Partial Corrective Action Plan: 202 Bay Street, St. Johnsbury, Vermont

SMS #20204966
May 5, 2022

PROJECT NO.

20-117

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Title and Approval Page

Document Title

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I certify under penalty of perjury that I am an environmental professional and that all content contained within this deliverable is to the best of my knowledge true and correct.

5/5/2022

Signature Date

Katrina Mattice, PE, Environmental Engineer, Stone Environmental, Inc.

By my signature, as a Vermont Registered Engineer that I hereby certify that I have reviewed this document.

Katrina J. Mattice May 5, 2022

Signature Date

Executive Summary

Stone Environmental, Inc. (Stone) has prepared this Partial Corrective Action Plan (CAP) for the Zion Growers property located at 202 Bay Street in St. Johnsbury, Vermont (the Site; Figure 1 in Appendix A). The Partial CAP was prepared for Zion Growers and the Northeastern Vermont Development Association (NVDA) who is providing funding for environmental assessment and remedial planning. Zion Growers enrolled in Vermont's Brownfields Reuse and Environmental Liability Limitation Act (BRELLA) program on March 16, 2021 as a *bona fide* prospective purchaser and is completing corrective actions to allow Site redevelopment as an industrial hemp processing facility.

The Site is comprised of one, 0.98-acre parcel, located at 202 Bay Street in a mixed-use district in the Town of St. Johnsbury, Vermont (Figure 2). The Site was developed by the early 1900s as a retailer of grain and coal. Grain and coal arrived at the Site by a rail spur. Grain was brought to hoppers using a grain elevator powered by an electric motor. The building was designed to hold, mix, and distribute 150 tons of grain. Coal was brought to the coal hoppers from the elevated rail spur. Six buildings remain on-Site including a former grain elevator and storage building, coal hoppers shed, former grist mill, former retail and storage building ("L" building), former office building, and a carriage shed. The Site is bound to the north by the St. Johnsbury Paper Company, the west by a railroad corridor, the east by Bay Street, RK Miles lumber storage yard and lumber retail store, and a bike pavilion associated with the Lamoille Valley Rail Trail, and to the south by an RK Miles lumber storage building.

Since the closure of the grain mill, the Site buildings have been leased for various personal and commercial purposes, such as for storage, operation of a machine shop, an antique shop, storage, shop space for construction contractors, a shop for a board game company, offices, auction house storage, general storage space, an indoor BMX bicycle park, and storage of snow removal equipment, including bulk sand and road salt. Zion Growers recently acquired the Site and plan to redevelop the "L" building has an industrial hemp processing facility. This will require demolition of a former office building (building #1) for construction of loading docks and parking.

A Phase II Environmental Site Assessment (ESA) performed in 2021 at the Site identified vapor intrusion of volatile organic compounds (VOCs) within the "L" building, polycyclic aromatic hydrocarbons (PAHs), metals, and total petroleum hydrocarbons (TPH) exceeding Vermont Soil Standards (VSS) within fill soils, and petroleum-related VOCs in soil and groundwater at concentrations exceeding VSS and Vermont Groundwater Enforcement Standards (VGES), respectively. This Partial CAP has been prepared in accordance with §35-606 of the Vermont Department of Environmental Conservation's (VT DEC) Investigation and Remediation of Contaminated Properties Rule (IRule) to prevent the risk of exposure to Site users through the following pathways:

1) Inhalation of VOC contaminated indoor air in the former retail and storage building, hereafter referred to as the "L" building, as a result of vapor intrusion,
2) Direct contact with subsurface soil VOC, TPH, and benzo(a)pyrene contamination resulting from releases from a former 500-gallon gasoline underground storage tank (UST),
3) Direct contact with PAH, lead, and arsenic contaminated surface soil, and

4) Direct contact with containers of petroleum and potentially hazardous materials and associated stained surface soil.

Two sub-slab depressurization (SSD) systems will be constructed in the "L" building to mitigate vapor intrusion of VOCs. The SSD systems induce a negative pressure in the sub-slab environment relative to indoor air. Under these conditions, vapor intrusion cannot occur. Following SSD system startup, quarterly monitoring will be conducted by a qualified environmental professional (QEP) for one year to ensure system efficacy. The Site owner will be responsible for SSD system operation and maintenance after QEP monitoring ceases for as long as there is a risk of vapor intrusion into the "L" building. If VOCs are not detected in SSD system influent at concentrations above Vermont Vapor Intrusion Standards for two consecutive years, the SSD systems may be operated passively (fans turned off).

Groundwater and soil contamination associated with releases from the former 500-gallon gasoline UST requires additional assessment to define the downgradient extent of VOCs and feasibility of in-situ remediation technologies. A separate CAP will be prepared to address groundwater and soil contamination relative to the former UST after data gaps have been filled.

Section 3.7 of the CAP has been prepared as a Soil Management Plan in accordance with §35-804 of the IRule to ensure proper management of PAH, lead, arsenic, and TPH contaminated soil during Site redevelopment. Except as noted above for the UST area of concern, soils containing these contaminants of concern at concentrations exceeding Vermont urban background and/or non-resident soil standards will be excavated for off-Site disposal at a Subtitle D landfill.

A floor drain system in the "L" building will be closed in accordance with Vermont's Underground Injection Control (UIC) rules. Universal wastes present throughout the Site will be consolidated, inventoried, and properly disposed of.

Remedial activities will commence upon final approval of this Partial CAP, which is estimated to be by May 30, 2022, and will require up to six months to complete. SSD system installation, floor drain closure, and universal waste disposal will be performed during "L" building renovations. Soil management will occur during construction of the parking lot north of the "L" building.

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Cover Photo: 202 Bay Street, St. Johnsbury, Vermont. Photo taken by Stone Environmental, Inc. December 2, 2020.

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1. Introduction

Stone Environmental, Inc. (Stone) has prepared this Partial Corrective Action Plan (CAP) for the Zion Growers property located at 202 Bay Street in St. Johnsbury, Vermont (the Site; Figure 1 in Appendix A). The CAP was prepared for Zion Growers and the Northeastern Vermont Development Association (NVDA) who is providing funding for environmental assessment and remedial planning. Zion Growers enrolled in Vermont's Brownfields Reuse and Environmental Liability Limitation Act (BRELLA) program on March 16, 2021 as a *bona fide* prospective purchaser and is completing corrective actions to allow Site redevelopment as an industrial hemp processing facility. This Partial CAP has been prepared in accordance with §35-606 of the Vermont Department of Environmental Conservation's (VT DEC) Investigation and Remediation of Contaminated Properties Rule (IRule) to prevent the risk of exposure to Site users through the following pathways:

1) Inhalation of volatile organic compound (VOC) contaminated indoor air in the former retail and storage building, hereafter referred to as the "L" building, as a result of vapor intrusion,
2) Direct contact with subsurface soil VOC, total petroleum hydrocarbon (TPH), and benzo(a)pyrene contamination resulting from releases from a former 500-gallon gasoline underground storage tank (UST),
3) Direct contact with polycyclic aromatic hydrocarbon (PAH), lead, and arsenic contaminated surface soil, and
4) Direct contact with containers of petroleum and potentially hazardous materials and associated stained surface soil.

Groundwater contamination associated with releases from the former 500-gallon gasoline UST requires additional assessment to define the downgradient extent of VOCs and feasibility of in-situ remediation technologies. A separate CAP will be prepared to address groundwater contamination after data gaps have been filled.

Section 3.7 of the CAP has been prepared as a Soil Management Plan in accordance with §35-804 of the IRule to ensure proper management of PAH, lead, and arsenic contaminated soil during Site redevelopment.

A floor drain system in the "L" building should be closed in accordance with Vermont's Underground Injection Control (UIC) rules.

1.1. Site Description

The Site is located at approximately 44.418593° north latitude and - 72.014394° west longitude at an elevation of approximately 557 feet above sea level in the Town of St. Johnsbury, Caledonia County, Vermont (Figure 1 in Appendix A). The Site is comprised of one, 0.98-acre parcel, located at 202 Bay Street and is depicted on Figure 2, Vicinity Map (Appendix A). The Site is identified with the Town of St. Johnsbury as Parcel #1V010021. The current Site owner is Zion Growers:

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The Site is in a commercial area in the Town of St. Johnsbury and is zoned in a mixed-use district. The Site is bound to the north by the St. Johnsbury Paper Company, the west by a railroad corridor, the east by Bay Street, RK Miles lumber storage yard and lumber retail store, and a bike pavilion associated with the Lamoille Valley Rail Trail, and to the south by an RK Miles lumber storage building. The surrounding community is comprised of various commercial and light industrial businesses.

Six buildings are currently located on the Site, including a former grain elevator and storage building, coal hoppers shed, former grist mill, former retail and storage building, former office building, and a carriage shed (Figure 3, Appendix A). Several of the buildings are served by municipal water and sewer. Electrical service to the Site buildings is provided by pole mounted electrical utilities located along Bay Street to the east. An asphalt paved parking lot provides access from Bay Street, with a gravel driveway providing access to the coal hoppers shed. Buildings on the Site are further described as follows:

Building #1 - Former Office Building: A two-story wood framed building with wooden siding. The building is leased to the American Game Table Company, a manufacturer of wooden board game tables, and used as a workshop. The second floor contains an unfinished living space.

Building #2 - Carriage Shed: Two wooden carriage sheds are occupied by a timber framing contractor and are utilized for the storage of timbers and building materials. Former above-ground storage tank (AST) cradle foundations are present in the northern exterior walls of the carriage shed; the former ASTs were used to store maple syrup and molasses.

Building #3 - Former retail and storage building known as the "L" building: A two story, wood framed structure with aluminum siding. The first floor of the building is leased to a general contractor, who utilizes the space for storage and as a workshop, and an auction house, which utilizes the area for storage. The second floor is vacant.

Building #4 - Former Grist Mill: A four story concrete block building with a cut-stone façade. The first floor is leased for storage, while the upper floors are in disrepair.

Building #5 - Former grain elevator and storage building: An eight story, wood-framed building with aluminum siding and an attached grain silo. At the time of the Site walk, the building was vacant, with lower floors being used for storage of grain equipment, such as hand trucks, and household goods.

Building #6 - Coal Hoppers Shed: A wooden structure containing eight, concrete-lined bays situated below an elevated railroad spur. Several of the bays are leased and are used for storage of construction equipment, snow removal equipment, and bulk road salt and sand.

1.2. Site History

According to historical records reviewed and interviews with the Site owner completed during the Phase I ESA (Stone, 2021a), the Passumpsic River was moved east circa 1895 and Site buildings were constructed on fill materials used to infill the historic river channel. The Site was developed by the early 1900s as a retailer of grain and coal. Grain and coal arrived at the Site by a rail spur. Grain was brought to hoppers using a grain

elevator powered by an electric motor. The building was designed to hold, mix, and distribute 150 tons of grain. Coal was brought to the coal hoppers from the elevated rail spur.

Since the closure of the grain mill, the Site buildings have been leased for various personal and commercial purposes, such as for storage, operation of a machine shop, an antique shop, storage, shop space for construction contractors, a shop for a board game company, offices, auction house storage, general storage space, an indoor BMX bicycle park, and storage of snow removal equipment, including bulk sand and road salt.

1.3. Proposed Redevelopment

Zion Growers plans to redevelop the Site as an industrial hemp processing facility, located primarily within the "L" building. "L" building renovations will include removing interior partitions, improving the building envelope, and structural improvements. Hemp processing equipment and offices will be located on the first floor while the second floor will be used for storage of hemp bales. Two pole barns and building #1 in the northern portion of the property will be demolished and the ground surface regraded to accommodate parking and a truck loading dock. Redevelopment plans for remaining Site buildings have not been determined.

1.4. Previous Environmental Investigations

A summary of previous environmental investigations at Site is provided below. Previous sample locations and results are depicted on Figures 4 through 11 (Appendix A). Analytical data from previous environmental investigations is tabulated in the following Appendix B tables:

- Table B-1: Volatile Organic Compound Analytical Results – Soil Samples
- Table B-2: Semi-Volatile Organic Compound Analytical Results - Soil Samples
- Table B-3: Priority Pollutant Metals Analytical Results - Soil Samples
- Table B-4: Polychlorinated Biphenyl Analytical Results – Soil Samples
- Table B-5: Herbicide Analytical Results – Soil Samples
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- Table B-18: TCLP Volatile Organic Compounds Analytical Results - Soil Samples
- Table B-19: Waste Characteristics – Soil Samples
- Table B-20: Polychlorinated Biphenyl Analytical Results - Indoor Air Samples

1.4.1. 2011 Area Wide Assessment, Bay Street Area

In December 2011, Stone completed an area wide assessment (AWA) of the Bay Street Area Project in St. Johnsbury, Vermont. The AWA was completed to provide a preliminary evaluation of environmental conditions and potential environmental concerns within the assessment area, which included 41 industrially

zoned properties along Bay Street, including the Site. Based on a review of historical Site documentation, interview with the Site owner, and a Site inspection, Stone identified the following Recognized Environmental Conditions (RECs) and contaminants of concern associated with the Site:

Table 1: 2011 AWA Summary – 202 Bay Street

REC #	Location	Description	Contaminants of Concern
1	Coal Shed	A rail spur leads cars to this structure for receipt of coal to hoppers located below this building	PAHs
2	Grain Elevator	Containers within grain elevator building	Petroleum, PAHs
3	Grain silo/storage areas	Possible fumigant uses within grain storage areas	Carbon tetrachloride.
4	Sitewide	Site Maintenance activities	Small quantities of petroleum lubricants, solvents, etc.
5	Grain Elevator	Freight elevators within grain elevator building and former retail space	Petroleum lubricants, PCBs.
6	Carriage shed	Hazardous materials containers within carriage shed	VOCs, PAHs
7	Exterior	55-gallon drums along rail line embankment	Unknown
8	Sitewide	Location adjacent rail yard	VOCs, PAHs, pentachlorophenol, metals, herbicides
9	Former retail and storage building	Machine shop located at Site has been in operation at the site for 11 years. Solvent wash tanks are maintained by an industrial service provider. Chlorinated solvents have not been used at the Site	Petroleum solvents

Notes: PAHs – polycyclic aromatic hydrocarbons; PCBs – polychlorinated biphenyls; VOCs – volatile organic compounds

1.4.2. 2021 Phase I ESA

Stone completed a Phase I Environmental Site Assessment (ESA) of the Site on January 26, 2021, in accordance with the *Standard Practice for Environmental Site Assessments: Phase I ESA Assessment Process*, published by ASTM International as Standard Practice E1527-13. The Phase I ESA was performed on behalf of the VT DEC and Zion Growers. Zion Growers was performing environmental due diligence as a *bona fide* prospective purchaser of the Site. RECs identified by the Phase I ESA include:

- REC #1: Historic industrial practices and remaining evidence of these practices at the Site including coal and grain storage and machining with oil-staining on building materials adjacent to grain elevator equipment.
- REC #2: Proximity to historic and active rail lines, including the presence of a rail spur on the Site.
- REC #3: Presence of unsecured petroleum and potentially hazardous substance containers throughout the Site, some exhibiting evidence of releases.
- REC #4: Presence of empty and degraded 55-gallon drums on the Site near a rail embankment.
- REC #5: Reported removal of a 500-gallon gasoline underground storage tank from the Site at least thirty years ago.
- REC #6: Occurrence of benzene contamination in groundwater at concentrations exceeding Vermont Groundwater Enforcement Standards (VGES) on the adjoining KNTT Investments property.
- REC #7: Location of the Site as hydraulically downgradient of several State of Vermont Hazardous Waste Sites.
- REC #8: Importation of fill from an unknown source at the time of Site development.

1.4.3. 2021 Phase II ESA

Stone completed a Phase II ESA of the Site on June 2 and July 7, 2021, which included soil, groundwater, and sub-slab soil gas assessments. The results of the Phase II ESA indicate that the approximate upper 18-inches of fill soils contain PAHs at concentrations above non-resident VSS and below urban background levels except for an area of coal refuse located west of the "L" building and stained soils associated with a degraded 55-gallon drum located near the southwest corner of the "L" building. PAH concentrations in these locations exceed non-resident VSS and arsenic is present in coal refuse at concentrations exceeding the statewide background. Lead was identified in coal refuse and one soil sample north of the "L" building at concentrations below non-resident VSS but above the resident VSS. Total petroleum hydrocarbons-diesel range organics (TPH-DRO) is present in stained surface soil near a degraded 55-gallon drum located north of the "L" building at concentrations exceeding Vermont non-resident soil screening values. VOCs and TPH-gasoline range organics (TPH-GRO) were identified in soil near the former 500-gallon gasoline UST at concentrations exceeding VSS. VOCs and the PAH, benzo(a)pyrene, were detected in groundwater near the former UST at concentrations above their respective VGES. Tetrachloroethylene (PCE) and naphthalene were detected in sub slab soil gas at concentrations exceeding Vermont's non-resident vapor intrusion standards (VIS) below the former office (PCE) and "L" buildings (naphthalene). No PCBs were detected during investigation of a release of lubricating and hydraulic oils to building materials.

1.4.4. 2022 Supplemental Site Investigation and Evaluation of Corrective Action Alternatives

A Supplemental Site Investigation (SSI) was completed in February and March, 2022 and included a sub-slab depressurization (SSD) system pilot test within the "L" building to evaluate the efficacy of this technology to mitigate vapor intrusion, additional delineation of VOCs in soil vapor, collection of soil samples to support soil management planning, evaluation of a floor drain system in the "L" building, delineation of VOCs in groundwater downgradient of the former gasoline UST, and an evaluation of PCBs in indoor air. Results of the SSI field work indicated the following:

- Vacuum induced during the SSD pilot testing had good propagation below the slab, indicating that this technology would be effective to mitigate vapor intrusion into the "L" building. High volume samples collected from pilot test effluent did not detect VOCs at concentrations greater than Vermont's Vapor Intrusion Standards (VIS) for sub-slab soil gas.
- PCE and naphthalene were not detected in soil vapor samples collected from the northern portion of the Site at concentrations exceeding non-resident VIS.
- Evaluation of the floor drain system revealed that the floor drain discharges to a pit in the northwest portion of the "L" building. The pit is constructed as a concrete vault with no outlet.
- The downgradient extent of VOCs in groundwater, specifically 1,2,4-trimethylbenzene and naphthalene have not been defined. Both VOCs were detected in monitoring well MW-2 at concentrations exceeding VGES.
- Several potentially PCB-containing building materials were identified in the "L" building and former grain elevator building. PCBs were not detected in any indoor air samples.

Based on the cumulative results of the SSI and previous environmental investigations, Stone prepared an Evaluation of Corrective Action Alternatives (ECAA) in accordance with §35-604 of the IRule. The ECAA evaluated remedial alternatives to mitigate exposure to contaminated indoor air through vapor intrusion and corrective actions for the gasoline UST release. Remedial alternatives were subjected to a comparative analysis of their appropriateness for mitigating inhalation risk to known Site contaminants and their protectiveness to human health and the environment. Remedial alternatives considered for vapor intrusion mitigation into the "L" building included 1) Alternative 1: No Action, 2) Alternative 2: Apply epoxy-based resin material over the concrete floor slab, 3) Alternative 3: Install an SSD system, and 4) Alternative 4: Source removal. Remedial

alternatives considered for soil and groundwater contamination associated with the former 500-gallon UST included 1) Alternative 1: No action, 2) Alternative 2: Monitored natural attenuation, 3) Alternative 3: Source removal via excavation and off-Site disposal, and 4) Alternative 4: In-situ remediation.

Based on the results of the ECAA, the recommended corrective for vapor intrusion into the "L" building was Alternative 3, the installation of an SSD system. The recommended corrective action for soil and groundwater contamination related to the former 500-gallon gasoline UST was Alternative 4, in-situ remediation, which will require additional assessment prior to inclusion in a CAP.

2. Conceptual Site Model

The following Conceptual Site Model (CSM) provides a set of working hypotheses that describe key aspects of the Site. The CSM includes a discussion of the physical, geologic, and hydraulic attributes of the Site and surrounding area, how chemicals were released at the Site, their transport pathways, fate mechanisms, and potential routes of exposure to ecological and human receptors. The CSM provides the context from which the site investigation is developed and a framework to make sound Site management decisions.

2.1. Topography

The Site is situated approximately 557 feet above mean sea level and is located approximately 275 feet east of the Passumpsic River. Topography at the Site is generally flat, with an embankment on the western portion of the Site along the railroad corridor. Topography in the vicinity of the Site slopes gently to the east towards the Passumpsic River. The area has undergone significant man-made alterations (Stone, 2021b).

2.2. Geology

2.2.1. Bedrock

Bedrock outcrops have not been observed at the Site during environmental investigations completed from 2020 through 2022. According to the Bedrock Geologic Map of Vermont (Ratcliffe, et al., 2011), bedrock below the Site is mapped as a phyllite and metalimestone of the Waits Formation. This is further described as dark gray to silvery-gray, lustrous, carbonaceous muscovite-biotite-quartzite phyllite containing abundant beds of punky-brown-weathering, dark-bluish-gray micaceous quartz-rich limestone in beds ranging from 10 centimeters to 10 meters thick. Bedrock was not encountered while advancing soil borings during the Phase II ESA at a maximum exploratory depth of twenty feet bgs (SB-6). Direct push drilling refusals were encountered at depths from 15 to 16.5 feet bgs during installation of monitoring wells east of the Site in 2022. Refusal on bedrock was not confirmed and depth to bedrock at the Site is unknown.

2.2.2. Surficial Material

According to the Surficial Geologic Map of Vermont (Doll, Ed., 1970), native unconsolidated soils at the Site are mapped as recent alluvium. Based on a review of Sanborn fire insurance maps, the area has undergone significant man-made alterations. Between 1884 and 1900 a large bend of the Passumpsic River, adjacent to Portland Street, was in-filled to make room adjacent to the rail yard for the E.T. & H.K. Ide grain elevator and surrounding businesses.

Soils recovered from soil borings advanced during the Phase II ESA included fill, wetland/lowland, alluvium, and stream channel deposits. Sand and gravel fill was encountered from ground surface to depths ranging between approximately two (SB-3 and -4) and six feet (SB-1 and -7) bgs. The upper approximate 18-inches of sand and gravel fill often contained ash and brick rubble, especially in the northern portion of the Site. Coal refuse was observed to six feet bgs below former coal sheds (SB-2). Fill materials were observed to depths up to ten feet bgs in MW-4 during the SSI. MW-4 is located east of the Site where more significant infilling is likely from filling of the former river channel. Sand and gravel fill was underlain by well sorted fine sand

fining downwards to sandy silt with peat and fine sand lenses to depths ranging between approximately eleven (SB-1) and sixteen (SB-6) feet bgs. We interpret the sand in this stratigraphic sequence to represent alluvium overlaying riparian wetland deposits. Peat lenses, which were more prevalent in soil borings on the western side of the Site (SB-1, -3, and -4), were likely deposited in wetlands formerly adjacent to the Passumpsic River. Sandy silt with peat was in turn underlain by fine sand coarsening downward to poorly sorted gravel and cobbles. Fine sand in this sequence is likely alluvium deposited on the side of the river channel and overlying coarser channel deposits.

2.2.3. Hydrology and Hydrogeology

On February 23, 2022, elevations of potentiometric surface in Site groundwater monitoring wells, relative to an assigned Site datum, ranged from 89.96 feet at PZ-6 to 89.31 feet at MW-3. Based on these groundwater elevations, the direction of groundwater flow is to the east towards the Passumpsic River, which is located approximately 275 feet east of the Site and flows in a north to south direction.

2.3. Release Mechanisms and Contaminant Distribution

Release mechanisms for known Site contaminants of concern based on RECs identified in the 2021 Phase I ESA are summarized in Table 2, below, and discussed in the following subsections.

Table 2: Release Mechanisms and Contaminants of Concern by REC

REC #	Description	Release Mechanisms	Contaminants of Concern	Impacted Media
1	Historic industrial practices and remaining evidence of these practices at the Site including coal and grain storage and machining with oil-staining on building materials adjacent to grain elevator equipment.	Coal storage	PAHs and Metals	Shallow soil
		Spills (none known) and atmospheric deposition of coal ash from rail spur operation	PAHs and Metals	Shallow soil
		Use of petroleum and hazardous materials in industrial practices	VOCs and SVOCs	Soil and soil vapor
2	Proximity to historic and active rail lines, including the presence of a rail spur on the Site.	Spills (none known) and atmospheric deposition of coal ash from rail spur operation	PAHs and Metals	Soil
3	Presence of unsecured petroleum and potentially hazardous substance containers throughout the Site, some exhibiting evidence of releases.	Improper handling, storage, and potential disposal of petroleum and hazardous material containers resulting in releases to the ground surface, stormwater catchments, or floor drain system in former retail and storage building	TPH	Shallow soil – extent of impacts is *de minimis.* Presence of unsecure containers present a material threat of a release.
4	Presence of empty and degraded 55-gallon drums on the Site near a rail embankment.	Potential release of petroleum and/or hazardous materials from improperly stored drums	TPH	Shallow soil – extent of impacts is *de minimis.* Presence of unsecure containers present a material threat of a release.
5	Reported removal of a 500-gallon gasoline underground storage tank from the Site at least thirty years ago.	Leaks in the UST or piping could result in a release of gasoline to the subsurface	VOCs, TPH, PAHs	Soil and groundwater
6	Occurrence of benzene contamination in groundwater at concentrations exceeding VGES on the adjoining KNTT Investments property.	Leaks from the former 500-gallon gasoline UST system	VOCs	Soil and groundwater

Notes: PAHs – polycyclic aromatic hydrocarbons; PCBs – polychlorinated biphenyls; VOCs – volatile organic compounds; SVOCs – semi-volatile organic compounds

2.3.1. PAHs/SVOCs

PAHs are generated during the incomplete combustion of organic material, such as coal, petroleum products, and wood. PAHs are commonly found in surface soil in areas of cities and towns with long industrial histories and near railroad corridors. The Site has been in industrial use since approximately 1900, is in an industrialized area of St. Johnsbury, is adjacent to a railroad line, and historically operated a rail spur for bulk coal and grain storage. Atmospheric deposition of coal ash is common along rail lines. Fills soils used to infill the Passumpsic River corridor circa 1895 could have resulted in the importation of PAHs to the Site.

The upper approximate 18-inches of fill soils were observed to contain ash east of the coal sheds (SB-3) and in the area between the former carriage sheds and former office building (SB-1). PAHs, expressed as a toxicity equivalent to benzo(a)pyrene, are present in these soils at concentrations exceeding non-resident VSS. PAHs at concentrations above resident VSS are more widespread in shallow soil across the Site. Coal refuse, containing PAHs exceeding non-resident VSS, is present to at least six feet bgs along the western Site boundary near the historic rail spur. Except for naphthalene, PAHs are not present at concentrations exceeding VSS in underlying sandy fill or native soils.

Naphthalene was detected in soils throughout soil boring SB-6 resulting from a release from the former gasoline UST. The release from the former gasoline UST has also resulted in impacts to groundwater indicated by detections of benzo(a)pyrene and naphthalene in groundwater collected from PZ-6 with concentrations exceeding their respective VGES. The extent of PAH soil and groundwater contamination associated with the gasoline release has not been defined.

Odors associated with liquids in the former retail and storage building floor drain system have not been tested for Site contaminants of concern, except for VOCs. There does not appear to be an outlet from the pit associated with the floor drain.

2.3.2. Metals

The Site's location in an industrial setting and potential use of contaminated fill, as described above for PAHs, could have also resulted in metal contamination at the Site. Additionally, the improper handling, storage, and potential disposal of petroleum and hazardous material containers could have resulted in releases of metals to the ground surface. Evidence of improper storage and disposal of these types of containers was observed during the Phase I ESA and included containers surrounded by stained soil and a pile of empty and degraded 55-gallon drums near the rail line.

Former industrial practices at the Site have not resulted in widespread metals contamination to soil or groundwater. Arsenic is present in coal refuse sampled near the rail spur on the western Site boundary (SB-2) at a concentration above the Vermont statewide background value. This is due to the natural occurrence of arsenic in coal. Lead was detected in two samples at concentrations above the resident VSS. These samples included coal refuse (SB-2) and shallow soil near the former carriage shed (SB-1) containing coal rubble.

The former retail and storage building floor drain system has not been assessed for metals contamination.

2.3.3. VOCs

Current and past Site practices include the use and storage of hazardous substances, chlorinated solvents, and petroleum products. Petroleum and hazardous materials containers are evident at the Site and release(s) to the ground surface, building materials, and odors in a Site floor drain system were assessed. Past site practices

have not resulted in widespread VOC contamination at the Site based on non-detects in soil samples (SB-3, SB-4, SL-1, and SL-2) and a liquid sample (FD-080121) and the absence of visual, olfactory, and elevated PID readings.

The presence of naphthalene below the "L" building (SV-2) and PCE below the former office building (SV-1) indicate that releases of petroleum and chlorinated solvents likely occurred at or near these locations. The presence of naphthalene and PCE in sub-slab soil gas and indoor air in both buildings at concentrations above non-resident VIS and IAS, respectively, indicates the vapor intrusion pathway is complete and indoor air is impacted. The floor drain system includes a concrete-lined pit that contains liquids that have a petroleum odor. There does not appear to be an outlet from the floor drain system, which likely limits subsurface impacts. The extent of PCE and naphthalene soil vapor contamination is limited to below the northern portion of the "L" building and the former office building. The northern portion of the "L" building is currently unheated, and the building envelope is uninsulated and drafty. Vapor intrusion into the "L" building may by exacerbated when the "L" building is improved with a tighter envelope and is heated. Heating buildings creates a "stack effect" where sub-slab vapors are more easily drawn into buildings as make-up air for heating equipment.

Release mechanisms for chloroform related to current or historic Site activities has not been identified. Chloroform soil vapor contamination has been documented upgradient of the Site associated with former and active dry-cleaning operations at several properties on Eastern Avenue (Stone 2021c). Chloroform is also a disinfecting byproduct of municipal drinking water, which serves the Site. Chloroform has been detected at concentrations exceeding the resident VIS, but less than the non-resident VSS, below the norther portion of the "L" building (SV-2 and -3), below the former office building (SV-1), and exterior areas north and east of the "L" building (SV-11, -12, and -14). Chloroform is not a Site contaminant of concern based on proposed industrial reuse. Corrective actions to address vapor intrusion of PCE and naphthalene into the "L" building would also be protective of chloroform vapor intrusion.

The only groundwater and soil VOC contamination identified at the Site is associated with releases to the subsurface from the former 500-gallon UST. Petroleum VOCs 1,2,4-TMB, 1,3,5-TMB, ethylbenzene, naphthalene, and xylenes are present in soil in the vicinity of the former UST at concentrations exceeding non-resident VSS. Groundwater at this location has also been impacted by the same VOCs and toluene. The extent of VOC soil contamination associated with the former gasoline UST is likely limited to the vicinity of the former UST.

The downgradient extent of dissolved phase 1,2,4-TMB and naphthalene have not been defined as both VOCs were detected in groundwater samples from MW-2, located downgradient of the source area, at concentrations exceeding their respective VGES. However, 1,2,4-TMB and naphthalene concentrations attenuate by one and two orders of magnitude, respectively, between PZ-6 and MW-2. Petroleum-related VOCs will degrade more quickly under aerobic conditions than anaerobic conditions. Based on the low dissolved oxygen and oxidation-reduction potential measured at the Site during the Phase II ESA and SSI, it is unlikely that dissolved phase contamination associated with the Site UST and observed on the former KNTT property will attenuate significantly with time. Naphthalene and 1,2,4-TMB concentrations at MW-2 have increased since 2013 when groundwater samples were previously collected on the former KNTT property. This could be due to minor differences in well locations and construction or indicate that the dissolved phase groundwater plume has not stabilized. Increasing concentrations of these contaminants of concern in MW-2 confirm dissolved phase VOCs are not attenuating significantly with time. The presence of VOCs in MW-2, located east of the source area, suggests that migration of the dissolved phase VOC plume is influenced by coarse fill materials, coarse channel deposits, temporal changes in hydraulic conditions, or a combination of these factors.

There have been documented releases of petroleum and chlorinated VOCs at upgradient properties including the Railroad Street Texaco site and several dry-cleaning sites. The downgradient extent of groundwater and soil vapor contamination resulting from these releases has not been defined. However, based on the results of groundwater assessment at locations on the western side of the Site (PZ-1, -2, and -3), contaminated groundwater and soil vapor does not appear to be migrating onto the Site.

2.3.4. TPH

The release mechanism for TPH is the same as described for VOCs. TPH-DRO is present in oil-stained surface soil adjacent a degraded 55-gallon drum immediately southeast of the former carriage shed (SL-2) at concentrations above non-resident Vermont soil screening values. The extent of TPH contaminated soil has not been delineated but is not likely limited to the extent of stained soil.

TPH-gasoline range organics (GRO) is present in stained soil associated with the former 500-gallon gasoline UST (SB-6) at concentrations exceeding non-resident Vermont soil screening values. As discussed above, the extent of subsurface impacts from the gasoline release have not been defined.

2.4. Sensitive Receptor Evaluation

Contamination from Site sources has been evaluated for its potential for adversely affecting sensitive receptors. Table 3 presents the potentially affected media, potential pathways, and potential receptors.

Table 3: Sensitive Receptor Evaluation

Potentially Affected Media	Potential Pathways	Sensitive Receptors	Potential Level of Risk
Surface Water	Overland flow of surface water may erode contaminated soils and transport contamination off-Site	Passumpsic River aquatic biota and recreational users	Low – Most of the ground surface is paved or has buildings present.
	Discharge of contaminated water		Medium – The downgradient extent of contaminated groundwater associated with the former gasoline UST has not been defined. Contaminated groundwater may discharge to the Passumpsic River.
Sediment	Deposition of contaminated soil from overland flow of surface water	Passumpsic River aquatic biota and recreational users	Low – Most of the ground surface is paved or has buildings present.
Surface Soil	Direct contact to contaminated materials	Trespassers Site Workers Site Users Native biota	Medium – Most of the ground surface is paved, has buildings present, or access is restricted by locked fences. However, there is a risk for direct contact with PAH, lead, and arsenic contaminated soils in the north of the former retail and storage building
Sub Surface Soil	Direct contact to contaminated materials	Future users performing excavations for construction or utility maintenance	High – Intrusive activities near the former gasoline UST are likely to encounter contaminated soil.
Groundwater	Infiltration of surface water through affected soil may leach contaminants	Groundwater users – none known	Low – there are no known users of groundwater
	Leaks from gasoline UST system		
	Releases from the floor drain system		
Air	Vapor intrusion of volatile constituents	Building occupants	High – The vapor intrusion pathway is complete in the former office building

Potentially Affected Media	Potential Pathways	Sensitive Receptors	Potential Level of Risk
	Indoor air quality due to hazardous building materials		and former retail and storage building based on sub-slab soil vapor and indoor air sample results.
Building Materials	Direct contact to contaminated materials	Building occupants	Low – building materials are not contaminated with PCBs as a result of incidental spills of oils. PCBs have not been detected in indoor air.
	Indoor air quality		

2.4.1. Nearby Sensitive Receptors

Using the VT ANR Natural Resources Atlas, a qualitative receptor analysis was completed to evaluate the occurrence of potential receptors relative to the Site[1].

2.4.1.1. Adjoining Landowners

Adjoining landowners to the Site are summarized in Table 4, below. Theses landowners will receive notification of this Partial CAP at the onset of the 30-day public comment period.

Table 4: Adjoining Property Owners

Address	Grand List SPAN #	Owner Name	Contact Information
136 Bay Street	558-176-13236	William and Elizabeth Tremblay	C/O St Johnsbury Paper Company PO Box 96 St. Johnsbury, VT 05819
Not Applicable	558-176-11970	Maine Central Railroad	C/O Pan Am Railways 1700 Iron Horse Park North Billerica, MA 01862
249 Bay Street	558-176-10068 558-176-12276 558-176-10067	RK Miles Lumber Company	502 North Main Street Barre, VT 05641
311 Bay Street	558-176-10563	Green Mountain Power Corporation	2154 Post Road Rutland, VT 05701
195 Bay Street	558-176-12276	Town of St. Johnsbury	51 Depot Square Suite 101 St. Johnsbury, VT 05819

2.4.1.2. Drinking Water Supplies

There are no public water supplies and eight private water supply wells within one-half mile of the Site. Private water supply wells are depicted on Figure 2.

2.4.1.3. Surface Water and Groundwater Source Protection Areas

There are no surface water or groundwater source protection areas within one-half mile of the Site.

[1] http://anrmaps.vermont.gov/websites/anra5/ accessed February 8, 2021.

2.4.1.4. Buildings with Basements

Data regarding the presence of buildings with basements on adjoining properties is not readily available. We expect that residences nearby the Site have basements.

2.4.1.5. Wetlands

According to the ANR Natural Resources Atlas, there is one mapped Class II wetland located approximately 500 feet southeast of the Site adjacent to the Passumpsic River (Figure 2).

2.4.1.6. Sensitive Ecological Areas

Sensitive ecological areas, including deer wintering yards (0), habitat blocks (2), significant natural communities (0), VT Fish and Wildlife managed lands (0), Indiana Bat hibernacula (0), and uncommon species (2) were assessed within one-half mile of the Site using the ANR Natural Resources Atlas. Results are provided in Table 5 below.

Table 5: Sensitive Ecological Areas

Resource (ID)	Resource Type	Distance (feet) from Site	Direction from Site
753	Vascular Plant	1,980	North
13271	Vertebrate Animal	Adjoining	North
1364	Habitat Block	975	Southeast
1377	Habitat Block	1,250	East

3. Partial Corrective Action Plan

This section describes the recommended design elements for installation and operation of SSD systems and management of PAH, lead, arsenic, and TPH-DRO contaminated soil. Corrective actions will be performed by contractors under the supervision of a Qualified Environmental professional (QEP). This cleanup plan has been prepared as a Partial CAP and Soil Management Plan in accordance with the IRule. Implementation of corrective actions shall not commence until approval of this Partial CAP by the VT DEC.

Site buildings have been assessed for lead and asbestos containing material (ACM) separately. Any lead and ACM identified should be abated in accordance with Vermont Regulations for Lead Control and Asbestos Control, respectively, prior to remedial actions.

3.1. Performance Standards

Corrective action objectives described within this Partial CAP are designed to mitigate exposure to the following known Site contaminants and exposure pathways:

1) Inhalation of VOC contaminated indoor air in the "L" building, as a result of vapor intrusion, and
2) Direct contact with PAH, lead, arsenic, and TPH-DRO contaminated soil.

3.1.1. Vapor Intrusion Standards

The basis for vapor intrusion corrective actions at the Site is the complete vapor intrusion pathway that was identified in the 2021 Phase II ESA of naphthalene and PCE into the "L" and former office buildings. The former office building will be demolished during Site redevelopment, removing the vapor intrusion pathway into this structure (sample locations SV-1 and IA-1 in Table 6 and 7, below). Soil vapor samples from the 2021 Phase II ESA and 2022 SSI were compared to resident and non-resident sub-slab soil gas Vapor Intrusion Standards (VIS) included in Appendix § 35-APX-A2 of the IRule. Indoor air samples collected during the 2021 Phase II ESA for VOC analysis were compared to resident and non-resident Indoor Air Standards (IAS) included in Appendix § 35-APX-A2 of the IRule.

While redevelopment of the Site is for non-resident use, the SSD system will mitigate vapor intrusion into the "L" building and be protective of indoor air to residential IAS. Tables 6 and 7, below, summarize resident and non-resident VIS and IAS, respectively, for VOCs that have been detected at concentrations exceeding these standards. Maximum soil vapor and indoor air concentrations are provided. Carbon tetrachloride was removed from the list of contaminants of concern for indoor air since background ambient air concentrations were similar to indoor air concentrations and this VOC was not detected in sub-slab soil vapor.

Table 6: Site Contaminants of Concern – Soil Vapor

Contaminant of Concern	Resident VIS ($\mu g/m^3$)	Non-Resident VIS ($\mu g/m^3$)	Sample Location	Result ($\mu g/m^3$)
Benzene	4.3	35	SV-1	15
Chloroform	1.3	12	SV-11	11.4
Naphthalene	1.0	8.0	SV-2	180

Contaminant of Concern	Resident VIS (µg/m³)	Non-Resident VIS (µg/m³)	Sample Location	Result (µg/m³)
Tetrachloroethylene	21	170	SV-1	**280**

Notes: µg/m³ – micrograms per cubic meter; bold indicates analyte was detected; shaded result indicates exceedance of resident Vapor Intrusion Standard (VIS); orange border indicates exceedance of non-resident VIS

Table 7: Site Contaminants of Concern – Indoor Air

Contaminant of Concern	Resident IAS (µg/m³)	Non-Resident IAS (µg/m³)	Sample Location	Result (µg/m³)
Benzene	0.13	1.05	IA-2	**0.40**
Chloroform	0.04	0.36	IA-1	**0.25**
Naphthalene	0.262	0.262	IA-1	**0.52**
Tetrachloroethylene (PCE)	0.63	5.11	IA-1	**14**

Notes: µg/m³ – micrograms per cubic meter; bold indicates analyte was detected; shaded result indicates exceedance of resident Indoor Air Standard (IAS); orange border indicates exceedance of non-resident IAS

3.1.2. Soil Standards

The basis for soil cleanup at the Site is Vermont Soil Standards (VSS) for resident and non-resident properties, urban background values published in the IRule as Appendix A - § 35-APX-A1, and Soil Screening Levels for TPH (VT DEC, 2017). Soil contaminants of concern at the Site include PAHs, expressed as benzo(a)pyrene toxicity equivalence (B[a]P-TEQ), arsenic, lead, and TPH. These contaminants are generally limited to shallow soils (<1.5 feet bgs). Arsenic contaminated soils are limited to coal refuse adjacent the Site's rail spur west of the "L" building (SB-2; Figure 4). Lead is also present at this location and immediately north of the "L" building at concentrations exceeding the resident VSS, but below the non-resident VSS. Soil with concentrations of lead exceeding the resident VSS will be excavated for off-Site disposal. PAH concentrations generally exceed resident VSS, but are below urban background levels, in shallow soils throughout the Site. The only PAH exceedances of the non-resident VSS are associated with coal refuse west of the "L" building and stained surface soil associated with petroleum staining from a leaking 55-gallon drum (SB-3; Figure 4).

