination materials
- Groundwater sampling containers
- Plastic cups

Procedure

- Done latex gloves.
- Measure the depth to water of all wells.
- Mini-Trolls may be used to record changes in groundwater elevations in selected wells and/or the pumping well.
    - Lower the Mini-Troll into the selected wells so that the bottom of the troll is 6 inches to 1 foot above the bottom of the well. Verify that the Mini-Troll is not in contact with sediment at the bottom of the well.
    - Secure the cable to the flush mount to prevent movement within the well.
    - Connect the cable to the computer via the communication interface.
    - Program the Mini-Trolls to begin recording data prior to the start of the pump test.
- Lower the pump into the pumping well to a level several feet above the bottom of the well and secure it to the top of the well.
- Initiate pumping at the selected flow rate, as determined by the step test. The goal is to induce drawdown in the well without causing the well to run dry. Record the time.
- Measure the flow rate using a graduated cylinder and a stop watch. Record the flow rate in the field notebook.
- Measure the depth to water in the pumping well regularly using the water level indicator and record the measurement and the time in the field notebook.
- Periodically measure the depth to water in distal monitoring wells at the site to monitor for influence.
- Samples of the influent may be collected during the test for laboratory analysis.
    - Don a new pair of latex gloves for each sample.
    - Collect a sample of the groundwater from the effluent of the pump, prior to carbon treatment.
    - Fill VOA sample containers completely, leaving no head space in the containers.
    - Prepare a sample label including the project name, sample ID, analysis required, date and time of collection. Affix the sample label to the sample containers.

  - Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.
- At the scheduled time, discontinue pumping. This initiates the recovery phase of the pump test.
  - If using a Mini-Troll to measure recovery, program the Mini-Troll to begin logging data just before pumping is stopped. Use a log interval for measurements.
  - If recording recovery manually, measure and record the depth to water at regular intervals. Initially, measurements should be made frequently, approximately every 10 to 15 seconds. As recovery slows, the frequency of measurements may be decreased.
- When the water level has recovered to the initial level in the pumping well, the recovery phase is complete. Stop the test and download the data from each Mini-Troll.
- Stage the water generated during the pump test on site in 55-gallon drums for future disposal or treat with carbon and discharge in accordance with the discharge permit, if applicable.
- Decontaminate the pump and Mini-Trolls using a soap scrub followed by multiple water rinses.
- Transfer data into spreadsheets provided by the USGS for Cooper-Jacob single-well pumping analysis, Cooper-Jacob single-well recovery analysis, distance-drawdown analysis of a multi-well aquifer test

10.3 Soil Vapor Extraction Pilot Testing

Objectives

- Conduct a soil vapor extraction (SVE) pilot test to determine sustainable air flow rates of soil vapors from a well and the radius of vacuum influence.

Equipment

- SVE blower or other vacuum generating equipment (i.e. a vacuum truck)
- Various piping, hoses and fittings as needed to create an airtight seal between the blower and the test well. Piping should include ports to monitor vacuum and air flow at the well head and at the blower.
- Vacuum gauge (inches of mercury)
- Magnehelic gauges (inches of water)
- Wells caps with vacuum monitoring ports
- Air velocity meter
- PID meter
- Water level indicator
- Vacuum pump for air sampling
- Disposable tubing
- Tedlar bags
- Sample labels

Procedure

- Don latex gloves.
- Measure and record baseline depth to water of the test well and all distal wells to be monitored.
- For each of the distal wells, determine if the well screen is submerged. If it is, then vacuum / pressure readings are not applicable.

- For wells with exposed well screens, install a well cap having a vacuum monitoring port.
- Measure baseline vacuum / pressure of the test well and distal wells using the magnehelic gauges and record.
- Connect the SVE blower or other vacuum generating equipment to the test well.
- Start the test by turning on the blower. Record the time.
- Periodically, measure and record the following parameters:
  - Vacuum at the blower
  - Vacuum at the well head
  - Air flow rate (acfm) of the air extracted (also measure temperature and pressure/vacuum at this location to convert acfm to scfm)
  - PID reading of the air extracted
  - Vacuum / pressure of distal wells with exposed well screens
- Samples of the influent air may be collected for laboratory analysis.
  - Don a new pair of latex gloves for each sample.
  - Use tubing to attach the influent of the air sampling vacuum pump to a port before the blower.
  - Use tubing to attach the effluent of the air sampling vacuum pump to the Tedlar bag.
  - Open the valve on the Tedlar bag.
  - Turn on the vacuum pump.
  - Fill the Tedlar bag approximately half full.
  - Close the valve on the Tedlar bag.
  - Turn off the vacuum pump.
  - Prepare a sample label including the project name, sample ID, analysis required, date and time of collection. Affix the sample label to the Tedlar bag.
  - Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.
- Discontinue the test at the scheduled time. The length of time scheduled for the test may vary from a couple of hours to a couple of days, depending on site conditions and the specific goals of the test. Long-term SVE pilot tests may be conducted for a time period of weeks or months.

10.4 Dual Phase Vacuum Extraction Pilot Testing

Objectives

- Conduct a dual phase vacuum extraction (DPVE) pilot test to determine the sustainable flow rates of soil vapors and groundwater from a well, the radius of vacuum influence and the radius of groundwater drawdown.

Equipment

- Mobile DPVE system or vacuum truck equipped with a DPVE blower
- Various piping, hoses and fittings as needed to create an airtight seal between the blower and the test well. Piping should include ports to monitor air flow and vacuum.
- Vacuum gauge (inches of mercury)
- Magnehelic gauges (inches of water)
- Wells caps with vacuum monitoring ports
- Air velocity meter
- PID meter
- Water level indicator

- Vacuum pump for air sampling
- Disposable tubing
- Groundwater sample containers
- Tedlar bags
- Sample labels

Procedure

- Don latex gloves.
- Measure and record baseline depth to water of the test well and all distal wells.
- For each of the distal wells, determine if the well screen is submerged. If it is, then vacuum / pressure readings are not applicable.
- For wells with exposed well screens, install a well cap having a vacuum monitoring port.
- Measure baseline vacuum / pressure of the test well and distal wells using the magnehelic gauges and record. It may be necessary to vent the cap before measure the vacuum / pressure because changes in the depth to water with in the well can create an artificial vacuum or pressure.
- Connect the DPVE system to the test well.
- Start the test by turning on the DPVE system. Record the time.
- Periodically, measure and record the following parameters:
  - Vacuum at the blower
  - Vacuum at the well head
  - Air flow rate (acfm) of the air extracted (also measure temperature and pressure/vacuum at this location to convert acfm to scfm)
  - Liquid flow rate of the groundwater extracted
  - PID reading of the air extracted
  - Depth to water in all distal wells
  - Vacuum / pressure in distal wells with exposed well screens
- Samples of the influent air may be collected for laboratory analysis.
  - Don a new pair of latex gloves for each sample.
  - Use tubing to attach the influent of the air sampling vacuum pump to a port before the blower.
  - Use tubing to attach the effluent of the air sampling vacuum pump to the Tedlar bag.
  - Open the valve on the Tedlar bag.
  - Turn on the vacuum pump.
  - Fill the Tedlar bag approximately half full.
  - Close the valve on the Tedlar bag.
  - Turn off the vacuum pump.
  - Prepare a sample label including the project name, sample ID, analysis required, date and time of collection. Affix the sample label to the Tedlar bag.
  - Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.
- Samples of the influent groundwater may be collected for laboratory analysis.
  - Don a new pair of latex gloves for each sample.
  - Collect a sample of the groundwater from the effluent of the pump, prior to carbon treatment.
  - Fill VOA sample containers completely, leaving no head space in the containers.
  - Prepare a sample label including the project name, sample ID, analysis required, date and time of collection. Affix the sample label to the sample containers.

  - Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.
- Discontinue the test at the scheduled time. The length of time scheduled for the test may vary from a couple of hours to a couple of days, depending on site conditions and the specific goals of the test. Long-term DPVE pilot tests may be conducted for a time period of weeks or months.

11.0 COLLECTION OF SEPARATE PHASE LIQUID

11.1 Passive Collection of Separate Phase Liquid

Objective

- Collect separate phase liquid (SPL) from the subsurface for disposal off site.

Equipment

- Dinky socks
- Absorbent pads
- Interface probe
- Buckets
- Toolbox
- Rope
- Field notebook
- Site map
- Nitrile gloves

Procedure

- Record date, time of arrival, personnel, and goal(s) in field notebook.
- Don nitrile gloves.
- Place absorbent pads on the ground around the well to protect from surface spills.
- Open wells.
- Remove well cap (should have a rope attached to it, tied to the absorbent).
- Remove absorbents (Dinky Socks). Place absorbents in bucket.
- Using the interface probe, find the Depth to Product (DTP), and the Depth to Water (DTW). Interface probes must be turned on by a white button on the side. The DTP is a solid tone, and the DTW is a beeping tone.
- Record DTP and DTW in the field notebook.
- Note the amount of SPL in the absorbent. Use odor and color (dark petroleum staining) as indicators.
- If absorbent is more than half full, replace it. Store spent absorbent in a bucket temporarily.
- Record in the field notebook what size absorbent, how full it is, and if it was changed.
- Return absorbents to well (Dinky socks will float, just tie a rope to them and to the well cap and drop them in the well)
- Replace well cap.
- Replace flush mount lid and bolt it down.
- Spent absorbents should be placed in 55 gallon metal drums or plastic buckets with sealable lids labeled “hazardous waste – spent absorbents.” (15/16” socket and crescent wrench to open drums).

