FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

March 8, 2017

Mr. Eric Kemmer
City of Kalamazoo
Economic Development and Planning
241 W. South Street
Kalamazoo, MI 49007

RE: Potential Environmental and Building Foundation Development Issues and Associated Preliminary Cost Estimates
Performance Paper Property, Kalamazoo, Kalamazoo County, Michigan

Dear Eric:

The City of Kalamazoo has requested that Fleis & VandenBrink (F&V) conduct an evaluation of potential excessive development costs due to the potential for environmental and geotechnical challenges at a portion of the former Performance Paper Site. F&V was assisted by Materials Testing Consultants, Inc. (MTC) for geotechnical engineering and JDH Structural Engineering (JDH) for conceptual building foundation engineering.

The cost estimates presented in this evaluation are based on observations and data from borings and excavation test pits from several subsurface investigations conducted on the Site, and from preliminary building design and layout. The observed conditions may not be fully indicative of the nature and extent of the variations that may exist between the sample locations. Additional subsurface investigation and evaluation may be required once the actual building design is known.

BACKGROUND

The Site in question is an approximate 4-acre parcel that was formerly occupied by Mill C of the Performance Paper facility. The Mill C area was the first area of the Site to be developed for paper-making activities beginning in the 1890s. Extensive excavation and earth moving activities occurred on the majority of the Site during the demolition and removal of the Site buildings and infrastructure. The eastern ½ of the Site was formerly occupied by the Mill C basement which was excavated and removed during the demolition activities. The basement excavation was partially backfilled with crushed concrete generated during the demolition activities and remains a low-lying area at the Site. The western ½ of the Site was occupied by supporting infrastructure such as rail spurs, courtyards, parking lots and outbuildings. The western portion of the Site was not excavated and remains at a higher elevation.

4798 Campus Drive
Kalamazoo, MI 49008
P: 269.385.0011
F: 269.382.6972
www.fveng.com

ENVIRONMENTAL CONDITIONS

Historical Environmental Investigations

Numerous historical environmental investigations have been conducted at the Site over the years, including:

- 1997 Phase II ESA, Geraghty & Miller
- 1998 BEA, ARCADIS
- 2002 Remedial Investigation Technical Memorandum No. 1, MACTECH
- 2002 MDEQ Site Summary
- 2006 Impacted Materials Assessment, ECT

The historical environmental assessments were all conducted prior to building demolition activities. Historical soil contamination in the Mill C area included: tetrachloroethylene and trichloroethylene above Residential Drinking Water Protection Criteria (DWPC); arsenic and benzo(a)pyrene above Residential Direct Contact Criteria (DCC); and naphthalene, xylenes, barium, chromium mercury and selenium at concentrations above Residential Groundwater Surface Water Interface Protection Criteria (GSIPC). Significant historical groundwater contamination was not identified in the Mill C Area.

2015 Phase II Environmental Site Assessment

A Phase II Environmental Site Assessment (ESA) was conducted on the eastern portion of the Site by F&V in December of 2015 on behalf of Kalamazoo County. A total of four investigative test boings and one surficial sampling location were installed during the Phase II ESA. The sampling locations focused on areas surrounding the former Mill C basement where historical fill materials were most likely to be encountered. A figure showing the sampling locations is provided in Attachment 1. The findings of the report are summarized as follows:

SB/TMW-1 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-1 (2-3') was collected from this test boring and contained arsenic at a concentration exceeding Part 201 GRCC. Numerous PNA compounds, tetrachloroethylene and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-1 was collected at this location and contained tetrachloroethylene at a concentration equal to its Part 201 GRCC Drinking Water Criteria. Barium was detected at a concentration below its respective Part 201 GRCC.

SB/TMW-2 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-2 (3-4') was collected from this test boring and contained the following compounds at concentrations exceeding their respective Part 201 GRCC: carbon tetrachloride, naphthalene, tetrachloroethylene, trichloroethylene, xylenes, and arsenic. The concentrations of tetrachloroethylene and trichloroethylene also exceeded their respective Part 201 GNRCC Drinking Water Protection Criteria. Trichloroethylene also exceeded its Part 201 GNRCC Soil Volatilization to Indoor Air Criteria. Numerous VOCs, PNAs and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-2 was collected at this location and contained tetrachloroethylene at a concentration exceeding its Part 201 GRCC Drinking Water Criteria. Barium was detected at a concentration below its respective Part 201 GRCC.

SB/TMW-3 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-3 (3-4') was collected from this test boring and contained arsenic at a concentration exceeding Part 201 GRCC. Numerous PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-3 was collected at this location and contained tetrachloroethylene, barium, chromium and copper at concentrations below their respective Part 201 GRCC.

SB/TMW-4 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. A soil sample was not collected at this location. TMW-4 was collected at this location, and it did not contain tested compounds at concentrations exceeding Part 201 GRCC.

A surficial soil sample (SS-2, 0-1') was collected from undisturbed fill material near the north Property boundary. The sample contained arsenic and mercury at concentrations exceeding their respective Part 201 GRCC. Numerous PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC.

The 2015 Phase II ESA is provided as Attachment 1.

2017 Supplemental Phase II Environmental Site Assessment

A supplemental environmental investigation was conducted on the Property in February 2017 to further evaluate subsurface conditions. Test pitting was conducted to evaluate the nature and thickness of fill materials at the Property. Soil samples were collected from identified fill materials to assess their condition.

Test Pit 1 was installed along the northwest portion of the Property on an elevation high point located outside the former Mill C Basement area in an area that was formerly occupied by rail spurs. Encountered materials included one foot of crushed concrete overlying approximately 6.5 feet of historical fill material described as stained sand and gravel with some coal ash and cinders. Sandy gravel was present beneath the historical fill. Soil sample Test Pit 1 (2') was collected from this test pit and contained tetrachloroethylene, benzo(a)pyrene, arsenic and mercury at concentrations exceeding their respective Part 201 GRCC. The concentration of tetrachloroethylene also exceeded its Part 201 GNRCC Drinking Water Protection Criteria. Numerous VOCs, PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC. Soil sample Test Pit 1 (5') was collected from this test pit and did not contain any tested compound at concentrations above Part 201 GRCC. Several PNA compounds, VOCs and metals were detected at concentrations below their respective Part 201 GRCC.

Test Pit 2 was installed along the west portion of the Property on an elevation high point located outside the former Mill C Basement area in an area that was formerly occupied by rail spurs. Encountered materials included one foot of crushed concrete overlying approximately 7 feet of historical fill material described as stained sand and gravel with some concrete debris, rubble, coal ash and cinders. Interbedded layers of sandy gravel and fill material was present beneath the historical fill to a depth of 12 feet bgl. Soil sample Test Pit 2 (2') was collected from this test pit and contained arsenic at a concentration exceeding its Part 201 GRCC. Numerous PNA compounds, toluene and metals were detected at concentrations below their respective Part 201 GRCC. Soil sample Test Pit 2 (9') was collected from this test pit and contained arsenic at a concentration exceeding its Part 201 GRCC. Numerous PNA compounds, VOCs, metals and PCB Aroclor 1242 were detected at concentrations below their respective Part 201 GRCC.

Test Pit 3 was installed along the south central portion of the Property in a low area within the former Mill C Basement. Encountered materials were 9 feet of sandy gravel containing crushed concrete overlying native sands. No historical fill material was located in this test pit and no soil samples were collected for laboratory analysis.

Test Pit 4 was installed in the approximate center of the depression from the Mill C Basement excavation. Encountered materials were 2.5 feet of sandy gravel containing crushed concrete overlying 2.5 feet of sand with some gravel with minor dark stained layers overlying native sands and gravels. The water table was encountered at approximately 9 feet bgl. No historical fill material was located in this test pit. Soil sample Test Pit 4 (2') was collected from this test pit and did not contain any tested compound at concentrations above Part 201 GRCC. Several PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC.

Test Pit 5 was installed along the east central portion of the Property in a low area within the former Mill C Basement. Encountered materials were 2.5 feet of sandy gravel containing crushed concrete overlying sand with some stained layers to a depth of 9 feet bgl where the water table was encountered. No historical fill material was located in this test pit and no soil samples were collected for laboratory analysis.

Test Pit 6 was installed in the approximate center of the Property in a low area likely just west of the former Mill C Basement. Encountered materials were 2.5 feet of sandy gravel containing crushed concrete overlying 1.5 feet of historical fill (sandy gravel with a thin coal layer and some rubble) overlying native sand with clay

some stained layers or mottling to a depth of 9 feet bgl where the water table was encountered. No soil samples were collected for laboratory analysis.

Test Pit 7 was installed near the southeast corner of the Property in an area within the former Mill C Basement. Encountered materials were 7 feet of sandy gravel containing crushed concrete overlying native sandy gravel a depth of 9 feet bgl. The water table was encountered at approximately 8 feet bgl. No soil samples were collected for laboratory analysis.

Test Pit 8 was installed along the southwest portion of the Property on an elevation high point located outside the former Mill C Basement in an area that was formerly occupied by rail spurs and a courtyard. Encountered materials included 3 feet of sandy gravel with crushed concrete and sand overlying approximately 6 feet of historical fill material described as stained sand and gravel with some concrete debris, rubble, coal ash and cinders. Soil sample Test Pit 8 (7') was collected from this test pit and contained arsenic at a concentration exceeding its Part 201 GRCC. Numerous PNA compounds, trichloroethylene and metals were detected at concentrations below their respective Part 201 GRCC.

The 2017 Supplemental Phase II ESA is provided as Attachment 2.

Proposed Future Use and Potential Contaminant Exposure Pathway Evaluation

It is our understanding that a potential future site use would include construction of a 2- or 3-story, 30,000 square foot (footprint) commercial office style building with parking on the lower level and related site improvements.

The potential future site use would be considered a Non-Residential use; therefore the evaluation was conducted by comparing the recent Phase II ESA and Supplemental Phase II ESA soil and groundwater data to Part 201 Generic Non-Residential Cleanup Criteria (GNRCC). Potential contaminant exposure pathways are discussed below:

Soil Direct Contact

None of the detected concentrations of tested parameters in the soil samples collected during the Phase II ESA and Supplemental Phase II ESA exceeded Part 201 GNRCC Direct Contact Criteria. This exposure pathway does not have the potential to be completed.

Drinking Water

Soil contamination is present at concentrations exceeding Part 201 GNRCC DWPC. Groundwater contamination is present at concentrations exceeding Part 201 GNRCC Drinking Water Criteria. Municipal water is available at the Site and groundwater will not be used as a drinking water supply in the future. This exposure pathway does not have the potential to be completed.

Volatilization to Indoor Air

Trichloroethylene was detected in one historical fill material sample at a concentration that exceeded Part 201 GNRCC Volatilization to Indoor Air (VIA) Criteria. The extent and volume of historical fill material exceeding the Part 201 GNRCC VIA exposure pathway is limited to a small area just south of Bryant Street. This exposure pathway is not likely to be completed. However, as a conservative measure, any historical fill material from this limited area should not be placed within 50 feet of future site buildings. If parking is constructed beneath the building, it will be necessary to vent the lower level to prevent vehicle exhaust fumes from entering the structure, which will further prevent the completion of the VIA exposure pathway.

Contaminated Soils Leaching to Surface Water

Portions of the historical fill materials contain hazardous substances at concentrations exceeding Part 201 GNRCC Groundwater Surface Water Interface Protection Criteria. The potential would exist for contaminants to leach from the soils and be transferred via groundwater to Portage Creek. In order to prevent completion of this

potential exposure pathway, storm water should not be concentrated and drained through the historical fill materials.

Due Care Response Actions

Due Care Response Actions are those actions that are required at a property under development to prevent the completion of a potential contaminant exposure pathway. Based on our analysis stated above, Due Care Response Actions that would be required to redevelop the property as a 2-story, 30,000-square foot footprint, commercial structure with underground parking including the placement of the historical fill material beneath parking surfaces. The placement of the historical fill materials beneath impervious surfaces will minimize storm water infiltration and leaching of contaminants to underlying groundwater.

The Materials Testing Consultants (MTC) Geotechnical Report (Attachment 3) states the historical fill material is suitable to be used as fill material beneath parking surfaces. Based on available well logs and test pit observations from Site investigations, an average of 2 to 10 feet of historical fill materials is present in a narrow strip just south of Bryant Street and at areas that were outside of building footprints on the western portion of the Site. Materials consistent with buried building demolition debris (brick, wood, concrete) were encountered in Test Pits 2 and 4 at depths up to 8.5 feet below ground level. If we assume an average depth of 8 feet of historical fill material and an area of 45,000 square feet (approximately 1 acre), that would give an estimated volume of 13,500 cubic yards of historical fill material that would need to handled and placed beneath parking lot and driveway surfaces. We recommend that this material be screened to remove the demolition debris prior to placement and compaction. We anticipate that debris comprises 10% of the fill material volume, or 13,500 cubic yards.

For preliminary evaluation, we utilize the following unit costs:

$12.00/cubic yard	Excavation, screening, placement and compaction
$35.00/cubic yard	Loading, transport and disposal of debris

13,500 cubic yards of historical fill material to be handled and placed beneath parking areas at $12.00/cubic yard equates to an estimated cost of $162,000. 1,350 cubic yards of debris to be disposed offsite at a Type II landfill equates to an estimated cost of $47,250. The total estimated cost to process and reuse the historical fill material as fill beneath parking surfaces is $209,250.

POTENTIAL BUILDING FOUNDATION CONDITIONS

A Preliminary Geotechnical Evaluation and Report was conducted on the eastern portion of the Site by Professional Service Industries, Inc. (PSI) in August 2016. In our opinion, PSI incorrectly logged “Fill Material” to depths of up to 60 feet below the ground surface. Our analysis of the PSI boring logs suggests the following:

As part of this analysis a Geotechnical evaluation was conducted by MTC in March 2017. MTC concluded that the crushed concrete fill material placed within the former Mill C basement excavation by the MDEQ contractors in 2005-2006, and historical fill materials within the proposed building outline outside the former Mill C basement excavation, do not have suitable geotechnical properties to support the proposed site building. Options for foundation support recommended by MTC include:

- Excavation and removal of the unsuitable fill materials and replacement with compacted, Class II sand
- Installation of compacted aggregate piles

The completed Geotechnical Report provided by MTC is provided as Attachment 3.

Based on an analysis of potential foundation design and installation costs for the two options, excavation and removal of the unsuitable fill materials and replacement with compacted, Class II sand was selected as the most cost-effective solution.

The proposed site building footprint had an area of 30,000 square feet. Using a depth of excavation of 10 feet equates to approximately 11,000 cubic yards of fill material that needs to be removed. Adding a safety factor of 1,000 cubic yards, we have based our preliminary (pre-design) cost analysis on 12,000 cubic yards of material to be excavated and removed.

F&V had a phone discussion on March 6, 2017 with Mark Ducharme, MDEQ Project Manager for the 2005-2006 demolition of the former Mill C basement. Mr. Ducharme stated in summary:

- The crushed concrete fill placed into the Mill C basement excavation was tested and determined to be an inert material.
- Native sand was present beneath the Mill C basement.
- A "couple" of deep footings were not removed and left in place.

Based on our review of the test pit excavation data and boring logs from the PSI and MTC evaluations, we estimate that the majority of the fill material that will need to be excavated and removed is the inert crushed concrete fill. We have estimated the following volume of fill materials to be removed and disposed offsite:

- 9,000 cubic yards Inert Crushed Concrete Fill
- 3,000 cubic yards Contaminated Historical Fill Material

Inert Crushed Concrete Fill

The crushed concrete fill material is suitable to be used as general fill material at any offsite location. We estimate the following costs:

$5.00/cubic yard	Excavation and loading
$3.00/cubic yard	Transport to nearby local site
$8.00/cubic yard	Total unit cost to excavate and transport from Site

9,000 cubic yards of material at $8.00/cubic yard cost to excavate and remove the Inert Crushed Concrete Fill equates to a total cost of $72,000. This material may also have potential resale value.

Contaminated Historical Fill

This historical fill material is contaminated and will need to be removed from the Site and disposed in an appropriate landfill. We have assumed that the material will be classified as non-hazardous and can be disposed in a Type II Landfill. We estimate the following costs:

$5.00/cubic yard	Excavation and loading
$10.00/cubic yard	Transport to Type II Landfill
$20.00/cubic yard	Transport to Type II Landfill
$35.00/cubic yard	Total unit cost to excavate and transport from Site and dispose in a Type II Landfill

3,000 cubic yards of material at $35.00/cubic yard cost to excavate and dispose the Contaminated Historical Fill Material equates to a total cost of $105,000.

Remnant Mill C Footing/Foundation Removal

Borings installed by MTC (B-3, B-5 and B-8) encountered refusal, likely due to buried concrete remnant footings and/or foundations left over from Mill C demolition. These borings are located outside the estimated location of the building footprint; however, it is likely that buried remnant concrete footings/foundations will be encountered and uncovered during the excavation and removal of unsuitable fill materials. The volume of remnant building footings/foundations cannot be estimated at this time.

We have estimated a budget of $20,000 to remove and recycle any encountered remnant building footing/foundation within the future building footprint.

Placement of Engineered Fill – Class II Sand

The fill material excavation will be backfilled with compacted, Class II Sand. The exact volume of backfill will be dependent on the final building finished floor elevation. For the purposes of this evaluation, we have estimated than 5 feet of compacted, Class II Sand will be placed.

A total of 12,000 cubic yards of fill material (10-foot deep excavation) is proposed to be removed. Replacing the excavated volume with 5 feet of compacted, Class II Sand would equal:

6,000 cubic yards Class II Sand, plus 20% (1,200 cubic yards) to allow for compaction, would total 7,200 cubic yards. We estimate the following costs:

$5.00/cubic yard	Class II Sand delivered to Site
$5.00/cubic yard	Place and compact Class II Sand
$10.00/cubic yard	Total unit cost to place sand at the Site

7,200 cubic yards of Class II Sand at $10.00/cubic yard cost to purchase, place and compact the engineered fill equates to a total cost of $72,000.

Building Foundation Construction

JDH reviewed the MTC Geotechnical Report and F&V's summary of environmental conditions in the preparation of their foundation analysis and report. JDH concluded that the corrective actions of excavation of unsuitable fill material and placement of engineered Class II sand within the building area, would result in bearing pressures better than average for a West Michigan development site.

JDH concluded that "nothing out of the ordinary" would be required for the design and construction of the building's foundations or slab-on-grade.

The Foundation Recommendation report from JDH Structural Engineering is provided as Attachment 4.

COST SUMMARY

The following table summarizes our estimated pre-design costs for additional development costs due to existing Site conditions:

$209,250	Handle and place 13,500 cubic yards of historical fill material beneath parking surfaces
$72,000	Excavate and remove offsite 9,000 cubic yards of crushed concrete fill
$105,000	Excavate and offsite disposal of 3,000 cubic yards contaminated historical fill
$20,000	Remove and recycle offsite remnant concrete foundations/footings
$72,000	Import, place and compact 7,200 cubic yards Class II Sand
$478,250	Subtotal
$119,500	25% Contingency *(Bidding environment, seasonal and economic conditions can affect pricing)*
$597,750	**Estimated Additional Development Costs Due to Existing Site Conditions**

PROJECT SUMMARY

F&V, with support from MTC and JDH, have performed an evaluation of the proposed 4 acre development site. We conclude that the excavation of unsuitable fill materials from the proposed building area and replacement with engineered Class II Sand will provide a stable material to allow for normal foundation and slab-on-grade construction.

We further conclude that the excavation, processing and placement of the historical fill material beneath paved parking surfaces will prevent the completion of relevant contaminant exposure pathways at the Site.

The estimated cost for these additional development corrective actions is estimated to be approximately $600,000.

If you have any questions or require additional information, please contact me at 231.360.4677 or skimm@fveng.com.

Sincerely,

FLEIS & VANDENBRINK

Steven M. Kimm, CPG
Associate; Project Manager

Aaron Catlin
Associate; Development Group Manager

Attachments

Attachment 1	2015 F&V Phase II ESA
Attachment 2	2017 F&V Supplemental Phase II ESA
Attachment 3	Materials Testing Consultants Geotechnical Report
Attachment 4	JDH Structural Engineering Report

ATTACHMENT 1

PHASE II
ENVIRONMENTAL SITE ASSESSMENT

OF

505 EAST ALCOTT STREET
KALAMAZOO
KALAMAZOO COUNTY, MICHIGAN

FOR

KALAMAZOO COUNTY

January 2016
Project No. 825390

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LIST OF ABBREVIATIONS/ACRONYMS

ags	Above Ground Surface
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethel-Benzene and Xylenes
DWC	Drinking Water Criteria
ESA	Environmental Site Assessment
F&V	Fleis & VandenBrink Engineering, Inc.
GRCC	Generic Residential Cleanup Criteria
MDEQ	Michigan Department of Environmental Quality
NREPA	Natural Resources and Environmental Protection Act
NRVISL	Non-Residential Vapor Intrusion Screening Level
PID	Photoionization Detector
PNA	Polynuclear Aromatics
PVC	Polyvinyl Chloride
QC	Quality Control
REC	Recognized Environmental Condition
SS	Soil Sample
TB	Test Boring
TMB	1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene
TMW	Temporary Monitoring Well
USCS	United Soil Classification System
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Fleis & VandenBrink Engineering, Inc. (F&V) was retained by Kalamazoo County to conduct a Phase II Environmental Site Assessment (ESA) of the 505 East Alcott Street Property, Kalamazoo, Kalamazoo County, Michigan (Property). The purpose of the Phase II ESA was to further evaluate the Recognized Environmental Conditions (RECs) identified during the Phase I ESA conducted on the Property by F&V in December 2015.

This Phase II ESA was conducted on December 16, 2015 in accordance with the proposal dated October 28, 2015. F&V has no obligation to any party other than Kalamazoo County, and specifically disclaims any obligations or responsibility to any other party.

2.0 SITE BACKGROUND

The Property is a portion of the former Performance Paper Company which operated from the late 1800s until 1998 when paper-making operations ceased. The RECs identified in the Phase I ESA included the following:

1. Historical use of the Property as a portion of the former Performance Paper Company and listing as a portion of the Allied Paper/Portage Creek/Kalamazoo River Superfund Site.
2. The historical use and storage of coal on the Property.
3. The documented presence of soil contaminated with metals and PNAs above Part 201 GRCC.
4. The documented presence of groundwater contaminated with metals above Part 201 GRCC.
5. The documented releases of hazardous substances and petroleum products onto the basement floor of Mill C.
6. The documented releases of hazardous substances and petroleum products into the Mill C trench drains and sump in Building 34.

3.0 PHASE II ESA FIELD ACTIVITIES

Field activities conducted during the Phase II ESA are described below.

- Direct Push (Geoprobe) Soil Sampling
- Geoprobe Groundwater Sampling
- Surficial Soil Sampling

Field work and instrument calibration was conducted in accordance to F&V's Field Standard Operating Procedures.

3.1 Sample Collection

3.1.1 Geoprobe Soil Sampling

F&V contracted with TerraProbe who utilized a truck-mounted Geoprobe direct-push drilling rig to install four soil borings (SB-1 through SB-4) to evaluate subsurface conditions in the vicinity of the identified RECs. The borings were installed using the Geoprobe and a 2-inch diameter macro-core barrel equipped with single-use acetate liners. A continuous core of soils was collected at each boring location from the surface to the water table interface. The soils were field screened for visual indicators of contamination and the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). One soil sample was collected from SB-1, SB-2 and SB-3 at the interval corresponding to the highest PID reading in the soils or where visual evidence indicated the greatest potential for contamination. The visual and PID screening of the recovered soils from SB-4 did not identify potential areas of soil contamination, therefore a soil sample was not collected for analysis.

Soils were observed and logged by the F&V Geologist and Boring Logs are included in Appendix A. The water table was identified by the observation of saturated soils in the sampling liners.

Sample locations were measured to site landmarks and are shown on Figure 2.

3.1.2 Geoprobe Groundwater Sampling

Groundwater samples were collected using the Geoprobe at the four test boring locations. Upon reaching groundwater, a temporary monitoring well was installed at each boring location (TMW-1 through TMW-4). The temporary monitoring wells were constructed of one-inch diameter polyvinyl chloride (PVC) well riser equipped with a 5-foot PVC well screen. The wells were installed with the well screen bisecting the surface of the water table. A groundwater sample was collected from each temporary well. Field measurement of temperature, pH, specific conductance, dissolved oxygen, and turbidity was conducted at the time of sample collection.

Sample locations were measured to site landmarks and are shown on Figure 2.

3.1.3 Surficial Soil Sampling

A hand auger was used to create shallow borings at two locations on the Property (SS-1 and SS-2). Soil samples were collected from undisturbed soils directly into laboratory prepared sampling jars. Only the sample collected from SS-2 was submitted for laboratory analysis.

Sample locations were measured to site landmarks.

3.2 Field Quality Control Samples

Trip blanks were included in the shipping coolers and a field blank of the methanol preservative was collected.

3.3 Sample Handling, Custody and Analysis

3.3.1 Sample Containers and Preservation

The sample containers were provided by the analytical laboratory. Each sample was collected directly into the laboratory prepared containers. Sample preservation was used to prevent or retard the degradation or modification of chemical compounds during transit and storage prior to laboratory extraction and analysis. Sample preservatives were based on the type of sample and required analyses.

3.3.2 Chain of Custody

Chain-of-custody procedures are intended to document sample possession from collection to disposal in accordance with federal guidelines. A chain-of-custody record was used to document and track possession of the samples.

3.3.3 Sample Storage, Transport and Analysis

Samples were held on ice in an insulated cooler during the collection process. The samples were submitted to ALS Laboratory of Holland, Michigan (ALS) for analysis.

The samples were analyzed for volatile organic compounds (8260 plus scan), polynuclear aromatic hydrocarbons (Method 8270C), polychlorinated biphenyls and Michigan 10 Metals.

The laboratory analytical data report is included in Appendix B.

3.4 Applicable Standards

The analytical data for the collected samples are summarized and compared to Michigan Department of Environmental Quality (MDEQ) Part 201 GRCC on Table 1 (Soil) and Table 2 (Groundwater).

3.5 Investigative-Derived Waste

Excess soil cuttings were mixed with bentonite chips and used to fill the borehole where the drill cuttings were generated. Excess purged groundwater was returned to the ground surface adjacent to the well where it was generated.

3.6 Boring and Temporary Well Abandonment

Upon completion of site assessment activities, borings and temporary monitoring wells were abandoned. Temporary well materials were removed from the boreholes and properly disposed offsite. Boreholes were abandoned by placing bentonite chips and/or bentonite chips mixed with soil cuttings into the borehole until each was completely filled.

3.7 Equipment Decontamination

Contact sampling equipment was decontaminated between sampling events to ensure the accuracy of data collected. Single-use sampling equipment was properly disposed after use.

3.8 Field Documentation

Detailed records of the field activities were maintained in field notebooks, field forms, laboratory data sheets and chain of custody forms. These records will document field activities including sampling locations, sampling times, types of samples collected, weather conditions and other information pertinent to the assessment.

4.0 DATA ANALYSIS

SB/TMW-1 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-1 (2-3') was collected from this test boring and contained arsenic at a concentration exceeding Part 201 GRCC. Numerous PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-1 was collected at this location and contained tetrachloroethylene at a concentration equal to its Part 201 GRCC Drinking Water Criteria.

SB/TMW-2 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-2 (3-4') was collected from this test boring and contained the following compounds at concentrations exceeding their respective Part 201 GRCC: carbon tetrachloride, naphthalene, tetrachloroethylene, trichloroethylene, xylenes, and arsenic. Numerous VOCs, PNAs and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-2 was collected at this location and contained tetrachloroethylene at a concentration exceeding its Part 201 GRCC Drinking Water Criteria.

SB/TMW-3 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-3 (3-4') was collected from this test boring and contained arsenic at a concentration exceeding Part 201 GRCC. Numerous PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-1 was collected at this location and contained tetrachloroethylene at a concentration below its Part 201 GRCC Drinking Water Criteria.

SB/TMW-4 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. A soil sample was not collected at this location. TMW-4 was collected at this location, and it did not contain tested compounds at concentrations exceeding Part 201 GRCC.

A surficial soil sample (SS-2, 0-1') was collected from undisturbed fill material near the north Property boundary. The sample contained arsenic and mercury at concentrations exceeding their respective Part 201 GRCC. Numerous PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC.

A field blank was collected of the methanol preservative and analyzed for VOCs. The field blank did not contain detectable levels of VOCs.

A trip blank was included in the insulated cooler containing the collected samples and was analyzed for VOCs. The trip blank did not contain detectable levels of VOCs.

5.0 FINDINGS

F&V conducted a Phase II ESA to evaluate the RECs identified in the December 2015 Phase I ESA.

The hazardous substances: carbon tetrachloride, naphthalene, tetrachloroethylene, trichloroethylene, xylenes, arsenic and mercury have been identified in the Property's soil; and the hazardous substance tetrachloroethylene has been identified in the Property's groundwater; at concentrations exceeding their respective GRCC, as defined in R299.5744 and R299.5746 of the NREPA.

6.0 CONCLUSIONS

F&V conducted a Phase II ESA in December 2015 to evaluate the RECs identified in the December 2015 Phase I ESA.

Based on the data collected during the Phase II, the Property is a *facility*, as defined in Part 201 of the Natural Resources and Environmental Protection Act, P.A. 451 of 1994, as amended (NREPA), due to the presence of carbon tetrachloride, naphthalene, tetrachloroethylene, trichloroethylene, xylenes, arsenic and mercury in soils, and tetrachloroethylene in groundwater at concentrations, exceeding Part 201 GRCC.

This conclusion is based upon information presented within the complete F&V Phase II ESA report.

FIGURES

825390_Fig1_SiteLoc / amberp 12/2/2015

NORTH

0 500 1,000

SCALE IN FEET

APPROXIMATE
SITE LOCATION
KALAMAZOO CO.

KALAMAZOO COUNTY

EAST ALCOTT AVE., KALAMAZOO, MI

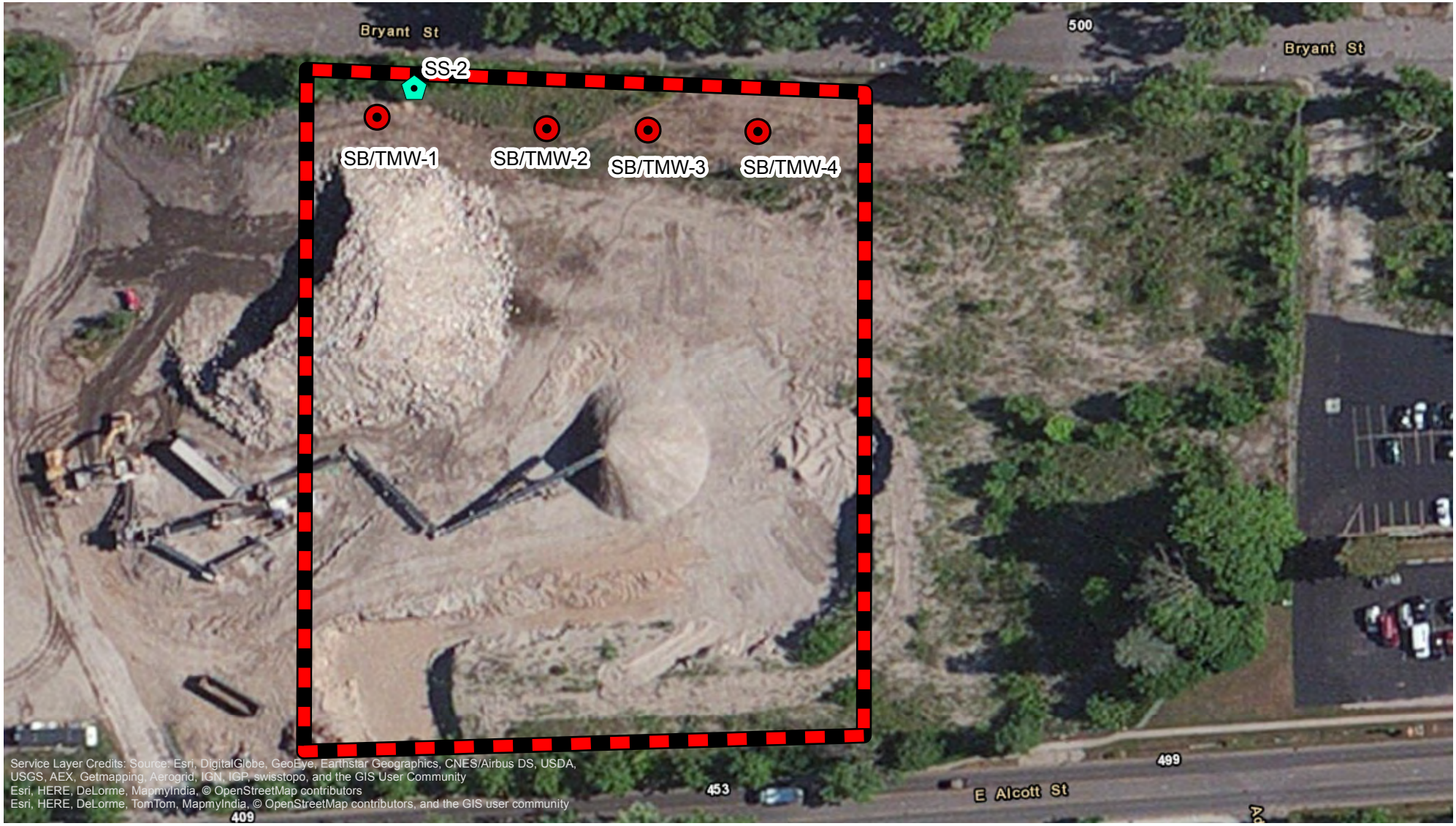
SITE LOCATION MAP

FIGURE 1

F&V PROJECT NO. 825390

F&V

825390_Fig2_SiteMap / amberp 1/6/2016



LEGEND

- SOIL BORING / TEMPORARY MONITORING WELL (SB/TMW)
- SURFACE SOIL (SS) SAMPLE

NORTH

0 80 160

SCALE IN FEET

KALAMAZOO COUNTY

EAST ALCOTT AVE., KALAMAZOO, MI

SITE PLAN WITH SAMPLING LOCATIONS

FIGURE 2

F&V PROJECT NO. 825390

F&V

TABLES

Table 1: Soil Analytical Results Summary
825390 East Alcott Street
December 2015

Sampling Location		SB-1	SB-2	SB-3	SS-2	Trip											
Sampling Interval		2-3'	3-4'	3-4'	0-1'	Blank		Groundwater Protection		Indoor Air	Ambient Air (Y)				Direct Contact	
Collection Date		12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	#10	#11	#12	#14	#15	#16	#17	#18	#19	#20
Hazardous Substance	Chemical Abstract Service Number						Statewide Default Background Level	Residential Drinking Water Protection Criteria & RBSLs	Groundwater Surface Water Interface Protection Criteria & RBSLs	Soil Volatilization to Indoor Air Inhalation Criteria & RBSLs	Infinite Source Volatile Soil Inhalation Criteria (VSIC) & RBSLs	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria & RBSLs	Residential Direct Contact Criteria & RBSLs	Soil Saturation Concentration Screening Levels
VOLATILES (8260B)																
Benzene (I)	71432	<33	70	<34	<43	<30	NA	100	4,000 (X)	1,600	13,000	34,000	79,000	3.80E+08	1.80E+05	4.00E+05
Carbon tetrachloride	56235	<33	**490**	<34	<43	<30	NA	**100**	900 (X)	**190**	3,500	12,000	28,000	1.30E+08	96,000	3.90E+05
Ethylbenzene (I)	100414	<33	150	<34	<43	<30	NA	1,500	360	87,000	7.20E+05	1.00E+06	2.20E+06	1.00E+10	2.2E+7 (C)	1.40E+05
n-Hexane	110543	<110	320	<110	<140	<100	NA	1.8E+5 (C)	NA	5.1E+5 (C)	3.0E+6	3.2E+6	6.2E+6	1.3E+10	9.2E+7 (C)	44,000
Isopropyl benzene	98828	<33	73	<34	<43	<30	NA	91,000	3,200	4.0E+5 (C)	1.70E+06	1.70E+06	2.80E+06	5.80E+09	2.5E+7 (C)	3.90E+05
2-Methylnaphthalene	91576	180	1,200	160	300	<30	NA	57,000	4,200	2.70E+06	1.50E+06	1.50E+06	1.50E+06	6.70E+08	8.10E+06	NA
Naphthalene	91203	<110	**1,200**	<110	<140	<100	NA	35,000	**730**	2.50E+05	3.00E+05	3.00E+05	3.00E+05	2.00E+08	1.60E+07	NA
n-Propylbenzene (I)	103651	<33	100	<34	<43	<30	NA	1,600	ID	ID	ID	ID	ID	1.30E+09	2.50E+06	1.00E+07
Tetrachloroethylene	127184	37	**3,800**	<34	<43	<30	NA	**100**	**1,200 (X)**	11,000	1.70E+05	4.80E+05	1.10E+06	2.70E+09	2.0E+5 (C)	88,000
Toluene (I)	108883	<33	730	<34	46	<30	NA	16,000	5,400	3.3E+5 (C)	2.80E+06	5.10E+06	1.20E+07	2.70E+10	5.0E+7 (C)	2.50E+05
Trichloroethylene	79016	<33	**3,000**	<34	<43	<30	NA	**100**	4,000 (X)	**1,000**	11,000	25,000	57,000	1.30E+08	.1E+5 (C,DL	5.00E+05
1,2,4-Trimethylbenzene (I)	95636	<33	410	<34	<43	<30	NA	2,100	570	4.3E+6 (C)	2.10E+07	5.00E+08	5.00E+08	8.20E+10	3.2E+7 (C)	1.10E+05
1,3,5-Trimethylbenzene (I)	108678	<33	130	<34	<43	<30	NA	1,800	1,100	2.6E+6 (C)	1.60E+07	3.80E+08	3.80E+08	8.20E+10	3.2E+7 (C)	94,000
Xylenes (I)	1330207	<99	**1,600**	<100	<130	<90	NA	5,600	**820**	6.3E+6 (C)	4.60E+07	6.10E+07	1.30E+08	2.90E+11	4.1E+8 (C)	1.50E+05
SEMIVOLATILES (8270C)																
Acenaphthene	83329	47	9.8	15	<83	--	NA	3.00E+05	8,700	1.90E+08	8.10E+07	8.10E+07	8.10E+07	1.40E+10	4.10E+07	NA
Acenaphthylene	208968	210	<7.9	38	<83	--	NA	5,900	ID	1.60E+06	2.20E+06	2.20E+06	2.20E+06	2.30E+09	1.60E+06	NA
Anthracene	120127	240	56	61	210	--	NA	41,000	ID	1.0E+9 (D)	1.40E+09	1.40E+09	1.40E+09	6.70E+10	2.30E+08	NA
Benzo(a)anthracene (Q)	56553	1,300	220	300	640	--	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	20,000	NA
Benzo(a)pyrene (Q)	50328	1,400	220	300	630	--	NA	NLL	NLL	NLV	NLV	NLV	NLV	1.50E+06	2,000	NA
Benzo(b)fluoranthene (Q)	205992	2,000	330	450	1,000	--	NA	NLL	NLL	ID	ID	ID	ID	ID	20,000	NA
Benzo(g,h,i)perylene	191242	850	190	210	490	--	NA	NLL	NLL	NLV	NLV	NLV	NLV	8.00E+08	2.50E+06	NA
Benzo(k)fluoranthene (Q)	207089	730	86	160	430	--	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	2.00E+05	NA
Chrysene (Q)	218019	1,300	320	310	810	--	NA	NLL	NLL	ID	ID	ID	ID	ID	2.00E+06	NA
Dibenzo(a,h)anthracene (Q)	53703	230	54	53	190	--	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	2,000	NA
Fluoranthene	206440	2,500	370	510	1,500	--	NA	7.30E+05	5,500	1.0E+9 (D)	7.40E+08	7.40E+08	7.40E+08	9.30E+09	4.60E+07	NA
Fluorene	86737	74	<7.9	24	<83	--	NA	3.90E+05	5,300	5.80E+08	1.30E+08	1.30E+08	1.30E+08	9.30E+09	2.70E+07	NA
Indeno(1,2,3-cd)pyrene (Q)	193395	990	150	220	570	--	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	20,000	NA
2-Methylnaphthalene	91576	91	1,100	29	330	--	NA	57,000	4,200	2.70E+06	1.50E+06	1.50E+06	1.50E+06	6.70E+08	8.10E+06	NA
Naphthalene	91203	78	720	26	210	--	NA	35,000	730	2.50E+05	3.00E+05	3.00E+05	3.00E+05	2.00E+08	1.60E+07	NA
Phenanthrene	85018	1,000	790	260	930	--	NA	56,000	2,100	2.80E+06	1.60E+05	1.60E+05	1.60E+05	6.70E+06	1.60E+06	NA
Pyrene	129000	1,000	360	450	1,200	--	NA	4.80E+05	ID	1.0E+9 (D)	6.50E+08	6.50E+08	6.50E+08	6.70E+09	2.90E+07	NA

Table 1: Soil Analytical Results Summary
825390 East Alcott Street
December 2015

Sampling Location		SB-1	SB-2	SB-3	SS-2	Trip											
Sampling Interval		2-3'	3-4'	3-4'	0-1'	Blank		Groundwater Protection		Indoor Air	Ambient Air (Y)				Direct Contact		
Collection Date		12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	#10	#11	#12	#14	#15	#16	#17	#18	#19	#20	
Hazardous Substance	Chemical Abstract Service Number						Statewide Default Background Level	Residential Drinking Water Protection Criteria & RBSLs	Groundwater Surface Water Interface Protection Criteria & RBSLs	Soil Volatilization to Indoor Air Inhalation Criteria & RBSLs	Infinite Source Volatile Soil Inhalation Criteria (VSIC) & RBSLs	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria & RBSLs	Residential Direct Contact Criteria & RBSLs	Soil Saturation Concentration Screening Levels	
METALS																	
Arsenic	7440382	**22,000**	**22,000**	**12,000**	**27,000**	--	5,800	**4,600**	**4,600**	NLV	NLV	NLV	NLV	7.20E+05	**7,600**	NA	
Barium (B)	7440393	100,000	140,000	180,000	120,000	--	75,000	1.30E+06	(G)	NLV	NLV	NLV	NLV	3.30E+08	3.70E+07	NA	
Cadmium (B)	7440439	<560	<770	<690	990	--	1,200	6,000	(G,X)	NLV	NLV	NLV	NLV	1.70E+06	5.50E+05	NA	
Chromium (III) (B,H)	16065831	8,100	8,300	7,600	15,000	--	18,000 (tota	1.0E+9 (D)	(G,X)	NLV	NLV	NLV	NLV	3.30E+08	7.90E+08	NA	
Chromium (VI)	18540299						NA	30,000	3,300	NLV	NLV	NLV	NLV	2.60E+05	2.50E+06	NA	
Copper (B)	7440508	18,000	22,000	11,000	48,000	--	32,000	5.80E+06	(G)	NLV	NLV	NLV	NLV	1.30E+08	2.00E+07	NA	
Lead (B)	7439921	47,000	72,000	55,000	180,000	--	21,000	7.00E+05	(G,X)	NLV	NLV	NLV	NLV	1.00E+08	4.00E+05	NA	
Mercury (Total) (B,Z)	Varies	52	62	41	**590**	--	130	1,700	**50 (M); 1.2**	48,000	52,000	52,000	52,000	2.00E+07	1.60E+05	NA	
Selenium (B)	7782492	<1,400	<1,900	<1,700	<1,800	--	410	4,000	400	NLV	NLV	NLV	NLV	1.30E+08	2.60E+06	NA	
Silver (B)	7440224	<1,400	<1,900	<1,700	<1,800	--	1,000	4,500	100 (M); 27	NLV	NLV	NLV	NLV	6.70E+06	2.50E+06	NA	
Zinc (B)	7440666	54,000	42,000	48,000	240,000	--	47,000	2.40E+06	(G)	NLV	NLV	NLV	NLV	ID	1.70E+08	NA	

*Part 201 Residential Generic Cleanup Criteria, Part 213 Tier 1 Risk-Based Screening Levels (RBSLs), MDEQ, December 31, 2013
Values in micrograms per kilogram (µg/kg).
Bolded values exceed one or more of the criterion.

Table 2: Groundwater Analytical Results Summary
825390 East Alcott Street
December 2015

Sampling Location		TMW-1	TMW-2	TMW-3	TMW-4	Trip							
Screened Interval (feet bgs)		15-20	9.5-14.5	9.5-14.5	9-14	Blank							
Collection Date		12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	#1	#2	#3	#4	#5	#7	#8
Hazardous Substance	Chemical Abstract Service Number						Residential Drinking Water Criteria	Nonresidential Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Residential Groundwater Volatilization to Indoor Air Inhalation Criteria	Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria	Water Solubility	Flammability and Explosivity Screening Level
VOLATILES (8260B)													
1,1-Dichloroethane	75343	<1	4.3	<1	<1	<1	880	2,500	740	1.00E+06	2.30E+06	5.06E+06	3.80E+05
cis-1,2-Dichloroethylene	156592	<1	6.6	<1	<1	<1	70 (A)	70 (A)	620	93,000	2.10E+05	3.50E+06	5.30E+05
Tetrachloroethylene	127184	**5**	**5.7**	1.2	<1	<1	**5.0 (A)**	**5.0 (A)**	60 (X)	25,000	1.70E+05	2.00E+05	ID
1,1,1-Trichloroethane	71556	1.8	<1	<1	<1	<1	200 (A)	200 (A)	89	6.60E+05	1.3E+6 (S)	1.33E+06	ID
Trichloroethylene	79016	1.1	3	<1	<1	<1	5.0 (A)	5.0 (A)	200 (X)	2,200	4,900	1.10E+06	ID
Vinyl chloride	75014	<1	1.4	<1	<1	<1	2.0 (A)	2.0 (A)	13 (X)	1,100	13,000	2.76E+06	33,000
METALS													
Arsenic	7440382	<5	<5	<5	<5	--	10 (A)	10 (A)	10	NLV	NLV	NA	ID
Barium (B)	7440393	140	69	40	190	--	2,000 (A)	2,000 (A)	(G)	NLV	NLV	NA	ID
Cadmium (B)	7440439	<2	<2	<2	<2	--	5.0 (A)	5.0 (A)	(G,X)	NLV	NLV	NA	ID
Chromium (III) (B,H)	16065831	<5	<5	<5	26	--	100 (A)	100 (A)	(G,X)	NLV	NLV	NA	ID
Chromium (VI)	18540299						100 (A)	100 (A)	11	NLV	NLV	NA	ID
Copper (B)	7440508	<5	<5	<5	12	--	1,000 (E)	1,000 (E)	(G)	NLV	NLV	NA	ID
Lead (B)	7439921	<5	<5	<5	<5	--	4.0 (L)	4.0 (L)	(G,X)	NLV	NLV	NA	ID
Mercury (Total) (B,Z)	Varies	<0.2	<0.2	<0.2	<0.2	--	2.0 (A)	2.0 (A)	0.0013	56 (S)	56 (S)	56	ID
Selenium (B)	7782492	<5	<5	<5	<5	--	50 (A)	50 (A)	5	NLV	NLV	NA	ID
Silver (B)	7440224	<5	<5	<5	<5	--	34	98	0.2 (M); 0.06	NLV	NLV	NA	ID
Zinc (B)	7440666	<10	<10	<10	<10	--	2,400	5,000 (E)	(G)	NLV	NLV	NA	ID

*Part 201 Residential Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 Risk-Based Screening Levels (RBSLs), MDEQ, December 31, 2013
Values in micrograms per liter (µg/L).
Bolded values exceed one or more of the criterion.

APPENDIX A

LOG OF BORING / WELL: SB/TMW-1

Project: Kalamazoo County Alcott Ph 2

Location: Alcott/Bryant Street, Kalamazoo

Project No.: 825390

Logged By: Amber Jane Pontius, Geologist

Drilling/Installation Date: 12/16/2015

Drilling Co.: Terra Probe Environmental

Drilling Method: Geoprobe

Sampling Methods: Core barrel

Boring Depth (below grade): 20'

Well Depth (from TOC): 20'

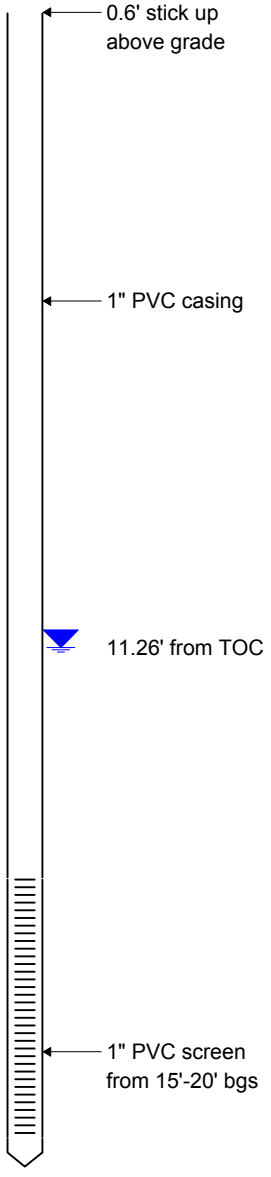
Static Water Level (from TOC): 11.26'

TOC stick-up (above grade): 0.5'

Notes: After groundwater sampling, temporary monitoring wells were removed and borings were plugged with bentonite holeplug.

SUBSURFACE PROFILE

Depth (ft.)	Sample Invl. (ft.)	Recovery (ft.)	Graphic Log	Description	Soil Samples
0				Ground Surface	
0	0'-5'	4'		Topsoil	
1				FILL MATERIAL: Crushed Concrete	
2				FILL MATERIAL: sand and gravel, stained dark brown/black, fine to medium sand with subrounded pebbles, relatively loose, dry.	SB-1(2'-3')
5	5'-10'	3'		FILL MATERIAL: sand and gravel, some silt, fine/medium sand with signigicant amount of subrounded pebbles and occasional cobbles, light brown, moist.	
9				SAND: moderately sorted fine to medium, light brown, moist.	
10	10'-15'	5'		SILT AND SAND: fine sand, light brown, saturated.	
14				SILT AND SAND: as above, dry.	
16				CLAY: some fine sand and silt, soft, gray, cohesive, high plasticity, dry.	
17	15'-20'	5'		SAND AND GRAVEL: some silt, fine to medium sand with subrounded pebbles and occasional cobbles, gray/brown, saturated.	
19				End of Boring 20' below grade.	
20					



LOG OF BORING / WELL: SB/TMW-2

Project: Kalamazoo County Alcott Ph 2

Location: Alcott/Bryant Street, Kalamazoo

Project No.: 825390

Logged By: Amber Jane Pontius, Geologist

Drilling/Installation Date: 12/16/2015

Drilling Co.: Terra Probe Environmental

Drilling Method: Geoprobe

Sampling Methods: Core barrel

Boring Depth (below grade): 15'

Well Depth (from TOC): 15'

Static Water Level (from TOC): 8.38'

TOC stick-up (above grade): 0.6'

Notes: After groundwater sampling, temporary monitoring wells were removed and borings were plugged with bentonite holeplug.

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Sample Invl. (ft.)	Recovery (ft.)	Graphic Log	Description	Soil Samples	Well Construction Detail	Depth (ft.)
0				Ground Surface		0.6' stick up above grade	0
0				Topsoil			0
1				FILL MATERIAL: sand and gravel, stained dark brown/black, fine to medium sand with subrounded pebbles with silt, relatively loose, dry.			1
2	0'-5'	3.5'		FILL MATERIAL: as above, with significant coal ash.			2
3					SB-2(3'-4')		3
4				FILL MATERIAL: as above with minor coal/ash staining.			4
5						1" PVC casing	5
6				SAND: few subrounded granules and pebbles, moderately well sorted medium sand, light brown with red tint, dry.			6
7	5'-10'	3.5'		SAND AND GRAVEL: coarse sand with subrounded granules, pebbles and occasional cobbles, light brown, relatively loose, moist to slightly saturated.			7
8						8.38' from TOC	8
9							9
10				SAND AND GRAVEL: fine to coarse sand, some silt, subrounded pebbles and occasional cobbles, light brown, relatively loose, saturated.			10
11							11
12	10'-15'	5'				1" PVC screen from 9.5'-14.5'	12
13							13
14							14
15							15

LOG OF BORING / WELL: SB/TMW-3

Project: Kalamazoo County Alcott Ph 2

Location: Alcott/Bryant Street, Kalamazoo

Project No.: 825390

Logged By: Amber Jane Pontius, Geologist

Drilling/Installation Date: 12/16/2015

Drilling Co.: Terra Probe Environmental

Drilling Method: Geoprobe

Sampling Methods: Core barrel

Boring Depth (below grade): 15'

Well Depth (from TOC): 15'

Static Water Level (from TOC): 8.50'

TOC stick-up (above grade): 0.5'

Notes: After groundwater sampling, temporary monitoring wells were removed and borings were plugged with bentonite holeplug.

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Sample Invl. (ft.)	LITHOLOGY: Recovery (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Soil Samples	Well Construction Detail	Depth (ft.)
0				Ground Surface		0.5' stick up above grade	0
0	0'-5'	3.5'		Topsoil: Sand and Gravel			0
1				FILL MATERIAL: sand and gravel, fine to medium sand with subrounded pebbles with silt and clay, light brown to dark brown, dry.			1
3				FILL MATERIAL: as above, staining black/dark brown, very thin coal layer.	SB-3(3'-4')		3
4				SAND AND GRAVEL: fine to medium, with subrounded pebbles, some silt, gray/brown, dry.		1" PVC casing	4
5	5'-10'	2'		SAND AND GRAVEL: as above, reddish orange, dry.			5
7				SAND AND GRAVEL: as above, light brown, moist.		8.50' from TOC	7
8				SAND AND GRAVEL: coarse sand, some fine and medium sand, some silt, subrounded to subangular granules and pebbles, trace cobbles, light brown, relatively loose, saturated.			8
10	10'-15'	5'				1" PVC screen from 9.5'-14.5'	10
15							15

LOG OF BORING / WELL: SB/TMW-4

Project: Kalamazoo County Alcott Ph 2

Location: Alcott/Bryant Street, Kalamazoo

Project No.: 825390

Logged By: Amber Jane Pontius, Geologist

Drilling/Installation Date: 12/16/2015

Drilling Co.: Terra Probe Environmental

Drilling Method: Geoprobe

Sampling Methods: Core barrel

Boring Depth (below grade): 15'

Well Depth (from TOC): 15'

Static Water Level (from TOC): 9.83'

TOC stick-up (above grade): 1'

Notes: After groundwater sampling, temporary monitoring wells were removed and borings were plugged with bentonite holeplug.

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Sample Invl. (ft.)	LITHOLOGY: Recovery (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Soil Samples	Well Construction Detail	Depth (ft.)
0				Ground Surface	No soil sample collected.	1' stick up above grade	0
0	0'-5'	4.5'		Topsoil			0
1				FILL MATERIAL: sand, brown, loose, dry.			1
2				SILTY SAND: fine to medium, light brown, relatively loose, dry.			2
3				SAND: well sorted, medium grained, light brown, loose, dry.			3
4							4
5				SILTY SAND: fine to medium, light brown, loose to lightly compacted, dry.		1" PVC casing	5
6							6
7	5'-10'	5'					7
8				SAND AND GRAVEL: fine to medium sand, subrounded granules and pebbles, some silt, light brown, relatively loose, moist.		9.83' from TOC	8
9							9
10				SAND AND GRAVEL: as above, occasional cobbles, saturated.			10
11						1" PVC screen from 9-14'	11
12	10'-15'	5'					12
13							13
14							14
15							15

APPENDIX B

30-Dec-2015

Steve Kimm
Fleis & Vandenbrink Engineering, Inc.
4798 Campus Drive
Kalamazoo, MI 49008

Re: **Alcott Street Phase II 825390** Work Order: **15121249**

Dear Steve,

ALS Environmental received 12 samples on 19-Dec-2015 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 85.

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

Sincerely,

Alex Csaszar

Electronically approved by: Tom Beamish

Alex Csaszar
Project Manager

Certificate No: MI: 0022

Report of Laboratory Analysis

ALS Group USA, Corp

Date: 30-Dec-15

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390
Work Order: **15121249**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
15121249-01	SB-1 (2'-3')	Soil		12/16/15 10:30	12/19/15 10:30	☐
15121249-02	SB-2 (3'-4')	Soil		12/16/15 11:30	12/19/15 10:30	☐
15121249-03	SB-3 (3'-4')	Soil		12/16/15 12:50	12/19/15 10:30	☐
15121249-04	SS-1 (0'-1')	Soil		12/16/15 05:20	12/19/15 10:30	☑
15121249-05	SS-2 (0'-1')	Soil		12/16/15 05:25	12/19/15 10:30	☐
15121249-06	TMW-1	Groundwater		12/16/15 12:30	12/19/15 10:30	☐
15121249-07	TMW-2	Groundwater		12/16/15 13:50	12/19/15 10:30	☐
15121249-08	TMW-3	Groundwater		12/16/15 15:40	12/19/15 10:30	☐
15121249-09	TMW-4	Groundwater		12/16/15 16:55	12/19/15 10:30	☐
15121249-10	Field Blank	Water		12/16/15 14:00	12/19/15 10:30	☐
15121249-11	Trip Blank (water)	Water		12/16/15	12/19/15 10:30	☐
15121249-12	Trip Blank (soil)	Soil		12/16/15	12/19/15 10:30	☐

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390
WorkOrder: **15121249**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
µg/L	Micrograms per Liter
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390
Work Order: 15121249

Case Narrative

QC Comments:

Batch 80609, Method PNLVI_8270_W, Sample SLCSW1-80609: The LCS recovery was above the upper control limit. The sample results may be biased high for Fluorene.

Batch 80647, Method VOC_8260_S, Sample LCS-80647: The LCS recovery was below the lower control limit. The sample results may be biased low for Bromomethane.

Batch 80647, Method VOC_8260_S, Sample LCS-80647: The LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for 1,2-Dibromoethane.

Batch R178988, Method VOC_8260_W, Sample VLCSW2-151223: The LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for 1,2-Dibromoethane.

Batch R178988, Method VOC_8260_W, Sample 15121249-09A MS: The MS recovery was above the upper control limit. The corresponding result in the parent sample was non-detect, therefore no qualification is necessary for 1,2-Dibromoethane.

