Evaluation of Corrective Action Alternatives

Pigeon Property
1705 Route 128
Westford, Vermont 05494

SMS # 2019-4863

December 22, 2023

44° 36’ 45.78’’ N, 73° 0’ 34.99’’ W

Prepared For:
Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, Vermont 05404

LE·Environmental
21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001
www.leenv.net

LEE #19-124

TABLE OF CONTENTS

EXECUTIVE SUMMARY 3
1.0 INTRODUCTION AND SITE BACKGROUND 4
A. Description and Environmental Setting 4
B. Site History and Updated Conceptual Site Model 4
C. Proposed Redevelopment Plan 6
2.0 SENSITIVE RECEPTOR IDENTIFICATION AND ASSESSMENT 6
A. Buildings in the Vicinity 7
B. Utility Corridors 7
C. Wetlands and Surface Water Bodies 7
D. Public and Private Water Supplies 7
E. Site Users 7
3.0 IDENTIFICATION OF CORRECTIVE ACTION ALTERNATIVES 8
4.0 EVALUATION OF CORRECTIVE ACTION ALTERNATIVES 9
A. Alternative A: Capping of Contaminated Soil and Deed Restriction 10
B. Alternative B: Excavation and Disposal of all Contaminated Soil to Depth 10
C. Alternative C: No Action Alternative 11
5.0 RECOMMENDED CORRECTIVE ACTION ALTERNATIVE 12

Appendices

A. Maps and Plans
B. Phase II ESA Data Summary
C. Budgetary Cost Estimates

EXECUTIVE SUMMARY

This document is an Evaluation of Corrective Action Alternatives (ECAA) as defined by the Vermont Department of Environmental Conservation (DEC). The purpose of this ECAA is to identify potential corrective action alternatives to mitigate human health and environmental risk posed by soil contamination at 1705 Route 128 in Westford, Vermont (Site). The Site owner is the Pigeon Family Living Trust

The Site includes a vacant residence and a former bus garage on approximately 3.3 acres of land, on the north side of Route 128, in the center of Westford. The buildings are currently unoccupied and are used for storage. The Site was developed prior to 1858. Historic Site use has included residential, with a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property. A building was noted on or near the northeastern property line on historic (1869 and 1915) maps. The building was gone by 1948.

A Phase I and a Phase II Environmental Site Assessment (ESA) were completed in 2019, and a Supplemental Site Investigation (SSI) was completed in 2021. An abandoned, 1,100-gallon, gasoline underground storage tank (UST) was removed from the Site on June 2, 2020. An additional abandoned, 2,000-gallon gasoline UST was removed from the Site in 2022. A total of 81.06 tons of petroleum contaminated soil were removed from the Site for disposal in 2021, and 20.61 tons of petroleum contaminated soils were removed for disposal in 2022.

Groundwater in the vicinity of the former USTs is impacted with petroleum related Volatile Organic Compounds (VOCs) at concentrations above the Vermont Groundwater Enforcement Standards (VGES). This contamination is being monitored on an annual basis, and the monitoring is funded by Co-Operative Insurance Companies.

Soil contamination has been reported in shallow and deep soils on the Site. The contamination consists of Polycyclic Aromatic Hydrocarbons (PAHs) in shallow and deep soils in the vicinity of the area formerly used to store buses, auto parts, and machinery as well as in fill soils along a ravine. VOCs are present in deep soils in the vicinity of the removed USTs and former dispenser area.

Three possible corrective action alternatives were evaluated, including soil capping, soil excavation, and a “no action” alternative. Based on a quantitative evaluation of corrective action alternatives, the highest scoring Alternative A involves capping the contaminated soil and implementing an institutional control. Alternative B is the second highest scoring option and would result in removal of all identified contaminated soil. LEE recommends that a CAP be developed incorporating Alternative A as its remediation strategy.

1.0 INTRODUCTION AND SITE BACKGROUND

This document is an Evaluation of Corrective Action Alternatives (ECAA) as defined by the §35-604 of the 2019 Vermont Department of Environmental Conservation (DEC) Investigation and Remediation of Contaminated Properties Rule (I-Rule). The purpose of this ECAA is to identify potential corrective action alternatives to mitigate human health and environmental risk posed by soil contamination by soil contamination at 1705 Route 128 in Westford, Vermont (Site). Chittenden County Regional Planning Commission (CCRPC). This work is supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A01259. The Site owner is the Pigeon Family Living Trust. A Site Location Map is included in Appendix A.

A. Description and Environmental Setting

The Site includes a vacant residence and a former bus garage on approximately 3.3 acres of land, on the north side of Route 128, in the center of Westford. The area immediately surrounding the Site is the town center of Westford, with closely spaced residential homes, a municipal office building, a public library, and a town common. The topography of the Site is fairly flat on its south side, near Route 128, and then slopes downward to the north, toward the Browns River. There is also a ravine on the eastern side of the Site, which contains an outlet drainage pipe for the town common's stormwater system.

The Site was developed as of the earliest record located thus far (1858). The property use has included residential with a gasoline filling station and automotive and bus repair. According to the current owner, the gasoline tanks were no longer used after circa 1985. A small store was also once present on the southeastern portion of the Site. A tannery was present on the adjoining property to the west on an 1869 map. It is unknown how long the tannery operated.

The on-Site residence is heated with fuel oil. The garage is not currently heated but appears to have been heated with wood, propane, and/or fuel oil historically. The buildings are served by a private dug supply well and at least one septic system. The configuration and location of the septic system is not known.

B. Site History and Updated Conceptual Site Model

The Site is approximately 470 feet above current sea level on the southern portion of the Site and drops to approximately 435 feet above current sea level at the northern terminus of the parcel boundary. This area has undergone extensive deposition and erosional processes through recent glacial events. The retreat of the Laurentide Ice Sheet led to the formation of glacial Lake Vermont approximately 13,500 years ago. The elevation of the lake surface was approximately 620 feet

above sea level, significantly higher than the elevation of the current Lake Champlain. Streams flowing off the melted glacier deposited many sediments, with larger sediments deposited near the front of the glacier and finer grained sediments deposited away from the front of the glacier. Clay and silt varves were deposited in the calmer portions of Lake Vermont.[1]

The data obtained from soil borings indicate the soils at the Site consist of an approximately 3' thick layer of sand with varying amounts of silt overlaying dense, native clay. The clay contained distinct sand layers in each boring, and distinct varves have been noted in several soil borings. This data suggests the Site was likely located in a calmer portion of Lake Vermont. Sand layers noted in the clay point to periods of higher energy deposition in the lake.

Bedrock was not encountered in the environmental investigations performed to date. According to the most recent geologic map of Vermont, the bedrock in the vicinity of the Site consists of Cambrian and Neoproterozoic aged schist in the Pinnacle formation and the overburden deposits in the area of the Site are mapped as boulders in clay.[2]

The depth to groundwater at the Site varied between the groundwater sampling events performed to date. Groundwater levels in December 2020 were 0.45' to 6.89' higher than those reported in June 2020. The groundwater levels in January 2021 were 0.38' to 4.67' lower than those reported in December 2020. The depth to water in January 2020 ranged from 2.09' bg at MW-7 to 10.27' bg at MW-5. Groundwater flow is generally toward the north and northeast. The hydraulic gradient in the southern portion of the Site has been calculated between 5 and 10%, while the hydraulic gradient on the central and northern portions of the Site has been calculated between 16 and 22%

The overall low permeability of the native soils implies the migration of the groundwater contaminant plume is limited, and it is not expected to travel off-Site. The low permeability of the soils was evident during sampling, where very low recharge has been noted in the groundwater monitoring wells. The sand layers noted during drilling are likely the mechanism for the migration of the low-level dissolved phase groundwater contamination away from the UST area.

Shallow and deep soils are impacted with petroleum contamination in the southern portion of the property, near the former UST location, and in a portion of the parking area to the east. Shallow soils are impacted with PAHs in the area to the north and northeast of the garage. The limits of the shallow soil PAH contamination have been defined. The extent of the contamination appears to correlate to the areas on the Site where buses, auto parts, and other machinery were previously stored

[1] S.F. Wright
[2] ANR Atlas.

and possibly where fill soils have been deposited on-Site. The depth of soil PAH contamination appears to be fairly confined to the top 1.5 feet. However, one deeper soil sample (SB-122s) contained PAH concentrations above background from 2-4 feet below grade.

Groundwater is impacted with petroleum related VOCs at concentrations above the VGES and the VI standards for groundwater in the vicinity of the former UST. The VGES exceedances are primarily limited to the former UST, with low-level contamination extended approximately 100' to the west, 50' to the north, and 75' to the east. The northern, southern, and western limits of the dissolved-phase contaminant plume have been defined. The eastern edge of the plume is not fully defined, but it likely terminates in the vicinity of MW-8 based on the fairly low concentration of naphthalene reported there.

Soil gas sampling results indicate several VOCs are present in the soil gas at the Site including benzene, carbon tetrachloride, ethylbenzene, methylene chloride, tetrachloroethene (PCE), acetone, ethanol, isopropanol, tetrahydrofuran, toluene, Freon 11, and xylenes. None of the reported concentrations exceeded residential VI standards. The results suggest that while VOCs were detected in all of the soil gas samples obtained, since none of these concentrations exceeded residential VI standards, Site users are not likely to be impacted by these contaminants via vapor intrusion into the structures.

The most apparent source(s) of contamination at the Site include the leaking gasoline USTs removed from the Site (soil and groundwater), historic USTs (soil and groundwater), and historic use and storage of hazardous substances and petroleum products (soil).

C. Proposed Redevelopment Plan

The preliminary redevelopment plan for the Site includes a combination of residential and commercial redevelopment, as well as a public path to the Browns River.

2.0 SENSITIVE RECEPTOR IDENTIFICATION AND ASSESSMENT

Potential receptors of contamination include Site users. Shallow and deep soils are impacted with petroleum contamination in the southern portion of the property, near the former UST location, and in a portion of the parking area to the east. Shallow soils are impacted with PAHs in the area to the north and northeast of the garage. Groundwater is impacted with petroleum related VOCs at concentrations above the VGES and the VI standards for groundwater in the vicinity of the former UST. Site users would not be expected to come into contact with contaminated groundwater given its average depth of 2-11' bg.

A. Buildings in the Vicinity

There are no known soil gas risks on-Site currently. Soil gas sampling was conducted under both existing buildings and in additional exterior locations. None of the VOCs reported in the soil gas samples exceeded residential VI standards. Site users are not likely to be impacted by these contaminants via vapor intrusion into the existing or future structures.

B. Utility Corridors

Buried underground utilities known to exist on or in the immediate vicinity of the Site include the water line from the well to the residence and garage, and the septic systems for the buildings. The Westford Common to the south of the Site has a series of drainage lines, which connect to a drainage culvert on the eastern portion of the Site. The drainage outfall has been inspected several times and no petroleum odors or sheens have been noted to date.

C. Wetlands and Surface Water Bodies

The Browns River abuts the property on its northeast side and is approximately 450' from the former UST location. There is also an unnamed tributary that runs through the western portion of the property, and this tributary is approximately 200 feet northwest of the former UST location. A wetland delineation has been completed and the wetland locations are identified on the Existing Conditions Plan in Appendix A. Based on the results of the investigation, surface water does not appear to be at risk.

D. Public and Private Water Supplies

The Site and nearby properties are served by private wells. Approximately 28 water supply wells are depicted on the ANR Natural Resources Atlas within a quarter mile of the Site. The on-Site supply well was sampled and tested for VOCs, and no detections or exceedances of regulatory standards were noted. The data suggests off-Site supply wells are unlikely to be impacted from contamination at this Site.

E. Site Users

The Site is currently unoccupied and not being used except for storage by the owners of the property. Portions of the area have shallow soil contamination and future Site users could come into contact with this soil. Contaminated soils would need to be properly managed during redevelopment to protect Site users.

3.0 IDENTIFICATION OF CORRECTIVE ACTION ALTERNATIVES

Corrective action is warranted to reduce human and environmental exposure to contamination identified at the Site. Per Section 35-604(c) of the I-Rule, corrective action alternatives that eliminate exposure pathways to sensitive receptors have been identified. A minimum of two corrective action alternatives must be considered according to the I-Rule. These include:

1) An alternative that reduces the toxicity, mobility, or volume of the hazardous materials released to the extent feasible. This alternative shall minimize the need for long term management at the Site; and,
2) An alternative that involves little or no treatment but controls impacts to sensitive receptors through engineered controls, containment, long term monitoring, and institutional controls.

Corrective action alternatives that satisfy these criteria have been addressed in this section, as well as a "no-action" alternative that leaves the Site in its current condition with the only change being restriction on all access. The alternatives considered include the following:

1) Alternative A: Capping of contaminated soil. This alternative involves no treatment, but controls impacts to sensitive receptors through engineered controls and an institutional control.
2) Alternative B: Removal of all contaminated soil from the Site. This alternative reduces the toxicity, mobility, and volume of contamination by removing it from the Site.
3) Alternative C: No action alternative, including fencing and filing of an institutional control to prohibit occupancy.

4.0 EVALUATION OF CORRECTIVE ACTION ALTERNATIVES

Section 35-503(d) of the I-Rule indicates that each proposed cleanup alternative shall be evaluated. LEE has evaluated the three corrective action alternatives outlined in Section 5.0 using the following criteria established per the I-Rule and EPA's required evaluation criteria of the alternative's climate change resiliency. The results of the ranking are as follows.

Table 4-1: Summary of Corrective Action Alternatives Ranking

Criteria	Alternative A	Alternative B	Alternative C
1. Compliance with legal requirements	5	5	3
2. Overall protection of human health and environment	5	5	0
3. Long-term effectiveness and permanence	5	5	0
4. Land Use Restriction	3	5	3
5. Reducing toxicity, mobility or volume through treatment	3	0	0
6. Short-term effectiveness	5	5	3
7. Implementability	5	5	5
8. Cost	3	0	5
9. Environmental impact and sustainability/resiliency	3	0	3
10. Community acceptance	5	5	3
Total ranking	42 points	35 points	25 points

Criteria 1) Compliance with Legal Requirements
0-Clearly out of compliance with one or more legal requirements
3-uncertain legal status
5-compliant with legal requirements based on experience

Criteria 2) Overall protection of human health and environment
0-ineffective protection of human health and environment
3-protective of human health or environment; may result in risk reduction
5-protective of both health and environment, highly effective

Criteria 3) Long-term effectiveness and permanence
0-ineffective and /or not permanent
3-somewhat effective or permanent, requires long-term oversight
5-highly effective and permanent based on experience

Criteria 4) Land use restriction
0-land use restriction required with inspections to verify system integrity
3-land use restriction required; no inspections necessary
5-no land use restriction required

Criteria 5) Reducing toxicity, mobility or volume through treatment
0-no waste treatment proposed and no treatment benefit
3- toxicity, mobility or volume reduction forecast.
5- treatment proposed that eliminates toxicity, mobility or volume

Criteria 6) Short-term effectiveness
0-ineffective immediately following implementation
3-somewhat effective immediately following implementation
5-highly effective immediately following implementation

Criteria 7) Implementability
0-difficult to implement using readily available technologies
3-possible to implement using technologies that may not be locally available
5-high likelihood of implementation using readily available local technologies

Criteria 8) Cost
0-highest predicted implementation costs
3-middle predicted implementation costs
5-lowest predicted installation

Criteria 9) Environmental impact and sustainability/climate change resiliency
0-highest negative impact
3-median or neutral impact
5-lowest negative impact

Criteria 10) Community acceptance
0-likely to be met with opposition by the local community
3-May be met with some opposition but other factors may compensate
5-unlikely to be met with opposition by the local community

A. Alternative A: Capping of Contaminated Soil and Deed Restriction

This alternative specifies partial removal of contaminated soil to accommodate the proposed redevelopment, and a clean cap will be placed over the residual shallow-contaminated soils at the Site. The protective cap will consist of either a minimum of 18" of clean soil, or a minimum of 6" of concrete or asphalt (sidewalks, parking lots, and driveways). The protective caps will isolate the contaminated soil from exposure.

Excavation and off-Site disposal of some PAH-contaminated soil will need to occur to accommodate the clean caps. Preliminary calculations indicate that approximately 425 cubic yards would be transported and disposed of off-Site at a certified solid waste facility. Characterization soil testing would be needed to fulfill disposal facility acceptance requirements. The contaminated soils would be properly transported and disposed of in accordance with state and federal regulations. Clean soil testing would be needed to verify the replacement soils are suitable for use.

A layer of geotextile fabric would be placed under the protective caps, to serve as a warning layer in the event of soil erosion or unauthorized excavations. A Certificate of Completion would be filed with the Town of Westford indicating the presence of residual contamination. Annual inspections would not be required by DEC because the proposed capping structures fully meet the I-Rule specifications.

This alternative would provide overall protection of human health and the environment and would serve as a long-term remedy to the contamination. This alternative can be implemented using readily available local technologies and would not require a substantial amount of truck traffic that would be realized in a total soil excavation remedy. Long-term monitoring of the clean caps and possible operations and maintenance costs to repair damage would be required. The environmental impact, sustainability, and climate change resiliency of this alternative are better than soil excavation alternatives due to less trucking and fuel consumption. Community acceptance is anticipated with this alternative.

Information on current prices for excavation equipment and necessary construction supervision and coordination were used to estimate the cost for Alternative A. This information, contained in Appendix C, indicates that the cost for this alternative is approximately $345,000 including 15% contingency.

B. Alternative B: Excavation and Disposal of all Contaminated Soil to Depth

This alternative specifies that all contaminated soils at the Site would be transported and disposed of off-Site at an approved facility. The extent of the contaminated soil is outlined in the Depth of Contaminated Soil Excavation Map in

Appendix A. Preliminary calculations indicate that approximately 958 cubic yards, or 1,437 tons, would be removed from the Site.

Characterization soil testing would be needed to fulfill disposal facility acceptance requirements. The contaminated soils would be properly transported and disposed of in accordance with state and federal regulations.

Clean fill would be imported to the Site. The clean soil source would be tested for the presence of contaminants to ensure it meets applicable regulatory standards.

This alternative would provide overall protection of human health and the environment and would serve as a long-term remedy to the contamination. This alternative can be implemented using readily available local technologies. Long-term monitoring would not be required. The environmental impact of this option is higher than for capping the Site given the amount of trucking that would be required to dispose of the soil. A significant amount of fuel consumption would be required for this option.

Information on current prices for excavation equipment and necessary construction supervision and coordination were used to estimate the cost for Alternative B. This information, contained in Appendix C, indicates that the cost for this alternative is approximately $510,000 including a 15% contingency.

C. Alternative C: No Action Alternative

This alternative specifies that the Site would remain as-is without capping contaminated soils. Under a no-action scenario, no remediation would take place and the Site would need to be fenced off to prevent access and exposure to contamination. No soils would be relocated or transported off-Site. A deed restriction would be filed with the Town of Westford.

The principal steps in performing this alternative would include: installation of additional chain link fencing and signage; creating a permanent record of the fence location; and filing of a deed restriction.

This alternative would comply with DEC requirements, would provide overall protection of human health and would provide short-term and long-term effectiveness and permanence. This alternative can be implemented using readily available local technologies (fencing) and would not include significant trucking or earth work. Long-term monitoring and inspections of the fencing, and possible operations and maintenance costs to repair damage would be needed. The environmental impact, sustainability, and climate change resiliency is more favorable due to a low carbon footprint.

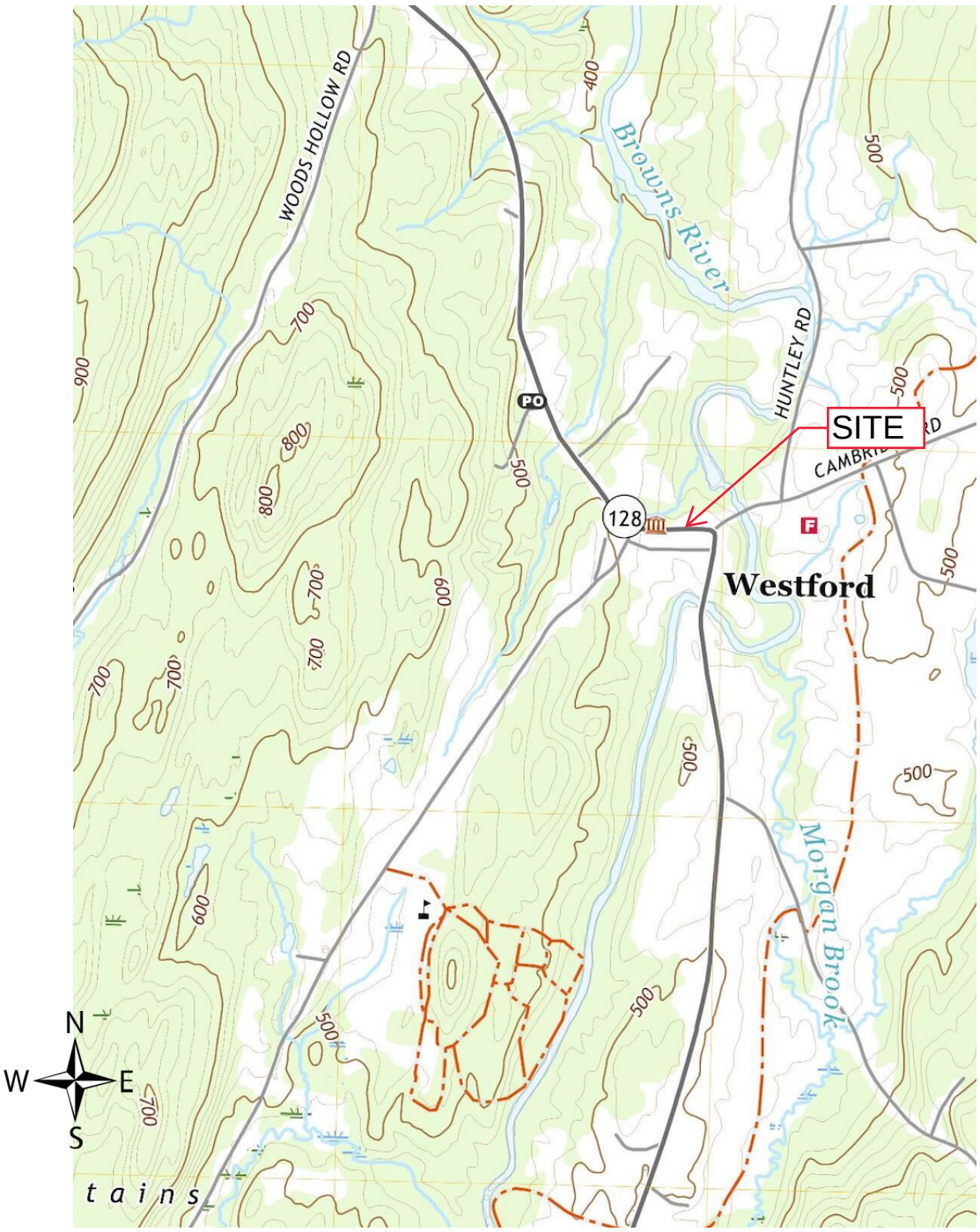
The current prices for equipment, labor, and coordination were used to estimate the total cost range. This information is contained in Appendix C and it indicates that the probable cost for this alternative is approximately $72,300 including a 15% contingency.

5.0 RECOMMENDED CORRECTIVE ACTION ALTERNATIVE

Based on a quantitative evaluation of corrective action alternatives, the highest scoring Alternative A involves partial removal and capping the residual contaminated soil, and an institutional control. LEE recommends that a Corrective Action Plan (CAP) be developed incorporating Alternative A as its remediation strategy.