- DO NOT REMOVE OR TRANSPORT ABSORBENTS FROM SITE.
- Absorbent drums and buckets should be located in sheds, trailers or next to the buildings.
- Record how full the absorbent drum/bucket is (approximately) and how many empty drums (metal and plastic) are on site in the field notebook.
- Record time of departure in field notebook.
- Upon return to the office, fill out equipment logs and time sheets. Enter field data into electronic databases.

11.2 Vacuum Extraction

Objective
- Collect separate phase liquid and contaminated groundwater from the subsurface for disposal off site.

Equipment
- Vacuum truck
- Water level indicator
- Field notebook

Procedure
- Open well(s) to be vacuumed.
- Record initial depths to water and depths to product.
- Insert drop tube into well and attach it to the well head.
- Record Start and Stop times for extraction on all wells.
- Begin vacuum extraction.
- Record drop tube length, vacuum at the well head, vacuum at the air water separator, influent air flow and temperature, PID readings and liquid flow rate, if available.
- Record total volume removed from wells.
- Record volume of product removed from wells.
- Complete a manifest (see section 12.3).

12.0 WASTE MANAGEMENT

The disposition of wastes is regulated by the Pennsylvania Department of Environmental Protection (DEP). Wastes are generated during activities including drilling, well development, groundwater sampling and free product collection. A waste manifest is the means by which the disposition of wastes is tracked from the generator to the disposer. The process of waste disposal includes sampling of the waste, profiling, manifest preparation, transportation and disposal.

12.1 Waste Sampling

Objective
- Obtain analytical data that is representative of the waste to be disposed.

Equipment
- Sample containers
- Sampling equipment

Procedure

- For soil cuttings, collect a sample from each container and composite the material. Sample the composite material for the parameters of interest.
- For spent carbon, collect a sample from the first carbon canister in line; it will have the highest contaminant concentrations.
- For staged groundwater, collect a grab sample.
- Fill the laboratory sample containers using standard protocols.
- Prepare a chain-of-custody form and ship samples in accordance with Section 7.0.

12.2 Waste Profiling

Objective

- Accurately characterize the waste for disposal in accordance with DEP waste regulations.

Materials / Information

- Analytical data for the waste
- Site information
- Generator information
- Description of the waste

Procedure

- Contact the disposing facility and obtain the required form(s).
- Collect the information needed to complete the form:
    - Generator Name, address, telephone number and responsible party
    - Site name and location
    - Results of analytical testing
    - Copy of the laboratory report
    - Type of waste
    - Volume or weight of waste
    - Number of containers to be disposed
    - Physical characteristics of waste
    - Letter of authorization to sign on behalf of the generator
    - Temporary EPA Identification Number
    - Obtain authorized signature on the form
- Mail or fax the completed form to the disposing facility.
- A profile number will be assigned by the disposer upon approval.
- Note: An EPA Generator ID number may be required by some disposal facilities for disposal of hazardous, non-hazardous or exempt media. In Pennsylvania, the DEP provides a temporary number upon request.

12.3 Manifesting, Transporting and Disposing of Waste

Objective

- Complete a legal record of the waste from generation to final disposition.

Materials Needed

- Waste manifest provided by the disposing facility

Procedure

- Assemble the required information and provide the following:
  - Generator name, address and telephone number
  - Site location
  - Description of waste
- At the time the waste is transported, add additional information to the form:
  - Name and signature of generator's authorized agent
  - Date of shipment
  - Transporter name and address
  - Driver's name, signature, vehicle license number and truck number
- Manifests are three or four-part forms. Remove one copy for IGI records.
- Send the original and remaining copies with the transporter for delivery to the disposing facility.
- Upon receipt of the delivery, the disposing facility will complete the form and return the original to IGI. This is a legal record of waste generation and disposal.

ATTACHMENT N

HEALTH & SAFETY PLAN

Valley Village
10243 State Route 85
Kittanning, PA 16201-8165

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HEALTH AND SAFETY PLAN
SITE INVESTIGATION AND REMEDIATION
Valley Village
10243 State Route 85
Kittanning, PA 16201

1.0 INTRODUCTION

The Site Health and Safety Plan (HASP) establishes the safety requirements and procedures governing work performed by Insite Group, Inc. personnel, contractor personnel, and site visitors during site investigation and remediation activities performed at the Valley Village Keystone, 10243 State Route 85, Kittanning, PA 16201.

This HASP defines general applicability and general responsibilities with respect to compliance with Insite Group, Inc Health and Safety Programs.

1.1 Scope and Applicability of the Site Health and Safety Plan

The purpose of this Site Health and Safety Plan (HASP) is to define the requirements and designate protocols to be followed at the Former Valley Village facility during site investigation and remediation activities. Applicability extends to all Insite Group, Inc. personnel, contractors, sub-contractors, regulatory personnel, and visitors.

All personnel on site, contractors and sub-contractors included, shall be informed of the site emergency response procedures and any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards and defines protective measures planned for this site in section 10.

During development of this plan consideration was given to current safety standards as defined by Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Health (NIOSH), Environmental Protection Agency (EPA), and American Conference for Governmental Industrial Hygienists (ACGIH) health effects and standards for known contaminants, and procedures designed to account for the potential of exposure to unknown substances.

1.2 Visitors

The site is an active gasoline station and convenience store. Site visitors at the site will be required to comply with the applicable provisions of this HASP. Subcontractors will be expected to provide their own personal protective equipment (PPE), if deemed necessary. In the event that a visitor does not adhere to the provisions of the HASP, he/she will be requested to leave the work area. All nonconformance incidents will be recorded in the site log.

2.0 KEY PERSONNEL

The following sections present a summary of the key personnel responsible for completing site investigation and remediation activities at the Valley Village Keystone in Kittanning, Pennsylvania according to the site specific HASP.

2.1 Specific Health and Safety Personnel

The Site Health and Safety Officer (HSO) has responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that personnel assigned as HSO be experienced and meet the additional training requirements specified by OSHA in 29 Code of Federal Regulations (CFR) 1910.120 (see section 4). The HSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

2.2 Organizational Responsibility

The following personnel and organizations are critical to the planned activities at the site. The organizational structure will be reviewed and updated periodically by the project manager.

- Project Director – Responsible for the overall completion of the project.
- Project Manager/Site Supervisor – Responsible for project oversight and completion. Reports to the project director.
- Site Health and Safety Officer – Responsible for the day-to-day implementation of the requirements of this HASP. Reports to the Project Manger. Duties may be assumed by the Project Manager.
- Site Workers and Sub-contractors – Responsible for the daily implementation of the work plan. Report to Project Manager.

3.0 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSIS

The evaluation of hazards is based upon the knowledge of site background and anticipated risks posed by the specific operation. The following sections describe each task/operation in terms of specific hazards associated with it. In addition, the personnel protective measures to be implemented during completion of those operations are also identified.

3.1 Site Narrative

The subject property was first developed as a gasoline retail station and convenience store in 1985. Mr. Buffone purchased the facility in 1993 and continued the operations. Site features include a one-story building with a basement, one overhead canopy and a UST system consisting of two dispenser islands and three USTs. The surface is mainly asphalt and concrete with some areas of gravel.

- Location

  The facility is located at 10243 SR 85 just west of Yatesboro, PA.

- Description
  The property is being utilized as a retail gasoline service station and a convenience store.

- History
  The subject property was open land until 1985 when it was developed as a gasoline retail station and convenience store. The USTs were installed at that time. Strong petroleum odors and SPL were discovered in the area of the sump on Tank 003 during an upgrade of the UST system in March 2014. A release of unleaded gasoline was reported on March 19, 2014.

3.2 Site Activities

In general, site activities may include, drilling activities, groundwater sampling, free product collection and storage, soil excavation and backfilling, piping and system installation, loading and unloading excavated materials, resurfacing, dual phase extraction, extraction well screen cleaning, chemical oxidant application, and surveying.

3.3 Task Hazard Descriptions

The following sections outline the potential hazards associated with specific tasks that will be performed at the Valley Village site.