Soils within the gasoline UST source area (SB-16) are impacted by gasoline range organics (TPH-GRO). Minor surface staining associated with releases from one 55-gallon drum is impacted by diesel range organics (TPH-DRO).

3.1.3. Corrective Action Objectives

Based on redevelopment of the "L" building as an industrial hemp processing facility and restriction of future use of other Site buildings for commercial/industrial uses, corrective actions must achieve the following objectives:

1. Mitigate vapor intrusion of naphthalene vapors into the "L" building such that indoor air concentrations are less than non-resident IAS.
2. Management of PAH, lead, arsenic, and TPH contaminated soils for off-Site disposal.
3. Off-Site disposal of containers of petroleum and potentially hazardous materials and associated stained surface soil according to their waste characteristics.
4. Cleaning and closure of the "L" building floor drain system in accordance with Vermont UIC rules to prevent potential future discharges to the subsurface.

3.1.4. Permitting

Building permits from the Town of St. Johnsbury will be required for the corrective action. Approved special waste profiles will be required for disposal facilities for excess soil that cannot be capped on-Site and disposal of containers, TPH-DRO contaminated soil, and sludge/liquids removed from the floor drain system. A traffic control plan should be prepared to manage the increased amount of truck traffic that will be entering and leaving the Site during Site redevelopment.

3.2. Redevelopment and Reuse Plan

The current redevelopment plan for the Site is provided as Figures 12, 13, and 14 and described in Section 1.3 of this CAP.

3.3. Basis of Design and Remedial Construction Plan

The basis of design for the SSD system is to ensure that indoor air concentrations of PCE and naphthalene inside the "L" building will not exceed the non-resident IAS. The SSD system will ventilate any accumulating vapors below the building slab. The SSD system to be constructed at the Site will consist of the materials listed in Table 8, below, or other equivalent materials as applicable.

Table 8: Materials of Construction

Sub Slab Depressurization System
Four-inch diameter schedule 40 poly-vinyl chloride (PVC) pipe and fittings (sweep elbows, screens, caps, and couplings)
Washed 1-inch minus landscaping stone
PVC primer and cement
4-inch pipe mounting hardware
Elastomeric PVC flexible couplings
Magnehelic gauge and ¼-inch diameter polyethylene tubing
Radon Fan – RadonAway GX4 or equivalent
Roof vent boot
Audible/visual alarm – RadonAway RSA1 or equivalent
Electrical wire and breaker switches
Flexible electrical conduit and mounting hardware

The basis of design to reduce the potential for direct contact with contaminated soils at the Site is excavation and off-Site disposal of soils containing contaminants at concentrations exceeding non-resident VSS or urban background levels.

3.4. Erosion Control Measures

Installation of silt fencing at the edge of the disturbed soil area will be required to prevent erosion and migration of sediment into the Passumpsic River, catch basins, and other sensitive areas.

Dust management activities will be performed by the Site contractor and will include wetting of surfaces with water during earthwork that disturbs contaminated soil. Calcium chloride may be added to assist in caking of soils and preventing the need for excessive watering.

3.5. SSD System

The objective of the SSD system is to mitigate vapor intrusion of PCE and naphthalene into the "L" building. To accomplish this, two SSD systems will establish a negative pressure of at least -0.008 "WC beneath the building slab. Proposed SSD system layout and details are presented on Figures 15 and 16, respectively, and described below.

SSD systems were designed in accordance with the American Society for Testing and Materials International (ASTM) Standard Practice E2121-13, Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings, March 1, 2013.

Stone anticipates that four vapor extraction wells (EW-1 through EW-4; Figure 15) will be required to ensure the system provides adequate negative pressure between the sub-slab/foundation wall and indoor air environments. Extraction wells will be installed as follows:

1. Six-inch diameter cores will be removed from the slab and excavated approximately one foot below the base of the slab. Excavated soil will be managed in accordance with the Soil Management Plan (See Section 3.6).
2. Excavations will be backfilled with 1-inch diameter washed stone to the base of the slab elevation.
3. 4-inch diameter schedule 40 polyvinyl chloride (PVC) pipe be installed in each core hole and the annulus sealed with quick setting concrete
4. PVC expansion plugs will be installed to close SSD extraction wells and ventilation piping when the SSD system is not actively being constructed.
5. PVC expansion plugs will be installed to close the SSD extraction well when not in use.

Cox-Colvin Vapor Pins® will be installed at six locations (MP-1 through -6; Figure 15) as differential pressure monitoring points to enable measurement of differential pressures between the sub-slab and indoor air environments to confirm SSD system effectiveness. Vapor Pins® will be installed by advancing a 1.5-inch diameter hammer drill bit approximately 1.5-inches into the slab at each location, then advancing a 3/8-inch diameter drill bit through the slab in the center of each larger recess. After vacuuming debris from the resulting hole, a silicon sleeve will be placed around the base of the Vapor Pins®, which will be set in the foundation. Rubber caps will be placed over the open end of the Vapor Pins®, which will be secured with a stainless-steel flush mount cap when not in use.

Following extraction well and differential pressure monitoring point installation, the radius of influence will be determined at each extraction well by applying vacuum to the extraction wells and monitoring pressure differentials at monitoring points. Data generated during extraction well testing will be used to select the appropriate size fan and make other design alterations as appropriate. Alterations in design could include, but would not be limited to, changes in PVC pipe size, installation of additional extraction wells, or increase in fan size. Stone will document any design alterations, as necessary, in a letter to VT DEC for their approval prior to these changes being made. Based on pilot testing results, we do not expect design alterations will be required to achieve SSD corrective action objectives.

Four inch-diameter PVC pipe will be connected to each extraction well and plumbed together into two 4-inch diameter schedule 40 PVC pipes prior to exiting the building envelope. Gate valves will be installed between each extraction well and the manifold to allow flow adjustment during SSD system startup and subsequent monitoring. Exhaust vent piping will extend at least two feet above the building roofline and will be appropriately secured with brackets and flashed to prevent leaks around the building envelope penetration. A radon fan, with appropriate flow rate versus static pressure will be installed in-line with exhaust piping using elastomeric fittings on the building exterior. With this configuration, potential leaks from the fan and/or pressurized vent piping/fittings will be discharged to the building exterior. Monitoring ports will be installed in each extraction well pipe, prior to the manifold, to allow for air flow and vacuum measurements. Monitoring ports will consist of a 3/8-inch threaded hole in the PVC pipe plugged with a stainless-steel hex dive cap and O-ring when the system is in operation. One Magnehelic® pressure gauge will be installed in each SSD system to monitor the vacuum applied by the fan or blower. Radon fans or blowers will be wired in accordance with building codes by an electrical contractor.

Placards will be placed on the SSD systems that indicate an active remediation system is in operation and not to tamper. Placards will include Stone's contact information in the event the system is not operating properly. An audible/visual alarm (RadonAway RSA1 or equivalent) will monitor vacuum in each SSD system and will be triggered if applied vacuum drops below operating parameters, to be specified within the Operation and Maintenance Plan (OMP).

3.5.1. SSD System Startup

SSD system startup will occur upon installation of all components and include the following measurements:

1. Pressure differentials between each monitoring point and the building interior using a micro-manometer,
2. Applied vacuum at each extraction well using a manometer,
3. Air velocity utilizing a thermal anemometer, and
4. Relative levels of VOCs within SSD system effluent streams using a photoionization detector (PID).

One air sample will be collected from each SSD system influent stream using 6-liter Summa canisters equipped with a thirty-minute flow regulator to determine whether effluent requires treatment. Air emissions from SSD systems should be sampled at least three weeks following system startup to allow VOCs associated with PVC cement to off-gas. Effluent samples will be submitted to a NELAP accredited laboratory for analysis of VOCs by EPA Method TO-15. Results will be evaluated to determine if SSD system effluent treatment is required in accordance with Vermont Air Pollution Control Regulations. Based on concentrations of VOCs in sub-slab soil gas, Stone does not anticipate that treatment of SSD system effluent will be required. However, if treatment is required, design adjustments to the SSD systems will be provided as a CAP amendment.

3.6. Soil Management Plan

3.6.1. PAHs, Arsenic, and TPH-DRO

The extent of soils containing PAHs and arsenic at concentrations exceeding urban background and non-resident VSS and TPH-DRO exceeding non-resident soil screening values is shown on Figure 17. These include stained soils associated with an unsecure 55-gallon drum (SB-3), coal refuse located west of the "L" building (SB-2), and stained surface soil associated with a degraded 55-gallon drum (SL-2). These soils will be excavated for off-Site disposal at the Waste USA landfill in Coventry, Vermont, pending waste profile approval by Casella Waste. Waste characteristics samples will be required from SB-2/SB-3 and SL-2 to support waste profiling. Expected excavation dimensions and soil volume/weight is summarized in Table 9, below and are based on visual observations of soil staining and presence of coal refuse. Excavation dimensions may be expanded or contracted at the direction of a Qualified Environmental Professional based on visual, olfactory, or field screening (e.g. PID screening) evidence of contamination.

Table 9: Excavation Summary

Investigation Location/Excavation Area	Excavation Area (Square Feet)	Depth (feet)	Soil Volume[1] (Cubic Yards)	Soil Weight[2] (tons)
SB-2	600	6	160	240
SB-3	100	2	9	14
SL-2	100	2	9	14
		Total	**178**	**268**

Notes: 1 – volume includes a 20% soil expansion factor and are rounded up to the closest whole number; 2 – assumes 1.5 tons/cubic yard of soil

Cleanup verification samples will be collected following exaction of the areas summarized in Table 9. Two soil samples will be collected from the bottom of excavation area SB-2 and one from the bottom of excavation area SB-3. These samples will be analyzed by a NELAP-accredited laboratory for PAHs by EPA Method 8270 with select ion monitoring (SIM) and RCRA 8 Metals by EPA Method 6020. One soil sample will be collected from the bottom of excavation areas SL-2 and will be analyzed by a NELAP-accredited laboratory for TPH-DRO by EPA Method 8015. One field duplicate will be collected for each analytical parameter.

If contaminants of concern are detected in cleanup verification samples at concentrations exceeding urban background (PAHs and arsenic) or non-resident soil screening levels (TPH-DRO), soil will be excavated in one-foot lifts and additional cleanup verification samples collected in the same manner as described above. This will be repeated until cleanup objectives are met.

3.6.2. Gasoline Impacted Soil

Soils at the former gasoline UST location (SB/PZ-6) are contaminated by VOCs and TPH-GRO from depths ranging from approximately 3.5 and 17 feet below ground surface. Disturbance of these soils are not anticipated based on current redevelopment plans. Soil management would be required if future Site renovations require disturbance of these soils prior to UST soil and groundwater remediation, to be described in the full CAP. Pending disposal facility approval, excavated soil can either be disposed of at a Subtitle D landfill, such as the Waste USA landfill in Coventry, Vermont or treated at a thermal treatment facility, such as Clean Earth's facility in Loudon, New Hampshire. For disposal facility approval, Casella would require representative concentration results for every 500 tons of material (minimum) for Resource Conservation Recovery Act (RCRA) 8 Metals, VOCs, semi-volatile organic compounds (SVOCs), herbicides, and pesticides by toxicity characteristics leaching procedure (TCLP), reactivity cyanide and sulfide, corrosivity, and ignitability. Clean Earth, Inc. requires total analyses (non-TCLP) on soil for TPH, VOCs, SVOCs, PCBs, and RCRA 8 metals. If analytes exceed the RCRA 20-times rule, TCLP analyses would be required. Based on Site data, TCLP analysis would be required for TPH-GRO and VOCs. Clean Earth, Inc requires representative analyses for each 200 tons up to 2,000 tons, and every 500 tons thereafter.

3.6.3. Development Soils

The balance of surface soil (0-1.5 feet bgs) not managed according to Section 3.6.1 of this CAP are development soils containing PAHs at concentrations above the resident VSS but below the Vermont urban background concentration. Development soils that remain on-Site do not require special management. Near-term redevelopment plans include the construction of a parking lot and sidewalks north and east of the "L" building that require removal of up to two feet of soil and subsequent installation of two feet of engineered fill and greenspaces that will require removal of six inches of development soils. This area is presented on Figure 17 as "Development Soil Area for Near-Term Redevelopment." Volume of estimated development soils that will be generated during near-term Site redevelopment is summarized in Table 10, below, assuming all development soils are disposed off-Site. Development soils will remain on-Site, to the extent practical. Development soils can be disposed off-Site as follows:

1. At a categorical solid waste facility permitted to receive development soils (none currently exist in Vermont).
2. Use as alternative daily cover at a solid waste disposal facility, such as the Waste USA landfill in Coventry, Vermont.

3. A receiving site within the St. Johnsbury urban soil background area, as delineated on the Vermont Agency of Natural Resources Natural Resources Atlas. At this time, there are no known receiving sites in St. Johnsbury.

Table 10: Development Soil Summary – Near-Term Redevelopment

Redevelopment Feature	Excavation Area (Square Feet)	Depth (feet)	Soil Volume[1] (Cubic Yards)	Soil Weight[2] (tons)
Parking Lot	8,400	1.5	560	840
Sidewalks	800	1.5	55	82
Greenspace	3,800	0.5	85	128
		Total	**700**	**1,050**

Notes: 1 – volume includes a 20% soil expansion factor and are rounded up to the closest whole number; 2 – assumes 1.5 tons/cubic yard of soil

Future Site renovations may generate additional excess development soils that will require management as described above.

3.7. Container Disposal

Containers of miscellaneous petroleum and potentially hazardous materials are stored throughout the Site. These articles will be inventoried, consolidated, packed in United States Department of Transportation (DOT) approved containers, and profiled for waste characteristics prior to off-Site disposal. Contractors performing this work shall have current hazardous waste operations and emergency response (HAZWOPER) training certification in compliance with the Occupational Safety and Health Administration (OSHA) standard 29 CFR Part 190.120.

3.8. Floor Drain Closure

The floor drain system shall be closed in accordance with Vermont's UIC regulations to prevent the system from serving as a contaminant migration pathway in the future. The wood coverings will be removed and discarded as demolition debris. The floor drain will be flushed, and liquids and sludge cleaned from the pit and contained in 55-gallon drums or other appropriate DOT approved containers for off-Site disposal according to their waste characteristics. The floor drain will be sealed with concrete. The pit associated with the floor drain system will be backfilled with material, to be determined by the Site civil engineer, suitable for structural and architectural plans for this area of the "L" building.

3.9. Quality Assurance Control Plan

Differential pressure, air flow, and PID measurements will be made, SSD exhaust air samples collected, and SSD performance testing conducted in accordance with the following Stone Standard Operating Procedures (SOPs), which are available upon request:

- Cox Colvin Vapor Pin® Installation: *SEI-5.51.2 Procedure for Collection of Soil Gas Samples for VOC Analysis*
- Discrete soil sampling for cleanup verification samples: *SEI-5.58.2 Collection, Handling, and Preservation of Discrete Soil Samples*
- Collection of SSD exhaust air samples: *SEI-5.62.0 Procedure for Collection of Indoor Air Samples for TO15 Analysis using Summa Canister*
- PID screening of SSD exhaust: *SEI-5.63.0 Use, Maintenance and Calibration of the Ion Science Tiger Photoionization Detector (PID)*
- SSD interim performance monitoring: *SEI-5.65.1: Sub-Slab Depressurization Pilot Testing Procedures*

- Differential pressure measurements: *SEI-5.67.0 Use and Maintenance of the Omniguard™ 5 Manometer / Differential Pressure Recorder*
- SSD exhaust airflow measurements: *SEI-5.68.0 Use and Maintenance of the TSI Velocicalc 9535 Anemometer*

3.10. Investigation Derived Waste Plan

Remediation wastes derived during the SSD system installation will be limited to construction debris, which will be disposed of as solid waste, and a small amount of excavated soil. Soil will be managed in accordance with Section 3.7 of this CAP. Stone does not anticipate that treatment of the SSD system exhaust will be required, however if treatment is necessary, remediation wastes will include liquids from a moisture knock-out drum and spent granular activated carbon (GAC). Liquid wastes will be disposed of as non-hazardous or hazardous waste according to its waste characteristics. GAC will either be disposed of according to its waste characteristics or regenerated at an appropriate thermal facility.

Remediation wastes derived from soil management, management of existing petroleum/potentially hazardous materials containers, and floor drain system closure will be limited to PPE and will be disposed of as solid waste.

3.11. Institutional Control Plan

As a BRELLA participant, Zion Growers will receive a Certificate of Completion (COC) upon completion of corrective actions described in this Partial CAP and those to be described in a full CAP that addresses contamination associated with releases from the former gasoline UST. The COC will serve as the institutional control and will recorded in the Town of St. Johnsbury, Vermont Land Record for the 202 Bay Street property. Institutional control elements from this Partial CAP that will be included in the COC following completion of all Site remediation will, at a minimum, require that:

- The Site owner submit a certification to the VT DEC that the COC has been recorded on the Site Property deed,
- A brief description of the release of hazardous materials
- A brief description of the corrective actions that were implemented on the property,
- The location of contaminated soil vapor, soil, and groundwater that remains on-Site and a restriction that prevents the use of Site groundwater as a potable water source,
- The SSD system constructed in accordance with this CAP be routinely inspected for failure and maintained in perpetuity or until a VI pathway no longer exists,
- Maintenance of failed SSD system components be repaired promptly (within 30 days) under the supervision of personnel trained in accordance with the requirements of the OSHA HAZWOPER regulations (20 CFR 191.120),
- VT DEC be notified prior to any future Site renovations that could potentially affect the operation of the SSD system or create a potential VI pathway.
- Development soils generated during future Site work be managed in accordance with the Soil Management Plan included as Section 3.6 of the Partial CAP.

Additional institutional controls may be addressed in the full CAP should they be necessary for contamination associated with the former gasoline UST release.

3.12. Long-Term Monitoring and Operations and Maintenance

It is expected that the following O&M activities will be required quarterly for one year of SSD system operation to verify system effectiveness:

1. Differential pressure measurements between indoor air and the ventilation layer to verify a negative pressure field in the ventilation layer relative to indoor air exists,
2. Inspection of all mechanical elements and performance of any necessary maintenance,
3. Collection of a sub-slab soil vapor sample from monitoring point MP-5 (Figure 15) to evaluate SSD system effectiveness of removing naphthalene from sub-slab soil vapor. Soil vapor samples should be collected in batch certified clean Summa canisters over a 30-minute period and analyzed for VOCs by EPA Method TO-15. One field duplicate will be collected during each monitoring event.

Once it is demonstrated that the SSD systems are effectively mitigating VI for a period of one year, the site owner will be responsible for periodically inspecting mechanical elements and performing any maintenance necessary. Soil vapor samples can be collected annually from MP-5, as described above. If VOCs are not detected in sub-slab soil vapor at concentrations exceeding resident VIS for sub-slab soil gas, the SSD system fan be turned off and the system operated passively and soil vapor samples collected annually from MW-5. If soil vapor VOC concentrations are below resident VIS for two consecutive years with the SSD system operating passively, continued operation of the SSD system can cease.

A licensed electrician will be contracted to perform any electrical repairs, such as the replacement of a fan requiring re-wiring. Any such work will be completed under the supervision of a QEP.

Following SSD system installation and startup, Stone will finalize the O&M plan that is attached in Appendix D as a sample O&M plan. The O&M plan outlines maintenance and monitoring requirements for the SSD system. The O&M plan includes the following key elements:

- An overview of the SSD system,
- Description of SSD system components,
- System operation requirements,
- Performance objectives,
- System troubleshooting guidance,
- Emergency contact information,
- Long-term system maintenance requirements, and
- Reporting requirements.

3.13. Health and Safety

Due to the presence of contaminated media at the Site, corrective actions should be performed using appropriate health and safety precautions. Construction and electrical contractors selected for engineered barrier construction, SSD system construction, container disposal, and floor drain system closure shall perform construction services under the auspices of their own site-specific health and safety plan, to be developed for the project. The contractors must make their own determinations as to the appropriate level of health and safety protection required for each of the construction activities described in this CAP.

3.14. Reporting

Following implementation of this CAP, a Corrective Action Construction Completion Report (CACCR) will be prepared in accordance with §35-608 of the IRule and submitted to the VT DEC, Sites Management Section. The CACCR will include a description of Site activities including dates of work and as-built construction diagrams.

The VT DEC shall be notified if the SSD systems have failed, or planned Site renovations or maintenance could potentially affect the effectiveness of these systems.

3.15. Schedule and Contracting

Upon approval of the CAP, the proposed schedule for completion of the corrective actions is provided in Table 11, below. Reporting will be completed within 30 days of completing Site activities. Quarterly SSD system monitoring will begin three months after SSD system startup. Proposed contractors are summarized in Table 12, below.

Table 11: Proposed Schedule

Task	Responsible Party	Duration	Anticipated Start Date	Anticipated Completion Date
Corrective Action Plan Regulatory Review and Approval	VTDEC	3 weeks	April 20, 2022	May 1, 2022
Corrective Action Plan Public Comment Period	VTDEC/Stone	30 days	May 1, 2022	May 30, 2022
SSD System Installation and Startup	Contractor/Stone	3 weeks	June 13, 2022	July 1, 2022
Container Disposal	Contractor/Stone	1 week	June 13, 2022	June 17, 2022
Floor Drain Closure	Contractor/Stone	1 day	Week of June 13, 2022	
Waste Characteristics and Soil Management	Contractor/Stone	3 Weeks	June 13, 2022	July 1, 2022
Corrective Action Construction Completion Report	Stone	4 weeks	July 1, 2022	July 29, 2022

Table 12: Proposed Contractors

Address	Contact	Title	Phone	Email
Corrective Action Planning, Oversight, and Reporting: Stone Environmental, Inc.				
535 Stone Cutters Way Montpelier, VT 05602	Lee Rosberg	Senior Geologist	802-229-5378	lrosberg@stone-env.com
SSD system, Soil Excavation and Engineered Barrier Construction: Neagley & Chase Construction Company				
Meadowland Business Park 66 Bowdoin Street, Suite 100 South Burlington, Vermont 05403	Andrew Martin	CEO	802- 658-6320	amartin@neagleychase.com
Container Disposal and Floor Drain Closure: Absolute Spill Response, LLC				
21 Metro Way Unit 7 PO Box 309 Barre, VT 05641	Steve Singer	Branch Manager	802-552-4200	ssinger@absolutespillresponse.com

3.16. Cost

Stone has prepared a cost estimate for the corrective actions specified herein, including soil management, design, installation, startup, and quarterly monitoring of the SSD system, container disposal, floor drain closure, and subsequent corrective action completion report. The costs presented below are representative of the remedial system design elements, as described within this CAP, which are necessary to mitigate exposure to Site contaminants. The costs include one year of quarterly SSD system O&M performed by a QEP. Additional O&M costs following the first year of system operation are not included in the detailed costs.

Stone utilized past project experience to estimate the cost of the proposed remedies. The estimated cost to implement the corrective actions as described within this CAP is approximately $247,500 as summarized in Table 13. A detailed cost estimate is provided as Appendix C. A 20% contingency has been included to account for variations in contractor bids, and unforeseen circumstances.

Table 13: 202 Bay Street CAP Cost Summary

Task	Professional Services	Consultant	Expenses	Cost
Task 1 - Project Management	$8,460	$0	$187	$8,647
Task 2 - SSD System Installation & Startup	$4,368	$10,197	$4,685	$19,250
Task 3 - SSD System Quarterly Monitoring - 1 Year	$5,274	$2,640	$2,148	$10,062
Task 4 - Soil Management	$10,012	$121,002	$1,665	$132,679
Task 5 - Container Disposal	$1,664	$22,000	$289	$23,953
Task 6 - Floor Drain Closure	$832	$5,500	$145	$6,477
Task 7 - Corrective Action Construction Completion Report	$5,000	$0	$160	$5,160
TOTAL	**$35,610**	**$161,339**	**$9,278**	**$206,227**
TOTAL (20% Contingency)	**$42,732**	**$193,607**	**$11,134**	**$247,473**

4. References

Ratcliffe, N.M., Stanley, R.S., Gale, M.H., Thompson, P.J., and Walsh, G.J., 2011, *Bedrock Geologic Map of Vermont*, U.S. Geological Survey Scientific Investigations Map 3184, 3 sheets, scale 1:100,000.

Stone Environmental, Inc., 2021a. *Phase I Environmental Site Assessment: 202 Bay Street, St. Johnsbury, Vermont, Revision 1*. January 26.

Stone Environmental, Inc., 2021b. *Phase II Environmental Site Assessment Report: 202 Bay Street, St. Johnsbury, Vermont, Revision 2*. August 9

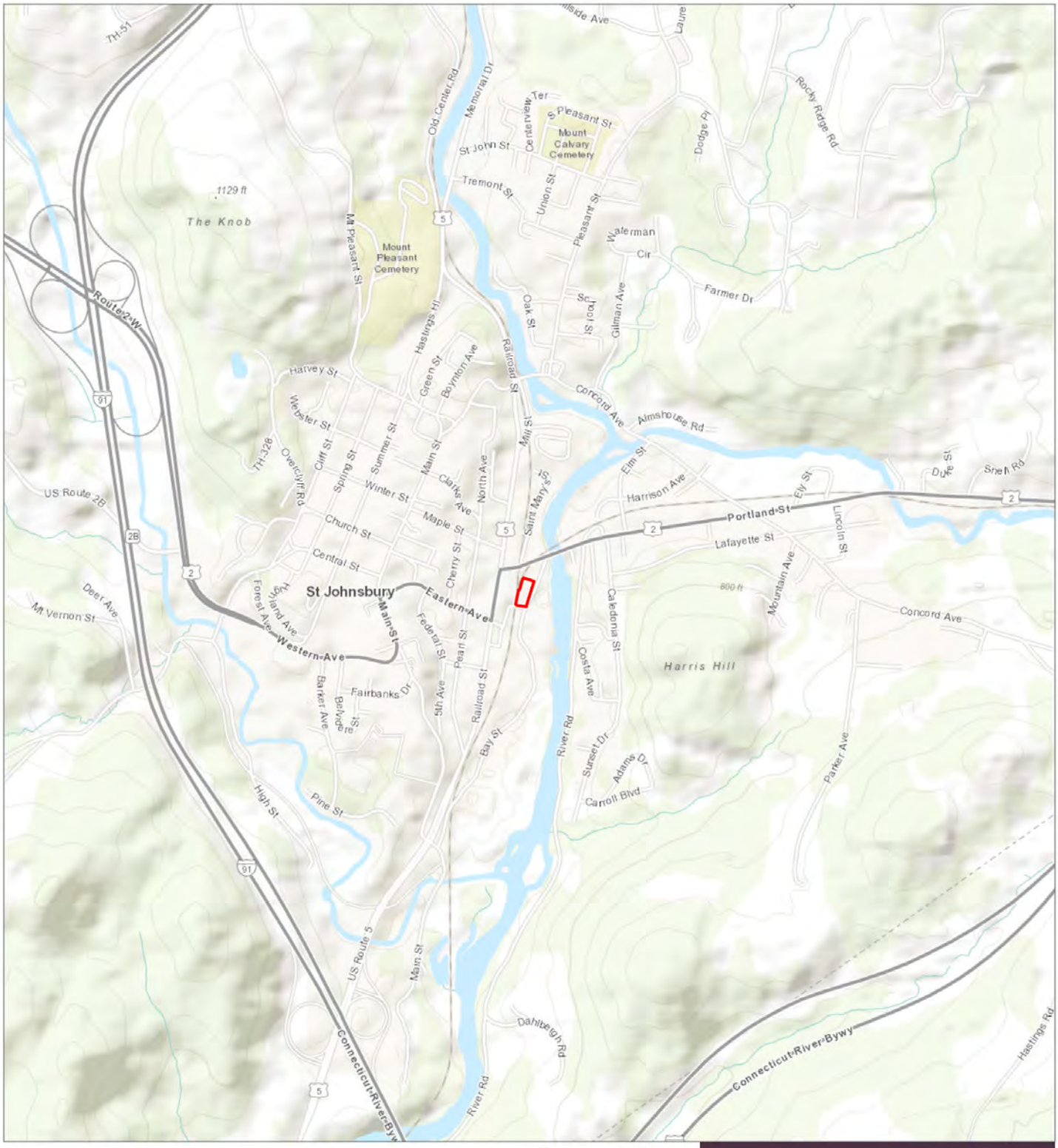
Stone Environmental, Inc., 2022. *Supplemental Site Investigation Report and Evaluation of Corrective Action Alternatives: 202 Bay Street, St. Johnsbury, Vermont, SMS #20204966*. March 21

Surficial Geologic Map of Vermont, 1970, Stewart and MacClintock, Doll, ed. Digital Data (VT Open Geodata Portal).

Vermont Department of Environmental Conservation, 2017, *Soil Screening Levels for Total Petroleum Hydrocarbons*, May 31.

Vermont Department of Environmental Conservation, 2019, *Investigation and Remediation of Contaminated Properties Rule*, July 6.

Appendix A: Figures



LEGEND

Site Boundary

N

0 500 1,000

Feet

Figure 1: Location Map

202 Bay Street
St. Johnsbury, Vermont

Prepared for VT DEC

STONE ENVIRONMENTAL

Source: Esri World Imagery, VCGI

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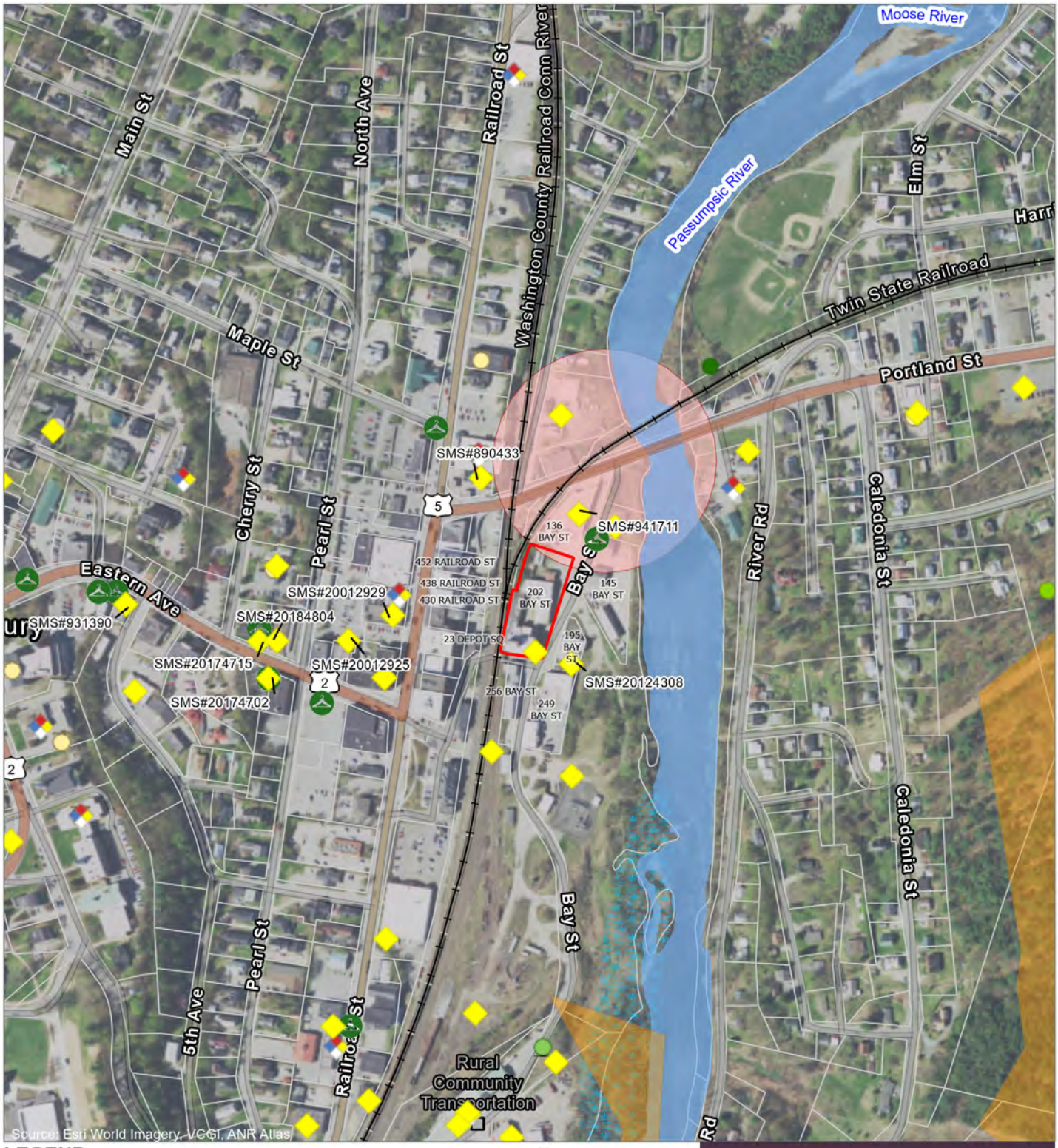

LEGEND

- Site Boundary
- Parcel Boundary
- River
- VT Significant Wetlands Inventory

Habitat Blocks and Wildlife Corridors

- 3

Uncommon Species and Other Features

- Animal
- Rail Lines
- Hazardous Waste Sites
- Hazardous Waste Generators
- Aboveground Storage Tank
- Dry Cleaner
- Underground Storage Tank (working)

Private Wells

- GPS Location
- screen digitized
- E911 Address

N

0 150 300

Feet

Figure 2: Vicinity Map

202 Bay Street
St. Johnsbury, Vermont

Prepared for VT DEC

STONE ENVIRONMENTAL

Path: O:\PROJ-20\EAR\20-117 202 Bay Street\GIS\20-117 202 Bay Street\20-117 202 Bay Street.aprx Saved: 7/27/2021 by frajnak

LEGEND

- Site Boundary
- Building of Interest
- Former Machine Shop
- Parcel Boundary
- Hazardous Waste Sites
- Point of Interest

2021 Sample Locations

- Bulk Oil
- Indoor Air
- Monitoring Well
- Soil Boring
- Soil Gas
- Wipe Sample
- Wood

2022 Sample Locations

- Indoor Air
- Extraction Well
- Soil Boring
- Soil Gas
- Monitoring Well

Site Building Key:
1) Former office building
2) Carriage sheds
3) Former retail and storage building
4) Former grist mill building
5) Former grain elevator and storage building
6) Coal hoppers shed

Site Point of Interest Key:
A) 55-gallon drum of motor oil, gasoline canister, 5-gallon bucket of gear oil
B) Degraded drum pile along railroad embankment
C) Approximately 15-gallon metal drum
D) Spilled 5-gallon buckets of motor oil, unlabeled containers, empty drums
E) Scale Canopy
F) Approximate Location of Former 500-gallon gasoline UST
G) Floor Pit
H) Floor Drain

N

0 10 20
Feet

Path: O:\PROJ-20\EAR\20-117 202 Bay Street\GIS\20-117 202 Bay Street\20-117 202 Bay Street_R01.aprx Saved:

Figure 3: Site Map

202 Bay Street
St. Johnsbury, Vermont

Prepared for VT DEC

STONE ENVIRONMENTAL

LEGEND

Select VOC Results

- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Ethylbenzene
- Naphthalene
- Total Xylene

Sum of selected Fields

- 2,000
- 1,000
- 420

- Soil Boring Location
- Site Boundary
- Parcel Boundary

N

0 10 20

Feet

Vermont Soil Standards (mg/Kg) - Resident / Non-Resident
1,2,4-Trimethylbenzene - 144 / 177
1,3,5-Trimethylbenzene - 144 / 177
Ethylbenzene - 3.7 / 22
Naphthalene - 2.7 / 16
Total Xylene - 252 / 257
B(a)P-TEQ - 0.07 / 1.54 / 0.58 (Urban Background)

Notes:
Size of pie chart is proportional to the sum of detections of analytes listed.
Bold results indicate an exceedance of the residential enforcement standard
Red results indicate an exceedance of the non-residential enforcement standard
Italicized results indicate an exceedance of urban background
U - Analyte not detected; limit of quantitation listed

Figure 4 - VOC and SVOC Concentrations in Soil

202 Bay Street
St Johnsbury VT

Prepared for VT DEC

STONE ENVIRONMENTAL

Path: O:\PROJ-20\EAR\20-117 202 Bay Street\GIS\20-117 202 Bay Street\20-117 202 Bay Street_R01.aprx
Saved: 4/5/2022 by lrajnak

LEGEND

- Site Boundary
- Parcel Boundary
- Soil Sample Location

N

0 10 20

Feet

Vermont Soil Standards - Resident / Non-Resident (mg/Kg)
Arsenic - 16 / 16
Lead - 400 / 800

Notes:

Bold results indicate detections of the analyte
Red results indicate an exceedance of the residential enforcement standard
Italicized results indicate and exceedance of the non-residential enforcement standard
U - Analyte not detected; limit of quantitation listed

Figure 5 - Metals Concentrations in Soil

202 Bay Street
St Johnsbury VT

Prepared for VT DEC

STONE ENVIRONMENTAL

Path: O:\PROJ-20\EAR\20-117 202 Bay Street\GIS\20-117 202 Bay Street\20-117 202 Bay Street_R01.aprx
Saved: 4/5/2022 by lrajnak

LEGEND

- Site Boundary
- Parcel Boundary

VOC & SVOC Results

- Non-Detect
- Detection

Select VOC Concentrations

- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Ethylbenzene
- Naphthalene
- Toluene
- Total Xylene

N

0 10 20

Feet

Vermont Groundwater Enforcement Standards (VGES) (µg/L):
1,2,4-Trimethylbenzene - 23
1,3,5-Trimethylbenzene - 23
Ethylbenzene - 700
Naphthalene - 0.5
Toluene - 1000
Total Xylene - 10000

Benzo(a)pyrene - 0.2

Notes:

Red results indicate an exceedance of the VGES
U - Analyte not detected; limit of quantitation listed

Figure 6 - VOC and SVOC Concentrations in Groundwater - Phase II ESA

202 Bay Street
St Johnsbury VT

Prepared for VT DEC

STONE ENVIRONMENTAL

Path: O:\PROJ-20\EAR\20-117 202 Bay Street\GIS\20-117 202 Bay Street\20-117 202 Bay Street_R01.aprx
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LEGEND

- Site Boundary
- Parcel Boundary
- Monitoring Well Location with Groundwater Elevation (ft)
- 0.1' Groundwater Contours

VOC & SVOC Results

- Non-Detect
- Detection

Select VOC Concentrations

- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Benzene
- Naphthalene

N

0 5 10 15
Feet

Vermont Groundwater Enforcement Standards (VGES) (µg/L):
1,2,4-Trimethylbenzene - 23
1,3,5-Trimethylbenzene - 23
Benzene – 5
Naphthalene - 0.5

Notes:
Monitoring wells gauged by Stone 2/23/2022
and surveyed 2/16/2022, relative to local site datum.
Red results indicate an exceedance of the VGES