APPENDIX A

MAPS AND PLANS



Site Location Map

1705 Route 128
Westford, Vermont

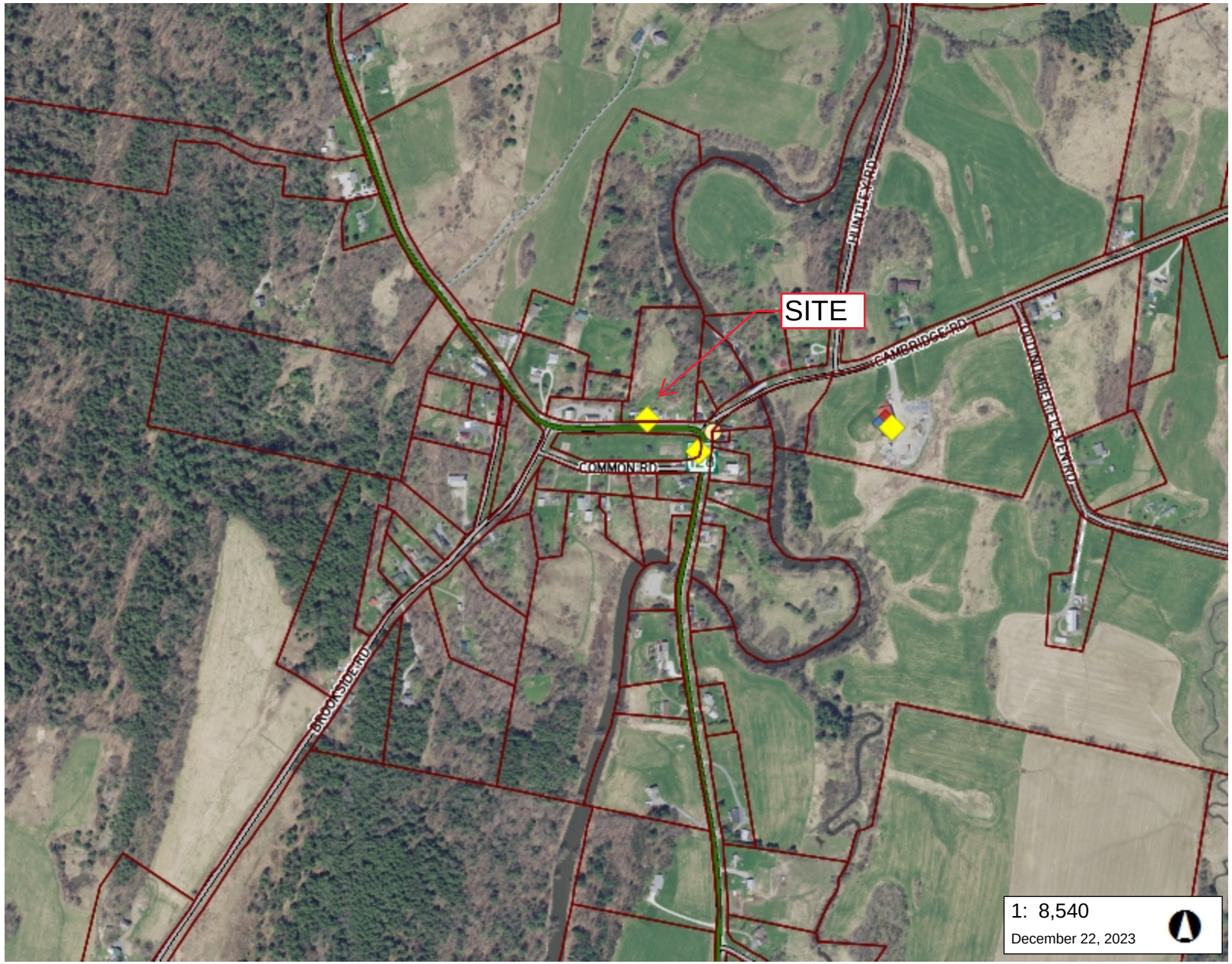
LE·Environmental

LEE #: 19-138
Date: December 22, 2023
Source: USGS Store

1705 Route 128

Vermont Agency of Natural Resources

vermont.gov



LEGEND

- Hazardous Site
- Hazardous Waste Generators
- Brownfields
- Salvage Yard
- Aboveground Storage Tank
- Underground Storage Tank (w
- Dry Cleaner
- Parcels (standardized)
- Roads
  - Interstate
  - US Highway; 1
  - State Highway
  - Town Highway (Class 1)
  - Town Highway (Class 2,3)
  - Town Highway (Class 4)
  - State Forest Trail
  - National Forest Trail
  - Legal Trail
  - Private Road/Driveway
  - Proposed Roads
- Town Boundary

NOTES

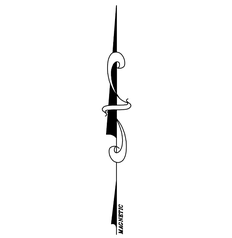
Map created using ANR's Natural Resources Atlas

434.0 0 217.00 434.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 712 Ft. 1cm = 85 Meters

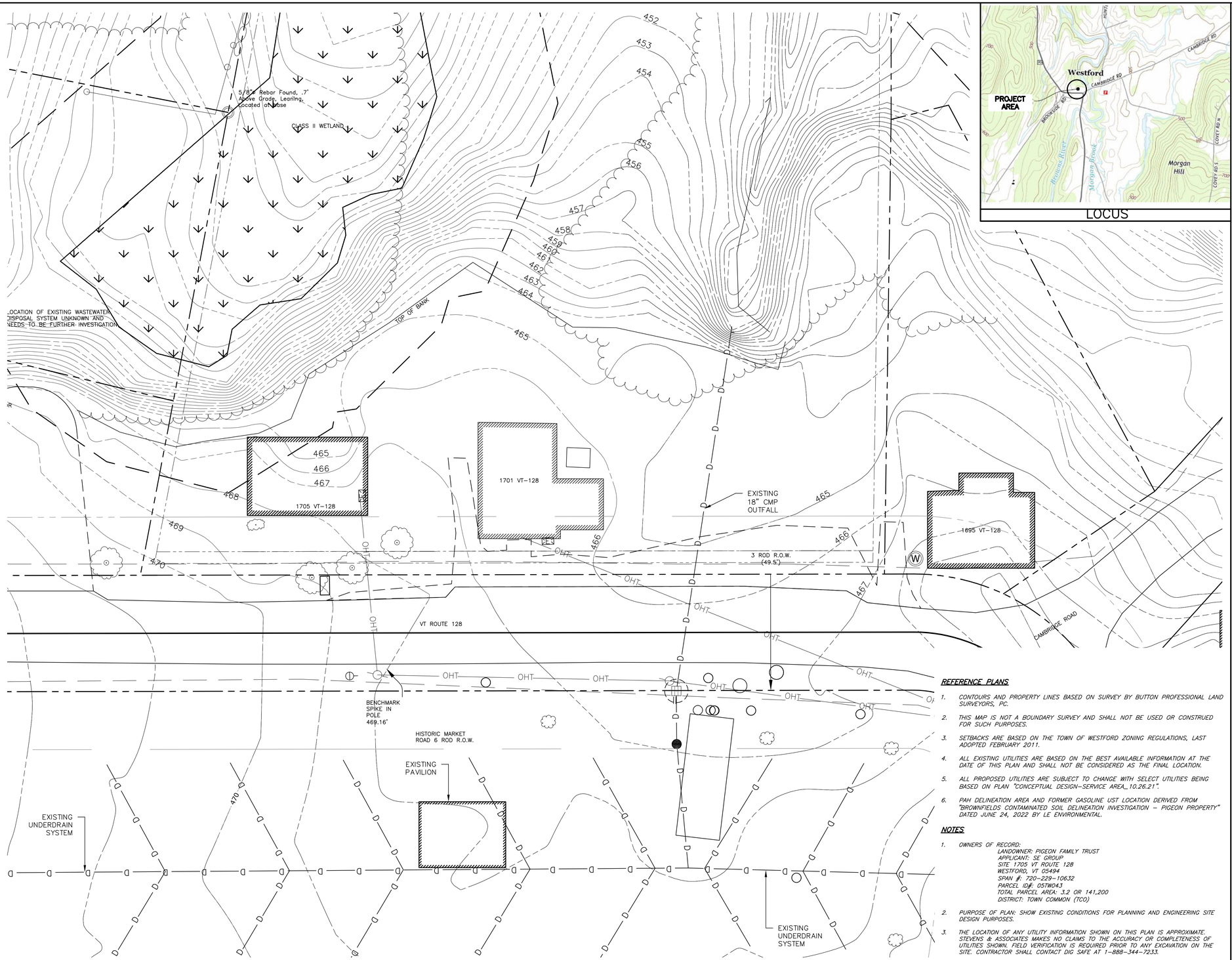
THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.



LEGEND

CATCH BASIN	ECB
DRAIN MANHOLE	EDMH
SEWER MANHOLE	ESMH
AREA DRAIN	EAD
CURB STOP	
GATE VALVE	
SIGN POST	
UTILITY POLE	
LIGHT POLE	
FIRE HYDRANT	
FLUSHING HYDRANT	
ENTRY	
IRON PIN	
MONUMENT	
DRILLED WELL	
MONITORING WELL	
DRILL HOLE	
TEST PIT	
PERC TEST	
HEADWALL	
STONEWALL	
CONIFERS	
DECIDUOUS TREES	
SHRUB	
OIL TANK	OIL
PROPANE TANK	PROPD P
TRAILER DISCONNECT	DS
TELEPHONE PEDESTAL	T
WATER DROP	W
SEWER DROP	S
HANDICAP PARKING	
UNDERGROUND DRAINAGE	D
UNDERGROUND ELECTRIC	E
UNDERGROUND SEWER	S
SEWER FORCE MAIN	FM
UNDERGROUND TELEPHONE	T
UNDERGROUND UTILITY	U
UNDERGROUND WATER	W
OVERHEAD ELECTRIC	OHE
OVERHEAD TELEPHONE	OHT
OVERHEAD UTILITY	OHU
CONTOURS	95
STOCKADE FENCE	
PICKET FENCE	
CHAIN LINK FENCE	
SPLIT RAIL FENCE	
TREE LINE	
GUARD RAIL	
BARBED WIRE	
CENTERLINE	
BOUNDARY LINE	
WETLANDS	
STREAM	
CURB	



LOCUS

STEVENS & ASSOCIATES, P.C.
SMART DESIGN FOR LIVABLE COMMUNITIES

ARCHITECTS | ENGINEERS
LANDSCAPE ARCHITECTS
95 MAIN ST. | P.O. BOX 1586
BRATTLEBORO, VT 05302
PH: 802-257-9329 | F: 802-258-3892
WWW.STEVENS-ASSOC.COM

PURPOSE OF DRAWING:
DECEMBER 26, 2023
FOR CLIENT REVIEW

PIGEON PROPERTY – ENVIRONMENTAL REMEDIATION

1705 VT ROUTE 128
WESTFORD, VT 05464

PREPARED FOR:
LE ENVIROMENTAL, LLC
21 NORTH MAIN ST #1
WATERBURY, VT

DATE:
REVISION:

EXISTING CONDITIONS PLAN

DES. BY	---
DWN. BY	EEF
CHKD. BY	SJW
SCALE	1"=20'
DATE	12/26/2023
PROJECT NUM:	23-097

DWG. NO.
C-1

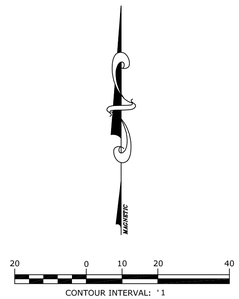
SHEET 1 OF 3

REFERENCE PLANS

1. CONTOURS AND PROPERTY LINES BASED ON SURVEY BY BUTTON PROFESSIONAL LAND SURVEYORS, PC.
2. THIS MAP IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED OR CONSTRUED FOR SUCH PURPOSES.
3. SETBACKS ARE BASED ON THE TOWN OF WESTFORD ZONING REGULATIONS, LAST ADOPTED FEBRUARY 2011.
4. ALL EXISTING UTILITIES ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE DATE OF THIS PLAN AND SHALL NOT BE CONSIDERED AS THE FINAL LOCATION.
5. ALL PROPOSED UTILITIES ARE SUBJECT TO CHANGE WITH SELECT UTILITIES BEING BASED ON PLAN "CONCEPTUAL DESIGN-SERVICE AREA_10.26.21".
6. PAH DELINEATION AREA AND FORMER GASOLINE UST LOCATION DERIVED FROM "BROWNFIELDS CONTAMINATED SOIL DELINEATION INVESTIGATION – PIGEON PROPERTY" DATED JUNE 24, 2022 BY LE ENVIRONMENTAL.

NOTES

1. OWNERS OF RECORD:
   LANDOWNER: PIGEON FAMILY TRUST
   APPLICANT: SE GROUP
   SITE 1705 VT ROUTE 128
   WESTFORD, VT 05494
   SPAN #: 720-229-10632
   PARCEL ID#: 051W043
   TOTAL PARCEL AREA: 3.2 OR 141,200
   DISTRICT: TOWN COMMON (TCO)
2. PURPOSE OF PLAN: SHOW EXISTING CONDITIONS FOR PLANNING AND ENGINEERING SITE DESIGN PURPOSES.
3. THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. STEVENS & ASSOCIATES MAKES NO CLAIMS TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. FIELD VERIFICATION IS REQUIRED PRIOR TO ANY EXCAVATION ON THE SITE. CONTRACTOR SHALL CONTACT DIG SAFE AT 1-888-344-7233.



LEGEND

	EXISTING	PROPOSED
CATCH BASIN	ECB	CB
DRAIN MANHOLE	EDMH	DMH
SEWER MANHOLE	ESMH	SMH
AREA DRAIN	EAD	AD
CURB STOP		
GATE VALVE		
SIGN POST		
UTILITY POLE		
LIGHT POLE		
FIRE HYDRANT		
FLUSHING HYDRANT		
ENTRY		
IRON PIN		
DRINKING WELL		
MONITORING WELL		
DRILL HOLE		
TEST PIT		
PERC TEST		
THRUST BLOCK		
REDUCER		
INLET PROTECTION		
HEADWALL		
STONEWALL		
RIP RAP		
SILT FENCE	SF SF	SF SF
CONIFERS		
DECIDUOUS TREES		
SHRUB		
OIL TANK	OIL	OIL
PROPANE TANK	PROP P	PROP P
TRAILER DISCONNECT	DS	DS
TELEPHONE PEDESTAL	T	T
WATER DROP	W	W
SEWER DROP	S	S
HANDICAP PARKING		
UNDERGROUND DRAINAGE	D	D
UNDERGROUND ELECTRIC	E	E
UNDERGROUND SEWER	S	S
SEWER FORCE MAIN	FM	FM
UNDERGROUND UTILITY	U	U
UNDERGROUND WATER	W	W
OVERHEAD UTILITY	OHU	OHU
CONTOURS	95	95
SURFACE WATER FLOW		
STOCKADE FENCE		
PICKET FENCE		
CHAIN LINK FENCE		
TREE LINE		
GUARD RAIL		
BARBED WIRE		
CENTERLINE		
BOUNDARY LINE		
WETLANDS		
STREAM		
CURB		

SUPPLY WELL ISOLATION SHIELD

5/8"ø Rebar Found, .7' Above Grade, Leaning, Located at Base

CLASS II WETLAND

APPROXIMATE AREA OF PAH CONCENTRATIONS (HAZARDOUS SITE #20194863)

ON OF EXISTING WASTEWATER AL SYSTEM UNKNOWN AND TO BE FURTHER INVESTIGATION

TOP OF BANK

5' CURB AND SIDEWALK

PROPOSED 1,700 SF BUILDING FFE 466.0'

PROPOSED 1,250 SF BUILDING FFE 466.2'

EXISTING 18" CMP OUTFALL

LIMITS OF DISTURBANCE

1701 VT-128

1705 VT-128

1695 VT-128

3 ROD R.O.W. (49 FT)

APPROXIMATE LOCATION OF FORMER UNDERGROUND STORAGE TANK

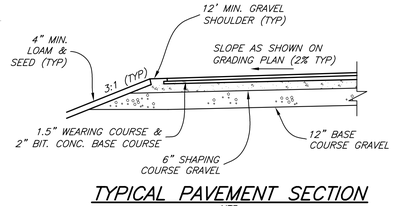
REMOVE 3' OF SOIL AND STOCKPILE. REMOVE AN ADDITIONAL 5' TO A DEPTH 8'

VT ROUTE 128

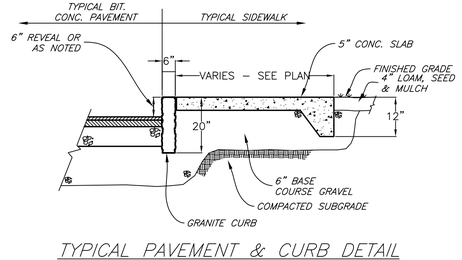
CAMBRIDGE ROAD

BENCHMARK SPIKE IN POLE 469.16'

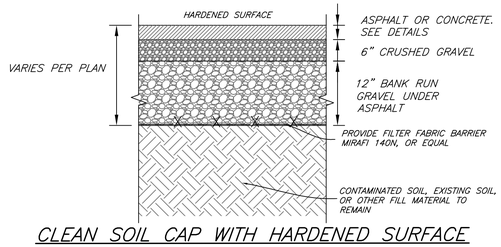
HISTORIC MARKET ROAD 6 ROD R.O.W.



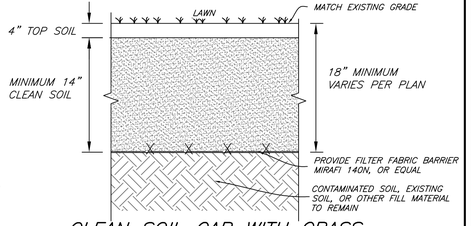
TYPICAL PAVEMENT SECTION
NTS



TYPICAL PAVEMENT & CURB DETAIL
NTS



CLEAN SOIL CAP WITH HARDENED SURFACE
NTS



CLEAN SOIL CAP WITH GRASS
NTS

STEVENS & ASSOCIATES, P.C.
SMART DESIGN FOR LIVABLE COMMUNITIES

ARCHITECTS | ENGINEERS
LANDSCAPE ARCHITECTS
95 MAIN ST. | P.O. BOX 1586
BRATTLEBORO, VT 05302
PH: 802-257-9329 | F: 802-258-3892
WWW.STEVENS-ASSOC.COM

PURPOSE OF DRAWING:
DECEMBER 26, 2023
FOR CLIENT REVIEW

PIGEON PROPERTY – ENVIRONMENTAL REMEDIATION

1705 VT ROUTE 128
WESTFORD, VT 05464

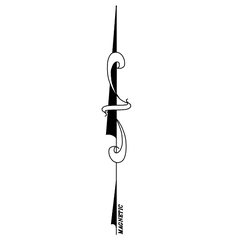
PREPARED FOR:
LE ENVIROMENTAL, LLC
21 NORTH MAIN ST #1
WATERBURY, VT

DATE: / REVISION:

ALTERNATE A LAYOUT PLAN

DES. BY	SJW
DWN. BY	EEF
CHKD. BY	SJW
SCALE	1"=20'
DATE	12/26/2023
PROJECT NUM:	23-097

DWG. NO.
C-2



20 0 10 20 40

CONTOUR INTERVAL: 1'

LEGEND

	EXISTING	PROPOSED
CATCH BASIN	ECB	CB
DRAIN MANHOLE	EDMH	DMH
SEWER MANHOLE	ESMH	SMH
AREA DRAIN	EAD	AD
CURB STOP		
GATE VALVE		
SIGN POST		
UTILITY POLE		
LIGHT POLE		
FIRE HYDRANT		
FLUSHING HYDRANT		
ENTRY		
IRON PIN		
DRINKING WELL		
MONITORING WELL		
DRILL HOLE		
TEST PIT		
PERC TEST		
THRUST BLOCK		
REDUCER		
INLET PROTECTION		
HEADWALL		
STONEWALL		
RIP RAP		
SILT FENCE		
CONIFERS		
DECIDUOUS TREES		
SHRUB		
OIL TANK	OIL	OIL
PROPANE TANK	PROP P	PROP P
TRAILER DISCONNECT	DS	DS
TELEPHONE PEDESTAL	T	T
WATER DROP	W	W
SEWER DROP	S	S
HANDICAP PARKING		
UNDERGROUND DRAINAGE	D	D
UNDERGROUND ELECTRIC	E	E
UNDERGROUND SEWER	S	S
SEWER FORCE MAIN	FM	FM
UNDERGROUND UTILITY	U	U
UNDERGROUND WATER	W	W
OVERHEAD UTILITY	OHU	OHU
CONTOURS	95	95
SURFACE WATER FLOW		
STOCKADE FENCE		
PICKET FENCE		
CHAIN LINK FENCE		
TREE LINE		
GUARD RAIL		
BARBED WIRE		
CENTERLINE		
BOUNDARY LINE		
WETLANDS		
STREAM		
CURB		

APPROXIMATE AREA OF PAH CONCENTRATIONS (HAZARDOUS SITE #20194863)

REMOVE 0 TO 4'

REMOVE 0 TO 2'

LIMITS OF DISTURBANCE

PROVIDE CONSTRUCTION FENCE

APPROXIMATE LOCATION OF FORMER UNDERGROUND STORAGE TANK

REMOVE 3' OF SOIL AND STOCKPILE. REMOVE AN ADDITIONAL 5' TO A DEPTH 8'

STEVENS & ASSOCIATES, P.C.
SMART DESIGN FOR LIVABLE COMMUNITIES

ARCHITECTS | ENGINEERS
LANDSCAPE ARCHITECTS
95 MAIN ST. | P.O. BOX 1586
BRATTLEBORO, VT 05302
PH: 802-257-9329 | F: 802-258-3892
WWW.STEVENS-ASSOC.COM

PURPOSE OF DRAWING:
DECEMBER 26, 2023
FOR CLIENT REVIEW

PIGEON PROPERTY – ENVIRONMENTAL REMEDIATION

1705 VT ROUTE 128
WESTFORD, VT 05464

PREPARED FOR:
LE ENVIROMENTAL, LLC
21 NORTH MAIN ST #1
WATERBURY, VT

DATE:
REVISION:

ALTERNATE B&C LAYOUT PLAN

DES. BY	SJW
DWN. BY	EEF
CHKD. BY	SJW
SCALE	1"=20'
DATE	12/26/2023
PROJECT NUM:	23-097

DWG. NO.
C-3

SHEET 3 OF 3

APPENDIX B

PHASE II ESA DATA SUMMARY

Brownfields Phase II ESA Report
Pigeon Property
1705 Route 128
Westford, Vermont

DEC SMS#2019-4863, EPA RFA 19093

July 24, 2020

Prepared for:

Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, Vermont 05404

LE·Environmental

21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001
www.leenv.net

LEE #19-138

Contents

1.0 EXECUTIVE SUMMARY 3
2.0 SITE INFORMATION 5
3.0 CURRENT USE OF THE SITE 6
4.0 CURRENT ADJOINING PROPERTY USES 6
5.0 SITE DESCRIPTION 6
6.0 LATITUDE/LONGITUDE 6
7.0 PROPERTY HISTORY 7
8.0 SITE CONTAMINANT BACKGROUND 7
A. Release Date and Description 7
B. Release Report Date 8
C. Release Response Actions 8
D. Previous Environmental Documents 8
E. Copy of Previous Environmental Documents 9
F. List of Governmental Records Reviewed 9
9.0 UPDATED CONCEPTUAL SITE MODEL 9
A. Updated Site Conceptual Model 9
B. Potential Contamination Sources 11
C. Potential Receptors 11
D. Utility Corridors 11
E. Water Bodies and Wetlands 11
F. Water Supplies 11
G. Site Users 12
10.0 WORK PLAN DEVIATIONS 12
11.0 SAMPLE COLLECTION DOCUMENTATION 12
12.0 CONTAMINATED MEDIA CHARACTERIZATION 13
A. Gasoline UST Removal 14
B. Soil 15
C. Groundwater 16
D. Supply Well Sampling 17
E. Other Media 17
F. Site-Specific Values 17
13.0 SITE-SPECIFIC RISK ASSESSMENT 17
14.0 MAPS 17
15.0 DISCUSSION 18
A. Soil Sample Results 18
B. Groundwater Sample Results 19
C. Drinking Water Sample Results 20
16.0 DATA PRESENTATION 20
17.0 QA/QC SAMPLE RESULTS 20
18.0 INVESTIGATION DERIVED WASTE 20
19.0 CONCLUSIONS AND RECOMMENDATIONS 20
20.0 SIGNATURE AND CERTIFICATION 22
21.0 MAPS AND APPENDICES 23

1.0 EXECUTIVE SUMMARY

LE Environmental LLC (LEE) conducted a Brownfields Phase II Environmental Site Assessment (ESA) at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The ESA was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated February 25, 2020, approved March 6, 2020, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). This assessment was conducted for the Chittenden County Regional Planning Commission (CCRPC). This work is supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A00483. The Site owner is the Pigeon Family Living Trust.