3.3.1 Drilling/Soil Sampling/Monitoring Well Installation

Physical and chemical hazards associated with drilling soil borings, collecting soil samples, and installing monitoring wells are similar. These hazards include the following:

- Contact with contaminated soil/groundwater.
- Personal injury due to slipping, tripping, or falling.
- Injury due to being hit by heavy machinery such as a drilling rig.
- Personal Injury due to being caught in the augers or other heavy machinery.
- The presence of underground and/or above ground utilities in the area of the soil borings, which could present electrical, pneumatic, chemical, or physical hazards depending on the utility.
- Collection of soil samples via direct-push methodology requires cutting open plastic soil sleeves in order to remove the sample. The plastic sleeves are very hard and the potential exists for the sampling personnel to be cut with the knife used to open the sleeves.

3.3.2 Purging of Monitoring Wells/Groundwater Sampling

Physical and chemical hazards associated with groundwater sampling include the following:

- Contact with contaminated water/petroleum product.
- Electrical Hazards associated with pumps and water.
- Personal injury due to slipping, tripping, or falling while sampling.
- Hazards associated with traffic.

3.3.3 Free Product Collection and Storage

Physical and chemical hazards associated with the collection of gasoline product include but are not limited to the following:

- Contact with petroleum product via inhalation or absorption.
- Personal injury due to slipping, tripping, or falling.

3.3.4 Soil Excavation and Backfilling

Physical and chemical hazards associated with soil excavation and backfilling may include but are not limited to the following:

- Slips, trips, and falls associated with walking on uneven surfaces or falling into excavated hole
- Hazards associated with splashing or spreading of possible contaminated groundwater in the excavation
- Danger of walking into the swing radius of the trackhoe bucket
- Danger of walking into the path of heavy machinery
- Hazards associated with traffic on the property
- Fire, explosion, ignition hazards due to spark producing activities around free product
- Possibility of loading/excavation equipment striking overhead or underground utilities
- Fire, explosion, ignition hazards due to sparks or ignition sources in the area of refueling operations
- Exposure due to gasoline fumes laying in the excavation due to inversion

3.3.5 Piping and System Installation

Physical and chemical hazards associated with this project include but are not limited to the following:

- Cuts, lacerations, and abrasions from sharps used to cut pipes
- Eye injury due to small airborne particles from cutting pipes
- Inhalation of gasoline fumes due to inversion while in the excavation

3.3.6 Loading and Unloading Excavated Materials

Physical and chemical hazards associated with this project include but are not limited to the following:

- Head injury to personnel standing around trucks being loaded associated with falling objects or trackhoe bucket
- Danger of being struck by heavy equipment moving around
- Skin contact with contaminated water

3.3.7 Resurfacing

Physical and chemical hazards associated with this project include but are not limited to the following:

- Cuts, lacerations, etc. due to bodily contact with machinery
- Exposure to chemicals in re-surfacing materials

3.3.8 Dual Phase Extraction

Physical and chemical hazards associated with dual phase extraction may include but are not limited to the following:

- Hazards associated with movement of the trailer – Trailer wheels will be blocked and an exclusion zone delineated around the tanks and trailer.
- Hazards associated with splashing or spreading of possible contaminated groundwater

- Electrical hazards - Electrical wiring will be performed by others. The circuit panel will be closed at all times to avoid sparking.
- Hazards associated with negative pressure – Openings and pressurized lines will be marked.
- Hazards associated with traffic – Traffic vests will be worn and cones will be used to route traffic. Wells in streets will only be sampled during daylight hours.

3.3.9 Extraction Well Screen Cleaning

Occasionally the extraction well screen becomes clogged with mineral precipitates- mainly iron. An acid solution, "Aqua Clear" MGA, is used for cleaning it. The solution is mixed from a powder. Soda ash is used to neutralize the acidity of the waste water that is pumped from the well in the cleaning process. Hazards associated with cleaning the extraction well screen may include but are not limited to the following:

- Hazards associated with air borne powder used in making the cleaning solution coming in contact with skin or eyes.
- Hazards associated with splashing liquid acid solution on skin or into eyes.
- Hazards associated with air borne soda-ash powder used in neutralizing the cleaning solution coming in contact with skin or eyes.

3.3.10 Chemical Oxidant Application

Physical and chemical hazards associated with chemical oxidant application include but are not limited to the following:

- Contact with chemical oxidant via inhalation or absorption.

3.3.11 Surveying

Physical and chemical hazards associated with surveying may include but are not limited to the following:

- Personal injury due to slipping, tripping, or falling while sampling.
- Hazards associated with traffic.

3.4 Chemical Hazards

The following section outlines the potential chemical hazards that may be encountered during work at the Valley Village site. Descriptions are based on contact with unleaded gasoline. The primary dangers are inhalation or absorption of gasoline constituents through contact with product while performing routine activities at the site.

3.4.1 General Descriptions

The primary constituents of concern in unleaded gasoline are Benzene, Toluene, Ethylbenzene, Xylene, Cumene (Isopropylbenzene), Naphthalene, 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene. All of these chemicals are classified as volatile organic compounds and produce similar symptoms from exposure. The chart shown below lists additional information about these chemicals. In addition, a Material Safety Data Sheet for each of these chemicals is provided in Appendix E.

Chemical Name & Formula	Personal Protection	Symptoms	First Aid
Benzene C_6H_6	Prevent skin contact Prevent eye contact	Irritation eyes, skin, nose, respiratory system; giddiness; headache, nausea, staggered gait; fatigue, anorexia, lassitude; dermatitis; bone marrow depression; [potential occupational carcinogen]	Eye: immediately wash with large amounts of water* Skin: Soap wash immediately* Breath: respiratory support* Swallow: medical attention immediately (* seek medical attention immediately)
Ethyl benzene $CH_3CH_2C_6H_5$	Prevent skin contact Prevent eye contact	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eye: immediately wash with large amounts of water* Skin: water flush promptly Breath: respiratory support* Swallow: medical attention immediately (* seek medical attention immediately)
Cumene $C_6H_5CH(CH_3)_2$	Prevent skin contact Prevent eye contact	Irritation eyes, skin mucous membrane; dermatitis; headache, narcosis, coma	Eye: immediately wash with large amounts of water* Skin: water flush promptly Breath: respiratory support* Swallow: medical attention immediately (* seek medical attention immediately)
Naphthalene $C_{10}H_8$	Prevent skin contact Prevent eye contact	Irritation eyes; headache, confusion, excitement, malaise; nausea, vomiting, abdominal pain; irritation bladder; profuse sweat; jaundice; hematuria, hemoglobinuria, renal shutdown; dermatitis; optical neuritis, corneal damage	Eye: immediately wash with large amounts of water* Skin: molten - flush immediately* sol-liq - soap wash promptly Breath: respiratory support* Swallow: medical attention immediately (* seek medical attention immediately)
Toluene $C_6H_5CH_3$	Prevent skin contact Prevent eye contact	Irritation eyes, nose; fatigue, weak, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation; nervousness, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eye: immediately wash with large amounts of water* Skin: Soap wash immediately* Breath: respiratory support* Swallow: medical attention immediately (* seek medical attention immediately)
Xylenes $C_6H_4(CH_3)_2$	Prevent skin contact Prevent eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait, corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eye: immediately wash with large amounts of water* Skin: Soap wash immediately* Breath: respiratory support* Swallow: medical attention immediately (* seek medical attention immediately)
1,2,4-Trimethylbenzene $C_6H_5(CH_3)_3$	Prevent skin contact Prevent eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait, corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eye: immediately wash with large amounts of water* Skin: Soap wash immediately* Breath: respiratory support* Swallow: medical attention immediately (* seek medical attention immediately)
1,3,5-Trimethylbenzene C_9H_{12}	Prevent skin contact Prevent eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait, corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eye: immediately wash with large amounts of water* Skin: Soap wash immediately* Breath: respiratory support* Swallow: medical attention immediately (* seek medical attention immediately)

4.0 PERSONNEL TRAINING REQUIREMENTS

All site personnel are required to be trained in accordance with OSHA's 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response.

4.1 Pre-assignment and Annual Refresher Training

Prior to (arrival on site, beginning work, etc.) each employer will be responsible for certifying that his/her employees meet the requirements of pre-assignment training. Consistent with (ex. OSHA 29 CFR 1910.120 paragraph (e)(3)). Each employee should be able to provide a document certifying dates of 24 to 40 hours of training depending on the employee and his/her purpose on the site.

4.2 Site Supervisors Training

Ex. Consistent with OSHA 29 CFR 1910.120 paragraph (e)(8), individuals designated as site supervisors require an additional 8 hours of training. The following individuals are identified as site supervisors:

Sara Giordano	Project Director/SHSO
Paul Rogers	Project Manager/SHSO

4.3 Training and Briefing Topics

The following items will be discussed at the site pre-entry briefing(s), as well as daily or periodic site briefings:

Training	Frequency
Physical hazards	Daily/Periodically, dependent on activity
Chemical hazards	Annually
Training requirements Sec. 4.0; [29 CFR 1910.120 (e)] etc.	Annually
Heavy machinery	Daily/Periodically dependent on activity
Engineering controls and work Practices	Periodically
PPE, Etc.	As required for tasks not performed routinely

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

This section describes the general requirements of (EPA, OSHA, Etc.) designated levels of protection (A-D), and specific levels of protection for each task require at the site.

