
**Vacant Parcel
133 – 139 Main Street
Windsor, Vermont 05089**

KAS#507210630

PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

October 22, 2021

Prepared for:

Windham & Windsor Housing Trust, Inc.
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Brattleboro, Vermont 05201



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1.0 REPORT PREPARATION / CERTIFICATION

This Phase II Environmental Site Assessment Report was prepared by KAS, Inc. for Windham & Windsor Housing Trust, Inc. of Brattleboro, VT pursuant to ASTM E 1903-19 and following guidelines for a site investigation outlined in the Vermont Department of Environmental Conservation (VT DEC) Investigation and Remediation of Contaminated Properties Rule (I-Rule) dated July 6, 2019. This report was prepared under my direction. I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined by ASTM. This report accurately represents the findings of the Phase II Environmental Site Assessment to the best of my knowledge.

A handwritten signature in black ink, appearing to read "J. Roberts", is written over a horizontal line.

Jeremy Roberts, P.G.
Principal / Environmental Program Manager



2.0 INTRODUCTION

This report summarizes the results of a Phase II Environmental Site Assessment (ESA) completed at 133 – 139 Main Street in Windsor, Vermont (property). A Site Location Map is included in Appendix A. The Phase II ESA was performed by KAS, Inc. (KAS) in accordance with the American Society for Testing and Materials (ASTM) Practice ASTM E 1903-19 and following guidelines for a site investigation outlined in the Vermont Department of Environmental Conservation (VT DEC) Investigation and Remediation of Contaminated Properties Rule (I-Rule) dated July 6, 2019. KAS performed this Phase II ESA for Windham & Windsor Housing Trust, Inc. (WWHT) who is also the Phase II ESA document user.

3.0 SITE DESCRIPTION

The property is located in Windsor which is the town where the Constitution of Vermont was adopted in 1777. The property lies along the eastern side of Main Street (US Route 5) south of the corner of River Street. The property consists of three parcels totaling approximately 1.95 acres and is located within the central business zoning district according to the Town of Windsor. The property coordinates are – 72.386831° west longitude and 43.478416° north latitude. The property contains unlevelled grounds throughout with the southern portion of the property lying a higher elevation than the northern portion. The majority of the property is covered by grass vegetation with some portions along the southern boundary consisting of a gravel surface. No buildings are present on the property.

The first development at the property is believed to have occurred in the 1800's when at least two dwellings were indicated to be present on the property. The property was used for residential purposes through the early 2000's when the residential structures were demolished. A fire reportedly partially damaged one of the residential buildings located along the southern portion of the property.

4.0 BACKGROUND

A Phase I ESA was completed at the property in July 2021. The Phase I assessment revealed evidence of the following recognized environmental condition (REC) in connection with the property:

1. The potential presence of historical fill material beneath the property as a result of historical urban use and historical fire(s).

A Phase II ESA was advised for the property in order to properly assess potential liability associated with future ownership and redevelopment of the property.

5.0 OBJECTIVES

The objective of this Phase II ESA work was to provide data to evaluate the potential impacts the aforementioned REC may have had on the property soil and to provide information relevant to evaluating business environmental risk associated with potential future use and development of the property by WWHT. The means by which this objective was completed included soil boring

advancement and laboratory analysis of soil samples. These tasks are further described in Section 6.0.

The contaminants of concern consist of arsenic, lead and polycyclic aromatic hydrocarbons (PAHs) which are the most common contaminants found in urban fill.

6.0 PHASE II IMPLEMENTATION

The Phase II ESA was implemented by KAS on October 6, 2021. Specific details of the Phase II work scope are discussed below.

6.1 Project Coordination / Health and Safety Plan Preparation

KAS coordinated with WWHT to gain access to the property grounds to conduct the Phase II work scope. Prior to the commencement of fieldwork, KAS prepared a site-specific Health and Safety Plan for the property to comply with Occupational Health and Safety regulations. The property was premarked for Digsafe notification on September 30, 2021 and Digsafe ticket #20213912126 was assigned on September 30, 2021.

6.2 Soil Boring Advancement

On October 6, 2021 six (6) soil borings (SB21-1 through SB21-6) were advanced by KAS using a track-mounted Geoprobe 54LT rig under the supervision of a KAS scientist. These soil borings were strategically placed across the property to evaluate the potential presence of urban fill. Soil boring locations are presented in Appendix A. Photographic documentation is presented in Appendix B.

Undisturbed soil cores were collected continuously from all soil borings. The soil borings were advanced up to a depth of 12.0 feet below grade. The soil cores were logged by a KAS scientist and screened for the presence of volatile organic compounds (VOCs) using a MiniRae photoionization detector (PID). Prior to screening, the PID was calibrated with isobutylene referenced to benzene (KAS Protocol #034¹). Soils were screened using KAS' Soil Screening Protocol #001². Soil characteristics and contaminant concentrations were recorded by the KAS scientist in soil boring logs presented in Appendix C. Soils observed in the borings generally consisted of a fine to medium silty sand with gravel overlying a native poorly graded coarse sand at depths ranging from 2.0 – 5.0 feet below grade. Fill material consisting of brick, wood and slate was noted from surface grade ranging from depths up to 5.0 feet below grade. No VOCs above 1.2 parts per million by volume (ppmv) were measured with the PID in any of the soil borings. No petroleum or non-petroleum odors were encountered in the soil borings.

KAS collected soil samples at the property for laboratory analysis of lead, arsenic and PAHs. The project site was divided up into two areas and samples were composited from the six borings as follows:

¹ KAS Protocol #034: Use and Maintenance of MiniRAE Lite Photoionization Detector, December 2010

² KAS Protocol #001: Soil Screening Headspace Measurement, revised December 2010

- One sample from surface soils at approximately 0 – 2 feet below surface grade from the northern half of the project site (Soil borings SB21-3, SB21-4 and SB21-5 = COMP A 0-2');
- One sample from approximately 2 – 5 feet below grade from the northern half of the project site (Soil borings SB21-3, SB21-4 and SB21-5 = COMP A 2-5');
- One sample within the deeper native soils layer from the northern half of the project site (Soil borings SB21-3, SB21-4 and SB21-5 = COMP A 5-8');
- One sample from surface soils at approximately 0 – 2 feet below surface grade from the southern half of the project site (Soil borings SB21-1, SB21-2 and SB21-6 = COMP B 0-2');
- One sample from approximately 2 – 5 feet below grade from the southern half of the project site (Soil borings SB21-1, SB21-2 and SB21-6 = COMP B 2-5');
- One sample within the deeper native soils layer from the southern half of the project site (Soil borings SB21-1, SB21-2 and SB21-6 = COMP B 5-8');

All samples collected were placed on ice and were submitted to Eastern Analytical Laboratories of Concord, NH under proper chain of custody procedures.

