

Additional Brownfields Phase II ESA Report

Congress and Main Redevelopment Project

10 Maiden Lane

10 and 12 Congress Street

83-87, 89, and 99 North Main Street

St. Albans, Vermont 05478



44°48'46.70" N, 73°4'55.93" W

DEC Site #2018-4811

January 10, 2019

Prepared For:

City of St. Albans

100 North Main Street

St. Albans, Vermont 05478



LE·Environmental

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LEE Project 18-112



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## 1.0 INTRODUCTION/BACKGROUND

LE Environmental LLC of Waterbury, Vermont (LEE) was retained by the City of St. Albans to conduct an Additional Brownfields Phase II Environmental Site Assessment (ESA) at the Congress and Main Redevelopment project, located at 10 Maiden Lane, 10 and 12 Congress Street, 83-87, 89, and 99 Main Street in the City of St. Albans, Vermont (Site). A work plan and cost estimate, dated November 13, 2018, was prepared, and the work plan was approved in an electronic mail message from the Vermont Department of Environmental Conservation (DEC) dated November 28, 2018. A Site Location Map is included in Appendix A. The Site was assigned DEC Site #2018-4811.

LEE completed a Phase I ESA report for the project location on May 3, 2018. The following Recognized Environmental Conditions (RECs) were identified:

1. Historic use of 12 Congress Street as a dry cleaner.
2. A gasoline underground storage tank (UST) shown on the south side of 83-87 North Main Street on the 1926 Sanborn map.
3. Historic use of the property for a vulcanizing plant (83 North Main Street, 1926).
4. Historic use of the property as a machine shop (89 North Main Street, 1906-1920).
5. Fuel oil contamination in soil and groundwater in the vicinity of a closed in place 5,000-gallon UST at 10 Maiden Lane.
6. Historic use of the property as a millinery (89 North Main Street, 1889 and 97-99 North Main Street, 1884-1889).
7. Potential soil contamination from the 1980's fire at 99 North Main Street, and the 1896 fire that destroyed the Welden Inn.

A geophysical investigation was performed on June 13, 2018, to investigate the former gasoline UST location noted on the historic Sanborn map. Subterra Locating Services of Colchester conducted a ground penetrating radar investigation in the area of the former gasoline UST. Only one anomaly was detected in the investigation, and it was determined to be buried piping associated with a water suppression system for the adjoining building. The anomaly was not believed to be associated with a UST.

A Phase II ESA was completed in November 2018. The Phase II ESA consisted of a soil, groundwater, and sub-slab soil vapor evaluation. Soils at the Site consisted of sand with varying amounts of silt, overlaying a dense glacial till layer. Evidence of charred wood and ash was noted in the soil borings advanced at the northwest portion of the Site, in the gravel parking lot where a building burned in the 1990s. Evidence of charred wood, ash, and bricks was also noted in the soil borings



advanced in the parking lot behind the Maiden Lane apartments, where a hotel burned in the late 1800s.

Concentrations of metals and polycyclic aromatic hydrocarbons (PAHs) were observed in soils throughout the Site. Levels of lead, arsenic, and PAHs were noted above statewide urban background in soils on the Site, which is consistent with urban fill or “development soils” typically found in urban downtowns. No Volatile Organic Compound (VOCs) or other metals were reported above regulatory standards in the soil samples. Analysis of extractable lead and mercury via the toxicity leaching procedure (TCLP) indicates the metal concentrations found in the soil would not render the soil hazardous waste.

Four groundwater monitoring wells were installed at the Site. Groundwater was found to flow in a westerly direction, at an approximate hydraulic gradient of 6%. The laboratory results indicate that two VOCs (acetone, and 1,2,4-trimethylbenzene) were present above the laboratory reporting limits, but well below the Vermont Groundwater Enforcement Standards (VGES), in the sample collected from MW-1. A low level of acetone, well below the VGES was also noted in MW-2. No other VOCs were reported in the groundwater samples.

Concentrations of total arsenic, total barium, total chromium, total lead, and total selenium were reported in the groundwater samples. The concentrations were well below the VGES for these metals except for the arsenic and lead concentrations in MW-1. The turbidity in the groundwater sample from MW-1 was higher than the other groundwater samples due to slow groundwater recharge. The elevated metals concentrations may be attributed to sediment in the groundwater sample.

Four sub-slab soil gas samples were obtained from three of the existing buildings on-Site. An outdoor ambient air sample was also collected for comparison purposes. Several VOCs were reported in the sub-slab soil gas samples. None of the reported VOC concentrations exceeded vapor intrusion (VI) residential sub-slab soil gas screening values except for naphthalene and acrolein in all four samples. The reported acrolein concentration also exceeded the industrial sub-slab soil gas screening value in Subslab-2. The concentration of Acrolein in the ambient air sample also exceeded the VI residential sub-slab soil gas screening value. Naphthalene was not detected in the ambient air sample, but the laboratory detection limit was elevated to just above the VI residential sub-slab soil gas screening value.

A round of indoor air quality testing was recommended to determine if naphthalene is present in the indoor air above applicable standards. Additionally, it was recommended that monitoring well MW-1 be re-sampled for metals to confirm the findings of the Phase II ESA.



## **2.0 ENVIRONMENTAL ASSESSMENT - GROUNDWATER**

The Phase II ESA completed in November 2018 concluded the groundwater in the vicinity of MW-1 had concentrations of arsenic and lead above the VGES. The elevated levels of metals were attributed to sediment in the groundwater sample, due to low groundwater recharge and high turbidity. Follow-up sampling was recommended to confirm the exceedances.

On December 11, 2018, LEE measured groundwater levels with an electronic water level indicator, and collected a groundwater sample from monitoring well MW-1. Groundwater was measured at depths ranging from 6.71-8.61 feet below top of casing (btoc). A Geotech peristaltic pump was used to purge and sample the wells. New, disposable, polyethylene down hole tubing and silicon pump head tubing was installed prior to pumping each well. LEE collected the groundwater sample from MW-1 using low-flow methods. A turbidity measurement of 3.45 NTU was obtained at MW-1 at the time of sampling.

Following the completion of purging, the groundwater sample was collected directly from the pump discharge tubing into a laboratory-supplied pre-acidified sample container. One duplicate sample was also collected. The samples were submitted to Eastern Analytical Inc. for analysis of RCRA 8 Metals via EPA Method 200.8.

A groundwater contour map was created using the measured depths to water at the four monitoring wells. The groundwater flows to the northwest at an approximate hydraulic gradient of 8%. The measured water level depths, surveyed top of casing elevations, and calculated groundwater flow are presented in Appendix B and the groundwater contour map is included in Appendix A.

### **2.1 Groundwater Quality Testing Results**

The laboratory results indicate concentrations of total barium and total selenium were reported in the groundwater sample. The concentrations were below the VGES for these metals. Arsenic and lead were not detected above the reporting limit. The turbidity in the groundwater sample from MW-1 (3.45 NTU) was significantly lower than the turbidity in the previous sample (1,100 NTU). The elevated metal concentrations in the previous sample are confirmed to be attributed to sediment in the groundwater sample and not indicative of the aquifer conditions. A tabular summary of the groundwater monitoring data is included in Appendix B.

### **2.2 QA/QC Sampling Results**

Quality assurance and quality control samples for this investigation included a duplicate sample. The relative percent difference calculation for the groundwater samples ranged from a low of 0% to 2%, which is within the acceptable range of



30%. Based on this information, all of the laboratory data meet normal QAQC requirements and are considered acceptable for the purposes of this investigation.

### **3.0 ENVIRONMENTAL ASSESSMENT – INDOOR AIR**

On December 11, 2018, LEE performed indoor air quality (IAQ) monitoring at 12 Congress Street, which is not slated for demolition during the redevelopment, to determine if the contaminants identified in the sub-slab vapor samples are also present in the indoor air. The building is currently vacant except for a salon that occupies a portion of the first floor and uses a portion of the basement for storage of cosmetics. The basement is divided into separate sections using plywood, but there are visible spaces between the sections of plywood that allow for air movement between the basement sections.

Two IAQ samples were collected in the following locations: first floor of the southeastern residential apartment (IA-1), and the southern portion of the basement (IA-2). One outdoor ambient air sample (AA-1) was collected. LEE surveyed the contents of the apartment and the southern portion of the basement prior to setting up the canisters. No known sources of VOCs were found in the apartment. The southern basement contained minor amounts of latex paints and pvc cement. The containers were sealed and in good condition. The northern portion of the basement had a strong cosmetic odor and contained salon supplies. The salon uses shampoo, conditioners, hairsprays and gels, hair dye, nail polishes and remover, and biocide. No PID readings above background were measured in the first floor apartment. PID readings up to 0.5 ppm were reported in the basement.

Weather during the IAQ testing was cold and cloudy with minimal wind. The outdoor temperature was approximately 19 degrees F. The indoor temperature was 59 degrees F. Barometric pressure was 30.12" and steady during the IAQ testing. The apartment and basement were closed during the testing, with only incidental entry and exit for starting and stopping the canisters.

IAQ samples and the ambient air sample were collected into certified clean 6.0-liter stainless steel Summa canisters with 2-hour regulators. The samples were submitted to ALS Laboratory of Simi Valley, California, for testing via EPA Method TO-15 for VOCs using low-level analysis.

#### **3.1 Indoor Air Quality Testing Results**

The results of the IAQ testing indicate that benzene and acrolein were present in all three samples at concentrations in excess of the DEC's residential indoor air screening thresholds. The first floor sample and the basement sample also contained concentrations of chloroform and 1,2-Dichloroethane above the residential indoor air screening thresholds. The basement sample also contained concentrations of ethyl acetate above the residential indoor air screening threshold.



The total VOCs in the basement sample were more than 5 times higher than the first floor sample, and more than 75 times higher in the ambient air sample. A spreadsheet summary of the data compared to relevant screening levels is included in Appendix B, and an Indoor Air Contaminant Concentration Map is included in Appendix A. The laboratory analytical data are included in Appendix C. A synopsis of the results is as follows:

- **Acrolein** concentrations ranged from 0.29 micrograms per cubic meter ( $\text{ug}/\text{m}^3$ ) in the ambient (outdoor) air sample to  $1.8 \text{ ug}/\text{m}^3$  in the basement indoor air sample. The residential air space contained concentrations similar to the ambient air concentration ( $0.33 \text{ ug}/\text{m}^3$ ). The sub-slab vapor samples collected in this building in July 2018 ranged from  $1.6\text{-}3.1 \text{ ug}/\text{m}^3$ .
- **Benzene** concentrations collected in the basement and the first floor were almost identical ( $0.46 \text{ ug}/\text{m}^3$  in the first floor and  $0.47 \text{ ug}/\text{m}^3$  in the basement). These concentrations were lower than the ambient (outdoor) air sample ( $0.64 \text{ ug}/\text{m}^3$ ). The sub-slab vapor samples collected in this building in July 2018 ranged from  $0.54\text{-}0.78 \text{ ug}/\text{m}^3$ .
- **Chloroform** concentrations collected in the basement and the first floor were identical ( $0.16 \text{ ug}/\text{m}^3$ ). This concentration is just over the residential indoor air screening value of  $0.12 \text{ ug}/\text{m}^3$ . This compound was not reported in the ambient air sample above the detection limit. The sub-slab vapor samples collected in this building in July 2018 ranged from  $0.49\text{-}1.1 \text{ ug}/\text{m}^3$ .
- **1,2-Dichloroethane** concentrations collected in the basement ( $0.15 \text{ ug}/\text{m}^3$ ) were slightly higher than the first floor sample ( $0.11 \text{ ug}/\text{m}^3$ ). These concentrations are equal to or just over the residential indoor air screening value of  $0.11 \text{ ug}/\text{m}^3$ . This compound was not reported in the ambient air sample above the detection limit. The sub-slab vapor samples collected in this building in July 2018 ranged from non-detect less than  $0.20 \text{ ug}/\text{m}^3$  to  $0.13 \text{ ug}/\text{m}^3$ .
- **Ethyl Acetate:** concentrations collected in the basement ( $74 \text{ ug}/\text{m}^3$ ) exceeded the residential indoor air screening value of  $73 \text{ ug}/\text{m}^3$ . This compound was not reported in the ambient air sample or the first floor air sample above the detection limit. The sub-slab vapor samples collected in this building in July 2018 ranged from  $2.0\text{-}2.3 \text{ ug}/\text{m}^3$ .
- **Naphthalene** in air is a contaminant of concern due to the sub-slab vapor exceedances noted in the July 2018 sampling event ( $1.0\text{-}1.2 \text{ ug}/\text{m}^3$ ). No concentrations of naphthalene were report in the indoor air samples above the reporting limits. However, the reporting limits were above the residential indoor air screening value of  $0.03 \text{ ug}/\text{m}^3$ , in part due to the interference of other compounds in the samples.
- Several of the reporting limits were elevated above the residential indoor air screening values, due in part to the interference of other compounds in the samples



## 3.0 UPDATED CONCEPTUAL SITE MODEL

### 3.1 Site Conditions and Setting

The Site is located in the downtown area of the City of St. Albans. The surrounding area includes residential/institutional/commercial properties along North Main Street, Congress Street, Bank Street, and Maiden Lane. Taylor Park occupies the next block to the south. The area becomes residential to the east (uphill) and more commercial/industrial in nature toward the west (downhill).

The Site's topography drops toward the west. The Site is entirely developed with structures, parking lots, and a retaining wall. Bedrock in the vicinity of the property consists of Ordovician-aged slate and dolostone of the Skeels Corners group. The overburden deposits in the area of the property are mapped as beach gravel.<sup>1</sup> Soils encountered during drilling consisted of sand with varying amounts of silt, overlaying a dense glacial till layer. Evidence of charred wood and ash were noted in the soil borings advanced at the northwest portion of the Site, in the gravel parking lot where a building burned in the 1990s, as well as in the parking lot behind the Maiden Lane apartments, where a hotel burned in the late 1800s.

The soils data collected to date suggest that soils contain levels of PAHs and metals above regulatory standards. PAHs in excess of regulatory standards were found in most of the soil samples. There is no clear source area for these compounds, but they are likely attributed to historic fires and atmospheric deposition. The concentrations appear to be fairly typical for urban fill soils with similar history.

Lead exceedances have been reported in two shallow soil locations, and arsenic exceedances have been noted in two shallow soil locations and one deep soil location. The highest arsenic concentration was noted in SB-5, which appeared to be fill soil in the former UST grave. The arsenic in this location may have been brought onto the Site when the UST was removed. The remaining lead and arsenic exceedances are located below the driveway and parking lot behind Maiden Lane. There is no clear source for these concentrations, but could be attributed to lead based paint or other lead containing materials in the former hotel, and atmospheric deposition.

No known VOCs are present in the soils, and the TCLP metal concentrations indicate the soil on-Site is not hazardous waste. However, special handling and disposal considerations will be required for the soils during redevelopment.

The groundwater flows to the west or northwest at an approximate hydraulic gradient of 6%-8%. The low permeability of the dense glacial till sediments affects the recharge in the groundwater wells located on the northwest portion of the Site.

