CONESTOGA-ROVERS
& ASSOCIATES

651 Colby Drive, Waterloo, Ontario, Canada N2V 1C2
Telephone: 519-884-0510 Facsimile: 519-884-0525
www.CRAworld.com

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Reference No. 050138

Mr. Robert Corcoran, P.E.
NYSDEC-DER
Remedial Bureau A, Section C
625 Broadway, 11th floor
Albany, NY 12233-7015
(Email: rkcorcor@gw.dec.state.ny.us)

Dear Mr. Corcoran

Re: ASD System Shut-down Determination Work Plan
HWD Site, Farmingdale, NY

Conestoga-Rovers & Associates (CRA) has prepared this work plan to conduct activities to determine if the Active Sub-Slab Depressurization (ASD) system currently operating at the former R&D Carpet and Tile building can be shut down. The work plan was prepared in accordance with the Operations, Maintenance and Monitoring Plan (OM&M Plan), Section 7.2, "ASD System" of the NYSDEC-approved Site Management Plan (SMP) for the HWD Site (Site) in Farmingdale, New York. The Site plan is shown in Figure 1.

This work plan presents the scope of work for the collection of one soil vapor sample adjacent to the former R&D Carpet and Tile building, one outdoor air sample, one indoor air sample, and one sub-slab soil vapor sample inside the building. The air and soil vapor samples will be analyzed by H2M Labs, Inc. in Melville, NY using the USEPA Method TO-15 for the Site-related volatile organic compounds (VOCs) (i.e., tetrachloroethene, trichloroethene, 1,2-dichloroethene, and vinyl chloride). In addition, a chemical use survey will be conducted in the former R&D Carpet and Tile building. These tasks are discussed further in the following paragraphs and the attached Scope of Work.

The ASD system will be shut down approximately 2 weeks in advance of the ASD-related sampling.

Chemical Use Survey

Prior to installing any of the sampling equipment, a chemical use survey will be conducted. The survey will be conducted to help determine sample locations and assess potential non-Site related sources.

Exterior Soil Vapor Sample

One soil vapor probe will be installed and sampled outside of the former R&D Carpet and Tile building. The location is at the northeast corner of the building, as proposed in the 100% Design report, and shown on the attached Figure 2. The details of construction, sampling protocols, and a figure showing the location are presented in the attached Scope of Work.

Sub-Slab Soil Vapor Sampling

One sub-slab soil vapor sample will be collected inside the former R&D Carpet and Tile building. The proposed location is at the northeast end of the building, in the conference room. The details of construction, sampling protocols, and a figure showing the location are presented in the attached Scope of Work.

Indoor and Outdoor Air Sampling

One indoor air and one outdoor ambient air sample will be collected. The indoor air sample will be collected in the general vicinity of the sub-slab soil vapor sample (i.e., at the northeast end of the building in the conference room). One outdoor air sample will be collected in the general vicinity of the exterior soil vapor sampling location. The details of installation, sampling protocols, and a figure showing the proposed indoor and outdoor air sampling locations are presented in the attached Scope of Work.

Reporting

A report will be prepared and submitted to the NYSDEC. The report will present a description of the field activities, analytical results, and an evaluation of the data along with recommendations for the ASD system.

Waste Management

The supplemental investigative activities will produce investigation-derived materials (IDM) which will require appropriate management. IDM includes the following:

- Decontamination fluids and residual soil which may settle out of such fluids
- Concrete/asphalt rubble
- Personnel protective equipment (PPE) and associated debris resulting from the execution of field activities

These materials will be managed in accordance with Appendix L, "Waste Management Plan", of the 100% Design report.

Should you have any questions concerning this information, please do not hesitate to contact me or Rod Sutch at (865) 691-5051.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Jamie Puskas

JH/cs/27
Encl.

c.c. Dean Sommer
John Uruskyj
Rod Sutch

SCOPE OF WORK
ASD SYSTEM SHUT-DOWN DETERMINATION WORK PLAN
HWD SITE
FARMINGDALE, NEW YORK

ASD System Operations

Two weeks prior to the collection of soil vapor and air samples, the ASD system will be shut off. Office staff will be notified of the schedule for the sampling and procedures. The ASD system will be restarted at the completion of the sampling.