Batch R179082x, Method VOC_8260_W, Sample VLCSW2-151228: The LCS recovery was below the lower control limit. The sample results may be biased low for Methyl iodide.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-1 (2'-3') **Lab ID:** 15121249-01
Collection Date: 12/16/15 10:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3541 / 12/28/15	Analyst: **EB**
Aroclor 1016	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1221	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1232	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1242	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1248	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1254	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1260	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Surr: Decachlorobiphenyl	*78.1*		*40-140*	*%REC*	1	12/28/15 07:54 PM
Surr: Tetrachloro-m-xylene	*82.1*		*45-124*	*%REC*	1	12/28/15 07:54 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 12/29/15	Analyst: **RG**
Mercury	**0.052**		**0.014**	**mg/Kg-dry**	1	12/29/15 04:00 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 12/23/15	Analyst: **ML**
Arsenic	**22**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Barium	**100**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Cadmium	ND		0.56	mg/Kg-dry	4	12/23/15 09:27 PM
Chromium	**8.1**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Copper	**18**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Lead	**47**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Selenium	ND		1.4	mg/Kg-dry	4	12/23/15 09:27 PM
Silver	ND		1.4	mg/Kg-dry	4	12/23/15 09:27 PM
Zinc	**54**		**2.8**	**mg/Kg-dry**	4	12/23/15 09:27 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 12/28/15	Analyst: **RM**
2-Chloronaphthalene	ND		7.3	µg/Kg-dry	1	12/28/15 10:13 PM
2-Methylnaphthalene	**91**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Acenaphthene	**47**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Acenaphthylene	**210**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Anthracene	**240**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(a)anthracene	**1,300**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(a)pyrene	**1,400**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(b)fluoranthene	**2,000**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(g,h,i)perylene	**850**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(k)fluoranthene	**730**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Chrysene	**1,300**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Dibenzo(a,h)anthracene	**230**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Fluoranthene	**2,500**		**37**	**µg/Kg-dry**	5	12/30/15 01:25 AM
Fluorene	**74**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Indeno(1,2,3-cd)pyrene	**990**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-1 (2'-3') **Lab ID:** 15121249-01
Collection Date: 12/16/15 10:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**78**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Phenanthrene	**1,000**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Pyrene	**1,900**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Surr: 2-Fluorobiphenyl	*77.3*		*12-100*	*%REC*	1	12/28/15 10:13 PM
Surr: 4-Terphenyl-d14	*87.7*		*25-137*	*%REC*	1	12/28/15 10:13 PM
Surr: Nitrobenzene-d5	*73.6*		*37-107*	*%REC*	1	12/28/15 10:13 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1,1-Trichloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1,2,2-Tetrachloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1,2-Trichloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1,2-Trichlorotrifluoroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1-Dichloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1-Dichloroethene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2,3-Trichloropropane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2,4-Trichlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2,4-Trimethylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dibromo-3-chloropropane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dibromoethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dichlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dichloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dichloropropane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,3,5-Trimethylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,3-Dichlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,4-Dichlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
2-Butanone	ND		220	µg/Kg-dry	1	12/23/15 05:47 PM
2-Hexanone	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
2-Methylnaphthalene	**180**		**110**	**µg/Kg-dry**	1	12/23/15 05:47 PM
4-Methyl-2-pentanone	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Acetone	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
Acrylonitrile	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
Benzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Bromochloromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Bromodichloromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Bromoform	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Bromomethane	ND		83	µg/Kg-dry	1	12/23/15 05:47 PM
Carbon disulfide	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Carbon tetrachloride	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Chlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Chloroethane	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-1 (2'-3') **Lab ID:** 15121249-01
Collection Date: 12/16/15 10:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Chloromethane	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
cis-1,2-Dichloroethene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
cis-1,3-Dichloropropene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Dibromochloromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Dibromomethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Dichlorodifluoromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Diethyl ether	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Ethylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Hexachloroethane	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
Hexane	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
Isopropylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
m,p-Xylene	ND		66	µg/Kg-dry	1	12/23/15 05:47 PM
Methyl iodide	ND		83	µg/Kg-dry	1	12/23/15 05:47 PM
Methyl tert-butyl ether	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Methylene chloride	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Naphthalene	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
n-Propylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
o-Xylene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Styrene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Tetrachloroethene	**37**		**33**	**µg/Kg-dry**	1	12/23/15 05:47 PM
Toluene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
trans-1,2-Dichloroethene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
trans-1,3-Dichloropropene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
trans-1,4-Dichloro-2-butene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Trichloroethene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Trichlorofluoromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Vinyl acetate	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Vinyl chloride	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Xylenes, Total	ND		99	µg/Kg-dry	1	12/23/15 05:47 PM
Surr: 1,2-Dichloroethane-d4	*98.6*		*70-130*	*%REC*	1	12/23/15 05:47 PM
Surr: 4-Bromofluorobenzene	*97.0*		*70-130*	*%REC*	1	12/23/15 05:47 PM
Surr: Dibromofluoromethane	*93.2*		*70-130*	*%REC*	1	12/23/15 05:47 PM
Surr: Toluene-d8	*95.6*		*70-130*	*%REC*	1	12/23/15 05:47 PM
MOISTURE			**E160.3M**			Analyst: **ED**
Moisture	**9.2**		**0.050**	**% of sample**	1	12/22/15 04:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-2 (3'-4') **Lab ID:** 15121249-02
Collection Date: 12/16/15 11:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3541 / 12/28/15	Analyst: **EB**
Aroclor 1016	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1221	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1232	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1242	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1248	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1254	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1260	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Surr: Decachlorobiphenyl	*63.1*		*40-140*	*%REC*	1	12/28/15 08:11 PM
Surr: Tetrachloro-m-xylene	*63.1*		*45-124*	*%REC*	1	12/28/15 08:11 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 12/29/15	Analyst: **RG**
Mercury	**0.062**		**0.015**	**mg/Kg-dry**	1	12/29/15 04:03 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 12/23/15	Analyst: **ML**
Arsenic	**22**		**1.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
Barium	**140**		**1.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
Cadmium	ND		0.77	mg/Kg-dry	4	12/23/15 11:39 PM
Chromium	**8.3**		**1.9**	**mg/Kg-dry**	4	12/28/15 02:45 PM
Copper	**22**		**1.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
Lead	**72**		**1.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
Selenium	ND		1.9	mg/Kg-dry	4	12/23/15 11:39 PM
Silver	ND		1.9	mg/Kg-dry	4	12/23/15 11:39 PM
Zinc	**42**		**3.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 12/28/15	Analyst: **RM**
2-Chloronaphthalene	ND		7.9	µg/Kg-dry	1	12/28/15 10:33 PM
2-Methylnaphthalene	**1,100**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Acenaphthene	**9.8**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Acenaphthylene	ND		7.9	µg/Kg-dry	1	12/28/15 10:33 PM
Anthracene	**56**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(a)anthracene	**220**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(a)pyrene	**220**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(b)fluoranthene	**330**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(g,h,i)perylene	**190**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(k)fluoranthene	**86**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Chrysene	**320**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Dibenzo(a,h)anthracene	**54**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Fluoranthene	**370**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Fluorene	ND		7.9	µg/Kg-dry	1	12/28/15 10:33 PM
Indeno(1,2,3-cd)pyrene	**150**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-2 (3'-4') **Lab ID:** 15121249-02
Collection Date: 12/16/15 11:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**720**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Phenanthrene	**790**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Pyrene	**360**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Surr: 2-Fluorobiphenyl	*75.5*		*12-100*	*%REC*	1	12/28/15 10:33 PM
Surr: 4-Terphenyl-d14	*88.0*		*25-137*	*%REC*	1	12/28/15 10:33 PM
Surr: Nitrobenzene-d5	*75.3*		*37-107*	*%REC*	1	12/28/15 10:33 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1,1-Trichloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1,2,2-Tetrachloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1,2-Trichloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1,2-Trichlorotrifluoroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1-Dichloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1-Dichloroethene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2,3-Trichloropropane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2,4-Trichlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2,4-Trimethylbenzene	**410**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
1,2-Dibromo-3-chloropropane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2-Dibromoethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2-Dichlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2-Dichloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2-Dichloropropane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,3,5-Trimethylbenzene	**130**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
1,3-Dichlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,4-Dichlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
2-Butanone	ND		370	µg/Kg-dry	1	12/23/15 06:13 PM
2-Hexanone	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
2-Methylnaphthalene	**1,200**		**180**	**µg/Kg-dry**	1	12/23/15 06:13 PM
4-Methyl-2-pentanone	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Acetone	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM
Acrylonitrile	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM
Benzene	**70**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Bromochloromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Bromodichloromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Bromoform	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Bromomethane	ND		140	µg/Kg-dry	1	12/23/15 06:13 PM
Carbon disulfide	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Carbon tetrachloride	**490**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Chlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Chloroethane	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-2 (3'-4') **Lab ID:** 15121249-02
Collection Date: 12/16/15 11:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Chloromethane	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM
cis-1,2-Dichloroethene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
cis-1,3-Dichloropropene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Dibromochloromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Dibromomethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Dichlorodifluoromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Diethyl ether	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Ethylbenzene	**150**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Hexachloroethane	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM
Hexane	**320**		**180**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Isopropylbenzene	**73**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
m,p-Xylene	**970**		**110**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Methyl iodide	ND		140	µg/Kg-dry	1	12/23/15 06:13 PM
Methyl tert-butyl ether	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Methylene chloride	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Naphthalene	**1,200**		**180**	**µg/Kg-dry**	1	12/23/15 06:13 PM
n-Propylbenzene	**100**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
o-Xylene	**660**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Styrene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Tetrachloroethene	**3,800**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Toluene	**730**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
trans-1,2-Dichloroethene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
trans-1,3-Dichloropropene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
trans-1,4-Dichloro-2-butene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Trichloroethene	**3,000**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Trichlorofluoromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Vinyl acetate	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Vinyl chloride	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Xylenes, Total	**1,600**		**170**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Surr: 1,2-Dichloroethane-d4	*98.9*		*70-130*	*%REC*	1	12/23/15 06:13 PM
Surr: 4-Bromofluorobenzene	*101*		*70-130*	*%REC*	1	12/23/15 06:13 PM
Surr: Dibromofluoromethane	*93.4*		*70-130*	*%REC*	1	12/23/15 06:13 PM
Surr: Toluene-d8	*99.8*		*70-130*	*%REC*	1	12/23/15 06:13 PM
MOISTURE			**E160.3M**			Analyst: **ED**
Moisture	**16**		**0.050**	**% of sample**	1	12/22/15 04:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-3 (3'-4') **Lab ID:** 15121249-03
Collection Date: 12/16/15 12:50 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3541 / 12/28/15	Analyst: **EB**
Aroclor 1016	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1221	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1232	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1242	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1248	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1254	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1260	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Surr: Decachlorobiphenyl	*81.1*		*40-140*	*%REC*	1	12/28/15 08:27 PM
Surr: Tetrachloro-m-xylene	*84.1*		*45-124*	*%REC*	1	12/28/15 08:27 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 12/29/15	Analyst: **RG**
Mercury	**0.041**		**0.017**	**mg/Kg-dry**	1	12/29/15 04:05 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 12/23/15	Analyst: **ML**
Arsenic	**12**		**1.7**	**mg/Kg-dry**	4	12/23/15 11:45 PM
Barium	**180**		**1.7**	**mg/Kg-dry**	4	12/23/15 11:45 PM
Cadmium	ND		0.69	mg/Kg-dry	4	12/23/15 11:45 PM
Chromium	**7.6**		**1.7**	**mg/Kg-dry**	4	12/28/15 02:51 PM
Copper	**11**		**1.7**	**mg/Kg-dry**	4	12/23/15 11:45 PM
Lead	**55**		**1.7**	**mg/Kg-dry**	4	12/23/15 11:45 PM
Selenium	ND		1.7	mg/Kg-dry	4	12/23/15 11:45 PM
Silver	ND		1.7	mg/Kg-dry	4	12/23/15 11:45 PM
Zinc	**48**		**3.5**	**mg/Kg-dry**	4	12/23/15 11:45 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 12/28/15	Analyst: **RM**
2-Chloronaphthalene	ND		7.4	µg/Kg-dry	1	12/28/15 08:11 PM
2-Methylnaphthalene	**29**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Acenaphthene	**15**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Acenaphthylene	**38**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Anthracene	**61**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(a)anthracene	**300**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(a)pyrene	**300**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(b)fluoranthene	**450**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(g,h,i)perylene	**210**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(k)fluoranthene	**160**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Chrysene	**310**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Dibenzo(a,h)anthracene	**53**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Fluoranthene	**510**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Fluorene	**24**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Indeno(1,2,3-cd)pyrene	**220**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-3 (3'-4') **Lab ID:** 15121249-03
Collection Date: 12/16/15 12:50 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**26**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Phenanthrene	**260**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Pyrene	**450**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Surr: 2-Fluorobiphenyl	*57.5*		*12-100*	*%REC*	1	12/28/15 08:11 PM
Surr: 4-Terphenyl-d14	*86.7*		*25-137*	*%REC*	1	12/28/15 08:11 PM
Surr: Nitrobenzene-d5	*59.0*		*37-107*	*%REC*	1	12/28/15 08:11 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1,1-Trichloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1,2,2-Tetrachloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1,2-Trichloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1,2-Trichlorotrifluoroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1-Dichloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1-Dichloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2,3-Trichloropropane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2,4-Trichlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2,4-Trimethylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dibromo-3-chloropropane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dibromoethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dichlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dichloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dichloropropane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,3,5-Trimethylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,3-Dichlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,4-Dichlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
2-Butanone	ND		230	µg/Kg-dry	1	12/23/15 06:39 PM
2-Hexanone	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
2-Methylnaphthalene	**160**		**110**	**µg/Kg-dry**	1	12/23/15 06:39 PM
4-Methyl-2-pentanone	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Acetone	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
Acrylonitrile	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
Benzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Bromochloromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Bromodichloromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Bromoform	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Bromomethane	ND		86	µg/Kg-dry	1	12/23/15 06:39 PM
Carbon disulfide	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Carbon tetrachloride	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Chlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Chloroethane	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-3 (3'-4') **Lab ID:** 15121249-03
Collection Date: 12/16/15 12:50 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Chloromethane	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
cis-1,2-Dichloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
cis-1,3-Dichloropropene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Dibromochloromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Dibromomethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Dichlorodifluoromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Diethyl ether	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Ethylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Hexachloroethane	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
Hexane	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
Isopropylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
m,p-Xylene	ND		68	µg/Kg-dry	1	12/23/15 06:39 PM
Methyl iodide	ND		86	µg/Kg-dry	1	12/23/15 06:39 PM
Methyl tert-butyl ether	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Methylene chloride	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Naphthalene	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
n-Propylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
o-Xylene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Styrene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Tetrachloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Toluene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
trans-1,2-Dichloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
trans-1,3-Dichloropropene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
trans-1,4-Dichloro-2-butene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Trichloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Trichlorofluoromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Vinyl acetate	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Vinyl chloride	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Xylenes, Total	ND		100	µg/Kg-dry	1	12/23/15 06:39 PM
Surr: 1,2-Dichloroethane-d4	*98.6*		*70-130*	*%REC*	1	12/23/15 06:39 PM
Surr: 4-Bromofluorobenzene	*94.1*		*70-130*	*%REC*	1	12/23/15 06:39 PM
Surr: Dibromofluoromethane	*93.1*		*70-130*	*%REC*	1	12/23/15 06:39 PM
Surr: Toluene-d8	*99.0*		*70-130*	*%REC*	1	12/23/15 06:39 PM
MOISTURE			**E160.3M**			Analyst: **ED**
Moisture	**12**		**0.050**	**% of sample**	1	12/22/15 04:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SS-2 (0'-1') **Lab ID:** 15121249-05
Collection Date: 12/16/15 05:25 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3541 / 12/28/15	Analyst: **EB**
Aroclor 1016	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1221	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1232	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1242	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1248	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1254	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1260	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Surr: Decachlorobiphenyl	*82.1*		*40-140*	*%REC*	1	12/28/15 08:43 PM
Surr: Tetrachloro-m-xylene	*86.1*		*45-124*	*%REC*	1	12/28/15 08:43 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 12/29/15	Analyst: **RG**
Mercury	**0.59**		**0.084**	**mg/Kg-dry**	5	12/29/15 05:57 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 12/23/15	Analyst: **ML**
Arsenic	**27**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Barium	**120**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Cadmium	**0.99**		**0.71**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Chromium	**15**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Copper	**48**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Lead	**180**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Selenium	ND		1.8	mg/Kg-dry	4	12/23/15 11:51 PM
Silver	ND		1.8	mg/Kg-dry	4	12/23/15 11:51 PM
Zinc	**240**		**3.6**	**mg/Kg-dry**	4	12/23/15 11:51 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 12/28/15	Analyst: **RM**
2-Chloronaphthalene	ND		83	µg/Kg-dry	10	12/28/15 10:54 PM
2-Methylnaphthalene	**330**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Acenaphthene	ND		83	µg/Kg-dry	10	12/28/15 10:54 PM
Acenaphthylene	ND		83	µg/Kg-dry	10	12/28/15 10:54 PM
Anthracene	**210**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(a)anthracene	**640**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(a)pyrene	**630**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(b)fluoranthene	**1,000**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(g,h,i)perylene	**490**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(k)fluoranthene	**430**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Chrysene	**810**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Dibenzo(a,h)anthracene	**190**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Fluoranthene	**1,500**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Fluorene	ND		83	µg/Kg-dry	10	12/28/15 10:54 PM
Indeno(1,2,3-cd)pyrene	**570**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SS-2 (0'-1') **Lab ID:** 15121249-05
Collection Date: 12/16/15 05:25 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**210**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Phenanthrene	**930**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Pyrene	**1,200**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Surr: 2-Fluorobiphenyl	*69.2*		*12-100*	*%REC*	10	12/28/15 10:54 PM
Surr: 4-Terphenyl-d14	*86.4*		*25-137*	*%REC*	10	12/28/15 10:54 PM
Surr: Nitrobenzene-d5	*63.6*		*37-107*	*%REC*	10	12/28/15 10:54 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1,1-Trichloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1,2,2-Tetrachloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1,2-Trichloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1,2-Trichlorotrifluoroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1-Dichloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1-Dichloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2,3-Trichloropropane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2,4-Trichlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2,4-Trimethylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dibromo-3-chloropropane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dibromoethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dichlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dichloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dichloropropane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,3,5-Trimethylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,3-Dichlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,4-Dichlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
2-Butanone	ND		290	µg/Kg-dry	1	12/23/15 07:05 PM
2-Hexanone	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
2-Methylnaphthalene	**300**		**140**	**µg/Kg-dry**	1	12/23/15 07:05 PM
4-Methyl-2-pentanone	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Acetone	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
Acrylonitrile	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
Benzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Bromochloromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Bromodichloromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Bromoform	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Bromomethane	ND		110	µg/Kg-dry	1	12/23/15 07:05 PM
Carbon disulfide	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Carbon tetrachloride	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Chlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Chloroethane	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SS-2 (0'-1') **Lab ID:** 15121249-05
Collection Date: 12/16/15 05:25 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Chloromethane	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
cis-1,2-Dichloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
cis-1,3-Dichloropropene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Dibromochloromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Dibromomethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Dichlorodifluoromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Diethyl ether	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Ethylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Hexachloroethane	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
Hexane	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
Isopropylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
m,p-Xylene	ND		86	µg/Kg-dry	1	12/23/15 07:05 PM
Methyl iodide	ND		110	µg/Kg-dry	1	12/23/15 07:05 PM
Methyl tert-butyl ether	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Methylene chloride	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Naphthalene	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
n-Propylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
o-Xylene	**52**		**43**	**µg/Kg-dry**	1	12/23/15 07:05 PM
Styrene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Tetrachloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Toluene	**46**		**43**	**µg/Kg-dry**	1	12/23/15 07:05 PM
trans-1,2-Dichloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
trans-1,3-Dichloropropene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
trans-1,4-Dichloro-2-butene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Trichloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Trichlorofluoromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Vinyl acetate	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Vinyl chloride	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Xylenes, Total	ND		130	µg/Kg-dry	1	12/23/15 07:05 PM
Surr: 1,2-Dichloroethane-d4	*100*		*70-130*	*%REC*	1	12/23/15 07:05 PM
Surr: 4-Bromofluorobenzene	*93.0*		*70-130*	*%REC*	1	12/23/15 07:05 PM
Surr: Dibromofluoromethane	*93.3*		*70-130*	*%REC*	1	12/23/15 07:05 PM
Surr: Toluene-d8	*97.0*		*70-130*	*%REC*	1	12/23/15 07:05 PM
MOISTURE			**E160.3M**			Analyst: **ED**
Moisture	**19**		**0.050**	**% of sample**	1	12/22/15 04:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-1 **Lab ID:** 15121249-06
Collection Date: 12/16/15 12:30 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3510 / 12/22/15	Analyst: **BLM**
Aroclor 1016	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1221	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1232	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1242	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1248	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1254	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1260	ND		0.20	µg/L	1	12/22/15 03:35 PM
Surr: Decachlorobiphenyl	*94.0*		*40-110*	*%REC*	1	12/22/15 03:35 PM
Surr: Tetrachloro-m-xylene	*43.0*		*40-110*	*%REC*	1	12/22/15 03:35 PM
MERCURY BY CVAA			**SW7470A**		Prep: SW7470 / 12/23/15	Analyst: **LR**
Mercury	ND		0.00020	mg/L	1	12/26/15 10:19 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A / 12/28/15	Analyst: **ML**
Arsenic	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Barium	**0.14**		**0.0050**	**mg/L**	1	12/28/15 10:24 PM
Cadmium	ND		0.0020	mg/L	1	12/28/15 10:24 PM
Chromium	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Copper	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Lead	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Selenium	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Silver	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Zinc	ND		0.010	mg/L	1	12/28/15 10:24 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3511 / 12/22/15	Analyst: **RM**
2-Chloronaphthalene	ND		5.0	µg/L	1	12/28/15 11:02 PM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Acenaphthene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Acenaphthylene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Anthracene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(a)anthracene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(a)pyrene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(b)fluoranthene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(g,h,i)perylene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(k)fluoranthene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Chrysene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Dibenzo(a,h)anthracene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Fluoranthene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Fluorene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Indeno(1,2,3-cd)pyrene	ND		5.0	µg/L	1	12/28/15 11:02 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-1 **Lab ID:** 15121249-06
Collection Date: 12/16/15 12:30 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Phenanthrene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Pyrene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Surr: 2-Fluorobiphenyl	*118*		*20-140*	*%REC*	1	12/28/15 11:02 PM
Surr: 4-Terphenyl-d14	*125*		*22-172*	*%REC*	1	12/28/15 11:02 PM
Surr: Nitrobenzene-d5	*136*		*8-140*	*%REC*	1	12/28/15 11:02 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **DD**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1,1-Trichloroethane	**1.8**		**1.0**	**µg/L**	1	12/24/15 07:04 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
2-Butanone	ND		5.0	µg/L	1	12/24/15 07:04 AM
2-Hexanone	ND		5.0	µg/L	1	12/24/15 07:04 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/24/15 07:04 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/24/15 07:04 AM
Acetone	ND		10	µg/L	1	12/24/15 07:04 AM
Acrylonitrile	ND		1.0	µg/L	1	12/24/15 07:04 AM
Benzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Bromochloromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Bromoform	ND		1.0	µg/L	1	12/24/15 07:04 AM
Bromomethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Carbon disulfide	ND		1.0	µg/L	1	12/24/15 07:04 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/24/15 07:04 AM
Chlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Chloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-1 **Lab ID:** 15121249-06
Collection Date: 12/16/15 12:30 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		1.0	µg/L	1	12/24/15 07:04 AM
Chloromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 07:04 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Dibromomethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Diethyl ether	ND		1.0	µg/L	1	12/24/15 07:04 AM
Ethylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Hexachloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Hexane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
m,p-Xylene	ND		2.0	µg/L	1	12/24/15 07:04 AM
Methyl iodide	ND		1.0	µg/L	1	12/24/15 07:04 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/24/15 07:04 AM
Methylene chloride	ND		5.0	µg/L	1	12/24/15 07:04 AM
Naphthalene	ND		5.0	µg/L	1	12/24/15 07:04 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
o-Xylene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Styrene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Tetrachloroethene	**5.0**		**1.0**	**µg/L**	1	12/24/15 07:04 AM
Toluene	ND		1.0	µg/L	1	12/24/15 07:04 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 07:04 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 07:04 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/24/15 07:04 AM
Trichloroethene	**1.1**		**1.0**	**µg/L**	1	12/24/15 07:04 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Vinyl acetate	ND		1.0	µg/L	1	12/24/15 07:04 AM
Vinyl chloride	ND		1.0	µg/L	1	12/24/15 07:04 AM
Xylenes, Total	ND		3.0	µg/L	1	12/24/15 07:04 AM
Surr: 1,2-Dichloroethane-d4	*96.4*		*75-120*	*%REC*	1	12/24/15 07:04 AM
Surr: 4-Bromofluorobenzene	*97.0*		*80-110*	*%REC*	1	12/24/15 07:04 AM
Surr: Dibromofluoromethane	*96.8*		*85-115*	*%REC*	1	12/24/15 07:04 AM
Surr: Toluene-d8	*94.0*		*85-110*	*%REC*	1	12/24/15 07:04 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-2 **Lab ID:** 15121249-07
Collection Date: 12/16/15 01:50 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3510 / 12/22/15	Analyst: **BLM**
Aroclor 1016	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1221	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1232	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1242	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1248	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1254	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1260	ND		0.20	µg/L	1	12/22/15 04:06 PM
Surr: Decachlorobiphenyl	*81.0*		*40-110*	*%REC*	1	12/22/15 04:06 PM
Surr: Tetrachloro-m-xylene	*44.0*		*40-110*	*%REC*	1	12/22/15 04:06 PM
MERCURY BY CVAA			**SW7470A**		Prep: SW7470 / 12/23/15	Analyst: **LR**
Mercury	ND		0.00020	mg/L	1	12/26/15 10:21 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A / 12/28/15	Analyst: **ML**
Arsenic	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Barium	**0.069**		**0.0050**	**mg/L**	1	12/28/15 10:30 PM
Cadmium	ND		0.0020	mg/L	1	12/28/15 10:30 PM
Chromium	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Copper	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Lead	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Selenium	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Silver	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Zinc	ND		0.010	mg/L	1	12/28/15 10:30 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3511 / 12/22/15	Analyst: **RM**
2-Chloronaphthalene	ND		5.0	µg/L	1	12/28/15 11:26 PM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Acenaphthene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Acenaphthylene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Anthracene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(a)anthracene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(a)pyrene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(b)fluoranthene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(g,h,i)perylene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(k)fluoranthene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Chrysene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Dibenzo(a,h)anthracene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Fluoranthene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Fluorene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Indeno(1,2,3-cd)pyrene	ND		5.0	µg/L	1	12/28/15 11:26 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-2 **Lab ID:** 15121249-07
Collection Date: 12/16/15 01:50 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Phenanthrene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Pyrene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Surr: 2-Fluorobiphenyl	*115*		*20-140*	*%REC*	1	12/28/15 11:26 PM
Surr: 4-Terphenyl-d14	*109*		*22-172*	*%REC*	1	12/28/15 11:26 PM
Surr: Nitrobenzene-d5	*124*		*8-140*	*%REC*	1	12/28/15 11:26 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1-Dichloroethane	**4.3**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
2-Butanone	ND		5.0	µg/L	1	12/29/15 01:00 AM
2-Hexanone	ND		5.0	µg/L	1	12/29/15 01:00 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/29/15 01:00 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/29/15 01:00 AM
Acetone	ND		10	µg/L	1	12/29/15 01:00 AM
Acrylonitrile	ND		1.0	µg/L	1	12/29/15 01:00 AM
Benzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Bromochloromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Bromoform	ND		1.0	µg/L	1	12/29/15 01:00 AM
Bromomethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Carbon disulfide	ND		1.0	µg/L	1	12/29/15 01:00 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/29/15 01:00 AM
Chlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Chloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-2 **Lab ID:** 15121249-07
Collection Date: 12/16/15 01:50 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		1.0	µg/L	1	12/29/15 01:00 AM
Chloromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
cis-1,2-Dichloroethene	**6.6**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Dibromomethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Diethyl ether	ND		1.0	µg/L	1	12/29/15 01:00 AM
Ethylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Hexachloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Hexane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
m,p-Xylene	ND		2.0	µg/L	1	12/29/15 01:00 AM
Methyl iodide	ND		1.0	µg/L	1	12/29/15 01:00 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/29/15 01:00 AM
Methylene chloride	ND		5.0	µg/L	1	12/29/15 01:00 AM
Naphthalene	ND		5.0	µg/L	1	12/29/15 01:00 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
o-Xylene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Styrene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Tetrachloroethene	**5.7**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
Toluene	ND		1.0	µg/L	1	12/29/15 01:00 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:00 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/29/15 01:00 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/29/15 01:00 AM
Trichloroethene	**3.0**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Vinyl acetate	ND		1.0	µg/L	1	12/29/15 01:00 AM
Vinyl chloride	**1.4**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
Xylenes, Total	ND		3.0	µg/L	1	12/29/15 01:00 AM
Surr: 1,2-Dichloroethane-d4	*97.0*		*75-120*	*%REC*	1	12/29/15 01:00 AM
Surr: 4-Bromofluorobenzene	*97.4*		*80-110*	*%REC*	1	12/29/15 01:00 AM
Surr: Dibromofluoromethane	*97.2*		*85-115*	*%REC*	1	12/29/15 01:00 AM
Surr: Toluene-d8	*98.0*		*85-110*	*%REC*	1	12/29/15 01:00 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-3 **Lab ID:** 15121249-08
Collection Date: 12/16/15 03:40 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3510 / 12/22/15	Analyst: **BLM**
Aroclor 1016	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1221	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1232	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1242	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1248	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1254	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1260	ND		0.20	µg/L	1	12/22/15 04:38 PM
Surr: Decachlorobiphenyl	*67.0*		*40-110*	*%REC*	1	12/22/15 04:38 PM
Surr: Tetrachloro-m-xylene	*40.0*		*40-110*	*%REC*	1	12/22/15 04:38 PM
MERCURY BY CVAA			**SW7470A**		Prep: SW7470 / 12/23/15	Analyst: **LR**
Mercury	ND		0.00020	mg/L	1	12/26/15 10:23 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A / 12/28/15	Analyst: **ML**
Arsenic	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Barium	**0.040**		**0.0050**	**mg/L**	1	12/28/15 10:36 PM
Cadmium	ND		0.0020	mg/L	1	12/28/15 10:36 PM
Chromium	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Copper	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Lead	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Selenium	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Silver	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Zinc	ND		0.010	mg/L	1	12/28/15 10:36 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3511 / 12/23/15	Analyst: **RM**
2-Chloronaphthalene	ND		5.0	µg/L	1	12/29/15 09:21 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Acenaphthene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Acenaphthylene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Anthracene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(a)anthracene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(a)pyrene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(b)fluoranthene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(g,h,i)perylene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(k)fluoranthene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Chrysene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Dibenzo(a,h)anthracene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Fluoranthene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Fluorene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Indeno(1,2,3-cd)pyrene	ND		5.0	µg/L	1	12/29/15 09:21 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-3 **Lab ID:** 15121249-08
Collection Date: 12/16/15 03:40 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Phenanthrene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Pyrene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Surr: 2-Fluorobiphenyl	*100*		*20-140*	*%REC*	1	12/29/15 09:21 AM
Surr: 4-Terphenyl-d14	*95.1*		*22-172*	*%REC*	1	12/29/15 09:21 AM
Surr: Nitrobenzene-d5	*121*		*8-140*	*%REC*	1	12/29/15 09:21 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **DD**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
2-Butanone	ND		5.0	µg/L	1	12/24/15 06:15 AM
2-Hexanone	ND		5.0	µg/L	1	12/24/15 06:15 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/24/15 06:15 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/24/15 06:15 AM
Acetone	ND		10	µg/L	1	12/24/15 06:15 AM
Acrylonitrile	ND		1.0	µg/L	1	12/24/15 06:15 AM
Benzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Bromochloromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Bromoform	ND		1.0	µg/L	1	12/24/15 06:15 AM
Bromomethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Carbon disulfide	ND		1.0	µg/L	1	12/24/15 06:15 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/24/15 06:15 AM
Chlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Chloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-3 **Lab ID:** 15121249-08
Collection Date: 12/16/15 03:40 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		1.0	µg/L	1	12/24/15 06:15 AM
Chloromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 06:15 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Dibromomethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Diethyl ether	ND		1.0	µg/L	1	12/24/15 06:15 AM
Ethylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Hexachloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Hexane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
m,p-Xylene	ND		2.0	µg/L	1	12/24/15 06:15 AM
Methyl iodide	ND		1.0	µg/L	1	12/24/15 06:15 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/24/15 06:15 AM
Methylene chloride	ND		5.0	µg/L	1	12/24/15 06:15 AM
Naphthalene	ND		5.0	µg/L	1	12/24/15 06:15 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
o-Xylene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Styrene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Tetrachloroethene	**1.2**		**1.0**	**µg/L**	1	12/24/15 06:15 AM
Toluene	ND		1.0	µg/L	1	12/24/15 06:15 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 06:15 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 06:15 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/24/15 06:15 AM
Trichloroethene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Vinyl acetate	ND		1.0	µg/L	1	12/24/15 06:15 AM
Vinyl chloride	ND		1.0	µg/L	1	12/24/15 06:15 AM
Xylenes, Total	ND		3.0	µg/L	1	12/24/15 06:15 AM
Surr: 1,2-Dichloroethane-d4	*96.5*		*75-120*	*%REC*	1	12/24/15 06:15 AM
Surr: 4-Bromofluorobenzene	*98.6*		*80-110*	*%REC*	1	12/24/15 06:15 AM
Surr: Dibromofluoromethane	*97.6*		*85-115*	*%REC*	1	12/24/15 06:15 AM
Surr: Toluene-d8	*93.3*		*85-110*	*%REC*	1	12/24/15 06:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-4 **Lab ID:** 15121249-09
Collection Date: 12/16/15 04:55 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3510 / 12/22/15	Analyst: **BLM**
Aroclor 1016	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1221	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1232	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1242	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1248	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1254	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1260	ND		0.20	µg/L	1	12/22/15 04:53 PM
Surr: Decachlorobiphenyl	*51.0*		*40-110*	*%REC*	1	12/22/15 04:53 PM
Surr: Tetrachloro-m-xylene	*40.0*		*40-110*	*%REC*	1	12/22/15 04:53 PM
MERCURY BY CVAA			**SW7470A**		Prep: SW7470 / 12/23/15	Analyst: **LR**
Mercury	ND		0.00020	mg/L	1	12/26/15 10:32 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A / 12/28/15	Analyst: **ML**
Arsenic	ND		0.0050	mg/L	1	12/28/15 10:42 PM
Barium	**0.019**		**0.0050**	**mg/L**	1	12/28/15 10:42 PM
Cadmium	ND		0.0020	mg/L	1	12/28/15 10:42 PM
Chromium	**0.026**		**0.0050**	**mg/L**	1	12/28/15 10:42 PM
Copper	**0.012**		**0.0050**	**mg/L**	1	12/28/15 10:42 PM
Lead	ND		0.0050	mg/L	1	12/28/15 10:42 PM
Selenium	ND		0.0050	mg/L	1	12/28/15 10:42 PM
Silver	ND		0.0050	mg/L	1	12/28/15 10:42 PM
Zinc	ND		0.010	mg/L	1	12/28/15 10:42 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3511 / 12/23/15	Analyst: **RM**
2-Chloronaphthalene	ND		5.0	µg/L	1	12/29/15 09:44 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Acenaphthene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Acenaphthylene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Anthracene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(a)anthracene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(a)pyrene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(b)fluoranthene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(g,h,i)perylene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(k)fluoranthene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Chrysene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Dibenzo(a,h)anthracene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Fluoranthene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Fluorene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Indeno(1,2,3-cd)pyrene	ND		5.0	µg/L	1	12/29/15 09:44 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-4 **Lab ID:** 15121249-09
Collection Date: 12/16/15 04:55 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Phenanthrene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Pyrene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Surr: 2-Fluorobiphenyl	*92.1*		*20-140*	*%REC*	1	12/29/15 09:44 AM
Surr: 4-Terphenyl-d14	*94.9*		*22-172*	*%REC*	1	12/29/15 09:44 AM
Surr: Nitrobenzene-d5	*122*		*8-140*	*%REC*	1	12/29/15 09:44 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
2-Butanone	ND		5.0	µg/L	1	12/29/15 01:26 AM
2-Hexanone	ND		5.0	µg/L	1	12/29/15 01:26 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/29/15 01:26 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/29/15 01:26 AM
Acetone	ND		10	µg/L	1	12/29/15 01:26 AM
Acrylonitrile	ND		1.0	µg/L	1	12/29/15 01:26 AM
Benzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Bromochloromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Bromoform	ND		1.0	µg/L	1	12/29/15 01:26 AM
Bromomethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Carbon disulfide	ND		1.0	µg/L	1	12/29/15 01:26 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/29/15 01:26 AM
Chlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Chloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-4 **Lab ID:** 15121249-09
Collection Date: 12/16/15 04:55 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		1.0	µg/L	1	12/29/15 01:26 AM
Chloromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Dibromomethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Diethyl ether	ND		1.0	µg/L	1	12/29/15 01:26 AM
Ethylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Hexachloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Hexane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
m,p-Xylene	ND		2.0	µg/L	1	12/29/15 01:26 AM
Methyl iodide	ND		1.0	µg/L	1	12/29/15 01:26 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/29/15 01:26 AM
Methylene chloride	ND		5.0	µg/L	1	12/29/15 01:26 AM
Naphthalene	ND		5.0	µg/L	1	12/29/15 01:26 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
o-Xylene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Styrene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Tetrachloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Toluene	ND		1.0	µg/L	1	12/29/15 01:26 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/29/15 01:26 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/29/15 01:26 AM
Trichloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Vinyl acetate	ND		1.0	µg/L	1	12/29/15 01:26 AM
Vinyl chloride	ND		1.0	µg/L	1	12/29/15 01:26 AM
Xylenes, Total	ND		3.0	µg/L	1	12/29/15 01:26 AM
Surr: 1,2-Dichloroethane-d4	*94.8*		*75-120*	*%REC*	1	12/29/15 01:26 AM
Surr: 4-Bromofluorobenzene	*96.2*		*80-110*	*%REC*	1	12/29/15 01:26 AM
Surr: Dibromofluoromethane	*99.8*		*85-115*	*%REC*	1	12/29/15 01:26 AM
Surr: Toluene-d8	*95.8*		*85-110*	*%REC*	1	12/29/15 01:26 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Field Blank **Lab ID:** 15121249-10
Collection Date: 12/16/15 02:00 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **DD**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
2-Butanone	ND		5.0	µg/L	1	12/24/15 02:30 AM
2-Hexanone	ND		5.0	µg/L	1	12/24/15 02:30 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/24/15 02:30 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/24/15 02:30 AM
Acetone	ND		10	µg/L	1	12/24/15 02:30 AM
Acrylonitrile	ND		1.0	µg/L	1	12/24/15 02:30 AM
Benzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Bromochloromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Bromoform	ND		1.0	µg/L	1	12/24/15 02:30 AM
Bromomethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Carbon disulfide	ND		1.0	µg/L	1	12/24/15 02:30 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/24/15 02:30 AM
Chlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Chloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Chloroform	ND		1.0	µg/L	1	12/24/15 02:30 AM
Chloromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Dibromomethane	ND		1.0	µg/L	1	12/24/15 02:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Field Blank **Lab ID:** 15121249-10
Collection Date: 12/16/15 02:00 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Diethyl ether	ND		1.0	µg/L	1	12/24/15 02:30 AM
Ethylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Hexachloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Hexane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
m,p-Xylene	ND		2.0	µg/L	1	12/24/15 02:30 AM
Methyl iodide	ND		1.0	µg/L	1	12/24/15 02:30 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/24/15 02:30 AM
Methylene chloride	ND		5.0	µg/L	1	12/24/15 02:30 AM
Naphthalene	ND		5.0	µg/L	1	12/24/15 02:30 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
o-Xylene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Styrene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Tetrachloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Toluene	ND		1.0	µg/L	1	12/24/15 02:30 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 02:30 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/24/15 02:30 AM
Trichloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Vinyl acetate	ND		1.0	µg/L	1	12/24/15 02:30 AM
Vinyl chloride	ND		1.0	µg/L	1	12/24/15 02:30 AM
Xylenes, Total	ND		3.0	µg/L	1	12/24/15 02:30 AM
Surr: 1,2-Dichloroethane-d4	*94.5*		*75-120*	*%REC*	1	12/24/15 02:30 AM
Surr: 4-Bromofluorobenzene	*98.5*		*80-110*	*%REC*	1	12/24/15 02:30 AM
Surr: Dibromofluoromethane	*96.4*		*85-115*	*%REC*	1	12/24/15 02:30 AM
Surr: Toluene-d8	*92.2*		*85-110*	*%REC*	1	12/24/15 02:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Trip Blank (water) **Lab ID:** 15121249-11
Collection Date: 12/16/15 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **DD**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
2-Butanone	ND		5.0	µg/L	1	12/24/15 02:55 AM
2-Hexanone	ND		5.0	µg/L	1	12/24/15 02:55 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/24/15 02:55 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/24/15 02:55 AM
Acetone	ND		10	µg/L	1	12/24/15 02:55 AM
Acrylonitrile	ND		1.0	µg/L	1	12/24/15 02:55 AM
Benzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Bromochloromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Bromoform	ND		1.0	µg/L	1	12/24/15 02:55 AM
Bromomethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Carbon disulfide	ND		1.0	µg/L	1	12/24/15 02:55 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/24/15 02:55 AM
Chlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Chloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Chloroform	ND		1.0	µg/L	1	12/24/15 02:55 AM
Chloromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Dibromomethane	ND		1.0	µg/L	1	12/24/15 02:55 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Trip Blank (water) **Lab ID:** 15121249-11
Collection Date: 12/16/15 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Diethyl ether	ND		1.0	µg/L	1	12/24/15 02:55 AM
Ethylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Hexachloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Hexane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
m,p-Xylene	ND		2.0	µg/L	1	12/24/15 02:55 AM
Methyl iodide	ND		1.0	µg/L	1	12/24/15 02:55 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/24/15 02:55 AM
Methylene chloride	ND		5.0	µg/L	1	12/24/15 02:55 AM
Naphthalene	ND		5.0	µg/L	1	12/24/15 02:55 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
o-Xylene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Styrene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Tetrachloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Toluene	ND		1.0	µg/L	1	12/24/15 02:55 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 02:55 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/24/15 02:55 AM
Trichloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Vinyl acetate	ND		1.0	µg/L	1	12/24/15 02:55 AM
Vinyl chloride	ND		1.0	µg/L	1	12/24/15 02:55 AM
Xylenes, Total	ND		3.0	µg/L	1	12/24/15 02:55 AM
Surr: 1,2-Dichloroethane-d4	*95.3*		*75-120*	*%REC*	1	12/24/15 02:55 AM
Surr: 4-Bromofluorobenzene	*97.8*		*80-110*	*%REC*	1	12/24/15 02:55 AM
Surr: Dibromofluoromethane	*98.5*		*85-115*	*%REC*	1	12/24/15 02:55 AM
Surr: Toluene-d8	*92.8*		*85-110*	*%REC*	1	12/24/15 02:55 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Trip Blank (soil) **Lab ID:** 15121249-12
Collection Date: 12/16/15 **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2,4-Trimethylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,3,5-Trimethylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
2-Butanone	ND		200	µg/Kg	1	12/23/15 07:30 PM
2-Hexanone	ND		30	µg/Kg	1	12/23/15 07:30 PM
2-Methylnaphthalene	ND		100	µg/Kg	1	12/23/15 07:30 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	12/23/15 07:30 PM
Acetone	ND		100	µg/Kg	1	12/23/15 07:30 PM
Acrylonitrile	ND		100	µg/Kg	1	12/23/15 07:30 PM
Benzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Bromochloromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Bromodichloromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Bromoform	ND		30	µg/Kg	1	12/23/15 07:30 PM
Bromomethane	ND		75	µg/Kg	1	12/23/15 07:30 PM
Carbon disulfide	ND		30	µg/Kg	1	12/23/15 07:30 PM
Carbon tetrachloride	ND		30	µg/Kg	1	12/23/15 07:30 PM
Chlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Chloroethane	ND		100	µg/Kg	1	12/23/15 07:30 PM
Chloroform	ND		30	µg/Kg	1	12/23/15 07:30 PM
Chloromethane	ND		100	µg/Kg	1	12/23/15 07:30 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Dibromochloromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Dibromomethane	ND		30	µg/Kg	1	12/23/15 07:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Trip Blank (soil) **Lab ID:** 15121249-12
Collection Date: 12/16/15 **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Diethyl ether	ND		30	µg/Kg	1	12/23/15 07:30 PM
Ethylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Hexachloroethane	ND		100	µg/Kg	1	12/23/15 07:30 PM
Hexane	ND		100	µg/Kg	1	12/23/15 07:30 PM
Isopropylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
m,p-Xylene	ND		60	µg/Kg	1	12/23/15 07:30 PM
Methyl iodide	ND		75	µg/Kg	1	12/23/15 07:30 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	12/23/15 07:30 PM
Methylene chloride	ND		30	µg/Kg	1	12/23/15 07:30 PM
Naphthalene	ND		100	µg/Kg	1	12/23/15 07:30 PM
n-Propylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
o-Xylene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Styrene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Tetrachloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Toluene	ND		30	µg/Kg	1	12/23/15 07:30 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	12/23/15 07:30 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Trichloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Vinyl acetate	ND		30	µg/Kg	1	12/23/15 07:30 PM
Vinyl chloride	ND		30	µg/Kg	1	12/23/15 07:30 PM
Xylenes, Total	ND		90	µg/Kg	1	12/23/15 07:30 PM
Surr: 1,2-Dichloroethane-d4	*98.5*		*70-130*	*%REC*	1	12/23/15 07:30 PM
Surr: 4-Bromofluorobenzene	*92.6*		*70-130*	*%REC*	1	12/23/15 07:30 PM
Surr: Dibromofluoromethane	*91.8*		*70-130*	*%REC*	1	12/23/15 07:30 PM
Surr: Toluene-d8	*98.2*		*70-130*	*%REC*	1	12/23/15 07:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **80547** Instrument ID **GC12** Method: **SW8082**

MBLK Sample ID: **PBLKW1-80547-80547** Units: **µg/L** Analysis Date: **12/22/15 02:31 PM**

Client ID: Run ID: **GC12_151222A** SeqNo: **3633461** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	0.20								
Aroclor 1221	ND	0.20								
Aroclor 1232	ND	0.20								
Aroclor 1242	ND	0.20								
Aroclor 1248	ND	0.20								
Aroclor 1254	ND	0.20								
Aroclor 1260	ND	0.20								
Surr: Decachlorobiphenyl	*0.087*	0	*0.1*	0	*87*	*40-110*	0			
Surr: Tetrachloro-m-xylene	*0.054*	0	*0.1*	0	*54*	*40-110*	0			

LCS Sample ID: **PLCSW1-80547-80547** Units: **µg/L** Analysis Date: **12/22/15 02:47 PM**

Client ID: Run ID: **GC12_151222A** SeqNo: **3633462** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	1.513	0.20	2.5	0	60.5	50-130	0			
Aroclor 1260	1.868	0.20	2.5	0	74.7	50-130	0			
Surr: Decachlorobiphenyl	*0.082*	0	*0.1*	0	*82*	*40-110*	0			
Surr: Tetrachloro-m-xylene	*0.055*	0	*0.1*	0	*55*	*40-110*	0			

MS Sample ID: **15121249-06D MS** Units: **µg/L** Analysis Date: **12/22/15 03:50 PM**

Client ID: **TMW-1** Run ID: **GC12_151222A** SeqNo: **3633465** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	1.1	0.20	2.5	0	44	40-140	0			
Aroclor 1260	1.784	0.20	2.5	0	71.4	40-140	0			
Surr: Decachlorobiphenyl	*0.078*	0	*0.1*	0	*78*	*40-110*	0			
Surr: Tetrachloro-m-xylene	*0.038*	0	*0.1*	0	*38*	*40-110*	0			*S*

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80547** Instrument ID **GC12** Method: **SW8082**

DUP Sample ID: **15121249-07D DUP** Units: **µg/L** Analysis Date: **12/22/15 04:21 PM**
Client ID: **TMW-2** Run ID: **GC12_151222A** SeqNo: **3633959** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1221	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1232	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1242	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1248	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1254	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1260	ND	0.20	0	0	0	0-0	0	0	50	
Surr: Decachlorobiphenyl	*0.086*	0	*0.1*	0	*86*	*40-110*	0.081	*5.99*	*50*	
Surr: Tetrachloro-m-xylene	*0.043*	0	*0.1*	0	*43*	*40-110*	0.044	*2.3*	*50*	

The following samples were analyzed in this batch:

15121249-06D	15121249-07D	15121249-08D
15121249-09D		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80712** Instrument ID **GC14** Method: **SW8082**

MBLK Sample ID: **PBLKS1-80712-80712** Units: **µg/Kg** Analysis Date: **12/28/15 05:28 PM**
Client ID: Run ID: **GC14_151228A** SeqNo: **3639488** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	83								
Aroclor 1221	ND	83								
Aroclor 1232	ND	83								
Aroclor 1242	ND	83								
Aroclor 1248	ND	83								
Aroclor 1254	ND	83								
Aroclor 1260	ND	83								
Surr: Decachlorobiphenyl	*30*	0	*33.3*	0	*90.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*29.67*	0	*33.3*	0	*89.1*	*45-124*	0			

LCS Sample ID: **PLCSS1-80712-80712** Units: **µg/Kg** Analysis Date: **12/28/15 05:44 PM**
Client ID: Run ID: **GC14_151228A** SeqNo: **3639489** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	815.3	83	833	0	97.9	50-130	0			
Aroclor 1260	867.7	83	833	0	104	50-130	0			
Surr: Decachlorobiphenyl	*32*	0	*33.3*	0	*96.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*27*	0	*33.3*	0	*81.1*	*45-124*	0			

MS Sample ID: **15121413-01B MS** Units: **µg/Kg** Analysis Date: **12/28/15 06:49 PM**
Client ID: Run ID: **GC14_151228A** SeqNo: **3639491** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	840.2	80	802	0	105	40-140	0			
Aroclor 1260	863.3	80	802	0	108	40-140	0			
Surr: Decachlorobiphenyl	*26.64*	0	*32.06*	0	*83.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*25.67*	0	*32.06*	0	*80.1*	*45-124*	0			

MSD Sample ID: **15121413-01B MSD** Units: **µg/Kg** Analysis Date: **12/28/15 07:05 PM**
Client ID: Run ID: **GC14_151228A** SeqNo: **3639492** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	785.4	80	797.9	0	98.4	40-140	840.2	6.73	50	
Aroclor 1260	775.5	80	797.9	0	97.2	40-140	863.3	10.7	50	
Surr: Decachlorobiphenyl	*23.95*	0	*31.9*	0	*75.1*	*40-140*	26.64	*10.6*	*50*	
Surr: Tetrachloro-m-xylene	*25.22*	0	*31.9*	0	*79.1*	*45-124*	25.67	*1.77*	*50*	

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80667** Instrument ID **HG1** Method: **SW7470A**

MBLK Sample ID: **MBLK-80667-80667** Units: **mg/L** Analysis Date: **12/26/15 09:50 PM**
Client ID: Run ID: **HG1_151226A** SeqNo: **3636222** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000021	0.00020								J

LCS Sample ID: **LCS-80667-80667** Units: **mg/L** Analysis Date: **12/26/15 09:52 PM**
Client ID: Run ID: **HG1_151226A** SeqNo: **3636223** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00201	0.00020	0.002	0	100	80-120	0			

MS Sample ID: **15121266-28AMS** Units: **mg/L** Analysis Date: **12/26/15 10:36 PM**
Client ID: Run ID: **HG1_151226A** SeqNo: **3636243** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0206	0.0020	0.02	0.00024	102	75-125	0			

MSD Sample ID: **15121266-28AMSD** Units: **mg/L** Analysis Date: **12/26/15 10:38 PM**
Client ID: Run ID: **HG1_151226A** SeqNo: **3636244** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0198	0.0020	0.02	0.00024	97.8	75-125	0.0206	3.96	20	

The following samples were analyzed in this batch:

15121249-06C	15121249-07C	15121249-08C
15121249-09C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80742** Instrument ID **HG1** Method: **SW7471B**

MBLK	Sample ID: **MBLK-80742-80742**			Units: **mg/Kg**			Analysis Date: **12/29/15 03:56 PM**			
Client ID:	Run ID: **HG1_151229A**			SeqNo: **3640787**			Prep Date: **12/29/15**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.020								

LCS	Sample ID: **LCS-80742-80742**			Units: **mg/Kg**			Analysis Date: **12/30/15 01:11 PM**			
Client ID:	Run ID: **HG1_151230A**			SeqNo: **3641947**			Prep Date: **12/29/15**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.165	0.020	0.1665	0	99.1	80-120	0			

MS	Sample ID: **15121399-01BMS**			Units: **mg/Kg**			Analysis Date: **12/29/15 04:29 PM**			
Client ID:	Run ID: **HG1_151229A**			SeqNo: **3640801**			Prep Date: **12/29/15**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1387	0.014	0.1205	0.01246	105	75-125	0			

MSD	Sample ID: **15121399-01BMSD**			Units: **mg/Kg**			Analysis Date: **12/29/15 04:31 PM**			
Client ID:	Run ID: **HG1_151229A**			SeqNo: **3640802**			Prep Date: **12/29/15**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1327	0.014	0.1143	0.01246	105	75-125	0.1387	4.42	35	

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80644** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-80644-80644** Units: **mg/Kg** Analysis Date: **12/23/15 05:53 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636594** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.25								
Barium	ND	0.25								
Cadmium	ND	0.10								
Chromium	0.0609	0.25								J
Copper	ND	0.25								
Lead	ND	0.25								
Selenium	ND	0.25								
Silver	ND	0.25								
Zinc	ND	0.50								

LCS Sample ID: **LCS-80644-80644** Units: **mg/Kg** Analysis Date: **12/23/15 05:59 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636595** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.42	0.25	5	0	88.4	80-120	0			
Barium	4.676	0.25	5	0	93.5	80-120	0			
Cadmium	4.662	0.10	5	0	93.2	80-120	0			
Chromium	4.952	0.25	5	0	99	80-120	0			
Copper	4.642	0.25	5	0	92.8	80-120	0			
Lead	4.813	0.25	5	0	96.3	80-120	0			
Selenium	4.368	0.25	5	0	87.4	80-120	0			
Zinc	4.36	0.50	5	0	87.2	80-120	0			

LCS Sample ID: **LCS-80644-80644** Units: **mg/Kg** Analysis Date: **12/28/15 02:01 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3638026** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Silver	4.76	0.25	5	0	95.2	80-120	0			

MS Sample ID: **15121217-10BMS** Units: **mg/Kg** Analysis Date: **12/23/15 08:33 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636626** Prep Date: **12/23/15** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.63	1.3	6.477	6.789	106	75-125	0			
Barium	67.2	1.3	6.477	57.13	156	75-125	0			SO
Cadmium	8.635	0.52	6.477	1.854	105	75-125	0			
Lead	239.1	1.3	6.477	175.8	977	75-125	0			SO
Selenium	8.049	1.3	6.477	1.676	98.4	75-125	0			
Silver	6.505	1.3	6.477	0.07076	99.3	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80644** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **15121217-12BMS** Units: **mg/Kg** Analysis Date: **12/23/15 09:03 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636631** Prep Date: **12/23/15** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.04	1.4	7.205	2.176	95.3	75-125	0			
Barium	38.73	1.4	7.205	30.46	115	75-125	0			O
Cadmium	7.037	0.58	7.205	0.09023	96.4	75-125	0			
Chromium	422.2	1.4	7.205	448	-358	75-125	0			SO
Copper	15.69	1.4	7.205	10.35	74.2	75-125	0			S
Lead	13.77	1.4	7.205	5.293	118	75-125	0			
Selenium	7.311	1.4	7.205	0.6974	91.8	75-125	0			
Silver	6.38	1.4	7.205	0.04491	87.9	75-125	0			
Zinc	31.35	2.9	7.205	27.83	49	75-125	0			S

MS Sample ID: **15121217-10BMS** Units: **mg/Kg** Analysis Date: **12/28/15 02:14 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3638028** Prep Date: **12/23/15** DF: **40**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	1585	13	6.477	1655	-1080	75-125	0			SO
Copper	409.6	13	6.477	805.7	-6120	75-125	0			SO
Zinc	605.7	26	6.477	749.1	-2210	75-125	0			SO

MSD Sample ID: **15121217-10BMSD** Units: **mg/Kg** Analysis Date: **12/23/15 08:39 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636627** Prep Date: **12/23/15** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	12.91	1.3	6.527	6.789	93.8	75-125	13.63	5.43	25	
Barium	66.5	1.3	6.527	57.13	144	75-125	67.2	1.05	25	SO
Cadmium	8.198	0.52	6.527	1.854	97.2	75-125	8.635	5.18	25	
Lead	160.6	1.3	6.527	175.8	-233	75-125	239.1	39.3	25	SRO
Selenium	7.58	1.3	6.527	1.676	90.4	75-125	8.049	6.01	25	
Silver	6.366	1.3	6.527	0.07076	96.4	75-125	6.505	2.17	25	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80644** Instrument ID **ICPMS1** Method: **SW6020A**

MSD Sample ID: **15121217-12BMSD** Units: **mg/Kg** Analysis Date: **12/23/15 09:09 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636632** Prep Date: **12/23/15** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.228	1.4	7.123	2.176	99	75-125	9.04	2.05	25	
Barium	48.52	1.4	7.123	30.46	254	75-125	38.73	22.4	25	SO
Cadmium	7.179	0.57	7.123	0.09023	99.5	75-125	7.037	2	25	
Chromium	559.8	1.4	7.123	448	1570	75-125	422.2	28	25	SREO
Copper	17.29	1.4	7.123	10.35	97.5	75-125	15.69	9.68	25	
Lead	13.18	1.4	7.123	5.293	111	75-125	13.77	4.38	25	
Selenium	7.048	1.4	7.123	0.6974	89.2	75-125	7.311	3.66	25	
Silver	6.447	1.4	7.123	0.04491	89.9	75-125	6.38	1.04	25	
Zinc	35.64	2.8	7.123	27.83	110	75-125	31.35	12.8	25	

MSD Sample ID: **15121217-10BMSD** Units: **mg/Kg** Analysis Date: **12/28/15 02:20 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3638031** Prep Date: **12/23/15** DF: **40**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	1799	13	6.527	1655	2210	75-125	1585	12.7	25	SO
Copper	534.5	13	6.527	805.7	-4160	75-125	409.6	26.5	25	SRO
Zinc	621.9	26	6.527	749.1	-1950	75-125	605.7	2.64	25	SO

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80710** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-80710-80710** Units: **mg/L** Analysis Date: **12/28/15 06:32 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3639160** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Barium	0.0004295	0.0050								J
Chromium	ND	0.0050								
Copper	0.0002908	0.0050								J
Lead	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	ND	0.010								

MBLK Sample ID: **MBLK-80710-80710** Units: **mg/L** Analysis Date: **12/29/15 01:56 PM**
Client ID: Run ID: **ICPMS1_151229A** SeqNo: **3640250** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	ND	0.0020								

LCS Sample ID: **LCS-80710-80710** Units: **mg/L** Analysis Date: **12/28/15 06:39 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3639162** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.102	0.0050	0.1	0	102	80-120	0			
Barium	0.09895	0.0050	0.1	0	99	80-120	0			
Cadmium	0.1021	0.0020	0.1	0	102	80-120	0			
Chromium	0.09364	0.0050	0.1	0	93.6	80-120	0			
Lead	0.09811	0.0050	0.1	0	98.1	80-120	0			
Selenium	0.1029	0.0050	0.1	0	103	80-120	0			
Silver	0.09145	0.0050	0.1	0	91.4	80-120	0			
Zinc	0.09261	0.010	0.1	0	92.6	80-120	0			

LCS Sample ID: **LCS-80710-80710** Units: **mg/L** Analysis Date: **12/29/15 02:02 PM**
Client ID: Run ID: **ICPMS1_151229A** SeqNo: **3640251** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	0.09994	0.0050	0.1	0	99.9	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80710** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **15121250-03CMS** Units: **mg/L** Analysis Date: **12/28/15 11:07 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3639229** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1263	0.0050	0.1	0.02295	103	75-125	0			
Barium	0.4571	0.0050	0.1	0.3648	92.3	75-125	0			
Cadmium	0.1013	0.0020	0.1	-0.00005933	101	75-125	0			
Chromium	0.1009	0.0050	0.1	0.0006319	100	75-125	0			
Copper	0.09692	0.0050	0.1	0.0002301	96.7	75-125	0			
Lead	0.1008	0.0050	0.1	-0.00065	101	75-125	0			
Selenium	0.1019	0.0050	0.1	-0.00007259	102	75-125	0			
Silver	0.09605	0.0050	0.1	-0.00002848	96.1	75-125	0			
Zinc	0.09697	0.010	0.1	0.000928	96	75-125	0			

MSD Sample ID: **15121250-03CMSD** Units: **mg/L** Analysis Date: **12/28/15 11:14 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3639230** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1252	0.0050	0.1	0.02295	102	75-125	0.1263	0.875	20	
Barium	0.4646	0.0050	0.1	0.3648	99.8	75-125	0.4571	1.63	20	
Cadmium	0.1013	0.0020	0.1	-0.00005933	101	75-125	0.1013	0	20	
Chromium	0.1011	0.0050	0.1	0.0006319	100	75-125	0.1009	0.198	20	
Copper	0.09689	0.0050	0.1	0.0002301	96.7	75-125	0.09692	0.031	20	
Lead	0.1011	0.0050	0.1	-0.00065	102	75-125	0.1008	0.297	20	
Selenium	0.1013	0.0050	0.1	-0.00007259	101	75-125	0.1019	0.591	20	
Silver	0.09545	0.0050	0.1	-0.00002848	95.5	75-125	0.09605	0.627	20	
Zinc	0.09589	0.010	0.1	0.000928	95	75-125	0.09697	1.12	20	

The following samples were analyzed in this batch:

15121249-06C	15121249-07C	15121249-08C
15121249-09C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80609** Instrument ID **SVMS7** Method: **SW846 8270D**

MBLK Sample ID: **SBLKW1-80609-80609** Units: **µg/L** Analysis Date: **12/23/15 06:30 PM**
Client ID: Run ID: **SVMS7_151223A** SeqNo: **3637005** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(a)anthracene	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Chrysene	ND	5.0								
Dibenzo(a,h)anthracene	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Naphthalene	ND	5.0								
Phenanthrene	ND	5.0								
Pyrene	ND	5.0								
Surr: 2-Fluorobiphenyl	*130.7*	0	*114*	0	*115*	*20-140*	0			
Surr: 4-Terphenyl-d14	*135.3*	0	*114*	0	*119*	*22-172*	0			
Surr: Nitrobenzene-d5	*168.7*	0	*114*	0	*148*	*8-140*	0			*S*

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80609** Instrument ID **SVMS7** Method: **SW846 8270D**

LCS Sample ID: **SLCSW1-80609-80609** Units: **µg/L** Analysis Date: **12/23/15 06:58 PM**
Client ID: Run ID: **SVMS7_151223A** SeqNo: **3637006** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	47.63	5.0	45.7	0	104	50-140	0			
2-Methylnaphthalene	48.09	5.0	45.7	0	105	50-140	0			
Acenaphthene	58.86	5.0	45.7	0	129	60-140	0			
Acenaphthylene	61.21	5.0	45.7	0	134	60-140	0			
Anthracene	60.21	5.0	45.7	0	132	60-140	0			
Benzo(a)anthracene	51.86	5.0	45.7	0	113	60-140	0			
Benzo(a)pyrene	55.38	5.0	45.7	0	121	60-140	0			
Benzo(b)fluoranthene	55.31	5.0	45.7	0	121	60-140	0			
Benzo(g,h,i)perylene	56.66	5.0	45.7	0	124	60-140	0			
Benzo(k)fluoranthene	49.49	5.0	45.7	0	108	60-140	0			
Chrysene	53.26	5.0	45.7	0	117	60-140	0			
Dibenzo(a,h)anthracene	49.3	5.0	45.7	0	108	60-140	0			
Fluoranthene	59.02	5.0	45.7	0	129	60-140	0			
Fluorene	75.29	5.0	45.7	0	165	60-140	0			S
Indeno(1,2,3-cd)pyrene	51.86	5.0	45.7	0	113	60-140	0			
Naphthalene	31.27	5.0	45.7	0	68.4	40-140	0			
Phenanthrene	58.58	5.0	45.7	0	128	60-140	0			
Pyrene	55.54	5.0	45.7	0	122	60-140	0			
Surr: 2-Fluorobiphenyl	*117.4*	0	*114*	0	*103*	*20-140*	0			
Surr: 4-Terphenyl-d14	*118.5*	0	*114*	0	*104*	*22-172*	0			
Surr: Nitrobenzene-d5	*150.1*	0	*114*	0	*132*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80609** Instrument ID **SVMS7** Method: **SW846 8270D**

MS Sample ID: **15121121-02B MS** Units: **µg/L** Analysis Date: **12/23/15 07:25 PM**
Client ID: Run ID: **SVMS7_151223A** SeqNo: **3637007** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	43.15	5.0	45.7	0	94.4	50-140	0			
2-Methylnaphthalene	147.1	5.0	45.7	116.8	66.1	50-140	0			E
Acenaphthene	51.13	5.0	45.7	7.177	96.2	60-140	0			
Acenaphthylene	49.69	5.0	45.7	0	109	60-140	0			
Anthracene	59.02	5.0	45.7	2.423	124	60-140	0			
Benzo(a)anthracene	58.08	5.0	45.7	0	127	60-140	0			
Benzo(a)pyrene	53.21	5.0	45.7	0	116	60-140	0			
Benzo(b)fluoranthene	59.34	5.0	45.7	0	130	60-140	0			
Benzo(g,h,i)perylene	62.47	5.0	45.7	0	137	60-140	0			
Benzo(k)fluoranthene	45.78	5.0	45.7	0	100	60-140	0			
Chrysene	47.25	5.0	45.7	0	103	60-140	0			
Dibenzo(a,h)anthracene	55.7	5.0	45.7	0	122	60-140	0			
Fluoranthene	60.05	5.0	45.7	0.9143	129	60-140	0			
Fluorene	57.37	5.0	45.7	9.989	104	60-140	0			
Indeno(1,2,3-cd)pyrene	57.94	5.0	45.7	0	127	60-140	0			
Naphthalene	79.43	5.0	45.7	55.86	51.6	40-140	0			
Phenanthrene	67.11	5.0	45.7	11.75	121	60-140	0			
Pyrene	49.83	5.0	45.7	0.5943	108	60-140	0			
Surr: 2-Fluorobiphenyl	*113.4*	0	*114*	0	*99.4*	*20-140*	0			
Surr: 4-Terphenyl-d14	*117*	0	*114*	0	*103*	*22-172*	0			
Surr: Nitrobenzene-d5	*138.4*	0	*114*	0	*121*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80609** Instrument ID **SVMS7** Method: **SW846 8270D**

MSD Sample ID: **15121121-02B MSD** Units: **µg/L** Analysis Date: **12/23/15 07:53 PM**
Client ID: Run ID: **SVMS7_151223A** SeqNo: **3637008** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	41.26	5.0	45.7	0	90.3	50-140	43.15	4.49	30	
2-Methylnaphthalene	156.5	5.0	45.7	116.8	86.7	50-140	147.1	6.19	30	E
Acenaphthene	50.4	5.0	45.7	7.177	94.6	60-140	51.13	1.44	30	
Acenaphthylene	49.03	5.0	45.7	0	107	60-140	49.69	1.34	30	
Anthracene	62.17	5.0	45.7	2.423	131	60-140	59.02	5.21	30	
Benzo(a)anthracene	58.35	5.0	45.7	0	128	60-140	58.08	0.471	30	
Benzo(a)pyrene	50.56	5.0	45.7	0	111	60-140	53.21	5.11	30	
Benzo(b)fluoranthene	60.59	5.0	45.7	0	133	60-140	59.34	2.1	30	
Benzo(g,h,i)perylene	61.19	5.0	45.7	0	134	60-140	62.47	2.07	30	
Benzo(k)fluoranthene	37.71	5.0	45.7	0	82.5	60-140	45.78	19.3	30	
Chrysene	48.87	5.0	45.7	0	107	60-140	47.25	3.38	30	
Dibenzo(a,h)anthracene	53.71	5.0	45.7	0	118	60-140	55.7	3.63	30	
Fluoranthene	61.81	5.0	45.7	0.9143	133	60-140	60.05	2.89	30	
Fluorene	57.23	5.0	45.7	9.989	103	60-140	57.37	0.239	30	
Indeno(1,2,3-cd)pyrene	55.98	5.0	45.7	0	122	60-140	57.94	3.45	30	
Naphthalene	80.71	5.0	45.7	55.86	54.4	40-140	79.43	1.6	30	
Phenanthrene	69.44	5.0	45.7	11.75	126	60-140	67.11	3.41	30	
Pyrene	49.51	5.0	45.7	0.5943	107	60-140	49.83	0.644	30	
Surr: 2-Fluorobiphenyl	*114.3*	0	*114*	0	*100*	*20-140*	113.4	*0.843*	*30*	
Surr: 4-Terphenyl-d14	*116.8*	0	*114*	0	*102*	*22-172*	117	*0.235*	*30*	
Surr: Nitrobenzene-d5	*140.2*	0	*114*	0	*123*	*8-140*	138.4	*1.3*	*30*	

The following samples were analyzed in this batch: 15121249-06B, 15121249-07B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80682** Instrument ID **SVMS7** Method: **SW846 8270D**

MBLK Sample ID: **SBLKW1-80682-80682** Units: **µg/L** Analysis Date: **12/28/15 03:30 PM**
Client ID: Run ID: **SVMS7_151228A** SeqNo: **3639265** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(a)anthracene	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Chrysene	ND	5.0								
Dibenzo(a,h)anthracene	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Naphthalene	ND	5.0								
Phenanthrene	ND	5.0								
Pyrene	ND	5.0								
Surr: 2-Fluorobiphenyl	*125.9*	0	*114*	0	*110*	*20-140*	0			
Surr: 4-Terphenyl-d14	*154.9*	0	*114*	0	*136*	*22-172*	0			
Surr: Nitrobenzene-d5	*153.2*	0	*114*	0	*134*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80682** Instrument ID **SVMS7** Method: **SW846 8270D**

LCS Sample ID: **SLCSW1-80682-80682** Units: **µg/L** Analysis Date: **12/28/15 03:54 PM**
Client ID: Run ID: **SVMS7_151228A** SeqNo: **3639266** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	49.9	5.0	45.7	0	109	50-140	0			
2-Methylnaphthalene	50.03	5.0	45.7	0	109	50-140	0			
Acenaphthene	54.77	5.0	45.7	0	120	60-140	0			
Acenaphthylene	57.69	5.0	45.7	0	126	60-140	0			
Anthracene	62.1	5.0	45.7	0	136	60-140	0			
Benzo(a)anthracene	60.66	5.0	45.7	0	133	60-140	0			
Benzo(a)pyrene	59.25	5.0	45.7	0	130	60-140	0			
Benzo(b)fluoranthene	60.05	5.0	45.7	0	131	60-140	0			
Benzo(g,h,i)perylene	63.52	5.0	45.7	0	139	60-140	0			
Benzo(k)fluoranthene	52.07	5.0	45.7	0	114	60-140	0			
Chrysene	60.3	5.0	45.7	0	132	60-140	0			
Dibenzo(a,h)anthracene	56.02	5.0	45.7	0	123	60-140	0			
Fluoranthene	62.99	5.0	45.7	0	138	60-140	0			
Fluorene	63.02	5.0	45.7	0	138	60-140	0			
Indeno(1,2,3-cd)pyrene	61.71	5.0	45.7	0	135	60-140	0			
Naphthalene	37.49	5.0	45.7	0	82	40-140	0			
Phenanthrene	62.19	5.0	45.7	0	136	60-140	0			
Pyrene	57.05	5.0	45.7	0	125	60-140	0			
Surr: 2-Fluorobiphenyl	*125.7*	0	*114*	0	*110*	*20-140*	0			
Surr: 4-Terphenyl-d14	*141.5*	0	*114*	0	*124*	*22-172*	0			
Surr: Nitrobenzene-d5	*152.4*	0	*114*	0	*134*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80682** Instrument ID **SVMS7** Method: **SW846 8270D**

MS Sample ID: **15121121-04B MS** Units: **µg/L** Analysis Date: **12/29/15 01:25 AM**
Client ID: Run ID: **SVMS7_151228A** SeqNo: **3639301** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	53.14	5.0	45.7	0	116	50-140	0			
2-Methylnaphthalene	52.8	5.0	45.7	4.206	106	50-140	0			
Acenaphthene	55.77	5.0	45.7	0	122	60-140	0			
Acenaphthylene	56.25	5.0	45.7	0	123	60-140	0			
Anthracene	61.3	5.0	45.7	0	134	60-140	0			
Benzo(a)anthracene	62.86	5.0	45.7	0	138	60-140	0			
Benzo(a)pyrene	62.47	5.0	45.7	0	137	60-140	0			
Benzo(b)fluoranthene	78.83	5.0	45.7	0	173	60-140	0			S
Benzo(g,h,i)perylene	89.78	5.0	45.7	0	196	60-140	0			S
Benzo(k)fluoranthene	52.64	5.0	45.7	0	115	60-140	0			
Chrysene	53.62	5.0	45.7	0	117	60-140	0			
Dibenzo(a,h)anthracene	74.97	5.0	45.7	0	164	60-140	0			S
Fluoranthene	62.97	5.0	45.7	0	138	60-140	0			
Fluorene	58.03	5.0	45.7	0	127	60-140	0			
Indeno(1,2,3-cd)pyrene	80.18	5.0	45.7	0	175	60-140	0			S
Naphthalene	39.89	5.0	45.7	0	87.3	40-140	0			
Phenanthrene	79.5	5.0	45.7	14.15	143	60-140	0			S
Pyrene	57.62	5.0	45.7	0	126	60-140	0			
Surr: 2-Fluorobiphenyl	*150.1*	0	*114*	0	*132*	*20-140*	0			
Surr: 4-Terphenyl-d14	*127.4*	0	*114*	0	*112*	*22-172*	0			
Surr: Nitrobenzene-d5	*155.3*	0	*114*	0	*136*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80682** Instrument ID **SVMS7** Method: **SW846 8270D**

MSD Sample ID: **15121121-04B MSD** Units: **µg/L** Analysis Date: **12/29/15 01:49 AM**
Client ID: Run ID: **SVMS7_151228A** SeqNo: **3639304** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	53.65	5.0	45.7	0	117	50-140	53.14	0.942	30	
2-Methylnaphthalene	54.33	5.0	45.7	4.206	110	50-140	52.8	2.86	30	
Acenaphthene	55.34	5.0	45.7	0	121	60-140	55.77	0.782	30	
Acenaphthylene	57.26	5.0	45.7	0	125	60-140	56.25	1.77	30	
Anthracene	62.29	5.0	45.7	0	136	60-140	61.3	1.59	30	
Benzo(a)anthracene	67.47	5.0	45.7	0	148	60-140	62.86	7.09	30	S
Benzo(a)pyrene	63.22	5.0	45.7	0	138	60-140	62.47	1.2	30	
Benzo(b)fluoranthene	76.27	5.0	45.7	0	167	60-140	78.83	3.3	30	S
Benzo(g,h,i)perylene	96.53	5.0	45.7	0	211	60-140	89.78	7.24	30	S
Benzo(k)fluoranthene	50.01	5.0	45.7	0	109	60-140	52.64	5.12	30	
Chrysene	57.65	5.0	45.7	0	126	60-140	53.62	7.23	30	
Dibenzo(a,h)anthracene	76.14	5.0	45.7	0	167	60-140	74.97	1.54	30	S
Fluoranthene	62.4	5.0	45.7	0	137	60-140	62.97	0.912	30	
Fluorene	61.05	5.0	45.7	0	134	60-140	58.03	5.07	30	
Indeno(1,2,3-cd)pyrene	82.19	5.0	45.7	0	180	60-140	80.18	2.48	30	S
Naphthalene	38.1	5.0	45.7	0	83.4	40-140	39.89	4.57	30	
Phenanthrene	80.34	5.0	45.7	14.15	145	60-140	79.5	1.06	30	S
Pyrene	60.75	5.0	45.7	0	133	60-140	57.62	5.29	30	
Surr: 2-Fluorobiphenyl	*151.6*	0	*114*	0	*133*	*20-140*	150.1	*0.97*	*30*	
Surr: 4-Terphenyl-d14	*133*	0	*114*	0	*117*	*22-172*	127.4	*4.3*	*30*	
Surr: Nitrobenzene-d5	*157.1*	0	*114*	0	*138*	*8-140*	155.3	*1.16*	*30*	

The following samples were analyzed in this batch:

15121249-08B	15121249-09B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-80705-80705** Units: **µg/Kg** Analysis Date: **12/28/15 05:41 PM**
Client ID: Run ID: **SVMS8_151228A** SeqNo: **3640104** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	ND	6.7								
2-Methylnaphthalene	ND	6.7								
Acenaphthene	ND	6.7								
Acenaphthylene	ND	6.7								
Anthracene	ND	6.7								
Benzo(a)anthracene	ND	6.7								
Benzo(a)pyrene	ND	6.7								
Benzo(b)fluoranthene	ND	6.7								
Benzo(g,h,i)perylene	ND	6.7								
Benzo(k)fluoranthene	ND	6.7								
Chrysene	ND	6.7								
Dibenzo(a,h)anthracene	ND	6.7								
Fluoranthene	ND	6.7								
Fluorene	ND	6.7								
Indeno(1,2,3-cd)pyrene	ND	6.7								
Naphthalene	ND	6.7								
Phenanthrene	ND	6.7								
Pyrene	ND	6.7								
Surr: 2-Fluorobiphenyl	*1359*	0	*1667*	0	*81.5*	*12-100*	0			
Surr: 4-Terphenyl-d14	*2007*	0	*1667*	0	*120*	*25-137*	0			
Surr: Nitrobenzene-d5	*1619*	0	*1667*	0	*97.1*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

LCS Sample ID: **SLCSS1-80705-80705** Units: **µg/Kg** Analysis Date: **12/28/15 05:20 PM**
Client ID: Run ID: **SVMS8_151228A** SeqNo: **3640103** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	510.7	6.7	666.7	0	76.6	45-105	0			
2-Methylnaphthalene	518.3	6.7	666.7	0	77.7	45-105	0			
Acenaphthene	486	6.7	666.7	0	72.9	45-110	0			
Acenaphthylene	488.3	6.7	666.7	0	73.2	45-105	0			
Anthracene	605.7	6.7	666.7	0	90.8	55-105	0			
Benzo(a)anthracene	628.3	6.7	666.7	0	94.2	50-110	0			
Benzo(a)pyrene	660	6.7	666.7	0	99	50-110	0			
Benzo(b)fluoranthene	681.3	6.7	666.7	0	102	45-115	0			
Benzo(g,h,i)perylene	689	6.7	666.7	0	103	40-125	0			
Benzo(k)fluoranthene	703.3	6.7	666.7	0	105	45-115	0			
Chrysene	673.3	6.7	666.7	0	101	55-110	0			
Dibenzo(a,h)anthracene	678.3	6.7	666.7	0	102	40-125	0			
Fluoranthene	618.3	6.7	666.7	0	92.7	55-115	0			
Fluorene	488.7	6.7	666.7	0	73.3	50-110	0			
Indeno(1,2,3-cd)pyrene	680.7	6.7	666.7	0	102	40-120	0			
Naphthalene	568.3	6.7	666.7	0	85.2	40-105	0			
Phenanthrene	609	6.7	666.7	0	91.3	50-110	0			
Pyrene	758.7	6.7	666.7	0	114	45-125	0			
Surr: 2-Fluorobiphenyl	*1357*	0	*1667*	0	*81.4*	*12-100*	0			
Surr: 4-Terphenyl-d14	*2028*	0	*1667*	0	*122*	*25-137*	0			
Surr: Nitrobenzene-d5	*1543*	0	*1667*	0	*92.6*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

MS Sample ID: **15121249-03B MS** Units: **µg/Kg** Analysis Date: **12/28/15 07:30 PM**
Client ID: **SB-3 (3'-4')** Run ID: **SVMS8_151228A** SeqNo: **3640108** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	438.7	6.7	665.2	0	65.9	45-105	0			
2-Methylnaphthalene	464.3	6.7	665.2	25.78	65.9	45-105	0			
Acenaphthene	410.1	6.7	665.2	13.05	59.7	45-110	0			
Acenaphthylene	452.3	6.7	665.2	32.96	63	45-105	0			
Anthracene	593.3	6.7	665.2	53.84	81.1	55-105	0			
Benzo(a)anthracene	798.5	6.7	665.2	261	80.8	50-110	0			
Benzo(a)pyrene	846.8	6.7	665.2	259.4	88.3	50-110	0			
Benzo(b)fluoranthene	924.3	6.7	665.2	393.2	79.8	45-115	0			
Benzo(g,h,i)perylene	818.8	6.7	665.2	181.8	95.8	40-125	0			
Benzo(k)fluoranthene	740	6.7	665.2	137.4	90.6	45-115	0			
Chrysene	857.8	6.7	665.2	269.2	88.5	55-110	0			
Dibenzo(a,h)anthracene	657.5	6.7	665.2	46.34	91.9	40-125	0			
Fluoranthene	963.5	6.7	665.2	444.1	78.1	55-115	0			
Fluorene	467	6.7	665.2	21.21	67	50-110	0			
Indeno(1,2,3-cd)pyrene	844.8	6.7	665.2	196.8	97.4	40-120	0			
Naphthalene	516.2	6.7	665.2	22.84	74.2	40-105	0			
Phenanthrene	765	6.7	665.2	223.8	81.3	50-110	0			
Pyrene	1088	6.7	665.2	394.5	104	45-125	0			
Surr: 2-Fluorobiphenyl	*1183*	0	*1663*	0	*71.2*	*12-100*	0			
Surr: 4-Terphenyl-d14	*1647*	0	*1663*	0	*99*	*25-137*	0			
Surr: Nitrobenzene-d5	*1359*	0	*1663*	0	*81.7*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

MSD Sample ID: **15121249-03B MSD** Units: **µg/Kg** Analysis Date: **12/28/15 07:50 PM**
Client ID: **SB-3 (3'-4')** Run ID: **SVMS8_151228A** SeqNo: **3640109** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	424.4	6.6	664.3	0	63.9	45-105	438.7	3.3	30	
2-Methylnaphthalene	452.7	6.6	664.3	25.78	64.3	45-105	464.3	2.54	30	
Acenaphthene	402.2	6.6	664.3	13.05	58.6	45-110	410.1	1.94	30	
Acenaphthylene	442	6.6	664.3	32.96	61.6	45-105	452.3	2.3	30	
Anthracene	550	6.6	664.3	53.84	74.7	55-105	593.3	7.58	30	
Benzo(a)anthracene	738.6	6.6	664.3	261	71.9	50-110	798.5	7.8	30	
Benzo(a)pyrene	744.9	6.6	664.3	259.4	73.1	50-110	846.8	12.8	30	
Benzo(b)fluoranthene	803.7	6.6	664.3	393.2	61.8	45-115	924.3	14	30	
Benzo(g,h,i)perylene	717.4	6.6	664.3	181.8	80.6	40-125	818.8	13.2	30	
Benzo(k)fluoranthene	675.9	6.6	664.3	137.4	81.1	45-115	740	9.06	30	
Chrysene	779.1	6.6	664.3	269.2	76.8	55-110	857.8	9.6	30	
Dibenzo(a,h)anthracene	604.5	6.6	664.3	46.34	84	40-125	657.5	8.41	30	
Fluoranthene	886.1	6.6	664.3	444.1	66.5	55-115	963.5	8.37	30	
Fluorene	449	6.6	664.3	21.21	64.4	50-110	467	3.92	30	
Indeno(1,2,3-cd)pyrene	747.3	6.6	664.3	196.8	82.9	40-120	844.8	12.3	30	
Naphthalene	497.2	6.6	664.3	22.84	71.4	40-105	516.2	3.75	30	
Phenanthrene	688.8	6.6	664.3	223.8	70	50-110	765	10.5	30	
Pyrene	974.1	6.6	664.3	394.5	87.3	45-125	1088	11	30	
Surr: 2-Fluorobiphenyl	*1134*	0	*1661*	0	*68.3*	*12-100*	1183	*4.24*	*40*	
Surr: 4-Terphenyl-d14	*1550*	0	*1661*	0	*93.3*	*25-137*	1647	*6.09*	*40*	
Surr: Nitrobenzene-d5	*1381*	0	*1661*	0	*83.2*	*37-107*	1359	*1.65*	*40*	

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

MBLK	Sample ID: **MBLK-80647-80647**				Units: **µg/Kg**			Analysis Date: **12/23/15 02:20 PM**		
Client ID:		Run ID: **VMS8_151223A**			SeqNo: **3635664**		Prep Date: **12/23/15**		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1,2-Trichlorotrifluoroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								
Dichlorodifluoromethane	ND	30								
Diethyl ether	ND	30								
Ethylbenzene	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

Hexachloroethane	ND	100					
Hexane	ND	100					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
Styrene	ND	30					
Tetrachloroethene	ND	30					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl acetate	ND	30					
Vinyl chloride	ND	30					
Xylenes, Total	ND	90					
Surr: 1,2-Dichloroethane-d4	*949.5*	0	*1000*	0	*95*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1013*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*953.5*	0	*1000*	0	*95.4*	*70-130*	0
Surr: Toluene-d8	*918.5*	0	*1000*	0	*91.8*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

LCS Sample ID: **LCS-80647-80647** Units: **µg/Kg** Analysis Date: **12/23/15 12:41 PM**
Client ID: Run ID: **VMS8_151223A** SeqNo: **3635663** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	897.5	30	1000	0	89.8	75-125	0			
1,1,1-Trichloroethane	1004	30	1000	0	100	70-135	0			
1,1,2,2-Tetrachloroethane	1018	30	1000	0	102	55-130	0			
1,1,2-Trichloroethane	919.5	30	1000	0	92	60-125	0			
1,1-Dichloroethane	1083	30	1000	0	108	75-125	0			
1,1-Dichloroethene	980	30	1000	0	98	65-135	0			
1,2,3-Trichloropropane	1037	30	1000	0	104	65-130	0			
1,2,4-Trichlorobenzene	888.5	30	1000	0	88.8	65-130	0			
1,2,4-Trimethylbenzene	993.5	30	1000	0	99.4	65-135	0			
1,2-Dibromo-3-chloropropane	836.5	30	1000	0	83.6	40-135	0			
1,2-Dibromoethane	1581	30	1000	0	158	75-125	0			S
1,2-Dichlorobenzene	886	30	1000	0	88.6	75-120	0			
1,2-Dichloroethane	1004	30	1000	0	100	70-135	0			
1,2-Dichloropropane	1040	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1038	30	1000	0	104	65-135	0			
1,3-Dichlorobenzene	860.5	30	1000	0	86	70-125	0			
1,4-Dichlorobenzene	876.5	30	1000	0	87.6	70-125	0			
2-Butanone	1126	200	1000	0	113	30-160	0			
2-Hexanone	945.5	30	1000	0	94.6	45-145	0			
4-Methyl-2-pentanone	1222	30	1000	0	122	74-176	0			
Acetone	1026	100	1000	0	103	20-160	0			
Acrylonitrile	1070	100	1000	0	107	70-135	0			
Benzene	1050	30	1000	0	105	75-125	0			
Bromochloromethane	1139	30	1000	0	114	70-125	0			
Bromodichloromethane	1003	30	1000	0	100	70-130	0			
Bromoform	802	30	1000	0	80.2	55-135	0			
Bromomethane	222	75	1000	0	22.2	30-160	0			S
Carbon disulfide	886.5	30	1000	0	88.6	45-160	0			
Carbon tetrachloride	1023	30	1000	0	102	65-135	0			
Chlorobenzene	966.5	30	1000	0	96.6	75-125	0			
Chloroethane	1111	100	1000	0	111	40-155	0			
Chloroform	1010	30	1000	0	101	70-125	0			
Chloromethane	1161	100	1000	0	116	50-130	0			
cis-1,2-Dichloroethene	1108	30	1000	0	111	65-125	0			
cis-1,3-Dichloropropene	1120	30	1000	0	112	70-125	0			
Dibromochloromethane	781	30	1000	0	78.1	65-135	0			
Dibromomethane	1066	30	1000	0	107	75-130	0			
Dichlorodifluoromethane	1133	30	1000	0	113	35-135	0			
Ethylbenzene	965.5	30	1000	0	96.6	75-125	0			
Hexachloroethane	708	100	1000	0	70.8	53-112	0			
Isopropylbenzene	1026	30	1000	0	103	75-130	0			
m,p-Xylene	1999	60	2000	0	100	80-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	757.5	75	1000	0	75.8	64-145	0
Methyl tert-butyl ether	1170	30	1000	0	117	75-125	0
Methylene chloride	1092	30	1000	0	109	55-145	0
Naphthalene	865	100	1000	0	86.5	40-140	0
n-Propylbenzene	996	30	1000	0	99.6	65-135	0
o-Xylene	962.5	30	1000	0	96.2	75-125	0
Styrene	1042	30	1000	0	104	75-125	0
Tetrachloroethene	937.5	30	1000	0	93.8	64-140	0
Toluene	958	30	1000	0	95.8	70-125	0
trans-1,2-Dichloroethene	1081	30	1000	0	108	65-135	0
trans-1,3-Dichloropropene	816	30	1000	0	81.6	65-125	0
trans-1,4-Dichloro-2-butene	765.5	30	1000	0	76.6	62-112	0
Trichloroethene	994	30	1000	0	99.4	75-125	0
Trichlorofluoromethane	1001	30	1000	0	100	25-185	0
Vinyl chloride	1030	30	1000	0	103	60-125	0
Xylenes, Total	2962	90	3000	0	98.7	75-125	0
Surr: 1,2-Dichloroethane-d4	*905.5*	0	*1000*	0	*90.6*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1075*	0	*1000*	0	*108*	*70-130*	0
Surr: Dibromofluoromethane	*955*	0	*1000*	0	*95.5*	*70-130*	0
Surr: Toluene-d8	*934.5*	0	*1000*	0	*93.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

MS Sample ID: **15121217-12A MS** Units: **µg/Kg** Analysis Date: **12/23/15 08:09 PM**

Client ID: Run ID: **VMS8_151223A** SeqNo: **3636846** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	846.5	30	1000	0	84.6	75-125	0			
1,1,1-Trichloroethane	967	30	1000	0	96.7	70-135	0			
1,1,2,2-Tetrachloroethane	978.5	30	1000	0	97.8	55-130	0			
1,1,2-Trichloroethane	923.5	30	1000	0	92.4	60-125	0			
1,1-Dichloroethane	1034	30	1000	0	103	75-125	0			
1,1-Dichloroethene	887.5	30	1000	0	88.8	65-135	0			
1,2,3-Trichloropropane	1013	30	1000	0	101	65-130	0			
1,2,4-Trichlorobenzene	816	30	1000	0	81.6	65-130	0			
1,2,4-Trimethylbenzene	919	30	1000	0	91.9	65-135	0			
1,2-Dibromo-3-chloropropane	762	30	1000	0	76.2	40-135	0			
1,2-Dibromoethane	1538	30	1000	0	154	75-125	0			S
1,2-Dichlorobenzene	872	30	1000	0	87.2	75-120	0			
1,2-Dichloroethane	976.5	30	1000	0	97.6	70-135	0			
1,2-Dichloropropane	1030	30	1000	0	103	70-120	0			
1,3,5-Trimethylbenzene	970	30	1000	0	97	65-135	0			
1,3-Dichlorobenzene	844	30	1000	0	84.4	70-125	0			
1,4-Dichlorobenzene	845	30	1000	0	84.5	70-125	0			
2-Butanone	1136	200	1000	0	114	30-160	0			
2-Hexanone	909	30	1000	0	90.9	45-145	0			
4-Methyl-2-pentanone	1197	30	1000	0	120	74-176	0			
Acetone	1046	100	1000	0	105	20-160	0			
Acrylonitrile	1078	100	1000	0	108	70-135	0			
Benzene	1030	30	1000	0	103	75-125	0			
Bromochloromethane	1111	30	1000	0	111	70-125	0			
Bromodichloromethane	920	30	1000	0	92	70-130	0			
Bromoform	713	30	1000	0	71.3	55-135	0			
Bromomethane	125	75	1000	0	12.5	30-160	0			S
Carbon disulfide	723.5	30	1000	0	72.4	45-160	0			
Carbon tetrachloride	903	30	1000	0	90.3	65-135	0			
Chlorobenzene	887	30	1000	0	88.7	75-125	0			
Chloroethane	1018	100	1000	0	102	40-155	0			
Chloroform	994.5	30	1000	0	99.4	70-125	0			
Chloromethane	1114	100	1000	0	111	50-130	0			
cis-1,2-Dichloroethene	1156	30	1000	131.6	102	65-125	0			
cis-1,3-Dichloropropene	1032	30	1000	0	103	70-125	0			
Dibromochloromethane	711.5	30	1000	0	71.2	65-135	0			
Dibromomethane	1047	30	1000	0	105	75-130	0			
Dichlorodifluoromethane	1032	30	1000	0	103	35-135	0			
Ethylbenzene	888	30	1000	0	88.8	75-125	0			
Hexachloroethane	574	100	1000	0	57.4	53-112	0			
Isopropylbenzene	942.5	30	1000	0	94.2	75-130	0			
m,p-Xylene	1848	60	2000	0	92.4	80-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	561.5	75	1000	0	56.2	30-105	0	
Methyl tert-butyl ether	1160	30	1000	0	116	75-125	0	
Methylene chloride	1072	30	1000	0	107	55-145	0	
Naphthalene	826.5	100	1000	0	82.6	40-140	0	
n-Propylbenzene	890	30	1000	0	89	65-135	0	
o-Xylene	907.5	30	1000	0	90.8	75-125	0	
Styrene	953	30	1000	0	95.3	75-125	0	
Tetrachloroethene	1244	30	1000	0	124	64-140	0	
Toluene	896.5	30	1000	0	89.6	70-125	0	
trans-1,2-Dichloroethene	1008	30	1000	0	101	65-135	0	
trans-1,3-Dichloropropene	746.5	30	1000	0	74.6	65-125	0	
trans-1,4-Dichloro-2-butene	756	30	1000	0	75.6	45-86	0	
Trichloroethene	1509	30	1000	829.6	67.9	75-125	0	S
Trichlorofluoromethane	909.5	30	1000	0	91	25-185	0	
Vinyl chloride	943	30	1000	0	94.3	60-125	0	
Xylenes, Total	2755	90	3000	0	91.8	75-125	0	
Surr: 1,2-Dichloroethane-d4	*971*	0	*1000*	0	*97.1*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1038*	0	*1000*	0	*104*	*70-130*	0	
Surr: Dibromofluoromethane	*947*	0	*1000*	0	*94.7*	*70-130*	0	
Surr: Toluene-d8	*930.5*	0	*1000*	0	*93*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