Path: O:\PROJ-20\EAR\20-117 202 Bay Street\GIS\20-117 202 Bay Street\20-117 202 Bay Street_R01.aprx
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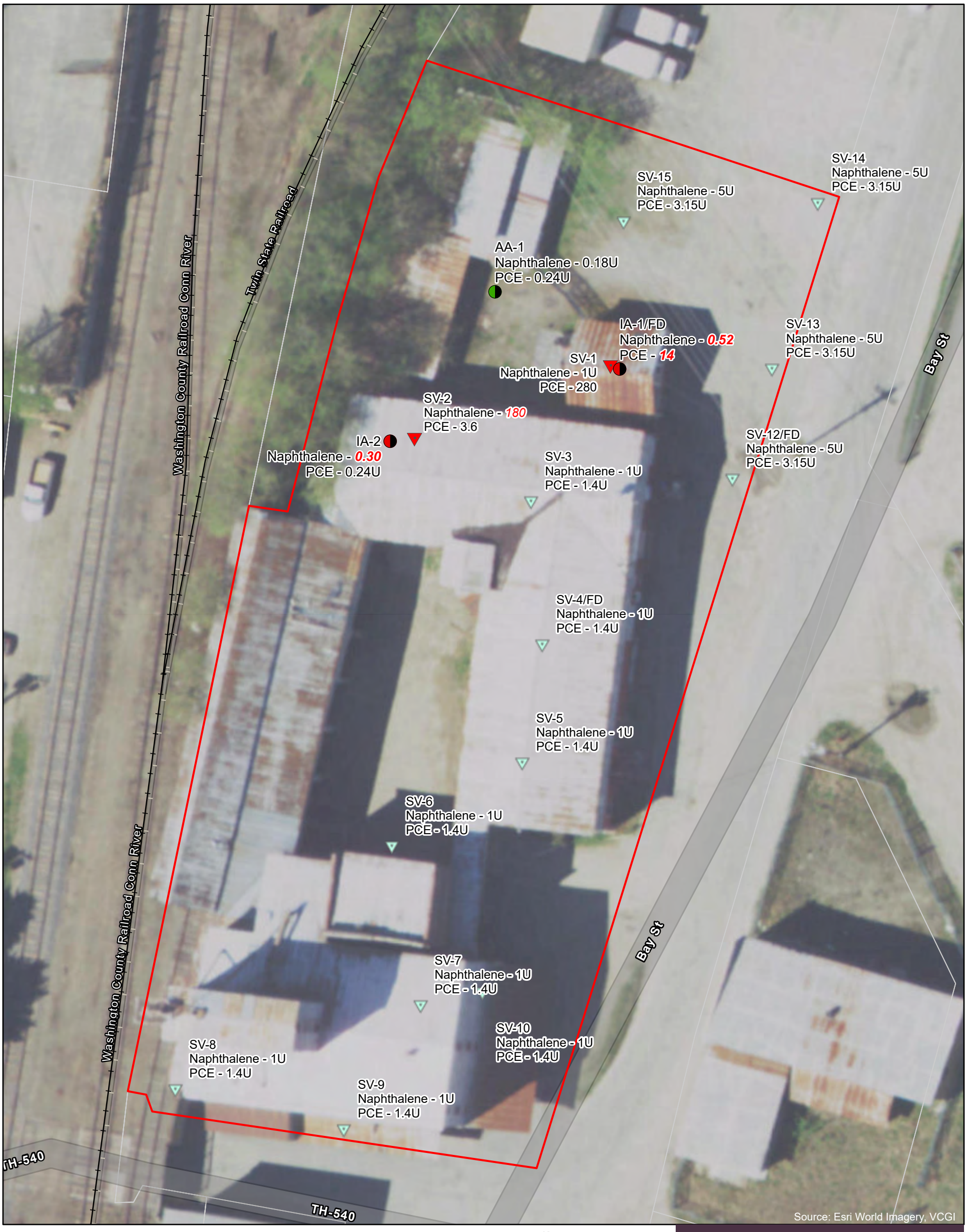
Figure 7 - VOCs in Groundwater - SSI

202 Bay Street
St Johnsbury VT

Prepared for VT DEC

STONE ENVIRONMENTAL



LEGEND

- Site Boundary
- Rail Lines
- Parcel Boundary

Soil Gas Sample Location

- Detection
- Non-Detect

Indoor Air Sample Location

- Detection
- Non-Detect

N

0 10 20

Feet

Vapor Intrusion Standards Resident / Non-Resident (µg/m3):
Naphthalene - 1 / 8
Tetrachloroethylene (PCE) - 21 / 170

Indoor Air Standards Resident / Non-Resident (µg/m3):
Naphthalene - 0.262 / 0.262
Tetrachloroethylene (PCE) - 0.63 / 5.11

Notes:
Red results indicate an exceedance of the resident standard
Italicized results indicate an exceedance of the non-resident standard
U - Analyte not detected; limit of quantitation listed

Figure 8 - Naphthalene & Tetrachloroethylene Concentrations in Soil Gas & Indoor Air

202 Bay Street
St Johnsbury VT

Prepared for VT DEC

STONE ENVIRONMENTAL

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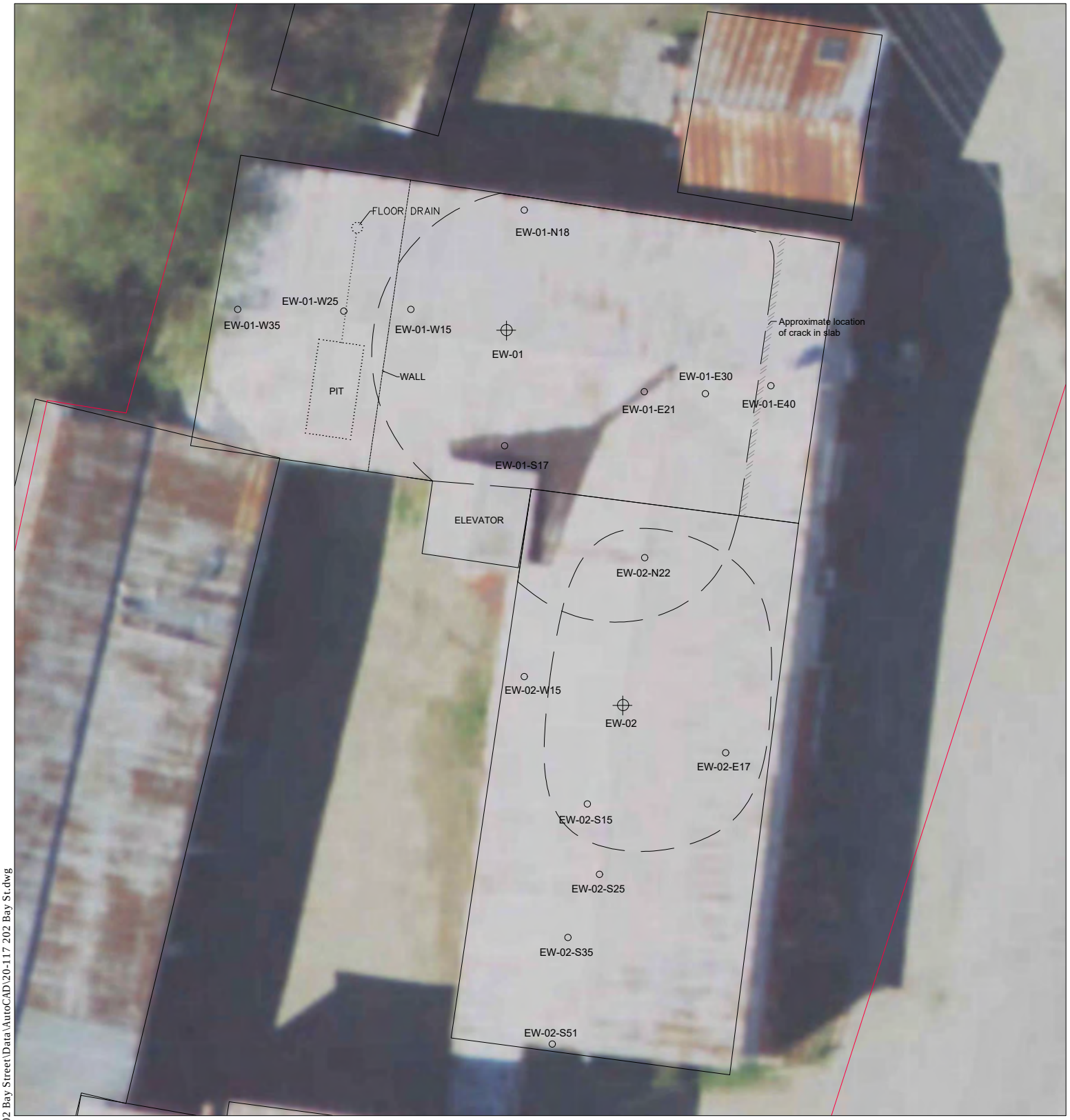


Legend

EW-02 — EXTRACTION WELL

EW-01-W15 — MONITORING POINT

BUILDING OUTLINE (APPROXIMATE)

SITE BOUNDARY

ZONE OF INFLUENCE

APPLIED VACUUM
EW-01: 3.2 inches of water column
EW-02: 2.6 inches of water column

File: O:\PROJ-20\EAR\20-117 202 Bay Street\Data\AutoCAD\20-117 202 Bay St.dwg

DRAWING CREDITS

Drawn On:	3/16/2022
Drawn By:	SLW
Checked On:	3/18/22
Checked By:	KJM
Project No.:	20-117

DRAWING SCALE

0 10 20 Feet

File:

STONE ENVIRONMENTAL

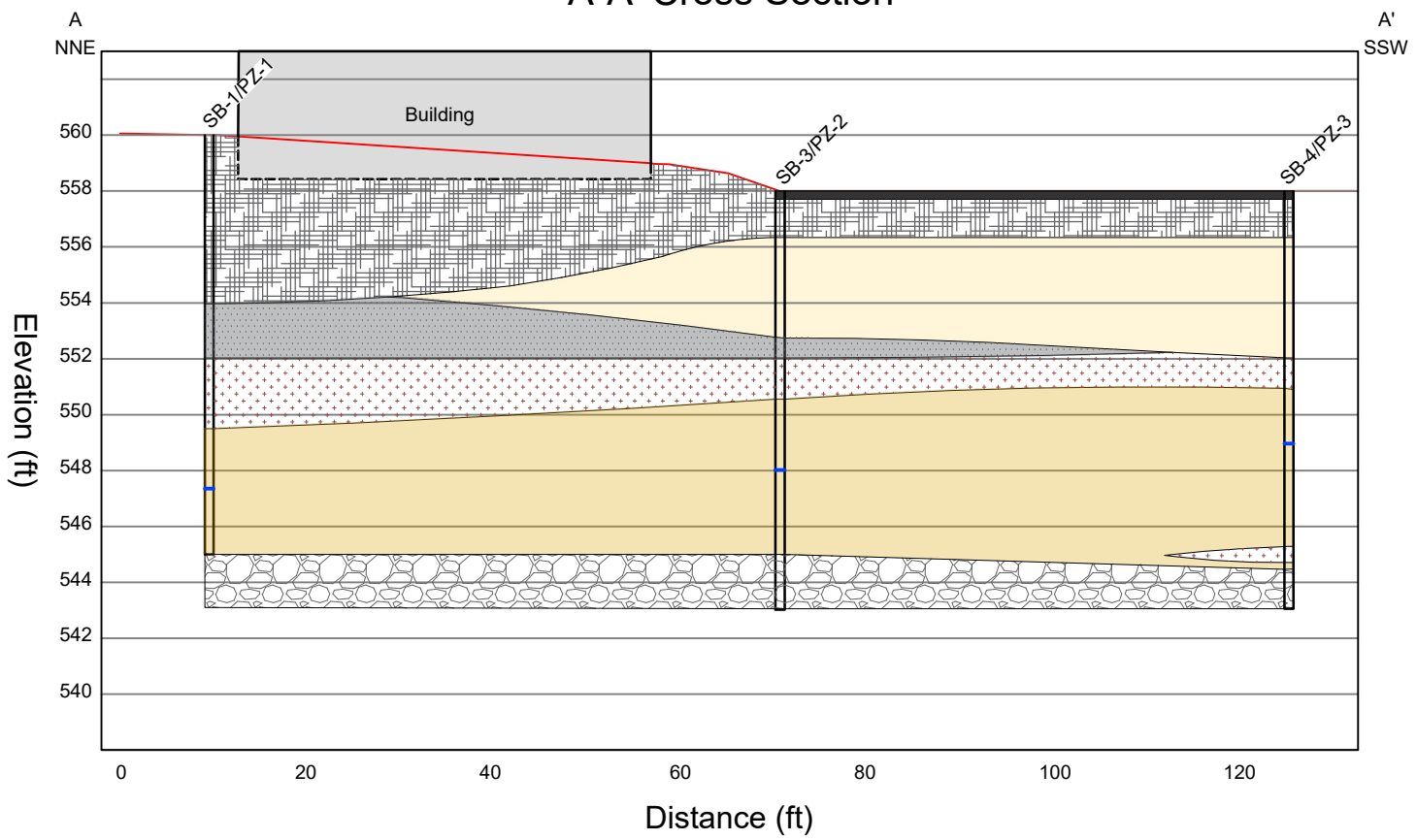
SSD Pilot Test Results
202 Bay Street
St. Johnsbury Vermont

43

FIGURE NO.

9

A-A' Cross Section



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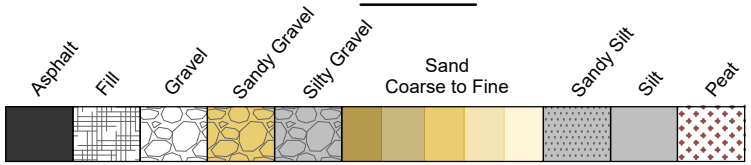


- Soil Boring
- Groundwater
- Ground Surface

Sources:
Ground surface from VCGI 1' Lidar Elevation_CN1T2016_N5383E135

Groundwater elevations from Stone Environmental 7/6/2021 & 7/7/2021

File: O:\PROJ~20\EAR\20-117 202 Bay Street\Data\AutoCAD\20-117 202 Bay Street.dwg

DRAWING CREDITS

Drawn On:	8/4/2021
Drawn By:	LBR
Checked On:	8/4/2021
Checked By:	LJR
Project No.:	20-117

DRAWING SCALE

0 5 10 20 Feet

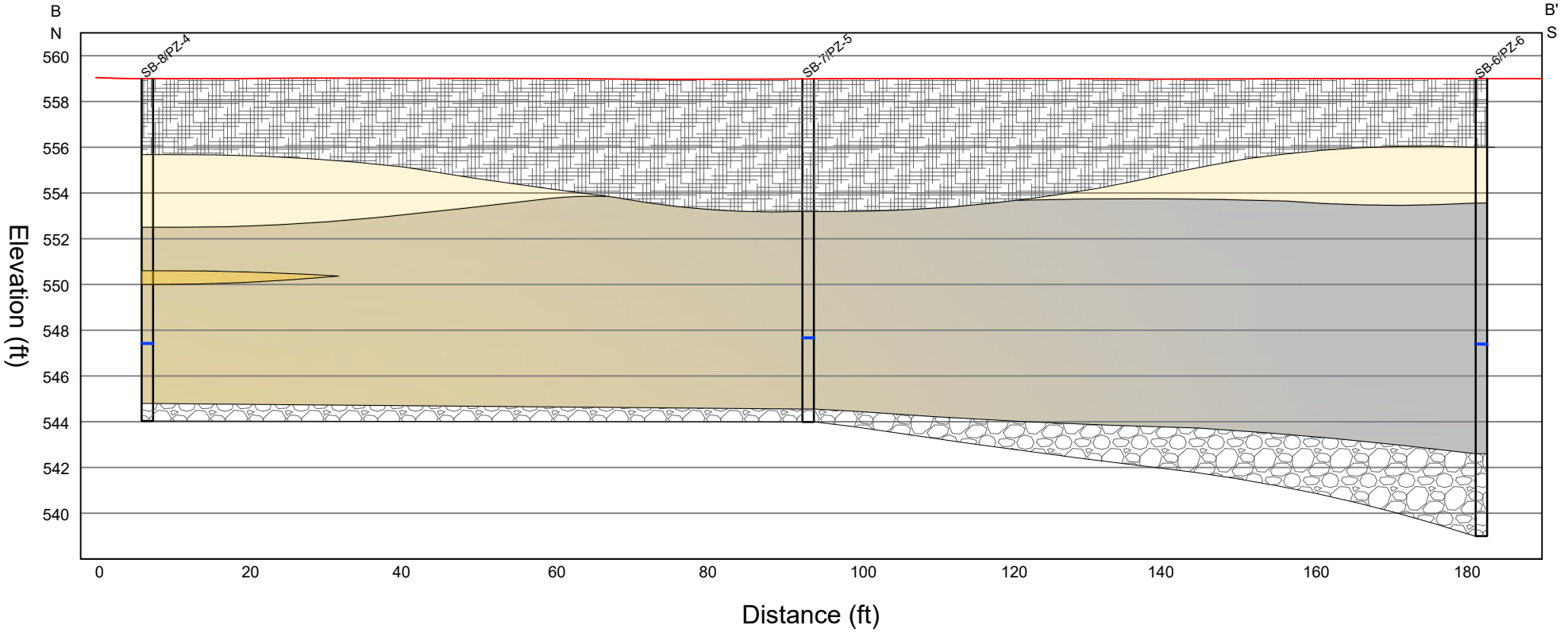
Vertical Scale 3x Horizontal

STONE ENVIRONMENTAL
535 Stone Cutters Way / Montpelier / VT / 05602 / USA
802.229.4541 / info@stone-env.com / www.stone-env.com

A-A' CROSS SECTION
CORRECTIV ACTION PLAN
202 BAY STREET
ST JOHNSBURY VERMONT

FIGURE NO. 10

B-B' Cross Section



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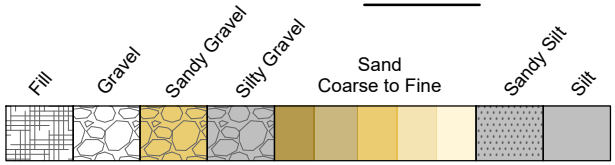

- Soil Boring
- Groundwater
- Ground Surface

Sources:
Ground surface from VCGI 1' Lidar Elevation_CN1T2016_N5383E135

Groundwater elevations from Stone Environmental 7/6/2021 & 7/7/2021

File: O:\PROJ-20\EAR\20-117 202 Bay Street\Data\AutoCAD\20-117 202 Bay Street.dwg

DRAWING CREDITS

Drawn On:	8/4/2021
Drawn By:	LBR
Checked On:	8/4/2021
Checked By:	LJR
Project No.:	20-117

DRAWING SCALE

0 5 10 20 Feet

Vertical Scale 3x Horizontal

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B-B' CROSS SECTION
CORRECTIVE ACTION PLAN
202 BAY STREET
ST JOHNSBURY VERMONT

FIGURE NO.
11

STONE ENVIRONMENTAL

Figure 12: Redevelopment Plan

GENERAL NOTES:

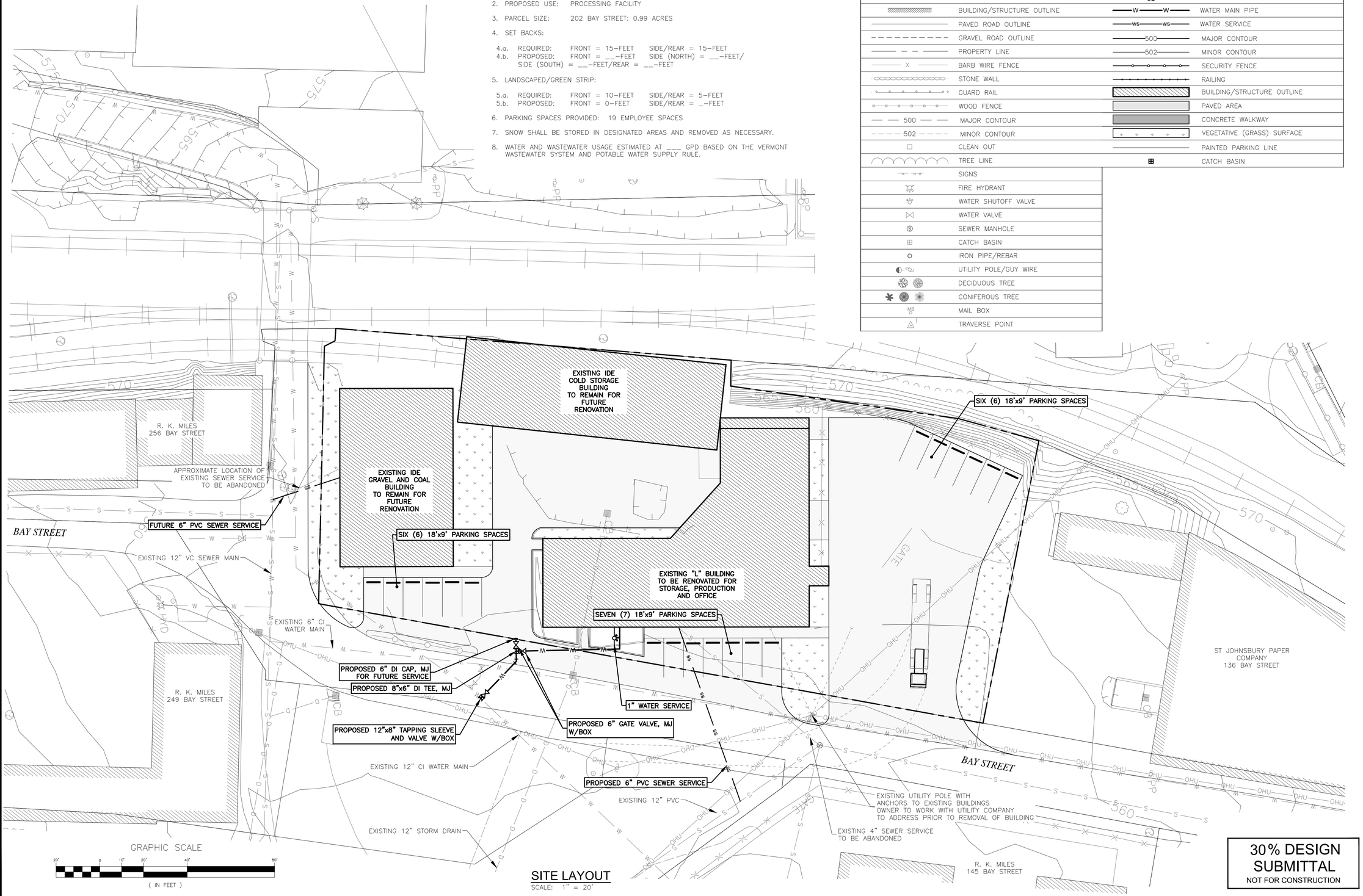
1. TOPOGRAPHIC SURVEY IS BASED ON AEREAL SURVEY AND BOUNDARY LINES BASED ON TAX MAP INFORMATION, THIS IS NOT A BOUNDARY SURVEY.
2. THERE ARE BURIED UTILITIES ON THIS SITE. THE LOCATION OF BURIED UTILITIES ARE NOT WARRANTED TO BE EXACT.
3. REFER TO SHEET C2 FOR GENERAL DETAILS.

ZONING NOTES:

1. ZONING DISTRICT: MIXED USE
2. PROPOSED USE: PROCESSING FACILITY
3. PARCEL SIZE: 202 BAY STREET: 0.99 ACRES
4. SET BACKS:
   - 4.a. REQUIRED: FRONT = 15–FEET SIDE/REAR = 15–FEET
   - 4.b. PROPOSED: FRONT = __–FEET SIDE (NORTH) = __–FEET/ SIDE (SOUTH) = __–FEET/REAR = __–FEET
5. LANDSCAPED/GREEN STRIP:
   - 5.a. REQUIRED: FRONT = 10–FEET SIDE/REAR = 5–FEET
   - 5.b. PROPOSED: FRONT = 0–FEET SIDE/REAR = _–FEET
6. PARKING SPACES PROVIDED: 19 EMPLOYEE SPACES
7. SNOW SHALL BE STORED IN DESIGNATED AREAS AND REMOVED AS NECESSARY.
8. WATER AND WASTEWATER USAGE ESTIMATED AT ___ GPD BASED ON THE VERMONT WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULE.

LEGEND

EXISTING:		PROPOSED:	
W W	WATER MAIN PIPE	S	SEWER MAIN PIPE
S	SEWER MAIN PIPE	ss	SEWER SERVICE
D D	STORM DRAIN PIPE	D	STORM DRAIN PIPE
OHU OHU	OVERHEAD WIRE	UD	6" PERFORATED UNDERDRAIN
	BUILDING/STRUCTURE OUTLINE	W W	WATER MAIN PIPE
	PAVED ROAD OUTLINE	ws ws	WATER SERVICE
	GRAVEL ROAD OUTLINE	500	MAJOR CONTOUR
	PROPERTY LINE	502	MINOR CONTOUR
X	BARB WIRE FENCE		SECURITY FENCE
	STONE WALL		RAILING
	GUARD RAIL		BUILDING/STRUCTURE OUTLINE
	WOOD FENCE		PAVED AREA
500	MAJOR CONTOUR		CONCRETE WALKWAY
502	MINOR CONTOUR		VEGETATIVE (GRASS) SURFACE
	CLEAN OUT		PAINTED PARKING LINE
	TREE LINE		CATCH BASIN
	SIGNS		
	FIRE HYDRANT		
	WATER SHUTOFF VALVE		
	WATER VALVE		
	SEWER MANHOLE		
	CATCH BASIN		
	IRON PIPE/REBAR		
	UTILITY POLE/GUY WIRE		
	DECIDUOUS TREE		
	CONIFEROUS TREE		
	MAIL BOX		
	TRAVERSE POINT		



SITE LAYOUT

SCALE: 1" = 20'

30% DESIGN SUBMITTAL
NOT FOR CONSTRUCTION

DUFRESNE GROUP
CONSULTING ENGINEERS
Suite 200, 56 Main Street
Springfield, Vermont 05156
E-mail: info@dufresnegroup.com
Web: www.dufresnegroup.com
• • •
Springfield, VT • Tel: (802) 674-2904 Fax: (802) 674-2913
Barre, VT • Tel: (802) 479-3698
St. Johnsbury, VT • Tel: (802) 748-8605
Manchester, VT • Tel: (802) 768-8291
• • •
Dufresne Group is owned by Dufresne & Associates, PC

REVISIONS

DATE	COMMENTS	BY

ZION GROWERS
202 BAY STREET FACILITY

SITE LAYOUT

ST JOHNSBURY, VERMONT

Project #	7121022
Project Mgr.	SMW
Design by	EAE
Drawn by	EAE
Reviewed by	SMW
Approved by	SMW
Date	DEC. 30, 2021
Scale	AS SHOWN

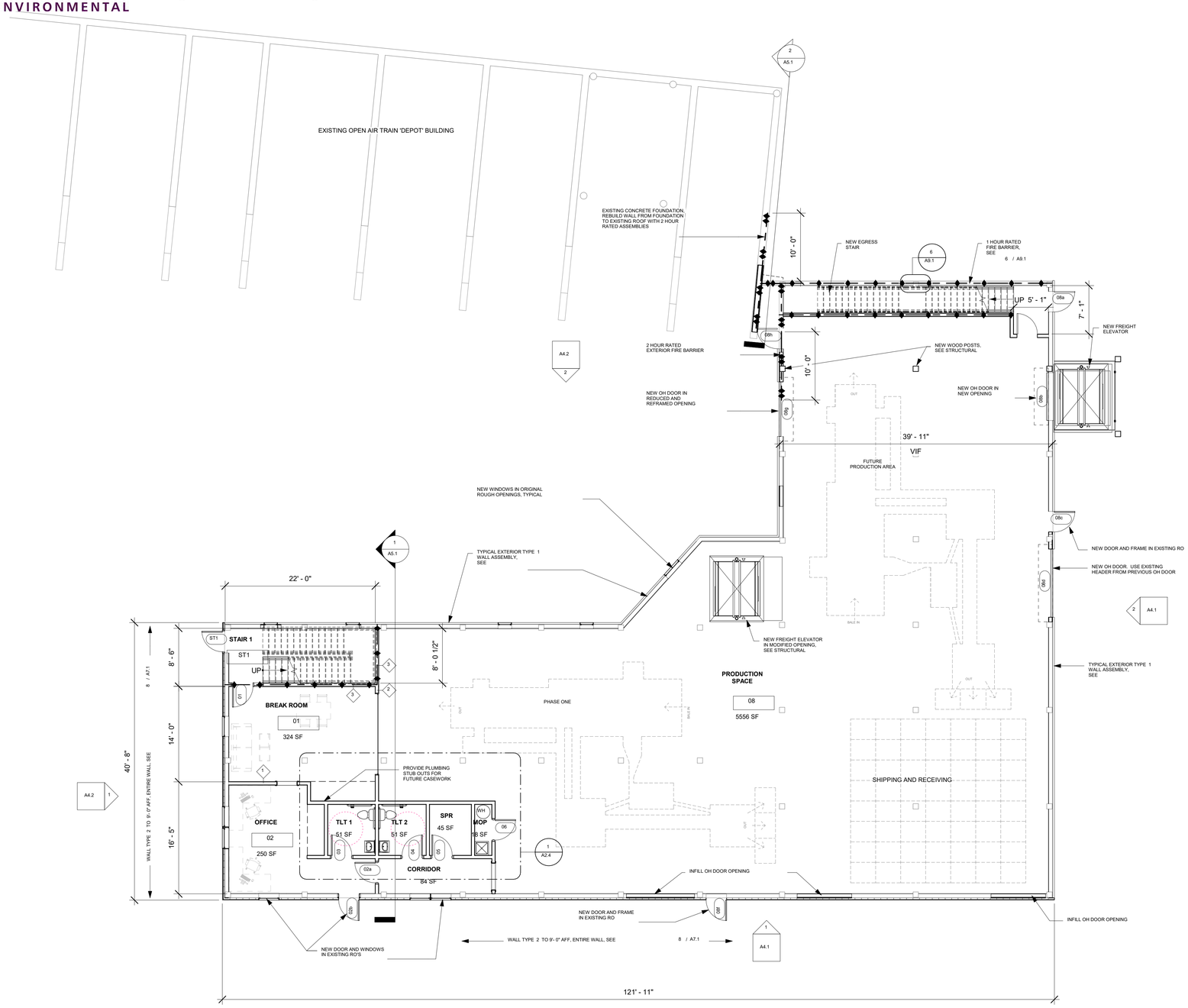
C1

SHEET 1 OF 2

FILE: J:\St. Johnsbury, VT\7121022 Zion Growers\CAD\7121022- prsite.dwg Dec 30, 2021 - 3:42pm

STONE ENVIRONMENTAL

Figure 13: L Building Floor Plan - First Floor



1 FIRST FLOOR PROPOSED PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

NORTH

FIRST FLOOR GENERAL NOTES:

1. ADD METAL STRAPPING TO THE EXTERIOR SHEATHING BEFORE INSTALLING NEW SIDING.
2. REPLACE ALL OH AND MAN DOORS WITH NEW. R-10 MIN FOR OH DOORS, R-2.7 MIN FOR MAN DOORS.
3. ADD NEW CBES COMPLIANT WINDOWS.
4. AT EXISTING SLAB, REPAIR AS NECESSARY. SEAL FOR DUST. FINISHES: TILE CARPET AT OFFICE AND MEETING ROOM.
5. ADD COLUMNS BACK IN AT OVERSIZED OH DOOR. REWORK FRAMING TO RESTORE STRUCTURAL CONNECTIONS.
6. AT BATHROOMS, BOTH ACCESSIBLE. 5/8" MR DRYWALL. FRP WAINSCOT TO 4' AFF. LVT SHEET FLOORING . LIGHT/FAN COMBO. PORCELAIN WC AND LAVITORY. GRAB BARS. MIRROR

PHASE 1 PRICING SET - 1/7/2021
NOT FOR CONSTRUCTION

SCOTT + PARTNERS ARCHITECTURE
7 CARMICHAEL ST ESSEX JUNCTION, VT 05452
P 802.879.5153 F 802.872.2764 SCOTTPARTNERS.COM

project name: **ZION GROWERS**

project address: 202 BAY STREET ST JOHNSBURY , VERMONT 05819

scale:	1/8" = 1'-0"
project no.	21-1454
checked by:	JA
drawn by:	EK/ CD
proj. date:	
sheet date:	12/20/21

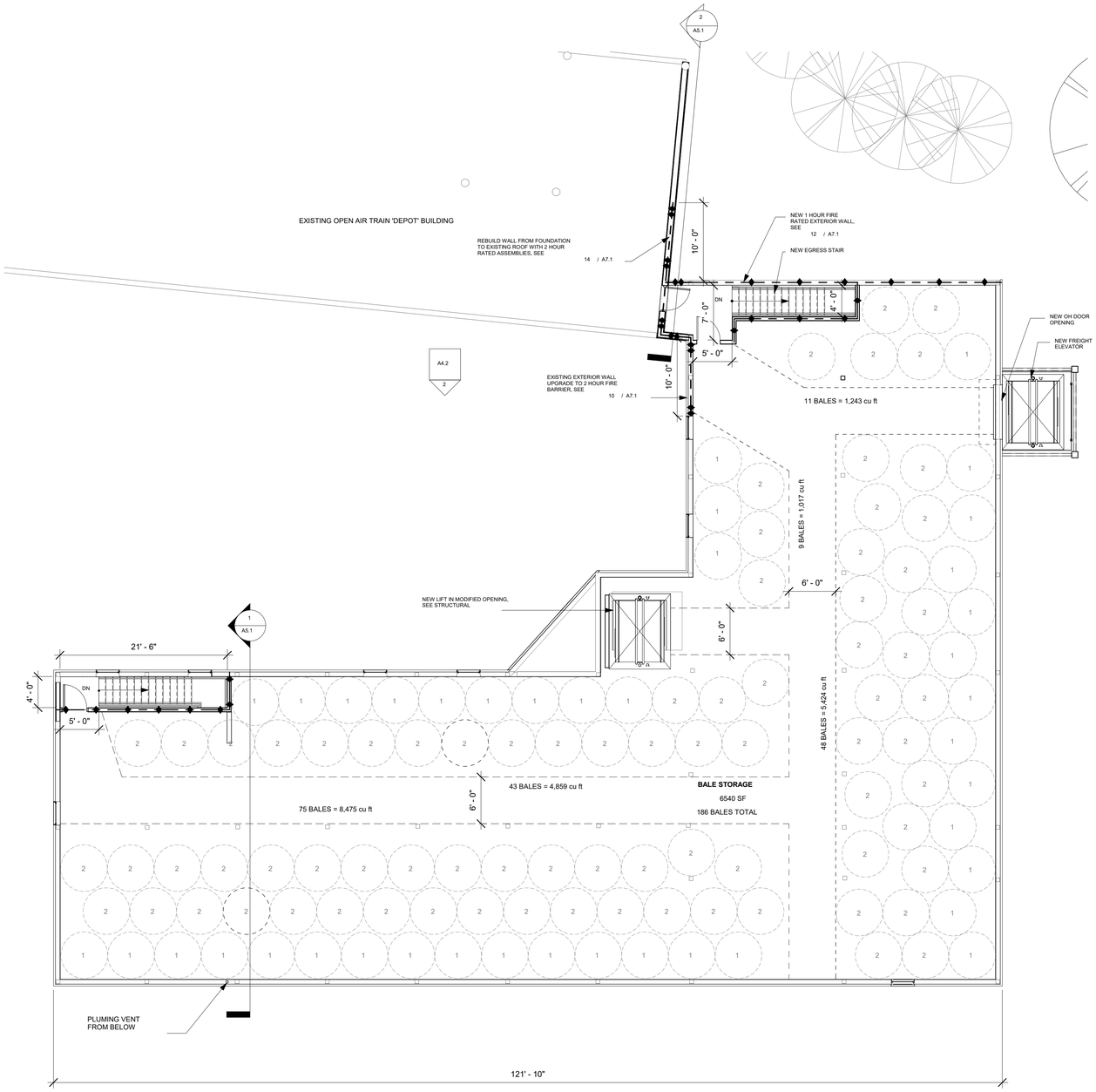
No	Date	Revisions

sheet title: PROPOSED FIRST FLOOR PLAN

sheet no. A2.1

2/22/2022 9:07:45 AM C:\Users\conrad\OneDrive\Documents\Zion Growers L Building_Central_conradKVD5.rvt

Figure 14: L Building Floor Plan - Second Floor



1 SECOND FLOOR PROPOSED PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

NORTH

SECOND FLOOR GENERAL NOTES:

1. BALES STORED IN LARGE "PILES" PER NFPA 45 (25,000 CF MAX) PER PILE. PILES SEPARTED BY 5' - 0" MIN WIDE AISLES, NON-COMBUSTIBLE SEPARATION BETWEEN PILES.
2. TO EXISTING PLANK FLOORING: ADD SHEET AIR BARRIER TO PREVENT DUST/ SMOKE FROM FILTERING DOWN TO FIRST FLOOR LEVEL. ADD 5/8" PLYWOOD ON ENTIRE FLOOR FOR STRUCTURAL DIAPHRAGM AND FORKLIFT TRIFFIC SURFACE.
3. ADD FIRE-BLOCKING AT FLOOR TO WALL JOINT AND TIE NEW FLOOR TO WALLS.

PHASE 1 PRICING SET - 1/7/2021
NOT FOR CONSTRUCTION

SCOTT + PARTNERS ARCHITECTURE
7 CARMICHAEL ST ESSEX JUNCTION, VT 05452
p 802.879.5153 f 802.872.2784 SCOTTPARTNERS.COM

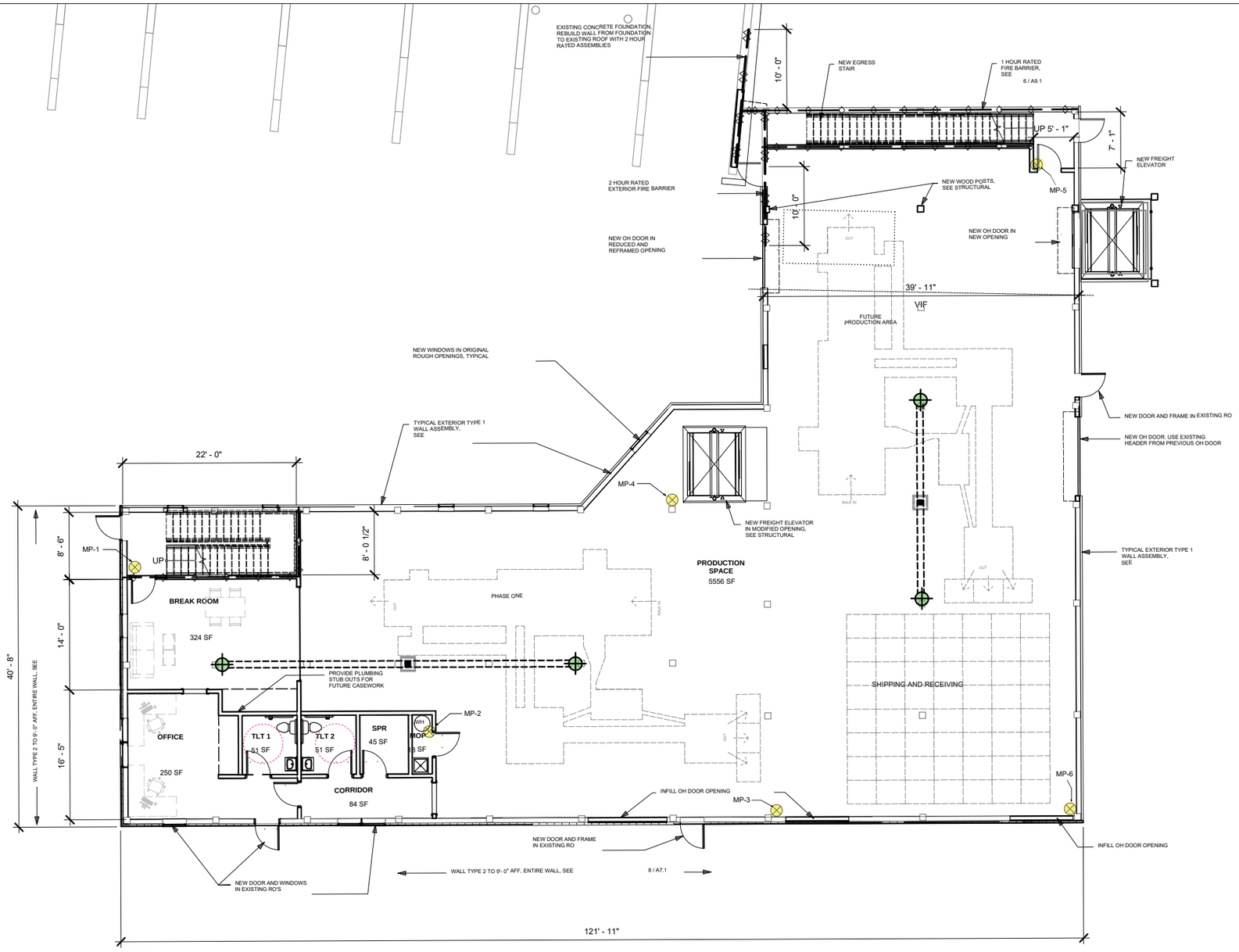
project name: ZION GROWERS
project address: 202 BAY STREET, ST JOHNSBURY, VERMONT, 05819

scale: 1/8" = 1'-0"
project no. 21-1454
checked by: JA
drawn by: EK/ CD
proj. date:
sheet date: 12/20/21

No	Date	Revisions

sheet title: PROPOSED SECOND FLOOR PLAN

sheet no. A2.2



LEGEND

- SSD MONITORING POINT
- SSD EXTRACTION WELL
- SSD EXHAUST ROOF PERFORATION/FAN LOCATION
- SSD EFFLUENT PIPE

Notes:
Building layout derived from Scott + Partners Architecture, Zion Growers, 12/20/21.