6.3 Laboratory Analytical Results

PAHs were detected in five of the six samples at concentrations above the laboratory reporting limits. Samples COMP A (0-2'), COMP A (2-5'), COMP B (0-2') and COMP B (2-5') contained benzo(a)pyrene (BaP) at a concentration exceeding the applicable Vermont Soil Standard (VSS) for a residential property. PAHs expressed as the toxic equivalent quotient (TEQ) for BaP exceeded the background level soil concentration for urban sites in the COMP A (0-2'), COMP A (2-5'), COMP B (0-2') and COMP B (2-5') samples. The TEQ for BaP was below the resident VSS in the COMP B (5-8') sample. A concentration of arsenic and lead was reported in all samples; however, the concentrations were below the applicable VSS.

A tabulated summary of the analytical results is included in Appendix D. The laboratory analytical reports are included in Appendix D.

7.0 PRELIMINARY CONCEPTUAL SITE MODEL

7.1 Description, History and Current Use of Property and Surrounding Area

The property is located in Windsor, VT along the eastern side of Main Street (US Route 5) south of the corner of River Street. The property consists of three parcels totaling approximately 1.95 acres and is located within the central business zoning district according to the Town of Windsor. The property is approximately 1.95 acres in size and is located in a mixed residential and commercial area within the Town of Windsor. The property contains unlevelled grounds throughout with the southern portion of the property lying a higher elevation than the northern portion. The majority of the property is covered by grass vegetation with some portions along the southern boundary consisting of a gravel surface. No buildings or improvements were noted on the property except for a gravel parking lot along its southern portion and a partially buried concrete slab along the eastern edge of the property. A former gravel driveway was noted along the southwestern side of the property which leads to the adjacent Windsor Diner parcel. A Site Plan which shows relevant

Site features is included in Appendix A. Historical uses of the property are discussed in Section 3.0.

Based on a review of topographic maps and aerial photography, the Site lies at an approximate elevation of 150 feet above mean sea level (AMSL). The nearest surface water is the Connecticut River which is located approximately 0.25 miles east of the property. Based on Site topography, the surface drainage from the property is anticipated to flow in a general easterly direction. Utilities servicing the property appear to consist of municipal sewer, with a manhole located along the northeastern portion of the property. No other subsurface infrastructure is known to be present beneath the property and none was reported by the Town of Windsor during the Phase II ESA.

As of October 2021, during KAS' most recent property visit, neighboring property uses consisted of the following:

- North: Restaurant (Bistro Midva) / Commercial building
- South: Mixed commercial / residential properties and Etta Frasier Drive
- East: Residential properties
- West: Windsor Diner and US Route 5 (Main Street)

7.2 Geology

The soils beneath the property are mapped as littoral sands and pebbly sands of glacial origin.³ Soils encountered during soil boring advancement generally consisted of well to medium coarse silty sand with gravel underlain by a native coarse poorly graded sand. Evidence of historical fill was noted beneath the property and was mainly concentrated in the upper five feet. Bedrock in the vicinity of the property consists of Devonian-aged Gile Mountain Formation which is described as gray phyllite and schist.⁴ No bedrock outcrop points are present on the property and no wetland areas have been identified on the property according to VT DEC records.⁵

7.3 Hydrogeology

Windsor is situated within the Connecticut River watershed. As such, all land in Windsor ultimately drains to the Connecticut River, which is located approximately 0.25 miles east of the property. Based on the topography of the local region, groundwater from the property is expected to flow easterly towards the Connecticut River. Groundwater was encountered in one of the soil borings advanced on October 6, 2021 at a depth of approximately 10.5 feet below grade.

7.4 Apparent Source of Release(s)

The PAH impacts identified in shallow soils at the property are believed to be related to the historical placement of fill on the property. Fill soils containing brick, wood and slate were observed throughout the property.

³ Doll, 1970.

⁴ Doll, 1961.

⁵ VTDEC Database

7.5 Contaminant Fate and Transport

PAH impacts in excess of applicable urban background and residential soil standards have been identified in fill soils located at the property. Fill soils containing brick wood and/or slate were observed throughout the property to a maximum depth of 5.0 feet below grade. The risk for groundwater transport and/or leaching of impacts from shallow soil appears to be low given groundwater is presumed to be lie several feet below the urban fill layer based on the data collected during soil boring advancement on October 6, 2021.

7.6 Sensitive Receptor Risk Assessment

A sensitive receptor risk assessment of the area surrounding the property is provided below, and a determination of the potential risk to identified receptors has been made based on proximity to the impacted areas, groundwater flow direction, contaminant mobility and volatility, and contaminant concentration levels in soil, groundwater and/or soil vapor. To date one sensitive receptor (soil) has been identified as being impacted from the placement of urban fill.

The property and surrounding area are serviced by the municipal water supply system. According to the Vermont Agency of Natural Resources Atlas mapping tool, there are no private wells within a ½ mile of the property. Based on this information and the general immobile nature of PAHs, there does not appear to be a risk to nearby by surface waters at this time.

The nearest surface water body is the Connecticut River, which is located approximately 0.25 miles east of the property. Given the general immobile nature of PAHs, there does not appear to be a risk to nearby by surface waters at this time.

A buried sewer line runs along the northeastern portion of the property. Given the type of impacts noted, utility corridors do not appear to be a risk at this time.

7.7 Potential Exposure Pathways

Potential exposure pathways to soil impacts identified at the property have been evaluated. Routes of potential exposure to current and future property users include absorption via dermal contact and/or ingestion of soil. Impacted soils have been identified at shallow depths across the property. The potential redevelopment plan proposed for the property consists of building residential housing which could result in a direct contact risk for future site users to shallow soils. The proposed future property uses and the identified potential exposure pathways will need to be evaluated to confirm adequate protection of human health is being accomplished.

