CORRECTIVE ACTION PLAN AMENDMENT
CRESCENT CONNECTOR ROADWAY

SMS Number: 2012-4263
Essex Junction, Vermont
June 17, 2021

STONE ENVIRONMENTAL

PROJECT NO.

12-152

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Title and Approval Page

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Corrective Action Plan - Amendment, Crescent Connector Roadway, Essex Junction, Vermont.
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By my signature, as a Vermont Registered Engineer that I hereby certify that I have reviewed this document.

Katrina Mattice June 17, 2021

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Executive Summary

Stone Environmental, Inc. (Stone), under contract with Dubois and King Inc. (D&K), has prepared this Corrective Action Plan (CAP) Amendment based on findings of prior environmental site investigation of the proposed Crescent Connector roadway project right-of-way limits (Project Area). This CAP amendment has been revised to incorporate comments from the Vermont Department of Environmental Conservation (VT DEC) in a letter dated March 3, 2021 and an email dated May 20, 2021.

Past use of the Project Area includes over 150 years of railway conveyance. The Project Area traverses a railroad right of way, municipal right of way, and commercial areas within the Village of Essex Junction. The Project Area is immediately adjacent to several properties in residential use, specifically along Railroad Street. From the south, the proposed Crescent Connector road first traverses a parcel currently under commercial use (34 Park Street). Businesses operating at this address include Karen's Kloset (used clothing), Not Just for Golf (club car sales and rentals), Lazy Farmer (restaurant), Heart n Soul by Mark BBQ (restaurant), Essex Barber Shop, and East Coast Printers. The second parcel traversed is a railway corridor owned by Canadian National and operated under lease agreement by New England Central Railroad, Inc. Limited Project Area improvements are proposed for 11 and 15 Maple Street, which are both privately owned and operated for commercial businesses, including Bailey's Spring and Chassis and Five Corners Antiques. The proposed road then crosses Maple Street (VT Route 117) and follows Railroad Street to the north, terminating at Main Street (VT Route 15).

The Vermont Agency of Transportation and the Village of Essex Junction intend to construct the Crescent Connector roadway to divert traffic from the five corners area of Essex Junction. The proposed roadway will connect Park Street, Maple Street, and Main Street with a two-lane road. A new at-grade rail crossing is proposed for the New England Central Railway (NECR) rail line along the proposed roadway. A small parking area is located between the proposed Crescent Connector and the railway with additional parking south of the roadway along Railroad Street Extension. Additional improvements will be made to Railroad Street to allow for more vehicular traffic than what is currently able to use the street. Stormwater infrastructure will include catch basins, swales, and sand filters and infiltration via porous pavement in the proposed parking lot.

In 2013, under contract with D&K, Stone performed Project Area investigations to determine the degree, nature, and extent of contamination in the Project Area. Concentration results indicate polycyclic aromatic hydrocarbons (PAHs) and the metals arsenic and lead are present at varying concentrations – including some in excess of the Vermont Soil Standards (VSSs) – in shallow soils across the Project Area resulting in four soil management categories: clean soil (native or fill), urban soil (soil with a PAH concentration greater than 0.07 milligrams per kilogram [mg/kg] and less than 0.58 mg/kg), development soil (soil with a PAH concentration greater than 0.58 mg/kg but less than 1.54 mg/kg), and non-hazardous waste soil. Approximately 41% of the Project Area is comprised of clean fill, while 11% is urban soils, and 43% is comprised of developments soils. The remaining 5% of the Project Area contains mercury and antimony and are non-hazardous waste soil. Due to the presence of contaminants, Site soils require mitigation and/or management as part of the construction of the Crescent Connector roadway.

Due to the heavy rail use of the Project Area, Stone attributes the observed contamination to emissions during the coal-burning history of the adjacent rail and maintenance performed along the rail Right of Way. The presence of metals and PAHs in Project Area soils is primarily attributed to coal ash waste and unburned coal debris. The presence of metals in Project Area soils may also be attributed to former maintenance activities, such as application or use of wood preservatives and insecticides along the rail corridor.

This *Corrective Action Plan* recommends that construction activities for the proposed roadway be performed to serve as adequate remedial systems to protect human health. The recommended remedial actions include:

- Implementing a soil management plan to properly identify, load, transport, and dispose of excess soils at an appropriate facility.
- Implement Project Area Control measures, including dust mitigation and erosion prevention during construction.
- Installation of engineered barriers to prevent direct contact with contaminated soil. Barriers will consist of the proposed roadway, parking lot, sidewalks, green spaces, and associated sub-base courses.
- Implementation of institutional controls on the Project Area in the form of a Village Ordinance for the Crescent Connector Right of Way.
- Periodic inspection of the engineered barriers with prompt repair in the event of degradation.

Corrective actions are expected to be performed over four months starting in the summer of 2021.

Corrective Action Plan - Amendment, Crescent Connector Roadway, Essex Junction, Vermont
SMS #2012-4263

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1. Introduction

Stone Environmental, Inc. (Stone), under contract with Dubois & King, Inc. (D&K), performed a Phase II Environmental Site Assessment (Phase II ESA) of the planned alignment for the proposed Crescent Connector in Essex Junction, Vermont (Figure 1). The findings of this investigation were reported in the *Phase II Environmental Site Assessment of the Crescent Connector* (Phase II ESA Report), prepared by Stone and dated November 21, 2013.

The Crescent Connector roadway is a proposed new road, approximately 1,250 feet in length, intended to bypass the Essex Junction Five Corners Area. The Crescent Connector will link Vermont Route 2A (Park Street) and Vermont Route 117 (Maple Street) and facilitate traffic flow from Vermont Route 117 (Maple Street) to Route 15 east (Main Street). Collectively, the right-of-way limits for these segments encompass the "Project Area" (Figures 2 and 3). For this document, we have divided the Project Area into three main sections, including from south to north:

- Section 1: Park Street to the new New England Central Railway (NECR) grade crossing, totaling approximately 430 linear feet.
- Section 2: New NECR grade crossing to Maple Street, totaling approximately 360 linear feet.
- Section 3: Maple Street to Main Street along Railroad Street, totaling approximately 460 linear feet.

As documented in the *Phase II ESA Report*, past use of the Project Area includes over 150 years of railway conveyance. The presence of metals and PAHs in Project Area soils in primarily attributed to coal ash waste and unburned coal debris. The presence of metals in Project Area soils may also be attributed to former maintenance activities, such as application or use of wood preservatives and insecticides along the rail corridor.

Stone has prepared this *Corrective Action Plan* (CAP) amendment to address the contaminated soils present in the Project Area while supporting the planned construction of the Crescent Connector. This CAP amendment has been revised to incorporate comments from the Vermont Department of Environmental Conservation (VT DEC) in a letter dated March 3, 2021 and an email dated May 20, 2021. The objective of the CAP is to reduce the risk of direct contact exposure to PAH and metals contamination present in surficial and shallow soils. The corrective actions consist of:

1. Developing a site-specific health and safety plan detailing training and monitoring requirements during construction;
2. Managing compatible contaminated soils on-site as backfill in areas requiring infill prior to the construction of the roadway. Compatible soils are defined as soils having the same contaminants and are classified as urban soils, development soils, and non-hazardous waste soils;

3. Excavation of PAH- and metals-contaminated soils in excess of the volume to be required for constructed road base and asphalt section while maintaining desired grades;
4. Transport and disposal of excess soils at an appropriate facility;
5. Installation of the constructed roadway, parking, and sidewalks to serve as a protective barrier; and
6. Implementation of an institutional control for ongoing management of the Project Area.

The CAP was initially dated March 15, 2017 and approved by the Vermont Department of Environmental Conservation (VT DEC) on May 16, 2017. This CAP amendment includes results of a supplemental soil assessment performed in May 2020, updates to Section 6.5, Soil Management Plan, updates to Section 6.8, Institutional Controls, and updates to the detailed costs estimates attached in Appendix E.

1.1. Site Description

The proposed alignment of the Crescent Connector is presented on Figure 2. The general topographic setting of the Project Area is flat at an elevation of approximately 340 feet above mean sea level (ft AMSL). The nearest surface water body is Indian Brook, located approximately 1,440 feet to the northeast of the Project Area. The Project Area is part of the center of the Village of Essex Junction. The Village Center is defined by the intersections of Vermont Routes 2A (Lincoln Street – north, and Park Street – south), Vermont Route 15 (Pearl Street – west, and Main Street – northeast), and Vermont Route 117 (Maple Street – southeast). The intersection of these roadways is locally known as the Five Corners.

According to the Vermont Agency of Natural Resources (ANR) Natural Resources Atlas, there are 11 State of Vermont Hazardous Waste Sites, one State-listed hazardous waste generator, and seven facilities with registered underground storage tanks (USTs) within one-quarter mile of the Five Corners intersection.

Utilities traversing the Project Area include potable water, sanitary sewer and stormwater pipes, natural gas pipes, and buried and overhead electrical and communications cables. Water and sanitary sewer services within the Project Area are supplied by municipal utilities. According to the ANR Well Locator, the nearest water supply well to the Project Area is a domestic well located approximately 840 feet to the east-southeast of the Project Area and is owned by David Adams (Well ID 8-263).

From the south, the proposed Crescent Connector road first traverses a parcel currently under commercial use (34 Park Street). Businesses operating at this address include: Karen's Kloset (used clothing), Not Just for Golf (club car sales and rentals), Lazy Farmer (restaurant), Heart n Soul by Mark BBQ (restaurant), Essex Barber Shop, and East Coast Printers. The second parcel traversed is a railway corridor owned by Canadian National and operated under lease agreement by New England Central Railroad, Inc. The proposed road then crosses Maple Street (VT Route 117). The proposed road then follows Railroad Street to the north, terminating at Main Street (VT Route 15).

Adjacent properties are predominantly commercial and residential. Residential apartments can be found at 15E-J Maple Street, 17 Maple Street, along Railroad Street, and on Gaines Court. Nearby commercial properties include Bailey's Spring and Chassis (15A-B Maple), Architectural Antiques (11 Maple), Kalanges and Dalton Real Estate (15A Maple), Sunoco Gas Station (16 Maple Street), William Raveis BCK Real Estate (18 Railroad Street), Essex Eye Association (16 Railroad Street), All Seasons Siding (8 Railroad Street), and the Essex Insurance Agency (2 Railroad Street).

1.2. Site History

The vicinity of the Project Area has been in mixed commercial and residential use since before 1894, the earliest property-specific historic land use documentation available. A narrow band of industrial use occurs to the southeast of the Project Area. Parcels located closest to Five Corners have been predominantly commercial. Growth in the area, and development of past commercial use, was largely spurred by the rail, which were first brought to Essex Junction in the 1850s.

Later, with the advent of the automobile, commercial enterprises were focused around serving this more mobile, car-driving populace.

Trends to commercial use within the downtown corridor are consistent with the introduction of new technologies and fashions. For instance, tinsmiths and blacksmiths were common through Essex Junction area through the turn of the 20th century; however with the development of cheaper and more durable alternatives, such as plastics or aluminum, smiths became less common and were no longer found after 1940.

Beginning in approximately 1920, with the introduction of affordable automobiles, service stations, garages, and storage units for automobiles became widespread. Many of the facilities that formerly served as the support infrastructure for the horse-reliant populace were converted to support automobiles; liveries became garages, blacksmiths became service stations. It is interesting to note that there are several former gasoline service stations and small gasoline dispensaries that no longer serve in this type of use. A prominent example is Firebird Cafe, located at the intersection of Main and Maple Street, which was a former Mobil station. Other examples include 4 Central Street, 34 Park Street, and 25 Pearl Street.

1.3. Proposed Re-Use Plan

The Vermont Agency of Transportation and the Village of Essex Junction intend to construct the Crescent Connector roadway to divert traffic from the Five Corners area of Essex Junction. The proposed roadway will connect Park Street, Maple Street, and Main Street with a two-lane road. An at grade rail crossing is proposed for the New England Central Railway line. A small parking area will be located between the proposed Crescent Connector and the railway. Additional improvements will be made to Railroad Street to allow for more vehicular traffic than what is currently able to use the street. Stormwater infrastructure will include catch basins, swales, and sand filters and infiltration via porous pavement in the proposed parking lot.

2. Prior Environmental Investigations

Prior environmental assessment of the Project Area includes the Essex Junction Area Wide Brownfield Assessment performed by Stone in July 2012 for the Village of Essex Junction and Chittenden County Regional Planning Commission under a Brownfield Assessment Grant awarded by the US EPA. During the course of the Area Wide Assessment, Stone reviewed pertinent historical documents, published geologic literature, Federal and State environmental databases, and Vermont Department of Environmental Conservation (VT DEC) Sites Management Section (SMS) files for known hazardous waste sites within and immediately upgradient of the Village Center zoning district, which includes the Project Area. From this assessment, Stone developed the following findings that are germane to the Project Area:

- Rail operations occurred on portions of the Project Area for over 150 years. Due to the nature of past use, specifically the rail operations, potential contaminants of concern (COCs) within soils in the Project Area include volatile organic compounds (VOCs) associated with petroleum fuels and solvents, chlorinated solvents, pesticides, PAHs associated with coal and coal ash, polychlorinated biphenyls (PCBs), metals, and asbestos.
- Operation of historically-documented gasoline USTs occurred at several locations immediately upgradient of the Project Area, including the following:
    - Former Robinson's Service Station at 1 Park Street from 1929 through 1967;
    - Former Graff's Garage at 12 Park Street from 1929 through 1944;
    - Former service station operated under the names R.L. Baker and Raymond Huntley at 9 Main Street from 1922 to 1962;
    - Former Standard Oil Company at Main and Maple (formerly Road Res-Q and now Firebird Cafe) from 1928 to 1996; and
    - Simons Store at 2 Park Street from 1954 to present.
- Gasoline contamination in groundwater from at least one State-listed hazardous waste site (Simon's Store, SMS #96-1961) has migrated onto the Project Area. The Project Area is also located downgradient of the Road Res-Q hazardous waste site (SMS# 96-1993), and is adjacent to a third hazardous waste site (Bushey's Sunoco; SMS#98-2430).

As a result of the above-listed findings of the Area Wide Assessment, Stone recommended that pre-construction planning for the proposed Crescent Connector consider the potential existence of surface soil contamination on the Project Area parcels. In 2013, Stone completed that assessment in the form of a Phase II Environmental Site Assessment (Phase II ESA).

2.1. Phase II Environmental Site Assessment

The Phase II ESA included performing 48 soil borings along the proposed alignment and the collection of soil samples for analysis for VOCs, metals, PAHs, PCBs, herbicides, organo-chlorine pesticides, and asbestos

analyses. Results from the Phase II ESA indicate that PAHs and the metals arsenic, lead, and mercury are present in shallow soils at concentrations in excess of US EPA RSLs and Vermont Soil Standards (VSSs) in a small portion of the Project Area and require mitigation and/or management as part of the construction of the Crescent Connector roadway. PAHs and arsenic are present in soil at varying concentrations across the Project Area.

Field screening and laboratory analysis of VOCs in soil samples collected during the Phase II ESA in the Project Area indicate gasoline VOCs are not present within Project Area soils, and therefore do not present an exposure risk to future construction workers or other Project Area users. Other contaminants of concern, including polychlorinated biphenyls (PCBs) and herbicides were not detected at concentrations greater than their respective regulatory criteria; PCBs, specifically Aroclor 1260, was detected in one of 37 samples while herbicides were detected in 11 of 37 samples.

Tables B-1 through B-7 contain concentration results of all samples collected from the Project Area compared to current regulatory thresholds.

2.2. Supplemental Soil Assessment

In May, 2020, Stone performed supplemental soil assessment within the revised Project Area to establish soil quality conditions for previously unassessed areas including three utility pull boxes at the Maple Street crossing and an expanded parking area at the southern end of Section 2. Five soil borings were performed to four feet below ground surface. Discrete samples were collected from 2.0 feet in each boring and submitted to Con-Test Laboratories in East Longmeadow, Massachusetts for PAHs, VOCs, PCB, and priority pollutant metals analyses. Field notes from the supplemental assessment are provided in Appendix C. The laboratory analytical reports is provided in Appendix D.

Concentration results from this supplemental assessment are presented in Tables B-1 through B-3 and B-5 in Appendix B. Results indicate that soils in these two new areas are similar to their adjacent counterparts. While several metals were detected above the laboratory reporting limit, no metals concentrations were greater than the VSSs for residential properties. No PCB Aroclor was detected above the laboratory reporting limit. Total PAHs as benzo(a)pyrene-toxicity equivalency were detected in three of the five borings with detections all less than both the VSSs for industrial properties and the Vermont urban background value.

3. Conceptual Site Model

A Conceptual Site Model (CSM) is a set of working hypotheses which describe key aspects of the problem at a site. As with any hypothesis, the CSM is not conclusive and may require testing to arrive at desired levels of certainty. A CSM includes discussions of how chemicals were released at a site, their fate and transport mechanisms, as well as exposure routes for both ecological and human receptors. The CSM is based on all available information related to the Project Area. In general terms, a CSM provides the context for the Site Investigation, to ensure that investigation phases are developed to efficiently provide the information needed for making sound site management decisions.

The following is a CSM for the Project Area based on review of historic documentation of prior uses within the downtown area, existing data sets of identified hazardous waste sites within or near the Project Area, and various other sources for the physical description of the area.

3.1. Project Area Geology and Hydrogeology

According to the Surficial Geologic Map of Vermont (Doll, 1970) and other published literature, native unconsolidated soils in the Project Area are pebbly marine sand derived from a proto-delta of the Winooski River as it emptied into the pre-historic extent of Lake Champlain and later marine water intrusion from the Saint Lawrence Seaway called the "Champlain Sea" following the last ice age. Deeper soils within the Project Area, based on borings performed during hazardous site investigations within the Project Area, are finer silts and clays associated with a series of broad freshwater glacial lakes that preceded the marine water intrusion. Lake Vermont, as it is commonly referred to, stretched as far inland as Montpelier, Roxbury, and Williamstown. As a result of these paleo water bodies, unconsolidated materials within the Project Area consist of as much as 20 feet of sand and gravel underlain by an unknown, but likely highly variable, thickness of silt and clay. Native soils collected from borings performed during this Phase II ESA corroborate the shallower sandy deposits recorded in published literature.

Non-native fill is also present at the Project Area and includes both engineered sub-base material consisting of crushed stone and gravel, as well as PAH- and metals-contaminated debris from long-running deposition of coal ash from the adjacent rail lines.

Bedrock in the vicinity of the Project Area is mapped as the Skeels Corners Slate, a laminated, black slate with thin orange dolostone beds (Doll, 1961; Ratcliffe et al., 2011). Structural geologic mapping of the area documents folding of the bedrock with axial planes dipping moderately to the north. Based on the presence of marine clay mantling bedrock, the composition and structural features of the bedrock below the site is not germane to fate and transport mechanisms related to Project Area contaminants.

Surface water bodies in proximity to the Project Area include Indian Brook, which, at its closest point is 1,440 feet to the northwest of the Project Area, and the Winooski River, located approximately 2,400 feet south of the Project Area.

Stormwater runoff from paved areas in the Project Area is captured by the municipal stormwater system, which discharges to local surface water bodies, including Indian Brook, the Winooski River, and several unnamed tributaries.

Based on environmental investigation of nearby hazardous waste sites, groundwater within the Project Area is inferred to flow from the northwest to southeast at a slight gradient. Borings in the Project Area encountered saturated soil between six and seven feet below ground surface (bgs) during the Phase II ESA.

3.2. Contaminant Distribution

Analytical results of soil samples collected during the Phase II ESA identified widespread contamination of Project Area soils with metals and PAHs. Groundwater contamination with VOCs was identified downgradient of sites adjacent to the Project Area, but not in soil samples above the water table.

3.2.1. PAHs

PAHs are a group of chemicals that are common byproducts of the combustion of fossil fuels, and occur naturally in fuel oil, coal, and tar. PAHs are regulated compounds in the State of Vermont, and have been identified as carcinogenic, teratogenic, and/or mutagenic compounds. PAHs do not readily dissolve into water without help from a co-solvent and are therefore slow to migrate and degrade under natural conditions.

PAHs were identified in shallow soils across the Project Area, which were observed to contain fill material with a high proportion of coal and coal ash. Published statistical studies conducted in Massachusetts have shown that background concentrations of total carcinogenic PAHs in soils containing coal ash are typically greater than 42 μg/Kg (MassDEP, 2002). The presence of PAHs in Project Area soils may therefore be attributed to the historic railroad operations that were documented in historical sources reviewed by Stone for the Essex Junction Area Wide Assessment. Historic railroad operations included coal-burning locomotive engines and the storage of coal in open areas along the rail corridor.

3.2.2. Volatile Organic Compounds

A release of gasoline from the Simons Store property, as documented by environmental investigation, has migrated in groundwater to the Project Area south of Maple Street and north of the Bailey's Spring and Chassis building (15 Maple Street). Field screening and laboratory analytical results of select soil samples performed during the Phase II ESA and supplemental soil assessment indicate that gasoline-related VOCs are not present in shallow soils at concentrations that would pose unacceptable risk of exposure to construction workers or other Project Area users through direct contact or inhalation pathways.

Other non-gasoline related VOCs, such as chlorinated solvents, Freons, or ketones, were not identified in soil samples collected during the Phase II ESA.

3.2.3. Arsenic

Arsenic is a naturally occurring metal in Vermont and has a low US EPA Region III RSL (0.39 milligrams per kilogram (mg/Kg)) for residential soils; background arsenic concentrations within the Project Area likely exceed the appropriate regulatory criteria for this compound, as typical arsenic concentrations in Vermont native soils range between 2 and 16 mg/Kg. Higher concentrations of arsenic than what can be attributed to natural occurrence were observed in several samples, including one sample that contained 264 mg/Kg of arsenic (SB-11) at 0.5 ft bgs and one sample that contained 532 mg/Kg of arsenic (SB-41) at 1.1 ft bgs. The sample collected from soil boring SB-11 also contained concentrations of antimony, lead and PAHs above regulatory criteria (industrial RSLs for PAHs and residential RSL for lead and antimony). The sample collected from SB-41 also contained lead at concentrations greater than the industrial RSL. The source of

these contaminants is likely related to coal ash present in the sample. Naturally-occurring metals present in coal are often concentrated in coal combustion residue (i.e. ash and slag), and concentrations of arsenic in coal ash-containing soils have been shown to exceed 16 mg/Kg (MassDEP, 2002). In addition, arsenic was commonly used as a fortifying agent for creosote to assist in wood preservation, and arsenic-based pesticides may have either been shipped to/from the railroad or used during maintenance activities of the rail bed itself. For example, historical documents indicate that creosote-treated railroad ties were stockpiled in the Project Area.

3.2.4. Lead and Mercury

The source of both lead and mercury contamination in shallow soils are likely attributable to coal ash, as described above for arsenic and antimony. Other anthropogenic sources of lead include lead-based paint, batteries, and solder, while mercury is commonly used in fluorescent light bulbs and thermometers.

3.2.5. Pesticides and PCBs

The organo-chlorine pesticide 4,4-DDT was detected in five samples at concentrations less than the US EPA Region III RSL for residential soils. Other, less prominent pesticides detected within Project Area soils included Dieldrin, 4,4-DDE, and 4,4-DDD. Organo-chlorine pesticides were commonly used in agricultural regions between 1939 and the 1970s, and are relatively insoluble, persistent (depending on the specific compound) and have a low vapor pressure. As the potential mobility of these chemicals under natural conditions is very low, their occurrence would be limited to areas where they were directly applied or otherwise released to the environment.

Arsenic-based pesticides were widely used prior to the early 1940s, when they were replaced by DDT. A release of arsenic-based pesticide in the Project Area may also explain the presence of arsenic in near-surface soils.

PCBs were detected as Aroclor 1260 in one soil sample within the Project Area (SB-5). The reported concentration of Aroclor 1260 was less than the VSSs for residential soils. Reported PCB concentrations were below laboratory reporting limits in the remaining soil samples analyzed during the Phase II ESA. Based on their limited occurrence and low concentration, PCBs do not appear to be pervasive in the Project Area.

3.3. Nearby Receptors and Abutting Landowners

Using the VT ANR Natural Resources Atlas, a qualitative receptor analysis was completed to evaluate the occurrence of potential receptors relative the Project Area.

3.3.1. Drinking Water Supplies

Public and private water supply wells located within one mile of the Project Area are depicted on Figure 1. Twenty-four private water supply wells were identified using the VT ANR Natural Resources Atlas within 1.0 mile of the Project Area, as presented in Table 1, below.

Table 1: Public Water Sources within 1 Mile

Well Report Number	System Owner	Well Use	Distance from Project Area (ft)	Direction from Project Area
392	Adams	Domestic	840	Southeast
227	Greenwood	Domestic	4,470	East, southeast
89	Carlson	Domestic	4,070	Southwest

281	IBM	OTHER	1,130	Southeast
136	IBM	Industrial	3,700	Southeast
282	IBM	OTHER	3,600	Southeast
137	IBM	Industrial	3,160	South, southeast
11	IBM Corporation	Industrial	3,010	South, southeast
23979	Hannaford Greer Ctr	Domestic	2,980	North, northeast
12983	VELCO	Industrial	2,730	South
6	IBM	Test	4,890	Southeast
50343	Reindeau	Domestic	2,730	North
135	IBM	Industrial	4,430	Southeast
49101	Green Mountain Power	Industrial	2,730	South, southwest
18	IBM CORPORATION	Industrial	4,710	Southeast
31861	Beathiaume	Domestic	4,790	North, northwest
312	Tuerass	Domestic	2,800	North, northeast
41193	Miller	Domestic	4,600	North, northwest
235	Morse Development	Domestic	4,610	North, northwest
13	IBM Corporation	Industrial	2,080	South, southeast
7	IBM	Test	4,890	Southeast
138	IBM	Industrial	3,630	East, Southeast
45	Agway, Inc.		4,360-	South
2135	Donnis	Domestic	1250	East, northeast

3.3.2. Surface Waters Source Protection Areas (SPAs)

No surface water source protection areas (SPAs) were identified within 1 mile of the Project Area.

3.3.3. Groundwater Source Protection Areas

No groundwater source protection areas (GSPAs) were identified within 1 mile of the Project Area.

3.3.4. Buildings with Basements

Structures with basements on abutting properties include several residences and commercial buildings along Railroad Street, 17 Maple Street, 34 Park Street, 4 Park Street, and 3 Maple Street. There are no building structures within the Project Area aside from a small shed located on the NECR property off Maple Street.

3.3.5. Wetlands

According to the Natural Resources Atlas, no mapped wetlands are located within the Project Area. The nearest mapped wetlands are located approximately 1,730 feet of the south of the Project Area along the Winooski River, with additional wetlands located along Indian Brook to the northeast and east.

3.3.6. Sensitive Ecological Areas

Mapped sensitive ecological areas, including deer wintering yards, habitat blocks, significant natural communities, VT Fish and Wildlife managed lands, and Indiana Bat hibernacula within 1 mile of the Project Area are summarized in Table 2, below.

Table 2: Sensitive Ecological Areas

Type	Unique ID (ANR Atlas)	Size (acres)	Distance from Project Area (ft)
Habitat Block	1134	395	4,300
Habitat Block	1139	42	3,440
Habitat Block	1172	26	3,230
Habitat Block	1191	652	3,050
Habitat Block	1233	1494	1,240

3.3.7. Rare, Threatened, and Endangered Species

Rare, threatened, and endangered species within a mile of the Project Area are summarized in Table 3, below. Based on the assessment performed as part of the Environmental Assessment for the Project, there are no threatened or endangered species within the Project Area.

Table 3: Rare, threatened, and endangered species

Type	Unique ID (ANR Atlas)	Category	Distance (ft)
40	3194	Vascular Plant	2,584
261	5051	Vascular Plant	5,023
517	712	Vascular Plant	744
627	5051	Vascular Plant	1,649
672	1753	Vascular Plant	1,757
1247	4797	Vascular Plant	4,735
1568	5004	Vascular Plant	4,869
4005	4938	Vascular Plant	4,870
4869	3561	Vascular Plant	5,203
6172	4819	Vascular Plant	4,782
7510	2660	Nonvascular Plant	2,600
7511	2660	Nonvascular Plant	2,641
7512	2660	Nonvascular Plant	2,693
7513	2660	Nonvascular Plant	2,600
7514	4352	Nonvascular Plant	2,950
7515	2917	Nonvascular Plant	2,950
7771	4352	Vascular Plant	4,974
7961	2402	Vascular Plant	2465
8621	2857	Nonvascular Plant	2,760
8622	3063	Nonvascular Plant	2,650
8623	3063	Nonvascular Plant	2,650
8624	3063	Nonvascular Plant	2,650
8625	3063	Nonvascular Plant	2,650
8755	3195	Vascular Plant	3,110
8778	2661	Vascular Plant	2,600
9085	3561	Vascular Plant	3,375
9843	4400	Vascular Plant	4,580
10091	3842	Vertebrate Animal	4,000
10565	1753	Vascular Plant	1,580
10568	1753	Vascular Plant	1,580
11684		Vertebrate Animal	1,707

3.3.8. Adjoining Property Owners

Adjoining property owners, based on the 2019 Grand List for Essex, Vermont, are summarized in Table 4, below and depicted on Figure 2.

Table 4: Adjoining Property Owner Information

Parcel #	Span #	Current Occupant or Use	Street #	Street	Owner
1NECRAIL		Rail ROW			Central Vermont Railway
1029046000	207-066-13476	Parklet / Vacant	3	MAIN ST	DDH - GSH Trust
1029044000	207-066-15397	Vacant	5	MAIN ST	Reynolds, Raymond H. & Reynolds, Katherine S. Family Trust
1029229000	207-066-11115	Yankee Pride Quilts Shear Envy Essex	11	MAIN ST	Central Vermont Railway
1029043000	207-066-13271	Transitions Physical Therapy	17	MAIN ST	Roost LLC
1029212000	207-066-16092	Vacant – Under construction	3	MAPLE ST	3 Maple Street Essex, LLC
1029211000	207-066-15541	Architectural Antiques	11	MAPLE ST	Kalanges, William C.
1029205000	207-066-13272	15A-B, Bailey's Spring and Chassis 15D - Kalanges & Dalton Realtor 15E-J - Residential Apartments	15	MAPLE ST	Kalanges, William C.
1029059000	207-066-11510	Sunoco Gas Station	16	MAPLE ST	Sixteen Maple Street, LLC
1029213000	207-066-15865	Simon's Five Corner Store	2	PARK ST	Sisters and Brothers Investment Group
1029214000	207-066-14667	Lincoln Inn	4	PARK ST	LI Park St. Properties, LLC
1029215000	207-066-12241	Karen's Kloset Not Just for Golf Lazy Farmer Heart n Soul by Mark BBQ Essex Barber Shop East Coast Printers	34	PARK ST	McEwing Properties, LLC
1029215001	207-066-14715	See 34 Park St.	36	PARK ST	Robbins Mountain Towers, LLC
1029048000	207-066-13011	Essex Agency (Insurance)	2	RAILROAD ST	Holton and Hardy, LLC
1029049000	207-066-10891	All Seasons Siding	8	RAILROAD ST	BSA Management, Inc.
1029055000	207-066-15824	Residential	10	RAILROAD ST	Siegrist, Ronald C. & Siegrist, Alice M.
1029056000	207-066-15825	Residential	12	RAILROAD ST	Siegrist, Ronald C. & Siegrist, Alice M.
1029057000	207-066-13174	Residential	14	RAILROAD ST	James T. Benton & Erica L. Benton
1029058000	207-066-12707	Essex Eye Association William Raveis BCK Real Estate	16	RAILROAD ST	Sixteen Railroad Street, LLC

4. Remedial Objectives

The remedial objectives described within this CAP are designed to mitigate exposure risk to workers within the Project Area during the construction of the Crescent Connector roadway and future users to PAHs and metals in soil. To ensure the ongoing efficacy of the selected remedial alternatives (Section 5), the Village of Essex Junction proposes to pass a Village Ordinance mandating ongoing maintenance and monitoring of the remedial barriers.

The objectives of the Project Area remedial activities are:

1. To prevent risk of exposure of contaminated soils to workers and users within the Project Area.
2. To manage contaminated soils cost effectively and in a manner that is consistent with the intended use of the Project Area.
3. To conduct Project Area activities in a manner that prevents migration of contaminants from the site during construction activities.

4.1. Regulatory Guidelines

PAHs and metals in soil are regulated under the Vermont Soil Standards (VSS; IRule, updated July 2019). For those compounds not listed within the VSS, concentrations are compared to the US EPA Regional Screening Levels (May 2021).

Tables B-1 through B-7 present soil concentrations to these regulatory criteria as well as the Vermont urban background concentrations for arsenic and PAHs.

5. Evaluation of Corrective Action Alternatives

This section presents the Evaluation of Corrective Action Alternatives (ECAA) prepared by Stone to evaluate remedial alternatives for mitigating exposure of Project Area users to metals and PAHs in shallow site soils. The intent of the ECAA is to determine what technology would be best suited to support the mitigation of direct exposure risk to future Project Area users, while also minimizing the potential direct exposure to workers performing the remediation activities. The selected remedial approach is then used to develop a recommendation for a specific corrective action strategy, in addition to providing criteria for design, construction, and operations, monitoring, and maintenance (OM&M).

5.1. Assumptions

Unit rates for excavation of existing materials and, where applicable installation of fill soils, were developed using the Vermont Agency of Transportation 2-year Averaged Price List from January 2018 to January 2020.

For costing purposes, volumes for general excavation activities (excavation, transport, and disposal) include a twenty percent (20%) expansion factor. Unless otherwise noted, all volumes include this 20% expansion factor.

For development of disposal costs, a density of 1.5 tons per cubic yard of soil was assumed.

Costs for installation of final pavement, subbase materials, stormwater infrastructure, curbs, lane markings, and other finishes are not included. Alternative specific assumptions are provided alongside the cost estimate details provided in Appendix E.

5.2. Remedial Alternative Selection

Remedial approaches to addressing the presence of PAHs and metals in soil include:

- Alternative 1: removal of all contaminated soils greater than their respective VSS from the project area prior to initiating construction of the proposed roadway using clean backfill materials, sub-base, and pavement courses. Soils for removal would be transported to an approved facility for disposal.
- Alternative 2: installation of the sub-base, roadway, and associated infrastructure as part of an engineered separation barrier above contaminated soils and clean backfill materials, as needed. Limited soil volume generated for disposal; or
- Alternative 3: relocation of a sufficient volume of contaminated soils to serve as borrow materials, where needed combined with removal of excess soils for disposal at an approved disposal facility.

5.3. Alternative 1: Full Removal of contaminated soils

This alternative would involve removal of existing asphalt and sod in the Project Area; excavation of all contaminated soils above the residential RSL (generally within the uppermost 4 feet) within the proposed

project area; and installation of clean fill material to meet the subgrade requirements prior to installation of the pavement section (sub-base plus bituminous concrete).

Confirmation testing, consisting of collection of samples for analysis, would be required to confirm that all contaminated soils are removed from the Project Area.

Alternative 1 would require excavation of approximately 11,390 cubic yards of soil for transport and disposal and installation of over 4,750 cubic yards clean backfill prior to installing the pavement section. As no contaminated soils would remain, no institutional control or ongoing monitoring and maintenance to prevent future exposure would be required.

The cost to implement this remedial alternative is estimated at $1,988,183 and would require approximately 7 months to complete. Costs to install pavement section are not provided in this estimate. Table 5, below, provides a summary cost estimate for Alternative 1. A detailed cost estimate is provided in Appendix E.

Table 5: Alternative 1 Cost Summary

Task	Subtotal
Project Coordination	$21,389
Site Work – per week	$108,586
Oversight	$8,879
Loading, Transport, and Disposal	$80,529
Fill Installation	$13,987
Dust Monitor	$2,420
Waste Characterization and Confirmation Analyses	$2,771
18 Week Site Work Sub-Total	$1,954,546
Remedial Action Report	$12,248
TOTAL	$1,988,183

5.3.1. Advantages

- Effective for protecting human health
- No ongoing monitoring required

5.3.2. Disadvantages

- Most expensive
- Only alternative that would require confirmation sample collection and analysis
- Increased costs for additional back fill materials
- Increased time for excavation and disruption in the project area and surrounding area
- Increased greenhouse gas contributions from excess transport for soils for disposal and materials for backfill

5.4. Alternative 2: Installation of roadway over existing surface

This alternative would involve removal of existing pavement and sod, where applicable, compaction, installation of a geotextile fabric to serve as an indicator fabric, and installation of the pavement section over the existing ground surface. Together, the pavement section and indicator fabric would serve as a cap over existing materials with disturbance of contaminated soils limited to surficial grading and installation of utilities. No additional fill is proposed. Soils generated for disposal are limited to those excavated for the installation of subsurface infrastructure (e.g., stormwater pipe, bedding, and catch basins).

Due to the thickness of the pavement section, roadway intersections, accesses, and the railroad crossing, grading for Alternative 2 would require additional design considerations from a road safety and drainage perspective.

Alternative 2 would require the use of institutional controls to ensure the ongoing monitoring and management of the remedial barriers. The institutional control would serve to notify future Project Area owners of the presence of PAHs and metals in soils below the pavement section, require an ongoing monitoring plan, and notification of the VT DEC in the event that excavation in the Project Area is required.

The cost to implement this remedial alternative is estimated at $146,123 and would require approximately three and a half months to complete. Table 6, below, provides a summary cost estimate for Alternative 2. A detailed cost estimate is provided in Appendix E.

Table 6: Alternative 2 Cost Summary

Task	Subtotal
Project Coordination	$6,471
Site Work – per week	$31,540
Oversight	$8,148
Loading, Transport, and Disposal	$20,137
Dust Monitor	$2,420
Waste Characterization Analyses	$835
2 Week Site Work Sub-Total	$63,080
Barrier Installation Oversight and ECAA Materials[1] – per week	$5,360
12 Week Barrier Installation Oversight Sub-Total	$64,323
Remedial Action Report	$12,248
TOTAL	$146,123

[1]ECAA-required materials include geotextile road base fabric to serve as indicator fabric at $1.28/square yard (VTrans 2-yr 2018 price list)

5.4.1. Advantages

- Effective for protecting human health
- Lower overall project cost (labor and materials)

- The roadway would serve as a cap preventing infiltration of rainwater through contaminated soils left in place

5.4.2. Disadvantages

- Road and rail intersections will require unacceptable grade changes or reconstruction of cross streets and the rail lines to accommodate
- Not effective for removing contaminant mass

5.5. Alternative 3: Use of Site soils for borrow in fill areas, installation of standard roadway, and disposal of excess materials.

This alternative would involve removal of existing pavement and sod, where applicable, perform grading and excavation necessary to achieve the desired sub grade elevation in each area of the Project Area by removing excess soil in certain areas and installing that same soil as fill in others that require infilling. Compatible contaminated soils will be managed as fill in other areas if the soils have the same contaminants. Once desired sub-grades are achieved, the pavement section would be installed. Dust monitoring would be performed while native soils are disturbed or exposed.

Alternative 3 would require the use of institutional controls to ensure the ongoing monitoring and management of the remedial barriers. The institutional controls would require an ongoing monitoring plan, and notification of the VT DEC if excavation in the Project Area is required.

The cost to implement this remedial alternative is estimated at $762,270 and would require an estimated 1.5 months to perform the excavation and an additional 1.5 to 3 months to construct the roadway. Active *in situ* soil management and capping is expected to require a total of 2 months.

Table 7, below, provides a summary cost estimate for Alternative 3. A detailed cost estimate is provided in Appendix E.

Table 7: Alternative 3 Cost Summary

Task	Subtotal
Project Coordination	$8,095
Site Work – per week	$119,910
Oversight	$8,634
Loading, Transport, and Disposal	$80,529
Fill Installation	$26,665
Dust Monitor	$2,420
Waste Characterization Analyses	$1,671
6 Week Site Work Sub-Total	$719,458
Barrier Installation Oversight	$22,470
Remedial Action Report	$12,248
TOTAL	$762,270

5.5.1. Advantages

- Effective for protecting human health
- Median overall project cost (labor and materials)
    - Saves costs related to backfill materials
    - Saves costs and related to transport and disposal of contaminated soils, however, still requires disposal of approximately 3,600 cubic yards of soils
- Reduces greenhouse gas emissions that would occur during the transport of materials to and from the Project Area
- The roadway would serve as a cap preventing infiltration of rainwater through contaminated soils left in place

5.5.2. Disadvantages

- Requires careful management of soils to ensure materials are managed correctly
- Contaminated soils will remain, requiring ongoing management via a Village Ordinance.

5.6. Remedial Alternative Comparison

The remedial alternatives were subjected to a comparative analysis of their appropriateness for mitigating direct contact exposure risk to metals and PAHs and supporting of the proposed construction.

The following US EPA criteria were used as the basis for the comparative analysis:

- Overall Protectiveness – how well the technology will prevent direct contact exposure.
- Compliance with Applicable and Relevant Appropriate Requirements (ARARs) – whether the technology will effectively prevent exposure of Project Area users to PAHs and metals.
- Long-Term Effectiveness and Permanence – whether the technology is a viable long term solution.
- Reduction in Toxicity, Mobility or Volume through Treatment – how well the technology will provide these contaminant treatment objectives.
- Short-Term Effectiveness – how well the technology will provide the desired effects in the early stage of implementation.
- Implementability – level of practical difficulty of implementing the technology; and
- Capital Cost – qualitative rating of cost to construct the technology.

For the purposes of this ECAA, cost estimates are based on present worth calculations for each technology were developed based on published costing information from the VTrans 2-year running average.

Table 8, below, presents the results of technology comparison for each remedial alternative.

Table 8: Comparison of Remedial Alternatives, Crescent Connector Roadway

Criterion	Alternative 1 – Full Excavation	Alternative 2 – Install roadway over existing	Alternative 3 – Partially reuse soils on site, dispose of remaining
Overall Protectiveness	Protective	Protective	Protective
Long-Term Effectiveness and Permanence	Excellent	Acceptable	Acceptable
Compliance with redevelopment objectives	Acceptable	Poor	Acceptable
Green Remedial Strategy	Poor – high emissions due to extra truck traffic. Landfill capacity issues also of concern.	Acceptable	Acceptable.
Reduction in Toxicity, Mobility or Volume through Treatment[1]	Excellent for reducing mobility, excellent for reducing toxicity and volume of contaminant mass	Excellent for reducing mobility, poor for reducing toxicity and volume of contaminant mass	Excellent for reducing mobility, moderate for reducing toxicity and volume of contaminant mass
Short-Term Effectiveness	Excellent	Excellent	Excellent
Implementability	Acceptable	Poor	Acceptable
Is an Institutional Control Necessary?	None	Yes	Yes
Estimated Initial Capital Cost	Highest: $1,988,183	Lowest: $146,123	Middle: $762,270
Ongoing Maintenance	No special maintenance for remedial purposes	Periodic inspection and maintenance of barriers	Periodic inspection and maintenance of barriers

5.7. ECAA Summary

Based on the results of the ECAA, the recommended remedial strategy is Alternative 3: using existing site soils as subgrade fill materials in areas where they are required; transport and disposal of excess soils at an approved disposal facility, implementation of an ongoing monitoring program, and emplacement of an institutional control on the project area in perpetuity.

Each remedial alternative is comparable in their overall protectiveness of human health, as they prevent direct exposure of Project Area users to contaminated soils. The major differences between the alternatives are therefore in the categories of implementability and cost (both initial and ongoing). Of these, a qualitative assessment of long-term durability, ongoing monitoring, lack of institutional controls, and maintenance costs favor Alternative 1. However, the much higher initial capital cost of Alternative 1 is, in our opinion, not justified to achieve higher long-term durability.

Properly constructed and maintained, the recommend remedial strategy will meet the objective of mitigating the exposure risk to Project Area users and workers constructing the roadway. Ongoing maintenance activities will need to be performed to ensure the continued effectiveness of the remedy and will be paired with normal maintenance activities and re-paving schedules.

The institutional control should require that maintenance activities be conducted for as long as the remedy is necessary to mitigate exposure risk; likely to be until the roadway is decommissioned.

6. Corrective Action Plan

This section describes the recommended design elements for the corrective actions proposed within the Project Area as part of construction of the Crescent Connector Roadway. The recommended design elements were developed to minimize the amount of soil to be transported from the site for disposal while also mitigating the direct exposure of Project Area users to known contaminants in soils. Excavation, transport, and disposal of contaminated soils and installation of infrastructure and roadway materials will be performed by the Village of Essex Junction's contractor, which will be selected through a formal solicitation.

For all soils, the cleanup criteria will be the VSS for non-residential use. All remedial actions will be performed by Hazardous Waste Operations and Emergency Response (HAZWOPER) trained contractors with oversight provided by Stone. Disposal characterization analyses have been performed with the exception of pH, ignitability, and reactivity cyanide/sulfide testing, but will likely need to be re-performed of stockpiled soils. Testing for these last parameters, which are not expected to affect the disposal characterization, will be performed upon stockpiling the soils.

According to Casella Waste Systems, Inc., these soils are suitable for use as alternative daily cover (ADC) in either Vermont or New York.

6.1. Primary Redevelopment Elements

According to the Village of Essex Junction and the design engineer, current construction plans for the Project Area include removal of existing asphalt surfaces, installation of stormwater and utility infrastructure, excavation and infilling to the designed subgrade elevation, and construction of the roadway. The roadway will measure approximately 1,250 feet in length and include two parking areas in Section 2 totaling 30 parking spaces with additional parallel parking included alongside the Railroad Street section. Drawings of the proposed roadway and parking lot are provided as Figure 4 and detailed in Sheets 8 through 12, 44 through 49, 58, and 59 in Appendix A.

6.2. Materials of Construction

The engineered controls to be constructed within the Project Area, developed by Dubois and King, will consist of the following materials, or other suitable substitute as applicable, provided those materials provide the same general use and direct exposure protection performance:

- Subgrade
  - Undisturbed native soils or borrow soils
- Roadway Subbase
  - 3 inches sand borrow
  - 4-inch insulation board
  - 24 inches: dense graded crushed stone

- 6 inches fine graded crushed stone
- Roadway: 6 inches Superpave Bituminous Concrete Pavement
- Sidewalks
  - 6 inches fine graded crushed gravel; 12 inches across commercial drives
  - 4 inches Portland cement concrete sidewalk, 6-8 inches across commercial drives
- Railroad Street Parking Lot Subbase – Parking Lanes
  - 24 inches drainage aggregate
- Railroad Street Parking Lot Pavement Section – Parking Lanes
  - 11 inches porous bituminous concrete pavement
- Railroad Street Parking Lot - Travel Lanes
  - Subbase Section:
    - 3 inches sand borrow
    - 4-inch insulation board
    - 24 inches dense graded crushed stone
  - Pavement Section: 4 inches bituminous concrete pavement
- Greenspaces
  - 6 inches: Fine graded crushed gravel
  - 4 inches topsoil.
  - Seed and mulch

6.3. Health and Safety

Due to the presence of contaminated soil within the Project Area, these construction activities should be performed using appropriate health and safety precautions. Contractors performing intrusive activities, where a risk of exposure to contaminated soil is present, will be required to do so under the supervision of a Qualified Environmental Professional (QEP).

A Health and Safety Plan is included in Appendix F for reference.

An Air Monitoring Plan has been prepared to ensure that site workers and the off-site public are not exposed to levels of airborne contaminants or fugitive dusts that could result in unacceptable risks during demolition, re-grading, excavation, and loading of contaminated soil. The Air Monitoring Plan is provided as an attachment to Stone's Health and Safety Plan (Appendix F). Real-time monitoring equipment will be used on-site while construction activities that disturb contaminated soil are occurring. Air monitoring data will be contained within a project database to document dust concentrations prior to and during construction activities.

Mitigation measures will be employed if action levels are reached or exceeded and may include water misting or calcium chloride application to reduce particulate concentrations to levels at or below the action level. Additional measures may include but are not limited to tarps or plastic sheeting to further isolate the work

area or suspending work until wind speeds drop to acceptable levels. If mitigation measures do not result in a drop in particulate concentrations to background levels, work activities will cease until particulate levels drop to background levels or dust mitigation procedures are re-evaluated.