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<sup>1</sup> ANR Atlas



Exceedances of groundwater enforcement standards for arsenic and lead were previously noted in one of the groundwater samples obtained from MW-1. However, follow-up testing revealed those concentrations were attributed to sediment in the groundwater sample, and not indicative of the aquifer conditions. No VOCs above standards were reported in the groundwater at the Site.

The sub-slab soil gas data collected at the Site indicate that naphthalene and acrolein are present at concentrations above DEC screening values for vapor intrusion into structures throughout the Site. Only one existing building (12 Congress Street) will remain on the Site after redevelopment occurs. The new buildings will have a passive vapor barrier system installed during construction.

Concentrations of benzene, acrolein, chloroform, 1,2-Dichloroethane, and ethyl acetate were reported above the residential indoor air screening threshold in the indoor air samples collected from 12 Congress Street. The benzene concentrations were less than the ambient air concentrations, indicating the source for benzene is likely the outdoor air. The other contaminants identified may be attributed to vapor intrusion since they were comparable to the sub-slab concentrations reported, or the operations of the salon. The concentrations reported in the basement were five times higher than those reported on the first floor.

Acrolein was also found in the outdoor air at comparable concentrations. These observations suggest that there is an area wide source of acrolein and that it could be transmitted through outdoor air. According to an EPA summary, acrolein is primarily used as an intermediate in chemical synthesis, and as a biocide. It also forms from the breakdown of outdoor air pollutants and from burning of organic matter such as tobacco or petroleum.<sup>2</sup>

The naphthalene levels found in the soil gas on-Site were found to be just above the DEC residential screening value. The source of the naphthalene in soil gas could be a fairly small release from the former drycleaning establishment at 12 Congress Street.

There are no known sources of Chloroform or 1,2-Dichloroethane on the Site. Chloroform may be present on the Site due to the breakdown of chlorinated water. 1,2-Dichloroethane is used as a solvent and in the manufacturing of other compounds.

The concentrations of ethyl acetate found in the basement indoor air sample were an order of magnitude higher the sub-slab vapor sample, indicating the interior building uses could be the source of this compound. Ethyl acetate is a solvent that is used in glues and nail polish removers.

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<sup>2</sup> <https://www.epa.gov/sites/production/files/2016-08/documents/acrolein.pdf>



The contaminants detected in soils on the Site, PAHs and metals, are not highly soluble in water, and are unlikely to migrate off-Site via groundwater dispersion or overland flow mechanisms. Furthermore, the low permeability of the glacial till sediments further inhibits contaminant migration. Naphthalene is present at a consistent low level throughout the Site, and is likely to dissipate below regulatory standards prior to reaching Site boundary lines.

#### Potential Sources

Potential source(s) of contamination at the Site include historic uses of the Site, which include drycleaning, vulcanizing, machine shops, and millineries, as well as previous USTs and structure fires. No other potential sources are known at this time.

#### Receptor Evaluation

##### *Buildings in the Vicinity:*

The concentrations of naphthalene and acrolein were present in sub-slab vapor slightly above regulatory screening levels throughout the Site. Concentrations of VOCs reported in the indoor air at 12 Congress indicate a sub-slab depressurization system should be installed in that building. The newly constructed buildings will have passive vapor systems installed as a protective measure to Site users.

##### *Utility Corridors:*

Utility corridors in the vicinity of the Site include buried water, sewer and storm drain lines. Based on the sampling results to date, it does not appear that the Site poses an environmental risk to nearby utility lines.

##### *Wetlands and Surface Water Bodies:*

The nearest body of water is Stevens Brook, located approximately 2,000 feet to the west of the Site. The ANR Natural Resources Atlas does not depict any wetlands advisory areas in the vicinity of the Site. Based on the results of the investigation, surface water does not appear to be at risk.

##### *Public and Private Water Supplies:*

The Site and nearby properties are served by the City of St. Albans municipal water system. No drinking water wells are nearby, and no drinking water wells were tested during the Phase II ESA. One private well is depicted on the ANR Natural Resources Atlas within a half-mile of the former Site, approximately 880 feet to the west according to the DEC's on line water supply well locator.<sup>3</sup>

##### *Sediment:*

Due to the type of contamination observed, and the fact that bodies of water are not located proximal the Site, contaminated sediment transport is not a risk for this Site.

##### *Site Users:*

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<sup>3</sup> Vermont Agency of Natural Resources Private Well Locator



The Site users may come into contact with shallow soils if excavations occur. However, the exterior grounds are primarily used for parking, and no garden or playgrounds were noted on the Site. The concentrations of VOCs reported in the indoor air at 12 Congress indicate a sub-slab depressurization system should be installed in that building. The newly constructed buildings will have passive vapor systems installed as a protective measure to Site users.

## **4.0 CONCLUSIONS AND RECOMMENDATIONS**

LEE completed an Additional Brownfields Phase II ESA in accordance with the approved Work Plan dated November 13, 2018. The following conclusions were made:

1. On December 11, 2018, LEE measured groundwater levels and collected a groundwater sample from MW-1 using low-flow methods. Depth to groundwater ranged from 6.71-8.61 btoc.
2. The direction of surficial groundwater flow is toward the northwest at an average hydraulic gradient of approximately 8%.
3. The laboratory results indicate concentrations of total barium and total selenium were reported in the groundwater sample. The concentrations were below the VGES for these metals. Arsenic and lead were not detected above the reporting limit. The turbidity in the groundwater sample from MW-1 (3.45 NTU) was significantly lower than the turbidity in the previous sample (1,100 NTU).
4. The elevated metal concentrations in the previous sample are attributed to sediment in the groundwater sample and not indicative of the aquifer conditions.
5. On December 11, 2018, LEE performed IAQ monitoring at 12 Congress Street, which is not slated for demolition during the redevelopment.
6. Two IAQ samples were collected in the following locations: first floor of the southeastern vacant residential apartment (IA-1), and the southern portion of the basement (IA-2). One outdoor ambient air sample (AA-1) was collected.
7. The results of the IAQ testing indicate that benzene and acrolein were present in all four samples, at concentrations in excess of the DEC's residential indoor air screening thresholds. The first floor sample and the basement sample also contained concentrations of chloroform, and 1,2-Dichloroethane above the residential indoor air screening thresholds. The basement sample also contained concentrations of ethyl acetate above the residential indoor air screening threshold. The total VOCs in the basement sample were more than 5 times higher than the first floor sample, and more than 75 times higher in the ambient air sample.
8. The benzene concentrations were less than the ambient air concentrations, indicating the source for benzene is likely the outdoor air. The other contaminants identified may be attributed to vapor intrusion since they were comparable to the sub-slab concentrations reported. The concentrations reported in the basement were higher than those reported on the first floor.



The following recommendations are made:

1. An Evaluation of Corrective Action Alternatives (ECAA) and Corrective Action Plan (CAP) should be completed to accommodate the redevelopment plan for the Site. This should include installation of a sub-slab depressurization system at 12 Congress and a passive vapor barrier system in the newly constructed buildings.



Additional Brownfields Phase II ESA Report  
Congress and Main Redevelopment, St. Albans, Vermont

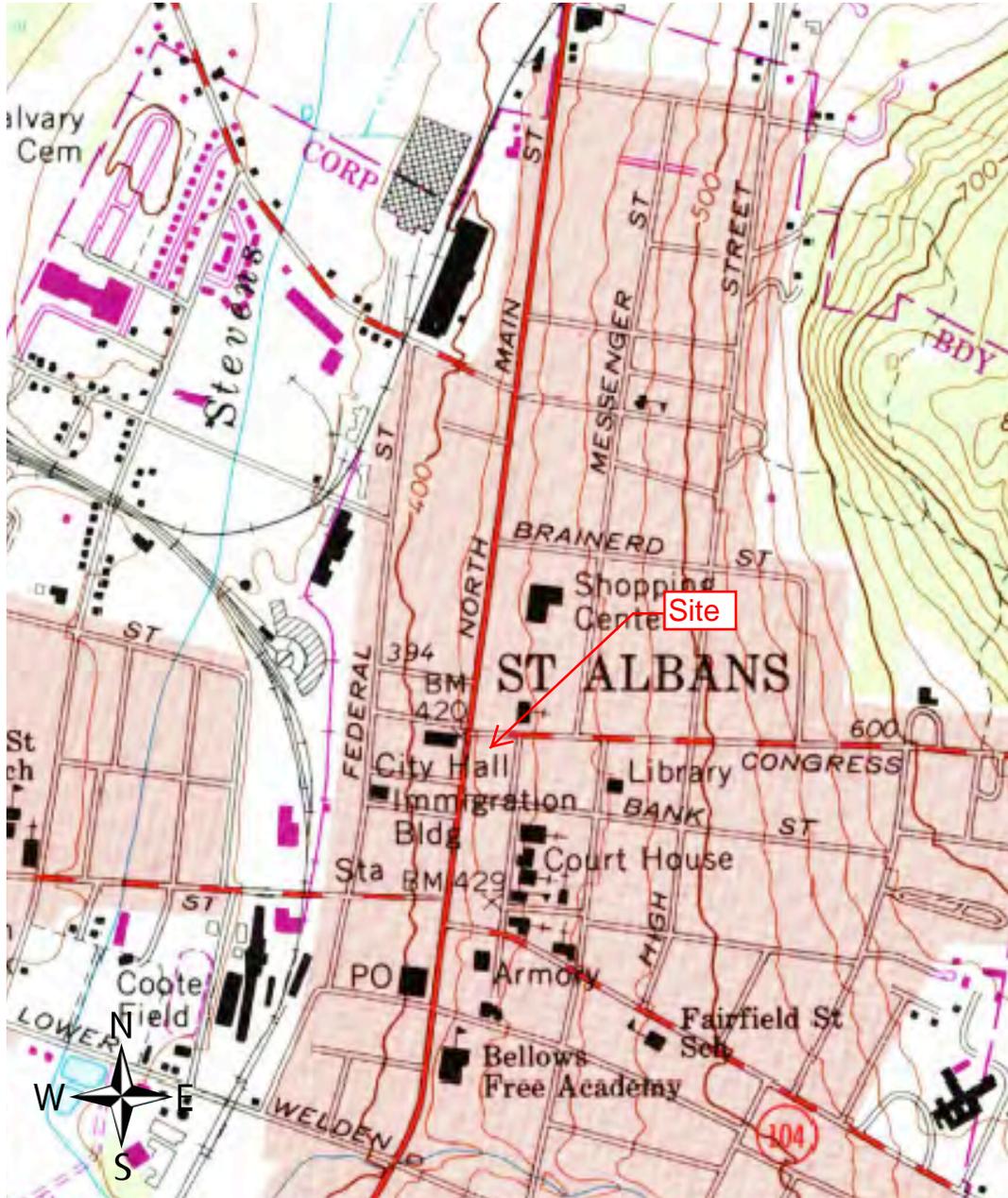
APPENDIX A

Site Location Map

Site Map

Groundwater Contour Map

Indoor Air Contaminant Concentration Map

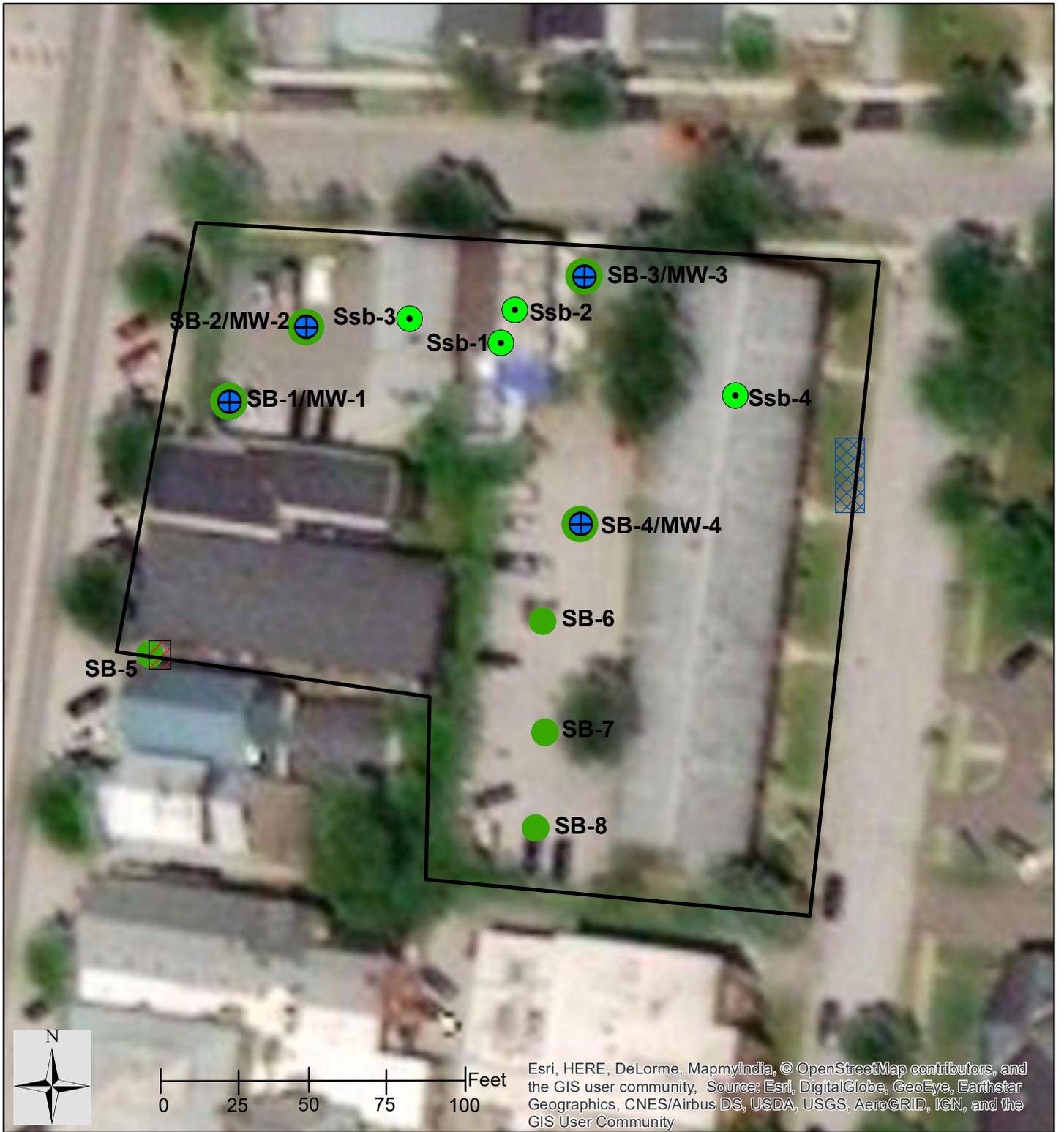


**Congress and Main Redevelopment  
St. Albans, Vermont**

**Site Location Map**



LEE# 18-112  
Date: June 18, 2018  
Source: USGS



  
**LEE**  
 LEEnvironmental  
 21 North Main Street Unit #1  
 Waterbury, Vermont  
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## Site Map

### Congress and Main Redevelopment Project St. Albans, Vermont

**Legend**

- SB-X: Soil Boring
- ⊕ GW-X: GW Well
- Ssb-X: SS Vapor Point
- ▧ Former Gasoline UST
- ▨ Former Fuel Oil UST (closed in-place)