5.1 Levels of Protection

Personnel wear protective equipment when response activities involve known or suspected atmospheric (or other hazard) contamination: when vapors, gases, or particulates may be generated by site activities: or when direct contact with skin-affecting substances may occur. Full face-piece respirators protect lungs, gastrointestinal tract, and eyes against airborne toxics. Chemical-resistant clothing protects the skin from contact with skin—destructive and absorbable chemicals.

The specific levels of protection and necessary components for each level have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments.

Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

Level D: Should be worn only as a work uniform and not in an area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

Modifications of these levels are permitted, and are routinely employed during work activities to maximize efficiency. For example, Level C respiratory protection may be required for a given task. Likewise, the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact. The level of protection is selected based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substance in air, splashes of liquids, or other direct contact with material due to work being done.
- Knowledge of on-site chemicals along with properties such as toxicity, route of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are not known, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be better identified.

5.2 Personal Protective Level

The level of PPE selected for soil/groundwater sampling, drilling, monitoring well installation/abandonment, and operation and maintenance activities (except for oil/water

separator and surge tank cleanout) at the site is Level D PPE. Personnel while working on site, at a minimum, should wear the following PPE:

- Work clothes
- Work gloves
- Gloves (when sampling), chemical resistant
- Eye protection
- Boots, steel toe – for drilling and construction activities
- Hard hat – for drilling and construction activities

During oil/water separator and surge tank cleanout activities or other activities where exposure to sludge/sediments and splash hazards exist, a tyvek or saranex suit should be worn in addition to the above-listed PPE.

A PPE inspection checklist is provided as Table 1.

5.3 Reassessment of Protection Program

The level of protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations. When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase.
- Change in job tasks during a work phase
- When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- Contaminants other than those previously identified are encountered.
- Change in ambient levels of contaminants.
- Change in work scope, which affects the degree of contact with contaminants.

5.4 Chemical Resistance and Protective Material Integrity

The following specific clothing materials are recommended/required for this site:

- Inner Gloves – Nitrile (disposable)
- Tyvek or Saranex suit during oil/water separator and surge tank cleanout.

5.5 Standard Operating Procedures for Respiratory Protection Devices

No ambient chemical levels requiring use of this equipment are expected at this site; however these sections are included in the unlikely event that they become present.

The following subsections define standard operating procedures for cleaning, storing, and inspecting air purifying respirators (APRs) and self-contained breathing apparatus (SCBA).

5.5.1 Cleaning and disinfecting Air Purifying Respirators

APRs in routine use should be cleaned and disinfected at least daily. Where respirators are used only occasionally, or when they are in storage, the cleaning interval is weekly or monthly, as appropriate.

5.5.1.1 Daily Cleaning Procedures

The steps to be followed for daily cleaning and disinfecting are as follows:

- Respirator Disassembly. Respirators are taken to a clean location where the filters, cartridges or canisters are removed. To prevent accidental re-use all damaged parts are discarded and replaced. For thorough cleaning, the inhalation and exhalation valves, speaking diaphragm, and any hoses are removed.
- Cleaning. In most instances, the cleaning and disinfecting solution provided by the manufacturer is used, and is dissolved in warm water in an appropriate tub. Using gloves, the respirator is placed in a clean basin and swirled for a few moments. A soft brush may be used to facilitate cleaning.
- Rinsing. The cleaned and disinfected respirators are rinsed thoroughly in water to remove all traces of detergent and disinfect. This is very important for preventing dermatitis.
- Drying. The respirators may be allowed to dry room air on a clean surface. They may also be hung upside down like drying clothes, but care must be taken not to damage or distort the face-piece.
- Re-assembly and Inspection. The clean, dry respirator face-pieces should be re-assembled and inspected in an area separate from the disassembly area to avoid contamination. Special emphasis should be given to inspecting the respirators for detergent or soap residue left by inadequate rinsing (appears most often under the seat of the exhalation valve, and can cause valve leakage or sticking).

5.5.1.2 After Routine Use in Exclusion Zone

The steps to be followed for cleaning and disinfecting in the field are as follows:

- The mask may be washed/rinsed with soap and water.
- At a minimum, the mask should be wiped with disinfectant wipes (Benzyl alkaloid or isopropyl alcohol) and allowed to air dry in a clean area.

5.5.2 APR Inspection and Checkout

The following procedure will be used to inspect and checkout APRs prior to their use:

1. Visually inspect the entire unit for any obvious damages, defects, or deteriorated rubber.
2. Make sure that the face-piece harness is not damaged. The serrated portion of the harness can fragment which will prevent proper face seal adjustment.
3. Inspect lens for damage and proper seal in face-piece.
4. Exhalation Valve – pull off plastic cover and check valve for debris or for tears in the neoprene valve (which could cause leakage).
5. Inhalation Valves (two) – screw off cartridges/canisters and visually inspect neoprene valves for tears. Make sure that the inhalation valves and cartridge receptacle gaskets are in place.
6. Make sure a protective cover lens is attached to the lens.
7. Make sure the speaking diaphragm retainer ring is hand tight.
8. Make sure that you have the correct cartridge.
9. Don the APR and perform a negative pressure test.

5.5.3 Storage of Air Purifying Respirators

OSHA requires that respirators be stored to protect against:

- Dust
- Sunlight
- Heat
- Extreme cold
- Excessive moisture
- Damaging chemicals
- Mechanical damage

Respirators should be stored in a clean, secure area, which minimizes the chance for contamination or unsanitary conditions.

5.6 Standard Operating Procedures for PPE

Proper inspection of PPE features several sequences of inspection depending upon specific articles of PPE and the frequency of use. The different levels of inspection are as follows:

- Inspection and operational testing of equipment received from the factory or distributor.
- Inspection of equipment as it is issued to workers.
- Inspection after use or training, and prior to maintenance.
- Periodic inspection of stored equipment.
- Periodic inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise.

The primary inspection of PPE in use for activities at the site will occur prior to immediate use and will be conducted by the user. This procedure ensures that the specific device or article has been checked-out by the user, and that the user is familiar with its use.

6.0 MEDICAL SURVEILLANCE REQUIREMENTS

The Medical Surveillance Program is a regulatory requirement designed to ensure that the health of employees is monitored while working on hazardous waste sites. Since the Valley Village site is not a hazardous waste site, the Program does not apply.

While working at this site, employees may come into contact with groundwater that has been impacted by septic system discharges. Quarterly groundwater sampling and discharge monitoring are two tasks that provide potential exposure to septic system discharges. The health concern associated with exposure to septic system discharges is Hepatitis A. Therefore, all employees are encouraged to receive Hepatitis A vaccination at company expense. Hepatitis A vaccination consists of 2 injections. Tetanus shots are provided every 7 years or upon injury.

If while working at this site, an employee develops symptoms of acute exposure to petroleum fumes, he/she must report the incident to a supervisor. The employee will be referred to a medical facility or practitioner for immediate attention.

The potential for exposure to petroleum constituents will be reevaluated on a task-by-task basis in pregnant females. Changes in work assignments may occur as a result.

If hazardous waste work should become an activity at the site, the following employees will be included in the Medical Surveillance Program:

- All employees who are exposed to hazardous substances or health hazards above published exposure limits (e.g., OSHA PELs, ACGIH TLVs, NIOSH RELs) without regard to the use of respirators, for 30 days or more a year;
- All employees who wear a respirator for 30 days (or fractions of days) or more a year or as required by 29 CFR 1910.134
- All employees who are injured, become ill, or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation; and

Baseline Monitoring

Medical surveillance specifies any special medical monitoring and examination requirements for hazardous waste work required by 29 CFR 1910.120. As a minimum, the examination will include:

- Complete medical and work histories
- Urinalysis
- Physical Exam
- Vision and Hearing Exam
- Blood Chemistry
- Pulmonary Function Test
- Audiometric

The examination will be conducted annually if the exposure is continuous. Additional medical testing may be required by the OHSM in consultation with the company physician and the SHSO if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance.

7.0 ENVIRONMENTAL MONITORING

Environmental monitoring will be conducted to determine type of personal protection equipment that must be used during site operations. Monitoring will also be performed to determine whether or not airborne contaminants are migrating off site.

7.1 Organic Vapor Measurements

If warranted, organic vapor will be measured using a PID or similar instrument. Organic vapor readings will be taken at the site before each day's work begins and at previously described intervals throughout the day. The specific frequency of the readings will be determined by the Site Health and Safety Officer (SHSO) based on measured levels. The higher the levels of organic vapor detected, the more frequent the measurements will take place. If organic vapor

levels are approaching an action level concentration, such as 50 parts per million, monitoring will be continuous.

There will be periodic measurements of organic vapor taken at the perimeter of the job site. This should be done on a regular basis at a minimum of four times a day. If organic vapors in excess of 500 Parts per million are encountered in the work area ambient air (i.e., working on smaller areas, ventilation, etc.) to limit off-site emissions. The actual frequency of OVM measurements and vapor reduction measures will be determined by the SHSO based on (his/her) observation at the time.

