LABELLA Associates, D.P.C.
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Architecture
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INTERIM REMEDIAL MEASURES WORK PLAN

Location:

46 Mount Hope Avenue
Rochester, New York

Prepared for:

Center Properties of Rochester, LLC
1000 South Avenue
Rochester, New York 14620

LaBella Project No. 2160225

August 2017

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Certification

I, Daniel P. Noll, P.E., certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Daniel Noll, P.E.

Printed Name

August 7, 2017

Signature

1.0 Introduction and Purpose

This Interim Remedial Measures (IRM) Work Plan summarizes previous site work and presents an IRM proposed for the property located at 46 Mount Hope Avenue in the City of Rochester, Monroe County, New York, hereinafter as the "Site".

2.0 Site Description and History

The Site is currently developed with an approximately 13,701 square-foot commercial building constructed circa 1930. Based on information obtained from a September 2013 Phase I Environmental Site Assessment (ESA) performed by Lender Consulting Services, Inc. (LCS), historic Site uses included truck repair, check cashing machine manufacturing, a paper box factory, military equipment manufacturing, metal stamping, die-casting steel, brass and zinc parts manufacturing and metal parts finishing. One 6,000 gallon heating oil underground storage tank was reportedly removed from the site in 1988.

3.0 Previous Investigations & Mitigation Actions

The following environmental assessments/investigations have been performed at the Site on behalf of a prospective purchaser (i.e., Echo-Tone Music, LLC).

Phase I ESA – LCS, September 2013

LCS, Inc. completed a Phase I ESA for the Site in September 2013. The LCS Phase I identified six known or suspected recognized environmental conditions (RECs) including lack of documentation relative to the removal of an 6,000-gallon heating oil underground storage tank (UST) in 1988, historical manufacturing operations including solvent use at the Site by a former owner, and use of the adjacent properties to the north and west.

Phase II ESA – LaBella, October 2013

In October 2013 LaBella performed a Phase II ESA at the Site to address the following issues:

1. An assessment of soil and groundwater conditions in the location of a 6,000-gallon heating oil underground storage tank (UST) reportedly removed from the north side of the Site building.
2. Historic Site use, including automotive service, machine shop/manufacturing and chemical use at the Site.

Eight outdoor soil borings were completed at the Site on October 22, 2013. Based on the findings of the investigation, petroleum impacts were not identified in the location of the former 6,000-gallon heating oil UST. The distribution of soil borings and samples collected are consistent with those typically collected during closure of a tank of this size, and the sand and gravel material encountered in the proximate center of the former UST is consistent with commonly used fill material. As such, the former UST was determined to no longer be of concern.

The chlorinated volatile organic compound (VOCs) tetrachloroethene (PCE) was detected in soil and groundwater samples collected during the investigation. Trichloroethene (TCE) and cis-1,2-Dichloroethene (DCE) were detected in groundwater at the Site as well. The concentrations of PCE detected in soil were below

NYSDEC Unrestricted Use Soil Cleanup Objectives (SCOs). Groundwater concentrations, while relatively low, were above NYSDEC groundwater standards.

Based on the findings of the Phase II ESA it could not be determined if the PCE, TCE and DCE concentrations detected at the Site originate from the Site, or from an off-site location. LaBella recommended additional investigation to the prospective purchaser to determine the presence of a source area beneath the Site building or a potential off-site location.

Supplemental Phase II ESA – LaBella, November 2013

An additional seven (7) soil borings and four (4) overburden groundwater monitoring wells were installed within the footprint of the Site building in November 2013. The combined findings of the investigations performed indicated that low concentrations of VOCs were present in soils site wide at concentrations below 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs. Chlorinated VOCs were detected in groundwater site wide at concentrations exceeding NYSDEC TOGS 1.1.1 standards. Overburden groundwater flow at the Site is to the northwest, towards Mt. Hope Avenue and the Genesee River. Based on field observations and laboratory analysis an on-site source of chlorinated VOC impacts was not identified. A vertical column of impacted soil was not observed in soil borings, and the highest headspace readings encountered in Site soils were from saturated soils, indicating likely transport in groundwater from an up gradient location. Based on the potential for an up gradient off-site source of chlorinated VOC impacts, additional investigation was recommended to the prospective purchaser.