Drawing Date: 9/12/18  
 LEE Project #: 18-112



  
**LEE**  
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 Waterbury, Vermont  
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**Groundwater Contour Map**  
**Congress and Main**  
**Redevelopment Project**  
**St. Albans, Vermont**  
  
**LEE #18-112**

**Legend**  
 Monitoring Well with GW elevations measured in feet  
 Arrow indicates estimated groundwater flow direction  
 Benchmark 100'  
  
 Measure Date: 12/11/18  
 Drawing Date: 1/8/19



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## Indoor Air Contaminant Map Congress and Main Redevelopment Project St. Albans, Vermont

**Legend**

- Indoor Air Sample
- Ambient Air Sample (concentrations in ug/m3)  
Residential Screening Value exceedances noted
- ▨ Former Gasoline UST
- ▩ Former Fuel Oil UST

Sample Date: 12/11/18  
 Drawing Date: 1/8/19



## APPENDIX B

### Groundwater Elevation Data and Contaminant Concentration Summary Tables

**Liquid Level Monitoring Data  
Brownfields Phase II ESA  
Main and Congress Redevelopment  
St. Albans, Vermont**

**Measurement Date: December 11, 2018**

Well I.D.	Top of Casing Elevation	Depth To Product btoc	Depth To Water btoc	Product Thickness	Specific Gravity Of Product	Water Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	93.20	-	7.63	-	-	-	-	85.57
MW-2	93.95	-	8.61	-	-	-	-	85.34
MW-3	99.70	-	6.71	-	-	-	-	92.99
MW-4	100.48	-	6.98	-	-	-	-	93.50

Notes:

All Values Reported in Feet

btoc - Below Top of Casing

Elevation data relative to 100' at northeast corner of 12 Congress St

**Brownfields Phase II Environmental Site Assessment  
Groundwater Sampling Data Summary  
Main and Congress Street  
St. Albans, Vermont**

<i>Groundwater Sample Sample Date</i>	<i>MW-1 12/11/18</i>	<i>Duplicate 12/11/18</i>	<i>VGES</i>
<b>TOTAL METALS, EPA Method 200.8 (mg/l)</b>			
Total Arsenic	ND<0.001	ND<0.001	0.010
Total Barium	<b>0.14</b>	<b>0.14</b>	2
Total Cadmium	ND<0.001	ND<0.001	0.005
Total Chromium	ND<0.001	ND<0.001	0.100
Total Lead	ND<0.001	ND<0.001	0.015
Total Mercury	ND<0.0001	ND<0.0001	0.002
Total Selenium	<b>0.025</b>	<b>0.026</b>	0.05
Total Silver	ND<0.001	ND<0.001	0.1

Groundwater Enforcement Standard from Groundwater Protection Rule and Strategy, 12/16

ND<xx = Not Detected< Detection Limit

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations or above the enforcement standard are shaded

NA = No current enforcement standard

**Relative Percent Difference Calculations  
Main and Congress Street  
St. Albans, Vermont**



<i>Groundwater Sample</i>	<i>MW-1</i>	<i>Duplicate</i>	
<i>Sample Date</i>	12/11/18	12/11/18	<i>RPD</i>
<b>TOTAL METALS, EPA Method 200.8 (mg/l)</b>			
Total Arsenic	ND<0.001	ND<0.001	-
Total Barium	<b>0.14</b>	<b>0.14</b>	0.0
Total Cadmium	ND<0.001	ND<0.001	-
Total Chromium	ND<0.001	ND<0.001	-
Total Lead	ND<0.001	ND<0.001	-
Total Mercury	ND<0.0001	ND<0.0001	-
Total Selenium	<b>0.025</b>	<b>0.026</b>	2.0
Total Sliver	ND<0.001	ND<0.001	-

**Brownfields Phase II Environmental Site Assessment  
Indoor Air Sampling Summary  
Main and Congress Redevelopment Project  
Page 1 of 2**



Analyte Category/Compound	IA-1 Concentration ug/m <sup>3</sup>	Data Qualifier	IA-2 Reported Concentration ug/m <sup>3</sup>	Data Qualifier	Ambient Air Reported Concentration ug/m <sup>3</sup>	Data Qualifier	I-Rule Air Screening Levels (residential, ug/m3)	I-Rule Air Screening Levels (industrial, ug/m3)
<i>Sample Date:</i>	12/11/18		12/11/18		12/11/18			
Propene	<b>21</b>		<b>73</b>		ND<0.70		NA	NA
Freon12(Dichlorodifluoromethane)	<b>2.0</b>		<b>2.0</b>		<b>2.1</b>		100	440
Chloromethane (methyl chloride)	<b>0.39</b>		<b>0.42</b>		<b>0.43</b>		94	390
Freon 114 (1,2-Dichloro-1,1,2,2-tetrafluoroethane)	ND<0.68		ND<0.74		ND<0.68		NA	NA
Vinyl Chloride	ND<0.15		ND<0.16		ND<0.15		0.11	1.86
1,3-Butadiene	ND<0.28		ND<0.31		ND<0.28		0.094	0.41
Bromomethane	ND<0.27		ND<0.29		ND<0.27		5.2	22
Chloroethane (ethyl chloride)	ND<0.27		ND<0.29		ND<0.27		10,000	44,000
Ethanol	<b>44</b>		<b>200</b>		<b>3.3</b>	J	NA	NA
Acetonitrile	ND<0.69		ND<0.76		ND<0.70		63	260
Acrolein	<b>0.33</b>	J	<b>1.8</b>		<b>0.29</b>	J	0.021	0.088
Acetone	<b>140</b>		<b>1,100</b>	D	<b>3.8</b>	J	32,000	140,000
Trichlorofluoromethane (Freon 11)	<b>1.1</b>		<b>1.2</b>		<b>1.1</b>		NA	NA
Isopropyl Alcohol (2-Propanol)	<b>52</b>		<b>190</b>		<b>0.31</b>	J	210	880
Acrylonitrile	ND<0.69		ND<0.76		ND<0.70		0.041	0.18
1,1-Dichloroethene	ND<0.15		ND<0.16		ND<0.15		210	880
2-Methyl-2-Propanol (tert-butyl Alcohol)	ND<1.5		<b>0.55</b>	J	ND<1.5		NA	NA
Methylene Chloride	<b>0.36</b>	J	<b>0.25</b>	J	<b>0.25</b>	J	100	1,200
3-Chloro-1-propene (Allyl Chloride)	ND<0.70		NR		NR		0.47	2
Trichlorotrifluoroethane	<b>0.43</b>	J	<b>0.44</b>	J	<b>0.44</b>	J	NA	NA
Carbon disulfide	ND<1.5		ND<1.6		ND<1.5		730	3,100
trans-1,2-Dichloroethene	ND<0.15		ND<0.16		ND<0.15		NA	NA
1,1-Dichloroethane	ND<0.13		ND<0.15		ND<0.13		1.8	7.7
Methyl tert-Butyl Ether (MTBE)	ND<0.72		ND<0.79		ND<0.72		11	47
Vinyl Acetate	ND<7.0		<b>4.9</b>	J	<b>7.1</b>		210	880
Methyl Ethyl Ketone (2-butanone)	<b>0.75</b>	J	<b>2.3</b>		<b>0.29</b>		5,200	22,000
cis-1,2-Dichloroethene	ND<0.15		ND<0.16		ND<0.15		NA	NA
Diisopropyl Ether	ND<0.72		ND<0.72		NR		730	3,100
Ethyl Acetate	<b>10</b>		<b>74</b>		ND<1.5		73	310
n-hexane	<b>0.22</b>	J	<b>0.25</b>	J	<b>0.22</b>	J	730	3,100
Chloroform	<b>0.16</b>		<b>0.16</b>	J	ND<0.15		0.12	0.53
Tetrahydrofuran	<b>0.69</b>		<b>2.1</b>		ND<0.71		2,100	8,800
Ethyl tert-Butyl Ether	ND<0.70		NR		NR		NA	NA
1,2-Dichloroethane	<b>0.11</b>	J	<b>0.15</b>	J	ND<0.15		0.11	0.47
1,1,1-Trichloroethane	ND<0.15		ND<0.16		ND<0.15		5,200	22,000
Isopropyl Acetate	<b>0.30</b>	J	NR		NR		NA	NA
1-Butanol	<b>2.7</b>		NR		NR		NA	NA
Benzene	<b>0.46</b>		<b>0.47</b>		<b>0.64</b>		0.13	1.05
Carbon Tetrachloride	<b>0.38</b>		<b>0.37</b>		<b>0.39</b>		0.47	2.0
Cyclohexane	ND<1.3		<b>0.27</b>	J	ND<1.3		6,300	26,000
tert-Amyl Methyl Ether	ND<0.72		NR		NR		NA	NA
1,2-Dichloropropane	ND<0.15		ND<0.16		ND<0.15		0.28	1.2
Bromodichloromethane	ND<0.15		ND<0.16		ND<0.15		0.076	0.33
Trichloroethene	ND<0.15		ND<0.16		ND<0.15		0.2	0.70
1,4-Dioxane (Dioxane)	ND<0.70		ND<0.77		ND<0.71		0.56	2.5
2,2,4-Trimethylpentane (Isooctane)	ND<0.70		NR		NR		NA	NA
Methyl Methacrylate	ND<1.5		ND<1.6		ND<1.5		730	3,100
n-heptane	<b>0.17</b>	J	<b>0.23</b>	J	<b>0.25</b>	J	NA	NA

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**Brownfields Phase II Environmental Site Assessment  
Indoor Air Sampling Summary  
Main and Congress Redevelopment Project  
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<i>Analyte Category/Compound</i>	IA-1 Concentration ug/m <sup>3</sup>	Data Qualifier	IA-2 Reported Concentration ug/m <sup>3</sup>	Data Qualifier	Ambient Air Reported Concentration ug/m <sup>3</sup>	Data Qualifier	I-Rule Air Screening Levels (residential, ug/m3)	I-Rule Air Screening Levels (industrial, ug/m3)
<i>Sample Date:</i>	12/11/18		12/11/18		12/11/18			
cis-1,3-Dichloropropene	ND<0.74		ND<0.82		ND<0.75		0.7	3.1
Methyl Isobutyl Ketone (4-methyl-2-Pentanone)	ND<0.70		ND<0.77		ND<0.71		3,100	13,000
trans-1,3-Dichloropropene	ND<0.70		ND<0.77		ND<0.71		0.7	3.1
1,1,2-Trichloroethane	ND<0.15		ND<0.16		ND<0.15		0.18	0.77
Toluene	<b>0.73</b>		<b>0.54</b>	J	<b>0.47</b>	J	5,200	22,000
Methyl Butyl Ketone (2-Hexanone)	ND<0.72		<b>0.20</b>	J	ND<0.72		31	130
Dibromochloromethane	ND<0.15		ND<0.16		ND<0.15		NA	NA
1,2-Dibromoethane (ethylene dibromide)	ND<0.15		ND<0.16		ND<0.15		0.0047	0.02
n-Butyl Acetate	<b>5.5</b>		<b>23</b>		ND<0.72		NA	NA
n-Octane	ND<0.72		ND<0.79		ND<0.72		NA	NA
Tetrachloroethene	ND<0.15		ND<0.16		ND<0.15		0.63	5.11
Chlorobenzene	ND<0.70		ND<0.77		ND<0.71		52	220
Ethylbenzene	<b>0.12</b>	J	ND<0.76		ND<0.70		1.1	4.9
m,p- Xylenes	<b>0.33</b>	J	<b>0.23</b>	J	<b>0.28</b>	J	100	440
Bromoform	ND<0.70		ND<0.77		ND<0.71		2.6	11
Styrene	<b>0.18</b>	J	ND<0.77		ND<0.71		1,000	4,400
o- Xylenes	<b>0.14</b>	J	ND<0.77		<b>0.11</b>	J	100	440
n-Nonane	<b>0.14</b>	J	<b>0.14</b>	J	ND<0.72		21	88
1,1,2,2-Tetrachloroethane	ND<0.15		ND<0.16		ND<0.15		0.048	0.21
Isopropylbenzene (cumene)	ND<0.70		ND<0.77		ND<0.71		420	1,800
alpha-Pinene	<b>1.7</b>		<b>0.29</b>	J	ND<0.70		NA	NA
n-propylbenzene	ND<0.72		ND<0.79		ND<0.72		1,000	4,400
3-Ethyltoluene	ND<0.70		NR		NR		NA	NA
4-Ethyltoluene	ND<0.70		ND<0.77		ND<0.71		NA	NA
1,3,5-Trimethylbenzene	ND<0.70		ND<0.77		ND<0.71		NA	NA
alpha-Methylstyrene	ND<0.70		NR		NR		NA	NA
2-Ethyltoluene	ND<0.72		NR		NR		NA	NA
1,2,4-Trimethylbenzene	<b>0.16</b>	J	ND<0.77		<b>0.10</b>	J	7.3	31
n-Decane	<b>0.16</b>	J	NR		NR		NA	NA
Benzyl Chloride	ND<1.5		ND<1.6		ND<1.5		0.057	0.25
1,3-Dichlorobenzene	ND<0.72		ND<0.79		ND<0.72		NA	NA
1,4-Dichlorobenzene	ND<0.72		ND<0.79		ND<0.72		0.26	1.1
sec-Butylbenzene	ND<0.70		NR		NR		NA	NA
(4) p-Isopropyltoluene (p-Cymene)	<b>0.18</b>	J	NR		NR		NA	NA
1,2,3-Trimethylbenzene	ND<0.69		NR		NR		5.2	22
1,2-Dichlorobenzene	ND<0.72		ND<0.79		ND<0.72		210	880
d-Limonene	<b>0.81</b>		ND<0.74		ND<0.68		NA	NA
1,2-Dibromo-3-Chloropropane	ND<0.69		ND<0.76		ND<0.70		0.00017	0.002
n-Undecane (hendecane)	<b>0.19</b>	J	NR		NR		NA	NA
1,2,4-Trichlorobenzene	ND<0.70		ND<0.77		ND<0.71		2.1	8.8
Naphthalene	ND<0.68		ND<0.74		ND<0.68		0.03	0.24
n-Dodecane	ND<0.69		NR		NR		NA	NA
Hexachlorobutadiene	ND<0.70		ND<0.77		ND<0.71		0.13	0.56
Cyclohexanone	<b>0.17</b>	J	NR		NR		730	3,100
tert-butylbenzene	ND<0.70		NR		NR		NA	NA
n-Butylbenzene	ND<0.70		NR		NR		NA	NA
<b>Total Reported VOCs</b>	<b>288</b>		<b>1,679</b>		<b>22</b>			

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**Brownfields Phase II Environmental Site Assessment  
Subslab Vapor Sampling Summary  
Main and Congress Redevelopment Project**