File: O:\PROJ-20\EAR\20-117 202 Bay Street\Data\AutoCAD\20-117 202 Bay St.dwg

DRAWING CREDITS

Drawn On: 04/05/2022
Drawn By: LBR
Checked On: 04/07/2022
Checked By: LJR
Project No.: 20-117

REVISIONS

#	Date	Drwn	Chk'd	App'd	Description

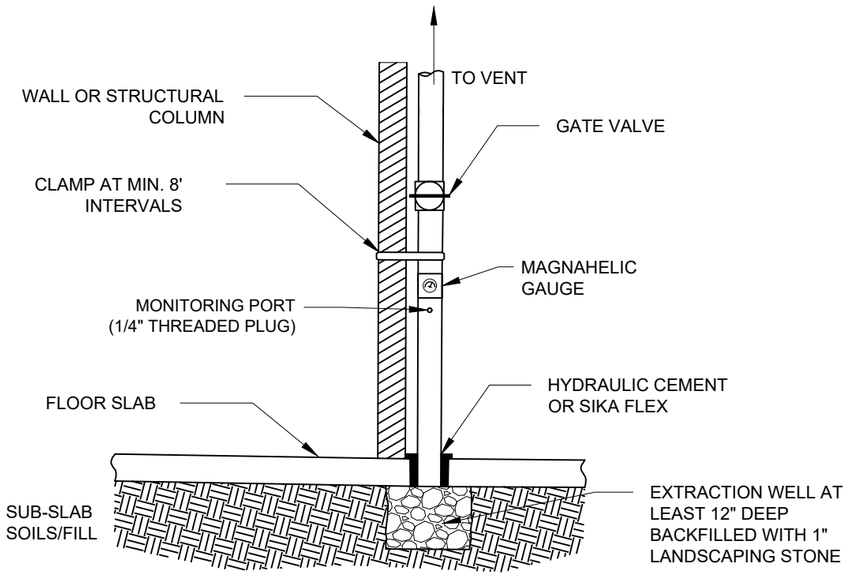
DRAWING SCALE

0 20 40'

STONE ENVIRONMENTAL
535 Stone Cutters Way / Montpelier / VT / 05602 / USA
802.229.4541 / info@stone-env.com / www.stone-env.com

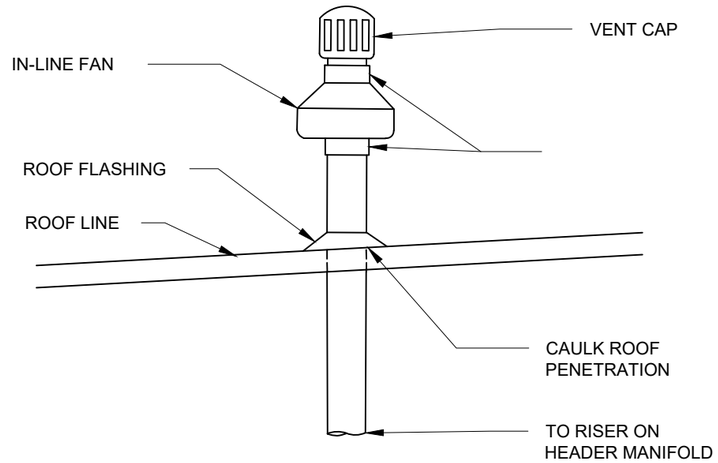
SSD SYSTEM LAYOUT
CORRECTIVE ACTION PLAN
202 BAY STREET
ST JOHNSBURY VERMONT

FIGURE NO. 15



A EXTRACTION WELL AND COLLECTOR PIPE DETAIL
NOT TO SCALE

ELASTOMERIC COUPLINGS



B ROOF PENETRATION AND VENT DETAIL
NOT TO SCALE

File: O:\PROJ-20\EAR\20-117 202 Bay Street\Data\AutoCAD\20-117 202 Bay St.dwg

DRAWING CREDITS

Drawn On: 04/05/2022
Drawn By: LBR
Checked On: 04/07/2022
Checked By: LJR
Project No.: 20-117

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#	Date	Drwn	Chk'd	App'd	Description

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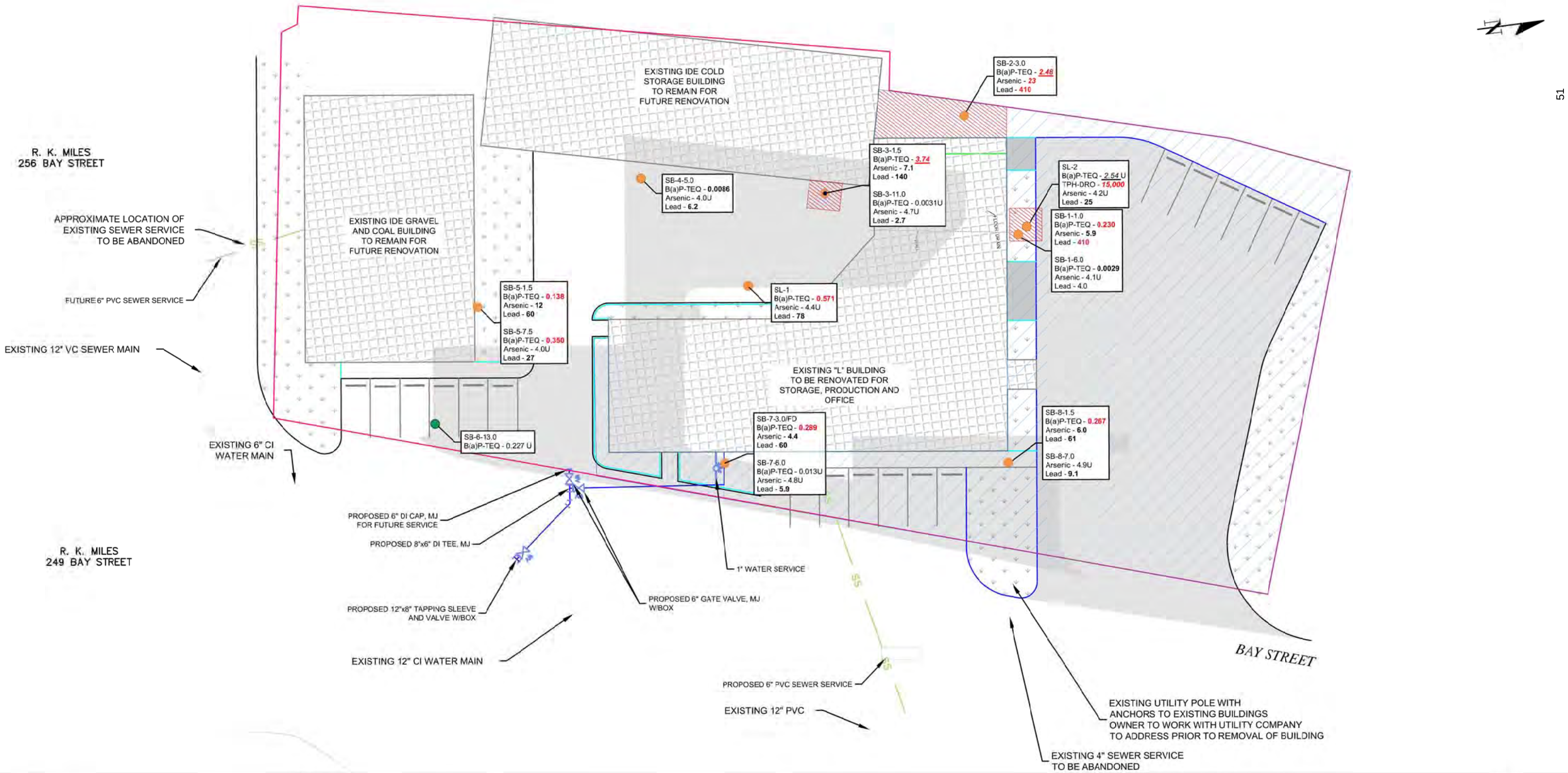
SSD SYSTEM DETAILS
CORRECTIVE ACTION PLAN
202 BAY STREET
ST JOHNSBURY VERMONT

FIGURE NO. 16



LEGEND

B(a)P-TEQ Concentrations:

- Soil Boring - Non-Detect
- Soil Boring - Detection
- Soils above Urban Background or Non-Resident Screening Values, Requires Off-Site Disposal
- Development Soil Area for near-term development
- Paved Area
- Building/Structure Outline
- Vegetative (Grass) Surface

Notes:
B(a)P-TEQ - Benzo(a)pyrene Toxic Equivalency Quotient
TPH-DRO - Total Petroleum Hydrocarbon - Diesel Range Organics
U - Analyte not detected; limit of quantitation listed
Bold results indicate detections of the analyte
Red results indicate an exceedance of the residential enforcement standard
Underlined results indicate an exceedance of urban background enforcement standard
Italicized results indicate an exceedance of the non-residential enforcement standard

Sources:
Building layout derived from Scott + Partners Architecture, Zion Growers, 12/20/21.

Vermont Soil Standards - B(a)P-TEQ (mg/kg)
Resident - 0.07
Urban Background - 0.58
Non-Resident - 1.54

VT Soil Screening Values - TPH-DRO (mg/kg)
Resident - 96
Non-Resident - 440

VT Soil Screening Values - Arsenic (mg/kg)
Resident - 16
Non-Resident - 16

DRAWING CREDITS
Drawn On: 04/05/2022
Drawn By: LBR
Checked On: 04/07/2022
Checked By: LJR
Project No.: 20-117

REVISIONS

#	Date	Drwn	Chk'd	App'd	Description

DRAWING SCALE
0 20 40'

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SOIL MANAGEMENT PLAN
CORRECTIVE ACTION PLAN
202 BAY STREET
ST JOHNSBURY VERMONT

FIGURE NO. 17

Appendix B: Tables

Table B-2
Semi-Volatile Organic Compound Analytical Results - Soil Samples

Sample ID		VSS - Resident Soil	VSS - Non-Resident Soil	EPA Residential RSL	EPA Industrial RSL	SB-1-1.0		SB-1-6.0		SB-2-3.0		SB-3-1.5		SB-3-11.0		SB-4-5.0	
Sample Date						7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q
	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
1,2,4,5-Tetrachlorobenzene	95-94-3	NE	NE	23	350	NA		NA		1.6	U	NA		NA		NA	
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	NA		NA		1.6	U	NA		NA		NA	
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	NA		NA		1.6	U	NA		NA		NA	
1,2-Diphenylhydrazine/Azobenzene	122-66-7	NE	NE	0.68	2.9	NA		NA		1.6	U	NA		NA		NA	
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	NA		NA		1.6	U	NA		NA		NA	
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	NA		NA		1.6	U	NA		NA		NA	
1-Methylnaphthalene	90-12-0	NE	NE	18	73	NA		NA		0.82	U	NA		NA		NA	
2,4,5-Trichlorophenol	95-95-4	NE	NE	6300	82000	NA		NA		1.6	U	NA		NA		NA	
2,4,6-Trichlorophenol	88-06-2	NE	NE	49	210	NA		NA		1.6	U	NA		NA		NA	
2,4-Dichlorophenol	120-83-2	NE	NE	190	2500	NA		NA		1.6	U	NA		NA		NA	
2,4-Dimethylphenol	105-67-9	NE	NE	1300	16000	NA		NA		1.6	U	NA		NA		NA	
2,4-Dinitrophenol	51-28-5	NE	NE	130	1600	NA		NA		3.2	U	NA		NA		NA	
2,4-Dinitrotoluene	121-14-2	NE	NE	1.7	7.4	NA		NA		1.6	U	NA		NA		NA	
2,6-Dinitrotoluene	606-20-2	NE	NE	0.36	1.5	NA		NA		1.6	U	NA		NA		NA	
2-Chloronaphthalene	91-58-7	NE	NE	4800	60000	NA		NA		1.6	U	NA		NA		NA	
2-Chlorophenol	95-57-8	NE	NE	390	5800	NA		NA		1.6	U	NA		NA		NA	
2-Methylnaphthalene	91-57-6	NE	NE	240	3000	**0.25**		0.042	U	0.82	U	0.16	U	0.046	U	0.040	U
2-Methylphenol	95-48-7	NE	NE	3200	41000	NA		NA		1.6	U	NA		NA		NA	
2-Nitroaniline	88-74-4	NE	NE	630	8000	NA		NA		1.6	U	NA		NA		NA	
2-Nitrophenol	88-75-5	NE	NE	NE	NE	NA		NA		1.6	U	NA		NA		NA	
3,3-Dichlorobenzidine	91-94-1	NE	NE	1.2	5.1	NA		NA		0.82	U	NA		NA		NA	
3/4-Methylphenol	108-39-4/106-4	NE	NE	NE	NE	NA		NA		1.6	U	NA		NA		NA	
3-Nitroaniline	99-09-2	NE	NE	NE	NE	NA		NA		1.6	U	NA		NA		NA	
4,6-Dinitro-2-methylphenol	534-52-1	NE	NE	5.1	66	NA		NA		1.6	U	NA		NA		NA	
4-Bromophenylphenylether	101-55-3	NE	NE	NE	NE	NA		NA		1.6	U	NA		NA		NA	
4-Chloro-3-methylphenol	59-50-7	NE	NE	6300	82000	NA		NA		3.2	U	NA		NA		NA	
4-Chloroaniline	106-47-8	NE	NE	2.7	11	NA		NA		3.2	U	NA		NA		NA	
4-Chlorophenylphenylether	7005-72-3	NE	NE	NE	NE	NA		NA		1.6	U	NA		NA		NA	
4-Nitroaniline	100-01-6	NE	NE	27	110	NA		NA		1.6	U	NA		NA		NA	
4-Nitrophenol	100-02-7	NE	NE	NE	NE	NA		NA		3.2	U	NA		NA		NA	
Acenaphthene	83-32-9	NE	NE	3600	45000	0.038	U	0.010	U	0.82	U	0.040	U	0.012	U	0.010	U
Acenaphthylene (SIM)	208-96-8	NE	NE	NE	NE	0.038	U	0.010	U	0.82	U	**0.26**		0.012	U	0.010	U
Acetophenone	98-86-2	NE	NE	7800	120000	NA		NA		1.6	U	NA		NA		NA	
Aniline	62-53-3	NE	NE	95	400	NA		NA		1.6	U	NA		NA		NA	
Anthracene (SIM)	120-12-7	NE	NE	18000	230000	**0.047**		0.0083	U	0.82	U	**0.55**		0.0093	U	0.0080	U
B(a)P-TEQ	50-32-8	0.07	1.54	0.11	2.1	**0.23**		**0.0029**		***2.48***		***3.74***		0.00305	U	**0.0086**	
Benzidine	92-87-5	NE	NE	0.00053	0.01	NA		NA		3.2	U	NA		NA		NA	
Benzo(a)anthracene (SIM)	56-55-3	NE	NE	1.1	21	**0.16**		0.0021	U	**1.9**		**2.7**		0.0023	U	**0.0061**	
Benzo(a)pyrene (SIM)	50-32-8	0.07	1.54	0.11	2.1	**0.14**		0.0021	U	**1.4**		***2.7***		0.0023	U	**0.0057**	
Benzo(b)fluoranthene (SIM)	205-99-2	NE	NE	1.1	21	**0.28**		**0.0022**		**3.4**		**3.1**		0.0023	U	**0.0084**	
Benzo(g,h,i)perylene (SIM)	191-24-2	NE	NE	NE	NE	**0.12**		0.021	U	**0.97**		**1.1**		0.023	U	0.020	U
Benzo(k)fluoranthene (SIM)	207-08-9	NE	NE	11	210	**0.089**		0.0083	U	**1.3**		**1.0**		0.0093	U	0.0080	U
Benzoic Acid	65-85-0	NE	NE	250000	3300000	NA		NA		4.8	U	NA		NA		NA	
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	190	2500	NA		NA		1.6	U	NA		NA		NA	
Bis(2-chloroethyl)ether	111-44-4	NE	NE	0.23	1	NA		NA		1.6	U	NA		NA		NA	
Bis(2-chloroisopropyl)ether	108-60-1	2804	36274	3100	47000	NA		NA		1.6	U	NA		NA		NA	
Bis(2-Ethylhexyl)phthalate	117-81-7	20	120	39	160	NA		NA		1.6	U	NA		NA		NA	
Butylbenzylphthalate	85-68-7	NE	NE	290	1200	NA		NA		1.6	U	NA		NA		NA	
Carbazole	86-74-8	NE	NE	NE	NE	NA		NA		0.82	U	NA		NA		NA	
Chrysene (SIM)	218-01-9	NE	NE	110	2100	**0.25**		0.0083	U	**3.1**		**2.4**		0.0093	U	0.0080	U
Dibenz(a,h)anthracene (SIM)	53-70-3	NE	NE	0.11	2.1	**0.031**		0.0021	U	0.82	U	**0.30**		0.0023	U	0.0020	U
Dibenzofuran	132-64-9	NE	NE	73	1000	NA		NA		1.6	U	NA		NA		NA	

Table B-2
Semi-Volatile Organic Compound Analytical Results - Soil Samples

Sample ID		VSS - Resident Soil	VSS - Non-Resident Soil	EPA Residential RSL	EPA Industrial RSL	SB-1-1.0		SB-1-6.0		SB-2-3.0		SB-3-1.5		SB-3-11.0		SB-4-5.0		
Sample Date						**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	
	CAS#	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**													
Diethylphthalate	84-66-2	NE	NE	51000	660000	NA		NA		1.6	U	NA		NA		NA		
Dimethylphthalate	131-11-3	NE	NE	NE	NE	NA		NA		1.6	U	NA		NA		NA		
Di-n-butylphthalate	84-74-2	NE	NE	6300	82000	NA		NA		1.6	U	NA		NA		NA		
Di-n-octylphthalate	117-84-0	NE	NE	630	8200	NA		NA		1.6	U	NA		NA		NA		
Fluoranthene (SIM)	206-44-0	2301	26371	2400	30000	**0.34**		0.021	U	**7.7**		**6.1**		0.023	U	0.020	U	
Fluorene (SIM)	86-73-7	2301	26371	2400	30000	0.15	U	0.042	U	0.82	U	0.16	U	0.046	U	0.040	U	
Hexachlorobenzene	118-74-1	0.13	0.69	0.21	0.96	NA		NA		*1.6*	U	NA		NA		NA		
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	NA		NA		1.6	U	NA		NA		NA		
Hexachlorocyclopentadiene	77-47-4	NE	NE	1.8	7.5	NA		NA		1.6	U	NA		NA		NA		
Hexachloroethane	67-72-1	NE	NE	1.8	8	NA		NA		1.6	U	NA		NA		NA		
Indeno(1,2,3-cd)pyrene (SIM)	193-39-5	NE	NE	1.1	21	**0.14**		0.0083	U	**1.2**		**1.5**		0.0093	U	0.0080	U	
Isophorone	78-59-1	NE	NE	570	2400	NA		NA		1.6	U	NA		NA		NA		
Naphthalene (SIM)	91-20-3	2.7	16	2	8.6	**0.16**		0.042	U	0.82	U	0.16	U	0.046	U	0.040	U	
Nitrobenzene	98-95-3	NE	NE	5.1	22	NA		NA		1.6	U	NA		NA		NA		
N-Nitrosodimethylamine	62-75-9	NE	NE	0.002	0.034	NA		NA		1.6	U	NA		NA		NA		
N-Nitrosodi-n-propylamine	621-64-7	NE	NE	0.078	0.33	NA		NA		1.6	U	NA		NA		NA		
N-Nitrosodiphenylamine/Diphenylamin	86-30-6	NE	NE	110	470	NA		NA		1.6	U	NA		NA		NA		
Pentachloronitrobenzene	82-68-8	NE	NE	2.7	13	NA		NA		1.6	U	NA		NA		NA		
Pentachlorophenol	87-86-5	0.48	2.9	1	4	NA		NA		1.6	U	NA		NA		NA		
Phenanthrene (SIM)	85-01-8	NE	NE	NE	NE	**0.31**		0.010	U	**2.6**		**1.4**		0.012	U	0.010	U	
Phenol	108-95-2	NE	NE	19000	250000	NA		NA		1.6	U	NA		NA		NA		
Pyrene (SIM)	129-00-0	NE	NE	1800	23000	**0.29**		0.042	U	**5.1**		**4.5**		0.046	U	0.040	U	
Pyridine	110-86-1	NE	NE	78	1200	NA		NA		1.6	U	NA		NA		NA		

Table B-2
Semi-Volatile Organic Compound Analytical Results - Soil Samples

Sample ID		VSS - Resident Soil	VSS - Non-Resident Soil	EPA Residential RSL	EPA Industrial RSL	SB-5-1.5		SB-5-7.5		SB-6-13.0		SB-7-3.0		SB-7-3.0-FD		SB-7-6.0		RPD
Sample Date	CAS#					7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)													
1,2,4,5-Tetrachlorobenzene	95-94-3	NE	NE	23	350	NA		NA		0.48	U	NA		NA		NA		-
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	NA		NA		0.48	U	NA		NA		NA		-
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	NA		NA		0.48	U	NA		NA		NA		-
1,2-Diphenylhydrazine/Azobenzene	122-66-7	NE	NE	0.68	2.9	NA		NA		0.48	U	NA		NA		NA		-
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	NA		NA		0.48	U	NA		NA		NA		-
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	NA		NA		0.48	U	NA		NA		NA		-
1-Methylnaphthalene	90-12-0	NE	NE	18	73	NA		NA		**3.9**		NA		NA		NA		-
2,4,5-Trichlorophenol	95-95-4	NE	NE	6300	82000	NA		NA		0.48	U	NA		NA		NA		-
2,4,6-Trichlorophenol	88-06-2	NE	NE	49	210	NA		NA		0.48	U	NA		NA		NA		-
2,4-Dichlorophenol	120-83-2	NE	NE	190	2500	NA		NA		0.48	U	NA		NA		NA		-
2,4-Dimethylphenol	105-67-9	NE	NE	1300	16000	NA		NA		0.48	U	NA		NA		NA		-
2,4-Dinitrophenol	51-28-5	NE	NE	130	1600	NA		NA		0.93	U	NA		NA		NA		-
2,4-Dinitrotoluene	121-14-2	NE	NE	1.7	7.4	NA		NA		0.48	U	NA		NA		NA		-
2,6-Dinitrotoluene	606-20-2	NE	NE	0.36	1.5	NA		NA		0.48	U	NA		NA		NA		-
2-Chloronaphthalene	91-58-7	NE	NE	4800	60000	NA		NA		0.48	U	NA		NA		NA		-
2-Chlorophenol	95-57-8	NE	NE	390	5800	NA		NA		0.48	U	NA		NA		NA		-
2-Methylnaphthalene (SIM)	91-57-6	NE	NE	240	3000	0.15	U	0.16	U	**9.7**		0.15	U	0.15	U	0.20	U	-
2-Methylphenol	95-48-7	NE	NE	3200	41000	NA		NA		0.48	U	NA		NA		NA		-
2-Nitroaniline	88-74-4	NE	NE	630	8000	NA		NA		0.48	U	NA		NA		NA		-
2-Nitrophenol	88-75-5	NE	NE	NE	NE	NA		NA		0.48	U	NA		NA		NA		-
3,3-Dichlorobenzidine	91-94-1	NE	NE	1.2	5.1	NA		NA		0.24	U	NA		NA		NA		-
3/4-Methylphenol	108-39-4/106-4	NE	NE	NE	NE	NA		NA		0.48	U	NA		NA		NA		-
3-Nitroaniline	99-09-2	NE	NE	NE	NE	NA		NA		0.48	U	NA		NA		NA		-
4,6-Dinitro-2-methylphenol	534-52-1	NE	NE	5.1	66	NA		NA		0.48	U	NA		NA		NA		-
4-Bromophenylphenylether	101-55-3	NE	NE	NE	NE	NA		NA		0.48	U	NA		NA		NA		-
4-Chloro-3-methylphenol	59-50-7	NE	NE	6300	82000	NA		NA		0.93	U	NA		NA		NA		-
4-Chloroaniline	106-47-8	NE	NE	2.7	11	NA		NA		0.93	U	NA		NA		NA		-
4-Chlorophenylphenylether	7005-72-3	NE	NE	NE	NE	NA		NA		0.48	U	NA		NA		NA		-
4-Nitroaniline	100-01-6	NE	NE	27	110	NA		NA		0.48	U	NA		NA		NA		-
4-Nitrophenol	100-02-7	NE	NE	NE	NE	NA		NA		0.93	U	NA		NA		NA		-
Acenaphthene (SIM)	83-32-9	NE	NE	3600	45000	0.038	U	0.040	U	0.24	U	0.038	U	0.038	U	0.050	U	-
Acenaphthylene (SIM)	208-96-8	NE	NE	NE	NE	0.038	U	**0.041**		0.24	U	0.038	U	0.038	U	0.050	U	-
Acetophenone	98-86-2	NE	NE	7800	120000	NA		NA		0.48	U	NA		NA		NA		-
Aniline	62-53-3	NE	NE	95	400	NA		NA		0.48	U	NA		NA		NA		-
Anthracene (SIM)	120-12-7	NE	NE	18000	230000	0.030	U	**0.14**		0.24	U	0.031	U	0.030	U	0.040	U	-
B(a)P-TEQ	50-32-8	0.07	1.54	0.11	2.1	**0.138**		**0.35**		0.277	U	**0.289**		**0.249**		0.0131	U	15%
Benzidine	92-87-5	NE	NE	0.00053	0.01	NA		NA		0.93	U	NA		NA		NA		-
Benzo(a)anthracene (SIM)	56-55-3	NE	NE	1.1	21	**0.083**		**0.30**		0.24	U	**0.18**		**0.15**		0.0099	U	18%
Benzo(a)pyrene (SIM)	50-32-8	0.07	1.54	0.11	2.1	**0.083**		**0.24**		0.24	U	**0.19**		**0.16**		0.0099	U	17%
Benzo(b)fluoranthene (SIM)	205-99-2	NE	NE	1.1	21	**0.15**		**0.29**		0.24	U	**0.30**		**0.26**		0.0099	U	14%
Benzo(g,h,i)perylene (SIM)	191-24-2	NE	NE	NE	NE	**0.23**		**0.13**		0.24	U	**0.14**		**0.12**		0.099	U	15%
Benzo(k)fluoranthene (SIM)	207-08-9	NE	NE	11	210	**0.050**		**0.11**		0.24	U	**0.11**		**0.096**		0.040	U	14%
Benzoic Acid	65-85-0	NE	NE	250000	3300000	NA		NA		1.4	U	NA		NA		NA		-
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	190	2500	NA		NA		0.48	U	NA		NA		NA		-
Bis(2-chloroethyl)ether	111-44-4	NE	NE	0.23	1	NA		NA		0.48	U	NA		NA		NA		-
Bis(2-chloroisopropyl)ether	108-60-1	2804	36274	3100	47000	NA		NA		0.48	U	NA		NA		NA		-
Bis(2-Ethylhexyl)phthalate	117-81-7	20	120	39	160	NA		NA		0.48	U	NA		NA		NA		-
Butylbenzylphthalate	85-68-7	NE	NE	290	1200	NA		NA		0.48	U	NA		NA		NA		-
Carbazole	86-74-8	NE	NE	NE	NE	NA		NA		0.24	U	NA		NA		NA		-
Chrysene (SIM)	218-01-9	NE	NE	110	2100	**0.12**		**0.28**		0.24	U	**0.22**		**0.19**		0.040	U	15%
Dibenz(a,h)anthracene (SIM)	53-70-3	NE	NE	0.11	2.1	**0.021**		**0.034**		0.24	U	**0.034**		**0.032**		0.0099	U	6%
Dibenzofuran	132-64-9	NE	NE	73	1000	NA		NA		0.48	U	NA		NA		NA		-

Table B-2
Semi-Volatile Organic Compound Analytical Results - Soil Samples

Sample ID		VSS - Resident Soil	VSS - Non-Resident Soil	EPA Residential RSL	EPA Industrial RSL	SB-5-1.5		SB-5-7.5		SB-6-13.0		SB-7-3.0		SB-7-3.0-FD		SB-7-6.0		RPD
Sample Date						7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	
	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)													
Diethylphthalate	84-66-2	NE	NE	51000	660000	NA		NA		0.48	U	NA		NA		NA		-
Dimethylphthalate	131-11-3	NE	NE	NE	NE	NA		NA		0.48	U	NA		NA		NA		-
Di-n-butylphthalate	84-74-2	NE	NE	6300	82000	NA		NA		0.48	U	NA		NA		NA		-
Di-n-octylphthalate	117-84-0	NE	NE	630	8200	NA		NA		0.48	U	NA		NA		NA		-
Fluoranthene (SIM)	206-44-0	2301	26371	2400	30000	**0.14**		**0.69**		**0.28**		**0.28**		**0.22**		0.099	U	24%
Fluorene (SIM)	86-73-7	2301	26371	2400	30000	0.15	U	0.16	U	0.24	U	0.15	U	0.15	U	0.20	U	-
Hexachlorobenzene	118-74-1	0.13	0.69	0.21	0.96	NA		NA		0.48	U	NA		NA		NA		-
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	NA		NA		0.48	U	NA		NA		NA		-
Hexachlorocyclopentadiene	77-47-4	NE	NE	1.8	7.5	NA		NA		0.48	U	NA		NA		NA		-
Hexachloroethane	67-72-1	NE	NE	1.8	8	NA		NA		0.48	U	NA		NA		NA		-
Indeno(1,2,3-cd)pyrene (SIM)	193-39-5	NE	NE	1.1	21	**0.099**		**0.16**		0.24	U	**0.16**		**0.15**		0.040	U	6%
Isophorone	78-59-1	NE	NE	570	2400	NA		NA		0.48	U	NA		NA		NA		-
Naphthalene (SIM)	91-20-3	2.7	16	2	8.6	0.15	U	0.16	U	**11**		0.15	U	0.15	U	0.20	U	-
Nitrobenzene	98-95-3	NE	NE	5.1	22	NA		NA		0.48	U	NA		NA		NA		-
N-Nitrosodimethylamine	62-75-9	NE	NE	0.002	0.034	NA		NA		0.48	U	NA		NA		NA		-
N-Nitrosodi-n-propylamine	621-64-7	NE	NE	0.078	0.33	NA		NA		0.48	U	NA		NA		NA		-
N-Nitrosodiphenylamine/Diphenylamin	86-30-6	NE	NE	110	470	NA		NA		0.48	U	NA		NA		NA		-
Pentachloronitrobenzene	82-68-8	NE	NE	2.7	13	NA		NA		0.48	U	NA		NA		NA		-
Pentachlorophenol	87-86-5	0.48	2.9	1	4	NA		NA		0.48	U	NA		NA		NA		-
Phenanthrene (SIM)	85-01-8	NE	NE	NE	NE	**0.095**		**0.57**		**0.34**		**0.13**		**0.11**		0.05	U	17%
Phenol	108-95-2	NE	NE	19000	250000	NA		NA		0.48	U	NA		NA		NA		-
Pyrene (SIM)	129-00-0	NE	NE	1800	23000	0.15	U	**0.57**		**0.26**		**0.26**		**0.21**		0.20	U	21%
Pyridine	110-86-1	NE	NE	78	1200	NA		NA		0.48	U	NA		NA		NA		-

Table B-2
Semi-Volatile Organic Compound Analytical Results - Soil Samples

Sample ID		VSS - Resident Soil	VSS - Non-Resident Soil	EPA Residential RSL	EPA Industrial RSL	SB-8-1.5		SB-8-7.0		SL-1		SL-2	
Sample Date						7/6/2021	Q	7/6/2021	Q	7/7/2021	Q	7/7/2021	Q
	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)								
1,2,4,5-Tetrachlorobenzene	95-94-3	NE	NE	23	350	NA		NA		0.47	U	4.4	U
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	NA		NA		0.47	U	4.4	U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	NA		NA		0.47	U	4.4	U
1,2-Diphenylhydrazine/Azobenzene	122-66-7	NE	NE	0.68	2.9	NA		NA		0.47	U	4.4	U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	NA		NA		0.47	U	4.4	U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	NA		NA		0.47	U	4.4	U
1-Methylnaphthalene	90-12-0	NE	NE	18	73	NA		NA		0.24	U	2.2	U
2,4,5-Trichlorophenol	95-95-4	NE	NE	6300	82000	NA		NA		0.47	U	4.4	U
2,4,6-Trichlorophenol	88-06-2	NE	NE	49	210	NA		NA		0.47	U	4.4	U
2,4-Dichlorophenol	120-83-2	NE	NE	190	2500	NA		NA		0.47	U	4.4	U
2,4-Dimethylphenol	105-67-9	NE	NE	1300	16000	NA		NA		0.47	U	4.4	U
2,4-Dinitrophenol	51-28-5	NE	NE	130	1600	NA		NA		0.92	U	8.6	U
2,4-Dinitrotoluene	121-14-2	NE	NE	1.7	7.4	NA		NA		0.47	U	4.4	U
2,6-Dinitrotoluene	606-20-2	NE	NE	0.36	1.5	NA		NA		0.47	U	4.4	U
2-Chloronaphthalene	91-58-7	NE	NE	4800	60000	NA		NA		0.47	U	4.4	U
2-Chlorophenol	95-57-8	NE	NE	390	5800	NA		NA		0.47	U	4.4	U
2-Methylnaphthalene (SIM)	91-57-6	NE	NE	240	3000	0.16	U	0.19	U	0.24	U	2.2	U
2-Methylphenol	95-48-7	NE	NE	3200	41000	NA		NA		0.47	U	4.4	U
2-Nitroaniline	88-74-4	NE	NE	630	8000	NA		NA		0.47	U	4.4	U
2-Nitrophenol	88-75-5	NE	NE	NE	NE	NA		NA		0.47	U	4.4	U
3,3-Dichlorobenzidine	91-94-1	NE	NE	1.2	5.1	NA		NA		0.24	U	2.2	U
3/4-Methylphenol	108-39-4/106-4	NE	NE	NE	NE	NA		NA		**0.57**		4.4	U
3-Nitroaniline	99-09-2	NE	NE	NE	NE	NA		NA		0.47	U	4.4	U
4,6-Dinitro-2-methylphenol	534-52-1	NE	NE	5.1	66	NA		NA		0.47	U	4.4	U
4-Bromophenylphenylether	101-55-3	NE	NE	NE	NE	NA		NA		0.47	U	4.4	U
4-Chloro-3-methylphenol	59-50-7	NE	NE	6300	82000	NA		NA		0.92	U	8.6	U
4-Chloroaniline	106-47-8	NE	NE	2.7	11	NA		NA		0.92	U	8.6	U
4-Chlorophenylphenylether	7005-72-3	NE	NE	NE	NE	NA		NA		0.47	U	4.4	U
4-Nitroaniline	100-01-6	NE	NE	27	110	NA		NA		0.47	U	4.4	U
4-Nitrophenol	100-02-7	NE	NE	NE	NE	NA		NA		0.92	U	8.6	U
Acenaphthene (SIM)	83-32-9	NE	NE	3600	45000	0.039	U	0.049	U	0.24	U	2.2	U
Acenaphthylene (SIM)	208-96-8	NE	NE	NE	NE	0.039	U	0.049	U	0.24	U	2.2	U
Acetophenone	98-86-2	NE	NE	7800	120000	NA		NA		0.47	U	4.4	U
Aniline	62-53-3	NE	NE	95	400	NA		NA		0.47	U	4.4	U
Anthracene (SIM)	120-12-7	NE	NE	18000	230000	**0.080**		0.039	U	0.24	U	2.2	U
B(a)P-TEQ	50-32-8	0.07	1.54	0.11	2.1	**0.267**		0.0129	U	**0.571**		*2.54*	U
Benzidine	92-87-5	NE	NE	0.00053	0.01	NA		NA		0.92	U	8.6	U
Benzo(a)anthracene (SIM)	56-55-3	NE	NE	1.1	21	**0.21**		0.0098	U	**0.30**		2.2	U
Benzo(a)pyrene (SIM)	50-32-8	0.07	1.54	0.11	2.1	**0.18**		0.0098	U	**0.35**		2.2	U
Benzo(b)fluoranthene (SIM)	205-99-2	NE	NE	1.1	21	**0.24**		0.0098	U	**0.57**		2.2	U
Benzo(g,h,i)perylene (SIM)	191-24-2	NE	NE	NE	NE	**0.11**		0.098	U	0.24	U	2.2	U
Benzo(k)fluoranthene (SIM)	207-08-9	NE	NE	11	210	**0.096**		0.039	U	0.24	U	2.2	U
Benzoic Acid	65-85-0	NE	NE	250000	3300000	NA		NA		1.4	U	13	U
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	190	2500	NA		NA		0.47	U	4.4	U
Bis(2-chloroethyl)ether	111-44-4	NE	NE	0.23	1	NA		NA		0.47	U	4.4	U
Bis(2-chloroisopropyl)ether	108-60-1	2804	36274	3100	47000	NA		NA		0.47	U	4.4	U
Bis(2-Ethylhexyl)phthalate	117-81-7	20	120	39	160	NA		NA		0.47	U	**11**	
Butylbenzylphthalate	85-68-7	NE	NE	290	1200	NA		NA		0.47	U	4.4	U
Carbazole	86-74-8	NE	NE	NE	NE	NA		NA		0.24	U	2.2	U
Chrysene (SIM)	218-01-9	NE	NE	110	2100	**0.23**		0.039	U	**0.33**		2.2	U
Dibenz(a,h)anthracene (SIM)	53-70-3	NE	NE	0.11	2.1	**0.028**		0.0098	U	0.24	U	2.2	U
Dibenzofuran	132-64-9	NE	NE	73	1000	NA		NA		0.47	U	4.4	U

Table B-2
Semi-Volatile Organic Compound Analytical Results - Soil Samples

Sample ID		VSS - Resident Soil	VSS - Non-Resident Soil	EPA Residential RSL	EPA Industrial RSL	SB-8-1.5		SB-8-7.0		SL-1		SL-2	
Sample Date	CAS#					7/6/2021	Q	7/6/2021	Q	7/7/2021	Q	7/7/2021	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)								
Diethylphthalate	84-66-2	NE	NE	51000	660000	NA		NA		0.47	U	4.4	U
Dimethylphthalate	131-11-3	NE	NE	NE	NE	NA		NA		0.47	U	4.4	U
Di-n-butylphthalate	84-74-2	NE	NE	6300	82000	NA		NA		0.47	U	4.4	U
Di-n-octylphthalate	117-84-0	NE	NE	630	8200	NA		NA		0.47	U	4.4	U
Fluoranthene (SIM)	206-44-0	2301	26371	2400	30000	**0.45**		0.098	U	**0.40**		2.2	U
Fluorene (SIM)	86-73-7	2301	26371	2400	30000	0.16	U	0.19	U	0.24	U	2.2	U
Hexachlorobenzene	118-74-1	0.13	0.69	0.21	0.96	NA		NA		0.47	U	4.4	U
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	NA		NA		0.47	U	4.4	U
Hexachlorocyclopentadiene	77-47-4	NE	NE	1.8	7.5	NA		NA		0.47	U	4.4	U
Hexachloroethane	67-72-1	NE	NE	1.8	8	NA		NA		0.47	U	4.4	U
Indeno(1,2,3-cd)pyrene (SIM)	193-39-5	NE	NE	1.1	21	**0.13**		0.039	U	0.24	U	2.2	U
Isophorone	78-59-1	NE	NE	570	2400	NA		NA		0.47	U	4.4	U
Naphthalene (SIM)	91-20-3	2.7	16	2	8.6	0.16	U	0.19	U	0.24	U	2.2	U
Nitrobenzene	98-95-3	NE	NE	5.1	22	NA		NA		0.47	U	4.4	U
N-Nitrosodimethylamine	62-75-9	NE	NE	0.002	0.034	NA		NA		0.47	U	4.4	U
N-Nitrosodi-n-propylamine	621-64-7	NE	NE	0.078	0.33	NA		NA		0.47	U	4.4	U
N-Nitrosodiphenylamine/Diphenylamin	86-30-6	NE	NE	110	470	NA		NA		0.47	U	4.4	U
Pentachloronitrobenzene	82-68-8	NE	NE	2.7	13	NA		NA		0.47	U	4.4	U
Pentachlorophenol	87-86-5	0.48	2.9	1	4	NA		NA		0.47	U	4.4	U
Phenanthrene (SIM)	85-01-8	NE	NE	NE	NE	**0.36**		0.049	U	0.24	U	2.2	U
Phenol	108-95-2	NE	NE	19000	250000	NA		NA		0.47	U	4.4	U
Pyrene (SIM)	129-00-0	NE	NE	1800	23000	**0.39**		0.19	U	**0.48**		**2.7**	
Pyridine	110-86-1	NE	NE	78	1200	NA		NA		0.47	U	4.4	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, November 2020
B(a)P-TEQ - Total carcenogenic PAH calculated as benzo(a)pyrene Toxicity Equivalency Quotient, using Toxicity Equivalency Factors (source: EPA RSL User Guide)
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the residential enforcement standard; defaults to EPA RSL if VSS not established
Italicized results indicate an exceedance of the non-residential enforcement standard; defaults to EPA RSL if VSS not established
NE - screening level not established
NA - Analyte not analyzed
U - Analyte not detected; limit of quantitation listed
RPD - Relative percent difference

