

Soil Vapor Extraction System Pilot Test Work Plan March 2024

148-28 Hillside Avenue
Queens, New York

NYSDEC # C241199

Prepared for:

NYSDEC Division of Environmental Remediation
625 Broadway
Albany, NY, 12233-5060

Prepared by:

Tyll Engineering and Consulting, PC
169 Commack Road, Suite 173
Commack, New York 11725

CA RICH Geology Services, D.P.C.
17 Dupont Street
Plainview, New York 11803





TYLL ENGINEERING & CONSULTING PC

March 25, 2024

NYSDEC Division of Environmental Remediation
625 Broadway
Albany, NY, 12233-5060

Attention: Mr. Rafi Alam

**Re: Soil Vapor Extraction System
Pilot Test Work Plan**
148-28 Hillside Avenue
Queens, New York

Dear Mr. Alam:

Enclosed please find the Soil Vapor Extraction System Pilot Test Work Plan for the above-referenced location prepared by Tyll Engineering & Consulting PC and CA RICH Geology Services, D.P.C. If you have any questions pertaining to this report, please feel free to contact the undersigned.

Sincerely,

TYLL ENGINEERING AND CONSULTING, PC

Karen G. Tyll, P.E.
President

CA RICH Geology Services, D.P.C.

Jessica Proscia
Senior Project Manager



Table of Contents

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1
2.0 CONCEPTUAL DESIGN FOR SVE SYSTEM	1
3.0 SOIL VAPOR EXTRACTION SYSTEM PILOT TEST	2
4.0 HEALTH AND SAFETY PLAN & COMMUNITY AIR MONITORING PLAN	2
5.0 PILOT TEST RESULT REPORT	3
CERTIFICATION	3

Figures

1	System Layout Plan
2	Proposed Pilot Test Plan

1.0 INTRODUCTION

This Pilot Test Work Plan was prepared by Tyll Engineering and Consulting, PC (TEC), and CA RICH Geology Services D.P.C. (CA RICH) on behalf of Hillside 168 Inc. for the Property located at 148-28 Hillside Avenue, Queens New York (NYSDEC BCP Site C241199). The purpose of performing this pilot test is to obtain field data needed to finalize the design of the Soil Vapor Extraction System (SVE System) which is being proposed to remediate impacted offsite soil vapor at a neighboring property (148-06 Hillside Avenue).

The results of the sub-slab and indoor air sampling performed during the Supplemental Offsite Investigation in January 2024 identified “Mitigate” in one sample for compounds trichloroethane and cis-1,2-dichloroethane and “Monitor” for compound tetrachloroethane when compared to NYSDOH’s “Guidance for Evaluation Soil Vapor Intrusion in the State of New York” decision matrices A, B, and C.

2.0 CONCEPTUAL DESIGN FOR SVE SYSTEM

A conceptual layout of the system as shown in Figure 1 includes three SVE wells (identified as SVE-1, SVE-2, and SVE-3). This layout is based on an assumed radius of influence of at least 30 feet for the SVE wells which in our experience is typically achieved using standard design variables.

The SVE wells will be constructed of 4-inch diameter PVC with five feet of 0.020-inch slotted screen set approximately 19 feet below surface grade or six feet below basement grade at the Property (basement grade at the Property is at 13 feet below surface grade, basement grade at the neighboring property is 10 feet below surface grade). Each SVE well is designed with a one-foot riser connected to a 4-inch solid horizontal PVC pipe containing a ball valve. All three SVE wells will be manifolded to each other horizontally via solid PVC piping in a gravel filled trench. Based on the proposed building plans, a steel riser pipe will be connected to the manifolded piping at SVE-2 and go vertically up, and through the building roof. All wells will be finished with a steel vault cover at basement grade. One appropriately sized blower shall be used to provide adequate vacuum, to be determined during this pilot testing.