MSD Sample ID: **15121217-12A MSD** Units: **µg/Kg** Analysis Date: **12/23/15 08:33 PM**
Client ID: Run ID: **VMS8_151223A** SeqNo: **3636848** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	865.5	30	1000	0	86.6	75-125	846.5	2.22	30	
1,1,1-Trichloroethane	957	30	1000	0	95.7	70-135	967	1.04	30	
1,1,2,2-Tetrachloroethane	960	30	1000	0	96	55-130	978.5	1.91	30	
1,1,2-Trichloroethane	895	30	1000	0	89.5	60-125	923.5	3.13	30	
1,1-Dichloroethane	1036	30	1000	0	104	75-125	1034	0.0966	30	
1,1-Dichloroethene	912.5	30	1000	0	91.2	65-135	887.5	2.78	30	
1,2,3-Trichloropropane	1001	30	1000	0	100	65-130	1013	1.19	30	
1,2,4-Trichlorobenzene	838	30	1000	0	83.8	65-130	816	2.66	30	
1,2,4-Trimethylbenzene	962.5	30	1000	0	96.2	65-135	919	4.62	30	
1,2-Dibromo-3-chloropropane	733.5	30	1000	0	73.4	40-135	762	3.81	30	
1,2-Dibromoethane	1534	30	1000	0	153	75-125	1538	0.228	30	S
1,2-Dichlorobenzene	884.5	30	1000	0	88.4	75-120	872	1.42	30	
1,2-Dichloroethane	965.5	30	1000	0	96.6	70-135	976.5	1.13	30	
1,2-Dichloropropane	1024	30	1000	0	102	70-120	1030	0.584	30	
1,3,5-Trimethylbenzene	1002	30	1000	0	100	65-135	970	3.25	30	
1,3-Dichlorobenzene	847.5	30	1000	0	84.8	70-125	844	0.414	30	
1,4-Dichlorobenzene	851	30	1000	0	85.1	70-125	845	0.708	30	
2-Butanone	1093	200	1000	0	109	30-160	1136	3.86	30	
2-Hexanone	863	30	1000	0	86.3	45-145	909	5.19	30	
4-Methyl-2-pentanone	1134	30	1000	0	113	74-176	1197	5.41	30	
Acetone	1005	100	1000	0	100	20-160	1046	4.05	30	
Acrylonitrile	1067	100	1000	0	107	70-135	1078	1.03	30	
Benzene	1036	30	1000	0	104	75-125	1030	0.629	30	
Bromochloromethane	1059	30	1000	0	106	70-125	1111	4.79	30	
Bromodichloromethane	945.5	30	1000	0	94.6	70-130	920	2.73	30	
Bromoform	696.5	30	1000	0	69.6	55-135	713	2.34	30	
Bromomethane	106	75	1000	0	10.6	30-160	125	16.5	30	S
Carbon disulfide	758.5	30	1000	0	75.8	45-160	723.5	4.72	30	
Carbon tetrachloride	925	30	1000	0	92.5	65-135	903	2.41	30	
Chlorobenzene	936	30	1000	0	93.6	75-125	887	5.38	30	
Chloroethane	984	100	1000	0	98.4	40-155	1018	3.35	30	
Chloroform	1004	30	1000	0	100	70-125	994.5	0.951	30	
Chloromethane	1125	100	1000	0	112	50-130	1114	0.938	30	
cis-1,2-Dichloroethene	1172	30	1000	131.6	104	65-125	1156	1.33	30	
cis-1,3-Dichloropropene	1039	30	1000	0	104	70-125	1032	0.724	30	
Dibromochloromethane	713	30	1000	0	71.3	65-135	711.5	0.211	30	
Dibromomethane	1022	30	1000	0	102	75-130	1047	2.42	30	
Dichlorodifluoromethane	1024	30	1000	0	102	35-135	1032	0.779	30	
Ethylbenzene	907	30	1000	0	90.7	75-125	888	2.12	30	
Hexachloroethane	620.5	100	1000	0	62	53-112	574	7.79	30	
Isopropylbenzene	985	30	1000	0	98.5	75-130	942.5	4.41	30	
m,p-Xylene	1936	60	2000	0	96.8	80-125	1848	4.68	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	694	75	1000	0	69.4	30-105	561.5	21.1	30	
Methyl tert-butyl ether	1144	30	1000	0	114	75-125	1160	1.48	30	
Methylene chloride	1072	30	1000	0	107	55-145	1072	0.0466	30	
Naphthalene	848.5	100	1000	0	84.8	40-140	826.5	2.63	30	
n-Propylbenzene	917.5	30	1000	0	91.8	65-135	890	3.04	30	
o-Xylene	939	30	1000	0	93.9	75-125	907.5	3.41	30	
Styrene	1012	30	1000	0	101	75-125	953	6.05	30	
Tetrachloroethene	1340	30	1000	0	134	64-140	1244	7.39	30	
Toluene	935.5	30	1000	0	93.6	70-125	896.5	4.26	30	
trans-1,2-Dichloroethene	1030	30	1000	0	103	65-135	1008	2.21	30	
trans-1,3-Dichloropropene	775	30	1000	0	77.5	65-125	746.5	3.75	30	
trans-1,4-Dichloro-2-butene	726.5	30	1000	0	72.6	45-86	756	3.98	30	
Trichloroethene	1438	30	1000	829.6	60.8	75-125	1509	4.85	30	S
Trichlorofluoromethane	907.5	30	1000	0	90.8	25-185	909.5	0.22	30	
Vinyl chloride	958.5	30	1000	0	95.8	60-125	943	1.63	30	
Xylenes, Total	2875	90	3000	0	95.8	75-125	2755	4.26	30	
Surr: 1,2-Dichloroethane-d4	*925*	0	*1000*	0	*92.5*	*70-130*	971	*4.85*	*30*	
Surr: 4-Bromofluorobenzene	*1062*	0	*1000*	0	*106*	*70-130*	1038	*2.28*	*30*	
Surr: Dibromofluoromethane	*944*	0	*1000*	0	*94.4*	*70-130*	947	*0.317*	*30*	
Surr: Toluene-d8	*912.5*	0	*1000*	0	*91.2*	*70-130*	930.5	*1.95*	*30*	

The following samples were analyzed in this batch:

15121249-01A	15121249-02A	15121249-03A
15121249-05A	15121249-12A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

MBLK	Sample ID: **VBLKW2-151223-R178988**			Units: **µg/L**		Analysis Date: **12/24/15 02:05 AM**			
Client ID:		Run ID: **VMS7_151223B**		SeqNo: **3637051**		Prep Date:		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
1,1,2-Trichlorotrifluoroethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2,3-Trichloropropane	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	1.0								
1,2-Dibromoethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
2-Butanone	ND	5.0								
2-Hexanone	ND	5.0								
2-Methylnaphthalene	ND	5.0								
4-Methyl-2-pentanone	ND	1.0								
Acetone	ND	10								
Acrylonitrile	ND	1.0								
Benzene	ND	1.0								
Bromochloromethane	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	1.0								
Carbon disulfide	ND	1.0								
Carbon tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	1.0								
cis-1,2-Dichloroethene	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
Diethyl ether	ND	1.0								
Ethylbenzene	ND	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

Hexachloroethane	ND	1.0					
Hexane	ND	1.0					
Isopropylbenzene	ND	1.0					
m,p-Xylene	ND	2.0					
Methyl iodide	ND	1.0					
Methyl tert-butyl ether	ND	1.0					
Methylene chloride	ND	5.0					
Naphthalene	ND	5.0					
n-Propylbenzene	ND	1.0					
o-Xylene	ND	1.0					
Styrene	ND	1.0					
Tetrachloroethene	ND	1.0					
Toluene	ND	1.0					
trans-1,2-Dichloroethene	ND	1.0					
trans-1,3-Dichloropropene	ND	1.0					
trans-1,4-Dichloro-2-butene	ND	2.0					
Trichloroethene	ND	1.0					
Trichlorofluoromethane	ND	1.0					
Vinyl acetate	ND	1.0					
Vinyl chloride	ND	1.0					
Xylenes, Total	ND	3.0					
Surr: 1,2-Dichloroethane-d4	*19.38*	0	*20*	0	*96.9*	*75-120*	0
Surr: 4-Bromofluorobenzene	*20.18*	0	*20*	0	*101*	*80-110*	0
Surr: Dibromofluoromethane	*19.92*	0	*20*	0	*99.6*	*85-115*	0
Surr: Toluene-d8	*18.93*	0	*20*	0	*94.6*	*85-110*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

LCS	Sample ID: **VLCSW2-151223-R178988**				Units: **µg/L**			Analysis Date: **12/24/15 12:51 PM**		
Client ID:		Run ID: **VMS7_151223B**			SeqNo: **3637074**		Prep Date:		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.76	1.0	20	0	98.8	80-130	0			
1,1,1-Trichloroethane	20.52	1.0	20	0	103	75-130	0			
1,1,2,2-Tetrachloroethane	22.55	1.0	20	0	113	75-130	0			
1,1,2-Trichloroethane	21.29	1.0	20	0	106	75-125	0			
1,1-Dichloroethane	18.92	1.0	20	0	94.6	75-133	0			
1,1-Dichloroethene	18.98	1.0	20	0	94.9	70-145	0			
1,2,3-Trichloropropane	24.06	1.0	20	0	120	75-125	0			
1,2,4-Trichlorobenzene	21.17	1.0	20	0	106	70-135	0			
1,2,4-Trimethylbenzene	18.99	1.0	20	0	95	75-130	0			
1,2-Dibromo-3-chloropropane	21.92	1.0	20	0	110	60-130	0			
1,2-Dibromoethane	30.17	1.0	20	0	151	80-150	0			S
1,2-Dichlorobenzene	19.85	1.0	20	0	99.2	70-130	0			
1,2-Dichloroethane	20.98	1.0	20	0	105	78-125	0			
1,2-Dichloropropane	18.94	1.0	20	0	94.7	75-125	0			
1,3,5-Trimethylbenzene	19.57	1.0	20	0	97.8	75-130	0			
1,3-Dichlorobenzene	20.81	1.0	20	0	104	75-130	0			
1,4-Dichlorobenzene	18.93	1.0	20	0	94.6	75-130	0			
2-Butanone	18.11	5.0	20	0	90.6	55-150	0			
2-Hexanone	18.77	5.0	20	0	93.8	60-135	0			
4-Methyl-2-pentanone	23.77	1.0	20	0	119	77-178	0			
Acetone	18.54	10	20	0	92.7	60-160	0			
Acrylonitrile	19.22	1.0	20	0	96.1	60-140	0			
Benzene	21.26	1.0	20	0	106	85-125	0			
Bromochloromethane	18.14	1.0	20	0	90.7	75-130	0			
Bromodichloromethane	20.05	1.0	20	0	100	75-125	0			
Bromoform	18.23	1.0	20	0	91.2	60-125	0			
Bromomethane	14.44	1.0	20	0	72.2	30-185	0			
Carbon disulfide	20.15	1.0	20	0	101	60-165	0			
Carbon tetrachloride	21.49	1.0	20	0	107	65-140	0			
Chlorobenzene	19.33	1.0	20	0	96.6	80-120	0			
Chloroethane	15.89	1.0	20	0	79.4	50-140	0			
Chloroform	19.67	1.0	20	0	98.4	80-130	0			
Chloromethane	15.99	1.0	20	0	80	50-130	0			
cis-1,2-Dichloroethene	19.68	1.0	20	0	98.4	75-134	0			
cis-1,3-Dichloropropene	19.63	1.0	20	0	98.2	70-130	0			
Dibromochloromethane	19.65	1.0	20	0	98.2	60-115	0			
Dibromomethane	21.73	1.0	20	0	109	85-125	0			
Dichlorodifluoromethane	19.19	1.0	20	0	96	20-120	0			
Ethylbenzene	19.11	1.0	20	0	95.6	85-125	0			
Hexachloroethane	14.33	1.0	20	0	71.6	50-124	0			
Isopropylbenzene	19.68	1.0	20	0	98.4	80-127	0			
m,p-Xylene	37.8	2.0	40	0	94.5	75-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

Methyl iodide	20.22	1.0	20	0	101	60-160	0
Methyl tert-butyl ether	18.43	1.0	20	0	92.2	80-130	0
Methylene chloride	19.18	5.0	20	0	95.9	75-140	0
Naphthalene	22.8	5.0	20	0	114	55-160	0
n-Propylbenzene	18.39	1.0	20	0	92	78-120	0
o-Xylene	18.66	1.0	20	0	93.3	80-125	0
Styrene	20.01	1.0	20	0	100	85-125	0
Tetrachloroethene	21.56	1.0	20	0	108	77-138	0
Toluene	19.07	1.0	20	0	95.4	85-125	0
trans-1,2-Dichloroethene	19.31	1.0	20	0	96.6	80-140	0
trans-1,3-Dichloropropene	19.43	1.0	20	0	97.2	81-123	0
trans-1,4-Dichloro-2-butene	18.44	2.0	20	0	92.2	46-118	0
Trichloroethene	20.65	1.0	20	0	103	84-130	0
Trichlorofluoromethane	17.87	1.0	20	0	89.4	60-140	0
Vinyl chloride	17.51	1.0	20	0	87.6	50-136	0
Xylenes, Total	56.46	3.0	60	0	94.1	80-126	0
Surr: 1,2-Dichloroethane-d4	*18.7*	0	*20*	0	*93.5*	*75-120*	0
Surr: 4-Bromofluorobenzene	*20.46*	0	*20*	0	*102*	*80-110*	0
Surr: Dibromofluoromethane	*20.27*	0	*20*	0	*101*	*85-115*	0
Surr: Toluene-d8	*19.21*	0	*20*	0	*96*	*85-110*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

MS Sample ID: **15121249-09A MS** Units: **µg/L** Analysis Date: **12/24/15 10:53 AM**

Client ID: **TMW-4** Run ID: **VMS7_151223B** SeqNo: **3637072** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	102.5	5.0	100	0	102	80-130	0			
1,1,1-Trichloroethane	114.5	5.0	100	0	114	75-130	0			
1,1,2,2-Tetrachloroethane	117.2	5.0	100	0	117	75-130	0			
1,1,2-Trichloroethane	116.3	5.0	100	0	116	75-125	0			
1,1-Dichloroethane	106	5.0	100	0	106	75-133	0			
1,1-Dichloroethene	112.3	5.0	100	0	112	70-145	0			
1,2,3-Trichloropropane	121.8	5.0	100	0	122	75-125	0			
1,2,4-Trichlorobenzene	103.8	5.0	100	0	104	70-135	0			
1,2,4-Trimethylbenzene	107	5.0	100	0	107	75-130	0			
1,2-Dibromo-3-chloropropane	100.6	5.0	100	0	101	60-130	0			
1,2-Dibromoethane	159	5.0	100	0	159	80-150	0			S
1,2-Dichlorobenzene	106.4	5.0	100	0	106	70-130	0			
1,2-Dichloroethane	114	5.0	100	0	114	78-125	0			
1,2-Dichloropropane	104.1	5.0	100	0	104	75-125	0			
1,3,5-Trimethylbenzene	110.2	5.0	100	0	110	75-130	0			
1,3-Dichlorobenzene	114.4	5.0	100	0	114	75-130	0			
1,4-Dichlorobenzene	104.2	5.0	100	0	104	75-130	0			
2-Butanone	95.75	25	100	0	95.8	55-150	0			
2-Hexanone	101.1	25	100	0	101	60-135	0			
4-Methyl-2-pentanone	112.8	5.0	100	0	113	77-178	0			
Acetone	100.4	50	100	0	100	60-160	0			
Acrylonitrile	103.4	5.0	100	0	103	60-140	0			
Benzene	119.2	5.0	100	0	119	85-125	0			
Bromochloromethane	99.95	5.0	100	0	100	75-130	0			
Bromodichloromethane	107.6	5.0	100	0	108	75-125	0			
Bromoform	87.6	5.0	100	0	87.6	60-125	0			
Bromomethane	74.7	5.0	100	0	74.7	30-185	0			
Carbon disulfide	112.9	5.0	100	0	113	60-165	0			
Carbon tetrachloride	115.9	5.0	100	0	116	65-140	0			
Chlorobenzene	109.2	5.0	100	0	109	80-120	0			
Chloroethane	94.75	5.0	100	0	94.8	50-140	0			
Chloroform	114.6	5.0	100	0	115	80-130	0			
Chloromethane	93.25	5.0	100	0	93.2	50-130	0			
cis-1,2-Dichloroethene	110	5.0	100	0	110	75-134	0			
cis-1,3-Dichloropropene	101.6	5.0	100	0	102	70-130	0			
Dibromochloromethane	100.5	5.0	100	0	100	60-115	0			
Dibromomethane	117	5.0	100	0	117	85-125	0			
Dichlorodifluoromethane	113.6	5.0	100	0	114	20-120	0			
Ethylbenzene	106.6	5.0	100	0	107	85-125	0			
Hexachloroethane	71.05	5.0	100	0	71	50-124	0			
Isopropylbenzene	112	5.0	100	0	112	80-127	0			
m,p-Xylene	215	10	200	0	108	75-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

Methyl iodide	94.25	5.0	100	0	94.2	60-160	0
Methyl tert-butyl ether	100.6	5.0	100	0	101	80-130	0
Methylene chloride	108.7	25	100	0	109	75-140	0
Naphthalene	106.4	25	100	0	106	55-160	0
n-Propylbenzene	104.2	5.0	100	0	104	78-120	0
o-Xylene	106	5.0	100	0	106	80-125	0
Styrene	111.4	5.0	100	0	111	85-125	0
Tetrachloroethene	122.4	5.0	100	0	122	77-138	0
Toluene	107.8	5.0	100	0	108	85-125	0
trans-1,2-Dichloroethene	111.6	5.0	100	0	112	80-140	0
trans-1,3-Dichloropropene	98.55	5.0	100	0	98.6	81-123	0
trans-1,4-Dichloro-2-butene	83.65	10	100	0	83.6	46-118	0
Trichloroethene	116.3	5.0	100	0	116	84-130	0
Trichlorofluoromethane	107.2	5.0	100	0	107	60-140	0
Vinyl chloride	103.1	5.0	100	0	103	50-136	0
Xylenes, Total	321.1	15	300	0	107	80-126	0
Surr: 1,2-Dichloroethane-d4	*92.15*	0	*100*	0	*92.2*	*75-120*	0
Surr: 4-Bromofluorobenzene	*102.5*	0	*100*	0	*102*	*80-110*	0
Surr: Dibromofluoromethane	*98.85*	0	*100*	0	*98.8*	*85-115*	0
Surr: Toluene-d8	*96.15*	0	*100*	0	*96.2*	*85-110*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

MSD	Sample ID: **15121249-09A MSD**				Units: **µg/L**			Analysis Date: **12/24/15 11:18 AM**		
Client ID: **TMW-4**	Run ID: **VMS7_151223B**				SeqNo: **3637073**	Prep Date:		DF: **5**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	100.9	5.0	100	0	101	80-130	102.5	1.57	30	
1,1,1-Trichloroethane	109.6	5.0	100	0	110	75-130	114.5	4.42	30	
1,1,2,2-Tetrachloroethane	108.6	5.0	100	0	109	75-130	117.2	7.71	30	
1,1,2-Trichloroethane	108	5.0	100	0	108	75-125	116.3	7.45	30	
1,1-Dichloroethane	105.9	5.0	100	0	106	75-133	106	0.0944	30	
1,1-Dichloroethene	108.4	5.0	100	0	108	70-145	112.3	3.49	30	
1,2,3-Trichloropropane	111.8	5.0	100	0	112	75-125	121.8	8.56	30	
1,2,4-Trichlorobenzene	105.8	5.0	100	0	106	70-135	103.8	1.91	30	
1,2,4-Trimethylbenzene	99.75	5.0	100	0	99.8	75-130	107	7.01	30	
1,2-Dibromo-3-chloropropane	99.65	5.0	100	0	99.6	60-130	100.6	0.899	30	
1,2-Dibromoethane	148.5	5.0	100	0	148	80-150	159	6.83	30	
1,2-Dichlorobenzene	102.6	5.0	100	0	103	70-130	106.4	3.68	30	
1,2-Dichloroethane	110.2	5.0	100	0	110	78-125	114	3.48	30	
1,2-Dichloropropane	102	5.0	100	0	102	75-125	104.1	2.04	30	
1,3,5-Trimethylbenzene	104.6	5.0	100	0	105	75-130	110.2	5.21	30	
1,3-Dichlorobenzene	110.8	5.0	100	0	111	75-130	114.4	3.2	30	
1,4-Dichlorobenzene	102.4	5.0	100	0	102	75-130	104.2	1.79	30	
2-Butanone	85.95	25	100	0	86	55-150	95.75	10.8	30	
2-Hexanone	92.35	25	100	0	92.4	60-135	101.1	9.05	30	
4-Methyl-2-pentanone	104.2	5.0	100	0	104	77-178	112.8	7.93	30	
Acetone	93	50	100	0	93	60-160	100.4	7.65	30	
Acrylonitrile	97.5	5.0	100	0	97.5	60-140	103.4	5.87	30	
Benzene	115.4	5.0	100	0	115	85-125	119.2	3.24	30	
Bromochloromethane	94.75	5.0	100	0	94.8	75-130	99.95	5.34	30	
Bromodichloromethane	103.6	5.0	100	0	104	75-125	107.6	3.74	30	
Bromoform	85.55	5.0	100	0	85.6	60-125	87.6	2.37	30	
Bromomethane	76.3	5.0	100	0	76.3	30-185	74.7	2.12	30	
Carbon disulfide	108.5	5.0	100	0	108	60-165	112.9	3.97	30	
Carbon tetrachloride	112.8	5.0	100	0	113	65-140	115.9	2.76	30	
Chlorobenzene	104.4	5.0	100	0	104	80-120	109.2	4.45	30	
Chloroethane	90.7	5.0	100	0	90.7	50-140	94.75	4.37	30	
Chloroform	106.8	5.0	100	0	107	80-130	114.6	7.05	30	
Chloromethane	96.65	5.0	100	0	96.6	50-130	93.25	3.58	30	
cis-1,2-Dichloroethene	104.2	5.0	100	0	104	75-134	110	5.42	30	
cis-1,3-Dichloropropene	98.3	5.0	100	0	98.3	70-130	101.6	3.3	30	
Dibromochloromethane	96.4	5.0	100	0	96.4	60-115	100.5	4.16	30	
Dibromomethane	110	5.0	100	0	110	85-125	117	6.17	30	
Dichlorodifluoromethane	107	5.0	100	0	107	20-120	113.6	5.94	30	
Ethylbenzene	101	5.0	100	0	101	85-125	106.6	5.4	30	
Hexachloroethane	71.8	5.0	100	0	71.8	50-124	71.05	1.05	30	
Isopropylbenzene	105.4	5.0	100	0	105	80-127	112	5.98	30	
m,p-Xylene	207.5	10	200	0	104	75-130	215	3.57	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

Methyl iodide	111.8	5.0	100	0	112	60-160	94.25	17.1	30
Methyl tert-butyl ether	93.75	5.0	100	0	93.8	80-130	100.6	7	30
Methylene chloride	102.4	25	100	0	102	75-140	108.7	5.92	30
Naphthalene	107.6	25	100	0	108	55-160	106.4	1.21	30
n-Propylbenzene	98.4	5.0	100	0	98.4	78-120	104.2	5.77	30
o-Xylene	100.1	5.0	100	0	100	80-125	106	5.77	30
Styrene	106.2	5.0	100	0	106	85-125	111.4	4.69	30
Tetrachloroethene	117.2	5.0	100	0	117	77-138	122.4	4.38	30
Toluene	102.5	5.0	100	0	102	85-125	107.8	5.09	30
trans-1,2-Dichloroethene	106.4	5.0	100	0	106	80-140	111.6	4.86	30
trans-1,3-Dichloropropene	93.3	5.0	100	0	93.3	81-123	98.55	5.47	30
trans-1,4-Dichloro-2-butene	73.1	10	100	0	73.1	46-118	83.65	13.5	30
Trichloroethene	112.6	5.0	100	0	113	84-130	116.3	3.23	30
Trichlorofluoromethane	102.6	5.0	100	0	103	60-140	107.2	4.39	30
Vinyl chloride	99.65	5.0	100	0	99.6	50-136	103.1	3.4	30
Xylenes, Total	307.6	15	300	0	103	80-126	321.1	4.29	30
Surr: 1,2-Dichloroethane-d4	*91.5*	0	*100*	0	*91.5*	*75-120*	92.15	*0.708*	*30*
Surr: 4-Bromofluorobenzene	*99.35*	0	*100*	0	*99.4*	*80-110*	102.5	*3.12*	*30*
Surr: Dibromofluoromethane	*98.05*	0	*100*	0	*98*	*85-115*	98.85	*0.813*	*30*
Surr: Toluene-d8	*95.25*	0	*100*	0	*95.2*	*85-110*	96.15	*0.94*	*30*

The following samples were analyzed in this batch:

15121249-06A	15121249-07A	15121249-08A
15121249-09A	15121249-10A	15121249-11A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

MBLK	Sample ID: **VBLKW2-151228-R179082x**			Units: **µg/L**		Analysis Date: **12/29/15 12:08 PM**			
Client ID:	Run ID: **VMS6_151228B**			SeqNo: **3639386**		Prep Date:		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
1,1,2-Trichlorotrifluoroethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2,3-Trichloropropane	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	1.0								
1,2-Dibromoethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
2-Butanone	ND	5.0								
2-Hexanone	ND	5.0								
2-Methylnaphthalene	ND	5.0								
4-Methyl-2-pentanone	ND	1.0								
Acetone	ND	10								
Acrylonitrile	ND	1.0								
Benzene	ND	1.0								
Bromochloromethane	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	1.0								
Carbon disulfide	ND	1.0								
Carbon tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	1.0								
cis-1,2-Dichloroethene	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
Diethyl ether	ND	1.0								
Ethylbenzene	ND	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

Hexachloroethane	ND	1.0					
Hexane	ND	1.0					
Isopropylbenzene	ND	1.0					
m,p-Xylene	ND	2.0					
Methyl iodide	ND	1.0					
Methyl tert-butyl ether	ND	1.0					
Methylene chloride	ND	5.0					
Naphthalene	ND	5.0					
n-Propylbenzene	ND	1.0					
o-Xylene	ND	1.0					
Styrene	ND	1.0					
Tetrachloroethene	ND	1.0					
Toluene	ND	1.0					
trans-1,2-Dichloroethene	ND	1.0					
trans-1,3-Dichloropropene	ND	1.0					
trans-1,4-Dichloro-2-butene	ND	2.0					
Trichloroethene	ND	1.0					
Trichlorofluoromethane	ND	1.0					
Vinyl acetate	ND	1.0					
Vinyl chloride	ND	1.0					
Xylenes, Total	ND	3.0					
Surr: 1,2-Dichloroethane-d4	*19.41*	0	*20*	0	*97*	*75-120*	0
Surr: 4-Bromofluorobenzene	*19.36*	0	*20*	0	*96.8*	*80-110*	0
Surr: Dibromofluoromethane	*20.08*	0	*20*	0	*100*	*85-115*	0
Surr: Toluene-d8	*19.24*	0	*20*	0	*96.2*	*85-110*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

LCS	Sample ID: **VLCSW2-151228-R179082x**				Units: **µg/L**		Analysis Date: **12/28/15 11:16 PM**			
Client ID:		Run ID: **VMS6_151228B**			SeqNo: **3639309**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.99	1.0	20	0	105	80-130	0			
1,1,1-Trichloroethane	20.98	1.0	20	0	105	75-130	0			
1,1,2,2-Tetrachloroethane	22.14	1.0	20	0	111	75-130	0			
1,1,2-Trichloroethane	21.16	1.0	20	0	106	75-125	0			
1,1-Dichloroethane	20.29	1.0	20	0	101	75-133	0			
1,1-Dichloroethene	19.77	1.0	20	0	98.8	70-145	0			
1,2,3-Trichloropropane	22.49	1.0	20	0	112	75-125	0			
1,2,4-Trichlorobenzene	21.33	1.0	20	0	107	70-135	0			
1,2,4-Trimethylbenzene	22.81	1.0	20	0	114	75-130	0			
1,2-Dibromo-3-chloropropane	20.58	1.0	20	0	103	60-130	0			
1,2-Dibromoethane	23.42	1.0	20	0	117	80-150	0			
1,2-Dichlorobenzene	21.84	1.0	20	0	109	70-130	0			
1,2-Dichloroethane	20.12	1.0	20	0	101	78-125	0			
1,2-Dichloropropane	21.75	1.0	20	0	109	75-125	0			
1,3,5-Trimethylbenzene	23.54	1.0	20	0	118	75-130	0			
1,3-Dichlorobenzene	22.29	1.0	20	0	111	75-130	0			
1,4-Dichlorobenzene	21.72	1.0	20	0	109	75-130	0			
2-Butanone	19.88	5.0	20	0	99.4	55-150	0			
2-Hexanone	20.06	5.0	20	0	100	60-135	0			
4-Methyl-2-pentanone	28.61	1.0	20	0	143	77-178	0			
Acetone	21.57	10	20	0	108	60-160	0			
Acrylonitrile	20.98	1.0	20	0	105	60-140	0			
Benzene	21.14	1.0	20	0	106	85-125	0			
Bromochloromethane	21.26	1.0	20	0	106	75-130	0			
Bromodichloromethane	21.41	1.0	20	0	107	75-125	0			
Bromoform	21.17	1.0	20	0	106	60-125	0			
Bromomethane	14.52	1.0	20	0	72.6	30-185	0			
Carbon disulfide	21.22	1.0	20	0	106	60-165	0			
Carbon tetrachloride	20.6	1.0	20	0	103	65-140	0			
Chlorobenzene	20.92	1.0	20	0	105	80-120	0			
Chloroethane	19.08	1.0	20	0	95.4	50-140	0			
Chloroform	19.93	1.0	20	0	99.6	80-130	0			
Chloromethane	15.28	1.0	20	0	76.4	50-130	0			
cis-1,2-Dichloroethene	19.7	1.0	20	0	98.5	75-134	0			
cis-1,3-Dichloropropene	21.51	1.0	20	0	108	70-130	0			
Dibromochloromethane	20.57	1.0	20	0	103	60-115	0			
Dibromomethane	21.63	1.0	20	0	108	85-125	0			
Dichlorodifluoromethane	19.35	1.0	20	0	96.8	20-120	0			
Ethylbenzene	21.46	1.0	20	0	107	85-125	0			
Hexachloroethane	18	1.0	20	0	90	50-124	0			
Isopropylbenzene	22.9	1.0	20	0	114	80-127	0			
m,p-Xylene	43.94	2.0	40	0	110	75-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

Methyl iodide	11.52	1.0	20	0	57.6	60-160	0	S
Methyl tert-butyl ether	21.84	1.0	20	0	109	80-130	0	
Methylene chloride	20.61	5.0	20	0	103	75-140	0	
Naphthalene	23.02	5.0	20	0	115	55-160	0	
n-Propylbenzene	22.2	1.0	20	0	111	78-120	0	
o-Xylene	21.25	1.0	20	0	106	80-125	0	
Styrene	23.06	1.0	20	0	115	85-125	0	
Tetrachloroethene	20.71	1.0	20	0	104	77-138	0	
Toluene	20.71	1.0	20	0	104	85-125	0	
trans-1,2-Dichloroethene	20.12	1.0	20	0	101	80-140	0	
trans-1,3-Dichloropropene	18.34	1.0	20	0	91.7	81-123	0	
trans-1,4-Dichloro-2-butene	16.11	2.0	20	0	80.6	46-118	0	
Trichloroethene	20.08	1.0	20	0	100	84-130	0	
Trichlorofluoromethane	19.22	1.0	20	0	96.1	60-140	0	
Vinyl chloride	19.12	1.0	20	0	95.6	50-136	0	
Xylenes, Total	65.19	3.0	60	0	109	80-126	0	
Surr: 1,2-Dichloroethane-d4	*18.32*	0	*20*	0	*91.6*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*19.93*	0	*20*	0	*99.6*	*80-110*	0	
Surr: Dibromofluoromethane	*19.7*	0	*20*	0	*98.5*	*85-115*	0	
Surr: Toluene-d8	*19.2*	0	*20*	0	*96*	*85-110*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

MS	Sample ID: **15121309-35A MS**				Units: **µg/L**		Analysis Date: **12/29/15 09:16 AM**			
Client ID:		Run ID: **VMS6_151228B**			SeqNo: **3639373**		Prep Date:		DF: **5**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	105.6	5.0	100	0	106	80-130	0			
1,1,1-Trichloroethane	110.9	5.0	100	0	111	75-130	0			
1,1,2,2-Tetrachloroethane	105.4	5.0	100	0	105	75-130	0			
1,1,2-Trichloroethane	103.6	5.0	100	0	104	75-125	0			
1,1-Dichloroethane	101	5.0	100	0	101	75-133	0			
1,1-Dichloroethene	103	5.0	100	0	103	70-145	0			
1,2,3-Trichloropropane	104	5.0	100	0	104	75-125	0			
1,2,4-Trichlorobenzene	100.1	5.0	100	0	100	70-135	0			
1,2,4-Trimethylbenzene	113	5.0	100	0	113	75-130	0			
1,2-Dibromo-3-chloropropane	92.6	5.0	100	0	92.6	60-130	0			
1,2-Dibromoethane	114.6	5.0	100	0	115	80-150	0			
1,2-Dichlorobenzene	104	5.0	100	0	104	70-130	0			
1,2-Dichloroethane	97.6	5.0	100	0	97.6	78-125	0			
1,2-Dichloropropane	108.4	5.0	100	0	108	75-125	0			
1,3,5-Trimethylbenzene	116.3	5.0	100	0	116	75-130	0			
1,3-Dichlorobenzene	108	5.0	100	0	108	75-130	0			
1,4-Dichlorobenzene	103	5.0	100	0	103	75-130	0			
2-Butanone	84.9	25	100	0	84.9	55-150	0			
2-Hexanone	87.45	25	100	0	87.4	60-135	0			
4-Methyl-2-pentanone	131.2	5.0	100	0	131	77-178	0			
Acetone	101	50	100	0	101	60-160	0			
Acrylonitrile	90.65	5.0	100	0	90.6	60-140	0			
Benzene	110.6	5.0	100	0	111	85-125	0			
Bromochloromethane	102.6	5.0	100	0	103	75-130	0			
Bromodichloromethane	104	5.0	100	0	104	75-125	0			
Bromoform	104	5.0	100	0	104	60-125	0			
Bromomethane	52.8	5.0	100	0	52.8	30-185	0			
Carbon disulfide	106.6	5.0	100	0	107	60-165	0			
Carbon tetrachloride	110.6	5.0	100	0	111	65-140	0			
Chlorobenzene	106.4	5.0	100	0	106	80-120	0			
Chloroethane	94.5	5.0	100	0	94.5	50-140	0			
Chloroform	100	5.0	100	0	100	80-130	0			
Chloromethane	60.4	5.0	100	0	60.4	50-130	0			
cis-1,2-Dichloroethene	96.4	5.0	100	0	96.4	75-134	0			
cis-1,3-Dichloropropene	105.6	5.0	100	0	106	70-130	0			
Dibromochloromethane	100.2	5.0	100	0	100	60-115	0			
Dibromomethane	107.6	5.0	100	0	108	85-125	0			
Dichlorodifluoromethane	94.15	5.0	100	0	94.2	20-120	0			
Ethylbenzene	110.2	5.0	100	0	110	85-125	0			
Hexachloroethane	84.3	5.0	100	0	84.3	50-124	0			
Isopropylbenzene	115.7	5.0	100	0	116	80-127	0			
m,p-Xylene	223.8	10	200	0	112	75-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

Methyl iodide	35.35	5.0	100	0	35.4	60-160	0	S
Methyl tert-butyl ether	101.6	5.0	100	0	102	80-130	0	
Methylene chloride	100.4	25	100	0	100	75-140	0	
Naphthalene	106.4	25	100	0	106	55-160	0	
n-Propylbenzene	111.8	5.0	100	0	112	78-120	0	
o-Xylene	108	5.0	100	0	108	80-125	0	
Styrene	116	5.0	100	0	116	85-125	0	
Tetrachloroethene	111.3	5.0	100	0	111	77-138	0	
Toluene	107.4	5.0	100	0	107	85-125	0	
trans-1,2-Dichloroethene	99.85	5.0	100	0	99.8	80-140	0	
trans-1,3-Dichloropropene	86.15	5.0	100	0	86.2	81-123	0	
trans-1,4-Dichloro-2-butene	70.85	10	100	0	70.8	46-118	0	
Trichloroethene	117.4	5.0	100	15.13	102	84-130	0	
Trichlorofluoromethane	97.5	5.0	100	0	97.5	60-140	0	
Vinyl chloride	93.5	5.0	100	0	93.5	50-136	0	
Xylenes, Total	331.8	15	300	0	111	80-126	0	
Surr: 1,2-Dichloroethane-d4	*90.7*	0	*100*	0	*90.7*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*100.8*	0	*100*	0	*101*	*80-110*	0	
Surr: Dibromofluoromethane	*99.3*	0	*100*	0	*99.3*	*85-115*	0	
Surr: Toluene-d8	*96.3*	0	*100*	0	*96.3*	*85-110*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

MSD	Sample ID: **15121309-35A MSD**				Units: **µg/L**			Analysis Date: **12/29/15 09:42 AM**		
Client ID:		Run ID: **VMS6_151228B**			SeqNo: **3639382**	Prep Date:		DF: **5**		

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	107.6	5.0	100	0	108	80-130	105.6	1.88	30	
1,1,1-Trichloroethane	108.9	5.0	100	0	109	75-130	110.9	1.82	30	
1,1,2,2-Tetrachloroethane	109.6	5.0	100	0	110	75-130	105.4	3.91	30	
1,1,2-Trichloroethane	106.8	5.0	100	0	107	75-125	103.6	3.09	30	
1,1-Dichloroethane	102	5.0	100	0	102	75-133	101	0.887	30	
1,1-Dichloroethene	100.8	5.0	100	0	101	70-145	103	2.16	30	
1,2,3-Trichloropropane	111	5.0	100	0	111	75-125	104	6.51	30	
1,2,4-Trichlorobenzene	103.8	5.0	100	0	104	70-135	100.1	3.63	30	
1,2,4-Trimethylbenzene	112.4	5.0	100	0	112	75-130	113	0.533	30	
1,2-Dibromo-3-chloropropane	96.35	5.0	100	0	96.4	60-130	92.6	3.97	30	
1,2-Dibromoethane	117.4	5.0	100	0	117	80-150	114.6	2.5	30	
1,2-Dichlorobenzene	110	5.0	100	0	110	70-130	104	5.65	30	
1,2-Dichloroethane	97.25	5.0	100	0	97.2	78-125	97.6	0.359	30	
1,2-Dichloropropane	111.8	5.0	100	0	112	75-125	108.4	3.18	30	
1,3,5-Trimethylbenzene	115.4	5.0	100	0	115	75-130	116.3	0.734	30	
1,3-Dichlorobenzene	110.2	5.0	100	0	110	75-130	108	1.97	30	
1,4-Dichlorobenzene	106.4	5.0	100	0	106	75-130	103	3.25	30	
2-Butanone	86.45	25	100	0	86.4	55-150	84.9	1.81	30	
2-Hexanone	90.65	25	100	0	90.6	60-135	87.45	3.59	30	
4-Methyl-2-pentanone	130.5	5.0	100	0	130	77-178	131.2	0.535	30	
Acetone	102.2	50	100	0	102	60-160	101	1.28	30	
Acrylonitrile	92.6	5.0	100	0	92.6	60-140	90.65	2.13	30	
Benzene	109	5.0	100	0	109	85-125	110.6	1.41	30	
Bromochloromethane	102	5.0	100	0	102	75-130	102.6	0.636	30	
Bromodichloromethane	106.4	5.0	100	0	106	75-125	104	2.28	30	
Bromoform	108	5.0	100	0	108	60-125	104	3.73	30	
Bromomethane	67.7	5.0	100	0	67.7	30-185	52.8	24.7	30	
Carbon disulfide	106.7	5.0	100	0	107	60-165	106.6	0.141	30	
Carbon tetrachloride	109.9	5.0	100	0	110	65-140	110.6	0.68	30	
Chlorobenzene	108.1	5.0	100	0	108	80-120	106.4	1.63	30	
Chloroethane	96.75	5.0	100	0	96.8	50-140	94.5	2.35	30	
Chloroform	100.5	5.0	100	0	100	80-130	100	0.449	30	
Chloromethane	76.1	5.0	100	0	76.1	50-130	60.4	23	30	
cis-1,2-Dichloroethene	94.6	5.0	100	0	94.6	75-134	96.4	1.88	30	
cis-1,3-Dichloropropene	105.2	5.0	100	0	105	70-130	105.6	0.474	30	
Dibromochloromethane	102	5.0	100	0	102	60-115	100.2	1.73	30	
Dibromomethane	105.1	5.0	100	0	105	85-125	107.6	2.3	30	
Dichlorodifluoromethane	90.1	5.0	100	0	90.1	20-120	94.15	4.4	30	
Ethylbenzene	110.9	5.0	100	0	111	85-125	110.2	0.679	30	
Hexachloroethane	87.7	5.0	100	0	87.7	50-124	84.3	3.95	30	
Isopropylbenzene	117.6	5.0	100	0	118	80-127	115.7	1.59	30	
m,p-Xylene	222.4	10	200	0	111	75-130	223.8	0.628	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

Methyl iodide	65.25	5.0	100	0	65.2	60-160	35.35	59.4	30	R
Methyl tert-butyl ether	103	5.0	100	0	103	80-130	101.6	1.32	30	
Methylene chloride	99.85	25	100	0	99.8	75-140	100.4	0.549	30	
Naphthalene	108.1	25	100	0	108	55-160	106.4	1.59	30	
n-Propylbenzene	113.4	5.0	100	0	113	78-120	111.8	1.42	30	
o-Xylene	108	5.0	100	0	108	80-125	108	0	30	
Styrene	113.3	5.0	100	0	113	85-125	116	2.31	30	
Tetrachloroethene	111.5	5.0	100	0	112	77-138	111.3	0.18	30	
Toluene	107.9	5.0	100	0	108	85-125	107.4	0.464	30	
trans-1,2-Dichloroethene	100.4	5.0	100	0	100	80-140	99.85	0.5	30	
trans-1,3-Dichloropropene	90.1	5.0	100	0	90.1	81-123	86.15	4.48	30	
trans-1,4-Dichloro-2-butene	73.85	10	100	0	73.8	46-118	70.85	4.15	30	
Trichloroethene	117.9	5.0	100	15.13	103	84-130	117.4	0.468	30	
Trichlorofluoromethane	96.8	5.0	100	0	96.8	60-140	97.5	0.721	30	
Vinyl chloride	98.15	5.0	100	0	98.2	50-136	93.5	4.85	30	
Xylenes, Total	330.4	15	300	0	110	80-126	331.8	0.423	30	
Surr: 1,2-Dichloroethane-d4	*89.5*	0	*100*	0	*89.5*	*75-120*	90.7	*1.33*	*30*	
Surr: 4-Bromofluorobenzene	*101.5*	0	*100*	0	*102*	*80-110*	100.8	*0.742*	*30*	
Surr: Dibromofluoromethane	*96.45*	0	*100*	0	*96.4*	*85-115*	99.3	*2.91*	*30*	
Surr: Toluene-d8	*97.95*	0	*100*	0	*98*	*85-110*	96.3	*1.7*	*30*	

The following samples were analyzed in this batch:

15121249-07A	15121249-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R178881** Instrument ID **MOIST** Method: **E160.3M**

MBLK	Sample ID: **WBLKS-R178881**				Units: **% of sample**		Analysis Date: **12/22/15 04:48 PM**			
Client ID:		Run ID: **MOIST_151222C**			SeqNo: **3634615**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.050								J

LCS	Sample ID: **LCS-R178881**				Units: **% of sample**		Analysis Date: **12/22/15 04:48 PM**			
Client ID:		Run ID: **MOIST_151222C**			SeqNo: **3634613**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP	Sample ID: **15121217-10B DUP**				Units: **% of sample**		Analysis Date: **12/22/15 04:48 PM**			
Client ID:		Run ID: **MOIST_151222C**			SeqNo: **3634574**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	11.06	0.050	0	0	0		9.86	11.5	20	

DUP	Sample ID: **15121217-12B DUP**				Units: **% of sample**		Analysis Date: **12/22/15 04:48 PM**			
Client ID:		Run ID: **MOIST_151222C**			SeqNo: **3634580**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	11.83	0.050	0	0	0		13.19	10.9	20	

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-04B	15121249-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

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Chain of Custody Form

Page 1 of 1

COC ID: 32039

15121249

ALS Project Manager: N | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Alcott Street Phase II	A	VOCs
Work Order		Project Number	825390	B	PNAs
Company Name	Fleis & Vandenbrink Engineering, Inc.	Bill To Company	Fleis & Vandenbrink Engineering, Inc.	C	Metals (MI-10)
Send Report To	Steve Kimm	Invoice Attn	Accounts Payable	D	Mercury
Address	4798 Campus Drive	Address	4798 Campus Drive	E	PCBs
				F	Moisture
City/State/Zip	Kalamazoo, MI 49008	City/State/Zip	Kalamazoo, MI 49008	G	
Phone	(269) 385-0011	Phone	(269) 385-0011	H	
Fax	(269) 382-6972	Fax	(269) 382-6972	I	
e-Mail Address	SKimm@fveng.com	e-Mail Address	Lerskin@fveng.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SB-1 (2'-3')	12-16-15	10:30 A	Soil	VOCs	3	X	X	X	X	X	X					
2	SB-2 (3'-4')	12-16-15	11:30 A	Soil		3	X	X	X	X	X	X					
3	SB-3 (3'-4')	12-16-15	12:50 P	Soil		3	X	X	X	X	X	X					
4	SS-1 (0'-1')	12-16-15	5:20 P	Soil		3	X	X	X	X	X	X					
5	SS-2 (0'-1')	12-16-15	5:25 P	Soil		3	X	X	X	X	X	X					
6	TMW-1	12-16-15	12:30 P	GW		8	X	X	X	X	X	X					
7	TMW-2	12-16-15	1:50 P	GW		8	X	X	X	X	X	X					
8	TMW-3	12-16-15	3:40 P	GW		8	X	X	X	X	X	X					
9	TMW-4	12-16-15	4:55 P	GW		8	X	X	X	X	X	X					
10	Field Blank	12-16-15	2:00 P	GW		3	X										

Sampler(s) Please Print & Sign: Amber Jane Portiss (Amber Jane Portiss, F+V)

Shipment Method: FedEx

Turnaround Time in Business Days (BD): ☐ 10 BD ☒ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Amber Jane Portiss	12-18-15	5:30 pm	FedEx
Relinquished by:	Date:	Time:	Received by (Laboratory):
	12/19/15	1030	YM Brock
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):
MG	12/21/15	0849	

Notes: Please also analyze the trip blank(s) for VOCs.

Cooler ID	Cooler Temp
	3.4

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ORIGIN ID:AZOA (616) 710-2491
AMBER PONTIUS
FLEIST VANDENBRINK
3352 128TH AVE

HOLLAND, MI 49424
UNITED STATES US

SHIP DATE: 18DEC15
ACTWGT: 61.60 LB
CAD: 6990374/SSFO1621
DIMS: 24x14x14 IN

BILL THIRD PARTY

TO ALS ENVIRONMENTAL

3352 128TH AVE

HOLLAND MI 49424

(616) 399-6070

INV:
PO:
REF:
DEPT:

FedEx Express

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 0201 7819 9808 0931

68 HLMA

49424
MI-US GRR

Part # 156297-435 REV 12/15

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Time: 0.00 pm

Date: 18 Dec 2015

Name: Fleist VandenBrink

Com:

Seal Broken By:

Date:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **FLEIS&VANDENBRINK - KZOO** Date/Time Received: **19-Dec-15 10:30**

Work Order: **15121249** Received by: **MB**

Checklist completed by Meghan Broadbent (eSignature) 21-Dec-15 (Date) Reviewed by: Alex Csaszar (eSignature) 21-Dec-15 (Date)

Matrices: soil, water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.4/3.4	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/21/2015 9:11:57 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

APPENDIX C

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Troll 9500 **Low-Flow System**
12/16/2015 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Amber Jane Pontius	Pump Model/Type	Peristaltic
Company Name	Fleis & VandenBrink	Tubing Type	TLPE
Project Name	Kalamazoo County	Tubing Diameter	0.19 [in]
Site Name	Alcott Ph2	Tubing Length	20 [ft]
		Pump placement from TOC	17.5 [ft]

Well Information:		**Pumping information:**	
Well ID	TMW-1	Final pumping rate	120 [mL/min]
Well diameter	1 [in]	Flowcell volume	228.51 [mL]
Well total depth	20 [ft]	Calculated Sample Rate	115 [sec]
Depth to top of screen	15 [ft]	Sample rate	115 [sec]
Screen length	60 [in]	Stabilized drawdown	0.24 [in]
Depth to Water	11.26 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [FNU]	DO [mg/L]	ORP [V]
Stabilization Settings			+/-0.1	+/-0.3 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-0.01
Last 5 Readings	12:17:49	56.91	7.43	730.91	23.81	16.98	0.32
	12:19:45	56.65	7.44	727.98	33.99	17.12	0.32
	12:21:40	56.81	7.44	729.53	15.89	17.04	0.32
	12:23:36	56.79	7.43	732.99	12.92	17.05	0.31
	12:25:33	56.80	7.43	730.92	8.19	17.05	0.31
Variance in last 3 readings	12:21:40	0.16	0.00	1.55	-18.10	-0.08	0.00
	12:23:36	-0.02	0.00	3.46	-2.97	0.01	0.00
	12:25:33	0.01	0.00	-2.08	-4.73	0.00	0.00

Notes: Sampled after 1 hour purge. Turbidity not yet stable with 10%.

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Troll 9500 **Low-Flow System**
12/16/2015 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Amber Jane Pontius	Pump Model/Type	Peristaltic
Company Name	Fleis & VandenBrink	Tubing Type	TLPE
Project Name	Kalamazoo County	Tubing Diameter	0.19 [in]
Site Name	Alcott Ph2	Tubing Length	15 [ft]
		Pump placement from TOC	12.5 [ft]

Well Information:		**Pumping information:**	
Well ID	TMW-2	Final pumping rate	120 [mL/min]
Well diameter	1 [in]	Flowcell volume	200.63 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	101 [sec]
Depth to top of screen	10 [ft]	Sample rate	101 [sec]
Screen length	60 [in]	Stabilized drawdown	0.6 [in]
Depth to Water	8.38 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [FNU]	DO [mg/L]	ORP [V]
Stabilization Settings			+/-0.1	+/-0.3 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-0.01
Last 5 Readings	13:41:30	55.11	7.64	499.03	6.77	17.95	0.35
	13:43:12	55.22	7.63	499.75	7.68	17.88	0.35
	13:44:52	55.31	7.63	498.06	4.05	17.84	0.35
	13:46:35	55.06	7.63	497.17	4.33	17.97	0.35
	13:48:17	55.13	7.63	493.91	4.64	17.93	0.35
Variance in last 3 readings	13:44:52	0.08	0.00	-1.69	-3.63	-0.05	0.00
	13:46:35	-0.24	-0.01	-0.89	0.28	0.13	0.00
	13:48:17	0.06	0.00	-3.26	0.31	-0.03	0.00

Notes:

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Troll 9500 **Low-Flow System**
12/16/2015 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Amber Jane Pontius	Pump Model/Type	Peristaltic
Company Name	Fleis & VandenBrink	Tubing Type	TLPE
Project Name	Kalamazoo County	Tubing Diameter	0.19 [in]
Site Name	Alcott Ph2	Tubing Length	15 [ft]
		Pump placement from TOC	12.5 [ft]

Well Information:		**Pumping information:**	
Well ID	TMW-3	Final pumping rate	120 [mL/min]
Well diameter	1 [in]	Flowcell volume	200.63 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	101 [sec]
Depth to top of screen	10 [ft]	Sample rate	101 [sec]
Screen length	60 [in]	Stabilized drawdown	1.2 [in]
Depth to Water	8.5 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [FNU]	DO [mg/L]	ORP [V]
Stabilization Settings			+/-0.1	+/-0.3 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-0.01
Last 5 Readings	15:30:47	54.83	7.67	433.38	3.17	18.09	0.25
	15:32:29	54.79	7.67	432.90	3.48	18.12	0.25
	15:34:11	54.81	7.67	433.57	1.75	18.11	0.25
	15:35:52	54.84	7.67	432.91	1.51	18.09	0.25
	15:37:34	54.87	7.67	433.64	1.44	18.08	0.25
Variance in last 3 readings	15:34:11	0.02	0.00	0.67	-1.73	-0.01	0.00
	15:35:52	0.04	0.00	-0.67	-0.24	-0.02	0.00
	15:37:34	0.02	0.00	0.73	-0.07	-0.01	0.00

Notes:

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Troll 9500 **Low-Flow System**
12/16/2015 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Amber Jane Pontius	Pump Model/Type	Peristaltic
Company Name	Fleis & VandenBrink	Tubing Type	TLPE
Project Name	Kalamazoo County	Tubing Diameter	0.19 [in]
Site Name	Alcott Ph2	Tubing Length	15 [ft]
		Pump placement from TOC	12.5 [ft]

Well Information:		**Pumping information:**	
Well ID	TMW-4	Final pumping rate	100 [mL/min]
Well diameter	1 [in]	Flowcell volume	200.63 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	121 [sec]
Depth to top of screen	10 [ft]	Sample rate	121 [sec]
Screen length	60 [in]	Stabilized drawdown	2.4 [in]
Depth to Water	9.83 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [FNU]	DO [mg/L]	ORP [V]
Stabilization Settings			+/-0.1	+/-0.3 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-0.01
Last 5 Readings	16:44:35	53.19	9.17	288.51	81.84	19.02	0.20
	16:46:36	53.33	9.18	288.70	71.97	18.94	0.21
	16:48:38	53.23	9.18	288.10	67.00	19.00	0.20
	16:50:40	53.29	9.19	288.13	62.67	18.97	0.20
	16:52:41	53.30	9.19	288.02	65.75	18.96	0.19
Variance in last 3 readings	16:48:38	-0.10	0.00	-0.59	-4.98	0.06	0.01
	16:50:40	0.05	0.00	0.03	-4.33	-0.03	0.00
	16:52:41	0.01	0.01	-0.11	3.08	-0.01	0.00

Notes: Sampled after turbidity within 10%

ATTACHMENT 2

SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

OF

501 EAST ALCOTT STREET
KALAMAZOO
KALAMAZOO COUNTY, MICHIGAN

FOR

CITY OF KALAMAZOO

March 2017
Project No. 825821

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS/ACRONYMS

ags	Above Ground Surface
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethel-Benzene and Xylenes
DWC	Drinking Water Criteria
ESA	Environmental Site Assessment
F&V	Fleis & VandenBrink
GNRCC	Generic Non-Residential Cleanup Criteria
GRCC	Generic Residential Cleanup Criteria
MDEQ	Michigan Department of Environmental Quality
NREPA	Natural Resources and Environmental Protection Act
NRVISL	Non-Residential Vapor Intrusion Screening Level
PID	Photoionization Detector
PNA	Polynuclear Aromatics
PVC	Polyvinyl Chloride
QC	Quality Control
REC	Recognized Environmental Condition
SS	Soil Sample
TB	Test Boring
TMB	1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene
TMW	Temporary Monitoring Well
USCS	United Soil Classification System
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Fleis & VandenBrink (F&V) was retained by the City of Kalamazoo to conduct a Supplemental Phase II Environmental Site Assessment (ESA) of the 501 East Alcott Street Property, Kalamazoo, Kalamazoo County, Michigan (Property). The purpose of the Supplemental Phase II ESA was to further evaluate the Recognized Environmental Conditions (RECs) identified during the Phase I ESA and Phase II ESA conducted on the Property by F&V in December 2015 for Kalamazoo County. This report incorporates the findings of the Phase I and Phase II ESAs conducted in December 2015.

This Supplemental Phase II ESA was conducted on February 23, 2017 in accordance with the proposal dated January 11, 2017. F&V has no obligation to any party other than City of Kalamazoo, and specifically disclaims any obligations or responsibility to any other party.

2.0 SITE BACKGROUND

The Property is a portion of the former Performance Paper Company which operated from the late 1800s until 1998 when paper-making operations ceased. The RECs identified in the Phase I ESA included the following:

1. Historical use of the Property as a portion of the former Performance Paper Company and listing as a portion of the Allied Paper/Portage Creek/Kalamazoo River Superfund Site.
2. The historical use and storage of coal on the Property.
3. The documented presence of soil contaminated with metals and PNAs above Part 201 GRCC.
4. The documented presence of groundwater contaminated with metals above Part 201 GRCC.
5. The documented releases of hazardous substances and petroleum products onto the basement floor of Mill C.
6. The documented releases of hazardous substances and petroleum products into the Mill C trench drains and sump in Building 34.

3.0 PHASE II ESA FIELD ACTIVITIES

Field activities conducted during the December 2015 and February 2017 Phase II ESAs are described below.

- Direct Push (Geoprobe) Soil Sampling
- Geoprobe Groundwater Sampling
- Surficial Soil Sampling
- Test Pitting Soil Sampling

Field work and instrument calibration was conducted in accordance to F&V's Field Standard Operating Procedures.

3.1 Sample Collection

3.1.1 Geoprobe Soil Sampling (December 2015)

F&V contracted with TerraProbe who utilized a truck-mounted Geoprobe direct-push drilling rig to install four (4) soil borings (SB-1 through SB-4) to evaluate subsurface conditions in the vicinity of the identified RECs. The borings were installed using the Geoprobe and a 2-inch diameter macro-core barrel equipped with single-use acetate liners. A continuous core of soils was collected at each boring location from the surface to the water table interface. The soils were field screened for visual indicators of contamination and the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). One soil sample was collected from SB-1, SB-2 and SB-3 at the interval corresponding to the highest PID reading in the soils or where visual evidence indicated the greatest potential for contamination. The visual and PID screening of the recovered soils from SB-4 did not identify potential areas of soil contamination, therefore a soil sample was not collected for analysis.

Soils were observed and logged by the F&V Geologist and Boring Logs are included in Appendix A. The water table was identified by the observation of saturated soils in the sampling liners.

Sample locations were measured to site landmarks and are shown on Figure 2.

3.1.2 Geoprobe Groundwater Sampling (December 2015)

Groundwater samples were collected using the Geoprobe at the four (4) test boring locations. Upon reaching groundwater, a temporary monitoring well was installed at each boring location (TMW-1 through TMW-4). The temporary monitoring wells were constructed of one-inch diameter polyvinyl chloride (PVC) well riser equipped with a 5-foot PVC well screen. The wells were installed with the well screen bisecting the surface of the water table. A groundwater sample was collected from each temporary well. Field measurement of temperature, pH, specific conductance, dissolved oxygen, and turbidity was conducted at the time of sample collection.

Sample locations were measured to site landmarks and are shown on Figure 2.

3.1.3 Surficial Soil Sampling (December 2015)

A hand auger was used to create shallow borings at two locations on the Property (SS-1 and SS-2). Soil samples were collected from undisturbed soils directly into laboratory prepared sampling jars. Only the sample collected from SS-2 was submitted for laboratory analysis.

Sample locations were measured to site landmarks.

3.1.4 Test Pitting Soil Sampling (February 2017)

F&V subcontracted Fulton Excavating of Kalamazoo, Michigan (Fulton) to construct test pits at the Property. The purpose of the test pitting was to further evaluate the presence of historic fill materials at the Property. A total of eight (8) test pits were constructed. Test pit logs are provided in Appendix A.

A hand auger equipped with a stainless steel sampling spoon was used to collect soil samples from test pit sidewalls at selected locations. Soil samples were collected from the sampling spoon and placed directly into laboratory prepared sampling jars. A total of six (6) soil samples were collected for laboratory analysis.

Sample locations were measured to site landmarks.

3.2 Field Quality Control Samples

Trip blanks were included in the shipping coolers and a field blank of the methanol preservative was collected.

3.3 Sample Handling, Custody and Analysis

3.3.1 Sample Containers and Preservation

The sample containers were provided by the analytical laboratory. Each sample was collected directly into the laboratory prepared containers. Sample preservation was used to prevent or retard the degradation or modification of chemical compounds during transit and storage prior to laboratory extraction and analysis. Sample preservatives were based on the type of sample and required analyses.

3.3.2 Chain of Custody

Chain-of-custody procedures are intended to document sample possession from collection to disposal in accordance with federal guidelines. Chain-of-custody records were used to document and track possession of the samples.

3.3.3 Sample Storage, Transport and Analysis

Samples were held on ice in an insulated cooler during the collection process. The samples were submitted to ALS Laboratory of Holland, Michigan (ALS) for analysis.

The samples from both the 2015 Phase II ESA and 2017 Supplemental Phase II ESA were analyzed for volatile organic compounds (8260 plus scan), polynuclear aromatic hydrocarbons (Method 8270C), polychlorinated biphenyls and Michigan 10 Metals.

The laboratory analytical data reports are included in Appendix B.

3.4 Applicable Standards

The analytical data for the collected samples are summarized and compared to Michigan Department of Environmental Quality (MDEQ) Part 201 GRCC and GNRCC on Table 1 (Soil) and Table 2 (Groundwater).

3.5 Investigative-Derived Waste

Excess soil cuttings were mixed with bentonite chips and used to fill the borehole where the drill cuttings were generated. Excess purged groundwater was returned to the ground surface adjacent to the well where it was generated.

3.6 Boring, Temporary Well and Test Pit Abandonment

Upon completion of site assessment activities, borings and temporary monitoring wells were abandoned. Temporary well materials were removed from the boreholes and properly disposed offsite. Boreholes were abandoned by placing bentonite chips and/or bentonite chips mixed with soil cuttings into the borehole until each was completely filled.

The test pits were backfilled with the removed materials.

3.7 Equipment Decontamination

Contact sampling equipment was decontaminated between sampling events to ensure the accuracy of data collected. Single-use sampling equipment was properly disposed after use.

3.8 Field Documentation

Detailed records of the field activities were maintained in field notebooks, field forms, laboratory data sheets and chain of custody forms. These records will document field activities including sampling locations, sampling times, types of samples collected, weather conditions and other information pertinent to the assessment.

4.0 DATA ANALYSIS

4.1 December 2015 Data

SB/TMW-1 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-1 (2-3') was collected from this test boring and contained arsenic at a concentration exceeding Part 201 GRCC. Numerous PNA compounds, tetrachloroethylene and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-1 was collected at this location and contained tetrachloroethylene at a concentration equal to its Part 201 GRCC Drinking Water Criteria. Barium was detected at a concentration below its respective Part 201 GRCC.

SB/TMW-2 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-2 (3-4') was collected from this test boring and contained the following compounds at concentrations exceeding their respective Part 201 GRCC: carbon tetrachloride, naphthalene, tetrachloroethylene, trichloroethylene, xylenes, and arsenic. The concentrations of tetrachloroethylene and trichloroethylene also exceeded their respective Part 201 GNRCC Drinking Water Protection Criteria. Trichlorethylene also exceeded its Part 201 GNRCC Soil Volatilization to Indoor Air Criteria. Numerous VOCs, PNAs and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-2 was collected at this location and contained tetrachloroethylene at a concentration exceeding its Part 201 GRCC Drinking Water Criteria. Barium was detected at a concentration below its respective Part 201 GRCC.

SB/TMW-3 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. Soil sample SB-3 (3-4') was collected from this test boring and contained arsenic at a concentration exceeding Part 201 GRCC. Numerous PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC. Groundwater sample TMW-3 was collected at this location and contained tetrachloroethylene, barium, chromium and copper at concentrations below their respective Part 201 GRCC.

SB/TMW-4 was installed near the north Property boundary in an area that was formerly occupied by rail spurs and located hydraulically downgradient of the paper mill buildings. A soil sample was not collected at this location. TMW-4 was collected at this location, and it did not contain tested compounds at concentrations exceeding Part 201 GRCC.

A surficial soil sample (SS-2, 0-1') was collected from undisturbed fill material near the north Property boundary. The sample contained arsenic and mercury at concentrations exceeding their respective Part 201 GRCC. Numerous PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC.

A field blank was collected of the methanol preservative and analyzed for VOCs. The field blank did not contain detectable levels of VOCs.

A trip blank was included in the insulated cooler containing the collected samples and was analyzed for VOCs. The trip blank did not contain detectable levels of VOCs.

4.2 February 2017 Data

Test Pit 1 was installed along the northwest portion of the Property on an elevation high point located outside the former Mill C Basement area in an area that was formerly occupied by rail spurs. Encountered materials included one foot of crushed concrete overlying approximately 6.5 feet of historic fill material described as stained sand and gravel with some coal ash and cinders. Sandy gravel was present beneath the historic fill. Soil sample Test Pit 1 (2') was collected from this test pit and contained tetrachloroethylene, benzo(a)pyrene, arsenic and mercury at concentrations exceeding their respective Part 201 GRCC. The concentration of tetrachloroethylene also exceeded its Part 201 GNRCC Drinking Water Protection Criteria. Numerous VOCs, PNA compounds and metals were detected at concentrations

below their respective Part 201 GRCC. Soil sample Test Pit 1 (5') was collected from this test pit and did not contain any tested compound at concentrations above Part 201 GRCC. Several PNA compounds, VOCs and metals were detected at concentrations below their respective Part 201 GRCC.

Test Pit 2 was installed along the west portion of the Property on an elevation high point located outside the former Mill C Basement area in an area that was formerly occupied by rail spurs. Encountered materials included one foot of crushed concrete overlying approximately 7 feet of historic fill material described as stained sand and gravel with some concrete debris, rubble, coal ash and cinders. Interbedded layers of sandy gravel and fill material was present beneath the historic fill to a depth of 12 feet bgl. Soil sample Test Pit 2 (2') was collected from this test pit and contained arsenic at a concentration exceeding its Part 201 GRCC. Numerous PNA compounds, toluene and metals were detected at concentrations below their respective Part 201 GRCC. Soil sample Test Pit 2 (9') was collected from this test pit and contained arsenic at a concentration exceeding its Part 201 GRCC. Numerous PNA compounds, VOCs, metals and PCB Aroclor 1242 were detected at concentrations below their respective Part 201 GRCC.

Test Pit 3 was installed along the south central portion of the Property in a low area within the former Mill C Basement. Encountered materials were 9 feet of sandy gravel containing crushed concrete overlying native sands. No historic fill material was located in this test pit and no soil samples were collected for laboratory analysis.

Test Pit 4 was installed in the approximate center of the depression from the Mill C Basement excavation. Encountered materials were 2.5 feet of sandy gravel containing crushed concrete overlying 2.5 feet of sand with some gravel with minor dark stained layers overlying native sands and gravels. The water table was encountered at approximately 9 feet bgl. No historic fill material was located in this test pit. Soil sample Test Pit 4 (2') was collected from this test pit and did not contain any tested compound at concentrations above Part 201 GRCC. Several PNA compounds and metals were detected at concentrations below their respective Part 201 GRCC.

Test Pit 5 was installed along the east central portion of the Property in a low area within the former Mill C Basement. Encountered materials were 2.5 feet of sandy gravel containing crushed concrete overlying sand with some stained layers to a depth of 9 feet bgl where the water table was encountered. No historic fill material was located in this test pit and no soil samples were collected for laboratory analysis.

Test Pit 6 was installed in the approximate center of the Property in a low area likely just west of the former Mill C Basement. Encountered materials were 2.5 feet of sandy gravel containing crushed concrete overlying 1.5 feet of historic fill (sandy gravel with a thin coal layer and some rubble) overlying native sand with clay some stained layers or mottling to a depth of 9 feet bgl where the water table was encountered. No soil samples were collected for laboratory analysis.

Test Pit 7 was installed near the southeast corner of the Property in an area within the former Mill C Basement. Encountered materials were 7 feet of sandy gravel containing crushed concrete overlying native sandy gravel a depth of 9 feet bgl. The water table was encountered at approximately 8 feet bgl. No soil samples were collected for laboratory analysis.

Test Pit 8 was installed along the southwest portion of the Property on an elevation high point located outside the former Mill C Basement in an area that was formerly occupied by rail spurs and a courtyard. Encountered materials included 3 feet of sandy gravel with crushed concrete and sand overlying approximately 6 feet of historic fill material described as stained sand and gravel with some concrete debris, rubble, coal ash and cinders. Soil sample Test Pit 8 (7') was collected from this test pit and contained arsenic at a concentration exceeding its Part 201 GRCC. Numerous PNA compounds, trichloroethylene and metals were detected at concentrations below their respective Part 201 GRCC.

5.0 FINDINGS

F&V conducted a Phase II ESA in December 2015 and a Supplemental Phase II in February 2017 to evaluate the RECs identified in the December 2015 Phase I ESA.

The hazardous substances: carbon tetrachloride, naphthalene, tetrachloroethylene, trichloroethylene, xylenes, benzo(a)pyrene, arsenic and mercury have been identified in the Property's soil; and the hazardous substance tetrachloroethylene has been identified in the Property's groundwater; at concentrations exceeding their respective GRCC, as defined in R299.5744 and R299.5746 of the NREPA.

None of the hazardous substances detected in soils exceeded their Part 201 GNRCC Direct Contact Criteria. Trichloroethylene was detected in one soil sample at a concentration exceeding Part 201 GNRCC Volatilization to Indoor Air Criteria. Several tested hazardous substances were detected in soil at concentrations exceeding Part 201 GNRCC Drinking Water Protection Criteria; however, groundwater will not be used as a drinking water source at the Site.

6.0 CONCLUSIONS

F&V conducted a Phase II ESA in December 2015 and a Supplemental Phase II ESA in February 2017 to evaluate the RECs identified in the December 2015 Phase I ESA.

Based on the data collected during the Supplemental Phase II, the Property is a *facility*, as defined in Part 201 of the Natural Resources and Environmental Protection Act, P.A. 451 of 1994, as amended (NREPA), due to the presence of carbon tetrachloride, naphthalene, tetrachloroethylene, trichloroethylene, xylenes, benzo(a)pyrene, arsenic and mercury in soils, and tetrachloroethylene in groundwater at concentrations, exceeding Part 201 GRCC.

The concentrations of hazardous substances detected in soils above Part 201 GNRCC do not pose an excessive contaminant exposure risk to the proposed future use of the Property.

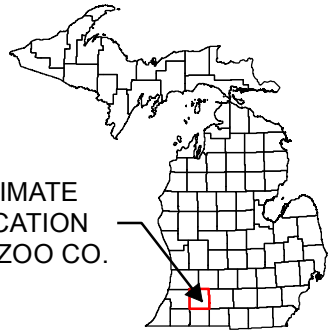
FIGURES

825821_Fig1_SiteLoc / amberp 3/3/2017

NORTH

0 470 940

SCALE IN FEET



APPROXIMATE
SITE LOCATION
KALAMAZOO CO.