The Site includes a vacant residence and a former bus repair garage and gasoline filling station on approximately 3.3 acres of land. The buildings are currently unoccupied and are used for storage. The Site was developed prior to 1858, and historic Site use has include residential, a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property, and a tannery was noted on the adjoining property to the west in 1869.

The Site is located on the north side of Route 128. The area immediately surrounding the Site is the town center of Westford, with closely spaced residential homes, a municipal office building, a public library, and a town common. The DEC indicates that the Site is in a designated “urban background” zone for soil contamination. The topography of the Site is fairly flat on its south side, near Route 128, and then slopes downward to the north, toward the Browns River. There is also a ravine on the eastern side of the Site, which contains an outlet drainage pipe for the town common’s stormwater system. No odors or sheens were noted on the water exiting the outlet pipe. Portions of the northern and eastern ends of the property appear to have wetland vegetation.

Three structures are currently present on the property. The residence is a two-story, wood framed structure with a full basement. The garage is a single-story, wood framed structure, with a slab on-grade foundation. The third building is a small wood framed shed.

LEE prepared a Phase I Environmental Site Assessment (ESA) report for the property in September 2019, and three Recognized Environmental Conditions (RECs) were identified during the Phase I ESA:

1. Historic use of the property for bus/automotive repair and as a gasoline filling station.

2. Possible presence of an abandoned underground storage tank (UST).
3. Historic adjoining property use as a tannery.

A Phase II ESA was recommended to determine whether contamination is present on the Site due to the identified RECs.

This Phase II ESA included removal of the abandoned gasoline UST, soil boring advancement, groundwater monitoring well installation, soil sampling, groundwater sampling, and drinking water sampling. Soils are the Site consist of sand with varying amounts of silty overlaying dense, native clay. The clay contained distinct sand layers in each boring.

An abandoned, 1,100-gallon, gasoline UST at the Site was removed from the Site on June 2, 2020. The UST was a relic of the former gasoline filling station that operated on the Site from circa 1940 through the mid 1980s. The age of the UST and piping is not known, but it appeared to be at least 80 years old. The UST was a single-walled tank, and piping from other former USTs was also encountered in the excavation. The piping for the removed UST appeared to have been cut near the former pump island, and had paper stuffed in the end. It was buried approximately 1.5' to 2' below grade, and was found to be in failed condition upon removal, with extensive rust, pitting, and several large holes in the bottom of the UST. Groundwater was encountered at 6' below grade in the excavation, and a sheen was noted on the groundwater.

The photoionization detector PID readings ranged from 17.1 parts per million (ppm) in soil under the former dispenser island to 2,374 ppm at the top of the tank where piping (not attached to this tank) was found. PID readings ranging from 1,286 ppm to 1644 ppm were observed under the UST, which was also where groundwater was encountered.

A pipe with unknown purpose was noted on the southern wall of the UST excavation. The excavation could not be extended in this direction due to the presence of Route 128 and special permitting, traffic control and engineering would be required to dig in this area.

The depth to water ranged from 4.45' below grade in the southern portion of the Site to 11.59' below grade in the northern portion of the Site. The overall groundwater flow beneath the Site appears to be northerly. The approximate hydraulic gradient is approximately 10% on the southern portion of the Site and 16% in the central and northern portions of the Site.

Groundwater is impacted with petroleum related Volatile Organic Compounds (VOCs) at concentrations above the Vermont Groundwater Enforcement Standards (VGES) and above the vapor intrusion standards for groundwater in the vicinity of the former UST, and the plume extends northerly at least 200 feet. The limits of the

dissolved-phase contaminant plume were not defined by this investigation. The overall low permeability of the native soils implies the migration of the contaminant plume will be limited. The low permeability of the soils was evident during sampling, where very low recharge was noted in the groundwater monitoring wells.

Shallow and deep soils are impacted with petroleum contamination in the southern portion of the property, near the former UST location, and in the parking area to the east. Shallow soils are impacted with Polycyclic Aromatic Hydrocarbons (PAHs) in the area to the north of the garage. The limits of the contamination were not defined by this investigation.

No VOCs were reported in the drinking water sample obtained during this Phase II ESA.

LEE has developed the following recommendations during this Phase II ESA.

Additional delineation of soil and groundwater contamination should be completed. Additional groundwater sampling of the existing groundwater monitoring wells should be performed prior to delineation. A soil vapor investigation should be performed to ensure the contamination detected is not impacting the indoor air quality in the residence and garage. In addition, soil vapor should be investigated in areas slated for redevelopment. A suspect pipe near Route 128 should be investigated via a geophysical investigation in the roadway.

Once delineation is completed, an evaluation of corrective action alternatives (ECAA) and a corrective action plan (CAP) could be prepared per the requirements of Subchapter 6 of the DEC's I-Rule.

2.0 SITE INFORMATION

LE Environmental LLC (LEE) conducted a Brownfields Phase II Environmental Site Assessment (ESA) at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The ESA was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated February 25, 2020, approved March 6, 2020, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). This assessment was conducted for the Chittenden County Regional Planning Commission (CCRPC). This work is supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A00483. The Site owner is the Pigeon Family Living Trust.

Appendix E

Laboratory Analytical Results

Liquid Level Monitoring Data
Brownfields Phase II ESA
Pigeon Property
1705 Route 128
Westford, Vermont

Measurement Date: June 17, 2020

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	99.22	-	4.45	-	-	-	-	94.77
MW-2	99.74	-	6.26	-	-	-	-	93.48
MW-3	99.03	-	11.59	-	-	-	-	87.44
MW-4	98.68	-	11.07	-	-	-	-	87.61
MW-5	81.18	-	10.97	-	-	-	-	70.21

Notes:
All Values Reported in Feet
btoc - Below Top of Casing
Elevation data relative to 100' at SE corner of garage

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 1 of 11

Sample Identification	UST-1	Dup UST-1	SB-1	SB-2S	SB-2D	SB-4S	SB-4D	SB-5	SB-6	SB-7	Dup SB-5	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	6	6	0-1.5	0-1.5	13-15	0-1.5	9-11	9-10	0-1.5	0-1.5	9-10				
PID Reading (ppm)	1,644	1,644	0.2	193.0	1,392	1.8	39.4	2.7	1.3	0.3	2.7				
Sample Date	6/2/20	6/2/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20				
VOCs, EPA Method 8260C (mg/kg)															
Dichlorodifluoromethane	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	87	370	-	-
Chloromethane	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	110	460	-	-
Vinyl Chloride	ND<0.03	ND<0.02	ND<0.02	ND<0.02	ND<0.03	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.03	-	-	0.10	0.59
Bromomethane	ND<0.2	ND<0.2	ND<0.1	ND<0.2	ND<0.1	ND<0.2	ND<0.2	ND<0.1	ND<0.2	ND<0.2	ND<0.1	6.8	30	-	-
Chloroethane (ethyl chloride)	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	14,000	57,000	-	-
Trichlorofluoromethane	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	23,000	350,000	-	-
Diethyl Ether	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.7	-	-	-	-
Acetone	ND<3	ND<2	ND<2	ND<2	ND<3	ND<2	ND<2	ND<2	ND<2	ND<2	ND<3	-	-	40,609	100,028
1 ,1-Dichloroethene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	230	1,000	-	-
Methylene chloride	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	57	1,000	-	-
Carbon disulfide	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	-	-	608	662
MTBE	ND<0.1	ND<0.1	ND<0.1	ND<0.1	**1.8**	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	-	-	649	4,464
trans-1,2-Dichloroethene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	1,402	18,137
1,1-Dichloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	2.1	13
2,2-Dichloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	-	-
cis-1,2-Dichloroethene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	140	1,814
2-Butanone (MEK)	ND<0.6	ND<0.6	ND<0.6	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.7	-	-	16,952	26,991
Bromochloromethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	193	597
Tetrahydrofuran(THF)	ND<0.6	ND<0.6	ND<0.6	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.7	-	-	-	-
Chloroform	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	0.32	1.4	-	-
1,1,1-Trichloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	8,100	36,000	-	-
Carbon tetrachloride	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.37	2.2
1 ,1-Dichloropropene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	-	-
Benzene	**43**	**32**	ND<0.06	ND<0.05	**8.7**	ND<0.05	**0.079**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.70	4.2
1,2-Dichloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.29	1.7
Trichloroethene (TCE)	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.68	6.5
1,2-Dichloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	1.5	9.1
Dibromomethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	24	99	-	-
Bromodichloromethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	0.29	1.3	-	-
4-Methyl-2-pentanone(MIBK)	ND<0.6	ND<0.6	ND<0.6	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.7	33,000	140,000	-	-
cis-1,3-Dichloropropene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1.8	8.2	-	-
Toluene	**610**	**520**	ND<0.06	ND<0.05	**63**	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	706	798
trans-1,3-Dichloropropene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.6	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1.8	8.2	-	-
1,1,2-Trichloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1.1	5	-	-
2-Hexanone	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	200	1,300	-	-
Tetrachloroethene (PCE)	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07			2.4	14
1,3-Dichloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1,600	23,000	-	-
Dibromochloromethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	8.3	39	-	-
1,2-Dibromoethane(EDB)	ND<0.03	ND<0.02	ND<0.02	ND<0.02	ND<0.03	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.03	-	-	0.02	0.14
Chlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	414	726

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from May 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Blank Cell=no published value (VSS) or published value not applicable (RSL)

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary

LE Environmental

Sample Identification	UST-1	Dup UST-1	SB-1	SB-2S	SB-2D	SB-4S	SB-4D	SB-5	SB-6	SB-7	Dup SB-5	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	6	6	0-1.5	0-1.5	13-15	0-1.5	9-11	9-10	0-1.5	0-1.5	9-10				
PID Reading (ppm)	1,644	1,644	0.2	193.0	1,392	1.8	39.4	2.7	1.3	0.3	2.7				
Sample Date	6/2/20	6/2/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20				
VOCs, EPA Method 8260C (mg/kg) (continued)															
1,1,1,2-Tetrachloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	2	8.8	-	-
Ethylbenzene	**150**	**120**	ND<0.06	ND<0.05	**22**	ND<0.05	**0.20**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	3.7	22
mp-Xylene	**700**	**620**	ND<0.06	ND<0.05	**82**	ND<0.05	**0.22**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	252	257
o-Xylene	**280**	**250**	ND<0.06	ND<0.05	**32**	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-		
Styrene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	6,000	35,000	-	-
Bromoform	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	19	86	-	-
IsoPropylbenzene (cumene)	**14**	**16**	ND<0.06	ND<0.05	**2.4**	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	p	264
Bromobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	290	1,800	-	-
1,1,2,2-Tetrachloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	0.6	2.7	-	-
1,2,3-Trichloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.00311	0.07
n-Propylbenzene	**46**	**37**	ND<0.06	ND<0.05	**7.3**	ND<0.05	**0.11**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	253	261
2-Chlorotoluene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1,600	23,000	-	-
4-Chlorotoluene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1,600	23,000	-	-
1,3,5-trimethylbenzene	**86**	**70**	ND<0.06	ND<0.05	**14**	ND<0.05	**0.39**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	144*	177*
tert-Butylbenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	7,009	102,200
1,2,4-trimethylbenzene	**340**	**330**	ND<0.06	ND<0.05	**53**	ND<0.05	**1.0**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	144*	177*
sec-Butylbenzene	**4.7**	**4.8**	ND<0.06	ND<0.05	**0.77**	ND<0.05	ND<0.05	**0.13**	ND<0.05	ND<0.05	ND<0.07	-	-	7,009	102,200
1,3-Dichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	-	-
p-Isopropyltoluene (p-cymene)	**2.6**	**2.7**	ND<0.06	ND<0.05	**0.52**	ND<0.05	ND<0.05	**0.098**	ND<0.05	ND<0.05	ND<0.07	-	-	-	-
1,4-Dichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	2.6	11	-	-
1,2-Dichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1,800	9,300	-	-
n-Butylbenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	3,504	51,100
1,2-Dibromo-3-chloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	0.0053	0.064	-	-
1,2,4-Trichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	24	110	-	-
Hexachlorobutadiene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1.2	5.3	-	-
Naphthalene	**54**	**43**	ND<0.1	ND<0.1	**7.6**	ND<0.1	**0.19**	ND<0.1	ND<0.1	ND<0.1	ND<0.01	-	-	2.7	16
1,2,3-Trichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	63	930	-	-

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from May 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)
* Standard for 1,3,5 and 1,2,4 TMB

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 3 of 11

LE Environmental

Sample Identification	UST-1	Dup UST-1	SB-1	SB-2S	SB-2D	SB-4S	SB-4D	SB-5	SB-6	SB-7	Dup SB-5	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	6	6	0-1.5	0-1.5	13-15	0-1.5	9-11	9-10	0-1.5	0-1.5	9-10				
PID Reading (ppm)	1,644	1,644	0.2	193.0	1,392	1.8	39.4	2.7	1.3	0.3	2.7				
Sample Date	6/2/20	6/2/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20				
PAH EPA Method 8270D (mg/kg)															
Naphthalene	**3.5**	**3.4**	ND<0.009	**0.012**	**0.018**	ND<0.008	**0.012**	ND<0.009	**0.045**	**0.024**	ND<0.009	-	-	2.7	16
2-Methylnaphthalene	**2.6**	**2.5**	ND<0.009	**0.0082**	**0.013**	ND<0.008	**0.0094**	ND<0.009	**0.019**	**0.0092**	ND<0.009	240	3,000	-	-
1-Methylnaphthalene	**1.2**	**1.2**	ND<0.009	ND<0.007	ND<0.01	ND<0.008	**0.0094**	ND<0.009	**0.017**	ND<0.008	ND<0.009	18	73	-	-
Acenaphthylene	**0.042**	**0.036**	ND<0.009	**0.044**	ND<0.01	**0.017**	**0.038**	ND<0.009	**0.37**	**0.23**	ND<0.009	-	-	-	-
Acenaphthene	**0.011**	**0.010**	ND<0.009	ND<0.007	ND<0.01	ND<0.008	ND<0.008	ND<0.009	**0.021**	**0.011**	ND<0.009	3,600	45,000	-	-
Fluorene	**0.028**	**0.026**	ND<0.009	ND<0.007	ND<0.01	ND<0.008	ND<0.008	ND<0.009	**0.11**	**0.051**	ND<0.009	-	-	2,301	26,371
Phenanthrene	**0.066**	**0.061**	ND<0.009	**0.10**	ND<0.01	**0.049**	**0.013**	ND<0.009	**1.0**	**0.47**	ND<0.009	-	-	-	-
Anthracene	**0.016**	**0.015**	ND<0.009	**0.031**	ND<0.01	**0.011**	**0.012**	ND<0.009	**0.26**	**0.12**	ND<0.009	18,000	230,000	-	-
Fluoranthene	**0.079**	**0.079**	ND<0.009	**0.28**	ND<0.01	**0.10**	**0.082**	**0.0090**	**2.2**	**1.4**	**0.011**	-	-	2,301	26,371
Pyrene	**0.082**	**0.084**	ND<0.009	**0.26**	ND<0.01	**0.10**	**0.12**	ND<0.009	**2.2**	**1.5**	ND<0.009	1,800	23,000	-	-
Benzo(a)anthracene	**0.041**	**0.041**	ND<0.009	**0.15**	ND<0.01	**0.052**	**0.033**	ND<0.009	**1.4**	**0.97**	ND<0.009	1.1	21	-	-
Chrysene	**0.047**	**0.046**	ND<0.009	**0.16**	ND<0.01	**0.058**	**0.039**	ND<0.009	**1.4**	**1.0**	ND<0.009	110	2,100	-	-
Benzo(b)fluoranthene	**0.087**	**0.083**	ND<0.009	**0.23**	ND<0.01	**0.084**	**0.15**	ND<0.009	**2.2**	**1.5**	ND<0.009	1.1	21	-	-
Benzo(k)fluoranthene	**0.033**	**0.031**	ND<0.009	**0.075**	ND<0.01	**0.027**	**0.051**	ND<0.009	**0.76**	**0.56**	ND<0.009	11	210	-	-
Benzo(a)pyrene	**0.067**	**0.064**	ND<0.009	**0.16**	ND<0.01	**0.065**	**0.12**	ND<0.009	**1.9**	**1.3**	ND<0.009	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	**0.066**	**0.059**	ND<0.009	**0.097**	ND<0.01	**0.048**	**0.090**	ND<0.009	**1.0**	**0.74**	ND<0.009	1.1	21	-	-
Dibenz(a,h)anthracene	**0.013**	**0.012**	ND<0.009	**0.019**	ND<0.01	**0.0094**	**0.019**	ND<0.009	**0.24**	**0.16**	ND<0.009	0.11	2.1	-	-
Benzo(g,h,i)perylene	**0.068**	**0.061**	ND<0.009	**0.087**	ND<0.01	**0.045**	**0.087**	ND<0.009	**0.84**	**0.62**	ND<0.009	-	-	-	-
Total Reported PAHs	**8.0**	**7.8**	ND	**1.71**	**0.031**	**0.67**	**0.88**	**0.0090**	**16.0**	**10.7**	**0.011**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**0.1**	**0.1**	**0.010**	**0.23**	**0.012**	**0.093**	**0.17**	**0.010**	**2.6**	**1.8**	**0.010**	-	-		0.58 (urban bkgd)
TOTAL METALS, EPA Method 6020 (mg/kg, dry)															
Total Arsenic	**8.4**	**6.9**	**4.1**	**3.1**	**8.6**	**6.0**	**2.7**	**6.4**	**5.4**	**4.0**	**6.9**	-	-	16	16
Total Barium	**130**	**140**	**110**	**65**	**140**	**43**	**21**	**140**	**82**	**56**	**140**	-	-	11,247	127,382
Total Cadmium	**0.56**	**0.52**	ND<0.5	**2.0**	ND<0.5	**65**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-	6.9	87
Total Chromium	**39**	**42**	**34**	**23**	**39**	**36**	**11**	**35**	**23**	**15**	**39**	-	-	40,223	360,223
Total Lead	**68**	**56**	**12**	**150**	**16**	**45**	**15**	**14**	**24**	**26**	**18**	-	-	400	800
Total Mercury	**0.11**	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	-	-	3.1	3.1
Total Selenium	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	390	5,800	-	-
Total Silver	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-	237	2,483
TPH (mg/kg, dry)															
TPH	**170**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	-	-	-	-

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) fromMay 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 4 of 11

Sample Identification	SB-1	SB-2S	SB-4S	SB-4D	SB-5	SB-6	SB-7	Dup SB-5	*EPA Residential*	*EPA Industrial*	*VSS Residential*
Sample Depth (ft. bg)	0-1.5	0-1.5	0-1.5	9-11	9-10	0-1.5	0-1.5	9-10	*RSL (mg/kg)*	*RSL (mg/kg)*	*(mg/kg)*
PID Reading (ppm)	0.2	193.0	1.8	39.4	2.7	1.3	0.3	2.7			
Sample Date	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20			
PCBs, EPA Method 8082 (mg/kg)											
Aroclor - 1016	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	4.1	27	NA
Aroclor - 1221	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.2	0.83	NA
Aroclor - 1232	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.17	0.72	NA
Aroclor - 1242	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.23	0.95	NA
Aroclor - 1248	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.23	0.94	NA
Aroclor - 1254	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	NA	0.97	0.12
Aroclor - 1260	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.24	0.99	NA
Aroclor - 1262	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	NA	NA	NA
Aroclor - 1268	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	NA	NA	NA
Total PCBs	ND	ND	ND	ND	ND	ND	ND	ND	-	-	0.114

Toxic Equivalency Calculations
Pigeon Property

LE Environmental

UST-1

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.041**	0.1	0.0041
Chrysene	**0.047**	0.001	0.000047
Benzo(b)fluoranthene	**0.087**	0.1	0.0087
Benzo(k)fluoranthene	**0.033**	0.01	0.00033
Benzo(a)pyrene	**0.067**	1	0.067
Indeno(1,2,3-cd)pyrene	**0.066**	0.1	0.0066
Dibenz(a,h)anthracene	**0.013**	1	0.013
		Total Benzo(a)pyrene Equivalent =	**0.100**

DUP UST-1

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.041**	0.1	0.0041
Chrysene	**0.046**	0.001	0.000046
Benzo(b)fluoranthene	**0.083**	0.1	0.0083
Benzo(k)fluoranthene	**0.031**	0.01	0.00031
Benzo(a)pyrene	**0.064**	1	0.064
Indeno(1,2,3-cd)pyrene	**0.059**	0.1	0.0059
Dibenz(a,h)anthracene	**0.012**	1	0.012
		Total Benzo(a)pyrene Equivalent =	**0.095**

SB-1

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.009	0.1	0.00045
Chrysene	ND<0.009	0.001	0.0000045
Benzo(b)fluoranthene	ND<0.009	0.1	0.00045
Benzo(k)fluoranthene	ND<0.009	0.01	0.000045
Benzo(a)pyrene	ND<0.009	1	0.0045
Indeno(1,2,3-cd)pyrene	ND<0.009	0.1	0.00045
Dibenz(a,h)anthracene	ND<0.009	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.010**

SB-2S

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.15**	0.1	0.015
Chrysene	**0.16**	0.001	0.00016
Benzo(b)fluoranthene	**0.23**	0.1	0.023
Benzo(k)fluoranthene	**0.075**	0.01	0.00075
Benzo(a)pyrene	**0.16**	1	0.16
Indeno(1,2,3-cd)pyrene	**0.097**	0.1	0.0097
Dibenz(a,h)anthracene	**0.019**	1	0.019
		Total Benzo(a)pyrene Equivalent =	**0.228**

SB-2D

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.01	0.1	0.0005
Chrysene	ND<0.01	0.001	0.000005
Benzo(b)fluoranthene	ND<0.01	0.1	0.0005
Benzo(k)fluoranthene	ND<0.01	0.01	0.00005
Benzo(a)pyrene	ND<0.01	1	0.005
Indeno(1,2,3-cd)pyrene	ND<0.01	0.1	0.0005
Dibenz(a,h)anthracene	ND<0.01	1	0.005
		Total Benzo(a)pyrene Equivalent =	**0.012**