Chemical Use Survey

Prior to installing the sub-slab soil vapor probes and canisters, a chemical use survey at the former R&D Carpet and Tile Building will be conducted. The chemical use survey will be conducted to assess potential non-HWD Site related VOC sources. This survey will entail a room-to-room search for chemicals that may be stored on the premises. This will include looking for cleaning supplies in janitorial closets, mechanical rooms, and storage spaces such as a garage. A list of chemicals found, if any, and the condition of product containers (unopened, used, or deteriorated) will be noted and a photograph of the container will be taken. A PID measurement in the vicinity of the containers will be recorded.

In addition to looking for stored chemicals, other sources of indoor air contaminants will be evaluated. These could include the following:

- Recent use of cleaning products;
- Recent paint or staining;
- Installation of new carpets, drapes or other textiles; and
- Use of air fresheners.

Sub-Slab Soil Vapor Probe Installation and Sampling

To investigate the potential for Site-related VOCs in the subsurface to volatilize from soil and groundwater to soil gas within the unsaturated overburden beneath on-Site buildings, the installation and sampling of one sub-slab soil vapor probe in the former R&D Carpet and Tile Building will be completed. The sub-slab sampling will be concurrent with the indoor and outdoor sampling, and with the exterior soil vapor probe sampling (discussed below). The sub-slab soil vapor probe will be installed in the conference room in the northeast corner of the building, the location in the building that is closest to the Site area. The proposed location is shown on Figure 2. This location may be revised depending on the existing conditions as determined during the chemical use survey.

Before drilling, the location of all sub-slab utilities, both public and building specific, will be identified and recorded within the field book. The sub-slab probe will be installed by drilling a ¼-inch hole through the entire slab with a drill-and-spline bit. Once the ¼-inch hole is completed, a 2-inch drill-and-spline bit will be utilized to drill out the top 2 inches of the concrete slab. No water will be used during the installation of the probe. A shop vacuum will be used to collect any dust generated, but will not be used to clean out the drill hole in the concrete slab. Care will be taken to prevent any debris from falling into the ¼-inch hole.

The temporary sub-slab sampling apparatus will consist of a ¼-inch diameter brass nipple attached to a ¾-inch-to-½-inch carbon steel reducer. A bead of clay will be placed around the ½-inch end of the carbon steel reducer. The sub-slab sampling apparatus will then be placed within the completed concrete slab borehole, with the ¼-inch brass nipple being placed within the ¼-inch hole that was drilled through the entire concrete slab. Once the sampling apparatus is in place, the space between the concrete slab and the sampling apparatus will be filled with non-shrink grout. The proposed set-up is shown on Figure 3.

The soil vapor probe will be left undisturbed for a minimum 24-hour period before connecting the sampling equipment in order for the grout to set.

Sub-Slab Soil Vapor Probe Sampling

In advance of sampling activities, a 5-gallon bucket will be placed upside down over the sub-slab soil gas probe and sealed to the floor with molding clay. A certified-clean Summa™ canister will then be attached to the sub-slab soil gas probe via a ¼-inch adapter and inert tubing (e.g., polyethylene, nylon, or Teflon®), which will run through the 5-gallon bucket to a three-way valve. A 30-liter cylinder of helium will also be attached to the 5-gallon bucket via a hose barb located toward the bottom of the bucket. The helium will be used as the tracer test compound for the duration of the sub-slab soil vapor collection as a check on any potential leakage around the probe seal. This set-up is shown on Figure 3.

The sub-slab sample will be collected using a 6-liter capacity Summa™ canister fitted with a laboratory calibrated critical orifice flow regulation device sized to allow the collection of the soil gas sample over an 8-hour sample collection time.