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<i>Analyte Category/Compound</i>	Subslab-1 Concentration ug/m <sup>3</sup>	Data Qualifier	Subslab-2 Reported Concentration ug/m <sup>3</sup>	Data Qualifier	Subslab-3 Reported Concentration ug/m <sup>3</sup>	Data Qualifier	Subslab-4 Reported Concentration ug/m <sup>3</sup>	Data Qualifier	Ambient Air Reported Concentration ug/m <sup>3</sup>	Data Qualifier	I-Rule VI Screening Values, Sub- Slab Soil Gas (residential, ug/m <sup>3</sup> )	I-Rule VI Screening Values, Sub- Slab Soil Gas (industrial, ug/m <sup>3</sup> )
<i>Sample Date:</i> 7/18/18			7/18/18		7/18/18		7/18/18		7/18/18			
Propene	45		63		4.1		4.3		0.92	J	NA	NA
Freon12(Dichlorodifluoromethane)	2.4		2.2		2.3		2.3		2.2		3,500	15,000
Chloromethane (methyl chloride)	ND<0.33		ND<0.36		ND<0.33		ND<0.34		0.31	J	3,100	13,000
Freon 114 (1,2-Dichloro-1,1,2,2-tetrafluoroethane)	ND<0.84		ND<0.93		ND<0.84		ND<0.86		ND<1.0		NA	NA
Vinyl Chloride	0.097	J	0.20		ND<0.17		ND<0.17		ND<0.21		3.7	62
1,3-Butadiene	ND<0.34		ND<0.38		ND<0.35		ND<0.35		ND<0.43		3.1	14
Bromomethane	ND<0.33		0.96		ND<0.33		ND<0.34		ND<0.41		170	730
Chloroethane (ethyl chloride)	ND<0.33		ND<0.36		ND<0.33		ND<0.34		ND<0.41		350,000	1,500,000
Ethanol	230		380		70		110		6.9	J	NA	NA
Acetonitrile	0.57	J	1.8		0.65	J	0.34	J	0.60	J	2,100	8,800
Acrolein	1.6	J	3.1		1.6	J	0.99	J	0.81	J	0.7	2.9
Acetone	160		120		94		74		13		1,100,000	4,500,000
Trichlorofluoromethane (Freon 11)	1.6		1.5		1.5		1.4		1.1		NA	NA
Isopropyl Alcohol (2-Propanol)	100		180		8.3		10		1.5	J	7,000	29,000
Acrylonitrile	ND<0.87		0.21	J	ND<0.87		ND<0.89		ND<1.1		1.4	6.0
1,1-Dichloroethene	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		7,000	29,000
2-Methyl-2-Propanol (tert-butyl Alcohol)	1.8		17		1.8	J	0.60	J	ND<2.3		NA	NA
Methylene Chloride	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		3,400	41,000
3-Chloro-1-propene (Allyl Chloride)	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		16	68
Trichlorotrifluoroethane	0.45	J	0.50	J	0.49	J	0.51	J	0.43	J	1,000,000	4,400,000
Carbon disulfide	8.5		1.4	J	0.66	J	0.28	J	ND<2.3		24,000	100,000
trans-1,2-Dichloroethene	ND<0.18		0.22		ND<0.18		ND<0.18		ND<0.23		NA	NA
1,1-Dichloroethane	ND<0.16		ND<0.18		ND<0.17		ND<0.17		ND<0.21		58	260
Methyl tert-Butyl Ether (MTBE)	ND<0.89		ND<0.98		ND<0.89		ND<0.91		ND<1.1		360	1,600
Vinyl Acetate	3.8	J	6.1	J	2.6	J	2.5	J	ND<11		7,000	29,000
Methyl Ethyl Ketone (2-butanone)	3.8		5.8		3.8		2.6		2.7		170,000	730,000
cis-1,2-Dichloroethene	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		NA	NA
Diisopropyl Ether	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		730	3,100
Ethyl Acetate	2.0		2.3		1.2		0.54	J	1.7	J	2,400	10,000
n-hexane	0.43	J	0.95	J	0.18	J	0.26	J	0.25	J	24,000	100,000
Chloroform	0.49		1.1		1.4		ND<0.18		ND<0.23		4.1	18
Tetrahydrofuran	4.9		6.0		0.25	J	0.22	J	ND<1.1		70,000	290,000
Ethyl tert-Butyl Ether	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		NA	NA
1,2-Dichloroethane	0.13	J	ND<0.20		ND<0.18		ND<0.18		ND<0.23		3.6	16
1,1,1-Trichloroethane	ND<0.18		0.16	J	0.13	J	ND<0.18		ND<0.23		170,000	730,000
Isopropyl Acetate	ND<1.8		ND<2.0		ND<1.8		ND<1.8		ND<2.3		NA	NA
1-Butanol	9.4		25		4.5		12		17		NA	NA
Benzene	0.54		0.78		1.2		0.19		0.25		4.3	35
Carbon Tetrachloride	0.42		0.34		20		ND<0.18		0.33		16	68
Cyclohexane	ND<1.8		0.34	J	ND<1.8		ND<1.8		ND<2.3		35,000	150,000
tert-Amyl Methyl Ether	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		NA	NA
1,2-Dichloropropane	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		9.4	41
Bromodichloromethane	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		2.5	11
Trichloroethene	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		6.7	23
1,4-Dioxane (Dioxane)	ND<0.87		2.1		0.62	J	0.41	J	ND<1.1		19	82
2,2,4-Trimethylpentane (Isooctane)	0.21	J	0.25	J	ND<0.87		ND<0.89		ND<1.1		NA	NA
Methyl Methacrylate	ND<1.8		ND<2.0		ND<1.8		ND<1.8		ND<2.3		24,000	10,000
n-heptane	0.41	J	0.83	J	0.17	J	0.28	J	ND<1.1		NA	NA

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**Brownfields Phase II Environmental Site Assessment  
Subslab Vapor Sampling Summary  
Main and Congress Redevelopment Project**



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Analyte Category/Compound	Subslab-1 Concentration ug/m <sup>3</sup>	Data Qualifier	Subslab-2 Reported Concentration ug/m <sup>3</sup>	Data Qualifier	Subslab-3 Reported Concentration ug/m <sup>3</sup>	Data Qualifier	Subslab-4 Reported Concentration ug/m <sup>3</sup>	Data Qualifier	Ambient Air Reported Concentration ug/m <sup>3</sup>	Data Qualifier	I-Rule VI Screening Values, Sub- Slab Soil Gas (residential, ug/m3)	I-Rule VI Screening Values, Sub- Slab Soil Gas (industrial, ug/m3)
cis-1,3-Dichloropropene	ND<0.92		ND<1.0		ND<0.92		ND<0.94		7/18/18 ND<1.1		NA	100
Methyl Isobutyl Ketone (4-methyl-2-Pentanone)	1.6		4.6		1.9		0.33	J	0.19	J	100,000	440,000
trans-1,3-Dichloropropene	ND<0.87		ND<0.96		ND<0.87		0.23	J	ND<1.1		NA	100
1,1,2-Trichloroethane	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		5.8	26
Toluene	4.3		4.2		2.1		1.1		0.83	J	170,000	730,000
Methyl Butyl Ketone (2-Hexanone)	0.60	J	0.96	J	0.52	J	0.34	J	0.39	J	1,000	4,400
Dibromochloromethane	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		NA	NA
1,2-Dibromoethane (ethylene dibromide)	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		0.16	0.68
n-Butyl Acetate	0.86	J	1.1		0.48	J	0.37	J	ND<1.1		NA	NA
n-Octane	0.92		1.2		0.44	J	0.37	J	ND<1.1		NA	NA
Tetrachloroethene	ND<0.18		ND<0.20		0.22		0.44		0.15	J	21	170
Chlorobenzene	0.13	J	0.16	J	ND<0.87		ND<0.89		ND<1.1		1,700	7,300
Ethylbenzene	1.4		1.6		1.0		0.77	J	ND<1.1		37	160
m,p- Xylenes	5.0		5.7		3.5		2.0		0.36	J	3,500	15,000
Bromoform	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		85	370
Styrene	1.0		1.2		0.56	J	0.47	J	ND<1.1		35,000	150,000
o- Xylenes	2.1		2.5		1.6		0.83	J	ND<1.1		3,500	15,000
n-Nonane	2.4		2.3		0.72	J	0.83	J	ND<1.1		700	2,900
1,1,2,2-Tetrachloroethane	ND<0.18		ND<0.20		ND<0.18		ND<0.18		ND<0.23		1.6	7.0
Isopropylbenzene (cumene)	0.17	J	0.19	J	ND<0.87		ND<0.89		ND<1.1		14,000	58,000
alpha-Pinene	6.9		8.0		2.9		1.5		0.31	J	NA	NA
n-propylbenzene	0.43	J	0.51	J	0.31	J	0.24	J	ND<1.1		35,000	150,000
3-Ethyltoluene	1.3		1.6		0.96		0.74		ND<1.1		NA	NA
4-Ethyltoluene	0.59	J	0.71	J	0.46	J	0.36	J	ND<1.1		NA	NA
1,3,5-Trimethylbenzene	0.71	J	0.84	J	0.44	J	0.39	J	ND<1.1		NA	NA
alpha-Methylstyrene	ND<0.85		ND<0.95		ND<0.86		ND<0.87		ND<1.1		NA	NA
2-Ethyltoluene	0.50	J	0.59	J	0.34	J	0.31	J	ND<1.1		NA	NA
1,2,4-Trimethylbenzene	2.6		3.2		1.5		1.8		0.16	J	240	1,000
n-Decane	6.3		5.7		1.8		3.0		0.18	J	NA	NA
Benzyl Chloride	ND<1.8		ND<2.0		ND<1.8		ND<1.8		ND<2.3		1.9	8.3
1,3-Dichlorobenzene	2.2		3.4		ND<0.89		ND<0.91		ND<1.1		NA	NA
1,4-Dichlorobenzene	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		8.5	37
sec-Butylbenzene	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		NA	NA
(4) p-Isopropyltoluene (p-Cymene)	0.62	J	0.54	J	0.28	J	0.28	J	ND<1.0		NA	NA
1,2,3-Trimethylbenzene	0.72	J	0.90	J	0.36	J	0.56	J	ND<1.0		5.2	22
1,2-Dichlorobenzene	ND<0.89		ND<0.98		ND<0.89		ND<0.91		ND<1.1		7,000	29,000
d-Limonene	5.7		7.3		3.3		4.4		0.25	J	NA	NA
1,2-Dibromo-3-Chloropropane	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		0.0056	0.068
n-Undecane (hendecane)	ND<0.87		ND<0.96		ND<0.87		3.6		ND<1.1		NA	NA
1,2,4-Trichlorobenzene	ND<0.90		ND<1.0		ND<0.91		ND<0.92		ND<1.1		70	290
Naphthalene	1.0		1.2		1.4		1.1		ND<1.1		1.0	8.0
n-Dodecane	2.6		3.4		ND<0.87		3.2		0.64	J	NA	NA
Hexachlorobutadiene	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		4.3	19
Cyclohexanone	2.7		2.9		1.2		1.0		0.51	J	730	3,100
tert-butylbenzene	ND<0.87		0.41	J	0.20	J	0.24	J	ND<1.1		NA	NA
n-Butylbenzene	ND<0.87		ND<0.96		ND<0.87		ND<0.89		ND<1.1		NA	NA
<b>Total Reported VOCs</b>	<b>634</b>		<b>891</b>		<b>249</b>		<b>253</b>		<b>53</b>			

Notes:

ND<X means compound not present above MRL indicated; J=estimated concentration less than the MRL but greater than or equal to the MDL.

IROCP = July 2017 Vermont DEC Investigation and Remediation of Contaminated Properties Rule

NA = Not Available (no guidance level)

Reporting limits in excess of or equal to DEC residential sub-slab soil gas screening values are shaded



## APPENDIX C

### Analytical Laboratory Results



# Eastern Analytical, Inc.

*professional laboratory and drilling services*

Angela Emerson  
LE Environmental LLC  
21 North Main Street #1  
Waterbury, VT 05676



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 190306  
Client Identification: Main and Congress | 18-112  
Date Received: 12/13/2018

Dear Ms. Emerson :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at [www.easternanalytical.com](http://www.easternanalytical.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

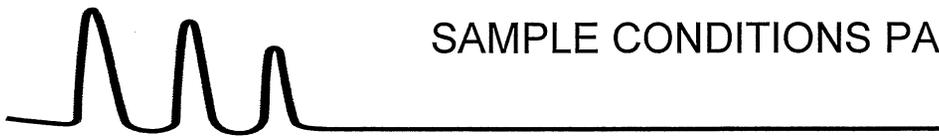
We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

  
Lorraine Olashaw, Lab Director

12.21.18  
Date

4  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 190306

Client: **LE Environmental LLC**

Client Designation: **Main and Congress | 18-112**

**Temperature upon receipt (°C): 3.2**

**Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

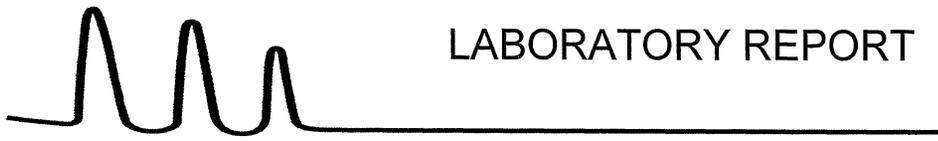
Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
190306.01	MW-1	12/13/18	12/11/18	aqueous		Adheres to Sample Acceptance Policy
190306.02	Duplicate	12/13/18	12/11/18	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis. Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 4th edition, 1992



# LABORATORY REPORT

EAI ID#: 190306

Client: LE Environmental LLC

Client Designation: Main and Congress | 18-112

Sample ID: MW-1 Duplicate

Lab Sample ID: 190306.01 190306.02

Matrix: aqueous aqueous

Date Sampled: 12/11/18 12/11/18

Date Received: 12/13/18 12/13/18

			Analytical Matrix	Units	Date of Analysis	Method	Analyst
Arsenic	< 0.001	< 0.001	AqTot	mg/L	12/14/18	6020	DS
Barium	<b>0.14</b>	<b>0.14</b>	AqTot	mg/L	12/14/18	6020	DS
Cadmium	< 0.001	< 0.001	AqTot	mg/L	12/14/18	6020	DS
Chromium	< 0.001	< 0.001	AqTot	mg/L	12/14/18	6020	DS
Lead	< 0.001	< 0.001	AqTot	mg/L	12/14/18	6020	DS
Mercury	< 0.0001	< 0.0001	AqTot	mg/L	12/14/18	6020	DS
Selenium	<b>0.025</b>	<b>0.026</b>	AqTot	mg/L	12/14/18	6020	DS
Silver	< 0.001	< 0.001	AqTot	mg/L	12/14/18	6020	DS



# QC REPORT

EAI ID#: 190306

Client: **LE Environmental LLC**

Client Designation: **Main and Congress | 18-112**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Arsenic	< 0.001	1.1 (106 %R)		NA	mg/L 12/14/18	80 - 120	20	6020
Barium	< 0.001	1.1 (108 %R)		NA	mg/L 12/14/18	80 - 120	20	6020
Cadmium	< 0.001	1.1 (106 %R)		NA	mg/L 12/14/18	80 - 120	20	6020
Chromium	< 0.001	1.0 (100 %R)		NA	mg/L 12/14/18	80 - 120	20	6020
Lead	< 0.001	0.97 (97 %R)		NA	mg/L 12/14/18	80 - 120	20	6020
Mercury	< 0.0001	0.00097 (98 %R)		NA	mg/L 12/14/18	80 - 120	20	6020
Selenium	< 0.001	1.1 (111 %R)		NA	mg/L 12/14/18	80 - 120	20	6020
Silver	< 0.001	0.010 (104 %R)		NA	mg/L 12/14/18	80 - 120	20	6020

Samples were analyzed within holding times unless noted on the sample results page.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

The associated matrix spikes and/or Laboratory Control Samples met the above stated criteria.

