APPENDIX C

Atlas Standard Operating Procedures

Stantec

SOP **4.0 GENERAL SAMPLING PROCEDURES FOR AQUEOUS AND SOLID MATRICES**

- During field sampling activities, the following applicable procedures will be practiced for sample collection:

- Whenever possible, samples will be collected first from the location expected to be least contaminated. Samples that are expected to be most contaminated will be collected last.

- Accurate and detailed field notes will be maintained in a bound field notebook. Soil samples will be examined and logged in the field.

- Sampling procedures will be performed with the overall intent of collecting representative samples and minimizing sample disturbance.

- Soil samples will be selected for analysis based on the results of qualitative field screening for total volatile organic vapors, visual and olfactory observations, and the depth of the water table.

- Sample containers will be labeled with the site name, project number and date prior to being filled with a sample.

- All sample collection, handling, and shipping information will be recorded in a field notebook.

- Groundwater samples will be logged, using the attached *Groundwater Sampling Log.* Samples of other matrices (sediment, surface water, soil, etc.) will be logged, using the attached *Field Sampling Log*.

- All samples should be collected according the specific requirements of the intended analytical method. Tables 1 and 2 provide lists of sample containers, preservation and holding time requirements for aqueous and soil/sediment samples, respectively.

- All samples will be placed in a chilled, thermally-insulated container containing ice. Blue ice, ice packs, or ice substitutes are not able to reach and maintain the required temperature until receipt at a laboratory.

- All soil samples for volatile organic compound analysis must be collected, preserved, and handled accordingly to SW846 Method 5035. The procedures are outlined in attached memorandum from Spectrum Analytical.

- All samples to be analyzed by Massachusetts Department of Environmental Protection methodologies for Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH) will be collected according the published MADEP procedures outlined in the attached memorandum from Spectrum Analytical, Inc.

SOP 8.30 GROUNDWATER SAMPLE COLLECTION PROCEDURES USING LOW FLOW SAMPLING METHODOLOGY

The following groundwater sampling protocols are based on the USEPA Region 1 Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells (July 30, 1996, Revision 2) (Region 1 Low Flow SOP #: GW 0001) with the following modifications.

8.3.1 MATERIALS

The following equipment and materials may be used during groundwater sampling. Not all material and equipment is necessary all of the time.

- health and safety equipment;
- map of well locations;
- well construction data;
- field data from last sampling and/or gauging event;
- well keys;
- interface probe;
- electronic water level indicator;
- PID or FID;
- a multiprobe water quality monitoring system (pH, specific conductivity, temperature, ORP, and optional dissolved oxygen)-i.e. Geotech Multiprobe Sampling System™ or YSI Model 3560 Water Quality Monitoring System™
- field book;
- adjustable rate peristaltic pump;
- 3/16-inch inside diameter and ¼-inch outside diameter polyethylene tubing;
- ¼-inch inside diameter silicone tubing;
- cable ties;
- folding table;
- disposable gloves;
- bucket (calibrated in gallons);
- sample containers and labels;
- chain-of-custody forms;
- cooler and ice;
- decontamination equipment;
- polyethylene sheeting;
- field filtering apparatus.

In order to ensure the collection of groundwater samples representative of the aquifer, stabilization of groundwater parameters must occur prior to sampling. Note: Depth to water level measurements will be performed in each monitoring well prior to purging and sampling (see Water-Level Measurement Procedures).

8.3.2 WELL PURGING

An electronic water level indicator will be lowered slowly to the air-water interface and the depth to water will be recorded. Care should be taken such that any particulates in the water column are not mobilized. Depth of the well should be based on previous sampling logs or measurements made after the collection of the groundwater sample. If the presence of a free phase product (light non-aqueous phase liquid - LNAPL) is suspected, an interface probe will be lowered to the product-water interface and the thickness of the product will be measured. If LNAPL is present, the well will not be sampled using the low flow sampling procedure.

- If no free phase product is present in the well purging will begin.

    - Purging of each well prior to sampling is conducted using an adjustable rate peristaltic pump in line with a multiprobe water quality monitoring system. This instrument allows for the visual monitoring of five parameters (temperature, pH, specific conductivity, dissolved oxygen and Eh -- oxidation-reduction potential) simultaneously in real time. This system uses an adjustable rate peristaltic pump system to collect the purge water directly into a flow-through chamber assembly containing the parameter probes.

    - A dedicated polyethylene tubing of 3/16-inch inside diameter and ¼-inch outside diameter is tied flush with the tip of a water-level measurement indicator using a plastic cable tie and is lowered into the well casing until it is at the mid-point of the saturated screen length and at least 2 feet from the bottom of the well.