7.8 Data Gap Analysis

Taking into consideration the preliminary conceptual site model presented above, KAS has completed an evaluation of potential data gaps at the property. No data gaps have been identified. A complete picture of the property history and use has been obtained through the completion of a Phase I ESA in July 2021. Once a final redevelopment plan is in place for the

property, the proposed future property uses and the identified potential exposure pathways will need to be evaluated to confirm adequate protection of human health is being accomplished.

8.0 CONCLUSIONS

Based on the Phase II ESA completed in conformance with the scope and limitations of ASTM Practice ASTM E 1903-19 at the 133 – 139 Main Street property located in Windsor, Vermont the following conclusions are offered:

1. A Phase II assessment was conducted on October 6, 2021 by KAS using a Geoprobe drill rig. Six soil borings (SB21-1 through SB21-6) were advanced at various locations on the property to assess the potential presence of urban fill. No elevated PID readings or odors were noted in any of the soil borings advanced on October 6, 2021;
2. Composite soil sampling was completed at the property to assess the potential for arsenic, lead and PAH impacts;
3. PAHs were detected in five of the six samples at concentrations above the laboratory reporting limits. Samples COMP A (0-2'), COMP A (2-5'), COMP B (0-2') and COMP B (2-5') contained BaP at a concentration exceeding the applicable VSS for a residential property. PAHs expressed as the TEQ for BaP exceeded the background level soil concentration for urban sites in the COMP A (0-2'), COMP A (2-5'), COMP B (0-2') and COMP B (2-5') samples. A concentration of arsenic and lead was reported in all samples; however, the concentrations were below the applicable VSS;
4. The source of the PAH impacts is believed to be related to the historical placement of fill on the property. Fill soils containing brick, wood and slate were observed throughout the property down to a maximum depth of 5.0 feet below grade; and,
5. Based on the results of the Phase II ESA, the REC identified during the Phase I ESA appears to have resulted in detectable contamination at the property. Soils above the native sandy layer have been shown to be impacted with PAHs above regulatory standards.

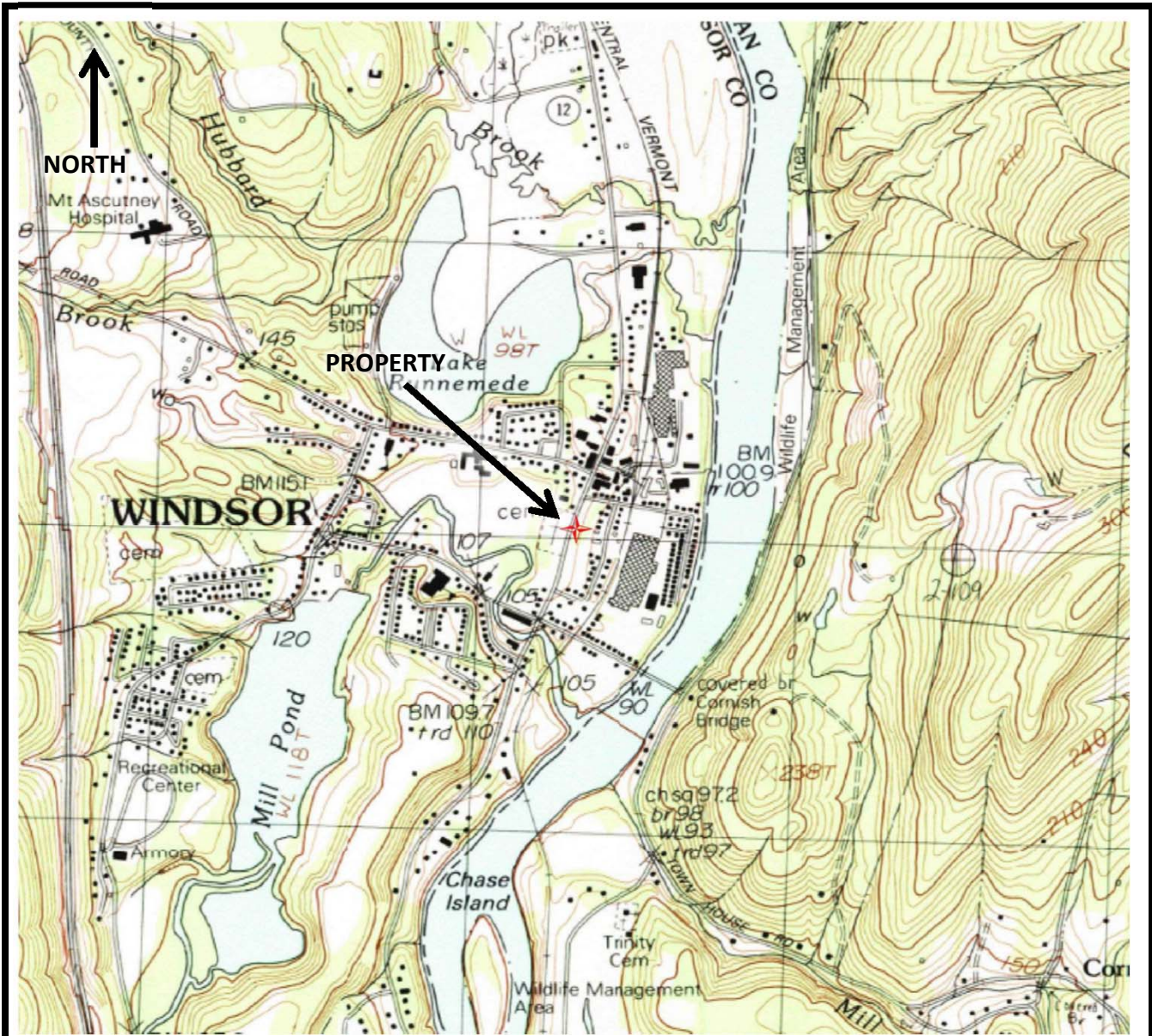
9.0 RECOMMENDATIONS

Based on the above listed conclusions, KAS recommends a Corrective Action Plan be prepared for the property to outline the management of PAH impacted soils during future redevelopment and to mitigate direct contact risk to any future property users.