Exceptions to the above statements are flagged or noted above or on the QC Narrative page.

\*! Flagged analyte recoveries deviated from the QA/QC limits.





# Eastern Analytical, Inc.

professional laboratory and drilling services

Angela Emerson  
LE Environmental LLC  
21 North Main Street #1  
Waterbury , VT 05676



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 190305  
Client Identification: Main and Congress | 18-112  
Date Received: 12/13/2018

Dear Ms Emerson :

Enclosed please find the report of analysis for the above identified project.  
As discussed, analyses were subcontracted and are listed as follows:

Analysis: Subcontract - Air TO15 SIM in SUMMA ALSCA

Subcontractor Lab: ALS Environmental

A complete copy of the report is attached. This report may not be reproduced except in full, without the written approval of the laboratory.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

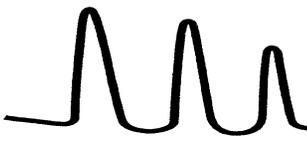
Lorraine Olashaw, Lab Director

1-8-19

Date

30

# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 190305

Client: LE Environmental LLC

Client Designation: Main and Congress | 18-112

Temperature upon receipt (°C): NA

Received on ice or cold packs (Yes/No): N

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
190305.01	IA-1	12/13/18	12/11/18	air		Adheres to Sample Acceptance Policy
190305.02	IA-2	12/13/18	12/11/18	air		Adheres to Sample Acceptance Policy
190305.03	AA-1	12/13/18	12/11/18	air		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 4th edition, 1992



2655 Park Center Dr., Suite A  
Simi Valley, CA 93065  
T: +1 805 526 7161  
[www.alsglobal.com](http://www.alsglobal.com)

## LABORATORY REPORT

January 7, 2019

Customer Service  
Eastern Analytical, Inc.  
25 Chenell Drive  
Concord, NH 03301

**RE: 190305**

Dear Customer Service:

Enclosed are the results of the samples submitted to our laboratory on December 17, 2018. For your reference, these analyses have been assigned our service request number P1806959.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at [www.alsglobal.com](http://www.alsglobal.com). Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

**ALS | Environmental**

By Sue Anderson at 12:41 pm, Jan 07, 2019

Sue Anderson  
Project Manager



2655 Park Center Dr., Suite A  
Simi Valley, CA 93065  
T: +1 805 526 7161  
[www.alsglobal.com](http://www.alsglobal.com)

Client: Eastern Analytical, Inc.  
Project: 190305

Service Request No: P1806959

---

## CASE NARRATIVE

The samples were received intact under chain of custody on December 17, 2018 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

### Volatile Organic Compound Analysis

The samples were analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.1 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

---

*The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.*

*Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.*



2655 Park Center Dr., Suite A  
 Simi Valley, CA 93065  
 T: +1 805 526 7161  
[www.alsglobal.com](http://www.alsglobal.com)

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	<a href="http://dec.alaska.gov/eh/lab.aspx">http://dec.alaska.gov/eh/lab.aspx</a>	17-019
Arizona DHS	<a href="http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home">http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home</a>	AZ0694
Florida DOH (NELAP)	<a href="http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html">http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html</a>	E871020
Louisiana DEQ (NELAP)	<a href="http://www.deq.louisiana.gov/page/la-lab-accreditation">http://www.deq.louisiana.gov/page/la-lab-accreditation</a>	05071
Maine DHHS	<a href="http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml">http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml</a>	2018027
Minnesota DOH (NELAP)	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	1521096
New Jersey DEP (NELAP)	<a href="http://www.nj.gov/dep/enforcement/oqa.html">http://www.nj.gov/dep/enforcement/oqa.html</a>	CA009
New York DOH (NELAP)	<a href="http://www.wadsworth.org/labcert/elap/elap.html">http://www.wadsworth.org/labcert/elap/elap.html</a>	11221
Oregon PHD (NELAP)	<a href="http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	4068-005
Pennsylvania DEP	<a href="http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx">http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx</a>	68-03307 (Registration)
PJLA (DoD ELAP)	<a href="http://www.pjlabs.com/search-accredited-labs">http://www.pjlabs.com/search-accredited-labs</a>	65818 (Testing)
Texas CEQ (NELAP)	<a href="http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html</a>	T104704413-18-9
Utah DOH (NELAP)	<a href="http://health.utah.gov/lab/lab_cert_env">http://health.utah.gov/lab/lab_cert_env</a>	CA01627201 8-9
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at [www.alsglobal.com](http://www.alsglobal.com), or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

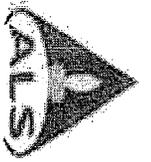
Service Request: P1806959

Client: Eastern Analytical, Inc.  
Project ID: 190305

Date Received: 12/17/2018  
Time Received: 08:30

TO-15 - VOC Cans

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pfi (psig)	
IA-1	P1806959-001	Air	12/11/2018	11:41	AS01365	-0.87	3.73	X
IA-2	P1806959-002	Air	12/11/2018	11:44	AC02072	-1.15	5.09	X
AA-1	P1806959-003	Air	12/11/2018	11:45	AS00609	-0.80	3.93	X



2655 Park Center Drive, Suite A  
 Simi Valley, California 93065  
 Phone (805) 526-7161  
 Fax (805) 526-7270

### Air - Chain of Custody Record & Analytical Service Request

Requested Turnaround Time in Business Days (Surcharges) please circle  
 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. **P1800959**

Company Name & Address (Reporting Information)  
**Easter**  
**25 Cheneau Lane**  
**Concord, NH 03301**

Project Manager  
**Front Office**  
 Phone **603-228-0525** Fax **603-228-4591**

Project Name  
**190305**

P.O. # / Billing Information  
**49331**

Email Address for Result Reporting  
**customerservice@easternanalytical.com**

Sampler (Print & Sign)

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	ALS Contact	Analysis Method	Comments
IA-1		12/11/2018	11:41	AS01365	SFC00199	30	3	6L			Need to meet the Vermont residential indoor air standards.
IA-2		12/11/2018	11:44	AC02072	SFC00163	29	4	6L			
5 of 28		12/11/2018	11:45	AS00609	SFC00057	29	5	6L			

Report Tier Levels - please select  
 Tier I - Results (Default if not specified) \_\_\_ Tier III (Results + QC & Calibration Summaries)  
 Tier II (Results + QC Summaries) X Tier IV (Data Validation Packages) 10% Surcharge \_\_\_

Relinquished by: (Signature) *[Signature]* Date: **12/13/18** Time: **1600**  
 Received by: (Signature) *[Signature]* Date: **12/18/18** Time: **0830**

Chain of Custody Seal: (Circle)  
 INTACT BROKEN  
 Project Requirements (MRLs, GAPP)  
 Rule - VT Indoor Air Temperature \_\_\_ °C

**ALS Environmental  
Sample Acceptance Check Form**

Client: Eastern Analytical, Inc.

Work order: P1806959

Project: 190305

Sample(s) received on: 12/17/18

Date opened: 12/17/18

by: AARON GONZALEZ

**Note:** This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- |   | <u>Yes</u>                          | <u>No</u>                           | <u>N/A</u>                          |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were <b>sample containers</b> properly marked with client sample ID?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 2 Did <b>sample containers</b> arrive in good condition?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 3 Were <b>chain-of-custody</b> papers used and filled out?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 4 Did <b>sample container labels</b> and/or tags agree with custody papers?                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 5 Was <b>sample volume</b> received adequate for analysis?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 6 Are samples within specified holding times?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 7 Was proper <b>temperature</b> (thermal preservation) of cooler at receipt adhered to?                         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8 Were <b>custody seals</b> on outside of cooler/Box/Container?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Location of seal(s)? _____ Sealing Lid?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were signature and date included?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were seals intact?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 9 Do containers have appropriate <b>preservation</b> , according to method/SOP or Client specified information? | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Is there a client indication that the submitted samples are <b>pH</b> preserved?                                | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were <b>VOA vials</b> checked for presence/absence of air bubbles?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it?       | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 10 <b>Tubes:</b> Are the tubes capped and intact?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 11 <b>Badges:</b> Are the badges properly capped and intact?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Are dual bed badges separated and individually capped and intact?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1806959-001.01	6.0 L Silonite Can					
P1806959-002.01	6.0 L Ambient Can					
P1806959-003.01	6.0 L Silonite Can					

Explain any discrepancies: (include lab sample ID numbers): \_\_\_\_\_

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** IA-1  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-001

**Test Code:** EPA TO-15  
**Instrument ID:** Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
**Analyst:** Simon Cao  
**Sample Type:** 6.0 L Silonite Canister  
**Test Notes:**  
**Container ID:** AS01365

**Date Collected:** 12/11/18  
**Date Received:** 12/17/18  
**Date Analyzed:** 1/4/19  
**Volume(s) Analyzed:** 1.00 Liter(s)

Initial Pressure (psig): -0.87      Final Pressure (psig): 3.73

Container Dilution Factor: 1.33

CAS #	Compound	Result	MRL	MDL	Result	MRL	MDL	Data Qualifier
		µg/m³	µg/m³	µg/m³	ppbV	ppbV	ppbV	
115-07-1	Propene	21	0.69	0.17	12	0.40	0.10	
75-71-8	Dichlorodifluoromethane (CFC 12)	2.0	0.69	0.12	0.40	0.14	0.023	
74-87-3	Chloromethane	0.39	0.27	0.11	0.19	0.13	0.055	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.68	0.11	ND	0.097	0.016	
75-01-4	Vinyl Chloride	ND	0.15	0.076	ND	0.057	0.030	
106-99-0	1,3-Butadiene	ND	0.28	0.12	ND	0.13	0.053	
74-83-9	Bromomethane	ND	0.27	0.098	ND	0.069	0.025	
75-00-3	Chloroethane	ND	0.27	0.088	ND	0.10	0.033	
64-17-5	Ethanol	44	6.8	0.49	23	3.6	0.26	
75-05-8	Acetonitrile	ND	0.69	0.17	ND	0.41	0.10	
107-02-8	Acrolein	0.33	1.3	0.20	0.15	0.58	0.087	J
67-64-1	Acetone	140	7.2	1.6	59	3.0	0.67	
75-69-4	Trichlorofluoromethane (CFC 11)	1.1	0.70	0.11	0.19	0.13	0.019	
67-63-0	2-Propanol (Isopropyl Alcohol)	52	2.8	0.29	21	1.1	0.12	
107-13-1	Acrylonitrile	ND	0.69	0.15	ND	0.32	0.067	
75-35-4	1,1-Dichloroethene	ND	0.15	0.098	ND	0.037	0.025	
75-65-0	2-Methyl-2-Propanol (tert-Butyl Alcohol)	ND	1.5	0.21	ND	0.48	0.070	
75-09-2	Methylene Chloride	0.36	0.72	0.20	0.10	0.21	0.057	J
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.70	0.096	ND	0.23	0.031	
76-13-1	Trichlorotrifluoroethane (CFC 113)	0.43	0.70	0.10	0.057	0.092	0.013	J
75-15-0	Carbon Disulfide	ND	1.5	0.21	ND	0.47	0.068	
156-60-5	trans-1,2-Dichloroethene	ND	0.15	0.098	ND	0.037	0.025	
75-34-3	1,1-Dichloroethane	ND	0.13	0.10	ND	0.033	0.026	
1634-04-4	Methyl tert-Butyl Ether	ND	0.72	0.084	ND	0.20	0.023	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

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**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** IA-1  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-001

**Test Code:** EPA TO-15  
**Instrument ID:** Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
**Analyst:** Simon Cao  
**Sample Type:** 6.0 L Silonite Canister  
**Test Notes:**  
**Container ID:** AS01365

**Date Collected:** 12/11/18  
**Date Received:** 12/17/18  
**Date Analyzed:** 1/4/19  
**Volume(s) Analyzed:** 1.00 Liter(s)

Initial Pressure (psig): -0.87 Final Pressure (psig): 3.73

Container Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
108-05-4	Vinyl Acetate	ND	7.0	1.6	ND	2.0	0.45	
78-93-3	2-Butanone (MEK)	0.75	1.3	0.15	0.26	0.45	0.050	J
156-59-2	cis-1,2-Dichloroethene	ND	0.15	0.10	ND	0.037	0.025	
108-20-3	Diisopropyl Ether	ND	0.72	0.093	ND	0.17	0.022	
141-78-6	Ethyl Acetate	10	1.5	0.37	2.8	0.41	0.10	
110-54-3	n-Hexane	0.22	0.72	0.15	0.064	0.20	0.042	J
67-66-3	Chloroform	0.16	0.15	0.094	0.033	0.030	0.019	
109-99-9	Tetrahydrofuran (THF)	0.69	0.70	0.089	0.24	0.24	0.030	J
637-92-3	Ethyl tert-Butyl Ether	ND	0.70	0.085	ND	0.17	0.020	
107-06-2	1,2-Dichloroethane	0.11	0.15	0.078	0.026	0.036	0.019	J
71-55-6	1,1,1-Trichloroethane	ND	0.15	0.088	ND	0.027	0.016	
108-21-4	Isopropyl Acetate	0.30	1.3	0.23	0.073	0.32	0.054	J
71-36-3	1-Butanol	2.7	1.3	0.19	0.89	0.44	0.061	
71-43-2	Benzene	0.46	0.13	0.10	0.15	0.042	0.032	
56-23-5	Carbon Tetrachloride	0.38	0.13	0.098	0.061	0.021	0.016	
110-82-7	Cyclohexane	ND	1.3	0.20	ND	0.39	0.058	
994-05-8	tert-Amyl Methyl Ether	ND	0.72	0.086	ND	0.17	0.021	
78-87-5	1,2-Dichloropropane	ND	0.15	0.088	ND	0.032	0.019	
75-27-4	Bromodichloromethane	ND	0.15	0.10	ND	0.022	0.015	
79-01-6	Trichloroethene	ND	0.15	0.096	ND	0.027	0.018	
123-91-1	1,4-Dioxane	ND	0.70	0.084	ND	0.20	0.023	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	0.70	0.11	ND	0.15	0.023	
80-62-6	Methyl Methacrylate	ND	1.5	0.25	ND	0.36	0.062	
142-82-5	n-Heptane	0.17	0.72	0.11	0.042	0.18	0.028	J

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

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**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** IA-1  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-001

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:  
 Container ID: AS01365

Date Collected: 12/11/18  
 Date Received: 12/17/18  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -0.87      Final Pressure (psig): 3.73