6.4. Asphalt Removal

Asphalt, currently existing within Section 1 and Section 3, will be stripped, stockpiled, and transported for recycling. The selected contractor will be responsible for locating an appropriate asphalt recycling facility, however nearby facilities include:

- Myers Recycling, Colchester, (802) 655-4312
- Pike Industries, Williston (802) 658-0453
- Ranger Asphalt and Concrete, Colchester (802) 655-2005

6.5. Soil Management

Soil excavated during construction activities, such as stormwater infrastructure earthwork, surface grading, etc. will be used as fill in areas of the Project Area that require raising the final grade, specifically Section 1. Figure 4, included in Appendix A, depicts the portions of the Project Area that require a net removal of soil as well as those areas that require installation of borrow to achieve the designed subgrade elevation. Based on cut/fill estimates developed by the civil engineering team, approximately 3,600 cubic yards (yd^3)/5,400 tons of soil will require off-site disposal. Of this volume, approximately 198 yd^3– located within Section 2 and noted by the pink coloration on Figure 4 –will require disposal as ADC at a regulated solid waste landfill such as Casella's landfill in Clinton County New York or the Coventry, Vermont landfill. The development soils will first be used as fill material at the Site in other areas designated as development soils, and the excess soils may be disposed at a categorical facility permitted to receive development soils. If a categorical facility is not identified, excess soils generated from areas noted as "development soils" on Figure 4 will require landfill disposal. Excess "urban" soils may be disposed at any property within an urban area as defined by the Vermont Agency of Natural Resources Natural Resource Atlas[1].

All excess soil for off-site disposal will either be live loaded onto trucks or staged on polyethylene sheeting prior to being transported off-site for disposal. Staged soil would be covered by polyethylene sheeting and silt fence would be installed around the base of stockpiles.

6.6. Engineered Barriers

Engineered barriers will be installed to prevent exposure to contaminated soils. Engineered barriers, described in detail in the following subsections, include:

- Concrete caps (proposed sidewalks);
- Asphalt, concrete, and aggregate cap (proposed parking lot and roadway); and
- Soil and geotextile fabric cap (proposed green spaces).

[1] http://anrmaps.vermont.gov/websites/anra5/

As designed, the proposed roadway, parking lot, and sidewalks achieve the prescribed separation minimums as detailed in VT DEC's *Investigation and Remediation of Contaminated Properties Rule* (VT DEC, 2019). Limited greenspaces are proposed; however those will include 6 inches of fine graded crushed stone with an overlay of 4 inches of topsoil. These materials will be installed above a geotextile indicator fabric. Engineered barriers will be installed with environmental oversight provided by a Qualified Environmental Professional (QEP). The areal extent of each type of barrier is provided as Sheets 7 through 12 included within Appendix A.

Clean fill imported to the Project Area to construct the engineered barriers will be certified in writing by each supplier to be material that has not been impacted by release of oil or hazardous materials.

Specifications used for the installation of engineered barriers have been selected by the Design Team Civil Engineer (Dubois and King) and are consistent with the following Vermont Agency of Transportation Standard Specifications for Construction 2018 and the Village of Essex Junction Public Works Specifications and Details:

- Section 203: Excavations and Embankments
- Section 301: Subbase
- Section 406: Bituminous Concrete Pavement
- Section 618: Sidewalks
- Section 649: Geotextile Fabric
- Section 651: Turf Establishment

Copies of these specifications can be found at:
https://outside.vermont.gov/agency/VTRANS/external/docs/construction/02ConstrServ/PreContract/2018SpecBook/2018%20Standard%20Specifications%20for%20Construction.pdf

Typical cross section details are provided as Sheets 8 through 12 in Appendix A.

6.6.1. Concrete Cap

Concrete sidewalks will also be utilized as a physical barrier between project users and underlying contaminated soil. Following grading to the required construction elevation 6-inches of compacted crushed gravel (AOT specification 704.05 fine) will be installed above the contaminated soils. Four inches of concrete will be poured over the compacted crushed gravel, with the exception that 6 or 8-inches of concrete over 12 inches of compacted crushed gravel will be installed in areas where sidewalks cross commercial driveways. The 4-inch-thick concrete layer and underlying 6-inch thick clean aggregate layer will serve as a 10-inch thick barrier between site users and contaminated soils. Barrier thickness will increase to 18 to 20-inches where sidewalks cross commercial driveways.

6.6.2. Porous Pavement Cap

To achieve stormwater treatment and onsite storage goals, D&K has designed the parking lot to be constructed using porous bituminous concrete. According to the typical sections developed by D&K porous concrete will consist of 11 inches of porous bituminous concrete installed over 24 inches of drainage aggregate.

6.6.3. Asphalt Cap

Construction activities for the proposed parking lot travel lanes and roadway includes the installation of a minimum of 37-inches of clean imported base material underlying a minimum of 6-inches of asphalt. A 4-

inch insulation board layer will be installed over a 3-inch sand borrow layer above native soils. Clean imported base materials installed over the insulation board and will include 24-inches of dense graded crushed stone overlain by 6-inches of fine graded crushed gravel. Asphalt will be installed in three, 2-inch courses for the roadway and two, 2-inch courses in the travel lanes of the parking lot.

6.6.4. Soil Cap

Proposed greenspaces are located along the perimeter of the proposed parking lot and along the proposed roadway. The engineered barrier in these areas would include grading sub grade soils to allow for subsequent installation of at least 10-inches of clean imported fill while allowing for final grade elevations. Following grading, clean fill will then be installed. The first 6 inches of the soil cap barrier will consist of fine graded crushed stone. The top four inches will consist of topsoil.

6.7. Engineering Controls

Project Area engineering controls include installation of asphalt, soil, and concrete caps as a mechanism for controlling direct exposure to contaminated soils. The physical integrity of these barriers will be managed through institutional controls as described in the following Section.

6.8. Institutional Controls

Institutional controls are proposed for the Project Area to ensure ongoing maintenance and monitoring of the remedy occur in perpetuity. The Institutional Controls include a Village Ordinance governing actions for the entire Project Area. A copy of the proposed Village Ordinance is in Appendix G.

6.8.1. Village Ordinance

The proposed roadway will be controlled by the Village of Essex Junction. To ensure long-term maintenance and operation of the engineered barriers in perpetuity, the Village of Essex Junction has drafted an ordinance dictating ongoing requirements for monitoring and maintaining the remedial barriers and notifying the VT DEC in the event of subsurface explorations for purposes such as utility or roadway maintenance. The Village Ordinance will be enforced by the Village with notification to VTDEC. The Village Ordinance shall describe the location of contamination remaining in the Project Area and the need for ongoing maintenance of the caps. The ordinance shall also require that the engineered barriers be maintained in perpetuity, that the caps will be routinely inspected for degradation, and that cracks or other degradation will be promptly repaired, within 30 days as allowed by weather. The ordinance will further require that the VT DEC be notified prior to any future excavations that would require penetrating the engineered barriers, and that such work will be performed under a health and safety plan prepared by personnel trained in accordance with the requirements of the OSHA HAZWOPER regulations (29 CFR 1910.120).

6.9. Long-Term Operations and Maintenance

The following operation and maintenance (O&M) activities will be required to maximize the useful life of the engineered barriers:

- Periodic inspection of the asphalt, soil, and concrete caps for visual indications of physical damage, to evaluate their continued effectiveness as engineered barriers. Repairs will be made to asphalt, soil, and concrete caps and documented, as necessary.
- Careful monitoring of soil caps for signs of erosion, particularly after storms, and timely repair of any areas of erosion to prevent exposure or off-site migration of the underlying contaminated materials due to erosion.

- Prompt repair of any damage to caps and regular maintenance, as necessary, to ensure the engineering controls and access restrictions continue to mitigate the exposure of users within the Project Area to underlying contaminated media.
- Annual inspection reports will be submitted by the Village to the VT DEC.

Prior to performing any excavations that would disturb subgrade soils (I.E., those that penetrate the full depth of the engineered barrier), those performing the work will be required to obtain an Excavation and Right-of-Way Permit from the Village of Essex Junction and to notify the VT DEC Site Manager. Any contaminated soils generated during repairs should be preferentially used as backfill on-site or disposed of properly at a VT DEC-approved location. The engineered barrier shall be re-installed to the specifications presented above.

6.10. Health and Safety

Due to the presence of contaminated media within the Project Area, these construction activities should be performed using appropriate health and safety precautions. Contractors selected for construction shall perform construction services under the auspices of their own site-specific health and safety plan, to be developed for the project. The contractor must make their own determinations as to the appropriate level of health and safety protection required for each of the construction activities described in Sections 6.4 through 6.6. Where applicable, the work shall be performed by personnel trained in accordance with the requirements of the OSHA HAZWOPER regulations (29 CFR 1910.120).

6.11. Permitting

6.11.1. Erosion Control Measures

Based on the planned area of disturbance within the Project Area (>1 acre), it is anticipated that construction activities at the site, including the corrective actions described herein, will be conducted in accordance with the Construction General Permit issued by VT DEC under the National Pollution Discharge Elimination System (NPDES).

The Notice of Intent has been issued for the project as a low-risk project based on the risk assessment contained in Appendix A of the Construction General Permit 3-9020, and as such, the project will implement measures included in the Low Risk Site Handbook for Erosion Prevention and Sediment Control, published by VT DEC February 2020.

All native soil excavated from the Project Area will be either directly placed in its on-site re-use location or stockpiled on site on polyethylene sheeting with a minimum thickness of 6-mil. If stockpiled, at the end of each workday, and at all times after stockpiling is completed, stockpiles of native soil will be covered with minimum 6-mil reinforced polyethylene sheeting and surrounded by silt fence to filter stormwater runoff. The polyethylene sheet lining and covering on the stockpiles will be maintained in place until the material is shipped off-site for disposal or moved to its on-site re-use location.

6.11.2. Post-Construction Stormwater Management

Stone also evaluated the need for the proposed project to obtain coverage under a stormwater discharge permit against the thresholds contained in the General Permit 3-9015 for Stormwater Discharges from New Development and Redevelopment (VT DEC, issued March 20, 2013).

As existing site conditions include more than 1 acre of impervious surface and that the area of impervious surface will increase by more than 5,000 square feet as a result of the proposed project, a post-construction

stormwater discharge permit is required for the proposed Project Area, including the corrective actions described herein.

6.12. Reporting

Following completion of Project Area activities, a remediation completion report will be prepared and submitted to the VT DEC, Sites Management Section. The completion report will include a description of site activities including dates of work and as-built construction diagrams. Deviations from the Final CAP will be noted within the completion report.

Annual inspection reports will be prepared by the Village and submitted to the VTDEC. Additional reporting may be required by the VT DEC in the event that future excavation or maintenance activities are necessary. As stated in Section 6.8, the Village of Essex Junction and the VTDEC shall be notified prior to performing any excavations that extend into subgrade soils. Such activities would include reporting to the VT DEC.

6.13. Schedule, Contracting, and Interim Measures

Upon approval of the CAP, the proposed schedule for completion of the corrective action plan is provided in Table 9 below.

Table 9: Proposed Schedule.

Task	Responsible Party	Duration	Anticipated Start Date
Public Comment Period		30 days	October 30, 2020
Final CAP	Stone	15 days	December 15, 2020
Excavation, transportation, and disposal of contaminated soils	Contractor with QEP oversight	1.5 months	Summer 2021
Installation of engineered barriers	Contractor with PE oversight	2 months	Summer 2021
Corrective Action Completion Report	Stone	2 months	Fall 2021
Long-Term Monitoring	VTrans / Village of Essex	Ongoing	TBD

Submittal of Corrective Action Completion Report will be submitted within two months of completing Site activities.

At present, no contractor(s) has been awarded a contract for performing the described remedial actions. The selection and award of a contractor is outside the scope of this CAP development effort. Once a construction contractor has been selected to perform the CAP and construct the roadway, a more accurate project timeline can be developed and shared with VT DEC.

6.14. Cost

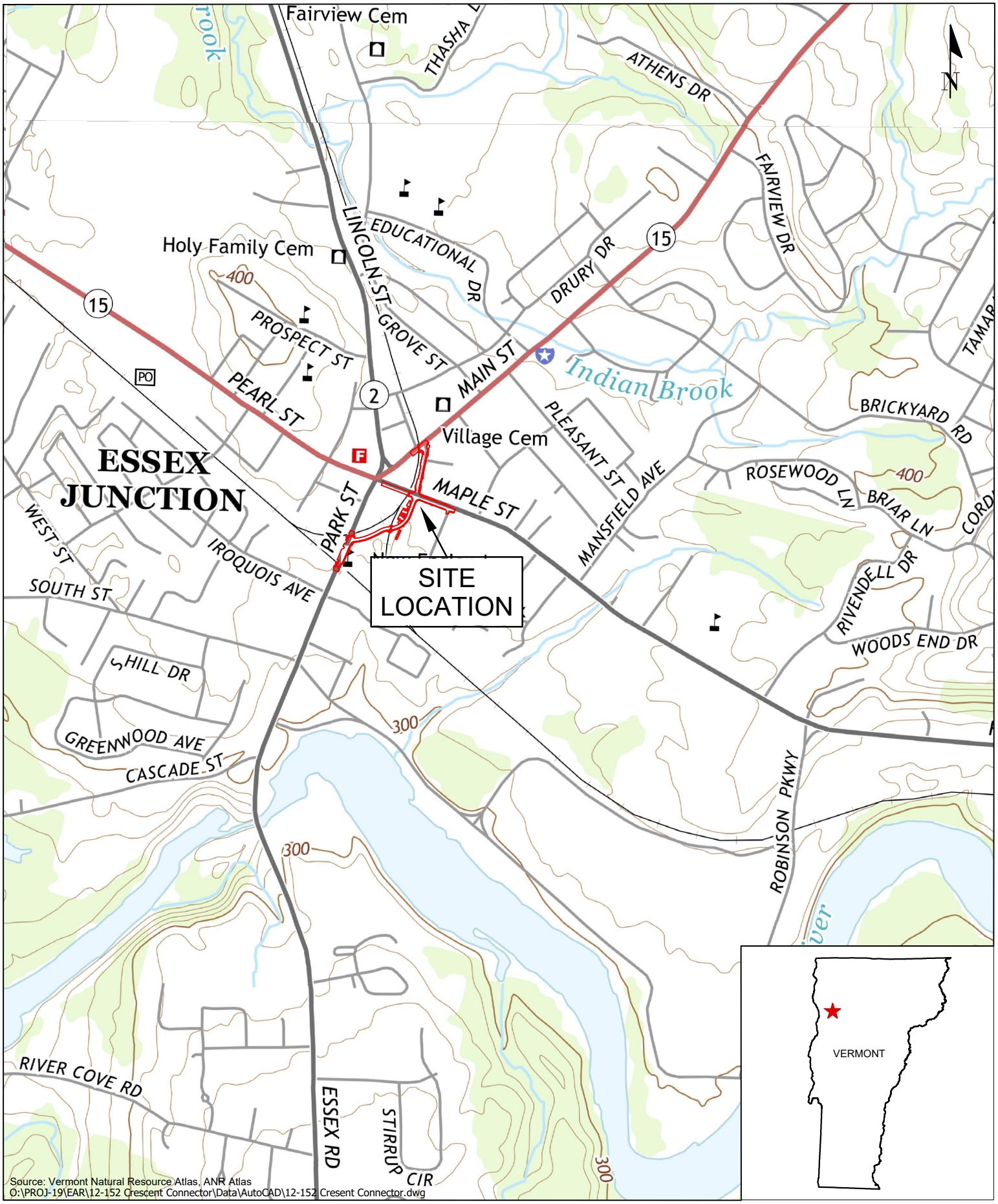
Stone has prepared a cost estimate for the corrective actions specified herein, including management of contaminated soils generated during Project Area preparation, oversight by a QEP, implementing a dust monitoring program, and reporting. Costs for construction of the roadway itself and associated infrastructure (e.g., stormwater management) are not included herein.

To prepare this opinion of cost, Stone utilized past project experience, the Vermont Agency of Transportation (VTrans) 2-Year Averaged Price List (January 2018 through January 2020), in addition to unit pricing

provided by waste disposal companies. Following approval of this CAP by VT DEC, Stone anticipates that the consulting civil engineer will prepare a detailed construction specification and solicit bids to perform the work, including the corrective actions.

Stone estimates the total project cost to be $882,180. A detailed cost estimate of the selected remedy is included in Appendix E.

Appendix A: Figures



Source: Vermont Natural Resource Atlas, ANR Atlas
O:\PROJ-19\EAR\12-152 Crescent Connector\Data\AutoCAD\12-152 Cresent Connector.dwg

DRAWING CREDITS

Drawn On:	3/27/2020
Drawn By:	LBR
Checked On:	5/20/2020
Checked By:	DTV
Project No.:	12-152

DRAWING SCALE

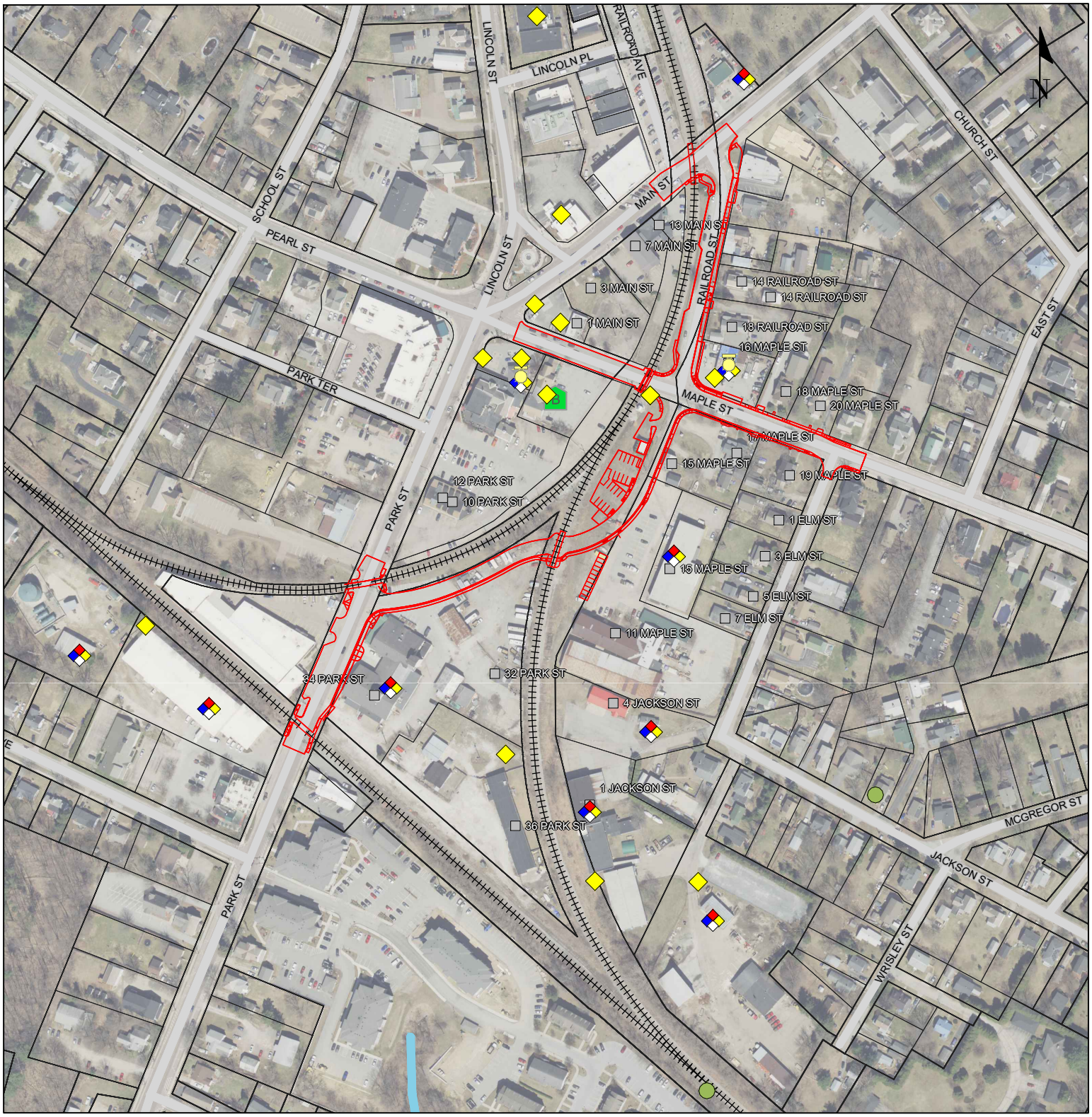
0 600 1200 Feet
Scale 1:1200

STONE ENVIRONMENTAL

LOCATION MAP
CORRECTIVE ACTION PLAN
CRESENT CONNECTOR

ESSEX VERMONT

FIGURE NO. 1



LEGEND

- Parcel Boundary
- Revised Road Alignment
- Stream
- Railroad
- Public Water Source
- Hazardous Waste Site
- Hazardous Waste Generator
- Brownfields
- UST

Source: Vermont Natural Resource Atlas, ANR Atlas
O:\PROJ-19\EAR\12-152 Crescent Connector\Data\AutoCAD\12-152 Cresent Connector.dwg

DRAWING CREDITS

Drawn On:	5/20/2020
Drawn By:	LBR
Checked On:	5/20/2020
Checked By:	DTV
Project No.:	12-152

DRAWING SCALE

0 200 400 Feet

STONE ENVIRONMENTAL

VICINITY MAP
CORRECTIVE ACTION PLAN
CRESENT CONNECTOR

ESSEX VERMONT

FIGURE NO. 2

LEGEND

- Cresent Connector Corridor
- Parcel Boundaries
- Soil Boring (May 2020)
- Soil Boring (October 2013)

Notes:
1) Concentration units reported in mg/Kg.
2) U - Indicates non detection of analyte with the limit of quantitation listed.
   Values in BOLD exceed the Vermont Soil Standards for Residential Soils.
   Values in RED text are also greater than the VSS for Non-Resident Soils.
3) cPAH: Total carcinogenic polycyclic aromatic hydrocarbon concentration relative to benzo(a)pyrene TEQ.

N

0 60 120

Feet

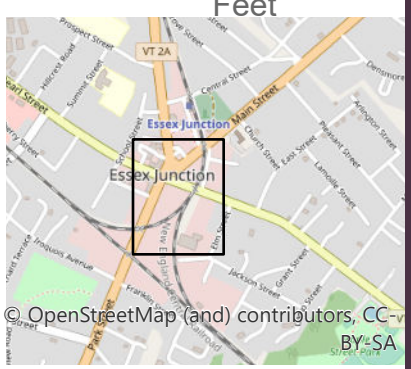


Figure 3: Site Map

Corrective Action Plan
Crescent Connector

Essex Junction, Vermont

STONE ENVIRONMENTAL

Path: \\stone-files1\NetDrv-O\PROJ-19\EAR\12-152 Crescent Connector\GIS\MapDocuments\Proposed Remediation Areas Figure (updated from archives).aprx CAP Figure 3 Site Map Exported: 6/8/2020 3:32 PM

Clean Fill:
Clean fill can be used as fill on-site or transported off-site as non-regulated clean fill.

Urban Soils:
Excess soils generated from this area will be used as fill on-site, disposed of at an approved disposal facility, or used at another urban site.

Development Soils:
Excess soils generated from this area will be used as fill on-site or disposed of at an approved disposal facility. Any soils used on-site from this area must be placed under an engineered barrier.

Non-hazardous Waste Soils:
Excess soils generated from this area will be disposed of at an approved disposal facility

-244.27 / +8.96
-235.31 CY

-203.75 / +19.84
-183.91 CY

-113.4 / +20.55
-92.85 CY

-113.5 / +14.43
-99.07 CY

-129.19 / +5.76
-123.43 CY

-144.72 / +4.69
-140.03 CY

-184.34 / +1.45
-182.89 CY

-221.51 / +0.86
-220.65 CY

-220.79 / +1.58
-219.21 CY

-94.27 / +8.24
-86.03 CY

-272.95 / +6.98
-265.97 CY

-493.48 / +4.71
-488.77 CY

-430.07 / +2.26
-427.81 CY

-197.84 / +0.22
-197.62 CY

-100.23 / +58.76
-41.47 CY

-29.09 / +122.15
93.06 CY

-506.69 / +7.82
-498.87 CY

-0 / +305.76
305.76 CY

-535.99 / +5.09
-530.9 CY

-244.95 / +9.77
-235.18 CY

-0.06 / +190
189.94 CY

-530.9 / 0
-530.9 CY

-0 / +323.94
323.94 CY

-0.77 / +218.41
217.64 CY

-0.06 / +243.46
243.4 CY

-131.21 / +44.69
-86.52 CY

-20.95 / +149.63
128.68 CY

-110.26 / +0
-110.26 CY

LEGEND

- Proposed Crescent Connector Corridor
- Development Soils
- Non-hazardous Waste Soils
- Urban Soils
- Clean Fill

Proposed Remediation Area
with cut (-)/ fill (+) and net (+/-) soil volumes in cubic yards

Cut (Net) Fill (Net)

N

0 40 80

Feet

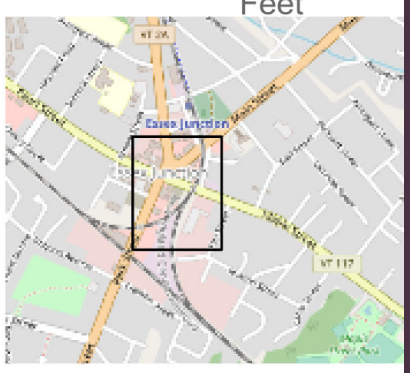


Figure 4: Soil Management Plan

Corrective Action Plan
Crescent Connector

Essex Junction, Vermont

STONE ENVIRONMENTAL

Source: Esri World Imagery

Path: O:\PROJ-19\EAR\12-152 Crescent Connector\GIS\MapDocuments\Proposed Remediation Areas Figure (updated from archives).aprx Vicinity Map Portrait Exported: 6/14/2021 8:37 AM by lrajnak

Appendix B: Concentration Result Tables

Table B-1
Metals Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-1-0.5		AMR-SB-2-2.0		AMR-SB-3-0.5		AMR-SB-4-2.0		AMR-SB-5-0.5		AMR-SB-6-2.0	
Sample Date	**CAS#**					**6/28/2013**	**Q**	**6/28/2013**	**Q**	**6/28/2013**	**Q**	**6/28/2013**	**Q**	**6/28/2013**	**Q**	**6/28/2013**	**Q**
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Beryllium	7440-41-7	35	289	160	2300	0.326	U	0.322	U	**0.356**		0.317	U	**0.416**		0.338	U
Cadmium	7440-43-9	6.9	87	71	980	0.652	U	0.644	U	0.694	U	0.635	U	0.67	U	0.676	U
Chromium	7440-47-3	NE	NE	NE	NE	**10.8**		**13.8**		**9.33**		**10.4**		**11.5**		**12.9**	
Copper	7440-50-8	10407	139231	3100	47000	**15.3**		**43.0**		**22.4**		**6.72**		**27.5**		**8.37**	
Lead	7439-92-1	400	800	400	800	**28.7**		**21.9**		**38.9**		5.07	U	**93.8**		5.4	U
Nickel	7440-02-0	940	9707	1500	22000	**15.9**		**23.3**		**13.5**		**13.4**		**11**		**13.9**	
Silver	7440-22-4	237	2483	390	5800	1.83	U	1.8	U	1.95	U	1.77	U	1.87	U	1.89	U
Zinc	7440-66-6	21986	294150	23000	350000	**38.2**		**54.3**		**37.9**		**30.1**		**35.0**		**32.9**	
Antimony	7440-36-0	26	319	31	470	**1.9**		**1.1**		**1.5**		0.79	U	**6.5**		0.84	U
Arsenic	7440-38-2	16	16	0.68	3	***4.93***		***4.85***		***7.91***		***3.89***		***8.61***		***3.72***	
Mercury	7439-97-6	3.1	3.1	11	46	0.0522	U	0.0518	U	0.0547	U	0.0494	U	0.0547	U	0.0538	U
Selenium	7782-49-2	366	4900	390	5800	1.3	U	1.3	U	1.4	U	1.3	U	1.3	U	1.4	U
Thallium	7440-28-0	NE	NE	0.78	12	1.3	U	1.3	U	1.4	U	1.3	U	1.3	U	1.4	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-7-0.5		AMR-SB-8-2.0		AMR-SB-09-0.5		AMR-SB-10-2.0		AMR-SB-11-0.5		AMR-SB-12-2.0	
Sample Date	**CAS#**					**6/28/2013**	**Q**	**6/28/2013**	**Q**	**6/28/2013**	**Q**	**6/28/2013**	**Q**	**6/28/2013**	**Q**	**6/27/2013**	**Q**
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Beryllium	7440-41-7	35	289	160	2300	**0.421**		0.336	U	0.311	U	0.336	U	**0.585**		0.341	U
Cadmium	7440-43-9	6.9	87	71	980	0.698	U	0.672	U	0.622	U	0.672	U	0.768	U	**0.88**	
Chromium	7440-47-3	NE	NE	NE	NE	**12.3**		**11.4**		**11**		**13.6**		**18.1**		**15.4**	
Copper	7440-50-8	10407	139231	3100	47000	**59.6**		**8.54**		**42**		**51.7**		**157**		**10.6**	
Lead	7439-92-1	400	800	400	800	**248**		5.38	U	**155**		**47.3**		**735**		5.45	U
Nickel	7440-02-0	940	9707	1500	22000	**10.8**		**16.8**		**12.7**		**14.3**		**17.5**		**21.0**	
Silver	7440-22-4	237	2483	390	5800	1.95	U	1.88	U	1.74	U	1.88	U	2.15	U	1.91	U
Zinc	7440-66-6	21986	294150	23000	350000	**33.7**		**23.9**		**98.2**		**31.3**		**38.0**		**101**	
Antimony	7440-36-0	26	319	31	470	**11.5**		0.84	U	**1.4**		**1.3**		**47**		0.85	U
Arsenic	7440-38-2	16	16	0.68	3	***7.22***		***4.75***		***6.27***		***9.36***		***264***		***5.45***	U
Mercury	7439-97-6	3.1	3.1	11	46	0.0542	U	0.0533	U	***5.57***		0.0525	U	**0.356**		0.0543	U
Selenium	7782-49-2	366	4900	390	5800	5.6	U	1.3	U	1.2	U	1.3	U	**2.6**		1.4	U
Thallium	7440-28-0	NE	NE	0.78	12	1.4	U	1.3	U	1.2	U	1.3	U	1.5	U	1.4	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-15-2.0		AMR-SB-17-2.0		AMR-SB-21-0.5		AMR-SB-21-0.5 FD		AMR-SB-24-1.0		AMR-SB-25-0.5	
Sample Date	**CAS#**					**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Beryllium	7440-41-7	35	289	160	2300	0.32	U	**0.411**		**0.542**		0.337	U	0.429	U	0.314	U
Cadmium	7440-43-9	6.9	87	71	980	0.642	U	0.761	U	**0.799**		0.673	U	0.858	U	0.629	U
Chromium	7440-47-3	NE	NE	NE	NE	**14.8**		**24.6**		**19.1**		**12.4**		**19.3**		**8.5**	
Copper	7440-50-8	10407	139231	3100	47000	**11.0**		**50.7**		**82.1**		**30.9**		**29.6**		**21.2**	
Lead	7439-92-1	400	800	400	800	**5.33**		**129**		**216**		**117**		**82.8**		**7.96**	
Nickel	7440-02-0	940	9707	1500	22000	**14.7**		**21.2**		**24.1**		**9.73**		**24.2**		**14.2**	
Silver	7440-22-4	237	2483	390	5800	1.8	U	2.13	U	1.9	U	1.89	U	2.41	U	1.76	U
Zinc	7440-66-6	21986	294150	23000	350000	**28.4**		**113**		**120**		**47.9**		**68.0**		**44.9**	
Antimony	7440-36-0	26	319	31	470	0.8	U	**7.0**		**7.3**		**11.0**		1.1	U	0.79	U
Arsenic	7440-38-2	16	16	0.68	3	***4.92***		***14.3***		***22.5***		***4.02***		***7.71***		***5.03***	U
Mercury	7439-97-6	3.1	3.1	11	46	0.0515	U	**0.123**		**0.088**		**0.066**		0.0665	U	0.0498	U
Selenium	7782-49-2	366	4900	390	5800	1.3	U	1.5	U	**1.4**		1.3	U	1.7	U	1.3	U
Thallium	7440-28-0	NE	NE	0.78	12	1.3	U	1.5	U	1.4	U	1.3	U	1.7	U	1.3	U

Table B-1
Metals Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-26-2.0		AMR-SB-27-0.5		AMR-SB-28-2.0		AMR-SB-29-0.5		AMR-SB-30-2.0		AMR-SB-31-0.5	
Sample Date	**CAS#**					**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**												
Beryllium	7440-41-7	35	289	160	2300	0.307	U	0.321	U	**0.606**		0.358	U	0.349	U	0.332	U
Cadmium	7440-43-9	6.9	87	71	980	0.612	U	0.642	U	**0.926**		0.717	U	0.697	U	0.663	U
Chromium	7440-47-3	NE	NE	NE	NE	**9.56**		**11.2**		**18.0**		**11.8**		**14.7**		**10.2**	
Copper	7440-50-8	10407	139231	3100	47000	**10.6**		**24.4**		**159**		**8.84**		**110**		**26.7**	
Lead	7439-92-1	400	800	400	800	4.9	U	**8.67**		**251**		**8.43**		**170**		**8.76**	
Nickel	7440-02-0	940	9707	1500	22000	**16.3**		**15.8**		**20.0**		**9.26**		**19.8**		**18.3**	
Silver	7440-22-4	237	2483	390	5800	1.72	U	1.79	U	2.0	U	2.0	U	1.96	U	1.86	U
Zinc	7440-66-6	21986	294150	23000	350000	**27.4**		**49.7**		**35.8**		**27.9**		**48.2**		**43.5**	
Antimony	7440-36-0	26	319	31	470	0.77	U	0.8	U	**19.9**		0.9	U	**9.8**		0.83	U
Arsenic	7440-38-2	16	16	0.68	3	***4.45***		***6.19***		***13.4***		***4.52***		***10.8***		***5.89***	
Mercury	7439-97-6	3.1	3.1	11	46	0.0507	U	0.0508	U	**0.0863**		0.0576	U	**0.0614**		0.051	U
Selenium	7782-49-2	366	4900	390	5800	1.2	U	1.3	U	2.9	U	1.4	U	1.4	U	1.3	U
Thallium	7440-28-0	NE	NE	0.78	12	1.2	U	1.3	U	1.4	U	1.4	U	1.4	U	1.3	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-31-FD-0.5		AMR-SB-32-2.0		AMR-SB-33-0.5		AMR-SB34-1.5		AMR-SB35-1.5		AMR-SB36-2.0	
Sample Date	**CAS#**					**6/27/2013**	**Q**	**6/27/2013**	**Q**	**6/27/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**												
Barium	7440-39-3	11247	127382	15000	220000	NS		NS		NS		**115**		**61.3**		**13.2**	
Beryllium	7440-41-7	35	289	160	2300	0.328	U	0.324	U	0.327	U	NS		NS		NS	
Cadmium	7440-43-9	6.9	87	71	980	0.657	U	0.648	U	0.653	U	**1.41**		**1.0**		**0.712**	
Chromium	7440-47-3	NE	NE	NE	NE	**9.95**		**9.15**		**11.4**		**18.6**		**16.1**		**7.66**	
Copper	7440-50-8	10407	139231	3100	47000	**28.6**		**10.7**		**20.3**		NS		NS		NS	
Lead	7439-92-1	400	800	400	800	**9.02**		**8.95**		**8.45**		**663**		**333**		4.93	U
Nickel	7440-02-0	940	9707	1500	22000	**17.5**		**13.8**		**16.2**		NS		NS		NS	
Silver	7440-22-4	237	2483	390	5800	1.84	U	1.81	U	1.83	U	1.95	U	1.9	U	1.73	U
Zinc	7440-66-6	21986	294150	23000	350000	**48.2**		**25.7**		**41.7**		NS		NS		NS	
Antimony	7440-36-0	26	319	31	470	0.82	U	0.81	U	0.82	U	NS		NS		NS	
Arsenic	7440-38-2	16	16	0.68	3	***6.05***		***4.22***		***5.97***		***14.2***		***14.1***		***3.6***	
Mercury	7439-97-6	3.1	3.1	11	46	0.0498	U	0.0494	U	0.0503	U	**0.334**		**0.413**		0.0511	U
Selenium	7782-49-2	366	4900	390	5800	1.3	U	1.3	U	1.3	U	2.8	U	**1.5**		1.2	U
Thallium	7440-28-0	NE	NE	0.78	12	1.3	U	1.3	U	1.3	U	NS		NS		NS	

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB37-2.0		AMR-SB38-2.0		AMR-SB38-2.0-FD		AMR-SB39-1.5		AMR-SB40-1.2		AMR-SB41-1.1	
Sample Date	**CAS#**					**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**												
Barium	7440-39-3	11247	127382	15000	220000	**17.3**		**25.2**		**19.2**		**36.5**		**19.6**		**79.0**	
Beryllium	7440-41-7	35	289	160	2300	NS		NS		NS		NS		NS		NS	
Cadmium	7440-43-9	6.9	87	71	980	**0.711**		**0.993**		**0.877**		**0.726**		**0.707**		**0.910**	
Chromium	7440-47-3	NE	NE	NE	NE	**11.2**		**17.7**		**14.9**		**18.1**		**14.4**		**17.5**	
Copper	7440-50-8	10407	139231	3100	47000	NS		NS		NS		NS		NS		NS	
Lead	7439-92-1	400	800	400	800	5.03	U	**66.5**		**78.9**		**273**		**58.3**		***964***	
Nickel	7440-02-0	940	9707	1500	22000	NS		NS		NS		NS		NS		NS	
Silver	7440-22-4	237	2483	390	5800	1.76	U	1.93	U	1.83	U	1.78	U	1.87	U	1.83	U
Zinc	7440-66-6	21986	294150	23000	350000	NS		NS		NS		NS		NS		NS	
Antimony	7440-36-0	26	319	31	470	NS		NS		NS		NS		NS		NS	
Arsenic	7440-38-2	16	16	0.68	3	***5.28***		***4.57***		***5.62***		***10.3***		***5.16***		***532***	
Mercury	7439-97-6	3.1	3.1	11	46	0.0518	U	0.0539	U	0.0542	U	**0.193**		0.0536	U	**0.266**	
Selenium	7782-49-2	366	4900	390	5800	1.3	U	1.4	U	1.3	U	1.3	U	1.3	U	**3.7**	
Thallium	7440-28-0	NE	NE	0.78	12	NS		NS		NS		NS		NS		NS	

Table B-1
Metals Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB42-1.5		AMR-SB43-1.0		AMR-SB44-1.0		AMR-SB45-1.5		AMR-SB46-2.0		AMR-SB47-2.0	
Sample Date	**CAS#**					**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**												
Barium	7440-39-3	11247	127382	15000	220000	**62.2**		**39.0**		**66.5**		**37.6**		**22.1**		**14.9**	
Beryllium	7440-41-7	35	289	160	2300	NS		NS		NS		NS		NS		NS	
Cadmium	7440-43-9	6.9	87	71	980	**1.11**		**0.846**		**1.19**		**0.811**		**0.641**		**0.79**	
Chromium	7440-47-3	NE	NE	NE	NE	**25.7**		**20.7**		**17.5**		**14.5**		**8.68**		**13.3**	
Copper	7440-50-8	10407	139231	3100	47000	NS		NS		NS		NS		NS		NS	
Lead	7439-92-1	400	800	400	800	**205**		**260**		**296**		**102**		**7.52**		5.09	U
Nickel	7440-02-0	940	9707	1500	22000	NS		NS		NS		NS		NS		NS	
Silver	7440-22-4	237	2483	390	5800	1.94	U	1.78	U	2.01	U	1.74	U	1.78	U	1.78	U
Zinc	7440-66-6	21986	294150	23000	350000	NS		NS		NS		NS		NS		NS	
Antimony	7440-36-0	26	319	31	470	NS		NS		NS		NS		NS		NS	
Arsenic	7440-38-2	16	16	0.68	3	***14.9***		***13.0***		***16.2***		***5.53***		***5.83***		***5.23***	
Mercury	7439-97-6	3.1	3.1	11	46	**0.103**		**0.109**		**0.111**		0.05	U	0.0494	U	0.0512	U
Selenium	7782-49-2	366	4900	390	5800	1.4	U	**1.4**		1.4	U	1.2	U	1.3	U	1.3	U
Thallium	7440-28-0	NE	NE	0.78	12	NS		NS		NS		NS		NS		NS	

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB47-2.0-FD		AMR-SB48-1.5		SB-101-2.0		SB-102-2.0		SB-103-2.0		SB-103-2.0-FD	
Sample Date	**CAS#**					**8/30/2013**	**Q**	**8/30/2013**	**Q**	**5/15/2020**	**Q**	**5/15/2020**	**Q**	**5/15/2020**	**Q**	**5/15/2020**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**												
Barium	7440-39-3	11247	127382	15000	220000	**14**		12.6	U	NS		NS		NS		NS	
Beryllium	7440-41-7	35	289	160	2300	NS		NS		**0.28**		**0.21**		**0.23**		0.19	U
Cadmium	7440-43-9	6.9	87	71	980	0.629	U	0.628	U	0.38	U	0.37	U	0.38	U	0.37	U
Chromium	7440-47-3	NE	NE	NE	NE	**11.4**		**10.4**		**13**		**12**		**12**		**11**	
Copper	7440-50-8	10407	139231	3100	47000	NS		NS		**61**		**45**		**63**		**65**	
Lead	7439-92-1	400	800	400	800	5.04	U	5.03	U	**120**		**45**		**69**		**74**	
Nickel	7440-02-0	940	9707	1500	22000	NS		NS		**16**		**16**		**16**		**15**	
Silver	7440-22-4	237	2483	390	5800	1.76	U	1.76	U	0.38	U	0.37	U	0.38	U	0.37	U
Zinc	7440-66-6	21986	294150	23000	350000	NS		NS		**180**		**48**		**72**		**69**	
Antimony	7440-36-0	26	319	31	470	NS		NS		1.9	U	1.9	U	1.9	U	1.9	U
Arsenic	7440-38-2	16	16	0.68	3	***5.06***		***4.72***		***6.3***		***4.2***		**4.8**		**5.1**	
Mercury	7439-97-6	3.1	3.1	11	46	0.0511	U	0.0502	U	**0.073**		**0.047**		**0.069**		**0.064**	
Selenium	7782-49-2	366	4900	390	5800	1.3	U	1.3	U	3.8	U	3.7	U	3.8	U	3.7	U
Thallium	7440-28-0	NE	NE	0.78	12	NS		NS		1.9	U	1.9	U	1.9	U	1.9	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	SB-104-2.0		SB-105-2.0	
Sample Date	**CAS#**					**5/15/2020**	**Q**	**5/15/2020**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**				
Barium	7440-39-3	11247	127382	15000	220000	NS		NS	
Beryllium	7440-41-7	35	289	160	2300	**0.25**		**0.21**	
Cadmium	7440-43-9	6.9	87	NE	980	0.36	U	0.37	U
Chromium	7440-47-3	NE	NE	NE	NE	**11**		**14**	
Copper	7440-50-8	10407	139231	3100	47000	**39**		**43**	
Lead	7439-92-1	400	800	400	800	**120**		**82**	
Nickel	7440-02-0	940	9707	1500	22000	**12**		**14**	
Silver	7440-22-4	237	2483	390	5800	0.36	U	0.37	U
Zinc	7440-66-6	21986	294150	23000	350000	**25**		**31**	
Antimony	7440-36-0	26	319	31	470	1.8	U	1.8	U
Arsenic	7440-38-2	16	16	0.68	3	***5.6***		***4.8***	
Mercury	7439-97-6	3.1	3.1	11	46	**0.029**		**0.028**	
Selenium	7782-49-2	366	4900	390	5800	3.6	U	3.7	U
Thallium	7440-28-0	NE	NE	0.78	12	1.8	U	1.8	U

Key:
Vermont Soil Standards from Investigation and Remediation of Contaminated Properties Rule, July 2019
RSL - US Environmental Protection Agency, Regional Screening Levels for Residential (Res) and Industrial (Ind) settings, May 2019
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the Regional Screening Level for residential sites.
Italicized results indicate an exceedence of the Regional Screening Level for non-residential sites
Values with orange border exceed the Vermont Background Value (Arsenic only)
NE - screening level not established
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed
NS - Sample not analyzed for compound

Table B-2
Polychlorinated Biphenyls Concentrations in Soil

SampleID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-1-0.5		AMR-SB-2-2.0		AMR-SB-3-0.5		AMR-SB-4-2.0		AMR-SB-5-0.5		AMR-SB-6-2.0	
Sample Date	CAS#					6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Aroclor 1016	12674-11-2	NE	NE	4.1	27	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Aroclor 1221	11104-28-2	NE	NE	0.2	0.83	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Aroclor 1232	11141-16-5	NE	NE	0.17	0.72	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Aroclor 1242	53469-21-9	NE	NE	0.23	0.95	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Aroclor 1254	11097-69-1	NE	NE	0.24	0.97	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Aroclor 1260	11096-82-5	NE	NE	0.24	0.99	0.026	U	0.026	U	0.029	U	0.027	U	**0.038**		0.028	U
Aroclor 1262	37324-23-5	NE	NE	NE	NE	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Aroclor 1268	11100-14-4	NE	NE	NE	NE	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Total PCBs	1336-36-3	0.114	0.68	NE	NE	0.026	U	0.026	U	0.029	U	0.027	U	**0.038**		0.028	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-7-0.5		AMR-SB-8-2.0		AMR-SB-09-0.5		AMR-SB-10-2.0		AMR-SB-11-0.5		AMR-SB-12-2.0	
Sample Date	CAS#					6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Aroclor 1016	12674-11-2	NE	NE	4.1	27	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Aroclor 1221	11104-28-2	NE	NE	0.2	0.83	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Aroclor 1232	11141-16-5	NE	NE	0.17	0.72	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Aroclor 1242	53469-21-9	NE	NE	0.23	0.95	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Aroclor 1254	11097-69-1	NE	NE	0.24	0.97	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Aroclor 1260	11096-82-5	NE	NE	0.24	0.99	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Aroclor 1262	37324-23-5	NE	NE	NE	NE	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Aroclor 1268	11100-14-4	NE	NE	NE	NE	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Total PCBs	1336-36-3	0.114	0.68	NE	NE	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-15-2.0		AMR-SB-17-2.0		AMR-SB-21-0.5		AMR-SB-21-0.5 FD		AMR-SB-24-1.0		AMR-SB-25-0.5	
Sample Date	CAS#					6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Aroclor 1016	12674-11-2	NE	NE	4.1	27	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Aroclor 1221	11104-28-2	NE	NE	0.2	0.83	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Aroclor 1232	11141-16-5	NE	NE	0.17	0.72	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Aroclor 1242	53469-21-9	NE	NE	0.23	0.95	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Aroclor 1254	11097-69-1	NE	NE	0.24	0.97	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Aroclor 1260	11096-82-5	NE	NE	0.24	0.99	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Aroclor 1262	37324-23-5	NE	NE	NE	NE	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Aroclor 1268	11100-14-4	NE	NE	NE	NE	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U
Total PCBs	1336-36-3	0.114	0.68	NE	NE	0.028	U	0.030	U	0.029	U	0.027	U	0.035	U	0.026	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-26-2.0		AMR-SB-27-0.5		AMR-SB-28-2.0		AMR-SB-29-0.5		AMR-SB-30-2.0		AMR-SB-31-0.5	
Sample Date	CAS#					6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Aroclor 1016	12674-11-2	NE	NE	4.1	27	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Aroclor 1221	11104-28-2	NE	NE	0.2	0.83	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Aroclor 1232	11141-16-5	NE	NE	0.17	0.72	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Aroclor 1242	53469-21-9	NE	NE	0.23	0.95	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Aroclor 1254	11097-69-1	NE	NE	0.24	0.97	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Aroclor 1260	11096-82-5	NE	NE	0.24	0.99	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Aroclor 1262	37324-23-5	NE	NE	NE	NE	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Aroclor 1268	11100-14-4	NE	NE	NE	NE	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Total PCBs	1336-36-3	0.114	0.68	NE	NE	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U