Bedrock Well Installation/Vapor Intrusion Assessment – LaBella, February 2014

In February 2014 a bedrock groundwater monitoring well was installed upgradient of the Site building, south of the loading dock. TCE was detected in overburden soil, with the highest concentration, 3,500 µg/Kg, detected at one (1) foot below ground surface (bgs). The high concentrations detected in shallow soil are indicative of a nearby surface release in the vicinity of BW-01. It should be noted that BW-01 was installed approximately 15 feet south of the loading dock door due to the presence of the storm sewer and overhead obstructions. A vertical column was not observed in the soil boring, however given the presence of the foundation wall it is unlikely that the source of the release was inside the Site building.

Sub slab and corresponding indoor air samples were collected from three locations in the Site building. The findings of the vapor intrusion assessment indicate that chlorinated VOCs were present in significant concentrations in sub-slab vapor and in concentrations above NYSDOH mitigation criteria in the ambient air in the Site building. It was apparent that a vapor intrusion concern was present at the Site. LaBella recommended to the prospective purchaser that a sub slab depressurization system be installed at the Site to mitigate sub slab vapors.

3.1 Mitigation Activities

Although the prospective purchaser did not purchase the property, Center Properties of Rochester LLC (Center Properties) undertook the following mitigation actions based on the findings of the reports prepared for the prospective purchaser.

Existing System Upgrades

In 2014 a sub slab depressurization system (SSDS) was installed on behalf of Center Properties in the basement section of the Site building. In December 2015, upgrades to the existing SSDS were performed which included the following:

1. Sealing all openings in cracks in the basement floor.

2. Installation of an alarm and U-tube style manometer on the SSDS system piping.
3. Extension of the SSDS exhaust piping above the roofline.
4. Performance of a pressure field extension test in the basement.

The pressure field extension test indicated sub slab pressure measurements ranging from -0.026 to -0.473 inches of water column measured on a digital micromanometer.

Additional SSDS Installation

In February 2016 Center Properties engaged LaBella to install a second SSDS in the storage area on the south side of the Site building. The system consisted of a four inch diameter PVC pipe installed into a suction pit proximate GPMW-11. The piping penetrates the southern exterior wall and is equipped with a Radonaway GP-501 centrifugal vent fan. The exhaust piping extends above the roofline and is equipped with a bird screen. The system is equipped with an alarm on a separate circuit and a U-tube style manometer.

Follow Up Indoor Air Testing

A total of five (5) indoor air samples and one (1) outdoor control sample were collected in one (1) liter Summa canisters equipped with eight (8) hour flow controllers. Concentrations of trichloroethene (TCE) in indoor air were significantly lower than in previous sampling events, ranging from 1.9 µg/m3 to 8.6 µg/m3. However, concentrations in several locations exceed the NYSDOH action level for TCE of 2.0 µg/m3.

Design Phase Investigation

In March 2017 a Design Phase Investigation was conducted to collect data necessary for design of additional vapor mitigation measures at the Site in accordance with a Design Phase Investigation Work Plan prepared by LaBella in November 2016. Technicians with Mitigation Tech of Brockport, New York visited the site on March 1, 2017 and again on March 16, 2017 to perform sub-slab air communication testing and a general building assessment. Sub-slab air communication testing was utilized to design the most efficient system configuration. The test procedure included drilling test holes at several locations to create and measure vacuum influence. At the conclusion of testing, all holes were repaired with closed cell backer and urethane sealant. The site is occupied and highly compartmentalized. The design detailed below is a result of weighing key elements (fan type, suction point location, pipe diameter, etc.) against the cost of different construction techniques and materials. Fan maintenance, noise and operating cost are considered in system design.