Toxic Equivalency Calculations
Pigeon Property

LE Environmental

SB-4S

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.052**	0.1	0.0052
Chrysene	**0.058**	0.001	0.000058
Benzo(b)fluoranthene	**0.084**	0.1	0.0084
Benzo(k)fluoranthene	**0.027**	0.01	0.00027
Benzo(a)pyrene	**0.065**	1	0.065
Indeno(1,2,3-cd)pyrene	**0.048**	0.1	0.0048
Dibenz(a,h)anthracene	**0.0094**	1	0.0094
		Total Benzo(a)pyrene Equivalent =	**0.093**

SB-4D

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.033**	0.1	0.0033
Chrysene	**0.039**	0.001	0.000039
Benzo(b)fluoranthene	**0.15**	0.1	0.015
Benzo(k)fluoranthene	**0.051**	0.01	0.00051
Benzo(a)pyrene	**0.12**	1	0.12
Indeno(1,2,3-cd)pyrene	**0.090**	0.1	0.009
Dibenz(a,h)anthracene	**0.019**	1	0.019
		Total Benzo(a)pyrene Equivalent =	**0.17**

SB-5

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.009	0.1	0.00045
Chrysene	ND<0.009	0.001	0.0000045
Benzo(b)fluoranthene	ND<0.009	0.1	0.00045
Benzo(k)fluoranthene	ND<0.009	0.01	0.000045
Benzo(a)pyrene	ND<0.009	1	0.0045
Indeno(1,2,3-cd)pyrene	ND<0.009	0.1	0.00045
Dibenz(a,h)anthracene	ND<0.009	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.010**

SB-6

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**1.4**	0.1	0.14
Chrysene	**1.4**	0.001	0.0014
Benzo(b)fluoranthene	**2.2**	0.1	0.22
Benzo(k)fluoranthene	**0.76**	0.01	0.0076
Benzo(a)pyrene	**1.9**	1	1.9
Indeno(1,2,3-cd)pyrene	**1.0**	0.1	0.1
Dibenz(a,h)anthracene	**0.24**	1	0.24
		Total Benzo(a)pyrene Equivalent =	**2.6**

SB-7

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.97**	0.1	0.097
Chrysene	**1.0**	0.001	0.001
Benzo(b)fluoranthene	**1.5**	0.1	0.15
Benzo(k)fluoranthene	**0.56**	0.01	0.0056
Benzo(a)pyrene	**1.3**	1	1.3
Indeno(1,2,3-cd)pyrene	**0.74**	0.1	0.074
Dibenz(a,h)anthracene	**0.16**	1	0.16
		Total Benzo(a)pyrene Equivalent =	**1.8**

Dup SB-5

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.009	0.1	0.00045
Chrysene	ND<0.009	0.001	0.0000045
Benzo(b)fluoranthene	ND<0.009	0.1	0.00045
Benzo(k)fluoranthene	ND<0.009	0.01	0.000045
Benzo(a)pyrene	ND<0.009	1	0.0045
Indeno(1,2,3-cd)pyrene	ND<0.009	0.1	0.00045
Dibenz(a,h)anthracene	ND<0.009	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.010**

Brownfields Phase II Environmental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*4.45*	*6.26*	*11.59*	*11.07*	*10.97*	*4.45*		
pH (standard units)	*6.27*	*6.41*	*6.69*	*6.78*	*7.01*	*6.27*		
Conductivity (umhos)	*7,460*	*520*	*103.9*	*1,006*	*228.00*	*7,460*		
Temperature (celcius)	*16.0*	*12.3*	*13.1*	*15.0*	*14.6*	*16.0*		
Turbidity (n.t.u.)	*138*	*173*	*113*	*910*	*NR*	*138*		
Sample Date	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*		
VOCs, EPA Method 8260c (ug/l)								
Dichlorodifluoromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Chloromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Vinyl Chloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	0.13	2
Bromomethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	5
Chloroethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	31,000	
Trichlorofluoromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Diethyl Ether	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Acetone	ND<1000	**12**	**19**	ND<10	**50**	ND<1000	-	950
1 ,1-Dichloroethene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	7
Methylene chloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	680	5
Carbon disulfide	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Methyl-t-butyl ether (MTBE)	**2,100**	ND<1	ND<1	**2.8**	ND<1	**2,100**	-	11
trans-1,2-Dichloroethene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	100
1,1-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	270	70
2,2-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
cis-1,2-Dichloroethene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	70
2-Butanone(MEK)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<1,000	-	511
Bromochloromethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	8
Tetrahydrofuran(THF)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<1,000	-	-
Chloroform	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	0.41	-
1,1,1-Trichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	200
Carbon tetrachloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	0.24	5
1 ,1-Dichloropropene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
Benzene	**14,000.**	**1.3**	ND<1	ND<1	**1.8**	**13,000.**	0.92	5
1,2-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	5
Trichloroethene (TCE)	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	0.82	5
1,2-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	5
Dibromomethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
Bromodichloromethane	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	-
4-Methyl-2-pentanone(MIBK)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<1,000	-	-
cis-1,3-Dichloropropene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	-
Toluene	**34,000**	**1.1**	ND<1	ND<1	**8.2**	**34,000**	-	1000
trans-1,3-Dichloropropene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	-
1,1,2-Trichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	5
2-Hexanone	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<1,000	-	-
Tetrachloroethene (PCE)	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	1.5	5
1,3-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
NR = no reading due to meter capabilty

Brownfields Phase II Environmental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*4.45*	*6.26*	*11.59*	*11.07*	*10.97*	*4.45*		
pH (standard units)	*6.27*	*6.41*	*6.69*	*6.78*	*7.01*	*6.27*		
Conductivity (umhos)	*7,460*	*520*	*103.9*	*1,006*	*228.00*	*7,460*		
Temperature (celcius)	*16.0*	*12.3*	*13.1*	*15.0*	*14.6*	*16.0*		
Turbidity (n.t.u.)	*138*	*173*	*113*	*910*	*NR*	*138*		
Sample Date	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*		
VOCs, EPA Method 8260c (ug/l)								
Dibromochloromethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,2-Dibromoethane(EDB)	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	0.05
Chlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	100
1,1,1,2-Tetrachloroethane	ND<100	ND<1	ND<2	ND<2	ND<1	ND<100	-	70
Ethylbenzene	**3,900**	**9.4**	ND<1	ND<1	**1.0**	**4,000**	2.2	700
mp-Xylene	**13,000**	**18**	ND<1	ND<1	**3.6**	**14,000**	-	10000**
o-Xylene	**6,000**	**2**	ND<1	ND<1	**1.3**	**6,300**	-	10000**
Styrene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	100
Bromoform	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
IsoPropylbenzene	**120**	**1.5**	ND<1	ND<1	ND<1	**140**	-	-
Bromobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,1,2,2-Tetrachloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,2,3-Trichloropropane	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	0.02
n-Propylbenzene	**330**	**4.1**	ND<1	ND<1	ND<1	**380**	-	-
2-Chlorotoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
4-Chlorotoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,3,5-trimethylbenzene	**770**	**7.1**	ND<1	ND<1	ND<1	**890**	330	23*
tert-Butylbenzene	ND<100	**2.1**	ND<1	ND<1	ND<1	ND<100	-	-
1,2,4-trimethylbenzene	**2,900**	**22**	ND<1	ND<1	**1.4**	**3,200**	470	23*
sec-Butylbenzene	ND<100	**2.3**	ND<1	ND<1	ND<1	ND<100	-	-
1,3-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	600
p-Isopropyltoluene	ND<100	**1.1**	ND<1	ND<1	ND<1	ND<100	-	-
1,4-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	75
1,2-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	600
n-Butylbenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,2-Dibromo-3-chloropropane	ND<20	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<20	-	0.2
1,2,4-Trichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	70
Hexachlorobutadiene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	-
Naphthalene	**640**	**5.3**	ND<0.5	ND<0.5	**0.55**	**690**	4	0.5
1,2,3-Trichlorobenzene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	0.9
Total Reported VOCs	**77,760**	**89**	**19**	**2.8**	**68**	**78,700**		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Brownfields Phase II Environmental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*4.45*	*6.26*	*11.59*	*11.07*	*10.97*	*4.45*		
pH (standard units)	*6.27*	*6.41*	*6.69*	*6.78*	*7.01*	*6.27*		
Conductivity (umhos)	*7,460*	*520*	*103.9*	*1,006*	*228.00*	*7,460*		
Temperature (celcius)	*16.0*	*12.3*	*13.1*	*15.0*	*14.6*	*16.0*		
Turbidity (n.t.u.)	*138*	*173*	*113*	*910*	*NR*	*138*		
Sample Date	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*		
RCRA Metals, EPA Method 6020a (mg/l)								
Total Arsenic	**0.017**	**0.0057**	Insufficient Water	**0.0031**	Insufficient Water	**0.017**	-	0.010
Total Barium	**1.6**	**0.71**		**0.46**		**1.6**	-	2
Total Cadmium	**0.0012**	**0.0019**		**0.0012**		**0.0012**	-	0.005
Total Chromium	**0.022**	ND<0.001		**0.0019**		**0.024**	-	0.100
Total Lead	**0.12**	**0.0011**		**0.0057**		**0.12**	-	0.015
Total Mercury	ND<0.0001	ND<0.0001		ND<0.0001		ND<0.0001	2.0	0.002
Total Selenium	**0.0047**	ND<0.001		ND<0.001		**0.0034**	-	0.05
Total Sliver	ND<0.001	ND<0.001		ND<0.001		ND<0.001	-	-

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard

Brownfields Phase II Environmental Site Assessment
Drinking Water Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Sample *Sample Date*	*DWS-1* *6/17/20*	*MCL*
VOCs, EPA Method 524.2 (ug/L)		
Dichlorodifluoromethane	ND<0.5	-
Chloromethane	ND<0.5	-
Vinyl Chloride	ND<0.5	2.
Bromomethane	ND<0.5	-
Chloroethane	ND<0.5	-
Trichlorofluoromethane	ND<0.5	-
Diethyl Ether	ND<5	-
Acetone	ND<10	-
1 ,1-Dichloroethene	ND<0.5	7
tert-Butyl Alcohol (TBA)	ND<30	
Methylene chloride	ND<0.5	5
Carbon disulfide	ND<2	-
MTBE	ND<0.5	-
trans-1,2-Dichloroethene	ND<0.5	100
1,1-Dichloroethane	ND<0.5	-
2,2-Dichloropropane	ND<0.5	-
cis-1,2-Dichloroethene	ND<0.5	70
2-Butanone(MEK)	ND<5	-
Bromochloromethane	ND<0.5	-
Tetrahydrofuran(THF)	ND<5	-
Chloroform	ND<0.5	80*
1,1,1-Trichloroethane	ND<0.5	200
Carbon tetrachloride	ND<0.5	5
1 ,1-Dichloropropene	ND<0.5	-
Benzene	ND<0.5	5
1,2-Dichloroethane	ND<0.5	5
Trichloroethene (TCE)	ND<0.5	5
1,2-Dichloropropane	ND<0.5	5
Dibromomethane	ND<0.5	-
Bromodichloromethane	ND<0.5	80*
4-Methyl-2-pentanone(MIBK)	ND<5	-
cis-1,3-Dichloropropene	ND<0.3	-
Toluene	ND<0.5	1000
trans-1,3-Dichloropropene	ND<0.3	-
1,1,2-Trichloroethane	ND<0.5	5
2-Hexanone	ND<5	-
Tetrachloroethene (PCE)	ND<0.05	5
1,3-Dichloropropane	ND<0.05	-
Dibromochloromethane	ND<0.05	80*

NOTES:
Drinking Water Standards - Maximum Contaminant Levels (MCLs) published in the Water Supply Rule, 3/2020
ND<xx = Not Detected< Detection Limit; Results reported above detection limits are indicated in bold
Reporting limits and reported concentrations equal to or above the MCL are shaded
* means the indicated enforcement standard is for total trihalomethanes
*** means the indicated enforcement standard is for total xylenes

Brownfields Phase II Environmental Site Assessment
Drinking Water Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Sample *Sample Date*	*DWS-1* *6/17/20*	*MCL*
VOCs, EPA Method 524.2 (ug/L) (continued)		
1,2-Dibromoethane(EDB)	ND<0.05	0.05
Chlorobenzene	ND<0.05	100
1,1,1,2-Tetrachloroethane	ND<0.5	-
Ethylbenzene	ND<0.5	700
mp-Xylene	ND<0.5	10000***
o-Xylene	ND<0.5	10000***
Styrene	ND<0.5	100
Bromoform	ND<0.5	80*
IsoPropylbenzene	ND<0.5	-
Bromobenzene	ND<0.5	-
1,1,2,2-Tetrachloroethane	ND<0.5	-
1,2,3-Trichloropropane	ND<0.5	-
n-Propylbenzene	ND<0.5	-
2-Chlorotoluene	ND<0.5	-
4-Chlorotoluene	ND<0.5	-
1,3,5-trimethylbenzene	ND<0.5	-
tert-Butylbenzene	ND<0.5	-
1,2,4-trimethylbenzene	ND<0.5	-
sec-Butylbenzene	ND<0.5	-
1,3-Dichlorobenzene	ND<0.5	-
p-Isopropyltoluene	ND<0.5	-
1,4-Dichlorobenzene	ND<0.5	75
1,2-Dichlorobenzene	ND<0.5	600.
n-Butylbenzene	ND<0.5	-
1,2-Dibromo-3-chloropropane	ND<0.5	0.2
1,2,4-Trichlorobenzene	ND<0.5	70
Hexachlorobutadiene	ND<0.5	-
Naphthalene	ND<0.5	-
1,2,3-Trichlorobenzene	ND<0.5	-
Total Reported VOCs	ND	-

NOTES:
Drinking Water Standards - Maximum Contaminant Levels (MCLs) published in the Water Supply Rule, 3/2020
ND<xx = Not Detected< Detection Limit; Results reported above detection limits are indicated in bold
Reporting limits and reported concentrations equal to or above the MCL are shaded
* means the indicated enforcement standard is for total trihalomethanes
*** means the indicated enforcement standard is for total xylenes

Brownfields Supplemental Site Investigation Report
Pigeon Property
1705 Route 128
Westford, Vermont

DEC SMS#2019-4863, EPA RFA 19093

February 12, 2021

Prepared for:

Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, Vermont 05404

Co-Operative Insurance Companies
292 Colonial Drive
Middlebury, VT 05753

LE·Environmental

21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001
www.leenv.net
LEE #19-138

Contents

1.0 EXECUTIVE SUMMARY 3
2.0 SITE INFORMATION 6
3.0 CURRENT USE OF THE SITE 6
4.0 CURRENT ADJOINING PROPERTY USES 6
5.0 SITE DESCRIPTION 6
6.0 LATITUDE/LONGITUDE 7
7.0 PROPERTY HISTORY 7
8.0 SITE CONTAMINANT BACKGROUND 9
A. Release Date and Description 9
B. Release Report Date 10
C. Release Response Actions 10
D. Previous Environmental Documents 10
E. Copy of Previous Environmental Documents 11
F. List of Governmental Records Reviewed 11
9.0 UPDATED CONCEPTUAL SITE MODEL 11
A. Updated Site Conceptual Model 11
B. Potential Contamination Sources 13
C. Potential Receptors 13
D. Utility Corridors 14
E. Water Bodies and Wetlands 14
F. Water Supplies 14
G. Site Users 14
10.0 WORK PLAN DEVIATIONS 14
11.0 SAMPLE COLLECTION DOCUMENTATION 15
12.0 CONTAMINATED MEDIA CHARACTERIZATION 16
A. Geophysical Investigation 16
B. Soil 16
C. Groundwater 17
D. Supply Well Sampling 19
E. Soil Gas Sampling 19
F. Other Media 21
G. Site-Specific Values 21
13.0 SITE-SPECIFIC RISK ASSESSMENT 21
14.0 MAPS 21
15.0 DISCUSSION 21
16.0 DATA PRESENTATION 23
17.0 QA/QC SAMPLE RESULTS 23
18.0 INVESTIGATION DERIVED WASTE 23
19.0 CONCLUSIONS AND RECOMMENDATIONS 23
20.0 SIGNATURE AND CERTIFICATION 25
21.0 MAPS AND APPENDICES 26

1.0 EXECUTIVE SUMMARY

LE Environmental LLC (LEE) conducted a Brownfields Supplement Site Investigation (SSI) at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The SSI was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated November 12, 2020, approved November 16, 2020, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). This assessment was conducted for the Chittenden County Regional Planning Commission (CCRPC) and Co-Operative Insurance Companies. A portion of this work is supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A00483. The Site owner is the Pigeon Family Living Trust.

The Site includes a vacant residence and a former bus repair garage and gasoline filling station on approximately 3.3 acres of land. The buildings are currently unoccupied and are used for storage. The Site was developed prior to 1858, and historic Site use has included residential, a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property, and a tannery was noted on the adjoining property to the west in 1869.

The Site is located on the north side of Route 128. The area immediately surrounding the Site is the town center of Westford, with closely spaced residential homes, a municipal office building, a public library, and a town common. The DEC indicates that the Site is in a Vermont Department of Environmental Conservation (DEC) designated “urban background” zone for soil contamination. The topography of the Site is fairly flat on its south side, near Route 128, and then slopes downward to the north, toward the Browns River. There is also a ravine on the eastern side of the Site, which contains an outlet drainage pipe for the town common’s stormwater system. No odors or sheens have been noted on the water exiting the outlet pipe. Portions of the northern and eastern ends of the property appear to have wetland vegetation.

Three structures are currently present on the property. The residence is a two-story, wood framed structure with a full basement. The garage is a single-story, wood framed structure, with a slab on-grade foundation. The third building is a small wood framed shed.

A Phase II Environmental Site Assessment (ESA) was conducted in 2020 to investigate Recognized Environmental Conditions (RECs) identified in a 2019 Phase

I ESA. The ESA concluded the abandoned gasoline underground storage tank (UST) had failed and soils and groundwater in the vicinity were impacted with Volatile Organic Compounds (VOCs) above regulatory standards. A pipe with unknown purpose was also noted on the southern wall of the UST excavation. The excavation could not be extended in this direction due to the presence of Route 128 and special permitting, traffic control and engineering would be required to dig in this area. The limits of the dissolved-phase contaminant plume were not defined during the Phase II ESA.

Shallow and deep soils were found to be impacted with petroleum contamination in the southern portion of the property, near the former UST location, and in the parking area to the east. Shallow soils are impacted with Polycyclic Aromatic Hydrocarbons (PAHs) in the area to the north and northeast of the garage. The limits of the PAH contamination were not defined during the Phase II ESA. LEE recommended additional delineation of soil and groundwater contamination should be completed.

The SSI included a geophysical investigation in the roadway near the suspect pipe noted during the UST removal, an additional round of groundwater sampling of the existing groundwater monitoring wells followed by installation of additional groundwater monitoring wells and a subsequent round of groundwater sampling, a soil boring investigation of shallow soil PAH contamination, drinking water sampling, and a soil vapor investigation.

A geophysical investigation was conducted to investigate the area around the suspect pipe noted on the southern edge of the previous UST excavation on November 24, 2020. No evidence of a pipe or additional USTs beneath Route 128 was noted during the geophysical investigation.

A confirmatory round of groundwater sampling was performed on December 3, 2020. The depth to water ranged from 2.86’ below grade (bg) at MW-1 to 8.62’ bg at MW-5. Concentrations of benzene, toluene, ethylbenzene, xylenes, trimethylbenzenes, and naphthalene in excess of the Vermont Groundwater Enforcement Standards (VGES) were reported in the vicinity of the former UST location (MW-1). Ethylbenzene was reported in MW-2 below the VGES. No contaminant concentrations were reported above laboratory detection limits in MW-3, MW-4, or MW-5. A supply well sample was also obtained on December 3, 2020, and no VOCs were reported in the water supply sample.

Thirteen soil borings were advanced at the Site on December 21, 2020. Ten soil samples and a duplicate were obtained during drilling. Three additional groundwater monitoring wells, four soil gas wells, and two vapor pins were installed.

PAH toxicity equivalency quotient (TEQ) concentrations in excess of the DEC's Statewide Urban Background concentration were identified in five of the ten shallow soil samples obtained in this SSI (SB-102, SB-103, SB-104, SB-105, and SB-106). The northwestern, western, southern, and eastern limits of the PAH-impacted shallow soil were identified by the SSI sampling. However, the northern-most soil shallow soil samples contained PAH TEQ above the DEC's Statewide Urban Background concentration, indicating the extent of the contamination continues to the north some distance. The area of soils impacted is likely correlated to the historic storage of buses, auto parts, and other machinery in this area.

An additional round of groundwater sampling, including the three newly installed monitoring wells, was performed on January 7, 2021. The depth to water ranged from 2.09' bg at MW-7 to 10.27' bg at MW-5. Concentrations of MTBE, benzene, toluene, ethylbenzene, xylenes, trimethylbenzenes, and naphthalene in excess of the VGES were reported in MW-1. A naphthalene concentration in excess of the VGES was reported in MW-8. Concentrations of ethylbenzene and 1,3,5-trimethylbenzene below the VGES were reported in MW-2.

The northern, western, and southern portions of the groundwater contaminant plume have been defined. The eastern edge of the plume is not fully defined, but it likely terminates in the vicinity of MW-8 based on the fairly low concentration of naphthalene reported there.

Three soil gas, two sub-slab soil gas, and one outdoor ambient air sample were obtained on January 2, 2021. The soil gas samples were analyzed for the presence of VOCs via EPA Method TO-15.

Several VOCs were reported in the soil gas samples including: benzene, carbon tetrachloride, ethylbenzene, methylene chloride, tetrachloroethene (PCE), acetone, ethanol, isopropanol, tetrahydrofuran, toluene, Freon 11, and xylenes. None of the reported concentrations exceeded DEC's residential vapor intrusion standards.

LEE has developed the following recommendations during this SSI:

- Groundwater monitoring should continue to be performed on an annual basis to track the groundwater contaminant plume at the Site.
- An evaluation of corrective action alternatives (ECAA) and a corrective action plan (CAP) should be prepared per the requirements of Subchapter 6 of the DEC's I-Rule.