Table B-1
Volatile Organic Compound Analytical Results – Soil Samples

Sample ID		VSS - Resident	VSS - Non-Resident	EPA Residential RSL	EPA Industrial RSL	SB-3-1.5		SB-4-2.0		SB-6-13.0		SB-6-3.5		SB-6-3.5-FD		SB-6-8.7		RPD
Sample Date						7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	
	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)													
1,1,1,2-Tetrachloroethane	630-20-6	1.3	8	2	8.8	0.0017	U	0.0015	U	*38*	U	7.5	U	7.8	U	0.96	U	-
1,1,1-Trichloroethane	71-55-6	NE	NE	8100	36000	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	0.6	2.7	0.00084	U	0.00073	U	*19*	U	*3.7*	U	*3.9*	U	0.48	U	-
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	NE	NE	6700	28000	0.0084	U	0.0073	U	38	U	7.5	U	7.8	U	0.96	U	-
1,1,2-Trichloroethane	79-00-5	NE	NE	1.1	5	0.0017	U	0.0015	U	*38*	U	*7.5*	U	*7.8*	U	0.96	U	-
1,1-Dichloroethane	75-34-3	2.1	13	3.6	16	0.0017	U	0.0015	U	*38*	U	7.5	U	7.8	U	0.96	U	-
1,1-Dichloroethylene	75-35-4	NE	NE	230	1000	0.0034	U	0.0029	U	38	U	7.5	U	7.8	U	0.96	U	-
1,1-Dichloropropene	563-58-6	NE	NE	NE	NE	0.0017	U	0.0015	U	76	U	15	U	16	U	1.9	U	-
1,2,3-Trichlorobenzene	87-61-6	NE	NE	63	930	0.0017	U	0.0015	U	190	U	37	U	39	U	4.8	U	-
1,2,3-Trichloropropane	96-18-4	0.00311	0.07	0.0051	0.11	0.0017	U	0.0015	U	*76*	U	*15*	U	*16*	U	*1.9*	U	-
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
1,2,4-Trimethylbenzene	95-63-6	144	177	300	1800	0.0017	U	0.0015	U	***760***		***330***		***490***		**73**		39%
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.01	0.06	0.0053	0.064	0.0017	U	0.0015	U	*190*	U	*37*	U	*39*	U	*4.8*	U	-
1,2-Dibromoethane (EDB)	106-93-4	0.02	0.14	0.036	0.16	0.00084	U	0.00073	U	*19*	U	*3.7*	U	*3.9*	U	*0.48*	U	-
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
1,2-Dichloroethane	107-06-2	0.29	1.7	0.46	2	0.0017	U	0.0015	U	*38*	U	*7.5*	U	*7.8*	U	0.96	U	-
1,2-Dichloropropane	78-87-5	1.5	9.1	2.5	11	0.0017	U	0.0015	U	*38*	U	7.5	U	7.8	U	0.96	U	-
1,3,5-Trichlorobenzene	108-70-3	NE	NE	NE	NE	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
1,3,5-Trimethylbenzene	108-67-8	144	177	270	1500	0.0017	U	0.0015	U	***240***		**110**		**160**		**23**		37%
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
1,3-Dichloropropane	142-28-9	NE	NE	1600	23000	0.00084	U	0.00073	U	19	U	3.7	U	3.9	U	0.48	U	-
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	0.0017	U	0.0015	U	*38*	U	7.5	U	7.8	U	0.96	U	-
1,4-Dioxane	123-91-1	2.8	17	5.3	24	0.084	U	0.073	U	*1900*	U	*370*	U	*390*	U	*48*	U	-
2,2-Dichloropropane	594-20-7	NE	NE	NE	NE	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
2-Butanone (MEK)	78-93-3	16952	26991	27000	190000	0.034	U	0.029	U	760	U	150	U	160	U	19	U	-
2-Chlorotoluene	95-49-8	NE	NE	1600	23000	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
2-Hexanone (MBK)	591-78-6	NE	NE	200	1300	0.017	U	0.015	U	380	U	75	U	78	U	9.6	U	-
4-Chlorotoluene	106-43-4	NE	NE	1600	23000	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
4-Methyl-2-pentanone (MIBK)	108-10-1	NE	NE	33000	140000	0.017	U	0.015	U	380	U	75	U	78	U	9.6	U	-
Acetone	67-64-1	40609	100028	61000	670000	0.084	U	0.073	U	1900	U	370	U	390	U	48	U	-
Acrylonitrile	107-13-1	NE	NE	0.25	1.1	0.0051	U	0.0044	U	*190*	U	*37*	U	*39*	U	4.8	U	-
Benzene	71-43-2	0.7	4.2	1.2	5.1	0.0017	U	0.0015	U	*38*	U	*7.5*	U	*7.8*	U	0.96	U	-
Bromobenzene	108-86-1	NE	NE	290	1800	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
Bromochloromethane	74-97-5	193	597	150	630	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
Bromodichloromethane	75-27-4	NE	NE	0.29	1.3	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
Bromoform	75-25-2	NE	NE	19	86	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
Bromomethane	74-83-9	NE	NE	6.8	30	0.0084	U	0.0073	U	76	U	15	U	16	U	1.9	U	-
Carbon Disulfide	75-15-0	608	662	770	3500	0.0051	U	0.0044	U	190	U	37	U	39	U	4.8	U	-
Carbon Tetrachloride	56-23-5	0.37	2.2	0.65	2.9	0.0017	U	0.0015	U	*38*	U	*7.5*	U	*7.8*	U	0.96	U	-
Chlorobenzene	108-90-7	414	726	280	1300	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
Chlorodibromomethane	124-48-1	NE	NE	8.3	39	0.00084	U	0.00073	U	19	U	3.7	U	3.9	U	0.48	U	-
Chloroethane	75-00-3	NE	NE	14000	57000	0.017	U	0.015	U	76	U	15	U	16	U	1.9	U	-
Chloroform	67-66-3	NE	NE	0.32	1.4	0.0034	U	0.0029	U	*76*	U	*15*	U	*16*	U	*1.9*	U	-
Chloromethane	74-87-3	NE	NE	110	460	0.0084	U	0.0073	U	*38000*	U	*7500*	U	*7800*	U	*960*	U	-
cis-1,2-Dichloroethylene	156-59-2	140	1814	160	2300	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
cis-1,3-Dichloropropene	10061-01-5	NE	NE	NE	NE	0.00084	U	0.00073	U	19	U	3.7	U	3.9	U	0.48	U	-
Dibromomethane	74-95-3	NE	NE	24	99	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
Dichlorodifluoromethane (Freon 12)	75-71-8	NE	NE	87	370	0.017	U	0.015	U	76	U	15	U	16	U	1.9	U	-

Table B-1
Volatile Organic Compound Analytical Results – Soil Samples

Sample ID		VSS - Resident	VSS - Non-Resident	EPA Residential RSL	EPA Industrial RSL	SB-3-1.5		SB-4-2.0		SB-6-13.0		SB-6-3.5		SB-6-3.5-FD		SB-6-8.7		RPD
Sample Date						7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	
	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)													
Diethyl Ether	60-29-7	NE	NE	16000	230000	0.017	U	0.015	U	76	U	15	U	16	U	1.9	U	-
Diisopropyl Ether (DIPE)	108-20-3	NE	NE	2200	9400	0.00084	U	0.00073	U	19	U	3.7	U	3.9	U	0.48	U	-
Ethylbenzene	100-41-4	3.7	22	5.8	25	0.0017	U	0.0015	U	***380***		**9.7**		**13**		***22***		29%
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
Isopropylbenzene (Cumene)	98-82-8	256	264	1900	9900	0.0017	U	0.0015	U	**57**		7.5	U	**9.0**		**4.5**		-
m+p Xylene	108383/10642	NE	NE	NE	NE	0.0034	U	0.0029	U	**1700**		**62**		**88**		**96**		35%
Methyl Acetate	79-20-9	NE	NE	78000	1200000	0.0034	U	0.0029	U	380	U	75	U	78	U	9.6	U	-
Methyl Cyclohexane	108-87-2	NE	NE	NE	NE	0.0017	U	0.0015	U	**69**		7.5	U	7.8	U	**5.3**		-
Methyl tert-Butyl Ether (MTBE)	1634-04-4	649	4464	47	210	0.0034	U	0.0029	U	38	U	7.5	U	7.8	U	0.96	U	-
Methylene Chloride	75-09-2	NE	NE	57	1000	0.017	U	0.015	U	190	U	37	U	39	U	4.8	U	-
Naphthalene	91-20-3	2.7	16	2	8.6	0.0034	U	0.0029	U	***84***		***47***		***67***		**6.8**		35%
n-Butylbenzene	104-51-8	3504	51100	3900	58000	0.0017	U	0.0015	U	**55**		**30**		**47**		**5.3**		44%
n-Propylbenzene	103-65-1	253	261	3800	24000	0.0017	U	0.0015	U	**130**		**22**		**33**		**11**		40%
o-Xylene	95-47-6	NE	NE	650	2800	0.0017	U	0.0015	U	**300**		7.5	U	7.8	U	**11**		-
p-Isopropyltoluene (p-Cymene)	99-87-6	NE	NE	NE	NE	0.0017	U	0.0015	U	38	U	7.5	U	**8.8**		**2.5**		-
sec-Butylbenzene	135-98-8	7009	102200	7800	120000	0.0017	U	0.0015	U	38	U	7.5	U	**9.8**		**1.5**		-
Styrene	100-42-5	NE	NE	6000	35000	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
tert-Amyl Methyl Ether (TAME)	994-05-8	NE	NE	NE	NE	0.00084	U	0.00073	U	19	U	3.7	U	3.9	U	0.48	U	-
tert-Butyl Alcohol (TBA)	75-65-0	NE	NE	NE	NE	0.084	U	0.073	U	760	U	150	U	160	U	19	U	-
tert-Butyl Ethyl Ether (TBEE)	637-92-3	NE	NE	NE	NE	0.00084	U	0.00073	U	19	U	3.7	U	3.9	U	0.48	U	-
tert-Butylbenzene	98-06-6	7009	102200	7800	120000	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
Tetrachloroethylene	127-18-4	2.4	14	24	100	0.0017	U	0.0015	U	*38*	U	7.5	U	7.8	U	0.96	U	-
Tetrahydrofuran	109-99-9	NE	NE	18000	94000	0.0084	U	0.0073	U	380	U	75	U	78	U	9.6	U	-
Toluene	108-88-3	706	798	4900	47000	0.0017	U	0.0015	U	**91**		7.5	U	7.8	U	**2.9**		-
Total Trimethylbenzene	25551-13-7	NE	NE	NE	NE	0.0017	U	0.0015	U	**1000**		**440**		**650**		**96**		39%
Total Xylene	1330-20-7	252	257	580	2500	0.0034	U	0.0029	U	***2000***		**62**		**88**		**107**		35%
trans-1,2-Dichloroethylene	156-60-5	1402	18137	70	300	0.0017	U	0.0015	U	38	U	7.5	U	7.8	U	0.96	U	-
trans-1,3-Dichloropropene	10061-02-6	NE	NE	NE	NE	0.00084	U	0.00073	U	19	U	3.7	U	3.9	U	0.48	U	-
trans-1,4-Dichloro-2-butene	110-57-6	NE	NE	0.0074	0.032	0.0034	U	0.0029	U	*76*	U	*15*	U	*16*	U	*1.9*	U	-
Trichloroethylene	79-01-6	0.68	6.5	0.94	6	0.0017	U	0.0015	U	*38*	U	*7.5*	U	*7.8*	U	0.96	U	-
Trichlorofluoromethane (Freon 11)	75-69-4	NE	NE	23000	350000	0.0084	U	0.0073	U	76	U	15	U	16	U	1.9	U	-
Vinyl Chloride	75-01-4	0.1	0.59	0.059	1.7	0.0084	U	0.0073	U	*76*	U	*15*	U	*16*	U	*1.9*	U	-

Table B-1
Volatile Organic Compound Analytical Results – Soil Samples

Sample ID		VSS - Resident	VSS - Non-Resident	EPA Residential RSL	EPA Industrial RSL	Trip Blank		SL-3		SL-4	
Sample Date	CAS#					7/7/2021	Q	3/1/2022	Q	3/1/2022	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)						
1,1,1,2-Tetrachloroethane	630-20-6	1.3	8	2	8.8	0.0020	U	0.010	U	0.0067	U
1,1,1-Trichloroethane	71-55-6	NE	NE	8100	36000	0.0020	U	0.010	U	0.0067	U
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	0.6	2.7	0.0010	U	0.0062	U	0.004	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	NE	NE	6700	28000	0.010	U	NA		NA	
1,1,2-Trichloroethane	79-00-5	NE	NE	1.1	5	0.0020	U	0.010	U	0.0067	U
1,1-Dichloroethane	75-34-3	2.1	13	3.6	16	0.0020	U	0.010	U	0.0067	U
1,1-Dichloroethylene	75-35-4	NE	NE	230	1000	0.0040	U	0.010	U	0.0067	U
1,1-Dichloropropene	563-58-6	NE	NE	NE	NE	0.0020	U	0.010	U	0.0067	U
1,2,3-Trichlorobenzene	87-61-6	NE	NE	63	930	0.0020	U	0.010	U	0.0067	U
1,2,3-Trichloropropane	96-18-4	0.00311	0.07	0.0051	0.11	0.0020	U	0.010	U	0.0067	U
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	0.0020	U	0.010	U	0.0067	U
1,2,4-Trimethylbenzene	95-63-6	144	177	300	1800	0.0020	U	0.010	U	0.0067	U
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.01	0.06	0.0053	0.064	0.0020	U	0.010	U	0.0067	U
1,2-Dibromoethane (EDB)	106-93-4	0.02	0.14	0.036	0.16	0.0010	U	0.0010	U	0.00067	U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	0.0020	U	0.010	U	0.0067	U
1,2-Dichloroethane	107-06-2	0.29	1.7	0.46	2	0.0020	U	0.010	U	0.0067	U
1,2-Dichloropropane	78-87-5	1.5	9.1	2.5	11	0.0020	U	0.010	U	0.0067	U
1,3,5-Trichlorobenzene	108-70-3	NE	NE	NE	NE	0.0020	U	NA		NA	
1,3,5-Trimethylbenzene	108-67-8	144	177	270	1500	0.0020	U	0.010	U	0.0067	U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	0.0020	U	0.010	U	0.0067	U
1,3-Dichloropropane	142-28-9	NE	NE	1600	23000	0.0010	U	0.010	U	0.0067	U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	0.0020	U	0.010	U	0.0067	U
1,4-Dioxane	123-91-1	2.8	17	5.3	24	0.10	U	NA		NA	
2,2-Dichloropropane	594-20-7	NE	NE	NE	NE	0.0020	U	0.010	U	0.0067	U
2-Butanone (MEK)	78-93-3	16952	26991	27000	190000	0.040	U	NA		NA	
2-Chlorotoluene	95-49-8	NE	NE	1600	23000	0.0020	U	0.010	U	0.0067	U
2-Hexanone (MBK)	591-78-6	NE	NE	200	1300	0.02	U	0.052	U	0.034	U
4-Chlorotoluene	106-43-4	NE	NE	1600	23000	0.0020	U	0.010	U	0.0067	U
4-Methyl-2-pentanone (MIBK)	108-10-1	NE	NE	33000	140000	0.020	U	0.052	U	0.034	U
Acetone	67-64-1	40609	100028	61000	670000	0.10	U	0.52	U	0.34	U
Acrylonitrile	107-13-1	NE	NE	0.25	1.1	0.0060	U	0.010	U	0.0067	U
Benzene	71-43-2	0.7	4.2	1.2	5.1	0.0020	U	0.010	U	0.0067	U
Bromobenzene	108-86-1	NE	NE	290	1800	0.0020	U	0.010	U	0.0067	U
Bromochloromethane	74-97-5	193	597	150	630	0.0020	U	0.010	U	0.0067	U
Bromodichloromethane	75-27-4	NE	NE	0.29	1.3	0.0020	U	0.010	U	0.0067	U
Bromoform	75-25-2	NE	NE	19	86	0.0020	U	0.010	U	0.0067	U
Bromomethane	74-83-9	NE	NE	6.8	30	0.010	U	0.010	U	0.0067	U
Carbon Disulfide	75-15-0	608	662	770	3500	0.0060	U	0.010	U	0.0067	U
Carbon Tetrachloride	56-23-5	0.37	2.2	0.65	2.9	0.0020	U	0.010	U	0.0067	U
Chlorobenzene	108-90-7	414	726	280	1300	0.0020	U	0.010	U	0.0067	U
Chlorodibromomethane	124-48-1	NE	NE	8.3	39	0.0010	U	NA		NA	
Chloroethane	75-00-3	NE	NE	14000	57000	0.020	U	0.010	U	0.0067	U
Chloroform	67-66-3	NE	NE	0.32	1.4	0.0040	U	0.010	U	0.0067	U
Chloromethane	74-87-3	NE	NE	110	460	0.010	U	0.010	U	0.0067	U
cis-1,2-Dichloroethylene	156-59-2	140	1814	160	2300	0.0020	U	0.010	U	0.0067	U
cis-1,3-Dichloropropene	10061-01-5	NE	NE	NE	NE	0.0010	U	0.010	U	0.0067	U
Dibromomethane	74-95-3	NE	NE	24	99	0.0020	U	0.010	U	0.0067	U
Dichlorodifluoromethane (Freon 12)	75-71-8	NE	NE	87	370	0.020	U	0.010	U	0.0067	U
Diethyl Ether	60-29-7	NE	NE	16000	230000	0.020	U	NA		NA	
Diisopropyl Ether (DIPE)	108-20-3	NE	NE	2200	9400	0.0010	U	NA		NA	

Table B-1
Volatile Organic Compound Analytical Results – Soil Samples

Sample ID		VSS - Resident	VSS - Non-Resident	EPA Residential RSL	EPA Industrial RSL	Trip Blank		SL-3		SL-4	
Sample Date	**CAS#**					**7/7/2021**	**Q**	**3/1/2022**	**Q**	**3/1/2022**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**						
Ethylbenzene	100-41-4	3.7	22	5.8	25	0.0020	U	0.010	U	0.0067	U
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	0.0020	U	0.010	U	0.0067	U
Isopropylbenzene (Cumene)	98-82-8	256	264	1900	9900	0.0020	U	0.010	U	0.0067	U
m+p Xylene	108383/10642	NE	NE	NE	NE	0.0040	U	0.010	U	0.0067	U
Methyl Acetate	79-20-9	NE	NE	78000	1200000	0.0040	U	NA		NA	
Methyl Cyclohexane	108-87-2	NE	NE	NE	NE	0.0020	U	NA		NA	
Methyl Ethyl Ketone	78-93-3	16952	26991	27000	190000	NA		0.062	U	0.04	U
Methyl tert-Butyl Ether (MTBE)	1634-04-4	649	4464	47	210	0.0040	U	0.021	U	0.013	U
Methylene Chloride	75-09-2	NE	NE	57	1000	0.020	U	0.021	U	0.013	U
Naphthalene	91-20-3	2.7	16	2	8.6	0.0040	U	0.010	U	0.0067	U
n-Butylbenzene	104-51-8	3504	51100	3900	58000	0.0020	U	0.010	U	0.0067	U
n-Propylbenzene	103-65-1	253	261	3800	24000	0.0020	U	0.010	U	0.0067	U
o-Xylene	95-47-6	NE	NE	650	2800	0.0020	U	0.010	U	0.0067	U
p-Isopropyltoluene (p-Cymene)	99-87-6	NE	NE	NE	NE	0.0020	U	0.010	U	0.0067	U
sec-Butylbenzene	135-98-8	7009	102200	7800	120000	0.0020	U	0.010	U	0.0067	U
Styrene	100-42-5	NE	NE	6000	35000	0.0020	U	0.010	U	0.0067	U
tert-Amyl Methyl Ether (TAME)	994-05-8	NE	NE	NE	NE	0.0010	U	NA		NA	
tert-Butyl Alcohol (TBA)	75-65-0	NE	NE	NE	NE	0.10	U	NA		NA	
tert-Butyl Ethyl Ether (TBEE)	637-92-3	NE	NE	NE	NE	0.0010	U	NA		NA	
tert-Butylbenzene	98-06-6	7009	102200	7800	120000	0.0020	U	0.010	U	0.0067	U
Tetrachloroethylene	127-18-4	2.4	14	24	100	0.0020	U	0.010	U	0.0067	U
Tetrahydrofuran	109-99-9	NE	NE	18000	94000	0.010	U	0.021	U	0.013	U
Toluene	108-88-3	706	798	4900	47000	0.0020	U	0.010	U	0.0067	U
Total Trimethylbenzene	25551-13-7	NE	NE	NE	NE	0.0020	U	0.010	U	0.0067	U
Total Xylene	1330-20-7	252	257	580	2500	0.0040	U	0.010	U	0.0067	U
trans-1,2-Dichloroethylene	156-60-5	1402	18137	70	300	0.0020	U	0.010	U	0.0067	U
trans-1,3-Dichloropropene	10061-02-6	NE	NE	NE	NE	0.0010	U	0.010	U	0.0067	U
trans-1,4-Dichloro-2-butene	110-57-6	NE	NE	0.0074	0.032	0.0040	U	0.021	U	0.013	U
Trichloroethylene	79-01-6	0.68	6.5	0.94	6	0.0020	U	0.010	U	0.0067	U
Trichlorofluoromethane (Freon 11)	75-69-4	NE	NE	23000	350000	0.010	U	0.010	U	0.0067	U
Trichlorotrifluoroethane	76-13-1	NE	NE	6700	28000	NA		0.021	U	0.013	U
Vinyl Chloride	75-01-4	0.1	0.59	0.059	1.7	0.010	U	0.010	U	0.0067	U

Key:
Vermont Soil Standards (VSS) 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, November 2020
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the VSS Resident Soil enforcement standard; defaults to EPA Residential if not established
Italicized results indicate an exceedence of the VSS Non-resident enforcement standard; defaults to EPA Industrical if not established
NE - screening level not established
U - Analyte not detected; limit of quantitation listed
RPD - Relative percent difference
NA - Not Analyzed

Table B-3
Priority Pollutant Metals Analytical Results - Soil Samples

Sample ID		VSS - Resident	VSS - Non-Resident	EPA Residential RSL	EPA Industrial RSL	SB-1-1.0		SB-1-6.0		SB-2-3.0		SB-3-1.5		SB-3-11.0		SB-4-5.0	
Sample Date	**CAS#**					**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**												
Antimony	7440-36-0	26	319	31	470	1.9	U	2.0	U	1.9	U	2.0	U	2.3	U	2.0	U
Arsenic	7440-38-2	16	16	0.68	3	**5.9**		4.1	U	***23***		**7.1**		4.7	U	4.0	U
Beryllium	7440-41-7	35	289	160	2300	**0.47**		**0.55**		**0.51**		**0.80**		**0.41**		**0.57**	
Cadmium	7440-43-9	6.9	87	71	980	**0.81**		0.41	U	**2.8**		**1.5**		0.47	U	0.40	U
Chromium	7440-47-3	NE	NE	NE	NE	**21**		**19**		**33**		**16**		**19**		**18**	
Copper	7440-50-8	10407	139231	3100	47000	**64**		**16**		**180**		**46**		**8.3**		**16**	
Lead	7439-92-1	400	800	400	800	**410**		**4.0**		**410**		**140**		**2.7**		**6.2**	
Nickel	7440-02-0	940	9707	1500	22000	**17**		**18**		**32**		**24**		**15**		**21**	
Selenium	7782-49-2	366	4900	390	5800	3.8	U	4.1	U	38	U	4.0	U	4.7	U	4.0	U
Silver	7440-22-4	237	2483	390	5800	0.38	U	0.41	U	0.38	U	0.40	U	0.47	U	0.40	U
Thallium	7440-28-0	NE	NE	0.78	12	1.9	U	2.0	U	1.9	U	2.0	U	2.3	U	2.0	U
Zinc	7440-66-6	21986	294150	23000	350000	**290**		**26**		**860**		**390**		**31**		**39**	
Mercury	7439-97-6	3.1	3.1	11	46	**0.15**		0.035	U	**0.87**		**0.41**		0.041	U	**0.066**	

Sample ID		VSS - Resident	VSS - Non-Resident	EPA Residential RSL	EPA Industrial RSL	SB-5-1.5		SB-5-7.5		SB-7-3.0		SB-7-3.0-FD		SB-7-6.0		SB-8-1.5		RPD
Sample Date	**CAS#**					**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	**7/6/2021**	**Q**	
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**													
Antimony	7440-36-0	26	319	31	470	1.8	U	2.0	U	1.8	U	1.9	U	2.4	U	1.9	U	-
Arsenic	7440-38-2	16	16	0.68	3	**12**		4.0	U	**4.4**		**4.3**		4.8	U	**6.0**		2%
Beryllium	7440-41-7	35	289	160	2300	**0.40**		**0.36**		**0.38**		**0.43**		**0.60**		**0.66**		12%
Cadmium	7440-43-9	6.9	87	71	980	**0.57**		0.4	U	0.36	U	0.38	U	0.48	U	0.38	U	-
Chromium	7440-47-3	NE	NE	NE	NE	**29**		**13**		**12**		**20**		**25**		**27**		50%
Copper	7440-50-8	10407	139231	3100	47000	**140**		**14**		**14**		**18**		**15**		**22**		25%
Lead	7439-92-1	400	800	400	800	**60**		**27**		**48**		**60**		**5.9**		**61**		22%
Nickel	7440-02-0	940	9707	1500	22000	**15**		**17**		**13**		**16**		**21**		**23**		21%
Selenium	7782-49-2	366	4900	390	5800	3.6	U	4.0	U	3.6	U	3.8	U	4.8	U	3.8	U	-
Silver	7440-22-4	237	2483	390	5800	0.36	U	0.40	U	0.36	U	0.38	U	0.48	U	0.38	U	-
Thallium	7440-28-0	NE	NE	0.78	12	1.8	U	2.0	U	1.8	U	1.9	U	2.4	U	1.9	U	-
Zinc	7440-66-6	21986	294150	23000	350000	**86**		**20**		**84**		**91**		**36**		**110**		8%
Mercury	7439-97-6	3.1	3.1	11	46	**0.18**		**0.034**		**0.17**		**0.17**		0.043	U	**0.13**		0%

Table B-3
Priority Pollutant Metals Analytical Results - Soil Samples

Sample ID		VSS - Resident	VSS - Non-Resident	EPA Residential RSL	EPA Industrial RSL	SB-8-7.0		SL-1		SL-2	
Sample Date	**CAS#**					**7/6/2021**	**Q**	**7/7/2021**	**Q**	**7/7/2021**	**Q**
		(mg/Kg)	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**						
Antimony	7440-36-0	26	319	31	470	2.4	U	2.2	U	2.1	U
Arsenic	7440-38-2	16	16	0.68	3	4.9	U	4.4	U	4.2	U
Beryllium	7440-41-7	35	289	160	2300	**0.64**		**0.4**		0.21	U
Cadmium	7440-43-9	6.9	87	71	980	0.49	U	**0.84**		0.42	U
Chromium	7440-47-3	NE	NE	NE	NE	**27**		**20**		**6.6**	
Copper	7440-50-8	10407	139231	3100	47000	**16**		**30**		**10**	
Lead	7439-92-1	400	800	400	800	**9.1**		**78**		**25**	
Nickel	7440-02-0	940	9707	1500	22000	**23**		**19**		**4.8**	
Selenium	7782-49-2	366	4900	390	5800	4.9	U	4.4	U	4.2	U
Silver	7440-22-4	237	2483	390	5800	0.49	U	0.44	U	0.42	U
Thallium	7440-28-0	NE	NE	0.78	12	2.4	U	2.2	U	2.1	U
Zinc	7440-66-6	21986	294150	23000	350000	**38**		**340**		**150**	
Mercury	7439-97-6	3.1	3.1	11	46	0.038	U	**0.049**		0.038	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, November 2020
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the residential enforcement standard(s)
Italicized results indicate an exceedance of the non-residential enforcement standard(s)
NE - screening level not established
NA - Analyte not analyzed
U - Analyte not detected; limit of quantitation listed

Table B-4
Polychlorinated Biphenyl Analytical Results - Soil Samples

Sample ID		VSS - Resident Soil	VSS - Non-resident Soil	EPA Residential RSL	EPA Industrial RSL	SB-1-1.0		SB-1-1.0-FD		SB-2-3.0		SB-3-1.5		SB-5-1.5		SB-5-7.5	
Sample Date						7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Aroclor-1016	12674-11-2	NE	NE	4.1	27	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Aroclor-1221	11104-28-2	NE	NE	0.2	0.83	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Aroclor-1232	11141-16-5	NE	NE	0.17	0.72	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Aroclor-1242	53469-21-9	NE	NE	0.23	0.95	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Aroclor-1248	12672-29-6	NE	NE	0.23	0.95	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Aroclor-1254	11097-69-1	NE	NE	0.24	0.97	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Aroclor-1260	11096-82-5	NE	NE	0.24	0.99	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Aroclor-1262	37324-23-5	NE	NE	NE	NE	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Aroclor-1268	11100-14-4	NE	NE	NE	NE	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U
Total PCBs	1336-36-3	0.114	0.68	0.23	0.94	0.092	U	0.094	U	0.096	U	0.096	U	0.09	U	0.096	U

Sample ID		VSS - Resident Soil	VSS - Non-resident Soil	EPA Residential RSL	EPA Industrial RSL	SL-1		SL-2	
Sample Date	**CAS#**					7/7/2021	Q	7/7/2021	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)				
Aroclor-1016	12674-11-2	NE	NE	4.1	27	0.11	U	0.10	U
Aroclor-1221	11104-28-2	NE	NE	0.2	0.83	0.11	U	0.10	U
Aroclor-1232	11141-16-5	NE	NE	0.17	0.72	0.11	U	0.10	U
Aroclor-1242	53469-21-9	NE	NE	0.23	0.95	0.11	U	0.10	U
Aroclor-1248	12672-29-6	NE	NE	0.23	0.95	0.11	U	0.10	U
Aroclor-1254	11097-69-1	NE	NE	0.24	0.97	0.11	U	0.10	U
Aroclor-1260	11096-82-5	NE	NE	0.24	0.99	0.11	U	0.10	U
Aroclor-1262	37324-23-5	NE	NE	NE	NE	0.11	U	0.10	U
Aroclor-1268	11100-14-4	NE	NE	NE	NE	0.11	U	0.10	U
Total PCBs	1336-36-3	0.114	0.68	0.23	0.94	0.11	U	0.10	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, November 2020
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the residential enforcement standard(s)
Italicized results indicate an exceedance of the non-residential enforcement standard(s)
NE - screening level not established
U - Analyte not detected; limit of quantitation listed

Table B-5
Herbicide Analytical Results – Soil Samples

Sample ID		VSS - Resident Soil	VSS - Non-resident Soil	EPA Residential RSL	EPA Industrial RSL	SB-2-3.0		SL-1	
Sample Date						7/6/2021	Q	7/7/2021	Q
	CAS#	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)				
2,4,5-T	93-76-5	630	8200	8200	NE	12	U	14	U
2,4,5-TP (Silvex)	93-72-1	510	6600	6600	NE	12	U	14	U
2,4-D	94-75-7	700	9600	9600	NE	120	U	140	U
2,4-DB	94-82-6	1900	25000	25000	NE	120	U	140	U
Dalapon	75-99-0	1900	25000	25000	NE	300	U	340	U
Dicamba	1918-00-9	1900	25000	25000	NE	12	U	14	U
Dichloroprop	120-36-5	NE	NE	NE	NE	120	U	140	U
Dinoseb	88-85-7	63	820	820	NE	60	U	68	U
MCPA	94-74-6	32	410	410	NE	*12000*	U	*14000*	U
MCPP	93-65-2	63	820	820	NE	*12000*	U	*14000*	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, November 2020
µg/kg - micrograms per kilogram (parts per billion)
Shaded results indicate an exceedance of the residential enforcement standard(s)
Italicized results indicate an exceedance of the non-residential enforcement standard(s)
NE - screening level not established
U - Analyte not detected; limit of quantitation listed

Table B-6
Total Petroleum Hydrocarbrons Analytical Results - Soil Samples

Sample ID		VT Soil Screening Value - Resident	VT Soil Screening Value - Non Resident	SB-6-13.0		SL-2		SL-3		SL-4	
Sample Date				**7/6/2021**	**Q**	**7/7/2021**	**Q**	**3/1/2022**	**Q**	**3/1/2022**	**Q**
	CAS#	**mg/Kg**	**mg/Kg**								
Diesel Range Organics	C-999	96	440	NA		***15000***		***140***	U	***59***	U
Gasoline Range Organics (GRO)	NA	82	420	***11000***		NA		NA		NA	

Key:
Vermont Soil Standards from Investigation and Remediation of Contaminated Properties Rule, July 2019
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the residential enforcement standard(s)
Italicized results indicate an exceedance of the non-residential enforcement standard(s)
NE - screening level not established
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed
NA - Not Analyzed

Table B-7
Volatile Organic Compound Analytical Results - Groundwater Samples

Sample ID		VGES	PZ-1		PZ-2		PZ-3		PZ-4		PZ-5		PZ-6		PZ-6-FD		Trip Blank		FP-090121		Trip Blank		
Sample Date			7/7/2021	Q	7/7/2021	Q	7/7/2021	Q	7/7/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/7/2021	Q	8/1/2021	Q	7/7/2021	Q	RPD
	CAS#	(µg/L)																					
1,1,1,2-Tetrachloroethane	630-20-6	70	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,1,1-Trichloroethane	71-55-6	200	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,1,2,2-Tetrachloroethane	79-34-5	NE	0.5	U	0.5	U	1	U	0.5	U	0.5	U	20	U	50	U	0.50	U	5	U	0.5	U	-
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,1,2-Trichloroethane	79-00-5	5	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
1,1-Dichloroethane	75-34-3	70	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,1-Dichloroethylene	75-35-4	7	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
1,1-Dichloropropene	563-58-6	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	80	U	200	U	2.0	U	20	U	2.0	U	-
1,2,3-Trichlorobenzene	87-61-6	0.9	*5.0*	U	*5.0*	U	*10.0*	U	*5.0*	U	*5.0*	U	*200*	U	500	U	5.0	U	50	U	5.0	U	-
1,2,3-Trichloropropane	96-18-4	0.02	*2.0*	U	*2.0*	U	*4.0*	U	*2.0*	U	*2.0*	U	*80*	U	200	U	2.0	U	20	U	2.0	U	-
1,2,4-Trichlorobenzene	120-82-1	70	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,2,4-Trimethylbenzene	95-63-6	23	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	***3400***		***3300***		1.0	U	10	U	1.0	U	3%
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	*5.0*	U	*5.0*	U	*10*	U	*5.0*	U	*5.0*	U	*200*	U	500	U	5.0	U	50	U	5.0	U	-
1,2-Dibromoethane (EDB)	106-93-4	0.05	*0.50*	U	*0.50*	U	*1*	U	*0.50*	U	*0.50*	U	*20*	U	50	U	0.50	U	5	U	0.5	U	-
1,2-Dichlorobenzene	95-50-1	600	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,2-Dichloroethane	107-06-2	5	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
1,2-Dichloropropane	78-87-5	5	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
1,3,5-Trichlorobenzene	108-70-3	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,3,5-Trimethylbenzene	108-67-8	23	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	***1000***		**950**		1.0	U	10	U	1.0	U	5%
1,3-Dichlorobenzene	541-73-1	600	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,3-Dichloropropane	142-28-9	NE	0.50	U	0.50	U	1.00	U	0.50	U	0.50	U	20	U	50	U	0.50	U	5	U	0.5	U	-
1,4-Dichlorobenzene	106-46-7	75	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
1,4-Dioxane	123-91-1	0.3	*50*	U	*50*	U	*100*	U	*50*	U	*50*	U	*2000*	U	5000	U	50	U	500	U	50	U	-
2,2-Dichloropropane	594-20-7	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
2-Butanone (MEK)	78-93-3	511	20	U	20	U	40	U	20	U	20	U	*800*	U	2000	U	20	U	200	U	20	U	-
2-Chlorotoluene	95-49-8	100	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
2-Hexanone (MBK)	591-78-6	NE	10	U	10	U	20	U	10	U	10	U	400	U	1000	U	10	U	100	U	10	U	-
4-Chlorotoluene	106-43-4	100	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
4-Methyl-2-pentanone (MIBK)	108-10-1	NE	10	U	10	U	20	U	10	U	10	U	400	U	1000	U	10	U	100	U	10	U	-
Acetone	67-64-1	950	50	U	50	U	100	U	50	U	50	U	*2000*	U	5000	U	50	U	500	U	50	U	-
Acrylonitrile	107-13-1	NE	5.0	U	5.0	U	10.0	U	5.0	U	5.0	U	200	U	500	U	5.0	U	50	U	5.0	U	-
Benzene	71-43-2	5	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
Bromobenzene	108-86-1	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
Bromochloromethane	74-97-5	8	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
Bromodichloromethane	75-27-4	NE	0.50	U	0.50	U	1.0	U	0.50	U	0.50	U	20	U	50	U	0.5	U	5	U	**6.0**		-
Bromoform	75-25-2	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
Bromomethane	74-83-9	5	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	*80*	U	200	U	2.0	U	20	U	2.0	U	-
Carbon Disulfide	75-15-0	NE	5.0	U	5.0	U	10	U	5.0	U	5.0	U	200	U	500	U	5.0	U	50	U	5.0	U	-
Carbon Tetrachloride	56-23-5	5	*5.0*	U	*5.0*	U	*10*	U	*5.0*	U	*5.0*	U	*200*	U	500	U	5.0	U	50	U	5.0	U	-
Chlorobenzene	108-90-7	100	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
Chlorodibromomethane	124-48-1	NE	0.50	U	0.50	U	1.0	U	0.50	U	0.50	U	20	U	50	U	0.50	U	5	U	**1.3**		-
Chloroethane	75-00-3	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	80	U	200	U	2.0	U	20	U	2	U	-
Chloroform	67-66-3	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	80	U	200	U	2.0	U	20	U	**21**		-
Chloromethane	74-87-3	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	80	U	200	U	2.0	U	20	U	2	U	-
cis-1,2-Dichloroethylene	156-59-2	70	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1		-

Table B-7
Volatile Organic Compound Analytical Results - Groundwater Samples

Sample ID		VGES	PZ-1		PZ-2		PZ-3		PZ-4		PZ-5		PZ-6		PZ-6-FD		Trip Blank		FP-090121		Trip Blank		
Sample Date			7/7/2021	Q	7/7/2021	Q	7/7/2021	Q	7/7/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	7/7/2021	Q	8/1/2021	Q	7/7/2021	Q	RPD
	CAS#	(µg/L)																					
cis-1,3-Dichloropropene	10061-01-5	NE	0.50	U	0.50	U	1.0	U	0.50	U	0.50	U	20	U	50	U	0.50	U	5	U	0.5	U	-
Dibromomethane	74-95-3	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
Dichlorodifluoromethane (Freon 12)	75-71-8	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	80	U	200	U	2.0	U	20	U	2.0	U	-
Diethyl Ether	60-29-7	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	80	U	200	U	2.0	U	20	U	2.0	U	-
Diisopropyl Ether (DIPE)	108-20-3	NE	0.50	U	0.50	U	1.0	U	0.50	U	0.50	U	20	U	50	U	0.5	U	5	U	0.5	U	-
Ethylbenzene	100-41-4	700	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	***2100***		***2600***		1.0	U	10	U	1.0	U	21%
Hexachlorobutadiene	87-68-3	NE	0.60	U	0.60	U	1.2	U	0.60	U	0.60	U	24	U	60	U	0.60	U	6	U	0.6	U	-
Isopropylbenzene (Cumene)	98-82-8	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	**260**		***260***		1.0	U	10	U	1.0	U	0%
m+p Xylene	108383/106423	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	**9300**		**11000**		2.0	U	20	U	2.0	U	17%
Methyl Acetate	79-20-9	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
Methyl Cyclohexane	108-87-2	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	**240**		**130**		1.0	U	10	U	1.0	U	-
Methyl tert-Butyl Ether (MTBE)	1634-04-4	11	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
Methylene Chloride	75-09-2	5	*5.0*	U	*5.0*	U	*10*	U	*5.0*	U	*5.0*	U	*200*	U	500	U	5.0	U	50	U	5.0	U	-
Naphthalene	91-20-3	0.5	*2.0*	U	*2.0*	U	*4.0*	U	*2.0*	U	*2.0*	U	***450***		***350***		2.0	U	20	U	2.0	U	25%
n-Butylbenzene	104-51-8	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	**180**		100	U	1.0	U	10	U	1.0	U	-
n-Propylbenzene	103-65-1	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	**550**		***500***		1.0	U	10	U	1.0	U	10%
o-Xylene	95-47-6	10000	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	**1600**		**1900**		1.0	U	10	U	1.0	U	17%
p-Isopropyltoluene (p-Cymene)	99-87-6	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
sec-Butylbenzene	135-98-8	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	**52**		100	U	1.0	U	10	U	1.0	U	-
Styrene	100-42-5	100	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
tert-Amyl Methyl Ether (TAME)	994-05-8	NE	0.50	U	0.50	U	1.0	U	0.50	U	0.50	U	20	U	50	U	0.50	U	5	U	0.5	U	-
tert-Butyl Alcohol (TBA)	75-65-0	NE	20	U	20	U	40	U	20	U	20	U	800	U	2000	U	20	U	200	U	20	U	-
tert-Butyl Ethyl Ether (TBEE)	637-92-3	NE	0.50	U	0.50	U	1.0	U	0.50	U	0.50	U	20	U	50	U	0.50	U	5	U	0.5	U	-
tert-Butylbenzene	98-06-6	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
Tetrachloroethylene	127-18-4	5	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
Tetrahydrofuran	109-99-9	NE	10	U	10	U	20	U	10	U	10	U	400	U	1000	U	10	U	100	U	10	U	-
Toluene	108-88-3	1000	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	***1300***		***1700***		1.0	U	10	U	1.0	U	27%
Total Trimethylbenzene	25551-13-7	NE	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	**4400**		**4250**		1.0	U	10	U	1.0	U	3%
Total Xylene	1330-20-7	10000	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	***10900***		**12900**		2.0	U	10	U	1.0	U	17%
trans-1,2-Dichloroethylene	156-60-5	100	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	40	U	100	U	1.0	U	10	U	1.0	U	-
trans-1,3-Dichloropropene	10061-02-6	NE	0.50	U	0.50	U	1.0	U	0.50	U	0.50	U	20	U	50	U	0.50	U	5	U	0.5	U	-
trans-1,4-Dichloro-2-butene	110-57-6	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	80	U	200	U	2.0	U	20	U	2.0	U	-
Trichloroethylene	79-01-6	5	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	*40*	U	100	U	1.0	U	10	U	1.0	U	-
Trichlorofluoromethane (Freon 11)	75-69-4	NE	2.0	U	2.0	U	4.0	U	2.0	U	2.0	U	80	U	200	U	2.0	U	20	U	2.0	U	-
Vinyl Chloride	75-01-4	2	*2.0*	U	*2.0*	U	*4.0*	U	*2.0*	U	*2.0*	U	*80*	U	200	U	2.0	U	20	U	2.0	U	-