3.0 SOIL VAPOR EXTRACTION SYSTEM PILOT TEST

The SVE pilot test will consist of installing an SVE well, SVE-2, as proposed in the attached design. Temporary vacuum points will be installed horizontally in five-foot increments to the east of the newly installed SVE-2 to 30 feet. A total of six temporary vacuum points will be installed. Each temporary vacuum point will be installed to 2.5 feet below basement grade and will consist of a ¼ inch stainless steel point. Figure 2 shows the proposed locations of the temporary vacuum points.

Once SVE-2 and the eight temporary vacuum points are installed, a regenerative blower will be attached to SVE-2. Negative pressure will be recorded in the nearby temporary vacuum points to establish the effective radius of influence.

Vacuum readings will be taken at the blower and SVE-2 with a magnahelic gauge, and at the temporary vacuum points, with a digital manometer. Contaminant concentration will be measured with a photoionization detector (PID) calibrated to provide a reading of total volatiles. Flow rates obtained from the blower will be determined utilizing a vacuum/cfm chart supplied by the manufacturer as well as a digital flow meter.

Two SVE tests will be run: one at full vacuum and one at half vacuum. The tests will be run from the lowest applied vacuum (half) to the greatest (full). Each test will be run for approximately 15 minutes to allow for the stabilization of pressures.

It is important to note, once the entire SVE system is installed (based on the results of the pilot test) VOCs will be sampled from the combined effluent via the TO-15 method; the collected data can determine the extent of effluent treatment by completing the discharge calculations as outlined in the DAR-1 policy document.

4.0 HEALTH AND SAFETY PLAN & COMMUNITY AIR MONITORING PLAN

The previously approved HASP and CAMP for this Site will be followed.

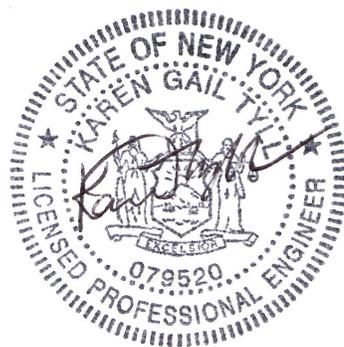
5.0 PILOT TEST RESULT REPORT

Once the pilot test is completed, the results will be included in a Pilot Test Result Letter Report. A figure will be generated based on the results of the SVE test, representing the vacuum at the SVE well as a function of its distance to the temporary vacuum points. In turn, these calculations can be used to determine the radius of influence and the required spacing of the SVE wells to provide adequate vacuum under the slab adjacent to the Union Hall basement.