Liquid Level Monitoring Data
Brownfields Phase II ESA
Pigeon Property
1705 Route 128
Westford, Vermont

Measurement Date: December 3, 2020

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	99.22	-	2.86	-	-	-	-	96.36
MW-2	99.74	-	5.81	-	-	-	-	93.93
MW-3	99.03	-	4.70	-	-	-	-	94.33
MW-4	98.68	-	5.09	-	-	-	-	93.59
MW-5	81.18	-	8.62	-	-	-	-	72.56

Notes:
All Values Reported in Feet
btoc - Below Top of Casing
Elevation data relative to 100' at SE corner of garage

Brownfields Phase II ESA
Pigeon Property
1705 Route 128
Westford, Vermont

Measurement Date: January 7, 2021

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	99.22	-	3.57	-	-	-	-	95.65
MW-2	99.74	-	6.19	-	-	-	-	93.55
MW-3	99.03	-	9.37	-	-	-	-	89.66
MW-4	98.68	-	7.25	-	-	-	-	91.43
MW-5	81.18	-	10.27	-	-	-	-	70.91
MW-6	99.99	-	3.80	-	-	-	-	96.19
MW-7	100.30	-	2.09	-	-	-	-	98.21
MW-8	98.37	-	6.31	-	-	-	-	92.06

Notes:
All Values Reported in Feet
btoc - Below Top of Casing
Elevation data relative to 100' at SE corner of garage

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*2.86*	*5.81*	*4.70*	*5.09*	*8.62*	*5.81*		
pH (standard units)	*7.24*	*6.78*	*6.87*	*6.68*	*6.52*	*6.78*		
Conductivity (umhos)	*2,390*	*473*	*1,242*	*866*	*416*	*473*		
Temperature (celcius)	*8.2*	*10.3*	*9.6*	*9.4*	*8.8*	*10.3*		
Turbidity (n.t.u.)	*711*	*749*	*13.4*	*106*	*550*	*749*		
Sample Date	*12/3/20*	*12/3/20*	*12/3/20*	*12/3/20*	*12/3/20*	*12/3/20*		
VOCs, EPA Method 8260c VT Petroleum List (ug/l)								
Methyl-t-butyl ether (MTBE)	ND<200	ND<1	ND<1	ND<1	ND<1	ND<1	-	11
Benzene	**4,900.**	ND<1	ND<1	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<200	ND<1	ND<1	ND<1	ND<1	ND<1	-	5
Toluene	**15,000**	ND<1	ND<1	ND<1	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	**2,500**	**1.5**	ND<1	ND<1	ND<1	**1.4**	2.2	700
mp-Xylene	**12,000**	ND<1	ND<1	ND<1	ND<1	ND<1	-	10000**
o-Xylene	**5,700**	ND<1	ND<1	ND<1	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	**880**	ND<1	ND<1	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	**3,300**	ND<1	ND<1	ND<1	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	**950**	ND<1	ND<1	ND<1	ND<1	ND<1	790	23*
Naphthalene	**710**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**45,940**	**1.5**	ND	ND	ND	**1.4**		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*MW-6*	*MW-7*	*MW-8*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*3.57*	*6.19*	*9.37*	*7.25*	*10.27*	*3.80*	*2.09*	*6.31*	*6.19*		
pH (standard units)	*7.11*	*6.75*	*6.95*	*6.55*	*6.84*	*6.73*	*7.11*	*6.82*	*6.75*		
Conductivity (umhos)	*3,430*	*497*	*1,502*	*741*	*809*	*812*	*1,268*	*4,510*	*497*		
Temperature (celcius)	*5.6*	*7.3*	*8.2*	*8.7*	*6.6*	*6.3*	*6.5*	*6.9*	*7.3*		
Turbidity (n.t.u.)	*635*	*814*	*119*	*81.9*	*604*	*853*	*NR*	*520*	*814*		
Sample Date	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)											
Dichlorodifluoromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Chloromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Vinyl Chloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.13	2
Bromomethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	5
Chloroethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	31,000	
Trichlorofluoromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Diethyl Ether	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Acetone	ND<1000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	950
1 ,1-Dichloroethene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	7
Methylene chloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	680	5
Carbon disulfide	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Methyl-t-butyl ether (MTBE)	**290**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	11
trans-1,2-Dichloroethene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	100
1,1-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	270	70
2,2-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
cis-1,2-Dichloroethene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	70
2-Butanone(MEK)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	511
Bromochloromethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	8
Tetrahydrofuran(THF)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	-
Chloroform	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.41	-
1,1,1-Trichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	200
Carbon tetrachloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.24	5
1 ,1-Dichloropropene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
Benzene	**5,900**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	5
Trichloroethene (TCE)	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.82	5
1,2-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	5
Dibromomethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
Bromodichloromethane	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-
4-Methyl-2-pentanone(MIBK)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	-
cis-1,3-Dichloropropene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-
Toluene	**19,000**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	1000
trans-1,3-Dichloropropene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-
1,1,2-Trichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	5
2-Hexanone	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	-
Tetrachloroethene (PCE)	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	1.5	5
1,3-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
NR = no reading due to meter capabilty

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*MW-6*	*MW-7*	*MW-8*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*3.57*	*6.19*	*9.37*	*7.25*	*10.27*	*3.80*	*2.09*	*6.31*	*6.19*		
pH (standard units)	*7.11*	*6.75*	*6.95*	*6.55*	*6.84*	*6.73*	*7.11*	*6.82*	*6.75*		
Conductivity (umhos)	*3,430*	*497*	*1,502*	*741*	*809*	*812*	*1,268*	*4,510*	*497*		
Temperature (celcius)	*5.6*	*7.3*	*8.2*	*8.7*	*6.6*	*6.3*	*6.5*	*6.9*	*7.3*		
Turbidity (n.t.u.)	*635*	*814*	*119*	*81.9*	*604*	*853*	*NR*	*520*	*814*		
Sample Date	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)											
Dibromochloromethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,2-Dibromoethane(EDB)	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.05
Chlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	100
1,1,1,2-Tetrachloroethane	ND<100	ND<1	ND<2	ND<2	ND<2	ND<1	ND<2	ND<2	ND<1	-	70
Ethylbenzene	**2,900**	**2**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**2.1**	2.2	700
mp-Xylene	**15,000**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	10000**
o-Xylene	**6,800**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	10000**
Styrene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	100
Bromoform	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
IsoPropylbenzene	**120**	ND<1	ND<1	ND<1	ND<1	**1.1**	ND<1	ND<1	ND<1	-	-
Bromobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,1,2,2-Tetrachloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,2,3-Trichloropropane	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.02
n-Propylbenzene	**350**	ND<1	ND<1	ND<1	ND<1	**2.3**	ND<1	ND<1	ND<1	-	-
2-Chlorotoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
4-Chlorotoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,3,5-trimethylbenzene	**1,000**	**1**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**1.1**	330	23*
tert-Butylbenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**1.2**	-	-
1,2,4-trimethylbenzene	**4,300**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	470	23*
sec-Butylbenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**1.2**	-	-
1,3-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	600
1,2,3-Trimethylenzene	**1,100**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	790	23*
p-Isopropyltoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,4-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	75
1,2-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	600
n-Butylbenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,2-Dibromo-3-chloropropane	ND<20	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	-	0.2
1,2,4-Trichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	70
Hexachlorobutadiene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-
Naphthalene	**690**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**2.9**	ND<0.5	4	0.5
1,2,3-Trichlorobenzene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.9
Total Reported VOCs	**57,450**	**3**	ND	ND	ND	**3.4**	ND	**2.9**	**5.6**		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

MW-1

				I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*4.45*	*2.86*	*3.57*		
pH (standard units)	*6.27*	*7.24*	*7.11*		
Conductivity (umhos)	*7,460*	*2,390*	*3,430*		
Temperature (celcius)	*16.0*	*8.2*	*5.6*		
Turbidity (n.t.u.)	*138*	*711*	*635*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	**2,100**	ND<200	**290**	-	11
Benzene	**14,000.**	**4,900.**	**5,900**	0.92	5
1,2-Dichloroethane	ND<100	ND<200	ND<100	-	5
Toluene	**34,000**	**15,000**	**19,000**	-	1000
1,2-Dibromoethane(EDB)	ND<50	ND<100	ND<50	-	0.05
Ethylbenzene	**3,900**	**2,500**	**2,900**	2.2	700
mp-Xylene	**13,000**	**12,000**	**15,000**	-	10000**
o-Xylene	**6,000**	**5,700**	**6,800**	-	10000**
1,3,5-trimethylbenzene	**770**	**880**	**1,000**	330	23*
1,2,4-trimethylbenzene	**2,900**	**3,300**	**4,300**	470	23*
1,2,3-trimethylbenzene	NT	**950**	**1,100**	790	23*
Naphthalene	**640**	**710**	**690**	4	0.5
Total Reported VOCs	**77,310**	**45,940**	**56,980**		

MW-2

				I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*6.26*	*5.81*	*6.19*		
pH (standard units)	*6.41*	*6.78*	*6.75*		
Conductivity (umhos)	*520*	*473*	*497*		
Temperature (celcius)	*12.3*	*10.3*	*7.3*		
Turbidity (n.t.u.)	*173*	*749*	*814*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	ND<1	-	11
Benzene	**1.3**	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	-	5
Toluene	**1.1**	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	**9.4**	**1.5**	**2**	2.2	700
mp-Xylene	**18**	ND<1	ND<1	-	10000**
o-Xylene	**2**	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	**7.1**	ND<1	**1**	330	23*
1,2,4-trimethylbenzene	**22**	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1	790	23*
Naphthalene	**5.3**	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**66**	**1.5**	**3**		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

MW-3

				I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*11.59*	*4.70*	*9.37*		
pH (standard units)	*6.69*	*6.87*	*6.95*		
Conductivity (umhos)	*103.9*	*1,242*	*1,502*		
Temperature (celcius)	*13.1*	*9.6*	*8.2*		
Turbidity (n.t.u.)	*113*	*13.4*	*119*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	ND<1	-	11
Benzene	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	-	5
Toluene	ND<1	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	ND<1	ND<1	ND<1	2.2	700
mp-Xylene	ND<1	ND<1	ND<1	-	10000**
o-Xylene	ND<1	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	ND<1	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1		
Naphthalene	ND<0.5	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	ND	ND	ND		

MW-4

				I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*11.07*	*5.09*	*7.25*		
pH (standard units)	*6.78*	*6.68*	*6.55*		
Conductivity (umhos)	*1,006*	*866*	*741*		
Temperature (celcius)	*15.0*	*9.4*	*8.7*		
Turbidity (n.t.u.)	*910*	*106*	*81.9*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	**2.8**	ND<1	ND<1	-	11
Benzene	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	-	5
Toluene	ND<1	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	ND<1	ND<1	ND<1	2.2	700
mp-Xylene	ND<1	ND<1	ND<1	-	10000**
o-Xylene	ND<1	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	ND<1	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1		
Naphthalene	ND<0.5	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**2.8**	ND	ND		

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

MW-5

Depth to Groundwater (Ft)	*10.97*	*8.62*	*10.27*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
pH (standard units)	*7.01*	*6.52*	*6.84*		
Conductivity (umhos)	*228.00*	*416*	*809*		
Temperature (celcius)	*14.6*	*8.8*	*6.6*		
Turbidity (n.t.u.)	*NR*	*550*	*604*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	ND<1	-	11
Benzene	**1.8**	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	-	5
Toluene	**8.2**	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	**1.0**	ND<1	ND<1	2.2	700
mp-Xylene	**3.6**	ND<1	ND<1	-	10000**
o-Xylene	**1.3**	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	**1.4**	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1		
Naphthalene	**0.55**	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**18**	ND	ND		

Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Brownfields Supplemental Site Assessment
Drinking Water Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Sample *Sample Date*	*DWS-1* *6/17/20*	*DWS* *12/3/20*	*MCL*
VOCs, EPA Method 524.2 (ug/L)			
Dichlorodifluoromethane	ND<0.5	ND<0.5	-
Chloromethane	ND<0.5	ND<0.5	-
Vinyl Chloride	ND<0.5	ND<0.5	2.
Bromomethane	ND<0.5	ND<0.5	-
Chloroethane	ND<0.5	ND<0.5	-
Trichlorofluoromethane	ND<0.5	ND<0.5	-
Diethyl Ether	ND<5	ND<5	-
Acetone	ND<10	ND<10	-
1 ,1-Dichloroethene	ND<0.5	ND<0.5	7
tert-Butyl Alcohol (TBA)	ND<30	ND<30	-
Methylene chloride	ND<0.5	ND<0.5	5
Carbon disulfide	ND<2	ND<2	-
MTBE	ND<0.5	ND<0.5	-
trans-1,2-Dichloroethene	ND<0.5	ND<0.5	100
1,1-Dichloroethane	ND<0.5	ND<0.5	-
2,2-Dichloropropane	ND<0.5	ND<0.5	-
cis-1,2-Dichloroethene	ND<0.5	ND<0.5	70
2-Butanone(MEK)	ND<5	ND<5	-
Bromochloromethane	ND<0.5	ND<0.5	-
Tetrahydrofuran(THF)	ND<5	ND<5	-
Chloroform	ND<0.5	ND<0.5	80*
1,1,1-Trichloroethane	ND<0.5	ND<0.5	200
Carbon tetrachloride	ND<0.5	ND<0.5	5
1 ,1-Dichloropropene	ND<0.5	ND<0.5	-
Benzene	ND<0.5	ND<0.5	5
1,2-Dichloroethane	ND<0.5	ND<0.5	5
Trichloroethene (TCE)	ND<0.5	ND<0.5	5
1,2-Dichloropropane	ND<0.5	ND<0.5	5
Dibromomethane	ND<0.5	ND<0.5	-
Bromodichloromethane	ND<0.5	ND<0.5	80*
4-Methyl-2-pentanone(MIBK)	ND<5	ND<5	-
cis-1,3-Dichloropropene	ND<0.3	ND<0.3	-
Toluene	ND<0.5	ND<0.5	1000
trans-1,3-Dichloropropene	ND<0.3	ND<0.3	-
1,1,2-Trichloroethane	ND<0.5	ND<0.5	5
2-Hexanone	ND<5	ND<5	-
Tetrachloroethene (PCE)	ND<0.05	ND<0.05	5
1,3-Dichloropropane	ND<0.05	ND<0.05	-
Dibromochloromethane	ND<0.05	ND<0.05	80*

NOTES:
Drinking Water Standards - Maximum Contaminant Levels (MCLs) published in the Water Supply Rule, 3/2020
ND<xx = Not Detected< Detection Limit; Results reported above detection limits are indicated in bold
Reporting limits and reported concentrations equal to or above the MCL are shaded
* means the indicated enforcement standard is for total trihalomethanes
*** means the indicated enforcement standard is for total xylenes

Brownfields Supplemental Site Assessment
Drinking Water Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Sample *Sample Date*	*DWS-1* *6/17/20*	*DWS* *12/3/20*	*MCL*
VOCs, EPA Method 524.2 (ug/L) (continued)			
1,2-Dibromoethane(EDB)	ND<0.05	ND<0.05	0.05
Chlorobenzene	ND<0.05	ND<0.05	100
1,1,1,2-Tetrachloroethane	ND<0.5	ND<0.5	-
Ethylbenzene	ND<0.5	ND<0.5	700
mp-Xylene	ND<0.5	ND<0.5	10000***
o-Xylene	ND<0.5	ND<0.5	10000***
Styrene	ND<0.5	ND<0.5	100
Bromoform	ND<0.5	ND<0.5	80*
IsoPropylbenzene	ND<0.5	ND<0.5	-
Bromobenzene	ND<0.5	ND<0.5	-
1,1,2,2-Tetrachloroethane	ND<0.5	ND<0.5	-
1,2,3-Trichloropropane	ND<0.5	ND<0.5	-
n-Propylbenzene	ND<0.5	ND<0.5	-
2-Chlorotoluene	ND<0.5	ND<0.5	-
4-Chlorotoluene	ND<0.5	ND<0.5	-
1,3,5-trimethylbenzene	ND<0.5	ND<0.5	-
tert-Butylbenzene	ND<0.5	ND<0.5	-
1,2,4-trimethylbenzene	ND<0.5	ND<0.5	-
sec-Butylbenzene	ND<0.5	ND<0.5	-
1,3-Dichlorobenzene	ND<0.5	ND<0.5	-
p-Isopropyltoluene	ND<0.5	ND<0.5	-
1,4-Dichlorobenzene	ND<0.5	ND<0.5	75
1,2-Dichlorobenzene	ND<0.5	ND<0.5	600.
n-Butylbenzene	ND<0.5	ND<0.5	-
1,2-Dibromo-3-chloropropane	ND<0.5	ND<0.5	0.2
1,2,4-Trichlorobenzene	ND<0.5	ND<0.5	70
Hexachlorobutadiene	ND<0.5	ND<0.5	-
Naphthalene	ND<0.5	ND<0.5	-
1,2,3-Trichlorobenzene	ND<0.5	ND<0.5	-
Total Reported VOCs	ND	ND	-

NOTES:
Drinking Water Standards - Maximum Contaminant Levels (MCLs) published in the Water Supply Rule, 3/2020
ND<xx = Not Detected< Detection Limit; Results reported above detection limits are indicated in bold
Reporting limits and reported concentrations equal to or above the MCL are shaded
* means the indicated enforcement standard is for total trihalomethanes
*** means the indicated enforcement standard is for total xylenes

Brownfields Supplemental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 1 of 3

Sample Identification	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107	SB-108	SB-109	SB-110	Dup SB-107	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5				
PID Reading (ppm)	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2				
Sample Date	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20				
PAH EPA Method 8270D (mg/kg)															
Naphthalene	ND<0.008	**0.010**	**0.046**	**0.22**	ND<0.02	**0.10**	**0.0098**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	-	-	2.7	16
2-Methylnaphthalene	ND<0.008	ND<0.008	**0.017**	**0.078**	ND<0.02	**0.039**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	ND<0.008	240	3,000	-	-
1-Methylnaphthalene	ND<0.008	ND<0.008	**0.013**	**0.073**	ND<0.02	**0.031**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	ND<0.008	18	73	-	-
Acenaphthylene	**0.022**	**0.10**	**0.47**	**2.1**	**0.17**	**1.3**	**0.044**	**0.038**	**0.016**	**0.021**	**0.017**	-	-	-	-
Acenaphthene	ND<0.008	ND<0.008	**0.021**	**0.17**	ND<0.02	**0.083**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	ND<0.008	3,600	45,000	-	-
Fluorene	**0.011**	**0.020**	**0.091**	**0.55**	**0.042**	**0.30**	**0.027**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	-	-	2,301	26,371
Phenanthrene	**0.12**	**0.19**	**0.72**	**4.2**	**0.52**	**2.2**	**0.23**	**0.036**	**0.013**	**0.021**	**0.022**	-	-	-	-
Anthracene	**0.017**	**0.060**	**0.29**	**1.4**	**0.092**	**0.99**	**0.041**	**0.014**	ND<0.008	**0.015**	ND<0.008	18,000	230,000	-	-
Fluoranthene	**0.23**	**0.68**	**2.2**	**13**	**1.1**	**6.4**	**0.33**	**0.098**	**0.034**	**0.023**	**0.063**	-	-	2,301	26,371
Pyrene	**0.18**	**0.61**	**1.8**	**12**	**0.86**	**4.8**	**0.22**	**0.10**	**0.031**	**0.077**	**0.052**	1,800	23,000	-	-
Benzo(a)anthracene	**0.083**	**0.41**	**1.4**	**7.2**	**0.44**	**4.1**	**0.12**	**0.055**	**0.019**	**0.011**	**0.032**	1.1	21	-	-
Chrysene	**0.099**	**0.42**	**1.4**	**7.1**	**0.53**	**4.0**	**0.13**	**0.063**	**0.020**	**0.021**	**0.034**	110	2,100	-	-
Benzo(b)fluoranthene	**0.14**	**0.62**	**2.4**	**11**	**0.76**	**6.1**	**0.21**	**0.079**	**0.032**	**0.024**	**0.060**	1.1	21	-	-
Benzo(k)fluoranthene	**0.052**	**0.24**	**0.83**	**3.7**	**0.28**	**2.4**	**0.081**	**0.028**	**0.011**	ND<0.008	**0.023**	11	210	-	-
Benzo(a)pyrene	**0.12**	**0.55**	**2.0**	**9.5**	**0.59**	**4.8**	**0.16**	**0.070**	**0.026**	**0.012**	**0.047**	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	**0.086**	**0.38**	**0.94**	**8.0**	**0.24**	**1.5**	**0.065**	**0.025**	**0.011**	**0.021**	**0.023**	1.1	21	-	-
Dibenz(a,h)anthracene	**0.019**	**0.090**	**0.24**	**1.8**	**0.060**	**0.43**	**0.015**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	0.11	2.1	-	-
Benzo(g,h,i)perylene	**0.085**	**0.34**	**0.77**	**8.1**	**0.20**	**1.1**	**0.056**	**0.024**	**0.011**	**0.028**	**0.022**	-	-	-	-
Total Reported PAHs	**1.3**	**4.7**	**15.6**	**90**	**5.9**	**40.7**	**1.74**	**0.63**	**0.22**	**0.27**	**0.40**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**0.17**	**0.78**	**2.7**	**14**	**0.80**	**6.4**	**0.22**	**0.090**	**0.036**	**0.022**	**0.063**	-	-		0.58 (urban bkgd)

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) fromMay 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)

Toxic Equivalency Calculations
Pigeon Property
Page 2 of 3

SB-101

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.083**	0.1	0.0083
Chrysene	**0.099**	0.001	0.000099
Benzo(b)fluoranthene	**0.14**	0.1	0.014
Benzo(k)fluoranthene	**0.052**	0.01	0.00052
Benzo(a)pyrene	**0.12**	1	0.12
Indeno(1,2,3-cd)pyrene	**0.086**	0.1	0.0086
Dibenz(a,h)anthracene	**0.019**	1	0.019
		Total Benzo(a)pyrene Equivalent =	**0.17**

SB-102

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.41**	0.1	0.041
Chrysene	**0.42**	0.001	0.00042
Benzo(b)fluoranthene	**0.62**	0.1	0.062
Benzo(k)fluoranthene	**0.24**	0.01	0.0024
Benzo(a)pyrene	**0.55**	1	0.55
Indeno(1,2,3-cd)pyrene	**0.38**	0.1	0.038
Dibenz(a,h)anthracene	**0.090**	1	0.09
		Total Benzo(a)pyrene Equivalent =	**0.78**

SB-103

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**1.4**	0.1	0.14
Chrysene	**1.4**	0.001	0.0014
Benzo(b)fluoranthene	**2.4**	0.1	0.24
Benzo(k)fluoranthene	**0.83**	0.01	0.0083
Benzo(a)pyrene	**2.0**	1	2
Indeno(1,2,3-cd)pyrene	**0.94**	0.1	0.094
Dibenz(a,h)anthracene	**0.24**	1	0.24
		Total Benzo(a)pyrene Equivalent =	**2.7**

SB-104

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**7.2**	0.1	0.72
Chrysene	**7.1**	0.001	0.0071
Benzo(b)fluoranthene	**11**	0.1	1.1
Benzo(k)fluoranthene	**3.7**	0.01	0.037
Benzo(a)pyrene	**9.5**	1	9.5
Indeno(1,2,3-cd)pyrene	**8.0**	0.1	0.8
Dibenz(a,h)anthracene	**1.8**	1	1.8
		Total Benzo(a)pyrene Equivalent =	**14.0**

SB-105

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.44**	0.1	0.044
Chrysene	**0.53**	0.001	0.00053
Benzo(b)fluoranthene	**0.76**	0.1	0.076
Benzo(k)fluoranthene	**0.28**	0.01	0.0028
Benzo(a)pyrene	**0.59**	1	0.59
Indeno(1,2,3-cd)pyrene	**0.24**	0.1	0.024
Dibenz(a,h)anthracene	**0.060**	1	0.06
		Total Benzo(a)pyrene Equivalent =	**0.80**

Toxic Equivalency Calculations
Pigeon Property

SB-106

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**4.1**	0.1	0.41
Chrysene	**4.0**	0.001	0.004
Benzo(b)fluoranthene	**6.1**	0.1	0.61
Benzo(k)fluoranthene	**2.4**	0.01	0.024
Benzo(a)pyrene	**4.8**	1	4.8
Indeno(1,2,3-cd)pyrene	**1.5**	0.1	0.15
Dibenz(a,h)anthracene	**0.43**	1	0.43
		Total Benzo(a)pyrene Equivalent =	**6.4**

SB-107

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.12**	0.1	0.012
Chrysene	**0.13**	0.001	0.00013
Benzo(b)fluoranthene	**0.21**	0.1	0.021
Benzo(k)fluoranthene	**0.081**	0.01	0.00081
Benzo(a)pyrene	**0.16**	1	0.16
Indeno(1,2,3-cd)pyrene	**0.065**	0.1	0.0065
Dibenz(a,h)anthracene	**0.015**	1	0.015
		Total Benzo(a)pyrene Equivalent =	**0.22**

SB-108

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.055**	0.1	0.0055
Chrysene	**0.063**	0.001	0.000063
Benzo(b)fluoranthene	**0.079**	0.1	0.0079
Benzo(k)fluoranthene	**0.028**	0.01	0.00028
Benzo(a)pyrene	**0.07**	1	0.07
Indeno(1,2,3-cd)pyrene	**0.025**	0.1	0.0025
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.090**