7.2 Carbon Monoxide Monitoring

If warranted, carbon monoxide levels will be determined in the general work area several times a day if equipment or structures restrict airflow. The work site is not a confined space, but air movement through the site can be restricted, and the constant use of gasoline-powered equipment may result in unacceptable levels of carbon monoxide developing in the area. The actual frequency of carbon monoxide measurements will be determined by the Site Health and Safety Officer based on previous measurements and the work activities being performed.

7.3 Flammable Atmosphere Monitoring

If warranted, flammability will also be measured at any location showing a PID reading in excess of 1,000 parts per million total organic vapor.

7.4 Modifications to Environmental Monitoring Plan

The frequency of monitoring, the substances measured, and the types of instruments used are all subject to modification. Based on information developed as the project progresses, any responsible member of the project staff (e.g., the SHSO or SPM) may alter the monitoring requirements for this job.

The SHSO has the authority to increase the frequency of monitoring should the site conditions indicate. Decreasing the type or frequency of monitoring established in this plan will require the concurrence of the Site Manager. Any substantial modifications to this plan should be in writing.

8.0 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program.

8.1 Buddy System

During all Level B or C activities or when site conditions present a risk to personnel, the implementation of a buddy system is mandatory. A buddy system requires at least two people who work as a team, each looking out for the other. For example, Level B operations generally require three people working as buddies (or as company policy mandates). The buddy system will also be required during surface water sampling if sampling personnel must enter the area.

8.2 Site Communications Plan

Successful communications between field teams and contact with personnel in the support zone is essential. The following communications systems will be available during activities at the site:

- Whistle
- Hand Signals

Signal	Definition
Hands clutching throat	Cannot breathe
Hands on top of head	Need assistance
Thumbs up	OK/I am alright/I understand
Thumbs down	No/negative

Note: Additional hand signals may be added as necessary and at digression of IGI site supervisory personnel and will be reviewed with all site personnel to ensure understanding.

8.3 Nearest Medical Assistance

Appendix B provides directions to the nearest medical facility, which can provide emergency care for individuals who may experience an injury or exposure on site. The route to the hospital should be verified SHSO, and should be familiar to all site personnel.

8.4 Emergency Alarm Procedures

The warning signals described in Section 10.5 (or as applicable) [Evacuation Routes and Procedures] will be deployed in the event of an emergency. Communication signals will also be used according to Section 8.2.

9.0 DECONTAMINATION PLAN

Table 2 lists the tasks and specific levels of protection required for each task to be performed at the Valley Village site. Consistent with the levels of protection, these procedures should be modified to suit site conditions and protective ensembles in use.

9.1 Contamination Prevention

One of the most important aspects of decontamination is contamination prevention. Contamination prevention practices will minimize worker exposure and ensure valid sample results by precluding cross contamination. Procedures for contamination prevention include the following:

- Do not walk through areas of obvious or known contamination;
- Do not handle or touch contaminated materials directly;
- Make sure all personal protective equipment (PPE) has no cuts or tears prior to donning;
- Fasten all closures on suits, covering with tape, if necessary;
- Take particular care to protect any skin injuries;
- Stay upwind of airborne contaminants; and
- Do not carry cigarettes, gum, etc. into contaminated areas.

9.2 Standard Operating Procedures

Decontamination involves the orderly and controlled removal of contaminants. All site personnel should minimize contact with contaminants to minimize the need for extensive decontamination.

9.3 Levels of Decontamination Protection Required for Personnel

The levels of protection required for personnel assisting with decontamination will be equal to that used by the site personnel during the given task. The SHSO is responsible for monitoring decontamination procedures and determining their effectiveness.

9.4 Equipment Decontamination

The following procedure will be utilized during decontamination of sampling equipment at the site: (as is applicable)

- Alcanox or Dawn Detergent in tap water scrub
- Tap water rinse
- Distilled/de-ionized water rinse
- Air dry

Equipment not used immediately following decontamination will be wrapped in aluminum foil to help prevent the introduction of foreign materials/contaminants. A decontamination solvent (i.e., acetone, hexane, methanol, etc.) may be used as appropriate in the decontamination process. Solvents used will be pesticide grade or higher.

9.5 Disposition of Decontamination Wastes

Equipment and solvents used for decontamination shall be decontaminated or disposed of properly. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment shall be informed of the potentially harmful effects of exposures. All decontamination fluids and spent PE must be drummed and staged pending appropriate disposal. Each type of material must be stored in a separate drum.

10.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the Valley Village site. This plan is compatible with local, state, and federal disaster and emergency management plans, as appropriate.

10.1 Pre-Emergency Planning

During the site briefings held periodically, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. The plan will be reviewed, and revised, if necessary, on a regular basis by the HSO. This procedure will help ensure that the plan is adequate and consistent with prevailing site conditions.

10.2 Emergency Planning

Before project work commences, personnel who will be present at the site on a regular basis will review the Emergency/Off-Site Response Plan. Following this review, the subcontractor and Insite Group, Inc. project management will finalize detailed response strategies for various emergency conditions.

10.2.1 Sudden Illness

Any person at the site may become ill for no apparent reason. However, because hazardous chemicals are being worked with at the site, any sudden illness must be considered possibly due to overexposure to a toxic chemical. Anyone who becomes ill MUST be referred to a physician immediately. The SHSO will arrange for the victim to be immediately transported to a suitable medical facility. If in his judgment an ambulance is required, one shall be summoned at once.

10.2.2 Conventional Incident

Conventional incidents for purposes of this plan are incidents that do not involve exposure to hazardous chemicals. Examples of conventional incidents are falls, cuts, abrasions, traffic accidents, etc. The procedure for a conventional incident will involve the following:

- Evaluation of the situation. Is the injured person in danger where he/she is?
- Move the victim only if this is necessary to prevent further injury. If not, secure the immediate area.
- Determine the extent of the injury. Render appropriate first aid.

10.2.3 Exposure to Toxic Concentrations of Chemicals

Four main exposure routes are available for toxic chemicals at a hazardous substance operation: inhalation, ingestion, absorption, and injection. As described in Chapter 3.0 (or as applicable), the only toxic chemicals known or believed to be present at the site are petroleum hydrocarbons. Section 3.4.1 describes the applicable first aid procedures for contact with these chemicals. All workers on the site should be trained to avoid any eating, drinking, smoking, or other hand to mouth activities during fieldwork. However, because of potentially fatal complications following the improper treatment for ingestion of organic compounds, this exposure route is included in the first aid procedures.

10.2.4 Exposure to Oxygen Deficiency

Exposure to an oxygen deficient environment is not anticipated at this site; however, the following information is provided in the event that it occurs.

Oxygen deficient atmospheres are immediately dangerous to life and health (IDLH). If a worker has been exposed to an oxygen-deficient atmosphere, a medical evaluation should be obtained even if there is no overt sign of damage or impairment.

In the event that a worker is in an atmosphere found to be oxygen deficient, he/she should be promptly evacuated to fresh air. If he/she is unconscious or loses consciousness, carefully evaluate his/her breathing and be prepared to support respiration. Administer oxygen (if applicable) and summon emergency medical attention.

If someone must be rescued from an oxygen-deficient atmosphere, it is imperative that the rescuer be protected from the dangerous atmosphere. Rescue in an IDLH atmosphere must be conducted using the appropriate type of personal protection equipment. Use of self-contained breathing apparatus in this circumstance is mandatory

10.2.5 Heat Stress

Heat stress may develop as a result of performing physically demanding tasks in warm weather. Use of chemically resistant clothing can intensify heat stress. Heat-related illness may range from cramps to heat stroke.

If heat cramps develop, the affected worker should rest in a cool location and gradually re-hydrate by drinking water or an electrolyte replacement (i.e., Gatorade, etc.). After the cramps subside, the employee can return to work but should avoid heavy labor for the rest of the day.

Heat exhaustion is a more serious condition. A victim of heat exhaustion should rest and re-hydrate. He/she should be attended by persons knowledgeable in first-aid for heat stress. After the worker recovers from heat exhaustion, he/she should not report back for work that day. A medical evaluation may be advisable. Heat stroke is a life-threatening emergency. The victim should be aggressively cooled with available water, ice packs, etc. Emergency medical attention should be summoned immediately.

If project operations must be conducted during particularly hot weather or in hot conditions, supervisory personnel need to be aware of the symptoms of heat illness. Workers should be frequently evaluated for the signs of developing heat stress. Work schedules should be adjusted to minimize the likelihood of workers developing heat-related illness (i.e., by taking frequent rest breaks, job rotations, or scheduling heavy labor during the early part of the day).

10.2.6 Frostbite

If project operations must be conducted in extremely cold weather, frostbite can also resent a hazard. When work is to be performed at temperatures below freezing, all workers should be suitably dressed. Supervisory personnel should be alert for the signs of a developing frostbite and should direct workers to report to a warmer area if incipient frostbite is observed.