APPENDIX A

- 1) SITE LOCATION MAP*
- 2) SITE MAP WITH SOIL BORING LOCATIONS*



KAS Job #: 507210630

Source: EnviroSite



**133 - 139 Main Street
Windsor, VT 05089**



**Site Location Map
Windsor, VT Quadrangle, 1984 USGS Map**

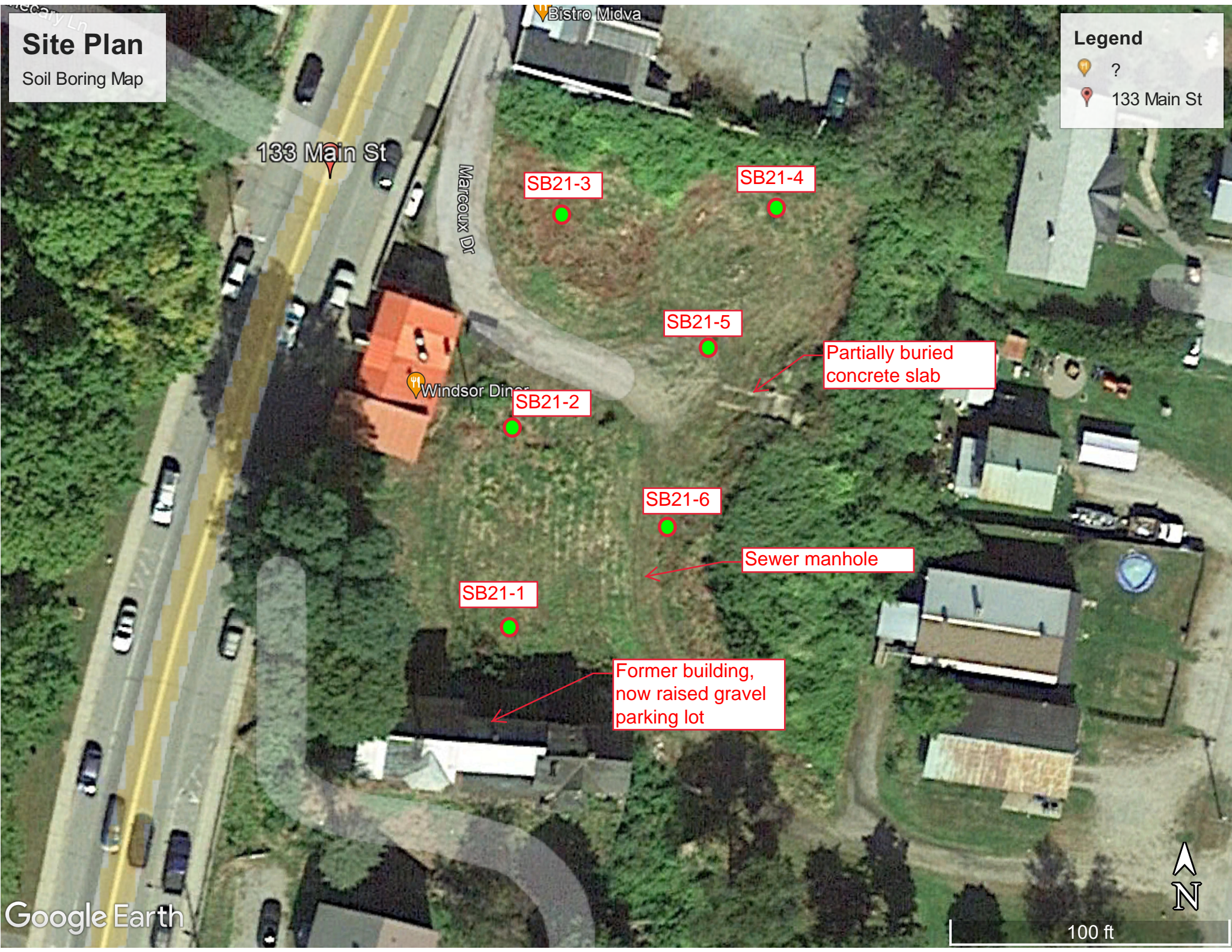
Date: 08/18/21	Drawing No. 0	Scale: NTS	By: JR
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Site Plan

Soil Boring Map

Legend

-  ?
-  133 Main St





APPENDIX B
PHOTOGRAPHIC DOCUMENTATION



Photographic Documentation
Phase II Environmental Site Assessment
133 - 139 Main Street
Windsor, Vermont
KAS # 507210630

Photograph ID: 001
Date: October 6, 2021
Location:
Property
Direction:
Facing south
Comments:

View during the advancement of soil boring SB21-1 along the southern portion of the property.



Photograph ID: 002
Date: October 6, 2021
Location:
Property
Direction:
Facing northwest
Comments:

View during the advancement of soil boring SB21-3 along the northern portion of the property.





APPENDIX C

BORING LOGS



Soil Boring Summary
133 - 139 Main Street, Windsor, VT
October 6, 2021

Soil Boring #	Run Depth (ft bsg)	Group Name	PID (ppmv)	Comments / Observations
SB21-1	0 - 4	Brown Silty Sand with Gravel (Fill)	0.0	No odors; evidence of fill including brick, slate and wood noted to 5 feet below grade
	4 - 5	Brown Silty Sand (Fill)	0.0	
	5 - 8	Native Poorly Graded Sand	0.0	
	8 - 12	Native Poorly Graded Sand	0.0	
SB21-2	0 - 4	Brown Silty Sand with Gravel (Fill)	0.1	No odors; evidence of fill including brick, slate and wood noted to 5 feet below grade; GW noted at ~ 10.5'
	4 - 5	Brown Silty Sand (Fill)	0.3	
	5 - 8	Native Poorly Graded Sand	0.6	
	8 - 12	Native Poorly Graded Sand	0.3	
SB21-3	0 - 4	Brown Silty Sand with Gravel (Fill)	0.7	No odors; evidence of fill including brick, slate and wood noted to 5 feet below grade
	4 - 5	Brown Silty Sand (Fill)	0.6	
	5 - 8	Poorly Graded Sand with Gravel	0.7	
SB21-4	0 - 2	Brown Silty Sand with Gravel (Fill)	1.0	No odors; evidence of fill including brick, slate and wood noted to 2 feet below grade
	2 - 4	Poorly Graded Sand	1.2	
	4 - 8	Poorly Graded Sand	0.3	
SB21-5	0 - 3.5	Brown Silty Sand with Gravel (Fill)	0.2	No odors; evidence of fill including brick, slate and wood noted to 3.5 feet below grade
	3.5 - 4	Poorly Graded Sand	0.6	
	4 - 8	Poorly Graded Sand	0.3	
SB21-6	0 - 4	Brown Silty Sand with Gravel (Fill)	0.0	No odors; evidence of fill including brick, slate and wood noted to 5 feet below grade
	4 - 5	Brown Silty Sand (Fill)	0.0	
	5 - 8	Native Poorly Graded Sand	0.0	
	8 - 12	Native Poorly Graded Sand	0.0	