Table B-2
Polychlorinated Biphenyls Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-31-FD-0.5		AMR-SB-32-2.0		AMR-SB-33-0.5		AMR-SB11-COMP		AMR-SB21-COMP		AMR-SB28-COMP	
Sample Date	CAS#					6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	8/30/2013	Q	8/30/2013	Q	8/30/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Aroclor 1016	12674-11-2	NE	NE	4.1	27	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Aroclor 1221	11104-28-2	NE	NE	0.2	0.83	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Aroclor 1232	11141-16-5	NE	NE	0.17	0.72	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Aroclor 1242	53469-21-9	NE	NE	0.23	0.95	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Aroclor 1254	11097-69-1	NE	NE	0.24	0.97	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Aroclor 1260	11096-82-5	NE	NE	0.24	0.99	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Aroclor 1262	37324-23-5	NE	NE	NE	NE	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Aroclor 1268	11100-14-4	NE	NE	NE	NE	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U
Total PCBs	1336-36-3	0.114	0.68	NE	NE	0.026	U	0.026	U	0.026	U	0.054	U	0.050	U	0.052	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB9-COMP		SB-101-2.0		SB-102-2.0		SB-103-2.0		SB-103-2.0-FD		SB-104-2.0	
Sample Date	CAS#					8/30/2013	Q	5/15/2020	Q	5/15/2020	Q	5/15/2020	Q	5/15/2020	Q	5/15/2020	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Aroclor 1016	12674-11-2	NE	NE	4.1	27	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Aroclor 1221	11104-28-2	NE	NE	0.2	0.83	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Aroclor 1232	11141-16-5	NE	NE	0.17	0.72	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Aroclor 1242	53469-21-9	NE	NE	0.23	0.95	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Aroclor 1254	11097-69-1	NE	NE	0.24	0.97	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Aroclor 1260	11096-82-5	NE	NE	0.24	0.99	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Aroclor 1262	37324-23-5	NE	NE	NE	NE	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Aroclor 1268	11100-14-4	NE	NE	NE	NE	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U
Total PCBs	1336-36-3	0.114	0.68	NE	NE	0.054	U	0.087	U	0.090	U	0.088	U	0.088	U	0.086	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	SB-105-2.0	
Sample Date	CAS#					5/15/2020	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)		
Aroclor 1016	12674-11-2	NE	NE	4.1	27	0.084	U
Aroclor 1221	11104-28-2	NE	NE	0.2	0.83	0.084	U
Aroclor 1232	11141-16-5	NE	NE	0.17	0.72	0.084	U
Aroclor 1242	53469-21-9	NE	NE	0.23	0.95	0.084	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.084	U
Aroclor 1254	11097-69-1	NE	NE	0.24	0.97	0.084	U
Aroclor 1260	11096-82-5	NE	NE	0.24	0.99	0.084	U
Aroclor 1262	37324-23-5	NE	NE	NE	NE	0.084	U
Aroclor 1268	11100-14-4	NE	NE	NE	NE	0.084	U
Total PCBs	1336-36-3	0.114	0.68	NE	NE	0.084	U

Key:
Vermont Soil Standards from Investigation and Remediation of Contaminated Properties Rule, July 2019
RSL - US Environmental Protection Agency, Regional Screening Levels for Residential (Res) and Industrial (Ind) settings, May 2019
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the enforcement standard(s)
NE - screening level not established
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed

Table B-3

Carcinogenic Polycyclic Aromatic Hydrocarbons Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	VSS - Urban Background	EPA - Residential RSL	EPA - Industrial RSL	AMR-SB-1-0.5		AMR-SB-2-2.0		AMR-SB-3-0.5		AMR-SB-4-2.0		AMR-SB-5-0.5		AMR-SB-6-2.0	
Sample Date	CAS#						6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
B(a)P-TEQ	50-32-8	0.07	1.54	0.58	0.11	2.1	**0.107**		***0.857***		***5.15***		0.0116	U	***0.733***		0.0127	U
2-Methylnaphthalene	91-57-6	NE	NE	NE	240	3000	**0.47**		**0.23**		**1.3**		0.01	U	**0.42**		0.011	U
Acenaphthene	83-32-9	NE	NE	NE	3600	45000	0.011	U	**0.019**		**0.054**		0.01	U	0.011	U	0.011	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	NE	**0.012**		**0.21**		**0.76**		0.01	U	**0.061**		0.011	U
Anthracene	120-12-7	NE	NE	NE	18000	230000	**0.02**		**0.15**		**0.67**		0.01	U	**0.067**		0.011	U
Benz(a)anthracene	56-55-3	NE	NE	NE	1.1	21	**0.076**		**0.52**		**2.8**		0.01	U	**0.37**		0.011	U
Benzo(a)pyrene	50-32-8	0.07	1.54	NE	0.11	2.1	**0.065**		***0.53***		***3.3***		0.01	U	**0.46**		0.011	U
Benzo(b)fluoranthene	205-99-2	NE	NE	NE	1.1	21	**0.071**		**0.61**		**3.6**		0.01	U	**0.51**		0.011	U
Benzo(g,h,i)perylene	191-24-2	NE	NE	NE	NE	NE	**0.047**		**0.41**		**2.4**		0.01	U	**0.34**		0.011	U
Benzo(k)fluoranthene	207-08-9	NE	NE	NE	11	210	**0.045**		**0.54**		**3.1**		0.01	U	**0.33**		0.011	U
Chrysene	218-01-9	NE	NE	NE	110	2100	**0.11**		**0.67**		**3.6**		0.01	U	**0.51**		0.011	U
Dibenz(a,h)anthracene	53-70-3	NE	NE	NE	0.11	2.1	**0.023**		**0.17**		**0.95**		0.01	U	**0.15**		0.011	U
Fluoranthene	206-44-0	2301	26371	NE	2400	30000	**0.1**		**0.88**		**5.1**		0.01	U	**0.34**		0.011	U
Fluorene	86-73-7	2301	26371	NE	2400	30000	0.011	U	**0.016**		**0.081**		0.01	U	**0.012**		0.011	U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	NE	1.1	21	**0.035**		**0.38**		**2.3**		0.01	U	**0.31**		0.011	U
Naphthalene	91-20-3	2.7	16	NE	3.8	17	**0.29**		**0.2**		**0.98**		0.01	U	**0.34**		0.011	U
Phenanthrene	85-01-8	NE	NE	NE	NE	NE	**0.28**		**0.39**		**1.9**		0.01	U	**0.35**		0.011	U
Pyrene	129-00-0	NE	NE	NE	1800	23000	**0.11**		**0.9**		**4.9**		0.01	U	**0.42**		0.011	U

Sample ID		VSS - Resident	VSS - Non-resident	VSS - Urban Background	EPA - Residential RSL	EPA - Industrial RSL	AMR-SB-7-0.5		AMR-SB-8-2.0		AMR-SB-09-0.5		AMR-SB-10-2.0		AMR-SB-11-0.5		AMR-SB-12-2.0	
Sample Date	CAS#						6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
B(a)P-TEQ	50-32-8	0.07	1.54	0.58	0.11	2.1	**0.479**		0.0127	U	**0.154**		0.0127	U	***3.59***		0.0127	U
2-Methylnaphthalene	91-57-6	NE	NE	NE	240	3000	**1.4**		0.011	U	**0.016**		0.011	U	**0.97**		**0.018**	
Acenaphthene	83-32-9	NE	NE	NE	3600	45000	0.011	U	0.011	U	0.011	U	0.011	U	**0.053**		0.011	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	NE	**0.077**		0.011	U	0.011	U	0.011	U	**1.4**		0.011	U
Anthracene	120-12-7	NE	NE	NE	18000	230000	**0.088**		0.011	U	**0.017**		0.011	U	**0.8**		0.011	U
Benz(a)anthracene	56-55-3	NE	NE	NE	1.1	21	**0.27**		0.011	U	**0.086**		0.011	U	**1.7**		0.011	U
Benzo(a)pyrene	50-32-8	0.07	1.54	NE	0.11	2.1	**0.28**		0.011	U	**0.10**		0.011	U	***1.6***		0.011	U
Benzo(b)fluoranthene	205-99-2	NE	NE	NE	1.1	21	**0.39**		0.011	U	**0.10**		0.011	U	**4.2**		0.011	U
Benzo(g,h,i)perylene	191-24-2	NE	NE	NE	NE	NE	**0.23**		0.011	U	**0.076**		0.011	U	**2.7**		0.011	U
Benzo(k)fluoranthene	207-08-9	NE	NE	NE	11	210	**0.25**		0.011	U	**0.087**		0.011	U	**3**		0.011	U
Chrysene	218-01-9	NE	NE	NE	110	2100	**0.49**		0.011	U	**0.099**		0.011	U	**3.3**		0.011	U
Dibenz(a,h)anthracene	53-70-3	NE	NE	NE	0.11	2.1	**0.11**		0.011	U	**0.027**		0.011	U	**1.1**		0.011	U
Fluoranthene	206-44-0	2301	26371	NE	2400	30000	**0.49**		0.011	U	**0.17**		0.011	U	**2.3**		0.011	U
Fluorene	86-73-7	2301	26371	NE	2400	30000	**0.021**		0.011	U	0.011	U	0.011	U	**0.047**		0.011	U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	NE	1.1	21	**0.2**		0.011	U	**0.072**		0.011	U	**2.7**		0.011	U
Naphthalene	91-20-3	2.7	16	NE	3.8	17	**1.2**		0.011	U	**0.014**		0.011	U	**1.0**		**0.016**	
Phenanthrene	85-01-8	NE	NE	NE	NE	NE	**0.93**		0.011	U	**0.075**		0.011	U	**0.9**		0.011	U
Pyrene	129-00-0	NE	NE	NE	1800	23000	**0.48**		0.011	U	**0.17**		0.011	U	**2.0**		0.011	U

Table B-3

Carcinogenic Polycyclic Aromatic Hydrocarbons Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	VSS - Urban Background	EPA - Residential RSL	EPA - Industrial RSL	AMR-SB-15-2.0		AMR-SB-17-2.0		AMR-SB-21-0.5		AMR-SB-21-0.5 FD		AMR-SB-24-1.0		AMR-SB-25-0.5	
Sample Date	CAS#						6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
B(a)P-TEQ	50-32-8	0.07	1.54	0.58	0.11	2.1	0.0127	U	***1.73***		***16.8***		***1.64***		***5.85***		**0.0334**	
2-Methylnaphthalene	91-57-6	NE	NE	NE	240	3000	0.011	U	**0.13**		**0.32**		**0.061**		**0.052**		0.01	U
Acenaphthene	83-32-9	NE	NE	NE	3600	45000	0.011	U	**0.038**		**0.17**		0.054	U	**0.054**		0.01	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	NE	0.011	U	**0.39**		**5.0**		**0.58**		**0.9**		0.01	U
Anthracene	120-12-7	NE	NE	NE	18000	230000	0.011	U	**0.35**		**2.1**		**0.34**		**0.59**		0.01	U
Benz(a)anthracene	56-55-3	NE	NE	NE	1.1	21	0.011	U	**0.81**		**6.4**		**0.66**		**3.1**		**0.026**	
Benzo(a)pyrene	50-32-8	0.07	1.54	NE	0.11	2.1	0.011	U	**1.1**		***11***		**1.0**		***3.9***		**0.022**	
Benzo(b)fluoranthene	205-99-2	NE	NE	NE	1.1	21	0.011	U	**1.3**		**11**		**1.1**		**3.5**		**0.022**	
Benzo(g,h,i)perylene	191-24-2	NE	NE	NE	NE	NE	0.011	U	**0.84**		**9.5**		**1.1**		**2.7**		**0.014**	
Benzo(k)fluoranthene	207-08-9	NE	NE	NE	11	210	0.011	U	**0.91**		**7.9**		**0.77**		**3.4**		**0.02**	
Chrysene	218-01-9	NE	NE	NE	110	2100	0.011	U	**1.1**		**8.6**		**0.95**		**3.4**		**0.025**	
Dibenz(a,h)anthracene	53-70-3	NE	NE	NE	0.11	2.1	0.011	U	**0.33**		**3.2**		**0.37**		**1.0**		0.01	U
Fluoranthene	206-44-0	2301	26371	NE	2400	30000	0.011	U	**1.7**		**14**		**1.3**		**6.2**		**0.039**	
Fluorene	86-73-7	2301	26371	NE	2400	30000	0.011	U	**0.046**		**0.19**		0.054	U	**0.1**		0.01	U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	NE	1.1	21	0.011	U	**0.78**		**8.1**		**0.86**		**2.5**		**0.014**	
Naphthalene	91-20-3	2.7	16	NE	3.8	17	0.011	U	**0.11**		**0.52**		**0.067**		**0.14**		0.01	U
Phenanthrene	85-01-8	NE	NE	NE	NE	NE	0.011	U	**0.83**		**4.7**		**0.46**		**1.7**		0.01	U
Pyrene	129-00-0	NE	NE	NE	1800	23000	0.011	U	**1.6**		**14**		**1.5**		**5.7**		**0.035**	

Sample ID		VSS - Resident	VSS - Non-resident	VSS - Urban Background	EPA - Residential RSL	EPA - Industrial RSL	AMR-SB-26-2.0		AMR-SB-27-0.5		AMR-SB-28-2.0		AMR-SB-29-0.5		AMR-SB-30-2.0		AMR-SB-31-0.5	
Sample Date	CAS#						6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
B(a)P-TEQ	50-32-8	0.07	1.54	0.58	0.11	2.1	0.0116	U	0.0193	U	***2.0***		**0.0357**		***5.59***		**0.0222**	
2-Methylnaphthalene	91-57-6	NE	NE	NE	240	3000	0.01	U	0.01	U	**0.74**		0.012	U	**0.052**		0.01	U
Acenaphthene	83-32-9	NE	NE	NE	3600	45000	0.01	U	0.01	U	**0.049**		0.012	U	**0.051**		0.01	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	NE	0.01	U	0.01	U	**0.77**		0.012	U	**0.94**		**0.011**	
Anthracene	120-12-7	NE	NE	NE	18000	230000	0.01	U	0.01	U	**0.51**		0.012	U	**0.52**		0.01	U
Benz(a)anthracene	56-55-3	NE	NE	NE	1.1	21	0.01	U	0.01	U	**1.1**		**0.017**		**3.2**		**0.011**	
Benzo(a)pyrene	50-32-8	0.07	1.54	NE	0.11	2.1	0.01	U	**0.012**		**1.1**		**0.023**		***3.7***		**0.014**	
Benzo(b)fluoranthene	205-99-2	NE	NE	NE	1.1	21	0.01	U	**0.012**		**1.9**		**0.028**		**3.4**		**0.015**	
Benzo(g,h,i)perylene	191-24-2	NE	NE	NE	NE	NE	0.01	U	0.01	U	**0.95**		**0.023**		**2.5**		**0.013**	
Benzo(k)fluoranthene	207-08-9	NE	NE	NE	11	210	0.01	U	**0.011**		**1.4**		**0.022**		**3.2**		0.01	U
Chrysene	218-01-9	NE	NE	NE	110	2100	0.01	U	**0.01**		**1.8**		**0.023**		**3.5**		**0.021**	
Dibenz(a,h)anthracene	53-70-3	NE	NE	NE	0.11	2.1	0.01	U	0.01	U	**0.47**		0.012	U	**0.96**		0.01	U
Fluoranthene	206-44-0	2301	26371	NE	2400	30000	0.01	U	**0.014**		**2.0**		**0.035**		**5.5**		**0.015**	
Fluorene	86-73-7	2301	26371	NE	2400	30000	0.01	U	0.01	U	**0.055**		0.012	U	**0.06**		0.01	U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	NE	1.1	21	0.01	U	0.01	U	**1.1**		**0.02**		**2.3**		0.01	U
Naphthalene	91-20-3	2.7	16	NE	3.8	17	0.01	U	0.01	U	**0.71**		0.012	U	**0.081**		0.01	U
Phenanthrene	85-01-8	NE	NE	NE	NE	NE	0.01	U	0.01	U	**1.4**		0.012	U	**1.3**		0.01	U
Pyrene	129-00-0	NE	NE	NE	1800	23000	0.01	U	**0.014**		**1.7**		**0.031**		**5.2**		**0.017**	

Table B-3

Carcinogenic Polycyclic Aromatic Hydrocarbons Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	VSS - Urban Background	EPA - Residential RSL	EPA - Industrial RSL	AMR-SB-31-FD-0.5		AMR-SB-32-2.0		AMR-SB-33-0.5		AMR-SB34-1.5		AMR-SB38-2.0		AMR-SB38-2.0-FD	
Sample Date	**CAS#**						6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	8/30/2013	Q	8/30/2013	Q	8/30/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
B(a)P-TEQ	50-32-8	0.07	1.54	0.58	0.11	2.1	0.0116	U	**0.936**		0.0116	U	***3.01***		0.324	U	0.324	U
2-Methylnaphthalene	91-57-6	NE	NE	NE	240	3000	0.01	U	0.01	U	0.01	U	**1.2**		0.28	U	0.28	U
Acenaphthene	83-32-9	NE	NE	NE	3600	45000	0.01	U	0.01	U	0.01	U	0.28	U	0.28	U	0.28	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	NE	0.01	U	**0.16**		0.01	U	**0.78**		0.28	U	0.28	U
Anthracene	120-12-7	NE	NE	NE	18000	230000	0.01	U	**0.13**		0.01	U	**0.85**		0.28	U	0.28	U
Benz(a)anthracene	56-55-3	NE	NE	NE	1.1	21	0.01	U	**0.53**		0.01	U	**1.7**		0.28	U	0.28	U
Benzo(a)pyrene	50-32-8	0.07	1.54	NE	0.11	2.1	0.01	U	**0.60**		0.01	U	***1.8***		0.28	U	0.28	U
Benzo(b)fluoranthene	205-99-2	NE	NE	NE	1.1	21	0.01	U	**0.56**		0.01	U	***2.3***		0.28	U	0.28	U
Benzo(g,h,i)perylene	191-24-2	NE	NE	NE	NE	NE	0.01	U	**0.44**		0.01	U	**1.4**		0.28	U	0.28	U
Benzo(k)fluoranthene	207-08-9	NE	NE	NE	11	210	0.01	U	**0.54**		0.01	U	***2.2***		0.28	U	0.28	U
Chrysene	218-01-9	NE	NE	NE	110	2100	**0.013**		**0.55**		0.01	U	**2.6**		0.28	U	0.28	U
Dibenz(a,h)anthracene	53-70-3	NE	NE	NE	0.11	2.1	0.01	U	**0.18**		0.01	U	**0.65**		0.28	U	0.28	U
Fluoranthene	206-44-0	2301	26371	NE	2400	30000	0.01	U	**1.0**		0.01	U	**3.6**		0.28	U	0.28	U
Fluorene	86-73-7	2301	26371	NE	2400	30000	0.01	U	**0.011**		0.01	U	0.28	U	0.28	U	0.28	U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	NE	1.1	21	0.01	U	**0.41**		0.01	U	**1.4**		0.28	U	0.28	U
Naphthalene	91-20-3	2.7	16	NE	3.8	17	0.01	U	**0.012**		0.01	U	**0.75**		0.28	U	0.28	U
Phenanthrene	85-01-8	NE	NE	NE	NE	NE	0.01	U	**0.27**		0.01	U	**1.5**		0.28	U	0.28	U
Pyrene	129-00-0	NE	NE	NE	1800	23000	0.01	U	**0.89**		0.01	U	**3.3**		0.28	U	0.28	U

Sample ID		VSS - Resident	VSS - Non-resident	VSS - Urban Background	EPA - Residential RSL	EPA - Industrial RSL	AMR-SB45-1.5		AMR-SB47-2.0		AMR-SB47-2.0-FD		SB-101-2.0		SB-102-2.0		SB-103-2.0	
Sample Date	**CAS#**						8/30/2013	Q	8/30/2013	Q	8/30/2013	Q	5/15/2020	Q	5/15/2020	Q	5/15/2020	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
B(a)P-TEQ	50-32-8	0.07	1.54	0.58	0.11	2.1	**0.619**		0.3	U	0.3	U	**0.469**		0.22	U	**0.37**	
2-Methylnaphthalene	91-57-6	NE	NE	NE	240	3000	0.26	U	0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Acenaphthene	83-32-9	NE	NE	NE	3600	45000	0.26	U	0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	NE	0.26	U	0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Anthracene	120-12-7	NE	NE	NE	18000	230000	0.26	U	0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Benz(a)anthracene	56-55-3	NE	NE	NE	1.1	21	**0.36**		0.26	U	0.26	U	**0.27**		0.19	U	0.19	U
Benzo(a)pyrene	50-32-8	0.07	1.54	NE	0.11	2.1	**0.4**		*0.26*	U	*0.26*	U	***0.29***		*0.19*	U	***0.22***	
Benzo(b)fluoranthene	205-99-2	NE	NE	NE	1.1	21	**0.35**		0.26	U	0.26	U	**0.46**		0.19	U	**0.35**	
Benzo(g,h,i)perylene	191-24-2	NE	NE	NE	NE	NE	**0.3**		0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Benzo(k)fluoranthene	207-08-9	NE	NE	NE	11	210	**0.41**		0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Chrysene	218-01-9	NE	NE	NE	110	2100	**0.44**		0.26	U	0.26	U	**0.35**		0.19	U	**0.23**	
Dibenz(a,h)anthracene	53-70-3	NE	NE	NE	0.11	2.1	0.26	U	0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Fluoranthene	206-44-0	2301	26371	NE	2400	30000	**0.8**		0.26	U	0.26	U	**0.66**		0.19	U	**0.34**	
Fluorene	86-73-7	2301	26371	NE	2400	30000	0.26	U	0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	NE	1.1	21	0.26	U	0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Naphthalene	91-20-3	2.7	16	NE	3.8	17	0.26	U	0.26	U	0.26	U	0.19	U	0.19	U	0.19	U
Phenanthrene	85-01-8	NE	NE	NE	NE	NE	**0.3**		0.26	U	0.26	U	**0.37**		0.19	U	0.19	U
Pyrene	129-00-0	NE	NE	NE	1800	23000	**0.7**		0.26	U	0.26	U	**0.52**		0.19	U	**0.32**	

Table B-3

Carcinogenic Polycyclic Aromatic Hydrocarbons Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	VSS - Urban Background	EPA - Residential RSL	EPA - Industrial RSL	SB-103-2.0-FD		SB-104-2.0		SB-105-2.0	
Sample Date	**CAS#**						**5/15/2020**	**Q**	**5/15/2020**	**Q**	**5/15/2020**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**						
B(a)P-TEQ	50-32-8	0.07	1.54	0.58	0.11	2.1	***0.222***		0.208	U	**0.241**	
2-Methylnaphthalene	91-57-6	NE	NE	NE	240	3000	0.18	U	0.18	U	0.18	U
Acenaphthene	83-32-9	NE	NE	NE	3600	45000	0.18	U	0.18	U	0.18	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	NE	0.18	U	0.18	U	0.18	U
Anthracene	120-12-7	NE	NE	NE	18000	230000	0.18	U	0.18	U	0.18	U
Benzo(a)anthracene	56-55-3	NE	NE	NE	1.1	21	0.18	U	0.18	U	0.18	U
Benzo(a)pyrene	50-32-8	0.07	1.54	NE	0.11	2.1	0.18	U	0.18	U	0.18	U
Benzo(b)fluoranthene	205-99-2	NE	NE	NE	1.1	21	**0.23**		0.18	U	**0.42**	
Benzo(g,h,i)perylene	191-24-2	NE	NE	NE	NE	NE	0.18	U	0.18	U	0.18	U
Benzo(k)fluoranthene	207-08-9	NE	NE	NE	11	210	0.18	U	0.18	U	0.18	U
Chrysene	218-01-9	NE	NE	NE	110	2100	0.18	U	0.18	U	**0.19**	
Dibenz(a,h)anthracene	53-70-3	NE	NE	NE	0.11	2.1	0.18	U	0.18	U	0.18	U
Fluoranthene	206-44-0	2301	26371	NE	2400	30000	**0.26**		0.18	U	**0.38**	
Fluorene	86-73-7	2301	26371	NE	2400	30000	0.18	U	0.18	U	0.18	U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	NE	1.1	21	0.18	U	0.18	U	0.18	U
Naphthalene	91-20-3	2.7	16	NE	3.8	17	0.18	U	0.18	U	0.18	U
Phenanthrene	85-01-8	NE	NE	NE	NE	NE	0.18	U	0.18	U	0.18	U
Pyrene	129-00-0	NE	NE	NE	1800	23000	**0.23**		0.18	U	**0.33**	

Key:

Vermont Soil Standards from Investigation and Remediation of Contaminated Properties Rule, July 2019

RSL - US Environmental Protection Agency, Regional Screening Levels for Residential (Res) and Industrial (Ind) settings, May 2019

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the Vemront Soil Screening Level for residential sites

Italicized results indicate an exceedence of the Vermont Soil Screening Level for non-residential sites.

Benzo(a)pyrene Toxicity Equivalency Quotient [B(a)P-TEQ] Values with orange border exceed the Vermont Urban Background Value

NE - screening level not established

Q - laboratory result qualifier

U - Analyte not detected; limit of quantitation listed

NS - Sample not analyzed for compound

Table B-4
Semi Volatile Organic Compounds Concentrations in Soil[1]

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB34-1.5		AMR-SB38-2.0		AMR-SB38-2.0-FD		AMR-SB45-1.5		AMR-SB47-2.0		AMR-SB47-2.0-FD	
Sample Date	CAS#					8/30/2013	Q	8/30/2013	Q	8/30/2013	Q	8/30/2013	Q	8/30/2013	Q	8/30/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
1,2-Diphenylhydrazine (as A	122-66-7	NE	NE	0.68	2.9	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2,4,5-Trichlorophenol	95-95-4	NE	NE	6300	82000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2,4,6-Trichlorophenol	88-06-2	NE	NE	49	210	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2,4-Dichlorophenol	120-83-2	NE	NE	190	2500	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2,4-Dimethylphenol	105-67-9	NE	NE	1300	16000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2,4-Dinitrophenol	51-28-5	NE	NE	130	1600	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
2,4-Dinitrotoluene	121-14-2	NE	NE	1.7	7.4	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2,6-Dinitrotoluene	606-20-2	NE	NE	0.36	1.5	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2-Chloronaphthalene	91-58-7	NE	NE	4800	60000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2-Chlorophenol	95-57-8	NE	NE	390	5800	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2-Methylphenol	95-48-7	NE	NE	3200	41000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
2-Nitroaniline	88-74-4	NE	NE	630	8000	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
2-Nitrophenol	88-75-5	NE	NE	NE	NE	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
3,3´-Dichlorobenzidine	91-94-1	NE	NE	1.2	5.1	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
3-Nitroaniline	99-09-2	NE	NE	NE	NE	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
4,6-Dinitro-2-methylphenol	534-52-1	NE	NE	5.1	66	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
4-Bromophenyl phenyl ether	101-55-3	NE	NE	NE	NE	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
4-Chloro-3-methylphenol	59-50-7	NE	NE	6300	82000	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
4-Chloroaniline	106-47-8	NE	NE	2.7	11	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	NE	NE	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
4-Methylphenol	106-44-5	NE	NE	6300	82000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
4-Nitroaniline	100-01-6	NE	NE	27	110	**0.85**		0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
4-Nitrophenol	100-02-7	NE	NE	NE	NE	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
Benzoic acid	65-85-0	NE	NE	250000	3300000	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
Benzyl alcohol	100-51-6	NE	NE	6300	82000	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	190	2500	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Bis(2-chloroethyl)ether	111-44-4	NE	NE	0.23	1	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Bis(2-chloroisopropyl)ether	108-60-1	2804	36274	3100	47000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Bis(2-ethylhexyl)phthalate	117-81-7	20	120	39	160	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Butyl benzyl phthalate	85-68-7	NE	NE	290	1200	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Carbazole	86-74-8	NE	NE	NE	NE	**0.32**		0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Dibenzofuran	132-64-9	NE	NE	73	1000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Diethyl phthalate	84-66-2	NE	NE	51000	660000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Dimethyl phthalate	131-11-3	NE	NE	NE	NE	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Di-n-butyl phthalate	84-74-2	NE	NE	6300	82000	**0.83**		**1.5**		**1.1**		**1.2**		**1.1**		**1**	
Di-n-octyl phthalate	117-84-0	NE	NE	630	8200	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Hexachlorobenzene	118-74-1	0.13	0.69	0.21	0.96	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Hexachlorocyclopentadiene	77-47-4	NE	NE	1.8	7.5	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Hexachloroethane	67-72-1	NE	NE	1.8	8	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Isophorone	78-59-1	NE	NE	570	2400	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Nitrobenzene	98-95-3	NE	NE	5.1	22	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
N-Nitrosodi-n-propylamine	621-64-7	NE	NE	0.078	0.33	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
N-Nitrosodiphenylamine	86-30-6	NE	NE	110	470	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U
Pentachlorophenol	87-86-5	0.48	2.9	1	4	0.55	U	0.56	U	0.57	U	0.52	U	0.52	U	0.52	U
Phenol	108-95-2	NE	NE	19000	250000	0.28	U	0.28	U	0.28	U	0.26	U	0.26	U	0.26	U

1: Concentration results of carcinogenic PAH compounds appear in Table B-3

Key:
Vermont Soil Standards from Investigation and Remediation of Contaminated Properties Rule, July 2019
RSL - US Environmental Protection Agency, Regional Screening Levels for Residential (Res) and Industrial (Ind) settings, May 2019
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the enforcement standard(s)
NE - screening level not established
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed
NS - Sample not analyzed for compound

Table B-5
Volatile Organic Compounds Concentrations in Soil

SampleID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	SB-101-2.0		SB-102-2.0		SB-103-2.0		SB-103-2.0-FD		SB-104-2.0		SB-105-2.0	
Sample Date	CAS#					5/15/2020	Q	5/15/2020	Q	5/15/2020	Q	5/15/2020	Q	5/15/2020	Q	5/15/2020	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
1,1,1,2-Tetrachloroethane	630-20-6	1.3	8	2	8.8	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,1,1-Trichloroethane	71-55-6	NE	NE	8100	36000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	0.6	2.7	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113	76-13-1	NE	NE	6700	28000	0.0079	U	0.0078	U	0.0096	U	0.0089	U	0.0088	U	0.0074	U
1,1,2-Trichloroethane	79-00-5	NE	NE	1.1	5	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,1-Dichloroethane	75-34-3	2.1	13	3.6	16	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,1-Dichloroethylene	75-35-4	NE	NE	230	1000	0.0032	U	0.0031	U	0.0038	U	0.0036	U	0.0035	U	0.003	U
1,1-Dichloropropene	563-58-6	NE	NE	NE	NE	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,2,3-Trichlorobenzene	87-61-6	NE	NE	63	930	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,2,3-Trichloropropane	96-18-4	0.00311	0.07	0.0051	0.11	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,2,4-Trimethylbenzene	95-63-6	144	177	300	1800	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,2-Dibromo-3-chloropropane (DBCP	96-12-8	0.01	0.06	0.0053	0.064	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,2-Dibromoethane (EDB	106-93-4	0.02	0.14	0.036	0.16	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,2-Dichloroethane	107-06-2	0.29	1.7	0.46	2	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,2-Dichloropropane	78-87-5	1.5	9.1	2.5	11	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,3,5-Trichlorobenzene	108-70-3	NE	NE	NE	NE	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,3,5-Trimethylbenzene	108-67-8	144	177	270	1500	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,3-Dichloropropane	142-28-9	NE	NE	1600	23000	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
1,4-Dioxane	123-91-1	2.8	17	5.3	24	0.079	U	0.078	U	0.096	U	0.089	U	0.088	U	0.074	U
2,2-Dichloropropane	594-20-7	NE	NE	NE	NE	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
2-Butanone (MEK	78-93-3	16952	26991	27000	190000	0.032	U	0.031	U	0.038	U	0.036	U	0.035	U	0.03	U
2-Chlorotoluene	95-49-8	NE	NE	1600	23000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
2-Hexanone (MBK	591-78-6	NE	NE	200	1300	0.016	U	0.016	U	0.019	U	0.018	U	0.018	U	0.015	U
4-Chlorotoluene	106-43-4	NE	NE	1600	23000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
4-Methyl-2-pentanone (MIBK	108-10-1	NE	NE	33000	140000	0.016	U	0.016	U	0.019	U	0.018	U	0.018	U	0.015	U
Acetone	67-64-1	40609	100028	61000	670000	0.079	U	0.078	U	0.096	U	0.089	U	0.088	U	0.074	U
Acrylonitrile	107-13-1	NE	NE	0.25	1.1	0.0048	U	0.0047	U	0.0058	U	0.0053	U	0.0053	U	0.0044	U
Benzene	71-43-2	0.7	4.2	1.2	5.1	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Bromobenzene	108-86-1	NE	NE	290	1800	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Bromochloromethane	74-97-5	193	597	150	630	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Bromodichloromethane	75-27-4	NE	NE	0.29	1.3	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Bromoform	75-25-2	NE	NE	19	86	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Bromomethane	74-83-9	NE	NE	6.8	30	0.0079	U	0.0078	U	0.0096	U	0.0089	U	0.0088	U	0.0074	U
Carbon Disulfide	75-15-0	608	662	770	3500	0.0048	U	0.0047	U	0.0058	U	0.0053	U	0.0053	U	0.0044	U
Carbon Tetrachloride	56-23-5	0.37	2.2	0.65	2.9	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Chlorobenzene	108-90-7	414	726	280	1300	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Chlorodibromomethane	124-48-1	NE	NE	8.3	39	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
Chloroethane	75-00-3	NE	NE	14000	57000	0.016	U	0.016	U	0.019	U	0.018	U	0.018	U	0.015	U
Chloroform	67-66-3	NE	NE	0.32	1.4	0.0032	U	0.0031	U	0.0038	U	0.0036	U	0.0035	U	0.003	U
Chloromethane	74-87-3	NE	NE	110	460	0.0079	U	0.0078	U	0.0096	U	0.0089	U	0.0088	U	0.0074	U
cis-1,2-Dichloroethylene	156-59-2	140	1814	160	2300	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
cis-1,3-Dichloropropene	10061-01-5	NE	NE	NE	NE	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
Dibromomethane	74-95-3	NE	NE	24	99	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Dichlorodifluoromethane (Freon 12	75-71-8	NE	NE	87	370	0.016	U	0.016	U	0.019	U	0.018	U	0.018	U	0.015	U
Diethyl Ether	60-29-7	NE	NE	16000	230000	0.016	U	0.016	U	0.019	U	0.018	U	0.018	U	0.015	U
Diisopropyl Ether (DIPE	108-20-3	NE	NE	2200	9400	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
Ethylbenzene	100-41-4	3.7	22	5.8	25	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Isopropylbenzene (Cumene	98-82-8	256	264	1900	9900	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
m+p Xylene	108383/106423	NE	NE	NE	NE	0.0032	U	0.0031	U	0.0038	U	0.0036	U	0.0035	U	0.003	U
Methyl Acetate	79-20-9	NE	NE	78000	1200000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Methyl Cyclohexane	108-87-2	NE	NE	NE	NE	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Methyl tert-Butyl Ether (MTBE	1634-04-4	649	4464	47	210	0.0032	U	0.0031	U	0.0038	U	0.0036	U	0.0035	U	0.003	U
Methylene Chloride	75-09-2	NE	NE	57	1000	0.016	U	0.016	U	0.019	U	0.018	U	0.018	U	0.015	U
Naphthalene	91-20-3	2.7	16	3.8	17	0.0032	U	0.0031	U	0.0038	U	0.0036	U	0.0035	U	0.003	U
n-Butylbenzene	104-51-8	3504	51100	3900	58000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
n-Propylbenzene	103-65-1	253	261	3800	24000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
o-Xylene	95-47-6	NE	NE	650	2800	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
p-Isopropyltoluene (p-Cymene	99-87-6	NE	NE	NE	NE	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
sec-Butylbenzene	135-98-8	7009	102200	7800	120000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Styrene	100-42-5	NE	NE	6000	35000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
tert-Amyl Methyl Ether (TAME	994-05-8	NE	NE	NE	NE	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
tert-Butyl Alcohol (TBA	75-65-0	NE	NE	NE	NE	0.032	U	0.031	U	0.038	U	0.036	U	0.035	U	0.03	U
tert-Butyl Ethyl Ether (TBEE	637-92-3	NE	NE	NE	NE	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
tert-Butylbenzene	98-06-6	7009	102200	7800	120000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Tetrachloroethylene	127-18-4	2.4	14	24	100	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Tetrahydrofuran	109-99-9	NE	NE	18000	94000	0.0079	U	0.0078	U	0.0096	U	0.0089	U	0.0088	U	0.0074	U
Toluene	108-88-3	706	798	4900	47000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Total Trimethylbenzene	25551-13-7	NE	NE	NE	NE	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Total Xylene	1330-20-7	252	257	580	2500	0.0032	U	0.0031	U	0.0038	U	0.0036	U	0.0035	U	0.003	U
trans-1,2-Dichloroethylene	156-60-5	1402	18137	1600	23000	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
trans-1,3-Dichloropropene	10061-02-6	NE	NE	NE	NE	0.00079	U	0.00078	U	0.00096	U	0.00089	U	0.00088	U	0.00074	U
trans-1,4-Dichloro-2-butene	110-57-6	NE	NE	0.0074	0.032	0.0032	U	0.0031	U	0.0038	U	0.0036	U	0.0035	U	0.003	U
Trichloroethylene	79-01-6	0.68	6.5	0.94	6	0.0016	U	0.0016	U	0.0019	U	0.0018	U	0.0018	U	0.0015	U
Trichlorofluoromethane (Freon 11	75-69-4	NE	NE	23000	350000	0.0079	U	0.0078	U	0.0096	U	0.0089	U	0.0088	U	0.0074	U
Vinyl Chloride	75-01-4	0.1	0.59	0.059	1.7	0.0079	U	0.0078	U	0.0096	U	0.0089	U	0.0088	U	0.0074	U

Key:
Vermont Soil Standards from Investigation and Remediation of Contaminated Properties Rule, July 2(
RSL - US Environmental Protection Agency, Regional Screening Levels for Residential (Res) and Industrial (Ind) settings, May 2(
mg/kg - milligrams per kilogram (parts per millior
Bold results indicate detections of the analyt
Shaded results indicate an exceedence of the enforcement standard(
NE - screening level not establishe(
Q - laboratory result qualifie
U - Analyte not detected; limit of quantitation liste

Table B-6
Herbicides Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-1-0.5		AMR-SB-2-2.0		AMR-SB-3-0.5		AMR-SB-4-2.0		AMR-SB-5-0.5		AMR-SB-6-2.0	
Sample Date	CAS#					6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
4,4´-DDD	72-54-8	NE	NE	1.9	9.6	0.0017	U	0.0017	U	0.0018	U	0.0017	U	0.0017	U	0.0018	U
4,4´-DDE	72-55-9	NE	NE	2	9.3	0.0017	U	0.0017	U	0.0018	U	0.0017	U	0.0017	U	0.0018	U
4,4´-DDT	50-29-3	NE	NE	1.9	8.5	0.0017	U	**0.0036**		0.0018	U	0.0017	U	**0.0076**		0.0018	U
Aldrin	309-00-2	0.02	0.1	0.039	0.18	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
alpha-BHC	319-84-6	NE	NE	0.086	0.36	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
alpha-Chlordane	5103-71-9	NE	NE	NE	NE	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
beta-BHC	319-85-7	NE	NE	0.3	1.3	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
delta-BHC	319-86-8	NE	NE	NE	NE	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
Dieldrin	60-57-1	NE	NE	0.034	0.14	0.0017	U	0.0017	U	**0.015**		0.0017	U	0.0017	U	0.0018	U
Endosulfan I	959-98-8	NE	NE	NE	NE	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
Endosulfan II	33213-65-9	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0018	U	0.0017	U	0.0017	U	0.0018	U
Endosulfan sulfate	1031-07-8	NE	NE	380	4900	0.0017	U	0.0017	U	0.0018	U	0.0017	U	0.0017	U	0.0018	U
Endrin	72-20-8	NE	NE	19	250	0.0017	U	0.0017	U	0.0018	U	0.0017	U	0.0017	U	0.0018	U
Endrin aldehyde	7421-93-4	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0018	U	0.0017	U	0.0017	U	0.0018	U
Endrin ketone	53494-70-5	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0018	U	0.0017	U	0.0017	U	0.0018	U
gamma-BHC	58-89-9	NE	NE	0.57	2.5	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
gamma-Chlordane	5103-74-2	NE	NE	NE	NE	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
Heptachlor	76-44-8	NE	NE	0.13	0.63	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
Heptachlor epoxide	1024-57-3	NE	NE	0.07	0.33	0.00085	U	0.00084	U	0.00092	U	0.00085	U	0.00087	U	0.00089	U
Methoxychlor	72-43-5	NE	NE	320	4100	0.0085	U	0.0084	U	0.0092	U	0.0085	U	0.0087	U	0.0089	U
Technical Chlordane	57-74-9	NE	NE	NE	NE	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U
Toxaphene	8001-35-2	NE	NE	0.49	2.1	0.026	U	0.026	U	0.029	U	0.027	U	0.027	U	0.028	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-7-0.5		AMR-SB-8-2.0		AMR-SB-09-0.5		AMR-SB-10-2.0		AMR-SB-11-0.5		AMR-SB-12-2.0	
Sample Date	CAS#					6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/28/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
4,4´-DDD	72-54-8	NE	NE	1.9	9.6	0.0018	U	0.0017	U	0.0017	U	0.0017	U	0.002	U	0.0018	U
4,4´-DDE	72-55-9	NE	NE	2	9.3	0.0018	U	0.0017	U	0.0017	U	0.0017	U	0.002	U	0.0018	U
4,4´-DDT	50-29-3	NE	NE	1.9	8.5	**0.011**		0.0017	U	0.0017	U	0.0017	U	**0.0071**		0.0018	U
Aldrin	309-00-2	0.02	0.1	0.039	0.18	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
alpha-BHC	319-84-6	NE	NE	0.086	0.36	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
alpha-Chlordane	5103-71-9	NE	NE	NE	NE	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
beta-BHC	319-85-7	NE	NE	0.3	1.3	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
delta-BHC	319-86-8	NE	NE	NE	NE	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
Dieldrin	60-57-1	NE	NE	0.034	0.14	0.0018	U	0.0017	U	0.0017	U	0.0017	U	**0.011**		0.0018	U
Endosulfan I	959-98-8	NE	NE	NE	NE	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
Endosulfan II	33213-65-9	NE	NE	NE	NE	0.0018	U	0.0017	U	0.0017	U	0.0017	U	0.002	U	0.0018	U
Endosulfan sulfate	1031-07-8	NE	NE	380	4900	0.0018	U	0.0017	U	0.0017	U	0.0017	U	0.002	U	0.0018	U
Endrin	72-20-8	NE	NE	19	250	0.0018	U	0.0017	U	0.0017	U	0.0017	U	0.002	U	0.0018	U
Endrin aldehyde	7421-93-4	NE	NE	NE	NE	0.0018	U	0.0017	U	0.0017	U	0.0017	U	0.002	U	0.0018	U
Endrin ketone	53494-70-5	NE	NE	NE	NE	0.0018	U	0.0017	U	0.0017	U	0.0017	U	0.002	U	0.0018	U
gamma-BHC	58-89-9	NE	NE	0.57	2.5	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
gamma-Chlordane	5103-74-2	NE	NE	NE	NE	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
Heptachlor	76-44-8	NE	NE	0.13	0.63	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
Heptachlor epoxide	1024-57-3	NE	NE	0.07	0.33	0.00092	U	0.00086	U	0.00086	U	0.00087	U	0.00098	U	0.00092	U
Methoxychlor	72-43-5	NE	NE	320	4100	0.0092	U	0.0086	U	0.0086	U	0.0087	U	0.0098	U	0.0092	U
Technical Chlordane	57-74-9	NE	NE	NE	NE	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U
Toxaphene	8001-35-2	NE	NE	0.49	2.1	0.029	U	0.027	U	0.027	U	0.027	U	0.031	U	0.029	U

Table B-6
Herbicides Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-15-2.0		AMR-SB-17-2.0		AMR-SB-21-0.5		AMR-SB-21-0.5 FD		AMR-SB-24-1.0		AMR-SB-25-0.5	
Sample Date	CAS#					6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
4,4´-DDD	72-54-8	NE	NE	1.9	9.6	0.0018	U	**0.0034**		**0.012**		0.017	U	**0.003**		0.0017	U
4,4´-DDE	72-55-9	NE	NE	2	9.3	0.0018	U	**0.0065**		0.0018	U	0.017	U	0.0022	U	0.0017	U
4,4´-DDT	50-29-3	NE	NE	1.9	8.5	**0.0033**		**0.028**		**0.015**		**0.03**		**0.0099**		0.0017	U
Aldrin	309-00-2	0.02	0.1	0.039	0.18	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
alpha-BHC	319-84-6	NE	NE	0.086	0.36	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
alpha-Chlordane	5103-71-9	NE	NE	NE	NE	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
beta-BHC	319-85-7	NE	NE	0.3	1.3	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
delta-BHC	319-86-8	NE	NE	NE	NE	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
Dieldrin	60-57-1	NE	NE	0.034	0.14	0.0018	U	0.0019	U	**0.017**		0.017	U	**0.0056**		0.0017	U
Endosulfan I	959-98-8	NE	NE	NE	NE	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
Endosulfan II	33213-65-9	NE	NE	NE	NE	0.0018	U	0.0019	U	0.0018	U	0.017	U	0.0022	U	0.0017	U
Endosulfan sulfate	1031-07-8	NE	NE	380	4900	0.0018	U	0.0019	U	0.0018	U	0.017	U	0.0022	U	0.0017	U
Endrin	72-20-8	NE	NE	19	250	0.0018	U	0.0019	U	0.0018	U	0.017	U	0.0022	U	0.0017	U
Endrin aldehyde	7421-93-4	NE	NE	NE	NE	0.0018	U	0.0019	U	0.0018	U	0.017	U	0.0022	U	0.0017	U
Endrin ketone	53494-70-5	NE	NE	NE	NE	0.0018	U	0.0019	U	0.0018	U	0.017	U	0.0022	U	0.0017	U
gamma-BHC	58-89-9	NE	NE	0.57	2.5	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
gamma-Chlordane	5103-74-2	NE	NE	NE	NE	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
Heptachlor	76-44-8	NE	NE	0.13	0.63	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
Heptachlor epoxide	1024-57-3	NE	NE	0.07	0.33	0.00088	U	0.00095	U	0.00091	U	0.0087	U	0.0011	U	0.00084	U
Methoxychlor	72-43-5	NE	NE	320	4100	0.0088	U	0.0095	U	0.0091	U	0.087	U	0.011	U	0.0084	U
Technical Chlordane	57-74-9	NE	NE	NE	NE	0.028	U	0.03	U	0.029	U	0.27	U	0.035	U	0.026	U
Toxaphene	8001-35-2	NE	NE	0.49	2.1	0.028	U	0.03	U	0.029	U	0.27	U	0.035	U	0.026	U

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-26-2.0		AMR-SB-27-0.5		AMR-SB-28-2.0		AMR-SB-29-0.5		AMR-SB-30-2.0		AMR-SB-31-0.5	
Sample Date	CAS#					6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q	6/27/2013	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
4,4´-DDD	72-54-8	NE	NE	1.9	9.6	0.0017	U	0.0017	U	0.0018	U	0.0019	U	**0.012**		0.0017	U
4,4´-DDE	72-55-9	NE	NE	2	9.3	0.0017	U	0.0017	U	0.0018	U	0.0019	U	0.0018	U	0.0017	U
4,4´-DDT	50-29-3	NE	NE	1.9	8.5	0.0017	U	0.0017	U	0.0018	U	0.0019	U	**0.041**		0.0017	U
Aldrin	309-00-2	0.02	0.1	0.039	0.18	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
alpha-BHC	319-84-6	NE	NE	0.086	0.36	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
alpha-Chlordane	5103-71-9	NE	NE	NE	NE	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
beta-BHC	319-85-7	NE	NE	0.3	1.3	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
delta-BHC	319-86-8	NE	NE	NE	NE	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
Dieldrin	60-57-1	NE	NE	0.034	0.14	0.0017	U	0.0017	U	0.0018	U	0.0019	U	**0.013**		0.0017	U
Endosulfan I	959-98-8	NE	NE	NE	NE	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
Endosulfan II	33213-65-9	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0018	U	0.0019	U	0.0018	U	0.0017	U
Endosulfan sulfate	1031-07-8	NE	NE	380	4900	0.0017	U	0.0017	U	0.0018	U	0.0019	U	0.0018	U	0.0017	U
Endrin	72-20-8	NE	NE	19	250	0.0017	U	0.0017	U	0.0018	U	0.0019	U	0.0018	U	0.0017	U
Endrin aldehyde	7421-93-4	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0018	U	0.0019	U	0.0018	U	0.0017	U
Endrin ketone	53494-70-5	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0018	U	0.0019	U	0.0018	U	0.0017	U
gamma-BHC	58-89-9	NE	NE	0.57	2.5	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
gamma-Chlordane	5103-74-2	NE	NE	NE	NE	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
Heptachlor	76-44-8	NE	NE	0.13	0.63	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
Heptachlor epoxide	1024-57-3	NE	NE	0.07	0.33	0.00083	U	0.00086	U	0.00092	U	0.00094	U	0.00089	U	0.00084	U
Methoxychlor	72-43-5	NE	NE	320	4100	0.0083	U	0.0086	U	0.0092	U	0.0094	U	0.0089	U	0.0084	U
Technical Chlordane	57-74-9	NE	NE	NE	NE	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U
Toxaphene	8001-35-2	NE	NE	0.49	2.1	0.026	U	0.027	U	0.029	U	0.029	U	0.028	U	0.026	U