Table B-7
Volatile Organic Compound Analytical Results - Groundwater Samples

Sample ID		VGES	MW-1		MW-2		MW-3		MW-4		PZ-6		PZ-6-FD		TRIP BLANK		
Sample Date			2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	RPD
	CAS#	(µg/l)															
1,1,1,2-Tetrachloroethane	630-20-6	70	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,1,1-Trichloroethane	71-55-6	200	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,1,2,2-Tetrachloroethane	79-34-5	NE	0.50	U	0.50	U	0.50	U	0.50	U	10	U	10	U	0.50	U	-
1,1,2-Trichloroethane	79-00-5	5	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,1-Dichloroethane	75-34-3	70	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,1-Dichloroethene	75-35-4	7	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,1-Dichloropropene	563-58-6	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,2,3-Trichlorobenzene	87-61-6	0.9	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,2,3-Trichloropropane	96-18-4	0.02	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,2,4-Trichlorobenzene	120-82-1	70	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,2,4-Trimethylbenzene	95-63-6	23	1.0	U	**70**		1.0	U	1.0	U	**790**		**690**		1.0	U	
1,2-Dibromo-3-chloropropane	96-12-8	0.2	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,2-Dibromoethane	106-93-4	0.05	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,2-Dichlorobenzene	95-50-1	600	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,2-Dichloroethane	107-06-2	5	0.60	U	0.60	U	0.60	U	0.60	U	12	U	12	U	0.60	U	-
1,2-Dichloropropane	78-87-5	5	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,3,5-Trimethylbenzene	108-67-8	23	1.0	U	**13**		1.0	U	1.0	U	**190**		**200**		1.0	U	5%
1,3-Dichlorobenzene	541-73-1	600	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,3-Dichloropropane	142-28-9	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
1,4-Dichlorobenzene	106-46-7	75	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
2,2-Dichloropropane	594-20-7	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
2-Chlorotoluene	95-49-8	100	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
2-Hexanone	591-78-6	NE	5.0	U	5.0	U	5.0	U	5.0	U	100	U	100	U	5.0	U	-
2-Isopropyltoluene	527-84-4	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
4-Chlorotoluene	106-43-4	100	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
4-Methyl-2-pentanone	108-10-1	NE	5.0	U	5.0	U	5.0	U	5.0	U	100	U	100	U	5.0	U	-
Acetone	67-64-1	950	25	U	25	U	25	U	25	U	500	U	500	U	25	U	-
Acrylonitrile	107-13-1	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Benzene	71-43-2	5	0.70	U	**2.7**		0.70	U	0.70	U	**18**		**17**		0.70	U	6%
Bromobenzene	108-86-1	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Bromochloromethane	74-97-5	8	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Bromodichloromethane	75-27-4	NE	0.50	U	0.50	U	0.50	U	0.50	U	10	U	10	U	0.50	U	-
Bromoform	75-25-2	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Bromomethane	74-83-9	5	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Carbon Disulfide	75-15-0	NE	5.0	U	5.0	U	5.0	U	5.0	U	100	U	100	U	5.0	U	-
Carbon tetrachloride	56-23-5	5	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Chlorobenzene	108-90-7	100	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Chloroethane	75-00-3	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Chloroform	67-66-3	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Chloromethane	74-87-3	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
cis-1,2-Dichloroethene	156-59-2	70	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
cis-1,3-Dichloropropene	10061-01-5	NE	0.40	U	0.40	U	0.40	U	0.40	U	8.0	U	8.0	U	0.40	U	-
Dibromochloromethane	124-48-1	NE	0.50	U	0.50	U	0.50	U	0.50	U	10	U	10	U	0.50	U	-
Dibromomethane	74-95-3	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Dichlorodifluoromethane	75-71-8	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Ethylbenzene	100-41-4	700	1.0	U	1.0	U	1.0	U	1.0	U	**360**		**350**		1.0	U	3%
Hexachlorobutadiene	87-68-3	NE	0.40	U	0.40	U	0.40	U	0.40	U	8.0	U	8.0	U	0.40	U	-
Isopropylbenzene	98-82-8	NE	1.0	U	**6.9**		1.0	U	1.0	U	**59**		**59**		1.0	U	0%
m&p-Xylene	179601-23-1	NE	1.0	U	**240**		1.0	U	1.0	U	**2600**		**2400**		1.0	U	8%
Methyl ethyl ketone	78-93-3	511	5.0	U	5.0	U	5.0	U	5.0	U	100	U	100	U	5.0	U	-
Methyl t-butyl ether (MTBE)	1634-04-4	11	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Methylene chloride	75-09-2	5	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Naphthalene	91-20-3	0.5	1.0	U	**7.9**		1.0	U	1.0	U	**97**		**110**		1.0	U	13%
n-Butylbenzene	104-51-8	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
n-Propylbenzene	103-65-1	NE	1.0	U	**5.6**		1.0	U	1.0	U	**100**		**100**		1.0	U	0%
o-Xylene	95-47-6	10000	1.0	U	1.0	U	1.0	U	1.0	U	**150**		**150**		1.0	U	0%
p-Isopropyltoluene	99-87-6	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
sec-Butylbenzene	135-98-8	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Styrene	100-42-5	100	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
tert-Butylbenzene	98-06-6	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Tetrachloroethene	127-18-4	5	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-

Table B-7
Volatile Organic Compound Analytical Results - Groundwater Samples

Sample ID		VGES	MW-1		MW-2		MW-3		MW-4		PZ-6		PZ-6-FD		TRIP BLANK		
Sample Date			2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	RPD
	CAS#	(µg/l)															
Tetrahydrofuran (THF)	109-99-9	NE	2.5	U	2.5	U	2.5	U	2.5	U	50	U	50	U	2.5	U	-
Toluene	108-88-3	1000	1.0	U	1.0	U	1.0	U	1.0	U	**190**		**190**		1.0	U	0%
Total Trimethylbenzene	25551-13-7	NE	1.0	U	**83**		1.0	U	1.0	U	**980**		**890**		1.0	U	10%
Total Xylenes	1330-20-7	10000	1.0	U	**240**		1.0	U	1.0	U	**2750**		**2550**		1.0	U	8%
trans-1,2-Dichloroethene	156-60-5	100	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
trans-1,3-Dichloropropene	10061-02-6	NE	0.40	U	0.40	U	0.40	U	0.40	U	8.0	U	8.0	U	0.40	U	-
trans-1,4-dichloro-2-butene	110-57-6	NE	5.0	U	5.0	U	5.0	U	5.0	U	100	U	100	U	5.0	U	-
Trichloroethene	79-01-6	5	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Trichlorofluoromethane	75-69-4	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Trichlorotrifluoroethane	76-13-1	NE	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-
Vinyl chloride	75-01-4	2	1.0	U	1.0	U	1.0	U	1.0	U	20	U	20	U	1.0	U	-

Key:
VGES - Vermont Groundwater Enforcement Standard, July 2019
µg/L - micrograms per liter (parts per billion)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the enforcement standard
NE - screening level not established
U - Analyte not detected; limit of quantitation listed

Table B-8
Semi-Volatile Organic Compound Analytical Results - Groundwater Samples

Sample ID		VGES	PZ-1		PZ-2		PZ-4		PZ-5		PZ-6		PZ-6-FD		
Sample Date			7/7/2021	Q	7/7/2021	Q	7/7/2021	Q	7/6/2021	Q	7/6/2021	Q	7/6/2021	Q	RPD
	CAS#	(µg/L)													
2-Methylnaphthalene (SIM)	91-57-6	NE	1.0	U	0.99	U	0.99	U	1.0	U	**88**		**61**		36%
Acenaphthene (SIM)	83-32-9	NE	0.30	U	0.30	U	0.30	U	0.30	U	**0.62**		**0.41**		41%
Acenaphthylene (SIM)	208-96-8	NE	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	-
Anthracene (SIM)	120-12-7	343	0.20	U	0.20	U	0.20	U	0.20	U	**0.70**		**0.41**		52%
Benzo(a)anthracene (SIM)	56-55-3	NE	0.050	U	0.050	U	0.050	U	0.051	U	**0.72**		**0.46**		44%
Benzo(a)pyrene (SIM)	50-32-8	0.2	0.10	U	0.099	U	0.099	U	0.10	U	**0.55**		**0.34**		47%
Benzo(b)fluoranthene (SIM)	205-99-2	NE	0.050	U	0.050	U	0.050	U	0.051	U	**0.65**		**0.40**		48%
Benzo(g,h,i)perylene (SIM)	191-24-2	NE	0.50	U	0.50	U	0.50	U	0.51	U	0.50	U	0.51	U	-
Benzo(k)fluoranthene (SIM)	207-08-9	NE	0.20	U	0.20	U	0.20	U	0.20	U	**0.25**		0.20	U	-
Chrysene (SIM)	218-01-9	NE	0.20	U	0.20	U	0.20	U	0.20	U	**0.63**		**0.41**		42%
Dibenz(a,h)anthracene (SIM)	53-70-3	NE	0.10	U	0.099	U	0.099	U	0.10	U	0.099	U	0.10	U	-
Fluoranthene (SIM)	206-44-0	46	0.50	U	0.50	U	0.50	U	0.51	U	**2.0**		**1.3**		42%
Fluorene (SIM)	86-73-7	46	1.0	U	0.99	U	0.99	U	1.0	U	**1.5**		1.0	U	-
Indeno(1,2,3-cd)pyrene (SIM)	193-39-5	NE	0.10	U	0.099	U	0.099	U	0.10	U	**0.28**		**0.18**		43%
Naphthalene (SIM)	91-20-3	0.5	1.0	U	0.99	U	0.99	U	1.0	U	**170**		**120**		34%
Phenanthrene (SIM)	85-01-8	NE	0.050	U	0.050	U	0.050	U	0.051	U	**2.8**		**1.8**		43%
Pyrene (SIM)	129-00-0	NE	1.0	U	0.99	U	0.99	U	1.0	U	**1.6**		**1.1**		37%

Sample ID		VGES	MW-1		MW-2		MW-3		MW-4		PZ-6		PZ-6-FD		
Sample Date	CAS#		2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	2/23/2022	Q	RPD
		(µg/l)													
2-Methylnaphthalene	91-57-6	NE	0.50	U	0.50	U	0.49	U	0.49	U	**33**		**28**		16%
Acenaphthene	83-32-9	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Acenaphthylene	208-96-8	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Anthracene	120-12-7	343	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Benz(a)anthracene	56-55-3	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Benzo(a)pyrene	50-32-8	0.2	0.20	U	0.20	U	0.19	U	0.19	U	0.19	U	0.19	U	-
Benzo(b)fluoranthene	205-99-2	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Benzo(ghi)perylene	191-24-2	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Benzo(k)fluoranthene	207-08-9	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Chrysene	218-01-9	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Dibenz(a,h)anthracene	53-70-3	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Fluoranthene	206-44-0	46	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Fluorene	86-73-7	46	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Indeno(1,2,3-cd)pyrene	193-39-5	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Naphthalene	91-20-3	0.5	0.50	U	**8.0**		0.49	U	0.49	U	**120**		**100**		18%
Phenanthrene	85-01-8	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-
Pyrene	129-00-0	NE	0.50	U	0.50	U	0.49	U	0.49	U	0.47	U	0.49	U	-

Key:
VGES - Vermont Groundwater Enforcement Standard, July 2019
µg/L - micrograms per liter (parts per billion)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the enforcement standard
NE - screening level not established
U - Analyte not detected; limit of quantitation listed
RPD - Relative percent difference

Table B-9
Priority Pollutant Metals Analytical Results - Groundwater Samples

Sample ID		VGES	PZ-1		PZ-2		PZ-3		PZ-4		PZ-5	
Sample Date			7/7/2021	Q	7/7/2021	Q	7/7/2021	Q	7/7/2021	Q	7/6/2021	Q
	CAS#	(µg/L)										
Antimony	7440-36-0	NE	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Arsenic	7440-38-2	10	**0.86**		**1.7**		**1.0**		**0.81**		0.8	U
Beryllium	7440-41-7	4	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
Cadmium	7440-43-9	5	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Chromium	7440-47-3	100	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Copper	7440-50-8	1300	**2.1**		**9.6**		**12**		**3.3**		**1.2**	
Lead	7439-92-1	15	0.50	U	0.50	U	**1.5**		0.50	U	0.50	U
Nickel	7440-02-0	100	**6.8**		**6.4**		5.0	U	5.0	U	5.0	U
Selenium	7782-49-2	50	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Silver	7440-22-4	NE	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Thallium	7440-28-0	2	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Zinc	7440-66-6	NE	**11**		**18**		10	U	10	U	10	U
Mercury	7439-97-6	2	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U

Key:
VGES - Vermont Groundwater Enforcement Standard, July 2019
µg/L - micrograms per liter (parts per billion)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the enforcement standard
NE - screening level not established
U - Analyte not detected; limit of quantitation listed

Table B-10
Soil Gas Sample Analytical Results

Sample ID		VIS - Resident	VIS - Non-Resident	SV-1		SV-2		SV-3		SV-4		SV-4 -FD		RPD
Sample Date				6/2/2021	Q	6/2/2021	Q	6/2/2021	Q	6/2/2021	Q	6/2/2021	Q	
	CAS#	(µg/m³)	(µg/m³)											
1,1,1-Trichloroethane	71-55-6	NE	NE	**5000**		**260**		**390**		**5.6**		**5.5**		2%
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	-
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	NE	NE	6.1	U	6.1	U	6.1	U	6.1	U	6.1	U	-
1,1,2-Trichloroethane	79-00-5	NE	NE	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	-
1,1-Dichloroethane	75-34-3	21	170	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U	-
1,1-Dichloroethylene	75-35-4	6700	23000	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	-
1,2,4-Trichlorobenzene	120-82-1	NE	NE	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	-
1,2,4-Trimethylbenzene	95-63-6	2000	7000	0.98	U	**76**		**2.4**		**1.8**		**2.0**		11%
1,2-Dibromoethane (EDB)	106-93-4	NE	NE	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	-
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	76-14-2	NE	NE	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	-
1,2-Dichlorobenzene	95-50-1	NE	NE	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	-
1,2-Dichloroethane	107-06-2	NE	NE	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U	-
1,2-Dichloropropane	78-87-5	NE	NE	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	-
1,3,5-Trimethylbenzene	108-67-8	2000	7000	0.98	U	**28**		**1.8**		0.98	U	0.98	U	-
1,3-Butadiene	106-99-0	NE	NE	**4.3**		0.44	U	0.44	U	0.44	U	0.44	U	-
1,3-Dichlorobenzene	541-73-1	NE	NE	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	-
1,4-Dichlorobenzene	106-46-7	NE	NE	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	-
1,4-Dioxane	123-91-1	NE	NE	7.2	U	7.2	U	7.2	U	7.2	U	7.2	U	-
2-Butanone (MEK)	78-93-3	NE	NE	**38**		24	U	24	U	24	U	24	U	-
2-Hexanone (MBK)	591-78-6	NE	NE	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U	-
4-Ethyltoluene	622-96-8	NE	NE	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U	-
4-Methyl-2-pentanone (MIBK)	108-10-1	NE	NE	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	-
Acetone	67-64-1	NE	NE	**270**		**200**		**600**		**53**		**52**		2%
Benzene	71-43-2	4.3	35	**4.1**		**9.5**		**5.4**		**1.4**		**1.5**		7%
Benzyl chloride	100-44-7	NE	NE	1	U	1	U	1	U	1	U	1.0	U	-
Bromodichloromethane	75-27-4	NE	NE	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	-
Bromoform	75-25-2	NE	NE	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	-
Bromomethane	74-83-9	NE	NE	0.78	U	0.78	U	0.78	U	0.78	U	0.78	U	-
Carbon Disulfide	75-15-0	NE	NE	6.2	U	6.2	U	6.2	U	6.2	U	6.2	U	-
Carbon Tetrachloride	56-23-5	5.7	45	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	-
Chlorobenzene	108-90-7	NE	NE	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	-
Chloroethane	75-00-3	330000	1200000	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	-
Chloroform	67-66-3	1.3	12	**7.0**		**3.7**		**3.3**		0.98	U	0.98	U	-
Chloromethane	74-87-3	NE	NE	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U	-
cis-1,2-Dichloroethylene	156-59-2	NE	NE	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	-
cis-1,3-Dichloropropene	10061-01-5	NE	NE	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	-
Cyclohexane	110-82-7	NE	NE	0.69	U	0.69	U	**20**		0.69	U	0.69	U	-
Dibromochloromethane	124-48-1	NE	NE	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	-
Dichlorodifluoromethane (Freon 12)	75-71-8	NE	NE	0.99	U	0.99	U	0.99	U	0.99	U	0.99	U	-
Ethanol	64-17-5	NE	NE	**77**		**490**		**89**		**53**		**51**		4%
Ethyl Acetate	141-78-6	NE	NE	7.2	U	7.2	U	7.2	U	7.2	U	7.2	U	-
Ethylbenzene	100-41-4	13	110	**1.4**		**4.4**		**1.6**		**1.9**		**2.2**		15%
Heptane	142-82-5	NE	NE	0.82	U	0.82	U	**5.6**		**2.1**		0.82	U	-
Hexachlorobutadiene	87-68-3	NE	NE	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	-
Hexane	110-54-3	NE	NE	28	U	28	U	28	U	28	U	28	U	-
Isopropanol	67-63-0	NE	NE	20	U	20	U	20	U	20	U	20	U	-
m&p-Xylene	1330-20-7P/M	NE	NE	**4.2**		**12**		**5.1**		**5.3**		**6.4**		19%
Methyl tert-Butyl Ether (MTBE)	1634-04-4	NE	NE	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	-
Methylene Chloride	75-09-2	2000	27000	6.9	U	6.9	U	6.9	U	6.9	U	6.9	U	-
Naphthalene	91-20-3	1	8	1.0	U	***180***		1.0	U	1.0	U	1.0	U	-
o-Xylene	95-47-6	NE	NE	**1.6**		**5.3**		**3.3**		**1.8**		**2.3**		24%
Propene	115-07-1	NE	NE	**30**		14	U	14	U	14	U	14	U	-
Styrene	100-42-5	NE	NE	0.85	U	**1.8**		0.85	U	0.85	U	0.85	U	-
Tetrachloroethylene	127-18-4	21	170	***280***		**3.6**		1.4	U	1.4	U	1.4	U	-
Tetrahydrofuran	109-99-9	NE	NE	5.9	U	5.9	U	5.9	U	5.9	U	5.9	U	-
Toluene	108-88-3	NE	NE	**8.2**		**17**		**8.5**		**8.9**		**10**		12%
Total Trimethylbenzene	25551-13-7	2000	7000	0.98	U	**104**		**4.2**		**1.8**		**2.0**		11%
Total Xylene	1330-20-7	NE	NE	**5.8**		**17.3**		**8.4**		**7.1**		**8.7**		20%
trans-1,2-Dichloroethylene	156-60-5	NE	NE	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	-
trans-1,3-Dichloropropene	10061-02-6	NE	NE	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	-
Trichloroethylene	79-01-6	6.7	23	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	-
Trichlorofluoromethane (Freon 11)	75-69-4	NE	NE	4.5	U	4.5	U	4.5	U	4.5	U	4.5	U	-
Vinyl Acetate	108-05-4	NE	NE	14	U	14	U	14	U	14	U	14	U	-
Vinyl Chloride	75-01-4	3.7	62	0.51	U	0.51	U	0.51	U	0.51	U	0.51	U	-

Table B-10
Soil Gas Sample Analytical Results

Sample ID		VIS - Resident	VIS - Non-Resident	SV-5		SV-6		SV-7		SV-8		SV-9		SV-10	
Sample Date				6/2/2021	Q	6/2/2021	Q	6/2/2021	Q	6/2/2021	Q	6/2/2021	Q	6/2/2021	Q
	CAS#	(µg/m³)	(µg/m³)												
1,1,1-Trichloroethane	71-55-6	NE	NE	1.1	U	1.1	U	1.1	U	1.1	U	**1.6**		1.1	U
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	NE	NE	6.1	U	6.1	U	6.1	U	6.1	U	6.1	U	6.1	U
1,1,2-Trichloroethane	79-00-5	NE	NE	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
1,1-Dichloroethane	75-34-3	21	170	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U
1,1-Dichloroethylene	75-35-4	6700	23000	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U
1,2,4-Trichlorobenzene	120-82-1	NE	NE	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
1,2,4-Trimethylbenzene	95-63-6	2000	7000	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U
1,2-Dibromoethane (EDB)	106-93-4	NE	NE	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	76-14-2	NE	NE	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
1,2-Dichlorobenzene	95-50-1	NE	NE	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
1,2-Dichloroethane	107-06-2	NE	NE	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U
1,2-Dichloropropane	78-87-5	NE	NE	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U
1,3,5-Trimethylbenzene	108-67-8	2000	7000	**1.2**		0.98	U	**1.7**		0.98	U	0.98	U	0.98	U
1,3-Butadiene	106-99-0	NE	NE	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U
1,3-Dichlorobenzene	541-73-1	NE	NE	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
1,4-Dichlorobenzene	106-46-7	NE	NE	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
1,4-Dioxane	123-91-1	NE	NE	7.2	U	7.2	U	7.2	U	7.2	U	7.2	U	7.2	U
2-Butanone (MEK)	78-93-3	NE	NE	24	U	24	U	24	U	24	U	24	U	24	U
2-Hexanone (MBK)	591-78-6	NE	NE	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U
4-Ethyltoluene	622-96-8	NE	NE	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U
4-Methyl-2-pentanone (MIBK)	108-10-1	NE	NE	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U
Acetone	67-64-1	NE	NE	**270**		19	U	**950**		**26**		**29**		19	U
Benzene	71-43-2	4.3	35	**15**		0.64	U	**4.1**		**1.1**		**0.88**		0.64	U
Benzyl chloride	100-44-7	NE	NE	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromodichloromethane	75-27-4	NE	NE	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Bromoform	75-25-2	NE	NE	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U
Bromomethane	74-83-9	NE	NE	0.78	U	0.78	U	0.78	U	0.78	U	0.78	U	0.78	U
Carbon Disulfide	75-15-0	NE	NE	6.2	U	6.2	U	6.2	U	6.2	U	6.2	U	6.2	U
Carbon Tetrachloride	56-23-5	5.7	45	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Chlorobenzene	108-90-7	NE	NE	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U
Chloroethane	75-00-3	330000	1200000	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
Chloroform	67-66-3	1.3	12	0.98	U	0.98	U	0.98	U	0.98	U	**1.2**		0.98	U
Chloromethane	74-87-3	NE	NE	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U
cis-1,2-Dichloroethylene	156-59-2	NE	NE	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U
cis-1,3-Dichloropropene	10061-01-5	NE	NE	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U
Cyclohexane	110-82-7	NE	NE	0.69	U	0.69	U	0.69	U	0.69	U	**14**		0.69	U
Dibromochloromethane	124-48-1	NE	NE	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Dichlorodifluoromethane (Freon 12)	75-71-8	NE	NE	0.99	U	0.99	U	0.99	U	0.99	U	0.99	U	0.99	U
Ethanol	64-17-5	NE	NE	**120**		**18**		**190**		**36**		**20**		**23**	
Ethyl Acetate	141-78-6	NE	NE	7.2	U	7.2	U	7.2	U	7.2	U	7.2	U	7.2	U
Ethylbenzene	100-41-4	13	110	**2.2**		0.87	U	**2.5**		0.87	U	0.87	U	0.87	U
Heptane	142-82-5	NE	NE	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U
Hexachlorobutadiene	87-68-3	NE	NE	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U
Hexane	110-54-3	NE	NE	28	U	28	U	28	U	28	U	28	U	28	U
Isopropanol	67-63-0	NE	NE	**21**		20	U	**69**		20	U	20	U	20	U
m&p-Xylene	1330-20-7P/M	NE	NE	**4.9**		1.7	U	**7.9**		1.7	U	1.7	U	1.7	U
Methyl tert-Butyl Ether (MTBE)	1634-04-4	NE	NE	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Methylene Chloride	75-09-2	2000	27000	6.9	U	6.9	U	6.9	U	6.9	U	6.9	U	6.9	U
Naphthalene	91-20-3	1	8	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
o-Xylene	95-47-6	NE	NE	**1.9**		0.87	U	**3.8**		0.87	U	0.87	U	0.87	U
Propene	115-07-1	NE	NE	14	U	14	U	14	U	14	U	**29**		14	U
Styrene	100-42-5	NE	NE	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U
Tetrachloroethylene	127-18-4	21	170	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Tetrahydrofuran	109-99-9	NE	NE	5.9	U	5.9	U	5.9	U	5.9	U	5.9	U	5.9	U
Toluene	108-88-3	NE	NE	**12**		**0.87**		**12**		**2.2**		**3.2**		**0.75**	
Total Trimethylbenzene	25551-13-7	2000	7000	**1.2**		0.98	U	**1.7**		0.98	U	0.98	U	0.98	U
Total Xylene	1330-20-7	NE	NE	**6.8**		2.57	U	**11.7**		2.57	U	2.57	U	2.57	U
trans-1,2-Dichloroethylene	156-60-5	NE	NE	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U
trans-1,3-Dichloropropene	10061-02-6	NE	NE	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U
Trichloroethylene	79-01-6	6.7	23	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
Trichlorofluoromethane (Freon 11)	75-69-4	NE	NE	4.5	U	4.5	U	4.5	U	4.5	U	4.5	U	4.5	U
Vinyl Acetate	108-05-4	NE	NE	14	U	14	U	14	U	14	U	14	U	14	U
Vinyl Chloride	75-01-4	3.7	62	0.51	U	0.51	U	0.51	U	0.51	U	0.51	U	0.51	U

Table B-10
Soil Gas Sample Analytical Results

Sample ID		Resident VIS	Non-resident VIS	SV-11		SV-12		SV-12-FD		SV-13		SV-14		SV-15		RPD
Sample Date				3/1/2022	Q	3/1/2022	Q	3/1/2022	Q	3/1/2022	Q	3/1/2022	Q	3/1/2022	Q	
	CAS#	(µg/m3)	(µg/m3)													
1,1,1,2-Tetrachloroethane	630-20-6	NE	NE	1.90	U	1.90	U	1.90	U	1.90	U	1.90	U	1.90	U	--
1,1,1-Trichloroethane	71-55-6	NE	NE	**1,730**		**30.7**		**28.2**		13.6	U	13.6	U	**56.7**		8%
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	1.05	U	1.05	U	1.05	U	1.05	U	1.05	U	1.05	U	--
1,1,2-Trichloroethane	79-00-5	NE	NE	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	--
1,1-Dichloroethane	75-34-3	21	170	9.18	U	9.18	U	9.18	U	9.18	U	9.18	U	9.18	U	--
1,1-Dichloroethene	75-35-4	6700	23000	9.9	U	9.9	U	9.9	U	9.9	U	9.9	U	9.9	U	--
1,2,4-Trichlorobenzene	120-82-1	NE	NE	10.5	U	10.5	U	10.5	U	10.5	U	10.5	U	10.5	U	--
1,2,4-Trimethylbenzene	95-63-6	2000	7000	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	--
1,2-Dibromoethane(EDB)	106-93-4	NE	NE	1.92	U	1.92	U	1.92	U	1.92	U	1.92	U	1.92	U	--
1,2-Dichlorobenzene	95-50-1	NE	NE	15.0	U	15.0	U	15.0	U	15.0	U	15.0	U	15.0	U	--
1,2-Dichloroethane	107-06-2	NE	NE	1.01	U	1.01	U	1.01	U	1.01	U	1.01	U	1.01	U	--
1,2-dichloropropane	78-87-5	NE	NE	1.40	U	1.40	U	1.40	U	1.40	U	1.40	U	1.40	U	--
1,2-Dichlorotetrafluoroethane	76-14-2	NE	NE	17.5	U	17.5	U	17.5	U	17.5	U	17.5	U	17.5	U	--
1,3,5-Trimethylbenzene	108-67-8	2000	7000	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	--
1,3-Butadiene	106-99-0	NE	NE	0.47	U	**12.9**		0.47	U	0.47	U	0.47	U	0.47	U	--
1,3-Dichlorobenzene	541-73-1	NE	NE	15.0	U	15.0	U	15.0	U	15.0	U	15.0	U	15.0	U	--
1,4-Dichlorobenzene	106-46-7	NE	NE	1.30	U	1.30	U	1.30	U	1.30	U	1.30	U	1.30	U	--
1,4-Dioxane	123-91-1	NE	NE	2.80	U	2.80	U	2.80	U	2.80	U	2.80	U	2.80	U	--
2-Hexanone(MBK)	591-78-6	NE	NE	10.2	U	10.2	U	10.2	U	10.2	U	10.2	U	10.2	U	--
4-Ethyltoluene	622-96-8	NE	NE	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	--
4-Isopropyltoluene	99-87-6	NE	NE	13.7	U	13.7	U	13.7	U	13.7	U	13.7	U	13.7	U	--
4-Methyl-2-pentanone(MIBK)	108-10-1	NE	NE	10.2	U	10.2	U	10.2	U	10.2	U	10.2	U	10.2	U	--
Acetone	67-64-1	NE	NE	**22.4**		**20.3**		**25.2**		**59.1**		**35.6**		**56.5**		22%
Acrylonitrile	107-13-1	NE	NE	5.42	U	5.42	U	5.42	U	5.42	U	5.42	U	5.42	U	--
Benzene	71-43-2	4.3	35	0.65	U	**1.39**		**1.42**		**1.15**		0.65	U	0.65	U	2%
Benzyl chloride	100-44-7	NE	NE	1.25	U	1.25	U	1.25	U	1.25	U	1.25	U	1.25	U	--
Bromodichloromethane	75-27-4	NE	NE	1.25	U	1.25	U	1.25	U	1.25	U	1.25	U	1.25	U	--
Bromoform	75-25-2	NE	NE	25.8	U	25.8	U	25.8	U	25.8	U	25.8	U	25.8	U	--
Bromomethane	74-83-9	NE	NE	9.7	U	9.7	U	9.7	U	9.7	U	9.7	U	9.7	U	--
Carbon Disulfide	75-15-0	NE	NE	7.78	U	7.78	U	7.78	U	**23.6**		**573**		**8.46**		--
Carbon Tetrachloride	56-23-5	5.7	45	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	--
Chlorobenzene	108-90-7	NE	NE	11.5	U	11.5	U	11.5	U	11.5	U	11.5	U	11.5	U	--
Chloroethane	75-00-3	330000	1200000	6.59	U	6.59	U	6.59	U	6.59	U	6.59	U	6.59	U	--
Chloroform	67-66-3	1.3	12	**11.4**		**9.27**		**8.44**		1.25	U	**3.17**		1.25	U	9%
Chloromethane	74-87-3	NE	NE	5.16	U	5.16	U	5.16	U	5.16	U	5.16	U	5.16	U	--
Cis-1,2-Dichloroethene	156-59-2	NE	NE	9.9	U	9.9	U	9.9	U	9.9	U	9.9	U	9.9	U	--
cis-1,3-Dichloropropene	10061-01-5	NE	NE	3.50	U	3.50	U	3.50	U	3.50	U	3.50	U	3.50	U	--
Cyclohexane	110-82-7	NE	NE	8.60	U	8.60	U	8.60	U	**28.5**		8.60	U	8.60	U	--
Dibromochloromethane	124-48-1	NE	NE	21.3	U	21.3	U	21.3	U	21.3	U	21.3	U	21.3	U	--
Dichlorodifluoromethane	75-71-8	NE	NE	12.4	U	12.4	U	12.4	U	12.4	U	12.4	U	12.4	U	--
Ethanol	64-17-5	NE	NE	**10.4**		**21.8**		**9.9**		**11.9**		**8.96**		**15.5**		75%
Ethyl acetate	141-78-6	NE	NE	9.00	U	9.00	U	9.00	U	9.00	U	9.00	U	9.00	U	--
Ethylbenzene	100-41-4	13	110	5.51	U	5.51	U	5.51	U	5.51	U	5.51	U	5.51	U	--
Heptane	142-82-5	NE	NE	10.2	U	10.2	U	10.2	U	10.2	U	10.2	U	10.2	U	--
Hexachlorobutadiene	87-68-3	NE	NE	1.87	U	1.87	U	1.87	U	1.87	U	1.87	U	1.87	U	--
Hexane	110-54-3	NE	NE	8.81	U	8.81	U	8.81	U	8.81	U	8.81	U	8.81	U	--
Isopropylalcohol	67-63-0	NE	NE	6.14	U	6.14	U	6.14	U	6.14	U	6.14	U	**8.89**		--
Isopropylbenzene	98-82-8	NE	NE	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	--
m,p-Xylene	179601-23-1	NE	NE	21.7	U	21.7	U	21.7	U	21.7	U	21.7	U	21.7	U	--
Methyl Ethyl Ketone	78-93-3	NE	NE	7.37	U	**11.1**		7.37	U	7.37	U	7.37	U	**9.28**		--
Methyl tert-butyl ether(MTBE)	1634-04-4	NE	NE	9.01	U	9.01	U	9.01	U	9.01	U	9.01	U	9.01	U	--
Methylene Chloride	75-09-2	2000	27000	8.68	U	8.68	U	8.68	U	8.68	U	8.68	U	8.68	U	--
n-Butylbenzene	104-51-8	NE	NE	13.7	U	13.7	U	13.7	U	13.7	U	13.7	U	13.7	U	--
Naphthalene	91-20-3	1.0	8.0	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	--
o-Xylene	95-47-6	NE	NE	10.8	U	10.8	U	10.8	U	10.8	U	10.8	U	10.8	U	--
Propylene	115-07-1	NE	NE	4.3	U	**87.4**		**83.6**		**1810**		**110**		**13.8**		4%
sec-Butylbenzene	135-98-8	NE	NE	13.7	U	13.7	U	13.7	U	13.7	U	13.7	U	13.7	U	--
Styrene	100-42-5	NE	NE	10.6	U	10.6	U	10.6	U	10.6	U	10.6	U	10.6	U	--
Tetrachloroethene	127-18-4	21	170	3.15	U	3.15	U	3.15	U	3.15	U	3.15	U	3.15	U	--
Tetrahydrofuran	109-99-9	NE	NE	7.37	U	7.37	U	7.37	U	7.37	U	7.37	U	7.37	U	--
Toluene	108-88-3	NE	NE	9.42	U	9.42	U	9.42	U	9.42	U	9.42	U	9.42	U	--
Total Trimethylbenzene	25551-13-7	NE	NE	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	12.3	U	--
Total Xylene	1330-20-7	NE	NE	10.8	U	10.8	U	10.8	U	10.8	U	10.8	U	10.8	U	--
Trans-1,2-Dichloroethene	156-60-5	NE	NE	9.9	U	9.9	U	9.9	U	9.9	U	9.9	U	9.9	U	--
trans-1,3-Dichloropropene	10061-02-6	NE	NE	3.50	U	3.50	U	3.50	U	3.50	U	3.50	U	3.50	U	--
Trichloroethene	79-01-6	6.7	23	0.99	U	0.99	U	0.99	U	0.99	U	0.99	U	0.99	U	--
Trichlorofluoromethane	75-69-4	NE	NE	14.0	U	14.0	U	14.0	U	14.0	U	14.0	U	14.0	U	--
Trichlorotrifluoroethane	76-13-1	NE	NE	19.1	U	19.1	U	19.1	U	19.1	U	19.1	U	19.1	U	--
Vinyl Chloride	75-01-4	3.7	62	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	--

Table B-10
Soil Gas Sample Analytical Results

Sample ID		Resident VIS	Non-resident VIS	EW-01		EW-01-FD		EW-02		RPD (EW-01)
Sample Date				2/28/2022	Q	2/28/2022	Q	2/28/2022	Q	
	CAS#	(µg/m3)	(µg/m3)							
1,1,1,2-Tetrachloroethane	630-20-6	NE	NE	0.38	U	0.38	U	0.38	U	--
1,1,1-Trichloroethane	71-55-6	NE	NE	**184**		**200**		**2.92**		8%
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	0.21	U	0.21	U	0.21	U	--
1,1,2-Trichloroethane	79-00-5	NE	NE	0.18	U	0.18	U	0.18	U	--
1,1-Dichloroethane	75-34-3	21	170	1.84	U	1.84	U	1.84	U	--
1,1-Dichloroethene	75-35-4	6700	23000	1.98	U	1.98	U	1.98	U	--
1,2,4-Trichlorobenzene	120-82-1	NE	NE	2.10	U	2.10	U	2.10	U	--
1,2,4-Trimethylbenzene	95-63-6	2000	7000	2.46	U	2.46	U	2.46	U	--
1,2-Dibromoethane(EDB)	106-93-4	NE	NE	0.38	U	0.38	U	0.38	U	--
1,2-Dichlorobenzene	95-50-1	NE	NE	3.00	U	3.00	U	3.00	U	--
1,2-Dichloroethane	107-06-2	NE	NE	0.20	U	0.20	U	0.20	U	--
1,2-dichloropropane	78-87-5	NE	NE	0.28	U	0.28	U	0.28	U	--
1,2-Dichlorotetrafluoroethane	76-14-2	NE	NE	3.49	U	3.49	U	3.49	U	--
1,3,5-Trimethylbenzene	108-67-8	2000	7000	2.46	U	2.46	U	2.46	U	--
1,3-Butadiene	106-99-0	NE	NE	0.10	U	0.10	U	0.10	U	--
1,3-Dichlorobenzene	541-73-1	NE	NE	3.00	U	3.00	U	3.00	U	--
1,4-Dichlorobenzene	106-46-7	NE	NE	**0.72**		0.26	U	0.26	U	--
1,4-Dioxane	123-91-1	NE	NE	0.56	U	0.56	U	0.56	U	--
2-Hexanone(MBK)	591-78-6	NE	NE	2.05	U	2.05	U	2.05	U	--
4-Ethyltoluene	622-96-8	NE	NE	2.46	U	2.46	U	2.46	U	--
4-Isopropyltoluene	99-87-6	NE	NE	2.74	U	2.74	U	2.74	U	--
4-Methyl-2-pentanone(MIBK)	108-10-1	NE	NE	2.05	U	2.05	U	2.05	U	--
Acetone	67-64-1	NE	NE	**2.87**		**3.01**		**5.46**		5%
Acrylonitrile	107-13-1	NE	NE	1.08	U	1.08	U	1.08	U	--
Benzene	71-43-2	4.3	35	0.13	U	0.13	U	0.13	U	--
Benzyl chloride	100-44-7	NE	NE	0.25	U	0.25	U	0.25	U	--
Bromodichloromethane	75-27-4	NE	NE	0.25	U	0.25	U	0.25	U	--
Bromoform	75-25-2	NE	NE	5.17	U	5.17	U	5.17	U	--
Bromomethane	74-83-9	NE	NE	1.94	U	1.94	U	1.94	U	--
Carbon Disulfide	75-15-0	NE	NE	1.56	U	1.56	U	1.56	U	--
Carbon Tetrachloride	56-23-5	5.7	45	**0.15**		0.05	U	0.05	U	--
Chlorobenzene	108-90-7	NE	NE	2.30	U	2.30	U	2.30	U	--
Chloroethane	75-00-3	330000	1200000	1.32	U	1.32	U	1.32	U	--
Chloroform	67-66-3	1.3	12	**3.34**		**4.18**		**0.41**		22%
Chloromethane	74-87-3	NE	NE	1.03	U	1.03	U	1.03	U	--
Cis-1,2-Dichloroethene	156-59-2	NE	NE	1.98	U	1.98	U	1.98	U	--
cis-1,3-Dichloropropene	10061-01-5	NE	NE	0.70	U	0.70	U	0.70	U	--
Cyclohexane	110-82-7	NE	NE	1.72	U	1.72	U	1.72	U	--
Dibromochloromethane	124-48-1	NE	NE	4.26	U	4.26	U	4.26	U	--
Dichlorodifluoromethane	75-71-8	NE	NE	2.47	U	2.47	U	2.47	U	--
Ethanol	64-17-5	NE	NE	**4.03**		**5.31**		0.94	U	27%
Ethyl acetate	141-78-6	NE	NE	1.8	U	1.8	U	1.8	U	--
Ethylbenzene	100-41-4	13	110	1.10	U	1.10	U	**2.32**		--
Heptane	142-82-5	NE	NE	2.05	U	2.05	U	2.05	U	--
Hexachlorobutadiene	87-68-3	NE	NE	0.37	U	0.37	U	0.37	U	--
Hexane	110-54-3	NE	NE	1.76	U	1.76	U	1.76	U	--
Isopropylalcohol	67-63-0	NE	NE	**5.70**		**9.6**		**2.90**		51%
Isopropylbenzene	98-82-8	NE	NE	2.46	U	2.46	U	2.46	U	--
m,p-Xylene	179601-23-1	NE	NE	4.34	U	4.34	U	**9.9**		--
Methyl Ethyl Ketone	78-93-3	NE	NE	1.47	U	1.47	U	**6.78**		--
Methyl tert-butyl ether(MTBE)	1634-04-4	NE	NE	1.80	U	1.80	U	1.80	U	--
Methylene Chloride	75-09-2	2000	27000	**2.81**		1.74	U	1.74	U	--
n-Butylbenzene	104-51-8	NE	NE	2.74	U	2.74	U	2.74	U	--
o-Xylene	95-47-6	NE	NE	2.17	U	2.17	U	**3.06**		--
Propylene	115-07-1	NE	NE	0.86	U	0.86	U	0.86	U	--
sec-Butylbenzene	135-98-8	NE	NE	2.74	U	2.74	U	2.74	U	--
Styrene	100-42-5	NE	NE	2.13	U	2.13	U	2.13	U	--
Tetrachloroethene	127-18-4	21	170	0.63	U	0.63	U	0.63	U	--
Tetrahydrofuran	109-99-9	NE	NE	1.47	U	1.47	U	1.47	U	--
Toluene	108-88-3	NE	NE	1.88	U	1.88	U	**4.71**		--
Total Trimethylbenzene	25551-13-7	NE	NE	2.46	U	2.46	U	2.46	U	--
Total Xylene	1330-20-7	NE	NE	2.17	U	2.17	U	**3.06**		--
Trans-1,2-Dichloroethene	156-60-5	NE	NE	1.98	U	1.98	U	1.98	U	--
trans-1,3-Dichloropropene	10061-02-6	NE	NE	0.70	U	0.70	U	0.70	U	--
Trichloroethene	79-01-6	6.7	23	0.20	U	0.20	U	0.20	U	--
Trichlorofluoromethane	75-69-4	NE	NE	2.81	U	2.81	U	2.81	U	--
Trichlorotrifluoroethane	76-13-1	NE	NE	3.83	U	3.83	U	3.83	U	--
Vinyl Chloride	75-01-4	3.7	62	0.11	U	0.11	U	0.11	U	--