Container Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
10061-01-5	cis-1,3-Dichloropropene	ND	0.74	0.11	ND	0.16	0.024	
108-10-1	4-Methyl-2-pentanone	ND	0.70	0.097	ND	0.17	0.024	
10061-02-6	trans-1,3-Dichloropropene	ND	0.70	0.15	ND	0.16	0.032	
79-00-5	1,1,2-Trichloroethane	ND	0.15	0.072	ND	0.027	0.013	
108-88-3	Toluene	<b>0.73</b>	0.70	0.086	<b>0.19</b>	0.19	0.023	
591-78-6	2-Hexanone	ND	0.72	0.088	ND	0.18	0.021	
124-48-1	Dibromochloromethane	ND	0.15	0.093	ND	0.017	0.011	
106-93-4	1,2-Dibromoethane	ND	0.15	0.082	ND	0.019	0.011	
123-86-4	n-Butyl Acetate	<b>5.5</b>	0.72	0.097	<b>1.2</b>	0.15	0.020	
111-65-9	n-Octane	ND	0.72	0.16	ND	0.15	0.034	
127-18-4	Tetrachloroethene	ND	0.15	0.092	ND	0.022	0.014	
108-90-7	Chlorobenzene	ND	0.70	0.094	ND	0.15	0.021	
100-41-4	Ethylbenzene	<b>0.12</b>	0.69	0.10	<b>0.028</b>	0.16	0.023	<b>J</b>
179601-23-1	m,p-Xylenes	<b>0.33</b>	1.5	0.19	<b>0.077</b>	0.34	0.043	<b>J</b>
75-25-2	Bromoform	ND	0.70	0.15	ND	0.068	0.014	
100-42-5	Styrene	<b>0.18</b>	0.70	0.11	<b>0.042</b>	0.17	0.027	<b>J</b>
95-47-6	o-Xylene	<b>0.14</b>	0.70	0.10	<b>0.033</b>	0.16	0.024	<b>J</b>
111-84-2	n-Nonane	<b>0.14</b>	0.72	0.12	<b>0.027</b>	0.14	0.023	<b>J</b>
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.15	0.098	ND	0.021	0.014	
98-82-8	Cumene	ND	0.70	0.10	ND	0.14	0.021	
80-56-8	alpha-Pinene	<b>1.7</b>	0.69	0.11	<b>0.31</b>	0.12	0.020	
103-65-1	n-Propylbenzene	ND	0.72	0.10	ND	0.15	0.021	
620-14-4	3-Ethyltoluene	ND	0.70	0.096	ND	0.14	0.019	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

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**Client:** Eastern Analytical, Inc.

**Client Sample ID:** IA-1

**Client Project ID:** 190305

ALS Project ID: P1806959

ALS Sample ID: P1806959-001

Test Code: EPA TO-15

Date Collected: 12/11/18

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: 12/17/18

Analyst: Simon Cao

Date Analyzed: 1/4/19

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AS01365

Initial Pressure (psig): -0.87      Final Pressure (psig): 3.73

Container Dilution Factor: 1.33

CAS #	Compound	Result	MRL	MDL	Result	MRL	MDL	Data Qualifier
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ppbV	ppbV	ppbV	
622-96-8	4-Ethyltoluene	ND	0.70	0.11	ND	0.14	0.023	
108-67-8	1,3,5-Trimethylbenzene	ND	0.70	0.10	ND	0.14	0.021	
98-83-9	alpha-Methylstyrene	ND	0.70	0.11	ND	0.15	0.023	
611-14-3	2-Ethyltoluene	ND	0.72	0.090	ND	0.15	0.018	
95-63-6	1,2,4-Trimethylbenzene	<b>0.16</b>	0.70	0.098	<b>0.032</b>	0.14	0.020	<b>J</b>
124-18-5	n-Decane	<b>0.16</b>	0.72	0.096	<b>0.027</b>	0.12	0.016	<b>J</b>
100-44-7	Benzyl Chloride	ND	1.5	0.16	ND	0.28	0.031	
541-73-1	1,3-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.018	
106-46-7	1,4-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.018	
135-98-8	sec-Butylbenzene	ND	0.70	0.097	ND	0.13	0.018	
99-87-6	4-Isopropyltoluene (p-Cymene)	<b>0.18</b>	0.69	0.11	<b>0.033</b>	0.13	0.020	<b>J</b>
526-73-8	1,2,3-Trimethylbenzene	ND	0.69	0.097	ND	0.14	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.017	
5989-27-5	d-Limonene	<b>0.81</b>	0.68	0.15	<b>0.15</b>	0.12	0.026	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.69	0.13	ND	0.072	0.014	
1120-21-4	n-Undecane	<b>0.19</b>	0.70	0.19	<b>0.030</b>	0.11	0.029	<b>J</b>
120-82-1	1,2,4-Trichlorobenzene	ND	0.70	0.17	ND	0.095	0.023	
91-20-3	Naphthalene	ND	0.68	0.17	ND	0.13	0.033	
112-40-3	n-Dodecane	ND	0.69	0.20	ND	0.099	0.029	
87-68-3	Hexachlorobutadiene	ND	0.70	0.15	ND	0.066	0.014	
108-94-1	Cyclohexanone	<b>0.17</b>	0.65	0.11	<b>0.043</b>	0.16	0.028	<b>J</b>
98-06-6	tert-Butylbenzene	ND	0.70	0.11	ND	0.13	0.019	
104-51-8	n-Butylbenzene	ND	0.70	0.10	ND	0.13	0.019	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

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**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** IA-2  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-002

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Summa Canister  
 Test Notes:  
 Container ID: AC02072

Date Collected: 12/11/18  
 Date Received: 12/17/18  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 1.00 Liter(s)  
 0.10 Liter(s)

Initial Pressure (psig): -1.15      Final Pressure (psig): 5.09

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	MDL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	73	0.76	0.19	42	0.44	0.11	
75-71-8	Dichlorodifluoromethane (CFC 12)	2.0	0.76	0.13	0.40	0.15	0.026	
74-87-3	Chloromethane	0.42	0.29	0.13	0.20	0.14	0.061	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.74	0.12	ND	0.11	0.018	
75-01-4	Vinyl Chloride	ND	0.16	0.083	ND	0.063	0.033	
106-99-0	1,3-Butadiene	ND	0.31	0.13	ND	0.14	0.058	
74-83-9	Bromomethane	ND	0.29	0.11	ND	0.075	0.028	
75-00-3	Chloroethane	ND	0.29	0.096	ND	0.11	0.037	
64-17-5	Ethanol	200	7.4	0.54	110	4.0	0.29	
75-05-8	Acetonitrile	ND	0.76	0.19	ND	0.45	0.11	
107-02-8	Acrolein	1.8	1.5	0.22	0.79	0.64	0.096	
67-64-1	Acetone	1,100	79	18	450	33	7.4	D
75-69-4	Trichlorofluoromethane (CFC 11)	1.2	0.77	0.12	0.21	0.14	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	190	3.1	0.32	77	1.2	0.13	
107-13-1	Acrylonitrile	ND	0.76	0.16	ND	0.35	0.074	
75-35-4	1,1-Dichloroethene	ND	0.16	0.11	ND	0.041	0.027	
75-65-0	2-Methyl-2-Propanol(tert-Butyl Alcohol)	0.55	1.6	0.23	0.18	0.53	0.077	J
75-09-2	Methylene Chloride	0.25	0.79	0.22	0.072	0.23	0.063	J
76-13-1	Trichlorotrifluoroethane (CFC 113)	0.44	0.77	0.11	0.057	0.10	0.014	J
75-15-0	Carbon Disulfide	ND	1.6	0.23	ND	0.52	0.075	
156-60-5	trans-1,2-Dichloroethene	ND	0.16	0.11	ND	0.041	0.027	
75-34-3	1,1-Dichloroethane	ND	0.15	0.11	ND	0.036	0.028	
1634-04-4	Methyl tert-Butyl Ether	ND	0.79	0.092	ND	0.22	0.026	
108-05-4	Vinyl Acetate	4.9	7.7	1.8	1.4	2.2	0.50	J
78-93-3	2-Butanone (MEK)	2.3	1.5	0.16	0.77	0.50	0.054	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

D = The reported result is from a dilution.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 2 of 3

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** IA-2  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-002

**Test Code:** EPA TO-15  
**Instrument ID:** Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
**Analyst:** Simon Cao  
**Sample Type:** 6.0 L Summa Canister  
**Test Notes:**  
**Container ID:** AC02072

**Date Collected:** 12/11/18  
**Date Received:** 12/17/18  
**Date Analyzed:** 1/4/19  
**Volume(s) Analyzed:** 1.00 Liter(s)  
 0.10 Liter(s)

Initial Pressure (psig): -1.15      Final Pressure (psig): 5.09

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.16	0.11	ND	0.041	0.028	
141-78-6	Ethyl Acetate	74	1.6	0.41	20	0.45	0.11	
110-54-3	n-Hexane	0.25	0.79	0.16	0.070	0.22	0.046	J
67-66-3	Chloroform	0.16	0.16	0.10	0.032	0.033	0.021	J
109-99-9	Tetrahydrofuran (THF)	2.1	0.77	0.098	0.71	0.26	0.033	
107-06-2	1,2-Dichloroethane	0.15	0.16	0.086	0.038	0.040	0.021	J
71-55-6	1,1,1-Trichloroethane	ND	0.16	0.096	ND	0.029	0.018	
71-43-2	Benzene	0.47	0.15	0.11	0.15	0.046	0.035	
56-23-5	Carbon Tetrachloride	0.37	0.15	0.11	0.059	0.023	0.017	
110-82-7	Cyclohexane	0.27	1.5	0.22	0.077	0.42	0.064	J
78-87-5	1,2-Dichloropropane	ND	0.16	0.096	ND	0.035	0.021	
75-27-4	Bromodichloromethane	ND	0.16	0.11	ND	0.024	0.017	
79-01-6	Trichloroethene	ND	0.16	0.11	ND	0.030	0.020	
123-91-1	1,4-Dioxane	ND	0.77	0.092	ND	0.21	0.026	
80-62-6	Methyl Methacrylate	ND	1.6	0.28	ND	0.39	0.068	
142-82-5	n-Heptane	0.23	0.79	0.12	0.057	0.19	0.030	J
10061-01-5	cis-1,3-Dichloropropene	ND	0.82	0.12	ND	0.18	0.027	
108-10-1	4-Methyl-2-pentanone	ND	0.77	0.11	ND	0.19	0.026	
10061-02-6	trans-1,3-Dichloropropene	ND	0.77	0.16	ND	0.17	0.035	
79-00-5	1,1,2-Trichloroethane	ND	0.16	0.079	ND	0.029	0.014	
108-88-3	Toluene	0.54	0.77	0.095	0.14	0.21	0.025	J
591-78-6	2-Hexanone	0.20	0.79	0.096	0.048	0.19	0.024	J
124-48-1	Dibromochloromethane	ND	0.16	0.10	ND	0.019	0.012	
106-93-4	1,2-Dibromoethane	ND	0.16	0.091	ND	0.021	0.012	
123-86-4	n-Butyl Acetate	23	0.79	0.11	4.9	0.17	0.022	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Eastern Analytical, Inc.  
 Client Sample ID: IA-2  
 Client Project ID: 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-002

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Summa Canister  
 Test Notes:  
 Container ID: AC02072

Date Collected: 12/11/18  
 Date Received: 12/17/18  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 1.00 Liter(s)  
 0.10 Liter(s)

Initial Pressure (psig): -1.15 Final Pressure (psig): 5.09

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.79	0.18	ND	0.17	0.038	
127-18-4	Tetrachloroethene	ND	0.16	0.10	ND	0.024	0.015	
108-90-7	Chlorobenzene	ND	0.77	0.10	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.76	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	0.23	1.6	0.20	0.052	0.37	0.047	J
75-25-2	Bromoform	ND	0.77	0.16	ND	0.075	0.016	
100-42-5	Styrene	ND	0.77	0.13	ND	0.18	0.030	
95-47-6	o-Xylene	ND	0.77	0.11	ND	0.18	0.026	
111-84-2	n-Nonane	0.14	0.79	0.13	0.026	0.15	0.025	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.16	0.11	ND	0.023	0.016	
98-82-8	Cumene	ND	0.77	0.11	ND	0.16	0.023	
80-56-8	alpha-Pinene	0.29	0.76	0.12	0.052	0.14	0.021	J
103-65-1	n-Propylbenzene	ND	0.79	0.11	ND	0.16	0.023	
622-96-8	4-Ethyltoluene	ND	0.77	0.12	ND	0.16	0.025	
108-67-8	1,3,5-Trimethylbenzene	ND	0.77	0.11	ND	0.16	0.023	
95-63-6	1,2,4-Trimethylbenzene	ND	0.77	0.11	ND	0.16	0.022	
100-44-7	Benzyl Chloride	ND	1.6	0.18	ND	0.31	0.034	
541-73-1	1,3-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.019	
5989-27-5	d-Limonene	ND	0.74	0.16	ND	0.13	0.029	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.76	0.15	ND	0.079	0.015	
120-82-1	1,2,4-Trichlorobenzene	ND	0.77	0.19	ND	0.10	0.026	
91-20-3	Naphthalene	ND	0.74	0.19	ND	0.14	0.036	
87-68-3	Hexachlorobutadiene	ND	0.77	0.16	ND	0.073	0.015	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

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**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** AA-1  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-003

**Test Code:** EPA TO-15  
**Instrument ID:** Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
**Analyst:** Simon Cao  
**Sample Type:** 6.0 L Silonite Canister  
**Test Notes:**  
**Container ID:** AS00609

**Date Collected:** 12/11/18  
**Date Received:** 12/17/18  
**Date Analyzed:** 1/4/19  
**Volume(s) Analyzed:** 1.00 Liter(s)

Initial Pressure (psig): -0.80      Final Pressure (psig): 3.93

Container Dilution Factor: 1.34

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.70	0.17	ND	0.41	0.10	
75-71-8	Dichlorodifluoromethane (CFC 12)	<b>2.1</b>	0.70	0.12	<b>0.42</b>	0.14	0.024	
74-87-3	Chloromethane	<b>0.43</b>	0.27	0.12	<b>0.21</b>	0.13	0.056	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.68	0.11	ND	0.098	0.016	
75-01-4	Vinyl Chloride	ND	0.15	0.076	ND	0.058	0.030	
106-99-0	1,3-Butadiene	ND	0.28	0.12	ND	0.13	0.053	
74-83-9	Bromomethane	ND	0.27	0.099	ND	0.069	0.026	
75-00-3	Chloroethane	ND	0.27	0.088	ND	0.10	0.034	
64-17-5	Ethanol	<b>3.3</b>	6.8	0.50	<b>1.8</b>	3.6	0.26	<b>J</b>
75-05-8	Acetonitrile	ND	0.70	0.17	ND	0.42	0.10	
107-02-8	Acrolein	<b>0.29</b>	1.3	0.20	<b>0.13</b>	0.58	0.088	<b>J</b>
67-64-1	Acetone	<b>3.8</b>	7.2	1.6	<b>1.6</b>	3.0	0.68	<b>J</b>
75-69-4	Trichlorofluoromethane (CFC 11)	<b>1.1</b>	0.71	0.11	<b>0.19</b>	0.13	0.019	
67-63-0	2-Propanol (Isopropyl Alcohol)	<b>0.31</b>	2.8	0.29	<b>0.12</b>	1.1	0.12	<b>J</b>
107-13-1	Acrylonitrile	ND	0.70	0.15	ND	0.32	0.068	
75-35-4	1,1-Dichloroethene	ND	0.15	0.099	ND	0.037	0.025	
75-65-0	2-Methyl-2-Propanol(tert-Butyl Alcohol)	ND	1.5	0.21	ND	0.49	0.071	
75-09-2	Methylene Chloride	<b>0.25</b>	0.72	0.20	<b>0.073</b>	0.21	0.058	<b>J</b>
76-13-1	Trichlorotrifluoroethane (CFC 113)	<b>0.44</b>	0.71	0.10	<b>0.057</b>	0.093	0.013	<b>J</b>
75-15-0	Carbon Disulfide	ND	1.5	0.21	ND	0.47	0.069	
156-60-5	trans-1,2-Dichloroethene	ND	0.15	0.099	ND	0.037	0.025	
75-34-3	1,1-Dichloroethane	ND	0.13	0.10	ND	0.033	0.026	
1634-04-4	Methyl tert-Butyl Ether	ND	0.72	0.084	ND	0.20	0.023	
108-05-4	Vinyl Acetate	ND	7.1	1.6	ND	2.0	0.46	
78-93-3	2-Butanone (MEK)	<b>0.29</b>	1.3	0.15	<b>0.098</b>	0.45	0.050	<b>J</b>