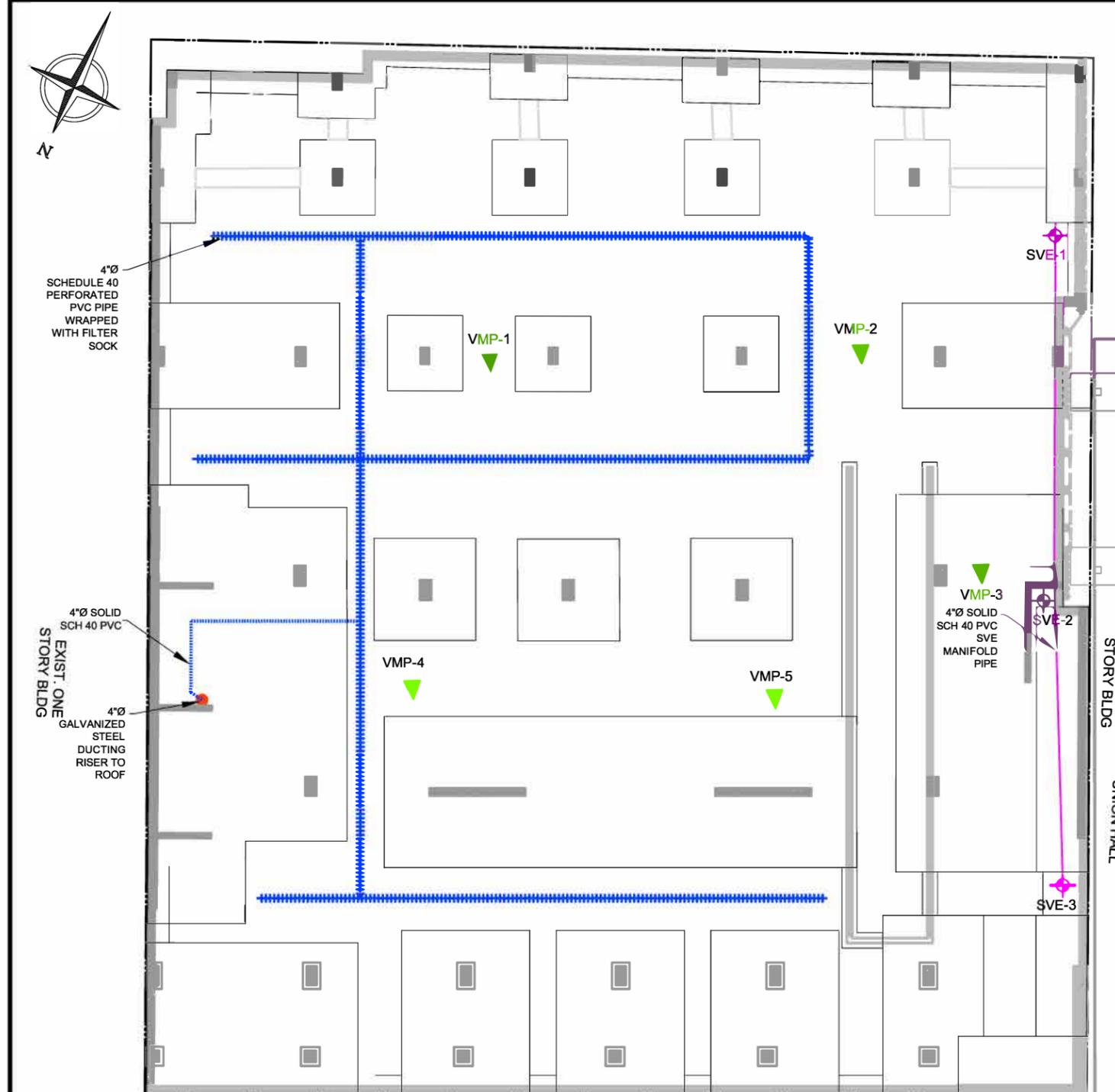
The equipment, location, and treatment equipment (if required) in the system will be selected based on the pilot test results. The Report will present these design decisions and calculations. The blower will be selected based on the characteristic curve after determining the vacuum and air flow needed for the system. The Report will include recommendations that will include the effluent sampling for VOCs via TO-15 method once all wells are installed and manifolded to determine the necessity and extent of effluent treatment.