CITY OF KALAMAZOO

505 EAST ALCOTT STREET

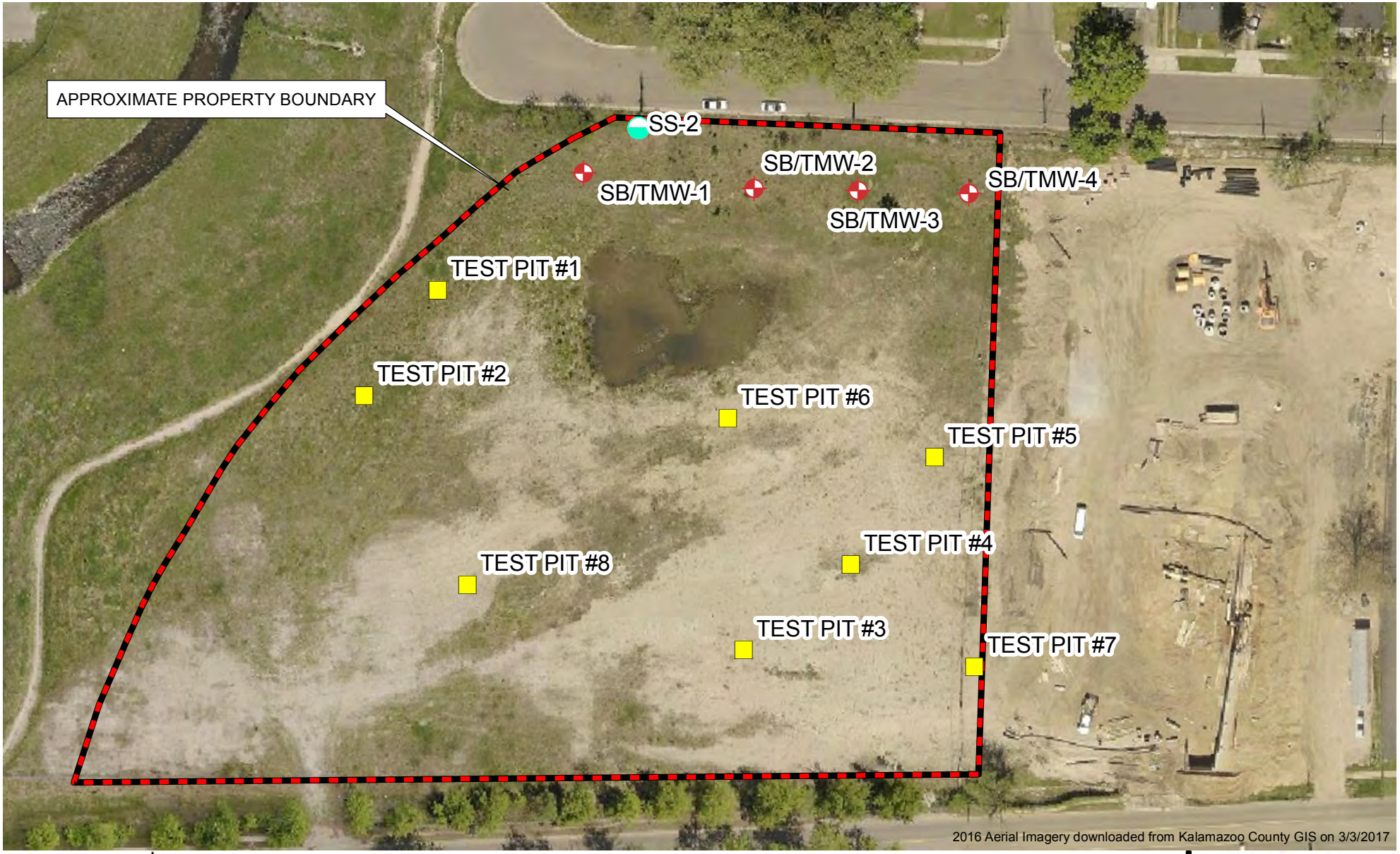
SITE LOCATION MAP

FIGURE 1

F&V PROJECT NO. 825821

F&V

825821_Fig2_SiteMap / amberp 3/3/2017



NORTH

0 80 160

Feet

Legend

- Soil Boring / Temporary Monitoring Well (SB/TMW)
- Surface Soil Sample (SS)
- Test Pitting Location

CITY OF KALAMAZOO

505 EAST ALCOTT STREET

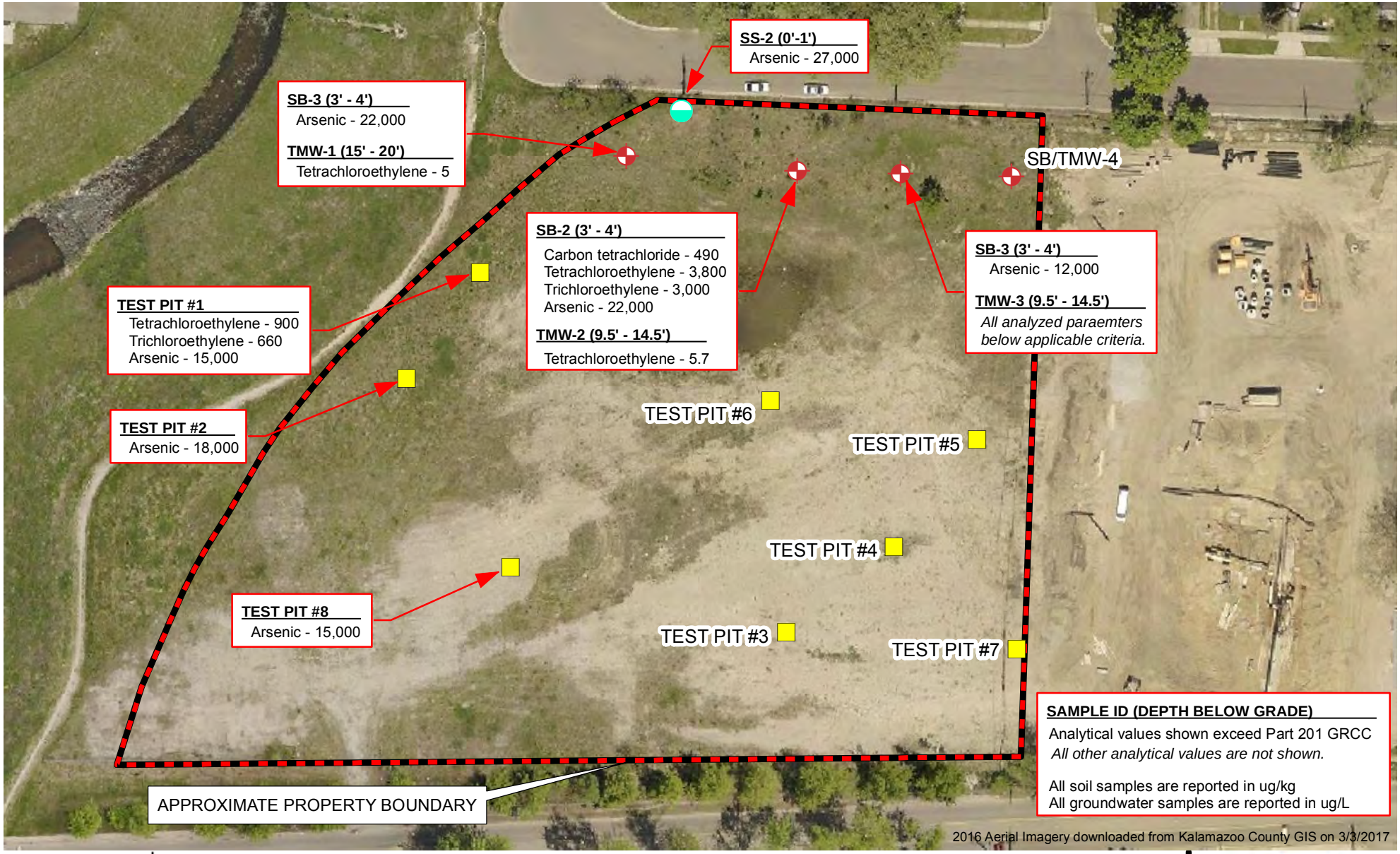
SITE PLAN WITH BORING & TEST PITTING LOCATIONS

FIGURE 2

F&V PROJECT NO. 825821

F&V

825821_Fig3_SitePlanAnalyticalRES / amberp 3/3/2017



NORTH

0 80 160

Feet

Legend

- Soil Boring / Temporary Monitoring Well (SB/TMW)
- Surface Soil Sample (SS)
- Test Pitting Location

CITY OF KALAMAZOO

505 EAST ALCOTT STREET

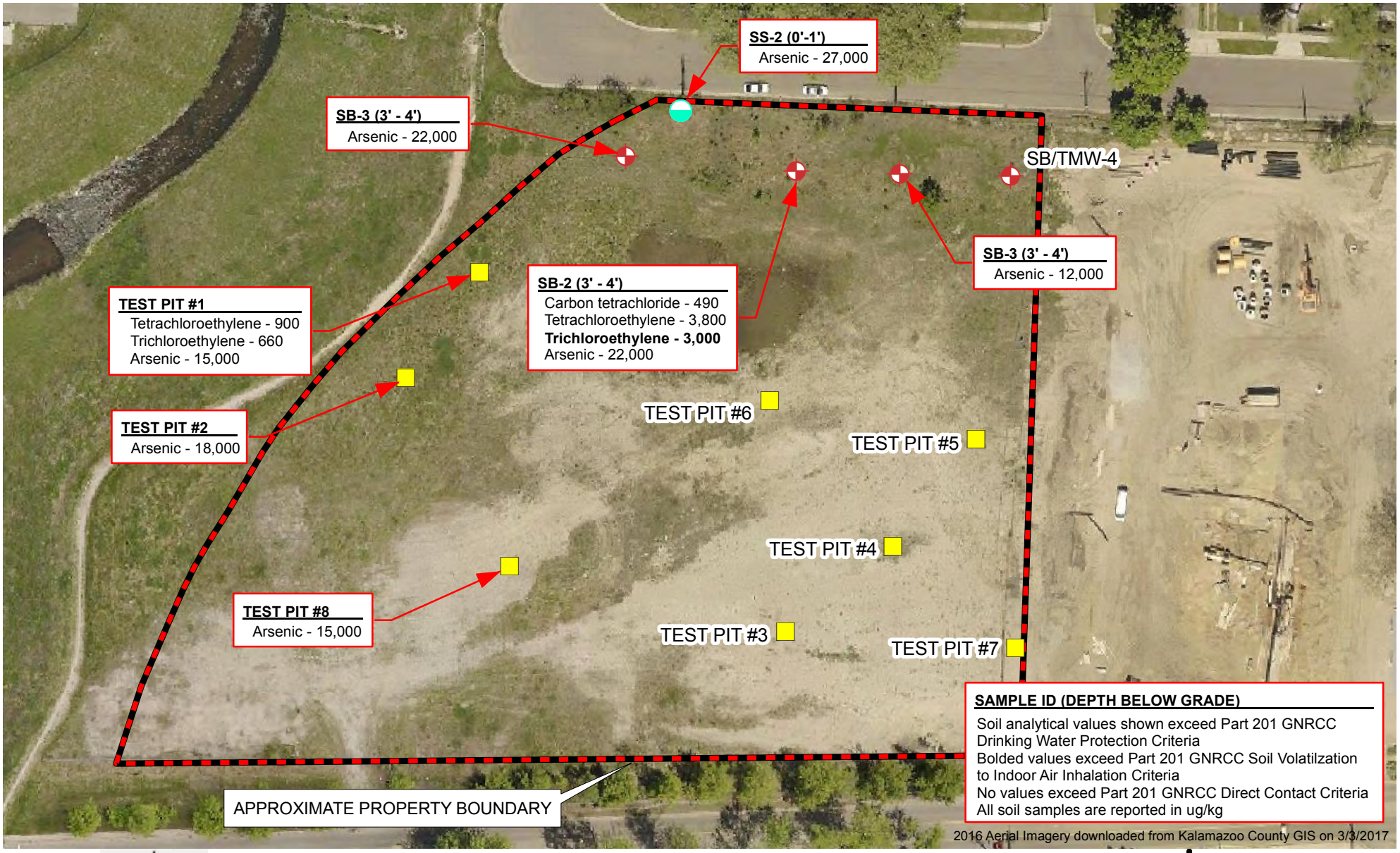
SITE PLAN SHOWING ANALYTICAL DATA EXCEEDING PART 201 RESIDENTIAL CRITERIA

FIGURE 3

F&V PROJECT NO. 825821

F&V

825821_Fig4_SitePlanAnalyticalNONRES / amberp 3/6/2017



NORTH

0 80 160

Feet

Legend

- Soil Boring / Temporary Monitoring Well (SB/TMW)
- Surface Soil Sample (SS)
- Test Pitting Location

CITY OF KALAMAZOO

505 EAST ALCOTT STREET

SITE PLAN SHOWING ANALYTICAL DATA EXCEEDING PART 201 NON-RESIDENTIAL CRITERIA

FIGURE 4

F&V PROJECT NO. 825821

F&V

TABLES

Table 1: Soil Analytical Results Summary
825821 Performance Paper
December 2015; February 2017

Sampling Location		SB-1	SB-2	SB-3	SS-2	Trip	Test Pit #1	Test Pit #1	Test Pit #2	Test Pit #2	Test Pit #4	Test Pit #8	Trip													
Sampling Interval		2-3'	3-4'	3-4'	0-1'	Blank	2'	5'	2'	9'	2'	7'	Blank		Groundwater Protection			Indoor Air		Ambient Air (Y)				Direct Contact		
Collection Date		12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	2/23/2017	2/23/2017	2/23/2017	2/23/2017	2/23/2017	2/23/2017	2/23/2017	#10	#11		#12	#14		#15	#16	#17	#18	#19		#20
Hazardous Substance	Chemical Abstract Service Number													Statewide Default Background Level	Residential Drinking Water Protection Criteria & RBSLs	Nonresidential Drinking Water Protection Criteria & RBSLs	Groundwater Surface Water Interface Protection Criteria & RBSLs	Residential Soil Volatilization to Indoor Air Inhalation Criteria & RBSLs	Nonresidential Soil Volatilization to Indoor Air Inhalation Criteria & RBSLs	Infinite Source Volatile Soil Inhalation Criteria (VSIC) & RBSLs	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria & RBSLs	Residential Direct Contact Criteria & RBSLs	Nonresidential Direct Contact Criteria & RBSLs	Soil Saturation Concentration Screening Levels
VOLATILES (8260B)																										
Benzene (I)	71432	<33	70	<34	<43	<30	<30	<30	<30	<30	<30	<30	<30	NA	100	100	4,000 (X)	1,600	8,400	13,000	34,000	79,000	3.80E+08	1.80E+05	8.4E+5 (C)	4.00E+05
Carbon tetrachloride	56235	<33	**490**	<34	<43	<30	<30	<30	<30	<30	<30	<30	<30	NA	**100**	100	900 (X)	**190**	990	3,500	12,000	28,000	1.30E+08	96,000	4.4E+5 (C)	3.90E+05
Ethylbenzene (I)	100414	<33	150	<34	<43	<30	34	<30	<30	<30	<30	<30	<30	NA	1,500	1,500	360	87,000	4.6E+5 (C)	7.20E+05	1.00E+06	2.20E+06	1.00E+10	2.2E+7 (C)	7.1E+7 (C)	1.40E+05
n-Hexane	110543	<110	320	<110	<140	<100	<100	<100	<100	<100	<100	<100	<100	NA	1.8E+5 (C)	5.1E+5 (C)	NA	5.1E+5 (C)	9.5E+5 (C)	3.0E+6	3.2E+6	6.2E+6	1.3E+10	9.2E+7 (C)	3.0E+8 (C)	44,000
Isopropyl benzene	98828	<33	73	<34	<43	<30	<30	<30	<30	<30	<30	<30	<30	NA	91,000	2.6E+5	3,200	4.0E+5 (C)	7.3E+5 (C)	1.70E+06	1.70E+06	2.80E+06	5.80E+09	2.5E+7 (C)	8.0E+7 (C)	3.90E+05
Methylene chloride	75092	<33	<55	<34	<43	<30	<30	44	<30	<30	<30	<30	<30	NA	100	100	30,000 (X)	45,000	2.4E+5	2.10E+05	5.90E+05	1.40E+06	6.60E+09	1.30E+06	5.8E+6 (C)	2.30E+06
2-Methylnaphthalene	91576	180	1,200	160	300	<30	210	<100	<100	<100	<100	140	<100	NA	57,000	1.7E+5	4,200	2.70E+06	4.9E+6	1.50E+06	1.50E+06	1.50E+06	6.70E+08	8.10E+06	2.6E+7	NA
Naphthalene	91203	<110	**1,200**	<110	<140	<100	170	<100	<100	<100	<100	110	<100	NA	35,000	1.0E+5	**730**	2.50E+05	4.7E+5	3.00E+05	3.00E+05	3.00E+05	2.00E+08	1.60E+07	5.2E+7	NA
n-Propylbenzene (I)	103651	<33	100	<34	<43	<30	36	<30	<30	<30	<30	<30	<30	NA	1,600	4,600	ID	ID	ID	ID	ID	ID	1.30E+09	2.50E+06	8.0E+6	1.00E+07
Tetrachloroethylene	127184	37	**3,800**	<34	<43	<30	**900**	290	<30	160	<30	<30	<30	NA	**100**	**100**	**1,200 (X)**	11,000	21,000	1.70E+05	4.80E+05	1.10E+06	2.70E+09	2.0E+5 (C)	9.3E+5 (C)	88,000
Toluene (I)	108883	<33	730	<34	46	<30	76	<30	70	<30	<30	120	<30	NA	16,000	16,000	5,400	3.3E+5 (C)	6.1E+5 (C)	2.80E+06	5.10E+06	1.20E+07	2.70E+10	5.0E+7 (C)	1.6E+8 (C)	2.50E+05
Trichloroethylene	79016	<33	**3,000**	<34	<43	<30	660	210	<30	62	<30	<30	<30	NA	**100**	**100**	4,000 (X)	**1,000**	**1,900**	11,000	25,000	57,000	1.30E+08	1E+5 (C,DD)	3.6E+5 (C,DD)	5.00E+05
1,2,4-Trimethylbenzene (I)	95636	<33	410	<34	<43	<30	74	<30	<30	<30	<30	50	<30	NA	2,100	2,100	570	4.3E+6 (C)	8.0E+6 (C)	2.10E+07	5.00E+08	5.00E+08	8.20E+10	3.2E+7 (C)	1.0E+8 (C)	1.10E+05
1,3,5-Trimethylbenzene (I)	108678	<33	130	<34	<43	<30	38	<30	<30	<30	<30	<30	<30	NA	1,800	1,800	1,100	2.6E+6 (C)	4.8E+6 (C)	1.60E+07	3.80E+08	3.80E+08	8.20E+10	3.2E+7 (C)	1.0E+8 (C)	94,000
Xylenes (I)	1330207	<99	**1,600**	<100	<130	<90	240	<90	<90	<90	<90	260	<90	NA	5,600	5,600	**820**	6.3E+6 (C)	1.2E+7 (C)	4.60E+07	6.10E+07	1.30E+08	2.90E+11	4.1E+8 (C)	1.0E+9 (C,D	1.50E+05
SEMIVOLATILES (8270C)																										
Acenaphthene	83329	47	9.8	15	<83	--	200	<44	<51	<41	<45	87	--	NA	3.00E+05	8.8E+5	8,700	1.90E+08	3.5E+8	8.10E+07	8.10E+07	8.10E+07	1.40E+10	4.10E+07	1.3E+8	NA
Acenaphthylene	208968	210	<7.9	38	<83	--	3,000	<44	130	<41	<45	95	--	NA	5,900	17,000	ID	1.60E+06	3.0E+6	2.20E+06	2.20E+06	2.30E+09	1.60E+06	5.2E+6	NA	
Anthracene	120127	240	56	61	210	--	3,600	<44	85	97	<45	310	--	NA	41,000	41,000	ID	1.0E+9 (D)	1.0E+9 (D)	1.40E+09	1.40E+09	1.40E+09	6.70E+10	2.30E+08	7.30E+08	NA
Benzo(a)anthracene (Q)	56553	1,300	220	300	640	--	7,100	53	530	440	160	1,400	--	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	NLV	ID	20,000	80,000	NA
Benzo(a)pyrene (Q)	50328	1,400	220	300	630	--	**7,300**	58	580	520	160	1,400	--	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	NLV	1.50E+06	**2,000**	8,000	NA
Benzo(b)fluoranthene (Q)	205992	2,000	330	450	1,000	--	11,000	68	1,000	710	280	1,600	--	NA	NLL	NLL	NLL	ID	ID	ID	ID	ID	ID	20,000	80,000	NA
Benzo(g,h,i)perylene	191242	850	190	210	490	--	3,700	<44	250	400	79	920	--	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	NLV	8.00E+08	2.50E+06	7.0E+6	NA
Benzo(k)fluoranthene (Q)	207089	730	86	160	430	--	5,400	<44	340	290	120	550	--	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	NLV	ID	2.00E+05	8.0E+5	NA
Chrysene (Q)	218019	1,300	320	310	810	--	7,200	<44	320	530	120	1,500	--	NA	NLL	NLL	NLL	ID	ID	ID	ID	ID	ID	2.00E+06	8.00E+06	NA
Dibenzo(a,h)anthracene (Q)	53703	230	54	53	190	--	1,400	<44	140	130	82	220	--	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	NLV	ID	2,000	8,000	NA
Fluoranthene	206440	2,500	370	510	1,500	--	7,200	80	840	930	240	2,500	--	NA	7.30E+05	7.3E+5	5,500	1.0E+9 (D)	1.0E+9 (D)	7.40E+08	7.40E+08	7.40E+08	9.30E+09	4.60E+07	1.3E+8	NA
Fluorene	86737	74	<7.9	24	<83	--	210	<44	<51	45	<45	95	--	NA	3.90E+05	8.9E+5	5,300	5.80E+08	1.0E+9 (D)	1.30E+08	1.30E+08	1.30E+08	9.30E+09	2.70E+07	8.7E+7	NA
Indeno(1,2,3-cd)pyrene (Q)	193395	990	150	220	570	--	3,700	<44	260	420	99	960	--	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	NLV	ID	20,000	80,000	NA
2-Methylnaphthalene	91576	91	1,100	29	330	--	1,200	100	340	49	<45	91	--	NA	57,000	1.7E+5	4,200	2.70E+06	4.9E+6	1.50E+06	1.50E+06	1.50E+06	6.70E+08	8.10E+06	2.6E+7	NA
Naphthalene	91203	78	720	26	210	--	890	86	240	<41	<45	74	--	NA	35,000	1.0E+5	730	2.50E+05	4.7E+5	3.00E+05	3.00E+05	3.00E+05	2.00E+08	1.60E+07	5.2E+7	NA
Phenanthrene	85018	1,000	790	260	930	--	3,000	92	440	580	120	1,700	--	NA	56,000	1.6E+5	2,100	2.80E+06	5.1E+6	1.60E+05	1.60E+05	1.60E+05	6.70E+06	1.60E+06	5.2E+6	NA
Pyrene	129000	1,000	360	450	1,200	--	7,500	74	810	850	260	3,200	--	NA	4.80E+05	4.8E+5	ID	1.0E+9 (D)	1.0E+9 (D)	6.50E+08	6.50E+08	6.50E+08	6.70E+09	2.90E+07	8.4E+7	NA
METALS																										
Arsenic	7440382	**22,000**	**22,000**	**12,000**	**27,000**	--	**15,000**	4,800	**9,200**	**18,000**	3,900	**15,000**	--	5,800	**4,600**	4,600	**4,600**	NLV	NLV	NLV	NLV	NLV	7.20E+05	**7,600**	37,000	NA
Barium (B)	7440393	100,000	140,000	180,000	120,000	--	110,000	56,000	87,000	100,000	41,000	83,000	--	75,000	1.30E+06	1.3E+6	(G)	NLV	NLV	NLV	NLV	NLV	3.30E+08	3.70E+07	1.3E+8	NA
Cadmium (B)	7440439	<560	<770	<690	990	--	<730	<580	<670	<730	<610	<710	--	1,200	6,000	6,000	(G,X)	NLV	NLV	NLV	NLV	NLV	1.70E+06	5.50E+05	2.1E+6	NA
Chromium (III) (B,H)	16065831	8,100	8,300	7,600	15,000	--	9,100	7,700	15,000	11,000	7,700	6,500	--	18,000 (total	1.0E+9 (D)	1.0E+9 (D)	(G,X)	NLV	NLV	NLV	NLV	NLV	3.30E+08	7.90E+08	1.0E+9 (D)	NA
Chromium (VI)	18540299													NA	30,000	30,000	3,300	NLV	NLV	NLV	NLV	NLV	2.60E+05	2.50E+06	9.2E+6	NA
Copper (B)	7440508	18,000	22,000	11,000	48,000	--	18,000	6,800	17,000	31,000	10,000	23,000	--	32,000	5.80E+06	5.80E+06	(G)	NLV	NLV	NLV	NLV	NLV	1.30E+08	2.00E+07	7.3E+7	NA
Lead (B)	7439921	47,000	72,000	55,000	180,000	--	62,000	32,000	76,000	64,000	27,000	53,000	--	21,000	7.00E+05	7.0E+5	(G,X)	NLV	NLV	NLV	NLV	NLV	1.00E+08	4.00E+05	(DD)	NA
Mercury (Total) (B,Z)	Varies	52	62	41	**590**	--	**370**	98	71	130	44	76	--	130	1,700	1,700	**50 (M); 1.2**	48,000	89,000	52,000	52,000	52,000	2.00E+07	1.60E+05	5.8E+5	NA
Selenium (B)	7782492	*<1,400*	*<1,900*	*<1,700*	*<1,800*	--	*<1,800*	*<1,400*	*<1,700*	*<1,800*	*<1,500*	*<1,800*	--	410	4,000	4,000	*400*	NLV	NLV	NLV	NLV	NLV	1.30E+08	2.60E+06	9.6E+6	NA
Silver (B)	7440224	*<1,400*	*<1,900*	*<1,700*	*<1,800*	--	*<1,800*	*<1,400*	*<1,700*	*<1,800*	*<1,500*	*<1,800*	--	1,000	4,500	13,000	*100 (M); 27*	NLV	NLV	NLV	NLV	NLV	6.70E+06	2.50E+06	9.0E+6	NA
Zinc (B)	7440666	54,000	42,000	48,000	240,000	--	130,000	26,000	63,000	76,000	38,000	85,000	--	47,000	2.40E+06	5.0E+6	(G)	NLV	NLV	NLV	NLV	NLV	ID	1.70E+08	6.3E+8	NA
PCBs																										
Aroclor 1016		<87	<99	<90	<100	--	<76	<71	<83	<82	<69	<110	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1221		<87	<99	<90	<100	--	<76	<71	<83	<82	<69	<110	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		<87	<99	<90	<100	--	<76	<71	<83	<82	<69	<110	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		<87	<99	<90	<100	--	<76	<71	<83	190	<69	<110	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		<87	<99	<90	<100	--	<76	<71	<83	<82	<69	<110	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		<87	<99	<90	<100	--	<76	<71	<83	<82	<69	<110	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		<87	<99	<90	<100	--	<76	<71	<83	<82	<69	<110	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1262		--	--	--	--	--	<76	<71	<83	<82	<69	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1268		--	--	--	--	--	<76	<71	<83	<82	<69	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCBs (T)		U	U	U	U		U	U	190	U	U			NA	NLL	NLL	NLL	3.00E+06	1.60E+07	2.40E+05	7.90E+06	7.90E+06	5.20E+06	4,000	16,000	NA

*Part 201 Residential Generic Cleanup Criteria, Part 213 Tier 1 Risk-Based Screening Levels (RBSLs), MDEQ, December 31, 2013
Values in micrograms per kilogram (µg/kg).
NA Not Available
-- Not Sampled
U - Not detected above the given limit
Bolded values exceed one or more of the criterion.
Shaded Values Exceed Generic Non-Residential Cleanup Criteria

Table 2: Groundwater Analytical Results Summary
825821 Performance Paper
December 2015

Sampling Location		TMW-1	TMW-2	TMW-3	TMW-4	Trip							
Screened Interval (feet bgs)		15-20	9.5-14.5	9.5-14.5	9-14	Blank							
Collection Date		12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	#1	#2	#3	#4	#5	#7	#8
Hazardous Substance	Chemical Abstract Service Number						Residential Drinking Water Criteria	Nonresidential Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Residential Groundwater Volatilization to Indoor Air Inhalation Criteria	Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria	Water Solubility	Flammability and Explosivity Screening Level
VOLATILES (8260B)													
1,1-Dichloroethane	75343	<1	4.3	<1	<1	<1	880	2,500	740	1.00E+06	2.30E+06	5.06E+06	3.80E+05
cis-1,2-Dichloroethylene	156592	<1	6.6	<1	<1	<1	70 (A)	70 (A)	620	93,000	2.10E+05	3.50E+06	5.30E+05
Tetrachloroethylene	127184	**5**	**5.7**	1.2	<1	<1	**5.0 (A)**	**5.0 (A)**	60 (X)	25,000	1.70E+05	2.00E+05	ID
1,1,1-Trichloroethane	71556	1.8	<1	<1	<1	<1	200 (A)	200 (A)	89	6.60E+05	1.3E+6 (S)	1.33E+06	ID
Trichloroethylene	79016	1.1	3	<1	<1	<1	5.0 (A)	5.0 (A)	200 (X)	2,200	4,900	1.10E+06	ID
Vinyl chloride	75014	<1	1.4	<1	<1	<1	2.0 (A)	2.0 (A)	13 (X)	1,100	13,000	2.76E+06	33,000
METALS													
Arsenic	7440382	<5	<5	<5	<5	--	10 (A)	10 (A)	10	NLV	NLV	NA	ID
Barium (B)	7440393	140	69	40	190	--	2,000 (A)	2,000 (A)	(G)	NLV	NLV	NA	ID
Cadmium (B)	7440439	<2	<2	<2	<2	--	5.0 (A)	5.0 (A)	(G,X)	NLV	NLV	NA	ID
Chromium (III) (B,H)	16065831	<5	<5	<5	26	--	100 (A)	100 (A)	(G,X)	NLV	NLV	NA	ID
Chromium (VI)	18540299						100 (A)	100 (A)	11	NLV	NLV	NA	ID
Copper (B)	7440508	<5	<5	<5	12	--	1,000 (E)	1,000 (E)	(G)	NLV	NLV	NA	ID
Lead (B)	7439921	<5	<5	<5	<5	--	4.0 (L)	4.0 (L)	(G,X)	NLV	NLV	NA	ID
Mercury (Total) (B,Z)	Varies	<0.2	<0.2	<0.2	<0.2	--	2.0 (A)	2.0 (A)	0.0013	56 (S)	56 (S)	56	ID
Selenium (B)	7782492	<5	<5	<5	<5	--	50 (A)	50 (A)	5	NLV	NLV	NA	ID
Silver (B)	7440224	<5	<5	<5	<5	--	34	98	0.2 (M); 0.06	NLV	NLV	NA	ID
Zinc (B)	7440666	<10	<10	<10	<10	--	2,400	5,000 (E)	(G)	NLV	NLV	NA	ID

*Part 201 Residential Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 Risk-Based Screening Levels (RBSLs), MDEQ, December 31, 2013

Values in micrograms per liter (µg/L).

Bolded values exceed one or more of the criterion.

R 299.49 Footnotes for generic cleanup criteria tables.

Rule 49. (1) The footnotes that apply to the generic criteria tables in R 299.44, R 299.46, and R 299.48 are as follows:

(A) Criterion is the state of Michigan drinking water standard established pursuant to Section 5 of 1976 PA 399, MCL 325.1005.

(B) Background, as defined in R 299.1(b), may be substituted if higher than the calculated cleanup criterion. Background levels may be less than criteria for some inorganic compounds.

(C) The criterion developed under R 299.20 to R 299.26 exceeds the chemical-specific soil saturation screening level (C_{sat}). The person proposing or implementing response activity shall document whether additional response activity is required to control free-phase liquids or NAPL to protect against risks associated with free-phase liquids by using methods appropriate for the free-phase liquids present. Development of a site-specific C_{sat} or methods presented in R 299.22, R 299.24(5), and R 299.26(8) may be conducted for the relevant exposure pathways.

(D) Calculated criterion exceeds 100 percent, hence it is reduced to 100 percent or 1.0E+9 parts per billion (ppb).

(E) Criterion is the aesthetic drinking water value, as required by Section 20120a(5) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). A notice of aesthetic impact may be employed as an institutional control mechanism if groundwater concentrations exceed the aesthetic drinking water criterion, but do not exceed the applicable health-based drinking water value provided in the following table:

Hazardous Substance	Chemical Abstract Service Number	Residential Health-Based Drinking Water Value	Non-Residential Health-Based Drinking Water Value
Aluminum	7429905	300	4,100
tertiary Amyl methyl ether	994058	910	2,600
Copper	7440508	1,400	4,000
Diethyl ether	60297	3,700	10,000
Ethylbenzene	100414	700	700
Iron	7439896	2,000	5,600
Manganese	7439965	860	2,500
Methyl-tert-butyl ether (MTBE)	1634044	240	690
Toluene	108883	1,000	1,000
1,2,4-Trimethylbenzene	95636	1,000	2,900
1,3,5-Trimethylbenzene	108678	1,000	2,900
Xylenes	1330207	10,000	10,000

(F) Criterion is based on adverse impacts to plant life and phytotoxicity.

(G) Groundwater surface water interface (GSI) criterion depends on the pH or water hardness, or both, of the receiving surface water. The final chronic value (FCV) for the protection of aquatic life shall be calculated based on the pH or hardness

of the receiving surface water. Where water hardness exceeds 400 mg $CaCO_3$/L, use 400 mg $CaCO_3$/L for the FCV calculation. The FCV formula provides values in units of ug/L or ppb. The generic GSI criterion is the lesser of the calculated FCV, the wildlife value (WV), and the surface water human non-drinking water value (HNDV). The soil GSI protection criteria for these hazardous substances are the greater of the 20 times the GSI criterion or the GSI soil-water partition values using the GSI criteria developed with the procedure described in this footnote.

Hazardous Substance	**FCV Formula ug/L**	**FCV Conversion Factor (CF)**	**WV ug/L**	**HNDV ug/L**
Acetate	EXP(0.2732*(pH) + 7.0362)	NA	NA	1.3E+6
Acetic Acid	EXP(0.2732*(pH) + 7.0362)	NA	NA	1.3E+6
Barium	EXP(1.0629*(LnH)+1.1869)	NA	NA	1.6E+5
Beryllium	EXP(2.5279*(LnH)-10.7689)	NA	NA	1,200
Cadmium	(EXP(0.7852*(LnH)-2.715))*CF	1.101672-((LnH)*(0.041838))	NA	130
Chromium (III)	(EXP(0.819*(LnH)+0.6848))*CF	0.86	NA	9,400
Copper	(EXP(0.8545*(LnH)-1.702))*CF	0.96	NA	38,000
Lead	(EXP(0.9859*(LnH)-1.270))*CF	1.46203-((LnH)*(0.14571))	NA	190
Manganese	EXP(0.8784*(LnH)+3.5385)	NA	NA	59,000
Nickel	(EXP(0.846*(LnH)+0.0584))*CF	0.997	NA	2.1E+5
Pentachlorophenol	EXP(1.005*(pH)-5.134)	NA	NA	2.8
Zinc	(EXP(0.8473*(LnH)+0.884))*CF	0.986	NA	16,000

where,

EXP(x) = The base of the natural logarithm raised to power x (e^x).

LnH = The natural logarithm of water hardness in mg $CaCO_3$/L.

* = The multiplication symbol.

= The GSI criterion developed here may not be protective for surface water that is used as a drinking water source. Refer to footnote (X) for further guidance.

A spreadsheet that may be used to calculate GSI and GSI protection criteria for (G)-footnoted hazardous substances is available on the Department of Environmental Quality (DEQ) internet web site.

(H) Valence-specific chromium data (Cr III and Cr VI) shall be compared to the corresponding valence-specific cleanup criteria. If both Cr III and Cr VI are present in groundwater, the total concentration of both cannot exceed the drinking water criterion of 100 ug/L. If analytical data are provided for total chromium only, they shall be compared to the cleanup criteria for Cr VI. Cr III soil cleanup criterion for protection of drinking water can only be used at sites where groundwater is prevented from being used as a public water supply, currently and in the future, through an approved land or resource use restriction.

(I) Hazardous substance may exhibit the characteristic of ignitability as defined in 40 C.F.R. §261.21 (revised as of July 1, 2001), which is adopted by reference in these rules and is available for inspection at the DEQ, 525 West Allegan Street, Lansing, Michigan. Copies of the regulation may be purchased, at a cost as of the time of adoption of these rules of $45, from the Superintendent of Documents, Government Printing Office, Washington, DC 20401 (stock number 869-044-00155-1), or from the DEQ, Remediation and Redevelopment Division (RRD), 525 West Allegan Street, Lansing, Michigan 48933, at cost.

(J) Hazardous substance may be present in several isomer forms. Isomer-specific concentrations shall be added together for comparison to criteria.

(K) Hazardous substance may be flammable or explosive, or both.

(L) Criteria for lead are derived using a biologically based model, as allowed for under Section 20120a(9) of the NREPA, and are not calculated using the algorithms and assumptions specified in pathway-specific rules. The generic residential drinking water criterion of 4 ug/L is linked to the generic residential soil direct contact criterion of 400 mg/kg. A higher concentration in the drinking water, up to the state action level of 15 ug/L, may be allowed as a site-specific remedy and still allow for drinking water use, under Section 20120a(2) and 20120b of the NREPA if soil concentrations are appropriately lower than 400 mg/kg. If a site-specific criterion is approved based on this subdivision, a notice shall be filed on the deed for all property where the groundwater concentrations will exceed 4 ug/L to provide notice of the potential for unacceptable risk if soil or groundwater concentrations increase. Acceptable combinations of site-specific soil and drinking water concentrations are presented in the following table:

Acceptable Combinations of Lead in Drinking Water and Soil

Drinking Water Concentration (ug/L)	Soil Concentration (mg/kg)
5	386-395
6	376-385
7	376-385
8	366-375
9	356-365
10	346-355
11	336-345
12	336-345
13	326-335
14	316-325
15	306-315

(M) Calculated criterion is below the analytical target detection limit, therefore, the criterion defaults to the target detection limit.

(N) The concentrations of all potential sources of nitrate-nitrogen (e.g., ammonia-N, nitrite-N, nitrate-N) in groundwater that is used as a source of drinking water shall not, when added together, exceed the nitrate drinking water criterion of 10,000 ug/L. Where leaching to groundwater is a relevant pathway, soil concentrations of all potential sources of nitrate-nitrogen shall not, when added together, exceed the nitrate drinking water protection criterion of 2.0E+5 ug/kg.

(O) The concentration of all polychlorinated and polybrominated dibenzodioxin and dibenzofuran isomers present at a facility, expressed as an equivalent concentration of 2,3,7,8-tetrachlorodibenzo-p-dioxin based upon their relative potency, shall be added together and compared to the criteria for 2,3,7,8-tetrachlorodibenzo-p-dioxin. The generic cleanup criteria for 2,3,7,8-tetrachlorodibenzo-p-dioxin are not calculated according to the algorithms presented in R 299.14 to R 299.26. The generic cleanup criteria are being held at the values that the DEQ has used since August 1998, in recognition of the fact that national efforts to reassess risks posed by dioxin are not yet complete. Until these studies are complete, it is premature to select a revised slope factor and/or reference dose for calculation of generic cleanup criteria.

(P) Amenable cyanide methods or method OIA-1677 shall be used to quantify cyanide concentrations for compliance with all groundwater criteria. Total cyanide methods or method OIA-1677 shall be used to quantify cyanide concentrations for compliance with soil criteria. Nonresidential direct contact criteria may not be protective of the potential for release of hydrogen cyanide gas. Additional land or resource use restrictions may be necessary to protect for the acute inhalation concerns associated with hydrogen cyanide gas.

(Q) Criteria for carcinogenic polycyclic aromatic hydrocarbons were developed using relative potential potencies to benzo(a)pyrene.

(R) Hazardous substance may exhibit the characteristic of reactivity as defined in 40 C.F.R. §261.23 (revised as of July 1, 2001), which is adopted by reference in these rules and is available for inspection at the DEQ, 525 West Allegan Street, Lansing, Michigan. Copies of the regulation may be purchased, at a cost as of the time of adoption of these rules of $45, from the Superintendent of Documents, Government Printing Office, Washington, DC 20401 (stock number 869-044-00155-1), or from the DEQ, RRD, 525 West Allegan Street, Lansing, Michigan 48933, at cost.

(S) Criterion defaults to the hazardous substance-specific water solubility limit.

(T) Refer to the federal Toxic Substances Control Act (TSCA), 40 C.F.R. §761, Subpart D and 40 C.F.R. §761, Subpart G, to determine the applicability of TSCA cleanup standards. Subpart D and Subpart G of 40 C.F.R. §761 (July 1, 2001) are adopted by reference in these rules and are available for inspection at the DEQ, 525 West Allegan Street, Lansing, Michigan. Copies of the regulations may be purchased, at a cost as of the time of adoption of these rules of $55, from the Superintendent of Documents, Government Printing Office, Washington, DC 20401, or from the DEQ, RRD, 525 West Allegan Street, Lansing, Michigan 48933, at cost. Alternatives to compliance with the TSCA standards listed below

are possible under 40 C.F.R. §761 Subpart D. New releases may be subject to the standards identified in 40 C.F.R. §761, Subpart G. Use Part 201 soil direct contact cleanup criteria in the following table if TSCA standards are not applicable.

Land Use Category	TSCA, Subpart D Cleanup Standards	Part 201 Soil Direct Contact Cleanup Criteria
Residential	1,000 ppb, or 10,000 ppb if capped	4,000 ppb
Nonresidential	1,000 ppb, or 10,000 ppb if capped	16,000 ppb

(U) Hazardous substance may exhibit the characteristic of corrosivity as defined in 40 C.F.R. §261.22 (revised as of July 1, 2001), which is adopted by reference in these rules and is available for inspection at the DEQ, 525 West Allegan Street, Lansing, Michigan. Copies of the regulation may be purchased, at a cost as of the time of adoption of these rules of $45, from the Superintendent of Documents, Government Printing Office, Washington, DC 20401 (stock number 869-044-00155-1), or from the DEQ, RRD, 525 West Allegan Street, Lansing, Michigan 48933, at cost.

(V) Criterion is the aesthetic drinking water value as required by Section 20120(a)(5) of the NREPA. Concentrations up to 200 ug/L may be acceptable, and still allow for drinking water use, as part of a site-specific cleanup under Section 20120a(2) and 20120b of the NREPA.

(W) Concentrations of trihalomethanes in groundwater shall be added together to determine compliance with the Michigan drinking water standard of 80 ug/L. Concentrations of trihalomethanes in soil shall be added together to determine compliance with the drinking water protection criterion of 1,600 ug/kg.

(X) The GSI criterion shown in the generic cleanup criteria tables is not protective for surface water that is used as a drinking water source. For a groundwater discharge to the Great Lakes and their connecting waters or discharge in close proximity to a water supply intake in inland surface waters, the generic GSI criterion shall be the surface water human drinking water value (HDV) listed in the table in this footnote, except for those HDV indicated with an asterisk. For HDV with an asterisk, the generic GSI criterion shall be the lowest of the HDV, the WV, and the calculated FCV. See formulas in footnote (G). Soil protection criteria based on the HDV shall be as listed in the table in this footnote, except for those values with an asterisk. Soil GSI protection criteria based on the HDV shall be as listed in the table in this footnote, except for those values with an asterisk. Soil GSI protection criteria for compounds with an asterisk shall be the greater of 20 times the GSI criterion or the GSI soil-water partition values using the GSI criteria developed with the procedure described in this footnote.

Hazardous Substance	Chemical Abstract Service Number	Surface Water Human Drinking Water Values (HDV) (ug/L)	Soil GSI Protection Criteria for HDV (ug/kg)
Acrylamide	79061	0.5 (M); 0.12	10
Alachlor	15972608	3.5	88
Antimony	7440360	2.0 (M); 1.7	1,200
Benzene	71432	12	240
Boron	7440428	4,000	80,000
Bromate	15541454	10 (M); 0.5	200
n-Butanol	71363	3,500	70,000
Butyl benzyl phthalate	85687	6.9	13,000
Cadmium	7440439	2.5*	*
Carbon tetrachloride	56235	5.6	110
Chloride	16887006	50,000	1.0E+6
Chloroethane	75003	170	3,400
Chromium (III)	16065831	120*	*
Cyanazine	21725462	2.0 (M); 0.93	200 (M); 40
1,2-Dichloroethane	107062	6.0	120
trans-1,2-Dichloroethylene	156605	470	9,400
1,2-Dichloropropane	78875	9.1	180
1,3-Dichloropropene	542756	3.3	100 (M); 66
N,N-Dimethylacetamide	127195	700	14,000
1,4-Dioxane	123911	34	680
Ethylene dibromide	106934	0.17	20 (M); 3.4
Ethylene glycol	107211	56,000	1.1E+6
Hexachloroethane	67721	5.3	310
Isophorone	78591	310	6,200
Isopropyl alcohol	67630	28,000	5.6E+5
Lead	7439921	14*	*
Manganese	7439965	1,300*	*
Methanol	67561	14,000	2.8E+5
Methyl-tert-butyl ether (MTBE)	1634044	100	2,000
Methylene chloride	75092	47	940
Molybdenum	7439987	120	2,400
Nitrobenzene	98953	4.7	330 (M); 94
Pentachlorophenol	87865	1.8*	*
Styrene	100425	20	530
1,2,4,5-Tetrachlorobenzene	95943	2.8	3,300
1,1,2,2-Tetrachloroethane	79345	3.2	64
Tetrachloroethylene	127184	11	220
Tetrahydrofuran	109999	350	7,000
Thallium	7440280	2.0 (M); 1.2	1,400
1,2,4-Trichlorobenzene	120821	80	4,700
1,1,2-Trichloroethane	79005	12	240
Trichloroethylene	79016	29	580
Vinyl chloride	75014	1.0 (M); 0.25	40 (M); 20

(Y) Source size modifiers shown in the following table shall be used to determine soil inhalation criteria for ambient air when the source size is not one-half acre. The modifier shall be multiplied by the generic soil inhalation criteria shown in the table of generic cleanup criteria to determine the applicable criterion. See Footnote (C).

Source Size sq. feet or acres	Modifier
400 sq feet	3.17
1000 sq feet	2.2
2000 sq feet	1.76
1/4 acre	1.15
1/2 acre	1
1 acre	0.87
2 acre	0.77
5 acre	0.66
10 acre	0.6
32 acre	0.5
100 acre	0.43

(Z) Mercury is typically measured as total mercury. The generic cleanup criteria, however, are based on data for different species of mercury. Specifically, data for elemental mercury, chemical abstract service (CAS) number 7439976, serve as the basis for the soil volatilization to indoor air criteria, groundwater volatilization to indoor air, and soil inhalation criteria. Data for methyl mercury, CAS number 22967926, serve as the basis for the GSI criterion; and data for mercuric chloride, CAS number 7487947, serve as the basis for the drinking water, groundwater contact, soil direct contact, and the groundwater protection criteria. Comparison to criteria shall be based on species-specific analytical data only if sufficient facility characterization has been conducted to rule out the presence of other species of mercury.

(AA) Use 10,000 ug/l where groundwater enters a structure through the use of a water well, sump or other device. Use 28,000 ug/l for all other uses.

(BB) The state drinking water standard for asbestos (fibers greater than 10 micrometers in length) is in units of a million fibers per liter of water (MFL). Soil concentrations of asbestos are determined by polarized light microscopy.

(CC) Groundwater: The generic GSI criteria are based on the toxicity of unionized ammonia (NH_3); the criteria are 29 ug/L and 53 ug/L for cold water and warm water surface water, respectively. As a result, the GSI criterion shall be compared to the percent of the total ammonia concentration in the groundwater that will become NH_3 in the surface water. This percent NH_3 is a function of the pH and temperature of the receiving surface water and can be estimated using the following table, taken from Emerson, et al., (Journal of the Fisheries Research Board of Canada, Volume 32(12):2382, 1975).

Percent NH_3 in Aqueous Ammonia Solutions for 0-30 ^oC and pH 6-10

Temp (^oF)	Temp (^oC)	pH 6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
32.0	0	0.00827	0.0261	0.0826	0.261	0.820	2.55	7.64	20.7	45.3
33.8	1	0.00899	0.0284	0.0898	0.284	0.891	2.77	8.25	22.1	47.3
35.6	2	0.00977	0.0309	0.0977	0.308	0.968	3.00	8.90	23.6	49.4
37.4	3	0.0106	0.0336	0.106	0.335	1.05	3.25	9.60	25.1	51.5
39.2	4	0.0115	0.0364	0.115	0.363	1.14	3.52	10.3	26.7	53.5
41.0	5	0.0125	0.0395	0.125	0.394	1.23	3.80	11.1	28.3	55.6
42.8	6	0.0136	0.0429	0.135	0.427	1.34	4.11	11.9	30.0	57.6
44.6	7	0.0147	0.0464	0.147	0.462	1.45	4.44	12.8	31.7	59.5
46.4	8	0.0159	0.0503	0.159	0.501	1.57	4.79	13.7	33.5	61.4
48.2	9	0.0172	0.0544	0.172	0.542	1.69	5.16	14.7	35.3	63.3
50.0	10	0.0186	0.0589	0.186	0.586	1.83	5.56	15.7	37.1	65.1
51.8	11	0.0201	0.0637	0.201	0.633	1.97	5.99	16.8	38.9	66.8
53.6	12	0.0218	0.0688	0.217	0.684	2.13	6.44	17.9	40.8	68.5
55.4	13	0.0235	0.0743	0.235	0.738	2.30	6.92	19.0	42.6	70.2
57.2	14	0.0254	0.0802	0.253	0.796	2.48	7.43	20.2	44.5	71.7
59.0	15	0.0274	0.0865	0.273	0.859	2.67	7.97	21.5	46.4	73.3
60.8	16	0.0295	0.0933	0.294	0.925	2.87	8.54	22.8	48.3	74.7
62.6	17	0.0318	0.101	0.317	0.996	3.08	9.14	24.1	50.2	76.1
64.4	18	0.0343	0.108	0.342	1.07	3.31	9.78	25.5	52.0	77.4
66.2	19	0.0369	0.117	0.368	1.15	3.56	10.5	27.0	53.9	78.7
68.0	20	0.0397	0.125	0.396	1.24	3.82	11.2	28.4	55.7	79.9
69.8	21	0.0427	0.135	0.425	1.33	4.10	11.9	29.9	57.5	81.0
71.6	22	0.0459	0.145	0.457	1.43	4.39	12.7	31.5	59.2	82.1
73.4	23	0.0493	0.156	0.491	1.54	4.70	13.5	33.0	60.9	83.2
75.2	24	0.0530	0.167	0.527	1.65	5.03	14.4	34.6	62.6	84.1
77.0	25	0.0569	0.180	0.566	1.77	5.38	15.3	36.3	64.3	85.1
78.8	26	0.0610	0.193	0.607	1.89	5.75	16.2	37.9	65.9	85.9
80.6	27	0.0654	0.207	0.651	2.03	6.15	17.2	39.6	67.4	86.8
82.4	28	0.0701	0.221	0.697	2.17	6.56	18.2	41.2	68.9	87.3
84.2	29	0.0752	0.237	0.747	2.32	7.00	19.2	42.9	70.4	88.3
86.0	30	0.0805	0.254	0.799	2.48	7.46	20.3	44.6	71.8	89.0

The generic approach for estimating NH_3 assumes a default pH of 8 and default temperatures of 68!F and 85!F for cold water and warm water surface water, respectively. The resulting percent NH_3 is 3.8 percent and 7.2 percent for cold water and warm water, respectively. This default percentage shall be multiplied by the total ammonia-nitrogen (NH_3-N) concentration in the groundwater and the resulting NH_3 concentration compared to the applicable GSI criterion. As an

alternative, the maximum pH and temperature data from the specific receiving surface water can be used to estimate, from the table in this footnote, a lower percent unionized ammonia concentration for comparison to the generic GSI.

Soil: The generic soil GSI protection criteria for unionized ammonia are 580 ug/kg and 1,100 ug/kg for cold water and warm water surface water, respectively.

(DD) Hazardous substance causes developmental effects. Residential direct contact criteria are protective of both prenatal and postnatal exposure. Nonresidential direct contact criteria are protective for a pregnant adult receptor.

(EE) The following are applicable generic GSI criteria as required by Section 20120e of the NREPA.

Hazardous Substance	GSI (ug/L)	Notes
Phosphorus	1,000	Criteria applicable unless receiving water is a surface water that has a phosphorus waste load allocation or is an inland lake. In those cases, contact the department for applicable values.
Total dissolved solids (TDS)	5.0E+5	If TDS data are not available, the TDS criterion may be used a screening level for the sum of the concentrations of the following substances: calcium, chlorides, iron, magnesium, potassium, sodium, sulfate.
Dissolved Oxygen (DO): Cold receiving waters Warm receiving waters	 ≥ 7,000 ≥ 5,000	Since a low level of DO can be harmful to aquatic life, the criterion represents a minimum level that on-site samples must exceed. This is in contrast to other criteria which represent "not to exceed" concentrations. DO criteria are not applicable if groundwater Carbonaceous Biochemical Oxygen Demand (CBOD) is less than 10,000 ug/L and groundwater ammonia concentration is less than 2,000 ug/L.

(FF) The chloride GSI criterion shall be 125 mg/l when the discharge is to surface waters of the state designated as public water supply sources or 50 mg/l when the discharge is to the Great Lakes or connecting waters. Chloride GSI criteria shall not apply for surface waters of the state that are not designated as a public water supply source, however, the total dissolved solids criterion is applicable.

(GG) Risk-based criteria are not available for methane due to insufficient toxicity data. An acceptable soil gas concentration (presented for both residential and nonresidential land uses) was derived utilizing 25 percent of the lower explosive level for methane. This equates to 1.25 percent or 8.4E+6 ug/m^3.

(HH) The residential criterion for sodium is 230,000 ug/l in accordance with the Sodium Advisory Council recommendation and revised Groundwater Discharge Standards.

"ID" means insufficient data to develop criterion.

"NA" means a criterion or value is not available or, in the case of background and CAS numbers, not applicable.

"NLL" means hazardous substance is not likely to leach under most soil conditions.

“NLV” means hazardous substance is not likely to volatilize under most conditions.

History: 2013 AACS.

R 299.50 Toxicological and chemical-physical properties.

Rule 50. (1) The toxicological and chemical-physical properties used to calculate generic shall be as shown in table 4, except as provided in section 20120a(9) of the act, R 299.49(1)(l) and R 299.49(1)(o).

(2) Abbreviations used in table 4 have the following meanings when used in this rule:

(a) “NA” means not available.

(b) “NR” means not relevant.

History: 2013 AACS.

APPENDIX A

LOG OF BORING / WELL: SB/TMW-1

Project: Kalamazoo County Alcott Ph 2

Location: Alcott/Bryant Street, Kalamazoo

Project No.: 825390

Logged By: Amber Jane Pontius, Geologist

Drilling/Installation Date: 12/16/2015

Drilling Co.: Terra Probe Environmental

Drilling Method: Geoprobe

Sampling Methods: Core barrel

Boring Depth (below grade): 20'

Well Depth (from TOC): 20'

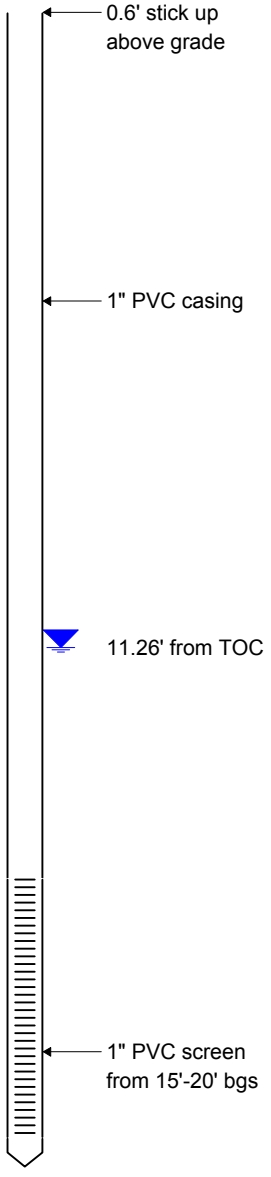
Static Water Level (from TOC): 11.26'

TOC stick-up (above grade): 0.5'

Notes: After groundwater sampling, temporary monitoring wells were removed and borings were plugged with bentonite holeplug.

SUBSURFACE PROFILE

Depth (ft.)	Sample Invl. (ft.)	Recovery (ft.)	Graphic Log	Description	Soil Samples
0				Ground Surface	
0	0'-5'	4'		Topsoil	
1				FILL MATERIAL: Crushed Concrete	
2				FILL MATERIAL: sand and gravel, stained dark brown/black, fine to medium sand with subrounded pebbles, relatively loose, dry.	SB-1(2'-3')
5	5'-10'	3'		FILL MATERIAL: sand and gravel, some silt, fine/medium sand with signigicant amount of subrounded pebbles and occasional cobbles, light brown, moist.	
9				SAND: moderately sorted fine to medium, light brown, moist.	
10	10'-15'	5'		SILT AND SAND: fine sand, light brown, saturated.	
14				SILT AND SAND: as above, dry.	
16				CLAY: some fine sand and silt, soft, gray, cohesive, high plasticity, dry.	
17	15'-20'	5'		SAND AND GRAVEL: some silt, fine to medium sand with subrounded pebbles and occasional cobbles, gray/brown, saturated.	
19				End of Boring 20' below grade.	
20					



LOG OF BORING / WELL: SB/TMW-2

Project: Kalamazoo County Alcott Ph 2

Location: Alcott/Bryant Street, Kalamazoo

Project No.: 825390

Logged By: Amber Jane Pontius, Geologist

Drilling/Installation Date: 12/16/2015

Drilling Co.: Terra Probe Environmental

Drilling Method: Geoprobe

Sampling Methods: Core barrel

Boring Depth (below grade): 15'

Well Depth (from TOC): 15'

Static Water Level (from TOC): 8.38'

TOC stick-up (above grade): 0.6'

Notes: After groundwater sampling, temporary monitoring wells were removed and borings were plugged with bentonite holeplug.

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Sample Invl. (ft.)	Recovery (ft.)	Graphic Log	Description	Soil Samples	Well Construction Detail	Depth (ft.)
0				Ground Surface		0.6' stick up above grade	0
0				Topsoil			0
1				FILL MATERIAL: sand and gravel, stained dark brown/black, fine to medium sand with subrounded pebbles with silt, relatively loose, dry.			1
2	0'-5'	3.5'		FILL MATERIAL: as above, with significant coal ash.			2
3					SB-2(3'-4')		3
4				FILL MATERIAL: as above with minor coal/ash staining.			4
5						1" PVC casing	5
6				SAND: few subrounded granules and pebbles, moderately well sorted medium sand, light brown with red tint, dry.			6
7	5'-10'	3.5'		SAND AND GRAVEL: coarse sand with subrounded granules, pebbles and occasional cobbles, light brown, relatively loose, moist to slightly saturated.			7
8						8.38' from TOC	8
9							9
10				SAND AND GRAVEL: fine to coarse sand, some silt, subrounded pebbles and occasional cobbles, light brown, relatively loose, saturated.			10
11							11
12	10'-15'	5'				1" PVC screen from 9.5'-14.5'	12
13							13
14							14
15							15

LOG OF BORING / WELL: SB/TMW-3

Project: Kalamazoo County Alcott Ph 2

Location: Alcott/Bryant Street, Kalamazoo

Project No.: 825390

Logged By: Amber Jane Pontius, Geologist

Drilling/Installation Date: 12/16/2015

Drilling Co.: Terra Probe Environmental

Drilling Method: Geoprobe

Sampling Methods: Core barrel

Boring Depth (below grade): 15'

Well Depth (from TOC): 15'

Static Water Level (from TOC): 8.50'

TOC stick-up (above grade): 0.5'

Notes: After groundwater sampling, temporary monitoring wells were removed and borings were plugged with bentonite holeplug.

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Sample Invl. (ft.)	LITHOLOGY: Recovery (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Soil Samples	Well Construction Detail	Depth (ft.)
0				Ground Surface		0.5' stick up above grade	0
0	0'-5'	3.5'		Topsoil: Sand and Gravel			0
1				FILL MATERIAL: sand and gravel, fine to medium sand with subrounded pebbles with silt and clay, light brown to dark brown, dry.			1
3				FILL MATERIAL: as above, staining black/dark brown, very thin coal layer.	SB-3(3'-4')		3
4				SAND AND GRAVEL: fine to medium, with subrounded pebbles, some silt, gray/brown, dry.		1" PVC casing	4
5	5'-10'	2'		SAND AND GRAVEL: as above, reddish orange, dry.			5
7				SAND AND GRAVEL: as above, light brown, moist.		8.50' from TOC	7
8				SAND AND GRAVEL: coarse sand, some fine and medium sand, some silt, subrounded to subangular granules and pebbles, trace cobbles, light brown, relatively loose, saturated.			8
10	10'-15'	5'				1" PVC screen from 9.5'-14.5'	10
15							15

LOG OF BORING / WELL: SB/TMW-4

Project: Kalamazoo County Alcott Ph 2

Location: Alcott/Bryant Street, Kalamazoo

Project No.: 825390

Logged By: Amber Jane Pontius, Geologist

Drilling/Installation Date: 12/16/2015

Drilling Co.: Terra Probe Environmental

Drilling Method: Geoprobe

Sampling Methods: Core barrel

Boring Depth (below grade): 15'

Well Depth (from TOC): 15'

Static Water Level (from TOC): 9.83'

TOC stick-up (above grade): 1'

Notes: After groundwater sampling, temporary monitoring wells were removed and borings were plugged with bentonite holeplug.

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Sample Invl. (ft.)	LITHOLOGY: Recovery (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Soil Samples	Well Construction Detail	Depth (ft.)
0				Ground Surface	No soil sample collected.	1' stick up above grade	0
0	0'-5'	4.5'		Topsoil			0
1				FILL MATERIAL: sand, brown, loose, dry.			1
2				SILTY SAND: fine to medium, light brown, relatively loose, dry.			2
3				SAND: well sorted, medium grained, light brown, loose, dry.			3
4							4
5				SILTY SAND: fine to medium, light brown, loose to lightly compacted, dry.		1" PVC casing	5
6							6
7	5'-10'	5'					7
8				SAND AND GRAVEL: fine to medium sand, subrounded granules and pebbles, some silt, light brown, relatively loose, moist.		9.83' from TOC	8
9							9
10				SAND AND GRAVEL: as above, occasional cobbles, saturated.			10
11						1" PVC screen from 9-14'	11
12	10'-15'	5'					12
13							13
14							14
15							15

LOG OF BORING / WELL: Test Pit #1

Start Date: 02/23/2017
End Date: 02/23/2017
Total Depth (ft. below grade): 12'
Depth to Water.: NA
Excavation Co.: James E. Fulton & Sons Excavating
Sampling Methods: Soil Corer

Project: Performance Paper
Location: Kalamazoo
Project No.: 825821
Logged By: Barrett Walquist

Notes:

SUBSURFACE PROFILE

Depth (ft.)	Graphic Log	Description	Sample Location	Monitoring Well Construction/Soil Boring Detail	Depth (ft.)
0		Ground Surface			0
0		Crushed Concrete/Weeds			0
1		SANDY GRAVEL: Fill Material, Fine-Coarse Grained, Coal Ash Present, Black Discoloration of Soils, Concrete Rubble Present, Dry, Compact.			1
2			Soil Sample- 2'		2
3		SANDY GRAVEL: Fill Material Fine-Coarse Grained, Orange w/ Grey & Black Discoloration, Compact, Dry.			3
4					4
5			Soil Sample- 5'		5
6					6
7		COAL ASH: Grey/Black, Compact, Dry, Slag Present.			7
8		SANDY GRAVEL: Fine-Medium Grained, Interbedded Fill & Native Material, Compact, Moist, Orange-Brown.			8
9					9
10					10
11					11
12					12
13					13
14					14
15					15
16					16
17					17
18					18
19					19
20					20

LOG OF BORING / WELL: Test Pit #2

Start Date: 02/23/2017
End Date: 02/23/2017
Total Depth (ft. below grade): 12'
Depth to Water.: NA

Project: Performance Paper
Location: Kalamazoo
Project No.: 825821
Logged By: Barrett Walquist

Excavation Co.: James E. Fulton & Sons Excavating
Sampling Methods: Soil Corer

Notes:

SUBSURFACE PROFILE

Depth (ft.)	Graphic Log	Description	Sample Location	Monitoring Well Construction/Soil Boring Detail	Depth (ft.)
0		Ground Surface			0
0		SAND GRAVEL: Crushed Concrete & Weeds			0
1		SANDY GRAVEL: Fill Material, Fine-Coarse Grained, Black Discoloration of Soils, Moist, Poorly Sorted, Orange-Brown.			1
2			Soil Sample- 2'		2
3		SANDY GRAVEL: Fill Material, Fine-Coarse Grained, Compact, Dry, Concrete Debris/Rubble Present.			3
4					4
5		SANDY GRAVEL: Fill Material, Fine-Medium Grained, Poorly Sorted, Grey-Black w/ Coal Debris Present.			5
6					6
7					7
8		SANDY GRAVEL: Fine-Medium Grained, Interbedded Fill & Native Material, Compact, Dry, Grey-Tan.			8
9			Soil Sample- 9'		9
10					10
11		SAND: Some Coal/Slag Present, Interbedded Fill & Native Material, Tan-Brown.			11
12					12
13					13
14					14
15					15
16					16
17					17
18					18
19					19
20					20

LOG OF BORING / WELL: Test Pit #3

Start Date: 02/23/2017
End Date: 02/23/2017
Total Depth (ft. below grade): 11'
Depth to Water.: NA

Project: Performance Paper
Location: Kalamazoo
Project No.: 825821
Logged By: Barrett Walquist

Excavation Co.: James E. Fulton & Sons Excavating
Sampling Methods: Soil Corer

Notes:

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Sample Location	Monitoring Well Construction/Soil Boring Detail	Depth (ft.)
0		Ground Surface			0
0–9		SANDY GRAVEL: Fill Material, Fine-Coarse Grained, Compact, Concrete Rubble Present, Dry, Brown-Tan			
9–10		SANDY GRAVEL: Fill Material Interbedded w/ Native Sand/Gravel, Tan-Orange, Moist, Compact.			
10–11		SANDY GRAVEL: Coarse Grained, Primarily Gravel, Compact, Moist.			
1–20					1–20

LOG OF BORING / WELL: Test Pit #4

Start Date: 02/23/2017
End Date: 02/23/2017
Total Depth (ft. below grade): 10'
Depth to Water.: NA
Excavation Co.: James E. Fulton & Sons Excavating
Sampling Methods: Soil Corer

Project: Performance Paper
Location: Kalamazoo
Project No.: 825821
Logged By: Barrett Walquist

Notes:

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Sample Location	Monitoring Well Construction/Soil Boring Detail	Depth (ft.)
0		Ground Surface			0
0–2		SANDY GRAVEL: Fill Material, Concrete Rubble Present, Brown, Dry.			0–2
2			Soil Sample- 2'		2
2–5		SAND: Gravel Present, Fine-Medium Grained, Loosely Compacted, Slightly Moist, Orange-Tan w/ Grey & Black Discoloration.			2–5
5–9		SAND: Some Gravel, Uniform Grain Size, Moist, Orange-Brown.			5–9
9			Water Table		9
9–10		GRAVEL: Some Sand, Brown-Orange, Wet.			9–10
10–20					10–20

LOG OF BORING / WELL: Test Pit #5

Start Date: 02/23/2017
End Date: 02/23/2017
Total Depth (ft. below grade): 9'
Depth to Water.: NA
Excavation Co.: James E. Fulton & Sons Excavating
Sampling Methods: Soil Corer

Project: Performance Paper
Location: Kalamazoo
Project No.: 825821
Logged By: Barrett Walquist

Notes:

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Sample Location	Monitoring Well Construction/Soil Boring Detail	Depth (ft.)
0		Ground Surface			0
0–3		SANDY GRAVEL: Fill Material, Concrete Rubble Present, Brown, Dry.			0–3
3–9		SAND: Gravel Present, Fine-Medium Grained, Loosely Compacted, Slightly Moist, Orange-Tan w/ Grey & Black Interbedded Layers.			3–9
9			Water Table		9
10–20					10–20

LOG OF BORING / WELL: Test Pit #6

Start Date: 02/23/2017
End Date: 02/23/2017
Total Depth (ft. below grade): 9'
Depth to Water.: NA

Project: Performance Paper
Location: Kalamazoo
Project No.: 825821
Logged By: Barrett Walquist

Excavation Co.: James E. Fulton & Sons Excavating
Sampling Methods: Soil Corer

Notes:

SUBSURFACE PROFILE

Depth (ft.)	Graphic Log	Description	Sample Location	Monitoring Well Construction/Soil Boring Detail	Depth (ft.)
0		Ground Surface			0
0–1		SANDY GRAVEL: Fill Material, Concrete Rubble Present, Brown, Dry.			1
1–2		COAL: Black, Compact.			2
2–3		SANDY GRAVEL: Fill Material, Concrete Rubble Present, Brown, Dry			3
3–9		SAND: Clay Present, Fine-Medium Grained, Moist, Tan-Brown, Some Black Discoloration.			9
9			Water Table		
10–20					20

LOG OF BORING / WELL: Test Pit #7

Start Date: 02/23/2017
End Date: 02/23/2017
Total Depth (ft. below grade): 9'
Depth to Water.: NA
Excavation Co.: James E. Fulton & Sons Excavating
Sampling Methods: Soil Corer

Project: Performance Paper
Location: Kalamazoo
Project No.: 825821
Logged By: Barrett Walquist

Notes:

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Sample Location	Monitoring Well Construction/Soil Boring Detail	Depth (ft.)
0		Ground Surface			0
0–7		SANDY GRAVEL: Fill Material, Concrete Rubble & Debris Present, Brown, Dry.			0–7
7			Water Table		7
7–9		SANDY GRAVEL: Light Brown, Fine-Medium Grained, Wet.			7–9
9					9
10–20					10–20

LOG OF BORING / WELL: Test Pit #8

Start Date: 02/23/2017
End Date: 02/23/2017
Total Depth (ft. below grade): 9'
Depth to Water.: NA

Project: Performance Paper
Location: Kalamazoo
Project No.: 825821
Logged By: Barrett Walquist

Excavation Co.: James E. Fulton & Sons Excavating
Sampling Methods: Soil Corer

Notes:

SUBSURFACE PROFILE

Depth (ft.)	LITHOLOGY: Graphic Log	LITHOLOGY: Description	Sample Location	Monitoring Well Construction/Soil Boring Detail	Depth (ft.)
0		Ground Surface			0
0–1		SANDY GRAVEL: Fill Material, Concrete Rubble & Debris Present, Brown, Dry.			0–1
2		SAND: Fine-Medium Grained, Moist, Tan.			2
3		COAL: Black, Layered, Compact.			3
4–8		SANDY GRAVEL: Fill Material, Compact, Moist, Foundation Debris (Concrete, Brick, Stone)			4–8
9					9
10–20					10–20

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

DAILY FIELD REPORT

DATE 02/23/17

PAGE 1 OF 1

DAY	S	M	T	W	T	F	S
					X		

PROJECT NAME: Kzoo Performance paper
PROJECT NO.: 825821
LOCATION: Kalamazoo, MI
PROJECT MANAGER: Steve Kramm
FIELD PERSONEL: BMW

WEATHER	Brite Sun	(Clear)	Overcast	Rain	Snow		
TEMP	To 32	32 50	(50 70)	70 85	85 Up		
WIND	Still	(Moderate)	High				
HUMIDITY	(Dry)	Moderate	Humid				

VISITORS

Visitor	Time	Representing	Remarks

EQUIPMENT AT THE SITE

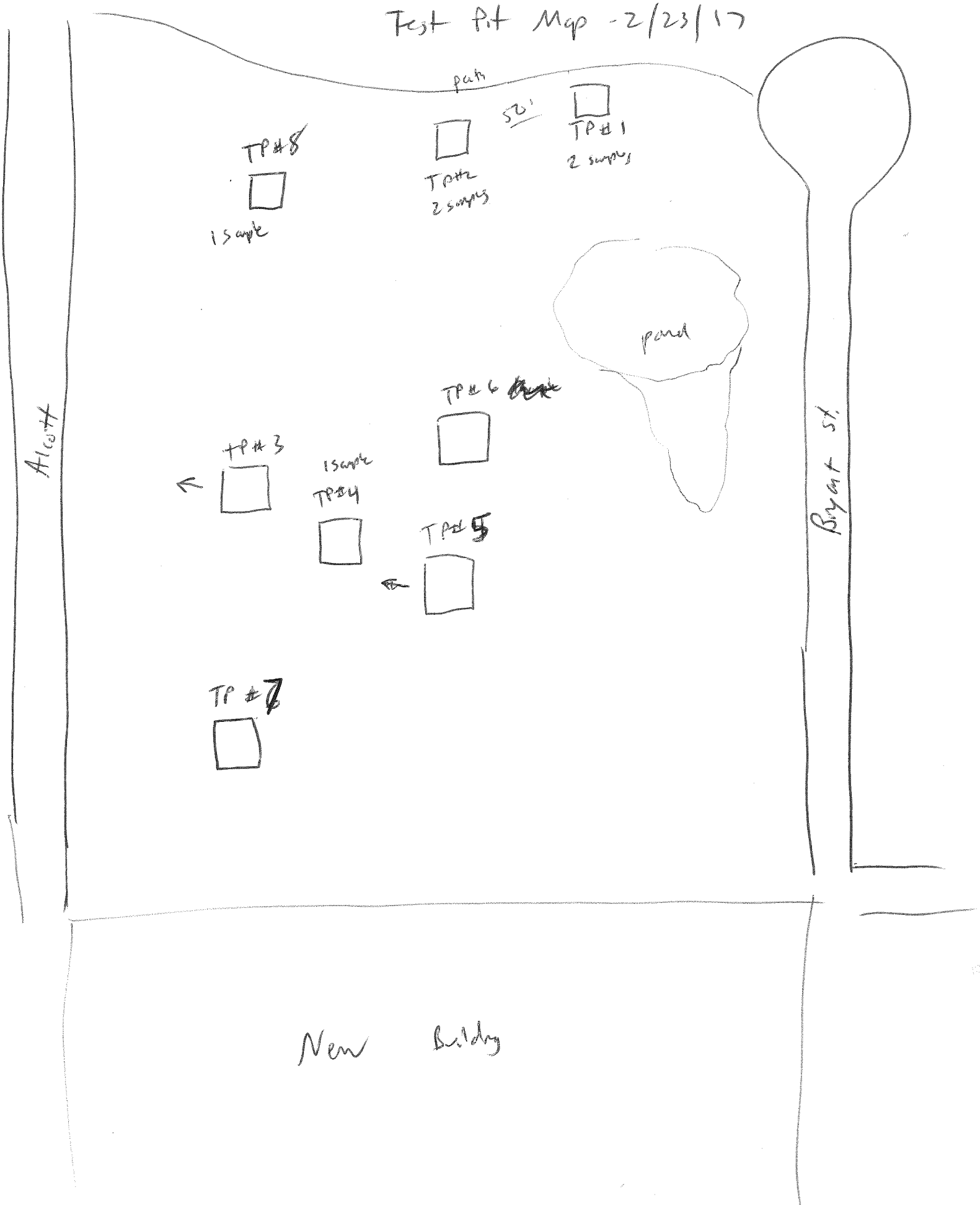
Auger, Scale, etc

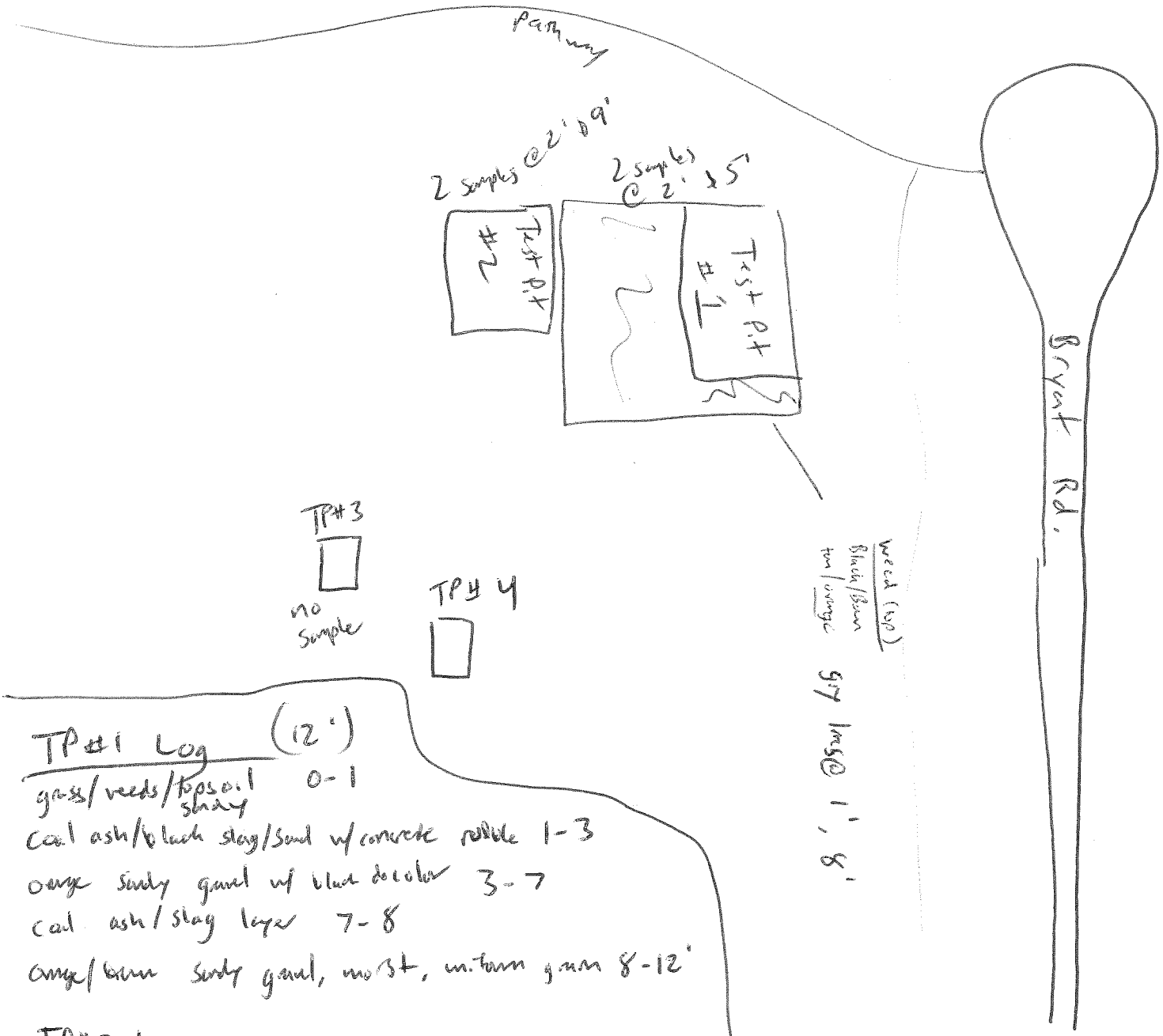
SITE WORKERS

MTC
Fulton Excavation

FIELD ACTIVITIES

6:45 - 7:30	Drive to site
7:30 - 8:00	Meet subs / prep gear
8:00 - 1:30	Begin Test Pit Excavation
	8 test pits total
1:30 - 2:00	pack gear / Chain of custody / samples
2:00 - 3:30	Drive to ALS - drop samples
3:30 - 4:00	Drive home


Test Pit Map - 2/23/17
path
50'
TP#8
1 sample
TP#2
2 samples
TP#1
2 samples
pond
TP#6
TP#3
1 sample
TP#4
TP#5
TP#7
Alcott
Bryant St.
New Building



TP#1 Log (12')

grass/weeds/topsoil 0-1
Coal ash/black slag/sand w/concrete rubble 1-3
orange sandy gravel w/ black discolor 3-7
coal ash/slag layer 7-8
orange/brown sandy gravel, moist, w/ brown grain 8-12'

TP#2 Log

0-1 grass/weeds/sandy topsoil
1-2 orange/brown sandy soil, moist, poorly sorted
2-5 grey/brown sandy gravel, lots of rubble/trash/debris present (wires/concrete/etc)
5-8 grey/chalky color sandy gravel w/debris, poorly sorted, dry-moist, very compacted, fine-med grain
8-10 grey/black sandy gravel w/ debris, some silty/clay?, very hard/dry soils, thin interbedded slag (black), tan layers
10-12 tan/brown, sand (coarse) interbedded w/ debris/coal

large Rebar @ 6-7'

TP#3 Log

0-11' crushed concrete/
sandy gravel, dry.
water table @ 11'
medium - large grain
compact
small/thin tan/orange gravel/sand layer @ 9'-9.5' - few roots present meaning ground was raised up - possibly near native soils

TP#4 log

0-2.5' Sandy brown gravel w/concrete, dry
2.5-5 orange/tan, fine grain, moist, slightly sandy, some gravel, few dark grey/black layers
5-9 Sand, brown/orange, more gravel, moist, more uniform grain size (native?)
9-9.5 water table, lots of gravel

TP#5 log

0-3 grey/brown sandy gravel w/ debris & crushed concrete
3-9' tan/brown/orange sandy gravel, fine-coarse gravel (native)
gravel increasing w/ depth, more grey/brown, moist
Water @ 9'

TP#6 log

0-3 Sand/silt, brown/grey w/ coal layer @ 2', crushed concrete present
3-9' Sandy clay, tan/brown, moist, fine-medium grain w/gravel, few black streaks, some silt present
water table @ 9'

TP#7 log

Similar to TP#3
0-7 Crushed concrete/gravel w/ sand (grey/brown), to dry, fine-coarse grain
7-9 water @ 7.5'; light brown, sandy w/ gravel, wet (native ? think?)

TP#8 log

0-2 grey/brown sandy gravel w/ concrete
2-3 tan, sand, uniform grain
3-4 coal layer
4-9 sandy gravel w/ debris, moist, foundation still present, yellow brick w/ asphalt? lots of debris

ALS Environmental

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page _____ of _____

COC ID: 36768

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	K200 Performance Paper	A	8260B plus 1,1,1 of VOCs - no TIC
Work Order		Project Number	825821	B	VOC Metals PCB's
Company Name	Fleis & Vandenbrink Engineering	Bill To Company	FBV	C	PAH 8270C
Send Report To	Steve Kimm	Invoice Attn	Steve Kimm	D	
Address	4798 Campus Dr.	Address		E	
				F	
City/State/Zip	Kalamazoo/MI/49008	City/State/Zip		G	
Phone	269-532-7300	Phone		H	
Fax		Fax		I	
e-Mail Address	skimm@fveng.com	e-Mail Address	skimm@fveng.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Test Pit #1 (2')	02/23/17	9:00	Soil	MeOH	3											
2	Test Pit #1 (5')	02/23/17	9:10	Soil	MeOH	3											
3	Test Pit #2 (2')	02/23/17	10:10	Soil	MeOH	3											
4	Test Pit #2 (9')	02/23/17	10:00	Soil	MeOH	3											
5	Test Pit #4 (2')	02/23/17	11:45	Soil	MeOH	3											
6	Test Pit #5 (7')	02/23/17	13:20	Soil	MeOH	3											
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Barrett Walquist

Shipment Method: Hand Deliver

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other ASAP TAT

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Barrett Walquist	2/23/17	1515	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other _____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

APPENDIX B

28-Feb-2017

Steve Kimm
Fleis & Vandenbrink Engineering, Inc.
4798 Campus Drive
Kalamazoo, MI 49008

Re: **Kalamazoo Performance Paper 825821** Work Order: **17021259**

Dear Steve,

ALS Environmental received 7 samples on 23-Feb-2017 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 50.

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

Sincerely,

Alex Csaszar

Electronically approved by: Alex Csaszar

Alex Csaszar
Project Manager

Certificate No: MN 998501

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821
Work Order: **17021259**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17021259-01	Test Pit #1 (2')	Soil		2/23/2017 09:00	2/23/2017 15:15	☐
17021259-02	Test Pit #1 (5')	Soil		2/23/2017 09:10	2/23/2017 15:15	☐
17021259-03	Test Pit #2 (2')	Soil		2/23/2017 10:10	2/23/2017 15:15	☐
17021259-04	Test Pit #2 (9')	Soil		2/23/2017 10:00	2/23/2017 15:15	☐
17021259-05	Test Pit #4 (2')	Soil		2/23/2017 11:45	2/23/2017 15:15	☐
17021259-06	Test Pit #8 (7')	Soil		2/23/2017 13:20	2/23/2017 15:15	☐
17021259-07	Trip Blank	Soil		2/23/2017	2/23/2017 15:15	☐

Client:	Fleis & Vandenbrink Engineering, Inc.
Project:	Kalamazoo Performance Paper 825821
Work Order:	17021259

Case Narrative

Samples for the above noted Work Order were received on 02/23/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Volatile Organics:

Batch 98593, Method VOC_8260_S, Sample LCS-98593: The LCS recoveries were above the upper control limits for several analytes (See QC Report). All the sample results in the batch were non-detect. No qualification is necessary for these analytes.