A personal pump will then be attached to one end of the three-way valve, while the Summa™ canister and soil probe are attached to the other ends. The soil gas probe and tubing will then be purged using the personal pump at a maximum flow rate of 0.2 L/min. A maximum of three soil gas probe and tubing, "dead volumes," will be purged to remove potentially stagnant air from the internal volume of the soil gas probe and tubing. The dead volumes will be calculated

based on field measurements of probe construction (i.e., tubing length and tubing inner diameter) and aboveground sampling equipment. Once the "dead volume" has been purged, with the personal pump still running, the three-way valve will be positioned to allow for the collection of the sub-slab soil vapor sample.

One field duplicate sample will be collected at the sub-slab sampling location.

Exterior Soil Vapor Probe Construction

A soil vapor probe will be placed approximately 10 feet from the building, as shown on Figure 2 to avoid any fill material around the buildings. This location was proposed in the 100% Design Report, as it is on the side of the building next to the Site area. The proposed depth of the probe is 5 feet below ground surface (bgs). This will ensure the base of the probe is more than a foot above the water table, which typically is 8 feet bgs or deeper but has been as high as 6.58 ft bgs.

The soil vapor probe will be constructed as shown in Figure 4. The soil vapor probe will be installed using direct-push methods. The borehole will be advanced using 1.25-inch diameter drill rods with an expendable drive point holder and an expendable drive point to the target depth. The well screen (6-inch stainless steel) with the sample tubing (⅛-inch diameter polyethylene) attached will be placed down into the drive rods to the top of the drive point and threaded to the drive point. Coarse sand will be placed around the well screen up to 6 inches above the screen, followed by bentonite slurry up to 1 foot bgs. A 5-inch diameter curb box will be cemented into place on top of the granular bentonite.

Exterior Soil Vapor Probe Sampling

Soil vapor sampling will be conducted no sooner than 24 hours following the installation of the soil vapor probe.

The soil vapor samples will be collected using a certified-clean 6-liter capacity Summa™ canister fitted with a laboratory calibrated critical orifice flow regulation device sized to allow the collection of the soil gas samples over an 8-hour sample collection time.

Prior to sample collection, the soil vapor probe will be purged at a maximum flow rate of 0.2 L/min. A 3-way valve with all valves initially closed will be connected to the probe sample point, to the portable vacuum pump, and to the top of the regulator of the Summa™ canister. The Summa™ canister has a regulator on top of the canister with a valve in between the canister and the regulator. This canister valve is also initially closed as supplied by the laboratory. Opening the valves to the probe, to the vacuum pump, and to the top of the regulator, will begin purging. A maximum of three soil vapor probe "dead volumes" will be purged to

remove potentially stagnant air from the internal volume of the soil vapor probe and ensure that soil vapor representative of the formation is drawn into the soil vapor probe. The soil vapor probe "dead volumes" will be calculated based on field measurements of probe construction (i.e., below ground tubing length, tubing inner diameter, and sand pack length indicated in the soil vapor probe log) and aboveground sampling equipment. After purging is complete, the valve to the portable vacuum pump will be closed, and the valve to the canister will be opened (in between the canister and regulator) to begin sampling. The regulator will be calibrated for an 8-hour sampling period by the laboratory. The Summa™ canister will be placed on the concrete/asphalt surface and protected from vehicle traffic.

Soil Vapor Probe Abandonment

The soil vapor sampling location will be abandoned when it is no longer needed for post-remediation activities. The soil vapor sampling point will be abandoned by pulling the tubing and well screen from the ground. The probe location will be then backfilled with a non-shrink grout.

Indoor and Outdoor Air Sampling

An indoor air sample will be collected in the former R&D Carpet and Tile Building. Prior to the indoor air sampling, the chemical use survey will be completed inside of the building as previously noted. Concurrent with the indoor air sampling, an outdoor sample will also be collected outside the former R&D Carpet and Tile Building. Sub-slab vapor and exterior soil vapor sampling will be performed during the 8-hour time required for collection of the indoor and outdoor air samples.