ft bsg = feet below surface grade
 ppmv = parts per million by volume



APPENDIX D

DATA SUMMARY TABLES ANALYTICAL LABORATORY REPORT



Summary of Soil Analytical Data
133 - 139 Main Street
Windsor, Vermont

Soil Boring ID (depth):	COMP A (0-2')	COMP A (2-5')	COMP A (5-8')	COMP B (0-2')	COMP B (2-5')	COMP B (5-8')	VSS - Resident Soil	VT Urban Background Standard
Sample Date:	10/06/21	10/06/21	10/06/21	10/06/21	10/06/21	10/06/21		
SVOCs (mg/kg)								
Naphthalene	0.30	< 0.008	< 0.008	0.077	0.065	< 0.008	2.7	-
2-Methylnaphthalene	0.13	< 0.008	< 0.008	0.022	0.026	< 0.008	-	-
1-Methylnaphthalene	0.10	< 0.008	< 0.008	0.017	0.018	< 0.008	-	-
Acenaphthylene	2.8	0.018	< 0.008	0.27	0.048	< 0.008	-	-
Acenaphthene	< 0.08	< 0.008	< 0.008	0.025	0.040	< 0.008	-	-
Fluorene	0.25	< 0.008	< 0.008	0.049	0.075	< 0.008	2,301	-
Phenanthrene	3.8	0.031	< 0.008	0.91	0.63	< 0.008	-	-
Anthracene	1.4	0.0094	< 0.008	0.22	0.17	< 0.008	-	-
Fluoranthene	11	0.13	< 0.008	2.1	0.95	0.0094	2,301	-
Pyrene	9.2	0.12	< 0.008	1.6	0.76	< 0.008	-	-
Benzo(a)anthracene	6.6	0.075	< 0.008	0.98	0.45	0.0084	-	-
Chrysene	7.3	0.081	< 0.008	1.1	0.44	< 0.008	-	-
Benzo(b)fluoranthene	10	0.12	< 0.008	1.4	0.53	0.0082	-	-
Benzo(k)fluoranthene	4.2	0.047	< 0.008	0.5	0.21	< 0.008	-	-
Benzo(a)pyrene	7.5	0.093	< 0.008	1.1	0.44	< 0.008	0.07	-
Indeno(1,2,3-cd)pyrene	6.5	0.08	< 0.008	0.70	0.30	< 0.008	-	-
Dibenzo(a,h)anthracene	1.8	0.018	< 0.008	0.16	0.069	< 0.008	-	-
Benzo(g,h,i)perylene	5.3	0.069	< 0.008	0.50	0.24	< 0.008	-	-
TEQ as Benzo(a)pyrene*	11.6593	0.139151	ND	1.5741	0.63954	0.00166	0.07	0.580

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

VSS = Vermont Soil Standards (Investigation and Remediation of Contaminated Properties Rule (I-Rule), July 6, 2019)

<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations at or above the the applicable standards are shaded.

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA

* Sum of Toxicity Equivalent Quotients (TEQs) provided in laboratory report. Toxicity Equivalent Factors (TEFs) used by laboratory are consistent with those provided in I-Rule (July 6, 2019).



Summary of Soil Analytical Data
133 - 139 Main Street
Windsor, Vermont

Soil Boring ID (depth):	COMP A (0-2')	COMP A (2-5')	COMP A (5-8')	COMP B (0-2')	COMP B (2-5')	COMP B (5-8')	VSS - Resident Soil	EPA RSL - Resident Soil
Sample Date:	10/06/21	10/06/21	10/06/21	10/06/21	10/06/21	10/06/21		
METALS (mg/kg)								
Total Arsenic	5.5	3.9	3.1	5.2	5.4	2.7	16	0.68
Total Lead	110	13	3.5	260	200	3.6	400	400

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

EPA RSL = Environmental Protection Agency Regional Screening Level (May 2021 EPA Regional Screening Level Summary Table)

VSS = Vermont Soil Standards (Investigation and Remediation of Contaminated Properties Rule (I-Rule), July 6, 2019)

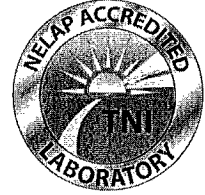
<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations at or above the the applicable Vermont standard are shaded.

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA

Jeremy Roberts
KAS, Inc.
PO Box 787
Williston , VT 05495



Laboratory Report for:

Eastern Analytical, Inc. ID: 233262
Client Identification: 133-139 Main St. | 507210630
Date Received: 10/7/2021

Enclosed are the analytical results per the Chain of Custody for sample(s) in the referenced project. All analyses were performed in accordance with our QA/QC Program, NELAP and other applicable state requirements. All quality control criteria was within acceptance criteria unless noted on the report pages. Results are for the exclusive use of the client named on this report and will not be released to a third party without consent.

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 written approval of the laboratory.

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

- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R : % Recovery

Certifications:

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), New York (12072), West Virginia (9910C) and Alabama (41620). Please refer to our website at www.easternanalytical.com for a copy of our certificates and accredited parameters.


References:

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

If you have any questions regarding the results contained within, please feel free to contact customer service. Unless otherwise requested, we will dispose of the sample(s) 6 weeks 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

10-15-21
Date



SAMPLE CONDITIONS PAGE

EAI ID#: 233262

Client: KAS, Inc.