    - A dedicated section, approximately one foot long, of ¼-inch inside diameter silicone tubing is fit through the peristaltic pump. The silicone tubing connects the dedicated polyethylene tubing from the well to a small piece of polyethylene tubing (approximately 24-inch), which attaches to the flow-through chamber of the multiprobe water quality monitoring system.

    - The pump is started at its lowest speed setting and slowly increased until the purge water is directly discharged into the chamber. Once the chamber is filled with purge water, the multiprobe meter displays are turned on and the initial stabilization parameter measurements should be recorded. The volume of purge water will be measured by pumping groundwater directly into a container of known volume.

    - The pumping rate is adjusted until there is little or no water level drawdown. Any adjustments made should be recorded. During the initial pump start-up, the drawdown may exceed 0.3 feet as pump flow adjustments are made and the water level stabilizes. If the minimal drawdown possible exceeds 0.3 feet but remains stable, continue purging at the stabilized groundwater drawdown level.

    - If drawdown exceeds 0.3 feet and does not stabilize, sampling should proceed.

    - The water level inside the well casing is monitored every three to five minutes or approximately every 0.25 to 0.5 gallons during purging. Drawdown of less than 0.3 feet during purging is desirable but not mandatory. The volume of water purged from the well, field measurement data (temperature, pH, specific conductance, ORP/Eh and dissolved oxygen if available) along with observations of color, odor and turbidity are recorded during the purging process every three to five minutes or as appropriate. An example of the ATC Low Flow Groundwater Sampling Log is attached.

- Purging is complete when stabilization of the groundwater parameters has been reached and the volume purged exceeds the stabilized groundwater drawdown volume plus the extraction tubing volume (approximately 0.014 gallons per 10 feet of tubing). Stabilization is achieved when three consecutive readings, taken at 3 to 5 minute intervals, are within the following limits: within +/- 0.5 degrees Celsius; within +/- 0.1 pH units; within +/- 10 μmhos/cm (or μS/cm) specific conductance or within 3% if specific conductance is greater than 300 μmhos/cm (or μS/cm); within +/- 10mV ORP/Eh.

- The amount of dissolved oxygen in the groundwater should be measured in each well after stabilization.

- A turbidity reading will be taken before the collection of the groundwater sample and the value will be recorded on the sampling log. Turbidity levels of less than 5 NTU are desirable but not mandatory.

- All measuring equipment will be decontaminated between uses (See Decontamination Protocols). The groundwater measuring equipment will be calibrated daily prior to use and in the field if field personnel suspect a problem with the calibration.

- Groundwater collected during purging and sampling of groundwater monitoring wells will be discharged to the subsurface at the point of withdrawal in accordance with Massachusetts General Law Chapter 21E and 310 CMR 40.0056 of the Massachusetts Contingency Plan. If purge water is grossly contaminated (i.e. contains free phase product) this water will be drummed and disposed of according to applicable municipal, state, and federal regulations (See Disposal Procedures).

8.3.3 GROUNDWATER SAMPLING PROTOCOL USING THE PERISTALTIC PUMP

- Once stabilization of the groundwater parameters occurs, the sampling of the groundwater from the well begins. The following SOP describes groundwater sampling using peristaltic pump, the dedicated section of silicon tubing, and the dedicated section of polyethylene tubing in the well.

- Immediately prior to sampling, the polyethylene tube leading to the flow-through chamber of the multiprobe water quality monitoring system is disconnected so that the groundwater flows directly from the ¼-inch silicone tubing into the sample vials.

- The location of the sampling point (or position of the end of the dedicated in-well tubing) will be the same location as it was during the purging process.

- If drawdown increases such that the recharge rate of the well is less than the slowest possible extraction rate, the well should be sampled as soon as the water level has recovered sufficiently to collect the appropriate volume needed for all required samples even though the parameters have not stabilized. The intake should not be lowered during the recovery period.

- Water samples for the analysis of volatile organic compounds (VOCs) and volatile petroleum hydrocarbons (VPH) will be collected first from the tubing in the water column in the well.

- Groundwater samples collected for the analysis of VOCs will be collected in duplicate 40-milliliter glass vials with zero headspace. Vials will be pre-preserved with hydrochloric acid to a pH of <2. The vial will be uncapped carefully in order to avoid contact with the Teflon septum. The vial will be filled slowly taking care not to agitate the sample which may mean slowing down the rate of the

peristaltic pump. Each vial will be filled until there is a meniscus over the lip of the vial. If no meniscus forms, a sample of water will be collected in the cap and poured slowly into the vial to create a meniscus. The Teflon-faced septum will be placed on the convex meniscus and the cap screwed down. The vial will be inverted and tapped to check for the presence of air bubbles. If air bubbles are present, the sample will be discarded and another vial will be selected and filled.