SB-109

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.019**	0.1	0.0019
Chrysene	**0.020**	0.001	0.00002
Benzo(b)fluoranthene	**0.032**	0.1	0.0032
Benzo(k)fluoranthene	**0.011**	0.01	0.00011
Benzo(a)pyrene	**0.026**	1	0.026
Indeno(1,2,3-cd)pyrene	**0.011**	0.1	0.0011
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.036**

SB-110

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.011**	0.1	0.0011
Chrysene	**0.021**	0.001	0.000021
Benzo(b)fluoranthene	**0.024**	0.1	0.0024
Benzo(k)fluoranthene	ND<0.008	0.01	0.00004
Benzo(a)pyrene	**0.012**	1	0.012
Indeno(1,2,3-cd)pyrene	**0.021**	0.1	0.0021
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.022**

Dup SB-107

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.032**	0.1	0.0032
Chrysene	**0.034**	0.001	0.000034
Benzo(b)fluoranthene	**0.060**	0.1	0.006
Benzo(k)fluoranthene	**0.023**	0.01	0.00023
Benzo(a)pyrene	**0.047**	1	0.047
Indeno(1,2,3-cd)pyrene	**0.023**	0.1	0.0023
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.063**

Brownfields Supplemental Site Assessment
Pigeon Property
Westford, Vermont
Soil Vapor Data Summary

Parameter	SAMPLING LOCATION						Vapor Intrusion Standards Residental	Vapor Intrusion Standards Non-Resident
	Ambient	SG-2	SG-3	SG-4	VP-1	VP-2		
Sampling Date	1/5/21	1/5/21	1/5/21	1/5/21	1/5/21	1/5/21		
EPA TO-15 (µg/m³)	Result	Result	Result	Result	Result	Result		
Acetone	**7.6**	<9.5	<9.5	<9.5	**160**	**10**	-	-
Benzene	**0.47**	<0.32	<0.32	<0.32	<0.32	<0.32	4.3	35
Benzyl chloride	<0.18	<0.52	<0.52	<0.52	<0.52	<0.52	-	-
Bromodichloromethane	<0.23	<0.67	<0.67	<0.67	<0.67	<0.67	-	-
Bromoform	<0.36	<1.0	<1.0	<1.0	<1.0	<1.0	-	-
Bromomethane (Methyl bromide)	<0.14	<0.39	<0.39	<0.39	<0.39	<0.39	-	-
1,3-Butadiene	<0.077	<0.22	<0.22	<0.22	<0.22	<0.22	-	-
Methyl Ethyl Ketone (2-Butanone)	<4.1	<12	<12	<12	<12	<12	-	-
Carbon Disulfide	<1.1	<3.1	<3.1	<3.1	<3.1	<3.1	-	-
Carbon Tetrachloride	**0.50**	<0.63	<0.63	<0.63	<0.63	<0.63	5.7	45
Chlorobenzene	<0.16	<0.46	<0.46	<0.46	<0.46	<0.46	-	-
Chloroethane	<0.092	<0.26	<0.26	<0.26	<0.26	<0.26	330000	1200000
Chloroform	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	1.3	12
Chloromethane	<0.14	<0.41	<0.41	<0.41	<0.41	<0.41	-	-
Cyclohexane	<0.12	<0.34	<0.34	<0.34	<0.34	<0.34	-	-
Dibromochloromethane	<0.30	<0.85	<0.85	<0.85	<0.85	<0.85	-	-
Dibromoethane, (1,2)	<0.27	<0.77	<0.77	<0.77	<0.77	<0.77	-	-
Dichlorobenzene (ortho)	<0.21	<0.60	<0.60	<0.60	<0.60	<0.60	-	-
Dichlorobenzene (meta)	<0.21	<0.60	<0.60	<0.60	<0.60	<0.60	-	-
Dichlorobenzene (para)	<0.21	<0.60	<0.60	<0.60	<0.60	<0.60	-	-
Dichlorodifluoromethane (Freon 12)	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	-	-
Dichloroethane (1,1)	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	21	170
Dichloroethane (1,2)	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	-	-
Dichloroethylene, 1,1-	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	6700	23000
Dichloroethylene, 1,2-cis-	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	-	-
Dichloroethene (trans-1,2)	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	-	-
Dichloropropane (1,2)	<0.16	<0.46	<0.46	<0.46	<0.46	<0.46	-	-
Dichloropropene (cis-1,3)	<0.16	<0.45	<0.45	<0.45	<0.45	<0.45	-	-
trans-1,3-Dichloropropene	<0.16	<0.45	<0.45	<0.45	<0.45	<0.45	-	-
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	<0.24	<0.70	<0.70	<0.70	<0.70	<0.70	-	-
Dioxane (1,4)	<1.3	<3.6	<3.6	<3.6	<3.6	<3.6	-	-
Ethanol	**4.5**	<7.5	<7.5	<7.5	**250**	**17**	-	-
Ethyl Acetate	<1.3	<3.6	<3.6	<3.6	<3.6	<3.6	-	-
Ethylbenzene	<0.15	<0.43	<0.43	<0.43	**0.47**	<0.43	13	110
4-Ethyltoluene	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	-	-
Heptane	<0.14	<0.41	<0.41	<0.41	<0.41	<0.41	-	-
Hexachlorobutadiene	<0.37	<1.1	<1.1	<1.1	<1.1	<1.1	-	-
Hexane	<4.9	<14	<14	<14	<14	<14	-	-
2-Hexanone (MBK)	<0.29	<0.82	<0.82	<0.82	<0.82	<0.82	-	-
Isopropanol	<3.4	<9.8	<9.8	<9.8	**21**	<9.8	-	-
Methyl tert-butyl ether (MTBE)	<0.13	<0.36	<0.36	<0.36	<0.36	<0.36	-	-
Methylene Chloride	**1.8**	<3.5	<3.5	**6.0**	<3.5	<3.5	2000	27000
4-Methyl-2-pentanone (MIBK)	<0.14	<0.41	<0.41	<0.41	<0.41	<0.41	-	-
Naphthalene	<0.18	<0.52	<0.52	<0.52	<0.52	<0.52	1	8
Propene	<2.4	<6.9	<6.9	<6.9	<6.9	<6.9	-	-
Styrene	<0.15	<0.43	<0.43	<0.43	<0.43	<0.43	-	-
1,1,2,2-Tetrachloroethane	<0.24	<0.69	<0.69	<0.69	<0.69	<0.69	-	-
Tetrachloroethylene	<0.24	**8.9**	**0.85**	<0.68	<0.68	<0.68	21	170
Tetrahydrofuran	<1.0	<2.9	**3.1**	<2.9	<2.9	<2.9	-	-
Toluene	**0.46**	<0.38	<0.38	<0.38	**1.3**	**0.38**	-	-
Trichlorobenzene (1,2,4)	<0.26	<0.74	<0.74	<0.74	<0.74	<0.74	-	-
Trichloroethane (1,1,1)	<0.19	<0.55	<0.55	<0.55	<0.55	<0.55	-	-
Trichloroethane (1,1,2)	<0.19	<0.55	<0.55	<0.55	<0.55	<0.55	-	-
Trichloroethylene	<0.19	<0.54	<0.54	<0.54	<0.54	<0.54	6.7	23
Trichlorofluoromethane (Freon 11)	**1.2**	**7.4**	<2.2	<2.2	<2.2	<2.2	-	-
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.1	<3.1	<3.1	<3.1	<3.1	<3.1	-	-
Trimethylbenzene (1,2,4)	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	2000*	7000*
Trimethylbenzene (1,3,5)	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	2000*	7000*
Vinyl Acetate	<2.5	<7.0	<7.0	<7.0	<7.0	<7.0	-	-
Vinyl Chloride	<0.089	<0.26	<0.26	<0.26	<0.26	<0.26	3.7	62
m&p-Xylene	<0.30	<0.87	<0.87	<0.87	**1.9**	<0.87	-	-
o-Xylene	<0.15	<0.43	**0.48**	<0.43	**1.0**	<0.43	-	-

NOTES:
1. Vermont Sub-Slab Soil Vapor Intrusion Standards from July 2019 DEC I-Rule
2. < in result column indicates analyte is not detected above the lab reporting limit shown.
3. "-" Indicates no regulatory limits.
4. "*" Standard is sum of all trimethylbenzene isomers
5. Values in bold indicate compound detected above laboratory detection limit
6. Reported results or reporting limits equal to or in excess of residential thresholds are shaded.

Brownfields Contaminated Soil Delineation Investigation
Pigeon Property
1705 Route 128
Westford, Vermont

DEC SMS#2019-4863, EPA RFA 19093

September 29, 2021

Prepared for:

Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, Vermont 05404

LE·Environmental

21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001
www.leenv.net

LEE #19-138

Contents

1.0 EXECUTIVE SUMMARY 3
2.0 SITE INFORMATION 4
3.0 CURRENT USE OF THE SITE 4
4.0 CURRENT ADJOINING PROPERTY USES 5
5.0 SITE DESCRIPTION 5
6.0 LATITUDE/LONGITUDE 5
7.0 PROPERTY HISTORY 5
8.0 SITE CONTAMINANT BACKGROUND 8
9.0 UPDATED CONCEPTUAL SITE MODEL 9
A. Updated Site Conceptual Model 9
B. Potential Contamination Sources 11
C. Potential Receptors 11
D. Utility Corridors 11
E. Water Bodies and Wetlands 11
F. Water Supplies 12
G. Site Users 12
10.0 WORK PLAN DEVIATIONS 12
11.0 SAMPLE COLLECTION DOCUMENTATION 12
12.0 CONTAMINATED MEDIA CHARACTERIZATION 13
13.0 SITE-SPECIFIC RISK ASSESSMENT 14
14.0 MAPS 14
15.0 DISCUSSION 14
16.0 DATA PRESENTATION 15
17.0 QA/QC SAMPLE RESULTS 15
18.0 INVESTIGATION DERIVED WASTE 15
19.0 CONCLUSIONS AND RECOMMENDATIONS 15
20.0 SIGNATURE AND CERTIFICATION 16
21.0 MAPS AND APPENDICES 17

1.0 EXECUTIVE SUMMARY

LE Environmental LLC (LEE) conducted a Brownfields Contaminated Soil Delineation Investigation at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The Contaminated Soil Delineation Investigation was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated July 7, 2021, approved August 23, 2021, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). This assessment was conducted for the Chittenden County Regional Planning Commission (CCRPC). Funding for this investigation was supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A00483. The Site owner is the Pigeon Family Living Trust.

The Site includes a vacant residence and a former bus repair garage and gasoline filling station on approximately 3.3 acres of land. The buildings are currently unoccupied and are used for storage. The Site was developed prior to 1858, and historic Site use has included residential, a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property, and a tannery was noted on the adjoining property to the west in 1869.

Previous environmental investigations conducted at the Site have revealed the presence of Polycyclic Aromatic Hydrocarbons (PAHs) in soils on the Site, as well as Volatile Organic Compounds (VOCs) in the groundwater. The objective of this investigation was to delineate soils impacted with PAHs on the Site.

Thirteen soil borings were advanced at the Site, and 15 soil samples and a duplicate were collected and analyzed for the presence of PAHs via EPA Method 8270d. Soil borings were advanced to a depth of 1.5' bg to collect shallow soil samples at SB-111 through SB-121. Soil borings SB-122 and SB-123 were advanced to a depth of 6' below grade (bg) to collect deeper soil samples. Soil samples were all screened for VOCs using a calibrated PID. No VOCs above background were reported in the soil samples.

PAH toxicity equivalency quotient (TEQ) concentrations in excess of the DEC's Statewide Urban Background concentration were identified in four of the fifteen soil samples obtained during this investigation (SB-117, SB-118, SB-119, and SB-120). The northwestern, western, southern, and eastern extent of PAH-impacted shallow soils have been defined during this investigation and previous investigations. PAH contaminated soils appear to extend down the ravine some distance north beyond the soil samples collected during this investigation.

Deeper soil samples were also analyzed for PAHs at two locations during this investigation, and at two other locations during previous investigations. The vertical extent of PAH contamination appears to generally be limited to the upper soil horizons (0-18" bg). However, PAH TEQ in excess of the DEC's Statewide Urban Background concentration was observed in the 2-4' bg sample obtained at SB-122.

The PAH contamination present on the Site is likely attributed to the historic storage of buses, auto parts, and other machinery in the area north and northeast of the garage. Disturbed soils and fill were noted in the soil samples obtained in the heavily vegetated/ravine area (northeast of the garage), and these fill soils may also be a source of PAHs.

LEE recommends an evaluation of corrective action alternatives (ECAA) and a corrective action plan (CAP) be prepared once a redevelopment plan is solidified per the requirements of Subchapter 6 of the DEC's I-Rule. Additional soil delineation may be warranted prior to or during the completion of the ECAA and CAP.

2.0 SITE INFORMATION

LE Environmental LLC (LEE) conducted a Brownfields Contaminated Soil Delineation Investigation at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The Contaminated Soil Delineation Investigation was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated July 7, 2021, approved August 23, 2021, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). This assessment was conducted for the Chittenden County Regional Planning Commission (CCRPC). Funding for this investigation was supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A00483. The Site owner is the Pigeon Family Living Trust.

Site Information Table	
Site Owner Name:	Pigeon Family Living Trust – George Pigeon
Site Owner Address:	1705 Route 128, Westford, VT 05494
Site Owner E-mail:	gepigeon@msn.com
Site Owner Phone:	(802) 355-6628

3.0 CURRENT USE OF THE SITE

The Site includes a vacant residence and a former bus garage on approximately 3.3 acres of land. The buildings are currently unoccupied and are used for storage.

Soil PAH Delineation
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 1 of 4

LE Environmental

Sample Identification	SB-111	SB-112	SB-113	SB-114	SB-115	SB-116	SB-117	SB-118	SB-119	SB-120	SB-121	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5				
PID Reading (ppm)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.1	0.3	0.1				
Sample Date	9/10/21	9/10/21	9/10/21	9/10/21	9/10/21	9/10/21	9/10/21	9/10/21	9/10/21	9/10/21	9/10/21				
PAH EPA Method 8270D (mg/kg)															
Naphthalene	ND<0.009	ND<0.008	ND<0.008	ND<0.007	ND<0.008	ND<0.008	**0.032**	**0.041**	**0.035**	**0.26**	ND<0.008	-	-	2.7	16
2-Methylnaphthalene	ND<0.009	ND<0.008	ND<0.008	ND<0.007	ND<0.008	ND<0.008	**0.014**	**0.022**	**0.016**	**0.32**	ND<0.008	240	3,000	-	-
1-Methylnaphthalene	ND<0.009	ND<0.008	ND<0.008	ND<0.007	ND<0.008	ND<0.008	**0.015**	**0.022**	**0.016**	**0.53**	ND<0.008	18	73	-	-
Acenaphthylene	ND<0.009	ND<0.008	**0.011**	ND<0.007	ND<0.008	**0.051**	**0.45**	**0.28**	**0.55**	**2.9**	**0.025**	-	-	-	-
Acenaphthene	ND<0.009	ND<0.008	ND<0.008	ND<0.007	ND<0.008	ND<0.008	**0.028**	**0.019**	**0.037**	**0.65**	ND<0.008	3,600	45,000	-	-
Fluorene	ND<0.009	ND<0.008	ND<0.008	ND<0.007	ND<0.008	**0.0089**	**0.12**	**0.077**	**0.15**	**2.9**	ND<0.008	-	-	2,301	26,371
Phenanthrene	ND<0.009	**0.024**	**0.018**	ND<0.007	**0.011**	**0.080**	**1.4**	**0.66**	**2.3**	**19**	**0.011**	-	-	-	-
Anthracene	ND<0.009	ND<0.008	ND<0.008	ND<0.007	ND<0.008	**0.026**	**0.39**	**0.22**	**0.44**	**4.1**	ND<0.008	18,000	230,000	-	-
Fluoranthene	ND<0.009	**0.045**	**0.084**	**0.011**	**0.018**	**0.33**	**4.4**	**1.9**	**4.5**	**34**	**0.029**	-	-	2,301	26,371
Pyrene	ND<0.009	**0.039**	**0.081**	**0.012**	**0.015**	**0.31**	**4.0**	**1.6**	**3.5**	**29**	**0.024**	1,800	23,000	-	-
Benzo(a)anthracene	ND<0.009	**0.023**	**0.050**	**0.0083**	**0.0091**	**0.17**	**2.2**	**0.93**	**2.0**	**12**	**0.015**	1.1	21	-	-
Chrysene	ND<0.009	**0.023**	**0.051**	ND<0.007	**0.0082**	**0.18**	**2.2**	**0.97**	**2.2**	**11**	**0.012**	110	2,100	-	-
Benzo(b)fluoranthene	ND<0.009	**0.038**	**0.084**	**0.010**	**0.012**	**0.28**	**2.9**	**1.4**	**2.8**	**14**	**0.024**	1.1	21	-	-
Benzo(k)fluoranthene	ND<0.009	**0.012**	**0.027**	ND<0.007	ND<0.008	**0.090**	**0.94**	**0.49**	**1.0**	**4.5**	ND<0.008	11	210	-	-
Benzo(a)pyrene	ND<0.009	**0.029**	**0.066**	**0.0073**	**0.0091**	**0.22**	**2.5**	**1.1**	**2.1**	**12**	**0.018**	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	ND<0.009	**0.027**	**0.052**	**0.0072**	**0.0084**	**0.19**	**2.0**	**0.65**	**0.82**	**8.7**	**0.011**	1.1	21	-	-
Dibenz(a,h)anthracene	ND<0.009	ND<0.008	**0.011**	ND<0.007	ND<0.008	**0.039**	**0.44**	**0.13**	**0.21**	**1.6**	ND<0.008	0.11	2.1	-	-
Benzo(g,h,i)perylene	ND<0.009	**0.028**	**0.052**	ND<0.007	**0.0088**	**0.19**	**1.7**	**0.53**	**0.64**	**8.9**	**0.0093**	-	-	-	-
Total Reported PAHs	ND	**0.29**	**0.59**	**0.056**	**0.10**	**2.2**	**25.7**	**11.0**	**23.3**	**166**	**0.18**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**0.01**	**0.04**	**0.10**	**0.01**	**0.02**	**0.32**	**3.7**	**1.5**	**2.9**	**17**	**0.03**	-	-		0.58 (urban bkgd)

Sample Identification	SB-122S	SB-122D	SB-123S	SB-123D	Dup SB-114	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	2-4	4-6	2-4	4-6	0-1.5				
PID Reading (ppm)	0.4	0.2	0.1	0.1	0.0				
Sample Date	9/10/21	9/10/21	9/10/21	9/10/21	9/10/21				
PAH EPA Method 8270D (mg/kg)									
Naphthalene	**0.058**	**0.016**	ND<0.009	ND<0.008	ND<0.007	-	-	2.7	16
2-Methylnaphthalene	**0.051**	ND<0.008	ND<0.009	ND<0.008	ND<0.007	240	3,000	-	-
1-Methylnaphthalene	**0.065**	ND<0.008	ND<0.009	ND<0.008	ND<0.007	18	73	-	-
Acenaphthylene	**0.33**	**0.022**	**0.037**	**0.0096**	ND<0.007	-	-	-	-
Acenaphthene	**0.062**	ND<0.008	ND<0.009	ND<0.008	ND<0.007	3,600	45,000	-	-
Fluorene	**0.27**	ND<0.008	ND<0.009	ND<0.008	ND<0.007	-	-	2,301	26,371
Phenanthrene	**2.1**	**0.032**	**0.043**	ND<0.008	**0.036**	-	-	-	-
Anthracene	**0.45**	ND<0.008	**0.020**	ND<0.008	ND<0.007	18,000	230,000	-	-
Fluoranthene	**3.6**	**0.056**	**0.18**	**0.017**	**0.025**	-	-	2,301	26,371
Pyrene	**2.7**	**0.042**	**0.14**	**0.016**	**0.023**	1,800	23,000	-	-
Benzo(a)anthracene	**1.4**	**0.024**	**0.091**	**0.011**	**0.011**	1.1	21	-	-
Chrysene	**1.4**	**0.038**	**0.096**	**0.011**	0.011	110	2,100	-	-
Benzo(b)fluoranthene	**2.1**	**0.059**	**0.16**	**0.020**	**0.016**	1.1	21	-	-
Benzo(k)fluoranthene	**0.71**	**0.020**	**0.056**	ND<0.008	ND<0.007	11	210	-	-
Benzo(a)pyrene	**1.6**	**0.027**	**0.12**	**0.013**	**0.011**	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	**0.72**	**0.022**	**0.060**	**0.0090**	ND<0.007	1.1	21	-	-
Dibenz(a,h)anthracene	**0.15**	ND<0.008	**0.013**	ND<0.008	ND<0.007	0.11	2.1	-	-
Benzo(g,h,i)perylene	**0.56**	**0.019**	**0.048**	ND<0.008	ND<0.007	-	-	-	-
Total Reported PAHs	**18.3**	**0.38**	**1.06**	**0.11**	**0.133**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**2.2**	**0.04**	**0.16**	**0.02**	**0.02**	-	-		0.58 (urban bkgd)

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) fromMay 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)

Toxic Equivalency Calculations
Pigeon Property

LEE
LE Environmental

SB-111

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.009	0.1	0.00045
Chrysene	ND<0.009	0.001	0.0000045
Benzo(b)fluoranthene	ND<0.009	0.1	0.00045
Benzo(k)fluoranthene	ND<0.009	0.01	0.000045
Benzo(a)pyrene	ND<0.009	1	0.0045
Indeno(1,2,3-cd)pyrene	ND<0.009	0.1	0.00045
Dibenz(a,h)anthracene	ND<0.009	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.01**

SB-112

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.023**	0.1	0.0023
Chrysene	**0.023**	0.001	0.000023
Benzo(b)fluoranthene	**0.038**	0.1	0.0038
Benzo(k)fluoranthene	**0.012**	0.01	0.00012
Benzo(a)pyrene	**0.029**	1	0.029
Indeno(1,2,3-cd)pyrene	**0.027**	0.1	0.0027
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.04**

SB-113

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.05**	0.1	0.005
Chrysene	**0.051**	0.001	0.000051
Benzo(b)fluoranthene	**0.084**	0.1	0.0084
Benzo(k)fluoranthene	**0.027**	0.01	0.00027
Benzo(a)pyrene	**0.066**	1	0.066
Indeno(1,2,3-cd)pyrene	**0.052**	0.1	0.0052
Dibenz(a,h)anthracene	**0.011**	1	0.011
		Total Benzo(a)pyrene Equivalent =	**0.10**

SB-114

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.0083**	0.1	0.00083
Chrysene	ND<0.007	0.001	0.0000035
Benzo(b)fluoranthene	**0.010**	0.1	0.001
Benzo(k)fluoranthene	ND<0.007	0.01	0.000035
Benzo(a)pyrene	**0.0073**	1	0.0073
Indeno(1,2,3-cd)pyrene	**0.0072**	0.1	0.00072
Dibenz(a,h)anthracene	ND<0.007	1	0.0035
		Total Benzo(a)pyrene Equivalent =	**0.01**

SB-115

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.0091**	0.1	0.00091
Chrysene	**0.0082**	0.001	0.0000082
Benzo(b)fluoranthene	**0.012**	0.1	0.0012
Benzo(k)fluoranthene	ND<0.008	0.01	0.00004
Benzo(a)pyrene	**0.0091**	1	0.0091
Indeno(1,2,3-cd)pyrene	**0.0084**	0.1	0.00084
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.02**