A more typical but far more dangerous condition that can develop in cold weather is hypothermia. This can result in impaired physical performance and judgment, leading to incidents. Anyone found to be suffering from hypothermia should be taken to a warm area at once. Hot beverages will speed recovery from hypothermia. The victim should be thoroughly warm before returning to work.

10.2.7 Fire and Explosion

The presence of free product presents a significant fire hazard. Natural gas lines or product lines potentially located in the area present an additional complication, both as a source of fire hazard in themselves and as a factor increasing the seriousness of any fire from other sources. Any fire on the site is a serious emergency. While every effort must be made to fight and contain a fire on the site, emergency assistance MUST be summoned immediately.

Fire control equipment must be present at the site at all times. At least one person on the site should be familiar with the operation of the fire extinguishers and the proper techniques for

fighting burning liquid fires. All site personnel not immediately involved in fire fighting should be evacuated from the site until the fire is out.

Supervisory personnel must make a head count immediately. If any site personnel are unaccounted for, designated rescue team members should be deployed in appropriate protective equipment to locate and rescue any missing employees. Site personnel will defer to the direction of trained emergency personnel, if available.
Procedures for summoning emergency assistance must be established in advance of beginning the excavation work. The locations of telephones must be established together with the provisions for gaining access to them. Telephone numbers for emergency services must be clearly posted at the job site.

An explosion may occur at the site from ignition of an accumulation of flammable vapors. The procedures to follow in the event of an explosion are similar to those for fire.

Fire and explosion prevention should be a primary concern for all site operations. Good Housekeeping practices should be employed. "No Smoking" policies in or around the work area should be strictly enforced. Other sources of ignition should be eliminated to the extent possible. Work that can produce sparks should only be performed in atmospheres that have been thoroughly monitored for flammability. Ventilation of the work area may be necessary to prevent accumulation of flammable vapors.

10.2.8 Natural Gas Line Rupture

In the event that a natural gas line rupture occurs, immediate cessation of all site activities will be required. The site must be evacuated and emergency services (i.e., police, fire department, and gas company) immediately notified.

10.2.9 Chemical Release (Spills or Leaks)

Free product may accumulate during the course of project activities. Recovered product will be stored in properly marked tanks or drums pending disposal. While the material is stored on site, there is a possibility for release.

All facilities and devices for storage or transfer of product will be inspected daily to limit the likelihood of a release. Inspections will include checks for physical integrity, functionality, position of valves, etc., as may be required.

In the event of a release, designated personnel will be deployed to contain the spill and clean up any spilled material. The source of the spill will be controlled, if possible.

During the response to the spill, all non-essential personnel will be evacuated until the spill is contained and cleaned up. If the spill results in a reportable quantity of material being released, government agencies will be notified as required.

In the event of a spill or a leak, site personnel will:

- Inform their supervisor immediately.
- Locate the source of the spillage and stop the flow if it can be done safely.
- Begin containment and recovery of the spilled materials.

10.2.10 Exposure to Electricity

The potential exists for contact with underground or overhead electric lines during drilling. To avoid electrical shock, heavy equipment used during site activities should be operated at least 15 feet away from identified electric lines. In the event that site personnel contact an electric line, immediate medical attention is required. If the person remains in contact with a line or electrified piece of equipment, DO NOT attempt to detach that person from the contact point. Doing so would result in a transfer of the electricity through the victims' body into the rescuers body, injuring the rescuer. Contact the electric company to turn power off to the line and also emergency medical personnel. If the contacted electric line generates sparks and free product or significant product vapors exist in the vicinity, the potential for a fire or explosion exists. Sections 10.2.7 addresses these hazards.

10.3 Personnel Roles and Lines of Authority

The Site Supervisor has primary responsibility for responding to and correcting emergency situations, including taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area and evacuation of adjacent residents. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The SHSO may be called upon to act on the behalf of the site supervisor, and will direct responses to any medical emergency. The individual contractor organizations are responsible for assisting the project manager in his/her mission within the parameters of their scope of work.

10.4 Emergency Recognition/Prevention

Chapter 3.0 provides a listing of chemical and physical hazards associated with completing the assigned scope of work at the Valley Village Personnel will be familiar with techniques of hazard recognition from pre-assignment training and site-specific briefings. The SHSO is responsible for ensuring that prevention devices or equipment is available to site personnel.

10.5 Evacuation Routes/Procedures

In the event of an emergency which necessitates an evacuation of the site, personnel on site will:

- Blow on a whistle or activate an air horn

Site personnel will be expected to proceed to the closest exit with their buddy, and mobilize to the safe distance area associated with the evacuation route. Site personnel will remain at the area until the re-entry alarm is sounded or an authorized individual provides further instructions.

10.6 Emergency Contact/Notification System

All emergency contact information can be found in Appendix A.

10.7 Emergency Medical Treatment Procedures

First aid and other medical treatment should only be administered by trained and qualified personnel. As such, emergency notifications shall be made to the local emergency agencies to summon qualified personnel.

Any person who becomes ill or injured in the exclusion zone must be decontaminated, if necessary, to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics. All injuries and illness must immediately be reported to the project manager.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they potentially have been exposed to at the site. This information is included in Chapter 3.0. Any vehicle used to transport contaminated personnel will be treated and cleaned as necessary following use.

10.8 Emergency Equipment

Insite Group, Inc. personnel shall carry mobile telephones and a Field Safety Kit to the site. The kit contains the items listed below. Each kit should be checked periodically for outdates on materials and restocked after each use.

- FIRST AID KIT
- FIRE EXTINGUISHER
- UMBRELLA
- SAFETY GLASSES
- EAR PLUGS
- WHISTLE
- X-LARGE NITRILE GLOVES
- MEDIUM NITRILE GLOVES
- PLASTIC CUPS
- LARGE ZIP-LOCK BAGS
- SMALL ZIP-LOCK BAGS
- PAPER TOWELS
- ASPRIN CONTAINER
- Q-TIPS
- ACE BANDAGE
- EYE WASH KIT
- HAND SANITIZER
- PETROLEUM JELLY
- ROLAIDS
- SMALL BAR OF DOVE SOAP
- BOTTLES OF DRINKING WATER
- ABSOBENT SOCK
- ABSORBENT PAD

11.0 SPILL CONTAINMENT PROGRAM

The procedures defined below comprise the spill containment program in place for activities at the Valley Village site:

All drums and tanks used during the cleanup shall meet the appropriate DOT, OSHA, and EPA regulations for the waste that they will contain.

Drums and tanks shall be inspected and their integrity confirmed prior to being moved. Drums or tanks that cannot be inspected before being moved because of storage conditions shall be positioned in an accessible location and inspected prior to further handling.

Operations on site will be organized so as to minimize the amount of drum or tank movement.

Employees involved in the drum or tank operations shall be warned of the hazards associated with the containers.

Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment (i.e., absorbent, pillows, etc.) will be stationed in the immediate area. The

available spill containment materials must be sufficient to contain and isolate the entire volume of the substance being transferred.

Drums or tanks that cannot be moved without failure shall be emptied into a suitable container.

Fire extinguishing equipment meeting 29 CFR part 1910, Subpart 1 shall be on hand and ready for use to control fires.

12.0 CONFINED SPACE ENTRY PROGRAM

There are no confined spaces at this site. The following information is provided in the event that a need to address confined spaces should arise in the future.

Confined space is defined as any space, depression, or enclosure that has limited opening for entry and egress, may have limited ventilation, may contain or produce life-threatening atmospheres due to oxygen deficiency, the presence of toxic, flammable or corrosive contaminants, and which is not intended for continuous occupancy.

13.0 HAZARD COMMUNICATIONS

Personnel working at this site have the right to know about the chemical hazards associated with hazardous materials used and stored onsite. This information will be readily available to all site workers as required by OSHA's Hazard Communication Standard (29 CFR 1910.1200). This information will be communicated to personnel through the maintenance of a chemical inventory system, chemical labeling, material safety data sheets (MSDSs), hazard communication training, and a written hazard communication program.

Chemicals imported to the site will bear the original Department of Transportation (DOT) required labeling on the chemical's container. In addition, a new label will be affixed to the original containers, if necessary, and to a new container to which the chemical is dispensed providing the chemical name and specific hazard warnings (e.g., flammability, health, reactivity). Hazard warnings will follow either the National Fire Protection Association (NFPA) format or the Hazardous Material Information Systems (HMIS) format. Both systems are easy to use and rely on numerically ranking hazards on a 0 to 4 scale. Most chemicals used onsite, which are subject to the Hazard Communication Standard, are related to sampling activities. These chemicals may include hexane, methanol, acetone and nitric acid.

14.0 CONTROL OF HAZARDOUS ENERGY (Lockout / Tagout)

No hazardous energy sources exist at this site. The following information is provided in the event that such sources may occur in the future.