The proposed sampling locations of the indoor and outdoor air samples are shown on Figure 2. Both of these locations are on the side of the building closest to the Site area. Both indoor and outdoor air samples will be collected using certified-clean 6-liter capacity Summa™ canisters, over an 8-hour period. Each Summa™ canister will be fitted with a laboratory calibrated critical orifice flow regulation device sized to allow the collection of the indoor and outdoor air samples over an 8-hour period. The inlet of each Summa™ canister will be fitted with tubing, and the tube inlet will be fixed in-place at a height of approximately 3 to 5 ft above ground surface (the height typical of the breathing zone). The Summa™ canisters will be placed to prevent disturbance of the sample tubing. The valves on the tubing will then be opened to start collecting the air samples. Purging of the tubing prior to sample collection is not required for indoor and outdoor air sampling.

The sampling team members will avoid actions (e.g., fueling vehicles, using permanent marking pens, wearing personal fragrances, etc.) which can cause sample interference in the field when setting up the sampling equipment.

General Information

All air and soil vapor samples will be collected concurrently, and be submitted to H2M Labs, Inc. in Melville, New York for chemical analysis for tetrachlorothene, trichloroethene, 1,2-dichloroethene, and vinyl chloride using USEPA's gas GC/MS Method TO-15. H2M is certified under the Environmental Laboratory Approval Program (ELAP) in New York State.

The sampling team will maintain a field book summarizing the following information:

a) Sample identification
b) Date and time of sample collection
c) Sample depth
d) Identity of samplers
e) Sampling methods and devices
f) Air/vapor purge volumes
g) Volume of air/vapor extracted
h) Vacuum of canisters before and after sample collection
i) Chain of custody protocols and records used to track samples from sample collection to analysis.

During sample collection, the following actions will be taken to document conditions (where appropriate) during sampling:

a) The use of heating or air conditioning systems during sampling
b) Weather conditions (precipitation, indoor and outdoor temperatures, wind direction and speed, humidity) and ventilation conditions (e.g., heating system active and windows closed)
c) Pertinent observations, such as spills, floor stains, odors, significant activities in the vicinity (e.g., operation of heavy equipment)
d) Surface conditions (e.g., surface type, presence of standing water)
e) Groundwater levels in monitoring wells nearby exterior soil vapor probe

Sub-surface drilling and sampling equipment will be decontaminated, as required, by washing with an Alconox detergent solution and rinsing with distilled water. All generated waste material will be containerized and appropriately disposed of.