SB-116

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.17**	0.1	0.017
Chrysene	**0.18**	0.001	0.00018
Benzo(b)fluoranthene	**0.28**	0.1	0.028
Benzo(k)fluoranthene	**0.090**	0.01	0.0009
Benzo(a)pyrene	**0.22**	1	0.22
Indeno(1,2,3-cd)pyrene	**0.19**	0.1	0.019
Dibenz(a,h)anthracene	**0.039**	1	0.039
		Total Benzo(a)pyrene Equivalent =	**0.32**

Toxic Equivalency Calculations
Pigeon Property

LE Environmental

SB-117

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**2.2**	0.1	0.22
Chrysene	**2.2**	0.001	0.0022
Benzo(b)fluoranthene	**2.9**	0.1	0.29
Benzo(k)fluoranthene	**0.94**	0.01	0.0094
Benzo(a)pyrene	**2.5**	1	2.5
Indeno(1,2,3-cd)pyrene	**2.0**	0.1	0.2
Dibenz(a,h)anthracene	**0.44**	1	0.44
		Total Benzo(a)pyrene Equivalent =	**3.7**

SB-118

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.93**	0.1	0.093
Chrysene	**0.97**	0.001	0.00097
Benzo(b)fluoranthene	**1.4**	0.1	0.14
Benzo(k)fluoranthene	**0.49**	0.01	0.0049
Benzo(a)pyrene	**1.1**	1	1.1
Indeno(1,2,3-cd)pyrene	**0.65**	0.1	0.065
Dibenz(a,h)anthracene	**0.13**	1	0.13
		Total Benzo(a)pyrene Equivalent =	**1.5**

SB-119

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**2.0**	0.1	0.2
Chrysene	**2.2**	0.001	0.0022
Benzo(b)fluoranthene	**2.8**	0.1	0.28
Benzo(k)fluoranthene	**1.0**	0.01	0.01
Benzo(a)pyrene	**2.1**	1	2.1
Indeno(1,2,3-cd)pyrene	**0.82**	0.1	0.082
Dibenz(a,h)anthracene	**0.21**	1	0.21
		Total Benzo(a)pyrene Equivalent =	**2.9**

SB-120

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**12**	0.1	1.2
Chrysene	**11**	0.001	0.011
Benzo(b)fluoranthene	**14**	0.1	1.4
Benzo(k)fluoranthene	**4.5**	0.01	0.045
Benzo(a)pyrene	**12**	1	12
Indeno(1,2,3-cd)pyrene	**8.7**	0.1	0.87
Dibenz(a,h)anthracene	**1.6**	1	1.6
		Total Benzo(a)pyrene Equivalent =	**17**

SB-121

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.015**	0.1	0.0015
Chrysene	**0.012**	0.001	0.000012
Benzo(b)fluoranthene	**0.024**	0.1	0.0024
Benzo(k)fluoranthene	ND<0.008	0.01	0.00004
Benzo(a)pyrene	**0.018**	1	0.018
Indeno(1,2,3-cd)pyrene	**0.011**	0.1	0.0011
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.03**

SB-122S

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**1.4**	0.1	0.14
Chrysene	**1.4**	0.001	0.0014
Benzo(b)fluoranthene	**2.1**	0.1	0.21
Benzo(k)fluoranthene	**0.71**	0.01	0.0071
Benzo(a)pyrene	**1.6**	1	1.6
Indeno(1,2,3-cd)pyrene	**0.72**	0.1	0.072
Dibenz(a,h)anthracene	**0.15**	1	0.15
		Total Benzo(a)pyrene Equivalent =	**2.2**

Toxic Equivalency Calculations
Pigeon Property

LE Environmental

SB-122D

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.024**	0.1	0.0024
Chrysene	**0.038**	0.001	0.000038
Benzo(b)fluoranthene	**0.059**	0.1	0.0059
Benzo(k)fluoranthene	**0.020**	0.01	0.0002
Benzo(a)pyrene	**0.027**	1	0.027
Indeno(1,2,3-cd)pyrene	**0.022**	0.1	0.0022
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.04**

SB-123S

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.091**	0.1	0.0091
Chrysene	**0.096**	0.001	0.000096
Benzo(b)fluoranthene	**0.16**	0.1	0.016
Benzo(k)fluoranthene	**0.056**	0.01	0.00056
Benzo(a)pyrene	**0.12**	1	0.12
Indeno(1,2,3-cd)pyrene	**0.060**	0.1	0.006
Dibenz(a,h)anthracene	**0.013**	1	0.013
		Total Benzo(a)pyrene Equivalent =	**0.16**

SB-123D

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.011**	0.1	0.0011
Chrysene	**0.011**	0.001	0.000011
Benzo(b)fluoranthene	**0.020**	0.1	0.002
Benzo(k)fluoranthene	ND<0.008	0.01	0.00004
Benzo(a)pyrene	**0.013**	1	0.013
Indeno(1,2,3-cd)pyrene	**0.0090**	0.1	0.0009
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.02**

Duplicate SB-114

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.011**	0.1	0.0011
Chrysene	0.011	0.001	0.000011
Benzo(b)fluoranthene	**0.016**	0.1	0.0016
Benzo(k)fluoranthene	ND<0.007	0.01	0.000035
Benzo(a)pyrene	**0.011**	1	0.011
Indeno(1,2,3-cd)pyrene	ND<0.007	0.1	0.00035
Dibenz(a,h)anthracene	ND<0.007	1	0.0035
		Total Benzo(a)pyrene Equivalent =	**0.02**

Brownfields Contaminated Soil Delineation Investigation
Pigeon Property
1705 Route 128
Westford, Vermont

DEC SMS#2019-4863, EPA RFA 19093

June 24, 2022

Prepared for:
Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, Vermont 05404

LE·Environmental
21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001
www.leenv.net

LEE #19-138

This Brownfields Contaminated Soil Delineation Investigation Report for Chittenden County Regional Planning Commission is made possible in part by a grant from the State of Vermont through the Agency of Commerce and Community Development, Department of Economic Development

Contents

1.0 EXECUTIVE SUMMARY 3
2.0 SITE INFORMATION 4
3.0 CURRENT USE OF THE SITE 4
4.0 CURRENT ADJOINING PROPERTY USES 4
5.0 SITE DESCRIPTION 5
6.0 LATITUDE/LONGITUDE 5
7.0 PROPERTY HISTORY 5
8.0 SITE CONTAMINANT BACKGROUND 5
9.0 UPDATED CONCEPTUAL SITE MODEL 9
A. Updated Site Conceptual Model 9
B. Potential Contamination Sources 11
C. Potential Receptors 12
D. Utility Corridors 12
E. Water Bodies and Wetlands 12
F. Water Supplies 12
G. Site Users 13
10.0 WORK PLAN DEVIATIONS 13
11.0 SAMPLE COLLECTION DOCUMENTATION 13
12.0 CONTAMINATED MEDIA CHARACTERIZATION 13
13.0 SITE-SPECIFIC RISK ASSESSMENT 14
14.0 MAPS 14
15.0 DISCUSSION 14
16.0 DATA PRESENTATION 15
17.0 QA/QC SAMPLE RESULTS 15
18.0 INVESTIGATION DERIVED WASTE 15
19.0 CONCLUSIONS AND RECOMMENDATIONS 15
20.0 SIGNATURE AND CERTIFICATION 16
21.0 MAPS AND APPENDICES 17

1.0 EXECUTIVE SUMMARY

LE Environmental LLC (LEE) conducted a Brownfields Contaminated Soil Delineation Investigation at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The Contaminated Soil Delineation Investigation was completed by LEE for the Chittenden County Regional Planning Commission (CCRPC) of Winooski, Vermont and was made possible in part by a grant from the State of Vermont through the Agency of Commerce and Community Development, Department of Economic Development. The work was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated May 16, 2022, approved May 25, 2022, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). Funding for this investigation was also supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. The Site owner is the Pigeon Family Living Trust.

The Site includes a vacant residence and a former bus repair garage and gasoline filling station on approximately 3.3 acres of land. The buildings are currently unoccupied and are used for storage. The Site was developed prior to 1858, and historic Site use has included residential, a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property, and a tannery was noted on the adjoining property to the west in 1869.

Previous environmental investigations conducted at the Site have revealed the presence of Polycyclic Aromatic Hydrocarbons (PAHs) in soils on the Site, as well as Volatile Organic Compounds (VOCs) in the groundwater. The objective of this investigation was to delineate shallow soils impacted with PAHs on the Site.

Twelve soil borings were advanced at the Site, and 12 shallow soil samples and a duplicate were collected and analyzed for the presence of PAHs via EPA Method 8270d. Soil borings were advanced to a depth of 1.5’ below grade (bg) to collect shallow soil samples at each soil boring. Soil samples were screened for VOCs using a calibrated PID. No VOCs above background were reported in the soil samples.

This investigation completed the objective of defining PAH contamination in shallow soil on the Site. Concentrations of PAHs were reported in all of the soil samples and PAH concentrations were converted to PAH toxicity equivalency quotient (TEQ) relative to benzo[a]pyrene. PAH TEQ concentrations were all below the DEC’s Statewide Urban Background concentration. Concentrations generally decreased northward.

The PAH contamination present on the Site is likely attributed to the historic storage of buses, auto parts, and other machinery in the area north and northeast of the garage as well as fill soils along the ravine.

LEE recommends an evaluation of corrective action alternatives (ECAA) and a corrective action plan (CAP) be prepared once a redevelopment plan is solidified per the requirements of Subchapter 6 of the DEC's I-Rule.

2.0 SITE INFORMATION

LE Environmental LLC (LEE) conducted a Brownfields Contaminated Soil Delineation Investigation at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The Contaminated Soil Delineation Investigation was completed by LEE for the Chittenden County Regional Planning Commission (CCRPC) of Winooski, Vermont and was made possible in part by a grant from the State of Vermont through the Agency of Commerce and Community Development, Department of Economic Development. The work was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated May 16, 2022, approved May 25, 2022, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). Funding for this investigation was also supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. The Site owner is the Pigeon Family Living Trust.

Site Information Table	
Site Owner Name:	Pigeon Family Living Trust – George Pigeon
Site Owner Address:	1705 Route 128, Westford, VT 05494
Site Owner E-mail:	gepigeon@msn.com
Site Owner Phone:	(802) 355-6628

3.0 CURRENT USE OF THE SITE

The Site includes a vacant residence and a former bus garage on approximately 3.3 acres of land. The buildings are currently unoccupied and are used for storage.

4.0 CURRENT ADJOINING PROPERTY USES

Current uses of the adjoining properties are as follows:

- North: Residential
- South: Town Common
- East: Multi-family residential
- West: Municipal Offices

Soil PAH Delineation
Pigeon Property
Westford, Vermont
Soil Data Summary

LEE Environmental

Sample Identification	SB-122	SB-123	SB-124	SB-125	SB-126	SB-127	SB-128	SB-129	SB-130	SB-131	SB-132	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5				
PID Reading (ppm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Sample Date	6/8/22	6/8/22	6/8/22	6/8/22	6/8/22	6/8/22	6/8/22	6/8/22	6/8/22	6/8/22	6/8/22				
PAH EPA Method 8270D (mg/kg)															
Naphthalene	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	ND< 0.008	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	-	-	2.7	16
2-Methylnaphthalene	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	ND< 0.008	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	240	3,000	-	-
1-Methylnaphthalene	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	ND< 0.008	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	18	73	-	-
Acenaphthylene	**0.026**	**0.021**	**0.015**	ND< 0.01	**0.022**	ND< 0.008	ND< 0.009	**0.0099**	ND< 0.008	ND< 0.01	ND< 0.009	-	-	-	-
Acenaphthene	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	ND< 0.008	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	3,600	45,000	-	-
Fluorene	ND< 0.009	ND< 0.009	0.0087	ND< 0.01	ND< 0.009	ND< 0.008	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	-	-	2,301	26,371
Phenanthrene	**0.09**	**0.059**	**0.11**	**0.02**	**0.011**	ND< 0.008	**0.013**	**0.036**	ND< 0.008	ND< 0.01	**0.024**	-	-	-	-
Anthracene	**0.022**	**0.019**	**0.011**	ND< 0.01	ND< 0.009	ND< 0.008	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	18,000	230,000	-	-
Fluoranthene	**0.25**	**0.3**	**0.15**	**0.042**	**0.051**	**0.014**	**0.02**	**0.074**	**0.013**	**0.012**	**0.041**	-	-	2,301	26,371
Pyrene	**0.2**	**0.27**	**0.13**	**0.035**	**0.078**	**0.012**	**0.017**	**0.071**	**0.012**	**0.01**	**0.034**	1,800	23,000	-	-
Benzo(a)anthracene	**0.11**	**0.14**	**0.062**	**0.017**	**0.047**	**0.0087**	**0.0093**	**0.04**	**0.0088**	ND< 0.01	**0.015**	1.1	21	-	-
Chrysene	**0.13**	**0.15**	**0.07**	**0.019**	**0.055**	ND< 0.008	ND< 0.009	**0.045**	ND< 0.008	ND< 0.01	**0.017**	110	2,100	-	-
Benzo(b)fluoranthene	**0.17**	**0.19**	**0.077**	**0.025**	**0.049**	**0.0085**	**0.0092**	**0.064**	**0.0091**	ND< 0.01	**0.021**	1.1	21	-	-
Benzo(k)fluoranthene	**0.07**	**0.072**	**0.027**	**0.011**	**0.019**	ND< 0.008	ND< 0.009	**0.023**	ND< 0.008	ND< 0.01	ND< 0.009	11	210	-	-
Benzo(a)pyrene	**0.14**	**0.16**	**0.067**	**0.021**	**0.055**	ND< 0.008	ND< 0.009	**0.053**	ND< 0.008	ND< 0.01	**0.017**	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	**0.09**	**0.12**	**0.047**	**0.017**	**0.026**	ND< 0.008	ND< 0.009	**0.037**	ND< 0.008	ND< 0.01	**0.012**	1.1	21	-	-
Dibenz(a,h)anthracene	**0.015**	**0.022**	**0.0095**	ND< 0.01	ND< 0.009	ND< 0.008	ND< 0.009	ND< 0.009	ND< 0.008	ND< 0.01	ND< 0.009	0.11	2.1	-	-
Benzo(g,h,i)perylene	**0.083**	**0.12**	**0.044**	**0.016**	**0.025**	ND< 0.008	ND< 0.009	**0.033**	ND< 0.008	ND< 0.01	**0.01**	-	-	-	-
Total Reported PAHs	**1.4**	**1.6**	**0.83**	**0.22**	**0.438**	**0.043**	**0.01**	**0.49**	**0.043**	**0.02**	**0.19**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**0.19**	**0.23**	**0.10**	**0.03**	**0.07**	**0.01**	**0.01**	**0.07**	**0.01**	**0.01**	**0.03**	-	-		0.58 (urban bkgd)

Sample Identification	SB-133	Dup SB-124	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	0-1.5	0-1.5				
PID Reading (ppm)	0.0	0.0				
Sample Date	6/8/22	6/8/22				
PAH EPA Method 8270D (mg/kg)						
Naphthalene	ND< 0.009	ND< 0.008	-	-	2.7	16
2-Methylnaphthalene	ND< 0.009	ND< 0.008	240	3,000	-	-
1-Methylnaphthalene	ND< 0.009	ND< 0.008	18	73	-	-
Acenaphthylene	ND< 0.009	ND< 0.008	-	-	-	-
Acenaphthene	ND< 0.009	ND< 0.008	3,600	45,000	-	-
Fluorene	ND< 0.009	ND< 0.008	-	-	2,301	26,371
Phenanthrene	ND< 0.009	ND< 0.008	-	-	-	-
Anthracene	ND< 0.009	ND< 0.008	18,000	230,000	-	-
Fluoranthene	**0.012**	**0.015**	-	-	2,301	26,371
Pyrene	**0.011**	**0.016**	1,800	23,000	-	-
Benzo(a)anthracene	ND< 0.009	**0.0098**	1.1	21	-	-
Chrysene	ND< 0.009	**0.0098**	110	2,100	-	-
Benzo(b)fluoranthene	ND< 0.009	**0.012**	1.1	21	-	-
Benzo(k)fluoranthene	ND< 0.009	ND< 0.008	11	210	-	-
Benzo(a)pyrene	ND< 0.009	**0.0097**	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	ND< 0.009	ND< 0.008	1.1	21	-	-
Dibenz(a,h)anthracene	ND< 0.009	ND< 0.008	0.11	2.1	-	-
Benzo(g,h,i)perylene	ND< 0.009	ND< 0.008	-	-	-	-
Total Reported PAHs	**0.023**	**0.072**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**0.01**	**0.02**	-	-		0.58 (urban bkgd)

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from May 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)

Toxic Equivalency Calculations
Pigeon Property

LEE Environmental

SB-122

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.11	0.1	0.011
Chrysene	0.13	0.001	0.00013
Benzo(b)fluoranthene	0.17	0.1	0.017
Benzo(k)fluoranthene	0.070	0.01	0.0007
Benzo(a)pyrene	0.14	1	0.14
Indeno(1,2,3-cd)pyrene	0.090	0.1	0.009
Dibenz(a,h)anthracene	0.015	1	0.015
		Total Benzo(a)pyrene Equivalent =	**0.19**

SB-123

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.14	0.1	0.014
Chrysene	0.15	0.001	0.00015
Benzo(b)fluoranthene	0.19	0.1	0.019
Benzo(k)fluoranthene	0.072	0.01	0.00072
Benzo(a)pyrene	0.16	1	0.16
Indeno(1,2,3-cd)pyrene	0.12	0.1	0.012
Dibenz(a,h)anthracene	0.022	1	0.022
		Total Benzo(a)pyrene Equivalent =	**0.23**

SB-124

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.062	0.1	0.0062
Chrysene	0.070	0.001	0.00007
Benzo(b)fluoranthene	0.077	0.1	0.0077
Benzo(k)fluoranthene	0.027	0.01	0.00027
Benzo(a)pyrene	0.067	1	0.067
Indeno(1,2,3-cd)pyrene	0.047	0.1	0.0047
Dibenz(a,h)anthracene	0.0095	1	0.0095
		Total Benzo(a)pyrene Equivalent =	**0.10**

SB-125

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.017	0.1	0.0017
Chrysene	0.019	0.001	0.000019
Benzo(b)fluoranthene	0.025	0.1	0.0025
Benzo(k)fluoranthene	0.011	0.01	0.00011
Benzo(a)pyrene	0.021	1	0.021
Indeno(1,2,3-cd)pyrene	0.017	0.1	0.0017
Dibenz(a,h)anthracene	0.005	1	0.005
		Total Benzo(a)pyrene Equivalent =	**0.03**

SB-126

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.047	0.1	0.0047
Chrysene	0.055	0.001	0.000055
Benzo(b)fluoranthene	0.049	0.1	0.0049
Benzo(k)fluoranthene	0.019	0.01	0.00019
Benzo(a)pyrene	0.055	1	0.055
Indeno(1,2,3-cd)pyrene	0.026	0.1	0.0026
Dibenz(a,h)anthracene	0.0045	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.07**

SB-127

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.0087	0.1	0.00087
Chrysene	0.004	0.001	0.000004
Benzo(b)fluoranthene	0.0085	0.1	0.00085
Benzo(k)fluoranthene	0.004	0.01	0.00004
Benzo(a)pyrene	0.004	1	0.004
Indeno(1,2,3-cd)pyrene	0.004	0.1	0.0004
Dibenz(a,h)anthracene	0.004	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.01**

Toxic Equivalency Calculations
Pigeon Property

LE Environmental

SB-128

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.0093	0.1	0.00093
Chrysene	0.0045	0.001	0.0000045
Benzo(b)fluoranthene	0.0092	0.1	0.00092
Benzo(k)fluoranthene	0.0045	0.01	0.000045
Benzo(a)pyrene	0.0045	1	0.0045
Indeno(1,2,3-cd)pyrene	0.0045	0.1	0.00045
Dibenz(a,h)anthracene	0.0045	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.01**

SB-129

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.040	0.1	0.004
Chrysene	0.045	0.001	0.000045
Benzo(b)fluoranthene	0.064	0.1	0.0064
Benzo(k)fluoranthene	0.023	0.01	0.00023
Benzo(a)pyrene	0.053	1	0.053
Indeno(1,2,3-cd)pyrene	0.037	0.1	0.0037
Dibenz(a,h)anthracene	0.0045	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.07**

SB-130

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.0088	0.1	0.00088
Chrysene	0.004	0.001	0.000004
Benzo(b)fluoranthene	0.0091	0.1	0.00091
Benzo(k)fluoranthene	0.004	0.01	0.00004
Benzo(a)pyrene	0.004	1	0.004
Indeno(1,2,3-cd)pyrene	0.004	0.1	0.0004
Dibenz(a,h)anthracene	0.004	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.01**

SB-131

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.005	0.1	0.0005
Chrysene	0.005	0.001	0.000005
Benzo(b)fluoranthene	0.005	0.1	0.0005
Benzo(k)fluoranthene	0.005	0.01	0.00005
Benzo(a)pyrene	0.005	1	0.005
Indeno(1,2,3-cd)pyrene	0.005	0.1	0.0005
Dibenz(a,h)anthracene	0.005	1	0.005
		Total Benzo(a)pyrene Equivalent =	**0.01**

SB-132

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.015	0.1	0.0015
Chrysene	0.017	0.001	0.000017
Benzo(b)fluoranthene	0.021	0.1	0.0021
Benzo(k)fluoranthene	0.0045	0.01	0.000045
Benzo(a)pyrene	0.017	1	0.017
Indeno(1,2,3-cd)pyrene	0.012	0.1	0.0012
Dibenz(a,h)anthracene	0.0045	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.03**

SB-133

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.0045	0.1	0.00045
Chrysene	0.0045	0.001	0.0000045
Benzo(b)fluoranthene	0.0045	0.1	0.00045
Benzo(k)fluoranthene	0.0045	0.01	0.000045
Benzo(a)pyrene	0.0045	1	0.0045
Indeno(1,2,3-cd)pyrene	0.0045	0.1	0.00045
Dibenz(a,h)anthracene	0.0045	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.01**

Duplicate SB-124

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.0098	0.1	0.00098
Chrysene	0.0098	0.001	0.0000098
Benzo(b)fluoranthene	0.012	0.1	0.0012
Benzo(k)fluoranthene	0.004	0.01	0.00004
Benzo(a)pyrene	0.0097	1	0.0097
Indeno(1,2,3-cd)pyrene	0.004	0.1	0.0004
Dibenz(a,h)anthracene	0.004	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.02**

Corrective Action Construction Completion Report

Pigeon Property
1705 Route 128
Westford, Vermont

DEC SMS#2019-4863

November 29, 2022

Prepared for:

Co-Operative Insurance Companies
292 Colonial Drive
Middlebury, VT 05753

and

Vermont Department of Environmental Conservation
Waste Management and Prevention Division
One National Life Drive, Davis 1
Montpelier, VT 05620-3704