Certification

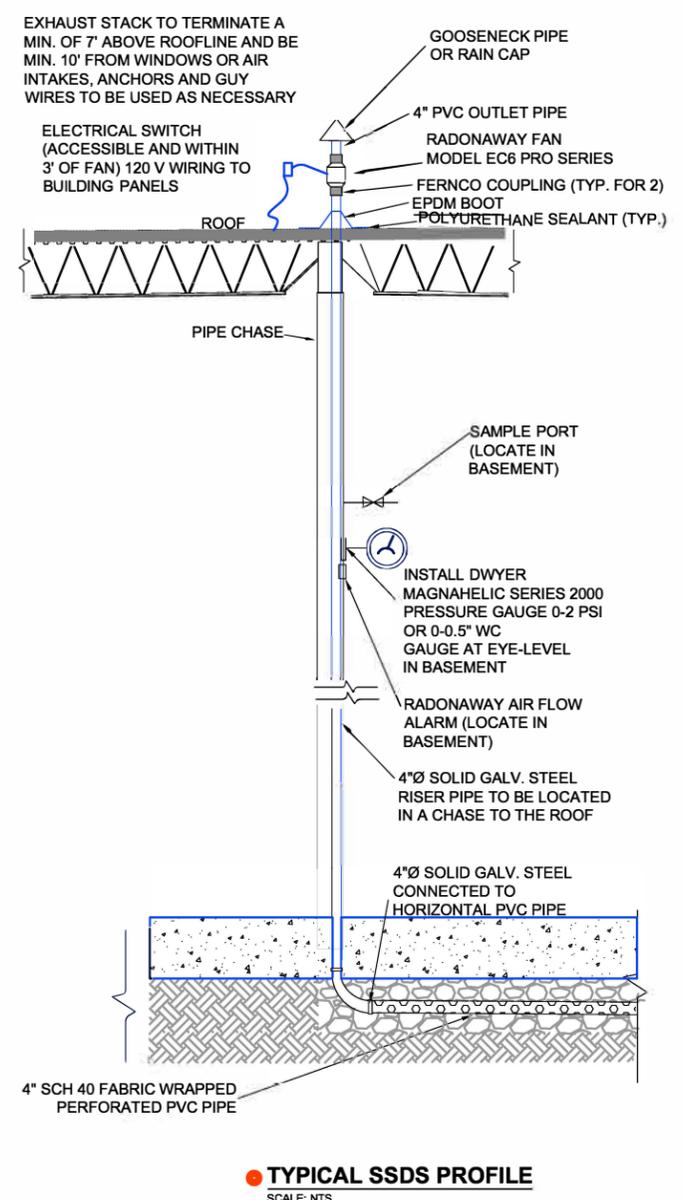
I, Karen G. Tyll, certify that I am currently a NYS registered professional engineer and that this Soil Vapor Extraction Pilot Test Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