Table B-6
Herbicides Concentrations in Soil

Sample ID		VSS - Resident	VSS - Non-resident	Residential RSL	Industrial RSL	AMR-SB-31-FD-0.5		AMR-SB-32-2.0		AMR-SB-33-0.5							
Sample Date	CAS#					6/27/2013	Q	6/27/2013	Q	6/27/2013	Q						
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
4,4´-DDD	72-54-8	NE	NE	1.9	9.6	0.0017	U	0.0017	U	0.0017	U						
4,4´-DDE	72-55-9	NE	NE	2	9.3	0.0017	U	0.0017	U	0.0017	U						
4,4´-DDT	50-29-3	NE	NE	1.9	8.5	0.0017	U	0.0017	U	0.0017	U						
Aldrin	309-00-2	0.02	0.1	0.039	0.18	0.00085	U	0.00083	U	0.00083	U						
alpha-BHC	319-84-6	NE	NE	0.086	0.36	0.00085	U	0.00083	U	0.00083	U						
alpha-Chlordane	5103-71-9	NE	NE	NE	NE	0.00085	U	0.00083	U	0.00083	U						
beta-BHC	319-85-7	NE	NE	0.3	1.3	0.00085	U	0.00083	U	0.00083	U						
delta-BHC	319-86-8	NE	NE	NE	NE	0.00085	U	0.00083	U	0.00083	U						
Dieldrin	60-57-1	NE	NE	0.034	0.14	0.0017	U	**0.0024**		0.0017	U						
Endosulfan I	959-98-8	NE	NE	NE	NE	0.00085	U	0.00083	U	0.00083	U						
Endosulfan II	33213-65-9	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0017	U						
Endosulfan sulfate	1031-07-8	NE	NE	380	4900	0.0017	U	0.0017	U	0.0017	U						
Endrin	72-20-8	NE	NE	19	250	0.0017	U	0.0017	U	0.0017	U						
Endrin aldehyde	7421-93-4	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0017	U						
Endrin ketone	53494-70-5	NE	NE	NE	NE	0.0017	U	0.0017	U	0.0017	U						
gamma-BHC	58-89-9	NE	NE	0.57	2.5	0.00085	U	0.00083	U	0.00083	U						
gamma-Chlordane	5103-74-2	NE	NE	NE	NE	0.00085	U	0.00083	U	0.00083	U						
Heptachlor	76-44-8	NE	NE	0.13	0.63	0.00085	U	0.00083	U	0.00083	U						
Heptachlor epoxide	1024-57-3	NE	NE	0.07	0.33	0.00085	U	0.00083	U	0.00083	U						
Methoxychlor	72-43-5	NE	NE	320	4100	0.0085	U	0.0083	U	0.0083	U						
Technical Chlordane	57-74-9	NE	NE	NE	NE	0.026	U	0.026	U	0.026	U						
Toxaphene	8001-35-2	NE	NE	0.49	2.1	0.026	U	0.026	U	0.026	U						

Key:
Vermont Soil Standards from Investigation and Remediation of Contaminated Properties Rule, July 2019
RSL - US Environmental Protection Agency, Regional Screening Levels for Residential (Res) and Industrial (Ind) settings, May 2019
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the enforcement standard(s)
NE - screening level not established
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed
NS - Sample not analyzed for compound

Table B-7
TCLP Concentrations in Soil

METALS TCLP									
Sample ID		**AMR-SB11-COMP**		**AMR-SB21-COMP**		**AMR-SB28-COMP**		**AMR-SB9-COMP**	
Sample Date	**CAS#**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**
Arsenic	7440-38-2	0.25	U	0.25	U	0.25	U	0.25	U
Barium	7440-39-3	4	U	4	U	4	U	4	U
Cadmium	7440-43-9	0.05	U	0.05	U	0.05	U	0.05	U
Chromium	7440-47-3	0.1	U	0.1	U	0.1	U	0.1	U
Lead	7439-92-1	0.25	U	0.25	U	0.25	U	0.25	U
Selenium	7782-49-2	0.85	U	0.85	U	0.85	U	0.85	U
Silver	7440-22-4	0.07	U	0.07	U	0.07	U	0.07	U
Mercury	7439-97-6	0.001	U	0.001	U	0.001	U	0.001	U
PESTICIDES TCLP									
Sample ID		**AMR-SB11-COMP**		**AMR-SB21-COMP**		**AMR-SB28-COMP**		**AMR-SB9-COMP**	
Sample Date	**CAS#**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**
Chlordane	57-74-9	0.0008	U	0.0008	U	0.0008	U	0.0008	U
Endrin	72-20-8	0.000051	U	0.000051	U	0.000051	U	0.000051	U
gamma-BHC	58-89-9	0.000026	U	0.000026	U	0.000026	U	0.000026	U
Heptachlor	76-44-8	0.000026	U	0.000026	U	0.000026	U	0.000026	U
Heptachlor epoxide	1024-57-3	0.000026	U	0.000026	U	0.000026	U	0.000026	U
Methoxychlor	72-43-5	0.00026	U	0.00026	U	0.00026	U	0.00026	U
Toxaphene	8001-35-2	0.0008	U	0.0008	U	0.0008	U	0.0008	U
SEMI VOLATILE ORGANIC COMPOUNDS									
Sample ID		**AMR-SB11-COMP**		**AMR-SB21-COMP**		**AMR-SB28-COMP**		**AMR-SB9-COMP**	
Sample Date	**CAS#**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**
1,4-Dichlorobenzene	106-46-7	0.04	U	0.04	U	0.04	U	0.04	U
2,4,5-Trichlorophenol	95-95-4	0.04	U	0.04	U	0.04	U	0.04	U
2,4,6-Trichlorophenol	88-06-2	0.04	U	0.04	U	0.04	U	0.04	U
2,4-Dinitrotoluene	121-14-2	0.04	U	0.04	U	0.04	U	0.04	U
2-Methylphenol	95-48-7	0.04	U	0.04	U	0.04	U	0.04	U
4-Methylphenol	106-44-5	0.04	U	0.04	U	0.04	U	0.04	U
Cresols, Total	1319-77-3	0.04	U	0.04	U	0.04	U	0.04	U
Hexachlorobenzene	118-74-1	0.04	U	0.04	U	0.04	U	0.04	U
Hexachlorobutadiene	87-68-3	0.04	U	0.04	U	0.04	U	0.04	U
Hexachloroethane	67-72-1	0.04	U	0.04	U	0.04	U	0.04	U
Nitrobenzene	98-95-3	0.04	U	0.04	U	0.04	U	0.04	U
Pentachlorophenol	87-86-5	0.08	U	0.08	U	0.08	U	0.08	U
Pyridine	110-86-1	0.08	U	0.08	U	0.08	U	0.08	U

VOLATILE ORGANIC COMPOUNDS									
Sample ID		**AMR-SB11-COMP**		**AMR-SB21-COMP**		**AMR-SB28-COMP**		**AMR-SB9-COMP**	
Sample Date	**CAS#**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**
1,1-Dichloroethene	75-35-4								
1,2-Dichloroethane	107-06-2	0.02	U	0.02	U	0.02	U	0.02	U
1,4-Dichlorobenzene	106-46-7	0.02	U	0.02	U	0.02	U	0.02	U
2-Butanone	78-93-3	0.02	U	0.02	U	0.02	U	0.02	U
Benzene	71-43-2	0.1	U	0.1	U	0.1	U	0.1	U
Carbon tetrachloride	56-23-5	0.02	U	0.02	U	0.02	U	0.02	U
Chlorobenzene	108-90-7	0.02	U	0.02	U	0.02	U	0.02	U
Chloroform	67-66-3	0.02	U	0.02	U	0.02	U	0.02	U
Tetrachloroethene	127-18-4	0.02	U	0.02	U	0.02	U	0.02	U
Trichloroethene	79-01-6	0.02	U	0.02	U	0.02	U	0.02	U
Vinyl chloride	75-01-4	0.02	U	0.02	U	0.02	U	0.02	U
IGNITABILITY									
Sample ID		**AMR-SB11-COMP**		**AMR-SB21-COMP**		**AMR-SB28-COMP**		**AMR-SB9-COMP**	
Sample Date	**CAS#**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**	**8/30/2013**	**Q**
Ignitability		>200		>200		>200		>200	

Key:
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the enforcement standard(s)
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed

Appendix C: Field Notes Supplemental Soil Assessment

SOIL BORING LOG

Project Name: Crescent Connector Site Name:

Stone Project Number: 12-152 Client:

BORING/WELL ID: SB-101	Date Drilled: 5/15/20		Location:
S followed:	Borehole Diam. (in)	3	
Deviations:	Well Diameter (in):	NA	
Drilling Method: Hand auger	Screen Length (ft):		
Driller's name: DTC	Screen Slot Size:		
Sampling method: HA	Sand Pack (ft):		
Core Length: NA	Well Seal (ft):		

Comments:

Depth Interval (ft bgs)	Recovery (feet)	PID Interval (ft)	PID Reading (ppm v/v)	Soil Description (color, texture, moisture, remarks)	Sample Collected (Depth, ID & Time)	Well Const. Details
0-1.5	NA	0.5 1.0 1.5	0.3 0.3 0.5	0-0.5': brown, moist, loamy silt and sand. 0.5-1.5': brown to dark brown sand w trace silt, some coal fragments and coal ash throughout.		
1.5-3.0	NA	2.0 2.5 3.0	0.3 0.2 0.3	1.5-1.75': dark gravel and sand w/ significant coal and coal ash from ~ 1.5-1.65', then less coal + coal ash. 1.75-3.0': light brown fine sand and trace silt, no odor.	SB-101-2.0 @ 1010 VOCs, PP metals, PAHs, PCBs	
				small coal fragments present ~2.3' (may have fallen into auger bucket from upper side wall) no other coal + coal ash observed		

Geoscientist: Dan Curran	Signature: Daniel T. Curran	Date: 5/15/20
Geoscientist:	Signature:	Date:

SOIL BORING LOG

Project Name: Crescent Connector Site Name:

Stone Project Number: 12-152 Client:

BORING/WELL ID: SB-102	Date Drilled: 5/15/20		Location:
S followed:	Borehole Diam. (in)	3"	
Deviations:	Well Diameter (in):	NA	
Drilling Method: Hand Auger	Screen Length (ft):		
Driller's name: DTC	Screen Slot Size:		
Sampling method: HA	Sand Pack (ft):		
Core Length: NA	Well Seal (ft):		

Comments:

Depth Interval (ft bgs)	Recovery (feet)	PID Interval (ft)	PID Reading (ppm v/v)	Soil Description (color, texture, moisture, remarks)	Sample Collected (Depth, ID & Time)	Well Const. Details
0-2.0	NA	0.5 1.0 1.5 2.0	0.1 0.1 0.1 0.1	0-0.8': Brown to dark brown sand and gravel, w/ trace silt, dry. 0.8-2.0 light brown fine sand w/ trace silt, dry becoming moist and brown ~1.5'.	SB-102-2.0 (composite 0-2') 840 VOCs, PAHs, PCBs, RP metals	
2-3	NA	2.5 3.0	0.1 0.1	2-3': SAA, moist brown fine sand w/ trace silt becoming light brown ~2.5'		

Geoscientist: Dan Curran	Signature: Daniel S. Curran	Date: 5/15/20
G cientist:	Signature:	Date:

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SOIL BORING LOG

Project Name: Crescent Connector Site Name:

Stone Project Number: 12-152 Client:

BORING/WELL ID: SB-103	Date Drilled: 5/15/20		Location:
S followed:	Borehole Diam. (in)	3	
Deviations:	Well Diameter (in):	NA	
Drilling Method: Hand Auger	Screen Length (ft):		
Driller's name: DTC	Screen Slot Size:		
Sampling method: HA	Sand Pack (ft):		
Core Length: NA	Well Seal (ft):		

Comments:

Depth Interval (ft bgs)	Recovery (feet)	PID Interval (ft)	PID Reading (ppm v/v)	Soil Description (color, texture, moisture, remarks)	Sample Collected (Depth, ID & Time)	Well Const. Details
0-2	NA	0.5 1.0 1.5 2.0	0.3 0.4 0.3 0.4	0.0-1.5 brown to dark brown sand, gravel and crushed stone, w/ trace silt, dry becoming damp @ 1.0' 1.5-2.0 dark brown sand w/ trace silt and gravel, moist becoming light brown @ 1.75' coal fragments throughout	SB-103-2.0 /SB-103-2.0-FD @ 925 (comp 0-2.0') VOCs, PP metals, PAHs, PCBs	
2-3	NA	2.5 3.0	0.3 0.3	2-3': light brown to tan fine sand w/ trace silt, moist. No coal fragments observed.		

Geoscientist: Dan Curran	Signature: Daniel T. Curran	Date: 5/15/20
G[illegible]cientist:	Signature:	Date:

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SOIL BORING LOG

Project Name: 12-152 Site Name:

Stone Project Number: Crescent Connector Client:

BORING/WELL ID: SB-104	Date Drilled: 5/15/20	Location:
S followed:	Borehole Diam. (in): 3	
Deviations:	Well Diameter (in): NA	
Drilling Method: Hand Auger	Screen Length (ft):	
Driller's name: DTC	Screen Slot Size:	
Sampling method: HA	Sand Pack (ft):	
Core Length: NA	Well Seal (ft):	

Comments: Coal fragments present at ground surface

Depth Interval (ft bgs)	Recovery (feet)	PID Interval (ft)	PID Reading (ppm v/v)	Soil Description (color, texture, moisture, remarks)	Sample Collected (Depth, ID & Time)	Well Const. Details
0-2		0.25 0.5 1.0 1.5 2.0	0.3 0.4 0.4 0.5 0.4	0-0.5': black gravel and sand, dry with significant coal and coal ash throughout. 0.5-2.0': light brown to brown fine sand with trace silt, trace of coal throughout, moist	SB-104-2.0 (comp) @ 1645 VOCs, PAHs, RP metals, PCBs	
2-3		2.5 3.0	0.3 0.3	~~2.0-2.5'~~ (1) 2-3.0 light brown fine sand becoming medium to coarse sand @ 2.5', moist No coal observed.		

Geoscientist: Dan Curran	Signature: Daniel T. Curran	Date: 5/15/20
G cientist:	Signature:	Date:

(1) E) DTC 5/15/20

SOIL BORING LOG

Project Name: Crescent Connector Site Name:

Stone Project Number: 12-152 Client:

BORING/WELL ID: SB-105	Date Drilled: 5/15/20		Location:
S followed:	Borehole Diam. (in)	3	
Deviations:	Well Diameter (in):	NA	
Drilling Method: Hand auger	Screen Length (ft):		
Driller's name: DTC	Screen Slot Size:		
Sampling method: HA	Sand Pack (ft):		
Core Length: NA	Well Seal (ft):		

Comments:

Depth Interval (ft bgs)	Recovery (feet)	PID Interval (ft)	PID Reading (ppm v/v)	Soil Description (color, texture, moisture, remarks)	Sample Collected (Depth, ID & Time)	Well Const. Details
0-2		0.5 1.0 1.5 2.0	0.7 0.5 0.5 0.5	0.0-1.0': black, gravel + sand, dry, with significant coal + coal ash throughout. ~~1.0-2.0 light brown, moist, medium to coarse sand w/ some gravel~~ (1)	SB-105-2.0 VOCs, PAHs,	0.0-2.0 (Comp) 1/25 PCBs, PB Metal
2-3		2.5 3.0	0.4 0.4	~~2.4-2.5 darker brown, fine~~ 2.0-2.5 light brown fine sand with trace silt, moist, no coal. 2.5-2.6: darker brown fine silty sand, moist. 2.6-2.75: light brown, medium sand, moist		
				2.75-3.0 tan coarse sand and gravel, moist		

Geoscientist: Dan Curran	Signature: Daniel T. Curran	Date: 5/15/20
Geoscientist:	Signature:	Date:

(1) (E) DTC 5/15/20

OBSERVATIONS AND REMARKS

Project Name/Description: Crescent Connector	STONE ENVIRONMENTAL 535 Stone Cutters Way / Montpelier / VT / 05602 / USA 802.229.4541 / info@stone-env.com / www.stone-env.com
SEI Project #: 12-152	Client/Sponsor:

0805 Stone on site @ Crescent connector to complete SSI soil assessment.
weather: 50, cloudy, rain

Calibrated PID. Confirmed SB locations are 15+ feet outside center of rail line, Begin soil assessment. See soil boring logs for details.

1145 Collected TB-051520

1200 DTE off-site

Signed: Daniel S. Cano Date: 5/15/20

5 squares = 1 inch

Appendix D: Laboratory Analytical Report-Supplemental Soil Assessment

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

May 29, 2020

Dan Voisin
Stone Environmental
535 Stone Cutters Ways
Montpelier, VT 05602

Project Location: Essex Junction, VT
Client Job Number:
Project Number: 12-152
Laboratory Work Order Number: 20E0762

Enclosed are results of analyses for samples received by the laboratory on May 19, 2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kaitlyn A. Feliciano
Project Manager

Table of Contents

Table of Contents (continued)

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Stone Environmental
535 Stone Cutters Ways
Montpelier, VT 05602
ATTN: Dan Voisin

REPORT DATE: 5/29/2020

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 12-152

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 20E0762

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Essex Junction, VT

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SB-101-2.0	20E0762-01	Soil		SM 2540G	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8260C-D	
				SW-846 8270D-E	
SB-102-2.0	20E0762-02	Soil		SM 2540G	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8260C-D	
				SW-846 8270D-E	
SB-103-2.0	20E0762-03	Soil		SM 2540G	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8260C-D	
				SW-846 8270D-E	
SB-103-2.0-FD	20E0762-04	Soil		SM 2540G	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8260C-D	
				SW-846 8270D-E	
SB-104-2.0	20E0762-05	Soil		SM 2540G	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8260C-D	
				SW-846 8270D-E	
SB-105-2.0	20E0762-06	Soil		SM 2540G	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8260C-D	
				SW-846 8270D-E	
TB-051520	20E0762-07	Trip Blank Soil		SW-846 8260C-D	

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

For 8270E, only PAHs were requested and reported.

SW-846 6010D

Qualifications:

MS-07

Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery.Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.

Analyte & Samples(s) Qualified:

Antimony
20E0762-02[SB-102-2.0], B258495-MS1

SW-846 8260C-D

Qualifications:

L-04

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

trans-1,4-Dichloro-2-butene
20E0762-01[SB-101-2.0], 20E0762-02[SB-102-2.0], 20E0762-03[SB-103-2.0], 20E0762-04[SB-103-2.0-FD], 20E0762-05[SB-104-2.0], 20E0762-06[SB-105-2.0], 20E0762-07[TB-051520], B258383-BLK1, B258383-BS1, B258383-BSD1

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

1,2-Dibromo-3-chloropropane (DB
20E0762-01[SB-101-2.0], 20E0762-02[SB-102-2.0], 20E0762-03[SB-103-2.0], 20E0762-04[SB-103-2.0-FD], 20E0762-05[SB-104-2.0], 20E0762-06[SB-105-2.0], 20E0762-07[TB-051520], B258383-BLK1, B258383-BS1, B258383-BSD1, S048619-CCV1

2,2-Dichloropropane
20E0762-01[SB-101-2.0], 20E0762-02[SB-102-2.0], 20E0762-03[SB-103-2.0], 20E0762-04[SB-103-2.0-FD], 20E0762-05[SB-104-2.0], 20E0762-06[SB-105-2.0], 20E0762-07[TB-051520], B258383-BLK1, B258383-BS1, B258383-BSD1, S048619-CCV1

Carbon Tetrachloride
20E0762-01[SB-101-2.0], 20E0762-02[SB-102-2.0], 20E0762-03[SB-103-2.0], 20E0762-04[SB-103-2.0-FD], 20E0762-05[SB-104-2.0], 20E0762-06[SB-105-2.0], 20E0762-07[TB-051520], B258383-BLK1, B258383-BS1, B258383-BSD1, S048619-CCV1

tert-Butyl Alcohol (TBA)
20E0762-01[SB-101-2.0], 20E0762-02[SB-102-2.0], 20E0762-03[SB-103-2.0], 20E0762-04[SB-103-2.0-FD], 20E0762-05[SB-104-2.0], 20E0762-06[SB-105-2.0], 20E0762-07[TB-051520], B258383-BLK1, B258383-BS1, B258383-BSD1, S048619-CCV1

trans-1,4-Dichloro-2-butene
20E0762-01[SB-101-2.0], 20E0762-02[SB-102-2.0], 20E0762-03[SB-103-2.0], 20E0762-04[SB-103-2.0-FD], 20E0762-05[SB-104-2.0], 20E0762-06[SB-105-2.0], 20E0762-07[TB-051520], B258383-BLK1, B258383-BS1, B258383-BSD1, S048619-CCV1

V-34

Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:

Bromomethane
20E0762-01[SB-101-2.0], 20E0762-02[SB-102-2.0], 20E0762-03[SB-103-2.0], 20E0762-04[SB-103-2.0-FD], 20E0762-05[SB-104-2.0], 20E0762-06[SB-105-2.0], 20E0762-07[TB-051520], B258383-BLK1, B258383-BS1, B258383-BSD1, S048619-CCV1

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The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-101-2.0 | Sampled: 5/15/2020 10:10

Sample ID: 20E0762-01

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Acrylonitrile	ND	0.0048	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Benzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Bromobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Bromochloromethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Bromodichloromethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Bromoform	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Bromomethane	ND	0.0079	mg/Kg dry	1	V-34	SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
2-Butanone (MEK)	ND	0.032	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
tert-Butyl Alcohol (TBA)	ND	0.032	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
n-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
sec-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
tert-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Carbon Disulfide	ND	0.0048	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Carbon Tetrachloride	ND	0.0016	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Chlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Chlorodibromomethane	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Chloroethane	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Chloroform	ND	0.0032	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Chloromethane	ND	0.0079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
2-Chlorotoluene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
4-Chlorotoluene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0016	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2-Dibromoethane (EDB)	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Dibromomethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,3-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,4-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
trans-1,4-Dichloro-2-butene	ND	0.0032	mg/Kg dry	1	L-04, V-05	SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,1-Dichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2-Dichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,1-Dichloroethylene	ND	0.0032	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
cis-1,2-Dichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
trans-1,2-Dichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2-Dichloropropane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,3-Dichloropropane	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
2,2-Dichloropropane	ND	0.0016	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,1-Dichloropropene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
cis-1,3-Dichloropropene	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
trans-1,3-Dichloropropene	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Diethyl Ether	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-101-2.0 | Sampled: 5/15/2020 10:10

Sample ID: 20E0762-01

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,4-Dioxane	ND	0.079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Ethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Hexachlorobutadiene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
2-Hexanone (MBK)	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Isopropylbenzene (Cumene)	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Methyl Acetate	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0032	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Methyl Cyclohexane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Methylene Chloride	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Naphthalene	ND	0.0032	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
n-Propylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Styrene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,1,1,2-Tetrachloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,1,2,2-Tetrachloroethane	ND	0.00079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Tetrachloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Tetrahydrofuran	ND	0.0079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Toluene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2,3-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2,4-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,3,5-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,1,1-Trichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,1,2-Trichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Trichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2,3-Trichloropropane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,2,4-Trimethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
1,3,5-Trimethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
Vinyl Chloride	ND	0.0079	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
m+p Xylene	ND	0.0032	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF
o-Xylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:02	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	93.3	70-130		5/20/20 8:02
Toluene-d8	95.9	70-130		5/20/20 8:02
4-Bromofluorobenzene	94.3	70-130		5/20/20 8:02

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-101-2.0 | Sampled: 5/15/2020 10:10

Sample ID: 20E0762-01

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Acenaphthylene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Anthracene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Benzo(a)anthracene	0.27	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Benzo(a)pyrene	0.29	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Benzo(b)fluoranthene	0.46	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Benzo(g,h,i)perylene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Benzo(k)fluoranthene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Chrysene	0.35	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Dibenz(a,h)anthracene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Fluoranthene	0.66	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Fluorene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Indeno(1,2,3-cd)pyrene	0.19	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
2-Methylnaphthalene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Naphthalene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Phenanthrene	0.37	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL
Pyrene	0.52	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:22	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	50.4	30-130		5/22/20 13:22
2-Fluorobiphenyl	58.7	30-130		5/22/20 13:22
p-Terphenyl-d14	46.8	30-130		5/22/20 13:22

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-101-2.0 | Sampled: 5/15/2020 10:10

Sample ID: 20E0762-01

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB
Aroclor-1221 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB
Aroclor-1232 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB
Aroclor-1242 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB
Aroclor-1248 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB
Aroclor-1254 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB
Aroclor-1260 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB
Aroclor-1262 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB
Aroclor-1268 [1]	ND	0.087	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:21	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	104	30-150		5/23/20 12:21
Decachlorobiphenyl [2]	97.0	30-150		5/23/20 12:21
Tetrachloro-m-xylene [1]	96.7	30-150		5/23/20 12:21
Tetrachloro-m-xylene [2]	98.4	30-150		5/23/20 12:21

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-101-2.0 | Sampled: 5/15/2020 10:10

Sample ID: 20E0762-01

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.9	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Arsenic	6.3	3.8	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Beryllium	0.28	0.19	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Cadmium	ND	0.38	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Chromium	13	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Copper	61	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Lead	120	0.56	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Mercury	0.073	0.028	mg/Kg dry	1		SW-846 7471B	5/20/20	5/22/20 12:43	CJV
Nickel	16	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Selenium	ND	3.8	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Silver	ND	0.38	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Thallium	ND	1.9	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW
Zinc	180	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:46	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-101-2.0 | Sampled: 5/15/2020 10:10

Sample ID: 20E0762-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.5		% Wt	1		SM 2540G	5/19/20	5/20/20 7:14	CAH

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-102-2.0 | Sampled: 5/15/2020 08:40

Sample ID: 20E0762-02

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Acrylonitrile	ND	0.0047	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Benzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Bromobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Bromochloromethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Bromodichloromethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Bromoform	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Bromomethane	ND	0.0078	mg/Kg dry	1	V-34	SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
2-Butanone (MEK)	ND	0.031	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
tert-Butyl Alcohol (TBA)	ND	0.031	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
n-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
sec-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
tert-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Carbon Disulfide	ND	0.0047	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Carbon Tetrachloride	ND	0.0016	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Chlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Chlorodibromomethane	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Chloroethane	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Chloroform	ND	0.0031	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Chloromethane	ND	0.0078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
2-Chlorotoluene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
4-Chlorotoluene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0016	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2-Dibromoethane (EDB)	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Dibromomethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,3-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,4-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
trans-1,4-Dichloro-2-butene	ND	0.0031	mg/Kg dry	1	L-04, V-05	SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,1-Dichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2-Dichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,1-Dichloroethylene	ND	0.0031	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
cis-1,2-Dichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
trans-1,2-Dichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2-Dichloropropane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,3-Dichloropropane	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
2,2-Dichloropropane	ND	0.0016	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,1-Dichloropropene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
cis-1,3-Dichloropropene	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
trans-1,3-Dichloropropene	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Diethyl Ether	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-102-2.0 | Sampled: 5/15/2020 08:40

Sample ID: 20E0762-02

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,4-Dioxane	ND	0.078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Ethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Hexachlorobutadiene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
2-Hexanone (MBK)	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Isopropylbenzene (Cumene)	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Methyl Acetate	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0031	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Methyl Cyclohexane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Methylene Chloride	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Naphthalene	ND	0.0031	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
n-Propylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Styrene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,1,1,2-Tetrachloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,1,2,2-Tetrachloroethane	ND	0.00078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Tetrachloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Tetrahydrofuran	ND	0.0078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Toluene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2,3-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2,4-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,3,5-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,1,1-Trichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,1,2-Trichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Trichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2,3-Trichloropropane	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,2,4-Trimethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
1,3,5-Trimethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
Vinyl Chloride	ND	0.0078	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
m+p Xylene	ND	0.0031	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF
o-Xylene	ND	0.0016	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:27	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	92.1	70-130		5/20/20 8:27
Toluene-d8	97.9	70-130		5/20/20 8:27
4-Bromofluorobenzene	96.5	70-130		5/20/20 8:27

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-102-2.0 | Sampled: 5/15/2020 08:40

Sample ID: 20E0762-02

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Acenaphthylene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Anthracene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Benzo(a)anthracene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Benzo(a)pyrene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Benzo(b)fluoranthene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Benzo(g,h,i)perylene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Benzo(k)fluoranthene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Chrysene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Dibenz(a,h)anthracene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Fluoranthene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Fluorene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Indeno(1,2,3-cd)pyrene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
2-Methylnaphthalene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Naphthalene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Phenanthrene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL
Pyrene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 13:47	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	60.6	30-130		5/22/20 13:47
2-Fluorobiphenyl	69.9	30-130		5/22/20 13:47
p-Terphenyl-d14	59.6	30-130		5/22/20 13:47

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-102-2.0 | Sampled: 5/15/2020 08:40

Sample ID: 20E0762-02

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB
Aroclor-1221 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB
Aroclor-1232 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB
Aroclor-1242 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB
Aroclor-1248 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB
Aroclor-1254 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB
Aroclor-1260 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB
Aroclor-1262 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB
Aroclor-1268 [1]	ND	0.090	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 12:39	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	113	30-150		5/23/20 12:39
Decachlorobiphenyl [2]	104	30-150		5/23/20 12:39
Tetrachloro-m-xylene [1]	99.1	30-150		5/23/20 12:39
Tetrachloro-m-xylene [2]	101	30-150		5/23/20 12:39

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-102-2.0 | Sampled: 5/15/2020 08:40

Sample ID: 20E0762-02

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.9	mg/Kg dry	1	MS-07	SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Arsenic	4.2	3.7	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Beryllium	0.21	0.19	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Cadmium	ND	0.37	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Chromium	12	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Copper	45	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Lead	45	0.56	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Mercury	0.047	0.027	mg/Kg dry	1		SW-846 7471B	5/20/20	5/22/20 12:24	CJV
Nickel	16	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Selenium	ND	3.7	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Silver	ND	0.37	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Thallium	ND	1.9	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW
Zinc	48	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 17:41	QNW

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-102-2.0 | Sampled: 5/15/2020 08:40

Sample ID: 20E0762-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.8		% Wt	1		SM 2540G	5/19/20	5/20/20 7:14	CAH

con-test® ANALYTICAL LABORATORY
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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0 | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-03

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Acrylonitrile	ND	0.0058	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Benzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Bromobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Bromochloromethane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Bromodichloromethane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Bromoform	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Bromomethane	ND	0.0096	mg/Kg dry	1	V-34	SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
2-Butanone (MEK)	ND	0.038	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
tert-Butyl Alcohol (TBA)	ND	0.038	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
n-Butylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
sec-Butylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
tert-Butylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Carbon Disulfide	ND	0.0058	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Carbon Tetrachloride	ND	0.0019	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Chlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Chlorodibromomethane	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Chloroethane	ND	0.019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Chloroform	ND	0.0038	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Chloromethane	ND	0.0096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
2-Chlorotoluene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
4-Chlorotoluene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0019	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2-Dibromoethane (EDB)	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Dibromomethane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2-Dichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,3-Dichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,4-Dichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
trans-1,4-Dichloro-2-butene	ND	0.0038	mg/Kg dry	1	L-04, V-05	SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,1-Dichloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2-Dichloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,1-Dichloroethylene	ND	0.0038	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
cis-1,2-Dichloroethylene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
trans-1,2-Dichloroethylene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2-Dichloropropane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,3-Dichloropropane	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
2,2-Dichloropropane	ND	0.0019	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,1-Dichloropropene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
cis-1,3-Dichloropropene	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
trans-1,3-Dichloropropene	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Diethyl Ether	ND	0.019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0 | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-03

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,4-Dioxane	ND	0.096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Ethylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Hexachlorobutadiene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
2-Hexanone (MBK)	ND	0.019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Isopropylbenzene (Cumene)	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Methyl Acetate	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0038	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Methyl Cyclohexane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Methylene Chloride	ND	0.019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Naphthalene	ND	0.0038	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
n-Propylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Styrene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,1,1,2-Tetrachloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,1,2,2-Tetrachloroethane	ND	0.00096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Tetrachloroethylene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Tetrahydrofuran	ND	0.0096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Toluene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2,3-Trichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2,4-Trichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,3,5-Trichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,1,1-Trichloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,1,2-Trichloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Trichloroethylene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2,3-Trichloropropane	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,2,4-Trimethylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
1,3,5-Trimethylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
Vinyl Chloride	ND	0.0096	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
m+p Xylene	ND	0.0038	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF
o-Xylene	ND	0.0019	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 8:52	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	91.8	70-130		5/20/20 8:52
Toluene-d8	98.9	70-130		5/20/20 8:52
4-Bromofluorobenzene	93.1	70-130		5/20/20 8:52

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0 | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-03

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Acenaphthylene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Anthracene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Benzo(a)anthracene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Benzo(a)pyrene	0.22	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Benzo(b)fluoranthene	0.35	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Benzo(g,h,i)perylene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Benzo(k)fluoranthene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Chrysene	0.23	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Dibenz(a,h)anthracene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Fluoranthene	0.34	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Fluorene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Indeno(1,2,3-cd)pyrene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
2-Methylnaphthalene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Naphthalene	ND	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Phenanthrene	0.19	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL
Pyrene	0.32	0.19	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:11	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	59.0	30-130		5/22/20 14:11
2-Fluorobiphenyl	68.7	30-130		5/22/20 14:11
p-Terphenyl-d14	55.9	30-130		5/22/20 14:11

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0 | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-03

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB
Aroclor-1221 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB
Aroclor-1232 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB
Aroclor-1242 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB
Aroclor-1248 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB
Aroclor-1254 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB
Aroclor-1260 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB
Aroclor-1262 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB
Aroclor-1268 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 13:44	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	107	30-150		5/23/20 13:44
Decachlorobiphenyl [2]	99.2	30-150		5/23/20 13:44
Tetrachloro-m-xylene [1]	95.4	30-150		5/23/20 13:44
Tetrachloro-m-xylene [2]	96.7	30-150		5/23/20 13:44

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0 | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-03

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.9	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Arsenic	4.8	3.8	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Beryllium	0.23	0.19	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Cadmium	ND	0.38	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Chromium	12	0.76	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Copper	63	0.76	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Lead	69	0.57	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Mercury	0.069	0.028	mg/Kg dry	1		SW-846 7471B	5/20/20	5/22/20 12:45	CJV
Nickel	16	0.76	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Selenium	ND	3.8	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Silver	ND	0.38	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Thallium	ND	1.9	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW
Zinc	72	0.76	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:03	QNW

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0 | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.0		% Wt	1		SM 2540G	5/19/20	5/20/20 7:15	CAH

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0-FD | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-04

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Acrylonitrile	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Benzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Bromobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Bromochloromethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Bromodichloromethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Bromoform	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Bromomethane	ND	0.0089	mg/Kg dry	1	V-34	SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
2-Butanone (MEK)	ND	0.036	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
tert-Butyl Alcohol (TBA)	ND	0.036	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
n-Butylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
sec-Butylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
tert-Butylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Carbon Disulfide	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Carbon Tetrachloride	ND	0.0018	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Chlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Chlorodibromomethane	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Chloroethane	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Chloroform	ND	0.0036	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Chloromethane	ND	0.0089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
2-Chlorotoluene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
4-Chlorotoluene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0018	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2-Dibromoethane (EDB)	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Dibromomethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2-Dichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,3-Dichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,4-Dichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
trans-1,4-Dichloro-2-butene	ND	0.0036	mg/Kg dry	1	L-04, V-05	SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,1-Dichloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2-Dichloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,1-Dichloroethylene	ND	0.0036	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
cis-1,2-Dichloroethylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
trans-1,2-Dichloroethylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2-Dichloropropane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,3-Dichloropropane	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
2,2-Dichloropropane	ND	0.0018	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,1-Dichloropropene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
cis-1,3-Dichloropropene	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
trans-1,3-Dichloropropene	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Diethyl Ether	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0-FD | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-04

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,4-Dioxane	ND	0.089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Ethylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Hexachlorobutadiene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
2-Hexanone (MBK)	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Isopropylbenzene (Cumene)	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Methyl Acetate	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0036	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Methyl Cyclohexane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Methylene Chloride	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Naphthalene	ND	0.0036	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
n-Propylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Styrene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,1,1,2-Tetrachloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,1,2,2-Tetrachloroethane	ND	0.00089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Tetrachloroethylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Tetrahydrofuran	ND	0.0089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Toluene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2,3-Trichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2,4-Trichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,3,5-Trichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,1,1-Trichloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,1,2-Trichloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Trichloroethylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2,3-Trichloropropane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,2,4-Trimethylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
1,3,5-Trimethylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
Vinyl Chloride	ND	0.0089	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
m+p Xylene	ND	0.0036	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF
o-Xylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:16	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
1,2-Dichloroethane-d4	96.3	70-130			5/20/20 9:16
Toluene-d8	98.4	70-130			5/20/20 9:16
4-Bromofluorobenzene	98.4	70-130			5/20/20 9:16

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0-FD | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-04

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Acenaphthylene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Benzo(a)anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Benzo(a)pyrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Benzo(b)fluoranthene	0.23	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Benzo(g,h,i)perylene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Benzo(k)fluoranthene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Chrysene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Dibenz(a,h)anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Fluoranthene	0.26	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Fluorene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Indeno(1,2,3-cd)pyrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
2-Methylnaphthalene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Naphthalene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Phenanthrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL
Pyrene	0.23	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/22/20 14:35	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	46.1	30-130		5/22/20 14:35
2-Fluorobiphenyl	54.4	30-130		5/22/20 14:35
p-Terphenyl-d14	44.6	30-130		5/22/20 14:35

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0-FD | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-04

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB
Aroclor-1221 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB
Aroclor-1232 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB
Aroclor-1242 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB
Aroclor-1248 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB
Aroclor-1254 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB
Aroclor-1260 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB
Aroclor-1262 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB
Aroclor-1268 [1]	ND	0.088	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:01	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	109	30-150		5/23/20 14:01
Decachlorobiphenyl [2]	101	30-150		5/23/20 14:01
Tetrachloro-m-xylene [1]	98.6	30-150		5/23/20 14:01
Tetrachloro-m-xylene [2]	101	30-150		5/23/20 14:01

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0-FD | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-04

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.9	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Arsenic	5.1	3.7	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Beryllium	ND	0.19	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Cadmium	ND	0.37	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Chromium	11	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Copper	65	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Lead	74	0.56	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Mercury	0.064	0.028	mg/Kg dry	1		SW-846 7471B	5/20/20	5/22/20 12:51	CJV
Nickel	15	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Selenium	ND	3.7	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Silver	ND	0.37	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Thallium	ND	1.9	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW
Zinc	69	0.75	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:08	QNW

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-103-2.0-FD | Sampled: 5/15/2020 09:25

Sample ID: 20E0762-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.7		% Wt	1		SM 2540G	5/19/20	5/20/20 7:15	CAH

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-104-2.0 | Sampled: 5/15/2020 10:45

Sample ID: 20E0762-05

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Acrylonitrile	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Benzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Bromobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Bromochloromethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Bromodichloromethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Bromoform	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Bromomethane	ND	0.0088	mg/Kg dry	1	V-34	SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
2-Butanone (MEK)	ND	0.035	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
tert-Butyl Alcohol (TBA)	ND	0.035	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
n-Butylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
sec-Butylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
tert-Butylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Carbon Disulfide	ND	0.0053	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Carbon Tetrachloride	ND	0.0018	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Chlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Chlorodibromomethane	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Chloroethane	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Chloroform	ND	0.0035	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Chloromethane	ND	0.0088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
2-Chlorotoluene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
4-Chlorotoluene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0018	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2-Dibromoethane (EDB)	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Dibromomethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2-Dichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,3-Dichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,4-Dichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
trans-1,4-Dichloro-2-butene	ND	0.0035	mg/Kg dry	1	L-04, V-05	SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,1-Dichloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2-Dichloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,1-Dichloroethylene	ND	0.0035	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
cis-1,2-Dichloroethylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
trans-1,2-Dichloroethylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2-Dichloropropane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,3-Dichloropropane	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
2,2-Dichloropropane	ND	0.0018	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,1-Dichloropropene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
cis-1,3-Dichloropropene	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
trans-1,3-Dichloropropene	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Diethyl Ether	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-104-2.0 | Sampled: 5/15/2020 10:45

Sample ID: 20E0762-05

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,4-Dioxane	ND	0.088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Ethylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Hexachlorobutadiene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
2-Hexanone (MBK)	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Isopropylbenzene (Cumene)	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Methyl Acetate	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0035	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Methyl Cyclohexane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Methylene Chloride	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Naphthalene	ND	0.0035	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
n-Propylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Styrene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,1,1,2-Tetrachloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,1,2,2-Tetrachloroethane	ND	0.00088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Tetrachloroethylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Tetrahydrofuran	ND	0.0088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Toluene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2,3-Trichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2,4-Trichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,3,5-Trichlorobenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,1,1-Trichloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,1,2-Trichloroethane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Trichloroethylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2,3-Trichloropropane	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,2,4-Trimethylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
1,3,5-Trimethylbenzene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
Vinyl Chloride	ND	0.0088	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
m+p Xylene	ND	0.0035	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF
o-Xylene	ND	0.0018	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 9:40	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	91.4	70-130		5/20/20 9:40
Toluene-d8	97.0	70-130		5/20/20 9:40
4-Bromofluorobenzene	94.3	70-130		5/20/20 9:40

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-104-2.0 | Sampled: 5/15/2020 10:45

Sample ID: 20E0762-05

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Acenaphthylene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Benzo(a)anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Benzo(a)pyrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Benzo(b)fluoranthene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Benzo(g,h,i)perylene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Benzo(k)fluoranthene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Chrysene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Dibenz(a,h)anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Fluoranthene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Fluorene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Indeno(1,2,3-cd)pyrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
2-Methylnaphthalene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Naphthalene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Phenanthrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL
Pyrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 12:54	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	65.7	30-130		5/23/20 12:54
2-Fluorobiphenyl	73.9	30-130		5/23/20 12:54
p-Terphenyl-d14	67.4	30-130		5/23/20 12:54

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-104-2.0 | Sampled: 5/15/2020 10:45

Sample ID: 20E0762-05

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB
Aroclor-1221 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB
Aroclor-1232 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB
Aroclor-1242 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB
Aroclor-1248 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB
Aroclor-1254 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB
Aroclor-1260 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB
Aroclor-1262 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB
Aroclor-1268 [1]	ND	0.086	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:19	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	110	30-150		5/23/20 14:19
Decachlorobiphenyl [2]	101	30-150		5/23/20 14:19
Tetrachloro-m-xylene [1]	94.4	30-150		5/23/20 14:19
Tetrachloro-m-xylene [2]	97.5	30-150		5/23/20 14:19

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-104-2.0 | Sampled: 5/15/2020 10:45

Sample ID: 20E0762-05

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.8	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Arsenic	5.6	3.6	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Beryllium	0.25	0.18	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Cadmium	ND	0.36	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Chromium	11	0.72	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Copper	39	0.72	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Lead	120	0.54	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Mercury	0.029	0.027	mg/Kg dry	1		SW-846 7471B	5/20/20	5/22/20 12:52	CJV
Nickel	12	0.72	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Selenium	ND	3.6	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Silver	ND	0.36	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Thallium	ND	1.8	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW
Zinc	25	0.72	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:13	QNW

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-104-2.0 | Sampled: 5/15/2020 10:45

Sample ID: 20E0762-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.5		% Wt	1		SM 2540G	5/19/20	5/20/20 7:15	CAH

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-105-2.0 | Sampled: 5/15/2020 11:25

Sample ID: 20E0762-06

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Acrylonitrile	ND	0.0044	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Benzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Bromobenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Bromochloromethane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Bromodichloromethane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Bromoform	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Bromomethane	ND	0.0074	mg/Kg dry	1	V-34	SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
2-Butanone (MEK)	ND	0.030	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
tert-Butyl Alcohol (TBA)	ND	0.030	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
n-Butylbenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
sec-Butylbenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
tert-Butylbenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Carbon Disulfide	ND	0.0044	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Carbon Tetrachloride	ND	0.0015	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Chlorobenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Chlorodibromomethane	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Chloroethane	ND	0.015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Chloroform	ND	0.0030	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Chloromethane	ND	0.0074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
2-Chlorotoluene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
4-Chlorotoluene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0015	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2-Dibromoethane (EDB)	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Dibromomethane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2-Dichlorobenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,3-Dichlorobenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,4-Dichlorobenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
trans-1,4-Dichloro-2-butene	ND	0.0030	mg/Kg dry	1	L-04, V-05	SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,1-Dichloroethane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2-Dichloroethane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,1-Dichloroethylene	ND	0.0030	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
cis-1,2-Dichloroethylene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
trans-1,2-Dichloroethylene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2-Dichloropropane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,3-Dichloropropane	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
2,2-Dichloropropane	ND	0.0015	mg/Kg dry	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,1-Dichloropropene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
cis-1,3-Dichloropropene	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
trans-1,3-Dichloropropene	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Diethyl Ether	ND	0.015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-105-2.0 | Sampled: 5/15/2020 11:25

Sample ID: 20E0762-06

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,4-Dioxane	ND	0.074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Ethylbenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Hexachlorobutadiene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
2-Hexanone (MBK)	ND	0.015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Isopropylbenzene (Cumene)	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Methyl Acetate	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0030	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Methyl Cyclohexane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Methylene Chloride	ND	0.015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Naphthalene	ND	0.0030	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
n-Propylbenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Styrene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,1,1,2-Tetrachloroethane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,1,2,2-Tetrachloroethane	ND	0.00074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Tetrachloroethylene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Tetrahydrofuran	ND	0.0074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Toluene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2,3-Trichlorobenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2,4-Trichlorobenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,3,5-Trichlorobenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,1,1-Trichloroethane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,1,2-Trichloroethane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Trichloroethylene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2,3-Trichloropropane	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,2,4-Trimethylbenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
1,3,5-Trimethylbenzene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
Vinyl Chloride	ND	0.0074	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
m+p Xylene	ND	0.0030	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF
o-Xylene	ND	0.0015	mg/Kg dry	1		SW-846 8260C-D	5/20/20	5/20/20 10:06	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	93.2	70-130		5/20/20 10:06
Toluene-d8	97.3	70-130		5/20/20 10:06
4-Bromofluorobenzene	94.0	70-130		5/20/20 10:06

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-105-2.0 | Sampled: 5/15/2020 11:25

Sample ID: 20E0762-06

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Acenaphthylene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Benzo(a)anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Benzo(a)pyrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Benzo(b)fluoranthene	0.42	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Benzo(g,h,i)perylene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Benzo(k)fluoranthene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Chrysene	0.19	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Dibenz(a,h)anthracene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Fluoranthene	0.38	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Fluorene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Indeno(1,2,3-cd)pyrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
2-Methylnaphthalene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Naphthalene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Phenanthrene	ND	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL
Pyrene	0.33	0.18	mg/Kg dry	1		SW-846 8270D-E	5/20/20	5/23/20 13:18	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	79.6	30-130		5/23/20 13:18
2-Fluorobiphenyl	90.0	30-130		5/23/20 13:18
p-Terphenyl-d14	80.7	30-130		5/23/20 13:18

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-105-2.0 | Sampled: 5/15/2020 11:25