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

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**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** AA-1  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-003

**Test Code:** EPA TO-15  
**Instrument ID:** Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
**Analyst:** Simon Cao  
**Sample Type:** 6.0 L Silonite Canister  
**Test Notes:**  
**Container ID:** AS00609

**Date Collected:** 12/11/18  
**Date Received:** 12/17/18  
**Date Analyzed:** 1/4/19  
**Volume(s) Analyzed:** 1.00 Liter(s)

Initial Pressure (psig): -0.80      Final Pressure (psig): 3.93

Container Dilution Factor: 1.34

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.15	0.10	ND	0.037	0.025	
141-78-6	Ethyl Acetate	ND	1.5	0.38	ND	0.41	0.10	
110-54-3	n-Hexane	<b>0.22</b>	0.72	0.15	<b>0.061</b>	0.21	0.042	<b>J</b>
67-66-3	Chloroform	ND	0.15	0.095	ND	0.030	0.019	
109-99-9	Tetrahydrofuran (THF)	ND	0.71	0.090	ND	0.24	0.030	
107-06-2	1,2-Dichloroethane	ND	0.15	0.079	ND	0.036	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.15	0.088	ND	0.027	0.016	
71-43-2	Benzene	<b>0.64</b>	0.13	0.10	<b>0.20</b>	0.042	0.032	
56-23-5	Carbon Tetrachloride	<b>0.39</b>	0.13	0.099	<b>0.061</b>	0.021	0.016	
110-82-7	Cyclohexane	ND	1.3	0.20	ND	0.39	0.058	
78-87-5	1,2-Dichloropropane	ND	0.15	0.088	ND	0.032	0.019	
75-27-4	Bromodichloromethane	ND	0.15	0.10	ND	0.022	0.015	
79-01-6	Trichloroethene	ND	0.15	0.096	ND	0.027	0.018	
123-91-1	1,4-Dioxane	ND	0.71	0.084	ND	0.20	0.023	
80-62-6	Methyl Methacrylate	ND	1.5	0.25	ND	0.36	0.062	
142-82-5	n-Heptane	<b>0.25</b>	0.72	0.11	<b>0.061</b>	0.18	0.028	<b>J</b>
10061-01-5	cis-1,3-Dichloropropene	ND	0.75	0.11	ND	0.17	0.025	
108-10-1	4-Methyl-2-pentanone	ND	0.71	0.098	ND	0.17	0.024	
10061-02-6	trans-1,3-Dichloropropene	ND	0.71	0.15	ND	0.16	0.032	
79-00-5	1,1,2-Trichloroethane	ND	0.15	0.072	ND	0.027	0.013	
108-88-3	Toluene	<b>0.47</b>	0.71	0.087	<b>0.13</b>	0.19	0.023	<b>J</b>
591-78-6	2-Hexanone	ND	0.72	0.088	ND	0.18	0.022	
124-48-1	Dibromochloromethane	ND	0.15	0.094	ND	0.017	0.011	
106-93-4	1,2-Dibromoethane	ND	0.15	0.083	ND	0.019	0.011	
123-86-4	n-Butyl Acetate	ND	0.72	0.098	ND	0.15	0.021	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Eastern Analytical, Inc.  
 Client Sample ID: AA-1  
 Client Project ID: 190305

ALS Project ID: P1806959  
 ALS Sample ID: P1806959-003

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:  
 Container ID: AS00609

Date Collected: 12/11/18  
 Date Received: 12/17/18  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -0.80 Final Pressure (psig): 3.93

Container Dilution Factor: 1.34

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.72	0.16	ND	0.15	0.034	
127-18-4	Tetrachloroethene	ND	0.15	0.092	ND	0.022	0.014	
108-90-7	Chlorobenzene	ND	0.71	0.095	ND	0.15	0.021	
100-41-4	Ethylbenzene	ND	0.70	0.10	ND	0.16	0.023	
179601-23-1	m,p-Xylenes	0.28	1.5	0.19	0.065	0.34	0.043	J
75-25-2	Bromoform	ND	0.71	0.15	ND	0.069	0.014	
100-42-5	Styrene	ND	0.71	0.12	ND	0.17	0.027	
95-47-6	o-Xylene	0.11	0.71	0.10	0.026	0.16	0.024	J
111-84-2	n-Nonane	ND	0.72	0.12	ND	0.14	0.023	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.15	0.099	ND	0.021	0.014	
98-82-8	Cumene	ND	0.71	0.10	ND	0.14	0.021	
80-56-8	alpha-Pinene	ND	0.70	0.11	ND	0.13	0.020	
103-65-1	n-Propylbenzene	ND	0.72	0.10	ND	0.15	0.021	
622-96-8	4-Ethyltoluene	ND	0.71	0.11	ND	0.14	0.023	
108-67-8	1,3,5-Trimethylbenzene	ND	0.71	0.10	ND	0.14	0.021	
95-63-6	1,2,4-Trimethylbenzene	0.10	0.71	0.099	0.020	0.14	0.020	J
100-44-7	Benzyl Chloride	ND	1.5	0.16	ND	0.28	0.031	
541-73-1	1,3-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.018	
106-46-7	1,4-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.018	
95-50-1	1,2-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.018	
5989-27-5	d-Limonene	ND	0.68	0.15	ND	0.12	0.026	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.70	0.13	ND	0.072	0.014	
120-82-1	1,2,4-Trichlorobenzene	ND	0.71	0.17	ND	0.096	0.023	
91-20-3	Naphthalene	ND	0.68	0.17	ND	0.13	0.033	
87-68-3	Hexachlorobutadiene	ND	0.71	0.15	ND	0.067	0.014	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** Method Blank  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P190104-MB

**Test Code:** EPA TO-15  
**Instrument ID:** Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
**Analyst:** Simon Cao  
**Sample Type:** 6.0 L Silonite Canister  
**Test Notes:**

**Date Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 1/4/19  
**Volume(s) Analyzed:** 1.00 Liter(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.52	0.13	ND	0.30	0.076	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.20	0.086	ND	0.097	0.042	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.51	0.084	ND	0.073	0.012	
75-01-4	Vinyl Chloride	ND	0.11	0.057	ND	0.043	0.022	
106-99-0	1,3-Butadiene	ND	0.21	0.088	ND	0.095	0.040	
74-83-9	Bromomethane	ND	0.20	0.074	ND	0.052	0.019	
75-00-3	Chloroethane	ND	0.20	0.066	ND	0.076	0.025	
64-17-5	Ethanol	ND	5.1	0.37	ND	2.7	0.20	
75-05-8	Acetonitrile	ND	0.52	0.13	ND	0.31	0.077	
107-02-8	Acrolein	ND	1.0	0.15	ND	0.44	0.065	
67-64-1	Acetone	ND	5.4	1.2	ND	2.3	0.51	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.53	0.081	ND	0.094	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	2.1	0.22	ND	0.85	0.090	
107-13-1	Acrylonitrile	ND	0.52	0.11	ND	0.24	0.051	
75-35-4	1,1-Dichloroethene	ND	0.11	0.074	ND	0.028	0.019	
75-65-0	2-Methyl-2-Propanol(Tert-Butyl Alcohol)	ND	1.1	0.16	ND	0.36	0.053	
75-09-2	Methylene Chloride	ND	0.54	0.15	ND	0.16	0.043	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.53	0.072	ND	0.17	0.023	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.53	0.076	ND	0.069	0.0099	
75-15-0	Carbon Disulfide	ND	1.1	0.16	ND	0.35	0.051	
156-60-5	trans-1,2-Dichloroethene	ND	0.11	0.074	ND	0.028	0.019	
75-34-3	1,1-Dichloroethane	ND	0.10	0.078	ND	0.025	0.019	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	0.063	ND	0.15	0.017	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 2 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** Method Blank  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P190104-MB

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:

Date Collected: NA  
 Date Received: NA  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 1.00 Liter(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	MDL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
108-05-4	Vinyl Acetate	ND	5.3	1.2	ND	1.5	0.34	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
156-59-2	cis-1,2-Dichloroethene	ND	0.11	0.075	ND	0.028	0.019	
108-20-3	Diisopropyl Ether	ND	0.54	0.070	ND	0.13	0.017	
141-78-6	Ethyl Acetate	ND	1.1	0.28	ND	0.31	0.078	
110-54-3	n-Hexane	ND	0.54	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.11	0.071	ND	0.023	0.015	
109-99-9	Tetrahydrofuran (THF)	ND	0.53	0.067	ND	0.18	0.023	
637-92-3	Ethyl tert-Butyl Ether	ND	0.53	0.064	ND	0.13	0.015	
107-06-2	1,2-Dichloroethane	ND	0.11	0.059	ND	0.027	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.11	0.066	ND	0.020	0.012	
108-21-4	Isopropyl Acetate	ND	1.0	0.17	ND	0.24	0.041	
71-36-3	1-Butanol	ND	1.0	0.14	ND	0.33	0.046	
71-43-2	Benzene	ND	0.10	0.077	ND	0.031	0.024	
56-23-5	Carbon Tetrachloride	ND	0.10	0.074	ND	0.016	0.012	
110-82-7	Cyclohexane	ND	1.0	0.15	ND	0.29	0.044	
994-05-8	tert-Amyl Methyl Ether	ND	0.54	0.065	ND	0.13	0.016	
78-87-5	1,2-Dichloropropane	ND	0.11	0.066	ND	0.024	0.014	
75-27-4	Bromodichloromethane	ND	0.11	0.077	ND	0.016	0.011	
79-01-6	Trichloroethene	ND	0.11	0.072	ND	0.020	0.013	
123-91-1	1,4-Dioxane	ND	0.53	0.063	ND	0.15	0.017	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	0.53	0.080	ND	0.11	0.017	
80-62-6	Methyl Methacrylate	ND	1.1	0.19	ND	0.27	0.046	
142-82-5	n-Heptane	ND	0.54	0.085	ND	0.13	0.021	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 3 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** Method Blank  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P190104-MB

**Test Code:** EPA TO-15  
**Instrument ID:** Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
**Analyst:** Simon Cao  
**Sample Type:** 6.0 L Silonite Canister  
**Test Notes:**

**Date Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 1/4/19  
**Volume(s) Analyzed:** 1.00 Liter(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
10061-01-5	cis-1,3-Dichloropropene	ND	0.56	0.083	ND	0.12	0.018	
108-10-1	4-Methyl-2-pentanone	ND	0.53	0.073	ND	0.13	0.018	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	0.11	ND	0.12	0.024	
79-00-5	1,1,2-Trichloroethane	ND	0.11	0.054	ND	0.020	0.0099	
108-88-3	Toluene	ND	0.53	0.065	ND	0.14	0.017	
591-78-6	2-Hexanone	ND	0.54	0.066	ND	0.13	0.016	
124-48-1	Dibromochloromethane	ND	0.11	0.070	ND	0.013	0.0082	
106-93-4	1,2-Dibromoethane	ND	0.11	0.062	ND	0.014	0.0081	
123-86-4	n-Butyl Acetate	ND	0.54	0.073	ND	0.11	0.015	
111-65-9	n-Octane	ND	0.54	0.12	ND	0.12	0.026	
127-18-4	Tetrachloroethene	ND	0.11	0.069	ND	0.016	0.010	
108-90-7	Chlorobenzene	ND	0.53	0.071	ND	0.12	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.1	0.14	ND	0.25	0.032	
75-25-2	Bromoform	ND	0.53	0.11	ND	0.051	0.011	
100-42-5	Styrene	ND	0.53	0.086	ND	0.12	0.020	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
111-84-2	n-Nonane	ND	0.54	0.089	ND	0.10	0.017	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.11	0.074	ND	0.016	0.011	
98-82-8	Cumene	ND	0.53	0.077	ND	0.11	0.016	
80-56-8	alpha-Pinene	ND	0.52	0.082	ND	0.093	0.015	
103-65-1	n-Propylbenzene	ND	0.54	0.077	ND	0.11	0.016	
620-14-4	3-Ethyltoluene	ND	0.53	0.072	ND	0.11	0.015	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 4 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** Method Blank  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P190104-MB

**Test Code:** EPA TO-15  
**Instrument ID:** Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
**Analyst:** Simon Cao  
**Sample Type:** 6.0 L Silonite Canister  
**Test Notes:**

**Date Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 1/4/19  
**Volume(s) Analyzed:** 1.00 Liter(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result	MRL	MDL	Result	MRL	MDL	Data
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ppbV	ppbV	ppbV	Qualifier
622-96-8	4-Ethyltoluene	ND	0.53	0.085	ND	0.11	0.017	
108-67-8	1,3,5-Trimethylbenzene	ND	0.53	0.077	ND	0.11	0.016	
98-83-9	alpha-Methylstyrene	ND	0.53	0.085	ND	0.11	0.018	
611-14-3	2-Ethyltoluene	ND	0.54	0.068	ND	0.11	0.014	
95-63-6	1,2,4-Trimethylbenzene	ND	0.53	0.074	ND	0.11	0.015	
124-18-5	n-Decane	ND	0.54	0.072	ND	0.093	0.012	
100-44-7	Benzyl Chloride	ND	1.1	0.12	ND	0.21	0.023	
541-73-1	1,3-Dichlorobenzene	ND	0.54	0.080	ND	0.090	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.54	0.082	ND	0.090	0.014	
135-98-8	sec-Butylbenzene	ND	0.53	0.073	ND	0.097	0.013	
99-87-6	4-Isopropyltoluene (p-Cymene)	ND	0.52	0.081	ND	0.095	0.015	
526-73-8	1,2,3-Trimethylbenzene	ND	0.52	0.073	ND	0.11	0.015	
95-50-1	1,2-Dichlorobenzene	ND	0.54	0.079	ND	0.090	0.013	
5989-27-5	d-Limonene	ND	0.51	0.11	ND	0.092	0.020	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.52	0.10	ND	0.054	0.010	
1120-21-4	n-Undecane	ND	0.53	0.14	ND	0.083	0.022	
120-82-1	1,2,4-Trichlorobenzene	ND	0.53	0.13	ND	0.071	0.018	
91-20-3	Naphthalene	ND	0.51	0.13	ND	0.097	0.025	
112-40-3	n-Dodecane	ND	0.52	0.15	ND	0.075	0.022	
87-68-3	Hexachlorobutadiene	ND	0.53	0.11	ND	0.050	0.010	
108-94-1	Cyclohexanone	ND	0.49	0.083	ND	0.12	0.021	
98-06-6	tert-Butylbenzene	ND	0.53	0.080	ND	0.097	0.015	
104-51-8	n-Butylbenzene	ND	0.53	0.077	ND	0.097	0.014	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