Batch 98593, Method VOC_8260_S, Samples 17021259-03A MS and MSD: The MS and MSD recoveries were below the lower control limits for a few analytes (See QC Report). The reported results in the parent sample may be biased low for these analytes.

Batch 98593, Method VOC_8260_S, Samples 17021259-03A MS and MSD: The MS and MSD recoveries were above the upper control limits for several analytes (See QC Report). The reported results in the parent sample was non-detect, therefore no qualification is necessary.

Extractable Organics:

Batch 98553, Method PCBLVI_8082_S, Sample 17021227-01A DUP: RPD between DUP and parent sample for surrogate recoveries is out of control due to 5X surrogate spiked in DUP sample. Both samples are non-detect for target analytes.

Batch 98590, Method SVO_8270_S, Sample 17021259-04B MSD: The RPD between the MS and MSD was outside the control limits for Flouranthene. The reported result in the parent sample should be considered estimated for this analyte.

Metals:

Batch 98599, Method ICP_6020_S, Samples 17021259-05B MS and MSD: The MS and MSD recoveries were outside of the control limits for Barium and Zinc; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte.

Batch 98599, Method ICP_6020_S, Sample 17021259-05B MS: The MS recoveries were below the lower control limits for Copper and Lead. The reported results in the parent sample may be biased low for these analytes.

Batch 98599, Method ICP_6020_S, Sample 17021259-05B MSD: The RPDs between the MS and MSD were outside the control limits for Copper, Lead and Zinc. The reported results in the parent sample should be considered estimated for these analytes.

Batch 98599, Method ICP_6020_S, Sample 17021259-05B MSD: The MSD recovery was below the lower control limits for Lead. The reported result in the parent sample may be biased low for this analyte.

Wet Chemistry:

No other deviations or anomalies were noted. Prep Comments for VOC_5035_S, Sample 17021259-01A: Updated EMR Prep Comments for VOC_5035_S, Sample 17021259-02A: Updated EMR Prep Comments for VOC_5035_S, Sample 17021259-03A: Updated EMR Prep Comments for VOC_5035_S, Sample 17021259-04A: Updated EMR Prep Comments for VOC_5035_S, Sample 17021259-05A: Updated EMR Prep Comments for VOC_5035_S, Sample 17021259-06A: Updated EMR Prep Comments for VOC_5035_S, Sample 17021259-07A: TRIP BLANK!Batch 98593, Volatile Organic Compounds, Sample 17021259-01A:
Batch 98593, Volatile Organic Compounds, Sample 17021259-02A:
Batch 98593, Volatile Organic Compounds, Sample 17021259-03A:
Batch 98593, Volatile Organic Compounds, Sample 17021259-05A:
Batch 98593, Volatile Organic Compounds, Sample 17021259-04A:
Batch 98593, Volatile Organic Compounds, Sample 17021259-06A:
Batch 98593, Method VOC_8260_S, Sample 17021259-03A MS:
Batch 98593, Method VOC_8260_S, Sample 17021259-03A MSD:

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821
WorkOrder: **17021259**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #1 (2') **Lab ID:** 17021259-01
Collection Date: 2/23/2017 09:00 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3546 / 2/24/17	Analyst: **EB**
Aroclor 1016	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Aroclor 1221	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Aroclor 1232	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Aroclor 1242	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Aroclor 1248	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Aroclor 1254	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Aroclor 1260	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Aroclor 1262	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Aroclor 1268	ND		76	µg/Kg-dry	1	2/25/2017 03:22 PM
Surr: Decachlorobiphenyl	*89.9*		*40-140*	*%REC*	1	2/25/2017 03:22 PM
Surr: Tetrachloro-m-xylene	*83.4*		*45-124*	*%REC*	1	2/25/2017 03:22 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 2/27/17	Analyst: **JJB**
Mercury	**0.37**		**0.089**	**mg/Kg-dry**	5	2/27/2017 03:16 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 2/24/17	Analyst: **JF**
Arsenic	**15**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:36 AM
Barium	**110**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:36 AM
Cadmium	ND		0.73	mg/Kg-dry	4	2/25/2017 05:36 AM
Chromium	**9.1**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:36 AM
Copper	**18**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:36 AM
Lead	**62**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:36 AM
Selenium	ND		1.8	mg/Kg-dry	4	2/25/2017 05:36 AM
Silver	ND		1.8	mg/Kg-dry	4	2/25/2017 05:36 AM
Zinc	**130**		**3.7**	**mg/Kg-dry**	4	2/25/2017 05:36 AM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3546 / 2/24/17	Analyst: **RM**
2-Chloronaphthalene	ND		47	µg/Kg-dry	1	2/25/2017 09:43 AM
2-Methylnaphthalene	**1,200**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Acenaphthene	**200**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Acenaphthylene	**3,000**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Anthracene	**3,600**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Benzo(a)anthracene	**7,100**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Benzo(a)pyrene	**7,300**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Benzo(b)fluoranthene	**11,000**		**470**	**µg/Kg-dry**	10	2/27/2017 04:24 PM
Benzo(g,h,i)perylene	**3,700**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Benzo(k)fluoranthene	**5,400**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Chrysene	**7,200**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Dibenzo(a,h)anthracene	**1,400**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Fluoranthene	**7,200**		**470**	**µg/Kg-dry**	10	2/27/2017 04:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #1 (2') **Lab ID:** 17021259-01
Collection Date: 2/23/2017 09:00 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	**210**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Indeno(1,2,3-cd)pyrene	**3,700**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Naphthalene	**890**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Phenanthrene	**3,000**		**47**	**µg/Kg-dry**	1	2/25/2017 09:43 AM
Pyrene	**7,500**		**470**	**µg/Kg-dry**	10	2/27/2017 04:24 PM
Surr: 2-Fluorobiphenyl	*79.9*		*20-140*	*%REC*	1	2/25/2017 09:43 AM
Surr: 4-Terphenyl-d14	*85.0*		*22-172*	*%REC*	1	2/25/2017 09:43 AM
Surr: Nitrobenzene-d5	*69.3*		*8-140*	*%REC*	1	2/25/2017 09:43 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 2/24/17	Analyst: **BJB**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,2,4-Trimethylbenzene	**74**		**30**	**µg/Kg**	1	2/24/2017 03:13 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,3,5-Trimethylbenzene	**38**		**30**	**µg/Kg**	1	2/24/2017 03:13 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
2-Butanone	ND		200	µg/Kg	1	2/24/2017 03:13 PM
2-Hexanone	ND		30	µg/Kg	1	2/24/2017 03:13 PM
2-Methylnaphthalene	**210**		**100**	**µg/Kg**	1	2/24/2017 03:13 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Acetone	ND		100	µg/Kg	1	2/24/2017 03:13 PM
Acrylonitrile	ND		100	µg/Kg	1	2/24/2017 03:13 PM
Benzene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Bromochloromethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Bromodichloromethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Bromoform	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Bromomethane	ND		75	µg/Kg	1	2/24/2017 03:13 PM
Carbon disulfide	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Carbon tetrachloride	ND		30	µg/Kg	1	2/24/2017 03:13 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #1 (2') **Lab ID:** 17021259-01
Collection Date: 2/23/2017 09:00 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Chloroethane	ND		100	µg/Kg	1	2/24/2017 03:13 PM
Chloroform	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Chloromethane	ND		100	µg/Kg	1	2/24/2017 03:13 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Dibromochloromethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Dibromomethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Dichlorodifluoromethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Diethyl ether	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Ethylbenzene	**34**		**30**	**µg/Kg**	1	2/24/2017 03:13 PM
Hexachloroethane	ND		100	µg/Kg	1	2/24/2017 03:13 PM
Hexane	ND		100	µg/Kg	1	2/24/2017 03:13 PM
Isopropylbenzene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
m,p-Xylene	**130**		**60**	**µg/Kg**	1	2/24/2017 03:13 PM
Methyl iodide	ND		75	µg/Kg	1	2/24/2017 03:13 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Methylene chloride	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Naphthalene	**170**		**100**	**µg/Kg**	1	2/24/2017 03:13 PM
n-Propylbenzene	**36**		**30**	**µg/Kg**	1	2/24/2017 03:13 PM
o-Xylene	**110**		**30**	**µg/Kg**	1	2/24/2017 03:13 PM
Styrene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Tetrachloroethene	**900**		**30**	**µg/Kg**	1	2/24/2017 03:13 PM
Toluene	**76**		**30**	**µg/Kg**	1	2/24/2017 03:13 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Trichloroethene	**660**		**30**	**µg/Kg**	1	2/24/2017 03:13 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Vinyl acetate	ND		250	µg/Kg	1	2/24/2017 03:13 PM
Vinyl chloride	ND		30	µg/Kg	1	2/24/2017 03:13 PM
Xylenes, Total	**240**		**90**	**µg/Kg**	1	2/24/2017 03:13 PM
Surr: 1,2-Dichloroethane-d4	*108*		*70-130*	*%REC*	1	2/24/2017 03:13 PM
Surr: 4-Bromofluorobenzene	*99.7*		*70-130*	*%REC*	1	2/24/2017 03:13 PM
Surr: Dibromofluoromethane	*85.4*		*70-130*	*%REC*	1	2/24/2017 03:13 PM
Surr: Toluene-d8	*102*		*70-130*	*%REC*	1	2/24/2017 03:13 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**12**		**0.050**	**% of sample**	1	2/24/2017 10:50 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #1 (5') **Lab ID:** 17021259-02
Collection Date: 2/23/2017 09:10 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3546 / 2/24/17	Analyst: **EB**
Aroclor 1016	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Aroclor 1221	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Aroclor 1232	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Aroclor 1242	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Aroclor 1248	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Aroclor 1254	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Aroclor 1260	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Aroclor 1262	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Aroclor 1268	ND		71	µg/Kg-dry	1	2/25/2017 03:36 PM
Surr: Decachlorobiphenyl	*109*		*40-140*	*%REC*	1	2/25/2017 03:36 PM
Surr: Tetrachloro-m-xylene	*103*		*45-124*	*%REC*	1	2/25/2017 03:36 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 2/27/17	Analyst: **JJB**
Mercury	**0.098**		**0.018**	**mg/Kg-dry**	1	2/27/2017 02:07 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 2/24/17	Analyst: **JF**
Arsenic	**4.8**		**1.4**	**mg/Kg-dry**	4	2/25/2017 05:42 AM
Barium	**56**		**1.4**	**mg/Kg-dry**	4	2/25/2017 05:42 AM
Cadmium	ND		0.58	mg/Kg-dry	4	2/25/2017 05:42 AM
Chromium	**7.7**		**1.4**	**mg/Kg-dry**	4	2/25/2017 05:42 AM
Copper	**6.8**		**1.4**	**mg/Kg-dry**	4	2/25/2017 05:42 AM
Lead	**32**		**1.4**	**mg/Kg-dry**	4	2/25/2017 05:42 AM
Selenium	ND		1.4	mg/Kg-dry	4	2/25/2017 05:42 AM
Silver	ND		1.4	mg/Kg-dry	4	2/25/2017 05:42 AM
Zinc	**26**		**2.9**	**mg/Kg-dry**	4	2/25/2017 05:42 AM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3546 / 2/24/17	Analyst: **RM**
2-Chloronaphthalene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
2-Methylnaphthalene	**100**		**44**	**µg/Kg-dry**	1	2/25/2017 12:04 PM
Acenaphthene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Acenaphthylene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Anthracene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Benzo(a)anthracene	**53**		**44**	**µg/Kg-dry**	1	2/25/2017 12:04 PM
Benzo(a)pyrene	**58**		**44**	**µg/Kg-dry**	1	2/25/2017 12:04 PM
Benzo(b)fluoranthene	**68**		**44**	**µg/Kg-dry**	1	2/25/2017 12:04 PM
Benzo(g,h,i)perylene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Benzo(k)fluoranthene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Chrysene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Dibenzo(a,h)anthracene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Fluoranthene	**80**		**44**	**µg/Kg-dry**	1	2/25/2017 12:04 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #1 (5') **Lab ID:** 17021259-02
Collection Date: 2/23/2017 09:10 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Indeno(1,2,3-cd)pyrene	ND		44	µg/Kg-dry	1	2/25/2017 12:04 PM
Naphthalene	**86**		**44**	**µg/Kg-dry**	1	2/25/2017 12:04 PM
Phenanthrene	**92**		**44**	**µg/Kg-dry**	1	2/25/2017 12:04 PM
Pyrene	**74**		**44**	**µg/Kg-dry**	1	2/25/2017 12:04 PM
Surr: 2-Fluorobiphenyl	*86.0*		*20-140*	*%REC*	1	2/25/2017 12:04 PM
Surr: 4-Terphenyl-d14	*85.5*		*22-172*	*%REC*	1	2/25/2017 12:04 PM
Surr: Nitrobenzene-d5	*77.4*		*8-140*	*%REC*	1	2/25/2017 12:04 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 2/24/17	Analyst: **BJB**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,2,4-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,3,5-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
2-Butanone	ND		200	µg/Kg	1	2/24/2017 03:38 PM
2-Hexanone	ND		30	µg/Kg	1	2/24/2017 03:38 PM
2-Methylnaphthalene	ND		100	µg/Kg	1	2/24/2017 03:38 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Acetone	ND		100	µg/Kg	1	2/24/2017 03:38 PM
Acrylonitrile	ND		100	µg/Kg	1	2/24/2017 03:38 PM
Benzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Bromochloromethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Bromodichloromethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Bromoform	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Bromomethane	ND		75	µg/Kg	1	2/24/2017 03:38 PM
Carbon disulfide	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Carbon tetrachloride	ND		30	µg/Kg	1	2/24/2017 03:38 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #1 (5') **Lab ID:** 17021259-02
Collection Date: 2/23/2017 09:10 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Chloroethane	ND		100	µg/Kg	1	2/24/2017 03:38 PM
Chloroform	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Chloromethane	ND		100	µg/Kg	1	2/24/2017 03:38 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Dibromochloromethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Dibromomethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Dichlorodifluoromethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Diethyl ether	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Ethylbenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Hexachloroethane	ND		100	µg/Kg	1	2/24/2017 03:38 PM
Hexane	ND		100	µg/Kg	1	2/24/2017 03:38 PM
Isopropylbenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
m,p-Xylene	ND		60	µg/Kg	1	2/24/2017 03:38 PM
Methyl iodide	ND		75	µg/Kg	1	2/24/2017 03:38 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Methylene chloride	**44**		**30**	**µg/Kg**	1	2/24/2017 03:38 PM
Naphthalene	ND		100	µg/Kg	1	2/24/2017 03:38 PM
n-Propylbenzene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
o-Xylene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Styrene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Tetrachloroethene	**290**		**30**	**µg/Kg**	1	2/24/2017 03:38 PM
Toluene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Trichloroethene	**210**		**30**	**µg/Kg**	1	2/24/2017 03:38 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Vinyl acetate	ND		250	µg/Kg	1	2/24/2017 03:38 PM
Vinyl chloride	ND		30	µg/Kg	1	2/24/2017 03:38 PM
Xylenes, Total	ND		90	µg/Kg	1	2/24/2017 03:38 PM
Surr: 1,2-Dichloroethane-d4	*114*		*70-130*	*%REC*	1	2/24/2017 03:38 PM
Surr: 4-Bromofluorobenzene	*103*		*70-130*	*%REC*	1	2/24/2017 03:38 PM
Surr: Dibromofluoromethane	*94.0*		*70-130*	*%REC*	1	2/24/2017 03:38 PM
Surr: Toluene-d8	*100*		*70-130*	*%REC*	1	2/24/2017 03:38 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**9.3**		**0.050**	**% of sample**	1	2/24/2017 10:50 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #2 (2') **Lab ID:** 17021259-03
Collection Date: 2/23/2017 10:10 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3546 / 2/24/17	Analyst: **EB**
Aroclor 1016	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Aroclor 1221	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Aroclor 1232	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Aroclor 1242	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Aroclor 1248	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Aroclor 1254	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Aroclor 1260	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Aroclor 1262	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Aroclor 1268	ND		83	µg/Kg-dry	1	2/25/2017 04:19 PM
Surr: Decachlorobiphenyl	*104*		*40-140*	*%REC*	1	2/25/2017 04:19 PM
Surr: Tetrachloro-m-xylene	*101*		*45-124*	*%REC*	1	2/25/2017 04:19 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 2/27/17	Analyst: **JJB**
Mercury	**0.071**		**0.018**	**mg/Kg-dry**	1	2/27/2017 02:09 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 2/24/17	Analyst: **JF**
Arsenic	**9.2**		**1.7**	**mg/Kg-dry**	4	2/25/2017 05:48 AM
Barium	**87**		**1.7**	**mg/Kg-dry**	4	2/25/2017 05:48 AM
Cadmium	ND		0.67	mg/Kg-dry	4	2/25/2017 05:48 AM
Chromium	**15**		**1.7**	**mg/Kg-dry**	4	2/25/2017 05:48 AM
Copper	**17**		**1.7**	**mg/Kg-dry**	4	2/25/2017 05:48 AM
Lead	**76**		**1.7**	**mg/Kg-dry**	4	2/25/2017 05:48 AM
Selenium	ND		1.7	mg/Kg-dry	4	2/25/2017 05:48 AM
Silver	ND		1.7	mg/Kg-dry	4	2/25/2017 05:48 AM
Zinc	**63**		**3.4**	**mg/Kg-dry**	4	2/25/2017 05:48 AM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3546 / 2/24/17	Analyst: **RM**
2-Chloronaphthalene	ND		51	µg/Kg-dry	1	2/25/2017 10:08 AM
2-Methylnaphthalene	**340**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Acenaphthene	ND		51	µg/Kg-dry	1	2/25/2017 10:08 AM
Acenaphthylene	**130**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Anthracene	**85**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Benzo(a)anthracene	**530**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Benzo(a)pyrene	**580**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Benzo(b)fluoranthene	**1,000**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Benzo(g,h,i)perylene	**250**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Benzo(k)fluoranthene	**340**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Chrysene	**320**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Dibenzo(a,h)anthracene	**140**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Fluoranthene	**840**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #2 (2') **Lab ID:** 17021259-03
Collection Date: 2/23/2017 10:10 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		51	µg/Kg-dry	1	2/25/2017 10:08 AM
Indeno(1,2,3-cd)pyrene	**260**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Naphthalene	**240**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Phenanthrene	**440**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Pyrene	**810**		**51**	**µg/Kg-dry**	1	2/25/2017 10:08 AM
Surr: 2-Fluorobiphenyl	*84.1*		*20-140*	*%REC*	1	2/25/2017 10:08 AM
Surr: 4-Terphenyl-d14	*92.6*		*22-172*	*%REC*	1	2/25/2017 10:08 AM
Surr: Nitrobenzene-d5	*74.8*		*8-140*	*%REC*	1	2/25/2017 10:08 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 2/24/17	Analyst: **BJB**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,2,4-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,3,5-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
2-Butanone	ND		200	µg/Kg	1	2/24/2017 04:02 PM
2-Hexanone	ND		30	µg/Kg	1	2/24/2017 04:02 PM
2-Methylnaphthalene	ND		100	µg/Kg	1	2/24/2017 04:02 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Acetone	ND		100	µg/Kg	1	2/24/2017 04:02 PM
Acrylonitrile	ND		100	µg/Kg	1	2/24/2017 04:02 PM
Benzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Bromochloromethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Bromodichloromethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Bromoform	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Bromomethane	ND		75	µg/Kg	1	2/24/2017 04:02 PM
Carbon disulfide	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Carbon tetrachloride	ND		30	µg/Kg	1	2/24/2017 04:02 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #2 (2') **Lab ID:** 17021259-03
Collection Date: 2/23/2017 10:10 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Chloroethane	ND		100	µg/Kg	1	2/24/2017 04:02 PM
Chloroform	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Chloromethane	ND		100	µg/Kg	1	2/24/2017 04:02 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Dibromochloromethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Dibromomethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Dichlorodifluoromethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Diethyl ether	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Ethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Hexachloroethane	ND		100	µg/Kg	1	2/24/2017 04:02 PM
Hexane	ND		100	µg/Kg	1	2/24/2017 04:02 PM
Isopropylbenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
m,p-Xylene	ND		60	µg/Kg	1	2/24/2017 04:02 PM
Methyl iodide	ND		75	µg/Kg	1	2/24/2017 04:02 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Methylene chloride	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Naphthalene	ND		100	µg/Kg	1	2/24/2017 04:02 PM
n-Propylbenzene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
o-Xylene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Styrene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Tetrachloroethene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Toluene	**70**		**30**	**µg/Kg**	1	2/24/2017 04:02 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Trichloroethene	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Vinyl acetate	ND		250	µg/Kg	1	2/24/2017 04:02 PM
Vinyl chloride	ND		30	µg/Kg	1	2/24/2017 04:02 PM
Xylenes, Total	ND		90	µg/Kg	1	2/24/2017 04:02 PM
Surr: 1,2-Dichloroethane-d4	*115*		*70-130*	*%REC*	1	2/24/2017 04:02 PM
Surr: 4-Bromofluorobenzene	*95.4*		*70-130*	*%REC*	1	2/24/2017 04:02 PM
Surr: Dibromofluoromethane	*92.5*		*70-130*	*%REC*	1	2/24/2017 04:02 PM
Surr: Toluene-d8	*103*		*70-130*	*%REC*	1	2/24/2017 04:02 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**22**		**0.050**	**% of sample**	1	2/24/2017 10:50 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #2 (9') **Lab ID:** 17021259-04
Collection Date: 2/23/2017 10:00 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3546 / 2/24/17	Analyst: **EB**
Aroclor 1016	ND		82	µg/Kg-dry	1	2/25/2017 04:34 PM
Aroclor 1221	ND		82	µg/Kg-dry	1	2/25/2017 04:34 PM
Aroclor 1232	ND		82	µg/Kg-dry	1	2/25/2017 04:34 PM
Aroclor 1242	**190**		**82**	**µg/Kg-dry**	1	2/25/2017 04:34 PM
Aroclor 1248	ND		82	µg/Kg-dry	1	2/25/2017 04:34 PM
Aroclor 1254	ND		82	µg/Kg-dry	1	2/25/2017 04:34 PM
Aroclor 1260	ND		82	µg/Kg-dry	1	2/25/2017 04:34 PM
Aroclor 1262	ND		82	µg/Kg-dry	1	2/25/2017 04:34 PM
Aroclor 1268	ND		82	µg/Kg-dry	1	2/25/2017 04:34 PM
Surr: Decachlorobiphenyl	*85.1*		*40-140*	*%REC*	1	2/25/2017 04:34 PM
Surr: Tetrachloro-m-xylene	*84.3*		*45-124*	*%REC*	1	2/25/2017 04:34 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 2/27/17	Analyst: **JJB**
Mercury	**0.13**		**0.019**	**mg/Kg-dry**	1	2/27/2017 02:14 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 2/24/17	Analyst: **JF**
Arsenic	**18**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:54 AM
Barium	**100**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:54 AM
Cadmium	ND		0.73	mg/Kg-dry	4	2/25/2017 05:54 AM
Chromium	**11**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:54 AM
Copper	**31**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:54 AM
Lead	**64**		**1.8**	**mg/Kg-dry**	4	2/25/2017 05:54 AM
Selenium	ND		1.8	mg/Kg-dry	4	2/25/2017 05:54 AM
Silver	ND		1.8	mg/Kg-dry	4	2/25/2017 05:54 AM
Zinc	**76**		**3.6**	**mg/Kg-dry**	4	2/25/2017 05:54 AM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3550 / 2/24/17	Analyst: **RM**
2-Chloronaphthalene	ND		41	µg/Kg-dry	5	2/24/2017 06:24 PM
2-Methylnaphthalene	**49**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Acenaphthene	ND		41	µg/Kg-dry	5	2/24/2017 06:24 PM
Acenaphthylene	ND		41	µg/Kg-dry	5	2/24/2017 06:24 PM
Anthracene	**97**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Benzo(a)anthracene	**440**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Benzo(a)pyrene	**520**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Benzo(b)fluoranthene	**710**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Benzo(g,h,i)perylene	**400**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Benzo(k)fluoranthene	**290**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Chrysene	**530**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Dibenzo(a,h)anthracene	**130**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Fluoranthene	**930**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #2 (9') **Lab ID:** 17021259-04
Collection Date: 2/23/2017 10:00 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	**45**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Indeno(1,2,3-cd)pyrene	**420**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Naphthalene	ND		41	µg/Kg-dry	5	2/24/2017 06:24 PM
Phenanthrene	**580**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Pyrene	**850**		**41**	**µg/Kg-dry**	5	2/24/2017 06:24 PM
Surr: 2-Fluorobiphenyl	*60.5*		*12-100*	*%REC*	5	2/24/2017 06:24 PM
Surr: 4-Terphenyl-d14	*80.5*		*25-137*	*%REC*	5	2/24/2017 06:24 PM
Surr: Nitrobenzene-d5	*46.9*		*37-107*	*%REC*	5	2/24/2017 06:24 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 2/24/17	Analyst: **BJB**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,2,4-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,3,5-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
2-Butanone	ND		200	µg/Kg	1	2/24/2017 04:26 PM
2-Hexanone	ND		30	µg/Kg	1	2/24/2017 04:26 PM
2-Methylnaphthalene	ND		100	µg/Kg	1	2/24/2017 04:26 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Acetone	ND		100	µg/Kg	1	2/24/2017 04:26 PM
Acrylonitrile	ND		100	µg/Kg	1	2/24/2017 04:26 PM
Benzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Bromochloromethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Bromodichloromethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Bromoform	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Bromomethane	ND		75	µg/Kg	1	2/24/2017 04:26 PM
Carbon disulfide	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Carbon tetrachloride	ND		30	µg/Kg	1	2/24/2017 04:26 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #2 (9') **Lab ID:** 17021259-04
Collection Date: 2/23/2017 10:00 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Chloroethane	ND		100	µg/Kg	1	2/24/2017 04:26 PM
Chloroform	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Chloromethane	ND		100	µg/Kg	1	2/24/2017 04:26 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Dibromochloromethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Dibromomethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Dichlorodifluoromethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Diethyl ether	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Ethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Hexachloroethane	ND		100	µg/Kg	1	2/24/2017 04:26 PM
Hexane	ND		100	µg/Kg	1	2/24/2017 04:26 PM
Isopropylbenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
m,p-Xylene	ND		60	µg/Kg	1	2/24/2017 04:26 PM
Methyl iodide	ND		75	µg/Kg	1	2/24/2017 04:26 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Methylene chloride	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Naphthalene	ND		100	µg/Kg	1	2/24/2017 04:26 PM
n-Propylbenzene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
o-Xylene	**32**		**30**	**µg/Kg**	1	2/24/2017 04:26 PM
Styrene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Tetrachloroethene	**160**		**30**	**µg/Kg**	1	2/24/2017 04:26 PM
Toluene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Trichloroethene	**62**		**30**	**µg/Kg**	1	2/24/2017 04:26 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Vinyl acetate	ND		250	µg/Kg	1	2/24/2017 04:26 PM
Vinyl chloride	ND		30	µg/Kg	1	2/24/2017 04:26 PM
Xylenes, Total	ND		90	µg/Kg	1	2/24/2017 04:26 PM
Surr: 1,2-Dichloroethane-d4	*113*		*70-130*	*%REC*	1	2/24/2017 04:26 PM
Surr: 4-Bromofluorobenzene	*102*		*70-130*	*%REC*	1	2/24/2017 04:26 PM
Surr: Dibromofluoromethane	*87.2*		*70-130*	*%REC*	1	2/24/2017 04:26 PM
Surr: Toluene-d8	*102*		*70-130*	*%REC*	1	2/24/2017 04:26 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**20**		**0.050**	**% of sample**	1	2/24/2017 10:50 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #4 (2') **Lab ID:** 17021259-05
Collection Date: 2/23/2017 11:45 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3546 / 2/24/17	Analyst: **EB**
Aroclor 1016	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Aroclor 1221	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Aroclor 1232	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Aroclor 1242	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Aroclor 1248	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Aroclor 1254	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Aroclor 1260	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Aroclor 1262	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Aroclor 1268	ND		69	µg/Kg-dry	1	2/25/2017 04:48 PM
Surr: Decachlorobiphenyl	*86.7*		*40-140*	*%REC*	1	2/25/2017 04:48 PM
Surr: Tetrachloro-m-xylene	*85.0*		*45-124*	*%REC*	1	2/25/2017 04:48 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 2/27/17	Analyst: **JJB**
Mercury	**0.044**		**0.017**	**mg/Kg-dry**	1	2/27/2017 02:17 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 2/24/17	Analyst: **JF**
Arsenic	**3.9**		**1.5**	**mg/Kg-dry**	4	2/25/2017 07:32 AM
Barium	**41**		**1.5**	**mg/Kg-dry**	4	2/25/2017 07:32 AM
Cadmium	ND		0.61	mg/Kg-dry	4	2/25/2017 07:32 AM
Chromium	**7.7**		**1.5**	**mg/Kg-dry**	4	2/25/2017 07:32 AM
Copper	**10**		**1.5**	**mg/Kg-dry**	4	2/25/2017 07:32 AM
Lead	**27**		**1.5**	**mg/Kg-dry**	4	2/25/2017 07:32 AM
Selenium	ND		1.5	mg/Kg-dry	4	2/25/2017 07:32 AM
Silver	ND		1.5	mg/Kg-dry	4	2/25/2017 07:32 AM
Zinc	**38**		**3.1**	**mg/Kg-dry**	4	2/25/2017 07:32 AM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3546 / 2/24/17	Analyst: **RM**
2-Chloronaphthalene	ND		45	µg/Kg-dry	1	2/25/2017 10:33 AM
2-Methylnaphthalene	ND		45	µg/Kg-dry	1	2/25/2017 10:33 AM
Acenaphthene	ND		45	µg/Kg-dry	1	2/25/2017 10:33 AM
Acenaphthylene	ND		45	µg/Kg-dry	1	2/25/2017 10:33 AM
Anthracene	ND		45	µg/Kg-dry	1	2/25/2017 10:33 AM
Benzo(a)anthracene	**160**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Benzo(a)pyrene	**160**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Benzo(b)fluoranthene	**280**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Benzo(g,h,i)perylene	**79**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Benzo(k)fluoranthene	**120**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Chrysene	**120**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Dibenzo(a,h)anthracene	**82**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Fluoranthene	**240**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #4 (2') **Lab ID:** 17021259-05
Collection Date: 2/23/2017 11:45 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		45	µg/Kg-dry	1	2/25/2017 10:33 AM
Indeno(1,2,3-cd)pyrene	**99**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Naphthalene	ND		45	µg/Kg-dry	1	2/25/2017 10:33 AM
Phenanthrene	**120**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Pyrene	**260**		**45**	**µg/Kg-dry**	1	2/25/2017 10:33 AM
Surr: 2-Fluorobiphenyl	*86.4*		*20-140*	*%REC*	1	2/25/2017 10:33 AM
Surr: 4-Terphenyl-d14	*108*		*22-172*	*%REC*	1	2/25/2017 10:33 AM
Surr: Nitrobenzene-d5	*75.7*		*8-140*	*%REC*	1	2/25/2017 10:33 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 2/24/17	Analyst: **BJB**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,2,4-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,3,5-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
2-Butanone	ND		200	µg/Kg	1	2/24/2017 04:50 PM
2-Hexanone	ND		30	µg/Kg	1	2/24/2017 04:50 PM
2-Methylnaphthalene	ND		100	µg/Kg	1	2/24/2017 04:50 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Acetone	ND		100	µg/Kg	1	2/24/2017 04:50 PM
Acrylonitrile	ND		100	µg/Kg	1	2/24/2017 04:50 PM
Benzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Bromochloromethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Bromodichloromethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Bromoform	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Bromomethane	ND		75	µg/Kg	1	2/24/2017 04:50 PM
Carbon disulfide	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Carbon tetrachloride	ND		30	µg/Kg	1	2/24/2017 04:50 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #4 (2') **Lab ID:** 17021259-05
Collection Date: 2/23/2017 11:45 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Chloroethane	ND		100	µg/Kg	1	2/24/2017 04:50 PM
Chloroform	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Chloromethane	ND		100	µg/Kg	1	2/24/2017 04:50 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Dibromochloromethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Dibromomethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Dichlorodifluoromethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Diethyl ether	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Ethylbenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Hexachloroethane	ND		100	µg/Kg	1	2/24/2017 04:50 PM
Hexane	ND		100	µg/Kg	1	2/24/2017 04:50 PM
Isopropylbenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
m,p-Xylene	ND		60	µg/Kg	1	2/24/2017 04:50 PM
Methyl iodide	ND		75	µg/Kg	1	2/24/2017 04:50 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Methylene chloride	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Naphthalene	ND		100	µg/Kg	1	2/24/2017 04:50 PM
n-Propylbenzene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
o-Xylene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Styrene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Tetrachloroethene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Toluene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Trichloroethene	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Vinyl acetate	ND		250	µg/Kg	1	2/24/2017 04:50 PM
Vinyl chloride	ND		30	µg/Kg	1	2/24/2017 04:50 PM
Xylenes, Total	ND		90	µg/Kg	1	2/24/2017 04:50 PM
Surr: 1,2-Dichloroethane-d4	*113*		*70-130*	*%REC*	1	2/24/2017 04:50 PM
Surr: 4-Bromofluorobenzene	*97.4*		*70-130*	*%REC*	1	2/24/2017 04:50 PM
Surr: Dibromofluoromethane	*85.4*		*70-130*	*%REC*	1	2/24/2017 04:50 PM
Surr: Toluene-d8	*102*		*70-130*	*%REC*	1	2/24/2017 04:50 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**8.5**		**0.050**	**% of sample**	1	2/24/2017 10:50 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #8 (7') **Lab ID:** 17021259-06
Collection Date: 2/23/2017 01:20 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3550 / 2/24/17	Analyst: **EB**
Aroclor 1016	ND		110	µg/Kg-dry	1	2/25/2017 06:28 PM
Aroclor 1221	ND		110	µg/Kg-dry	1	2/25/2017 06:28 PM
Aroclor 1232	ND		110	µg/Kg-dry	1	2/25/2017 06:28 PM
Aroclor 1242	ND		110	µg/Kg-dry	1	2/25/2017 06:28 PM
Aroclor 1248	ND		110	µg/Kg-dry	1	2/25/2017 06:28 PM
Aroclor 1254	ND		110	µg/Kg-dry	1	2/25/2017 06:28 PM
Aroclor 1260	ND		110	µg/Kg-dry	1	2/25/2017 06:28 PM
Surr: Decachlorobiphenyl	*83.1*		*40-140*	*%REC*	1	2/25/2017 06:28 PM
Surr: Tetrachloro-m-xylene	*71.1*		*45-124*	*%REC*	1	2/25/2017 06:28 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 2/27/17	Analyst: **JJB**
Mercury	**0.076**		**0.021**	**mg/Kg-dry**	1	2/27/2017 02:32 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 2/24/17	Analyst: **JF**
Arsenic	**15**		**1.8**	**mg/Kg-dry**	4	2/25/2017 07:56 AM
Barium	**83**		**1.8**	**mg/Kg-dry**	4	2/25/2017 07:56 AM
Cadmium	ND		0.71	mg/Kg-dry	4	2/25/2017 07:56 AM
Chromium	**6.5**		**1.8**	**mg/Kg-dry**	4	2/25/2017 07:56 AM
Copper	**23**		**1.8**	**mg/Kg-dry**	4	2/25/2017 07:56 AM
Lead	**53**		**1.8**	**mg/Kg-dry**	4	2/25/2017 07:56 AM
Selenium	ND		1.8	mg/Kg-dry	4	2/25/2017 07:56 AM
Silver	ND		1.8	mg/Kg-dry	4	2/25/2017 07:56 AM
Zinc	**85**		**3.5**	**mg/Kg-dry**	4	2/25/2017 07:56 AM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3550 / 2/24/17	Analyst: **RM**
2-Chloronaphthalene	ND		41	µg/Kg-dry	5	2/24/2017 06:45 PM
2-Methylnaphthalene	**91**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Acenaphthene	**87**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Acenaphthylene	**95**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Anthracene	**310**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Benzo(a)anthracene	**1,400**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Benzo(a)pyrene	**1,400**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Benzo(b)fluoranthene	**1,600**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Benzo(g,h,i)perylene	**920**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Benzo(k)fluoranthene	**550**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Chrysene	**1,500**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Dibenzo(a,h)anthracene	**220**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Fluoranthene	**2,500**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Fluorene	**95**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Indeno(1,2,3-cd)pyrene	**960**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #8 (7') **Lab ID:** 17021259-06
Collection Date: 2/23/2017 01:20 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**74**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Phenanthrene	**1,700**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Pyrene	**3,200**		**41**	**µg/Kg-dry**	5	2/24/2017 06:45 PM
Surr: 2-Fluorobiphenyl	*64.3*		*12-100*	*%REC*	5	2/24/2017 06:45 PM
Surr: 4-Terphenyl-d14	*76.2*		*25-137*	*%REC*	5	2/24/2017 06:45 PM
Surr: Nitrobenzene-d5	*54.4*		*37-107*	*%REC*	5	2/24/2017 06:45 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 2/24/17	Analyst: **BJB**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,2,4-Trimethylbenzene	**50**		**30**	**µg/Kg**	1	2/24/2017 05:14 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,3,5-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
2-Butanone	ND		200	µg/Kg	1	2/24/2017 05:14 PM
2-Hexanone	ND		30	µg/Kg	1	2/24/2017 05:14 PM
2-Methylnaphthalene	**140**		**100**	**µg/Kg**	1	2/24/2017 05:14 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Acetone	ND		100	µg/Kg	1	2/24/2017 05:14 PM
Acrylonitrile	ND		100	µg/Kg	1	2/24/2017 05:14 PM
Benzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Bromochloromethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Bromodichloromethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Bromoform	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Bromomethane	ND		75	µg/Kg	1	2/24/2017 05:14 PM
Carbon disulfide	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Carbon tetrachloride	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Chlorobenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Chloroethane	ND		100	µg/Kg	1	2/24/2017 05:14 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Test Pit #8 (7') **Lab ID:** 17021259-06
Collection Date: 2/23/2017 01:20 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Chloromethane	ND		100	µg/Kg	1	2/24/2017 05:14 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Dibromochloromethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Dibromomethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Dichlorodifluoromethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Diethyl ether	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Ethylbenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Hexachloroethane	ND		100	µg/Kg	1	2/24/2017 05:14 PM
Hexane	ND		100	µg/Kg	1	2/24/2017 05:14 PM
Isopropylbenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
m,p-Xylene	**120**		**60**	**µg/Kg**	1	2/24/2017 05:14 PM
Methyl iodide	ND		75	µg/Kg	1	2/24/2017 05:14 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Methylene chloride	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Naphthalene	**110**		**100**	**µg/Kg**	1	2/24/2017 05:14 PM
n-Propylbenzene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
o-Xylene	**76**		**30**	**µg/Kg**	1	2/24/2017 05:14 PM
Styrene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Tetrachloroethene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Toluene	**120**		**30**	**µg/Kg**	1	2/24/2017 05:14 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Trichloroethene	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Vinyl acetate	ND		250	µg/Kg	1	2/24/2017 05:14 PM
Vinyl chloride	ND		30	µg/Kg	1	2/24/2017 05:14 PM
Xylenes, Total	**200**		**90**	**µg/Kg**	1	2/24/2017 05:14 PM
Surr: 1,2-Dichloroethane-d4	*112*		*70-130*	*%REC*	1	2/24/2017 05:14 PM
Surr: 4-Bromofluorobenzene	*97.7*		*70-130*	*%REC*	1	2/24/2017 05:14 PM
Surr: Dibromofluoromethane	*86.8*		*70-130*	*%REC*	1	2/24/2017 05:14 PM
Surr: Toluene-d8	*103*		*70-130*	*%REC*	1	2/24/2017 05:14 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**23**		**0.050**	**% of sample**	1	2/24/2017 10:50 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Trip Blank **Lab ID:** 17021259-07
Collection Date: 2/23/2017 **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 2/24/17	Analyst: **BJB**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,2,4-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,3,5-Trimethylbenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
2-Butanone	ND		200	µg/Kg	1	2/24/2017 02:49 PM
2-Hexanone	ND		30	µg/Kg	1	2/24/2017 02:49 PM
2-Methylnaphthalene	ND		100	µg/Kg	1	2/24/2017 02:49 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Acetone	ND		100	µg/Kg	1	2/24/2017 02:49 PM
Acrylonitrile	ND		100	µg/Kg	1	2/24/2017 02:49 PM
Benzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Bromochloromethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Bromodichloromethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Bromoform	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Bromomethane	ND		75	µg/Kg	1	2/24/2017 02:49 PM
Carbon disulfide	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Carbon tetrachloride	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Chlorobenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Chloroethane	ND		100	µg/Kg	1	2/24/2017 02:49 PM
Chloroform	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Chloromethane	ND		100	µg/Kg	1	2/24/2017 02:49 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Dibromochloromethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Dibromomethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Kalamazoo Performance Paper 825821 **Work Order:** 17021259
Sample ID: Trip Blank **Lab ID:** 17021259-07
Collection Date: 2/23/2017 **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Diethyl ether	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Ethylbenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Hexachloroethane	ND		100	µg/Kg	1	2/24/2017 02:49 PM
Hexane	ND		100	µg/Kg	1	2/24/2017 02:49 PM
Isopropylbenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
m,p-Xylene	ND		60	µg/Kg	1	2/24/2017 02:49 PM
Methyl iodide	ND		75	µg/Kg	1	2/24/2017 02:49 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Methylene chloride	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Naphthalene	ND		100	µg/Kg	1	2/24/2017 02:49 PM
n-Propylbenzene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
o-Xylene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Styrene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Tetrachloroethene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Toluene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Trichloroethene	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Vinyl acetate	ND		250	µg/Kg	1	2/24/2017 02:49 PM
Vinyl chloride	ND		30	µg/Kg	1	2/24/2017 02:49 PM
Xylenes, Total	ND		90	µg/Kg	1	2/24/2017 02:49 PM
Surr: 1,2-Dichloroethane-d4	*116*		*70-130*	*%REC*	1	2/24/2017 02:49 PM
Surr: 4-Bromofluorobenzene	*103*		*70-130*	*%REC*	1	2/24/2017 02:49 PM
Surr: Dibromofluoromethane	*92.3*		*70-130*	*%REC*	1	2/24/2017 02:49 PM
Surr: Toluene-d8	*103*		*70-130*	*%REC*	1	2/24/2017 02:49 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **98553** Instrument ID **GC14** Method: **SW8082**

MBLK Sample ID: **PBLKS1-98553-98553** Units: **µg/Kg** Analysis Date: **2/25/2017 01:27 PM**

Client ID: Run ID: **GC14_170224A** SeqNo: **4301912** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	67								
Aroclor 1221	ND	67								
Aroclor 1232	ND	67								
Aroclor 1242	ND	67								
Aroclor 1248	ND	67								
Aroclor 1254	ND	67								
Aroclor 1260	ND	67								
Aroclor 1262	ND	67								
Aroclor 1268	ND	67								
Surr: Decachlorobiphenyl	*38.8*	0	*33.3*	0	*117*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*33.31*	0	*33.3*	0	*100*	*45-124*	0			

LCS Sample ID: **PLCSS1-98553-98553** Units: **µg/Kg** Analysis Date: **2/25/2017 01:42 PM**

Client ID: Run ID: **GC14_170224A** SeqNo: **4301913** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	443.1	67	833	0	53.2	50-130	0			
Aroclor 1260	418.1	67	833	0	50.2	50-130	0			
Surr: Decachlorobiphenyl	*129.7*	0	*99.9*	0	*130*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*104.9*	0	*99.9*	0	*105*	*45-124*	0			

MS Sample ID: **17021227-01A MS** Units: **µg/Kg** Analysis Date: **2/25/2017 02:10 PM**

Client ID: Run ID: **GC14_170224A** SeqNo: **4301915** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	383	64	800	0	47.9	40-140	0			
Aroclor 1260	426.5	64	800	0	53.3	40-140	0			
Surr: Decachlorobiphenyl	*131.4*	0	*95.95*	0	*137*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*106.1*	0	*95.95*	0	*111*	*45-124*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98553** Instrument ID **GC14** Method: **SW8082**

DUP Sample ID: **17021227-01A DUP** Units: **µg/Kg** Analysis Date: **2/25/2017 02:25 PM**

Client ID: Run ID: **GC14_170224A** SeqNo: **4301916** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	65	0	0	0	0-0	0	0	50	
Aroclor 1221	ND	65	0	0	0	0-0	0	0	50	
Aroclor 1232	ND	65	0	0	0	0-0	0	0	50	
Aroclor 1242	ND	65	0	0	0	0-0	0	0	50	
Aroclor 1248	ND	65	0	0	0	0-0	0	0	50	
Aroclor 1254	ND	65	0	0	0	0-0	0	0	50	
Aroclor 1260	ND	65	0	0	0	0-0	0	0	50	
Aroclor 1262	ND	65	0	0	0	0-0	0	0	50	
Aroclor 1268	ND	65	0	0	0	0-0	0	0	50	
Surr: Decachlorobiphenyl	*227.5*	0	*163.3*	0	*139*	*40-140*	39.38	*141*	*50*	*R*
Surr: Tetrachloro-m-xylene	*192.8*	0	*163.3*	0	*118*	*45-124*	34.18	*140*	*50*	*R*

The following samples were analyzed in this batch:

17021259-01B	17021259-02B	17021259-03B
17021259-04B	17021259-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 17021259
Project: Kalamazoo Performance Paper 825821

QC BATCH REPORT

Batch ID: **98591** Instrument ID **GC14** Method: **SW8082**

MBLK Sample ID: **PBLKS1-98591-98591** Units: **µg/Kg** Analysis Date: **2/25/2017 05:59 PM**
Client ID: Run ID: **GC14_170224B** SeqNo: **4301983** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	83								
Aroclor 1221	ND	83								
Aroclor 1232	ND	83								
Aroclor 1242	ND	83								
Aroclor 1248	ND	83								
Aroclor 1254	ND	83								
Aroclor 1260	ND	83								
Surr: Decachlorobiphenyl	*28.33*	0	*33.3*	0	*85.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*23.67*	0	*33.3*	0	*71.1*	*45-124*	0			

LCS Sample ID: **PLCSS1-98591-98591** Units: **µg/Kg** Analysis Date: **2/25/2017 06:14 PM**
Client ID: Run ID: **GC14_170224B** SeqNo: **4301984** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	661.7	83	833	0	79.4	50-130	0			
Aroclor 1260	685.7	83	833	0	82.3	50-130	0			
Surr: Decachlorobiphenyl	*30.67*	0	*33.3*	0	*92.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*25*	0	*33.3*	0	*75.1*	*45-124*	0			

MS Sample ID: **17021259-06B MS** Units: **µg/Kg** Analysis Date: **2/25/2017 06:42 PM**
Client ID: **Test Pit #8 (7')** Run ID: **GC14_170224B** SeqNo: **4301986** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	771.4	83	825.6	0	93.4	40-140	0			
Aroclor 1260	781.4	83	825.6	0	94.6	40-140	0			
Surr: Decachlorobiphenyl	*27.42*	0	*33.01*	0	*83.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*24.12*	0	*33.01*	0	*73.1*	*45-124*	0			

MSD Sample ID: **17021259-06B MSD** Units: **µg/Kg** Analysis Date: **2/25/2017 06:57 PM**
Client ID: **Test Pit #8 (7')** Run ID: **GC14_170224B** SeqNo: **4301987** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	760.4	83	824.8	0	92.2	40-140	771.4	1.44	50	
Aroclor 1260	771	83	824.8	0	93.5	40-140	781.4	1.33	50	
Surr: Decachlorobiphenyl	*26.73*	0	*32.97*	0	*81.1*	*40-140*	27.42	*2.54*	*50*	
Surr: Tetrachloro-m-xylene	*22.11*	0	*32.97*	0	*67.1*	*45-124*	24.12	*8.67*	*50*	

The following samples were analyzed in this batch: 17021259-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 17021259
Project: Kalamazoo Performance Paper 825821

QC BATCH REPORT

Batch ID: **98613** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-98613-98613** Units: **mg/Kg** Analysis Date: **2/27/2017 01:54 PM**
Client ID: Run ID: **HG1_170227A** SeqNo: **4303357** Prep Date: **2/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.020								

LCS Sample ID: **LCS-98613-98613** Units: **mg/Kg** Analysis Date: **2/27/2017 01:57 PM**
Client ID: Run ID: **HG1_170227A** SeqNo: **4303358** Prep Date: **2/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1808	0.020	0.1665	0	109	80-120	0			

MS Sample ID: **17021259-05BMS** Units: **mg/Kg** Analysis Date: **2/27/2017 02:19 PM**
Client ID: **Test Pit #4 (2')** Run ID: **HG1_170227A** SeqNo: **4303366** Prep Date: **2/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1936	0.016	0.1325	0.04015	116	75-125	0			

MSD Sample ID: **17021259-05BMSD** Units: **mg/Kg** Analysis Date: **2/27/2017 02:30 PM**
Client ID: **Test Pit #4 (2')** Run ID: **HG1_170227A** SeqNo: **4303370** Prep Date: **2/27/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.186	0.016	0.1318	0.04015	111	75-125	0.1936	4.01	35	

The following samples were analyzed in this batch:

17021259-01B	17021259-02B	17021259-03B
17021259-04B	17021259-05B	17021259-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 17021259
Project: Kalamazoo Performance Paper 825821

QC BATCH REPORT

Batch ID: **98599** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-98599-98599** Units: **mg/Kg** Analysis Date: **2/25/2017 05:05 AM**
Client ID: Run ID: **ICPMS1_170224A** SeqNo: **4301721** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.25								
Barium	ND	0.25								
Cadmium	ND	0.10								
Chromium	ND	0.25								
Copper	ND	0.25								
Lead	ND	0.25								
Selenium	ND	0.25								
Silver	ND	0.25								
Zinc	ND	0.50								

LCS Sample ID: **LCS-98599-98599** Units: **mg/Kg** Analysis Date: **2/25/2017 05:11 AM**
Client ID: Run ID: **ICPMS1_170224A** SeqNo: **4301722** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.48	0.25	5	0	89.6	80-120	0			
Barium	4.881	0.25	5	0	97.6	80-120	0			
Cadmium	4.884	0.10	5	0	97.7	80-120	0			
Chromium	5.01	0.25	5	0	100	80-120	0			
Copper	5.095	0.25	5	0	102	80-120	0			
Lead	4.91	0.25	5	0	98.2	80-120	0			
Selenium	4.598	0.25	5	0	92	80-120	0			
Silver	5.065	0.25	5	0	101	80-120	0			
Zinc	4.784	0.50	5	0	95.7	80-120	0			

MS Sample ID: **17021259-05BMS** Units: **mg/Kg** Analysis Date: **2/25/2017 07:38 AM**
Client ID: **Test Pit #4 (2')** Run ID: **ICPMS1_170224A** SeqNo: **4301746** Prep Date: **2/24/2017** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.268	1.4	6.954	3.542	82.3	75-125	0			
Barium	42.17	1.4	6.954	37.46	67.8	75-125	0			SO
Cadmium	6.465	0.56	6.954	0.1402	90.9	75-125	0			
Chromium	12.43	1.4	6.954	7.028	77.7	75-125	0			
Copper	14.08	1.4	6.954	9.358	68	75-125	0			S
Lead	23.23	1.4	6.954	25.06	-26.3	75-125	0			S
Selenium	6.643	1.4	6.954	0.6531	86.1	75-125	0			
Silver	6.167	1.4	6.954	0.0242	88.3	75-125	0			
Zinc	35.24	2.8	6.954	34.97	3.9	75-125	0			SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98599** Instrument ID **ICPMS1** Method: **SW6020A**

MSD Sample ID: **17021259-05BMSD** Units: **mg/Kg** Analysis Date: **2/25/2017 07:44 AM**

Client ID: **Test Pit #4 (2')** Run ID: **ICPMS1_170224A** SeqNo: **4301747** Prep Date: **2/24/2017** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.11	1.4	6.974	3.542	94.1	75-125	9.268	8.65	20	
Barium	47.39	1.4	6.974	37.46	142	75-125	42.17	11.7	20	SO
Cadmium	6.854	0.56	6.974	0.1402	96.3	75-125	6.465	5.84	20	
Chromium	13.89	1.4	6.974	7.028	98.4	75-125	12.43	11.1	20	
Copper	17.54	1.4	6.974	9.358	117	75-125	14.08	21.8	20	R
Lead	29.15	1.4	6.974	25.06	58.6	75-125	23.23	22.6	20	SR
Selenium	6.806	1.4	6.974	0.6531	88.2	75-125	6.643	2.43	20	
Silver	6.522	1.4	6.974	0.0242	93.2	75-125	6.167	5.59	20	
Zinc	46.28	2.8	6.974	34.97	162	75-125	35.24	27.1	20	SRO

The following samples were analyzed in this batch:

17021259-01B	17021259-02B	17021259-03B
17021259-04B	17021259-05B	17021259-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98563** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-98563-98563** Units: **µg/Kg** Analysis Date: **2/24/2017 04:57 PM**

Client ID: Run ID: **SVMS6_170224B** SeqNo: **4302085** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	ND	42								
2-Methylnaphthalene	ND	42								
Acenaphthene	ND	42								
Acenaphthylene	ND	42								
Anthracene	ND	42								
Benzo(a)anthracene	ND	42								
Benzo(a)pyrene	ND	42								
Benzo(b)fluoranthene	ND	42								
Benzo(g,h,i)perylene	ND	42								
Benzo(k)fluoranthene	ND	42								
Chrysene	ND	42								
Dibenzo(a,h)anthracene	ND	42								
Fluoranthene	ND	42								
Fluorene	ND	42								
Indeno(1,2,3-cd)pyrene	ND	42								
Naphthalene	ND	42								
Phenanthrene	ND	42								
Pyrene	ND	42								
Surr: 2-Fluorobiphenyl	*2977*	0	*3333*	0	*89.3*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2735*	0	*3333*	0	*82.1*	*22-172*	0			
Surr: Nitrobenzene-d5	*2835*	0	*3333*	0	*85*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98563** Instrument ID **SVMS6** Method: **SW846 8270D**

LCS Sample ID: **SLCSS1-98563-98563** Units: **µg/Kg** Analysis Date: **2/24/2017 05:22 PM**
Client ID: Run ID: **SVMS6_170224B** SeqNo: **4302086** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1400	42	1333	0	105	50-140	0			
2-Methylnaphthalene	1414	42	1333	0	106	50-140	0			
Acenaphthene	1279	42	1333	0	96	60-140	0			
Acenaphthylene	1329	42	1333	0	99.7	60-140	0			
Anthracene	1442	42	1333	0	108	60-140	0			
Benzo(a)anthracene	1397	42	1333	0	105	60-140	0			
Benzo(a)pyrene	1540	42	1333	0	116	60-140	0			
Benzo(b)fluoranthene	1413	42	1333	0	106	60-140	0			
Benzo(g,h,i)perylene	1235	42	1333	0	92.6	60-140	0			
Benzo(k)fluoranthene	1211	42	1333	0	90.8	60-140	0			
Chrysene	1322	42	1333	0	99.2	60-140	0			
Dibenzo(a,h)anthracene	1402	42	1333	0	105	60-140	0			
Fluoranthene	1412	42	1333	0	106	60-140	0			
Fluorene	1472	42	1333	0	110	60-140	0			
Indeno(1,2,3-cd)pyrene	1442	42	1333	0	108	60-140	0			
Naphthalene	1277	42	1333	0	95.8	40-140	0			
Phenanthrene	1298	42	1333	0	97.4	60-140	0			
Pyrene	1248	42	1333	0	93.6	60-140	0			
Surr: 2-Fluorobiphenyl	*2952*	0	*3333*	0	*88.6*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2567*	0	*3333*	0	*77*	*22-172*	0			
Surr: Nitrobenzene-d5	*2760*	0	*3333*	0	*82.8*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98563** Instrument ID **SVMS6** Method: **SW846 8270D**

MS Sample ID: **17021241-02B MS** Units: **µg/Kg** Analysis Date: **2/25/2017 08:27 AM**

Client ID: Run ID: **SVMS6_170224B** SeqNo: **4302112** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1272	40	1265	0	100	50-140	0			
2-Methylnaphthalene	1181	40	1265	0	93.3	50-140	0			
Acenaphthene	1154	40	1265	0	91.2	60-140	0			
Acenaphthylene	1161	40	1265	0	91.8	60-140	0			
Anthracene	1311	40	1265	0	104	60-140	0			
Benzo(a)anthracene	1359	40	1265	67.69	102	60-140	0			
Benzo(a)pyrene	1639	40	1265	77.96	123	60-140	0			
Benzo(b)fluoranthene	1810	40	1265	128.7	133	60-140	0			
Benzo(g,h,i)perylene	727.2	40	1265	0	57.5	60-140	0			S
Benzo(k)fluoranthene	1652	40	1265	50.95	126	60-140	0			
Chrysene	1269	40	1265	49.6	96.4	60-140	0			
Dibenzo(a,h)anthracene	1139	40	1265	0	90	60-140	0			
Fluoranthene	1405	40	1265	112.9	102	60-140	0			
Fluorene	1292	40	1265	0	102	60-140	0			
Indeno(1,2,3-cd)pyrene	973.5	40	1265	0	76.9	60-140	0			
Naphthalene	1079	40	1265	0	85.3	40-140	0			
Phenanthrene	1222	40	1265	58.41	92	60-140	0			
Pyrene	1451	40	1265	110.5	106	60-140	0			
Surr: 2-Fluorobiphenyl	*2674*	0	*3164*	0	*84.5*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2793*	0	*3164*	0	*88.3*	*22-172*	0			
Surr: Nitrobenzene-d5	*2267*	0	*3164*	0	*71.6*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98563** Instrument ID **SVMS6** Method: **SW846 8270D**

MSD Sample ID: **17021241-02B MSD** Units: **µg/Kg** Analysis Date: **2/25/2017 08:53 AM**
Client ID: Run ID: **SVMS6_170224B** SeqNo: **4302113** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1267	40	1294	0	97.9	50-140	1272	0.364	30	
2-Methylnaphthalene	1174	40	1294	0	90.7	50-140	1181	0.592	30	
Acenaphthene	1146	40	1294	0	88.6	60-140	1154	0.652	30	
Acenaphthylene	1171	40	1294	0	90.5	60-140	1161	0.85	30	
Anthracene	1283	40	1294	0	99.1	60-140	1311	2.15	30	
Benzo(a)anthracene	1310	40	1294	67.69	96	60-140	1359	3.68	30	
Benzo(a)pyrene	1634	40	1294	77.96	120	60-140	1639	0.319	30	
Benzo(b)fluoranthene	1819	40	1294	128.7	131	60-140	1810	0.494	30	
Benzo(g,h,i)perylene	811.9	40	1294	0	62.7	60-140	727.2	11	30	
Benzo(k)fluoranthene	1685	40	1294	50.95	126	60-140	1652	2.03	30	
Chrysene	1266	40	1294	49.6	94	60-140	1269	0.225	30	
Dibenzo(a,h)anthracene	1203	40	1294	0	93	60-140	1139	5.47	30	
Fluoranthene	1336	40	1294	112.9	94.5	60-140	1405	4.96	30	
Fluorene	1287	40	1294	0	99.4	60-140	1292	0.404	30	
Indeno(1,2,3-cd)pyrene	1042	40	1294	0	80.5	60-140	973.5	6.84	30	
Naphthalene	1065	40	1294	0	82.3	40-140	1079	1.29	30	
Phenanthrene	1196	40	1294	58.41	87.8	60-140	1222	2.22	30	
Pyrene	1442	40	1294	110.5	103	60-140	1451	0.6	30	
Surr: 2-Fluorobiphenyl	*2643*	0	*3237*	0	*81.7*	*20-140*	2674	*1.2*	*30*	
Surr: 4-Terphenyl-d14	*2814*	0	*3237*	0	*86.9*	*22-172*	2793	*0.756*	*30*	
Surr: Nitrobenzene-d5	*2240*	0	*3237*	0	*69.2*	*8-140*	2267	*1.2*	*30*	

The following samples were analyzed in this batch:

17021259-01B	17021259-02B	17021259-03B
17021259-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98590** Instrument ID **SVMS8** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-98590-98590** Units: **µg/Kg** Analysis Date: **2/24/2017 02:29 PM**
Client ID: Run ID: **SVMS8_170224A** SeqNo: **4303487** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	ND	6.7								
2-Methylnaphthalene	ND	6.7								
Acenaphthene	ND	6.7								
Acenaphthylene	ND	6.7								
Anthracene	ND	6.7								
Benzo(a)anthracene	ND	6.7								
Benzo(a)pyrene	ND	6.7								
Benzo(b)fluoranthene	ND	6.7								
Benzo(g,h,i)perylene	ND	6.7								
Benzo(k)fluoranthene	ND	6.7								
Chrysene	ND	6.7								
Dibenzo(a,h)anthracene	ND	6.7								
Fluoranthene	ND	6.7								
Fluorene	ND	6.7								
Indeno(1,2,3-cd)pyrene	ND	6.7								
Naphthalene	ND	6.7								
Phenanthrene	ND	6.7								
Pyrene	ND	6.7								
Surr: 2-Fluorobiphenyl	*2085*	0	*3333*	0	*62.6*	*12-100*	0			
Surr: 4-Terphenyl-d14	*3131*	0	*3333*	0	*93.9*	*25-137*	0			
Surr: Nitrobenzene-d5	*1993*	0	*3333*	0	*59.8*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98590** Instrument ID **SVMS8** Method: **SW846 8270D**

LCS Sample ID: **SLCSS1-98590-98590** Units: **µg/Kg** Analysis Date: **2/24/2017 02:50 PM**
Client ID: Run ID: **SVMS8_170224A** SeqNo: **4303488** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1058	6.7	1333	0	79.4	45-105	0			
2-Methylnaphthalene	1063	6.7	1333	0	79.8	45-105	0			
Acenaphthene	1057	6.7	1333	0	79.3	45-110	0			
Acenaphthylene	1129	6.7	1333	0	84.7	45-105	0			
Anthracene	1210	6.7	1333	0	90.8	55-105	0			
Benzo(a)anthracene	1161	6.7	1333	0	87.1	50-110	0			
Benzo(a)pyrene	1217	6.7	1333	0	91.3	50-110	0			
Benzo(b)fluoranthene	1308	6.7	1333	0	98.1	45-115	0			
Benzo(g,h,i)perylene	1149	6.7	1333	0	86.2	40-125	0			
Benzo(k)fluoranthene	1225	6.7	1333	0	91.9	45-115	0			
Chrysene	1164	6.7	1333	0	87.3	55-110	0			
Dibenzo(a,h)anthracene	1025	6.7	1333	0	76.9	40-125	0			
Fluoranthene	1187	6.7	1333	0	89.1	55-115	0			
Fluorene	1136	6.7	1333	0	85.2	50-110	0			
Indeno(1,2,3-cd)pyrene	1197	6.7	1333	0	89.8	40-120	0			
Naphthalene	946	6.7	1333	0	71	40-105	0			
Phenanthrene	1117	6.7	1333	0	83.8	50-110	0			
Pyrene	1253	6.7	1333	0	94	45-125	0			
Surr: 2-Fluorobiphenyl	*2489*	0	*3333*	0	*74.7*	*12-100*	0			
Surr: 4-Terphenyl-d14	*3307*	0	*3333*	0	*99.2*	*25-137*	0			
Surr: Nitrobenzene-d5	*2456*	0	*3333*	0	*73.7*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98590** Instrument ID **SVMS8** Method: **SW846 8270D**

MS Sample ID: **17021259-04B MS** Units: **µg/Kg** Analysis Date: **2/24/2017 05:43 PM**
Client ID: **Test Pit #2 (9')** Run ID: **SVMS8_170224A** SeqNo: **4303489** Prep Date: **2/24/2017** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	859.7	32	1283	0	67	45-105	0			
2-Methylnaphthalene	930.3	32	1283	38.81	69.5	45-105	0			
Acenaphthene	923.9	32	1283	0	72	45-110	0			
Acenaphthylene	1004	32	1283	0	78.3	45-105	0			
Anthracene	1120	32	1283	77.62	81.2	55-105	0			
Benzo(a)anthracene	1238	32	1283	352.5	69	50-110	0			
Benzo(a)pyrene	1395	32	1283	410.7	76.8	50-110	0			
Benzo(b)fluoranthene	1527	32	1283	566	74.9	45-115	0			
Benzo(g,h,i)perylene	1322	32	1283	320.2	78.1	40-125	0			
Benzo(k)fluoranthene	1184	32	1283	232.9	74.1	45-115	0			
Chrysene	1229	32	1283	420.4	63	55-110	0			
Dibenzo(a,h)anthracene	1190	32	1283	103.5	84.7	40-125	0			
Fluoranthene	1562	32	1283	737.4	64.3	55-115	0			
Fluorene	1046	32	1283	35.58	78.7	50-110	0			
Indeno(1,2,3-cd)pyrene	1614	32	1283	333.1	99.8	40-120	0			
Naphthalene	782.8	32	1283	0	61	40-105	0			
Phenanthrene	1193	32	1283	459.2	57.2	50-110	0			
Pyrene	1460	32	1283	675.9	61.1	45-125	0			
Surr: 2-Fluorobiphenyl	*2124*	0	*3208*	0	*66.2*	*12-100*	0			
Surr: 4-Terphenyl-d14	*2724*	0	*3208*	0	*84.9*	*25-137*	0			
Surr: Nitrobenzene-d5	*1864*	0	*3208*	0	*58.1*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98590** Instrument ID **SVMS8** Method: **SW846 8270D**

MSD Sample ID: **17021259-04B MSD** Units: **µg/Kg** Analysis Date: **2/24/2017 06:03 PM**

Client ID: **Test Pit #2 (9')** Run ID: **SVMS8_170224A** SeqNo: **4303490** Prep Date: **2/24/2017** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	899.6	33	1313	0	68.5	45-105	859.7	4.53	30	
2-Methylnaphthalene	922.6	33	1313	38.81	67.3	45-105	930.3	0.835	30	
Acenaphthene	955.4	33	1313	0	72.8	45-110	923.9	3.35	30	
Acenaphthylene	998.1	33	1313	0	76	45-105	1004	0.6	30	
Anthracene	1097	33	1313	77.62	77.6	55-105	1120	2.08	30	
Benzo(a)anthracene	1231	33	1313	352.5	66.9	50-110	1238	0.574	30	
Benzo(a)pyrene	1356	33	1313	410.7	72	50-110	1395	2.87	30	
Benzo(b)fluoranthene	1481	33	1313	566	69.7	45-115	1527	3.08	30	
Benzo(g,h,i)perylene	1448	33	1313	320.2	85.9	40-125	1322	9.11	30	
Benzo(k)fluoranthene	1139	33	1313	232.9	69	45-115	1184	3.83	30	
Chrysene	1208	33	1313	420.4	60	55-110	1229	1.68	30	
Dibenzo(a,h)anthracene	1120	33	1313	103.5	77.4	40-125	1190	6.11	30	
Fluoranthene	1451	33	1313	737.4	54.4	55-115	1562	7.37	30	S
Fluorene	1028	33	1313	35.58	75.6	50-110	1046	1.75	30	
Indeno(1,2,3-cd)pyrene	1517	33	1313	333.1	90.2	40-120	1614	6.18	30	
Naphthalene	804.4	33	1313	0	61.3	40-105	782.8	2.73	30	
Phenanthrene	1208	33	1313	459.2	57	50-110	1193	1.24	30	
Pyrene	1471	33	1313	675.9	60.5	45-125	1460	0.767	30	
Surr: 2-Fluorobiphenyl	*2229*	0	*3283*	0	*67.9*	*12-100*	2124	*4.85*	*40*	
Surr: 4-Terphenyl-d14	*2699*	0	*3283*	0	*82.2*	*25-137*	2724	*0.915*	*40*	
Surr: Nitrobenzene-d5	*1954*	0	*3283*	0	*59.5*	*37-107*	1864	*4.7*	*40*	

The following samples were analyzed in this batch: 17021259-04B 17021259-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98593** Instrument ID **VMS8** Method: **SW8260B**

MBLK Sample ID: **MBLK-98593-98593** Units: **µg/Kg-dry** Analysis Date: **2/24/2017 02:14 PM**
Client ID: Run ID: **VMS8_170224A** SeqNo: **4301786** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30	0	0	0	0-0	0			
1,1,1-Trichloroethane	ND	30	0	0	0	0-0	0			
1,1,2,2-Tetrachloroethane	ND	30	0	0	0	0-0	0			
1,1,2-Trichloroethane	ND	30	0	0	0	0-0	0			
1,1,2-Trichlorotrifluoroethane	ND	30	0	0	0		0			
1,1-Dichloroethane	ND	30	0	0	0	0-0	0			
1,1-Dichloroethene	ND	30	0	0	0	0-0	0			
1,2,3-Trichloropropane	ND	30	0	0	0	0-0	0			
1,2,4-Trichlorobenzene	ND	30	0	0	0	0-0	0			
1,2,4-Trimethylbenzene	ND	30	0	0	0	0-0	0			
1,2-Dibromo-3-chloropropane	ND	30	0	0	0	0-0	0			
1,2-Dibromoethane	ND	30	0	0	0	0-0	0			
1,2-Dichlorobenzene	ND	30	0	0	0	0-0	0			
1,2-Dichloroethane	ND	30	0	0	0	0-0	0			
1,2-Dichloropropane	ND	30	0	0	0	0-0	0			
1,3,5-Trimethylbenzene	ND	30	0	0	0	0-0	0			
1,3-Dichlorobenzene	ND	30	0	0	0	0-0	0			
1,4-Dichlorobenzene	ND	30	0	0	0	0-0	0			
2-Butanone	ND	200	0	0	0	0-0	0			
2-Hexanone	ND	30	0	0	0	0-0	0			
2-Methylnaphthalene	ND	100	0	0	0	0-0	0			
4-Methyl-2-pentanone	ND	30	0	0	0	0-0	0			
Acetone	ND	100	0	0	0	0-0	0			
Acrylonitrile	ND	100	0	0	0	0-0	0			
Benzene	ND	30	0	0	0	0-0	0			
Bromochloromethane	ND	30	0	0	0	0-0	0			
Bromodichloromethane	ND	30	0	0	0	0-0	0			
Bromoform	ND	30	0	0	0	0-0	0			
Bromomethane	ND	75	0	0	0	0-0	0			
Carbon disulfide	ND	30	0	0	0	0-0	0			
Carbon tetrachloride	ND	30	0	0	0	0-0	0			
Chlorobenzene	ND	30	0	0	0	0-0	0			
Chloroethane	ND	100	0	0	0	0-0	0			
Chloroform	ND	30	0	0	0	0-0	0			
Chloromethane	ND	100	0	0	0	0-0	0			
cis-1,2-Dichloroethene	ND	30	0	0	0	0-0	0			
cis-1,3-Dichloropropene	ND	30	0	0	0	0-0	0			
Dibromochloromethane	ND	30	0	0	0	0-0	0			
Dibromomethane	ND	30	0	0	0	0-0	0			
Dichlorodifluoromethane	ND	30	0	0	0	0-0	0			
Diethyl ether	ND	30	0	0	0	0-0	0			
Ethylbenzene	ND	30	0	0	0	0-0	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98593** Instrument ID **VMS8** Method: **SW8260B**

Hexachloroethane	ND	100	0	0	0	0-0	0
Hexane	ND	100	0	0	0	0-0	0
Isopropylbenzene	ND	30	0	0	0	0-0	0
m,p-Xylene	ND	60	0	0	0	0-0	0
Methyl iodide	ND	75	0	0	0	0-0	0
Methyl tert-butyl ether	ND	30	0	0	0	0-0	0
Methylene chloride	ND	30	0	0	0	0-0	0
Naphthalene	ND	100	0	0	0	0-0	0
n-Propylbenzene	ND	30	0	0	0	0-0	0
o-Xylene	ND	30	0	0	0	0-0	0
Styrene	ND	30	0	0	0	0-0	0
Tetrachloroethene	ND	30	0	0	0	0-0	0
Toluene	ND	30	0	0	0	0-0	0
trans-1,2-Dichloroethene	ND	30	0	0	0	0-0	0
trans-1,3-Dichloropropene	ND	30	0	0	0	0-0	0
trans-1,4-Dichloro-2-butene	ND	30	0	0	0	0-0	0
Trichloroethene	ND	30	0	0	0	0-0	0
Trichlorofluoromethane	ND	30	0	0	0	0-0	0
Vinyl acetate	ND	250	0	0	0	0-0	0
Vinyl chloride	ND	30	0	0	0	0-0	0
Xylenes, Total	ND	90	0	0	0	0-0	0
Surr: 1,2-Dichloroethane-d4	*1154*	0	*1000*	0	*115*	*70-130*	0
Surr: 4-Bromofluorobenzene	*990.5*	0	*1000*	0	*99*	*70-130*	0
Surr: Dibromofluoromethane	*934*	0	*1000*	0	*93.4*	*70-130*	0
Surr: Toluene-d8	*1022*	0	*1000*	0	*102*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98593** Instrument ID **VMS8** Method: **SW8260B**

LCS Sample ID: **LCS-98593-98593** Units: **µg/Kg-dry** Analysis Date: **2/24/2017 12:37 PM**
Client ID: Run ID: **VMS8_170224A** SeqNo: **4301989** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	947.5	30	1000	0	94.8	75-125	0			
1,1,1-Trichloroethane	1034	30	1000	0	103	70-135	0			
1,1,2,2-Tetrachloroethane	1096	30	1000	0	110	55-130	0			
1,1,2-Trichloroethane	1017	30	1000	0	102	60-125	0			
1,1-Dichloroethane	1272	30	1000	0	127	75-125	0			S
1,1-Dichloroethene	1253	30	1000	0	125	65-135	0			
1,2,3-Trichloropropane	1021	30	1000	0	102	65-130	0			
1,2,4-Trichlorobenzene	921	30	1000	0	92.1	65-130	0			
1,2,4-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,2-Dibromo-3-chloropropane	859	30	1000	0	85.9	40-135	0			
1,2-Dibromoethane	1186	30	1000	0	119	80-195	0			
1,2-Dichlorobenzene	980	30	1000	0	98	75-120	0			
1,2-Dichloroethane	1048	30	1000	0	105	70-135	0			
1,2-Dichloropropane	1106	30	1000	0	111	70-120	0			
1,3,5-Trimethylbenzene	1018	30	1000	0	102	65-135	0			
1,3-Dichlorobenzene	1006	30	1000	0	101	70-125	0			
1,4-Dichlorobenzene	1004	30	1000	0	100	70-125	0			
2-Butanone	1138	200	1000	0	114	30-160	0			
2-Hexanone	987.5	30	1000	0	98.8	45-145	0			
4-Methyl-2-pentanone	1136	30	1000	0	114	74-176	0			
Acetone	1012	100	1000	0	101	20-160	0			
Acrylonitrile	1101	100	1000	0	110	70-135	0			
Benzene	1103	30	1000	0	110	75-125	0			
Bromochloromethane	1248	30	1000	0	125	74-134	0			
Bromodichloromethane	974	30	1000	0	97.4	70-130	0			
Bromoform	779	30	1000	0	77.9	55-135	0			
Bromomethane	1026	75	1000	0	103	50-170	0			
Carbon disulfide	1252	30	1000	0	125	45-160	0			
Carbon tetrachloride	995.5	30	1000	0	99.6	65-135	0			
Chlorobenzene	1006	30	1000	0	101	75-125	0			
Chloroethane	1107	100	1000	0	111	40-155	0			
Chloroform	1150	30	1000	0	115	70-125	0			
Chloromethane	1100	100	1000	0	110	50-144	0			
cis-1,2-Dichloroethene	1274	30	1000	0	127	65-125	0			S
cis-1,3-Dichloropropene	975.5	30	1000	0	97.6	70-125	0			
Dibromochloromethane	822	30	1000	0	82.2	65-135	0			
Dibromomethane	1044	30	1000	0	104	75-130	0			
Dichlorodifluoromethane	1146	30	1000	0	115	35-135	0			
Ethylbenzene	1057	30	1000	0	106	75-125	0			
Hexachloroethane	802	100	1000	0	80.2	51-122	0			
Isopropylbenzene	1023	30	1000	0	102	75-130	0			
m,p-Xylene	2137	60	2000	0	107	80-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98593** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	1062	75	1000	0	106	64-180	0
Methyl tert-butyl ether	1058	30	1000	0	106	75-125	0
Methylene chloride	1078	30	1000	0	108	55-145	0
Naphthalene	928	100	1000	0	92.8	40-140	0
n-Propylbenzene	1051	30	1000	0	105	65-135	0
o-Xylene	1036	30	1000	0	104	75-125	0
Styrene	1093	30	1000	0	109	80-138	0
Tetrachloroethene	1222	30	1000	0	122	67-167	0
Toluene	1066	30	1000	0	107	70-125	0
trans-1,2-Dichloroethene	1285	30	1000	0	128	65-135	0
trans-1,3-Dichloropropene	1092	30	1000	0	109	59-129	0
trans-1,4-Dichloro-2-butene	871.5	30	1000	0	87.2	62-112	0
Trichloroethene	911.5	30	1000	0	91.2	75-125	0
Trichlorofluoromethane	1085	30	1000	0	108	25-185	0
Vinyl chloride	1070	30	1000	0	107	60-125	0
Xylenes, Total	3172	90	3000	0	106	75-125	0
Surr: 1,2-Dichloroethane-d4	*1100*	0	*1000*	0	*110*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1093*	0	*1000*	0	*109*	*70-130*	0
Surr: Dibromofluoromethane	*1109*	0	*1000*	0	*111*	*70-130*	0
Surr: Toluene-d8	*1061*	0	*1000*	0	*106*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98593** Instrument ID **VMS8** Method: **SW8260B**