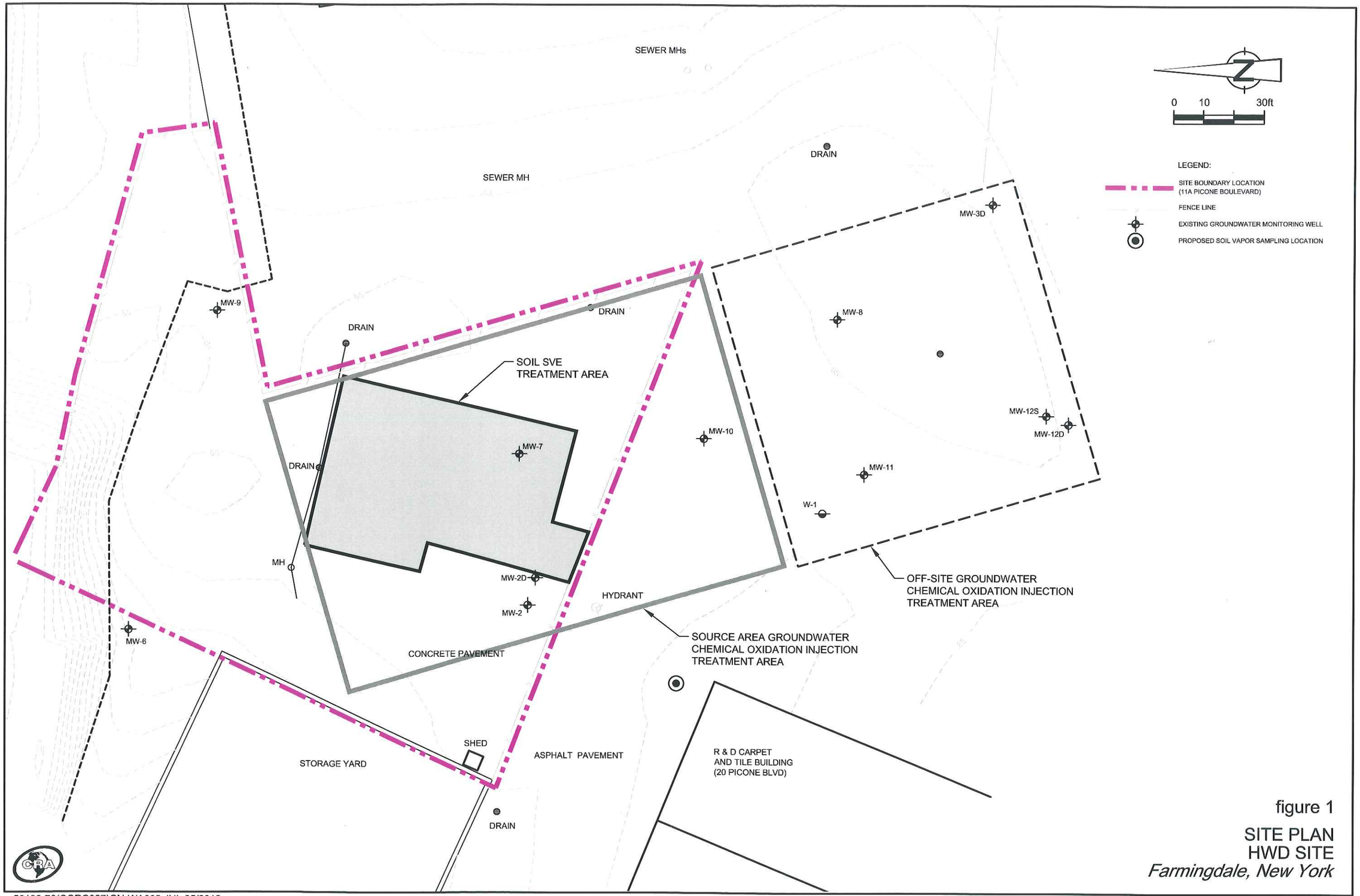