Client Designation: 133-139 Main St. | 507210630

Temperature upon receipt (°C): 0.5

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

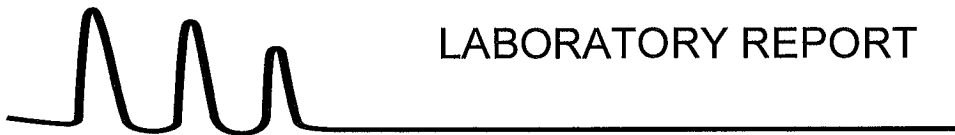
Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date/Time Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
233262.01	Comp A 0-2'	10/7/21	10/6/21 11:34	soil	85.8	Adheres to Sample Acceptance Policy
233262.02	Comp A 2-5'	10/7/21	10/6/21 11:42	soil	87.4	Adheres to Sample Acceptance Policy
233262.03	Comp A 5-8'	10/7/21	10/6/21 11:45	soil	90.3	Adheres to Sample Acceptance Policy
233262.04	Comp B 0-2'	10/7/21	10/6/21 11:50	soil	83.2	Adheres to Sample Acceptance Policy
233262.05	Comp B 2-5'	10/7/21	10/6/21 11:52	soil	82.6	Adheres to Sample Acceptance Policy
233262.06	Comp B 5-8'	10/7/21	10/6/21 11:57	soil	85.1	Adheres to Sample Acceptance Policy

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

Unless otherwise noted:

- Hold times, preservation, container types, and sample conditions adhered to EPA Protocol.
- Solid samples are reported on a dry weight basis, unless otherwise noted. pH/Corrosivity, Flashpoint, Ignitability, Paint Filter, Conductivity and Specific Gravity are always reported on an "as received" basis.
- Analysis of pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite were performed at the laboratory outside of the recommended 15 minute hold time.
- Samples collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures.



LABORATORY REPORT

EAI ID#: 233262

Client: **KAS, Inc.**

Client Designation: **133-139 Main St. | 507210630**

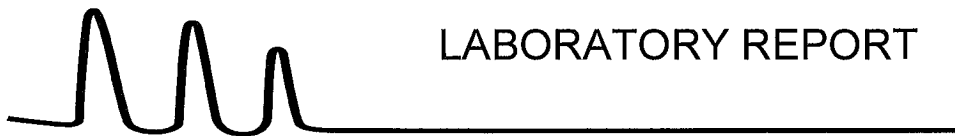
Client Sample ID: Comp A 0-2'
Lab Sample ID: 233262.01
Matrix: soil
Date Sampled: 10/6/21
Date Received: 10/7/21
Date Prepared: 10/8/21
Units: mg/kg
Method: 8270D
Analyst: JMR

	Results	Dilution Factor	Date Analyzed	TEF	TEQ
Naphthalene	0.30	12	10/8/21		
2-Methylnaphthalene	0.13	12	10/8/21		
1-Methylnaphthalene	0.10	12	10/8/21		
Acenaphthylene	2.8	12	10/8/21		
Acenaphthene	< 0.08	12	10/8/21		
Fluorene	0.25	12	10/8/21		
Phenanthrene	3.8	12	10/8/21		
Anthracene	1.4	12	10/8/21		
Fluoranthene	11	12	10/8/21		
Pyrene	9.2	12	10/8/21		
Benzo[a]anthracene	6.6	12	10/8/21	0.1	.66
Chrysene	7.3	12	10/8/21	0.001	.0073
Benzo[b]fluoranthene	10	12	10/8/21	0.1	1
Benzo[k]fluoranthene	4.2	12	10/8/21	0.01	.042
Benzo[a]pyrene	7.5	12	10/8/21	1	7.5
Indeno[1,2,3-cd]pyrene	6.5	12	10/8/21	0.1	.65
Dibenz[a,h]anthracene	1.8	12	10/8/21	1	1.8
Benzo[g,h,i]perylene	5.3	12	10/8/21		
p-Terphenyl-D14 (surr)	75 %R		10/8/21		

TEF: Toxicity Equivalent Factor

TEQ: Toxicity Equivalence to Benzo[a]pyrene

The TEF factors set forth in this report are taken from the following EPA document: "Mid- Atlantic Risk Assessment User's Guide: November 2013". This guidance document sets forth a recommended, but not mandatory approach based upon currently available information with respect to risk assessment for response actions at CERCLA sites. This document does not establish binding rules. This document contains the most current TEF values per VT IROCP.



LABORATORY REPORT

EAI ID#: 233262

Client: **KAS, Inc.**

Client Designation: **133-139 Main St. | 507210630**

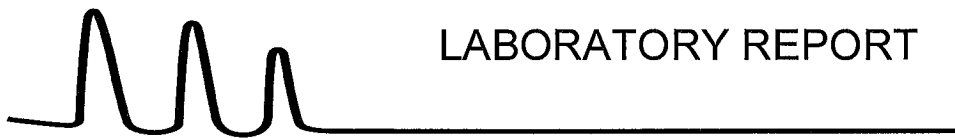
Client Sample ID: Comp A 2-5'
Lab Sample ID: 233262.02
Matrix: soil
Date Sampled: 10/6/21
Date Received: 10/7/21
Date Prepared: 10/8/21
Units: mg/kg
Method: 8270D
Analyst: JMR

	Results	Dilution Factor	Date Analyzed	TEF	TEQ
Naphthalene	< 0.008	1	10/8/21		
2-Methylnaphthalene	< 0.008	1	10/8/21		
1-Methylnaphthalene	< 0.008	1	10/8/21		
Acenaphthylene	0.018	1	10/8/21		
Acenaphthene	< 0.008	1	10/8/21		
Fluorene	< 0.008	1	10/8/21		
Phenanthrene	0.031	1	10/8/21		
Anthracene	0.0094	1	10/8/21		
Fluoranthene	0.13	1	10/8/21		
Pyrene	0.12	1	10/8/21		
Benzo[a]anthracene	0.075	1	10/8/21	0.1	.0075
Chrysene	0.081	1	10/8/21	0.001	.000081
Benzo[b]fluoranthene	0.12	1	10/8/21	0.1	.012
Benzo[k]fluoranthene	0.047	1	10/8/21	0.01	.00047
Benzo[a]pyrene	0.093	1	10/8/21	1	.093
Indeno[1,2,3-cd]pyrene	0.081	1	10/8/21	0.1	.0081
Dibenz[a,h]anthracene	0.018	1	10/8/21	1	.018
Benzo[g,h,i]perylene	0.069	1	10/8/21		
p-Terphenyl-D14 (surr)	68 %R		10/8/21		

TEF: Toxicity Equivalent Factor

TEQ: Toxicity Equivalence to Benzo[a]pyrene

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LABORATORY REPORT

EAI ID#: 233262

Client: KAS, Inc.