- Groundwater samples for analysis for PCBs, pesticides, total petroleum hydrocarbons, extractable petroleum hydrocarbons (EPH), semivolatiles organic compounds, metals, other inorganic compounds, and general chemical parameters will be collected last but immediately after collecting groundwater samples for analysis of VOCs.

- Groundwater samples for the analysis for dissolved (soluble) metals will be collected by connecting a dedicated 0.45 micron filter in-line to the ¼-inch silicone tubing. Care will be taken to adjust the pumping rate, in order to avoid any potential failure of the cartridge filter. The sample will be collected directly in a 1-liter HDPE bottle pre-preserved with nitric acid to achieve a pH <2.

- The sample containers for groundwater samples collected for all analyses other than VOCs will be filled to 90% capacity. Care will be taken so that no portion of the sample comes in contact with the sampler's gloves. ATC Standard Operating Procedure (SOP) # 4.00 should be referenced for selection of proper sample containers and preservation methods for each analytical method.

- Duplicate samples, field blanks, and equipment rinsate blanks will be collected according to specified QA/QC frequency

- A trip blank consisting of deionized hydrocarbon-free laboratory water in a 40-milliliter Teflon-septum vial, prepared prior to sampling, will be present with the volatile samples at all times during sampling and transportation to the analytical laboratory, and will be subjected to the same analyses as the samples.

- All sample containers will be capped immediately after filling. The exterior of the container will be rinsed with deionized water and dried with paper towels. All sample containers will be labeled immediately upon collection with the following information: site; project number; well number; date; time of collection; testing parameters; initials of sampling personnel.

- All groundwater samples will be cooled to 4°C by placing them immediately in a chilled, thermally insulated container with ice and submitted as soon as possible to a Massachusetts-certified analytical laboratory under Chain of Custody protocol. Information regarding sample holding times is found in Table 1. Information regarding Chain of Custody protocol is found in the Sample Custody Procedure.

- All equipment used to collect samples for analysis will be either decontaminated before each use or dedicated to a particular sample location after initial decontamination.

- Based on the results of previous sampling and analysis, sampling will progress from the least contaminated well to the most contaminated well.

SOP 9.00 WATER-LEVEL MEASUREMENT PROCEDURES

Depth to water-level measurements are taken to determine the elevation of the potentiometric surface. Water level measurements will be performed in each monitoring well prior to sampling. Because of fluctuating groundwater levels, all wells will be measured prior to sampling and within the same day, if possible. If the presence of NAPL is suspected, measurements will be made with an oil/water interface probe, otherwise, an electronic water level indicator will be used. These instruments are accurate to 0.01 feet. The following procedures are based on Massachusetts DEP guidelines (DEP, 1991) and ASTM Designations D 5092 - 90 and D 4750 -87.

- The measuring instrument will be decontaminated prior to use and between wells according to the standard decontamination procedures.

- Measurements will progress from the least contaminated wells to the most contaminated wells.

- The well casing will be opened and the headspace will be monitored for total organic vapors using a PID or FID. If a reading of 5 ppm or greater is detected, the well will be allowed to vent for 5 to 10 minutes. If after this time the reading is 5 ppm or greater, a determination regarding the level of personal protective equipment needed will be made before sampling continues. If specified, PID or FID readings for well casing headspace will be recorded for each well.

- An interface probe will be lowered to the air-water interface and the depth to water will be recorded. The interface probe will be lowered to the bottom of the well to measure the depth of the well and in wells where chlorinated hydrocarbons were detected to determine if dense non-aqueous phase liquid (DNAPL) is present. If the presence of a free phase product (LNAPL) is indicated, the probe will be lowered to the product-water interface and the thickness of the product will be recorded but the depth of the well will not be measured.

- One water-level measurement will be made from a reference point on the PVC well riser pipe and another from the top of the protective well casing at the surface elevation. The reference point on the PVC will be a V-notch cut into the top edge of the riser pipe at the highest point. This will be the surveyed point on the riser. The reference point on the well riser is preferred for determining depth to water-level due to its stability. The protective well casing is more susceptible to movement through settling, frost heaving, or displacement by impact.

- The volume of standing water in the well (static volume) will be calculated and used during well purging prior to sampling.

- The total depth of the well, depth to product, depth to water, standing water height, and static volume will be recorded on the groundwater sampling log (attached).

SOP 10.00 DECONTAMINATION

Decontamination will be performed in order to: minimize the spread of contaminants on the Site and from one sampling location to another; reduce the potential exposure of field personnel to contaminants; and to ensure good data quality and reliability. Decontamination of all field analytical testing and sampling equipment will be performed according to the following procedures. These procedures are based on ASTM Designation D 5088-90, USEPA CERCLA QAPP Review Guidance, 1987.