Key:
VIS - Vapor Intrusion Standards - Sub-slab Soil Gas from Investigation and Remediation of Contaminated Properties Rule, July 2019
µg/m^3 - micrograms per cubic meter
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the residential enforcement standard(s)
Italicized results indicate an exceedance of the non-residential enforcement standard(s)
NE - screening level not established
RPD - relative percent difference
Q - qualifier
U - analyte not detected, laboratory reporting limit provided

Table B-11

Polychlorinated Biphenyl Analytical Results – Porous Building Materials

Sample ID		TSCA: Solid Porous Media High Occupancy Walkaway	TSCA: Solid Porous Media Low Occupancy Walkaway	WD-1		WD-2		WD-2-FD		WD-3		WD-4	
Sample Date	CAS#			6/2/2021	Q	6/2/2021	Q	6/2/2021	Q	6/2/2021	Q	6/2/2021	Q
		(mg/Kg)	(mg/Kg)										
Aroclor-1016	12674-11-2	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Aroclor-1221	11104-28-2	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Aroclor-1232	11141-16-5	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Aroclor-1242	53469-21-9	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Aroclor-1248	12672-29-6	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Aroclor-1254	11097-69-1	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Aroclor-1260	11096-82-5	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Aroclor-1262	37324-23-5	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Aroclor-1268	11100-14-4	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U
Total PCBs	1336-36-3	1	25	0.94	U	0.49	U	0.49	U	0.49	U	0.98	U

Sample ID		TSCA: Solid Porous Media High Occupancy Walkaway	TSCA: Solid Porous Media Low Occupancy Walkaway	WD-5		WD-6	
Sample Date	CAS#			6/2/2021	Q	6/2/2021	Q
		(mg/Kg)	(mg/Kg)				
Aroclor-1016	12674-11-2	1	25	0.098	U	0.98	U
Aroclor-1221	11104-28-2	1	25	0.098	U	0.98	U
Aroclor-1232	11141-16-5	1	25	0.098	U	0.98	U
Aroclor-1242	53469-21-9	1	25	0.098	U	0.98	U
Aroclor-1248	12672-29-6	1	25	0.098	U	0.98	U
Aroclor-1254	11097-69-1	1	25	0.098	U	0.98	U
Aroclor-1260	11096-82-5	1	25	0.098	U	0.98	U
Aroclor-1262	37324-23-5	1	25	0.098	U	0.98	U
Aroclor-1268	11100-14-4	1	25	0.098	U	0.98	U
Total PCBs	1336-36-3	1	25	0.098	U	0.98	U

Key:
TSCA - Toxic Substance Control Act
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the TSCA High Occupancy Walkaway Criteria
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed

Table B-12

Polychlorinated Biphenyl Analytical Results – Non-Porous Building Materials

Sample ID		TSCA: Solid Non-Porous Media High Occupancy Walkaway	TSCA: Solid Non-Porous Media Low Occupancy	WP-1		WP-2		WP-3		WP-4	
Sample Date	**CAS#**			**6/2/2021**	**Q**	**6/2/2021**	**Q**	**6/2/2021**	**Q**	**6/2/2021**	**Q**
		(µg/100 cm2)	**(µg/100 cm2)**								
Aroclor-1016	12674-11-2	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1221	11104-28-2	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1232	11141-16-5	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1242	53469-21-9	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1248	12672-29-6	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1254	11097-69-1	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1260	11096-82-5	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1262	37324-23-5	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1268	11100-14-4	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Total PCBs	1336-36-3	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Sample ID		**TSCA: Solid Non-Porous Media High Occupancy Walkaway**	**TSCA: Solid Non-Porous Media Low Occupancy**	**WP-5**		**WP-5-FD**		**WP-6**		**EB-060221**	
Sample Date	**CAS#**			**6/2/2021**	**Q**	**6/2/2021**	**Q**	**6/2/2021**	**Q**	**6/2/2021**	**Q**
		(µg/100 cm2)	**(µg/100 cm2)**								
Aroclor-1016	12674-11-2	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1221	11104-28-2	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1232	11141-16-5	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1242	53469-21-9	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1248	12672-29-6	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1254	11097-69-1	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1260	11096-82-5	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1262	37324-23-5	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Aroclor-1268	11100-14-4	10	100	0.20	U	0.20	U	0.20	U	0.20	U
Total PCBs	1336-36-3	10	100	0.20	U	0.20	U	0.20	U	0.20	U

Key:
TSCA - Toxic Substance Control Act
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the TSCA High Occupancy Walkaway Criteria
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed

Table B-13

Solid (Porous) Sample Analytical Results

Sample ID		TSCA: Solid Porous Media High Occupancy Walkaway	BO-1	
Sample Date	**CAS#**		**6/2/2021**	**Q**
		(mg/Kg)		
Aroclor-1016	12674-11-2	1	0.73	U
Aroclor-1221	11104-28-2	1	0.73	U
Aroclor-1232	11141-16-5	1	0.73	U
Aroclor-1242	53469-21-9	1	0.73	U
Aroclor-1248	12672-29-6	1	0.73	U
Aroclor-1254	11097-69-1	1	0.73	U
Aroclor-1260	11096-82-5	1	0.73	U
Aroclor-1262	37324-23-5	1	0.73	U
Aroclor-1268	11100-14-4	1	0.73	U
Total PCBs	1336-36-3	1	0.73	U

Key:
TSCA - Toxic Substance Control Act
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the TSCA High Occupancy Walkaway Criteria
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed

Table B-14
Indoor Air Sample Analytical Results

Sample ID		IAS - Resident	IAS - Non-Resident	AA-1		IA-1		IA-1-FD		IA-2		RPD
Sample Date				8/2/2021	Q	8/2/2021	Q	8/2/2021	Q	8/2/2021	Q	
		(µg/m³)	(µg/m³)									
1,1,1-Trichloroethane	71-55-6	NE	NE	0.19	U	**34**		**35**		0.19	U	3%
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	0.048	U	0.048	U	0.048	U	0.048	U	-
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	NE	NE	1.1	U	1.1	U	1.1	U	1.1	U	-
1,1,2-Trichloroethane	79-00-5	NE	NE	0.038	U	0.038	U	0.038	U	0.038	U	-
1,1-Dichloroethane	75-34-3	0.63	5.11	0.028	U	0.028	U	0.028	U	0.028	U	-
1,1-Dichloroethylene	75-35-4	200	700.8	0.028	U	0.028	U	0.028	U	0.028	U	-
1,2,4-Trichlorobenzene	120-82-1	NE	NE	0.26	U	0.26	U	0.26	U	0.26	U	-
1,2,4-Trimethylbenzene	95-63-6	60	210.24	0.17	U	**8.9**		**9.1**		**0.25**		2%
1,2-Dibromoethane (EDB)	106-93-4	NE	NE	0.054	U	0.054	U	0.054	U	0.054	U	-
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	76-14-2	NE	NE	0.24	U	0.24	U	0.24	U	0.24	U	-
1,2-Dichlorobenzene	95-50-1	NE	NE	0.21	U	0.21	U	0.21	U	0.21	U	-
1,2-Dichloroethane	107-06-2	NE	NE	0.028	U	0.028	U	0.028	U	0.028	U	-
1,2-Dichloropropane	78-87-5	NE	NE	0.032	U	0.032	U	0.032	U	0.032	U	-
1,3,5-Trimethylbenzene	108-67-8	60	210.24	0.17	U	**2.3**		**2.3**		0.17	U	0%
1,3-Butadiene	106-99-0	NE	NE	0.077	U	0.077	U	0.077	U	0.077	U	-
1,3-Dichlorobenzene	541-73-1	NE	NE	0.21	U	0.21	U	0.21	U	0.21	U	-
1,4-Dichlorobenzene	106-46-7	NE	NE	0.21	U	0.21	U	0.21	U	0.21	U	-
1,4-Dioxane	123-91-1	NE	NE	1.3	U	1.3	U	1.3	U	1.3	U	-
2-Butanone (MEK)	78-93-3	NE	NE	4.1	U	**4.8**		**4.4**		4.1	U	9%
2-Hexanone (MBK)	591-78-6	NE	NE	0.29	U	0.29	U	0.29	U	0.29	U	-
4-Ethyltoluene	622-96-8	NE	NE	0.17	U	0.17	U	0.17	U	0.17	U	-
4-Methyl-2-pentanone (MIBK)	108-10-1	NE	NE	0.14	U	0.14	U	0.14	U	0.14	U	-
Acetone	67-64-1	NE	NE	**8.2**		**130**		**110**		**9.3**		17%
Benzene	71-43-2	0.13	1.05	**0.24**		0.11	U	**0.39**		**0.40**		-
Benzyl chloride	100-44-7	NE	NE	0.18	U	0.18	U	0.18	U	0.18	U	-
Bromodichloromethane	75-27-4	NE	NE	0.047	U	0.047	U	0.047	U	0.047	U	-
Bromoform	75-25-2	NE	NE	0.36	U	0.36	U	0.36	U	0.36	U	-
Bromomethane	74-83-9	NE	NE	0.14	U	0.14	U	0.14	U	0.14	U	-
Carbon Disulfide	75-15-0	NE	NE	1.1	U	1.1	U	1.1	U	1.1	U	-
Carbon Tetrachloride	56-23-5	0.17	1.36	**0.53**		**0.52**		**0.54**		**0.52**		4%
Chlorobenzene	108-90-7	NE	NE	0.16	U	0.16	U	0.16	U	0.16	U	-
Chloroethane	75-00-3	10,000	35,040	0.092	U	0.092	U	0.092	U	0.092	U	-
Chloroform	67-66-3	0.04	0.36	**0.099**		0.034	U	**0.25**		0.034	U	-
Chloromethane	74-87-3	NE	NE	0.14	U	0.14	U	0.14	U	0.14	U	-
cis-1,2-Dichloroethylene	156-59-2	NE	NE	0.028	U	0.028	U	0.028	U	0.028	U	-
cis-1,3-Dichloropropene	10061-01-5	NE	NE	0.032	U	0.032	U	0.032	U	0.032	U	-
Cyclohexane	110-82-7	NE	NE	0.12	U	0.12	U	0.12	U	0.12	U	-
Dibromochloromethane	124-48-1	NE	NE	0.30	U	0.30	U	0.30	U	0.30	U	-
Dichlorodifluoromethane (Freon 12)	75-71-8	NE	NE	**2.2**		**2.0**		0.17	U	**2.0**		-
Ethanol	64-17-5	NE	NE	**20**		**34**		**41**		**16**		19%
Ethyl Acetate	141-78-6	NE	NE	1.3	U	1.3	U	1.3	U	1.3	U	-
Ethylbenzene	100-41-4	0.4	3.27	0.15	U	**1.3**		**1.3**		0.15	U	0%
Heptane	142-82-5	NE	NE	0.14	U	**0.89**		0.14	U	0.14	U	-
Hexachlorobutadiene	87-68-3	NE	NE	0.37	U	0.37	U	0.37	U	0.37	U	-
Hexane	110-54-3	NE	NE	4.9	U	4.9	U	4.9	U	4.9	U	-
Isopropanol	67-63-0	NE	NE	3.4	U	**9.0**		**8.3**		3.4	U	8%
m&p-Xylene	1330-20-7P/M	NE	NE	0.300	U	**2.6**		**2.7**		**0.38**		4%
Methyl tert-Butyl Ether (MTBE)	1634-04-4	NE	NE	0.13	U	0.13	U	0.13	U	0.13	U	-
Methylene Chloride	75-09-2	60.34	817.6	**2.7**		**21**		1.2	U	**18**		-
Naphthalene	91-20-3	0.262	0.262	0.18	U	**0.49**		**0.52**		**0.30**		6%
o-Xylene	95-47-6	NE	NE	0.15	U	**1.2**		**1.3**		**0.18**		8%
Propene	115-07-1	NE	NE	2.4	U	2.4	U	2.4	U	2.4	U	-
Styrene	100-42-5	NE	NE	0.15	U	**0.42**		**0.43**		0.15	U	2%
Tetrachloroethylene	127-18-4	0.63	5.11	0.24	U	**13**		**14**		0.24	U	7%
Tetrahydrofuran	109-99-9	NE	NE	1.0	U	1.0	U	1.0	U	1.0	U	-
Toluene	108-88-3	NE	NE	**0.37**		**2.1**		**1.9**		**0.97**		10%
Total Trimethylbenzene	25551-13-7	60	210.24	0.26	U	**11.2**		**11.4**		**0.42**		2%
Total Xylene	1330-20-7	NE	NE	0.15	U	**3.8**		**4.0**		**0.56**		5%
trans-1,2-Dichloroethylene	156-60-5	NE	NE	0.028	U	0.028	U	0.028	U	0.028	U	-
trans-1,3-Dichloropropene	10061-02-6	NE	NE	0.032	U	0.032	U	0.032	U	0.032	U	-
Trichloroethylene	79-01-6	0.20	0.70	0.037	U	0.037	U	0.037	U	**0.19**		-
Trichlorofluoromethane (Freon 11)	75-69-4	NE	NE	**1.2**		**1.2**		**1.3**		**1.4**		8%
Vinyl Acetate	108-05-4	NE	NE	2.50	U	2.50	U	2.50	U	2.50	U	-
Vinyl Chloride	75-01-4	0.11	1.86	0.018	U	0.018	U	0.018	U	0.018	U	-

Key:
Indoor Air Standards (IAS) from Investigation and Remediation of Contaminated Properties Rule, July 2019
µg/m^3 - micrograms per cubic meter
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the resident IAS
Orange border indicates an exceedance of the non-resident IAS
NE - screening level not established
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed

Table B-15
TCLP Pesticides and Herbicides Results - Soil Samples

Sample ID		Maximum Concentration of Contaminants for Toxicity Characterisitic	SL-3		SL-4	
Sample Date		(µg/l)	3/1/2022	Q	3/1/2022	Q
	CAS #					
4,4' -DDD	72-54-8	NE	1.0	U	1.0	U
4,4' -DDE	72-55-9	NE	1.0	U	1.0	U
4,4' -DDT	50-29-3	NE	1.0	U	1.0	U
a-BHC	319-84-6	NE	0.50	U	0.50	U
Alachlor	15972-60-8	NE	0.50	U	0.50	U
Aldrin	309-00-2	NE	0.50	U	0.50	U
b-BHC	319-85-7	NE	0.50	U	0.50	U
Chlordane	57-74-9	NE	5.0	U	5.0	U
d-BHC	319-86-8	NE	0.50	U	0.50	U
Dieldrin	60-57-1	NE	1.0	U	1.0	U
Endosulfan I	959-98-8	NE	0.50	U	0.50	U
Endosulfan II	33213-65-9	NE	1.0	U	1.0	U
Endosulfan Sulfate	1031-07-8	NE	1.0	U	1.0	U
Endrin	72-20-8	NE	1.0	U	1.0	U
Endrin Aldehyde	7421-93-4	NE	1.0	U	1.0	U
g-BHC (Lindane)	58-89-9	NE	0.50	U	0.50	U
Heptachlor	76-44-8	NE	0.50	U	0.50	U
Heptachlor epoxide	1024-57-3	NE	0.50	U	0.50	U
Methoxychlor	72-43-5	NE	0.50	U	0.50	U
Toxaphene	8001-35-2	NE	20	U	20	U
2,4,5-TP (Silvex)	93-72-1	NE	50	U	50	U
2,4-D	94-75-7	10	100	U	100	U

Key:
µg/L - micrograms per liter (parts per billion)
Q - qualifier
U - Analyte not detected, laboratory reporting limit provided
NE - not established

Table B-16
TCLP Metals Analytical Results - Soil Samples

Sample ID		Maximum Concentration of Contaminants for Toxicity Characterisitic	SL-3		SL-4	
Sample Date			**3/1/2022**	**Q**	**3/1/2022**	**Q**
	CAS #	**mg/l**				
TCLP Arsenic	7440-38-2	5.0	0.10	U	0.10	U
TCLP Barium	7440-39-3	100	**0.50**		**0.29**	
TCLP Cadmium	7440-43-9	1.0	0.050	U	0.050	U
TCLP Chromium	7440-47-3	5.0	0.10	U	0.10	U
TCLP Lead	7439-92-1	5.0	0.10	U	0.10	U
TCLP Silver	7440-22-4	5.0	0.10	U	0.10	U
TCLP Selenium	7782-49-2	1.0	0.10	U	0.10	U
TCLP Mercury	7439-97-6	0.2	0.00020	U	0.00020	U

Key:
mg/L - milligrams per liter (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the residential enforcement standard(s)
NE - screening level not established
Q - qualifier
U - Analyte not detected, laboratory reporting limit provided

Table B-17
TCLP Semi Volatile Organic Compounds Analytical Results - Soil Samples

Sample ID		Maximum Concentration of Contaminants for Toxicity Characterisitic	SL-3		SL-4	
Sample Date			**3/1/2022**	**Q**	**3/1/2022**	**Q**
	CAS#	**(µg/l)**				
1,4-Dichlorobenzene	106-46-7	7,500	83	U	83	U
2,4,5-Trichlorophenol	95-95-4	400,000	83	U	83	U
2,4,6-Trichlorophenol	88-06-2	2,000	83	U	83	U
2,4-Dinitrotoluene	121-14-2	130	83	U	83	U
2-Methylphenol (o-cresol)	95-48-7	200,000	83	U	83	U
3&4-Methylphenol (m&p-Cresol)	PHNX - M&P C	200,000	83	U	83	U
Hexachlorobenzene	118-74-1	130	83	U	83	U
Hexachlorobutadiene	87-68-3	500	83	U	83	U
Hexachloroethane	67-72-1	3,000	83	U	83	U
Nitrobenzene	98-95-3	2,000	83	U	83	U
Pentachlorophenol	87-86-5	100,000	83	U	83	U
Pyridine	110-86-1	5,000	83	U	83	U

Key:
µg/L - micrograms per liter (parts per billion)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the residential enforcement standard(s)
NE - screening level not established
Q - qualifier
U - Analyte not detected, laboratory reporting limit provided

Table B-18
TCLP Volatile Organic Compounds Analytical Results - Soil Samples

Sample ID		Maximum Concentration of Contaminants for Toxicity Characterisitic	SL-3		SL-4	
Sample Date			3/1/2022	Q	3/1/2022	Q
	CAS#	(µg/l)				
1,1-Dichloroethene	75-35-4	7,000	50	U	50	U
1,2-Dichloroethane	107-06-2	5,000	50	U	50	U
Benzene	71-43-2	500	50	U	50	U
Carbon tetrachloride	56-23-5	500	50	U	50	U
Chlorobenzene	108-90-7	100,000	50	U	50	U
Chloroform	67-66-3	6,000	50	U	50	U
Methyl ethyl ketone	78-93-3	200,000	50	U	50	U
Tetrachloroethene	127-18-4	700	50	U	50	U
Trichloroethene	79-01-6	500	50	U	50	U
Vinyl chloride	75-01-4	200	50	U	50	U

Key:
µg/L - micrograms per liter (parts per billion)
Bold results indicate detections of the analyte
Shaded results indicate an exceedance of the residential enforcement standard(s)
NE - screening level not established
Q - qualifier
U - Analyte not detected, laboratory reporting limit provided

Table B-19
Waste Characteristics – Soil Samples

Sample ID	SL-3		SL-4	
Sample Date	3/1/2022		3/1/2022	
Flash Point	>200°F		>200°F	
pH at 25C - Soil	7.95		7.96	
Percent Solid	78%		83%	
Corrosivity	Negative		Negative	
Ignitability	Passed		Passed	
Reactivity Cyanide	<6 mg/Kg		<6 mg/Kg	
Reactivity Sulfide	<20 mg/Kg		<20 mg/Kg	
Reactivity	Negative		Negative	
Free Liquids	<2 mL		<2 mL	

Key:
mg/kg - milligrams per kilogram (parts per million)
°F - degrees Fahrenheit
mL - milliliter

Table B-20
Indoor Air Sample Analytical Results

Sample ID		VT RAL - PCBs in Indoor Air	IA-PCB-01		IA-PCB-02		IA-PCB-03		IA-PCB-04		IA-PCB-05	
Sample Date	CAS#		2/24/2022	Q	2/24/2022	Q	2/24/2022	Q	2/24/2022	Q	2/24/2022	Q
		(ng/m³)										
Aroclor-1016	12674-11-2	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Aroclor-1221	11104-28-2	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Aroclor-1232	11141-16-5	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Aroclor-1242	53469-21-9	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Aroclor-1248	12672-29-6	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Aroclor-1254	11097-69-1	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Aroclor-1260	11096-82-5	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Aroclor-1262	37324-23-5	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Aroclor-1268	11100-14-4	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U
Total PCBs	1336-36-3	22.5	7.9	U	7.9	U	7.9	U	7.9	U	7.9	U

Sample ID		VT RAL - PCBs in Indoor Air	IA-PCB-06		IA-PCB-07		OA-PCB-08	
Sample Date	CAS#		2/24/2022	Q	2/24/2022	Q	2/24/2022	Q
		(ng/m³)						
Aroclor-1016	12674-11-2	22.5	7.9	U	7.9	U	7.9	U
Aroclor-1221	11104-28-2	22.5	7.9	U	7.9	U	7.9	U
Aroclor-1232	11141-16-5	22.5	7.9	U	7.9	U	7.9	U
Aroclor-1242	53469-21-9	22.5	7.9	U	7.9	U	7.9	U
Aroclor-1248	12672-29-6	22.5	7.9	U	7.9	U	7.9	U
Aroclor-1254	11097-69-1	22.5	7.9	U	7.9	U	7.9	U
Aroclor-1260	11096-82-5	22.5	7.9	U	7.9	U	7.9	U
Aroclor-1262	37324-23-5	22.5	7.9	U	7.9	U	7.9	U
Aroclor-1268	11100-14-4	22.5	7.9	U	7.9	U	7.9	U
Total PCBs	1336-36-3	22.5	7.9	U	7.9	U	7.9	U

Key:
VT RAL - Vermont Department of Environmental Conservation Remedial Action Level for residential and commerical buildings (March 11, 2022)
ng/m^3 - nanograms per cubic meter
Q - laboratory result qualifier
U - Analyte not detected; limit of quantitation listed

Appendix C: Detailed Cost Estimate

202 Bay Street CAP Implementation
Stone Project #: 20-117
DETAILED FEE & SCOPE DETAILS

#	Staff Type	Rate Per Unit	Unit	Amount	Subtotal		Scope Details
1	**Task 1 - Project Management**						Senior Scientist:
	Professional Services						1) attend bi-weekly project team meetings for duration of cleanup project (1 hour/meeting for six months (12 meetings).
	Senior Professional 1	$ 141 / hour	60	$8,460			2) coordinate SSD system installation and soil management with general contractor (20 hours)
	Professional Services Summary		*60*		*$8,460*		3) Project tracking (2 hours/month for 6 months)
	Stone Equipment						4) Up to four site meetings with owner and contractors (4 hours/meeting, including travel)
	Civic Mileage	$ 0.585 / mile	320	$187			
	Expense Summary				*$187*		
	TASK SUBTOTAL					**$8,647**	
2	**Task 2 - SSD System Installation & Startup**						Staff scientist to oversee SSD system installation to document compliance with CAP. Perform SSD system performance monitoring following extraction well construction and upon startup. Collect two SSD system influent air samples upon startup.
	Professional Services						
	Staff Professional 3	104 / hour	42	$4,368			
	Professional Services Summary		*42*		*$4,368*		
	Consultants*						Contractor Labor:
	SSD System Install Labor	$65 / hour	48	$3,432			1) Assumes three days for two laboroers to construct SSD system.
	Electrician Contractor	$1,500 / ls	1	$1,650			2) Electrician to provide electrical supply to each SSD system fan from dedicated breaker.
	Roofing Contractor	$3,000 / ls	1	$3,300			3) Roofer to install flashing/roof vent boot for each SSD system as appropriate.
	Influent Samples: VOCs by TO-15	$275 / sample	2	$605			
	Indoor Air Samples: VOCs by TO-15	$275 / sample	4	$1,210			Stone Labor:
	Consultant Summary				*$10,197*		Staff scientist
	External Expenses						1) provide SSD system oversight and perform interim performance testing following extraction well installation (30 hours including travel)
	PVC Pipe and Fittings	$1,200 / ls	1	$1,320			2) field preparation - 4 hours
	Pipe Mounting Hardware	$250 / ls	1	$275			3) perform startup performance testing - 8 hours
	SSD System Fan	$200 / ea	2	$440			4) collect two indoor air samples, one field duplicate, and one outdoor ambient air sample following completion of building renovations
	Extraction Well Materials	$25 / ea	4	$110			
	Magnehelic Gauge	$125 / ea	2	$275			
	Fan Failure Alarm	$150 / ea	2	$330			
	Shipping/Freight	$100 / ea	1	$110			
	Monitoring Points	$100 / ea	6	$660			
	Stone Equipment						
	F-150 Usage Fee	$125 / Daily	5	$625			
	Bosch Hammer Drill	$50 / Daily	1	$50			
	Omnigaurd Differential Pressure Reco	$50 / Daily	2	$100			
	PID	$90 / Daily	2	$180			
	TSI Velocicalc 9535 Anemometer	$35 / Daily	2	$70			
	EG&G Rotron Blower	$70 / Daily	2	$140			
	Stone Consumables						
	PPE	$19.50 / Day/Staff		$0.00			
	Expense Summary				*$4,685*		
	TASK SUBTOTAL					**$19,250**	
3	**Task 3 - SSD System Monitoring - (1 Year Quarterly 2 years Annual)**						Conduct quarterly monitoring for one year following SSD system installation. Startup monitoring will serve as the first event. Measure differential pressure between sub-slab and indoor air environments and airflow, vacuum, and relative VOC levels in SSD system influent pipes. Inspect mechanical components for need or repair/replacement. Collect one sub-slab soil vapor sample (+ 1 field duplicate/event) for VOC analysis by TO-15. Operate SSD system passively for two years and collect sub-slab soil vapor samples from MP-5 annually (+1 FD/event)
	Professional Services						
	Staff Professional 3	$ 104 / hour	48	$4,992			
	Senior Professional 1	$ 141 / hour	2	$282			
	Professional Services Summary		*50*		*$5,274*		
	Consultants*						
	Soil Vapor Samples: VOCs by TO-15	$200 / sample	12	$2,640			
	Consultant Summary				*$2,640*		Staff Scientist: Staff Scientist 8 hours/event - 5 events total
	External Expenses						
	Shipping/Freight	$100.0 / ea	5	$550			Prepare monitoring report
	Stone Equipment						Staff scientist: 8 hours
	F-150 Usage Fee	$125 / Daily	5	$625			Senior Review: 2 hours
	Omnigaurd Differential Pressure Reco	$50 / Daily	5	$250			
	PID	$90 / Daily	5	$450			
	TSI Velocicalc 9535 Anemometer	$35 / Daily	5	$175			
	Stone Consumables						
	PPE	$19.50 / Day/Staff	5	$97.50			
	Expense Summary				*$2,148*		
	TASK SUBTOTAL					**$10,062**	

4	**Task 4 - Soil Management**						Senior Professional to coordinate soil disposal with Waste USA landfill in Coventry, VT (12 hours) Staff professional to provide oversight of contaminated and development soils - assumes work will take two weeks, 8 hours/day including travel
	Professional Services						
	Staff Professional 3	$ 104 / hour		80	$8,320		
	Senior Professional 1	$ 141 / hour		12	$1,692		
	Professional Services Summary			*92*		*$10,012*	
	Consultants*						
	Exc. Contractor Mobilization	$2,500 / ls		1	$2,750		
	Excavate/Load Disposal Soils	$15.68 / CY		178	$3,070		
	Excavate/Load Development Soils	$15.68 / CY		700	$12,074		
	Transport/Disposal of Disposal soils	$80 / ton		268	$23,584		
	Transport/Disposal of Development sc	$65 / ton		1050	$75,075		
	Waste Characterisitics Samples	$750 / each		4	$3,300		
	Cleanup Verification Samples - PAHs	$90 / each		5	$495		
	Cleanup Verification Samples - Metals	$95 / each		5	$523		
	Cleanup Verification Samples - TPH	$60 / each		2	$132		
	Consultant Summary					*$121,002*	
	External Expenses						
	Shipping/Freight	$100 / ea		2	$220		
	Stone Equipment						
	F-150 Usage Fee	$125 / Daily		10	$1,250		
	Stone Consumables						
	PPE	$19.50 / Day/Staff		10	$195.00		
	Expense Summary					*$1,665*	
	TASK SUBTOTAL						**$132,679**
5	**Task 5 - Container Disposal**						Absolute Spill Response to inventory, characterize, and transport universal wastes off-Site for proper disposal. Stone to provide oversight/document activities.
	Professional Services						
	Staff Professional 3	$ 104 / hour		16	$1,664		
	Professional Services Summary			*16*		*$1,664*	
	Consultants*						
	Absolute Spill Repsonse	$20,000 / ls		1	$22,000		
	Consultant Summary					*$22,000*	
	Stone Equipment						
	F-150 Usage Fee	$125 / Daily		2	$250		
	Stone Consumables						
	PPE	$19.50 / Day/Staff		2	$39.00		
	Expense Summary					*$289*	
	TASK SUBTOTAL						**$23,953**
6	**Task 6 - Floor Drain Closure**						Absolute Spill Response to remove sludge from floor drain system with drum vacuum, clean floor drain/pit, and backfill with flowable fill. Work to be completed under QEP supervision.
	Professional Services						
	Staff Professional 3	$ 104 / hour		8	$832		
	Professional Services Summary			*8*		*$832*	
	Consultants*						
	Absolute Spill Response	$5,000 / ls		1	$5,500		
	Consultant Summary					*$5,500*	
	Stone Equipment						
	F-150 Usage Fee	$125 / Daily		1	$125		
	Stone Consumables						
	PPE	$19.50 / Day/Staff		1	$19.50		
	Expense Summary					*$145*	
	TASK SUBTOTAL						**$6,477**
7	**Task 7 - Corrective Action Construction Completion Report**						Prepare CACCR in accordance with IRule following completion of cleanup activities.
	Professional Services						
	Senior Professional 1	$ 141 / hour		8	$1,128		
	Project Engineer 3	$ 136 / hour		4	$544		
	Staff Professional 3	$ 104 / hour		32	$3,328		
	Professional Services Summary			*44*		*$5,000*	
	Stone Equipment						
	AutoCAD Civil 3D	$10.00 / Hour		16	$160.00		
	Expense Summary					*$160*	
	TASK SUBTOTAL						**$5,160**
	PROJECT TOTAL						***$206,227***
	PROJECT TOTAL (20% Contingency)						***$247,473***

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

Appendix D: SSD System Operations and Maintenance Plan

Operations and Maintenance Plan: 202 Bay Street, St. Johnsbury, Vermont Sub-Slab Depressurization Systems

SMS #20204966

STONE ENVIRONMENTAL

PROJECT NO.

17-117

REVIEWED BY:

PREPARED FOR:

Brandon McFarlane/ ***Owner, CEO***
Zion Growers
74 Mountain Avenue / St. Johnsbury, Vermont 05819

SUBMITTED BY:

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Operations and Maintenance Plan: 202 Bay Street, St. Johnsbury, Vermont Sub-Slab Depressurization Systems

Contents

1. Introduction

Stone Environmental, Inc. (Stone) has prepared this Operations and Maintenance Plan (OMP) on behalf of Zion Growers for their property located at 202 Bay Street, St. Johnsbury, Vermont (the Site; Figure 1). Historical Site operations have resulted in vapor intrusion of the volatile organic compounds (VOCs), naphthalene, into a Site building referred to as the "L" building from sub-slab soil vapors. This OMP outlines maintenance and compliance monitoring requirements for proposed sub-slab depressurization (SSD) systems that will be installed in the "L" building. The purpose of the SSD systems is to mitigate vapor intrusion (VI) into the Site building. For additional details concerning subsurface contamination at the Site please refer to the CAP:

- Stone Environmental, Inc., *Partial Corrective Action Plan: 202 Bay Street, St. Johnsbury, Vermont, SMS #20204966*, April 19, 2022.

For the most up to date information regarding subsurface contamination at the Site, please contact the Vermont Department of Environmental Conservation (VT DEC). The current VT DEC site manager is Ms. Kimberly Caldwell (as of the production date for this document).

2. SSD System Operations and Maintenance Requirements

2.1. SSD System Overview

The SSD systems operate by inducing a negative pressure beneath the "L" building's concrete slab relative to indoor air. Air drawn from the subsurface by the fans is exhausted to the outdoors above the building roofline, which is located more than ten feet away from air intake structures and windows. Figures 2 and 3 (Appendix A) provide SSD system layout and component details.

The SSD systems installed beneath the building slab consists of six basic components:

1. **Extraction Wells**: Extraction wells will be constructed by using a concrete core drill with a 6-inch diameter coring bit to core through the building slab and foundation wall, hand excavating approximately 1-foot of soil, backfilling the excavation to the base of the slab/foundation wall using 1-inch minus diameter washed stone, inserting 4-inch diameter schedule 40 polyvinyl chloride (PVC) pipe into the core hole, and sealing the PVC pipe to the slab using hydraulic cement. Four extraction wells will be installed during construction of the SSD systems (EW-1, -2, -3, and -4).
2. **Ventilation Piping**: Ventilation piping will consist of 4-inch diameter schedule 40 PVC pipe solvent welded together and to each extraction well. Couplings, elbows, and other fittings will be used as appropriate to connect piping emanating from each extraction well in the SSD systems. Monitoring ports will be installed at chest height within PVC piping above each extraction well to allow for air flow and vacuum measurements. Monitoring ports will consist of 3/8-inch threaded holes in the PVC pipe and will be plugged with a stainless-steel hex drive cap and O-ring while the system is in use. Gate valves will be installed approximately 8-feet above each extraction well and in-line with effluent piping to allow for balancing flow between extraction wells within each SSD system, if required. Ventilation piping for the SSD system will be plumbed together within the building, exiting the building and extending above the roof-line.
3. **Fan Unit**: The fan used to induce a negative pressure in the sub-slab environment will be installed in-line with ventilation piping outside of the Site building.
4. **Pressure Gauge**: A magnehelic® pressure gauge will be installed as part of each SSD system to monitor differential pressure between the SSD systems and building interior. One quarter inch polyethylene tubing will be connected to each magnehelic® gauge and installed in effluent piping prior to PVC pipe exiting the building, but at a location after where the effluent piping from all extraction wells for each SSD system is plumbed together.
5. **Sub-Slab Monitoring Points**: Six differential pressure monitoring points will be installed in the "L" building slab to confirm the effectiveness of the SSD systems. Differential pressure vapor monitoring points will consist of Cox-Colvin Vapor Pins® installed through, and recessed within the concrete slab/foundation wall, and covered with flush-mount stainless steel covers.
6. **Fan Failure Alarm**: One fan failure alarm will be installed in each SSD system to measure the applied vacuum within ventilation piping prior to the piping exiting the building. If the applied

vacuum drops below -0.10 inches of water column ("WC), a red light will flash and an alarm will sound.

2.2. Specific System Components

A summary of specific components included in each SSD system is provided below.

1. **Extraction Wells**:
    a. 1-inch minus diameter washed stone to a depth of 1 foot below slab/foundation wall,
    b. 4-inch diameter PVC piping, and
    c. Hydraulic cement.
2. **Ventilation Piping**: 4-inch diameter schedule 40 PVC pipe and fittings.
3. **Blower Units**: RadonAway model GX4 radon fan with 120-volt power supply (or similar),
4. **Pressure Gauge**:
    a. Dwyer Instruments series 2000 Magnehelic® differential pressure gauge with a 0 – 5 inches of water column ("WC) range.
    b. ¼-inch outside diameter polyethylene tubing.
5. **Sub-Slab Monitoring Points**: Stainless Steel Cox-Colvin Vapor Pins® recessed in concrete slab and capped with silicon caps and flush-mount stainless steel covers.
6. **Fan Failure Alarm**: RadonAway model RSA1 or similar.

Product manuals and manufacturer information for the RadonAway model GX4 radon fan, Dwyer Instruments Magnehelic® differential pressure gauge, and RadonAway model RSA1 fan failure alarm are provided as Appendix B.

2.3. System Operation

SSD systems are operated by powering on fan units. For power supply to fans and fan failure alarms, electrical circuit breakers will be labeled "Radon Fan" by the electrician subcontracted to install electrical components.

SSD systems must remain in operation at all times. The only conditions warranting the shutdown of SSD systems are as follows:

1. Emergencies (fire, flood, etc.)
2. System malfunction,
3. System maintenance/inspection (fan replacement, cleaning fan impellers, etc.); and
4. Deactivation approved by the VT DEC. SSD systems may be operated passively if influent samples do not contain VOCs at concentrations exceeding non-resident sub-slab soil gas Vapor Intrusion Standards, published in the VT DEC's Investigation and Remediation of Contaminated Properties Rule for two consecutive years.

2.4. Performance Objectives

SSD systems are designed to:

1. Prevent migration of naphthalene contaminated soil gas into the "L" building at concentrations exceeding non-resident Vermont Indoor Air Standards (IAS). Non-resident IAS for naphthalene is 0.262 micrograms per cubic meter [$\mu g/m^3$]. IAS are published in Appendix A - §35-APX-A2 of the Investigation and Remediation of Contaminated Properties Rule (VT DEC, 2019); and
2. Maintain a minimum differential pressure of -0.008 "WC beneath the concrete slab, if operating actively.

2.5. System Troubleshooting

System troubleshooting is required if SSD fans fail, operates outside of the performance objectives discussed above, or if other system malfunctions are noted during periodic inspections. In the event of one of these situations, Zion Growers should contact Stone Environmental, Inc. at the phone numbers provided in Section 2.6. SSD system troubleshooting should only be performed by a qualified environmental professional or a professional engineer familiar with operation and maintenance (O&M) of SSD systems. SSD system troubleshooting may also require the retention of additional experts such as a licensed electrician, mechanical engineer, or others. Any such work will be completed under the supervision of a qualified environmental professional (QEP).

2.6. Emergency Contact Information

Zion Growers: 802-274-0613
Current Contact: Travis Samuels

Stone Environmental, Inc.: 802-229-5378
Current Contact: Lee Rosberg

Vermont Department of Environmental Conservation: 802-461-5857
Current Contact: Kimberly Caldwell

2.7. Periodic System Inspections

Quarterly O&M tasks will be completed by a QEP for the first year of system operation and include:

1. Pressure differential measurements between the sub-slab area and the indoor air to verify a minimum vacuum of -0.008 "WC is maintained. If appropriate, the QEP may adjust the gate valves in-line with extraction well ventilation piping to adjust applied vacuum and airflow rates within the SSD systems.
2. PID measurements will be collected from the exhaust vent to track relative levels of volatile organic compounds (VOC) in SSD system emissions.
3. Airflow and vacuum measurements within each extraction well ventilation piping.

The QEP will also assess each topside SSD system component to ensure they are functioning properly. These components include the fan, fan failure alarm, and Magnehelic® pressure gauge. Quarterly inspections are scheduled to begin three months following SSD system startup.