LE·Environmental
21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001

LEE Project # 19-138

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 1 of 4

Sample Identification Sample Depth (ft. bg) PID Reading (ppm) Sample Date	UST-2 6 1,634 10/17/22	Dup UST-2 6 1,634 10/17/22	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
VOCs, EPA Method 8260C (mg/kg)						
Dichlorodifluoromethane	ND<8	ND<5	87	370	-	-
Chloromethane	ND<8	ND<5	110	460	-	-
Vinyl Chloride	ND<2	ND<1	-	-	0.10	0.59
Bromomethane	ND<8	ND<5	6.8	30	-	-
Chloroethane (ethyl chloride)	ND<8	ND<5	14,000	57,000	-	-
Trichlorofluoromethane	ND<8	ND<5	23,000	350,000	-	-
Diethyl Ether	ND<4	ND<3	-	-	-	-
Acetone	ND<200	ND<100	-	-	40,609	100,028
1 ,1-Dichloroethene	ND<4	ND<3	230	1,000	-	-
Methylene chloride	ND<8	ND<5	57	1,000	-	-
Carbon disulfide	ND<8	ND<5	-	-	608	662
MTBE	ND<8	ND<5	-	-	649	4,464
trans-1,2-Dichloroethene	ND<4	ND<3	-	-	1,402	18,137
1,1-Dichloroethane	ND<4	ND<3	-	-	2.1	13
2,2-Dichloropropane	ND<4	ND<3	-	-	-	-
cis-1,2-Dichloroethene	ND<4	ND<3	-	-	140	1,814
2-Butanone (MEK)	ND<40	ND<30	-	-	16,952	26,991
Bromochloromethane	ND<4	ND<3	-	-	193	597
Tetrahydrofuran(THF)	ND<40	ND<30	-	-	-	-
Chloroform	ND<4	ND<3	0.32	1.4	-	-
1,1,1-Trichloroethane	ND<4	ND<3	8,100	36,000	-	-
Carbon tetrachloride	ND<4	ND<3	-	-	0.37	2.2
1 ,1-Dichloropropene	ND<4	ND<3	-	-	-	-
Benzene	**110**	**54**	-	-	0.70	4.2
1,2-Dichloroethane	ND<4	ND<3	-	-	0.29	1.7
Trichloroethene (TCE)	ND<4	ND<3	-	-	0.68	6.5
1,2-Dichloropropane	ND<4	ND<3	-	-	1.5	9.1
Dibromomethane	ND<4	ND<3	24	99	-	-
Bromodichloromethane	ND<4	ND<3	0.29	1.3	-	-
4-Methyl-2-pentanone(MIBK)	ND<40	ND<30	33,000	140,000	-	-
cis-1,3-Dichloropropene	ND<4	ND<3	1.8	8.2	-	-
Toluene	**990**	**540**	-	-	706	798
trans-1,3-Dichloropropene	ND<4	ND<3	1.8	8.2	-	-
1,1,2-Trichloroethane	ND<4	ND<3	1.1	5	-	-
2-Hexanone	ND<8	ND<5	200	1,300	-	-
Tetrachloroethene (PCE)	ND<4	ND<3			2.4	14
1,3-Dichloropropane	ND<4	ND<3	1,600	23,000	-	-
Dibromochloromethane	ND<4	ND<1	8.3	39	-	-
1,2-Dibromoethane(EDB)	ND<2	ND<3	-	-	0.02	0.14
Chlorobenzene	ND<4	ND<3	-	-	414	726

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Blank Cell=no published value (VSS) or published value not applicable (RSL)

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 2 of 4

Sample Identification Sample Depth (ft. bg) PID Reading (ppm) Sample Date	UST-2 6 1,634 10/17/22	Dup UST-2 6 1,634 10/17/22	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
VOCs, EPA Method 8260C (mg/kg) (continued)						
1,1,1,2-Tetrachloroethane	ND<4	ND<3	2	8.8	-	-
Ethylbenzene	**270**	**150**	-	-	3.7	22
mp-Xylene	**970**	**530**	-	-	252	257
o-Xylene	**430**	**240**	-	-		
Styrene	ND<4	ND<3	6,000	35,000	-	-
Bromoform	ND<4	ND<3	19	86	-	-
IsoPropylbenzene (cumene)	**24**	**13**	-	-	256	264
Bromobenzene	ND<4	ND<3	290	1,800	-	-
1,1,2,2-Tetrachloroethane	ND<4	ND<3	0.6	2.7	-	-
1,2,3-Trichloropropane	ND<4	ND<3	-	-	0.00311	0.07
n-Propylbenzene	**92**	**48**	-	-	253	261
2-Chlorotoluene	ND<4	ND<3	1,600	23,000	-	-
4-Chlorotoluene	ND<4	ND<3	1,600	23,000	-	-
1,3,5-trimethylbenzene	**180**	**91**	-	-	144*	177*
tert-Butylbenzene	ND<4	ND<3	-	-	7,009	102,200
1,2,4-trimethylbenzene	**570**	**300**	-	-	144*	177*
sec-Butylbenzene	**7.3**	**3.5**	-	-	7,009	102,200
1,3-Dichlorobenzene	ND<4	ND<3	-	-	-	-
p-Isopropyltoluene (p-cymene)	**130**	**69**	-	-	-	-
1,4-Dichlorobenzene	ND<4	ND<3	2.6	11	-	-
1,2-Dichlorobenzene	ND<4	ND<3	1,800	9,300	-	-
n-Butylbenzene	ND<4	ND<3	-	-	3,504	51,100
1,2-Dibromo-3-chloropropane	ND<4	ND<3	0.0053	0.064	-	-
1,2,4-Trichlorobenzene	ND<4	ND<3	24	110	-	-
Hexachlorobutadiene	ND<4	ND<3	1.2	5.3	-	-
Naphthalene	**74**	**47**	-	-	2.7	16
1,2,3-Trichlorobenzene	ND<4	ND<3	63	930	-	-

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)
* Standard for 1,3,5 and 1,2,4 TMB

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 3 of 4

Sample Identification Sample Depth (ft. bg) PID Reading (ppm) Sample Date	UST-2 6 1,634 10/17/22	Dup UST-2 6 1,634 10/17/22	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
PAH EPA Method 8270D (mg/kg)						
Naphthalene	**9.6**	**15**	-	-	2.7	16
2-Methylnaphthalene	**12**	**15**	240	3,000	-	-
1-Methylnaphthalene	**5.9**	**7.2**	18	73	-	-
Acenaphthylene	**0.064**	**0.059**	-	-	-	-
Acenaphthene	**0.060**	**0.061**	3,600	45,000	-	-
Fluorene	**0.17**	**0.17**	-	-	2,301	26,371
Phenanthrene	**0.33**	**0.32**	-	-	-	-
Anthracene	**0.059**	**0.045**	18,000	230,000	-	-
Fluoranthene	**0.18**	**0.16**	-	-	2,301	26,371
Pyrene	**0.20**	**0.18**	1,800	23,000	-	-
Benzo(a)anthracene	**0.090**	**0.072**	1.1	21	-	-
Chrysene	**0.086**	**0.069**	110	2,100	-	-
Benzo(b)fluoranthene	**0.11**	**0.091**	1.1	21	-	-
Benzo(k)fluoranthene	**0.047**	ND<0.04	11	210	-	-
Benzo(a)pyrene	**0.077**	**0.060**	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	**0.076**	**0.062**	1.1	21	-	-
Dibenz(a,h)anthracene	ND<0.04	ND<0.04	0.11	2.1	-	-
Benzo(g,h,i)perylene	**0.082**	**0.072**	-	-	-	-
Total Reported PAHs	**29.1**	**38.6**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**0.13**	**0.10**	-	-		0.58 (urban bkgd)
TOTAL METALS, EPA Method 6020 (mg/kg, dry)						
Total Arsenic	**7.8**	**7.5**	-	-	16	16
Total Barium	**200**	**170**	-	-	11,247	127,382
Total Cadmium	ND<0.5	ND<0.5	-	-	6.9	87
Total Chromium	**47**	**43**	-	-	40,223	360,223
Total Lead	**65**	**56**	-	-	400	800
Total Mercury	ND<0.1	ND<0.1	-	-	3.1	3.1
Total Selenium	ND<0.5	ND<0.5	390	5,800	-	-
Total Silver	ND<0.5	ND<0.5	-	-	237	2,483

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)

Toxic Equivalency Calculations
Pigeon Property

LEE
LE Environmental

UST-2

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.090**	0.1	0.009
Chrysene	**0.086**	0.001	0.000086
Benzo(b)fluoranthene	**0.11**	0.1	0.011
Benzo(k)fluoranthene	**0.047**	0.01	0.00047
Benzo(a)pyrene	**0.077**	1	0.077
Indeno(1,2,3-cd)pyrene	**0.076**	0.1	0.0076
Dibenz(a,h)anthracene	ND<0.04	1	0.02
		Total Benzo(a)pyrene Equivalent =	**0.13**

DUP UST-2

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.072**	0.1	0.0072
Chrysene	**0.069**	0.001	0.000069
Benzo(b)fluoranthene	**0.091**	0.1	0.0091
Benzo(k)fluoranthene	ND<0.04	0.01	0.0002
Benzo(a)pyrene	**0.060**	1	0.06
Indeno(1,2,3-cd)pyrene	**0.062**	0.1	0.0062
Dibenz(a,h)anthracene	ND<0.04	1	0.02
		Total Benzo(a)pyrene Equivalent =	**0.10**

Brownfields Phase II ESA
Pigeon Property
1705 Route 128
Westford, Vermont

Measurement Date: November 7, 2022

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-1R	99.51	-	2.62	-	-	-	-	96.89
MW-2	99.74	-	3.85	-	-	-	-	95.89
MW-3	99.03	-	12.14	-	-	-	-	86.89
MW-4	98.68	-	6.95	-	-	-	-	91.73
MW-5	81.18	-	Dry	-	-	-	-	-
MW-6	99.99	-	3.02	-	-	-	-	96.97
MW-7	100.30	-	0.51	-	-	-	-	99.79
MW-8	98.37	-	5.21	-	-	-	-	93.16

Notes:
All Values Reported in Feet
btoc - Below Top of Casing
Elevation data relative to 100' at SE corner of garage

Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

LE Environmental

Groundwater Sample	*MW-1R*	*MW-2*	*MW-6*	*MW-8*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*2.62*	*3.85*	*3.02*	*5.21*	*3.85*		
pH (standard units)	*6.74*	*6.62*	*6.46*	*6.79*	*6.62*		
Conductivity (umhos)	*3,920*	*375*	*855*	*3,550*	*375*		
Temperature (celcius)	*15.1*	*13.6*	*12.8*	*14.2*	*13.6*		
Turbidity (n.t.u.)	*557*	*477*	*116*	*632*	*477*		
Sample Date	*11/7/22*	*11/7/22*	*11/7/22*	*11/7/22*	*11/7/22*		
VOCs, EPA Method 8260c VT Petroleum List (ug/l)							
Methyl-t-butyl ether (MTBE)	**450**	ND<1	ND<1	ND<1	ND<1	-	11
Benzene	**5,800**	ND<1	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	-	5
Toluene	**13,000**	ND<1	ND<1	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	**930**	ND<1	ND<1	ND<1	ND<1	2.2	700
mp-Xylene	**4,800**	ND<1	ND<1	ND<1	ND<1	-	10000**
o-Xylene	**2,000**	ND<1	ND<1	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	**310**	ND<1	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	**1,100**	ND<1	ND<1	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	**250**	ND<1	ND<1	ND<1	ND<1	790	23*
Naphthalene	**150**	ND<0.5	ND<0.5	**1.2**	ND<0.5	4	0.5
Total Reported VOCs	**28,790**	ND	ND	**1.2**	ND		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

LEE Environmental

MW-1/MW-1R

Depth to Groundwater (Ft)	*4.45*	*2.86*	*3.57*	*2.62*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
pH (standard units)	*6.27*	*7.24*	*7.11*	*6.74*		
Conductivity (umhos)	*7,460*	*2,390*	*3,430*	*3,920*		
Temperature (celcius)	*16.0*	*8.2*	*5.6*	*15.1*		
Turbidity (n.t.u.)	*138*	*711*	*635*	*557*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*	*11/7/22*		
VOCs, EPA Method 8260c (ug/l)						
Methyl-t-butyl ether (MTBE)	**2,100**	ND<200	**290**	**450**	-	11
Benzene	**14,000.**	**4,900.**	**5,900**	**5,800.**	0.92	5
1,2-Dichloroethane	ND<100	ND<200	ND<100	ND<100	-	5
Toluene	**34,000**	**15,000**	**19,000**	**13,000**	-	1000
1,2-Dibromoethane(EDB)	ND<50	ND<100	ND<50	ND<50	-	0.05
Ethylbenzene	**3,900**	**2,500**	**2,900**	**930**	2.2	700
mp-Xylene	**13,000**	**12,000**	**15,000**	**4,800**	-	10000**
o-Xylene	**6,000**	**5,700**	**6,800**	**2,000**	-	10000**
1,3,5-trimethylbenzene	**770**	**880**	**1,000**	**310**	330	23*
1,2,4-trimethylbenzene	**2,900**	**3,300**	**4,300**	**1,100**	470	23*
1,2,3-trimethylbenzene	NT	**950**	**1,100**	**250**	790	23*
Naphthalene	**640**	**710**	**690**	**150**	4	0.5
Total Reported VOCs	**77,310**	**45,940**	**56,980**	**28,790**		

MW-2

Depth to Groundwater (Ft)	*6.26*	*5.81*	*6.19*	*3.85*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
pH (standard units)	*6.41*	*6.78*	*6.75*	*6.62*		
Conductivity (umhos)	*520*	*473*	*497*	*375*		
Temperature (celcius)	*12.3*	*10.3*	*7.3*	*13.6*		
Turbidity (n.t.u.)	*173*	*749*	*814*	*477*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*	*11/7/22*		
VOCs, EPA Method 8260c (ug/l)						
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	ND<1	ND<1	-	11
Benzene	**1.3**	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	ND<1	-	5
Toluene	**1.1**	ND<1	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	**9.4**	**1.5**	**2**	ND<1	2.2	700
mp-Xylene	**18**	ND<1	ND<1	ND<1	-	10000**
o-Xylene	**2**	ND<1	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	**7.1**	ND<1	**1**	ND<1	330	23*
1,2,4-trimethylbenzene	**22**	ND<1	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1	ND<1	790	23*
Naphthalene	**5.3**	ND<0.5	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**66**	**1.5**	**3**	ND		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

LEE Environmental

MW-6

			I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*3.80*	*3.02*		
pH (standard units)	*6.73*	*6.46*		
Conductivity (umhos)	*812*	*855*		
Temperature (celcius)	*6.3*	*12.8*		
Turbidity (n.t.u.)	*853*	*116*		
Sample Date	*1/7/21*	*11/7/22*		
VOCs, EPA Method 8260c (ug/l)				
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	-	11
Benzene	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	-	5
Toluene	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	ND<1	ND<1	2.2	700
mp-Xylene	ND<1	ND<1	-	10000**
o-Xylene	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	ND<1	ND<1		
Naphthalene	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	ND	ND		

Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

MW-8

			I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*3.80*	*5.21*		
pH (standard units)	*6.73*	*6.79*		
Conductivity (umhos)	*812*	*3,550*		
Temperature (celcius)	*6.3*	*14.2*		
Turbidity (n.t.u.)	*853*	*632*		
Sample Date	*1/7/21*	*11/7/22*		
VOCs, EPA Method 8260c (ug/l)				
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	-	11
Benzene	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	-	5
Toluene	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	ND<1	ND<1	2.2	700
mp-Xylene	ND<1	ND<1	-	10000**
o-Xylene	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	ND<1	ND<1		
Naphthalene	**2.9**	**1.2**	4	0.5
Total Reported VOCs	**2.9**	**1.2**		

Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

APPENDIX C

BUDGETARY COST ESTIMATES

Alternative A Budgetary Cleanup Cost Estimate
Clean Caps
1705 Route 128
Westford, Vermont
22-Dec-23

Task	Category	Description	No.		Per Unit Cost	Unit	Item Cost	Markup Factor	Total Item Cost	Subtotals
1.0	**Pre-construction**									
	Project Coordination	Geologist	8	@	$120.00	/hr	$960	1.00	$960	
	Bid Document Assistance	Geologist	16	@	$120.00	/hr	$1,920	1.00	$1,920	
	Review	Geologist	1	@	$120.00	/hr	$120	1.00	$120	
	Contractor Preparation / Coordination	Geologist	6	@	$120.00	/hr	$720	1.00	$720	**$3,720**
2.0	**Construction Inspection and Oversight (4 visits)**									
	Construction Inspection	Geologist	20	@	$120.00	/hr	$2,400	1.00	$2,400	
	Travel	Geologist	4.8	@	$120.00	/hr	$576	1.00	$576	
	Mileage	Expense	248	@	$0.66	/ea	$162	1.00	$162	**$3,138**
3.0	**Capping and Soil Disposal Costs**									
	Mobilization/Demobilization	Contractor	1	@	$20,000.00	/ls	$20,000	1.00	$20,000	
	Soil Erosion Control	Contractor	1	@	$4,000.00	/ls	$4,000	1.00	$4,000	
	Grading/Common Excavation	Contractor	425	@	$19.00	/cy	$8,066	1.00	$8,066	
	Non-woven Geotextile fabric	Contractor	9,055	@	$4.50	/sy	$40,748	1.00	$40,748	
	Clean Soil for Cap	Contractor	226	@	$25.00	/cy	$5,650	1.00	$5,650	
	Gravel Sub-Base(18")	Contractor	3,748	@	$4.00	/sf	$14,992	1.00	$14,992	
	Asphalt Type III (1.5") - Wearing	Contractor	3,148	@	$3.00	/sf	$9,444	1.00	$9,444	
	Asphalt Type II (2") - Base	Contractor	3,148	@	$3.00	/sf	$9,444	1.00	$9,444	
	Concrete	Contractor	600	@	$12.00	/sf	$7,200	1.00	$7,200	
	Fencing/Gate	Contractor	665	@	$75.00	/ft	$49,875	1.00	$49,875	
	Fine Grade, Seed, Mulch	Contractor	453	@	$13.00	/sy	$5,889	1.00	$5,889	
	Characterization Sampling - Lab Fees	Laboratory	3	@	$1,200.00	/ea	$3,600	1.10	$3,960	
	Clean Soil Sampling	Laboratory	2	@	$500.00	/each	$1,000	1.10	$1,100	
	Soil Disposal (assumes non-daily cover)	Contractor	637	@	$79.00	/ton	$50,303	1.10	$55,334	
	Soil Transport (assumes non-daily cover)	Contractor	637	@	$34.00	/ton	$21,650	1.10	$23,814	
	Soil Transport Fuel Surcharge (24%)	Contractor	1	@	0.24	/total	$5,715	1.10	$6,287	
	District Fee (disposal)	Contractor	637	@	$25.00	/ton	$15,919	1.10	$17,511	
	Groundwater Monitoring Well Abandonment	Contractor	8	@	$400.00	/each	$3,200	1.10	$3,520	**$286,833**
4.0	**As-Built Report Preparation**									
	Report	Senior Scientist	28	@	$120.00	/hr	$3,360	1.00	$3,360	
	Drafting	Draftsperson II	4	@	$80.00	/hr	$320	1.00	$320	
	Review	Senior Scientist	2	@	$120.00	/hr	$240	1.00	$240	**$3,920**

Cleanup Cost	**$297,611**
15% Contingency	**$44,642**
Total Cost For Project	**$342,253**

Alternative B Budgetary Cleanup Cost Estimate
Removal of all Contaminated Soil
1705 Route 128
Westford, Vermont
22-Dec-23

Task	Category	Description	No.		Per Unit Cost	Unit	Item Cost	Markup Factor	Total Item Cost	Subtotals
1.0	**Pre-construction**									
	Project Coordination	Geologist	8	@	$120.00	/hr	$960	1.00	$960	
	Bid Document Assistance	Geologist	16	@	$120.00	/hr	$1,920	1.00	$1,920	
	Review	Geologist	1	@	$120.00	/hr	$120	1.00	$120	
	Contractor Preparation / Coordination	Geologist	6	@	$120.00	/hr	$720	1.00	$720	**$3,720**
2.0	**Construction Inspection and Oversight (8 visits)**									
	Construction Inspection	Geologist	64	@	$120.00	/hr	$7,680	1.00	$7,680	
	Travel	Geologist	9.6	@	$120.00	/hr	$1,152	1.00	$1,152	
	Mileage	Expense	496	@	$0.66	/ea	$325	1.00	$325	**$9,157**
3.0	**Soil Excavation and Disposal Costs**									
	Mobilization/Demobilization	Contractor	1	@	$20,000.00	/ls	$20,000	1.00	$20,000	
	Soil Erosion Control	Contractor	1	@	$4,000.00	/ls	$4,000	1.00	$4,000	
	Grading/Common Excavation	Contractor	958	@	$19.00	/cy	$18,202	1.00	$18,202	
	Clean Soil Replacement	Contractor	958	@	$25.00	/cy	$23,950	1.00	$23,950	
	Seed, Mulch	Contractor	13,895	@	$8.00	/sy	$111,160	1.00	$111,160	
	Characterization Sampling - Lab Fees	Laboratory	4	@	$1,200.00	/ea	$4,800	1.10	$5,280	
	Clean Soil Sampling	Laboratory	2	@	$500.00	/each	$1,000	1.10	$1,100	
	Soil Disposal (assumes non-daily cover)	Contractor	1,437	@	$79.00	/ton	$113,523	1.10	$124,875	
	Soil Transport (assumes non-daily cover)	Contractor	1,437	@	$34.00	/ton	$48,858	1.10	$53,744	
	Soil Transport Fuel Surcharge (24%)	Contractor	1	@	0.24	/total	$12,899	1.10	$14,188	
	District Fee (disposal)	Contractor	1,437	@	$25.00	/ton	$35,925	1.10	$39,518	
	Groundwater Monitoring Well Abandonment	Contractor	8	@	$400.00	/each	$3,200	1.10	$3,520	**$419,537**
4.0	**Confirmation Sample Collection**									
	Coordination	Geologist	8	@	$120.00	/hr	$960.00	1.00	$960.00	
	Confirmation Sample Collection	Expense	1	@	$1,000.00	/ea	$1,000.00	1.00	$1,000.00	
	Confirmation Analysis-Metals	Expense	10	@	$113.00	/ea	$1,130.00	1.10	$1,243.00	
	Confirmation Analysis-PAHs	Expense	10	@	$124.00	/ea	$1,240.00	1.10	$1,364.00	**$4,567**
5.0	**As-Built Report Preparation**									
	Report	Senior Scientist	40	@	$120.00	/hr	$4,800	1.00	$4,800	
	Drafting	Draftsperson II	4	@	$80.00	/hr	$320	1.00	$320	
	Review	Senior Scientist	2	@	$120.00	/hr	$240	1.00	$240	**$5,360**

Cleanup Cost	**$442,341**
15% Contingency	**$66,351**
Total Cost For Project	**$508,692**

Alternative C Budgetary Cleanup Cost Estimate
Pigeon Property
1705 Route 128
Westford, Vermont
22-Dec-23

Task	Category	Description	No.		Per Unit Cost	Unit	Item Cost	Markup Factor	Total Item Cost	Subtotals
1.0	**Final Design / Permitting / Contractor Bid Support**									
	Project Coordination	Geologist	6	@	$120.00	/hr	$720	1.00	$720	**$720**
2.0	**Construction Inspection and Oversight (1 visit)**									
	Construction Inspection	Geologist	6	@	$120.00	/hr	$720	1.00	$720	
	Travel	Geologist	1.2	@	$120.00	/hr	$144	1.00	$144	
	Mileage	Expense	62	@	$0.66	/ea	$41	1.00	$41	**$905**
3.0	**Construction Costs**									
	Mobilization/Demobilization	Contractor	1	@	$500.00	/ls	$500	1.00	$500	
	Fencing/Gate	Expense	665	@	$75.00	/ft	$49,875	1.10	$54,863	
	Groundwater Monitoring Well Abandonment	Contractor	8	@	$400.00	/each	$3,200	1.10	$3,520	**$58,883**
4.0	**As-Built Report Preparation**									
	Report	Geologist	8	@	$120.00	/hr	$960	1.00	$960	
	Drafting	Draftsperson II	2	@	$80.00	/hr	$160	1.00	$160	**$1,120**
	Review	Geologist	1	@	$120.00	/hr	$120	1.00	$120	**$1,240**

Cleanup Cost	**$62,867**
15% Contingency	**$9,430**
Total Cost For Project	**$72,297**