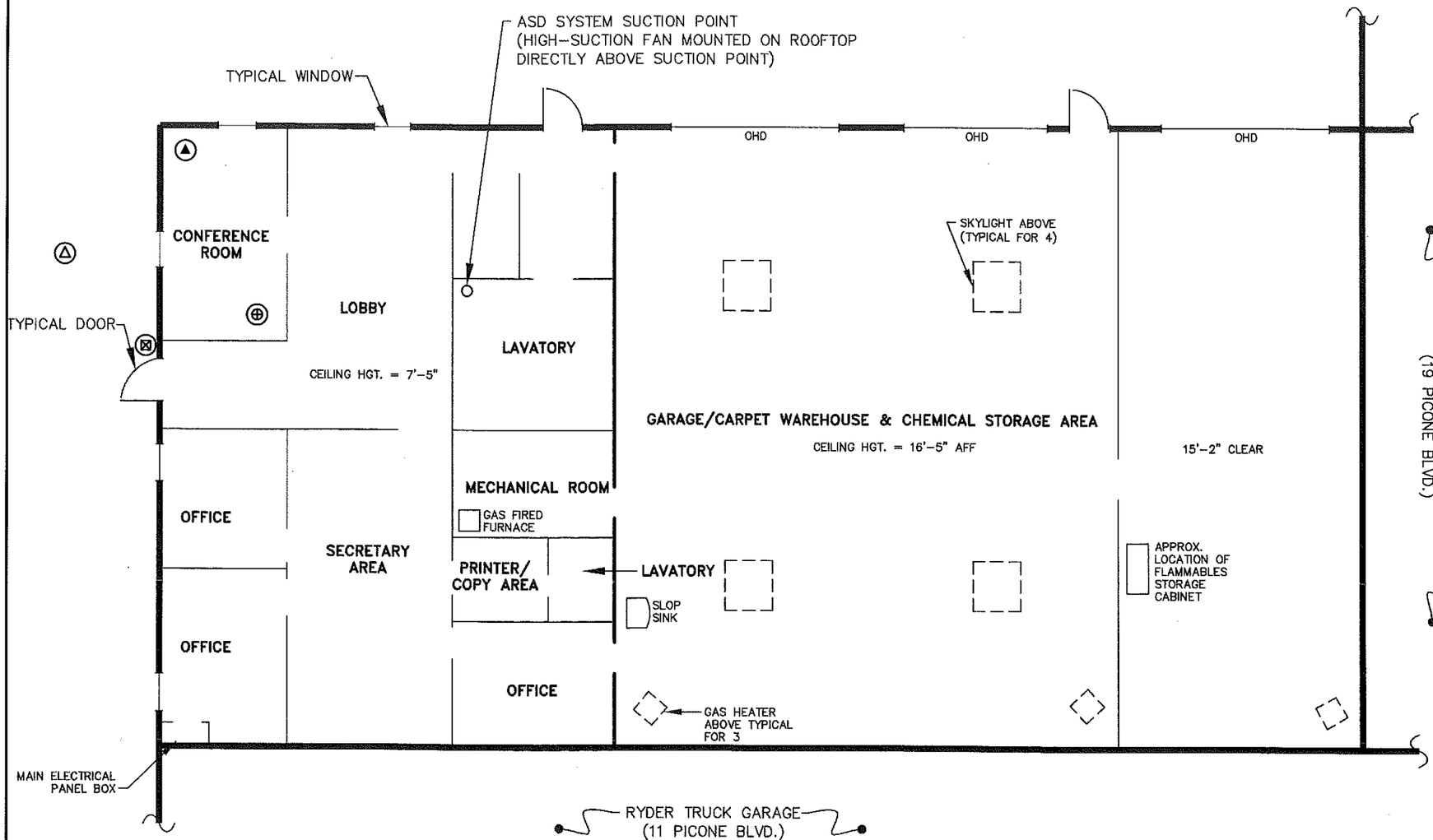