Hazardous energy at the site will be controlled through the use of a lockout/tagout procedure developed in accordance with OSHA's lockout/tagout standard (29 CFR 1910.147). The purpose of lockout/tagout procedures is to minimize exposures to hazards from the unexpected energizing, startup or release of residual or stored energy from equipment, machinery or processes. Lockout/tagout procedures will be followed during the installation, servicing and maintenance of machines or equipment that involve hazardous energy sources. Hazardous energy sources include any electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other energy source that is capable of causing injury to personnel.

Lockout / tagout procedures require the placement of a lock and/or tag on an energy-isolating device (a device that physically prevents the transmission or release of energy such as manually operated electrical circuit breakers, disconnect switches, valves and selector switches). After the energy isolation device is placed in the "off" or "safe" position, the lockout/tagout is placed on the energy isolation device to secure it in the "off" or "safe" position. This ensures that the equipment, machinery or process is not capable of being operated while installation, servicing, or maintenance is taking place.

If it is determined that lockout/tagout procedures are required for any aspect of site work, the following generic lockout/tagout procedures will be implemented. Note: these procedures will be tailored to the specific application of a lockout/tagout if there is a need for it. Presently, there are no known situations that would require the application of lockout/tagout procedures at this site.

1. Affected personnel and authorized personnel will receive lockout/tagout orientation training to become familiar with procedures to control hazardous energy. Affected personnel is defined as personnel whose job requires that they operate or use equipment, machinery or process on which servicing or maintenance is being performed under lockout/tagout, or whose job requires them to work in an area in which such servicing or maintenance is being performed. Authorized personnel is defined as a qualified person that an employer has given authority and responsibility to perform a specific lockout and/or tagout assignment.

2. Before proceeding with the installation, maintenance or servicing of any equipment, machinery or process at the site for which lockout/tagout procedures apply, a survey will be made to locate and identify associated energy isolation devices.

3. Once the survey is complete, the authorized personnel will notify all affected personnel including the FTL and SHSO that a shutdown of the equipment or machine will occur.

4. Following notification, the equipment or machine, if operating, will be shut down by normal stopping procedure (i.e., depress stop button, open toggle switch, turn light switch off, etc.)

5. Once turned off, the energy-isolating device (i.e., circuit breaker, disconnect switch, valve, etc.) will be operated in such a manner that the machine or equipment will be isolated from the energy source (electrical, mechanical, hydraulic, pneumatic, chemical, thermal, etc.)

6. The energy-isolating device is then "locked out" by applying the lockout, padlock and tag to the device. In some cases, a chain must be used (in combination with a padlock) to sufficiently "lockout" a device (i.e., steam valve, hydraulic valve, etc.).

7. The authorized personnel indicating the personnel's name and the date and time of the lockout will fill out the tag.

8. Once the energy-isolating device has been locked out and tagged, all potentially hazardous sources or residual energy will be purged or dissipated (i.e., grounding, bleeding, venting, lowering, etc.)

9. After ensuring that no personnel are exposed, the authorized personnel will operate the normal operating controls to make certain the equipment will not restart. The operating controls must be returned to the "off" or "neutral" position after the test.

10. Use a voltmeter to make sure that work is not energized, if applicable.

11. Attach a "ground stick" of sufficient size to handle any possible fault current to all three phases of the source, if applicable.

12. Maintenance or servicing of the machine or equipment can now be performed.

13. When the maintenance and/or service is completed, the work area is to be inspected to ensure that all affected personnel are safely positioned and/or removed. In addition, remove all nonessential items from the equipment.

14. The authorized personnel who applied the lockout devices shall then remove the lockout, padlock, and tag from the energy-isolating device.

15. Each and every personnel involved with the service or maintenance of the locked out equipment will place their assigned padlock to each and every lockout device and/or chain in such manner that if every other padlock were removed, the personnel would still have a padlock assuring that each and every source of energy is still "locked out". No personnel may affix the personal lockout/tagout device of another personnel.

16. If work on a piece of equipment of machinery that is locked out carries over to the next shift, the authorized personnel may remove their lockout device, provided that the next authorized personnel applies their lockout device at the same time the previous authorized personnel removes their lock device.

15.0 RECORD KEEPING REQUIREMENTS

Record keeping requirements mandated by OSHA 29 CFR 1910.120 will be strictly followed. Specifically, all personnel training records, incident reports (Appendix E), and medical examination records will be maintained by Insite Group Inc. for a period of at least 30 years after the employment termination date of each employee. The SHSO will maintain a daily written log of health and safety monitoring activities and monitoring results will become part of the project records.

16.0 HEARING CONSERVATION PROGRAM

Elevated noise levels are not anticipated at this site except during drilling activities. Hearing protective devices will be employed at the digression of the SHSO.

TABLES

TABLE 1

PPE Inspection Checklists

Clothing

Before use:

- Determine that the clothing material is correct for the specified tasks at hand.
- Visually inspect for:
  - Imperfect seams
  - Non-uniform coatings
  - Tears
  - Malfunctioning closures
- Hold up to light and check for pinholes.
- Flex product:
  - Observe for cracks
  - Observe for other signs of shelf deterioration
- If the product has been used previously, inspect inside and out for signs of chemical attack:
  - Discoloration
  - Swelling
  - Stiffness

During the work task, periodically inspect for:

- Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.
- Closure failure.
- Tears.
- Punctures.
- Seam Discolorations.

Gloves

Before use:

- Visually inspect for:
  - Imperfect seams
  - Tears, abrasions
  - Non-uniform coating
  - Pressurize glove with air: listen for pinhole leaks.

TABLE 2

Specific Levels of Protection Planned for the Task Assignments at The Site

Level A: Not applicable

Level B: Not applicable

Level C: Not applicable

Level D:

- Coveralls (as appropriate)
- Boots/shoes – chemical resistant with steel toes and shanks
- Safety glasses
- Hardhat (as required)
- Gloves
- Hearing protection (as required)

Note: All site work at this site shall be Level D unless the SHSO determines that levels should be raised to Level C.

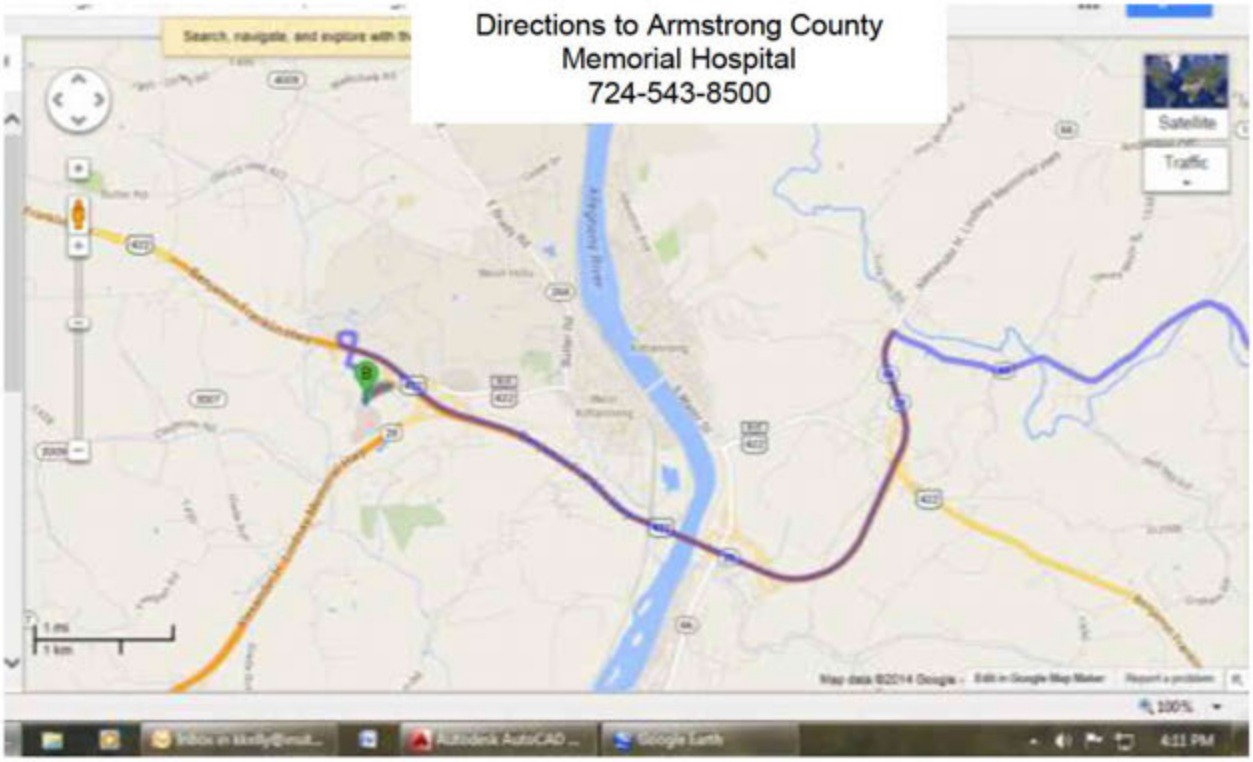
APPENDIX A

EMERGENCY CONTACTS

Responsibility	Contact	Telephone *
Fire Department	Kittanning Township Volunteer Fire Department 13126 U.S. 422 Kittanning, PA 16201	724 548-7290
Emergency Response		911
Police Department	Rural Valley Police 345 Kime Rd Rural Valley, PA 16249	724-783-7423
Ambulance		911 - Dispatch
Hospital (see Figure 3)	Armstrong County Memorial Hospital 1 Nolte Dr. Kittanning, PA 16201	724-543-8500
National Response Center (Release or Spill)		800-424-8802
Chemical Transport Emergency Center (CHEMTREC)		800-424-9300
Site Health & Safety Officer	Sara Giordano or designate	724-347-2101
Office Health & Safety Manager	Sara Giordano	724-347-2101
Project Manager	Paul Rogers	724-347-2101
Client Contact	Joseph Buffone Owner	724-783-6664

APPENDIX B

Directions to Armstrong County Memorial Hospital
724-543-8500



Google

Directions to 1 Nolte Dr, Kittanning, PA 16201
15.4 mi – about **19 mins**

You can enter notes here.