MS Sample ID: **17021259-03A MS** Units: **µg/Kg-dry** Analysis Date: **2/24/2017 10:03 PM**

Client ID: **Test Pit #2 (2')** Run ID: **VMS8_170224A** SeqNo: **4301800** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	754	30	1000	0	75.4	75-125	0			
1,1,1-Trichloroethane	913.5	30	1000	0	91.4	70-135	0			
1,1,2,2-Tetrachloroethane	758	30	1000	0	75.8	55-130	0			
1,1,2-Trichloroethane	993.5	30	1000	0	99.4	60-125	0			
1,1-Dichloroethane	1241	30	1000	0	124	75-125	0			
1,1-Dichloroethene	1378	30	1000	0	138	65-135	0			S
1,2,3-Trichloropropane	1020	30	1000	0	102	65-130	0			
1,2,4-Trichlorobenzene	889	30	1000	0	88.9	65-130	0			
1,2,4-Trimethylbenzene	992.5	30	1000	0	99.2	65-135	0			
1,2-Dibromo-3-chloropropane	589.5	30	1000	0	59	40-135	0			
1,2-Dibromoethane	1055	30	1000	0	106	80-195	0			
1,2-Dichlorobenzene	967	30	1000	0	96.7	75-120	0			
1,2-Dichloroethane	1068	30	1000	0	107	70-135	0			
1,2-Dichloropropane	1054	30	1000	0	105	70-120	0			
1,3,5-Trimethylbenzene	1024	30	1000	0	102	65-135	0			
1,3-Dichlorobenzene	991	30	1000	0	99.1	70-125	0			
1,4-Dichlorobenzene	999	30	1000	0	99.9	70-125	0			
2-Butanone	1894	200	1000	0	189	30-160	0			S
2-Hexanone	1454	30	1000	0	145	45-145	0			S
4-Methyl-2-pentanone	1006	30	1000	0	101	74-176	0			
Acetone	2755	100	1000	0	276	20-160	0			S
Acrylonitrile	1199	100	1000	0	120	70-135	0			
Benzene	1119	30	1000	0	112	75-125	0			
Bromochloromethane	1262	30	1000	0	126	74-134	0			
Bromodichloromethane	780	30	1000	0	78	70-130	0			
Bromoform	560.5	30	1000	0	56	55-135	0			
Bromomethane	414	75	1000	0	41.4	50-170	0			S
Carbon disulfide	922.5	30	1000	0	92.2	45-160	0			
Carbon tetrachloride	865.5	30	1000	0	86.6	65-135	0			
Chlorobenzene	996.5	30	1000	0	99.6	75-125	0			
Chloroethane	1066	100	1000	0	107	40-155	0			
Chloroform	1150	30	1000	0	115	70-125	0			
Chloromethane	1242	100	1000	0	124	50-144	0			
cis-1,2-Dichloroethene	1243	30	1000	0	124	65-125	0			
cis-1,3-Dichloropropene	703	30	1000	0	70.3	70-125	0			
Dibromochloromethane	602.5	30	1000	0	60.2	65-135	0			S
Dibromomethane	967.5	30	1000	0	96.8	75-130	0			
Dichlorodifluoromethane	1284	30	1000	0	128	35-135	0			
Ethylbenzene	1024	30	1000	0	102	75-125	0			
Hexachloroethane	607.5	100	1000	0	60.8	51-122	0			
Isopropylbenzene	1001	30	1000	0	100	75-130	0			
m,p-Xylene	2076	60	2000	0	104	80-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98593** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	653.5	75	1000	0	65.4	64-180	0	
Methyl tert-butyl ether	1007	30	1000	0	101	75-125	0	
Methylene chloride	1227	30	1000	0	123	55-145	0	
Naphthalene	880.5	100	1000	0	88	40-140	0	
n-Propylbenzene	1038	30	1000	0	104	65-135	0	
o-Xylene	1018	30	1000	0	102	75-125	0	
Styrene	1050	30	1000	0	105	80-138	0	
Tetrachloroethene	1764	30	1000	0	176	67-167	0	S
Toluene	1056	30	1000	69.5	98.7	70-125	0	
trans-1,2-Dichloroethene	1374	30	1000	0	137	65-135	0	S
trans-1,3-Dichloropropene	749.5	30	1000	0	75	59-129	0	
trans-1,4-Dichloro-2-butene	758	30	1000	0	75.8	62-112	0	
Trichloroethene	1029	30	1000	0	103	75-125	0	
Trichlorofluoromethane	1160	30	1000	0	116	25-185	0	
Vinyl chloride	1158	30	1000	0	116	60-125	0	
Xylenes, Total	3093	90	3000	0	103	75-125	0	
Surr: 1,2-Dichloroethane-d4	*1148*	0	*1000*	0	*115*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1046*	0	*1000*	0	*105*	*70-130*	0	
Surr: Dibromofluoromethane	*994*	0	*1000*	0	*99.4*	*70-130*	0	
Surr: Toluene-d8	*1038*	0	*1000*	0	*104*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98593** Instrument ID **VMS8** Method: **SW8260B**

MSD Sample ID: **17021259-03A MSD** Units: **µg/Kg-dry** Analysis Date: **2/24/2017 10:27 PM**

Client ID: **Test Pit #2 (2')** Run ID: **VMS8_170224A** SeqNo: **4301801** Prep Date: **2/24/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	702	30	1000	0	70.2	75-125	754	7.14	30	S
1,1,1-Trichloroethane	867.5	30	1000	0	86.8	70-135	913.5	5.17	30	
1,1,2,2-Tetrachloroethane	737	30	1000	0	73.7	55-130	758	2.81	30	
1,1,2-Trichloroethane	911.5	30	1000	0	91.2	60-125	993.5	8.61	30	
1,1-Dichloroethane	1142	30	1000	0	114	75-125	1241	8.27	30	
1,1-Dichloroethene	1262	30	1000	0	126	65-135	1378	8.78	30	
1,2,3-Trichloropropane	967.5	30	1000	0	96.8	65-130	1020	5.33	30	
1,2,4-Trichlorobenzene	857	30	1000	0	85.7	65-130	889	3.67	30	
1,2,4-Trimethylbenzene	913	30	1000	0	91.3	65-135	992.5	8.34	30	
1,2-Dibromo-3-chloropropane	555.5	30	1000	0	55.6	40-135	589.5	5.94	30	
1,2-Dibromoethane	1038	30	1000	0	104	80-195	1055	1.58	30	
1,2-Dichlorobenzene	912	30	1000	0	91.2	75-120	967	5.85	30	
1,2-Dichloroethane	1062	30	1000	0	106	70-135	1068	0.469	30	
1,2-Dichloropropane	1037	30	1000	0	104	70-120	1054	1.63	30	
1,3,5-Trimethylbenzene	958.5	30	1000	0	95.8	65-135	1024	6.56	30	
1,3-Dichlorobenzene	942	30	1000	0	94.2	70-125	991	5.07	30	
1,4-Dichlorobenzene	933.5	30	1000	0	93.4	70-125	999	6.78	30	
2-Butanone	1769	200	1000	0	177	30-160	1894	6.83	30	S
2-Hexanone	1362	30	1000	0	136	45-145	1454	6.5	30	
4-Methyl-2-pentanone	957	30	1000	0	95.7	74-176	1006	4.94	30	
Acetone	2364	100	1000	0	236	20-160	2755	15.3	30	S
Acrylonitrile	1070	100	1000	0	107	70-135	1199	11.3	30	
Benzene	1083	30	1000	0	108	75-125	1119	3.27	30	
Bromochloromethane	1148	30	1000	0	115	74-134	1262	9.38	30	
Bromodichloromethane	738	30	1000	0	73.8	70-130	780	5.53	30	
Bromoform	531	30	1000	0	53.1	55-135	560.5	5.41	30	S
Bromomethane	408	75	1000	0	40.8	50-170	414	1.46	30	S
Carbon disulfide	879.5	30	1000	0	88	45-160	922.5	4.77	30	
Carbon tetrachloride	861.5	30	1000	0	86.2	65-135	865.5	0.463	30	
Chlorobenzene	918	30	1000	0	91.8	75-125	996.5	8.2	30	
Chloroethane	934.5	100	1000	0	93.4	40-155	1066	13.1	30	
Chloroform	1076	30	1000	0	108	70-125	1150	6.65	30	
Chloromethane	1177	100	1000	0	118	50-144	1242	5.41	30	
cis-1,2-Dichloroethene	1162	30	1000	0	116	65-125	1243	6.74	30	
cis-1,3-Dichloropropene	705.5	30	1000	0	70.6	70-125	703	0.355	30	
Dibromochloromethane	587	30	1000	0	58.7	65-135	602.5	2.61	30	S
Dibromomethane	912.5	30	1000	0	91.2	75-130	967.5	5.85	30	
Dichlorodifluoromethane	1173	30	1000	0	117	35-135	1284	9.04	30	
Ethylbenzene	973	30	1000	0	97.3	75-125	1024	5.16	30	
Hexachloroethane	591	100	1000	0	59.1	51-122	607.5	2.75	30	
Isopropylbenzene	944	30	1000	0	94.4	75-130	1001	5.86	30	
m,p-Xylene	1951	60	2000	0	97.6	80-125	2076	6.18	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **98593** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	756.5	75	1000	0	75.6	64-180	653.5	14.6	30	
Methyl tert-butyl ether	973.5	30	1000	0	97.4	75-125	1007	3.38	30	
Methylene chloride	1121	30	1000	0	112	55-145	1227	9.03	30	
Naphthalene	849.5	100	1000	0	85	40-140	880.5	3.58	30	
n-Propylbenzene	971.5	30	1000	0	97.2	65-135	1038	6.57	30	
o-Xylene	953	30	1000	0	95.3	75-125	1018	6.55	30	
Styrene	970	30	1000	0	97	80-138	1050	7.97	30	
Tetrachloroethene	1670	30	1000	0	167	67-167	1764	5.44	30	S
Toluene	1002	30	1000	69.5	93.3	70-125	1056	5.25	30	
trans-1,2-Dichloroethene	1277	30	1000	0	128	65-135	1374	7.32	30	
trans-1,3-Dichloropropene	709	30	1000	0	70.9	59-129	749.5	5.55	30	
trans-1,4-Dichloro-2-butene	769	30	1000	0	76.9	62-112	758	1.44	30	
Trichloroethene	982.5	30	1000	0	98.2	75-125	1029	4.62	30	
Trichlorofluoromethane	1062	30	1000	0	106	25-185	1160	8.91	30	
Vinyl chloride	1106	30	1000	0	111	60-125	1158	4.55	30	
Xylenes, Total	2904	90	3000	0	96.8	75-125	3093	6.3	30	
Surr: 1,2-Dichloroethane-d4	*1139*	0	*1000*	0	*114*	*70-130*	1148	*0.787*	*30*	
Surr: 4-Bromofluorobenzene	*1034*	0	*1000*	0	*103*	*70-130*	1046	*1.15*	*30*	
Surr: Dibromofluoromethane	*1001*	0	*1000*	0	*100*	*70-130*	994	*0.702*	*30*	
Surr: Toluene-d8	*1047*	0	*1000*	0	*105*	*70-130*	1038	*0.863*	*30*	

The following samples were analyzed in this batch:

17021259-01A	17021259-02A	17021259-03A
17021259-04A	17021259-05A	17021259-06A
17021259-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 17021259
Project: Kalamazoo Performance Paper 825821

QC BATCH REPORT

Batch ID: **R206729** Instrument ID **MOIST** Method: **SW3550C**

MBLK	Sample ID: **WBLKS-R206729**				Units: **% of sample**			Analysis Date: **2/24/2017 10:50 AM**		
Client ID:		Run ID: **MOIST_170224A**			SeqNo: **4302543**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS	Sample ID: **LCS-R206729**				Units: **% of sample**			Analysis Date: **2/24/2017 10:50 AM**		
Client ID:		Run ID: **MOIST_170224A**			SeqNo: **4302542**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP	Sample ID: **17021289-01A DUP**				Units: **% of sample**			Analysis Date: **2/24/2017 10:50 AM**		
Client ID:		Run ID: **MOIST_170224A**			SeqNo: **4302528**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	56.34	0.050	0	0	0		56.53	0.337	5	

DUP	Sample ID: **17021309-01A DUP**				Units: **% of sample**			Analysis Date: **2/24/2017 10:50 AM**		
Client ID:		Run ID: **MOIST_170224A**			SeqNo: **4302539**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	30.17	0.050	0	0	0		30.68	1.68	5	

The following samples were analyzed in this batch:

17021259-01B	17021259-02B	17021259-03B
17021259-04B	17021259-05B	17021259-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 36768

ALS Project Manager: KL

ALS Work Order #: 17021259

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	K200 Performance Paper	A	8260B plus 1,3+ of VOCs - no TIC
Work Order		Project Number	825821	B	MI Metals/PCBs
Company Name	Fleis + Vandenbrink Engineering	Bill To Company	F&V	C	PAH 8270C
Send Report To	Steve Kimm	Invoice Attn	Steve Kimm	D	
Address	4798 Campus Dr.	Address		E	
				F	
City/State/Zip	Kalamazoo/MI/49008	City/State/Zip		G	
Phone	269-532-7300	Phone		H	
Fax		Fax		I	
e-Mail Address	Skimm@fveng.com	e-Mail Address	skimm@fveng.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Test Pit #1 (2')	02/23/17	9:20	Soil	Meth.	3	X	X	X								
2	Test Pit #1 (5')	02/23/17	9:10	Soil	Meth	3	X	X	X								
3	Test Pit #2 (2')	02/23/17	10:10	Soil	Meth	3	X	X	X								
4	Test Pit #2 (9')	02/23/17	10:00	Soil	Meth	3	X	X	X								
5	Test Pit #4 (2')	02/23/17	11:45	Soil	Meth.	3	X	X	X								
6	Test Pit #8 (7')	02/23/17	13:20	Soil	Meth	3	X	X	X								
7	TRIP BLANK	2/23/17				1	X										
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Barrett Walquist

Shipment Method: Hand Deliver

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other ASAP TAT — Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Barrett Walquist	2/23/17	1515	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory): KLW	Date: 2/23/17	Time: 1525	Checked by (Laboratory): KL

Notes:

Cooler ID	Cooler Temp
SK2	3.6°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Group, USA

Sample Receipt Checklist

Client Name: **FLEIS&VANDENBRINK - KZOO** Date/Time Received: **23-Feb-17 15:15**

Work Order: **17021259** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 23-Feb-17 (Date) Reviewed by: Alex Csaszar (eSignature) 23-Feb-17 (Date)

Matrices: Soil
Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.6/3.6 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	2/23/2017 3:31:43 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

30-Dec-2015

Steve Kimm
Fleis & Vandenbrink Engineering, Inc.
4798 Campus Drive
Kalamazoo, MI 49008

Re: **Alcott Street Phase II 825390** Work Order: **15121249**

Dear Steve,

ALS Environmental received 12 samples on 19-Dec-2015 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 85.

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

Sincerely,

Alex Csaszar

Electronically approved by: Tom Beamish

Alex Csaszar
Project Manager

Certificate No: MI: 0022

Report of Laboratory Analysis

ALS Group USA, Corp

Date: 30-Dec-15

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390
Work Order: **15121249**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
15121249-01	SB-1 (2'-3')	Soil		12/16/15 10:30	12/19/15 10:30	☐
15121249-02	SB-2 (3'-4')	Soil		12/16/15 11:30	12/19/15 10:30	☐
15121249-03	SB-3 (3'-4')	Soil		12/16/15 12:50	12/19/15 10:30	☐
15121249-04	SS-1 (0'-1')	Soil		12/16/15 05:20	12/19/15 10:30	☑
15121249-05	SS-2 (0'-1')	Soil		12/16/15 05:25	12/19/15 10:30	☐
15121249-06	TMW-1	Groundwater		12/16/15 12:30	12/19/15 10:30	☐
15121249-07	TMW-2	Groundwater		12/16/15 13:50	12/19/15 10:30	☐
15121249-08	TMW-3	Groundwater		12/16/15 15:40	12/19/15 10:30	☐
15121249-09	TMW-4	Groundwater		12/16/15 16:55	12/19/15 10:30	☐
15121249-10	Field Blank	Water		12/16/15 14:00	12/19/15 10:30	☐
15121249-11	Trip Blank (water)	Water		12/16/15	12/19/15 10:30	☐
15121249-12	Trip Blank (soil)	Soil		12/16/15	12/19/15 10:30	☐

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390
WorkOrder: **15121249**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
µg/L	Micrograms per Liter
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390
Work Order: 15121249

Case Narrative

QC Comments:

Batch 80609, Method PNLVI_8270_W, Sample SLCSW1-80609: The LCS recovery was above the upper control limit. The sample results may be biased high for Fluorene.

Batch 80647, Method VOC_8260_S, Sample LCS-80647: The LCS recovery was below the lower control limit. The sample results may be biased low for Bromomethane.

Batch 80647, Method VOC_8260_S, Sample LCS-80647: The LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for 1,2-Dibromoethane.

Batch R178988, Method VOC_8260_W, Sample VLCSW2-151223: The LCS recovery was above the upper control limit. All the sample results in the batch were non-detect. No qualification is necessary for 1,2-Dibromoethane.

Batch R178988, Method VOC_8260_W, Sample 15121249-09A MS: The MS recovery was above the upper control limit. The corresponding result in the parent sample was non-detect, therefore no qualification is necessary for 1,2-Dibromoethane.

Batch R179082x, Method VOC_8260_W, Sample VLCSW2-151228: The LCS recovery was below the lower control limit. The sample results may be biased low for Methyl iodide.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-1 (2'-3') **Lab ID:** 15121249-01
Collection Date: 12/16/15 10:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3541 / 12/28/15	Analyst: **EB**
Aroclor 1016	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1221	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1232	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1242	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1248	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1254	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Aroclor 1260	ND		87	µg/Kg-dry	1	12/28/15 07:54 PM
Surr: Decachlorobiphenyl	*78.1*		*40-140*	*%REC*	1	12/28/15 07:54 PM
Surr: Tetrachloro-m-xylene	*82.1*		*45-124*	*%REC*	1	12/28/15 07:54 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 12/29/15	Analyst: **RG**
Mercury	**0.052**		**0.014**	**mg/Kg-dry**	1	12/29/15 04:00 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 12/23/15	Analyst: **ML**
Arsenic	**22**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Barium	**100**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Cadmium	ND		0.56	mg/Kg-dry	4	12/23/15 09:27 PM
Chromium	**8.1**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Copper	**18**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Lead	**47**		**1.4**	**mg/Kg-dry**	4	12/23/15 09:27 PM
Selenium	ND		1.4	mg/Kg-dry	4	12/23/15 09:27 PM
Silver	ND		1.4	mg/Kg-dry	4	12/23/15 09:27 PM
Zinc	**54**		**2.8**	**mg/Kg-dry**	4	12/23/15 09:27 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 12/28/15	Analyst: **RM**
2-Chloronaphthalene	ND		7.3	µg/Kg-dry	1	12/28/15 10:13 PM
2-Methylnaphthalene	**91**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Acenaphthene	**47**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Acenaphthylene	**210**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Anthracene	**240**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(a)anthracene	**1,300**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(a)pyrene	**1,400**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(b)fluoranthene	**2,000**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(g,h,i)perylene	**850**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Benzo(k)fluoranthene	**730**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Chrysene	**1,300**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Dibenzo(a,h)anthracene	**230**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Fluoranthene	**2,500**		**37**	**µg/Kg-dry**	5	12/30/15 01:25 AM
Fluorene	**74**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Indeno(1,2,3-cd)pyrene	**990**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-1 (2'-3') **Lab ID:** 15121249-01
Collection Date: 12/16/15 10:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**78**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Phenanthrene	**1,000**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Pyrene	**1,900**		**7.3**	**µg/Kg-dry**	1	12/28/15 10:13 PM
Surr: 2-Fluorobiphenyl	*77.3*		*12-100*	*%REC*	1	12/28/15 10:13 PM
Surr: 4-Terphenyl-d14	*87.7*		*25-137*	*%REC*	1	12/28/15 10:13 PM
Surr: Nitrobenzene-d5	*73.6*		*37-107*	*%REC*	1	12/28/15 10:13 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1,1-Trichloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1,2,2-Tetrachloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1,2-Trichloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1,2-Trichlorotrifluoroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1-Dichloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,1-Dichloroethene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2,3-Trichloropropane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2,4-Trichlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2,4-Trimethylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dibromo-3-chloropropane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dibromoethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dichlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dichloroethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,2-Dichloropropane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,3,5-Trimethylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,3-Dichlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
1,4-Dichlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
2-Butanone	ND		220	µg/Kg-dry	1	12/23/15 05:47 PM
2-Hexanone	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
2-Methylnaphthalene	**180**		**110**	**µg/Kg-dry**	1	12/23/15 05:47 PM
4-Methyl-2-pentanone	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Acetone	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
Acrylonitrile	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
Benzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Bromochloromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Bromodichloromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Bromoform	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Bromomethane	ND		83	µg/Kg-dry	1	12/23/15 05:47 PM
Carbon disulfide	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Carbon tetrachloride	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Chlorobenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Chloroethane	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-1 (2'-3') **Lab ID:** 15121249-01
Collection Date: 12/16/15 10:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Chloromethane	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
cis-1,2-Dichloroethene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
cis-1,3-Dichloropropene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Dibromochloromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Dibromomethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Dichlorodifluoromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Diethyl ether	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Ethylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Hexachloroethane	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
Hexane	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
Isopropylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
m,p-Xylene	ND		66	µg/Kg-dry	1	12/23/15 05:47 PM
Methyl iodide	ND		83	µg/Kg-dry	1	12/23/15 05:47 PM
Methyl tert-butyl ether	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Methylene chloride	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Naphthalene	ND		110	µg/Kg-dry	1	12/23/15 05:47 PM
n-Propylbenzene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
o-Xylene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Styrene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Tetrachloroethene	**37**		**33**	**µg/Kg-dry**	1	12/23/15 05:47 PM
Toluene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
trans-1,2-Dichloroethene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
trans-1,3-Dichloropropene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
trans-1,4-Dichloro-2-butene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Trichloroethene	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Trichlorofluoromethane	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Vinyl acetate	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Vinyl chloride	ND		33	µg/Kg-dry	1	12/23/15 05:47 PM
Xylenes, Total	ND		99	µg/Kg-dry	1	12/23/15 05:47 PM
Surr: 1,2-Dichloroethane-d4	*98.6*		*70-130*	*%REC*	1	12/23/15 05:47 PM
Surr: 4-Bromofluorobenzene	*97.0*		*70-130*	*%REC*	1	12/23/15 05:47 PM
Surr: Dibromofluoromethane	*93.2*		*70-130*	*%REC*	1	12/23/15 05:47 PM
Surr: Toluene-d8	*95.6*		*70-130*	*%REC*	1	12/23/15 05:47 PM
MOISTURE			**E160.3M**			Analyst: **ED**
Moisture	**9.2**		**0.050**	**% of sample**	1	12/22/15 04:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-2 (3'-4') **Lab ID:** 15121249-02
Collection Date: 12/16/15 11:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3541 / 12/28/15	Analyst: **EB**
Aroclor 1016	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1221	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1232	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1242	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1248	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1254	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Aroclor 1260	ND		99	µg/Kg-dry	1	12/28/15 08:11 PM
Surr: Decachlorobiphenyl	*63.1*		*40-140*	*%REC*	1	12/28/15 08:11 PM
Surr: Tetrachloro-m-xylene	*63.1*		*45-124*	*%REC*	1	12/28/15 08:11 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 12/29/15	Analyst: **RG**
Mercury	**0.062**		**0.015**	**mg/Kg-dry**	1	12/29/15 04:03 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 12/23/15	Analyst: **ML**
Arsenic	**22**		**1.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
Barium	**140**		**1.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
Cadmium	ND		0.77	mg/Kg-dry	4	12/23/15 11:39 PM
Chromium	**8.3**		**1.9**	**mg/Kg-dry**	4	12/28/15 02:45 PM
Copper	**22**		**1.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
Lead	**72**		**1.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
Selenium	ND		1.9	mg/Kg-dry	4	12/23/15 11:39 PM
Silver	ND		1.9	mg/Kg-dry	4	12/23/15 11:39 PM
Zinc	**42**		**3.9**	**mg/Kg-dry**	4	12/23/15 11:39 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 12/28/15	Analyst: **RM**
2-Chloronaphthalene	ND		7.9	µg/Kg-dry	1	12/28/15 10:33 PM
2-Methylnaphthalene	**1,100**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Acenaphthene	**9.8**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Acenaphthylene	ND		7.9	µg/Kg-dry	1	12/28/15 10:33 PM
Anthracene	**56**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(a)anthracene	**220**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(a)pyrene	**220**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(b)fluoranthene	**330**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(g,h,i)perylene	**190**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Benzo(k)fluoranthene	**86**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Chrysene	**320**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Dibenzo(a,h)anthracene	**54**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Fluoranthene	**370**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Fluorene	ND		7.9	µg/Kg-dry	1	12/28/15 10:33 PM
Indeno(1,2,3-cd)pyrene	**150**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-2 (3'-4') **Lab ID:** 15121249-02
Collection Date: 12/16/15 11:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**720**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Phenanthrene	**790**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Pyrene	**360**		**7.9**	**µg/Kg-dry**	1	12/28/15 10:33 PM
Surr: 2-Fluorobiphenyl	*75.5*		*12-100*	*%REC*	1	12/28/15 10:33 PM
Surr: 4-Terphenyl-d14	*88.0*		*25-137*	*%REC*	1	12/28/15 10:33 PM
Surr: Nitrobenzene-d5	*75.3*		*37-107*	*%REC*	1	12/28/15 10:33 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1,1-Trichloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1,2,2-Tetrachloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1,2-Trichloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1,2-Trichlorotrifluoroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1-Dichloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,1-Dichloroethene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2,3-Trichloropropane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2,4-Trichlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2,4-Trimethylbenzene	**410**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
1,2-Dibromo-3-chloropropane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2-Dibromoethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2-Dichlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2-Dichloroethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,2-Dichloropropane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,3,5-Trimethylbenzene	**130**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
1,3-Dichlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
1,4-Dichlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
2-Butanone	ND		370	µg/Kg-dry	1	12/23/15 06:13 PM
2-Hexanone	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
2-Methylnaphthalene	**1,200**		**180**	**µg/Kg-dry**	1	12/23/15 06:13 PM
4-Methyl-2-pentanone	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Acetone	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM
Acrylonitrile	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM
Benzene	**70**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Bromochloromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Bromodichloromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Bromoform	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Bromomethane	ND		140	µg/Kg-dry	1	12/23/15 06:13 PM
Carbon disulfide	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Carbon tetrachloride	**490**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Chlorobenzene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Chloroethane	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-2 (3'-4') **Lab ID:** 15121249-02
Collection Date: 12/16/15 11:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Chloromethane	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM
cis-1,2-Dichloroethene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
cis-1,3-Dichloropropene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Dibromochloromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Dibromomethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Dichlorodifluoromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Diethyl ether	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Ethylbenzene	**150**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Hexachloroethane	ND		180	µg/Kg-dry	1	12/23/15 06:13 PM
Hexane	**320**		**180**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Isopropylbenzene	**73**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
m,p-Xylene	**970**		**110**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Methyl iodide	ND		140	µg/Kg-dry	1	12/23/15 06:13 PM
Methyl tert-butyl ether	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Methylene chloride	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Naphthalene	**1,200**		**180**	**µg/Kg-dry**	1	12/23/15 06:13 PM
n-Propylbenzene	**100**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
o-Xylene	**660**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Styrene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Tetrachloroethene	**3,800**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Toluene	**730**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
trans-1,2-Dichloroethene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
trans-1,3-Dichloropropene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
trans-1,4-Dichloro-2-butene	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Trichloroethene	**3,000**		**55**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Trichlorofluoromethane	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Vinyl acetate	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Vinyl chloride	ND		55	µg/Kg-dry	1	12/23/15 06:13 PM
Xylenes, Total	**1,600**		**170**	**µg/Kg-dry**	1	12/23/15 06:13 PM
Surr: 1,2-Dichloroethane-d4	*98.9*		*70-130*	*%REC*	1	12/23/15 06:13 PM
Surr: 4-Bromofluorobenzene	*101*		*70-130*	*%REC*	1	12/23/15 06:13 PM
Surr: Dibromofluoromethane	*93.4*		*70-130*	*%REC*	1	12/23/15 06:13 PM
Surr: Toluene-d8	*99.8*		*70-130*	*%REC*	1	12/23/15 06:13 PM
MOISTURE			**E160.3M**			Analyst: **ED**
Moisture	**16**		**0.050**	**% of sample**	1	12/22/15 04:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-3 (3'-4') **Lab ID:** 15121249-03
Collection Date: 12/16/15 12:50 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3541 / 12/28/15	Analyst: **EB**
Aroclor 1016	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1221	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1232	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1242	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1248	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1254	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Aroclor 1260	ND		90	µg/Kg-dry	1	12/28/15 08:27 PM
Surr: Decachlorobiphenyl	*81.1*		*40-140*	*%REC*	1	12/28/15 08:27 PM
Surr: Tetrachloro-m-xylene	*84.1*		*45-124*	*%REC*	1	12/28/15 08:27 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 12/29/15	Analyst: **RG**
Mercury	**0.041**		**0.017**	**mg/Kg-dry**	1	12/29/15 04:05 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 12/23/15	Analyst: **ML**
Arsenic	**12**		**1.7**	**mg/Kg-dry**	4	12/23/15 11:45 PM
Barium	**180**		**1.7**	**mg/Kg-dry**	4	12/23/15 11:45 PM
Cadmium	ND		0.69	mg/Kg-dry	4	12/23/15 11:45 PM
Chromium	**7.6**		**1.7**	**mg/Kg-dry**	4	12/28/15 02:51 PM
Copper	**11**		**1.7**	**mg/Kg-dry**	4	12/23/15 11:45 PM
Lead	**55**		**1.7**	**mg/Kg-dry**	4	12/23/15 11:45 PM
Selenium	ND		1.7	mg/Kg-dry	4	12/23/15 11:45 PM
Silver	ND		1.7	mg/Kg-dry	4	12/23/15 11:45 PM
Zinc	**48**		**3.5**	**mg/Kg-dry**	4	12/23/15 11:45 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 12/28/15	Analyst: **RM**
2-Chloronaphthalene	ND		7.4	µg/Kg-dry	1	12/28/15 08:11 PM
2-Methylnaphthalene	**29**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Acenaphthene	**15**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Acenaphthylene	**38**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Anthracene	**61**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(a)anthracene	**300**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(a)pyrene	**300**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(b)fluoranthene	**450**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(g,h,i)perylene	**210**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Benzo(k)fluoranthene	**160**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Chrysene	**310**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Dibenzo(a,h)anthracene	**53**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Fluoranthene	**510**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Fluorene	**24**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Indeno(1,2,3-cd)pyrene	**220**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-3 (3'-4') **Lab ID:** 15121249-03
Collection Date: 12/16/15 12:50 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**26**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Phenanthrene	**260**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Pyrene	**450**		**7.4**	**µg/Kg-dry**	1	12/28/15 08:11 PM
Surr: 2-Fluorobiphenyl	*57.5*		*12-100*	*%REC*	1	12/28/15 08:11 PM
Surr: 4-Terphenyl-d14	*86.7*		*25-137*	*%REC*	1	12/28/15 08:11 PM
Surr: Nitrobenzene-d5	*59.0*		*37-107*	*%REC*	1	12/28/15 08:11 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1,1-Trichloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1,2,2-Tetrachloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1,2-Trichloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1,2-Trichlorotrifluoroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1-Dichloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,1-Dichloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2,3-Trichloropropane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2,4-Trichlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2,4-Trimethylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dibromo-3-chloropropane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dibromoethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dichlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dichloroethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,2-Dichloropropane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,3,5-Trimethylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,3-Dichlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
1,4-Dichlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
2-Butanone	ND		230	µg/Kg-dry	1	12/23/15 06:39 PM
2-Hexanone	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
2-Methylnaphthalene	**160**		**110**	**µg/Kg-dry**	1	12/23/15 06:39 PM
4-Methyl-2-pentanone	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Acetone	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
Acrylonitrile	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
Benzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Bromochloromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Bromodichloromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Bromoform	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Bromomethane	ND		86	µg/Kg-dry	1	12/23/15 06:39 PM
Carbon disulfide	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Carbon tetrachloride	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Chlorobenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Chloroethane	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SB-3 (3'-4') **Lab ID:** 15121249-03
Collection Date: 12/16/15 12:50 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Chloromethane	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
cis-1,2-Dichloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
cis-1,3-Dichloropropene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Dibromochloromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Dibromomethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Dichlorodifluoromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Diethyl ether	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Ethylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Hexachloroethane	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
Hexane	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
Isopropylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
m,p-Xylene	ND		68	µg/Kg-dry	1	12/23/15 06:39 PM
Methyl iodide	ND		86	µg/Kg-dry	1	12/23/15 06:39 PM
Methyl tert-butyl ether	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Methylene chloride	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Naphthalene	ND		110	µg/Kg-dry	1	12/23/15 06:39 PM
n-Propylbenzene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
o-Xylene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Styrene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Tetrachloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Toluene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
trans-1,2-Dichloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
trans-1,3-Dichloropropene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
trans-1,4-Dichloro-2-butene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Trichloroethene	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Trichlorofluoromethane	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Vinyl acetate	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Vinyl chloride	ND		34	µg/Kg-dry	1	12/23/15 06:39 PM
Xylenes, Total	ND		100	µg/Kg-dry	1	12/23/15 06:39 PM
Surr: 1,2-Dichloroethane-d4	*98.6*		*70-130*	*%REC*	1	12/23/15 06:39 PM
Surr: 4-Bromofluorobenzene	*94.1*		*70-130*	*%REC*	1	12/23/15 06:39 PM
Surr: Dibromofluoromethane	*93.1*		*70-130*	*%REC*	1	12/23/15 06:39 PM
Surr: Toluene-d8	*99.0*		*70-130*	*%REC*	1	12/23/15 06:39 PM
MOISTURE			**E160.3M**			Analyst: **ED**
Moisture	**12**		**0.050**	**% of sample**	1	12/22/15 04:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SS-2 (0'-1') **Lab ID:** 15121249-05
Collection Date: 12/16/15 05:25 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3541 / 12/28/15	Analyst: **EB**
Aroclor 1016	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1221	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1232	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1242	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1248	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1254	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Aroclor 1260	ND		100	µg/Kg-dry	1	12/28/15 08:43 PM
Surr: Decachlorobiphenyl	*82.1*		*40-140*	*%REC*	1	12/28/15 08:43 PM
Surr: Tetrachloro-m-xylene	*86.1*		*45-124*	*%REC*	1	12/28/15 08:43 PM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 12/29/15	Analyst: **RG**
Mercury	**0.59**		**0.084**	**mg/Kg-dry**	5	12/29/15 05:57 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3050B / 12/23/15	Analyst: **ML**
Arsenic	**27**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Barium	**120**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Cadmium	**0.99**		**0.71**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Chromium	**15**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Copper	**48**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Lead	**180**		**1.8**	**mg/Kg-dry**	4	12/23/15 11:51 PM
Selenium	ND		1.8	mg/Kg-dry	4	12/23/15 11:51 PM
Silver	ND		1.8	mg/Kg-dry	4	12/23/15 11:51 PM
Zinc	**240**		**3.6**	**mg/Kg-dry**	4	12/23/15 11:51 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 12/28/15	Analyst: **RM**
2-Chloronaphthalene	ND		83	µg/Kg-dry	10	12/28/15 10:54 PM
2-Methylnaphthalene	**330**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Acenaphthene	ND		83	µg/Kg-dry	10	12/28/15 10:54 PM
Acenaphthylene	ND		83	µg/Kg-dry	10	12/28/15 10:54 PM
Anthracene	**210**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(a)anthracene	**640**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(a)pyrene	**630**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(b)fluoranthene	**1,000**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(g,h,i)perylene	**490**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Benzo(k)fluoranthene	**430**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Chrysene	**810**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Dibenzo(a,h)anthracene	**190**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Fluoranthene	**1,500**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Fluorene	ND		83	µg/Kg-dry	10	12/28/15 10:54 PM
Indeno(1,2,3-cd)pyrene	**570**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SS-2 (0'-1') **Lab ID:** 15121249-05
Collection Date: 12/16/15 05:25 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	**210**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Phenanthrene	**930**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Pyrene	**1,200**		**83**	**µg/Kg-dry**	10	12/28/15 10:54 PM
Surr: 2-Fluorobiphenyl	*69.2*		*12-100*	*%REC*	10	12/28/15 10:54 PM
Surr: 4-Terphenyl-d14	*86.4*		*25-137*	*%REC*	10	12/28/15 10:54 PM
Surr: Nitrobenzene-d5	*63.6*		*37-107*	*%REC*	10	12/28/15 10:54 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1,1-Trichloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1,2,2-Tetrachloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1,2-Trichloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1,2-Trichlorotrifluoroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1-Dichloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,1-Dichloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2,3-Trichloropropane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2,4-Trichlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2,4-Trimethylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dibromo-3-chloropropane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dibromoethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dichlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dichloroethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,2-Dichloropropane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,3,5-Trimethylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,3-Dichlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
1,4-Dichlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
2-Butanone	ND		290	µg/Kg-dry	1	12/23/15 07:05 PM
2-Hexanone	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
2-Methylnaphthalene	**300**		**140**	**µg/Kg-dry**	1	12/23/15 07:05 PM
4-Methyl-2-pentanone	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Acetone	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
Acrylonitrile	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
Benzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Bromochloromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Bromodichloromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Bromoform	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Bromomethane	ND		110	µg/Kg-dry	1	12/23/15 07:05 PM
Carbon disulfide	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Carbon tetrachloride	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Chlorobenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Chloroethane	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: SS-2 (0'-1') **Lab ID:** 15121249-05
Collection Date: 12/16/15 05:25 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Chloromethane	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
cis-1,2-Dichloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
cis-1,3-Dichloropropene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Dibromochloromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Dibromomethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Dichlorodifluoromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Diethyl ether	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Ethylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Hexachloroethane	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
Hexane	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
Isopropylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
m,p-Xylene	ND		86	µg/Kg-dry	1	12/23/15 07:05 PM
Methyl iodide	ND		110	µg/Kg-dry	1	12/23/15 07:05 PM
Methyl tert-butyl ether	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Methylene chloride	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Naphthalene	ND		140	µg/Kg-dry	1	12/23/15 07:05 PM
n-Propylbenzene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
o-Xylene	**52**		**43**	**µg/Kg-dry**	1	12/23/15 07:05 PM
Styrene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Tetrachloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Toluene	**46**		**43**	**µg/Kg-dry**	1	12/23/15 07:05 PM
trans-1,2-Dichloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
trans-1,3-Dichloropropene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
trans-1,4-Dichloro-2-butene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Trichloroethene	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Trichlorofluoromethane	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Vinyl acetate	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Vinyl chloride	ND		43	µg/Kg-dry	1	12/23/15 07:05 PM
Xylenes, Total	ND		130	µg/Kg-dry	1	12/23/15 07:05 PM
Surr: 1,2-Dichloroethane-d4	*100*		*70-130*	*%REC*	1	12/23/15 07:05 PM
Surr: 4-Bromofluorobenzene	*93.0*		*70-130*	*%REC*	1	12/23/15 07:05 PM
Surr: Dibromofluoromethane	*93.3*		*70-130*	*%REC*	1	12/23/15 07:05 PM
Surr: Toluene-d8	*97.0*		*70-130*	*%REC*	1	12/23/15 07:05 PM
MOISTURE			**E160.3M**			Analyst: **ED**
Moisture	**19**		**0.050**	**% of sample**	1	12/22/15 04:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-1 **Lab ID:** 15121249-06
Collection Date: 12/16/15 12:30 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3510 / 12/22/15	Analyst: **BLM**
Aroclor 1016	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1221	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1232	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1242	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1248	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1254	ND		0.20	µg/L	1	12/22/15 03:35 PM
Aroclor 1260	ND		0.20	µg/L	1	12/22/15 03:35 PM
Surr: Decachlorobiphenyl	*94.0*		*40-110*	*%REC*	1	12/22/15 03:35 PM
Surr: Tetrachloro-m-xylene	*43.0*		*40-110*	*%REC*	1	12/22/15 03:35 PM
MERCURY BY CVAA			**SW7470A**		Prep: SW7470 / 12/23/15	Analyst: **LR**
Mercury	ND		0.00020	mg/L	1	12/26/15 10:19 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A / 12/28/15	Analyst: **ML**
Arsenic	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Barium	**0.14**		**0.0050**	**mg/L**	1	12/28/15 10:24 PM
Cadmium	ND		0.0020	mg/L	1	12/28/15 10:24 PM
Chromium	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Copper	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Lead	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Selenium	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Silver	ND		0.0050	mg/L	1	12/28/15 10:24 PM
Zinc	ND		0.010	mg/L	1	12/28/15 10:24 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3511 / 12/22/15	Analyst: **RM**
2-Chloronaphthalene	ND		5.0	µg/L	1	12/28/15 11:02 PM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Acenaphthene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Acenaphthylene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Anthracene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(a)anthracene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(a)pyrene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(b)fluoranthene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(g,h,i)perylene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Benzo(k)fluoranthene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Chrysene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Dibenzo(a,h)anthracene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Fluoranthene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Fluorene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Indeno(1,2,3-cd)pyrene	ND		5.0	µg/L	1	12/28/15 11:02 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-1 **Lab ID:** 15121249-06
Collection Date: 12/16/15 12:30 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Phenanthrene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Pyrene	ND		5.0	µg/L	1	12/28/15 11:02 PM
Surr: 2-Fluorobiphenyl	*118*		*20-140*	*%REC*	1	12/28/15 11:02 PM
Surr: 4-Terphenyl-d14	*125*		*22-172*	*%REC*	1	12/28/15 11:02 PM
Surr: Nitrobenzene-d5	*136*		*8-140*	*%REC*	1	12/28/15 11:02 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **DD**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1,1-Trichloroethane	**1.8**		**1.0**	**µg/L**	1	12/24/15 07:04 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
2-Butanone	ND		5.0	µg/L	1	12/24/15 07:04 AM
2-Hexanone	ND		5.0	µg/L	1	12/24/15 07:04 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/24/15 07:04 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/24/15 07:04 AM
Acetone	ND		10	µg/L	1	12/24/15 07:04 AM
Acrylonitrile	ND		1.0	µg/L	1	12/24/15 07:04 AM
Benzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Bromochloromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Bromoform	ND		1.0	µg/L	1	12/24/15 07:04 AM
Bromomethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Carbon disulfide	ND		1.0	µg/L	1	12/24/15 07:04 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/24/15 07:04 AM
Chlorobenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Chloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-1 **Lab ID:** 15121249-06
Collection Date: 12/16/15 12:30 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		1.0	µg/L	1	12/24/15 07:04 AM
Chloromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 07:04 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Dibromomethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Diethyl ether	ND		1.0	µg/L	1	12/24/15 07:04 AM
Ethylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Hexachloroethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Hexane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
m,p-Xylene	ND		2.0	µg/L	1	12/24/15 07:04 AM
Methyl iodide	ND		1.0	µg/L	1	12/24/15 07:04 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/24/15 07:04 AM
Methylene chloride	ND		5.0	µg/L	1	12/24/15 07:04 AM
Naphthalene	ND		5.0	µg/L	1	12/24/15 07:04 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/24/15 07:04 AM
o-Xylene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Styrene	ND		1.0	µg/L	1	12/24/15 07:04 AM
Tetrachloroethene	**5.0**		**1.0**	**µg/L**	1	12/24/15 07:04 AM
Toluene	ND		1.0	µg/L	1	12/24/15 07:04 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 07:04 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 07:04 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/24/15 07:04 AM
Trichloroethene	**1.1**		**1.0**	**µg/L**	1	12/24/15 07:04 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/24/15 07:04 AM
Vinyl acetate	ND		1.0	µg/L	1	12/24/15 07:04 AM
Vinyl chloride	ND		1.0	µg/L	1	12/24/15 07:04 AM
Xylenes, Total	ND		3.0	µg/L	1	12/24/15 07:04 AM
Surr: 1,2-Dichloroethane-d4	*96.4*		*75-120*	*%REC*	1	12/24/15 07:04 AM
Surr: 4-Bromofluorobenzene	*97.0*		*80-110*	*%REC*	1	12/24/15 07:04 AM
Surr: Dibromofluoromethane	*96.8*		*85-115*	*%REC*	1	12/24/15 07:04 AM
Surr: Toluene-d8	*94.0*		*85-110*	*%REC*	1	12/24/15 07:04 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-2 **Lab ID:** 15121249-07
Collection Date: 12/16/15 01:50 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3510 / 12/22/15	Analyst: **BLM**
Aroclor 1016	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1221	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1232	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1242	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1248	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1254	ND		0.20	µg/L	1	12/22/15 04:06 PM
Aroclor 1260	ND		0.20	µg/L	1	12/22/15 04:06 PM
Surr: Decachlorobiphenyl	*81.0*		*40-110*	*%REC*	1	12/22/15 04:06 PM
Surr: Tetrachloro-m-xylene	*44.0*		*40-110*	*%REC*	1	12/22/15 04:06 PM
MERCURY BY CVAA			**SW7470A**		Prep: SW7470 / 12/23/15	Analyst: **LR**
Mercury	ND		0.00020	mg/L	1	12/26/15 10:21 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A / 12/28/15	Analyst: **ML**
Arsenic	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Barium	**0.069**		**0.0050**	**mg/L**	1	12/28/15 10:30 PM
Cadmium	ND		0.0020	mg/L	1	12/28/15 10:30 PM
Chromium	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Copper	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Lead	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Selenium	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Silver	ND		0.0050	mg/L	1	12/28/15 10:30 PM
Zinc	ND		0.010	mg/L	1	12/28/15 10:30 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3511 / 12/22/15	Analyst: **RM**
2-Chloronaphthalene	ND		5.0	µg/L	1	12/28/15 11:26 PM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Acenaphthene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Acenaphthylene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Anthracene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(a)anthracene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(a)pyrene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(b)fluoranthene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(g,h,i)perylene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Benzo(k)fluoranthene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Chrysene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Dibenzo(a,h)anthracene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Fluoranthene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Fluorene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Indeno(1,2,3-cd)pyrene	ND		5.0	µg/L	1	12/28/15 11:26 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-2 **Lab ID:** 15121249-07
Collection Date: 12/16/15 01:50 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Phenanthrene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Pyrene	ND		5.0	µg/L	1	12/28/15 11:26 PM
Surr: 2-Fluorobiphenyl	*115*		*20-140*	*%REC*	1	12/28/15 11:26 PM
Surr: 4-Terphenyl-d14	*109*		*22-172*	*%REC*	1	12/28/15 11:26 PM
Surr: Nitrobenzene-d5	*124*		*8-140*	*%REC*	1	12/28/15 11:26 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,1-Dichloroethane	**4.3**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
2-Butanone	ND		5.0	µg/L	1	12/29/15 01:00 AM
2-Hexanone	ND		5.0	µg/L	1	12/29/15 01:00 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/29/15 01:00 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/29/15 01:00 AM
Acetone	ND		10	µg/L	1	12/29/15 01:00 AM
Acrylonitrile	ND		1.0	µg/L	1	12/29/15 01:00 AM
Benzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Bromochloromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Bromoform	ND		1.0	µg/L	1	12/29/15 01:00 AM
Bromomethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Carbon disulfide	ND		1.0	µg/L	1	12/29/15 01:00 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/29/15 01:00 AM
Chlorobenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Chloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-2 **Lab ID:** 15121249-07
Collection Date: 12/16/15 01:50 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		1.0	µg/L	1	12/29/15 01:00 AM
Chloromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
cis-1,2-Dichloroethene	**6.6**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Dibromomethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Diethyl ether	ND		1.0	µg/L	1	12/29/15 01:00 AM
Ethylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Hexachloroethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Hexane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
m,p-Xylene	ND		2.0	µg/L	1	12/29/15 01:00 AM
Methyl iodide	ND		1.0	µg/L	1	12/29/15 01:00 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/29/15 01:00 AM
Methylene chloride	ND		5.0	µg/L	1	12/29/15 01:00 AM
Naphthalene	ND		5.0	µg/L	1	12/29/15 01:00 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/29/15 01:00 AM
o-Xylene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Styrene	ND		1.0	µg/L	1	12/29/15 01:00 AM
Tetrachloroethene	**5.7**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
Toluene	ND		1.0	µg/L	1	12/29/15 01:00 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:00 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/29/15 01:00 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/29/15 01:00 AM
Trichloroethene	**3.0**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/29/15 01:00 AM
Vinyl acetate	ND		1.0	µg/L	1	12/29/15 01:00 AM
Vinyl chloride	**1.4**		**1.0**	**µg/L**	1	12/29/15 01:00 AM
Xylenes, Total	ND		3.0	µg/L	1	12/29/15 01:00 AM
Surr: 1,2-Dichloroethane-d4	*97.0*		*75-120*	*%REC*	1	12/29/15 01:00 AM
Surr: 4-Bromofluorobenzene	*97.4*		*80-110*	*%REC*	1	12/29/15 01:00 AM
Surr: Dibromofluoromethane	*97.2*		*85-115*	*%REC*	1	12/29/15 01:00 AM
Surr: Toluene-d8	*98.0*		*85-110*	*%REC*	1	12/29/15 01:00 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-3 **Lab ID:** 15121249-08
Collection Date: 12/16/15 03:40 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3510 / 12/22/15	Analyst: **BLM**
Aroclor 1016	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1221	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1232	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1242	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1248	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1254	ND		0.20	µg/L	1	12/22/15 04:38 PM
Aroclor 1260	ND		0.20	µg/L	1	12/22/15 04:38 PM
Surr: Decachlorobiphenyl	*67.0*		*40-110*	*%REC*	1	12/22/15 04:38 PM
Surr: Tetrachloro-m-xylene	*40.0*		*40-110*	*%REC*	1	12/22/15 04:38 PM
MERCURY BY CVAA			**SW7470A**		Prep: SW7470 / 12/23/15	Analyst: **LR**
Mercury	ND		0.00020	mg/L	1	12/26/15 10:23 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A / 12/28/15	Analyst: **ML**
Arsenic	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Barium	**0.040**		**0.0050**	**mg/L**	1	12/28/15 10:36 PM
Cadmium	ND		0.0020	mg/L	1	12/28/15 10:36 PM
Chromium	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Copper	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Lead	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Selenium	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Silver	ND		0.0050	mg/L	1	12/28/15 10:36 PM
Zinc	ND		0.010	mg/L	1	12/28/15 10:36 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3511 / 12/23/15	Analyst: **RM**
2-Chloronaphthalene	ND		5.0	µg/L	1	12/29/15 09:21 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Acenaphthene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Acenaphthylene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Anthracene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(a)anthracene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(a)pyrene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(b)fluoranthene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(g,h,i)perylene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Benzo(k)fluoranthene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Chrysene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Dibenzo(a,h)anthracene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Fluoranthene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Fluorene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Indeno(1,2,3-cd)pyrene	ND		5.0	µg/L	1	12/29/15 09:21 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-3 **Lab ID:** 15121249-08
Collection Date: 12/16/15 03:40 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Phenanthrene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Pyrene	ND		5.0	µg/L	1	12/29/15 09:21 AM
Surr: 2-Fluorobiphenyl	*100*		*20-140*	*%REC*	1	12/29/15 09:21 AM
Surr: 4-Terphenyl-d14	*95.1*		*22-172*	*%REC*	1	12/29/15 09:21 AM
Surr: Nitrobenzene-d5	*121*		*8-140*	*%REC*	1	12/29/15 09:21 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **DD**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
2-Butanone	ND		5.0	µg/L	1	12/24/15 06:15 AM
2-Hexanone	ND		5.0	µg/L	1	12/24/15 06:15 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/24/15 06:15 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/24/15 06:15 AM
Acetone	ND		10	µg/L	1	12/24/15 06:15 AM
Acrylonitrile	ND		1.0	µg/L	1	12/24/15 06:15 AM
Benzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Bromochloromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Bromoform	ND		1.0	µg/L	1	12/24/15 06:15 AM
Bromomethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Carbon disulfide	ND		1.0	µg/L	1	12/24/15 06:15 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/24/15 06:15 AM
Chlorobenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Chloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-3 **Lab ID:** 15121249-08
Collection Date: 12/16/15 03:40 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		1.0	µg/L	1	12/24/15 06:15 AM
Chloromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 06:15 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Dibromomethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Diethyl ether	ND		1.0	µg/L	1	12/24/15 06:15 AM
Ethylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Hexachloroethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Hexane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
m,p-Xylene	ND		2.0	µg/L	1	12/24/15 06:15 AM
Methyl iodide	ND		1.0	µg/L	1	12/24/15 06:15 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/24/15 06:15 AM
Methylene chloride	ND		5.0	µg/L	1	12/24/15 06:15 AM
Naphthalene	ND		5.0	µg/L	1	12/24/15 06:15 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/24/15 06:15 AM
o-Xylene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Styrene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Tetrachloroethene	**1.2**		**1.0**	**µg/L**	1	12/24/15 06:15 AM
Toluene	ND		1.0	µg/L	1	12/24/15 06:15 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 06:15 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 06:15 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/24/15 06:15 AM
Trichloroethene	ND		1.0	µg/L	1	12/24/15 06:15 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/24/15 06:15 AM
Vinyl acetate	ND		1.0	µg/L	1	12/24/15 06:15 AM
Vinyl chloride	ND		1.0	µg/L	1	12/24/15 06:15 AM
Xylenes, Total	ND		3.0	µg/L	1	12/24/15 06:15 AM
Surr: 1,2-Dichloroethane-d4	*96.5*		*75-120*	*%REC*	1	12/24/15 06:15 AM
Surr: 4-Bromofluorobenzene	*98.6*		*80-110*	*%REC*	1	12/24/15 06:15 AM
Surr: Dibromofluoromethane	*97.6*		*85-115*	*%REC*	1	12/24/15 06:15 AM
Surr: Toluene-d8	*93.3*		*85-110*	*%REC*	1	12/24/15 06:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-4 **Lab ID:** 15121249-09
Collection Date: 12/16/15 04:55 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PCBS			**SW8082**		Prep: SW3510 / 12/22/15	Analyst: **BLM**
Aroclor 1016	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1221	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1232	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1242	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1248	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1254	ND		0.20	µg/L	1	12/22/15 04:53 PM
Aroclor 1260	ND		0.20	µg/L	1	12/22/15 04:53 PM
Surr: Decachlorobiphenyl	*51.0*		*40-110*	*%REC*	1	12/22/15 04:53 PM
Surr: Tetrachloro-m-xylene	*40.0*		*40-110*	*%REC*	1	12/22/15 04:53 PM
MERCURY BY CVAA			**SW7470A**		Prep: SW7470 / 12/23/15	Analyst: **LR**
Mercury	ND		0.00020	mg/L	1	12/26/15 10:32 PM
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A / 12/28/15	Analyst: **ML**
Arsenic	ND		0.0050	mg/L	1	12/28/15 10:42 PM
Barium	**0.019**		**0.0050**	**mg/L**	1	12/28/15 10:42 PM
Cadmium	ND		0.0020	mg/L	1	12/28/15 10:42 PM
Chromium	**0.026**		**0.0050**	**mg/L**	1	12/28/15 10:42 PM
Copper	**0.012**		**0.0050**	**mg/L**	1	12/28/15 10:42 PM
Lead	ND		0.0050	mg/L	1	12/28/15 10:42 PM
Selenium	ND		0.0050	mg/L	1	12/28/15 10:42 PM
Silver	ND		0.0050	mg/L	1	12/28/15 10:42 PM
Zinc	ND		0.010	mg/L	1	12/28/15 10:42 PM
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3511 / 12/23/15	Analyst: **RM**
2-Chloronaphthalene	ND		5.0	µg/L	1	12/29/15 09:44 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Acenaphthene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Acenaphthylene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Anthracene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(a)anthracene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(a)pyrene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(b)fluoranthene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(g,h,i)perylene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Benzo(k)fluoranthene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Chrysene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Dibenzo(a,h)anthracene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Fluoranthene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Fluorene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Indeno(1,2,3-cd)pyrene	ND		5.0	µg/L	1	12/29/15 09:44 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-4 **Lab ID:** 15121249-09
Collection Date: 12/16/15 04:55 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Naphthalene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Phenanthrene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Pyrene	ND		5.0	µg/L	1	12/29/15 09:44 AM
Surr: 2-Fluorobiphenyl	*92.1*		*20-140*	*%REC*	1	12/29/15 09:44 AM
Surr: 4-Terphenyl-d14	*94.9*		*22-172*	*%REC*	1	12/29/15 09:44 AM
Surr: Nitrobenzene-d5	*122*		*8-140*	*%REC*	1	12/29/15 09:44 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
2-Butanone	ND		5.0	µg/L	1	12/29/15 01:26 AM
2-Hexanone	ND		5.0	µg/L	1	12/29/15 01:26 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/29/15 01:26 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/29/15 01:26 AM
Acetone	ND		10	µg/L	1	12/29/15 01:26 AM
Acrylonitrile	ND		1.0	µg/L	1	12/29/15 01:26 AM
Benzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Bromochloromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Bromoform	ND		1.0	µg/L	1	12/29/15 01:26 AM
Bromomethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Carbon disulfide	ND		1.0	µg/L	1	12/29/15 01:26 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/29/15 01:26 AM
Chlorobenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Chloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: TMW-4 **Lab ID:** 15121249-09
Collection Date: 12/16/15 04:55 PM **Matrix:** GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		1.0	µg/L	1	12/29/15 01:26 AM
Chloromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Dibromomethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Diethyl ether	ND		1.0	µg/L	1	12/29/15 01:26 AM
Ethylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Hexachloroethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Hexane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
m,p-Xylene	ND		2.0	µg/L	1	12/29/15 01:26 AM
Methyl iodide	ND		1.0	µg/L	1	12/29/15 01:26 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/29/15 01:26 AM
Methylene chloride	ND		5.0	µg/L	1	12/29/15 01:26 AM
Naphthalene	ND		5.0	µg/L	1	12/29/15 01:26 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/29/15 01:26 AM
o-Xylene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Styrene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Tetrachloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Toluene	ND		1.0	µg/L	1	12/29/15 01:26 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/29/15 01:26 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/29/15 01:26 AM
Trichloroethene	ND		1.0	µg/L	1	12/29/15 01:26 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/29/15 01:26 AM
Vinyl acetate	ND		1.0	µg/L	1	12/29/15 01:26 AM
Vinyl chloride	ND		1.0	µg/L	1	12/29/15 01:26 AM
Xylenes, Total	ND		3.0	µg/L	1	12/29/15 01:26 AM
Surr: 1,2-Dichloroethane-d4	*94.8*		*75-120*	*%REC*	1	12/29/15 01:26 AM
Surr: 4-Bromofluorobenzene	*96.2*		*80-110*	*%REC*	1	12/29/15 01:26 AM
Surr: Dibromofluoromethane	*99.8*		*85-115*	*%REC*	1	12/29/15 01:26 AM
Surr: Toluene-d8	*95.8*		*85-110*	*%REC*	1	12/29/15 01:26 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Field Blank **Lab ID:** 15121249-10
Collection Date: 12/16/15 02:00 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **DD**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
2-Butanone	ND		5.0	µg/L	1	12/24/15 02:30 AM
2-Hexanone	ND		5.0	µg/L	1	12/24/15 02:30 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/24/15 02:30 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/24/15 02:30 AM
Acetone	ND		10	µg/L	1	12/24/15 02:30 AM
Acrylonitrile	ND		1.0	µg/L	1	12/24/15 02:30 AM
Benzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Bromochloromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Bromoform	ND		1.0	µg/L	1	12/24/15 02:30 AM
Bromomethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Carbon disulfide	ND		1.0	µg/L	1	12/24/15 02:30 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/24/15 02:30 AM
Chlorobenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Chloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Chloroform	ND		1.0	µg/L	1	12/24/15 02:30 AM
Chloromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Dibromomethane	ND		1.0	µg/L	1	12/24/15 02:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Field Blank **Lab ID:** 15121249-10
Collection Date: 12/16/15 02:00 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Diethyl ether	ND		1.0	µg/L	1	12/24/15 02:30 AM
Ethylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Hexachloroethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Hexane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
m,p-Xylene	ND		2.0	µg/L	1	12/24/15 02:30 AM
Methyl iodide	ND		1.0	µg/L	1	12/24/15 02:30 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/24/15 02:30 AM
Methylene chloride	ND		5.0	µg/L	1	12/24/15 02:30 AM
Naphthalene	ND		5.0	µg/L	1	12/24/15 02:30 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/24/15 02:30 AM
o-Xylene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Styrene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Tetrachloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Toluene	ND		1.0	µg/L	1	12/24/15 02:30 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 02:30 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/24/15 02:30 AM
Trichloroethene	ND		1.0	µg/L	1	12/24/15 02:30 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/24/15 02:30 AM
Vinyl acetate	ND		1.0	µg/L	1	12/24/15 02:30 AM
Vinyl chloride	ND		1.0	µg/L	1	12/24/15 02:30 AM
Xylenes, Total	ND		3.0	µg/L	1	12/24/15 02:30 AM
Surr: 1,2-Dichloroethane-d4	*94.5*		*75-120*	*%REC*	1	12/24/15 02:30 AM
Surr: 4-Bromofluorobenzene	*98.5*		*80-110*	*%REC*	1	12/24/15 02:30 AM
Surr: Dibromofluoromethane	*96.4*		*85-115*	*%REC*	1	12/24/15 02:30 AM
Surr: Toluene-d8	*92.2*		*85-110*	*%REC*	1	12/24/15 02:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Trip Blank (water) **Lab ID:** 15121249-11
Collection Date: 12/16/15 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**			Analyst: **DD**
1,1,1,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1,1-Trichloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1,2,2-Tetrachloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1,2-Trichloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1,2-Trichlorotrifluoroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1-Dichloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,1-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2,3-Trichloropropane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2,4-Trichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2,4-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dibromo-3-chloropropane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dibromoethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dichloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,2-Dichloropropane	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,3,5-Trimethylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,3-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
1,4-Dichlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
2-Butanone	ND		5.0	µg/L	1	12/24/15 02:55 AM
2-Hexanone	ND		5.0	µg/L	1	12/24/15 02:55 AM
2-Methylnaphthalene	ND		5.0	µg/L	1	12/24/15 02:55 AM
4-Methyl-2-pentanone	ND		1.0	µg/L	1	12/24/15 02:55 AM
Acetone	ND		10	µg/L	1	12/24/15 02:55 AM
Acrylonitrile	ND		1.0	µg/L	1	12/24/15 02:55 AM
Benzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Bromochloromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Bromodichloromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Bromoform	ND		1.0	µg/L	1	12/24/15 02:55 AM
Bromomethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Carbon disulfide	ND		1.0	µg/L	1	12/24/15 02:55 AM
Carbon tetrachloride	ND		1.0	µg/L	1	12/24/15 02:55 AM
Chlorobenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Chloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Chloroform	ND		1.0	µg/L	1	12/24/15 02:55 AM
Chloromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
cis-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
cis-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Dibromochloromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Dibromomethane	ND		1.0	µg/L	1	12/24/15 02:55 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Trip Blank (water) **Lab ID:** 15121249-11
Collection Date: 12/16/15 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Diethyl ether	ND		1.0	µg/L	1	12/24/15 02:55 AM
Ethylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Hexachloroethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Hexane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Isopropylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
m,p-Xylene	ND		2.0	µg/L	1	12/24/15 02:55 AM
Methyl iodide	ND		1.0	µg/L	1	12/24/15 02:55 AM
Methyl tert-butyl ether	ND		1.0	µg/L	1	12/24/15 02:55 AM
Methylene chloride	ND		5.0	µg/L	1	12/24/15 02:55 AM
Naphthalene	ND		5.0	µg/L	1	12/24/15 02:55 AM
n-Propylbenzene	ND		1.0	µg/L	1	12/24/15 02:55 AM
o-Xylene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Styrene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Tetrachloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Toluene	ND		1.0	µg/L	1	12/24/15 02:55 AM
trans-1,2-Dichloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
trans-1,3-Dichloropropene	ND		1.0	µg/L	1	12/24/15 02:55 AM
trans-1,4-Dichloro-2-butene	ND		2.0	µg/L	1	12/24/15 02:55 AM
Trichloroethene	ND		1.0	µg/L	1	12/24/15 02:55 AM
Trichlorofluoromethane	ND		1.0	µg/L	1	12/24/15 02:55 AM
Vinyl acetate	ND		1.0	µg/L	1	12/24/15 02:55 AM
Vinyl chloride	ND		1.0	µg/L	1	12/24/15 02:55 AM
Xylenes, Total	ND		3.0	µg/L	1	12/24/15 02:55 AM
Surr: 1,2-Dichloroethane-d4	*95.3*		*75-120*	*%REC*	1	12/24/15 02:55 AM
Surr: 4-Bromofluorobenzene	*97.8*		*80-110*	*%REC*	1	12/24/15 02:55 AM
Surr: Dibromofluoromethane	*98.5*		*85-115*	*%REC*	1	12/24/15 02:55 AM
Surr: Toluene-d8	*92.8*		*85-110*	*%REC*	1	12/24/15 02:55 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Trip Blank (soil) **Lab ID:** 15121249-12
Collection Date: 12/16/15 **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/23/15	Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1,1-Trichloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1,2,2-Tetrachloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1,2-Trichloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1,2-Trichlorotrifluoroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1-Dichloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,1-Dichloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2,3-Trichloropropane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2,4-Trichlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2,4-Trimethylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dibromo-3-chloropropane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dibromoethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dichlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dichloroethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,2-Dichloropropane	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,3,5-Trimethylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,3-Dichlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
1,4-Dichlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
2-Butanone	ND		200	µg/Kg	1	12/23/15 07:30 PM
2-Hexanone	ND		30	µg/Kg	1	12/23/15 07:30 PM
2-Methylnaphthalene	ND		100	µg/Kg	1	12/23/15 07:30 PM
4-Methyl-2-pentanone	ND		30	µg/Kg	1	12/23/15 07:30 PM
Acetone	ND		100	µg/Kg	1	12/23/15 07:30 PM
Acrylonitrile	ND		100	µg/Kg	1	12/23/15 07:30 PM
Benzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Bromochloromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Bromodichloromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Bromoform	ND		30	µg/Kg	1	12/23/15 07:30 PM
Bromomethane	ND		75	µg/Kg	1	12/23/15 07:30 PM
Carbon disulfide	ND		30	µg/Kg	1	12/23/15 07:30 PM
Carbon tetrachloride	ND		30	µg/Kg	1	12/23/15 07:30 PM
Chlorobenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Chloroethane	ND		100	µg/Kg	1	12/23/15 07:30 PM
Chloroform	ND		30	µg/Kg	1	12/23/15 07:30 PM
Chloromethane	ND		100	µg/Kg	1	12/23/15 07:30 PM
cis-1,2-Dichloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
cis-1,3-Dichloropropene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Dibromochloromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Dibromomethane	ND		30	µg/Kg	1	12/23/15 07:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *30-Dec-15*

Client: Fleis & Vandenbrink Engineering, Inc.
Project: Alcott Street Phase II 825390 **Work Order:** 15121249
Sample ID: Trip Blank (soil) **Lab ID:** 15121249-12
Collection Date: 12/16/15 **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Diethyl ether	ND		30	µg/Kg	1	12/23/15 07:30 PM
Ethylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Hexachloroethane	ND		100	µg/Kg	1	12/23/15 07:30 PM
Hexane	ND		100	µg/Kg	1	12/23/15 07:30 PM
Isopropylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
m,p-Xylene	ND		60	µg/Kg	1	12/23/15 07:30 PM
Methyl iodide	ND		75	µg/Kg	1	12/23/15 07:30 PM
Methyl tert-butyl ether	ND		30	µg/Kg	1	12/23/15 07:30 PM
Methylene chloride	ND		30	µg/Kg	1	12/23/15 07:30 PM
Naphthalene	ND		100	µg/Kg	1	12/23/15 07:30 PM
n-Propylbenzene	ND		30	µg/Kg	1	12/23/15 07:30 PM
o-Xylene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Styrene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Tetrachloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Toluene	ND		30	µg/Kg	1	12/23/15 07:30 PM
trans-1,2-Dichloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
trans-1,3-Dichloropropene	ND		30	µg/Kg	1	12/23/15 07:30 PM
trans-1,4-Dichloro-2-butene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Trichloroethene	ND		30	µg/Kg	1	12/23/15 07:30 PM
Trichlorofluoromethane	ND		30	µg/Kg	1	12/23/15 07:30 PM
Vinyl acetate	ND		30	µg/Kg	1	12/23/15 07:30 PM
Vinyl chloride	ND		30	µg/Kg	1	12/23/15 07:30 PM
Xylenes, Total	ND		90	µg/Kg	1	12/23/15 07:30 PM
Surr: 1,2-Dichloroethane-d4	*98.5*		*70-130*	*%REC*	1	12/23/15 07:30 PM
Surr: 4-Bromofluorobenzene	*92.6*		*70-130*	*%REC*	1	12/23/15 07:30 PM
Surr: Dibromofluoromethane	*91.8*		*70-130*	*%REC*	1	12/23/15 07:30 PM
Surr: Toluene-d8	*98.2*		*70-130*	*%REC*	1	12/23/15 07:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **80547** Instrument ID **GC12** Method: **SW8082**

MBLK Sample ID: **PBLKW1-80547-80547** Units: **µg/L** Analysis Date: **12/22/15 02:31 PM**

Client ID: Run ID: **GC12_151222A** SeqNo: **3633461** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	0.20								
Aroclor 1221	ND	0.20								
Aroclor 1232	ND	0.20								
Aroclor 1242	ND	0.20								
Aroclor 1248	ND	0.20								
Aroclor 1254	ND	0.20								
Aroclor 1260	ND	0.20								
Surr: Decachlorobiphenyl	*0.087*	0	*0.1*	0	*87*	*40-110*	0			
Surr: Tetrachloro-m-xylene	*0.054*	0	*0.1*	0	*54*	*40-110*	0			

LCS Sample ID: **PLCSW1-80547-80547** Units: **µg/L** Analysis Date: **12/22/15 02:47 PM**

Client ID: Run ID: **GC12_151222A** SeqNo: **3633462** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	1.513	0.20	2.5	0	60.5	50-130	0			
Aroclor 1260	1.868	0.20	2.5	0	74.7	50-130	0			
Surr: Decachlorobiphenyl	*0.082*	0	*0.1*	0	*82*	*40-110*	0			
Surr: Tetrachloro-m-xylene	*0.055*	0	*0.1*	0	*55*	*40-110*	0			

MS Sample ID: **15121249-06D MS** Units: **µg/L** Analysis Date: **12/22/15 03:50 PM**

Client ID: **TMW-1** Run ID: **GC12_151222A** SeqNo: **3633465** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	1.1	0.20	2.5	0	44	40-140	0			
Aroclor 1260	1.784	0.20	2.5	0	71.4	40-140	0			
Surr: Decachlorobiphenyl	*0.078*	0	*0.1*	0	*78*	*40-110*	0			
Surr: Tetrachloro-m-xylene	*0.038*	0	*0.1*	0	*38*	*40-110*	0			*S*

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80547** Instrument ID **GC12** Method: **SW8082**

DUP Sample ID: **15121249-07D DUP** Units: **µg/L** Analysis Date: **12/22/15 04:21 PM**
Client ID: **TMW-2** Run ID: **GC12_151222A** SeqNo: **3633959** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1221	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1232	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1242	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1248	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1254	ND	0.20	0	0	0	0-0	0	0	50	
Aroclor 1260	ND	0.20	0	0	0	0-0	0	0	50	
Surr: Decachlorobiphenyl	*0.086*	0	*0.1*	0	*86*	*40-110*	0.081	*5.99*	*50*	
Surr: Tetrachloro-m-xylene	*0.043*	0	*0.1*	0	*43*	*40-110*	0.044	*2.3*	*50*	

The following samples were analyzed in this batch:

15121249-06D	15121249-07D	15121249-08D
15121249-09D		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80712** Instrument ID **GC14** Method: **SW8082**

MBLK Sample ID: **PBLKS1-80712-80712** Units: **µg/Kg** Analysis Date: **12/28/15 05:28 PM**
Client ID: Run ID: **GC14_151228A** SeqNo: **3639488** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	ND	83								
Aroclor 1221	ND	83								
Aroclor 1232	ND	83								
Aroclor 1242	ND	83								
Aroclor 1248	ND	83								
Aroclor 1254	ND	83								
Aroclor 1260	ND	83								
Surr: Decachlorobiphenyl	*30*	0	*33.3*	0	*90.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*29.67*	0	*33.3*	0	*89.1*	*45-124*	0			

LCS Sample ID: **PLCSS1-80712-80712** Units: **µg/Kg** Analysis Date: **12/28/15 05:44 PM**
Client ID: Run ID: **GC14_151228A** SeqNo: **3639489** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	815.3	83	833	0	97.9	50-130	0			
Aroclor 1260	867.7	83	833	0	104	50-130	0			
Surr: Decachlorobiphenyl	*32*	0	*33.3*	0	*96.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*27*	0	*33.3*	0	*81.1*	*45-124*	0			

MS Sample ID: **15121413-01B MS** Units: **µg/Kg** Analysis Date: **12/28/15 06:49 PM**
Client ID: Run ID: **GC14_151228A** SeqNo: **3639491** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	840.2	80	802	0	105	40-140	0			
Aroclor 1260	863.3	80	802	0	108	40-140	0			
Surr: Decachlorobiphenyl	*26.64*	0	*32.06*	0	*83.1*	*40-140*	0			
Surr: Tetrachloro-m-xylene	*25.67*	0	*32.06*	0	*80.1*	*45-124*	0			

MSD Sample ID: **15121413-01B MSD** Units: **µg/Kg** Analysis Date: **12/28/15 07:05 PM**
Client ID: Run ID: **GC14_151228A** SeqNo: **3639492** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	785.4	80	797.9	0	98.4	40-140	840.2	6.73	50	
Aroclor 1260	775.5	80	797.9	0	97.2	40-140	863.3	10.7	50	
Surr: Decachlorobiphenyl	*23.95*	0	*31.9*	0	*75.1*	*40-140*	26.64	*10.6*	*50*	
Surr: Tetrachloro-m-xylene	*25.22*	0	*31.9*	0	*79.1*	*45-124*	25.67	*1.77*	*50*	

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80667** Instrument ID **HG1** Method: **SW7470A**

MBLK Sample ID: **MBLK-80667-80667** Units: **mg/L** Analysis Date: **12/26/15 09:50 PM**
Client ID: Run ID: **HG1_151226A** SeqNo: **3636222** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000021	0.00020								J

LCS Sample ID: **LCS-80667-80667** Units: **mg/L** Analysis Date: **12/26/15 09:52 PM**
Client ID: Run ID: **HG1_151226A** SeqNo: **3636223** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00201	0.00020	0.002	0	100	80-120	0			

MS Sample ID: **15121266-28AMS** Units: **mg/L** Analysis Date: **12/26/15 10:36 PM**
Client ID: Run ID: **HG1_151226A** SeqNo: **3636243** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0206	0.0020	0.02	0.00024	102	75-125	0			

MSD Sample ID: **15121266-28AMSD** Units: **mg/L** Analysis Date: **12/26/15 10:38 PM**
Client ID: Run ID: **HG1_151226A** SeqNo: **3636244** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0198	0.0020	0.02	0.00024	97.8	75-125	0.0206	3.96	20	

The following samples were analyzed in this batch:

15121249-06C	15121249-07C	15121249-08C
15121249-09C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80742** Instrument ID **HG1** Method: **SW7471B**

MBLK	Sample ID: **MBLK-80742-80742**			Units: **mg/Kg**			Analysis Date: **12/29/15 03:56 PM**			
Client ID:	Run ID: **HG1_151229A**			SeqNo: **3640787**			Prep Date: **12/29/15**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.020								

LCS	Sample ID: **LCS-80742-80742**			Units: **mg/Kg**			Analysis Date: **12/30/15 01:11 PM**			
Client ID:	Run ID: **HG1_151230A**			SeqNo: **3641947**			Prep Date: **12/29/15**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.165	0.020	0.1665	0	99.1	80-120	0			

MS	Sample ID: **15121399-01BMS**			Units: **mg/Kg**			Analysis Date: **12/29/15 04:29 PM**			
Client ID:	Run ID: **HG1_151229A**			SeqNo: **3640801**			Prep Date: **12/29/15**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1387	0.014	0.1205	0.01246	105	75-125	0			

MSD	Sample ID: **15121399-01BMSD**			Units: **mg/Kg**			Analysis Date: **12/29/15 04:31 PM**			
Client ID:	Run ID: **HG1_151229A**			SeqNo: **3640802**			Prep Date: **12/29/15**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1327	0.014	0.1143	0.01246	105	75-125	0.1387	4.42	35	