**ALS ENVIRONMENTAL**

SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

**Client:** Eastern Analytical, Inc.  
**Client Project ID:** 190305

ALS Project ID: P1806959

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister(s) / 6.0 L Summa Canister(s)  
 Test Notes:

Date(s) Collected: 12/11/18  
 Date(s) Received: 12/17/18  
 Date(s) Analyzed: 1/4/19

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4	Toluene-d8	Bromofluorobenzene	Acceptance Limits	Data Qualifier
		Percent Recovered	Percent Recovered	Percent Recovered		
Method Blank	P190104-MB	92	101	100	70-130	
Lab Control Sample	P190104-LCS	91	100	102	70-130	
IA-1	P1806959-001	91	99	106	70-130	
IA-2	P1806959-002	90	99	106	70-130	
AA-1	P1806959-003	93	98	103	70-130	
AA-1	P1806959-003DUP	93	98	102	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

## ALS ENVIRONMENTAL

### LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** Lab Control Sample  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P190104-LCS

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:

Date Collected: NA  
 Date Received: NA  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
115-07-1	Propene	211	152	72	53-112	
75-71-8	Dichlorodifluoromethane (CFC 12)	210	157	75	62-103	
74-87-3	Chloromethane	211	154	73	51-121	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	211	171	81	56-111	
75-01-4	Vinyl Chloride	214	168	79	57-117	
106-99-0	1,3-Butadiene	210	174	83	53-134	
74-83-9	Bromomethane	212	179	84	65-110	
75-00-3	Chloroethane	214	172	80	64-111	
64-17-5	Ethanol	1,020	730	72	57-124	
75-05-8	Acetonitrile	206	150	73	57-126	
107-02-8	Acrolein	205	162	79	62-121	
67-64-1	Acetone	1,060	772	73	60-113	
75-69-4	Trichlorofluoromethane (CFC 11)	211	166	79	63-104	
67-63-0	2-Propanol (Isopropyl Alcohol)	413	313	76	60-124	
107-13-1	Acrylonitrile	207	172	83	66-125	
75-35-4	1,1-Dichloroethene	218	181	83	68-107	
75-65-0	2-Methyl-2-Propanol(tert-Butyl Alcohol)	434	342	79	64-114	
75-09-2	Methylene Chloride	217	177	82	66-105	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	216	169	78	63-127	
76-13-1	Trichlorotrifluoroethane (CFC 113)	216	175	81	59-109	
75-15-0	Carbon Disulfide	218	174	80	67-109	
156-60-5	trans-1,2-Dichloroethene	214	167	78	70-115	
75-34-3	1,1-Dichloroethane	216	169	78	66-106	
1634-04-4	Methyl tert-Butyl Ether	214	176	82	67-109	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

**ALS ENVIRONMENTAL**

LABORATORY CONTROL SAMPLE SUMMARY

Page 2 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** Lab Control Sample  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P190104-LCS

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:

Date Collected: NA  
 Date Received: NA  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
108-05-4	Vinyl Acetate	1,060	1050	99	68-136	
78-93-3	2-Butanone (MEK)	208	177	85	71-116	
156-59-2	cis-1,2-Dichloroethene	211	165	78	67-110	
108-20-3	Diisopropyl Ether	217	178	82	62-109	
141-78-6	Ethyl Acetate	436	377	86	64-127	
110-54-3	n-Hexane	216	173	80	60-115	
67-66-3	Chloroform	217	170	78	66-105	
109-99-9	Tetrahydrofuran (THF)	216	177	82	65-110	
637-92-3	Ethyl tert-Butyl Ether	214	180	84	69-109	
107-06-2	1,2-Dichloroethane	215	162	75	60-110	
71-55-6	1,1,1-Trichloroethane	215	169	79	64-108	
108-21-4	Isopropyl Acetate	412	356	86	66-119	
71-36-3	1-Butanol	413	348	84	54-143	
71-43-2	Benzene	211	164	78	67-106	
56-23-5	Carbon Tetrachloride	212	170	80	64-112	
110-82-7	Cyclohexane	416	354	85	67-110	
994-05-8	tert-Amyl Methyl Ether	217	180	83	68-112	
78-87-5	1,2-Dichloropropane	216	175	81	66-112	
75-27-4	Bromodichloromethane	215	178	83	67-113	
79-01-6	Trichloroethene	213	187	88	66-108	
123-91-1	1,4-Dioxane	214	182	85	70-116	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	213	171	80	64-113	
80-62-6	Methyl Methacrylate	431	398	92	73-118	
142-82-5	n-Heptane	215	183	85	66-110	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

**ALS ENVIRONMENTAL**

LABORATORY CONTROL SAMPLE SUMMARY

Page 3 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** Lab Control Sample  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P190104-LCS

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:

Date Collected: NA  
 Date Received: NA  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
10061-01-5	cis-1,3-Dichloropropene	214	185	86	75-120	
108-10-1	4-Methyl-2-pentanone	209	181	87	65-124	
10061-02-6	trans-1,3-Dichloropropene	213	188	88	77-123	
79-00-5	1,1,2-Trichloroethane	215	179	83	68-112	
108-88-3	Toluene	212	170	80	62-111	
591-78-6	2-Hexanone	214	177	83	59-128	
124-48-1	Dibromochloromethane	213	188	88	67-123	
106-93-4	1,2-Dibromoethane	216	185	86	66-122	
123-86-4	n-Butyl Acetate	219	186	85	64-128	
111-65-9	n-Octane	217	177	82	65-114	
127-18-4	Tetrachloroethene	213	177	83	55-120	
108-90-7	Chlorobenzene	215	179	83	61-114	
100-41-4	Ethylbenzene	212	173	82	64-113	
179601-23-1	m,p-Xylenes	426	353	83	64-114	
75-25-2	Bromoform	213	190	89	65-132	
100-42-5	Styrene	212	191	90	67-124	
95-47-6	o-Xylene	214	174	81	65-114	
111-84-2	n-Nonane	215	166	77	64-117	
79-34-5	1,1,2,2-Tetrachloroethane	214	168	79	66-119	
98-82-8	Cumene	214	177	83	61-116	
80-56-8	alpha-Pinene	211	180	85	65-120	
103-65-1	n-Propylbenzene	218	180	83	63-117	
620-14-4	3-Ethyltoluene	215	180	84	60-117	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 4 of 4

**Client:** Eastern Analytical, Inc.  
**Client Sample ID:** Lab Control Sample  
**Client Project ID:** 190305

ALS Project ID: P1806959  
 ALS Sample ID: P190104-LCS

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:

Date Collected: NA  
 Date Received: NA  
 Date Analyzed: 1/4/19  
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	
					Acceptance Limits	Data Qualifier
622-96-8	4-Ethyltoluene	214	178	83	63-124	
108-67-8	1,3,5-Trimethylbenzene	214	175	82	60-117	
98-83-9	alpha-Methylstyrene	214	195	91	64-131	
611-14-3	2-Ethyltoluene	217	177	82	62-116	
95-63-6	1,2,4-Trimethylbenzene	215	182	85	61-122	
124-18-5	n-Decane	215	176	82	67-120	
100-44-7	Benzyl Chloride	217	204	94	77-142	
541-73-1	1,3-Dichlorobenzene	216	181	84	61-125	
106-46-7	1,4-Dichlorobenzene	216	179	83	59-123	
135-98-8	sec-Butylbenzene	212	177	83	62-117	
99-87-6	4-Isopropyltoluene (p-Cymene)	216	182	84	58-122	
526-73-8	1,2,3-Trimethylbenzene	216	184	85	62-124	
95-50-1	1,2-Dichlorobenzene	216	182	84	61-126	
5989-27-5	d-Limonene	211	185	88	66-124	
96-12-8	1,2-Dibromo-3-chloropropane	209	192	92	67-138	
1120-21-4	n-Undecane	216	182	84	68-127	
120-82-1	1,2,4-Trichlorobenzene	214	188	88	62-141	
91-20-3	Naphthalene	203	175	86	62-145	
112-40-3	n-Dodecane	205	206	100	64-152	
87-68-3	Hexachlorobutadiene	209	177	85	49-131	
108-94-1	Cyclohexanone	196	169	86	61-127	
98-06-6	tert-Butylbenzene	215	183	85	58-122	
104-51-8	n-Butylbenzene	216	175	81	64-121	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

**ALS ENVIRONMENTAL**

LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 3

**Client:** Eastern Analytical, Inc.

**Client Sample ID:** AA-1

**Client Project ID:** 190305

ALS Project ID: P1806959

ALS Sample ID: P1806959-003DUP

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00609

Date Collected: 12/11/18

Date Received: 12/17/18

Date Analyzed: 1/4/19

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -0.80

Final Pressure (psig): 3.93

Container Dilution Factor: 1.34

Compound	Sample Result		Duplicate Sample Result		Average µg/m³	% RPD	RPD Limit	Data Qualifier
	µg/m³	ppbV	µg/m³	ppbV				
Propene	ND	ND	ND	ND	-	-	25	
Dichlorodifluoromethane (CFC 12)	2.06	0.418	2.08	0.420	2.07	1	25	
Chloromethane	0.431	0.209	0.381	0.184	0.406	12	25	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	ND	ND	ND	-	-	25	
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Butadiene	ND	ND	ND	ND	-	-	25	
Bromomethane	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Ethanol	3.33	1.77	3.11	1.65	3.22	7	25	J
Acetonitrile	ND	ND	ND	ND	-	-	25	
Acrolein	0.288	0.126	0.277	0.121	0.2825	4	25	J
Acetone	3.80	1.60	3.69	1.55	3.745	3	25	J
Trichlorofluoromethane	1.09	0.194	1.13	0.202	1.11	4	25	
2-Propanol (Isopropyl Alcohol)	0.307	0.125	ND	ND	-	-	25	
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
2-Methyl-2-Propanol (tert-Butyl Alcohol)	ND	ND	ND	ND	-	-	25	
Methylene Chloride	0.253	0.0729	0.237	0.0683	0.245	7	25	J
Trichlorotrifluoroethane	0.440	0.0574	0.449	0.0586	0.4445	2	25	J
Carbon Disulfide	ND	ND	ND	ND	-	-	25	
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
Methyl tert-Butyl Ether	ND	ND	ND	ND	-	-	25	
Vinyl Acetate	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	0.289	0.0982	0.271	0.0918	0.28	6	25	J

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

**ALS ENVIRONMENTAL**

LABORATORY DUPLICATE SUMMARY RESULTS

Page 2 of 3

**Client:** Eastern Analytical, Inc.

**Client Sample ID:** AA-1

**Client Project ID:** 190305

ALS Project ID: P1806959

ALS Sample ID: P1806959-003DUP

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00609

Date Collected: 12/11/18

Date Received: 12/17/18

Date Analyzed: 1/4/19

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -0.80

Final Pressure (psig): 3.93

Container Dilution Factor: 1.34

Compound	Sample Result		Duplicate Sample Result		Average µg/m <sup>3</sup>	% RPD	RPD Limit	Data Qualifier
	µg/m <sup>3</sup>	ppbV	µg/m <sup>3</sup>	ppbV				
cis-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
Ethyl Acetate	ND	ND	ND	ND	-	-	25	
n-Hexane	0.216	0.0612	0.226	0.0643	0.221	5	25	J
Chloroform	ND	ND	ND	ND	-	-	25	
Tetrahydrofuran (THF)	ND	ND	ND	ND	-	-	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	
Benzene	0.645	0.202	0.662	0.207	0.6535	3	25	
Carbon Tetrachloride	0.386	0.0614	0.403	0.0641	0.3945	4	25	
Cyclohexane	ND	ND	ND	ND	-	-	25	
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
1,4-Dioxane	ND	ND	ND	ND	-	-	25	
Methyl Methacrylate	ND	ND	ND	ND	-	-	25	
n-Heptane	0.249	0.0608	0.232	0.0566	0.2405	7	25	J
cis-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	ND	ND	ND	ND	-	-	25	
trans-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
1,1,2-Trichloroethane	ND	ND	ND	ND	-	-	25	
Toluene	0.472	0.125	0.498	0.132	0.485	5	25	J
2-Hexanone	ND	ND	ND	ND	-	-	25	
Dibromochloromethane	ND	ND	ND	ND	-	-	25	
1,2-Dibromoethane	ND	ND	ND	ND	-	-	25	
n-Butyl Acetate	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

**ALS ENVIRONMENTAL**

LABORATORY DUPLICATE SUMMARY RESULTS

Page 3 of 3

**Client:** Eastern Analytical, Inc.

**Client Sample ID:** AA-1

**Client Project ID:** 190305

ALS Project ID: P1806959

ALS Sample ID: P1806959-003DUP

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00609

Date Collected: 12/11/18

Date Received: 12/17/18

Date Analyzed: 1/4/19

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -0.80

Final Pressure (psig): 3.93

Container Dilution Factor: 1.34

Compound	Sample Result		Duplicate Sample Result		Average µg/m³	% RPD	RPD Limit	Data Qualifier
	µg/m³	ppbV	µg/m³	ppbV				
n-Octane	ND	ND	ND	ND	-	-	25	
Tetrachloroethene	ND	ND	ND	ND	-	-	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	0.280	0.0645	0.269	0.0620	0.2745	4	25	J
Bromoform	ND	ND	ND	ND	-	-	25	
Styrene	ND	ND	ND	ND	-	-	25	
o-Xylene	0.111	0.0256	0.115	0.0265	0.113	4	25	J
n-Nonane	ND	ND	ND	ND	-	-	25	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	
Cumene	ND	ND	ND	ND	-	-	25	
alpha-Pinene	ND	ND	ND	ND	-	-	25	
n-Propylbenzene	ND	ND	ND	ND	-	-	25	
4-Ethyltoluene	ND	ND	ND	ND	-	-	25	
1,3,5-Trimethylbenzene	ND	ND	ND	ND	-	-	25	
1,2,4-Trimethylbenzene	0.101	0.0205	0.102	0.0207	0.1015	1	25	J
Benzyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
d-Limonene	ND	ND	ND	ND	-	-	25	
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	-	-	25	
1,2,4-Trichlorobenzene	ND	ND	ND	ND	-	-	25	
Naphthalene	ND	ND	ND	ND	-	-	25	
Hexachlorobutadiene	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