4.0 Field Activities Plan

4.1 Summary of IRM Goals

The goal of the IRM is to furnish and install three independent multi-point active sub-slab depressurization systems. Existing vapor intrusion measures are to be left in place. The Scope of Work is based on the minimum construction necessary to achieve the design objective of furnishing a minimum .002 wci pressure differential at designated areas of the sub-membrane or sub floor.

4.2 Components of the SSDS

The following will be completed as part of the SSDS installation:

- Continuous building assessment and sub-slab vacuum measurement to optimize design

- System configuration - (3) RADONAWAY RP-265 , rear sidewall or roof mount to provide sub-slab depressurization via 4" and/or 3" schedule 40 PVC pipe to roof exhaust; w/ (13) suction points at main floor strategically located approximately per "Field Notes"; fan groupings to be field determined
- Suction points as follows: connection via 3" Schedule 40 PVC pipe, to sub-floor, with urethane seal, to consist of approximately 1 cu. ft. excavated material in sub-slab, with urethane seal; access hole to suction cavity by 5"core drill or hand drill; trenching around footers where required, with concrete restoration; locations approximately per "Field Notes" with additional placements to meet performance objectives
- Proportioning valves or plates for suction risers where required
- All exhaust points will be a minimum of 12 inches from the top of the roof and 10 feet from any air intakes
- Exterior switch and *Sealtight* and/or MC conduit from fan housings to vicinity of electrical panel
- (1) U-tube style vacuum indicator per system, on vertical pipe run; location to be determined
- (1) audible alarm per system to notify building occupants of a loss of system vacuum
- Urethane sealant at all floor joints, accessible cracks and penetrations
- Horizontal pipe near ceiling, with metal bracketing direct to structure, sloped as required
- At completion, perform backdraft testing, measure pressure differentials and document; label components and provide system description and operational instructions

4.3 Post Installation Pressure Field Extension Testing

A digital micromanometer will be used to measure pressure differentials and values will be recorded on a floor plan. This testing will include the entire building to ensure that previous and newly installed systems are providing adequate negative sub slab pressure. All test holes will be repaired with urethane caulk (MSDS available) applied over a closed cell backer rod. Smoke tubes will be used to identify floor cracks and other openings to the sub-slab that could "short circuit" the pressure field. Backdrafting testing will be performed.

5.0 Deliverables

5.1 IRM Construction Completion Report

At the conclusion of construction, a Construction Completion Report (CCR) will be submitted. This report will include an as-built drawing, showing SSDS locations and components. The CCR will include measurements of created sub-slab to ambient air static pressure differentials, detailed descriptions of SSDS components, and post-installation sampling results.

5.2 Interim Site Management Plan

An Interim Site Management Plan (SMP) will be prepared to ensure the operation and maintenance of the SSDS going forward, including corrective measures, monthly system checks, annual reports with Professional engineer sign-offs, yearly air quality monitoring, and tenant notifications and certifications that required notifications have been completed (i.e., notifications of the SSDS, notifications for every standard exceedance, and notification of air quality testing).

The Interim SMP will also include an Operations, Maintenance and Monitoring Plan that will include the following information:

- A description of the SSDS Installed and its basic operating principles, with diagram;
- How the owner or tenant can check that the SSDS is operating properly;
- A list of appropriate actions for the owner or tenant to take if an SSDS alarm is activated, including who

is to be notified and means of contact;
- Actions to be taken to address the issue triggering the alarm.

6.0 Schedule

The following schedule is anticipated:

Task	Timeframe
Installation of additional SSDS	Approximately 30 days from IRM Work Plan Approval
Post installation pressure field testing	Within 1 week of SSDS installation
Submission of CCR	Within 30 days of post installation pressure field testing
Submission of Interim SMP	Within 30 days of post installation pressure field testing

LaBella Associates, D.P.C.
300 State Street
Rochester, New York 14614

Appendix 1

March 16, 2017

David K. Engert, CHMM
Remediation & Construction Manager
LABELLA ASSOCIATES, D.P.C.
300 State St. Suite 201
Rochester, NY 14614
Via email: Engert, Dave <dengert@labellapc.com>

Re: 46 Mt. Hope Ave., Rochester, NY
Sub-slab communication testing and building assessment
Soil Vapor Intrusion Mitigation System Proposal

Dear Mr. Engert,

Based on our recent discussion and site survey, below please find requested costs to cover the listed services for the above location.