Client Designation: 133-139 Main St. | 507210630

Client Sample ID: Comp A 5-8'
 Lab Sample ID: 233262.03
 Matrix: soil
 Date Sampled: 10/6/21
 Date Received: 10/7/21
 Date Prepared: 10/8/21
 Units: mg/kg
 Method: 8270D
 Analyst: JMR

	Results	Dilution Factor	Date Analyzed	TEF	TEQ
Naphthalene	< 0.008	1	10/8/21		
2-Methylnaphthalene	< 0.008	1	10/8/21		
1-Methylnaphthalene	< 0.008	1	10/8/21		
Acenaphthylene	< 0.008	1	10/8/21		
Acenaphthene	< 0.008	1	10/8/21		
Fluorene	< 0.008	1	10/8/21		
Phenanthrene	< 0.008	1	10/8/21		
Anthracene	< 0.008	1	10/8/21		
Fluoranthene	< 0.008	1	10/8/21		
Pyrene	< 0.008	1	10/8/21		
Benzo[a]anthracene	< 0.008	1	10/8/21	0.1	< .0008
Chrysene	< 0.008	1	10/8/21	0.001	< .00000
Benzo[b]fluoranthene	< 0.008	1	10/8/21	0.1	< .0008
Benzo[k]fluoranthene	< 0.008	1	10/8/21	0.01	< .00008
Benzo[a]pyrene	< 0.008	1	10/8/21	1	< .008
Indeno[1,2,3-cd]pyrene	< 0.008	1	10/8/21	0.1	< .0008
Dibenz[a,h]anthracene	< 0.008	1	10/8/21	1	< .008
Benzo[g,h,i]perylene	< 0.008	1	10/8/21		
p-Terphenyl-D14 (surr)	67 %R		10/8/21		

TEF: Toxicity Equivalent Factor

TEQ: Toxicity Equivalence to Benzo[a]pyrene

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LABORATORY REPORT

EAI ID#: 233262

Client: KAS, Inc.

Client Designation: 133-139 Main St. | 507210630

Client Sample ID: Comp B 0-2'
 Lab Sample ID: 233262.04
 Matrix: soil
 Date Sampled: 10/6/21
 Date Received: 10/7/21
 Date Prepared: 10/8/21
 Units: mg/kg
 Method: 8270D
 Analyst: JMR

	Results	Dilution Factor	Date Analyzed	TEF	TEQ
Naphthalene	0.077	1	10/8/21		
2-Methylnaphthalene	0.022	1	10/8/21		
1-Methylnaphthalene	0.017	1	10/8/21		
Acenaphthylene	0.27	1	10/8/21		
Acenaphthene	0.025	1	10/8/21		
Fluorene	0.049	1	10/8/21		
Phenanthrene	0.91	1	10/8/21		
Anthracene	0.22	1	10/8/21		
Fluoranthene	2.1	1	10/8/21		
Pyrene	1.6	1	10/8/21		
Benzo[a]anthracene	0.98	1	10/8/21	0.1	.098
Chrysene	1.1	1	10/8/21	0.001	.0011
Benzo[b]fluoranthene	1.4	1	10/8/21	0.1	.14
Benzo[k]fluoranthene	0.50	1	10/8/21	0.01	.005
Benzo[a]pyrene	1.1	1	10/8/21	1	1.1
Indeno[1,2,3-cd]pyrene	0.70	1	10/8/21	0.1	.07
Dibenz[a,h]anthracene	0.16	1	10/8/21	1	.16
Benzo[g,h,i]perylene	0.50	1	10/8/21		
p-Terphenyl-D14 (surr)	68 %R		10/8/21		

TEF: Toxicity Equivalent Factor

TEQ: Toxicity Equivalence to Benzo[a]pyrene

The TEF factors set forth in this report are taken from the following EPA document: "Mid- Atlantic Risk Assessment User's Guide: November 2013". This guidance document sets forth a recommended, but not mandatory approach based upon currently available information with respect to risk assessment for response actions at CERCLA sites. This document does not establish binding rules. This document contains the most current TEF values per VT IROCP.



LABORATORY REPORT

EAI ID#: 233262

Client: KAS, Inc.

Client Designation: 133-139 Main St. | 507210630

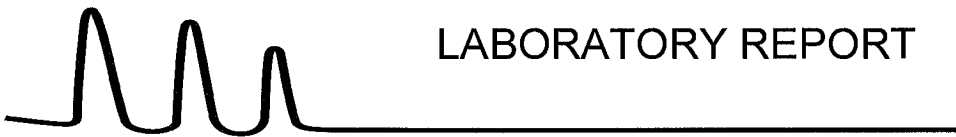
Client Sample ID: Comp B 2-5'
 Lab Sample ID: 233262.05
 Matrix: soil
 Date Sampled: 10/6/21
 Date Received: 10/7/21
 Date Prepared: 10/8/21
 Units: mg/kg
 Method: 8270D
 Analyst: JMR

	Results	Dilution Factor	Date Analyzed	TEF	TEQ
Naphthalene	0.065	1	10/8/21		
2-Methylnaphthalene	0.026	1	10/8/21		
1-Methylnaphthalene	0.018	1	10/8/21		
Acenaphthylene	0.048	1	10/8/21		
Acenaphthene	0.040	1	10/8/21		
Fluorene	0.075	1	10/8/21		
Phenanthrene	0.63	1	10/8/21		
Anthracene	0.17	1	10/8/21		
Fluoranthene	0.95	1	10/8/21		
Pyrene	0.76	1	10/8/21		
Benzo[a]anthracene	0.45	1	10/8/21	0.1	.045
Chrysene	0.44	1	10/8/21	0.001	.00044
Benzo[b]fluoranthene	0.53	1	10/8/21	0.1	.053
Benzo[k]fluoranthene	0.21	1	10/8/21	0.01	.0021
Benzo[a]pyrene	0.44	1	10/8/21	1	.44
Indeno[1,2,3-cd]pyrene	0.30	1	10/8/21	0.1	.03
Dibenz[a,h]anthracene	0.069	1	10/8/21	1	.069
Benzo[g,h,i]perylene	0.24	1	10/8/21		
p-Terphenyl-D14 (surr)	66 %R		10/8/21		

TEF: Toxicity Equivalent Factor

TEQ: Toxicity Equivalence to Benzo[a]pyrene

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LABORATORY REPORT

EAI ID#: 233262

Client: KAS, Inc.