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80644** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-80644-80644** Units: **mg/Kg** Analysis Date: **12/23/15 05:53 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636594** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.25								
Barium	ND	0.25								
Cadmium	ND	0.10								
Chromium	0.0609	0.25								J
Copper	ND	0.25								
Lead	ND	0.25								
Selenium	ND	0.25								
Silver	ND	0.25								
Zinc	ND	0.50								

LCS Sample ID: **LCS-80644-80644** Units: **mg/Kg** Analysis Date: **12/23/15 05:59 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636595** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.42	0.25	5	0	88.4	80-120	0			
Barium	4.676	0.25	5	0	93.5	80-120	0			
Cadmium	4.662	0.10	5	0	93.2	80-120	0			
Chromium	4.952	0.25	5	0	99	80-120	0			
Copper	4.642	0.25	5	0	92.8	80-120	0			
Lead	4.813	0.25	5	0	96.3	80-120	0			
Selenium	4.368	0.25	5	0	87.4	80-120	0			
Zinc	4.36	0.50	5	0	87.2	80-120	0			

LCS Sample ID: **LCS-80644-80644** Units: **mg/Kg** Analysis Date: **12/28/15 02:01 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3638026** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Silver	4.76	0.25	5	0	95.2	80-120	0			

MS Sample ID: **15121217-10BMS** Units: **mg/Kg** Analysis Date: **12/23/15 08:33 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636626** Prep Date: **12/23/15** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.63	1.3	6.477	6.789	106	75-125	0			
Barium	67.2	1.3	6.477	57.13	156	75-125	0			SO
Cadmium	8.635	0.52	6.477	1.854	105	75-125	0			
Lead	239.1	1.3	6.477	175.8	977	75-125	0			SO
Selenium	8.049	1.3	6.477	1.676	98.4	75-125	0			
Silver	6.505	1.3	6.477	0.07076	99.3	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80644** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **15121217-12BMS** Units: **mg/Kg** Analysis Date: **12/23/15 09:03 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636631** Prep Date: **12/23/15** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.04	1.4	7.205	2.176	95.3	75-125	0			
Barium	38.73	1.4	7.205	30.46	115	75-125	0			O
Cadmium	7.037	0.58	7.205	0.09023	96.4	75-125	0			
Chromium	422.2	1.4	7.205	448	-358	75-125	0			SO
Copper	15.69	1.4	7.205	10.35	74.2	75-125	0			S
Lead	13.77	1.4	7.205	5.293	118	75-125	0			
Selenium	7.311	1.4	7.205	0.6974	91.8	75-125	0			
Silver	6.38	1.4	7.205	0.04491	87.9	75-125	0			
Zinc	31.35	2.9	7.205	27.83	49	75-125	0			S

MS Sample ID: **15121217-10BMS** Units: **mg/Kg** Analysis Date: **12/28/15 02:14 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3638028** Prep Date: **12/23/15** DF: **40**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	1585	13	6.477	1655	-1080	75-125	0			SO
Copper	409.6	13	6.477	805.7	-6120	75-125	0			SO
Zinc	605.7	26	6.477	749.1	-2210	75-125	0			SO

MSD Sample ID: **15121217-10BMSD** Units: **mg/Kg** Analysis Date: **12/23/15 08:39 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636627** Prep Date: **12/23/15** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	12.91	1.3	6.527	6.789	93.8	75-125	13.63	5.43	25	
Barium	66.5	1.3	6.527	57.13	144	75-125	67.2	1.05	25	SO
Cadmium	8.198	0.52	6.527	1.854	97.2	75-125	8.635	5.18	25	
Lead	160.6	1.3	6.527	175.8	-233	75-125	239.1	39.3	25	SRO
Selenium	7.58	1.3	6.527	1.676	90.4	75-125	8.049	6.01	25	
Silver	6.366	1.3	6.527	0.07076	96.4	75-125	6.505	2.17	25	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80644** Instrument ID **ICPMS1** Method: **SW6020A**

MSD Sample ID: **15121217-12BMSD** Units: **mg/Kg** Analysis Date: **12/23/15 09:09 PM**
Client ID: Run ID: **ICPMS1_151223B** SeqNo: **3636632** Prep Date: **12/23/15** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.228	1.4	7.123	2.176	99	75-125	9.04	2.05	25	
Barium	48.52	1.4	7.123	30.46	254	75-125	38.73	22.4	25	SO
Cadmium	7.179	0.57	7.123	0.09023	99.5	75-125	7.037	2	25	
Chromium	559.8	1.4	7.123	448	1570	75-125	422.2	28	25	SREO
Copper	17.29	1.4	7.123	10.35	97.5	75-125	15.69	9.68	25	
Lead	13.18	1.4	7.123	5.293	111	75-125	13.77	4.38	25	
Selenium	7.048	1.4	7.123	0.6974	89.2	75-125	7.311	3.66	25	
Silver	6.447	1.4	7.123	0.04491	89.9	75-125	6.38	1.04	25	
Zinc	35.64	2.8	7.123	27.83	110	75-125	31.35	12.8	25	

MSD Sample ID: **15121217-10BMSD** Units: **mg/Kg** Analysis Date: **12/28/15 02:20 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3638031** Prep Date: **12/23/15** DF: **40**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	1799	13	6.527	1655	2210	75-125	1585	12.7	25	SO
Copper	534.5	13	6.527	805.7	-4160	75-125	409.6	26.5	25	SRO
Zinc	621.9	26	6.527	749.1	-1950	75-125	605.7	2.64	25	SO

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80710** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-80710-80710** Units: **mg/L** Analysis Date: **12/28/15 06:32 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3639160** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Barium	0.0004295	0.0050								J
Chromium	ND	0.0050								
Copper	0.0002908	0.0050								J
Lead	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	ND	0.010								

MBLK Sample ID: **MBLK-80710-80710** Units: **mg/L** Analysis Date: **12/29/15 01:56 PM**
Client ID: Run ID: **ICPMS1_151229A** SeqNo: **3640250** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	ND	0.0020								

LCS Sample ID: **LCS-80710-80710** Units: **mg/L** Analysis Date: **12/28/15 06:39 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3639162** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.102	0.0050	0.1	0	102	80-120	0			
Barium	0.09895	0.0050	0.1	0	99	80-120	0			
Cadmium	0.1021	0.0020	0.1	0	102	80-120	0			
Chromium	0.09364	0.0050	0.1	0	93.6	80-120	0			
Lead	0.09811	0.0050	0.1	0	98.1	80-120	0			
Selenium	0.1029	0.0050	0.1	0	103	80-120	0			
Silver	0.09145	0.0050	0.1	0	91.4	80-120	0			
Zinc	0.09261	0.010	0.1	0	92.6	80-120	0			

LCS Sample ID: **LCS-80710-80710** Units: **mg/L** Analysis Date: **12/29/15 02:02 PM**
Client ID: Run ID: **ICPMS1_151229A** SeqNo: **3640251** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	0.09994	0.0050	0.1	0	99.9	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80710** Instrument ID **ICPMS1** Method: **SW6020A**

MS Sample ID: **15121250-03CMS** Units: **mg/L** Analysis Date: **12/28/15 11:07 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3639229** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1263	0.0050	0.1	0.02295	103	75-125	0			
Barium	0.4571	0.0050	0.1	0.3648	92.3	75-125	0			
Cadmium	0.1013	0.0020	0.1	-0.00005933	101	75-125	0			
Chromium	0.1009	0.0050	0.1	0.0006319	100	75-125	0			
Copper	0.09692	0.0050	0.1	0.0002301	96.7	75-125	0			
Lead	0.1008	0.0050	0.1	-0.00065	101	75-125	0			
Selenium	0.1019	0.0050	0.1	-0.00007259	102	75-125	0			
Silver	0.09605	0.0050	0.1	-0.00002848	96.1	75-125	0			
Zinc	0.09697	0.010	0.1	0.000928	96	75-125	0			

MSD Sample ID: **15121250-03CMSD** Units: **mg/L** Analysis Date: **12/28/15 11:14 PM**
Client ID: Run ID: **ICPMS1_151228A** SeqNo: **3639230** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1252	0.0050	0.1	0.02295	102	75-125	0.1263	0.875	20	
Barium	0.4646	0.0050	0.1	0.3648	99.8	75-125	0.4571	1.63	20	
Cadmium	0.1013	0.0020	0.1	-0.00005933	101	75-125	0.1013	0	20	
Chromium	0.1011	0.0050	0.1	0.0006319	100	75-125	0.1009	0.198	20	
Copper	0.09689	0.0050	0.1	0.0002301	96.7	75-125	0.09692	0.031	20	
Lead	0.1011	0.0050	0.1	-0.00065	102	75-125	0.1008	0.297	20	
Selenium	0.1013	0.0050	0.1	-0.00007259	101	75-125	0.1019	0.591	20	
Silver	0.09545	0.0050	0.1	-0.00002848	95.5	75-125	0.09605	0.627	20	
Zinc	0.09589	0.010	0.1	0.000928	95	75-125	0.09697	1.12	20	

The following samples were analyzed in this batch:

15121249-06C	15121249-07C	15121249-08C
15121249-09C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80609** Instrument ID **SVMS7** Method: **SW846 8270D**

MBLK Sample ID: **SBLKW1-80609-80609** Units: **µg/L** Analysis Date: **12/23/15 06:30 PM**
Client ID: Run ID: **SVMS7_151223A** SeqNo: **3637005** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(a)anthracene	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Chrysene	ND	5.0								
Dibenzo(a,h)anthracene	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Naphthalene	ND	5.0								
Phenanthrene	ND	5.0								
Pyrene	ND	5.0								
Surr: 2-Fluorobiphenyl	*130.7*	0	*114*	0	*115*	*20-140*	0			
Surr: 4-Terphenyl-d14	*135.3*	0	*114*	0	*119*	*22-172*	0			
Surr: Nitrobenzene-d5	*168.7*	0	*114*	0	*148*	*8-140*	0			*S*

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80609** Instrument ID **SVMS7** Method: **SW846 8270D**

LCS Sample ID: **SLCSW1-80609-80609** Units: **µg/L** Analysis Date: **12/23/15 06:58 PM**
Client ID: Run ID: **SVMS7_151223A** SeqNo: **3637006** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	47.63	5.0	45.7	0	104	50-140	0			
2-Methylnaphthalene	48.09	5.0	45.7	0	105	50-140	0			
Acenaphthene	58.86	5.0	45.7	0	129	60-140	0			
Acenaphthylene	61.21	5.0	45.7	0	134	60-140	0			
Anthracene	60.21	5.0	45.7	0	132	60-140	0			
Benzo(a)anthracene	51.86	5.0	45.7	0	113	60-140	0			
Benzo(a)pyrene	55.38	5.0	45.7	0	121	60-140	0			
Benzo(b)fluoranthene	55.31	5.0	45.7	0	121	60-140	0			
Benzo(g,h,i)perylene	56.66	5.0	45.7	0	124	60-140	0			
Benzo(k)fluoranthene	49.49	5.0	45.7	0	108	60-140	0			
Chrysene	53.26	5.0	45.7	0	117	60-140	0			
Dibenzo(a,h)anthracene	49.3	5.0	45.7	0	108	60-140	0			
Fluoranthene	59.02	5.0	45.7	0	129	60-140	0			
Fluorene	75.29	5.0	45.7	0	165	60-140	0			S
Indeno(1,2,3-cd)pyrene	51.86	5.0	45.7	0	113	60-140	0			
Naphthalene	31.27	5.0	45.7	0	68.4	40-140	0			
Phenanthrene	58.58	5.0	45.7	0	128	60-140	0			
Pyrene	55.54	5.0	45.7	0	122	60-140	0			
Surr: 2-Fluorobiphenyl	*117.4*	0	*114*	0	*103*	*20-140*	0			
Surr: 4-Terphenyl-d14	*118.5*	0	*114*	0	*104*	*22-172*	0			
Surr: Nitrobenzene-d5	*150.1*	0	*114*	0	*132*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80609** Instrument ID **SVMS7** Method: **SW846 8270D**

MS Sample ID: **15121121-02B MS** Units: **µg/L** Analysis Date: **12/23/15 07:25 PM**
Client ID: Run ID: **SVMS7_151223A** SeqNo: **3637007** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	43.15	5.0	45.7	0	94.4	50-140	0			
2-Methylnaphthalene	147.1	5.0	45.7	116.8	66.1	50-140	0			E
Acenaphthene	51.13	5.0	45.7	7.177	96.2	60-140	0			
Acenaphthylene	49.69	5.0	45.7	0	109	60-140	0			
Anthracene	59.02	5.0	45.7	2.423	124	60-140	0			
Benzo(a)anthracene	58.08	5.0	45.7	0	127	60-140	0			
Benzo(a)pyrene	53.21	5.0	45.7	0	116	60-140	0			
Benzo(b)fluoranthene	59.34	5.0	45.7	0	130	60-140	0			
Benzo(g,h,i)perylene	62.47	5.0	45.7	0	137	60-140	0			
Benzo(k)fluoranthene	45.78	5.0	45.7	0	100	60-140	0			
Chrysene	47.25	5.0	45.7	0	103	60-140	0			
Dibenzo(a,h)anthracene	55.7	5.0	45.7	0	122	60-140	0			
Fluoranthene	60.05	5.0	45.7	0.9143	129	60-140	0			
Fluorene	57.37	5.0	45.7	9.989	104	60-140	0			
Indeno(1,2,3-cd)pyrene	57.94	5.0	45.7	0	127	60-140	0			
Naphthalene	79.43	5.0	45.7	55.86	51.6	40-140	0			
Phenanthrene	67.11	5.0	45.7	11.75	121	60-140	0			
Pyrene	49.83	5.0	45.7	0.5943	108	60-140	0			
Surr: 2-Fluorobiphenyl	*113.4*	0	*114*	0	*99.4*	*20-140*	0			
Surr: 4-Terphenyl-d14	*117*	0	*114*	0	*103*	*22-172*	0			
Surr: Nitrobenzene-d5	*138.4*	0	*114*	0	*121*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80609** Instrument ID **SVMS7** Method: **SW846 8270D**

MSD Sample ID: **15121121-02B MSD** Units: **µg/L** Analysis Date: **12/23/15 07:53 PM**
Client ID: Run ID: **SVMS7_151223A** SeqNo: **3637008** Prep Date: **12/22/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	41.26	5.0	45.7	0	90.3	50-140	43.15	4.49	30	
2-Methylnaphthalene	156.5	5.0	45.7	116.8	86.7	50-140	147.1	6.19	30	E
Acenaphthene	50.4	5.0	45.7	7.177	94.6	60-140	51.13	1.44	30	
Acenaphthylene	49.03	5.0	45.7	0	107	60-140	49.69	1.34	30	
Anthracene	62.17	5.0	45.7	2.423	131	60-140	59.02	5.21	30	
Benzo(a)anthracene	58.35	5.0	45.7	0	128	60-140	58.08	0.471	30	
Benzo(a)pyrene	50.56	5.0	45.7	0	111	60-140	53.21	5.11	30	
Benzo(b)fluoranthene	60.59	5.0	45.7	0	133	60-140	59.34	2.1	30	
Benzo(g,h,i)perylene	61.19	5.0	45.7	0	134	60-140	62.47	2.07	30	
Benzo(k)fluoranthene	37.71	5.0	45.7	0	82.5	60-140	45.78	19.3	30	
Chrysene	48.87	5.0	45.7	0	107	60-140	47.25	3.38	30	
Dibenzo(a,h)anthracene	53.71	5.0	45.7	0	118	60-140	55.7	3.63	30	
Fluoranthene	61.81	5.0	45.7	0.9143	133	60-140	60.05	2.89	30	
Fluorene	57.23	5.0	45.7	9.989	103	60-140	57.37	0.239	30	
Indeno(1,2,3-cd)pyrene	55.98	5.0	45.7	0	122	60-140	57.94	3.45	30	
Naphthalene	80.71	5.0	45.7	55.86	54.4	40-140	79.43	1.6	30	
Phenanthrene	69.44	5.0	45.7	11.75	126	60-140	67.11	3.41	30	
Pyrene	49.51	5.0	45.7	0.5943	107	60-140	49.83	0.644	30	
Surr: 2-Fluorobiphenyl	*114.3*	0	*114*	0	*100*	*20-140*	113.4	*0.843*	*30*	
Surr: 4-Terphenyl-d14	*116.8*	0	*114*	0	*102*	*22-172*	117	*0.235*	*30*	
Surr: Nitrobenzene-d5	*140.2*	0	*114*	0	*123*	*8-140*	138.4	*1.3*	*30*	

The following samples were analyzed in this batch: 15121249-06B, 15121249-07B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80682** Instrument ID **SVMS7** Method: **SW846 8270D**

MBLK Sample ID: **SBLKW1-80682-80682** Units: **µg/L** Analysis Date: **12/28/15 03:30 PM**
Client ID: Run ID: **SVMS7_151228A** SeqNo: **3639265** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(a)anthracene	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Chrysene	ND	5.0								
Dibenzo(a,h)anthracene	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Naphthalene	ND	5.0								
Phenanthrene	ND	5.0								
Pyrene	ND	5.0								
Surr: 2-Fluorobiphenyl	*125.9*	0	*114*	0	*110*	*20-140*	0			
Surr: 4-Terphenyl-d14	*154.9*	0	*114*	0	*136*	*22-172*	0			
Surr: Nitrobenzene-d5	*153.2*	0	*114*	0	*134*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80682** Instrument ID **SVMS7** Method: **SW846 8270D**

LCS Sample ID: **SLCSW1-80682-80682** Units: **µg/L** Analysis Date: **12/28/15 03:54 PM**
Client ID: Run ID: **SVMS7_151228A** SeqNo: **3639266** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	49.9	5.0	45.7	0	109	50-140	0			
2-Methylnaphthalene	50.03	5.0	45.7	0	109	50-140	0			
Acenaphthene	54.77	5.0	45.7	0	120	60-140	0			
Acenaphthylene	57.69	5.0	45.7	0	126	60-140	0			
Anthracene	62.1	5.0	45.7	0	136	60-140	0			
Benzo(a)anthracene	60.66	5.0	45.7	0	133	60-140	0			
Benzo(a)pyrene	59.25	5.0	45.7	0	130	60-140	0			
Benzo(b)fluoranthene	60.05	5.0	45.7	0	131	60-140	0			
Benzo(g,h,i)perylene	63.52	5.0	45.7	0	139	60-140	0			
Benzo(k)fluoranthene	52.07	5.0	45.7	0	114	60-140	0			
Chrysene	60.3	5.0	45.7	0	132	60-140	0			
Dibenzo(a,h)anthracene	56.02	5.0	45.7	0	123	60-140	0			
Fluoranthene	62.99	5.0	45.7	0	138	60-140	0			
Fluorene	63.02	5.0	45.7	0	138	60-140	0			
Indeno(1,2,3-cd)pyrene	61.71	5.0	45.7	0	135	60-140	0			
Naphthalene	37.49	5.0	45.7	0	82	40-140	0			
Phenanthrene	62.19	5.0	45.7	0	136	60-140	0			
Pyrene	57.05	5.0	45.7	0	125	60-140	0			
Surr: 2-Fluorobiphenyl	*125.7*	0	*114*	0	*110*	*20-140*	0			
Surr: 4-Terphenyl-d14	*141.5*	0	*114*	0	*124*	*22-172*	0			
Surr: Nitrobenzene-d5	*152.4*	0	*114*	0	*134*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80682** Instrument ID **SVMS7** Method: **SW846 8270D**

MS Sample ID: **15121121-04B MS** Units: **µg/L** Analysis Date: **12/29/15 01:25 AM**
Client ID: Run ID: **SVMS7_151228A** SeqNo: **3639301** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	53.14	5.0	45.7	0	116	50-140	0			
2-Methylnaphthalene	52.8	5.0	45.7	4.206	106	50-140	0			
Acenaphthene	55.77	5.0	45.7	0	122	60-140	0			
Acenaphthylene	56.25	5.0	45.7	0	123	60-140	0			
Anthracene	61.3	5.0	45.7	0	134	60-140	0			
Benzo(a)anthracene	62.86	5.0	45.7	0	138	60-140	0			
Benzo(a)pyrene	62.47	5.0	45.7	0	137	60-140	0			
Benzo(b)fluoranthene	78.83	5.0	45.7	0	173	60-140	0			S
Benzo(g,h,i)perylene	89.78	5.0	45.7	0	196	60-140	0			S
Benzo(k)fluoranthene	52.64	5.0	45.7	0	115	60-140	0			
Chrysene	53.62	5.0	45.7	0	117	60-140	0			
Dibenzo(a,h)anthracene	74.97	5.0	45.7	0	164	60-140	0			S
Fluoranthene	62.97	5.0	45.7	0	138	60-140	0			
Fluorene	58.03	5.0	45.7	0	127	60-140	0			
Indeno(1,2,3-cd)pyrene	80.18	5.0	45.7	0	175	60-140	0			S
Naphthalene	39.89	5.0	45.7	0	87.3	40-140	0			
Phenanthrene	79.5	5.0	45.7	14.15	143	60-140	0			S
Pyrene	57.62	5.0	45.7	0	126	60-140	0			
Surr: 2-Fluorobiphenyl	*150.1*	0	*114*	0	*132*	*20-140*	0			
Surr: 4-Terphenyl-d14	*127.4*	0	*114*	0	*112*	*22-172*	0			
Surr: Nitrobenzene-d5	*155.3*	0	*114*	0	*136*	*8-140*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80682** Instrument ID **SVMS7** Method: **SW846 8270D**

MSD Sample ID: **15121121-04B MSD** Units: **µg/L** Analysis Date: **12/29/15 01:49 AM**
Client ID: Run ID: **SVMS7_151228A** SeqNo: **3639304** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	53.65	5.0	45.7	0	117	50-140	53.14	0.942	30	
2-Methylnaphthalene	54.33	5.0	45.7	4.206	110	50-140	52.8	2.86	30	
Acenaphthene	55.34	5.0	45.7	0	121	60-140	55.77	0.782	30	
Acenaphthylene	57.26	5.0	45.7	0	125	60-140	56.25	1.77	30	
Anthracene	62.29	5.0	45.7	0	136	60-140	61.3	1.59	30	
Benzo(a)anthracene	67.47	5.0	45.7	0	148	60-140	62.86	7.09	30	S
Benzo(a)pyrene	63.22	5.0	45.7	0	138	60-140	62.47	1.2	30	
Benzo(b)fluoranthene	76.27	5.0	45.7	0	167	60-140	78.83	3.3	30	S
Benzo(g,h,i)perylene	96.53	5.0	45.7	0	211	60-140	89.78	7.24	30	S
Benzo(k)fluoranthene	50.01	5.0	45.7	0	109	60-140	52.64	5.12	30	
Chrysene	57.65	5.0	45.7	0	126	60-140	53.62	7.23	30	
Dibenzo(a,h)anthracene	76.14	5.0	45.7	0	167	60-140	74.97	1.54	30	S
Fluoranthene	62.4	5.0	45.7	0	137	60-140	62.97	0.912	30	
Fluorene	61.05	5.0	45.7	0	134	60-140	58.03	5.07	30	
Indeno(1,2,3-cd)pyrene	82.19	5.0	45.7	0	180	60-140	80.18	2.48	30	S
Naphthalene	38.1	5.0	45.7	0	83.4	40-140	39.89	4.57	30	
Phenanthrene	80.34	5.0	45.7	14.15	145	60-140	79.5	1.06	30	S
Pyrene	60.75	5.0	45.7	0	133	60-140	57.62	5.29	30	
Surr: 2-Fluorobiphenyl	*151.6*	0	*114*	0	*133*	*20-140*	150.1	*0.97*	*30*	
Surr: 4-Terphenyl-d14	*133*	0	*114*	0	*117*	*22-172*	127.4	*4.3*	*30*	
Surr: Nitrobenzene-d5	*157.1*	0	*114*	0	*138*	*8-140*	155.3	*1.16*	*30*	

The following samples were analyzed in this batch:

15121249-08B	15121249-09B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-80705-80705** Units: **µg/Kg** Analysis Date: **12/28/15 05:41 PM**
Client ID: Run ID: **SVMS8_151228A** SeqNo: **3640104** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	ND	6.7								
2-Methylnaphthalene	ND	6.7								
Acenaphthene	ND	6.7								
Acenaphthylene	ND	6.7								
Anthracene	ND	6.7								
Benzo(a)anthracene	ND	6.7								
Benzo(a)pyrene	ND	6.7								
Benzo(b)fluoranthene	ND	6.7								
Benzo(g,h,i)perylene	ND	6.7								
Benzo(k)fluoranthene	ND	6.7								
Chrysene	ND	6.7								
Dibenzo(a,h)anthracene	ND	6.7								
Fluoranthene	ND	6.7								
Fluorene	ND	6.7								
Indeno(1,2,3-cd)pyrene	ND	6.7								
Naphthalene	ND	6.7								
Phenanthrene	ND	6.7								
Pyrene	ND	6.7								
Surr: 2-Fluorobiphenyl	*1359*	0	*1667*	0	*81.5*	*12-100*	0			
Surr: 4-Terphenyl-d14	*2007*	0	*1667*	0	*120*	*25-137*	0			
Surr: Nitrobenzene-d5	*1619*	0	*1667*	0	*97.1*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

LCS Sample ID: **SLCSS1-80705-80705** Units: **µg/Kg** Analysis Date: **12/28/15 05:20 PM**
Client ID: Run ID: **SVMS8_151228A** SeqNo: **3640103** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	510.7	6.7	666.7	0	76.6	45-105	0			
2-Methylnaphthalene	518.3	6.7	666.7	0	77.7	45-105	0			
Acenaphthene	486	6.7	666.7	0	72.9	45-110	0			
Acenaphthylene	488.3	6.7	666.7	0	73.2	45-105	0			
Anthracene	605.7	6.7	666.7	0	90.8	55-105	0			
Benzo(a)anthracene	628.3	6.7	666.7	0	94.2	50-110	0			
Benzo(a)pyrene	660	6.7	666.7	0	99	50-110	0			
Benzo(b)fluoranthene	681.3	6.7	666.7	0	102	45-115	0			
Benzo(g,h,i)perylene	689	6.7	666.7	0	103	40-125	0			
Benzo(k)fluoranthene	703.3	6.7	666.7	0	105	45-115	0			
Chrysene	673.3	6.7	666.7	0	101	55-110	0			
Dibenzo(a,h)anthracene	678.3	6.7	666.7	0	102	40-125	0			
Fluoranthene	618.3	6.7	666.7	0	92.7	55-115	0			
Fluorene	488.7	6.7	666.7	0	73.3	50-110	0			
Indeno(1,2,3-cd)pyrene	680.7	6.7	666.7	0	102	40-120	0			
Naphthalene	568.3	6.7	666.7	0	85.2	40-105	0			
Phenanthrene	609	6.7	666.7	0	91.3	50-110	0			
Pyrene	758.7	6.7	666.7	0	114	45-125	0			
Surr: 2-Fluorobiphenyl	*1357*	0	*1667*	0	*81.4*	*12-100*	0			
Surr: 4-Terphenyl-d14	*2028*	0	*1667*	0	*122*	*25-137*	0			
Surr: Nitrobenzene-d5	*1543*	0	*1667*	0	*92.6*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

MS Sample ID: **15121249-03B MS** Units: **µg/Kg** Analysis Date: **12/28/15 07:30 PM**
Client ID: **SB-3 (3'-4')** Run ID: **SVMS8_151228A** SeqNo: **3640108** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	438.7	6.7	665.2	0	65.9	45-105	0			
2-Methylnaphthalene	464.3	6.7	665.2	25.78	65.9	45-105	0			
Acenaphthene	410.1	6.7	665.2	13.05	59.7	45-110	0			
Acenaphthylene	452.3	6.7	665.2	32.96	63	45-105	0			
Anthracene	593.3	6.7	665.2	53.84	81.1	55-105	0			
Benzo(a)anthracene	798.5	6.7	665.2	261	80.8	50-110	0			
Benzo(a)pyrene	846.8	6.7	665.2	259.4	88.3	50-110	0			
Benzo(b)fluoranthene	924.3	6.7	665.2	393.2	79.8	45-115	0			
Benzo(g,h,i)perylene	818.8	6.7	665.2	181.8	95.8	40-125	0			
Benzo(k)fluoranthene	740	6.7	665.2	137.4	90.6	45-115	0			
Chrysene	857.8	6.7	665.2	269.2	88.5	55-110	0			
Dibenzo(a,h)anthracene	657.5	6.7	665.2	46.34	91.9	40-125	0			
Fluoranthene	963.5	6.7	665.2	444.1	78.1	55-115	0			
Fluorene	467	6.7	665.2	21.21	67	50-110	0			
Indeno(1,2,3-cd)pyrene	844.8	6.7	665.2	196.8	97.4	40-120	0			
Naphthalene	516.2	6.7	665.2	22.84	74.2	40-105	0			
Phenanthrene	765	6.7	665.2	223.8	81.3	50-110	0			
Pyrene	1088	6.7	665.2	394.5	104	45-125	0			
Surr: 2-Fluorobiphenyl	*1183*	0	*1663*	0	*71.2*	*12-100*	0			
Surr: 4-Terphenyl-d14	*1647*	0	*1663*	0	*99*	*25-137*	0			
Surr: Nitrobenzene-d5	*1359*	0	*1663*	0	*81.7*	*37-107*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80705** Instrument ID **SVMS8** Method: **SW846 8270D**

MSD Sample ID: **15121249-03B MSD** Units: **µg/Kg** Analysis Date: **12/28/15 07:50 PM**
Client ID: **SB-3 (3'-4')** Run ID: **SVMS8_151228A** SeqNo: **3640109** Prep Date: **12/28/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	424.4	6.6	664.3	0	63.9	45-105	438.7	3.3	30	
2-Methylnaphthalene	452.7	6.6	664.3	25.78	64.3	45-105	464.3	2.54	30	
Acenaphthene	402.2	6.6	664.3	13.05	58.6	45-110	410.1	1.94	30	
Acenaphthylene	442	6.6	664.3	32.96	61.6	45-105	452.3	2.3	30	
Anthracene	550	6.6	664.3	53.84	74.7	55-105	593.3	7.58	30	
Benzo(a)anthracene	738.6	6.6	664.3	261	71.9	50-110	798.5	7.8	30	
Benzo(a)pyrene	744.9	6.6	664.3	259.4	73.1	50-110	846.8	12.8	30	
Benzo(b)fluoranthene	803.7	6.6	664.3	393.2	61.8	45-115	924.3	14	30	
Benzo(g,h,i)perylene	717.4	6.6	664.3	181.8	80.6	40-125	818.8	13.2	30	
Benzo(k)fluoranthene	675.9	6.6	664.3	137.4	81.1	45-115	740	9.06	30	
Chrysene	779.1	6.6	664.3	269.2	76.8	55-110	857.8	9.6	30	
Dibenzo(a,h)anthracene	604.5	6.6	664.3	46.34	84	40-125	657.5	8.41	30	
Fluoranthene	886.1	6.6	664.3	444.1	66.5	55-115	963.5	8.37	30	
Fluorene	449	6.6	664.3	21.21	64.4	50-110	467	3.92	30	
Indeno(1,2,3-cd)pyrene	747.3	6.6	664.3	196.8	82.9	40-120	844.8	12.3	30	
Naphthalene	497.2	6.6	664.3	22.84	71.4	40-105	516.2	3.75	30	
Phenanthrene	688.8	6.6	664.3	223.8	70	50-110	765	10.5	30	
Pyrene	974.1	6.6	664.3	394.5	87.3	45-125	1088	11	30	
Surr: 2-Fluorobiphenyl	*1134*	0	*1661*	0	*68.3*	*12-100*	1183	*4.24*	*40*	
Surr: 4-Terphenyl-d14	*1550*	0	*1661*	0	*93.3*	*25-137*	1647	*6.09*	*40*	
Surr: Nitrobenzene-d5	*1381*	0	*1661*	0	*83.2*	*37-107*	1359	*1.65*	*40*	

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-05B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

MBLK	Sample ID: **MBLK-80647-80647**				Units: **µg/Kg**			Analysis Date: **12/23/15 02:20 PM**		
Client ID:		Run ID: **VMS8_151223A**			SeqNo: **3635664**		Prep Date: **12/23/15**		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1,2-Trichlorotrifluoroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								
Dichlorodifluoromethane	ND	30								
Diethyl ether	ND	30								
Ethylbenzene	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

Hexachloroethane	ND	100					
Hexane	ND	100					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
Styrene	ND	30					
Tetrachloroethene	ND	30					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl acetate	ND	30					
Vinyl chloride	ND	30					
Xylenes, Total	ND	90					
Surr: 1,2-Dichloroethane-d4	*949.5*	0	*1000*	0	*95*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1013*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*953.5*	0	*1000*	0	*95.4*	*70-130*	0
Surr: Toluene-d8	*918.5*	0	*1000*	0	*91.8*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

LCS Sample ID: **LCS-80647-80647** Units: **µg/Kg** Analysis Date: **12/23/15 12:41 PM**
Client ID: Run ID: **VMS8_151223A** SeqNo: **3635663** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	897.5	30	1000	0	89.8	75-125	0			
1,1,1-Trichloroethane	1004	30	1000	0	100	70-135	0			
1,1,2,2-Tetrachloroethane	1018	30	1000	0	102	55-130	0			
1,1,2-Trichloroethane	919.5	30	1000	0	92	60-125	0			
1,1-Dichloroethane	1083	30	1000	0	108	75-125	0			
1,1-Dichloroethene	980	30	1000	0	98	65-135	0			
1,2,3-Trichloropropane	1037	30	1000	0	104	65-130	0			
1,2,4-Trichlorobenzene	888.5	30	1000	0	88.8	65-130	0			
1,2,4-Trimethylbenzene	993.5	30	1000	0	99.4	65-135	0			
1,2-Dibromo-3-chloropropane	836.5	30	1000	0	83.6	40-135	0			
1,2-Dibromoethane	1581	30	1000	0	158	75-125	0			S
1,2-Dichlorobenzene	886	30	1000	0	88.6	75-120	0			
1,2-Dichloroethane	1004	30	1000	0	100	70-135	0			
1,2-Dichloropropane	1040	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1038	30	1000	0	104	65-135	0			
1,3-Dichlorobenzene	860.5	30	1000	0	86	70-125	0			
1,4-Dichlorobenzene	876.5	30	1000	0	87.6	70-125	0			
2-Butanone	1126	200	1000	0	113	30-160	0			
2-Hexanone	945.5	30	1000	0	94.6	45-145	0			
4-Methyl-2-pentanone	1222	30	1000	0	122	74-176	0			
Acetone	1026	100	1000	0	103	20-160	0			
Acrylonitrile	1070	100	1000	0	107	70-135	0			
Benzene	1050	30	1000	0	105	75-125	0			
Bromochloromethane	1139	30	1000	0	114	70-125	0			
Bromodichloromethane	1003	30	1000	0	100	70-130	0			
Bromoform	802	30	1000	0	80.2	55-135	0			
Bromomethane	222	75	1000	0	22.2	30-160	0			S
Carbon disulfide	886.5	30	1000	0	88.6	45-160	0			
Carbon tetrachloride	1023	30	1000	0	102	65-135	0			
Chlorobenzene	966.5	30	1000	0	96.6	75-125	0			
Chloroethane	1111	100	1000	0	111	40-155	0			
Chloroform	1010	30	1000	0	101	70-125	0			
Chloromethane	1161	100	1000	0	116	50-130	0			
cis-1,2-Dichloroethene	1108	30	1000	0	111	65-125	0			
cis-1,3-Dichloropropene	1120	30	1000	0	112	70-125	0			
Dibromochloromethane	781	30	1000	0	78.1	65-135	0			
Dibromomethane	1066	30	1000	0	107	75-130	0			
Dichlorodifluoromethane	1133	30	1000	0	113	35-135	0			
Ethylbenzene	965.5	30	1000	0	96.6	75-125	0			
Hexachloroethane	708	100	1000	0	70.8	53-112	0			
Isopropylbenzene	1026	30	1000	0	103	75-130	0			
m,p-Xylene	1999	60	2000	0	100	80-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	757.5	75	1000	0	75.8	64-145	0
Methyl tert-butyl ether	1170	30	1000	0	117	75-125	0
Methylene chloride	1092	30	1000	0	109	55-145	0
Naphthalene	865	100	1000	0	86.5	40-140	0
n-Propylbenzene	996	30	1000	0	99.6	65-135	0
o-Xylene	962.5	30	1000	0	96.2	75-125	0
Styrene	1042	30	1000	0	104	75-125	0
Tetrachloroethene	937.5	30	1000	0	93.8	64-140	0
Toluene	958	30	1000	0	95.8	70-125	0
trans-1,2-Dichloroethene	1081	30	1000	0	108	65-135	0
trans-1,3-Dichloropropene	816	30	1000	0	81.6	65-125	0
trans-1,4-Dichloro-2-butene	765.5	30	1000	0	76.6	62-112	0
Trichloroethene	994	30	1000	0	99.4	75-125	0
Trichlorofluoromethane	1001	30	1000	0	100	25-185	0
Vinyl chloride	1030	30	1000	0	103	60-125	0
Xylenes, Total	2962	90	3000	0	98.7	75-125	0
Surr: 1,2-Dichloroethane-d4	*905.5*	0	*1000*	0	*90.6*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1075*	0	*1000*	0	*108*	*70-130*	0
Surr: Dibromofluoromethane	*955*	0	*1000*	0	*95.5*	*70-130*	0
Surr: Toluene-d8	*934.5*	0	*1000*	0	*93.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

MS Sample ID: **15121217-12A MS** Units: **µg/Kg** Analysis Date: **12/23/15 08:09 PM**

Client ID: Run ID: **VMS8_151223A** SeqNo: **3636846** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	846.5	30	1000	0	84.6	75-125	0			
1,1,1-Trichloroethane	967	30	1000	0	96.7	70-135	0			
1,1,2,2-Tetrachloroethane	978.5	30	1000	0	97.8	55-130	0			
1,1,2-Trichloroethane	923.5	30	1000	0	92.4	60-125	0			
1,1-Dichloroethane	1034	30	1000	0	103	75-125	0			
1,1-Dichloroethene	887.5	30	1000	0	88.8	65-135	0			
1,2,3-Trichloropropane	1013	30	1000	0	101	65-130	0			
1,2,4-Trichlorobenzene	816	30	1000	0	81.6	65-130	0			
1,2,4-Trimethylbenzene	919	30	1000	0	91.9	65-135	0			
1,2-Dibromo-3-chloropropane	762	30	1000	0	76.2	40-135	0			
1,2-Dibromoethane	1538	30	1000	0	154	75-125	0			S
1,2-Dichlorobenzene	872	30	1000	0	87.2	75-120	0			
1,2-Dichloroethane	976.5	30	1000	0	97.6	70-135	0			
1,2-Dichloropropane	1030	30	1000	0	103	70-120	0			
1,3,5-Trimethylbenzene	970	30	1000	0	97	65-135	0			
1,3-Dichlorobenzene	844	30	1000	0	84.4	70-125	0			
1,4-Dichlorobenzene	845	30	1000	0	84.5	70-125	0			
2-Butanone	1136	200	1000	0	114	30-160	0			
2-Hexanone	909	30	1000	0	90.9	45-145	0			
4-Methyl-2-pentanone	1197	30	1000	0	120	74-176	0			
Acetone	1046	100	1000	0	105	20-160	0			
Acrylonitrile	1078	100	1000	0	108	70-135	0			
Benzene	1030	30	1000	0	103	75-125	0			
Bromochloromethane	1111	30	1000	0	111	70-125	0			
Bromodichloromethane	920	30	1000	0	92	70-130	0			
Bromoform	713	30	1000	0	71.3	55-135	0			
Bromomethane	125	75	1000	0	12.5	30-160	0			S
Carbon disulfide	723.5	30	1000	0	72.4	45-160	0			
Carbon tetrachloride	903	30	1000	0	90.3	65-135	0			
Chlorobenzene	887	30	1000	0	88.7	75-125	0			
Chloroethane	1018	100	1000	0	102	40-155	0			
Chloroform	994.5	30	1000	0	99.4	70-125	0			
Chloromethane	1114	100	1000	0	111	50-130	0			
cis-1,2-Dichloroethene	1156	30	1000	131.6	102	65-125	0			
cis-1,3-Dichloropropene	1032	30	1000	0	103	70-125	0			
Dibromochloromethane	711.5	30	1000	0	71.2	65-135	0			
Dibromomethane	1047	30	1000	0	105	75-130	0			
Dichlorodifluoromethane	1032	30	1000	0	103	35-135	0			
Ethylbenzene	888	30	1000	0	88.8	75-125	0			
Hexachloroethane	574	100	1000	0	57.4	53-112	0			
Isopropylbenzene	942.5	30	1000	0	94.2	75-130	0			
m,p-Xylene	1848	60	2000	0	92.4	80-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	561.5	75	1000	0	56.2	30-105	0	
Methyl tert-butyl ether	1160	30	1000	0	116	75-125	0	
Methylene chloride	1072	30	1000	0	107	55-145	0	
Naphthalene	826.5	100	1000	0	82.6	40-140	0	
n-Propylbenzene	890	30	1000	0	89	65-135	0	
o-Xylene	907.5	30	1000	0	90.8	75-125	0	
Styrene	953	30	1000	0	95.3	75-125	0	
Tetrachloroethene	1244	30	1000	0	124	64-140	0	
Toluene	896.5	30	1000	0	89.6	70-125	0	
trans-1,2-Dichloroethene	1008	30	1000	0	101	65-135	0	
trans-1,3-Dichloropropene	746.5	30	1000	0	74.6	65-125	0	
trans-1,4-Dichloro-2-butene	756	30	1000	0	75.6	45-86	0	
Trichloroethene	1509	30	1000	829.6	67.9	75-125	0	S
Trichlorofluoromethane	909.5	30	1000	0	91	25-185	0	
Vinyl chloride	943	30	1000	0	94.3	60-125	0	
Xylenes, Total	2755	90	3000	0	91.8	75-125	0	
Surr: 1,2-Dichloroethane-d4	*971*	0	*1000*	0	*97.1*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1038*	0	*1000*	0	*104*	*70-130*	0	
Surr: Dibromofluoromethane	*947*	0	*1000*	0	*94.7*	*70-130*	0	
Surr: Toluene-d8	*930.5*	0	*1000*	0	*93*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

MSD Sample ID: **15121217-12A MSD** Units: **µg/Kg** Analysis Date: **12/23/15 08:33 PM**
Client ID: Run ID: **VMS8_151223A** SeqNo: **3636848** Prep Date: **12/23/15** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	865.5	30	1000	0	86.6	75-125	846.5	2.22	30	
1,1,1-Trichloroethane	957	30	1000	0	95.7	70-135	967	1.04	30	
1,1,2,2-Tetrachloroethane	960	30	1000	0	96	55-130	978.5	1.91	30	
1,1,2-Trichloroethane	895	30	1000	0	89.5	60-125	923.5	3.13	30	
1,1-Dichloroethane	1036	30	1000	0	104	75-125	1034	0.0966	30	
1,1-Dichloroethene	912.5	30	1000	0	91.2	65-135	887.5	2.78	30	
1,2,3-Trichloropropane	1001	30	1000	0	100	65-130	1013	1.19	30	
1,2,4-Trichlorobenzene	838	30	1000	0	83.8	65-130	816	2.66	30	
1,2,4-Trimethylbenzene	962.5	30	1000	0	96.2	65-135	919	4.62	30	
1,2-Dibromo-3-chloropropane	733.5	30	1000	0	73.4	40-135	762	3.81	30	
1,2-Dibromoethane	1534	30	1000	0	153	75-125	1538	0.228	30	S
1,2-Dichlorobenzene	884.5	30	1000	0	88.4	75-120	872	1.42	30	
1,2-Dichloroethane	965.5	30	1000	0	96.6	70-135	976.5	1.13	30	
1,2-Dichloropropane	1024	30	1000	0	102	70-120	1030	0.584	30	
1,3,5-Trimethylbenzene	1002	30	1000	0	100	65-135	970	3.25	30	
1,3-Dichlorobenzene	847.5	30	1000	0	84.8	70-125	844	0.414	30	
1,4-Dichlorobenzene	851	30	1000	0	85.1	70-125	845	0.708	30	
2-Butanone	1093	200	1000	0	109	30-160	1136	3.86	30	
2-Hexanone	863	30	1000	0	86.3	45-145	909	5.19	30	
4-Methyl-2-pentanone	1134	30	1000	0	113	74-176	1197	5.41	30	
Acetone	1005	100	1000	0	100	20-160	1046	4.05	30	
Acrylonitrile	1067	100	1000	0	107	70-135	1078	1.03	30	
Benzene	1036	30	1000	0	104	75-125	1030	0.629	30	
Bromochloromethane	1059	30	1000	0	106	70-125	1111	4.79	30	
Bromodichloromethane	945.5	30	1000	0	94.6	70-130	920	2.73	30	
Bromoform	696.5	30	1000	0	69.6	55-135	713	2.34	30	
Bromomethane	106	75	1000	0	10.6	30-160	125	16.5	30	S
Carbon disulfide	758.5	30	1000	0	75.8	45-160	723.5	4.72	30	
Carbon tetrachloride	925	30	1000	0	92.5	65-135	903	2.41	30	
Chlorobenzene	936	30	1000	0	93.6	75-125	887	5.38	30	
Chloroethane	984	100	1000	0	98.4	40-155	1018	3.35	30	
Chloroform	1004	30	1000	0	100	70-125	994.5	0.951	30	
Chloromethane	1125	100	1000	0	112	50-130	1114	0.938	30	
cis-1,2-Dichloroethene	1172	30	1000	131.6	104	65-125	1156	1.33	30	
cis-1,3-Dichloropropene	1039	30	1000	0	104	70-125	1032	0.724	30	
Dibromochloromethane	713	30	1000	0	71.3	65-135	711.5	0.211	30	
Dibromomethane	1022	30	1000	0	102	75-130	1047	2.42	30	
Dichlorodifluoromethane	1024	30	1000	0	102	35-135	1032	0.779	30	
Ethylbenzene	907	30	1000	0	90.7	75-125	888	2.12	30	
Hexachloroethane	620.5	100	1000	0	62	53-112	574	7.79	30	
Isopropylbenzene	985	30	1000	0	98.5	75-130	942.5	4.41	30	
m,p-Xylene	1936	60	2000	0	96.8	80-125	1848	4.68	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **80647** Instrument ID **VMS8** Method: **SW8260B**

Methyl iodide	694	75	1000	0	69.4	30-105	561.5	21.1	30	
Methyl tert-butyl ether	1144	30	1000	0	114	75-125	1160	1.48	30	
Methylene chloride	1072	30	1000	0	107	55-145	1072	0.0466	30	
Naphthalene	848.5	100	1000	0	84.8	40-140	826.5	2.63	30	
n-Propylbenzene	917.5	30	1000	0	91.8	65-135	890	3.04	30	
o-Xylene	939	30	1000	0	93.9	75-125	907.5	3.41	30	
Styrene	1012	30	1000	0	101	75-125	953	6.05	30	
Tetrachloroethene	1340	30	1000	0	134	64-140	1244	7.39	30	
Toluene	935.5	30	1000	0	93.6	70-125	896.5	4.26	30	
trans-1,2-Dichloroethene	1030	30	1000	0	103	65-135	1008	2.21	30	
trans-1,3-Dichloropropene	775	30	1000	0	77.5	65-125	746.5	3.75	30	
trans-1,4-Dichloro-2-butene	726.5	30	1000	0	72.6	45-86	756	3.98	30	
Trichloroethene	1438	30	1000	829.6	60.8	75-125	1509	4.85	30	S
Trichlorofluoromethane	907.5	30	1000	0	90.8	25-185	909.5	0.22	30	
Vinyl chloride	958.5	30	1000	0	95.8	60-125	943	1.63	30	
Xylenes, Total	2875	90	3000	0	95.8	75-125	2755	4.26	30	
Surr: 1,2-Dichloroethane-d4	*925*	0	*1000*	0	*92.5*	*70-130*	971	*4.85*	*30*	
Surr: 4-Bromofluorobenzene	*1062*	0	*1000*	0	*106*	*70-130*	1038	*2.28*	*30*	
Surr: Dibromofluoromethane	*944*	0	*1000*	0	*94.4*	*70-130*	947	*0.317*	*30*	
Surr: Toluene-d8	*912.5*	0	*1000*	0	*91.2*	*70-130*	930.5	*1.95*	*30*	

The following samples were analyzed in this batch:

15121249-01A	15121249-02A	15121249-03A
15121249-05A	15121249-12A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

MBLK	Sample ID: **VBLKW2-151223-R178988**			Units: **µg/L**		Analysis Date: **12/24/15 02:05 AM**			
Client ID:		Run ID: **VMS7_151223B**		SeqNo: **3637051**		Prep Date:		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
1,1,2-Trichlorotrifluoroethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2,3-Trichloropropane	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	1.0								
1,2-Dibromoethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
2-Butanone	ND	5.0								
2-Hexanone	ND	5.0								
2-Methylnaphthalene	ND	5.0								
4-Methyl-2-pentanone	ND	1.0								
Acetone	ND	10								
Acrylonitrile	ND	1.0								
Benzene	ND	1.0								
Bromochloromethane	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	1.0								
Carbon disulfide	ND	1.0								
Carbon tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	1.0								
cis-1,2-Dichloroethene	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
Diethyl ether	ND	1.0								
Ethylbenzene	ND	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

Hexachloroethane	ND	1.0					
Hexane	ND	1.0					
Isopropylbenzene	ND	1.0					
m,p-Xylene	ND	2.0					
Methyl iodide	ND	1.0					
Methyl tert-butyl ether	ND	1.0					
Methylene chloride	ND	5.0					
Naphthalene	ND	5.0					
n-Propylbenzene	ND	1.0					
o-Xylene	ND	1.0					
Styrene	ND	1.0					
Tetrachloroethene	ND	1.0					
Toluene	ND	1.0					
trans-1,2-Dichloroethene	ND	1.0					
trans-1,3-Dichloropropene	ND	1.0					
trans-1,4-Dichloro-2-butene	ND	2.0					
Trichloroethene	ND	1.0					
Trichlorofluoromethane	ND	1.0					
Vinyl acetate	ND	1.0					
Vinyl chloride	ND	1.0					
Xylenes, Total	ND	3.0					
Surr: 1,2-Dichloroethane-d4	*19.38*	0	*20*	0	*96.9*	*75-120*	0
Surr: 4-Bromofluorobenzene	*20.18*	0	*20*	0	*101*	*80-110*	0
Surr: Dibromofluoromethane	*19.92*	0	*20*	0	*99.6*	*85-115*	0
Surr: Toluene-d8	*18.93*	0	*20*	0	*94.6*	*85-110*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

LCS	Sample ID: **VLCSW2-151223-R178988**				Units: **µg/L**			Analysis Date: **12/24/15 12:51 PM**		
Client ID:		Run ID: **VMS7_151223B**			SeqNo: **3637074**		Prep Date:		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.76	1.0	20	0	98.8	80-130	0			
1,1,1-Trichloroethane	20.52	1.0	20	0	103	75-130	0			
1,1,2,2-Tetrachloroethane	22.55	1.0	20	0	113	75-130	0			
1,1,2-Trichloroethane	21.29	1.0	20	0	106	75-125	0			
1,1-Dichloroethane	18.92	1.0	20	0	94.6	75-133	0			
1,1-Dichloroethene	18.98	1.0	20	0	94.9	70-145	0			
1,2,3-Trichloropropane	24.06	1.0	20	0	120	75-125	0			
1,2,4-Trichlorobenzene	21.17	1.0	20	0	106	70-135	0			
1,2,4-Trimethylbenzene	18.99	1.0	20	0	95	75-130	0			
1,2-Dibromo-3-chloropropane	21.92	1.0	20	0	110	60-130	0			
1,2-Dibromoethane	30.17	1.0	20	0	151	80-150	0			S
1,2-Dichlorobenzene	19.85	1.0	20	0	99.2	70-130	0			
1,2-Dichloroethane	20.98	1.0	20	0	105	78-125	0			
1,2-Dichloropropane	18.94	1.0	20	0	94.7	75-125	0			
1,3,5-Trimethylbenzene	19.57	1.0	20	0	97.8	75-130	0			
1,3-Dichlorobenzene	20.81	1.0	20	0	104	75-130	0			
1,4-Dichlorobenzene	18.93	1.0	20	0	94.6	75-130	0			
2-Butanone	18.11	5.0	20	0	90.6	55-150	0			
2-Hexanone	18.77	5.0	20	0	93.8	60-135	0			
4-Methyl-2-pentanone	23.77	1.0	20	0	119	77-178	0			
Acetone	18.54	10	20	0	92.7	60-160	0			
Acrylonitrile	19.22	1.0	20	0	96.1	60-140	0			
Benzene	21.26	1.0	20	0	106	85-125	0			
Bromochloromethane	18.14	1.0	20	0	90.7	75-130	0			
Bromodichloromethane	20.05	1.0	20	0	100	75-125	0			
Bromoform	18.23	1.0	20	0	91.2	60-125	0			
Bromomethane	14.44	1.0	20	0	72.2	30-185	0			
Carbon disulfide	20.15	1.0	20	0	101	60-165	0			
Carbon tetrachloride	21.49	1.0	20	0	107	65-140	0			
Chlorobenzene	19.33	1.0	20	0	96.6	80-120	0			
Chloroethane	15.89	1.0	20	0	79.4	50-140	0			
Chloroform	19.67	1.0	20	0	98.4	80-130	0			
Chloromethane	15.99	1.0	20	0	80	50-130	0			
cis-1,2-Dichloroethene	19.68	1.0	20	0	98.4	75-134	0			
cis-1,3-Dichloropropene	19.63	1.0	20	0	98.2	70-130	0			
Dibromochloromethane	19.65	1.0	20	0	98.2	60-115	0			
Dibromomethane	21.73	1.0	20	0	109	85-125	0			
Dichlorodifluoromethane	19.19	1.0	20	0	96	20-120	0			
Ethylbenzene	19.11	1.0	20	0	95.6	85-125	0			
Hexachloroethane	14.33	1.0	20	0	71.6	50-124	0			
Isopropylbenzene	19.68	1.0	20	0	98.4	80-127	0			
m,p-Xylene	37.8	2.0	40	0	94.5	75-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

Methyl iodide	20.22	1.0	20	0	101	60-160	0
Methyl tert-butyl ether	18.43	1.0	20	0	92.2	80-130	0
Methylene chloride	19.18	5.0	20	0	95.9	75-140	0
Naphthalene	22.8	5.0	20	0	114	55-160	0
n-Propylbenzene	18.39	1.0	20	0	92	78-120	0
o-Xylene	18.66	1.0	20	0	93.3	80-125	0
Styrene	20.01	1.0	20	0	100	85-125	0
Tetrachloroethene	21.56	1.0	20	0	108	77-138	0
Toluene	19.07	1.0	20	0	95.4	85-125	0
trans-1,2-Dichloroethene	19.31	1.0	20	0	96.6	80-140	0
trans-1,3-Dichloropropene	19.43	1.0	20	0	97.2	81-123	0
trans-1,4-Dichloro-2-butene	18.44	2.0	20	0	92.2	46-118	0
Trichloroethene	20.65	1.0	20	0	103	84-130	0
Trichlorofluoromethane	17.87	1.0	20	0	89.4	60-140	0
Vinyl chloride	17.51	1.0	20	0	87.6	50-136	0
Xylenes, Total	56.46	3.0	60	0	94.1	80-126	0
Surr: 1,2-Dichloroethane-d4	*18.7*	0	*20*	0	*93.5*	*75-120*	0
Surr: 4-Bromofluorobenzene	*20.46*	0	*20*	0	*102*	*80-110*	0
Surr: Dibromofluoromethane	*20.27*	0	*20*	0	*101*	*85-115*	0
Surr: Toluene-d8	*19.21*	0	*20*	0	*96*	*85-110*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

MS Sample ID: **15121249-09A MS** Units: **µg/L** Analysis Date: **12/24/15 10:53 AM**

Client ID: **TMW-4** Run ID: **VMS7_151223B** SeqNo: **3637072** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	102.5	5.0	100	0	102	80-130	0			
1,1,1-Trichloroethane	114.5	5.0	100	0	114	75-130	0			
1,1,2,2-Tetrachloroethane	117.2	5.0	100	0	117	75-130	0			
1,1,2-Trichloroethane	116.3	5.0	100	0	116	75-125	0			
1,1-Dichloroethane	106	5.0	100	0	106	75-133	0			
1,1-Dichloroethene	112.3	5.0	100	0	112	70-145	0			
1,2,3-Trichloropropane	121.8	5.0	100	0	122	75-125	0			
1,2,4-Trichlorobenzene	103.8	5.0	100	0	104	70-135	0			
1,2,4-Trimethylbenzene	107	5.0	100	0	107	75-130	0			
1,2-Dibromo-3-chloropropane	100.6	5.0	100	0	101	60-130	0			
1,2-Dibromoethane	159	5.0	100	0	159	80-150	0			S
1,2-Dichlorobenzene	106.4	5.0	100	0	106	70-130	0			
1,2-Dichloroethane	114	5.0	100	0	114	78-125	0			
1,2-Dichloropropane	104.1	5.0	100	0	104	75-125	0			
1,3,5-Trimethylbenzene	110.2	5.0	100	0	110	75-130	0			
1,3-Dichlorobenzene	114.4	5.0	100	0	114	75-130	0			
1,4-Dichlorobenzene	104.2	5.0	100	0	104	75-130	0			
2-Butanone	95.75	25	100	0	95.8	55-150	0			
2-Hexanone	101.1	25	100	0	101	60-135	0			
4-Methyl-2-pentanone	112.8	5.0	100	0	113	77-178	0			
Acetone	100.4	50	100	0	100	60-160	0			
Acrylonitrile	103.4	5.0	100	0	103	60-140	0			
Benzene	119.2	5.0	100	0	119	85-125	0			
Bromochloromethane	99.95	5.0	100	0	100	75-130	0			
Bromodichloromethane	107.6	5.0	100	0	108	75-125	0			
Bromoform	87.6	5.0	100	0	87.6	60-125	0			
Bromomethane	74.7	5.0	100	0	74.7	30-185	0			
Carbon disulfide	112.9	5.0	100	0	113	60-165	0			
Carbon tetrachloride	115.9	5.0	100	0	116	65-140	0			
Chlorobenzene	109.2	5.0	100	0	109	80-120	0			
Chloroethane	94.75	5.0	100	0	94.8	50-140	0			
Chloroform	114.6	5.0	100	0	115	80-130	0			
Chloromethane	93.25	5.0	100	0	93.2	50-130	0			
cis-1,2-Dichloroethene	110	5.0	100	0	110	75-134	0			
cis-1,3-Dichloropropene	101.6	5.0	100	0	102	70-130	0			
Dibromochloromethane	100.5	5.0	100	0	100	60-115	0			
Dibromomethane	117	5.0	100	0	117	85-125	0			
Dichlorodifluoromethane	113.6	5.0	100	0	114	20-120	0			
Ethylbenzene	106.6	5.0	100	0	107	85-125	0			
Hexachloroethane	71.05	5.0	100	0	71	50-124	0			
Isopropylbenzene	112	5.0	100	0	112	80-127	0			
m,p-Xylene	215	10	200	0	108	75-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

Methyl iodide	94.25	5.0	100	0	94.2	60-160	0
Methyl tert-butyl ether	100.6	5.0	100	0	101	80-130	0
Methylene chloride	108.7	25	100	0	109	75-140	0
Naphthalene	106.4	25	100	0	106	55-160	0
n-Propylbenzene	104.2	5.0	100	0	104	78-120	0
o-Xylene	106	5.0	100	0	106	80-125	0
Styrene	111.4	5.0	100	0	111	85-125	0
Tetrachloroethene	122.4	5.0	100	0	122	77-138	0
Toluene	107.8	5.0	100	0	108	85-125	0
trans-1,2-Dichloroethene	111.6	5.0	100	0	112	80-140	0
trans-1,3-Dichloropropene	98.55	5.0	100	0	98.6	81-123	0
trans-1,4-Dichloro-2-butene	83.65	10	100	0	83.6	46-118	0
Trichloroethene	116.3	5.0	100	0	116	84-130	0
Trichlorofluoromethane	107.2	5.0	100	0	107	60-140	0
Vinyl chloride	103.1	5.0	100	0	103	50-136	0
Xylenes, Total	321.1	15	300	0	107	80-126	0
Surr: 1,2-Dichloroethane-d4	*92.15*	0	*100*	0	*92.2*	*75-120*	0
Surr: 4-Bromofluorobenzene	*102.5*	0	*100*	0	*102*	*80-110*	0
Surr: Dibromofluoromethane	*98.85*	0	*100*	0	*98.8*	*85-115*	0
Surr: Toluene-d8	*96.15*	0	*100*	0	*96.2*	*85-110*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

MSD	Sample ID: **15121249-09A MSD**				Units: **µg/L**			Analysis Date: **12/24/15 11:18 AM**		
Client ID: **TMW-4**	Run ID: **VMS7_151223B**				SeqNo: **3637073**	Prep Date:		DF: **5**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	100.9	5.0	100	0	101	80-130	102.5	1.57	30	
1,1,1-Trichloroethane	109.6	5.0	100	0	110	75-130	114.5	4.42	30	
1,1,2,2-Tetrachloroethane	108.6	5.0	100	0	109	75-130	117.2	7.71	30	
1,1,2-Trichloroethane	108	5.0	100	0	108	75-125	116.3	7.45	30	
1,1-Dichloroethane	105.9	5.0	100	0	106	75-133	106	0.0944	30	
1,1-Dichloroethene	108.4	5.0	100	0	108	70-145	112.3	3.49	30	
1,2,3-Trichloropropane	111.8	5.0	100	0	112	75-125	121.8	8.56	30	
1,2,4-Trichlorobenzene	105.8	5.0	100	0	106	70-135	103.8	1.91	30	
1,2,4-Trimethylbenzene	99.75	5.0	100	0	99.8	75-130	107	7.01	30	
1,2-Dibromo-3-chloropropane	99.65	5.0	100	0	99.6	60-130	100.6	0.899	30	
1,2-Dibromoethane	148.5	5.0	100	0	148	80-150	159	6.83	30	
1,2-Dichlorobenzene	102.6	5.0	100	0	103	70-130	106.4	3.68	30	
1,2-Dichloroethane	110.2	5.0	100	0	110	78-125	114	3.48	30	
1,2-Dichloropropane	102	5.0	100	0	102	75-125	104.1	2.04	30	
1,3,5-Trimethylbenzene	104.6	5.0	100	0	105	75-130	110.2	5.21	30	
1,3-Dichlorobenzene	110.8	5.0	100	0	111	75-130	114.4	3.2	30	
1,4-Dichlorobenzene	102.4	5.0	100	0	102	75-130	104.2	1.79	30	
2-Butanone	85.95	25	100	0	86	55-150	95.75	10.8	30	
2-Hexanone	92.35	25	100	0	92.4	60-135	101.1	9.05	30	
4-Methyl-2-pentanone	104.2	5.0	100	0	104	77-178	112.8	7.93	30	
Acetone	93	50	100	0	93	60-160	100.4	7.65	30	
Acrylonitrile	97.5	5.0	100	0	97.5	60-140	103.4	5.87	30	
Benzene	115.4	5.0	100	0	115	85-125	119.2	3.24	30	
Bromochloromethane	94.75	5.0	100	0	94.8	75-130	99.95	5.34	30	
Bromodichloromethane	103.6	5.0	100	0	104	75-125	107.6	3.74	30	
Bromoform	85.55	5.0	100	0	85.6	60-125	87.6	2.37	30	
Bromomethane	76.3	5.0	100	0	76.3	30-185	74.7	2.12	30	
Carbon disulfide	108.5	5.0	100	0	108	60-165	112.9	3.97	30	
Carbon tetrachloride	112.8	5.0	100	0	113	65-140	115.9	2.76	30	
Chlorobenzene	104.4	5.0	100	0	104	80-120	109.2	4.45	30	
Chloroethane	90.7	5.0	100	0	90.7	50-140	94.75	4.37	30	
Chloroform	106.8	5.0	100	0	107	80-130	114.6	7.05	30	
Chloromethane	96.65	5.0	100	0	96.6	50-130	93.25	3.58	30	
cis-1,2-Dichloroethene	104.2	5.0	100	0	104	75-134	110	5.42	30	
cis-1,3-Dichloropropene	98.3	5.0	100	0	98.3	70-130	101.6	3.3	30	
Dibromochloromethane	96.4	5.0	100	0	96.4	60-115	100.5	4.16	30	
Dibromomethane	110	5.0	100	0	110	85-125	117	6.17	30	
Dichlorodifluoromethane	107	5.0	100	0	107	20-120	113.6	5.94	30	
Ethylbenzene	101	5.0	100	0	101	85-125	106.6	5.4	30	
Hexachloroethane	71.8	5.0	100	0	71.8	50-124	71.05	1.05	30	
Isopropylbenzene	105.4	5.0	100	0	105	80-127	112	5.98	30	
m,p-Xylene	207.5	10	200	0	104	75-130	215	3.57	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R178988** Instrument ID **VMS7** Method: **SW8260B**

Methyl iodide	111.8	5.0	100	0	112	60-160	94.25	17.1	30
Methyl tert-butyl ether	93.75	5.0	100	0	93.8	80-130	100.6	7	30
Methylene chloride	102.4	25	100	0	102	75-140	108.7	5.92	30
Naphthalene	107.6	25	100	0	108	55-160	106.4	1.21	30
n-Propylbenzene	98.4	5.0	100	0	98.4	78-120	104.2	5.77	30
o-Xylene	100.1	5.0	100	0	100	80-125	106	5.77	30
Styrene	106.2	5.0	100	0	106	85-125	111.4	4.69	30
Tetrachloroethene	117.2	5.0	100	0	117	77-138	122.4	4.38	30
Toluene	102.5	5.0	100	0	102	85-125	107.8	5.09	30
trans-1,2-Dichloroethene	106.4	5.0	100	0	106	80-140	111.6	4.86	30
trans-1,3-Dichloropropene	93.3	5.0	100	0	93.3	81-123	98.55	5.47	30
trans-1,4-Dichloro-2-butene	73.1	10	100	0	73.1	46-118	83.65	13.5	30
Trichloroethene	112.6	5.0	100	0	113	84-130	116.3	3.23	30
Trichlorofluoromethane	102.6	5.0	100	0	103	60-140	107.2	4.39	30
Vinyl chloride	99.65	5.0	100	0	99.6	50-136	103.1	3.4	30
Xylenes, Total	307.6	15	300	0	103	80-126	321.1	4.29	30
Surr: 1,2-Dichloroethane-d4	*91.5*	0	*100*	0	*91.5*	*75-120*	92.15	*0.708*	*30*
Surr: 4-Bromofluorobenzene	*99.35*	0	*100*	0	*99.4*	*80-110*	102.5	*3.12*	*30*
Surr: Dibromofluoromethane	*98.05*	0	*100*	0	*98*	*85-115*	98.85	*0.813*	*30*
Surr: Toluene-d8	*95.25*	0	*100*	0	*95.2*	*85-110*	96.15	*0.94*	*30*

The following samples were analyzed in this batch:

15121249-06A	15121249-07A	15121249-08A
15121249-09A	15121249-10A	15121249-11A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

MBLK	Sample ID: **VBLKW2-151228-R179082x**			Units: **µg/L**		Analysis Date: **12/29/15 12:08 PM**			
Client ID:	Run ID: **VMS6_151228B**			SeqNo: **3639386**		Prep Date:		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
1,1,2-Trichlorotrifluoroethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2,3-Trichloropropane	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	1.0								
1,2-Dibromoethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
2-Butanone	ND	5.0								
2-Hexanone	ND	5.0								
2-Methylnaphthalene	ND	5.0								
4-Methyl-2-pentanone	ND	1.0								
Acetone	ND	10								
Acrylonitrile	ND	1.0								
Benzene	ND	1.0								
Bromochloromethane	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	1.0								
Carbon disulfide	ND	1.0								
Carbon tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	1.0								
Chloroform	ND	1.0								
Chloromethane	ND	1.0								
cis-1,2-Dichloroethene	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
Diethyl ether	ND	1.0								
Ethylbenzene	ND	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

Hexachloroethane	ND	1.0					
Hexane	ND	1.0					
Isopropylbenzene	ND	1.0					
m,p-Xylene	ND	2.0					
Methyl iodide	ND	1.0					
Methyl tert-butyl ether	ND	1.0					
Methylene chloride	ND	5.0					
Naphthalene	ND	5.0					
n-Propylbenzene	ND	1.0					
o-Xylene	ND	1.0					
Styrene	ND	1.0					
Tetrachloroethene	ND	1.0					
Toluene	ND	1.0					
trans-1,2-Dichloroethene	ND	1.0					
trans-1,3-Dichloropropene	ND	1.0					
trans-1,4-Dichloro-2-butene	ND	2.0					
Trichloroethene	ND	1.0					
Trichlorofluoromethane	ND	1.0					
Vinyl acetate	ND	1.0					
Vinyl chloride	ND	1.0					
Xylenes, Total	ND	3.0					
Surr: 1,2-Dichloroethane-d4	*19.41*	0	*20*	0	*97*	*75-120*	0
Surr: 4-Bromofluorobenzene	*19.36*	0	*20*	0	*96.8*	*80-110*	0
Surr: Dibromofluoromethane	*20.08*	0	*20*	0	*100*	*85-115*	0
Surr: Toluene-d8	*19.24*	0	*20*	0	*96.2*	*85-110*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

LCS	Sample ID: **VLCSW2-151228-R179082x**				Units: **µg/L**		Analysis Date: **12/28/15 11:16 PM**			
Client ID:		Run ID: **VMS6_151228B**			SeqNo: **3639309**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.99	1.0	20	0	105	80-130	0			
1,1,1-Trichloroethane	20.98	1.0	20	0	105	75-130	0			
1,1,2,2-Tetrachloroethane	22.14	1.0	20	0	111	75-130	0			
1,1,2-Trichloroethane	21.16	1.0	20	0	106	75-125	0			
1,1-Dichloroethane	20.29	1.0	20	0	101	75-133	0			
1,1-Dichloroethene	19.77	1.0	20	0	98.8	70-145	0			
1,2,3-Trichloropropane	22.49	1.0	20	0	112	75-125	0			
1,2,4-Trichlorobenzene	21.33	1.0	20	0	107	70-135	0			
1,2,4-Trimethylbenzene	22.81	1.0	20	0	114	75-130	0			
1,2-Dibromo-3-chloropropane	20.58	1.0	20	0	103	60-130	0			
1,2-Dibromoethane	23.42	1.0	20	0	117	80-150	0			
1,2-Dichlorobenzene	21.84	1.0	20	0	109	70-130	0			
1,2-Dichloroethane	20.12	1.0	20	0	101	78-125	0			
1,2-Dichloropropane	21.75	1.0	20	0	109	75-125	0			
1,3,5-Trimethylbenzene	23.54	1.0	20	0	118	75-130	0			
1,3-Dichlorobenzene	22.29	1.0	20	0	111	75-130	0			
1,4-Dichlorobenzene	21.72	1.0	20	0	109	75-130	0			
2-Butanone	19.88	5.0	20	0	99.4	55-150	0			
2-Hexanone	20.06	5.0	20	0	100	60-135	0			
4-Methyl-2-pentanone	28.61	1.0	20	0	143	77-178	0			
Acetone	21.57	10	20	0	108	60-160	0			
Acrylonitrile	20.98	1.0	20	0	105	60-140	0			
Benzene	21.14	1.0	20	0	106	85-125	0			
Bromochloromethane	21.26	1.0	20	0	106	75-130	0			
Bromodichloromethane	21.41	1.0	20	0	107	75-125	0			
Bromoform	21.17	1.0	20	0	106	60-125	0			
Bromomethane	14.52	1.0	20	0	72.6	30-185	0			
Carbon disulfide	21.22	1.0	20	0	106	60-165	0			
Carbon tetrachloride	20.6	1.0	20	0	103	65-140	0			
Chlorobenzene	20.92	1.0	20	0	105	80-120	0			
Chloroethane	19.08	1.0	20	0	95.4	50-140	0			
Chloroform	19.93	1.0	20	0	99.6	80-130	0			
Chloromethane	15.28	1.0	20	0	76.4	50-130	0			
cis-1,2-Dichloroethene	19.7	1.0	20	0	98.5	75-134	0			
cis-1,3-Dichloropropene	21.51	1.0	20	0	108	70-130	0			
Dibromochloromethane	20.57	1.0	20	0	103	60-115	0			
Dibromomethane	21.63	1.0	20	0	108	85-125	0			
Dichlorodifluoromethane	19.35	1.0	20	0	96.8	20-120	0			
Ethylbenzene	21.46	1.0	20	0	107	85-125	0			
Hexachloroethane	18	1.0	20	0	90	50-124	0			
Isopropylbenzene	22.9	1.0	20	0	114	80-127	0			
m,p-Xylene	43.94	2.0	40	0	110	75-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

Methyl iodide	11.52	1.0	20	0	57.6	60-160	0	S
Methyl tert-butyl ether	21.84	1.0	20	0	109	80-130	0	
Methylene chloride	20.61	5.0	20	0	103	75-140	0	
Naphthalene	23.02	5.0	20	0	115	55-160	0	
n-Propylbenzene	22.2	1.0	20	0	111	78-120	0	
o-Xylene	21.25	1.0	20	0	106	80-125	0	
Styrene	23.06	1.0	20	0	115	85-125	0	
Tetrachloroethene	20.71	1.0	20	0	104	77-138	0	
Toluene	20.71	1.0	20	0	104	85-125	0	
trans-1,2-Dichloroethene	20.12	1.0	20	0	101	80-140	0	
trans-1,3-Dichloropropene	18.34	1.0	20	0	91.7	81-123	0	
trans-1,4-Dichloro-2-butene	16.11	2.0	20	0	80.6	46-118	0	
Trichloroethene	20.08	1.0	20	0	100	84-130	0	
Trichlorofluoromethane	19.22	1.0	20	0	96.1	60-140	0	
Vinyl chloride	19.12	1.0	20	0	95.6	50-136	0	
Xylenes, Total	65.19	3.0	60	0	109	80-126	0	
Surr: 1,2-Dichloroethane-d4	*18.32*	0	*20*	0	*91.6*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*19.93*	0	*20*	0	*99.6*	*80-110*	0	
Surr: Dibromofluoromethane	*19.7*	0	*20*	0	*98.5*	*85-115*	0	
Surr: Toluene-d8	*19.2*	0	*20*	0	*96*	*85-110*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

MS	Sample ID: **15121309-35A MS**				Units: **µg/L**		Analysis Date: **12/29/15 09:16 AM**			
Client ID:		Run ID: **VMS6_151228B**			SeqNo: **3639373**		Prep Date:		DF: **5**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	105.6	5.0	100	0	106	80-130	0			
1,1,1-Trichloroethane	110.9	5.0	100	0	111	75-130	0			
1,1,2,2-Tetrachloroethane	105.4	5.0	100	0	105	75-130	0			
1,1,2-Trichloroethane	103.6	5.0	100	0	104	75-125	0			
1,1-Dichloroethane	101	5.0	100	0	101	75-133	0			
1,1-Dichloroethene	103	5.0	100	0	103	70-145	0			
1,2,3-Trichloropropane	104	5.0	100	0	104	75-125	0			
1,2,4-Trichlorobenzene	100.1	5.0	100	0	100	70-135	0			
1,2,4-Trimethylbenzene	113	5.0	100	0	113	75-130	0			
1,2-Dibromo-3-chloropropane	92.6	5.0	100	0	92.6	60-130	0			
1,2-Dibromoethane	114.6	5.0	100	0	115	80-150	0			
1,2-Dichlorobenzene	104	5.0	100	0	104	70-130	0			
1,2-Dichloroethane	97.6	5.0	100	0	97.6	78-125	0			
1,2-Dichloropropane	108.4	5.0	100	0	108	75-125	0			
1,3,5-Trimethylbenzene	116.3	5.0	100	0	116	75-130	0			
1,3-Dichlorobenzene	108	5.0	100	0	108	75-130	0			
1,4-Dichlorobenzene	103	5.0	100	0	103	75-130	0			
2-Butanone	84.9	25	100	0	84.9	55-150	0			
2-Hexanone	87.45	25	100	0	87.4	60-135	0			
4-Methyl-2-pentanone	131.2	5.0	100	0	131	77-178	0			
Acetone	101	50	100	0	101	60-160	0			
Acrylonitrile	90.65	5.0	100	0	90.6	60-140	0			
Benzene	110.6	5.0	100	0	111	85-125	0			
Bromochloromethane	102.6	5.0	100	0	103	75-130	0			
Bromodichloromethane	104	5.0	100	0	104	75-125	0			
Bromoform	104	5.0	100	0	104	60-125	0			
Bromomethane	52.8	5.0	100	0	52.8	30-185	0			
Carbon disulfide	106.6	5.0	100	0	107	60-165	0			
Carbon tetrachloride	110.6	5.0	100	0	111	65-140	0			
Chlorobenzene	106.4	5.0	100	0	106	80-120	0			
Chloroethane	94.5	5.0	100	0	94.5	50-140	0			
Chloroform	100	5.0	100	0	100	80-130	0			
Chloromethane	60.4	5.0	100	0	60.4	50-130	0			
cis-1,2-Dichloroethene	96.4	5.0	100	0	96.4	75-134	0			
cis-1,3-Dichloropropene	105.6	5.0	100	0	106	70-130	0			
Dibromochloromethane	100.2	5.0	100	0	100	60-115	0			
Dibromomethane	107.6	5.0	100	0	108	85-125	0			
Dichlorodifluoromethane	94.15	5.0	100	0	94.2	20-120	0			
Ethylbenzene	110.2	5.0	100	0	110	85-125	0			
Hexachloroethane	84.3	5.0	100	0	84.3	50-124	0			
Isopropylbenzene	115.7	5.0	100	0	116	80-127	0			
m,p-Xylene	223.8	10	200	0	112	75-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