2.8. Long Term System Maintenance

After one year of SSD system operation, long term O&M activities will be carried out by Zion Growers personnel and include:

1. Quarterly inspection of the concrete slab and foundation walls for potential preferential VI pathways, such as cracks or other perforations. Any potential VI pathways should be sealed immediately with Sikaflex 1a elastomeric sealant or other appropriate sealant,
2. Quarterly inspection of all mechanical elements and performance of any necessary maintenance; and
3. Recording Magnehelic® pressure gauge readings on a quarterly basis to verify the fan is inducing a vacuum comparable to those observed during system startup.

O&M forms are provided as Appendix C.

3. Reporting Requirements

An O&M report will be prepared annually – due October 1 – during the first year of operation for review by the VT DEC Sites Management Section (SMS). An annual institutional control inspection form is provided in Appendix C. Salient to the SSD system, the property owner should complete the buildings/structures and sub-slab depressurization system sections of the inspection form and submit to the VT DEC Site Manager by October 1 of every year. In addition, the SMS must be notified immediately if a remedial system is shut down or not functioning properly. O&M reports will include the following information:

- A summary of the remedial system operation and Site status;
- Documentation of periodic concrete slab inspections for potential preferential VI pathways and a summary of any remedial actions taken;
- Documentation of mechanical elements inspections and a summary of any maintenance performed;
- A table of applied vacuums, as recorded quarterly from Magnehelic® gauges;
- Pressure differential measurements between the sub-slab area and the indoor air;
- PID measurements of SSD system exhaust streams; and
- Airflow and vacuum measurements within each extraction well ventilation piping.

All inspection forms, documentation of repairs to either the SSD system, and any other appropriate documentation, such as photographs, will be included as an attachment to the O&M report. An O&M report will be submitted for SMS review at least six weeks prior to any operational changes that may require SMS approval.

3.1. Modifications to the OMP

Any changes to the OMP will be incorporated as an addendum or as a complete revision to this document, as appropriate and will be submitted to the SMS for approval.

4. List of Acronyms

µg/m^3: Micrograms per Cubic Meter

CFM: Cubic Feet per Minute

VOC: Volatile Organic Compound

O&M: Operations and Maintenance

OMP: Operations and Maintenance Plan

PCE: Tetrachloroethene

PVC: Poly-vinyl Chloride

QEP: Qualified Environmental Professional

SMS: Sites Management Section

SSD: Sub-Slab Depressurization

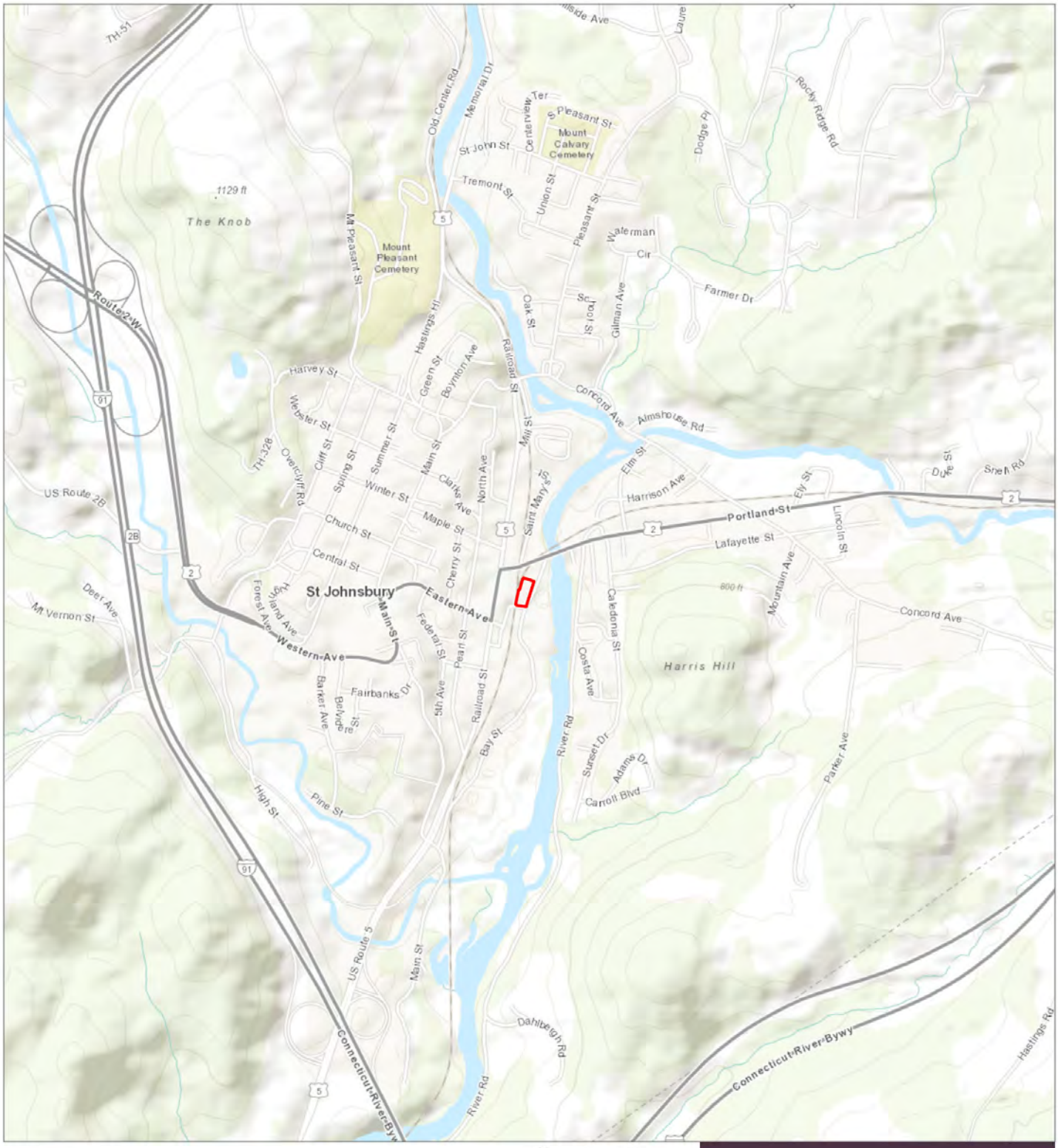
VI: Vapor Intrusion

VT DEC: Vermont Department of Environmental Conservation

"WC: Inches of Water Column

Appendix A: Figures

Figure 1: Site Location Map
Figure 2: SSD System Plan
Figure 3: SSD System Details



LEGEND

Site Boundary

N

0 500 1,000

Feet

Figure 1: Location Map

202 Bay Street
St. Johnsbury, Vermont

Prepared for VT DEC

STONE ENVIRONMENTAL

Source: Esri World Imagery, VCGI

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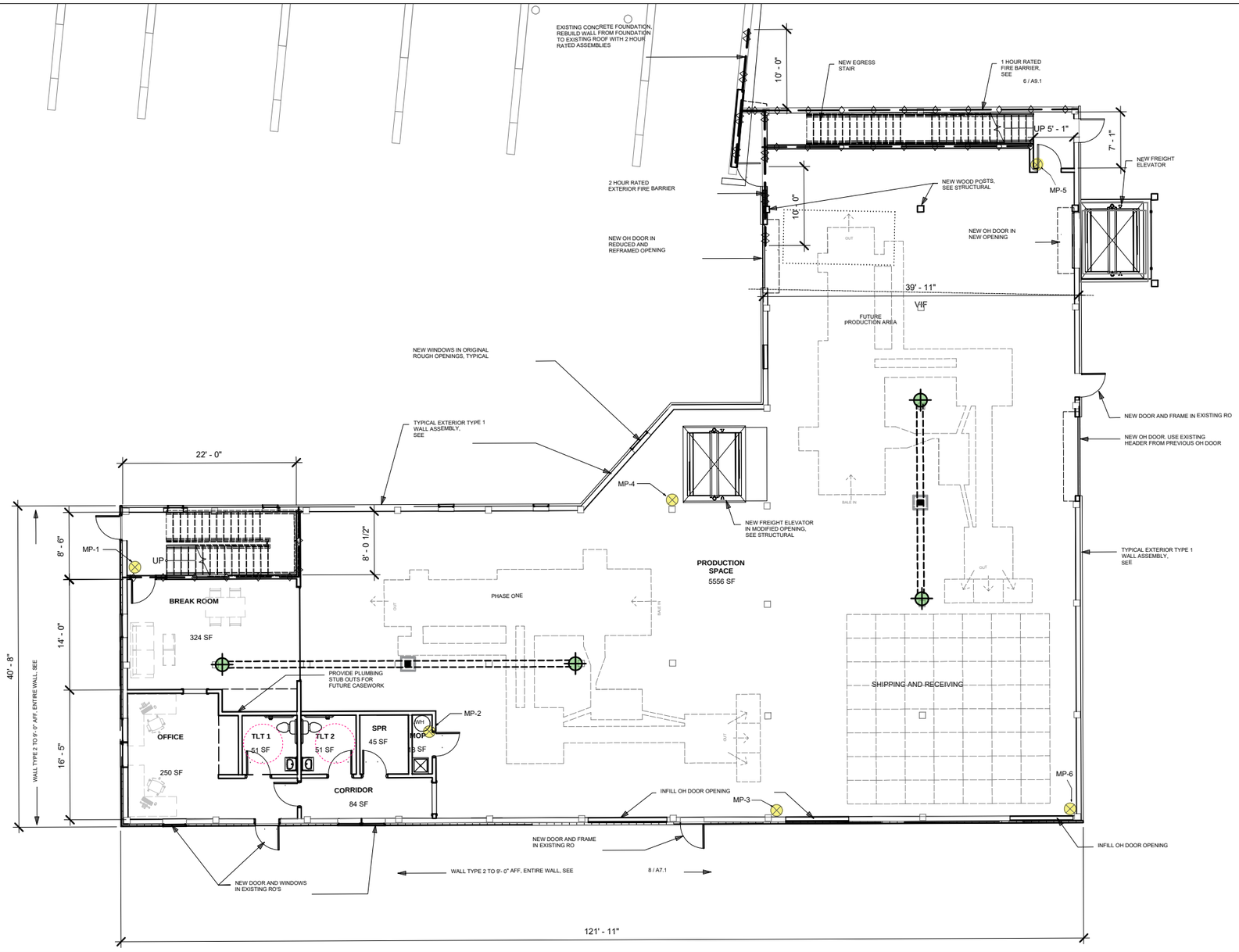
Saved: 7/27/2021 by lrajnak



LEGEND

- SSD MONITORING POINT
- SSD EXTRACTION WELL
- SSD EXHAUST ROOF PERFORATION/FAN LOCATION
- SSD EFFLUENT PIPE

Notes:
Building layout derived from Scott + Partners Architecture, Zion Growers, 12/20/21.

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DRAWING CREDITS

Drawn On:	04/05/2022
Drawn By:	LBR
Checked On:	04/07/2022
Checked By:	LJR
Project No.:	20-117

REVISIONS

#	Date	Drwn	Chk'd	App'd	Description

DRAWING SCALE

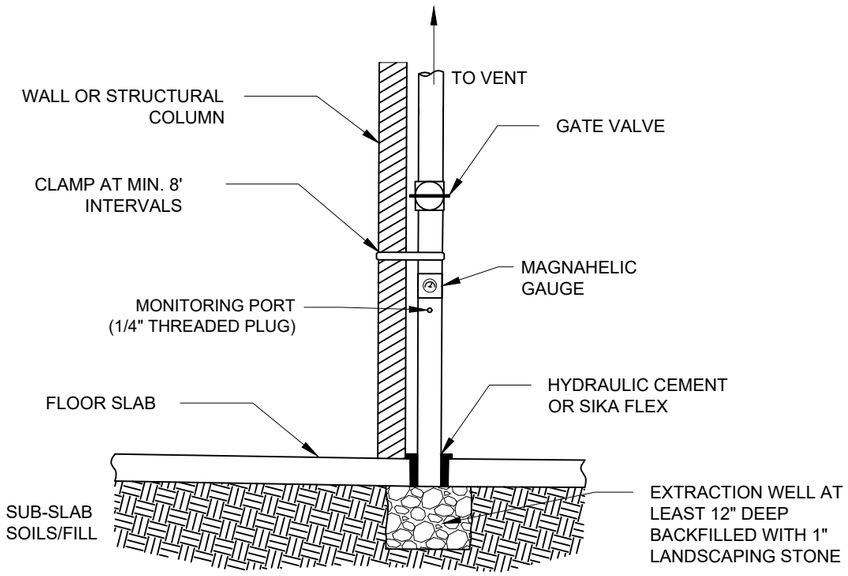
0 20 40'

STONE ENVIRONMENTAL
535 Stone Cutters Way / Montpelier / VT / 05602 / USA
802.229.4541 / info@stone-env.com / www.stone-env.com

SSD SYSTEM LAYOUT
CORRECTIVE ACTION PLAN
202 BAY STREET
ST JOHNSBURY VERMONT

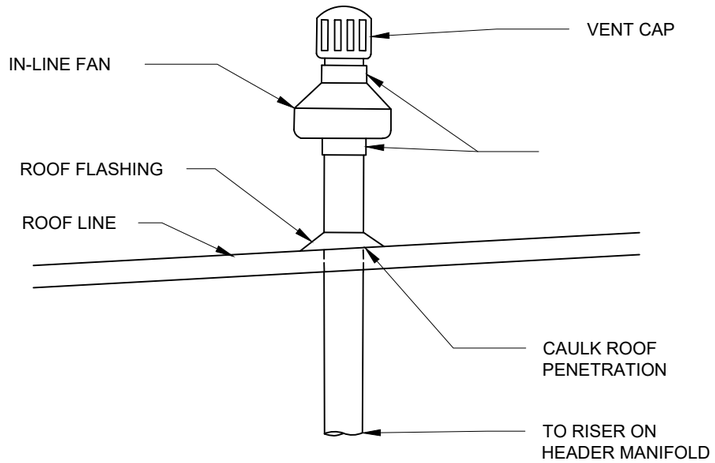
102

FIGURE NO. 2



A EXTRACTION WELL AND COLLECTOR PIPE DETAIL
NOT TO SCALE

ELASTOMERIC COUPLINGS



B ROOF PENETRATION AND VENT DETAIL
NOT TO SCALE

DRAWING CREDITS

Drawn On: 04/05/2022
Drawn By: LBR
Checked On: 04/07/2022
Checked By: LJR
Project No.: 20-117

REVISIONS

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DRAWING SCALE

STONE ENVIRONMENTAL
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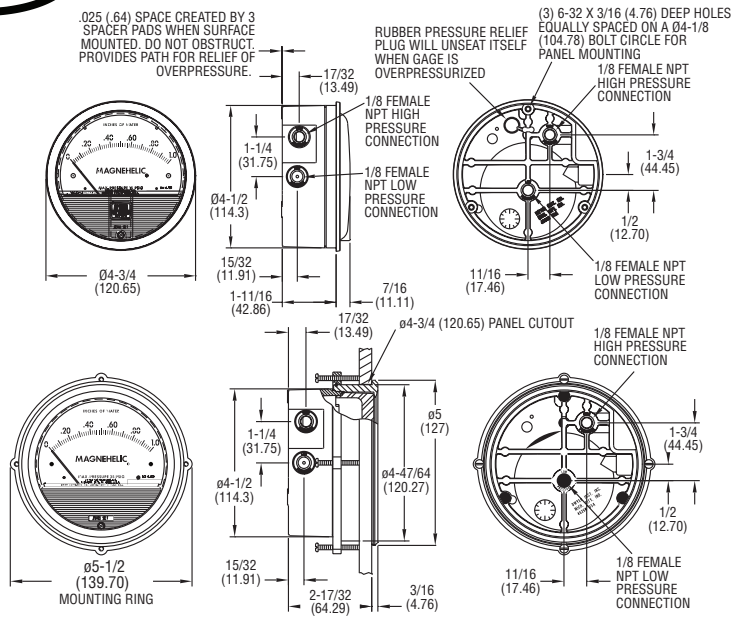
SSD SYSTEM DETAILS
CORRECTIVE ACTION PLAN
202 BAY STREET
ST JOHNSBURY VERMONT

FIGURE NO. 3

Appendix B: SSD Systems Component Manuals

Magnehelic® Differential Pressure Gage



**The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.*

STANDARD GAGE ACCESSORIES: Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapters and three flush mounting adapters with screws.

MP AND HP GAGE ACCESSORIES: Mounting ring and snap ring retainer substituted for 3 adaptors, 1/4" compression fittings replace 1/8" pipe thread to rubber tubing adaptors.

OVERPRESSURE PROTECTION: Standard Magnehelic® Differential Pressure Gages are rated for a maximum pressure of 15 psig and should not be used where that limit could be exceeded. Models employ a rubber plug on the rear which functions as a relief valve by unseating and venting the gage interior when over pressure reaches approximately 25 psig (excludes MP and HP models). To provide a free path for pressure relief, there are four spacer pads which maintain .023″ clearance when gage is surface mounted. Do not obstruct the gap created by these pads.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. (Natural Gas option available.)
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. (MP model has polycarbonate cover).
Accuracy: ±2% of full scale (±3% on - 0, -100 Pa, -125 Pa, 10MM and ±4% on -00, - 00N, -60 Pa, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20″ Hg to 15 psig.† (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.
Temperature Limits: 20 to 140°F (-6.67 to 60°C). *Low temperature models available as special option.
Size: 4″ (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/8″ female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).
Agency Approvals: RoHS.

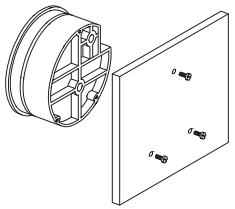
†For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options.

Note: May be used with hydrogen when ordering Buna-N diaphragm. Pressure must be less than 35 psi.

INSTALLATION

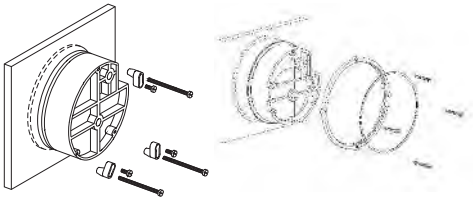
Select a location free from excessive vibration and where the ambient temperature will not exceed 140°F (60°C). Also, avoid direct sunlight which accelerates discoloration of the clear plastic cover. Sensing lines may be run any necessary distance. Long tubing lengths will not affect accuracy but will increase response time slightly. Do not restrict lines. If pulsating pressures or vibration cause excessive pointer oscillation, consult the factory for ways to provide additional damping.
All standard Magnehelic® Differential Pressure Gages are calibrated with the diaphragm vertical and should be used in that position for maximum accuracy. If gages are to be used in other than vertical position, this should be specified on the order. Many higher range gages will perform within tolerance in other positions with only rezeroing. Low range models of 0.5" w.c. plus 0.25" w.c. and metric equivalents must be used in the vertical position only.

SURFACE MOUNTING



Locate mounting holes, 120° apart on a 4-1/8" dia. circle. Use No. 6-32 machine screws of appropriate length.

FLUSH MOUNTING



Provide a 4-9/16" dia. (116 mm) opening in panel. Provide a 4-3/4" dia. (120 mm) opening for MP and HP models. Insert gage and secure in place with No. 6-32 machine screws of appropriate length, with adapters, firmly secured in place.

PIPE MOUNTING

To mount gage on 1-1/4" - 2" pipe, order optional A-610 pipe mounting kit.

TO ZERO GAGE AFTER INSTALLATION

Set the indicating pointer exactly on the zero mark, using the external zero adjust screw on the cover at the bottom. Note that the zero check or adjustment can only be made with the high and low pressure taps both open to atmosphere.

OPERATION

Positive Pressure: Connect tubing from source of pressure to either of the two high pressure ports. Plug the port not used. Vent one or both low pressure ports to atmosphere.
Negative Pressure: Connect tubing from source of vacuum or negative pressure to either of the two low pressure ports. Plug the port not used. Vent one or both high pressure ports to atmosphere.
Differential Pressure: Connect tubing from the greater of two pressure sources to either high pressure port and the lower to either low pressure port. Plug both unused ports.
When one side of the gage is vented in dirty, dusty atmosphere, we suggest an A-331 Filter Vent Plug be installed in the open port to keep inside of gage clean.

A. For portable use of temporary installation use 1/8" pipe thread to rubber tubing adapter and connect to source of pressure with flexible rubber or vinyl tubing.
B. For permanent installation, 1/4" O.D., or larger, copper or aluminum tubing is recommended.

MAINTENANCE

No lubrication or periodic servicing is required. Keep case exterior and cover clean. Occasionally disconnect pressure lines to vent both sides of gage to atmosphere and re-zero. Optional vent valves should be used in permanent installations. The Series 2000 is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

WARNING

Attempted field repair may void your warranty. Recalibration or repair by the user is not recommended.

TROUBLE SHOOTING TIPS

Gage won't indicate or is sluggish.

1. Duplicate pressure port not plugged.
2. Diaphragm ruptured due to overpressure.
3. Fittings or sensing lines blocked, pinched, or leaking.
4. Cover loose or "O"ring damaged, missing.
5. Pressure sensor, (static tips, Pitot tube, etc.) improperly located.
6. Ambient temperature too low. For operation below 20°F (-7°C), order gage with low temperature, (LT) option.

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
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RadonAway®

The world's leading radon fan manufacturer

RP, GP, XP Pro Series Installation Instructions

Fan Installation & Operating Instructions
RP, GP, XP Pro Series Fans
Please Read and Save These Instructions.

DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED. MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION. DISCONNECT POWER BEFORE SERVICING FAN.

1. **WARNING!** For General Ventilating Use Only. Do Not Use to Exhaust Hazardous, Corrosive or Explosive Materials, Gases or Vapors. See Vapor Intrusion Application Note #AN001 for important information on VI Applications. RadonAway.com/vapor-intrusion

2. **NOTE:** Fan is suitable for use with solid state speed controls; however, use of speed controls is not generally recommended.

2. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.

3. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.

4. **NOTICE!** There are no user serviceable parts located inside the fan unit.
Do NOT attempt to open. Return unit to the factory. (See Warranty, p. 8, for details.)

5. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.

6. **WARNING!** TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

   a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer. (See p. 8.)

   b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

   c) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire rated construction.

   d) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturers' guidelines and safety standards such as those published by any National Fire Protection Association, and the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), and the local code authorities.

   e) When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.

   f) Ducted fans must always be vented to outdoors.

   g) If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application and be connected to a GFCI (Ground Fault Circuit Interrupter) protected branch circuit.

Fan Installation & Operating Instructions

RP Pro Series	GP Pro Series	XP Pro Series
RP140 | P/N 28460	GP201 | P/N 28465	XP151 | P/N 28469
RP145 | P/N 28461	GP301 | P/N 28466	XP201 | P/N 28470
RP260 | P/N 28462	GP401 | P/N 28467	
RP265 | P/N 28463	GP501 | P/N 28468	
RP380 | P/N 28464		

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The RP, GP and XP Pro Series Radon Fans are intended for use by trained, professional, certified/licensed radon mitigators. The purpose of these instructions is to provide additional guidance for the most effective use of RP, GP and XP Series Fans. These instructions should be considered supplemental to EPA/radon industry standard practices, state and local building codes and regulations. In the event of a conflict, those codes, practices and regulations take precedence over these instructions.

1.2 FAN SEALING

The RP, GP and XP Pro Series Fans are factory sealed; no additional caulk or other materials are required to inhibit air leakage.

1.3 ENVIRONMENTALS

The RP, GP and XP Pro Series Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F or more than 100 degrees F.

1.4 ACOUSTICS

The RP, GP and XP Pro Series Fans, when installed properly, operate with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the "rushing" sound of the outlet air may be disturbing. In these instances, the use of a RadonAway Exhaust Muffler is recommended.

(To ensure quiet operation of inline and remote fans, each fan shall be installed using sound attenuation techniques appropriate for the installation. For bathroom and general ventilation applications, at least 8 feet of insulated flexible duct shall be installed between the exhaust or supply grille(s) and the fan(s). RP, GP and XP Pro Series Fans are not suitable for kitchen range hood remote ventilation applications.)

1.5 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes, thus blocking air flow to the RP, GP and XP Pro Series Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes, allowing for return to normal operation.

1.6 SLAB COVERAGE

The RP, GP and XP Pro Series Fans can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the RP, GP and XP Pro Series Fan best suited for the sub-slab material can improve the slab coverage. The RP, GP and XP Pro Series have a wide range of models to choose from to cover a wide range of sub-slab materials. The RP140 and 145 are best suited for general purpose use. The RP 260 can be used where additional airflow is required, and the RP265 and RP 380 are best suited for large slab, high airflow applications. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

1.7 CONDENSATION & DRAINAGE

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation. The RP, GP and XP Pro Series Fan MUST be mounted vertically plumb and level, with the outlet pointing up for proper drainage through the fan. Avoid mounting the fan in any orientation that will allow water to accumulate inside the fan housing. The RP, GP and XP Pro Series Fans are NOT suitable for underground burial.

For RP, GP and XP Pro Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

Pipe Diameter	Minimum Rise per Ft of Run*		
	@25 CFM	@50 CFM	@100 CFM
4”	1/8”	1/4”	3/8”
3”	1/4”	3/8”	1 1/2”

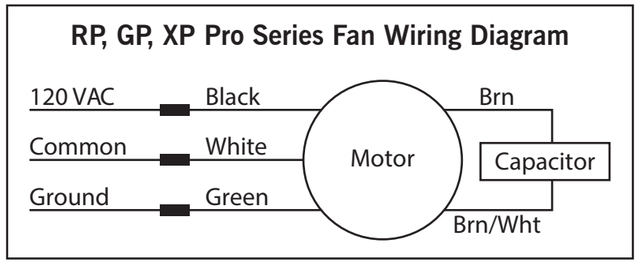
See p. 7 for detailed specifications.

1.8 SYSTEM MONITOR & LABEL

A System Monitor, such as a manometer (P/N 50017) or audible alarm (P/N 28001-2, 28001-4 or 28421), is required to notify the occupants of a fan system malfunction. A System Label (provided with Manometer P/N 50017) with instructions for contacting the installing contractor for service and identifying the necessity for regular radon tests to be conducted by the building occupants must be conspicuously placed in a location where the occupants frequent and can see the label.

1.9 ELECTRICAL WIRING

The RP, GP and XP Pro Series Fans operate on standard 120V, 60Hz AC. All wiring must be performed in accordance with National Fire Protection (NFPA) National Electrical Code, Standard #70, current edition, for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. Outdoor installations require the use of a UL Listed watertight conduit. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box.



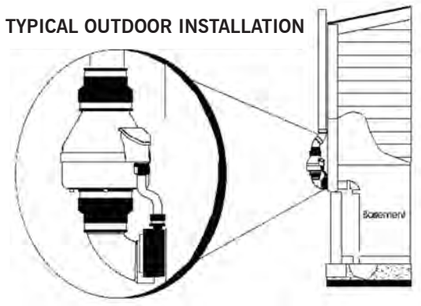
1.10 SPEED CONTROLS

The RP, GP and XP Pro Series Fans are rated for use with electronic speed controls; however, speed controls are generally not recommended. If used, the recommended speed control is Pass & Seymour Solid State Speed Control (Cat. No. 94601-1).

2.0 INSTALLATION

The RP, GP and XP Pro Series Fans can be mounted indoors or outdoors. (It is suggested that EPA and radon mitigation standards recommendations be followed in choosing the fan location.) The GP fans have an integrated mounting bracket; RP and XP Pro Series Fans may be mounted directly on the system piping or fastened to a supporting structure by means of an optional mounting bracket.
The ducting from the fan to the outside of the building has a strong effect on noise and fan energy use. Use the shortest, straightest duct routing possible for best performance, and avoid installing the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fans installed with existing ducts may not achieve their rated airflow.

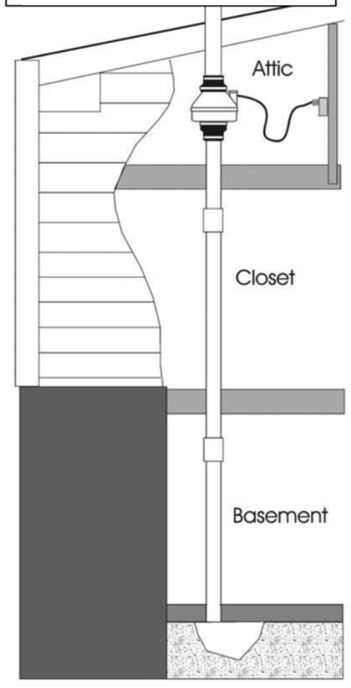
TYPICAL OUTDOOR INSTALLATION



2.1 MOUNTING

Mount the RP, GP and XP Pro Series Fan vertically with outlet up. Insure the unit is plumb and level. When mounting directly on the system piping assure that the fan does not contact any building surface to avoid vibration noise.

TYPICAL INDOOR INSTALLATION



2.2 MOUNTING BRACKET (optional)

The RP and XP Pro Series Fans may be optionally secured with the RadonAway P/N 25007 mounting bracket. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

2.3 SYSTEM PIPING

Complete piping run, using flexible couplings as a means of disconnect for servicing the unit and for vibration isolation. As the fan is typically outside of the building thermal boundary and is venting to the outside, installation of insulation around the fan is not required.

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections (See Section 1.9). Note that the fan is not intended for connection to rigid metal conduit.

2.5 VENT MUFFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

2.6 OPERATION CHECKS & ANNUAL SYSTEM MAINTENANCE

_____ **Verify** all connections are tight and **leak-free**.

_____ **Ensure** the RP, GP and XP Pro Series Fan and all ducting are **secure and vibration-free**.

_____ **Verify system vacuum pressure** with manometer. **Insure** vacuum pressure is within normal operating range and **less than** the maximum recommended operating pressure.
(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 feet)
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments.)
See Product Specifications. If this is exceeded, increase the number of suction points.

_____ **Verify Radon levels** by testing to EPA Protocol and applicable testing standards.

THE FOLLOWING CHARTS SHOW THE PERFORMANCE OF THE RP, GP and XP PRO SERIES FANS

RP Pro Series Product Specifications

Typical CFM Vs. Static Pressure "WC									
Model	**0"**	**.25"**	**.5"**	**.75"**	**1.0"**	**1.25"**	**1.5"**	**1.75"**	**2.0"**
RP140	135	103	70	14	-	-	-	-	
RP145	166	146	126	104	82	61	41	21	3
RP260	251	209	157	117	70	26	-	-	-
RP265	375	330	282	238	204	170	140	108	70
RP380	531	490	415	340	268	200	139	84	41

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
RP140	15 - 21 watts	0.7" WC
RP145	41 - 72 watts	1.7" WC
RP260	47-65 watts	1.3" WC
RP265	95 - 139 watts	2.3" WC
RP380	96 - 138 watts	2.0" WC

**Reduce by 10% for High Temperature Operation **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet	L.2
RP140	8.5"H x 9.7" Dia.	5.5 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)	25
RP145	8.5"H x 9.7" Dia.	5.5 lbs	4,5" OD	15
RP260	8.6"H x 11.75" Dia.	5.5 lbs	6.0" OD	48
RP265	8.6"H x 11.75" Dia.	6.5 lbs	6.0" OD	30
RP380	10.53"H x 13.41" Dia.	11.5 lbs	8.0" OD	57

L.2 = Estimated Equivalent Length of Rigid Metal Ducting resulting in .2" WC pressure loss for Duct Size listed. Longer Equivalent Lengths can be accommodated at Flows Lower than that at .2" WC pressure loss (see CFM Vs Static Pressure "WC Table).

XP Pro Series Product Specifications

Typical CFM Vs. Static Pressure "WC						
	0"	**.5"**	**1.0"**	**1.5"**	**1.75"**	**2.0"**
XP151	167	127	77	-	-	-
XP201	126	98	66	26	-	-

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
XP151	53-70 watts	1.4" WC
XP201	38-74 watts	1.6" WC

**Reduce by 10% for High Temperature Operation **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet
XP151	9.5"H x 8.5" Dia.	6 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)
XP201	9.5"H x 8.5" Dia.	6 lbs	4.5" OD

GP Pro Series Product Specifications

Typical CFM Vs. Static Pressure "WC							
	1.0"	**1.5"**	**2.0"**	**2.5"**	**3.0"**	**3.5"**	**4.0"**
GP201	54	42	11	-	-	-	-
GP301	64	54	41	4	-	-	-
GP401	-	61	52	44	22	-	-
GP501	-	-	66	58	50	27	4

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
GP201	31-65 watts	1.8" WC
GP301	56-100 watts	2.3" WC
GP401	62-128 watts	3.0" WC
GP501	68 - 146 watts	3.8" WC

**Reduce by 10% for High Temperature Operation **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet
GP201	13"H x 12.5" Dia.	12 lbs	3.5"OD (3.0" PVC Sched 40 size compatible)
GP301	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP401	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP501	13"H x 12.5" Dia.	12 lbs	3.5" OD

RP, XP and GP Pro Series Additional Specifications

Model	Recommended Duct	PVC Pipe Mounting	Thermal Cutout	Insulation Class
RP140	3" or 4" Schedule 20/40 PVC	Mount on the duct pipe or with optional mounting bracket. For Ventilation: 4", 6" or 8" Rigid or Flexible Ducting.	130°C/266°F	Class B Insulation
RP145			130°C/266°F	Class F Insulation
RP260			150°C/302°F	
RP265			150°C/302°F	
RP380	6" Schedule 20/40 PVC Pipe		150°C/302°F	
XP151	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
XP201				
GP201	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
GP301				
GP401				
GP501				

Continuous Duty
3000 RPM
Thermally Protected
RP, GP Residential and Commercial
XP Residential Only
Rated for Indoor or Outdoor Use

Most Efficient 2019 ENERGY STAR www.energystar.gov
RP140 Only

LISTED Electric Fan

Intertek 77728

Conforms to UL STD. 507
Certified to CAN/CSA STD. C22.2 No.113

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the RadonAway® RP, GP and XP Pro Series Fan for shipping damage within 15 days of receipt. **Notify RadonAway of any damages immediately.** RadonAway is not responsible for damages incurred during shipping. However, for your benefit, RadonAway does insure shipments.

There are no user serviceable parts inside the fan. **Do not attempt to open the housing.** Return unit to factory. (See Warranty below).

Install the RP, GP and XP Pro Series Fan in accordance with all EPA, ANSI/AARST standard practices, and state and local building codes and regulations.

Provide a copy of this instruction or comparable radon system and testing information to the building occupants after completing system installation.

Warranty

RadonAway® warrants that the RP, GP (excluding GP500) and XP Pro Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of 12 months from the date of purchase or 18 months from the date of manufacture, whichever is sooner (the "Warranty Term").

RadonAway® will replace any fan which fails due to defects in materials or workmanship during the Warranty Term. This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not cover damage in shipment unless the damage is due to the negligence of RadonAway®.

The Fan must be returned (at Owner's cost) to the RadonAway® factory. Any Fan returned to the factory will be discarded unless the Owner provides specific instructions along with the Fan when it is returned regardless of whether or not the Fan is actually replaced under this warranty. Proof of purchase must be supplied upon request for service under this Warranty.

5-YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

RadonAway® will extend the Warranty Term of the fan to 60 months (5 years) from date of purchase or 66 months from date of manufacture, whichever is sooner, provided that the fan is installed by a professional radon mitigation contractor. Proof of purchase and/or proof of professional installation may be required for service under this warranty. No extended warranty is offered outside the Continental United States and Canada beyond the standard 12 months from the date of purchase or18 months from the date of manufacture, whichever is sooner.

RadonAway® is not responsible for installation, removal or delivery costs associated with this Warranty.

LIMITATION OF WARRANTY

EXCEPT AS STATED ABOVE, THE RP, GP (excluding GP500) and XP PRO SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULARPURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping costs, including insurance, to and from factory.

RadonAway® 3 Saber Way
Ward Hill, MA 01835 USA TEL (978) 521-3703
FAX (978) 521-3964
Email to: Returns@RadonAway.com

Record the following information for your records:

Serial Number: _____ Purchase Date: _____

RadonAway
The world's leading radon fan manufacturer

RSA1 ALARM

RADON SYSTEM ALARM

The RadonAway RSA1Radon System Alarm is an advanced vacuum monitoring device utilizing piezoresistive pressure sensor (PPS) technology. It provides homeowners with an easy to read, easy to use system monitor that requires no intrepretation. Its audible and visual indicators alerts them when the radon system vacuum pressure is too low to be effective. This monitor complies with Section 9.2.2 of of the ANSI/AARST *Soil Gas Mitigation Standards For Existing Homes*, which calls for an audible and visual system monitor.

This monitor does not measure radon levels.

FEATURES

- Advanced PPS* Technology
- Easy Installation
- Pipe or Remote Mount
- Battery-Operated
  (No Wiring Required)
- Visual and Audible Indicators
- 7 Functional Modes
- For Use on 2", 3", 4" or 6" Pipe, or Flat Surface

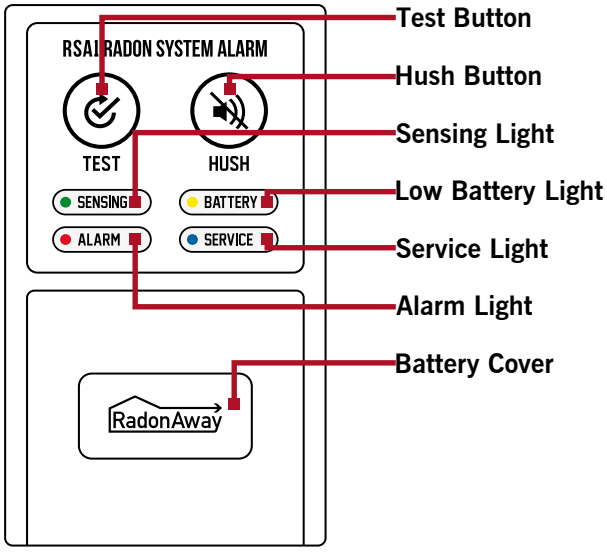
* piezoresistive pressure sensor

PACKAGE INCLUDES

- RSA-1 Radon System Alarm
- Wall Mount Adapter
- Pipe Mount Adapter
- 5" Length of Flexible Tubing
- Battery
- Product Instructions

SPECIFICATIONS

Sensing Light:	-24 to -200 Pa
Alarm Light:	≥90% reduction of baseline pressure
Service Light:	3+ Pre-Alarm Trig. @ 48 Hrs
Low Battery Light:	<3.35 V
Hush Button:	Stops alarm sounds for 7 days
Test Button:	Sounds alarm / activates lights
Dimensions:	W x H x D (2.19" x 3.75" x 1.37")
Overpressure:	±5KPa (±20"WC)



Appendix C: Operations and Monitoring Forms

Vapor Intrusion Mitigation System Inspection Form - Differential Pressure Monitoring Point Measurements

Project Name/Number: _____

Date: _____

Staff: _____

Differential Pressure Monitoring Point	Differential Pressure >0.008 "WC (y/n)	Differential Pressure ("WC)	Comments/Observations

Signature/Date: _____

L:\CSC\Field Forms\Differential Pressure Monitoring.xlsx

STONE ENVIRONMENTAL

Vapor Intrusion Mitigation System Inspection Form - Extraction Well Measurements

Project Name/Number: _____

Date: _____

Staff: _____

Extraction Well ID	Vacuum ("WC)	Flow Rate (CFM)	Gate Valve Position (% closed)	Comments/Observations

Signature/Date: _____

L:\CSC\Field Forms\Extraction Well Measurements.xlsx

VERMONT

LAND USE RESTRICTIONS – ANNUAL INSTITUTIONAL CONTROL INSPECTION FORM

Our records indicate that this property maintains institutional or engineering controls associated with a land use restriction. Please indicate the state of the following controls, as applicable, on the property.

SMS Site #: _____

Owner Name: _____

Site/Property Name: _____

Site/Property Address: _____

	YES	NO	COMMENTS
Paved Caps:			
1. Is there any cracking, fractures, or breaking of the pavement?	◯	◯	_____
2. Has the pavement been punctured, providing a risk of direct contact?	◯	◯	_____
Buildings/Structures:			
1. Are there visible cracks or fractures in the foundation?	◯	◯	_____
2. Have there been additions or improvements to the structure?	◯	◯	_____
3. Has there been standing water or flood in the basement of the structure (since receipt of the Certificate of Completion)?	◯	◯	_____
Sub-slab Depressurization System (SSD):			
1. Has the SSD been operational and appropriately maintained for the past year, as described in the Certificate of Completion?	◯	◯	_____
Soil/Grass Caps:			
1. Is there any evidence of erosion?	◯	◯	_____
2. Are monitoring wells at the site damaged, un-locatable, or otherwise in unacceptable condition?	◯	◯	_____
3. Have survey pins been repositioned or removed?	◯	◯	_____
4. Is there any evidence of burrowing wildlife?	◯	◯	_____
5. Are there bare spots larger than 3 square feet in grassy areas?	◯	◯	_____
6. Has there been any subsurface work conducted on the property?	◯	◯	_____

I certify that I have responded to each of the questions above to the best of my knowledge.

Signature: _____ **Date:** _____

Submit by email or submit original form to the SMS Project Manager at the address listed below:
Vermont Department of Environmental Conservation
Waste Management & Prevention Division/Sites Management Section
1 National Life Drive – Davis 1
Montpelier, VT 05620-3704

SMS Project Manager: _____

Clear Form