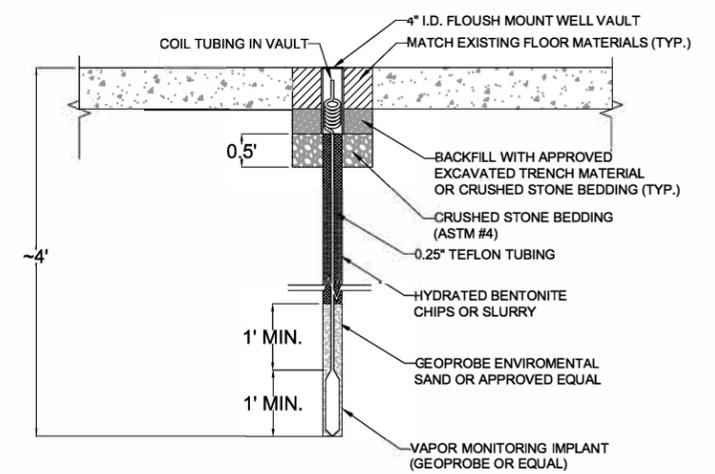
Karen G. Tyll
NYS #079520



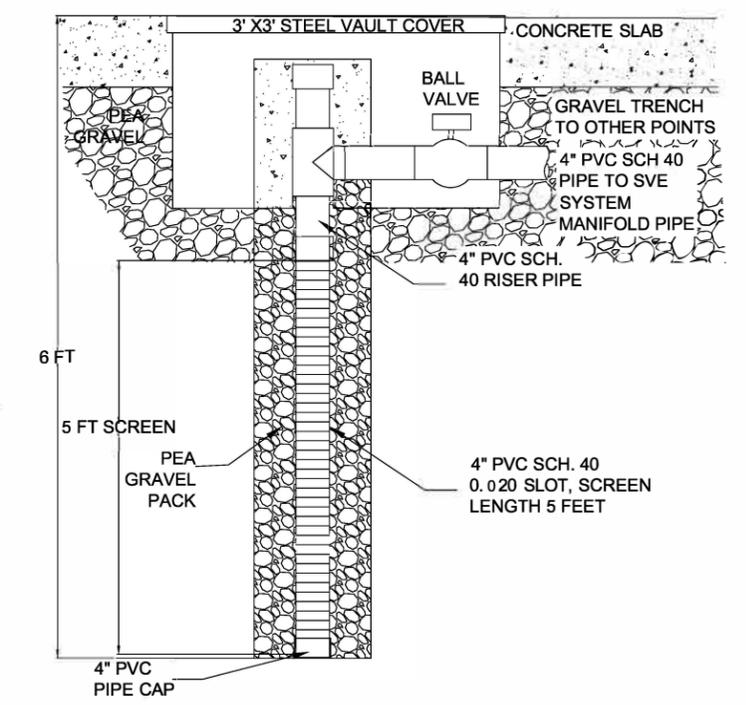
HILLSIDE AVENUE



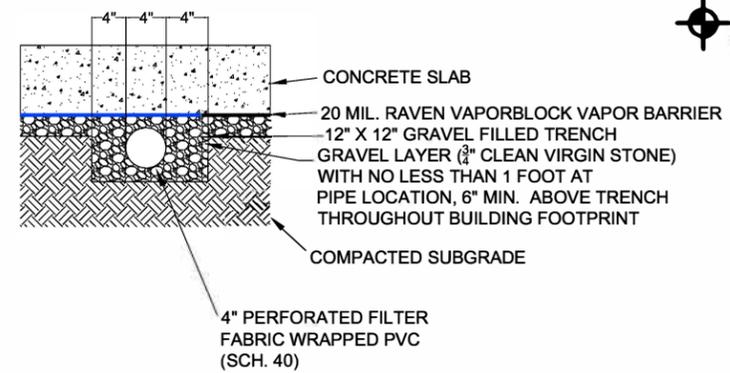
TYPICAL SSDS PROFILE
SCALE: NTS



TYPICAL VACUUM MONITORING POINT DETAIL
NTS



TYPICAL SVE WELL
SCALE: NTS



TYPICAL PIPE TRENCH DETAIL
SCALE: NTS

- NOTES**
- SSDS piping to be installed at 6-inches below the bottom of the Site building slab.
 - SVE pipe to be installed approximately 19-feet below grade with 5-feet of screen.
 - Bottom of the Site building slab when complete will be approximately 13-feet below grade. The Labor Union Building (148-06 Hillside Avenue) basement is located approximately 10-feet below surface grade. The anticipated SVE well depth will be approximately 6-feet below basement grade.
 - Pipe routing for the SVE system will be determined by the Architect and Remedial Engineer.
 - Carbon drums for the SVE system, if needed, shall be installed in the basement and upstream of the three SVE points.
 - Installation of the SVE system consists of a network of three, 4" sch. 40 perforated PVC vertical SVE well points. The SVE points installed vertically along the western wall of the property at basement grade (13 feet below surface grade) and will extend another six feet below basement grade. The three SVE points will be horizontally connected and will be fitted with a steel riser pipe will be finished at the roof. One appropriate sized blower shall be used to provide vacuum for the SVE system to be determined through on-site testing.

- LEGEND**
- VACUUM MONITORING POINT
 - SSDS HORIZONTAL PIPING (SCH 40 PERFORATED PVC WRAPPED WITH FILTER SOCK)
 - SSDS HORIZONTAL PIPING (SCH 40 PERFORATED PVC)
 - SSDS SOLID 4" AIRTIGHT GALV. STEEL RISER PIPE
 - PROPOSED 4" SVE SCH. 40 PVC RISER FOR SVE POINT

ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL IS ILLEGAL

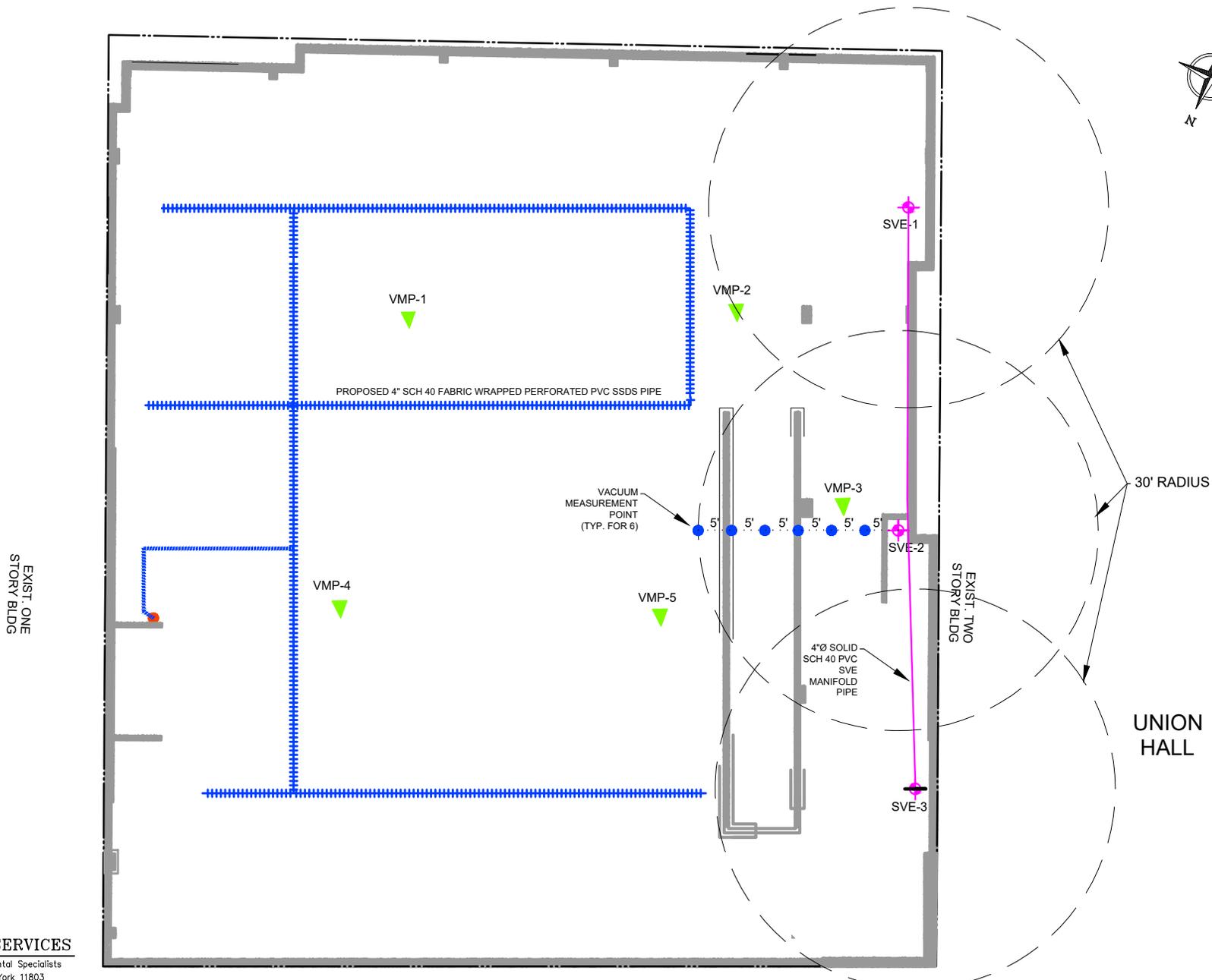
SSDS LAYOUT PLAN

NYSDEC # C241199
148-28 HILLSIDE AVENUE
QUEENS, NY

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SHEET TITLE: SSDS SYSTEM LAYOUT		1
DESIGNED BY: JC	SCALE: AS SHOWN	
REVIEWED BY: KT	DATE: 2/9/24	
PLAN SHEET BY: KT	PROJECT NO: CAR2305	



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PREPARED BY:



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TITLE:

PILOT TEST PLAN
 NYSDEC # C241199
 148-28 HILLSIDE AVENUE
 QUEENS, NY

DRAWN: -	SCALE: NTS	DATE: 3/25/2024	PROJECT NO.: CAR2305
CHECKED: KT	APPROVED: KT	REVISION: -	NOTES: -
FIGURE NO.:		2	