Save trees. Go green!
Download Google Maps on your phone at google.com/gmm

A 10243 Pennsylvania 85, Kittanning, PA 16201

85	1. Head **west** on **PA-85 W** toward **Little Rock Rd** About 11 mins	go 8.7 mi total 8.7 mi
28	2. Turn left onto **PA-28 S** About 1 min	go 1.0 mi total 9.7 mi
422	3. Continue onto **US-422 W** About 5 mins	go 4.8 mi total 14.6 mi
↗	4. Take the exit toward **W Hills**	go 0.2 mi total 14.7 mi
	5. Merge onto **T760**	go 433 ft total 14.8 mi
↱	6. Turn right onto **Glade Dr/Glade Park E**	go 0.2 mi total 15.1 mi
↰	7. Take the 1st left onto **Nolte Rd/T767** Continue to follow Nolte Rd Destination will be on the right About 51 secs	go 0.4 mi total 15.4 mi

B 1 Nolte Dr, Kittanning, PA 16201

APPENDIX C

FIELD TEAM REVIEW

Each Insite Group, Inc. field member shall sign the section after site-specific training is completed and before being permitted to work on site.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provision contained herein. I have been provided with an opportunity to have questions and concerns addressed by the Project Manager.

Site/Project: Valley Village

Name Printed	**Signature**	**Date**

APPENDIX D

APPROVAL PAGE

The Approval Page must be attached and signed by the SHSO, OHSM, Project Manager and Project Principal.

By their signatures, the undersigned certify that this HASP is approved and will be utilized by Insite Group, Inc. personnel at the Valley Village Keystone site in Kittanning, Pennsylvania.

Adam Gaines _____ Date 06/15/2014
Site Health and Safety Officer

Sara Giordano _____ Date 06/15/2014
Office Health and Safety Manager

Paul Rogers _____ Date 06/15/2014
Project Manager

APPENDIX E

INCIDENT REPORT

This form should be filled in by the individual staff member involved, **immediately** following an incident, accident, injury or near miss/hit.
***It should be completed** by the end of the shift.*
If the person involved is unable to fill in the form, their Manager/Supervisor must complete it. **(Please print all information)**

1. DETAILS OF PERSON INVOLVED IN INCIDENT

Surname: _____
Given Names: _____
Date of Birth: / / Phone (H): _____
Home Address: _____
_____ Zip Code: _____
Title: _____
Location: _____
Phone (W): _____ Employee No: _____

Employment Status:
☐ Employee ☐ Agency ☐ Contractor
☐ Full Time ☐ Part Time ☐ Casual
☐ Other *(please specify)*: _____

Gender: ☐ Male ☐ Female

2. DETAIL OF INCIDENT

Exact location of incident: _____
_____
_____
_____

Factors contributing to the incident: _____
(What were you doing at the time e.g. pushing trolley)
_____
_____
_____
_____

3. LIKELY CAUSE OF INCIDENT

(Please tick as many as appropriate)
☐ Fall from height ☐ Striking against object
☐ Slip/trip/fall ☐ Vehicle/Traffic
☐ Physical assault ☐ Falling Object
☐ Repetitive movement
☐ Struck by moving object

☐ Exposure – Hot/cold ☐ Contact - electricity
☐ Exposure - Chemical | ☐ Single ☐ Prolonged

☐ Exposure – Biological *(please specify)*: _____
☐ Sharps injury ☐ Blade ☐ Needle
☐ Other *(please specify)*: _____
_____

Procedure Type

☐ Set up for procedure ☐ During procedure
☐ Laboratory procedure ☐ Clean up after procedure
☐ Field procedure ☐ During garbage disposal
☐ Other *(please specify)*: _____
_____

4. DETAIL OF INJURY

Did an injury occur? ☐ Yes ☐ No
Bodily Location(s) (eg. Right Wrist): _____
_____
_____

Nature of Injury

☐ Fracture	☐ Sprain/Strain	☐ Needle stick
☐ Chemical exposure	☐ Stress/Anxiety	☐ Dermatitis
☐ Body fluid exposure	☐ Burn/Scald	☐ Puncture
☐ Electric shock	☐ Pain/Discomfort only	

☐ Other *(please specify)*: _____
_____

Treatment required at the time of incident occurring?

☐ Report Only ☐ First Aid
☐ Medical Treatment ☐ Time Lost
☐ Follow Up

EQUIPMENT (PPE)

Did this task require PPE? ☐ Yes ☐ No

Was correct PPE being used at time of incident? ☐ Yes ☐ No

Please give details of PPE worn:

☐ Eye Protection ☐ Gloves ☐ Gowns/Aprons
☐ Face Protection ☐ Footwear ☐ Hearing Protection

☐ Other: _____

6. OTHER DETAILS ABOUT INCIDENT

Details of other visitors involved: _____
_____
Did the incident involve a visitor? ☐ Yes ☐ No

Visitors Name: _____

Details of witness(es) involved:

Surname: _____
Given name: _____
Phone (H): _____ Phone (W): _____

Details of supervisor/manager to whom incident was reported

Surname: _____
Given name: _____
Position: _____ Phone: _____
Signature: _____ Date: / /

Signature of person involved in incident: _____
Date: / /

INCIDENT FOLLOW-UP REPORT

This form is to be filled by the **MANAGER / SUPERVISOR** of the staff member involved in the incident.
It must be completed **before the end of the shift** and Forwarded to the appropriate supervisor

1. DETAILS OF MANAGER / SUPERVISOR RESPONSIBLE FOR STAFF MEMBER

Manager / Supervisor's:

Surname: _____

Given Name: _____

Location: _____

Phone: _____

2. DETAILS OF MANAGER / SUPERVISOR OF DEPARTMENT IN WHICH INCIDENT OCCURRED

(If incident occurred in the same department where staff member normally works write "As Above".)

Manager / Supervisor's:

Surname: _____

Given Name: _____

Occupation: _____

Location: _____

Phone: _____

Others involved in incident follow-up process:

(eg. Supervisors or Health and Safety Representative)

i) Surname: _____
Given Name: _____
Occupation: _____
Department: _____
Campus / Location: _____
Phone: _____
ii) Surname: _____
Given Name: _____
Occupation: _____
Department: _____
Campus / Location: _____
Phone: _____

3. ACTION TO BE TAKEN TO PREVENTING AND CONTROL RE-OCCURRENCE: *(please tick as many as applicable)*

This action must be implemented by those involved in the Incident Follow-up process.
All Staff Incident Reports will be followed
.

- ☐ Remove Hazard
- ☐ Clean up / Housekeeping
- ☐ Improve Layout of Work Place
- ☐ Repair Equipment / Tools / Signs
- ☐ Upgrade Equipment / Tools / Signs
- ☐ Improve Inspection Procedure
- ☐ Staff Counselling
- ☐ Staff Training
- ☐ Personal Protective Equipment
  - ☐ Manager to provide
  - ☐ Employee to wear

Please specify details of required action: _____

Other follow-up recommended: _____

4. FOLLOW-UP OF STAFF MEMBER INVOLVED

Did an injury occur? ☐ Yes ☐ No

Treatment required at time of incident occurring:

- ☐ Report Only
- ☐ First Aid
- ☐ Medical Treatment
- ☐ Inpatient Admission
- ☐ Time Lost
- ☐ Follow up
- ☐ Debriefing
- ☐ Counselling

MANAGER / SUPERVISOR

Please ensure that this completed Incident Follow-up Report AND the Staff Incident Report (page 1) as completed by the staff member involved in the incident, are forwarded to the following parties, **by the completion of the shift in which the incident occurred.**

- **Original to:**
- **Copy to:**
- Accident Compensation Act 1985)

APPENDIX F

MATERIAL SAFETY DATA SHEETS

(Material Safety Data Sheets are available in the office.)