Sample ID: 20E0762-06

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB
Aroclor-1221 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB
Aroclor-1232 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB
Aroclor-1242 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB
Aroclor-1248 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB
Aroclor-1254 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB
Aroclor-1260 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB
Aroclor-1262 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB
Aroclor-1268 [1]	ND	0.084	mg/Kg dry	4		SW-846 8082A	5/20/20	5/23/20 14:36	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	112	30-150		5/23/20 14:36
Decachlorobiphenyl [2]	104	30-150		5/23/20 14:36
Tetrachloro-m-xylene [1]	98.4	30-150		5/23/20 14:36
Tetrachloro-m-xylene [2]	101	30-150		5/23/20 14:36

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-105-2.0 | Sampled: 5/15/2020 11:25

Sample ID: 20E0762-06

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.8	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Arsenic	4.8	3.7	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Beryllium	0.21	0.18	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Cadmium	ND	0.37	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Chromium	14	0.73	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Copper	43	0.73	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Lead	82	0.55	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Mercury	0.028	0.027	mg/Kg dry	1		SW-846 7471B	5/20/20	5/22/20 11:54	CJV
Nickel	14	0.73	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Selenium	ND	3.7	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Silver	ND	0.37	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Thallium	ND	1.8	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW
Zinc	31	0.73	mg/Kg dry	1		SW-846 6010D	5/21/20	5/21/20 18:18	QNW

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: SB-105-2.0 | Sampled: 5/15/2020 11:25

Sample ID: 20E0762-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.2		% Wt	1		SM 2540G	5/19/20	5/20/20 7:16	CAH

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Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: TB-051520 | Sampled: 5/15/2020 11:45

Sample ID: 20E0762-07

Sample Matrix: Trip Blank Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.10	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Acrylonitrile	ND	0.0060	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Benzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Bromobenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Bromochloromethane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Bromodichloromethane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Bromoform	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Bromomethane	ND	0.010	mg/Kg wet	1	V-34	SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
2-Butanone (MEK)	ND	0.040	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
tert-Butyl Alcohol (TBA)	ND	0.040	mg/Kg wet	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
n-Butylbenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
sec-Butylbenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
tert-Butylbenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Carbon Disulfide	ND	0.0060	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Carbon Tetrachloride	ND	0.0020	mg/Kg wet	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Chlorobenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Chlorodibromomethane	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Chloroethane	ND	0.020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Chloroform	ND	0.0040	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Chloromethane	ND	0.010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
2-Chlorotoluene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
4-Chlorotoluene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0020	mg/Kg wet	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2-Dibromoethane (EDB)	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Dibromomethane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2-Dichlorobenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,3-Dichlorobenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,4-Dichlorobenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
trans-1,4-Dichloro-2-butene	ND	0.0040	mg/Kg wet	1	L-04, V-05	SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,1-Dichloroethane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2-Dichloroethane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,1-Dichloroethylene	ND	0.0040	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
cis-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
trans-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2-Dichloropropane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,3-Dichloropropane	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
2,2-Dichloropropane	ND	0.0020	mg/Kg wet	1	V-05	SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,1-Dichloropropene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
cis-1,3-Dichloropropene	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
trans-1,3-Dichloropropene	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Diethyl Ether	ND	0.020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Essex Junction, VT | Sample Description: | Work Order: 20E0762

Date Received: 5/19/2020

Field Sample #: TB-051520 | Sampled: 5/15/2020 11:45

Sample ID: 20E0762-07

Sample Matrix: Trip Blank Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,4-Dioxane	ND	0.10	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Ethylbenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Hexachlorobutadiene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
2-Hexanone (MBK)	ND	0.020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Isopropylbenzene (Cumene)	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Methyl Acetate	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0040	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Methyl Cyclohexane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Methylene Chloride	ND	0.020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Naphthalene	ND	0.0040	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
n-Propylbenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Styrene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,1,1,2-Tetrachloroethane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,1,2,2-Tetrachloroethane	ND	0.0010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Tetrachloroethylene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Tetrahydrofuran	ND	0.010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Toluene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2,3-Trichlorobenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2,4-Trichlorobenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,3,5-Trichlorobenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,1,1-Trichloroethane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,1,2-Trichloroethane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Trichloroethylene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Trichlorofluoromethane (Freon 11)	ND	0.010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2,3-Trichloropropane	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,2,4-Trimethylbenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
1,3,5-Trimethylbenzene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
Vinyl Chloride	ND	0.010	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
m+p Xylene	ND	0.0040	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF
o-Xylene	ND	0.0020	mg/Kg wet	1		SW-846 8260C-D	5/20/20	5/20/20 12:36	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	92.0	70-130		5/20/20 12:36
Toluene-d8	99.3	70-130		5/20/20 12:36
4-Bromofluorobenzene	95.5	70-130		5/20/20 12:36

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Sample Extraction Data

Prep Method: % Solids **Analytical Method: SM 2540G**

Lab Number [Field ID]	Batch	Date
20E0762-01 [SB-101-2.0]	B258342	05/19/20
20E0762-02 [SB-102-2.0]	B258342	05/19/20
20E0762-03 [SB-103-2.0]	B258342	05/19/20
20E0762-04 [SB-103-2.0-FD]	B258342	05/19/20
20E0762-05 [SB-104-2.0]	B258342	05/19/20
20E0762-06 [SB-105-2.0]	B258342	05/19/20

Prep Method: SW-846 3050B **Analytical Method: SW-846 6010D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
20E0762-01 [SB-101-2.0]	B258495	1.49	50.0	05/21/20
20E0762-02 [SB-102-2.0]	B258495	1.51	50.0	05/21/20
20E0762-03 [SB-103-2.0]	B258495	1.48	50.0	05/21/20
20E0762-04 [SB-103-2.0-FD]	B258495	1.50	50.0	05/21/20
20E0762-05 [SB-104-2.0]	B258495	1.53	50.0	05/21/20
20E0762-06 [SB-105-2.0]	B258495	1.48	50.0	05/21/20

Prep Method: SW-846 7471 **Analytical Method: SW-846 7471B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
20E0762-06 [SB-105-2.0]	B258394	0.602	50.0	05/20/20

Prep Method: SW-846 7471 **Analytical Method: SW-846 7471B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
20E0762-01 [SB-101-2.0]	B258395	0.609	50.0	05/20/20
20E0762-02 [SB-102-2.0]	B258395	0.617	50.0	05/20/20
20E0762-03 [SB-103-2.0]	B258395	0.599	50.0	05/20/20
20E0762-04 [SB-103-2.0-FD]	B258395	0.604	50.0	05/20/20
20E0762-05 [SB-104-2.0]	B258395	0.614	50.0	05/20/20

Prep Method: SW-846 3540C **Analytical Method: SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
20E0762-01 [SB-101-2.0]	B258353	10.3	10.0	05/20/20
20E0762-02 [SB-102-2.0]	B258353	10.0	10.0	05/20/20
20E0762-03 [SB-103-2.0]	B258353	10.2	10.0	05/20/20
20E0762-04 [SB-103-2.0-FD]	B258353	10.1	10.0	05/20/20
20E0762-05 [SB-104-2.0]	B258353	10.3	10.0	05/20/20
20E0762-06 [SB-105-2.0]	B258353	10.3	10.0	05/20/20

Prep Method: SW-846 5035 **Analytical Method: SW-846 8260C-D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
20E0762-01 [SB-101-2.0]	B258383	7.03	10.0	05/20/20
20E0762-02 [SB-102-2.0]	B258383	7.21	10.0	05/20/20
20E0762-03 [SB-103-2.0]	B258383	5.85	10.0	05/20/20
20E0762-04 [SB-103-2.0-FD]	B258383	6.28	10.0	05/20/20
20E0762-05 [SB-104-2.0]	B258383	6.28	10.0	05/20/20

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Sample Extraction Data

Prep Method: SW-846 5035 **Analytical Method: SW-846 8260C-D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
20E0762-06 [SB-105-2.0]	B258383	7.31	10.0	05/20/20
20E0762-07 [TB-051520]	B258383	5.00	10.0	05/20/20

Prep Method: SW-846 3546 **Analytical Method: SW-846 8270D-E**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
20E0762-01 [SB-101-2.0]	B258455	30.5	1.00	05/20/20
20E0762-02 [SB-102-2.0]	B258455	30.7	1.00	05/20/20
20E0762-03 [SB-103-2.0]	B258455	30.2	1.00	05/20/20
20E0762-04 [SB-103-2.0-FD]	B258455	30.8	1.00	05/20/20
20E0762-05 [SB-104-2.0]	B258455	30.7	1.00	05/20/20
20E0762-06 [SB-105-2.0]	B258455	30.8	1.00	05/20/20

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258383 - SW-846 5035										
Blank (B258383-BLK1)				Prepared & Analyzed: 05/20/20						
Acetone	ND	0.10	mg/Kg wet							
Acrylonitrile	ND	0.0060	mg/Kg wet							
tert-Amyl Methyl Ether (TAME)	ND	0.0010	mg/Kg wet							
Benzene	ND	0.0020	mg/Kg wet							
Bromobenzene	ND	0.0020	mg/Kg wet							
Bromochloromethane	ND	0.0020	mg/Kg wet							
Bromodichloromethane	ND	0.0020	mg/Kg wet							
Bromoform	ND	0.0020	mg/Kg wet							
Bromomethane	ND	0.010	mg/Kg wet							V-34
2-Butanone (MEK)	ND	0.040	mg/Kg wet							
tert-Butyl Alcohol (TBA)	ND	0.040	mg/Kg wet							V-05
n-Butylbenzene	ND	0.0020	mg/Kg wet							
sec-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butyl Ethyl Ether (TBEE)	ND	0.0010	mg/Kg wet							
Carbon Disulfide	ND	0.0060	mg/Kg wet							
Carbon Tetrachloride	ND	0.0020	mg/Kg wet							V-05
Chlorobenzene	ND	0.0020	mg/Kg wet							
Chlorodibromomethane	ND	0.0010	mg/Kg wet							
Chloroethane	ND	0.020	mg/Kg wet							
Chloroform	ND	0.0040	mg/Kg wet							
Chloromethane	ND	0.010	mg/Kg wet							
2-Chlorotoluene	ND	0.0020	mg/Kg wet							
4-Chlorotoluene	ND	0.0020	mg/Kg wet							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0020	mg/Kg wet							V-05
1,2-Dibromoethane (EDB)	ND	0.0010	mg/Kg wet							
Dibromomethane	ND	0.0020	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.0020	mg/Kg wet							
trans-1,4-Dichloro-2-butene	ND	0.0040	mg/Kg wet							L-04, V-05
Dichlorodifluoromethane (Freon 12)	ND	0.020	mg/Kg wet							
1,1-Dichloroethane	ND	0.0020	mg/Kg wet							
1,2-Dichloroethane	ND	0.0020	mg/Kg wet							
1,1-Dichloroethylene	ND	0.0040	mg/Kg wet							
cis-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
trans-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
1,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,3-Dichloropropane	ND	0.0010	mg/Kg wet							
2,2-Dichloropropane	ND	0.0020	mg/Kg wet							V-05
1,1-Dichloropropene	ND	0.0020	mg/Kg wet							
cis-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
trans-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
Diethyl Ether	ND	0.020	mg/Kg wet							
Diisopropyl Ether (DIPE)	ND	0.0010	mg/Kg wet							
1,4-Dioxane	ND	0.10	mg/Kg wet							
Ethylbenzene	ND	0.0020	mg/Kg wet							
Hexachlorobutadiene	ND	0.0020	mg/Kg wet							
2-Hexanone (MBK)	ND	0.020	mg/Kg wet							
Isopropylbenzene (Cumene)	ND	0.0020	mg/Kg wet							
p-Isopropyltoluene (p-Cymene)	ND	0.0020	mg/Kg wet							
Methyl Acetate	ND	0.0020	mg/Kg wet							

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B258383 - SW-846 5035											
Blank (B258383-BLK1)				Prepared & Analyzed: 05/20/20							
Methyl tert-Butyl Ether (MTBE)	ND	0.0040	mg/Kg wet								
Methyl Cyclohexane	ND	0.0020	mg/Kg wet								
Methylene Chloride	ND	0.020	mg/Kg wet								
4-Methyl-2-pentanone (MIBK)	ND	0.020	mg/Kg wet								
Naphthalene	ND	0.0040	mg/Kg wet								
n-Propylbenzene	ND	0.0020	mg/Kg wet								
Styrene	ND	0.0020	mg/Kg wet								
1,1,1,2-Tetrachloroethane	ND	0.0020	mg/Kg wet								
1,1,2,2-Tetrachloroethane	ND	0.0010	mg/Kg wet								
Tetrachloroethylene	ND	0.0020	mg/Kg wet								
Tetrahydrofuran	ND	0.010	mg/Kg wet								
Toluene	ND	0.0020	mg/Kg wet								
1,2,3-Trichlorobenzene	ND	0.0020	mg/Kg wet								
1,2,4-Trichlorobenzene	ND	0.0020	mg/Kg wet								
1,3,5-Trichlorobenzene	ND	0.0020	mg/Kg wet								
1,1,1-Trichloroethane	ND	0.0020	mg/Kg wet								
1,1,2-Trichloroethane	ND	0.0020	mg/Kg wet								
Trichloroethylene	ND	0.0020	mg/Kg wet								
Trichlorofluoromethane (Freon 11)	ND	0.010	mg/Kg wet								
1,2,3-Trichloropropane	ND	0.0020	mg/Kg wet								
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.010	mg/Kg wet								
1,2,4-Trimethylbenzene	ND	0.0020	mg/Kg wet								
1,3,5-Trimethylbenzene	ND	0.0020	mg/Kg wet								
Vinyl Chloride	ND	0.010	mg/Kg wet								
m+p Xylene	ND	0.0040	mg/Kg wet								
o-Xylene	ND	0.0020	mg/Kg wet								
Surrogate: 1,2-Dichloroethane-d4	*0.0468*		mg/Kg wet	0.0500		93.5	70-130				
Surrogate: Toluene-d8	*0.0495*		mg/Kg wet	0.0500		99.0	70-130				
Surrogate: 4-Bromofluorobenzene	*0.0488*		mg/Kg wet	0.0500		97.7	70-130				
LCS (B258383-BS1)				Prepared & Analyzed: 05/20/20							
Acetone	0.192	0.10	mg/Kg wet	0.200		96.0	70-160				†
Acrylonitrile	0.0209	0.0060	mg/Kg wet	0.0200		104	70-130				
tert-Amyl Methyl Ether (TAME)	0.0186	0.0010	mg/Kg wet	0.0200		92.8	70-130				
Benzene	0.0194	0.0020	mg/Kg wet	0.0200		97.2	70-130				
Bromobenzene	0.0190	0.0020	mg/Kg wet	0.0200		94.9	70-130				
Bromochloromethane	0.0221	0.0020	mg/Kg wet	0.0200		111	70-130				
Bromodichloromethane	0.0177	0.0020	mg/Kg wet	0.0200		88.6	70-130				
Bromoform	0.0185	0.0020	mg/Kg wet	0.0200		92.7	70-130				
Bromomethane	0.0203	0.010	mg/Kg wet	0.0200		102	40-130			V-34	†
2-Butanone (MEK)	0.202	0.040	mg/Kg wet	0.200		101	70-160				†
tert-Butyl Alcohol (TBA)	0.136	0.040	mg/Kg wet	0.200		67.9	40-130			V-05	†
n-Butylbenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.5	70-130				
sec-Butylbenzene	0.0193	0.0020	mg/Kg wet	0.0200		96.5	70-130				
tert-Butylbenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.4	70-160				†
tert-Butyl Ethyl Ether (TBEE)	0.0193	0.0010	mg/Kg wet	0.0200		96.6	70-130				
Carbon Disulfide	0.214	0.0060	mg/Kg wet	0.200		107	70-130				
Carbon Tetrachloride	0.0155	0.0020	mg/Kg wet	0.0200		77.4	70-130			V-05	
Chlorobenzene	0.0194	0.0020	mg/Kg wet	0.0200		97.0	70-130				
Chlorodibromomethane	0.0187	0.0010	mg/Kg wet	0.0200		93.5	70-130				
Chloroethane	0.0197	0.020	mg/Kg wet	0.0200		98.3	70-130				
Chloroform	0.0183	0.0040	mg/Kg wet	0.0200		91.4	70-130				

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B258383 - SW-846 5035												
LCS (B258383-BS1)				Prepared & Analyzed: 05/20/20								
Chloromethane	0.0213	0.010	mg/Kg wet	0.0200		107		70-130				
2-Chlorotoluene	0.0188	0.0020	mg/Kg wet	0.0200		94.0		70-130				
4-Chlorotoluene	0.0184	0.0020	mg/Kg wet	0.0200		91.8		70-130				
1,2-Dibromo-3-chloropropane (DBCP)	0.0164	0.0020	mg/Kg wet	0.0200		82.1		70-130			V-05	
1,2-Dibromoethane (EDB)	0.0170	0.0010	mg/Kg wet	0.0200		84.8		70-130				
Dibromomethane	0.0178	0.0020	mg/Kg wet	0.0200		89.2		70-130				
1,2-Dichlorobenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.6		70-130				
1,3-Dichlorobenzene	0.0196	0.0020	mg/Kg wet	0.0200		97.8		70-130				
1,4-Dichlorobenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.9		70-130				
trans-1,4-Dichloro-2-butene	0.0124	0.0040	mg/Kg wet	0.0200		**61.9**	*	70-130			L-04, V-05	
Dichlorodifluoromethane (Freon 12)	0.0201	0.020	mg/Kg wet	0.0200		101		40-160				†
1,1-Dichloroethane	0.0199	0.0020	mg/Kg wet	0.0200		99.4		70-130				
1,2-Dichloroethane	0.0171	0.0020	mg/Kg wet	0.0200		85.4		70-130				
1,1-Dichloroethylene	0.0186	0.0040	mg/Kg wet	0.0200		92.9		70-130				
cis-1,2-Dichloroethylene	0.0195	0.0020	mg/Kg wet	0.0200		97.3		70-130				
trans-1,2-Dichloroethylene	0.0195	0.0020	mg/Kg wet	0.0200		97.4		70-130				
1,2-Dichloropropane	0.0197	0.0020	mg/Kg wet	0.0200		98.6		70-130				
1,3-Dichloropropane	0.0192	0.0010	mg/Kg wet	0.0200		95.8		70-130				
2,2-Dichloropropane	0.0151	0.0020	mg/Kg wet	0.0200		75.4		70-130			V-05	
1,1-Dichloropropene	0.0187	0.0020	mg/Kg wet	0.0200		93.7		70-130				
cis-1,3-Dichloropropene	0.0172	0.0010	mg/Kg wet	0.0200		85.9		70-130				
trans-1,3-Dichloropropene	0.0158	0.0010	mg/Kg wet	0.0200		78.8		70-130				
Diethyl Ether	0.0199	0.020	mg/Kg wet	0.0200		99.7		70-130				
Diisopropyl Ether (DIPE)	0.0224	0.0010	mg/Kg wet	0.0200		112		70-130				
1,4-Dioxane	0.200	0.10	mg/Kg wet	0.200		99.9		40-160				†
Ethylbenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.3		70-130				
Hexachlorobutadiene	0.0178	0.0020	mg/Kg wet	0.0200		89.1		70-160				
2-Hexanone (MBK)	0.193	0.020	mg/Kg wet	0.200		96.6		70-160				†
Isopropylbenzene (Cumene)	0.0188	0.0020	mg/Kg wet	0.0200		93.8		70-130				
p-Isopropyltoluene (p-Cymene)	0.0192	0.0020	mg/Kg wet	0.0200		96.0		70-130				
Methyl Acetate	0.0208	0.0020	mg/Kg wet	0.0200		104		70-130				
Methyl tert-Butyl Ether (MTBE)	0.0184	0.0040	mg/Kg wet	0.0200		92.2		70-130				
Methyl Cyclohexane	0.0185	0.0020	mg/Kg wet	0.0200		92.5		70-130				
Methylene Chloride	0.0231	0.020	mg/Kg wet	0.0200		116		40-160				†
4-Methyl-2-pentanone (MIBK)	0.213	0.020	mg/Kg wet	0.200		107		70-160				†
Naphthalene	0.0190	0.0040	mg/Kg wet	0.0200		95.0		40-130				†
n-Propylbenzene	0.0188	0.0020	mg/Kg wet	0.0200		94.2		70-130				
Styrene	0.0195	0.0020	mg/Kg wet	0.0200		97.6		70-130				
1,1,1,2-Tetrachloroethane	0.0182	0.0020	mg/Kg wet	0.0200		91.0		70-130				
1,1,2,2-Tetrachloroethane	0.0192	0.0010	mg/Kg wet	0.0200		96.0		70-130				
Tetrachloroethylene	0.0178	0.0020	mg/Kg wet	0.0200		88.9		70-130				
Tetrahydrofuran	0.0210	0.010	mg/Kg wet	0.0200		105		70-130				
Toluene	0.0178	0.0020	mg/Kg wet	0.0200		89.1		70-130				
1,2,3-Trichlorobenzene	0.0182	0.0020	mg/Kg wet	0.0200		91.0		70-130				
1,2,4-Trichlorobenzene	0.0188	0.0020	mg/Kg wet	0.0200		94.0		70-130				
1,3,5-Trichlorobenzene	0.0186	0.0020	mg/Kg wet	0.0200		93.1		70-130				
1,1,1-Trichloroethane	0.0173	0.0020	mg/Kg wet	0.0200		86.6		70-130				
1,1,2-Trichloroethane	0.0194	0.0020	mg/Kg wet	0.0200		96.8		70-130				
Trichloroethylene	0.0183	0.0020	mg/Kg wet	0.0200		91.6		70-130				
Trichlorofluoromethane (Freon 11)	0.0170	0.010	mg/Kg wet	0.0200		85.2		70-130				
1,2,3-Trichloropropane	0.0186	0.0020	mg/Kg wet	0.0200		93.2		70-130				

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B258383 - SW-846 5035												
LCS (B258383-BS1)				Prepared & Analyzed: 05/20/20								
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0181	0.010	mg/Kg wet	0.0200		90.7		70-130				
1,2,4-Trimethylbenzene	0.0188	0.0020	mg/Kg wet	0.0200		94.1		70-130				
1,3,5-Trimethylbenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.6		70-130				
Vinyl Chloride	0.0220	0.010	mg/Kg wet	0.0200		110		40-130				†
m+p Xylene	0.0371	0.0040	mg/Kg wet	0.0400		92.7		70-130				
o-Xylene	0.0187	0.0020	mg/Kg wet	0.0200		93.5		70-130				
Surrogate: 1,2-Dichloroethane-d4	*0.0467*		mg/Kg wet	0.0500		93.3		70-130				
Surrogate: Toluene-d8	*0.0494*		mg/Kg wet	0.0500		98.9		70-130				
Surrogate: 4-Bromofluorobenzene	*0.0488*		mg/Kg wet	0.0500		97.5		70-130				
LCS Dup (B258383-BSD1)				Prepared & Analyzed: 05/20/20								
Acetone	0.183	0.10	mg/Kg wet	0.200		91.3		70-160	5.02	25		†
Acrylonitrile	0.0209	0.0060	mg/Kg wet	0.0200		104		70-130	0.0958	25		
tert-Amyl Methyl Ether (TAME)	0.0185	0.0010	mg/Kg wet	0.0200		92.7		70-130	0.129	25		
Benzene	0.0190	0.0020	mg/Kg wet	0.0200		95.0		70-130	2.33	25		
Bromobenzene	0.0190	0.0020	mg/Kg wet	0.0200		95.1		70-130	0.147	25		
Bromochloromethane	0.0223	0.0020	mg/Kg wet	0.0200		112		70-130	0.864	25		
Bromodichloromethane	0.0177	0.0020	mg/Kg wet	0.0200		88.7		70-130	0.0790	25		
Bromoform	0.0188	0.0020	mg/Kg wet	0.0200		93.9		70-130	1.31	25		
Bromomethane	0.0198	0.010	mg/Kg wet	0.0200		98.9		40-130	2.77	25	V-34	†
2-Butanone (MEK)	0.201	0.040	mg/Kg wet	0.200		100		70-160	0.639	25		†
tert-Butyl Alcohol (TBA)	0.136	0.040	mg/Kg wet	0.200		68.1		40-130	0.268	25	V-05	†
n-Butylbenzene	0.0183	0.0020	mg/Kg wet	0.0200		91.6		70-130	3.15	25		
sec-Butylbenzene	0.0188	0.0020	mg/Kg wet	0.0200		93.8		70-130	2.80	25		
tert-Butylbenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.3		70-160	1.13	25		†
tert-Butyl Ethyl Ether (TBEE)	0.0194	0.0010	mg/Kg wet	0.0200		96.8		70-130	0.228	25		
Carbon Disulfide	0.208	0.0060	mg/Kg wet	0.200		104		70-130	3.05	25		
Carbon Tetrachloride	0.0150	0.0020	mg/Kg wet	0.0200		75.0		70-130	3.12	25	V-05	
Chlorobenzene	0.0195	0.0020	mg/Kg wet	0.0200		97.4		70-130	0.329	25		
Chlorodibromomethane	0.0179	0.0010	mg/Kg wet	0.0200		89.7		70-130	4.07	25		
Chloroethane	0.0195	0.020	mg/Kg wet	0.0200		97.3		70-130	0.971	25		
Chloroform	0.0181	0.0040	mg/Kg wet	0.0200		90.3		70-130	1.23	25		
Chloromethane	0.0209	0.010	mg/Kg wet	0.0200		104		70-130	2.31	25		
2-Chlorotoluene	0.0185	0.0020	mg/Kg wet	0.0200		92.3		70-130	1.85	25		
4-Chlorotoluene	0.0182	0.0020	mg/Kg wet	0.0200		91.2		70-130	0.645	25		
1,2-Dibromo-3-chloropropane (DBCP)	0.0150	0.0020	mg/Kg wet	0.0200		74.9		70-130	9.21	25	V-05	
1,2-Dibromoethane (EDB)	0.0165	0.0010	mg/Kg wet	0.0200		82.3		70-130	2.97	25		
Dibromomethane	0.0176	0.0020	mg/Kg wet	0.0200		87.9		70-130	1.49	25		
1,2-Dichlorobenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.5		70-130	0.926	25		
1,3-Dichlorobenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.9		70-130	1.87	25		
1,4-Dichlorobenzene	0.0185	0.0020	mg/Kg wet	0.0200		92.3		70-130	3.77	25		
trans-1,4-Dichloro-2-butene	0.0126	0.0040	mg/Kg wet	0.0200		**63.0**	*	70-130	1.83	25	L-04, V-05	
Dichlorodifluoromethane (Freon 12)	0.0200	0.020	mg/Kg wet	0.0200		100		40-160	0.648	25		†
1,1-Dichloroethane	0.0196	0.0020	mg/Kg wet	0.0200		97.9		70-130	1.56	25		
1,2-Dichloroethane	0.0174	0.0020	mg/Kg wet	0.0200		86.9		70-130	1.72	25		
1,1-Dichloroethylene	0.0181	0.0040	mg/Kg wet	0.0200		90.3		70-130	2.81	25		
cis-1,2-Dichloroethylene	0.0186	0.0020	mg/Kg wet	0.0200		93.2		70-130	4.25	25		
trans-1,2-Dichloroethylene	0.0195	0.0020	mg/Kg wet	0.0200		97.5		70-130	0.164	25		
1,2-Dichloropropane	0.0197	0.0020	mg/Kg wet	0.0200		98.5		70-130	0.132	25		
1,3-Dichloropropane	0.0192	0.0010	mg/Kg wet	0.0200		96.0		70-130	0.156	25		
2,2-Dichloropropane	0.0144	0.0020	mg/Kg wet	0.0200		71.9		70-130	4.76	25	V-05	
1,1-Dichloropropene	0.0182	0.0020	mg/Kg wet	0.0200		90.9		70-130	2.97	25		

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258383 - SW-846 5035										
LCS Dup (B258383-BSD1)				Prepared & Analyzed: 05/20/20						
cis-1,3-Dichloropropene	0.0169	0.0010	mg/Kg wet	0.0200		84.5	70-130	1.74	25	
trans-1,3-Dichloropropene	0.0159	0.0010	mg/Kg wet	0.0200		79.5	70-130	0.872	25	
Diethyl Ether	0.0195	0.020	mg/Kg wet	0.0200		97.6	70-130	2.12	25	
Diisopropyl Ether (DIPE)	0.0215	0.0010	mg/Kg wet	0.0200		108	70-130	3.93	25	
1,4-Dioxane	0.195	0.10	mg/Kg wet	0.200		97.3	40-160	2.61	50	† ‡
Ethylbenzene	0.0184	0.0020	mg/Kg wet	0.0200		92.1	70-130	1.26	25	
Hexachlorobutadiene	0.0178	0.0020	mg/Kg wet	0.0200		88.8	70-160	0.304	25	
2-Hexanone (MBK)	0.194	0.020	mg/Kg wet	0.200		97.1	70-160	0.511	25	†
Isopropylbenzene (Cumene)	0.0187	0.0020	mg/Kg wet	0.0200		93.4	70-130	0.363	25	
p-Isopropyltoluene (p-Cymene)	0.0186	0.0020	mg/Kg wet	0.0200		92.8	70-130	3.35	25	
Methyl Acetate	0.0211	0.0020	mg/Kg wet	0.0200		106	70-130	1.46	25	
Methyl tert-Butyl Ether (MTBE)	0.0182	0.0040	mg/Kg wet	0.0200		91.0	70-130	1.34	25	
Methyl Cyclohexane	0.0185	0.0020	mg/Kg wet	0.0200		92.3	70-130	0.260	25	
Methylene Chloride	0.0224	0.020	mg/Kg wet	0.0200		112	40-160	3.26	25	†
4-Methyl-2-pentanone (MIBK)	0.210	0.020	mg/Kg wet	0.200		105	70-160	1.41	25	†
Naphthalene	0.0183	0.0040	mg/Kg wet	0.0200		91.6	40-130	3.68	25	†
n-Propylbenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.4	70-130	0.789	25	
Styrene	0.0193	0.0020	mg/Kg wet	0.0200		96.5	70-130	1.16	25	
1,1,1,2-Tetrachloroethane	0.0176	0.0020	mg/Kg wet	0.0200		87.9	70-130	3.49	25	
1,1,2,2-Tetrachloroethane	0.0196	0.0010	mg/Kg wet	0.0200		98.0	70-130	2.11	25	
Tetrachloroethylene	0.0176	0.0020	mg/Kg wet	0.0200		88.0	70-130	0.938	25	
Tetrahydrofuran	0.0194	0.010	mg/Kg wet	0.0200		97.0	70-130	7.82	25	
Toluene	0.0177	0.0020	mg/Kg wet	0.0200		88.5	70-130	0.631	25	
1,2,3-Trichlorobenzene	0.0178	0.0020	mg/Kg wet	0.0200		89.1	70-130	2.12	25	
1,2,4-Trichlorobenzene	0.0178	0.0020	mg/Kg wet	0.0200		88.8	70-130	5.60	25	
1,3,5-Trichlorobenzene	0.0181	0.0020	mg/Kg wet	0.0200		90.4	70-130	2.91	25	
1,1,1-Trichloroethane	0.0167	0.0020	mg/Kg wet	0.0200		83.5	70-130	3.73	25	
1,1,2-Trichloroethane	0.0189	0.0020	mg/Kg wet	0.0200		94.6	70-130	2.34	25	
Trichloroethylene	0.0179	0.0020	mg/Kg wet	0.0200		89.5	70-130	2.31	25	
Trichlorofluoromethane (Freon 11)	0.0167	0.010	mg/Kg wet	0.0200		83.6	70-130	1.94	25	
1,2,3-Trichloropropane	0.0186	0.0020	mg/Kg wet	0.0200		93.2	70-130	0.0429	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0179	0.010	mg/Kg wet	0.0200		89.5	70-130	1.31	25	
1,2,4-Trimethylbenzene	0.0184	0.0020	mg/Kg wet	0.0200		92.0	70-130	2.25	25	
1,3,5-Trimethylbenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.4	70-130	0.916	25	
Vinyl Chloride	0.0213	0.010	mg/Kg wet	0.0200		107	40-130	3.29	25	†
m+p Xylene	0.0370	0.0040	mg/Kg wet	0.0400		92.4	70-130	0.286	25	
o-Xylene	0.0187	0.0020	mg/Kg wet	0.0200		93.5	70-130	0.00	25	
Surrogate: 1,2-Dichloroethane-d4	*0.0448*		mg/Kg wet	0.0500		89.7	70-130			
Surrogate: Toluene-d8	*0.0498*		mg/Kg wet	0.0500		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0484*		mg/Kg wet	0.0500		96.8	70-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258455 - SW-846 3546										
Blank (B258455-BLK1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Acenaphthene	ND	0.17	mg/Kg wet							
Acenaphthylene	ND	0.17	mg/Kg wet							
Anthracene	ND	0.17	mg/Kg wet							
Benzo(a)anthracene	ND	0.17	mg/Kg wet							
Benzo(a)pyrene	ND	0.17	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.17	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.17	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.17	mg/Kg wet							
Chrysene	ND	0.17	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.17	mg/Kg wet							
Fluoranthene	ND	0.17	mg/Kg wet							
Fluorene	ND	0.17	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.17	mg/Kg wet							
2-Methylnaphthalene	ND	0.17	mg/Kg wet							
Naphthalene	ND	0.17	mg/Kg wet							
Phenanthrene	ND	0.17	mg/Kg wet							
Pyrene	ND	0.17	mg/Kg wet							
Surrogate: Nitrobenzene-d5	*2.44*		mg/Kg wet	3.33		73.1	30-130			
Surrogate: 2-Fluorobiphenyl	*2.80*		mg/Kg wet	3.33		83.9	30-130			
Surrogate: p-Terphenyl-d14	*2.71*		mg/Kg wet	3.33		81.4	30-130			
LCS (B258455-BS1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Acenaphthene	0.972	0.17	mg/Kg wet	1.67		58.3	40-140			
Acenaphthylene	0.954	0.17	mg/Kg wet	1.67		57.3	40-140			
Anthracene	1.04	0.17	mg/Kg wet	1.67		62.1	40-140			
Benzo(a)anthracene	0.961	0.17	mg/Kg wet	1.67		57.7	40-140			
Benzo(a)pyrene	1.03	0.17	mg/Kg wet	1.67		61.9	40-140			
Benzo(b)fluoranthene	1.02	0.17	mg/Kg wet	1.67		61.1	40-140			
Benzo(g,h,i)perylene	1.01	0.17	mg/Kg wet	1.67		60.7	40-140			
Benzo(k)fluoranthene	0.988	0.17	mg/Kg wet	1.67		59.3	40-140			
Chrysene	0.962	0.17	mg/Kg wet	1.67		57.7	40-140			
Dibenz(a,h)anthracene	1.03	0.17	mg/Kg wet	1.67		62.0	40-140			
Fluoranthene	1.01	0.17	mg/Kg wet	1.67		60.9	40-140			
Fluorene	1.05	0.17	mg/Kg wet	1.67		63.2	40-140			
Indeno(1,2,3-cd)pyrene	1.17	0.17	mg/Kg wet	1.67		70.4	40-140			
2-Methylnaphthalene	1.07	0.17	mg/Kg wet	1.67		64.2	40-140			
Naphthalene	0.978	0.17	mg/Kg wet	1.67		58.7	40-140			
Phenanthrene	1.02	0.17	mg/Kg wet	1.67		61.2	40-140			
Pyrene	1.01	0.17	mg/Kg wet	1.67		60.3	40-140			
Surrogate: Nitrobenzene-d5	*2.02*		mg/Kg wet	3.33		60.5	30-130			
Surrogate: 2-Fluorobiphenyl	*2.32*		mg/Kg wet	3.33		69.5	30-130			
Surrogate: p-Terphenyl-d14	*1.99*		mg/Kg wet	3.33		59.8	30-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258455 - SW-846 3546										
LCS Dup (B258455-BSD1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Acenaphthene	1.09	0.17	mg/Kg wet	1.67		65.6	40-140	11.8	30	
Acenaphthylene	1.07	0.17	mg/Kg wet	1.67		64.2	40-140	11.5	30	
Anthracene	1.12	0.17	mg/Kg wet	1.67		67.2	40-140	7.95	30	
Benzo(a)anthracene	1.05	0.17	mg/Kg wet	1.67		62.7	40-140	8.44	30	
Benzo(a)pyrene	1.12	0.17	mg/Kg wet	1.67		67.2	40-140	8.21	30	
Benzo(b)fluoranthene	1.13	0.17	mg/Kg wet	1.67		67.7	40-140	10.3	30	
Benzo(g,h,i)perylene	1.05	0.17	mg/Kg wet	1.67		63.3	40-140	4.13	30	
Benzo(k)fluoranthene	1.09	0.17	mg/Kg wet	1.67		65.3	40-140	9.66	30	
Chrysene	1.05	0.17	mg/Kg wet	1.67		63.0	40-140	8.75	30	
Dibenz(a,h)anthracene	1.11	0.17	mg/Kg wet	1.67		66.8	40-140	7.55	30	
Fluoranthene	1.11	0.17	mg/Kg wet	1.67		66.6	40-140	9.07	30	
Fluorene	1.18	0.17	mg/Kg wet	1.67		70.8	40-140	11.3	30	
Indeno(1,2,3-cd)pyrene	1.25	0.17	mg/Kg wet	1.67		75.1	40-140	6.38	30	
2-Methylnaphthalene	1.19	0.17	mg/Kg wet	1.67		71.5	40-140	10.8	30	
Naphthalene	1.10	0.17	mg/Kg wet	1.67		66.1	40-140	11.9	30	
Phenanthrene	1.11	0.17	mg/Kg wet	1.67		66.7	40-140	8.60	30	
Pyrene	1.09	0.17	mg/Kg wet	1.67		65.5	40-140	8.23	30	
Surrogate: Nitrobenzene-d5	*2.24*		mg/Kg wet	3.33		67.4	30-130			
Surrogate: 2-Fluorobiphenyl	*2.55*		mg/Kg wet	3.33		76.6	30-130			
Surrogate: p-Terphenyl-d14	*2.18*		mg/Kg wet	3.33		65.3	30-130			

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QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258353 - SW-846 3540C										
Blank (B258353-BLK1)				Prepared: 05/20/20 Analyzed: 05/23/20						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.230*		mg/Kg wet	0.200		115	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.219*		mg/Kg wet	0.200		110	30-150			
Surrogate: Tetrachloro-m-xylene	*0.173*		mg/Kg wet	0.200		86.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.178*		mg/Kg wet	0.200		88.9	30-150			
LCS (B258353-BS1)				Prepared: 05/20/20 Analyzed: 05/23/20						
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		89.8	40-140			
Aroclor-1016 [2C]	0.20	0.020	mg/Kg wet	0.200		98.1	40-140			
Aroclor-1260	0.19	0.020	mg/Kg wet	0.200		97.3	40-140			
Aroclor-1260 [2C]	0.20	0.020	mg/Kg wet	0.200		101	40-140			
Surrogate: Decachlorobiphenyl	*0.230*		mg/Kg wet	0.200		115	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.221*		mg/Kg wet	0.200		110	30-150			
Surrogate: Tetrachloro-m-xylene	*0.186*		mg/Kg wet	0.200		93.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.191*		mg/Kg wet	0.200		95.5	30-150			
LCS Dup (B258353-BSD1)				Prepared: 05/20/20 Analyzed: 05/23/20						
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		90.1	40-140	0.404	30	
Aroclor-1016 [2C]	0.18	0.020	mg/Kg wet	0.200		92.0	40-140	6.45	30	
Aroclor-1260	0.20	0.020	mg/Kg wet	0.200		99.3	40-140	2.07	30	
Aroclor-1260 [2C]	0.20	0.020	mg/Kg wet	0.200		101	40-140	0.456	30	
Surrogate: Decachlorobiphenyl	*0.233*		mg/Kg wet	0.200		117	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.226*		mg/Kg wet	0.200		113	30-150			
Surrogate: Tetrachloro-m-xylene	*0.187*		mg/Kg wet	0.200		93.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.191*		mg/Kg wet	0.200		95.7	30-150			

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QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258353 - SW-846 3540C										
Matrix Spike (B258353-MS1)	**Source: 20E0762-02**			Prepared: 05/20/20 Analyzed: 05/23/20						
Aroclor-1016	0.24	0.086	mg/Kg dry	0.215	ND	110	40-140			
Aroclor-1016 [2C]	0.24	0.086	mg/Kg dry	0.215	ND	111	40-140			
Aroclor-1260	0.23	0.086	mg/Kg dry	0.215	ND	107	40-140			
Aroclor-1260 [2C]	0.23	0.086	mg/Kg dry	0.215	ND	108	40-140			
Surrogate: Decachlorobiphenyl	*0.238*		mg/Kg dry	0.215		111	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.219*		mg/Kg dry	0.215		102	30-150			
Surrogate: Tetrachloro-m-xylene	*0.208*		mg/Kg dry	0.215		96.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.211*		mg/Kg dry	0.215		98.4	30-150			
Matrix Spike Dup (B258353-MSD1)	**Source: 20E0762-02**			Prepared: 05/20/20 Analyzed: 05/23/20						
Aroclor-1016	0.25	0.090	mg/Kg dry	0.225	ND	111	40-140	5.62	50	
Aroclor-1016 [2C]	0.26	0.090	mg/Kg dry	0.225	ND	114	40-140	7.99	50	
Aroclor-1260	0.25	0.090	mg/Kg dry	0.225	ND	110	40-140	8.46	50	
Aroclor-1260 [2C]	0.25	0.090	mg/Kg dry	0.225	ND	111	40-140	7.99	50	
Surrogate: Decachlorobiphenyl	*0.256*		mg/Kg dry	0.225		114	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.238*		mg/Kg dry	0.225		106	30-150			
Surrogate: Tetrachloro-m-xylene	*0.232*		mg/Kg dry	0.225		103	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.236*		mg/Kg dry	0.225		105	30-150			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258394 - SW-846 7471										
Blank (B258394-BLK1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Mercury	ND	0.025	mg/Kg wet							
LCS (B258394-BS1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Mercury	7.72	0.38	mg/Kg wet	7.61		101	72.7-127.3			
LCS Dup (B258394-BSD1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Mercury	7.07	0.38	mg/Kg wet	7.61		92.9	72.7-127.3	8.81	20	
Batch B258395 - SW-846 7471										
Blank (B258395-BLK1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Mercury	ND	0.025	mg/Kg wet							
LCS (B258395-BS1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Mercury	7.55	0.38	mg/Kg wet	7.61		99.3	72.7-127.3			
LCS Dup (B258395-BSD1)				Prepared: 05/20/20 Analyzed: 05/22/20						
Mercury	7.33	0.37	mg/Kg wet	7.61		96.3	72.7-127.3	3.05	20	
Duplicate (B258395-DUP1)		**Source: 20E0762-02**		Prepared: 05/20/20 Analyzed: 05/22/20						
Mercury	0.0461	0.029	mg/Kg dry		0.0474			2.86	20	
Matrix Spike (B258395-MS1)		**Source: 20E0762-02**		Prepared: 05/20/20 Analyzed: 05/22/20						
Mercury	0.448	0.029	mg/Kg dry	0.382	0.0474	105	80-120			
Batch B258495 - SW-846 3050B										
Blank (B258495-BLK1)				Prepared & Analyzed: 05/21/20						
Antimony	ND	1.7	mg/Kg wet							
Arsenic	ND	3.3	mg/Kg wet							
Beryllium	ND	0.17	mg/Kg wet							
Cadmium	ND	0.33	mg/Kg wet							
Chromium	ND	0.67	mg/Kg wet							
Copper	ND	0.67	mg/Kg wet							
Lead	ND	0.50	mg/Kg wet							
Nickel	ND	0.67	mg/Kg wet							
Selenium	ND	3.3	mg/Kg wet							
Silver	ND	0.33	mg/Kg wet							
Thallium	ND	1.7	mg/Kg wet							
Zinc	ND	0.67	mg/Kg wet							

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B258495 - SW-846 3050B											
LCS (B258495-BS1)				Prepared & Analyzed: 05/21/20							
Antimony	126	4.9	mg/Kg wet	147		85.5		4.2-196.6			
Arsenic	135	9.8	mg/Kg wet	143		94.5		83.2-117.5			
Beryllium	182	0.49	mg/Kg wet	179		102		83.2-117.3			
Cadmium	53.8	0.98	mg/Kg wet	56.2		95.8		82.9-117.3			
Chromium	94.2	2.0	mg/Kg wet	101		93.3		82.4-116.8			
Copper	62.5	2.0	mg/Kg wet	63.1		99.0		84.2-115.8			
Lead	121	1.5	mg/Kg wet	125		96.6		82.4-116.8			
Nickel	108	2.0	mg/Kg wet	108		99.8		82.9-117.6			
Selenium	77.8	9.8	mg/Kg wet	77.9		99.8		79.3-120.7			
Silver	33.6	0.98	mg/Kg wet	34.3		98.0		81-119.2			
Thallium	118	4.9	mg/Kg wet	113		104		80.8-118.6			
Zinc	233	2.0	mg/Kg wet	240		97.2		80.8-118.8			
LCS Dup (B258495-BSD1)				Prepared & Analyzed: 05/21/20							
Antimony	116	4.9	mg/Kg wet	147		79.0		4.2-196.6	7.88	30	
Arsenic	127	9.8	mg/Kg wet	143		88.8		83.2-117.5	6.19	30	
Beryllium	170	0.49	mg/Kg wet	179		94.9		83.2-117.3	6.74	30	
Cadmium	49.1	0.98	mg/Kg wet	56.2		87.4		82.9-117.3	9.18	20	
Chromium	90.7	2.0	mg/Kg wet	101		89.8		82.4-116.8	3.73	30	
Copper	59.9	2.0	mg/Kg wet	63.1		95.0		84.2-115.8	4.17	30	
Lead	122	1.5	mg/Kg wet	125		97.6		82.4-116.8	1.09	30	
Nickel	102	2.0	mg/Kg wet	108		94.7		82.9-117.6	5.25	30	
Selenium	73.1	9.8	mg/Kg wet	77.9		93.8		79.3-120.7	6.23	30	
Silver	32.5	0.98	mg/Kg wet	34.3		94.8		81-119.2	3.31	30	
Thallium	109	4.9	mg/Kg wet	113		96.3		80.8-118.6	8.05	30	
Zinc	225	2.0	mg/Kg wet	240		93.7		80.8-118.8	3.67	30	
Duplicate (B258495-DUP1)		**Source: 20E0762-02**		Prepared & Analyzed: 05/21/20							
Antimony	ND	1.8	mg/Kg dry		ND				NC	35	
Arsenic	4.45	3.7	mg/Kg dry		4.24				4.95	35	
Beryllium	0.221	0.18	mg/Kg dry		0.212				4.31	35	
Cadmium	ND	0.37	mg/Kg dry		ND				NC	35	
Chromium	11.9	0.73	mg/Kg dry		12.3				3.39	35	
Copper	46.2	0.73	mg/Kg dry		45.4				1.79	35	
Lead	45.1	0.55	mg/Kg dry		45.4				0.728	35	
Nickel	15.6	0.73	mg/Kg dry		15.5				0.361	35	
Selenium	ND	3.7	mg/Kg dry		ND				NC	35	
Silver	ND	0.37	mg/Kg dry		ND				NC	35	
Thallium	ND	1.8	mg/Kg dry		ND				NC	35	
Zinc	48.9	0.73	mg/Kg dry		47.6				2.59	35	
Matrix Spike (B258495-MS1)		**Source: 20E0762-02**		Prepared & Analyzed: 05/21/20							
Antimony	12.3	1.9	mg/Kg dry	18.7	ND	**65.6**	*	75-125			MS-07
Arsenic	22.0	3.7	mg/Kg dry	18.7	4.24	95.3		75-125			
Beryllium	19.9	0.19	mg/Kg dry	18.7	0.212	106		75-125			
Cadmium	18.5	0.37	mg/Kg dry	18.7	ND	99.0		75-125			
Chromium	31.5	0.75	mg/Kg dry	18.7	12.3	103		75-125			
Copper	84.8	0.75	mg/Kg dry	37.4	45.4	106		75-125			
Lead	60.7	0.56	mg/Kg dry	18.7	45.4	81.9		75-125			
Nickel	34.5	0.75	mg/Kg dry	18.7	15.5	101		75-125			
Selenium	17.5	3.7	mg/Kg dry	18.7	ND	93.6		75-125			
Silver	19.7	0.37	mg/Kg dry	18.7	ND	106		75-125			
Thallium	22.6	1.9	mg/Kg dry	18.7	ND	121		75-125			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258495 - SW-846 3050B										
Matrix Spike (B258495-MS1)		**Source: 20E0762-02**		Prepared & Analyzed: 05/21/20						
Zinc	85.7	0.75	mg/Kg dry	37.4	47.6	102	75-125			
Reference (B258495-SRM1)				Prepared: 05/21/20 Analyzed: 05/22/20						
Lead	0.555	0.51	mg/Kg wet	0.514		108	80-120			

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B258342 - % Solids										
Duplicate (B258342-DUP4)	**Source: 20E0762-01**			Prepared: 05/19/20 Analyzed: 05/20/20						
% Solids	89.7		% Wt		89.5			0.154	20	
Duplicate (B258342-DUP5)	**Source: 20E0762-02**			Prepared: 05/19/20 Analyzed: 05/20/20						
% Solids	88.4		% Wt		88.8			0.429	20	
Duplicate (B258342-DUP6)	**Source: 20E0762-03**			Prepared: 05/19/20 Analyzed: 05/20/20						
% Solids	88.9		% Wt		89.0			0.0773	20	
Duplicate (B258342-DUP7)	**Source: 20E0762-04**			Prepared: 05/19/20 Analyzed: 05/20/20						
% Solids	88.7		% Wt		89.7			1.11	20	

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B258353-BS1 Date(s) Analyzed: 05/23/2020 05/23/2020

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	-0.030	0.030	0.18	
	2	0.000	-0.030	0.030	0.20	10.5
Aroclor-1260	1	0.000	-0.030	0.030	0.19	
	2	0.000	-0.030	0.030	0.20	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS Dup

Lab Sample ID: B258353-BSD1 Date(s) Analyzed: 05/23/2020 05/23/2020

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	-0.030	0.030	0.18	
	2	0.000	-0.030	0.030	0.18	0.0
Aroclor-1260	1	0.000	-0.030	0.030	0.20	
	2	0.000	-0.030	0.030	0.20	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

Matrix Spike

Lab Sample ID: B258353-MS1 Date(s) Analyzed: 05/23/2020 05/23/2020

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	-0.030	0.030	0.24	
	2	0.000	-0.030	0.030	0.24	0.0
Aroclor-1260	1	0.000	-0.030	0.030	0.23	
	2	0.000	-0.030	0.030	0.23	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

Matrix Spike Dup

Lab Sample ID: B258353-MSD1 Date(s) Analyzed: 05/23/2020 05/23/2020

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	-0.030	0.030	0.25	
	2	0.000	-0.030	0.030	0.26	3.9
Aroclor-1260	1	0.000	-0.030	0.030	0.25	
	2	0.000	-0.030	0.030	0.25	0.0

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.