Methyl iodide	35.35	5.0	100	0	35.4	60-160	0	S
Methyl tert-butyl ether	101.6	5.0	100	0	102	80-130	0	
Methylene chloride	100.4	25	100	0	100	75-140	0	
Naphthalene	106.4	25	100	0	106	55-160	0	
n-Propylbenzene	111.8	5.0	100	0	112	78-120	0	
o-Xylene	108	5.0	100	0	108	80-125	0	
Styrene	116	5.0	100	0	116	85-125	0	
Tetrachloroethene	111.3	5.0	100	0	111	77-138	0	
Toluene	107.4	5.0	100	0	107	85-125	0	
trans-1,2-Dichloroethene	99.85	5.0	100	0	99.8	80-140	0	
trans-1,3-Dichloropropene	86.15	5.0	100	0	86.2	81-123	0	
trans-1,4-Dichloro-2-butene	70.85	10	100	0	70.8	46-118	0	
Trichloroethene	117.4	5.0	100	15.13	102	84-130	0	
Trichlorofluoromethane	97.5	5.0	100	0	97.5	60-140	0	
Vinyl chloride	93.5	5.0	100	0	93.5	50-136	0	
Xylenes, Total	331.8	15	300	0	111	80-126	0	
Surr: 1,2-Dichloroethane-d4	*90.7*	0	*100*	0	*90.7*	*75-120*	0	
Surr: 4-Bromofluorobenzene	*100.8*	0	*100*	0	*101*	*80-110*	0	
Surr: Dibromofluoromethane	*99.3*	0	*100*	0	*99.3*	*85-115*	0	
Surr: Toluene-d8	*96.3*	0	*100*	0	*96.3*	*85-110*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

MSD	Sample ID: **15121309-35A MSD**				Units: **µg/L**			Analysis Date: **12/29/15 09:42 AM**		
Client ID:		Run ID: **VMS6_151228B**			SeqNo: **3639382**	Prep Date:		DF: **5**		

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	107.6	5.0	100	0	108	80-130	105.6	1.88	30	
1,1,1-Trichloroethane	108.9	5.0	100	0	109	75-130	110.9	1.82	30	
1,1,2,2-Tetrachloroethane	109.6	5.0	100	0	110	75-130	105.4	3.91	30	
1,1,2-Trichloroethane	106.8	5.0	100	0	107	75-125	103.6	3.09	30	
1,1-Dichloroethane	102	5.0	100	0	102	75-133	101	0.887	30	
1,1-Dichloroethene	100.8	5.0	100	0	101	70-145	103	2.16	30	
1,2,3-Trichloropropane	111	5.0	100	0	111	75-125	104	6.51	30	
1,2,4-Trichlorobenzene	103.8	5.0	100	0	104	70-135	100.1	3.63	30	
1,2,4-Trimethylbenzene	112.4	5.0	100	0	112	75-130	113	0.533	30	
1,2-Dibromo-3-chloropropane	96.35	5.0	100	0	96.4	60-130	92.6	3.97	30	
1,2-Dibromoethane	117.4	5.0	100	0	117	80-150	114.6	2.5	30	
1,2-Dichlorobenzene	110	5.0	100	0	110	70-130	104	5.65	30	
1,2-Dichloroethane	97.25	5.0	100	0	97.2	78-125	97.6	0.359	30	
1,2-Dichloropropane	111.8	5.0	100	0	112	75-125	108.4	3.18	30	
1,3,5-Trimethylbenzene	115.4	5.0	100	0	115	75-130	116.3	0.734	30	
1,3-Dichlorobenzene	110.2	5.0	100	0	110	75-130	108	1.97	30	
1,4-Dichlorobenzene	106.4	5.0	100	0	106	75-130	103	3.25	30	
2-Butanone	86.45	25	100	0	86.4	55-150	84.9	1.81	30	
2-Hexanone	90.65	25	100	0	90.6	60-135	87.45	3.59	30	
4-Methyl-2-pentanone	130.5	5.0	100	0	130	77-178	131.2	0.535	30	
Acetone	102.2	50	100	0	102	60-160	101	1.28	30	
Acrylonitrile	92.6	5.0	100	0	92.6	60-140	90.65	2.13	30	
Benzene	109	5.0	100	0	109	85-125	110.6	1.41	30	
Bromochloromethane	102	5.0	100	0	102	75-130	102.6	0.636	30	
Bromodichloromethane	106.4	5.0	100	0	106	75-125	104	2.28	30	
Bromoform	108	5.0	100	0	108	60-125	104	3.73	30	
Bromomethane	67.7	5.0	100	0	67.7	30-185	52.8	24.7	30	
Carbon disulfide	106.7	5.0	100	0	107	60-165	106.6	0.141	30	
Carbon tetrachloride	109.9	5.0	100	0	110	65-140	110.6	0.68	30	
Chlorobenzene	108.1	5.0	100	0	108	80-120	106.4	1.63	30	
Chloroethane	96.75	5.0	100	0	96.8	50-140	94.5	2.35	30	
Chloroform	100.5	5.0	100	0	100	80-130	100	0.449	30	
Chloromethane	76.1	5.0	100	0	76.1	50-130	60.4	23	30	
cis-1,2-Dichloroethene	94.6	5.0	100	0	94.6	75-134	96.4	1.88	30	
cis-1,3-Dichloropropene	105.2	5.0	100	0	105	70-130	105.6	0.474	30	
Dibromochloromethane	102	5.0	100	0	102	60-115	100.2	1.73	30	
Dibromomethane	105.1	5.0	100	0	105	85-125	107.6	2.3	30	
Dichlorodifluoromethane	90.1	5.0	100	0	90.1	20-120	94.15	4.4	30	
Ethylbenzene	110.9	5.0	100	0	111	85-125	110.2	0.679	30	
Hexachloroethane	87.7	5.0	100	0	87.7	50-124	84.3	3.95	30	
Isopropylbenzene	117.6	5.0	100	0	118	80-127	115.7	1.59	30	
m,p-Xylene	222.4	10	200	0	111	75-130	223.8	0.628	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R179082x** Instrument ID **VMS6** Method: **SW8260B**

Methyl iodide	65.25	5.0	100	0	65.2	60-160	35.35	59.4	30	R
Methyl tert-butyl ether	103	5.0	100	0	103	80-130	101.6	1.32	30	
Methylene chloride	99.85	25	100	0	99.8	75-140	100.4	0.549	30	
Naphthalene	108.1	25	100	0	108	55-160	106.4	1.59	30	
n-Propylbenzene	113.4	5.0	100	0	113	78-120	111.8	1.42	30	
o-Xylene	108	5.0	100	0	108	80-125	108	0	30	
Styrene	113.3	5.0	100	0	113	85-125	116	2.31	30	
Tetrachloroethene	111.5	5.0	100	0	112	77-138	111.3	0.18	30	
Toluene	107.9	5.0	100	0	108	85-125	107.4	0.464	30	
trans-1,2-Dichloroethene	100.4	5.0	100	0	100	80-140	99.85	0.5	30	
trans-1,3-Dichloropropene	90.1	5.0	100	0	90.1	81-123	86.15	4.48	30	
trans-1,4-Dichloro-2-butene	73.85	10	100	0	73.8	46-118	70.85	4.15	30	
Trichloroethene	117.9	5.0	100	15.13	103	84-130	117.4	0.468	30	
Trichlorofluoromethane	96.8	5.0	100	0	96.8	60-140	97.5	0.721	30	
Vinyl chloride	98.15	5.0	100	0	98.2	50-136	93.5	4.85	30	
Xylenes, Total	330.4	15	300	0	110	80-126	331.8	0.423	30	
Surr: 1,2-Dichloroethane-d4	*89.5*	0	*100*	0	*89.5*	*75-120*	90.7	*1.33*	*30*	
Surr: 4-Bromofluorobenzene	*101.5*	0	*100*	0	*102*	*80-110*	100.8	*0.742*	*30*	
Surr: Dibromofluoromethane	*96.45*	0	*100*	0	*96.4*	*85-115*	99.3	*2.91*	*30*	
Surr: Toluene-d8	*97.95*	0	*100*	0	*98*	*85-110*	96.3	*1.7*	*30*	

The following samples were analyzed in this batch:

15121249-07A	15121249-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Fleis & Vandenbrink Engineering, Inc.
Work Order: 15121249
Project: Alcott Street Phase II 825390

QC BATCH REPORT

Batch ID: **R178881** Instrument ID **MOIST** Method: **E160.3M**

MBLK	Sample ID: **WBLKS-R178881**				Units: **% of sample**		Analysis Date: **12/22/15 04:48 PM**			
Client ID:		Run ID: **MOIST_151222C**			SeqNo: **3634615**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.050								J

LCS	Sample ID: **LCS-R178881**				Units: **% of sample**		Analysis Date: **12/22/15 04:48 PM**			
Client ID:		Run ID: **MOIST_151222C**			SeqNo: **3634613**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP	Sample ID: **15121217-10B DUP**				Units: **% of sample**		Analysis Date: **12/22/15 04:48 PM**			
Client ID:		Run ID: **MOIST_151222C**			SeqNo: **3634574**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	11.06	0.050	0	0	0		9.86	11.5	20	

DUP	Sample ID: **15121217-12B DUP**				Units: **% of sample**		Analysis Date: **12/22/15 04:48 PM**			
Client ID:		Run ID: **MOIST_151222C**			SeqNo: **3634580**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	11.83	0.050	0	0	0		13.19	10.9	20	

The following samples were analyzed in this batch:

15121249-01B	15121249-02B	15121249-03B
15121249-04B	15121249-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511 | Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV +1 304 356 3168
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070 | Middletown, PA +1 717 944 3541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

Chain of Custody Form

COC ID: 32039

15121249

ALS Project Manager: N | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Alcott Street Phase II	A	VOCs
Work Order		Project Number	825390	B	PNAs
Company Name	Fleis & Vandenbrink Engineering, Inc.	Bill To Company	Fleis & Vandenbrink Engineering, Inc.	C	Metals (MI-10)
Send Report To	Steve Kimm	Invoice Attn	Accounts Payable	D	Mercury
Address	4798 Campus Drive	Address	4798 Campus Drive	E	PCBs
				F	Moisture
City/State/Zip	Kalamazoo, MI 49008	City/State/Zip	Kalamazoo, MI 49008	G	
Phone	(269) 385-0011	Phone	(269) 385-0011	H	
Fax	(269) 382-6972	Fax	(269) 382-6972	I	
e-Mail Address	SKimm@fveng.com	e-Mail Address	Lerskin@fveng.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SB-1 (2'-3')	12-16-15	10:30 A	Soil	VOCs	3	X	X	X	X	X	X					
2	SB-2 (3'-4')	12-16-15	11:30 A	Soil		3	X	X	X	X	X	X					
3	SB-3 (3'-4')	12-16-15	12:50 P	Soil		3	X	X	X	X	X	X					
4	SS-1 (0'-1')	12-16-15	5:20 P	Soil		3	X	X	X	X	X	X					
5	SS-2 (0'-1')	12-16-15	5:25 P	Soil		3	X	X	X	X	X	X					
6	TMW-1	12-16-15	12:30 P	GW		8	X	X	X	X	X	X					
7	TMW-2	12-16-15	1:50 P	GW		8	X	X	X	X	X	X					
8	TMW-3	12-16-15	3:40 P	GW		8	X	X	X	X	X	X					
9	TMW-4	12-16-15	4:55 P	GW		8	X	X	X	X	X	X					
10	Field Blank	12-16-15	2:00 P	GW		3	X										

Sampler(s) Please Print & Sign: Amber Jane Portiss (Amber Jane Portiss, F+V)

Shipment Method: FedEx

Turnaround Time in Business Days (BD): ☐ 10 BD ☒ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Amber Jane Portiss	12-18-15	5:30 pm	FedEx
Relinquished by:	Date:	Time:	Received by (Laboratory):
	12/19/15	1030	YM Brock
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):
MG	12/21/15	0849	

Notes: Please also analyze the trip blank(s) for VOCs.

Cooler ID	Cooler Temp
	3.4

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ORIGIN ID:AZOA (616) 710-2491
AMBER PONTIUS
FLEIST VANDENBRINK
3352 128TH AVE

HOLLAND, MI 49424
UNITED STATES US

SHIP DATE: 18DEC15
ACTWGT: 61.60 LB
CAD: 6990374/SSFO1621
DIMS: 24x14x14 IN

BILL THIRD PARTY

TO ALS ENVIRONMENTAL

3352 128TH AVE

HOLLAND MI 49424

(616) 399-6070

INV:
PO:
REF:
DEPT:

FedEx Express

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 0201 7819 9808 0931

68 HLMA

49424
MI-US GRR

Part # 156297-435 REV 12/15

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Time: 0.00 pm

Date: 18 Dec 2015

Name: Fleist VandenBrink

Com:

Seal Broken By:

Date:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **FLEIS&VANDENBRINK - KZOO** Date/Time Received: **19-Dec-15 10:30**

Work Order: **15121249** Received by: **MB**

Checklist completed by Meghan Broadbent (eSignature) 21-Dec-15 (Date) Reviewed by: Alex Csaszar (eSignature) 21-Dec-15 (Date)

Matrices: soil, water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.4/3.4	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/21/2015 9:11:57 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

APPENDIX C

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Troll 9500 **Low-Flow System**
12/16/2015 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Amber Jane Pontius	Pump Model/Type	Peristaltic
Company Name	Fleis & VandenBrink	Tubing Type	TLPE
Project Name	Kalamazoo County	Tubing Diameter	0.19 [in]
Site Name	Alcott Ph2	Tubing Length	20 [ft]
		Pump placement from TOC	17.5 [ft]

Well Information:		**Pumping information:**	
Well ID	TMW-1	Final pumping rate	120 [mL/min]
Well diameter	1 [in]	Flowcell volume	228.51 [mL]
Well total depth	20 [ft]	Calculated Sample Rate	115 [sec]
Depth to top of screen	15 [ft]	Sample rate	115 [sec]
Screen length	60 [in]	Stabilized drawdown	0.24 [in]
Depth to Water	11.26 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [FNU]	DO [mg/L]	ORP [V]
Stabilization Settings			+/-0.1	+/-0.3 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-0.01
Last 5 Readings	12:17:49	56.91	7.43	730.91	23.81	16.98	0.32
	12:19:45	56.65	7.44	727.98	33.99	17.12	0.32
	12:21:40	56.81	7.44	729.53	15.89	17.04	0.32
	12:23:36	56.79	7.43	732.99	12.92	17.05	0.31
	12:25:33	56.80	7.43	730.92	8.19	17.05	0.31
Variance in last 3 readings	12:21:40	0.16	0.00	1.55	-18.10	-0.08	0.00
	12:23:36	-0.02	0.00	3.46	-2.97	0.01	0.00
	12:25:33	0.01	0.00	-2.08	-4.73	0.00	0.00

Notes: Sampled after 1 hour purge. Turbidity not yet stable with 10%.

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Troll 9500 **Low-Flow System**
12/16/2015 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Amber Jane Pontius	Pump Model/Type	Peristaltic
Company Name	Fleis & VandenBrink	Tubing Type	TLPE
Project Name	Kalamazoo County	Tubing Diameter	0.19 [in]
Site Name	Alcott Ph2	Tubing Length	15 [ft]
		Pump placement from TOC	12.5 [ft]

Well Information:		**Pumping information:**	
Well ID	TMW-2	Final pumping rate	120 [mL/min]
Well diameter	1 [in]	Flowcell volume	200.63 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	101 [sec]
Depth to top of screen	10 [ft]	Sample rate	101 [sec]
Screen length	60 [in]	Stabilized drawdown	0.6 [in]
Depth to Water	8.38 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [FNU]	DO [mg/L]	ORP [V]
Stabilization Settings			+/-0.1	+/-0.3 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-0.01
Last 5 Readings	13:41:30	55.11	7.64	499.03	6.77	17.95	0.35
	13:43:12	55.22	7.63	499.75	7.68	17.88	0.35
	13:44:52	55.31	7.63	498.06	4.05	17.84	0.35
	13:46:35	55.06	7.63	497.17	4.33	17.97	0.35
	13:48:17	55.13	7.63	493.91	4.64	17.93	0.35
Variance in last 3 readings	13:44:52	0.08	0.00	-1.69	-3.63	-0.05	0.00
	13:46:35	-0.24	-0.01	-0.89	0.28	0.13	0.00
	13:48:17	0.06	0.00	-3.26	0.31	-0.03	0.00

Notes:

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Troll 9500 **Low-Flow System**
12/16/2015 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Amber Jane Pontius	Pump Model/Type	Peristaltic
Company Name	Fleis & VandenBrink	Tubing Type	TLPE
Project Name	Kalamazoo County	Tubing Diameter	0.19 [in]
Site Name	Alcott Ph2	Tubing Length	15 [ft]
		Pump placement from TOC	12.5 [ft]

Well Information:		**Pumping information:**	
Well ID	TMW-3	Final pumping rate	120 [mL/min]
Well diameter	1 [in]	Flowcell volume	200.63 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	101 [sec]
Depth to top of screen	10 [ft]	Sample rate	101 [sec]
Screen length	60 [in]	Stabilized drawdown	1.2 [in]
Depth to Water	8.5 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [FNU]	DO [mg/L]	ORP [V]
Stabilization Settings			+/-0.1	+/-0.3 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-0.01
Last 5 Readings	15:30:47	54.83	7.67	433.38	3.17	18.09	0.25
	15:32:29	54.79	7.67	432.90	3.48	18.12	0.25
	15:34:11	54.81	7.67	433.57	1.75	18.11	0.25
	15:35:52	54.84	7.67	432.91	1.51	18.09	0.25
	15:37:34	54.87	7.67	433.64	1.44	18.08	0.25
Variance in last 3 readings	15:34:11	0.02	0.00	0.67	-1.73	-0.01	0.00
	15:35:52	0.04	0.00	-0.67	-0.24	-0.02	0.00
	15:37:34	0.02	0.00	0.73	-0.07	-0.01	0.00

Notes:

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Troll 9500 **Low-Flow System**
12/16/2015 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Amber Jane Pontius	Pump Model/Type	Peristaltic
Company Name	Fleis & VandenBrink	Tubing Type	TLPE
Project Name	Kalamazoo County	Tubing Diameter	0.19 [in]
Site Name	Alcott Ph2	Tubing Length	15 [ft]
		Pump placement from TOC	12.5 [ft]

Well Information:		**Pumping information:**	
Well ID	TMW-4	Final pumping rate	100 [mL/min]
Well diameter	1 [in]	Flowcell volume	200.63 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	121 [sec]
Depth to top of screen	10 [ft]	Sample rate	121 [sec]
Screen length	60 [in]	Stabilized drawdown	2.4 [in]
Depth to Water	9.83 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [FNU]	DO [mg/L]	ORP [V]
Stabilization Settings			+/-0.1	+/-0.3 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-0.01
Last 5 Readings	16:44:35	53.19	9.17	288.51	81.84	19.02	0.20
	16:46:36	53.33	9.18	288.70	71.97	18.94	0.21
	16:48:38	53.23	9.18	288.10	67.00	19.00	0.20
	16:50:40	53.29	9.19	288.13	62.67	18.97	0.20
	16:52:41	53.30	9.19	288.02	65.75	18.96	0.19
Variance in last 3 readings	16:48:38	-0.10	0.00	-0.59	-4.98	0.06	0.01
	16:50:40	0.05	0.00	0.03	-4.33	-0.03	0.00
	16:52:41	0.01	0.01	-0.11	3.08	-0.01	0.00

Notes: Sampled after turbidity within 10%

ATTACHMENT 3

GEOTECHNICAL REPORT
PROPOSED STATE OF MICHIGAN FACILITY, 505 E. ALCOTT STREET
KALAMAZOO, MICHIGAN

Prepared For:

FLEIS & VANDENBRINK
Kalamazoo, Michigan

Prepared By:

MATERIALS TESTING CONSULTANTS, INC.
Grand Rapids, Michigan

March 2017
MTC Project No. 161651

Materials Testing Consultants, INC.
MATERIALS Engineers, Independent TESTING Laboratories, Geotechnical & Environmental CONSULTANTS — Since 1968

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Southeast Michigan
253 Dino Drive, Suite B • Ann Arbor, MI 48103 • (800) 968.8378 • (734) 619.6868

March 7, 2017
Project No. 161651

Fleis & VandenBrink
4798 Campus Drive
Kalamazoo, Michigan 49008

Attention: Steven M. Kimm, CPG
Associate

Reference: Report of Geotechnical Investigation
Proposed State of Michigan Facility, 505 E. Alcott Street
Kalamazoo, Michigan

Dear Mr. Kimm:

We have completed a geotechnical investigation for the above-referenced project. The purpose of this investigation has been to identify the general subsurface soil conditions in the vicinity of the proposed construction, assess the site against previously completed investigations, analyze the conditions relative to the planned construction and to provide recommendations for the design of foundations and earth-related structures. This work has been performed as described in our proposal number 12752 dated January 6, 2017.

Presented herein are descriptions of our understanding of the design considerations, the geotechnical investigation, encountered conditions and engineering recommendations. The Appendix contains the report limitations and data collected during this investigation.

DESIGN CONSIDERATIONS

Available Information

We have been provided the following documents and information for use in this investigation:

- A Site Plan and Topographic Plan for the Family Health Center, received from Fleis & Vandenbrink on January 4, 2017, showing former grading and proposed design information for the Family Health Center building located immediately east of the project site.

- Geotechnical Exploration and Engineering Report for the proposed Kalamazoo County Health and Community Services Center, prepared by Professional Service Industries, Inc dated September 30, 2016, containing encountered subsurface information and geotechnical recommendations. The geotechnical report for the adjacent Family Health Center was also received on January 4, 2017.
- A Preliminary Site Plan of the proposed construction, prepared by Fleis & VandenBrink, undated and received January 5, 2017, showing the 30,000 sq-ft building footprint and surrounding pavement and parking areas for the proposed State of Michigan Facility. An updated site plan of the proposed building footprint was received from Fleis & VandenBrink on February 22, 2017, showing a revised L-shaped building footprint.
- Email and telephone correspondence with Mr. Robert J. Berends and Mr. Steven M. Kimm of Fleis & VandenBrink regarding the proposed construction and scope of work.
- Email correspondence with Mr. Keith Ritsema of JDH Engineering regarding anticipated structural loads for the proposed building.
- Onsite correspondence with Mr. Barrett Walquist of Fleis & VandenBrink regarding test pit locations.

Site History

We have reviewed available documentation regarding the history of the project site. We understand the site was the former location of the Performance Paper Mill, which operated from 1895 to 1989. We understand the former paper mill had a basement which extended to approximately el 780. We understand the site is designated as a "facility" by the MDEQ. Demolition of the former paper mill was performed from December 2004 through January 2005. Restoration of the Portage Creek was performed in 2011 which involved removing the old powerhouse foundations and concrete channelized creek, and constructing a new creek channel, floodplain and banks utilizing natural stream channel design techniques (cobble rip/rap, site grading, seeding and planting). Long-term monitoring of the restored channel and habitat is ongoing.

We have reviewed the geotechnical investigation report from Professional Service Industries, Inc (PSI) dated September 30, 2016. This report suggests that fill depth across the project site varies from approximately 6 to 60 ft throughout the proposed building footprint.

Location and Type of Structure

The proposed construction will be located in plan as shown on Figure No. 1. The site is located at 505 E. Alcott Street in Kalamazoo, Michigan.

The project will involve constructing a new 30,000 sq-ft building for the State of Michigan in the area of the former Performance Paper site. We understand the building will be two stories above grade with a partially below-grade basement level for parking. The basement level will consist of cast-in-place concrete with open air ventilation on two sides. The main and upper levels will consist of wood frame or light gauge metal framed floors for office use, with a low slope membrane roof. We have considered maximum column loads of 350 kips and maximum wall loads of 10 kips per lineal foot for this type of structure based on correspondence with JDH Engineering.

Final grading information, including proposed finish floor elevations, has not been provided. We have considered the basement level floor elevation will be near el 786. Site grading, including fill placement of up to 7 ft, will be required within the building footprint to reach final site grades.

Asphalt pavement areas are planned. Traffic is expected to consist of relatively light passenger vehicles with only occasional heavier axle wheel loading from trucks for deliveries, refuse pickup, etc.

We should be informed of any changes between the actual design conditions and those described herein as this information may affect our recommendations.

INVESTIGATION METHODOLOGY

An initial test pit investigation was performed the week prior to our soil boring investigation. Eight test pits were excavated in areas determined by MTC and Fleis & VandenBrink. Heavy contruction equipment, including a Caterpillar excavator, was used to excavate approximately 9 to 12 ft below the existing ground surface. A visual inspection of the test pit walls was then performed in order to investigate soil conditions in the areas of proposed construction. Pocket penetrometer readings were taken in cohesive soils to determine their consistency. In-situ soils were reviewed by our field engineer onsite and technically classified according to the methods of ASTM D 2488 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)". No testing for relative density was performed on in-situ granular soils.

Conventional soil test borings and sampling along with field engineering reconnaissance were used to investigate the subsurface conditions. The proposed building corners were not staked by a surveyor at the time of our field investigation. Boring and test pit locations are shown on Figure

No. 1. Investigation procedures, soil classification information and boring logs are provided in the Appendix.

Number of Borings	8
Boring Depth Range, ft.	15 to 40
Number of Test Pits	8
Test Pit Depth Range, ft.	8.5 to 12

An MTC engineer staked the approximate boring locations in the field. The ground surface elevations at the boring locations were approximated using a Trimble GPS unit. The elevations used in this report are given in feet and are based on the NAVD 88 datum. If more precise location and elevation data are desired, a registered professional land surveyor should be retained to locate the borings and determine their ground elevations.

The drilling was performed using conventional hollow-stem auger methods. The boreholes were backfilled to the original ground surface after drilling completion using compacted soil cuttings.

Soil samples were recovered on regular intervals by means of the Standard Penetration Test (SPT), ASTM D 1586. The SPT test involves the use of a 140 lb hammer with a 30 inch drop to drive a standard 2.0 inch O.D. split spoon sampler. The number of hammer blows required to drive the sampler 12 inches, after seating 6 inches, is termed the soil N-value and provides an indication of the soil's relative density and strength parameters at the sample location. SPT blow counts in 6 inch increments are recorded on the boring logs. The drill rig was equipped with a CME automatic hammer system which delivers a more consistent driving energy to the sampler compared to the rope and cathead system. Recovered samples were sealed, labeled and transported to our laboratory. All soil samples will be discarded after sixty days unless a longer hold time is specifically requested.

Observations during the drilling were recorded in the “Remarks” column of the boring logs. If difficult drilling through obstructions such as cobble, boulder, rubble, etc. are observed by our field personnel, it is noted in the “Remarks” column. Both the “Description” and “Remarks” columns on the boring logs should be reviewed for an indication of the encountered subsurface conditions.

The recovered soil samples were reviewed by an engineer and technically classified according to the methods of ASTM D 2488 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)". Estimates of the unconfined compressive strength of the cohesive samples were made using a calibrated penetrometer. A copy of the test boring logs along with a description of the terminology used on the logs and a chart of the ASTM D 2488 group symbols names are provided in the Appendix.

Borings were drilled and other sampling was conducted solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.

INVESTIGATION RESULTS

Regional Geology

The *Map of the Surface Formations of the Southern Peninsula of Michigan,* published by the State of Michigan, indicates the site is in an area of former sand lake beds, bordered by sandy spillway deposits. These surface formations are composed primarily of granular soil, consistent with the soils encountered during our geotechnical investigation. The *Map of Bedrock Topography of the Southern Peninsula of Michigan* indicates bedrock to be at approximately el 650 to el 700.

Site Conditions

At the time of our field work, the site was a vacant lot following the demolition of the former Performance Paper mill. The ground surface was covered with gravel and concrete fragments in the southern half of the site, with areas of low grass vegetation to the west and northwest. The site, in general, was relatively flat, with elevations decreasing slightly to the northeast. The southeast corner of the site was approximately 15 ft below the roadway elevation of E. Alcott Street to the south, suggesting a previous site grading effort was performed to lower site grades. A low area with ponded water was observed near the center of the northern half of the site. Elevations increased slightly to the northwest, possibly indicating an area of stockpiled soil. The project site was bordered by Portage Creek to the west, and the Family Health Center was under construction to the east. Construction supplies for the Family Health Center were being stored near the northeast corner of the project site.

Subsurface Conditions

The test pit excavations generally encountered highly variable granular fill to depths of 3 to 12 ft. The granular fill consisted of brown to gray *poorly graded sand with silt* (SP-SM), grayish brown *poorly graded sand with gravel* (SP) and gray to black *silty sand* (SM). Frequent brick and concrete fragments and pieces were observed in the upper 6 to 10 ft of the test pit excavations, and occasional 1 to 3 ft size rubble was also observed. Occasional lenses and thin strata of gray to black *silty sand* (SM) with coal fragments and pieces were observed in the upper 6 ft of Test Pits TP-1, TP-2, TP-6 and TP-8. A stratum of gray to black *poorly graded sand with silt* (SP-SM) with few coal fragments was observed below a depth of 8 ft in Test Pits TP-1 and TP-2, and below a depth of 5 ft in TP-8. Large construction debris consisting of rebar, a large timber log, and concrete

pieces up to 1 ft in size were observed in the upper 4.5 ft of Test Pit TP-2. A boulder-sized concrete obstruction was encountered at a depth of 3.5 ft in Test Pit TP-4. Wood fragments were observed in the upper 7.5 ft of Test Pit TP-7. Frequent brick and coal pieces were observed in Test Pit TP-8, and the remnants of a possible former brick foundation were encountered from a depth of approximately 5 to 8.5 ft. Native granular soil was encountered below the fill in Test Pits TP-4, TP-5, TP-6 and TP-7 and consisted of light brown to brown *poorly graded sand* (SP), gray *sandy gravel* (GP), brown *poorly graded sand with gravel* (SP) and brown *clayey sand* (SC) to the explored depths.

The conventional soil test borings generally encountered loose to dense granular fill to depths of approximately 5.5 to 12 ft, overlying native granular soil. The native granular soil was generally loose to medium dense in relative density, and consisted of brown to gray brown *poorly graded sand* (SP), gray brown *poorly graded sand with silt* (SP-SM), light brown to brown *silty sand* (SM), and gray *clayey sand* (SC) to the explored depths. A native stratum of stiff gray *lean clay with sand* (CL) was encountered in Boring B-7 from a depth of approximately 13 ft to the explored depth of 15 ft.

Boring B-3 encountered auger refusal on an obstruction at a depth of 2.5 ft. Supplemental borings B-3A and B-3B were offset and drilled in the relative area of B-3, and encountered auger refusal at depths of 2 ft and 2.5 ft, respectively. Boring B-5 encountered auger refusal on an obstruction at a depth of 10.5 ft. Supplemental boring B-5A was offset approximately 30 ft north, and encountered auger refusal at a depth of 3 ft. Boring B-8 encountered auger refusal on an obstruction at a depth of 10 ft. Supplemental boring B-8A was offset approximately 10 ft south, and encountered auger refusal at a depth of 3 ft.

Poor sample recovery was frequently noted in the fill soil and occasionally noted in the native granular soil, possibly indicating the presence of coarse gravel or cobble type obstructions. Boulders may be present whenever cobble is noted.

The relative density of granular soil is based on recorded SPT N-values while the consistency of cohesive soil is based on both recorded SPT N-values and on estimates of the unconfined compressive strength obtained with a calibrated penetrometer.

Groundwater was encountered during the drilling activities at depths of 3.6 to 12 ft below the ground surface, corresponding to els 768.1 to 777.8. Groundwater levels may fluctuate due to seasonal variations such as precipitations, snowmelt, the nearby creek level and other factors that may not be evident at the time of measurement. Groundwater levels may be different at the time of construction.

This section has provided a generalized description of the encountered subsurface soil conditions. The boring logs located in the Appendix should be reviewed for detailed soil descriptions. Some variation between boring locations may be expected.

CONCLUSIONS AND RECOMMENDATIONS

A geotechnical investigation and report was prepared for this site by PSI (No. 0408-1490, dated September 29, 2016) in which 6 ft to 60 ft of fill was noted and identified as either "deleterious old fill" or "apparent fill" soil. Our geotechnical investigation saw evidence of this "deleterious old fill" in the upper 4 to 12 ft of the soil which contained construction debris ranging in size from small fragments to 1 to 3 ft size rubble. Test pit excavations allowed us to further delineate the depth and extent of this "deleterious old fill," as well as the type, size and frequency of its contents. We were unable to validate the presence of "apparent fill" below the "deleterious old fill," and instead encountered native granular soil beneath the rubble fill.

Foundations

A conference call was conducted on March 6, 2017 to discuss the encountered soil conditions and possible foundation options for the proposed building, and included representatives from MTC, Fleis and VandenBrink, JDH Engineering and Walbridge. Through discussion, it was understood that a shallow foundation system was preferred to support the proposed construction. During the conference MTC proposed two possible options for subgrade improvement: either overexcavation of the variable fill material and replacement with MDOT Class II engineered fill, or removal of the rubble fill and installation of rammed aggregate piers. Following a discussion of the possible options, the team preferred the overexcavation and replacement option.

A conventional shallow continuous and spread foundation system appears feasible for support of the proposed two-story building with partial basement. It is important that the recommendations of this report, in-particular those pertaining to subgrade preparation, construction observation and testing, be implemented during design and construction.

The following parameters are recommended for foundation design:

Foundation Design Parameters

Bearing pressure for square or rectangular foundations, maximum net allowable, psf	4000
Bearing pressure for continuous foundations, Maximum net allowable, psf	4000
Bearing pressure for cantilever retaining walls, maximum net allowable, psf	4000
Minimum width of square or rectangular foundations, inches	24
Minimum width of continuous foundations, inches	18
Minimum embedment depth for frost protection, inches	42

Foundations are expected to bear near el 782 on approved engineered fill. Subgrade preparation recommendations are contained in the following section.

Foundation recommendations presented herein are based on a safety factor to resist bearing capacity failure of at least 3.0, a maximum anticipated total foundation settlement of 1 inch or less, and maximum anticipated differential settlement between adjacent foundations of 0.5 inches or less.

Site and Subgrade Preparation

All topsoil, vegetation, roots, and any other surficial miscellaneous debris should be removed from within the proposed pavement and construction areas. All brick and concrete rubble and construction debris within the proposed building footprint should be overexcavated within the footprint and within an area extending at least 10 ft beyond the footprint. The gray to black *silty sand* (SM) and gray to black *poorly graded sand with silt* (SP-SM) containing coal fragments may remain in place under the building and pavement, or be placed as fill in pavement areas. The limits of the proposed construction area, prior to the placement of any structures or engineered fill material, should be densified in the upper 12 inches using suitable compaction equipment to at least 95 percent of the soil's maximum ASTM D 1557 dry density by the contractor.

Due to the presence of highly variable granular fill will cobble- to rubble-sized construction debris encountered in the upper 3 to 12 ft of the test pits and soil borings, and due to variations that may exist between borings, subgrade improvement will be required over the entire building area to provide suitable foundation bearing conditions. Subgrade improvement should include excavation of the rubble fill and replacement with engineered fill. Overexcavation should encompass soil within the stress influence region of the foundation, defined as a region bordered by 2V:1H planes extending down and away from the bottom edge of the foundation to the approved bearing stratum.

The foundation subgrade should be inspected and tested by qualified geotechnical personnel familiar with the geotechnical recommendations. As part of the inspection and testing, the subgrade at each individual bearing element should be verified to be consistent with the conditions encountered in this investigation and the indicated recommended allowable bearing pressures. This testing should include a dynamic cone penetrometer (ASTM STP 399) to verify minimum relative densities and equivalent N-values in granular soil. In unsuitably loose footing subgrade, additional densification or overexcavation may be needed.

Engineered fill is approved on-site or imported soil placed in uniform layers and compacted to a minimum required density. Generally, on-site soils with a group symbol of SP are expected to be suitable for engineered fill. Imported fill should meet the requirements for MDOT Class II granular material. MDOT Class II soil or approved on-site soil meeting the requirements of SP should be used as backfill against below-grade walls and foundations.

Granular engineered fill and backfill should be compacted to at least 95 percent of the soil's maximum dry density as determined by the Modified Proctor test (ASTM D 1557). Vibratory compaction methods are typically found to be most effective in granular soils, however, relatively light equipment should be used adjacent to retaining walls to avoid overstressing the walls.

The fill should be placed and compacted in horizontal layers not exceeding 9 inches. Field density tests (ASTM D 2922) should be taken on each lift, as the fill is being placed, to verify compliance with compaction specifications. If the earthwork takes place during winter months, fill must not be placed on frozen ground and fill with frozen conglomerations of soil must not be used.

The site is a designated “facility” from prior environmental investigations. As a result, special handling considerations will need to be given to any soil that is removed from the site and should be determined by the project’s environmental consultant.

Because the site has been previously developed, there may be buried items not encountered in our borings, such as a septic tank, well, or utility conduit, which may cause settlement problems. The contract documents should reflect that it is necessary to remove or relocate such structures and to fill the excavation with engineered fill.

Groundwater

Groundwater was generally encountered in the borings from els 768.1 to 777.8, above the anticipated depth of overexcavation for subgrade improvement. Groundwater will likely be encountered during construction and suitable control of groundwater should be anticipated and planned for accordingly before the start of construction.

The contractor should be responsible for selecting and implementing an appropriate groundwater control system. The contractor should have previous dewatering experience on sites with similar conditions. Suitable silt and sediment traps should be incorporated into the dewatering system.

A perimeter footing drain is recommended in all areas where the building's floor slab is at or below the adjacent exterior elevation.

Special handling and discharge considerations may need to be given to the dewatering program and should be reviewed by the project's environmental consultant.

Slopes and Temporary Excavations

The owner and the contractor should make themselves aware of and become familiar with applicable local, state, and federal safety regulations, including current OSHA excavation and trench safety standards. Construction site safety generally is the sole responsibility of the contractor. The contractor shall also be solely responsible for the means, methods, techniques, sequences and operations of construction operations. We are providing the following information solely as a service on this project and, under no circumstances, should our provision of the following information be construed to mean that we are assuming responsibility for construction site safety or the contractor's activities; such responsibility is not implied and should not be inferred.

The contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations; e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations. For this site, the overburden soil encountered in our exploratory program is predominantly granular soil. We anticipate that OSHA will classify these materials as Type C. OSHA recommends a maximum slope inclination of 1½H:1V for Type C soil under ideal conditions. If any excavation, including a utility trench, is extended to a depth of more than 20 ft, OSHA requires that the side slopes of such excavation be designed by a professional engineer registered in the State of Michigan.

Excavations of approximately 10 ft will be needed to remove unsuitable fill material. As an alternative to temporary slopes, vertical excavations can be temporarily shored. The contractor or the specialty subcontractor should be responsible for the design of the temporary shoring in accordance with applicable regulatory requirements.

Concrete Floor Slabs and Rigid Pavements

Subgrade preparation in floor slab areas should be as described in the "Site and Subgrade Preparation" section of this report. For design of the concrete floor slabs and rigid pavements supported on-grade, a modulus of subgrade reaction value, K_{30}, of 100 psi/inch is recommended. We recommend placement of at least 6 inches of MDOT Class II fill directly beneath the floor slab. Design of concrete slabs should be in accord with ACI and the applicable building code recognized design guidelines. If a vapor sensitive covering will be placed over the floor slab or the slab will be in a humidity controlled area, a vapor retarder/barrier is recommended following ACI 302.1R-04 guidelines and the floor covering manufacturer's guidelines.

Below-Grade Walls

The lateral earth pressure against below-grade walls is a function of the rigidity of the wall, the nature of the backfill material, the slope of the top surface of the retained soil and surcharge loads.

For design of below-grade rigid walls with horizontal front and backslopes, the following soil parameters may be used:

Rigid Wall Lateral Earth Pressures

Coefficient of at-rest earth pressure	0.47
Coefficient of passive earth pressure	1.5
Friction angle of backfill	32 degrees
Total unit weight of backfill	120 pcf
Friction angle between smooth concrete & sand	20 degrees
Friction angle between rough concrete & sand	24 degrees

The at-rest pressure is recommended for relatively rigid walls due to the lack of minor movement that is necessary to reduce the applied pressure from the at-rest to the active condition.

For design of cantilever retaining walls, the following soil parameters may be used:

Cantilever Wall Lateral Earth Pressures

Coefficient of active earth pressure	0.33
Coefficient of passive earth pressure	3.0
Friction angle of backfill	32 degrees
Total unit weight of backfill	120 pcf
Friction angle between smooth concrete & sand	20 degrees
Friction angle between rough concrete & sand	24 degrees

Any possible surcharge loads should be included in the design of all earth-retaining structures.

MBC Seismic Considerations

The seismic design category can be determined with noted exceptions following Section 1613 of the 2012 Michigan Building Code. The Risk Category under Section 1613.3.5 shall be determined by a licensed structural engineer. Based on the subsurface conditions identified in the soil borings, our experience with the geological conditions in the site vicinity and the procedures outlined in Section 1613 of the 2012 Michigan Building Code and Chapter 20, Table 20.3-1 of ASCE 7, we recommend assigning a Site Class D to this site. A Site Class D designates a stiff soil profile in the upper 100 ft with average SPT uncorrected N-values between 15 and 50 in granular soil and average undrained shear strengths, s_u, between 1,000 and 2,000 psf in cohesive soil. Recommended seismic ground motion values are provided in the following table.

Recommended Seismic Ground Motion Values

2012 Michigan Building Code Values	Short Period (0.2 sec)	Long Period (1 sec)
Spectral Response Acceleration, Figure 1613.3.1(1 and 2), %g	$S_s = 8$	$S_l = 5$
Seismic Site Coefficient, Table 1613.3.3(1 and 2)	$F_a = 1.6$	$F_v = 2.4$
Maximum Considered Spectral Response Acceleration, Equation 16-37 and 16-38	$S_{MS} = 0.128g$	$S_{Ml} = 0.120g$
5% Damped Spectral Response Acceleration, Equation 16-39 and 16-40	$S_{DS} = 0.085g$	$S_{Dl} = 0.080g$

CLOSURE

In this report, descriptions of the geotechnical investigation, encountered conditions and recommendations for the design of foundations and earth-related structures have been presented. The limitations of this study are described in the Appendix.

The recommendations presented in this report are based upon a limited number of subsurface samples obtained from various sampling locations. The samples may not fully indicate the nature and extent of the variations that actually exist between sampling locations. For that reason, among others, we strongly recommend that we be retained to observe earthwork construction. If variations or other latent conditions become evident during construction, it will be necessary for us to review these conditions and our recommendations as appropriate.

We appreciate the opportunity to provide this service to you on this project. Should you have any questions or require further assistance, please contact our office.

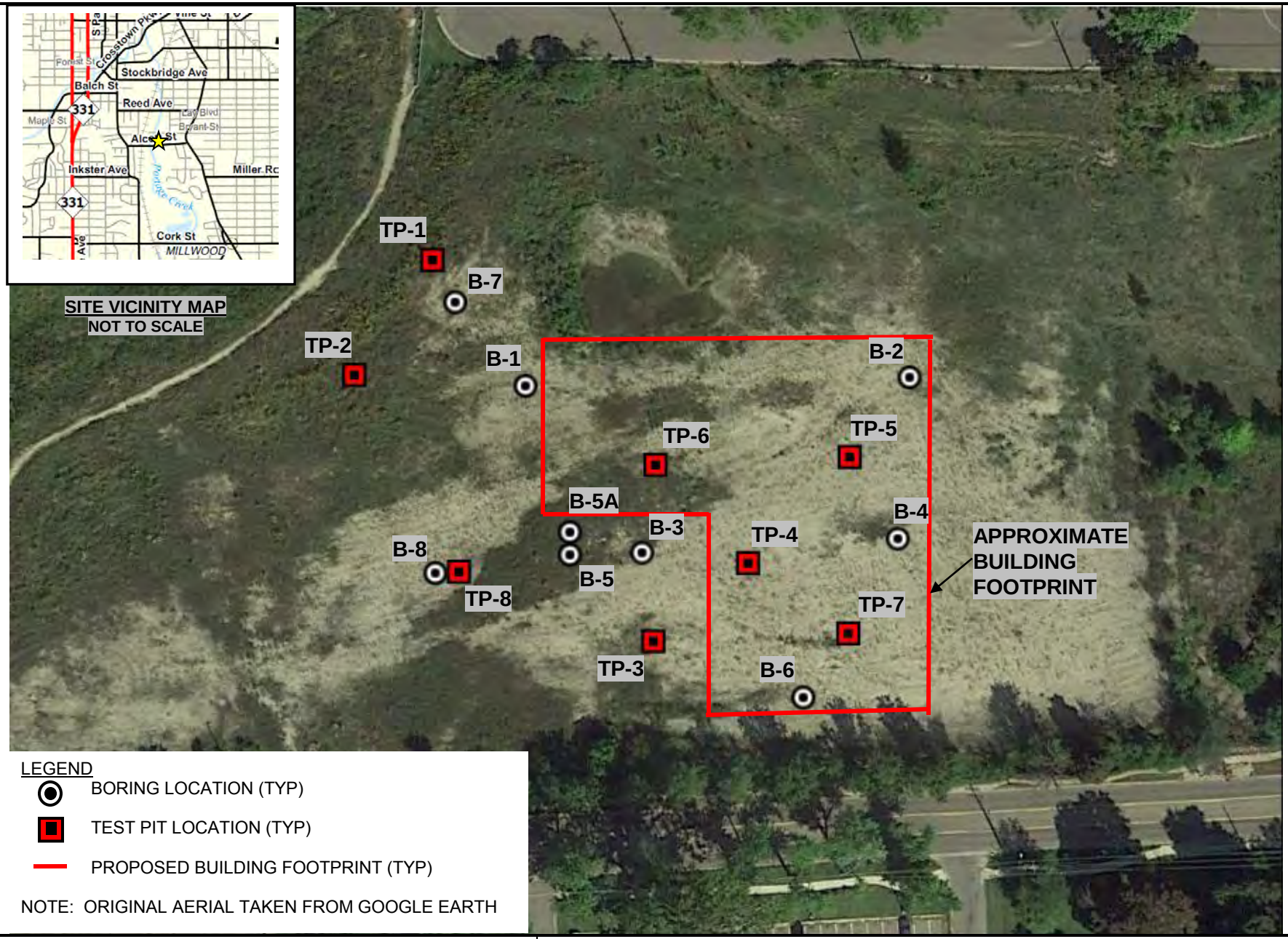
Sincerely,

MATERIALS TESTING CONSULTANTS, INC.

Adam L. DePoy, E.I.T.
Assistant Project Engineer

Douglas W. Sabin, P.E.
Senior Project Manager

Attachments: Figure No. 1 - Boring and Test Pit Location Plan
Appendix
- Limitations
- Boring Log Terminology
- Soil Classification Chart
- Boring Logs
- Test Pit Data



TITLE: BORING & TEST PIT LOCATION PLAN		PROJECT: PROPOSED STATE OF MICHIGAN FACILITY, 505 E. ALCOTT STREET	
SCALE: NTS	DATE: 3/6/17	PROJECT NO.: 161651	**Materials Testing Consultants, INC.**
FIG. NO.: 1	DR. BY: AD	REV. BY: DS	693 PLYMOUTH N.E., GRAND RAPIDS, MICH. 49505 • PHONE 616/456-5469

APPENDIX

- **Limitations**
- **Boring Log Terminology**
- **Soil Classification Chart**
- **Boring Logs**
- **Test Pit Data**

LIMITATIONS

Soil Variations

The recommendations in this report are based upon the data obtained from the soil borings. This report does not reflect variations which may occur between these borings, and which would not become evident until construction. If variations then become evident, it would be necessary for a re-evaluation of recommendations of this report, after performing on-site observations.

Warranties

We have prepared this report in accordance with generally accepted soil and foundation engineering practices. We make no other warranties, either expressed or implied, as to the professional advice provided under the terms of our agreement and included in this report. This report is prepared exclusively for our client and may not be relied upon by other parties without written consent from our office.

Boring Logs

In the process of obtaining and testing samples and preparing this report, we follow reasonable and accepted practice in the field of soil engineering. Field logs maintained during drilling describe field occurrences, sampling locations, and other information. The samples obtained in the field are subjected to additional testing in the laboratory and differences may exist between the field logs and the final logs. The engineer reviews the field logs and laboratory test data, and then prepares the final boring logs. Our recommendations are based on the contents of the final logs.

Review of Design Plans and Specifications

In the event that any changes in the design of the building or the location, however slight, are planned, our recommendations shall not be considered valid unless modified or approved in writing by our office. We recommend that we be provided the opportunity to review the final design and specifications in order to determine whether changes in the original concept may have affected the validity of our recommendations, and whether our recommendations have, in fact, been implemented in the design and specifications.

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Boring Log Terminology

Soil Classification Systems:

ASTM D2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D2488 Standard Practice for Description and Identifications of Soils (Visual-Manual Procedure)

Minor Component Quantifying Terms:

Trace (less than 5%); Few (5 to 10%); Little (15 to 25%); Some (30 to 45%); Mostly (50 to 100%)

Sample Types and Numbering:

S	SPT, split-barrel sample, ASTM D1586	**U**	Shelby tube sample, ASTM D1587
***S**	Other than 2" split barrel sample	**A**	Auger cuttings
L	SPT with liner, ASTM D1586	**R**	Rock core run
		G	Geoprobe liner

Grain Size:

Boulder	>12"
Cobble	12" to 3"
Coarse Gravel	3" to 0.75"
Fine Gravel	0.75" to No. 4
Coarse Sand	No. 4 to No. 10
Medium Sand	No. 10 to No. 40
Fine Sand	No. 40 to No. 200

Clay - Soil passing a No. 200 sieve that can be made to exhibit plasticity (putty-like properties) and exhibits considerable strength when air dry (ASTM D2487).
Silt - Soil passing a No. 200 sieve that is nonplastic or very slightly plastic and exhibits little or no strength when air dry (ASTM D2487).
Peat - A soil composed of decomposed vegetable tissue with organic odor, dark brown to black color, spongy consistency, and a fibrous to amorphous texture.

"Grades with" or "Grades without" may be used to describe soil when characteristics vary within a stratum.

Moisture Condition:. Dry (absence of visible moist.); Moist (damp but no visible water); Wet (visible free water)

Compactness (Coarse Grained Soils) and Consistency (Fine Grained Soils):

N-value	Relative Density	Compactness	N-value	Approx. Shear Strength, ksf	Consistency
0 - 4	0 - 20%	Very Loose	0 - 2	0.25	Very Soft
5 - 10	20 - 40%	Loose	3 - 4	0.25 - 0.5	Soft
11 - 30	40 - 70%	Med. Dense	5 - 8	0.5 - 1	Med. Stiff
31 - 50	70 - 90%	Dense	9 - 16	1 - 2	Stiff
>50	90 - 100%	Very Dense	17 - 32	2 - 4	Very Stiff
			>32	>4	Hard

Groundwater Observations:

During - indicates water level encountered during the boring
End - indicates water level immediately after drilling
Date and Depth - Measurements at indicated date

Water observations in pervious soils are considered reliable for the date. Water observations in impervious soils may not be accurate groundwater measurements unless records are made over several days time. Groundwater levels will fluctuate for both pervious and impervious soils.

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ASTM D2488 Soil Classification Chart - Coarse Grained Soil:

Primary Soil Type	Group Name and (Group Symbol)	Criteria
GRAVEL	Well-graded GRAVEL (GW) Poorly graded GRAVEL (GP)	<5% fines, <15% sand
	Well-graded GRAVEL with sand (GW) Poorly-graded GRAVEL with sand (GP)	<5% fines, >15% sand
	Well-graded GRAVEL with silt (GW-GM) Poorly graded GRAVEL with silt (GP-GM) Well-graded GRAVEL with clay (GW-GC) Poorly-graded GRAVEL with clay (GP-GC)	10% fines, <15% sand
	Well-graded GRAVEL with silt and sand (GW-GM) Poorly graded GRAVEL with silt and sand (GP-GM) Well-graded GRAVEL with clay and sand (GW-GC) Poorly graded GRAVEL with clay and sand (GP-GC)	10% fines, >15% sand
	Silty GRAVEL (GM) Clayey GRAVEL (GC)	>15% fines, <15% sand
	Silty GRAVEL with sand (GM) Clayey GRAVEL with sand (GC)	>15% fines, >15% sand
SAND	Well-graded SAND (SW) Poorly-graded SAND (SP)	<5% fines, <15% gravel
	Well-graded SAND with gravel (SW) Poorly-graded SAND with gravel (SP)	<5% fines, >15% gravel
	Well-graded SAND with silt (SW-SM) Poorly-graded SAND with silt (SP-SM) Well-graded SAND with clay (SW-SC) Poorly-graded SAND with clay (SP-SC)	10% fines, <15% gravel
	Well-graded SAND with silt and gravel (SW-SM) Poorly-graded SAND with silt and gravel (SP-SM) Well-graded SAND with clay and gravel (SW-SC) Poorly-graded SAND with clay and gravel (SP-SC)	10% fines, >15% gravel
	Silty SAND (SM) Clayey SAND (SC)	>15% fines, <15% gravel
	Silty SAND with gravel Clayey SAND with gravel	>15% fines, >15% gravel

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ASTM D2488 Soil Classification Outline - Fine Grained Soil:

Primary Soil Type	Group Name and (Group Symbol)	Criteria
SILT	SILT (ML) Elastic SILT (MH)	<15% plus No. 200
	SILT with sand (ML) Elastic SILT with sand (MH)	15-25% plus No. 200, % sand > % gravel
	SILT with gravel (ML) Elastic SILT with gravel (MH)	15-25% plus No. 200, % gravel >% sand
	Sandy SILT (ML) Sandy Elastic SILT (MH)	>30% plus No. 200, % sand > % gravel, <15% gravel
	Sandy SILT with gravel (ML) Sandy Elastic SILT with gravel (MH)	>30% plus No. 200, % sand > % gravel, >15% gravel
	Gravelly SILT (ML) Gravelly Elastic SILT (MH)	>30% plus No. 200, % gravel > % sand, <15% sand
	Gravelly SILT with sand (ML) Gravelly Elastic SILT with sand (MH)	>30% plus No. 200, % gravel > % sand, >15% sand
CLAY	Lean CLAY (CL) Fat CLAY (CH)	<15% plus No. 200
	Lean CLAY with sand (CL) Fat CLAY with sand (CH)	15-25% plus No. 200, % sand > % gravel
	Lean CLAY with gravel (CL) Fat CLAY with gravel (CH)	15-25% plus No. 200, % gravel >% sand
	Sandy lean CLAY (CL) Sandy fat CLAY (CH)	>30% plus No. 200, % sand > % gravel, <15% gravel
	Sandy lean CLAY with gravel (CL) Sandy fat CLAY with gravel (CH)	>30% plus No. 200, % sand > % gravel, >15% gravel
	Gravelly lean CLAY (CL) Gravelly fat CLAY (CH)	>30% plus No. 200, % gravel > % sand, <15% sand
	Gravelly lean CLAY with sand (CL) Gravelly fat CLAY with sand (CL)	>30% plus No. 200, % gravel > % sand, >15% sand

Note: Percentages are based on estimated amounts of fines, sand and gravel to the nearest 5%

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-1
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: Rev. By: AD
Coordinates: N=283374.7 E=12795959.8 (MI South ift)
Elevation: 780.1 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 6.0 ft.

Date Begin: 3/2/17 Date End: 3/2/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	12.0±
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 40.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
779.1	1	S-1	0.9	6-9-22 N=31		Brown silty SAND; mostly coarse to fine sand, little silty fines, few coarse to fine gravel, few brick and concrete fragments and pieces, moist, Fill				Fill 0.0' to 12.0'±
778.1	2									
777.1	3									
776.1	4	S-2	1.2	4-3-23 N=26						S-1, S-2 and S-10: Poor recovery; possible coarse gravel/COBBLE
775.1	5									
774.1	6				SM					
773.1	7	S-3	1.4	2-2-4 N=6		Grades gray to brown, with sandy clay lenses				
772.1	8									
771.1	9	S-4	1.5	3-3-4 N=7						
770.1	10									
769.1	11									
768.1	12					12.0				
767.1	13					Brown poorly graded SAND; mostly medium to fine sand, trace silty fines, wet				
766.1	14	S-5	1.5	6-8-9 N=17	SP					
765.1	15									
764.1	16									Charged augers with bentonite slurry from 15.0'
763.1	17					17.0				
762.1	18					Brown silty SAND; mostly fine sand, some silty fines, wet				
761.1	19	S-6	1.5	4-4-6 N=10	SM					
760.1	20									
759.1	21									
758.1	22					22.0				
757.1	23					Gray brown poorly graded SAND; mostly coarse to fine sand, few coarse to fine gravel, trace silty fines, wet				
756.1	24	S-7	1.3	4-7-9 N=16						
755.1	25									
754.1	26									
753.1	27									
752.1	28									
751.1	29	S-8	1.3	11-9-10 N=19						
750.1	30									
749.1	31				SP					
748.1	32									
747.1	33									
746.1	34	S-9	1.3	3-5-8 N=13						
745.1	35									
744.1	36									
743.1	37									
742.1	38									
741.1	39	S-10	0.9	5-11-17 N=28						
740.1	40					40.0				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-2
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: CK Rev. By: AD
Coordinates: N=283380.5 E=12796186.4 (MI South ift)
Elevation: 777.6 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 4.5 ft.

Date Begin: 3/1/17 Date End: 3/1/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	5.5±
Sampler	SPT	2"	End	3.6
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 40.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
776.6	1	S-1	1.2	14-20-26 N=46	SM	Brown silty SAND with gravel; mostly medium to fine sand, little silty fines, little fine gravel, moist, with brick and concrete fragments, Fill				Fill 0.0' to 5.5'±
775.6	2									
774.6	3									Difficult drilling from 2.0' to 4.0'
773.6	4	S-2	1.0	6-4-4 N=8		Grades with clay seams				S-1 and S-2: Poor recovery; possible coarse gravel/COBBLE
772.6	5									
771.6	6					5.5				
770.6	7	S-3	1.5	6-6-8 N=14		Brown poorly graded SAND; mostly fine sand, trace silty fines, wet				
769.6	8									
768.6	9	S-4	1.5	6-9-8 N=17		Grades few fine gravel				
767.6	10									
766.6	11									Charged augers with bentonite slurry from 10.0'
765.6	12									
764.6	13									
763.6	14	S-5	1.5	6-8-11 N=19						
762.6	15									
761.6	16									
760.6	17									
759.6	18									
758.6	19	S-6	1.5	8-12-14 N=26		Grades mostly medium to fine sand				
757.6	20									
756.6	21									
755.6	22									
754.6	23				SP					
753.6	24	S-7	1.5	10-11-12 N=23						
752.6	25									
751.6	26									
750.6	27									
749.6	28									
748.6	29	S-8	1.5	7-12-19 N=31						
747.6	30									
746.6	31									
745.6	32									
744.6	33									
743.6	34	S-9	1.5	29-15-13 N=28		Grades few coarse to fine gravel				
742.6	35									
741.6	36									
740.6	37									
739.6	38									
738.6	39	S-10	1.5	6-9-14 N=23		Grades with clay lenses				
737.6	40					40.0				End of boring at 40.0'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-3
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: ST Rev. By: AD
Coordinates: N=283277 E=12796028.7 (MI South ift)
Elevation: 782.8 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings.

Date Begin: 2/27/17 Date End: 2/27/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 2.5 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
781.8	1	S-1	1.1	6-14-8 N=22	SM	Brown to dark brown silty SAND; mostly coarse to fine sand, little silty fines, moist, with gravel to COBBLE size pieces of concrete and brick, Fill				Frequent gravel to COBBLE size pieces of rubble with occasional boulder or large pieces
780.8	2					2.5				
						End of Boring				Refusal on obstruction at 2.5'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-3A
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: ST Rev. By: AD
Coordinates: N=283275.8 E=12796024.7 (MI South ift)
Elevation: 783.0 ft Datum: NAVD 88 (GPS Observation)
Notes: Offset 4'W of B-3

Plugging Record: Backfilled borehole with compacted cuttings.

Date Begin: 2/27/17 Date End: 2/27/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 2.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
782.0	1				SM	Brown silty SAND; mostly coarse to fine sand, little silty fines, moist with concrete and brick fragments up to COBBLE size				Fill: 0.0' to 2.0'
781.0	2					2.0				
						End of Boring				Refusal on obstruction at 2.0'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-3B
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: ST Rev. By: AD
Coordinates: N=283264.5 E=12796033.3 (MI South ift)
Elevation: 783.6 ft Datum: NAVD 88 (GPS Observation)
Notes: Offset 4'SW of B-3

Plugging Record: Backfilled borehole with compacted cuttings.

Date Begin: 2/27/17 Date End: 2/27/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 2.5 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
782.6	1				SM	Brown silty SAND; mostly coarse to fine sand, little silty fines, moist with frequent concrete and brick pieces up to COBBLE size				Fill 0.0' to 2.5'
781.6	2					2.5				
						End of Boring				Refusal on obstruction at 2.5'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-4
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: ST Rev. By: AD
Coordinates: N=283285.5 E=12796179.5 (MI South ift)
Elevation: 780.2 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 7.7 ft.

Date Begin: 2/27/17 Date End: 2/27/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	7.5±
Sampler	SPT	2"	End	6.7
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 40.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
779.2	1	S-1	1.5	13-25-27 N=52	SM	Brown silty SAND; mostly coarse to fine sand, some silty fines, moist, with concrete and brick fragments and pieces up to small COBBLE size, Fill				Fill 0.0' to 9.9'; Gravels, concrete and brick pieces up to COBBLE size in cuttings from 0.0' to 6.0'±
778.2	2									
777.2	3									
776.2	4	S-2	1.5	9-11-9 N=20						
775.2	5									
774.2	6					6.0				
773.2	7	S-3	0.8	7-15-7 N=22	SM	Brown silty SAND; mostly medium to fine sand, little silty fines, trace coarse to fine gravel, wet, with trace wood fragments, Fill				S-3 and S-4: Poor recovery; possible coarse gravel/COBBLE
772.2	8									
771.2	9	S-4	0.6	4-4-4 N=8						Charged augers with bentonite slurry from 8.5'
770.2	10					9.9				
769.2	11				SP	Brown poorly graded SAND; mostly medium to fine sand, trace silty fines, trace fine gravel, wet with occasional sandy clay lenses				
768.2	12									
767.2	13									
766.2	14	S-5	1.3	3-8-9 N=17						
765.2	15									
764.2	16									
763.2	17									
762.2	18									
761.2	19	S-6	1.5	6-7-9 N=16						
760.2	20									
759.2	21									
758.2	22									
757.2	23									
756.2	24	S-7	1.1	4-6-7 N=13						S-7: Poor recovery; possible coarse gravel/COBBLE
755.2	25									
754.2	26									
753.2	27									
752.2	28									
751.2	29	S-8	1.3	7-9-10 N=19						
750.2	30									
749.2	31									
748.2	32					32.0				
747.2	33				SP-SM	Gray brown poorly graded SAND with silt; mostly medium to fine sand, few silty fines, trace coarse to fine gravel, wet, with frequent silty sand lenses and seams				
746.2	34	S-9	1.5	6-3-4 N=7						
745.2	35									
744.2	36									
743.2	37									
742.2	38									
741.2	39	S-10	1.5	7-11-10 N=21		Grades trace silty fines				
740.2	40					40.0				End of boring at 40.0'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-5
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: CK Rev. By: AD
Coordinates: N=283175 E=12795986.4 (MI South ift)
Elevation: 786.3 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 7.8 ft.

Date Begin: 2/28/17 Date End: 2/28/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	8.5±
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 10.5 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
785.3	1	S-1	1.5	13-15-23 N=38	SM	Brown silty SAND with gravel; mostly medium to fine sand, little silty fines, little fine gravel, moist, with brick and concrete fragments, Fill				Fill 0.0' to 10.5'±
784.3	2									
783.3	3					3.0				
782.3	4	S-2	1.5	8-10-9 N=19		Brown poorly graded SAND; mostly medium to fine sand, trace silty fines, moist, Fill				Difficult drilling at 3.0'; concrete debris noted in soil cuttings
781.3	5									
780.3	6									
779.3	7	S-3	1.0	4-5-4 N=9	SP	Grades with brick pieces				S-3: Poor recovery; possible coarse gravel/COBBLE
778.3	8									
777.3	9	S-4	1.5	3-3-3 N=6		Grades without brick, wet				
776.3	10					10.5				
						End of Boring				Charged augers with bentonite slurry from 10.0' Refusal on obstruction at 10.5'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-5A
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: CK Rev. By: AD
Coordinates: N=283289 E=12795986.3 (MI South ift)
Elevation: 783.4 ft Datum: NAVD 88 (GPS Observation)
Notes: 30'N of B-5

Plugging Record: Backfilled borehole with compacted cuttings.

Date Begin: 3/1/17 Date End: 3/1/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 3.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
782.4	1	S-1	1.2	6-26-15 N=41	SM	Brown silty SAND with gravel; mostly medium to fine sand, little silty fines, little fine gravel, moist, few brick and concrete pieces, Fill				Fill 0.0' to 3.0'
781.4	2									
780.4	3					3.0				Difficult drilling from 2.0' to 3.0'
						End of Boring				Refusal on obstruction at 3.0'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-6
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: CK Rev. By: AD
Coordinates: N=283193.6 E=12796122.6 (MI South ift)
Elevation: 783.0 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 5.5 ft.

Date Begin: 2/28/17 Date End: 2/28/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	12.0±
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 40.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
782.0	1	S-1	1.0	3-8-8 N=16		Brown silty SAND with gravel; mostly medium to fine sand, little silty fines, little coarse to fine gravel, moist, with brick pieces and concrete fragments, Fill				Fill 0.0' to 8.5'±
781.0	2									
780.0	3									S-1 through S-3: Poor recovery; possible coarse gravel/COBBLE
779.0	4	S-2	0.5	2-1-1 N=2	SM	Grades with clay lenses				
778.0	5									
777.0	6									
776.0	7	S-3	1.2	6-5-8 N=13		Grades little fine gravel, with brick and concrete fragments				
775.0	8									
774.0	9					8.5				
773.0	10	S-4	1.5	5-7-11 N=18		Light brown silty SAND; mostly fine sand, some silty fines, moist				
772.0	11									Charged augers with bentonite slurry from 10.0'
771.0	12									
770.0	13									Driller noted COBBLE at 12.0'
769.0	14	S-5	1.5	4-5-5 N=10	SM	Grades trace fine gravel, wet				
768.0	15									
767.0	16									
766.0	17									
765.0	18					18.5				
764.0	19	S-6	1.5	6-9-7 N=16		Light brown poorly graded SAND; mostly medium to fine sand, trace silty fines, trace fine gravel, wet, with clay lenses				
763.0	20									
762.0	21									
761.0	22									
760.0	23									
759.0	24	S-7	1.5	5-8-9 N=17		Grades without clay lenses				
758.0	25									
757.0	26									
756.0	27									
755.0	28				SP					
754.0	29	S-8	1.5	5-7-8 N=15						
753.0	30									
752.0	31									
751.0	32									
750.0	33									
749.0	34	S-9	0.6	6-5-6 N=11						S-9: Poor recovery; possible coarse gravel/COBBLE
748.0	35									
747.0	36									
746.0	37					37.0				
745.0	38				SC	Gray clayey SAND; mostly fine sand, little clayey fines, wet, with sandy clay lenses				
744.0	39	S-10	1.5	5-8-11 N=19			3.25			End of boring at 40.0'
743.0	40					40.0				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-7
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: CK Rev. By: AD
Coordinates: N=283423 E=12795918.9 (MI South ift)
Elevation: 785.0 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 7.8 ft.

Date Begin: 2/28/17 Date End: 2/28/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 15.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
784.0	1	S-1	1.5	7-14-16 N=30		Brown silty SAND with gravel; mostly medium to fine sand, little silty fines, little fine gravel, moist, with concrete and asphalt fragments and pieces, Fill				Fill: 0.0' to 9.0'
783.0	2									
782.0	3									
781.0	4	S-2	1.5	8-7-7 N=14	SM	Grades with brick fragments and pieces				Difficult drilling at 3.0'
780.0	5									
779.0	6									
778.0	7	S-3	1.5	3-4-4 N=8						
777.0	8									
776.0	9	S-4	1.5	3-3-2 N=5		9.0				
775.0	10				SP	Brown poorly graded SAND; mostly medium to fine sand, trace silty fines, trace fine gravel, moist				
774.0	11									
773.0	12									
772.0	13					13.0				
771.0	14	S-5	1.5	2-3-3 N=6	CL	Gray lean CLAY with sand; mostly clayey fines, little fine sand, moist	1.5			
770.0	15					15.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-8
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: CK Rev. By: AD
Coordinates: N=283264.9 E=12795907.5 (MI South ift)
Elevation: 784.0 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 6.5 ft.

Date Begin: 3/1/17 Date End: 3/1/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 10.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
783.0	1	S-1	1.2	8-14-14 N=28		Brown silty SAND with gravel; mostly medium to fine sand, little silty fines, few fine gravel, moist, with brick and concrete pieces, Fill				Fill 0.0' to 10.0'
782.0	2									
781.0	3									Difficult drilling at 2.0'
780.0	4	S-2	1.3	3-4-4 N=8	SM	Grades trace fine gravel				S-1, S-3 and S-4: Poor recovery; possible coarse gravel/COBBLE
779.0	5									
778.0	6									
777.0	7	S-3	0.8	1-2-2 N=4						
776.0	8									
775.0	9	S-4	0.6	50/3"		10.0				
774.0	10					End of Boring				Refusal on obstruction at 10.0'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

Materials Testing Consultants

LOG OF BORING

Project No.: 161651
Boring No.: B-8A
Sheet: 1 of 1

Project: Proposed State of Michigan Facility, 505 E. Alcott Street
Client: Fleis & VandenBrink
Location: Kalamazoo, MI
Drill Type: CME 45
Crew Chief: ZM Field Eng.: CK Rev. By: AD
Coordinates: N=283257.8 E=12795907.6 (MI South ift)
Elevation: 784.1 ft Datum: NAVD 88 (GPS Observation)
Notes: 10'S of B-8

Plugging Record: Backfilled borehole with compacted cuttings.

Date Begin: 3/1/17 Date End: 3/1/17

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 3.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
783.1	1				SM	Brown silty SAND with gravel; mostly medium to fine sand, little silty fines, few fine gravel, moist, with brick and concrete fragments and pieces, Fill				Fill 0.0' to 3.0'
782.1	2									
781.1	3					3.0				
						End of Boring				Refusal on obstruction at 3.0'

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

TEST PIT DATA

TEST PIT NO. 1 (TP1)	
	6” Brown silty sand Topsoil
0.5ft – 8ft±	Brown poorly graded SAND with silt (SP-SM); trace cobble and concrete pieces, moist, FILL
1.5ft - 2.0ft	6” lens of black to gray silty SAND with coal fragments and pieces
8ft± - 9ft±	Gray to black poorly graded SAND with silt (SP-SM); few coal coke fragments and fine gravel, moist, FILL
9ft± to 12ft+	Brown poorly graded SAND with silt (SP-SM); few fine gravel, moist, FILL
TEST PIT NO. 2 (TP2)	
	6” Brown silty sand Topsoil
0.5ft – 4.5ft±	Brown poorly graded SAND with silt (SP-SM); few coarse to fine gravel, trace cobble, moist, FILL, with construction debris (rebar, timber log, concrete pieces to rubble), occasional roots
4.5ft± - 6ft±	Gray to black silty SAND (SM); moist, with coal coke fragments and pieces
6ft± – 8.5ft±.	Brown poorly graded SAND with silt (SP-SM); few coarse to fine gravel, trace cobble, moist, FILL, occasional roots
8.5ft± - 12ft+	Gray to black poorly graded SAND with silt (SP-SM); few coal coke fragments and fine gravel, moist, FILL, with light brown to brown coarse to fine sand lenses
TEST PIT NO. 3 (TP3)	
	15” Gravel & Crushed Stone/Concrete
1.3ft – 11ft+	Grayish brown poorly graded SAND with gravel (SP); trace cobble, roots and brick fragments, moist, FILL, with a thin gray seam at 2.5 ft
TEST PIT NO. 4 (TP4)	
	20” Gravel & Crushed Stone/Concrete
1.7ft – 3.5ft±	Grayish brown poorly graded SAND with gravel (SP); trace cobble and concrete pieces, moist, FILL, large boulder-sized concrete at 3.5 ft
3.5ft± - 8ft±	Light brown to brown poorly graded SAND (SP); trace fine gravel, moist, with silt lenses
8ft± - 9.5ft+	Gray sandy GRAVEL (GP); wet

TEST PIT DATA

TEST PIT NO. 5 (TP5)	
	18” Gravel & Crushed Stone/Concrete
1.5ft – 3ft±	Grayish brown poorly graded SAND with gravel (SP); trace cobble and concrete pieces, moist, FILL
3ft± to 8.5ft±	Light brown to brown poorly graded SAND (SP); few fine gravel, moist
8.5ft± to 9ft+	Gray sandy GRAVEL (GP); wet
TEST PIT NO. 6 (TP6)	
	12” Gravel & Crushed Stone/Concrete
1.0ft – 3ft±	Grayish brown poorly graded SAND with gravel (SP); trace cobble, moist, FILL
1.8ft – 2.3ft	6” lens of black coal fragments and pieces
3ft± – 9ft+	Brown clayey SAND (SC); few fine gravel, moist, with sandy clay lenses (pen. 0.75 – 1.25 tsf)
TEST PIT NO. 7 (TP7)	
	12” Gravel & Crushed Stone/Concrete
1.0ft – 7.5ft±	Grayish brown poorly graded SAND with gravel (SP); trace cobble, trace brick, concrete and wood pieces, moist, FILL
7.5ft± - 9ft+	Brown poorly graded SAND with gravel (SP); wet
TEST PIT NO. 8 (TP8)	
	12” Gravel & Crushed Stone/Concrete
1.0ft – 2.5ft	Grayish brown poorly graded SAND with gravel (SP); trace cobble and concrete pieces, moist, FILL
2.5ft - 5ft±	Light brown poorly graded SAND (SP); moist, FILL
3.8ft – 4ft±	3” lens of black cemented silty SAND with coal coke fragments and pieces
5ft± - 8.5ft+	Gray to black poorly graded SAND with silt (SP-SM); few coal coke fragments and fine gravel, trace cobble, moist, FILL, with brick pieces and rubble (possible old foundation)

Note: Pen. = Calibrated penetrometer reading in tons/square foot

ATTACHMENT 4

JDH
Structural
Engineering

March 8, 2017

Mr. Eric Kemmer
City of Kalamazoo
Economic Development and Planning
241 W. South Street
Kalamazoo, MI 49007

RE: Building Foundation Development Issues
Performance Paper Property, Kalamazoo, Kalamazoo County, Michigan

Dear Eric,

The purpose of this letter is to provide our opinion regarding the preliminary foundation design of a new three story building at the noted site. This building will consist of lower level parking and atrium space with two wood or light gauge framed floors supported by the lowest structural steel or concrete "podium" level and will have a footprint of 30,000 square feet.

Our opinion is based on correspondence and discussion with Fleis & Vandenbrink Engineering (F&V), Materials Testing Consultants (MTC), and Walbridge, which includes a geotechnical investigation and report completed by MTC.

This letter and the scope of JDH Engineering, Inc. role does not include cost estimation input regarding environmental remediation of the site.

A geotechnical report was done in September 2016 by Professional Service Industries (PSI). This report identified deep foundations (caissons, auger cast piles, etc.) as the most cost effective option, combined with excavation and removal of the poor soils to a minimum of three feet below the elevation of the slabs on grade, to be replaced with engineered fill. They identified that there would be some elevated risk of slab on grade performance with this option, borne by the owner, as some of the poor fill would be left in place. In the report, they also discussed the possibility of using Rammed Aggregate Piers or full removal of the poor fill with engineered backfill for support of the building foundations. They concluded that these two options would likely be more expensive than deep foundations, and that more exploration was needed to validate these options.

The more recent geotechnical investigation performed by MTC included test pits and concluded that a deep foundation system was unnecessary. Rather, based on the extents of the poor fill found with their investigation, and discussion between F&V, MTC, JDH, and Walbridge, we concluded that full excavation of the poor soils and replacement with engineered fill would be the most economical approach for support of the buildings' foundations and slab on grade.

We discussed the potential use of Rammed Aggregate Piers, but there was concern about suitability of this system on a site that included extensive concrete rubble fill, which could reduce the effectiveness of these piers. We also noted that a significant amount of poor soil removal would be required for the slab on grade support anyway.

MTC has recommended the use of a 4000 psf allowable bearing pressure based on the removal of poor soils and replacement with engineered fill. This bearing pressure will be slightly better than the average site in West Michigan, constructed on shallow spread footings. The cost of the concrete foundations themselves will be greatly reduced when compared with a deep foundation system such as auger cast piles.

Based on the MTC report, we would not anticipate that anything out of the ordinary is required for the design and construction of the buildings' foundations or slab on grade.

Thank you for the opportunity to assist with this evaluation, and we would be happy to respond to questions or comments that may arise.

Sincerely,

Keith Ritsema, P.E.
JDH Engineering, Inc.