Client Designation: 133-139 Main St. | 507210630

Client Sample ID: Comp B 5-8'
 Lab Sample ID: 233262.06
 Matrix: soil
 Date Sampled: 10/6/21
 Date Received: 10/7/21
 Date Prepared: 10/8/21
 Units: mg/kg
 Method: 8270D
 Analyst: JMR

	Results	Dilution Factor	Date Analyzed	TEF	TEQ
Naphthalene	< 0.008	1	10/8/21		
2-Methylnaphthalene	< 0.008	1	10/8/21		
1-Methylnaphthalene	< 0.008	1	10/8/21		
Acenaphthylene	< 0.008	1	10/8/21		
Acenaphthene	< 0.008	1	10/8/21		
Fluorene	< 0.008	1	10/8/21		
Phenanthrene	< 0.008	1	10/8/21		
Anthracene	< 0.008	1	10/8/21		
Fluoranthene	0.0094	1	10/8/21		
Pyrene	< 0.008	1	10/8/21		
Benzo[a]anthracene	0.0084	1	10/8/21	0.1	.00084
Chrysene	< 0.008	1	10/8/21	0.001	< .00000
Benzo[b]fluoranthene	0.0082	1	10/8/21	0.1	.00082
Benzo[k]fluoranthene	< 0.008	1	10/8/21	0.01	< .00008
Benzo[a]pyrene	< 0.008	1	10/8/21	1	< .008
Indeno[1,2,3-cd]pyrene	< 0.008	1	10/8/21	0.1	< .0008
Dibenz[a,h]anthracene	< 0.008	1	10/8/21	1	< .008
Benzo[g,h,i]perylene	< 0.008	1	10/8/21		
p-Terphenyl-D14 (surr)	62 %R		10/8/21		

TEF: Toxicity Equivalent Factor

TEQ: Toxicity Equivalence to Benzo[a]pyrene

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QC REPORT

EAI ID#: 233262

Client: KAS, Inc.

Batch ID: 637692-76286/S100821PAH1

Client Designation: 133-139 Main St. | 507210630

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Naphthalene	< 0.007	1.4 (84 %R)	1.3 (78 %R) (7 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
2-Methylnaphthalene	< 0.007	1.4 (87 %R)	1.4 (82 %R) (5 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
1-Methylnaphthalene	< 0.007	1.4 (87 %R)	1.4 (83 %R) (5 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Acenaphthylene	< 0.007	1.3 (80 %R)	1.3 (78 %R) (3 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Acenaphthene	< 0.007	1.3 (78 %R)	1.3 (76 %R) (3 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Fluorene	< 0.007	1.4 (84 %R)	1.4 (81 %R) (3 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Phenanthrene	< 0.007	1.4 (85 %R)	1.4 (83 %R) (3 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Anthracene	< 0.007	1.4 (83 %R)	1.4 (81 %R) (2 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Fluoranthene	< 0.007	1.5 (88 %R)	1.4 (86 %R) (2 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Pyrene	< 0.007	1.4 (83 %R)	1.4 (82 %R) (1 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Benzo[a]anthracene	< 0.007	1.3 (80 %R)	1.3 (80 %R) (0 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Chrysene	< 0.007	1.4 (82 %R)	1.4 (82 %R) (0 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Benzo[b]fluoranthene	< 0.007	1.4 (84 %R)	1.4 (85 %R) (1 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Benzo[k]fluoranthene	< 0.007	1.4 (85 %R)	1.4 (85 %R) (1 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Benzo[a]pyrene	< 0.007	1.3 (77 %R)	1.3 (77 %R) (0 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Indeno[1,2,3-cd]pyrene	< 0.007	1.4 (84 %R)	1.4 (82 %R) (2 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Dibenz[a,h]anthracene	< 0.007	1.4 (85 %R)	1.4 (84 %R) (1 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
Benzo[g,h,i]perylene	< 0.007	1.4 (83 %R)	1.4 (81 %R) (2 RPD)	10/8/2021	mg/kg	40 - 140	30	8270D
p-Terphenyl-D14 (surr)	76 %R	76 %R	75 %R	10/8/2021	mg/kg	30 - 130		8270D

*! Flagged analyte recoveries deviated from the QA/QC limits. Data that impacts sample results are noted on the sample report.



LABORATORY REPORT

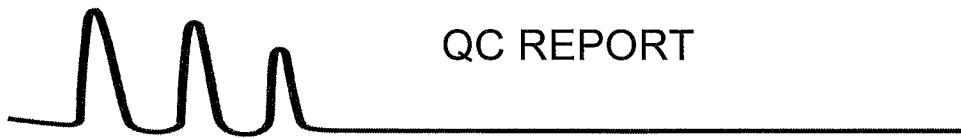
EAI ID#: 233262

Client: **KAS, Inc.**

Client Designation: **133-139 Main St. | 507210630**

Sample ID:	Comp A 0-2'	Comp A 2-5'	Comp A 5-8'	Comp B 0-2'					
Lab Sample ID:	233262.01	233262.02	233262.03	233262.04					
Matrix:	soil	soil	soil	soil					
Date Sampled:	10/6/21	10/6/21	10/6/21	10/6/21	Analytical		Date of		
Date Received:	10/7/21	10/7/21	10/7/21	10/7/21	Matrix	Units	Analysis	Method	Analyst
Arsenic	5.5	3.9	3.1	5.2	SolTotDry	mg/kg	10/11/21	6020	DS
Lead	110	13	3.5	260	SolTotDry	mg/kg	10/11/21	6020	DS

Sample ID:	Comp B 2-5'	Comp B 5-8'							
Lab Sample ID:	233262.05	233262.06							
Matrix:	soil	soil							
Date Sampled:	10/6/21	10/6/21			Analytical		Date of		
Date Received:	10/7/21	10/7/21			Matrix	Units	Analysis	Method	Analyst
Arsenic	5.4	2.7			SolTotDry	mg/kg	10/11/21	6020	DS
Lead	200	3.6			SolTotDry	mg/kg	10/11/21	6020	DS



QC REPORT

EAI ID#: **233262**

Client: **KAS, Inc.**

Client Designation: **133-139 Main St. | 507210630**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Arsenic	< 0.5	39 (98 %R)		NA mg/kg	10/7/21	80 - 120	20	6020
Lead	< 0.5	39 (99 %R)		NA mg/kg	10/7/21	80 - 120	20	6020

*! Flagged analyte recoveries deviated from the QA/QC limits. Unless noted, flagged data does not impact the sample data.