L-04	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.
MS-07	Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery.Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-34	Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 6010D in Soil	
Antimony	CT,NH,NY,ME,VA,NC
Arsenic	CT,NH,NY,ME,VA,NC
Beryllium	CT,NH,NY,ME,VA,NC
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Copper	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,AIHA,ME,VA,NC
Nickel	CT,NH,NY,ME,VA,NC
Selenium	CT,NH,NY,ME,VA,NC
Silver	CT,NH,NY,ME,VA,NC
Thallium	CT,NH,NY,ME,VA,NC
Zinc	CT,NH,NY,ME,VA,NC
SW-846 7470A in Water	
Mercury	CT,NH,NY,NC,ME,VA
SW-846 7471B in Soil	
Mercury	CT,NH,NY,NC,ME,VA
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,ME,NC,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1221	CT,NH,NY,ME,NC,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1232	CT,NH,NY,ME,NC,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1242	CT,NH,NY,ME,NC,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1248	CT,NH,NY,ME,NC,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1254	CT,NH,NY,ME,NC,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1260	CT,NH,NY,ME,NC,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1262	NY,NC,VA,PA
Aroclor-1262 [2C]	NY,NC,VA,PA
Aroclor-1268	NY,NC,VA,PA
Aroclor-1268 [2C]	NY,NC,VA,PA
SW-846 8260C-D in Soil	
Acetone	CT,NH,NY,ME,VA
Acrylonitrile	CT,NH,NY,ME,VA
Benzene	CT,NH,NY,ME,VA
Bromobenzene	NH,NY,ME,VA
Bromochloromethane	NH,NY,ME,VA
Bromodichloromethane	CT,NH,NY,ME,VA
Bromoform	CT,NH,NY,ME,VA
Bromomethane	CT,NH,NY,ME,VA
2-Butanone (MEK)	CT,NH,NY,ME,VA

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260C-D in Soil	
tert-Butyl Alcohol (TBA)	NY,ME
n-Butylbenzene	CT,NH,NY,ME,VA
sec-Butylbenzene	CT,NH,NY,ME,VA
tert-Butylbenzene	CT,NH,NY,ME,VA
Carbon Disulfide	CT,NH,NY,ME,VA
Carbon Tetrachloride	CT,NH,NY,ME,VA
Chlorobenzene	CT,NH,NY,ME,VA
Chlorodibromomethane	CT,NH,NY,ME,VA
Chloroethane	CT,NH,NY,ME,VA
Chloroform	CT,NH,NY,ME,VA
Chloromethane	CT,NH,NY,ME,VA
2-Chlorotoluene	CT,NH,NY,ME,VA
4-Chlorotoluene	CT,NH,NY,ME,VA
1,2-Dibromo-3-chloropropane (DBCP)	NY,ME
1,2-Dibromoethane (EDB)	NH,NY
Dibromomethane	NH,NY,ME,VA
1,2-Dichlorobenzene	CT,NH,NY,ME,VA
1,3-Dichlorobenzene	CT,NH,NY,ME,VA
1,4-Dichlorobenzene	CT,NH,NY,ME,VA
trans-1,4-Dichloro-2-butene	NY,ME
Dichlorodifluoromethane (Freon 12)	NH,NY,ME,VA
1,1-Dichloroethane	CT,NH,NY,ME,VA
1,2-Dichloroethane	CT,NH,NY,ME,VA
1,1-Dichloroethylene	CT,NH,NY,ME,VA
cis-1,2-Dichloroethylene	CT,NH,NY,ME,VA
trans-1,2-Dichloroethylene	CT,NH,NY,ME,VA
1,2-Dichloropropane	CT,NH,NY,ME,VA
1,3-Dichloropropane	NH,NY,ME,VA
2,2-Dichloropropane	NH,NY,ME,VA
1,1-Dichloropropene	NH,NY,ME,VA
cis-1,3-Dichloropropene	CT,NH,NY,ME,VA
trans-1,3-Dichloropropene	CT,NH,NY,ME,VA
Diethyl Ether	ME
1,4-Dioxane	NY,ME
Ethylbenzene	CT,NH,NY,ME,VA
Hexachlorobutadiene	NH,NY,ME,VA
2-Hexanone (MBK)	CT,NH,NY,ME,VA
Isopropylbenzene (Cumene)	CT,NH,NY,ME,VA
p-Isopropyltoluene (p-Cymene)	NH,NY
Methyl Acetate	NY,ME
Methyl tert-Butyl Ether (MTBE)	NY,ME,VA
Methyl Cyclohexane	NY
Methylene Chloride	CT,NH,NY,ME,VA
4-Methyl-2-pentanone (MIBK)	CT,NH,NY,ME,VA
Naphthalene	NH,NY,ME,VA
n-Propylbenzene	NH,NY,ME
Styrene	CT,NH,NY,ME,VA

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260C-D in Soil	
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME,VA
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME,VA
Tetrachloroethylene	CT,NH,NY,ME,VA
Toluene	CT,NH,NY,ME,VA
1,2,3-Trichlorobenzene	NY,ME
1,2,4-Trichlorobenzene	NH,NY,ME,VA
1,3,5-Trichlorobenzene	ME
1,1,1-Trichloroethane	CT,NH,NY,ME,VA
1,1,2-Trichloroethane	CT,NH,NY,ME,VA
Trichloroethylene	CT,NH,NY,ME,VA
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME,VA
1,2,3-Trichloropropane	NH,NY,ME,VA
1,2,4-Trimethylbenzene	CT,NH,NY,ME,VA
1,3,5-Trimethylbenzene	CT,NH,NY,ME,VA
Vinyl Chloride	CT,NH,NY,ME,VA
m+p Xylene	CT,NH,NY,ME,VA
o-Xylene	CT,NH,NY,ME,VA
SW-846 8270D-E in Soil	
Acenaphthene	CT,NY,NH,ME,NC,VA
Acenaphthylene	CT,NY,NH,ME,NC,VA
Anthracene	CT,NY,NH,ME,NC,VA
Benzo(a)anthracene	CT,NY,NH,ME,NC,VA
Benzo(a)pyrene	CT,NY,NH,ME,NC,VA
Benzo(b)fluoranthene	CT,NY,NH,ME,NC,VA
Benzo(g,h,i)perylene	CT,NY,NH,ME,NC,VA
Benzo(k)fluoranthene	CT,NY,NH,ME,NC,VA
Chrysene	CT,NY,NH,ME,NC,VA
Dibenz(a,h)anthracene	CT,NY,NH,ME,NC,VA
Fluoranthene	CT,NY,NH,ME,NC,VA
Fluorene	CT,NY,NH,ME,NC,VA
Indeno(1,2,3-cd)pyrene	CT,NY,NH,ME,NC,VA
2-Methylnaphthalene	CT,NY,NH,ME,NC,VA
Naphthalene	CT,NY,NH,ME,NC,VA
Phenanthrene	CT,NY,NH,ME,NC,VA
Pyrene	CT,NY,NH,ME,NC,VA
SW-846 8270D-E in Water	
Acenaphthene	CT,NY,NH,ME,NC,VA
Acenaphthylene	CT,NY,NH,ME,NC,VA
Anthracene	CT,NY,NH,ME,NC,VA
Benzo(a)anthracene	CT,NY,NH,ME,NC,VA
Benzo(a)pyrene	CT,NY,NH,ME,NC,VA
Benzo(b)fluoranthene	CT,NY,NH,ME,NC,VA
Benzo(g,h,i)perylene	CT,NY,NH,ME,NC,VA
Benzo(k)fluoranthene	CT,NY,NH,ME,NC,VA
Chrysene	CT,NY,NH,ME,NC,VA
Dibenz(a,h)anthracene	CT,NY,NH,ME,NC,VA

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270D-E in Water	
Fluoranthene	CT,NY,NH,ME,NC,VA
Fluorene	CT,NY,NH,ME,NC,VA
Indeno(1,2,3-cd)pyrene	CT,NY,NH,ME,NC,VA
2-Methylnaphthalene	CT,NY,NH,ME,NC,VA
Naphthalene	CT,NY,NH,ME,NC,VA
Phenanthrene	CT,NY,NH,ME,NC,VA
Pyrene	CT,NY,NH,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2021
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2021
RI	Rhode Island Department of Health	LAO00112	12/30/2020
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2021
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

20E0762

Company Name: Stone Environmental
Address: 535 Stone Cutters Way, Montpelier, VT
Phone:
Project Name: Crescent Connector
Project Location: Essex Junction, VT
Project Number: 12-152
Project Manager: Dan Voisin
Con-Test Quote Name/Number:
Invoice Recipient:
Sampled By: DTC

Requested Turnaround Time: 7-Day ☑ 10-Day ☐ PFAS 10-Day (std) ☐ Due Date:
Rush / Approval Required: 1-Day ☐ 3-Day ☐ 2-Day ☐ 4-Day ☐
Data Delivery: Format: PDF ☑ EXCEL ☐ Other: EQuIS EDoad
CLP Like Data Pkg Required: ☐
Email To: dvoisin@stone-env.com
Fax To #:
Dissolved Metals Samples: ○ Field Filtered ○ Lab to Filter
Orthophosphate Samples: ○ Field Filtered ○ Lab to Filter

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1] Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	MB VOCs / 8260	I PAHs / 8270	I PCBs/8082 Soxhlet	I PP Metals
1	SB-101-2.0	5/15/20	1010	Comp	S	U	3	1				X	X	X	X
2	SB-102-2.0		840				3	1				X	X	X	X
3	SB-103-2.0		925				3	1				X	X	X	X
4	SB-103-2.0-FD		925				3	1				X	X	X	X
5	SB-104-2.0		1045				3	1				X	X	X	X
6	SB-105-2.0		1125				3	1				X	X	X	X
7	TB-051520		1145				3					X			

[2] Preservation Code

Cooler Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Contest is not responsible for missing samples from prepacked coolers

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature) Daniel T. Cuin → To FedEx	Date/Time: 5/18/20 1200	Client Comments: VOCs, PAHs, PCBs w/ soxhlet extraction and PP metals, see Dan Voisin w/ questions.
Received by: (signature) 4.3	Date/Time: 5/19 927	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements: MA: ; CT:
Special Requirements: ☐ MA MCP Required; ☐ MCP Certification Form Required; ☐ CT RCP Required; ☐ RCP Certification Form Required; ☐ MA State DW Required; PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity: Government ☐ Municipality ☐ MWRA ☐ WRTA ☐ Federal ☐ 21 J ☐ School ☐ City ☐ Brownfield ☐ MBTA ☐

Other: ☐ Chromatogram ☐ *AIHA-LAP,LLC*

PCB ONLY: ☑ Soxhlet ☐ Non Soxhlet

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine wha analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Cor Test values your partnership on each project and will try to assist with missing information, but will not b held accountable.

Table of Contents

IMPORTANT!
We are continuing to respond to the impact of COVID-19 around the world. See our latest updates. For COVID-19-related recipient closures, you can redirect packages, Ask FedEx, or contact the shipper.

FedEx

770485267527

Delivered
Tuesday 5/19/2020 at 9:27 am

DELIVERED

Signed for by: R.PIETRIAS

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM	TO
Montpelier, VT US	EAST LONGMEADOW, MA US

Shipment Facts

TRACKING NUMBER
770485267527

SERVICE
FedEx Priority Overnight

WEIGHT
25 lbs / 11.34 kgs

DIMENSIONS
24x14x14 in.

DELIVERED TO
Shipping/Receiving

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
25 lbs / 11.34 kgs

TERMS
Shipper

SHIPPER REFERENCE
12-152

PACKAGING
Your Packaging

SPECIAL HANDLING SECTION
Deliver Weekday, Non Standard Packaging

STANDARD TRANSIT
5/19/2020 by 10:30 am

SHIP DATE
Mon 5/18/2020

ACTUAL DELIVERY
Tue 5/19/2020 9:27 am

Travel History

Local Scan Time

Tuesday , 5/19/2020

9:27 am	EAST LONGMEADOW, MA	Delivered
8:32 am	WINDSOR LOCKS, CT	On FedEx vehicle for delivery

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client Stune

Received By MP Date 5/19 Time 927

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 2 Actual Temp - 4.3 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Project T Analysis T ID's T Sampler Name T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? T

Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	6
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-	7	250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-	14	Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

Appendix E: Detailed Cost Estimates

Crescent Connector, Alternative 1: Full Removal
12-152
DETAILED FEE & SCOPE DETAILS

#	Staff Type	Name	Rate Per Unit	Unit	Amount	Subtotal		Scope Details
1	**Project Coordination**							Project Management (Contracting, Scheduling, Invoicing (4 hrs/month for 7 months) Coordinate access for dust monitoring, etc. (2 hrs) Procure equipment and consumables. (2 hrs) Attend weekly project team meetings in Essex for month prior and 7 months of active construction period (8 meetings, 2 hrs each)
	Professional Services							
	Senior Professional 1		$ 136 / hour	140	$19,040			
	Project Professional 3		$ 126 / hour	4	$504			
	Accountant 2		$ 78 / hour	7	$546			
		Professional Services Summary		*151*		*$20,090*		
	Stone Equipment							
	Civic Mileage		$0.58 / mile	2240	$1,299.20			
		Expense Summary				*$1,299*		
	TASK SUBTOTAL						**$21,389**	
2	**Soil Loading, Transport and Disposal - PER WEEK**							Costs per week for Loading, Transport, and Disposal of Contaminated Soils. Assumes: 1) Common excavation for loading of soils to tri-axel dump trailers. 2) Total volume for disposal = 11,390 yards @1.5 tons/yard = 17,085 tons. Approximately 1,000 tons will be generated from ~4,000 square ft for transport per week. 3) Costs for disposal and transport for soils as alternative daily cover at Coventry Landfill $56/ton with $6.75/ton for CCSWMD district fee. 4) Install 4,750 yards (350 yards per week) of clean coarse graded gravel fill to acheive desired sub-grade elevations. 5) Assumes oversight and confirmation sampling will be performed by Stone Staff Engineer 6) Samples will be collected for waste characterization during Site activities and be submitted for 48 hour turn around. Assume 2 waste characterization samples and 4 confirmation samples per week 7) Dust Monitoring will be performed to evaluate the effectiveness of dust control efforts on Site. 8) Assumes 4.5 month duration for project (18 weeks) 9) Project Engineer to provide weekly summary of Site activities related to environmental management of the Site for DEC and Project Team and attend a weekly meeting via conference call. 10) Costs for compaction and installation of pavement section are not included.
	Professional Services							
	Senior Professional 1		$ 136 / hour	2	$272			
	Project Professional 3		$ 126 / hour	8	$1,008			
	Staff Professional 2		$ 93 / hour	60	$5,580			
	Accountant 2		$ 78 / hour	1	$78			
		Professional Services Summary		*71*		*$6,938*		
	Consultants*							
	Casella - Transport and Disposal		$56 / ton	1000	$61,600			
	CCSWD District Fee		$6.75 / ton	1000	$7,425			
	Loading (VTRANS, 2-yr 2018 Price List, Common Excavation)		$15.68 / yard	667	$11,504			
	Fill Installation (VTRANS, 2-yr 2018 Price List, Coarse Graded Gravel)		$36.33 / yard	350	$13,987			
	Dust Monitor		$550 / unit/week	4	$2,420			
	Confirmation Analyses		$250 / ea	4	$1,100			
	Waste Characteristics Analyses		$760 / ea	2	$1,671			
		Consultant Summary				*$99,707*		
	External Expenses							
	Shipping/Freight		$80.0 / ea	2	$176			
	Field Supplies & Equipment		$20.0 / day	5	$110			
	Stone Equipment							
	Civic Mileage		$0.58 / mile	400	$232.00			
	EAR PID		$90.00 / Daily	5	$450.00			
	GPS Trimble Geo 7X		$125.00 / Daily	5	$625.00			
	EAR Hobo Weather Station/weekly		$250.00 / Weekly	1	$250.00			
	Stone Consumables							
	PPE		$19.50 / day/staff	5	$97.50			
		Expense Summary				*$1,941*		
	PER WEEK TASK SUBTOTAL						**$108,586**	
	TASK SUBTOTAL						**$1,954,546**	Assumes 18 weeks for active excavation.
3	**Corrective Action Construction Completion Report**							Prepare a CACCR in accordance with I-Rule followoing completion of remediation and construction. Develop as-built plans for ROW.
	Professional Services							
	Senior Professional 1		$ 136 / hour	8	$1,088			
	Project Professional 3		$ 126 / hour	40	$5,040			
	Staff Professional 3		$ 100 / hour	24	$2,400			
	Staff Professional 2		$ 93 / hour	40	$3,720			
		Professional Services Summary		*112*		*$12,248*		
	TASK SUBTOTAL						**$12,248**	
	PROJECT TOTAL						***$1,988,183***	

Stone Environmental's standard mark-up on all Consultant and reimbursable project expenses is 10%.

Crescent Connector, Alternative 2: Construct Over Existing
12-152
DETAILED FEE & SCOPE DETAILS

#	Staff Type	Name	Rate Per Unit	Unit	Amount	Subtotal		Scope Details
1	**Project Coordination**							Project Management (Contracting, Scheduling, Invoicing (4 hrs/month for 2 months)
	Professional Services							Coordinate access for dust monitoring, etc. (2 hrs)
	Senior Professional 1		$ 136 / hour	40	$5,440			Procure equipment and consumables. (2 hrs)
	Project Professional 3		$ 126 / hour	4	$504			Attend weekly project team meetings in Essex for month prior and 3 months of active construction period (8 meetings, 2 hrs each)
	Accountant 2		$ 78 / hour	2	$156			
		Professional Services Summary		*46*		*$6,100*		
	Stone Equipment							
	Civic Mileage		$0.58 / mile	640	$371.20			
		Expense Summary				*$371*		
	TASK SUBTOTAL						**$6,471**	
2	**Soil Loading, Transport and Disposal - PER WEEK**							Costs for managing soils associated with Alternative 2: Construct over existing.
	Professional Services							Loading and tranporting of contaminated soil limited to those generated to install stormwater infrastructure.
	Senior Professional 1		$ 136 / hour	2	$272			Assumes:
	Project Professional 3		$ 126 / hour	8	$1,008			1) Approximatley 333 cubic yards for disposal, 500 tons will be produced to install subsurface infrastructure. Assumes disposal as ADC at Conventry Landfill
	Staff Professional 2		$ 93 / hour	60	$5,580			2) Work for load out will be completed over 2 weeks.
		Professional Services Summary		*70*		*$6,860*		3) Dust monitoring will be required until all existing soils are covered
	Consultants*							
	Casella - Transport and Disposal		$56 / ton	250	$15,400			
	CCSWD District Fee		$6.75 / ton	250	$1,856			
	Loading (VTRANS, 2-yr 2018 Price List, Common Excavation)		$15.68 / yard	167	$2,880			
	Dust Monitor		$550.00 / unit/week	4	$2,420			
	Waste Characteristics Analyses		$760 / ea	1	$835			
		Consultant Summary				*$23,392*		
	External Expenses							
	Shipping/Freight		$80.0 / ea	2	$176			
	Field Supplies & Equipment		$15.0 / day	5	$83			
	Stone Equipment							
	Civic Mileage		$0.58 / mile	400	$232.00			
	EAR PID		$90.00 / Daily	5	$450.00			
	EAR Hobo Weather Station/weekly		$250.00 / Weekly	1	$250.00			
	Stone Consumables							
	PPE		$19.50 / day/staff	5	$97.50			
		Expense Summary				*$1,288*		
	PER WEEK TASK SUBTOTAL						**$31,540**	
	TASK SUBTOTAL						**$63,080**	Assumes two weeks for installation of sub base.
3	**Barrier Installation Oversight**							Costs per week for oversight of Site work while contaminated soils are exposed.
	Professional Services							Assumes:
	Senior Professional 1		$ 136 / hour	4	$544			1) Costs for grading and installation of sub base and pavement sections provided by others.
	Project Professional 3		$ 126 / hour	8	$1,008			2) Assumes 3 month duration for project (12 weeks)
	Staff Professional 2		$ 93 / hour	20	$1,860			3) Project Engineer to provide weekly summary of Site activities related to environmental management of the Site for DEC and Project Team.
		Professional Services Summary		*32*		*$3,412*		
	Consultants*							4) PM to attend a weekly meeting via conference call.
	Geotextile Fabric		$1.28 / sq yard	1054	$1,484			
		Consultant Summary				*$1,484*		
	Stone Equipment							
	Civic Mileage		$0.58 / mile	800	$464.00			
		Expense Summary				*$464*		
	TASK SUBTOTAL						**$5,360**	
	TASK SUBTOTAL						**$64,323**	Assumes twelve weeks for installation of sub base.
4	**Corrective Action Construction Completion Report**							Prepare a CACCR in accordance with I-Rule followming completion of remediation and construction. Develop as-built plans for ROW.
	Professional Services							
	Senior Professional 1		$ 136 / hour	8	$1,088			
	Project Professional 3		$ 126 / hour	40	$5,040			
	Staff Professional 3		$ 100 / hour	24	$2,400			
	Staff Professional 2		$ 93 / hour	40	$3,720			
		Professional Services Summary		*112*		*$12,248*		
	TASK SUBTOTAL						**$12,248**	
	PROJECT TOTAL						***$146,123***	

Stone Environmental's standard mark-up on all Consultant and reimbursable project expenses is 10%.

Crescent Connector, Alternative 3: Targeted Cut / Fill with Site Borrow
12-152
DETAILED FEE & SCOPE DETAILS

#	Staff Type	Name	Rate Per Unit	Unit	Amount	Subtotal		Scope Details
1	**Project Coordination**							Project Management (Contracting, Scheduling, Invoicing (4 hrs/month for 3 months)
	Professional Services							Coordinate access for dust monitoring, etc. (2 hrs)
	Senior Professional 1		$ 136 / hour	50	$6,800			Procure equipment and consumables. (2 hrs)
	Project Professional 3		$ 126 / hour	4	$504			Attend weekly project team meetings in Essex for month prior and 3 months of active construction period (12 meetings, 2 hrs each)
	Accountant 2		$ 78 / hour	3	$234			
		Professional Services Summary		*57*		*$7,538*		
	Stone Equipment							
	Civic Mileage		$0.58 / mile	960	$556.80			
		Expense Summary				*$557*		
	TASK SUBTOTAL						**$8,095**	
2	**Soil Loading, Transport and Disposal - PER WEEK**							Costs per week for Loading, Transport, and Disposal of Contaminated Soils.
	Professional Services							Assumes:
	Senior Professional 1		$ 136 / hour	5	$680			1) Common excavation for loading of soils to tri-axel dump trailers.
	Project Professional 3		$ 126 / hour	8	$1,008			2) Total volume for disposal = 3600 yards @1.5 tons/yard = 5400 tons. Approximately 1,000 tons will be generated from ~4,000 square ft for transport per week.
	Staff Professional 2		$ 93 / hour	60	$5,580			3) Costs for disposal and transport for soils as alternative daily cover at Coventry Landfill $56/ton.
	Accountant 2		$ 78 / hour	1	$78			4) Assumes oversight will be performed by Stone Staff Engineer
		Professional Services Summary		*74*		*$7,346*		5) Samples will be collected for waste characterization during Site activities and be submitted for 48 hour turn around. Assume 2 sample per week
	Consultants*							6) Dust Monitoring will be performed to evaluate the effectiveness of dust control efforts on Site.
	Casella - Transport and Disposal		$56 / ton	1000	$61,600			7) Assumes 6 weeks of active excavation within contaminated soils.
	CCSWD District Fee		$6.75 / ton	1000	$7,425			8) Project Engineer to provide weekly summary of Site activities related to environmental management of the Site for DEC and Project Team and attend a weekly meeting via conference call.
	Loading (VTRANS, 2-yr 2018 Price List, Common Excavation)		$15.68 / yard	667	$11,504			9) Costs for compaction and installation of pavement section are not included.
	Fill Installation (VTRANS, 2-yr 2018 Price List, Coarse Graded Gravel)		$36.33 / yard	667	$26,655			
	Dust Monitor		$550 / unit/week	4	$2,420			
	Waste Characteristics Analyses		$760 / ea	2	$1,671			
		Consultant Summary				*$111,276*		
	External Expenses							
	Shipping/Freight		$80.0 / ea	2	$176			
	Field Supplies & Equipment		$15.0 / day	5	$83			
	Stone Equipment							
	Civic Mileage		$0.58 / mile	400	$232.00			
	EAR PID		$90.00 / Daily	5	$450.00			
	EAR Hobo Weather Station/weekly		$250.00 / Weekly	1	$250.00			
			#N/A / #N/A		#N/A			
			#N/A / #N/A		#N/A			
			#N/A / #N/A		#N/A			
	Stone Consumables							
	PPE		$19.50 / day/staff	5	$97.50			
		Expense Summary				*$1,288*		
	PER WEEK TASK SUBTOTAL						**$119,910**	
	TASK SUBTOTAL						**$719,458**	Assumes six weeks for active excavation for in situ soils
3	**Barrier Installation Oversight**							Perform periodic inspection of the installation of barriers. Compile notes and send weekly project status reports to project team.
	Professional Services							
	Project Professional 3		$ 126 / hour	12	$1,512			Assumes:
	Staff Professional 2		$ 93 / hour	136	$12,648			1) Daily trips to Project Area at the beginning and end of the day to start and cease dust monitors for duration until sub-base is installed within Project Area.
		Professional Services Summary		*148*		*$14,160*		2) Two site visits per week each for one hour following installation of sub-base.
	External Expenses							3) Duration of 12 weeks (2 with daily visits, 10 with twice weekly visits)
	Rental-Field Equipment	dust mon.	$550.000 / unit/week	8	$4,840			
	Stone Equipment							Labor:
	Civic Mileage		$0.58 / mile	5,120	$2,969.60			1 hour/week for Project Engineer for email updates to Project Team and coordination with project superintendent.
	EAR Hobo Weather Station/weekly		$250.00 / Weekly	2	$500.00			20 hrs/week for two weeks (40 hrs) for Staff scientist to deploy/retrieve dust monitors during sub base installation. Assumes 4
		Expense Summary				*$8,310*		
	TASK SUBTOTAL						**$22,470**	
4	**Corrective Action Construction Completion Report**							Prepare a CACCR in accordance with I-Rule followoing completion of remediation and construction. Develop as-built plans for ROW.
	Professional Services							
	Senior Professional 1		$ 136 / hour	8	$1,088			
	Project Professional 3		$ 126 / hour	40	$5,040			
	Staff Professional 3		$ 100 / hour	24	$2,400			
	Staff Professional 2		$ 93 / hour	40	$3,720			
		Professional Services Summary		*112*		*$12,248*		
	TASK SUBTOTAL						**$12,248**	
	PROJECT TOTAL						***$762,270***	

Stone Environmental's standard mark-up on all Consultant and reimbursable project expenses is 10%.

Appendix F: Health and Safety Plan

SECTION 1: GENERAL INFORMATION AND DISCLAIMER		PROJECT NUMBER:	12-152
PROJECT NAME:	Crescent Connector	CLIENT NAME:	Village of Essex Junction
PROJECT MANAGER:	Dan Voisin	SITE SAFETY OFFICER	Lee Rosberg
PREPARED BY:	Dan Voisin	DATE:	06/10/16

NOTE: This site specific Health and Safety Plan - Short Form (HASP-SF) has been prepared for use by **Stone Environmental, Inc. (Stone)** employees for work at this site / facility. **The HASP-SF has been written for the specific site / facility conditions, purposes, tasks, dates and personnel specified, and must be amended and reviewed by those personnel named in Section 4 if these conditions change.** Stone Environmental, Inc., is not responsible for its use by others.

Subcontractors shall be solely responsible for the health and safety of their employees and shall comply with all applicable laws and regulations. In accordance with 1910.120(b)(1)(iv) and (v), Stone Environmental, Inc. will inform subcontractors of the site / facility emergency response procedures, and any potential fire, explosion, health, safety or other hazards by making this Site Specific Health and Safety Plan and site information obtained by others available during regular business hours. All contractors and subcontractors are responsible for: (1) developing their own Health and Safety Plan, including a written Hazard Communication Program and any other written hazard specific or safety programs required by federal, state and local laws and regulations, that details subcontractor tasks, potential or actual hazards identified as a result of a risk analysis of those tasks, and the engineering controls, work practices and personal protective equipment to be utilized to minimize or eliminate employee exposure to the hazard; (2) providing their own personal protective equipment; (3) providing documentation that their employees have been health and safety trained in accordance with applicable federal, state and local laws and regulations; (4) providing evidence of medical surveillance and medical approvals for their employees; and (5) designating their own site safety officer responsible for ensuring that their employees comply with their own Health and Safety plan and taking any other additional measures required by their site activities.

Providing a copy of this Stone Environmental, Inc. HASP-SF to subcontractors, does not establish, nor is it intended to establish a "joint employer" relationship between the Contractor and Stone Environmental, Inc. This allowance does not establish, nor is it intended to establish, a direct or indirect employer/employee relationship with subcontractor's employees.

In addition, if any site has a HASP, prepared by another contractor then that document should be made available to Stone Staff.

SECTION 2: EMERGENCY INFORMATION

(A) LOCAL RESOURCES	SERVICE NAME AND ADDRESS,	TELEPHONE NUMBER (nonemergency and emergency)
EMERGENCY MEDICAL SERVICES	Village of Essex Junction Rescue	911, (802) 878-4859
HOSPITAL (Map attached)	University of Vermont Medical Center (Emergency Room)	911, 802-847-2434
FIRE DEPARTMENT	Village of Essex Junction Fire Department	911, (802) 878-8331
POLICE / SECURITY	Village of Essex Junction Police Department	911, (802) 878-8331
HAZMAT/ SPILL / OTHER RESPONSE	Village of Essex Junction Fire Department VT State HAZMAT Response Team	911, (802) 878-8331 911, 800-640-2106

(B) CORPORATE RESOURCES	STONE ENVIRONMENTAL, INC.	INCIDENT TELEPHONE NUMBERS	
MAIN LINE NUMBER (802) 229-4541		OFFICE	CELL PHONE
CORPORATE HEALTH & SAFETY	Kim Watson	(802) 229-2196	(802) 249-7753
PROJECT OFFICER	Chris Stone	(802) 229-6433	(802) 249-2222
PROJECT MANAGER	Dan Voisin	(802) 229-1875	(802) 279-8174
SITE SAFETY OFFICER	Lee Rosberg	(802) 229-5378	(802) 309-1629

SECTION 3: PROJECT INFORMATION

(A) SITE / FACILITY INFORMATION:

SITE NAME:	Crescent Connector	SITE CLIENT CONTACT:	Robin Pierce

ADDRESS	2 Lincoln Street	PHONE NUMBER:	802-878-6944
TOWNSHIP / COUNTY:	Essex Junction	SITE SAFETY CONTACT:	
STATE	Vermont		

CLIENT TYPE: ☐ FEDERAL ☒ STATE ☒ MUNICIPAL / REGIONAL ☐ PRIVATE

(B) SITE / FACILITY TYPE:

☐ HAZARDOUS (RCRA)	☐ UST / LUST	☐ WTP / WWTP
☐ HAZARDOUS (CERCLA / Superfund)	☒ BROWNFIELD	☐ FIFRA
☒ CONSTRUCTION	☐ CHEMICAL PLANT	☐ STATE _____ (describe)
☐ LANDFILL (NON-HAZARDOUS)	☐ REFINERY	☐ OTHER:
☒ ACTIVE	☐ INACTIVE	

(C) INVESTIGATION TYPE:

☐ HAZARDOUS WASTE	☐ SOLID WASTE	☐ WASTE WATER
☐ HYDROGEOLOGY	☒ ENVIRONMENTAL	☐ WASTE STREAM
☐ WASTE WATER	☐ AUDIT	☐ AIR/ODOR
☐ PRE-JOB VISIT	☐ CONSTRUCTION	☐ SEDIMENT
☒ (SUB) CONTRACTOR OVERSIGHT	☐ LANDFILL	☒ SURFACE SOIL
☐ CONSTRUCTION MGMT	☐ AIR	☒ OTHER
☐ INSPECTION	☐ SURFACE WATER	**Building Materials**
☐ INVESTIGATION SURVEY	☐ GROUND WATER	

DATE(S) OF FIELD ACTIVITIES: **May through December 2017**

(D) FIELD TASKS

STONE ENVIRONMENTAL TASKS (List field tasks to be performed by Stone Environmental, Inc. staff)

S1 Oversight of target excavation and off-site disposal of contaminated native soil

S2 Oversight of installation of engineered barriers

S3 Performance Testing and Ongoing Monitoring

S4

TASKS PERFORMED BY OTHERS (List field tasks to be performed by client, subcontractors, or contractors)

O1 Excavation / Installation of engineered barriers to be completed by earthwork, paving, and concrete contractors

O2

SECTION 4: PROJECT SAFETY ORGANIZATION, HEALTH AND SAFETY TRAINING, AND MEDICAL MONITORING

(A) PROJECT HEALTH AND SAFETY ROLES, RESPONSIBILITIES AND COORDINATION

PROJECT OFFICER: **Chris Stone**	The Project Officer (PO) is ultimately responsible for project performance. The PO seeks and gets appropriate approvals for risk management decisions (e.g. Legal Counsel, Corporate Health and Safety, Other On-Site HASPs), and selects an effective and qualified project team. The PO supports the Project Manager with appropriate resources. The Project Officer is the chief liaison with the client and will coordinate Stone Environmental, Inc Project Managers and Resources to respond to the client's needs.
PROJECT MANAGER: **Dan Voisin**	The Project Manager (PM) has the responsibility for executing the project in accordance with the scope of work and good engineering practice. The PM will supervise the allocation of resources and staff to implement specific aspects of this HASP-SF and may delegate authority to expedite and facilitate any application of the program. The PM implements and executes an effective program of site-specific personnel protection and accident prevention. The Project Manager reports to the Program Manager.
CORPORATE HEALTH & SAFETY: **Kim Watson**	Corporate Health and Safety Officer is responsible for Stone Environmental, Inc.'s overall Health and Safety Program and provides project guidance on air monitoring methodology, data interpretation and assistance in determining appropriate project engineering controls, work practices, and personal protective equipment. Corporate Health and Safety also reviews and approve HASPs in accordance with Section 1.
SITE SAFETY OFFICER: **Lee Rosberg** ALTERNATE SITE SAFETY OFFICER (S): **Dan Voisin**	The Site Safety Officer (SSO) is responsible for interpreting and implementing the site health and safety provisions set out in this HASP-SF, and will guide the efforts of field team personnel in their day-to-day compliance with this HASP-SF. The SSO has the ability and authority to make necessary changes or additions to this HASP-SF and provide technical assistance to field team personnel on problems relating to worksite safety. The SSO has the authority to correct safety-related deficiencies in materials or practice and to call a Project STOP in the most serious cases. Alternate Site Safety Officer (ASSO) is assigned all duties and responsibilities of the Site Safety Officer in his/her absence.
FIELD TEAM PERSONNEL: **Lee Rosberg** **Steven Hubbs** **Dan Voisin** **Dan Curran**	Field personnel have the following health and safety responsibilities: • Implement the procedures set forth in the HASP-SF; • Take all reasonable precautions to prevent injury to themselves and their fellow employees; and • Perform only those tasks that they believe they can do safely, and immediately report any accidents and/or unsafe conditions in accordance with Section 1.

PROJECT TEAM - The above Stone Environmental, Inc. personnel are designated to carry out the stated project job functions on site. THE SITE SAFETY OFFICER OR A DESIGNATED ALTERNATE WILL BE ON-SITE DURING **ALL** SITE ACTIVITIES. (NOTE: One person may carry out more than one job function.)

The following subcontractor(s) and governmental agencies have been informed by Stone Environmental, Inc. of emergency response procedures, and any potential fire, explosion, health, safety or other hazards of the site / facility by making this Site Specific Health and Safety Plan and site information obtained by others available during regular business hours. Subcontractors and governmental agencies shall be solely responsible for the health and safety of their employees and shall comply with all applicable laws and regulations as described in **Section 1** of this plan.

SUBCONTRACTOR: NA

FEDERAL AND STATE AGENCY REPS: VT DEC
Kristi Herzer, VT DEC Brownfield Response

OTHER AGENCY REPS: Construction contractors - TBD

(B) HEALTH AND SAFETY TRAINING, MEDICAL MONITORING, AND FIT TESTING PROGRAM

The following project staff members are included in the Stone Environmental, Inc. Health and Safety Training and Medical Monitoring programs. The details of these programs can be found in the Health and Safety Policies and Written Programs.

NAME	HAZWOPER TRAINING: INITIAL 40HR (DATE)	HAZWOPER TRAINING: 8HR (DATE)	MEDICAL MONITORING: MEDICAL (DATE)	MEDICAL MONITORING: FIT TEST (DATE)
Dan Voisin	8/17/01	1/8/16	3/18/15	NA
Lee Rosberg	2/28/07	1/8/16	10/16/15	NA
Steve Hubbs	6/16/06	1/8/16	5/21/15	NA
Dan Curran	1/15/16	NA	1/13/16	NA

SECTION 5: HAZARD ANALYSIS

(A) ACTUAL OR POTENTIAL PHYSICAL HAZARDS – (Check all that apply to Stone Environmental, Inc. activities)

- ☒ ANIMALS / PLANTS /DEER TICKS/SNAKES
- ☐ ASBESTOS / LEAD
- ☒ CHEMICAL EXPOSURE (See Section 5B/5C)
- ☐ CONFINED SPACE (See section 5b/5c)
- ☐ DEMOLITION
- ☐ DRILLING
- ☐ DRUM HANDLING
- ☒ DUST, HARMFUL
- ☒ DUST, NUISANCE
- ☐ ELECTRICAL
- ☒ EXCAVATIONS (See Section 13)
- ☐ EXTREME COLD (See Section 10)
- ☐ FALL >6' VERTICAL
- ☐ FALLING OBJECTS
- ☐ HEAT STRESS
- ☒ HEAVY EQUIPMT
- ☒ HEAVY LIFTING
- ☐ HOT WORK
- ☐ HUNTING SEASON
- ☐ IMMERSION
- ☐ IONIZING RADIATION
- ☐ LIGHT RADIATION (i.e., Welding, High Intensity)
- ☐ LIMITED CONTACT
- ☐ MOVING PARTS (LO / TO)
- ☒ NOISE (> 85 dB)
- ☐ NON-IONIZING RADIATION
- ☐ OVERHEAD OBJECTS
- ☐ POWERED PLATFORMS
- ☐ POOR VISIBILITY
- ☐ ROLLING OBJECTS
- ☐ SCAFFOLDING
- ☐ SHARP OBJECTS
- ☒ TRAFFIC (STRUCK BY)
- ☐ STEEP / UNEVEN TERRAIN
- ☐ OTHER:

(B) PRESENCE OF HAZARDOUS MATERIALS STORED OR USED ON SITE – If active.

TYPE	CURRENTLY	FORMERLY	
	☐ YES	☒ YES	☐ NO
☐ EXPLOSIVES	☒ FLAMMABLE/ COMBUSTIBLE LIQUIDS	☐ OXDIZERS	☐ CORROSIVE
☐ COMPRESSED GASES	☐ FLAMMABLE/ REACTIVE SOLIDS	☒ TOXIC/INFECTIOUS	☐ MISCELLANEOUS
		☐ RADIOACTIVE	☐ HAZARDOUS WASTE (STORED)

(C) **CHEMICAL HAZARDS OF CONTAMINANTS INFORMATION**

(1) IDENTIFIED CONTAMINANTS - Known or suspected hazardous/toxic materials (**attach historical information, physical description, map of contamination and tabulated data, if available)**

Characteristics: CA (corrosive, acid), CC (corrosive, caustic), IG (ignitable), RA (radioactive), VO (volatile), TO (toxic), RE (reactive), BIO (infectious), UN (unknown), OT (other, describe)

Media types: GW (ground water), SW (surface water), WW (wastewater), AIR (air), SG (soil, gas), SL (soil), SD (sediment), WL (waste, liquid), WS (waste, solid), WD (waste, sludge), WG (waste, gas), OT (other, describe).

SUBSTANCES INVOLVED	CHARACTERISTICS	MEDIA	ESTIMATED CONCENTRATIONS	LOWEST PEL or TLV Concentration	Units
PAHs	**TO, Carcinogen**	**SL**	**Non-detect to 16.8 mg/Kg as toxicity equivalent normalized to benzo(a)pyrene**	**0.2 (OSHA PEL; benzo(a)pyrene)**	mg/m^3
Lead	**TO**	**SL**	**Non-detect to 964 mg/Kg**	**0.15 (OSHA PEL)**	mg/m^3
Mercury	**TO**	**SL**	**Non-detect to 5.57 mg/Kg**	**10 (OSHA PEL)**	mg/m^3
Arsenic	**TO**	**SL**	**5 to 210 mg/Kg**	**100 (OSHA PEL)**	mg/m^3

(2) DESCRIBE POTENTIAL FOR CONTACT WITH EACH MEDIA TYPE FOR EACH OF THE MPI TASKS LISTED IN SEC 3 (E):

MPI TASK	ROUTE OF EXPOSURE (INHAL/INGEST/CONTACT/ABSORB)	POTENTIAL FOR CONTACT (HIGH / MEDIUM / LOW)	METHOD OF CONTROL
S1	**Contact/Absorb/Inhal**	**Low**	**PPE, engineering controls**
S2	**Contact/Absorb/Inhal**	**Low**	**PPE, engineering controls**
S3	**Contact/Absorb/Inhal**	**Low**	**PPE, engineering controls**

The Site Safety Officer will brief the field team on symptoms and signs of overexposure to chemical hazards

SECTION 6: SITE CONTROL MEASURES

(A) WORK ZONES – EXCAVATIONS, DRILLING OPERATIONS AND HEAVY EQUIPMENT

Lee Rosberg has been designated to coordinate access control and security for operations on site.

(B) WORK ZONES – CONTAMINATION

The prevailing wind conditions are Westerly. A wind direction indicator is used to determine daily wind direction. The Command Post is located from the Exclusion Zone or at sufficient distance to prevent exposure should a release occur. Control boundaries are identified by traffic cones.

NO UNAUTHORIZED PERSON SHOULD BE WITHIN THIS AREA

SECTION 7: SAFETY PROCEDURES/EQUIPMENT REQUIRED

Identify all procedures and equipment needed to eliminate or minimize exposure to hazards identified in Section 5.

☒ AIR MONITORING EQUIPMENT (Note type in see Section 9)	☒ FIRST AIDKIT	☐ EMERGENCY AIR HORN
☐ BARRIER TAPE	☐ FLOTATION DEVICE (USCG)	☒ PPE – PHYSICAL HAZARDS (see section 15)
☒ COMMUNICATIONS - ONSITE	☐ GFCI EXTENSION CORDS	☒ RESPIRATORY PROTECTION PROGRAM & EQUIPMENT (APR) (see Section 15)
☒ COMMUNICATIONS – OFFSITE (i.e. cell/digital phones if no other means)	☐ HARNESS(S) / LIFELINE(S)	☒ TRAFFIC CONES
☐ CONFINED SPACE PROGRAM & EQUIP (see Section 12)	☐ INSECT/TICK REPELLENT	☒ MSDS (Site Specific-Attach)
☐ VENTILATION EQUIPMENT	☒ SAFETY VESTS	☐ MSDS (Stone Environmental –on file at Stone)
☐ EMERGENCY SHOWERS	☐ SAFETY HARNESS - LADDER(S)	
☐ EYE WASH	☐ LIGHTIING – HANDHELD	☒ LONE WORKER: Check In protocol: call/text Dan Voisin when off-Site @ **279-8174**
☐ FALL PROTECTION PROGRAM & EQUIPMENT	☐ LIGHTING – FIXED EMERGENCY	
☒ FIRE EXTINGUISHER(S) - ABC	☐ LOCKOUT/TAGOUT PROGRAM & EQUIPMENT	☐ OTHER: _____

SECTION 8: COMMUNICATIONS AND SAFE WORK PRACTICE

(A) COMMUNICATIONS - ONSITE

Whenever possible, communications between site personnel should be face-to-face. When verbal communications is not possible, radio communications shall be established.

In case of radio communications failure, or when respiratory protection is in use, the following hand signals will be used:

OK; I AM ALL RIGHT; I UNDERSTAND	= THUMBS UP
NO; NEGATIVE	= THUMBS DOWN
NEED ASSISTANCE	= BOTH HANDS ON TOP OF HEAD
DANGER - NEED TO LEAVE AREA, NO QUESTIONS	= GRIP PARTNERS WRIST WITH BOTH HANDS
HAVING DIFFICULTY BREATHING	= HANDS TO THROAT

(B) COMMUNICATIONS – OFF SITE

If applicable, telephone communication to the Home Office should be established as soon as practical.