1.0 Introduction

This document presents a Work Plan that consists of the installation and operation of a sub-slab depressurization system (SSDS) that is designed to mitigate the migration or potential migration of sub surface vapors into the building interiors. The subject area is the foundation footprint of the structure at 46 Mt. Hope Ave., Rochester, NY The SSDS is intended to protect the occupants of the subject area and is not intended to remove or diminish the source of the contamination. After start-up, demonstration of SSDS effectiveness will be confirmed and thereafter, a program of periodic maintenance and monitoring will be proposed. It is expected that oversight of construction, confirmation of effectiveness and post mitigation air sampling will be provided by LABELLA ASSOCIATES, D.P.C. under separate contract and at additional expense.

2.0 Objectives

This work plan was developed in general accordance with the NYS DOH document, "Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006".

The objective of the SSDS is to create and maintain a minimum negative pressure differential of .002 inches of water column (wci) below concrete slabs and added or existing vapor barriers which function as boundaries between sub-slab space and occupied interior space.

3.0 Work Plan Design and Specifications

3.1 Pre-design Communication Testing

Mitigation tech technicians visited the site on March 1, 2017 and again on March 16, 2017 to perform sub-slab air communication testing and a general building assessment. Sub-slab air communication testing was utilized to design the most efficient system configuration. The test procedure included drilling test holes at several locations to create and measure vacuum influence. The site is occupied and highly compartmentalized. The enclosed design is a result of weighing key elements (fan type, suction point location, pipe diameter, etc.) against the cost of different construction techniques and materials. Fan maintenance, noise and operating cost are considered in system design. Field notes attached, labeled "46 Mt Hope – Field Notes – March 16, 2017."

3.2 Scope of Work

The Scope of Work is to furnish and install three independent multi-point active sub-slab depressurization systems. Existing vapor intrusion measures are to be left in place. The Scope of Work is based on the minimum construction necessary to achieve the design objective of furnishing a minimum .002 wci pressure differential at designated areas of the sub-membrane or sub floor. At work conclusion, documentation will be provided for review showing that the installation of the SSDS is effective in reducing migration of sub-slab vapor into indoor air. The system configuration is subject to change based on field observations made during construction.

Furnish and Install:

- Continuous building assessment and sub-slab vacuum measurement to optimize design
- Mitigation Tech to consult and make reasonable efforts to accommodate tenants at the property on all activities to be performed under this Scope of Work
- System configuration - (3) RADONAWAY RP-265 , rear sidewall or roof mount to provide sub-slab depressurization via 4" and/or 3" schedule 40 PVC pipe to roof exhaust; w/ (13) suction points at main floor strategically located approximately per "Field Notes"; fan groupings to be field determined
- Suction points as follows: connection via 3" Schedule 40 PVC pipe, to sub-floor, with urethane seal, to consist of approximately 1 cu. ft. excavated material in sub-slab, with urethane seal; access hole to suction cavity by 5"core drill or hand drill; trenching around footers where required, with concrete restoration; locations approximately per "Field Notes" with additional placements to meet performance objectives
- Proportioning valves or plates for suction risers where required
- All exhaust points minimum 10' from any air intakes
- Exterior switch and *Sealtight* and/or MC conduit from fan housings to vicinity of electrical panel; final connection to circuit or panel by licensed electrician at other's expense
- (1) U-tube style vacuum indicator per system, on vertical pipe run; location TBD
- Urethane sealant at floor joints, accessible cracks and penetrations in vicinity of suction points
- Horizontal pipe near ceiling, with metal bracketing direct to structure, sloped as required
- At completion, perform backdraft testing, measure pressure differentials and document; label components and provide system description and operational instructions
- Permits and inspections, where required, at additional cost
- Consult with client to develop operation, maintenance and periodic inspection plan
- Two year warranty; labor and installed components

3.3 Post Installation Pressure Field Extension Testing

A digital micromanometer will be used to measure pressure differentials and values will be recorded on a floor plan. All test holes will be repaired with urethane caulk (MSDS available) applied over a closed cell backer rod. Smoke tubes will be used to identify floor cracks and other openings to the sub-slab that could "short circuit" the pressure field. Backdrafting testing will be performed.