figure 1

SITE PLAN
HWD SITE
Farmingdale, New York

50138-70(CORC027)GN-WA002 JUL 25/2012



PROPOSED INDOOR AIR SAMPLE LOCATION

PROPOSED OUTDOOR AIR SAMPLE LOCATION

PROPOSED SUB-SLAB VAPOR SAMPLE LOCATION

PROPOSED SUB-SOIL VAPOR PROBE LOCATION

SOURCE:

ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED, "FLOOR PLAN OF EXISTING BUILDING – BUILDING LOCATED AT 20 PICONE BOULEVARD, FARMINGDALE, NY," PREPARED BY LITTLE JOSEPH REALTY, INC., JOB NO. 91-117, SCTM# 100-35-1-31.4, LAST REVISED 5/29/91.

NOTES:

1. OHD = OVERHEAD DOOR
2. AFF = ABOVE FINISHED DOOR

0 10' 20'

GRAPHIC SCALE

SOURCE: BLASLAND, BOUCK AND LEE INC. FORMER R&D CARPET AND TILE BUILDING ASD SUMMARY REPORT

figure 2

PROPOSED SOIL VAPOR AND AIR SAMPLING LOCATIONS
HWD SITE
Farmingdale, New York

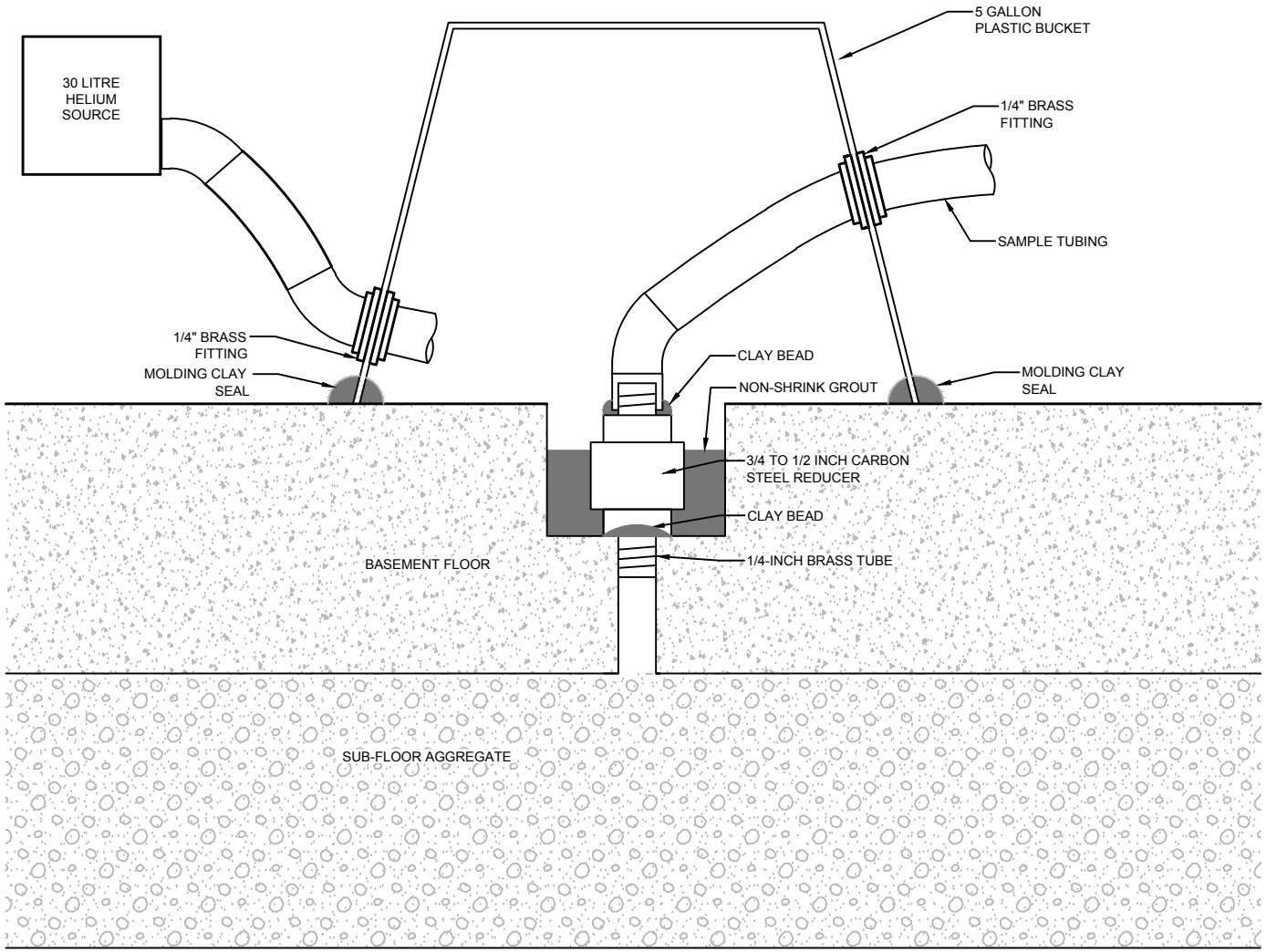


figure 3

SCHEMATIC OF SUB-SLAB VAPOR PROBE
HWD SITE
Farmingdale, New York

SOIL VAPOR PROBE

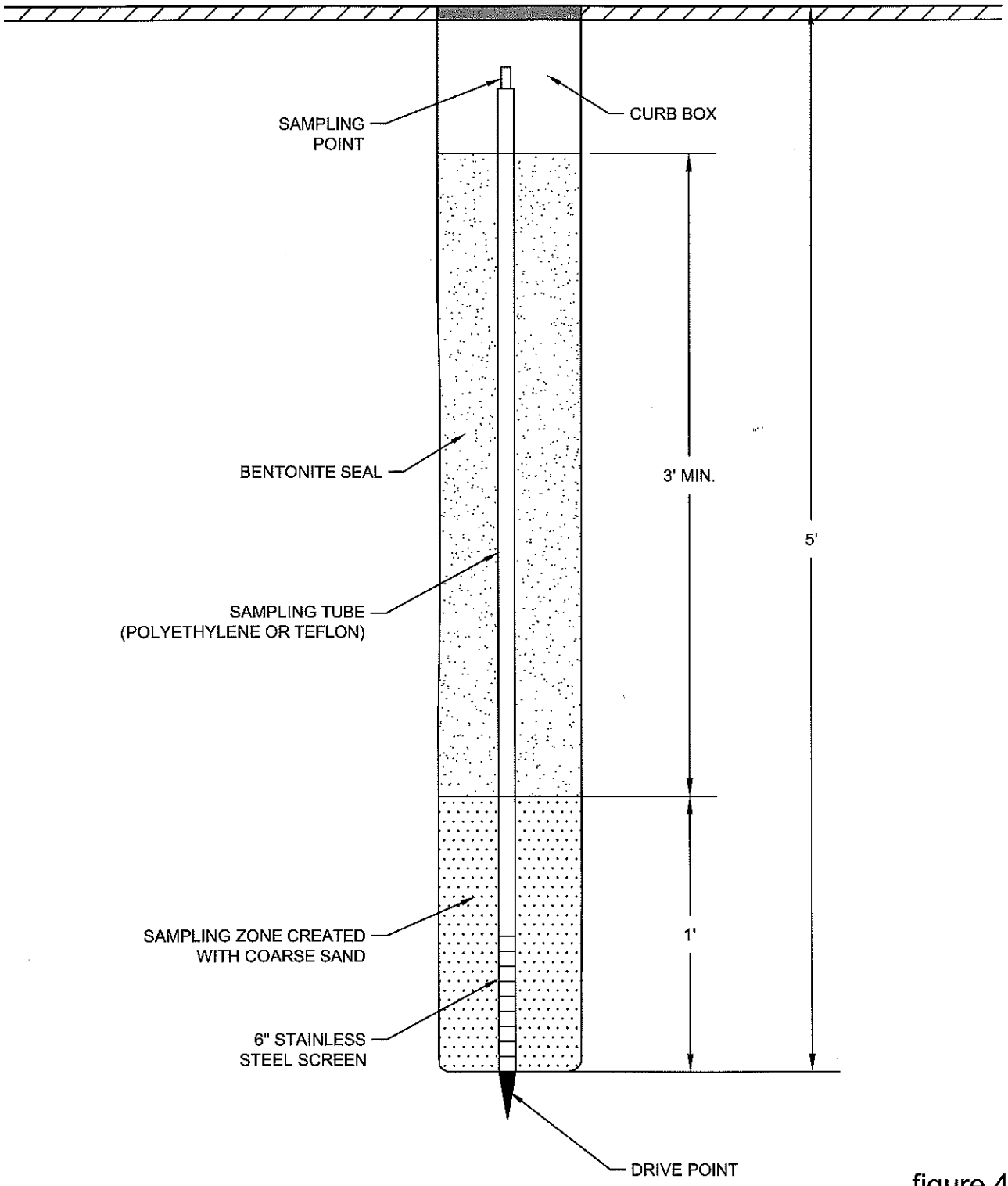


figure 4

TYPICAL GEOPROBE SOIL VAPOR PROBE INSTALLATION
HWD SITE
Farmingdale, New York