Telephone numbers that can be used to reach the command post are: **(802) 229-4541** and **(800) 959-9987**

(C) SAFE WORK PRACTICES

1. LONE WORKER: MUST ENSURE THAT SOMEONE KNOWS WHERE YOU ARE AND WHEN YOU ARE EXPECTED HOME. MUST HAVE MOBILE PHONE ACCESS AT ALL TIMES AND CONTACT SAFETY OFFICER OR DESIGNEE WHEN YOU ARE HOME SAFE (BY TEXTING OR CALLING).
2. A "BUDDY SYSTEM" IN WHICH ANOTHER WORKER IS CLOSE ENOUGH TO RENDER IMMEDIATE AID WILL BE IN EFFECT. CLIENTS AND/OR CONTRACTORS MAY SERVE AS A "DESIGNATED BUDDY."
3. WHERE THE EYES OR BODY MAY BE EXPOSED TO CORROSIVE MATERIALS, SUITABLE FACILITIES FOR QUICK DRENCHING OR FLUSHING SHALL BE AVAILABLE FOR IMMEDIATE USE (SEE SECTION 7).
4. IF DRILLING EQUIPMENT IS INVOLVED, HAVE A CURRENT UTILITY SURVEY, AND KNOW WHERE THE 'KILL SWITCH' IS.
5. CONTACT WITH SAMPLES, EXCAVATED MATERIALS, OR OTHER CONTAMINATED MATERIALS MUST BE MINIMIZED.
6. ALL ELECTRICAL EQUIPMENT USED IN OUTSIDE LOCATIONS, WET AREAS OR NEAR WATER MUST BE PLUGGED INTO GROUND FAULT CIRCUIT INTERRUPTER (GFCI) PROTECTED OUTLETS (SEE SECTION 7).
7. IN THE EVENT OF TREACHEROUS WEATHER-RELATED WORKING CONDITIONS (I.E., THUNDERSTORM, LIMITED VISIBILITY, EXTREME COLD OR HEAT) FIELD TASKS WILL BE SUSPENDED UNTIL CONDITIONS IMPROVE OR APPROPRIATE PROTECTION FROM THE ELEMENTS IS PROVIDED.
8. SMOKING, EATING, CHEWING GUM OR TOBACCO, OR DRINKING ARE FORBIDDEN EXCEPT IN CLEAN OR DESIGNATED AREAS.
9. USE OF CONTACT LENSES NEAR CHEMICALS OR DURING USE OF RESPIRATORY PROTECTION IS PROHIBITED AT ALL TIMES.
10. GOOD HOUSEKEEPING PRACTICES ARE TO BE MAINTAINED.
11. SITE / FACILITY SPECIFIC SAFE WORK PRACTICES: Level D (hard hat, steel toe work shoes, and high visibility vests) should be worn at all times. See Section 15 for PPE required for each task. Work will be conducted during summer months, be aware of heat stress. Drink plenty of hydrating fluids, take shade breaks as necessary, use sunscreen, and wear protective clothing to prevent heat stress. If conditions are extremely hot, consult Site Health and Safety Officer and use best judgement to decide whether it is safe to proceed with work.
12. FOLLOW ALL SITE / FACILITY H&S REQUIREMENTS-PROTECTIVE EYEWEAR AT ALL TIMES.

SECTION 9: ENVIRONMENTAL MONITORING ☐ THIS SECTION IS NOT APPLICABLE TO SITE ACTIVITIES

(A) The following environmental monitoring instruments shall be used on site at the specified intervals and recorded in the site logbook. (NOTE: If monitoring period is "OTHER", monitoring schedule will be attached to this plan.) Note Action limit for upgrade or stop work.

EQUIPMENT	MONITORING PERIOD	ACTION LEVEL
☐ Combustible Gas Indicator	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
☐ O_2 Meter	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
☐ Toxics: ☐ CO ☐ H_2S	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
☐ Other: _____	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
☒ PID (Lamp 10.6 eV)	☒ Continuous ☐ Hourly ☐ x Day ☐ Other	Stop work and consider respiratory protection if continuous readings of 5 ppm (NIOSH PEL for benzene) or greater are reached.
☐ FID		
☐ Colorimetric tubes:		
_____	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
_____	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
☐ Radiation: ☐ α ☐ β ☐ γ	☐ **x Day** ☐ Hourly ☐ x Day ☐ Other	_____

☒ Respirable Dust Meter	☒ Continuous ☐ Hourly ☐ x Day ☐ Other	71 $\mu g/m^3$ of PM-10 dust particles above Site background – See attached air monitoring plan
☐ Noise Meter	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
☐ Other:_____	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
_____	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____
_____	☐ Continuous ☐ Hourly ☐ x Day ☐ Other	_____

(B) Monitoring equipment is calibrated according to manufacturers' instructions. Record calibration data and air concentrations in the Health and Safety on-site log book.

(C) Recommended Action Levels for Upgrade or Downgrade of Respiratory Protection, or Site Shutdown and Evacuation. These are average values. Consideration should be given to the potential for release of highly toxic compounds from the waste or from reaction by-products. Levels are for persistent (> 10 min) breathing zone measurements in non-confined spaces. **For unexpected conditions, stop all work and contact Corporate Health and Safety.**

Oxygen Levels

Less than 19.5%	Level B necessary for work to start / continue. Consider toxicity potential.
19.5% to 23.5%	Work may start / continue. Investigate changes. Continuous monitoring.
Greater than 23.5%	PROHIBITED WORK CONDITION

Flammability / Explosive Hazards

Less than 10% of LEL	Work may start / continue. Consider toxicity potential.
10% to 25% of LEL	Work may start / continue. Continuous monitoring.
Greater than 25% of LEL	PROHIBITED WORK CONDITION.

Uncharacterized Airborne Organic Vapors or Gases	**See Section 9 A for actual action levels**
Background*	Work may start / continue. Continue to monitor conditions.
Up to 5 meter units (m.u. or "ppm") above background	Level C necessary for work to start / continue. Continuous monitoring. Use Colorimetric tubes to characterize vapors.
Up to 50 m.u. above background	Level B necessary for work to start / continue. Continuous monitoring.
Greater than 50 m.u.	PROHIBITED WORK CONDITION.

*** Off-site clean air measurement**

Characterized Airborne Organic Vapors or Gases**	**See Section 9 A for actual action levels**
Up to 50% of TLV, or PEL or REL >51% see next level.	Work may start / continue. Continue to monitor conditions.
Up to 25 times the TLV, or PEL or REL	Level C necessary for work to start / continue. Continuous monitoring.
Up to 500 times the TLV, or PEL or REL	Level B necessary for work to start / continue. Continuous monitoring.
Greater than 500 times the TLV, or PEL or REL	PROHIBITED WORK CONDITION.

** **Use mixture calculations (% allowed = $\sum C_N EL_N$) if more than one contaminant is present.**

Radiation

Less than 0.5 mR/Hour (500 μR)	Work may start / continue. Continue to monitor conditions.
Up to 1 mR/Hour above background	Work may start / continue with Radiation Safety Officer present on site.
Greater than 1 mR/Hour above background	PROHIBITED WORK CONDITION.

SECTION 10: PERSONAL MONITORING

☐ THIS SECTION IS NOT APPLICABLE TO SITE ACTIVITIES

(A) **PERSONAL EXPOSURE SAMPLING** (Consider if high levels of noise or high concentrations of lead, mercury or arsenic are present)

An **Air Monitoring Plan** is attached to address personal exposure of Site users and nearby occupants to lead, arsenic, and PAH contaminated soil as harmful dust drifting off site.

(B) HEAT / COLD STRESS MONITORING

The expected air temperature range will be 50-95ºF. If it is determined that heat stress or cold stress monitoring is required (mandatory for heavy exertion in PPE at temperatures over 70ºF, or at temperatures under 40ºF or wind chill equivalent), the following procedures shall be followed: The buddy system will be utilized to watch for signs of heat stress. Personnel should wear appropriate clothing, drink

plenty of water, and take shade warming breaks as necessary. If signs of heat stress are observed, move the person to a cool shady area immediately and treat appropriately. Consider rescheduled work on days of extreme heat.

SECTION 11: HAZARD COMMUNICATION PROGRAM ☒ THIS SECTION IS NOT APPLICABLE TO SITE ACTIVITIES

If chemicals are introduced to the site by Stone Environmental, Inc. (e.g., decontamination liquids, preservatives, etc.), a copy of the Stone Environmental, Inc. Hazard Communication Program and Safety Data Sheets (SDSs) of chemicals introduced by Stone Environmental, Inc. to the site is provided in the mobile facilities. The Site Safety Officer will review this information with all field personnel prior to the start of the project, and will inform other employers (e.g., Owner, Contractor and Subcontractors) the availability and location of this information. The Comprehensive List of Chemicals introduced by Stone Environmental, Inc. to this site is:

_____ _____

_____ _____

All chemicals being introduced to the site, hazardous/potentially hazardous samples prepared at the site, and/or any hazardous materials previously sent to the site, that will be stored at the site or will be transported from the site by common carrier, will be packaged, labeled and identified as hazardous materials in accordance with U.S. Department of Transportation (DOT) and/or International Air Transport Association (IATA) regulations by a trained HazMat employee. *(NOTE: At multi-employer sites, the Site Safety Officer will obtain information, if applicable, on hazardous chemicals other employers may produce or introduce to the job site to which Stone Environmental, Inc. employees may be exposed, including the location of their written hazard communication program(s), labeling program(s), and Material Safety Data Sheet(s).*

SECTION 12: CONFINED SPACE ENTRY ☒ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

If a permit-required confined space entry will be made on site, a copy of the Stone Environmental, Inc. Confined Space Entry Program, and a completed Stone Environmental, Inc. Confined Space Pre-Entry Inspection Check List will be attached to this plan. A Confined Space Entry Permit must be completed and posted outside the confined space prior to entry, and the entry will follow the Stone Environmental, Inc. Confined Space Entry written program. Permits are to be saved and logged with project documentation.
Name of Competent Person:_____

SECTION 13: EXCAVATION SAFETY ☐ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

Excavations being created in order to accomplish Stone Environmental, Inc. tasks or in progress during Stone Environmental, Inc. inspection of other activities or tasks, shall be shored or slopped or otherwise protected to prevent accidental collapse prior to entry, in accordance with Subpart F of 29 CFR 1926. It is Stone Environmental, Inc. policy that Stone Environmental, Inc. personnel will not enter trench or excavated areas without approval of Corporate Health and Safety. If an entry into an excavation by Stone Environmental, Inc. personnel is necessary, a Competent Person will be designated by the Corporate Health and Safety Officer. Excavations will not be left open overnight unless absolutely necessary.

COMPETENT PERSON	To Be Determined		
	Print Name	Signature	Date

SECTION 14: DECONTAMINATION PROCEDURES ☐ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated. The Site Safety Officer is responsible for monitoring adherence with this decontamination plan.

A 5.1. decontamination protocol shall be used with the following decontamination stations:

(1) **Trucks will drive across exit grid or stone bed to remove soil from tires. All loads of soil transported off-Site will be covered prior to exiting the Site.**

(2) _____

(3) _____

(Other) _____

The following decontamination equipment is required: _____

☐ Decon Pad (Plastic Sheet) _____ ☐ Dry Brushes ☐ Buckets Other **Exit Grid**

☐ Trash Cans/Bags ☐ Wet Brushes ☐ Hose / Spray _____

_____ Will be used as the decontamination solution

SECTION 15: PERSONAL PROTECTIVE EQUIPMENT

1 - List all that apply, i.e., FF w/ OV/AG/P

2 - Use same codes for clothing and boots of same material

TASK *	RESPIRATORS & CARTRIDGE[1]	USE ** (See Section 16)	CLOTHING	GLOVES	BOOTS	OTHER
S1	**NA**	**NA**	**N/S**	**N**	**SL**	**HH/Hi Vis/G**
S2	**HF/P**	**CONT**	**N/S**	**N/Le**	**SL**	**HH/Hi Vis/G**
S3	**NA**	**NA**	**N/S**	**N/Le**	**SL**	**HH/Hi Vis/G**

* Same as Section 3E

**UP = Upgrade
CONT = Continuous

NOTE: PPE use will be in accordance with Stone Environmental, Inc.'s Health and Safety Policy and Written Programs

CODES:

RESPIRATORS[1]	**CARTRIDGES[1]**	**CLOTHING**	**GLOVES[2]**	**BOOTS**	**OTHER**
HF = Half Face APR	P = Particulate	N/S = No Special	Co = Cotton	SL = Leather Safety	HH = Hard Hat
FF = Full Face APR	OV = Organic Vapors	C = Coveralls	Le = Leather		G = Safety Glasses
ESCBA = Escape Bottle	AG = Acid Gas	T = Tyvek	L = Latex	H = Hip (Fireman)	GP = Glare Protection
SAR = Airline	Multi = Multi-Gas/Vapor	Sx = Saranex	N = Nitrile		Gl = Goggles - Impact
SCBA = SCBA	Other	PT = PE Tyvek	B = Butyl		GS = Goggles - Splash
			Neo = Neoprene	O = Latex overboots	FS = Face Shield
			V = Viton		HP = Hearing Protection
			PVC = Polyvinyl Chloride		
			PVA = Polyvinyl Alcohol	CHM = Chemical Resistant	PFD=Personal Flotation Device
			T = Teflon		
			Other: _____		

Respiratory protection will be upgraded under the following conditions:

Consider respirators for VOCs if continuous PID readings in breathing zone are 5 ppm or greater. It is not anticipated that respirators will need to be worn. NIOSH P100 dust masks should be worn by staff working within the exclusion zone during excavation of contaminated soil until dust control measures are shown to be adequate.

The following cartridge change out schedule is to be followed onsite (attach any calculations to plan):

SECTION 17: EMERGENCY ACTION PLAN

The following standard emergency response procedures will be used by onsite personnel. The Site Safety Officer shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate procedures are followed.

(A) EVACUATION

All work activities are suspended and the site is to be EVACUATED IMMEDIATELY, when there is a threat to life or health as determined by individual good judgment, i.e. fire, hazardous chemical spill, dangerous gas leak, severe weather (i.e., tornado); or when notified by other site / facility staff and local fire or police officials.

- If an evacuation is called for, the emergency alarm system for weather-related, medical, fire and other evacuation emergencies is:
- 3 short blasts on a compressed air horn
- Evacuation from the Exclusion Zone should whenever possible occur through the decontamination line. In those situations where egress in this manner cannot occur, the following emergency escape routes have been designated (document on map if possible):

Once off site, all staff should gather at the **Village of Essex Junction Fire Station, located at 3 Pearl Street**, which is a minimum of 250 feet away from the incident.

(B) **FIRE OR EXPLOSION**

Upon discovery of a fire or an explosion, the above-designated emergency signal shall be sounded and all personnel shall assemble at the **Village of Essex Junction Fire Station, located at 3 Pearl Street**. The fire department is to be notified and all personnel moved to a safe distance (minimum 250') from the involved area.

If a person's clothing should catch fire, burning clothing may be extinguished by having the individual drop to the floor and roll. If necessary, physically restrain the person and roll them around on the floor to smother the flames. Use a fire blanket or extinguisher if one is readily available and you have been trained in its use. Call emergency medical services if not already done so.

If a person's clothing should become saturated with a chemical, douse the individual with water from the nearest safety shower if available. Consult the chemical Material Safety Data Sheets (MSDSs) for further information. Call emergency medical services if indicated by the MSDSs.

NEVER RE-ENTER THE SITE / FACILITY until the emergency has been declared over and permission to re-enter has been given by site / facility health and safety staff or local fire or police officials. If any staff is unaccounted for, notify an individual in charge.

(C) **MEDICAL EMERGENCY**

If you discover a medical emergency and are by yourself, CALL OUT FOR HELP. When someone arrives, tell them to call for help. If no one comes or you know you are alone, provide whatever care you can for 1 minute, and then make the call yourself. (See Section 2)

Upon notification of an injury the SSO or alternate should evaluate the nature of the injury and shall initiate the appropriate first aid, and contact should be made for an ambulance (and other emergency services as needed) and with the designated medical facility (if required). No persons shall reenter the Exclusion Zone until the cause of the injury or a symptom is determined.

The hospital is **10** Minutes from the site. Ambulance response time is suspected to take more than 10 minutes based on the location. If applicable, local fire and police should be briefed on the situation and the potential hazards and the substances involved. When IDLH conditions exist, arrangements should be made for onsite standby of emergency services. A map for directions to the nearest hospital is attached to this plan along with a site map.

(D) FOLLOW UP

In all situations, when an on site / facility emergency results in evacuation of the work area, or a "large spill" has occurred, staff shall not resume work until:

- The conditions resulting in the emergency have been corrected;
- The hazards reassessed by the SSO and Corporate Health and Safety;
- The HASP has been reviewed by the SSO and Corporate Health and Safety; and
- Site personnel have been briefed on any changes in the HASP by the SSO.

SECTION 18: SPILL CONTAINMENT / CONTROL ☒ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

For most chemicals introduced to the worksite, or under control of Stone Environmental, Inc. employees, spills of chemicals would be considered incidental and would be controlled in the immediate area of the spill. Such spills shall be handled utilizing precautions appropriate for the chemical

characteristics specified in the MSDS for the chemical including spill control methods and selection and use of minimum personal protective equipment.

For chemicals introduced to the worksite, or under control of Stone Environmental, Inc. employees, that would cause a "large spill" (greater than 55 gallons), a copy of the appropriate Emergency Response Guidebook (ERG) guide shall be attached to this plan, and a spill response contractor shall be identified in Section 2.

SECTION 19: EMPLOYEE ACKNOWLEDGEMENTS

PLAN REVIEWED BY:	NAME	DATE
Project Officer:	Chris Stone	
Project Manager:	Dan Voisin	
Site Safety Officer:	Lee Rosberg	
Corporate H & S	Kim Watson	

I acknowledge that I have read the information on this HASP-SF, attached Material Safety Data Sheets (MSDSs), DOT Emergency Response Guides, and Health and Safety Programs.
I understand the site / facility hazards as described and agree to comply with the contents of the plan.

EMPLOYEE (Print Name/Signature/Date)

/ / / /

/ / / /

VISITORS (Print Name/Signature/Date)

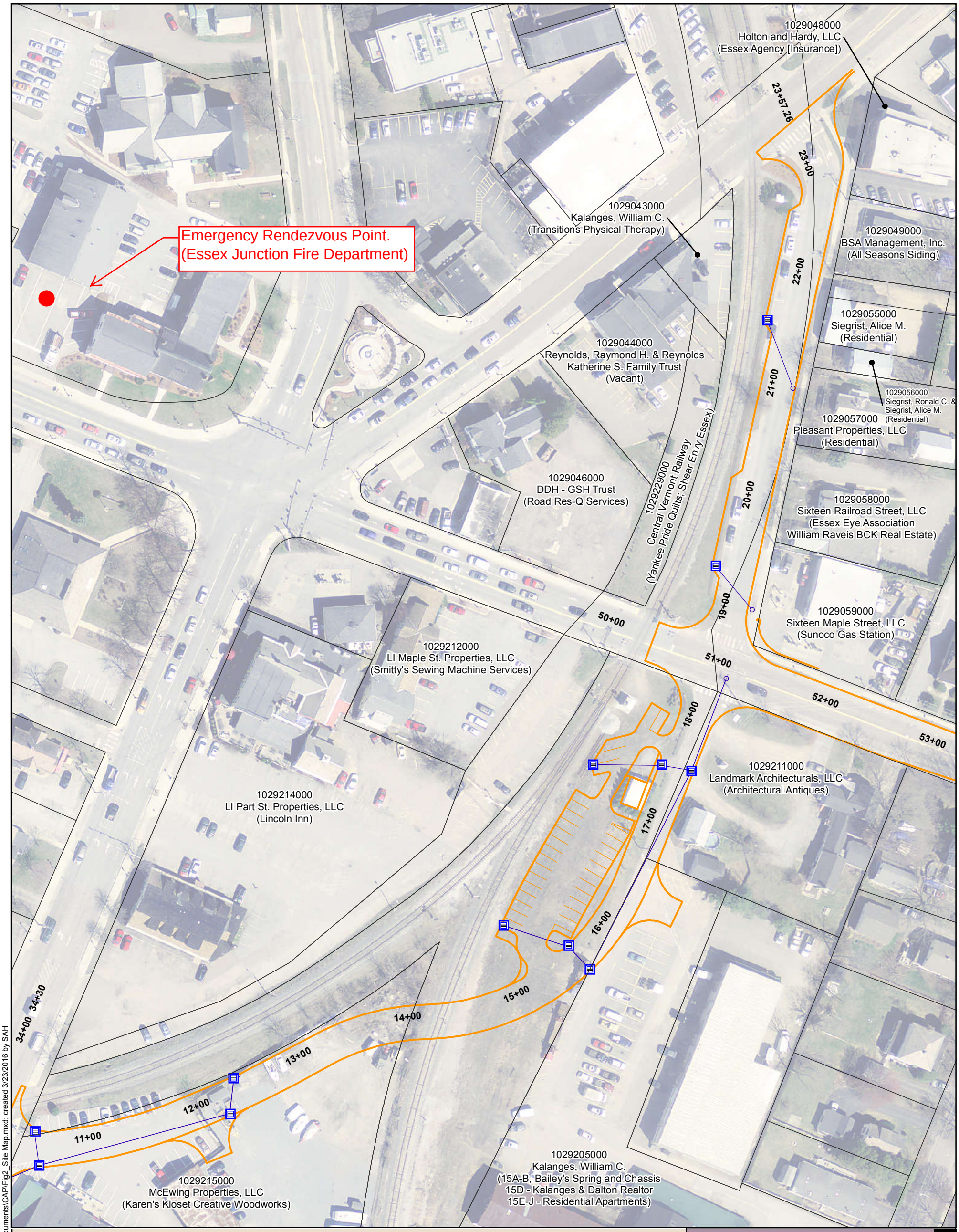
/ / / /

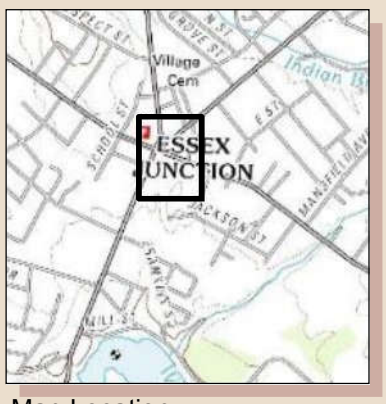
/ / / /

ATTACHED DOCUMENTS

☒ MSDS(s)	☐ Hazard Communication Written Program – if introduction of other chemicals	☐ Confined Space Entry Written Program	☐ Respiratory Protection Program
☒ Site Map	☐ Personal Protective Equipment Written Program	☐ DOT ERG Guides	☐ Activity Hazard Analysis Forms for activity risk assessment – attach.
☒ Hospital Directions	☐ Emergency Action Plan	☒ H&S Daily Site Sheet	☒ Other: **Air Monitoring Plan**

Attachment 1: Figures





Map Location

0 50 100 200 Feet

1 in = 80 ft

N

LEGEND

- Proposed Catch Basin
- Proposed Drain Line
- Proposed Crescent Connector Corridor
- Assessor's Parcel Boundaries (2015) with abutting parcel numbers and owners (occupants)
- 11+00 Waystation (D&K, 2013)

Sources. Stone Environmental: Soil Borings (2013); CCMPO: Crescent Connector (2011); Essex Assessor's Records (March 2016)
VT Center for Geogrpahic Information (VCGI): Railroads (2003); VCGI: 0.15m orthoimages (2013). VCGI: parcels (2015)

Site Map

Figure 2

Crescent Connector
Soil Management Work Plan
Essex Junction, Vermont
Prepared for Dubois & King, Inc.

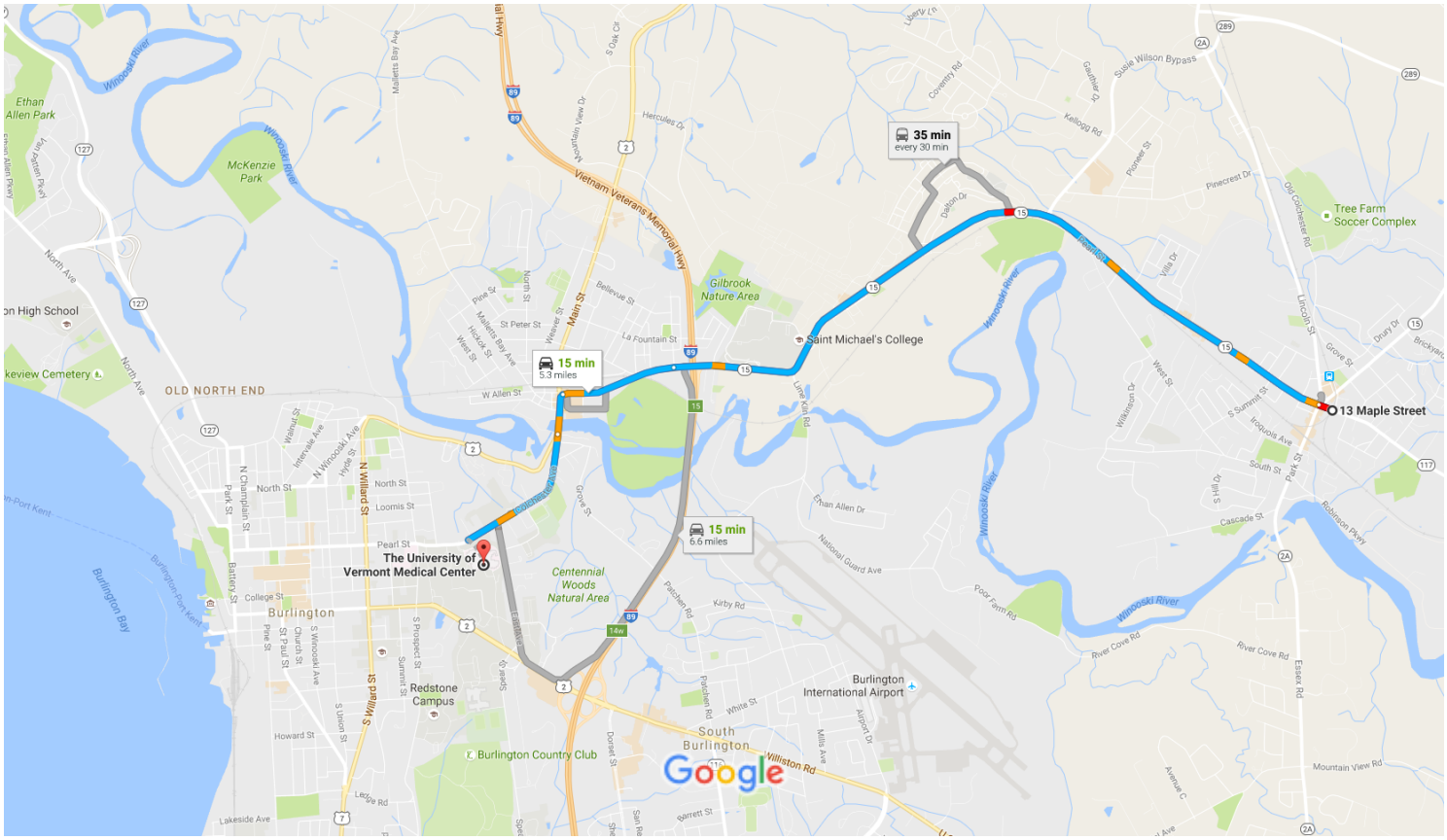
STONE ENVIRONMENTAL

O:\Proj-12\I&R\12-152 DK Essex Jtn Crescent Connector\Data\MapDocuments\CAP\Fig2_Site Map.mxd; created 3/23/2016 by SAH

Google Maps

13 Maple Street, Essex Junction, VT 05452 to The University of Vermont Medical Center

Drive 5.3 miles, 15 min



Map data ©2016 Google 2000 ft

via VT-15 W — 15 min

13 min without traffic — 5.3 miles

via VT-15 W and I-89 S — 15 min

14 min without traffic — 6.6 miles

2:27 PM—3:02 PM — 35 min

2

Daily Tailgate Form

STONE ENVIRONMENTAL INC

535 Stone Cutters Way
Montpelier, Vermont
05602 USA

Phone / 802.229.4541
Fax / 802.229.5417
Web Site / www.stone-env.com

Health and Safety – Daily Site Sheet

Project #: _____ Date: _____

Project Name: _____

Topics Covered:

_____

_____

_____

_____

_____

_____

HASP Author : Stone Environmental, Inc ☐ Other (Client) ☐

Person(s) Present

Signed: _____	Print: _____	Date: _____
Signed: _____	Print: _____	Date: _____
Signed: _____	Print: _____	Date: _____
Signed: _____	Print: _____	Date: _____
Signed: _____	Print: _____	Date: _____
Signed: _____	Print: _____	Date: _____
Signed: _____	Print: _____	Date: _____

Dust Monitoring and Abatement Plan

AIR MONITORING PLAN – CRESCENT CONNECTOR ROADWAY PROJECT

SMS # 2012-4263
ESSEX JUNCTION, VERMONT

Stone Project ID 12-152
June 10, 2016

Prepared for:
Village of Essex Junction
Robin Pierce, Community Development Director
2 Lincoln Street
Essex Junction, Vermont 05452
Tel. / 802-878-6950
E-Mail / Robin@essexjunction.org

Prepared by:
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Table of Contents

List of Tables

1. INTRODUCTION

This Air Monitoring Plan (Plan) has been prepared for the excavation and regrading of contaminated soils at the Crescent Connector roadway project in Essex Junction, Vermont (the Site; Figure 1, Appendix A). The Plan was prepared by Stone Environmental, Inc. (Stone) on behalf of the Village of Essex Junction (the Village) under contract with Dubois and King Engineers (D&K) of Randolph, Vermont. Previous environmental assessment (Stone, 2013) determined that shallow soils are impacted by arsenic, lead, mercury and polycyclic aromatic hydrocarbons (PAHs).

The Plan describes the approach for dust suppression measures and perimeter air monitoring that will be implemented during remedial excavation and Site-wide grading activities that will occur during redevelopment of the Site. Construction activities requiring dust monitoring are expected to occur over six weeks. Air monitoring as described within this Plan will cease following installation of base materials for construction of the proposed building and parking lot. The monitoring will be conducted to:

1. Determine the air quality within the work zone;
2. Minimize the potential for unacceptable levels of airborne contaminants to leave the Site during redevelopment; and
3. Implement environmental controls in the event Site specific action levels are exceeded.

1.1. Site Description

The proposed alignment of the Crescent Connector is presented on Figure 2. The general topographic setting of the Project Area is flat at an elevation of approximately 340 feet above mean sea level (ft AMSL). The nearest surface water body is Indian Brook, located approximately 1,440 feet to the northeast of the Project Area. The Project Area is part of the center of the Village of Essex Junction. The Village Center is defined by the intersections of Vermont Routes 2A (Lincoln Street – north, and Park Street – south), Vermont Route 15 (Pearl Street – west, and Main Street – northeast), and Vermont Route 117 (Maple Street – southeast). The intersection of these roadways is locally known as the Five Corners.

1.2. Site History

The vicinity of the Project Area has been in been in mixed commercial and residential use since before 1894, the earliest property-specific historic land use documentation available. A narrow band of industrial use occurs to the southeast of the Project Area. Parcels located closest to Five Corners have been predominantly commercial. Growth in the area, and development of past commercial use, was largely spurred by the rail, which were first brought to Essex Junction in the 1850s.

Later, with the advent of the automobile, commercial enterprises were focused around serving this more mobile, car-driving populace.

Trends to commercial use within the downtown corridor are consistent with the introduction of new technologies and fashions. For instance, tinsmiths and blacksmiths were common through Essex Junction area through the turn of the 20th century; however with the development of cheaper and more durable alternatives, such as plastics or aluminum, smiths became less common and were no longer found after 1940.

Beginning in approximately 1920, with the introduction of affordable automobiles, service stations, garages, and storage units for automobiles became widespread. Many of the facilities that formerly served as the support infrastructure for the horse-reliant populace were converted to support automobiles; liveries became garages, blacksmiths became service stations. It is interesting to note that there are several former gasoline

service stations and small gasoline dispensaries that no longer serve in this type of use. A prominent example is Road Res-Q, located at the intersection of Main and Maple Street, which was a former Mobil station. Other examples include 4 Central Street, 34 Park Street, and 25 Pearl Street.

1.3. Sources of Contaminants

Polycyclic aromatic hydrocarbons (PAHs) and the metals arsenic, antimony, lead, and mercury are present in shallow soils at concentrations in excess of US EPA Regional Screening Levels (RSLs), and require mitigation and/or management as part of the construction of the Crescent Connector roadway. Field screening and laboratory analysis of VOCs in soil samples collected in the Project Area indicate gasoline VOCs are not present within Project Area soils, and therefore do not present an exposure risk to future construction workers or other Project Area users.

Due to the heavy rail use of the Project Area, Stone attributes the observed contamination to emissions during the coal-burning history of the adjacent rail and maintenance performed along the rail Right of Way. The presence of metals and PAHs in Project Area soils in primarily attributed to coal ash waste and unburned coal debris. The presence of metals in Project Area soils may be attributed former maintenance activities, such as application or use of wood preservatives and insecticides along the rail corridor.

1.4. Screening Evaluation

The concentrations of the contaminants of concern (COCs; lead, arsenic, mercury, and PAHs) in shallow soil were evaluated to develop a protective air monitoring plan. Based on the 95% Upper Confidence Limits (UCLs) of each of the COCs detected during Stone's Phase II ESA (2016), the highest anticipated concentration of each COC in air was calculated by the following equation:

$$C_{air}\left(\frac{\mu g\ coc}{m^3\ \text{air}}\right) = C_{soil}\left(\frac{mg\ coc}{kg\,\text{soil}}\right) \times 10^{-6}\left(\frac{kg}{mg}\right) \times C_{sl}\left(\frac{\mu g\ soil\ [= dust]}{m^3\ \text{air}}\right)$$

Where: C_{air} = Concentration of COC in air (microgram per cubic meter [µg/m^3])

C_{soil} = Concentration of COC in soil (milligrams per kilogram [mg/kg])

C_{sl} = Concentration of dust screening level in air (µg/m^3)

The calculation was conservatively based on the assumptions that the evaluated concentration in soil would become airborne and present at the property boundary, therefore representing a "most vulnerable" scenario. In addition, the screening evaluation assumed 1) dust would be maintained below the Vermont and National Ambient Air Quality Standard (NAAQS) concentration of 150 micrograms per cubic meter (µg/m^3) for PM_{10}, which is defined as particulate matter 10 micrometer or less in diameter and 2) if calculated air concentrations exceeded regulatory criteria with a dust concentration of 150 µg/m^3, additional PM_{10} dust screening levels were evaluated. The maximum anticipated concentrations for lead, arsenic, mercury and PAHs in air are provided in Table 1, below. For PAHs, Toxicity Equivalency Concentrations (TECs), calculated for the seven carcinogenic PAHs (Stone, 2016), were used to calculate maximum anticipated air concentrations.

Table 1: Maximum Anticipated Air Concentration – Site COCs

Contaminant of Concern	Maximum 95% Upper Confidence Limit in Soil (mg/kg)	Required Concentration in Soil to Reach Air Screening Level @ PM_{10} 150 µg/m³ (mg/kg)	Calculated Maximum Detection in Air PM_{10} @ 150 for 24 hour (µg/m³)	Calculated Maximum Detection in Air PM_{10} @ 71 (µg/m³)	Regulatory Agency Air Screening Levels (µg/m³)
Lead	964	1,000	0.32	0.15	0.15 (NAAQS)
Arsenic	532	66,667	0.032	0.015	10 (OSHA PEL)
Mercury	5.57	666,667	0.001	0.00040	100 (OSHA PEL)
cPAH	16.8	1,333,333	0.0068	0.0032	*200 (OSHA PEL)

Notes:
mg/kg = Milligrams per kilogram
µg/m³ = Micrograms per cubic meter
cPAH = total carcinogenic polycyclic aromatic hydrocarbons, normalized to benzo(a)pyrene toxicity equivalent concentration (B[a]P-TEC)
* = Coal tar Pitch Volatiles (benzene soluble fraction) OSHA PEL
NAAQS = National ambient air quality standard
PM_{10} = particulate matter greater than 10 micrometers
OSHA PEL = Occupational Safety and Health Administration permissible Exposure Limit

The calculated air concentrations of COCs were compared to available screening levels, which, for lead, include both Vermont and National Ambient Air Quality Standards (NAAQS). PAH, mercury, and arsenic screening levels have not been established by Vermont or within the NAAQS. The Vermont and NAAQS screening level for Particulate Matter PM_{10}, which is based on a 24-hour time weighted average (TWA), was used for comparison with calculated air concentrations for these COCs. Concentrations were also compared to Occupational Safety and Health Administration permissible Exposure Limits (OSHA PELSs), which are based on an 8-hour TWA.

Calculated maximum air concentrations, assuming a PM_{10} concentration of 150 µg/m³, are approximately equivalent to regulatory criteria for lead. Total arsenic and carcinogenic PAHs, normalized to a benzo(a)pyrene toxicity equivalent concentrations, are several orders of magnitude lower than OSHA PELs, assuming a PM_{10} concentration of 150 µg/m³.

PM_{10} concentrations lower than the NAAQS standards were evaluated to determine an appropriate Site-specific screening level that would be protective of Site workers and neighboring site users from lead. Assuming a PM_{10} concentration of 71 µg/m³, calculated maximum air concentrations for lead is marginally below the NAAQS criteria.

Based on these calculations, air monitoring for lead would not be required as long as perimeter and working zone PM_{10} air concentrations do not exceed 71 µg/m³, as this would be protective of Site worker health and nearby off-Site receptors. Adjoining properties are depicted on Figure 2. On-Site lead monitoring would be conducted if perimeter and/or working zone dust concentrations exceed 71 µg/m³.

2. DUST SUPPRESSION

Dust suppression measures will be implemented during the course of all work that disturbs or leaves exposed contaminated soil to minimize the generation and potential movement of fugitive dust off-Site. Dust suppression measures that will be implemented as part of this Plan include:

- Water exposed areas that have been disturbed at least twice daily to prevent visible dust emissions, except when rain provides adequate moisture content to prevent visible dust emissions.
- Water all unpaved access roads, parking areas, and staging area three times daily, except when rain provides adequate moisture content to prevent visible dust emissions. The rate of application will depend on conditions such as work activity and weather.
- Limit traffic speeds on unpaved roads to 15 miles per hour
- Cover and protect all loose stockpiled construction materials that are not being actively used (including clean soil) with wattles, polyethylene sheeting, or other appropriate covering against rain and wind. Active use is defined as materials that are scheduled for use within 14 days.
- Limit the track-out of dust. The contractor will control vehicle traffic such that all vehicles exiting the Site will travel across an exit grid, consisting of a sufficient length bed of 6-inch gravel or structural steel grid. The exit grid will shake and flex vehicle tires, dislodging rocks, soil, and debris from tire treads. Stone field staff will monitor compliance and effectiveness of the exit grid throughout the project and take appropriate action to address issues with track-out as they arise. Wet-sweep public streets daily if visible soil material is tracked off the Site.
- Cover truck beds with tarps once filled with contaminated soils.
- In the event of high wind conditions, conduct additional dust suppression methods, such as increasing watering frequency or applying calcium chloride. A high wind condition is defined as 25 mile per hour (mph) winds sustained for at least 5 minutes in any 1 hour period, as measured by an anemometer with a minimum resolution of 1.0 mph.
    - Suspend work if high wind conditions occur during excavation or grading activities and additional dust suppression methods are not successful at controlling dust below Site action levels as defined in Section 7 of this document.
- Perform air monitoring as described within this plan.

The active work areas of the Site will be designated as Exclusion Zones during the periods when contaminated soils are being excavated, handled, loaded, and transported from Site. Access to the Exclusion Zone will be controlled by the general contractor with guidance from Stone. No unauthorized personnel shall be within the Exclusion Zone.

3. PERIMETER AND WORKING ZONE AIR MONITORING METHODS

Air monitoring will be performed to determine and document that excavation and grading operations do not generate dust particles above action levels at the Site property boundaries (Figure 2). In the event that dust concentrations exceed the action level, onsite activities will be temporarily suspended so that additional dust mitigation measures can be performed. Visual monitoring for dust generation will be performed in addition to the permanent air-monitoring stations, described below, as a means to evaluate the effectiveness of dust suppression measures. If dust is visible in a localized area, suppression methods will be immediately implemented. Perimeter and work zone dust monitors will be then be checked for action level exceedances and additional engineering controls will be evaluated.

3.1. Monitoring Equipment and Methods

Real-time particulate air monitors (e.g. TSI Dust Trak 8532 or equivalent) equipped with an omni-directional air intake device and a PM_{10} impactor head will be used at the Site to monitor dust levels at the Site boundaries and within the area of disturbance during excavation and regrading activities of contaminated soils. Real-time PM_{10} concentrations will be collected continuously during normal working hours (7:00 AM to 5:00 PM). Data will be monitored by Stone using real-time using telemetry and recorded digitally.

Real-time dust monitoring may not be conducted during inclement weather conditions, including heavy rain or fog, as these conditions interfere with the functionality of the instrument and may cause damage. Precipitation will reduce the potential for the dust generation, so work may proceed under these conditions, even if monitors cannot be operated. During these periods of operation, visual observations will be used to determine if dust emissions are being generated that require suppression measures.

Wind speed and direction, precipitation, and temperature will be monitored using an on-Site weather station (ONSET HOBO U30-NRC, or equivalent). Stone proposes to setup the weather station adjacent the railroad shed on Railroad Street approximately in the middle of the Project Area (Figure 2). The actual weather station location will be dependent on construction activities and will be placed as to not impede construction. Wind speed and direction will be monitored using an anemometer and wind vane, respectively. Wind data will be recorded at five minute intervals. Weather station data will be transmitted to Stone directly using telemetry and recorded digitally.

3.2. Monitoring Locations

Three tripod mounted dust monitors will be setup around the Site perimeter, two on the downwind and one on the upwind side of the Site, as determined by a wind direction indicator at the start of each work day. Stone presumes the prevalent wind direction at the Site is westerly. Based on this scenario, dust monitors will be deployed as depicted on Figure 2, but will be stationed in locations specific to a day's activities and depend on daily wind conditions. Measured upwind concentration will be subtracted from downwind concentration to determine the net ground level (NGL) concentration. The NGL will be compared with the target air concentration (71 $\mu g/m^3$). Background dust concentrations will be measured using the monitor at the beginning of each day prior to the initiation of any work activities. The background value will be noted on the daily logbook and used to determine whether dust concentrations require additional actions.

One tripod mounted dust monitor will be setup within a minimum of twenty five feet of the active work zone to monitor potential COC exposure to Site workers.

4. PERSONAL AIR MONITORING

Personal air monitoring will only be conducted in the event working zone or perimeter dust monitors detect PM_{10} dust at or above the target air concentration (71 µg/m^3) for fifteen consecutive minutes. If this Site action limit is reached, personal air-sampling devices will be worn by select field personnel to evaluate lead levels within the Site worker breathing zone.

4.1. Monitoring Equipment and Methods

Low-flow portable air-sampling pumps (GilAir5 or equivalent) will be fitted with a filter cassette collection device and will be worn during the Site work by one representative of the onsite work force. Sample pump air flow rates will range between 1 to 4 liters/minute. The filter cassette is a 37-mm, mixed cellulose ester (MCE). The personnel selected to wear the personal air sampling device will be selected by Stone based on the work task they perform and proximity to excavation or grading activities. The most likely candidate is a laborer who is working within excavations. One air sample will be collected in the worker's breathing zone for an 8-hour duration.

All samples will be submitted to Con-Test Analytical laboratory of East Longmeadow, Massachusetts, for laboratory analysis of lead by National institute for Occupational Safety and Health (NIOSH) Method 7303.

If lead is present within the initial personal air sample, the need for respiratory protection for Site workers, additional personal monitoring, and off-Site air monitoring will be evaluated. Respiratory protection, if deemed necessary, would include the use of half-face mask air-purifying respirators equipped with NIOSH approved P-100 (filters at least 99.97% of airborne particles) cartridges. Individuals performing work within the exclusion zone may make their own determination whether respiratory protection measures beyond those described within this plan are desired.

6. QUALITY ASSURANCE/QUALITY CONTROL

6.1. Documentation and Records

Thorough documentation of project activities will be conducted during this monitoring effort. The main areas of documentation are field log notebooks, electronic monitoring data downloads, and inspection forms (Appendix B). Any corrective actions must be documented. Corrective actions may include, but not be limited to, monitoring equipment repairs or calibrations and alterations to dust suppression techniques. Photographs will be taken daily to document the construction activities occurring at the Site.

Field operation records include field logbooks, operator checklists, and maintenance logbooks. Monitoring data include all air monitoring readings collected through the duration of the project. These records will be submitted to the Vermont Department of Environmental Conservation (VT DEC) as part of the Remedial Action Report prepared at the conclusion of the project.

6.1.1. Quality Control

Stone will maintain a file of Site information that will include visit logs, air monitoring equipment calibration data, and a maintenance log. Copies of this documentation will be retained in the project files. The air monitors and weather station will be inspected and calibrated in accordance with the manufacturer's recommendations. Specific tasks for periodic testing, inspection, and maintenance are required for the air monitoring equipment to provide sufficient quality control to remain within the manufacturer's operating specifications, and ensure that the project air monitoring goals are met. The maintenance tasks for each type of equipment are summarized below as recommended by the manufacturer.

- TSI Dust Trak 8532 – The impactor head will be cleaned and a zero check will be performed daily before use. The inlet will be cleaned and internal filters replaced at least every 350 hours (based on a concentration of 1 mg/m^3) or as needed.
- Weather Station Maintenance – The weather station does not require calibration according to the equipment manufacturer (Davis Instruments). However, Stone field staff will inspect and the weather station daily to ensure the weather station remains operable. Field personnel will visually correlate the reported wind direction to a wind sock installed adjacent to the weather station. A north/south demarcation will be added to the stand to assist field personnel in evaluating wind direction and will be recorded using a similar quadrant method used by the weather station (i.e., north, northeast, east, southeast, south, southwest, west, and northwest).
- GilAir Sampling Pumps – The flow of the samplers will be calibrated each day samples are collected. Calibration will be conducted with a Bios Defender flow meter. Other maintenance will be conducted as-needed in accordance with manufacturer specifications.

7. SITE ACTION LEVELS

Table 2, below, presents air monitoring action levels and the appropriate response that will be followed during excavation and grading of contaminated soils.

Table 2: Crescent Connector Air Monitoring Action Levels

Type	Measurement	Action
Visible	Empirical	If dust is visible in a localized area, suppression methods will be immediately implemented. Perimeter and work zone dust monitors will be then be checked for action level exceedances. Evaluate additional engineering controls.
PM_{10}	Dust readings measured above background at the downwind property boundary or work zone > 71 µg/m3 (TWA 15 minutes)	Cease operations. Identify/mitigate emission source originating from Site.
		Assess need for more frequent wetting of exposed areas and access roads and/or additional dust suppression methods.
		Collect personal air monitoring sample
	Dust readings measured above background at the downwind property boundary or work zone > 150 µg/m^3 (TWA 15 minutes)	Cease operations. Identify/mitigate emission source originating from Site.
		Assess need for more frequent wetting of exposed areas and access roads and/or additional dust suppression methods.
Personal Monitoring	8-hour TWA lead in air sample (breathing zone)	Assess need for Site worker respiratory protection and additional personal monitoring.
Wind Speed	Wind speed > 25 mph sustained for 5 minutes	Conduct additional dust suppression (e.g. wetting).
		Cease operations if dust readings measured above background at the downwind property boundary or work zone > 150 µg/m^3 (TWA 15 minutes) with additional dust suppression measures.

Notes:
Based on net ground level concentration (downwind – upwind)
µg/m^3 = Micrograms per cubic meter
PM_{10} = Particulate matter greater than 10 micrometers
mph = miles per hour

8. LIST OF ACRONYMS

µg: microgram
µg/m^3: microgram per cubic meter
B[a]P-TEC: Benzo[a]pyrene toxicity equivalent concetration
C_{air}: Concentration of COC in air (microgram per cubic meter [µg/m^3])
Cs_{oil}: Concentration of COC in soil (milligrams per kilogram [mg/kg])
C_{sl}: Concentration of dust screening level in air (µg/m^3)
COC: Contaminant of concern
cPAH: Carcinogenic polycyclic aromatic hydrocarbon
CVOC: Chlorinated volatile organic compound
EPA: united States Environmental Protection Agency
ESA: Environmental Site Assessment
ITRC: Interstate Technology Regulatory Council
MCE: Mixed cellulose ester
mg/m^3: milligram per cubic meter
mm: millimeter
mph: miles per hour
NAAQS: National Ambient Air Quality Standards
NELAP: National Environmental Laboratory Accreditation Program
NIOSH: National institute for Occupational Safety and Health
OSHA: Occupational Safety and Health Administration
PAH: Polycyclic aromatic hydrocarbon
PEL: Permissible exposure limit
PM_{10}: Particulate matter greater than 10 micrometers
TWA: Time weighted average
UCL: Upper confidence limit
VT DEC: Vermont Department of Environmental Conservation

9. REFERENCES

Massachusetts Department of Environmental Protection, 2002. *Technical Update, Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil*, Office of Research and Standards, May 2002.