3.4 System Operation Following Power Loss

The system will restart automatically after power restoration.

3.5 IRM Construction Completion Report

At conclusion of construction, a Construction Completion Report (CCR) will be submitted. This report will include an as-built drawing, showing SSDS locations and components. The CCR will include measurements of created sub-slab to ambient air static pressure differentials, detailed descriptions of SSDS components, and post-installation sampling results.

An Operations, Maintenance, and Monitoring (OM&M) Plan will be submitted with the CCR. The OM&M Plan will be provided to the owner and occupants to facilitate their understanding of the system's operation, maintenance and monitoring. The OM&M Plan will include the following:

- a description of the SSDS Installed and its basic operating principles, with diagram;
- how the owner or tenant can check that the SSDS is operating properly;
- how the SSDS will be maintained and monitored and by whom;
- a description of long-term reporting and annual SSDS certification requirements;
- a list of appropriate actions for the owner or tenant to take if a SSDS warning device (manometer) indicates system degradation or failure;
- a description of the proper operating procedures for the SSDS, including manufacturer's operation and maintenance instructions and warrantees; and
- contact information if the owner or tenant has questions, comments, or concerns.

3.6 Maintenance and Monitoring

Future monitoring will be proposed to monitor system communication via differential pressure measurements. The monitoring will be performed annually until a less-frequent monitoring frequency is approved. This routine monitoring will include:

- visual inspection of the equipment and piping;
- inspection of exhaust points to verify that no air intakes have been located nearby;
- identification and subsequent repair of any leaks;
- audible operational status check of vent fans;
- damper adjustments as required to balance parallel branches of system;
- measurement of differential pressure between the indoor air and the sub-slab to ensure a lower pressure is being maintained in the sub-slab relative to indoor ambient, as indicated by the pressure gauge on the fan suction pipe.

In addition, non-routine maintenance may be conducted should it appear that the SSDS has reduced its effectiveness due to malfunction, renovation, or other unplanned circumstance. Examples of such circumstances include the following:

- the building's owner or tenants report that a warning device indicates that the SSDS is not operating properly;

- the system is accidentally damaged;
- the building has undergone renovations that may reduce the effectiveness of the system.

The SSDS will be operated until such time as permission in writing is received from NYSDEC to terminate operation of the system and remove the equipment.

4.0 Cost **Labor and material……$17,800.00**

NYS ST-124 tax certificate required

Acceptance: The above prices, specifications and conditions are satisfactory and are hereby accepted.

Signature_____Date_____

Print name_____Title_____

Phone:_____Email:_____

Qualifications
NEHA NRPP ID certification #100722 RMT (mitigation)
NYS Listed for Radon Mitigation
AARST Membership
Installers are HAZWOPER and OSHA trained
25 years direct experience in Soil Vapor Intrusion Mitigation
Over 10,000,000 square feet accumulated depressurized sub-slabs
Over 5,000 completed work sites since 1991
Extensive experience with high suction fans (to 50 wci) and manifolded SSD systems
Expertise in ASTM E-2121-03 and NYS DOH VI Guidance
Comprehensive Insurance
· $5,000,000 General Liability
· $2,000,000 Pollution Liability
· $2,000,000 Professional Liability
· $1,000,000 Automobile Liability
· Statutory Worker's Comp

Thank you.

Nicholas E. Mouganis EPA listing # 15415-I; NEHA ID# 100722

46 MOUNT HOPE - FIELD NOTES - MARCH 16, 2017

	S	E	
X1 - X2	+003 →	-001	WINDY +/- 8
X3		-045	
X1 - X4	+001 →	-005	
X5 - X6		Ø	
X8		-002	
X5 - X8		Ø	
X6 - X7	=	Ø	
X9 - X4	=	-040