Stone, November 21, 2013, *Phase II Environmental Site Assessment of the Crescent Connector, SMS#2012-4263, Essex Junction, Vermont.*

APPENDICES

APPENDIX A: FIGURES

1029048000
Holton and Hardy, LLC
(Essex Agency [Insurance])

1029043000
Kalanges, William C.
(Transition's Physical Therapy)

1029049000
BSA Management, Inc.
(All Seasons Siding)

1029055000
Siegrist, Alice M.
(Residential)

1029044000
Reynolds, Raymond H. & Reynolds
Katherine S. Family Trust
(Vacant)

1029056000
Siegrist, Ronald C. &
Siegrist, Alice M.
(Residential)

1029057000
Pleasant Properties, LLC
(Residential)

1029046000
DDH - GSH Trust
(Road Res-Q Services)

1029229000
Central Vermont Railway
(Yankee Pride Quilts; Shear Envy Essex)

1029058000
Sixteen Railroad Street, LLC
(Essex Eye Association
William Raveis BCK Real Estate)

1029059000
Sixteen Maple Street, LLC
(Sunoco Gas Station)

1029212000
LI Maple St. Properties, LLC
(Smitty's Sewing Machine Services)

1029214000
LI Park St. Properties, LLC
(Lincoln Inn)

1029211000
Landmark Architecturals, LLC
(Architectural Antiques)

1029215000
McEwing Properties, LLC
(Karen's Kloset Creative Woodworks)

1029205000
Kalanges, William C.
(15A-B, Bailey's Spring and Chassis
15D - Kalanges & Dalton Realtor
15E-J - Residential Apartments)

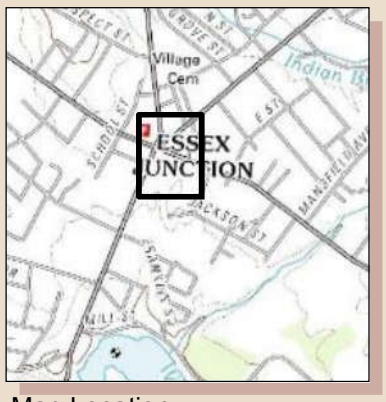
Presumed downwind

Presumed upwind area

Presumed downwind

Presumed downwind

23+57.26
23+00
22+00
21+00
20+00
19+00
18+00
17+00
16+00
15+00
14+00
13+00
12+00
11+00
50+00
51+00
53+00
34+00
34+30



Map Location

0 50 100 200 Feet

1 in = 80 ft

N

LEGEND

- Proposed Catch Basin
- Air Monitoring Station
- Proposed Drain Line
- Weather Station
- Proposed Crescent Connector Corridor
- Assessor's Parcel Boundaries (2015) with abutting parcel numbers and owners (occupants)
- 11+00 Waystation (D&K, 2013)

Sources. Stone Environmental: Soil Borings (2013); CCMPO: Crescent Connector (2011); Essex Assessor's Records (March 2016)
VT Center for Geogrpahic Information (VCGI): Railroads (2003); VCGI: 0.15m orthoimages (2013). VCGI: parcels (2015)

Site Map

Figure 2

Crescent Connector
Soil Management Work Plan
Essex Junction, Vermont
Prepared for Dubois & King, Inc.

STONE ENVIRONMENTAL

O:\Proj-12\I&R\12-152 DK Essex Jtn Crescent Connector\Data\MapDocuments\CAP\Fig2_Site Map.mxd: created 3/23/2016 by SAH

APPENDIX B: INSPECTION FORMS

STONE ENVIRONMENTAL INC

Dust Monitoring Log

Project Title		Location			
Client		SEI Study #			
Project Manager		Personnel			
Upwind Dust Monitor Model/SN		Downwind Dust Monitor Model/SNs		Location ID:	
				Location ID:	
		Work Zone Dust Monitor Model/SNs		Location ID	

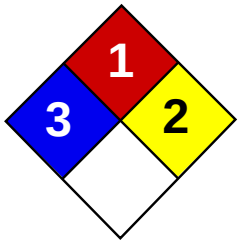
Date/Time	Dust Monitoring Location ID	Dust Concentration (mg/m^3)	Comments	Initials

Weather Observation Log

Project Title		Location	
Client		SEI Study #	
Project Manager		Personnel	

Date/Time	Temperature (°F)	Wind Speed (mph)	Wind Direction	Rainfall (inches)	General Conditions (Sunny, Cloudy, etc.)	Initials

Material Safety Data Sheets (MSDS)



Health	3
Fire	1
Reactivity	2
Personal Protection	E

Material Safety Data Sheet
Arsenic MSDS

Section 1: Chemical Product and Company Identification

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Arsenic	7440-38-2	100

Toxicological Data on Ingredients: Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat, of oxidizing materials.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: Not available.

Melting Point: Sublimation temperature: 615°C (1139°F)

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 145 mg/kg [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs: kidneys, lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R22- Harmful if swallowed. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

Created: 10/09/2005 04:16 PM

Last Updated: 05/21/2013 12:00 PM

Material Safety Data Sheet

Benzo[a]pyrene, 98%

MSDS# 37175

Section 1 - Chemical Product and Company Identification

MSDS Name:	Benzo[a]pyrene, 98%
Catalog Numbers:	AC105600000, AC105600010, AC105601000, AC377200000, AC377200010, AC377201000 AC377201000
Synonyms:	3,4-Benzopyrene; 3,4-Benzpyrene; Benzo[def]chrysene.

Company Identification:	Acros Organics BVBA Janssen Pharmaceuticalaan 3a 2440 Geel, Belgium
Company Identification: (USA)	Acros Organics One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	800-ACROS-01
For information in Europe, call:	+32 14 57 52 11
Emergency Number, Europe:	+32 14 57 52 99
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300
CHEMTREC Phone Number, Europe:	703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#:	50-32-8
Chemical Name:	Benzo[a]pyrene
%:	>96
EINECS#:	200-028-5

Hazard Symbols: T N

Risk Phrases: 45 46 60 61 43 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Danger! May cause allergic skin reaction. Cancer hazard. May cause harm to the unborn child. May impair fertility. May cause eye, skin, and respiratory tract irritation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause heritable genetic damage. Target Organs: Reproductive system, skin.

Potential Health Effects

Eye:	May cause eye irritation.
Skin:	May cause skin irritation. May be harmful if absorbed through the skin. May cause an allergic reaction in certain individuals.
Ingestion:	May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.
Inhalation:	May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. May be harmful if inhaled.

Chronic: May cause cancer in humans. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Autoignition Temperature: Not available.

Flash Point: Not available

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: 2; flammability: 0; instability: 0;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Benzo[a]pyrene	0.2 mg/m3 TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m3 TWA	0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Benzo[a]pyrene: 0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches)

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Personal Protective Equipment

Eyes:	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin:	Wear appropriate protective gloves to prevent skin exposure.
Clothing:	Wear appropriate protective clothing to prevent skin exposure.
Respirators:	A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State:	Powder
Color:	yellow to brown
Odor:	faint aromatic odor
pH:	Not available
Vapor Pressure:	Not available
Vapor Density:	Not available
Evaporation Rate:	Not available
Viscosity:	Not available
Boiling Point:	495 deg C @ 760 mm Hg (923.00°F)
Freezing/Melting Point:	175 - 179 deg C
Decomposition Temperature:	Not available
Solubility in water:	1.60x10-3 mg/l @25°C
Specific Gravity/Density:	
Molecular Formula:	C20H12
Molecular Weight:	252.31

Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Dust generation.
Incompatibilities with Other Materials	Strong oxidizing agents.
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide.
Hazardous Polymerization	Has not been reported.

Section 11 - Toxicological Information

RTECS#:	CAS# 50-32-8: DJ3675000
LD50/LC50:	RTECS: Not available.
Carcinogenicity:	Benzo[a]pyrene - ACGIH: A1 - Confirmed Human Carcinogen (Coal tar pitches). California: carcinogen, initial date 7/1/87 NTP: Suspect carcinogen IARC: Group 1 carcinogen
Other:	The toxicological properties have not been fully investigated.

Section 12 - Ecological Information

Not available

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOL (Benzo{a} pyrene)
Hazard Class: 9
UN Number: UN3077
Packing Group: III
Canada TDG
Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

USA RQ: CAS# 50-32-8: 1 lb final RQ; 0.454 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T N

Risk Phrases:

R 45 May cause cancer.

R 46 May cause heritable genetic damage.

R 61 May cause harm to the unborn child.

R 43 May cause sensitization by skin contact.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R 60 May impair fertility.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 50-32-8: Not available

Canada

CAS# 50-32-8 is listed on Canada's DSL List

Canadian WHMIS Classifications: D2A, D2B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 50-32-8 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 50-32-8 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 9/02/1997

Revision #8 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

Fisher Scientific

Part of Thermo Fisher Scientific

SAFETY DATA SHEET

Revision Date 10-Feb-2015 **Revision Number** 1

1. Identification

Product Name **Benzo[a]pyrene, 98%**

Cat No. : **AC105600010; AC105601000**

Synonyms Benzo[def]chrysene.; 3,4-Benzopyrene; 3,4-Benzpyrene

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1A
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1A

Label Elements

Signal Word
Danger

Hazard Statements
May cause an allergic skin reaction
May cause genetic defects
May cause cancer
May damage fertility or the unborn child

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Response
IF exposed or concerned: Get medical attention/advice
Skin
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects

3. Composition / information on ingredients

Component	CAS-No	Weight %
Benzo[a]pyrene	50-32-8	> 96

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes.

Inhalation Move to fresh air.

Ingestion Do not induce vomiting.

Most important symptoms/effects May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point
Method - No information available

Autoignition Temperature No information available
Explosion Limits

Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
None known
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	0	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment.
Environmental Precautions	See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.
Methods for Containment and Clean Up	No information available.

7. Handling and storage

Handling	Ensure adequate ventilation.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Benzo[a]pyrene		TWA: 0.2 mg/m^3	

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Benzo[a]pyrene	TWA: 0.005 mg/m^3		TWA:

Legend

OSHA - Occupational Safety and Health Administration

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	Dark yellow
Odor	aromatic
Odor Threshold	No information available
pH	
Melting Point/Range	175 179 °C
Boiling Point/Range	°C @ 760 mmHg
Flash Point	
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	No information available
Relative Density	No information available
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C20H12
Molecular Weight	252.31

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products None under normal use conditions

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Benzo[a]pyrene	50-32-8	Group 1	Reasonably Anticipated	A2	X	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Endocrine Disruptor Information No information available

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benzo[a]pyrene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Do not empty into drains.

Persistence and Degradability No information available
Bioaccumulation/ Accumulation No information available.

Mobility No information available.

Component	log Pow
Benzo[a]pyrene	6.06

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Benzo[a]pyrene - 50-32-8	U022	-

14. Transport information

DOT
UN-No UN3077
Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE,SOLID, N.O.S.
Hazard Class 9
Packing Group III

TDG
UN-No UN3077
Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE,SOLID, N.O.S.
Hazard Class 9
Packing Group III

IATA
UN-No UN3077
Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE,SOLID, N.O.S.
Hazard Class 9
Packing Group III

IMDG/IMO
UN-No UN3077

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE,SOLID, N.O.S.
Hazard Class	9
Packing Group	III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Benzo[a]pyrene	X	X	-	200-028-5	-		X	-	-	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Benzo[a]pyrene	50-32-8	> 96	0.1

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benzo[a]pyrene	-	-	X	X

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
Not applicable

Component	Hazardous Substances RQs	CERCLA EHS RQs
Benzo[a]pyrene	1 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Benzo[a]pyrene	50-32-8	Carcinogen	0.06 µg/day	Carcinogen

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benzo[a]pyrene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class D2A Very toxic materials

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 10-Feb-2015
Print Date 10-Feb-2015
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer
The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS

MSDS SUMMARY SHEET

Manufacturer:
Name: PHILLIPS PETROLEUM COMPANY
Address 1:
Address 2:
Address 3:
CSZ: BARTLESVILLE **State:** OK **Zipcode:** 74004
Emergency phone: (800) 424-9300
Business phone: 800-762-0942

Product:

Ferndale MSDS#: 1354 **Version # :** 6
Manufacturer MSDS#: 0041
Current? : 2002
Name:

NO. 2 DIESEL FUEL

Synonyms:

CARB **Diesel** TF3
CARB **Diesel**
CARB **Diesel** 10%
Diesel Fuel Oil
EPA Low Sulfur **Diesel** Fuel
EPA Low Sulfur **Diesel** Fuel – Dyed
EPA Off Road High Sulfur **Diesel –** Dyed
Fuel Oil No. 2 – CAS # 68476-30-2
No. 2 **Diesel** Fuel Oil
No. 2 Fuel Oil – Non Hiway – Dyed
No. 2 High Sulfur **Diesel** – Dyed
No. 2 Low Sulfur **Diesel** - Dyed
No. 2 Low Sulfur **Diesel** - Undyed
Crude column 3rd IR
Crude column 3rd side cut
Atmospheric tower 3rd side cut
Ultra Low Sulfur **Diesel** No. 2
Finished **Diesel**
DHT Reactor Feed
Straight Run **Diesel**
Diesel
Middle Distillate

Product/Catalog Numbers:
MSDS Date: 01/01/2002 **(received:** 01/14/2002**)**

NFPA codes:
Health: 0 **Flammability:** 2 **Reactivity:** 0

MATERIAL SAFETY DATA SHEET
No. 2 Diesel Fuel

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: No. 2 Diesel Fuel
Product Code: Multiple
SAP Code:
Synonyms: 1354
CARB Diesel TF3
CARB Diesel
CARB Diesel 10%
Diesel Fuel Oil
EPA Low Sulfur Diesel Fuel
EPA Low Sulfur Diesel Fuel – Dyed
EPA Off Road High Sulfur Diesel – Dyed
Fuel Oil No. 2 – CAS # 68476-30-2
No. 2 Diesel Fuel Oil
No. 2 Fuel Oil – Non Hiway – Dyed
No. 2 High Sulfur Diesel – Dyed
No. 2 Low Sulfur Diesel - Dyed
No. 2 Low Sulfur Diesel – Undyed
No. 2 Ultra Low Sulfur Diesel – Dyed
No. 2 Ultra Low Sulfur Diesel - Undyed
Intended Use: Fuel
Chemical Family:
Responsible Party: Phillip's Petroleum Company
Bartlesville, Oklahoma 74004
For Additional MSDSs: 800-762-0942
Technical Information:

The intended use of this product is indicated above. If any additional use is known, please contact us at the Technical Information number listed.

EMERGENCY OVERVIEW

24 Hour Emergency Telephone Numbers:
Spill, Leak, Fire or Accident
Call CHEMTREC
North America: (800) 424-9300
Others: (703) 527-3887 (collect)

California Poison Control System: 800-356-3120

Health Hazards/Precautionary Measures: Causes severe skin irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

Physical Hazards/Precautionary Measures: Flammable liquid and vapor. Keep away from heat, sparks, flames, static electricity or other sources of ignition.

Appearance: Straw-colored to dyed red
Physical Form: Liquid
Odor: Characteristic petroleum

HFPA Hazard Class:
Health: 0 (Least)
Flammability: 2 (Moderate)
Reactivity: 0 (Least)

HMIS Hazard Class
Not Evaluated

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS	% VOLUME	EXPOSURE GUIDELINE		
		Limits	Agency	Type
Diesel Fuel No. 2 CAS# 68476-34-6	100	100* mg/m3	ACGIH	TWA-SKIN
Naphthalene CAS# 91-20-3	<1	10ppm	ACGIH	TWA
		15ppm	ACGIH	STEL
		10ppm	OSHA	TWA
		250ppm	NIOSH	IDLH

All components are listed on the TSCA inventory

Tosco Low Sulfur No. 2 Diesel meets the specifications of 40 CFR 60.41 for low sulfur diesel fuel.

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

*Proposed ACGIH (1999)

3. HAZARDS IDENTIFICATION

Potential Health Effects:

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Severe skin irritant. Contact may cause redness, itching, burning, and severe skin damage. Prolonged or repeated contact can worsen irritation by causing drying and cracking of the skin, leading to dermatitis (inflammation). Not actually toxic by skin absorption, but prolonged or repeated skin contact may be harmful (see Section 11).

Inhalation (Breathing): No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.

Ingestion (Swallowing): Low degree of toxicity by ingestion. ASPIRATION HAZARD – This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Signs and Symptoms: Effects of overexposure may include irritation of the nose and throat, irritation of the digestive tract, nausea, diarrhea and transient excitation followed by signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

Cancer: Possible skin cancer hazard (see Sections 11 and 14).

Target Organs: There is limited evidence from animal studies that overexposure may cause injury to the kidney (see Section 11).

Developmental: Inadequate data available for this material.

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders and kidney disorders.

4. FIRST AID MEASURES

Eye: If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

Skin: Immediately remove contaminated shoes, clothing, and constrictive jewelry and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek immediate medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops, seek immediate medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): Aspiration hazard; Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

5. FIRE FIGHTING MEASURES

Flammable Properties:

Flash Point: >125°F/>52°
OSHA Flammability Class: Combustible liquid
LEL %: 0.3 / UEL %; 10.0
Autoignition Temperature: 500°F/260°C

Unusual Fire & Explosion Hazards: This material is flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk.

Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

6. ACCIDENTAL RELEASE MEASURES

Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof equipment is recommended.

Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Use foam on spills to minimize vapors (see Section 5). Spilled material may be absorbed into an appropriate material.

Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

7. HANDLING AND STORAGE

Handling: Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharged. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such ASTM D-4276 and 29CFR 1910.146. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8).

Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames. Use good personal hygiene practices.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing or high pressure hydraulic oil equipment.

“Empty” containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. “Empty” drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSIZ49.1 and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area “No Smoking or Open Flame.” Store only in approved containers. Keep away from incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentration below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used (see appropriate electrical codes).

Personal Protective Equipment (PPE):

Respiratory: A NIOSH certified air purifying respirator with an organic vapor cartridge maybe used under conditions where airborne concentrations are expected to exceed exposure limits (see Section 2).

Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a positive pressure air supplied respirator if there is a potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrants a respirator's use.

Skin: The use of gloves impervious to the specific material handled is advised to prevent skin contact, possible irritation and skin damage (see glove manufacturer literature for information on permeability). Depending on conditions of use, apron and/or arm covers may be necessary.

Eyes/Face: Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.

Other Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. It is recommended that impervious clothing be worn when skin contact is possible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1atm).

Appearance: Straw-colored to dyed red
Physical State: Liquid
Odor: Characteristic petroleum
pH: unavailable
Vapor Pressure (mm Hg): 0.40
Vapor Densisty (air=1):>3
Boiling Point/Range: 320-700°F /160-371°C
Freezing/Melting Point: No Data
Solubility in Water: Negligible
Specific Gravity: 0.81-0.88 @ 60°F
Percent Volatile: Negligible
Evaporation Rate (nBuAc=1): <1
Viscosity: 32.6-40.0 SUS @ 100°F
Bulk Density: 7.08 lbs/gal
Flash Point: >125°F / >52°C
Flammable/Expolsive Limits (%): LEL: 0.3 / UEL: 10.0

10. STABILITY AND REACTIVITY

Stability: Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Flammable liquid and vapor. Vapor can cause flash fire.

Conditions To Avoid: Avoid all possible sources of ignition (see Sections 5 and 7).

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite, calcium hypochlorite, etc.

Hazardous Decomposition Products: The use of hydrocarbon fuels in an area without adequate ventilation may result in hazardous levels of combustion products (e.g., oxides of carbon, sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels. ACGIH has included a TLV of 0.05 mg/m3 TWA for diesel exhaust particulate on its 1999 Notice of Intended Changes. See Section 11 for additional information on hazards of engine exhaust.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Diesel Fuel No. 2 (CAS# 68476-34-6)

Carcinogenicity: Chronic dermal application of certain middle distillate streams contained in diesel fuel No. 2 resulted in an increased incidence of skin tumors in mice. This material has not been identified as carcinogen by NTP, IARC, or OSHA. Diesel exhaust is a probable cancer hazard based on tests with laboratory animals.

Target Organ(s): Limited evidence of renal impairment has been noted from a few case reports involving excessive exposure to diesel fuel No. 2.

Naphthalene (CAS# 91-20-3)

Carcinogenicity: Naphthalene has been evaluated in two year inhalation studies in both rats and mice. The National Toxicology Program (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial neuroblastomas of the nose. NTP found some evidence of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene has not been identified as a carcinogen by IARC or OSHA.

12. ECOLOGICAL INFORMATION

Not evaluated at this time

13. DISPOSAL CONSIDERATIONS

This material, if discarded as produced, would be a RCRA “characteristic” hazardous waste due to the characteristic(s) of ignitability (D001) and benzene (D018). If the material is spilled to soil or water, characteristic testing of the contaminated materials is recommended. Further, this material, once it becomes a waste, is subject to the land disposal restrictions in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state and local regulations to determine whether they are more stringent then the federal requirements.

Container contents should be completely used and containers should be emptied prior to discard. Container ?insate? could be considered a RCRA hazardous waste and must be disposed of with care and in compliance with federal, state and local regulations. Large empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller containers, consult with state and local regulations and disposal authorities.

14. TRANSPORT INFORMATION

DOT Shipping Description: Diesel Fuel, NA1983
Non-Bulk Package Marking: Diesel Fuel, 3, NA 1993, III

15. REGULATORY INFORMATION

EPA SARA 311/312 (Title III Hazard Categories):

Acute Health:	Yes
Chronic Health:	Yes
Fire Hazard:	Yes
Pressure Hazard:	No
Reactive Hazard:	No

SARA 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

Component	CAS Number	Weight %
-- None known --		

California Proposition 65:

Warning: This material contains the following chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Effect
Benzene	Cancer, Developmental and Reproductive Toxicant
Toluene	Developmental Toxicant

Diesel engine exhaust, while not a component of this material, is on the Proposition 65 list of chemicals known to the State of California to cause cancer.

Carcinogen Identification:

This material has not been identified as a carcinogen by NTP, IARC, or OSHA. See Section 11 for carcinogenicity information of individual components, if any. Diesel exhaust is a probable cancer hazard based on tests in laboratory animals. It has been identified as carcinogen by IARC.

EPA (CERCLA Reportable Quantity: None

16. OTHER INFORMATION

Issue Date: 01/01/02
Previous Issue Date: 05/15/01
Product Code: Multiple
Revised Sections: None
Previous Product Code: Multiple
MSDS Number: 0041

Disclaimer of Expressed and Implied Warranties:

The information presented in this Material Data Safety Sheet is based on data believed to be accurate as of the date this Material Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THE PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Tosco Refining Company ***Ferndale Refinery***

UltraLow Sulfur Diesel Product Specification

Ferndale Product Code:34380xx (5) Product Code: ULSD2

(COMETS)

Specification	Unit	Limit	Test Procedure	Typical
Appearance				
Water & Sediment	Vol %	0.05 Max	D 2709	
Color	Number	3.0 Max	D 1500	
Haze Rating	Rating	2 Max	D 4176	
Composition				
Carbon Residue (Ramsbottom)	Wt %	0.35 Max	D 524, D 189	
Volatility				
90% Recovered	Deg; F	540 Min	D 86	
	Deg; F	640 Min	D 86	
Flash Point	Deg; F	125 Min (1)	D 93	130 F
Gravity	API	30 Min	D 287, D4052	
Fluidity				
Pour Point	Deg; F	See Season Table (6)	D 97	
Cloud Point	Deg; F	See Season Table (6)	D 2500	10 F
Viscosity @ 104F	cSt	1.9 Min	D 445	
	cSt	4.1 Max	D 445	
Lubricity, SLBOCLE	grams	3100 Min	D 6078	3300gm
Lubricity, HFRR	mm	.45	D 6079	
Combustion				
Cetane Index or Cetane Number (3,4)	Number	40.0 Min	D 976, D613	47.0
Corrosion				
Copper Strip, 3hr @ 50 deg C	Number	3 Max (2)	D 130	
Aromatics (4)	Vol %	35 Max	D 1319	25 %
Contaminants				
Total Sulfur	PPM	30 Max	D 2622, D4294	15-20ppm
Water & Sediment	Vol %	0.05 Max	D 1796	
Ash	Wt %	0.01 Max	D 482	
Additives				
Cetane Improver	Lb/MBbl	675 Max		
Dye		Undyed		

1. Minimum release specification is 125 deg. F. The refinery should target 135 deg. F.
2. Test result reported as a number and letter (e.g. 1a). Any letter is allowable as long as the number meets the spec shown.
3. Either specification must be met.
4. Either cetane index minimum or aromatics maximum must be met.
5. Winter cloud and pour specifications may be relaxed to the summer specifications by agreement with the customer.
6. Season Table

Month	Product Code	Pour Point	Cloud Point
Jan, Feb, Nov, Dec	WI	0 max (5)	14 max (5)
Mar - Oct	SU	15 max	24 max

LEAD METAL
SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product Identity: Lead Metal

Trade Names and Synonyms: Lead; Pb; Plumbum; Metallic Lead; Inorganic Lead; ASTM B29; TADANAC Lead, Low-Alpha Lead.

Manufacturer:
Teck Metals Ltd.
Trail Operations
Trail, British Columbia
V1R 4L8
Emergency Telephone: 250-364-4214

Supplier:
In U.S.:
Teck American Metal Sales Incorporated
501 North Riverpoint Blvd, Suite 300
Spokane, WA
USA, 99202

Other than U.S.:
Teck Metals Ltd.
#1700 – 11 King Street West
Toronto, Ontario
M5H 4C7

Preparer:
Teck Metals Ltd.
Suite 3300 – 550 Burrard Street
Vancouver, British Columbia
V6C 0B3

Date of Last Review: June 29, 2015.

Date of Last Edit: June 29, 2015.

Product Use: Used as a construction material for tank linings, piping, and equipment used in the manufacture of sulphuric acid and the refining and processing of petroleum; used in x-ray and atomic radiation shielding; used in the manufacture of paint pigments, organic and inorganic lead compounds, lead shot, lead wire for bullets, ballast, and lead solders; used as a bearing metal or alloy; used in the manufacture of storage batteries, ceramics, plastics, and electronic devices; used in the metallurgy of steel and other metals; and used in the form of lead oxide for batteries.

SECTION 2. HAZARDS IDENTIFICATION

CLASSIFICATION:

Health		Physical	Environmental
Acute Toxicity (Oral, Inhalation)	– Does not meet criteria	Does not meet criteria for any Physical Hazard	**Aquatic Toxicity – Short Term (Acute) Category 3**
Skin Corrosion/Irritation	– Does not meet criteria		
Eye Damage/Eye Irritation	– Does not meet criteria		
Respiratory or Skin Sensitization	– Does not meet criteria		
Mutagenicity	– Does not meet criteria		
Carcinogenicity	**– Category 2**		
Reproductive Toxicity	**– Category 1A**		
Specific Target Organ Toxicity Chronic Exposure	**– Category 1**		

LABEL:

Symbols:

Signal Word:

DANGER

Hazard Statements	Precautionary Statements:
DANGER! Causes damage to kidneys, blood-forming systems, central nervous system and digestive tract through prolonged or repeated exposure. May damage the unborn child. May cause harm to breast-fed children. Suspected of damaging fertility. Suspected of causing cancer. Harmful to aquatic life.	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection. Do not breathe dust or fumes. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. If exposed or concerned or you feel unwell: Get medical advice/attention. Avoid release to the environment.

Emergency Overview: A bluish-white to silvery-grey, heavy, soft metal that does not burn in bulk. Finely-divided lead dust clouds are a moderate fire and explosion hazard, however. When heated strongly in air, highly toxic lead oxide fumes can be generated. Inhalation or ingestion of lead may produce both acute and chronic health effects. Possible cancer and reproductive hazard. SCBA and full protective clothing are required for fire emergency response personnel.

Potential Health Effects: Inhalation or ingestion of lead may result in headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia and leg, arm, and joint pain. Prolonged exposure may also cause central nervous system damage, hypertension, gastrointestinal disturbances, anemia, kidney dysfunction and possible reproductive effects. Pregnant women should be protected from excessive exposure in order to prevent lead crossing the placental barrier and causing infant neurological disorders. Lead and inorganic lead compounds are listed as an *A3 Carcinogen (Confirmed Animal Carcinogen with Unknown Relevance to Humans)* by the ACGIH. IARC has listed lead compounds as *Group 2A Carcinogens (Probably Carcinogenic to Humans)* while lead metal is listed as *Group 2B (Possibly Carcinogenic to Humans)*. The NTP lists lead and lead compounds as *Reasonably Anticipated to be a Human Carcinogen*. OSHA and the EU does not currently list lead as a human carcinogen (see Toxicological Information, Section 11).

Potential Environmental Effects: Lead metal has relatively low bioavailability; however, compounds which it forms with other elements can be toxic to both aquatic and terrestrial organisms at low concentrations. These compounds can be particularly toxic in the aquatic environment. Lead bioaccumulates in plants and animals in both aquatic and terrestrial environments (see Ecological Information, Section 12).

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENT	CAS Registry No.	CONCENTRATION (% wgt/wgt)
Lead	7439-92-1	99+%

Note: See Section 8 for Occupational Exposure Guidelines.

SECTION 4. FIRST AID MEASURES

Eye Contact: *Symptoms:* Eye irritation, redness. Gently brush product off face if necessary. Do not rub eye(s). Let the eye(s) water naturally for a few minutes. Look right and left, then up and down. If particle/dust does not dislodge, cautiously rinse eye(s) with lukewarm, gently flowing water for 5 minutes or until particle/dust is removed, while holding eyelid(s) open. If irritation persists, get medical advice/attention. DO NOT attempt to manually remove anything stuck to the eye.

Skin Contact: *Symptoms:* Skin soiling, mild irritation. Gently brush away excess dust. Wash gently and thoroughly with lukewarm, gently flowing water and non-abrasive soap for 5 minutes, or until product is removed. If skin irritation occurs or you feel unwell, get medical advice/attention. *Molten Metal:* Flush contact area to solidify and cool but do not attempt to remove encrusted material or clothing. Cover burns and seek medical attention immediately.

Inhalation: *Symptoms:* Respiratory irritation. Remove source of exposure or move person to fresh air and keep comfortable for breathing. Seek medical attention if you feel unwell.

Ingestion: *Symptoms:* Stomach upset. If you feel unwell or are concerned, get medical advice/attention.

SECTION 5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Massive metal is not flammable or combustible. Finely-divided lead dust or powder is a moderate fire hazard and moderate explosion hazard when dispersed in the air at high concentrations and exposed to heat, flame, or other ignition sources. Explosions may also occur upon contact with certain incompatible materials (see Stability and Reactivity, Section 10).

Extinguishing Media: Use any means of extinction appropriate for surrounding fire conditions such as water spray, carbon dioxide, dry chemical, or foam.

Fire Fighting: Do not use direct water streams on fires where molten metal is present, due to the risk of a steam explosion that could potentially eject molten metal uncontrollably. Use a fine water mist on the front-running edge of the spill and on the top of the molten metal to cool and solidify it. If possible, move solid material from fire area or cool material exposed to flame to prevent melting of the metal ingots. Highly toxic lead oxide fumes may evolve in fires. Fire fighters must be fully trained and wear full protective clothing including an approved, self-contained breathing apparatus which supplies a positive air pressure within a full face-piece mask.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Procedures for Cleanup: Control source of spillage if possible to do so safely. Restrict access to the area until completion of clean-up. Clean up spilled material immediately, observing precautions outlined below. Molten metal should be allowed to solidify before cleanup. If solid metal, wear gloves, pick up and return to process. If dust, wear recommended personal protective equipment (see below) and use methods which will minimize dust generation (e.g., vacuum solids). Return uncontaminated spilled material to the process if possible. Place contaminated material in suitable labelled containers for later recovery or disposal. Treat or dispose of waste material in accordance with all local, regional, and national requirements.

Personal Precautions: Persons responding to an accidental release should wear protective clothing, gloves and a respirator (see also Section 8). Close-fitting safety goggles may be necessary in some circumstances to prevent eye contact with dust and fume. Where molten metal is involved, wear heat-resistant gloves and suitable clothing for protection from hot-metal splash as well as a respirator to protect against inhalation of lead fume. Workers should wash and change clothing following cleanup of a lead spill to prevent personal contamination with lead dust.

Environmental Precautions: Lead metal has low bioavailability; however, compounds which it forms with other elements can be toxic to aquatic and terrestrial organisms. Releases of the product to water and soil should be prevented.

SECTION 7. HANDLING AND STORAGE

Store in a DRY, covered area, separate from strong acids, other incompatible materials, active metals and food or feedstuffs. Solid metal suspected of containing moisture should be THOROUGHLY DRIED before being added to a molten bath. Otherwise, entrained moisture could expand explosively and spatter molten metal out of the bath. No special packaging materials are required. Lead metal, in contact with wood or other surfaces, may leave traces of lead particulate that can accumulate over time. Cleaning or disposal of these surfaces requires review to ensure that any effluent or solid waste disposal meets the requirements of regulations in the applicable jurisdiction.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Guidelines:

Component	ACGIH TLV	OSHA PEL	NIOSH REL
Lead	0.05 mg/m^3	0.05 mg/m^3	0.05 mg/m^3

NOTE: OEGs for individual jurisdictions may differ from those given above. Check with local authorities for the applicable OEGs in your jurisdiction.
ACGIH - American Conference of Governmental Industrial Hygienists; OSHA - Occupational Safety and Health Administration; NIOSH - National Institute for Occupational Safety and Health. TLV – Threshold Limit Value, PEL – Permissible Exposure Limit, REL – Recommended Exposure Limit.

NOTE: The selection of the necessary level of engineering controls and personal protective equipment will vary depending upon the conditions of use and the potential for exposure. The following are therefore only general guidelines that may not fit all circumstances. Control measures to consider include:

Ventilation: Use adequate local or general ventilation to maintain the concentration of lead fumes in the working environment well below recommended occupational exposure limits. Supply sufficient replacement air to make up for air removed by the exhaust system. Local exhaust is recommended for melting, casting, welding, grinding, flame cutting or burning, and use of lead powders.

Protective Clothing: Gloves and coveralls or other work clothing are recommended to prevent prolonged or repeated direct skin contact when lead is processed. Appropriate eye protection should be worn where fume or dust is generated. Where hot or molten metal is handled, heat resistant gloves, goggles or face shield, and clothing to protect from radiant heat and hot metal splash should be worn. Safety type boots are recommended.

Respirators: Where lead dust or fumes are generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH-approved respiratory protection equipment (a 42CFR84 Class N, R or P-100 particulate filter cartridge). When exposure levels are obviously high but the actual concentration is unknown, a self-contained breathing apparatus which supplies a positive air pressure within a full face-piece mask should be worn.

General Hygiene Considerations: Do not eat, drink or smoke in work areas. Thoroughly wash hands before eating, drinking, or smoking in appropriate, designated areas as well as at the end of the workday. A double locker-shower system with separate clean and dirty sides is usually required for lead handling operations to avoid cross-contamination of street clothes. Contaminated clothing should be changed frequently and laundered before each reuse. Inform laundry personnel of contaminants' hazards. Workers should not take dirty work clothes home and launder them with other personal clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Malleable, bluish-white to silvery-grey solid metal	**Odour:** None	**Odour Threshold:** Not Applicable	**pH:** Not Applicable
Vapour Pressure: (negligible @ 20°C)	**Vapour Density:** Not Applicable	**Melting Point/Range:** 328°C	**Boiling Point/Range:** 1,740°C
Relative Density (Water = 1)**:** 11.34	**Evaporation Rate:** Not Applicable	**Coefficient of Water/Oil Distribution:** Not Applicable	**Solubility:** Insoluble in water
Flash Point: None	**Flammable Limits (LEL/UEL):** Not Flammable	**Auto-ignition Temperature:** None	**Decomposition Temperature:** None

SECTION 10. STABILITY AND REACTIVITY

Stability & Reactivity: Massive metal is stable and not considered reactive under normal temperatures and pressures. Hazardous polymerization or runaway reactions will not occur. Freshly cut or cast lead surfaces tarnish rapidly due to the formation of an insoluble protective layer of basic lead carbonate.

Incompatibilities: Lead reacts vigorously with strong acids (e.g., hot concentrated nitric acid, boiling concentrated hydrochloric acid, etc.), strong oxidizers such as peroxides, chlorates, nitrates and halogen or interhalogen compounds such as chlorine trifluoride. Powdered lead metal in contact with disodium acetylide, chlorine trifluoride, sodium carbide or fused ammonium nitrate poses a risk of explosion. Solutions of sodium azide in contact with lead metal can form lead azide, which is a detonating compound. Vigorous reactions can also occur between molten lead and active metals, such as sodium, potassium, lithium and calcium. A lead-zirconium alloy (10-70% Zr) will ignite when struck with a hammer.

Hazardous Decomposition Products: High temperature operations such as oxy-acetylene cutting or burning, electric arc welding or overheating a molten bath will generate highly toxic lead oxide fume. Lead oxide is highly soluble in body fluids and the particle size of the metal fumes is largely within the respirable size range, which increases the likelihood of inhalation and deposition of the fume within the body.

SECTION 11. TOXICOLOGICAL INFORMATION

General: Lead accumulates in bone and body organs once it enters the body. Elimination from the body is slow. Initial and periodic medical examinations are advised for persons repeatedly exposed to levels at or above the exposure limits of lead dust or fumes. Once lead enters the body, it can affect a variety of organ systems, including the nervous system, kidneys, reproductive system, blood formation, and gastrointestinal system. The primary routes of exposure to lead are inhalation or ingestion of dust and fumes.

Acute:
Skin/Eye: Contact with dust or fume may cause local irritation but would not cause tissue damage.

Inhalation: Exposure to lead dust or fume may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia, and pain in legs, arms, and joints. An intense, short-term exposure to lead could cause acute encephalopathy with seizures, coma, and death. However, short-term exposures of this magnitude are unlikely in industry today. Kidney damage, as well as anemia, can occur from acute exposure.

Ingestion: Symptoms due to ingestion of lead dust or fume would be similar to those from inhalation. Other health effects such as metallic taste in the mouth and constipation or bloody diarrhea might also occur.

Chronic:
Prolonged exposure to lead dust and fume may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia, and, rarely, wrist drop. Reduced hemoglobin production has been associated with low lead exposures. Symptoms of central nervous system damage due to moderate lead exposure include fatigue, headaches, tremors and hypertension. Very high lead exposure can result in lead encephalopathy with symptoms of hallucinations, convulsions, and delirium. Kidney dysfunction and possible injury has also been associated with chronic lead poisoning. Chronic over-exposure to lead has been implicated as a causative agent for the impairment of male and female reproductive capacity. Pregnant women should be protected from excessive exposure as lead can cross the placental barrier and unborn children may suffer neurological damage or developmental problems due to excessive lead exposure. Teratogenic and mutagenic effects from exposure to lead have been reported in some studies but not in others. The literature is inconsistent and no firm conclusions can be drawn at this time. Lead and lead compounds are listed as an *A3 Carcinogen (Confirmed Animal Carcinogen with Unknown Relevance to Humans)* by the ACGIH. IARC has listed lead compounds as *Group 2A Carcinogens (Probably Carcinogenic to Humans)* while lead metal is listed as *Group 2B (Possibly Carcinogenic to Humans)*. The NTP lists lead and lead compounds as *Reasonably Anticipated to be a Human Carcinogen*. OSHA and the EU do not currently list lead as a human carcinogen.

Animal Toxicity:

Hazardous Ingredient:	Acute Oral Toxicity:	Acute Dermal Toxicity:	Acute Inhalation Toxicity:
Lead	No Data	No Data	No Data

SECTION 12. ECOLOGICAL INFORMATION

While lead metal is relatively insoluble, its processing or extended exposure in aquatic and terrestrial environments may lead to the release of lead compounds in more bioavailable forms. While lead compounds are not particularly mobile in the aquatic environment, they can be toxic to aquatic organisms, especially fish, at low concentrations. Water hardness, pH and dissolved organic carbon content are three major factors which regulate the degree of lead toxicity. Lead in soil is generally neither very mobile nor bioavailable, as it can become strongly sorbed onto soil particles, increasingly so over time, to a degree related to physical properties of the soil. Lead bioaccumulates in plants and animals in both aquatic and terrestrial environments.

SECTION 13. DISPOSAL CONSIDERATIONS

If material cannot be returned to process or salvage, dispose of in accordance with applicable regulations.

SECTION 14. TRANSPORT INFORMATION

PROPER SHIPPING NAME ..... Not a regulated product in ingot form.
TRANSPORT CANADA AND U.S. DOT CLASSIFICATION ..... Not Applicable

TRANSPORT CANADA AND U.S. DOT PIN ..... Not Applicable
MARINE POLLUTANT..... No
IMO CLASSIFICATION ..... Not Regulated

SECTION 15. REGULATORY INFORMATION

U.S.
Ingredient Listed on TSCA Inventory..... Yes

Hazardous Under Hazard Communication Standard ..... Yes

CERCLA Section 103 Hazardous Substances..... ..... Lead ..... RQ: 10 lbs. (4.54 kg.)*
*reporting not required when diameter of the pieces of solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

EPCRA Section 302 Extremely Hazardous Substance..... No

EPCRA Section 311/312 Hazard Categories ..... Delayed (chronic) health hazard - Carcinogen
Delayed (chronic) health hazard – Reproductive toxin

EPCRA Section 313 Toxic Release Inventory..... Lead CAS No. 7439-92-1
Percent by Weight - At least 99%

SECTION 16. OTHER INFORMATION

Date of Original Issue: July 23, 1997 **Version:** 01 *(First edition)*

Date of Latest Revision: June 29, 2015 **Version:** 13

The information in this Safety Data Sheet is based on the following references:

- American Conference of Governmental Industrial Hygienists, 2004, Documentation of the Threshold Limit Values and Biological Exposure Indices, Seventh Edition plus updates.
- American Conference of Governmental Industrial Hygienists, 2015, Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.
- American Conference of Governmental Industrial Hygienists, Guide to Occupational Exposure Values – 2015.
- Bretherick's Handbook of Reactive Chemical Hazards, 20th Anniversary Edition. (P. G. Urben, Ed), 1995.
- Canadian Centre for Occupational Health and Safety, Hamilton, ON, CHEMINFO Record No. 608 - Lead (Rev. 2009-05).
- European Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (REACH).
- Health Canada, SOR/2015-17, Hazardous Products Regulations, 30 January 2015.
- International Agency for Research on Cancer (IARC), Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, 1972 – present, (multi-volume work), World Health Organization, Geneva.
- International Chemical Safety Cards (WHO/IPCS/ILO), ICSC:0052 - Lead.
- Merck & Co., Inc., 2001, The Merck Index, An Encyclopedia of Chemicals, Drugs, and Biologicals, Thirteenth Edition.
- National Library of Medicine, National Toxicology Information Program, Hazardous Substance Data Bank (online version).
- Patty's Toxicology, Fifth Edition, 2001: E. Bingham, B. Cohrssen & C.H. Powell, Ed.
- U.S. Dept. of Health and Human Services, National Institute of Environmental Health Sciences, National Toxicology Program (NTP), 13th Report on Carcinogens, October 2014.
- U.S. Dept. of Health and Human Services, National Institute for Occupational Safety and Health, NIOSH Pocket Guide to Chemical Hazards, on-line edition.
- U.S. Dept. of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Toxicological Profile for Lead, September 2005.
- U.S. Occupational Safety and Health Administration, 1989, Code of Federal Regulations, Title 29, Part 1910.

Notice to Reader
Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. Teck American Metal Sales Incorporated and Teck Metals Ltd. extend no warranty and assume no responsibility for the accuracy of the content and expressly disclaim all liability for reliance thereon. This safety data sheet provides guidelines for the safe handling and processing of this product; it does not and cannot advise on all possible situations. Therefore, your specific use of this product should be evaluated to determine if additional precautions are required. Individuals exposed to this product should read and understand this information and be provided pertinent training prior to working with this product.

Appendix G: Village Ordinance

VILLAGE OF ESSEX JUNCTION

MUNICIPAL CODE

CHAPTER _____

ORDINANCE REGULATING EARTH WORK WITHIN THE CRESCENT CONNECTOR RIGHT-OF-WAY

PURPOSE: The Crescent Connector Right-of-Way is located within or adjacent to railroad property which has been in rail use for over 150 years. Testing on the site has identified concentrations of polycyclic aromatic hydrocarbons (PAHs) and the metals arsenic, antimony, lead, and mercury in excess of US EPA Region Screening Levels. These conditions are believed to be attributed to former coal-burning emissions and maintenance associated with the railroad. As such, this Ordinance sets standards and conditions for any earth work activities within the Crescent Connector Right-of-Way.

SECTION 1: DEFINITIONS.

The following words and terms, when used in this Ordinance, shall for the purpose of this Ordinance, have the following meanings ascribed to them:

A. Earth Work – any activity which may result in the risk of exposure to contaminated soil, including but not limited to excavation, grading, resurfacing where the soil is exposed.

B. Corrective Action Plan – The Corrective Action Plan ("CAP") prepared by Stone Environmental Inc. for the Crescent Connector Roadway Project, SMS Number: 2012-4263, as revised March 15, 2017. A copy of which is on file at the Village office and the VT Department of Environmental Conservation (VT DEC).

C. Crescent Connector Right-of-Way – the permanent Right-of-Way established and on file in the Land Records for the Crescent Connector starting at its intersection with Park Street and continuing along its entire length to its intersection with Main Street, including the properties leased from the railroad.

SECTION 2: ADMINISTRATION AND ENFORCEMENT.

The Village Manager or Agent shall be responsible for the administration of this Ordinance and shall have the authority to enforce compliance through the use of civil and criminal penalties as authorized by this Ordinance. Further, compliance with State and Federal regulations pertaining to the exposure,

transport, or disposal of contaminated soils shall apply and be enforceable by such State or Federal authorities having jurisdiction. Federal and or State authorities retain the right to inspect and or oversee compliance with applicable codes and standards.

SECTION 3: RIGHT-OF-WAY PROPERTY

A. Any Earth Work proposed within the Crescent Connector Right-of-Way requires the approval of the Village Manager or Authorized Agent and notification to the VT DEC, Sites Management Section. The Village Manager or Agent shall approve the Earth Work if it is in compliance with the CAP, notice is provided to the Vermont DEC and conforms with best practices. The Village Manager may rely on a qualified environmental professional to determine compliance with the CAP. Any applicant seeking approval under this Ordinance may be assessed the costs expended by Village for the qualified environmental professional's review of the proposed Earth Work.

B. Earth work that disturbs contaminated soils shall be performed in Level D or Modified Level D personal protective equipment by workers trained and medically monitored in accordance with the OSHA HAZWOPER regulations (29 CFR 1910.120 or as revised modified).

C. Engineered barriers installed to prevent exposure to contaminated soils (including concrete caps such as sidewalks; asphalt, concrete and aggregate caps such as parking lots or roadways; or soil or geotextile fabric caps in green spaces) shall be monitored and maintained pursuant to Section 6.9 of the CAP (or as modified or revised) in perpetuity to ensure their integrity and functionality as designed.

D. In addition to any other conditions, obligations or requirements, any earth work conducted within the Crescent Connector Right-of-Way shall adhere to the conditions and requirements stipulated with the Corrective Action Plan.

E. The Contractor or entity preforming the earth work, unless otherwise stipulated by the Village Manager or Agent under a written agreement, is responsible for obtaining the necessary approval and all cost associated with complying with all applicable provisions of the Corrective Action Plan or other State or Federal regulations pertaining to the exposure, handling, transporting and or disposal of contaminated soils.

SECTION 4: EQUITABLE REMEDIES.

In addition to the penalty provided in the Ordinance, the Village Manager or Agent may initiate injunction, mandamus, abatement, or any other appropriate action to remediate, remove or prevent further violation of any of the provisions of this Ordinance. Any and all costs for such actions are the sole responsibility of the party responsible for the violation. This Ordinance in no way removes or exempts the parties from compliance with applicable State or Federal regulations or the fines or penalties which may be imposed by such agencies.

SECTION 5: PENALTY.

In addition to Section 4 of this Ordinance, a violation of any provision of this Ordinance shall be punishable by a fine of up to $500 per day, per violation until the unlawful condition is abated, corrected or removed.

SECTION 6: SEVERABILITY.

If any section of this Ordinance is held by a court of competent jurisdiction to be invalid, such finding shall not invalidate any other provisions of the Ordinance.

SECTION 7: APPEAL OF NOTICE OF VIOLATION PENALTY.

A person or entity aggrieved by a revocation, suspension or penalty pursuant to this Ordinance may appeal to the Ordinance Appeal Board as outlined in the Trustees' Policy regarding the Ordinance Appeal Board. An appeal of this Ordinance in no way voids or stays any other action of another entity such as the State or Federal authority that may have jurisdiction under a separate State or Federal regulation or action.