Equipment cleaning procedures include pre-field, field, and post-field decontamination. Non-disposable equipment will be decontaminated after completing each sampling event. In cases of gross contamination (free phase product), rinse water will be contained for proper disposal according to municipal, state, and federal regulations. Decontamination procedures will be monitored through sampling and analysis when quality assurance/quality control checks are necessary.

Equipment will be dedicated to each sampling point and decontamination will be performed at the off-site facility as much as possible.

Decontaminated equipment will be rested on polyethylene sheeting at each sampling point.

Samplers will use new disposable gloves at each sampling point.

Potable water from the public water supply will be used for control rinse water.

A certified laboratory supply of deionized water will be used for decontamination of field testing and sampling equipment and for the collection of rinsate blanks. Deionized water will be stored in Nalgene, glass, or Teflon containers. The storage area containing the deionized water will be separated from the storage area for solvents.

Equipment rinsate blanks will be collected when a quality control check of the decontamination procedure is necessary. This check will not be performed if dedicated equipment is used. One blank will be collected at least once during a sampling event for each different piece of sampling equipment used. Rinsate blanks will be prepared by pouring deionized water over the decontaminated piece of equipment and collecting it in the sample container. The equipment rinsate blank will be analyzed for the same analytes as the samples that have been collected with that piece of equipment.

10.1 MATERIALS

- health and safety equipment;
- laboratory-supplied deionized water;
- phosphate-free detergent (Alconox, Liquinox);
- potable water (municipal water source);
- methanol;
- Hexane;
- Acetone;
- nitric acid rinse solution;
- wash basins;
- inert brushes;
- polyethylene sheeting;
- large heavy duty garbage bags;
- spray bottles;

- zip-lock bags;
- paper towels/Handiwipes;
- disposable gloves.

10.2 DECONTAMINATION PROCEDURES

- Stainless steel bailers will be disassembled, soaked in hot potable water and scrubbed with a brush in "Alconox" detergent and potable water , and rinsed with clean potable water at the company's facility. Bailers will be allowed to air dry in a vertical position in a contaminant-free environment.

- Prior to the sampling event, bailers used for the collection of samples which will undergo analysis for total petroleum hydrocarbons and volatile organic compounds will be rinsed with hot potable water followed by a 10% methanol solution of pesticide grade methanol and deionized water, followed by a final rinse with deionized water. The volume of deionized water will be at least five times the volume of the methanol. Bailers used for the collection of samples which will undergo analysis for semi-volatile organic compounds, PCBs, and pesticides will be rinsed with a technical grade acetone followed by a pesticide grade hexane, and a final deionized water rinse as above. Bailers used for the collection of groundwater samples which will undergo analysis for metals will be rinsed with 10 per cent nitric acid solution prepared from reagent grade nitric acid and deionized water followed by a potable water rinse, and a final deionized water rinse.

- Bailers will be wrapped in an inert material (i.e. plastic bags) and stored in a clean environment during transport to the Site.

- Following sample collection, the stainless-steel bailers will be rinsed with clean potable water and placed in a plastic bag for transport to the company's facility where decontamination will take place.

- Soil and sediment sampling equipment (stainless steel sampling scoop, tool, and bowl, split-spoon and macro-core sampler, knife) will be decontaminated in the field after each use.

- Soil and sediment sampling equipment will be decontaminated as follows: scrubbed with inert brushes in a bucket containing phosphate-free detergent and potable water; rinsed with potable water; rinsed with pesticide grade methanol; and finally rinsed with deionized water. The final potable water and deionized water rinse volumes will equal 5 times the volume of the methanol rinse. The equipment will be allowed to air dry and will be stored in a clean environment until reused.

- Non-dedicated field equipment used for the collection of samples to be analyzed for metals and filtering apparatus will be cleaned prior to each use by using a phosphate-free detergent solution, a potable water rinse, followed by a 10 percent nitric acid rinse solution prepared from reagent grade nitric acid and deionized water, a potable water rinse, and a final rinse with deionized water. Used filters will be properly disposed of.

- The YSI Water Quality Monitoring System™, Geotech Multi Parameter™ meter, interface probe, down-hole slug test equipment, QED Water Wizard well development equipment, and other measuring instruments will be decontaminated between uses by rinsing with Alconox or Liquinox, followed by potable water and deionized water rinses. A methanol rinse will be utilized prior to the deionized water rinse in the event of gross contamination such as contact with free-phase product.

- The drill rig and earthprobe and all drilling equipment and associated tools, including but not limited to augers, drill casing, drill rods, sampling equipment, and wrenches, will be steam cleaned prior to

beginning the drilling on the Site. This cleaning will consist of using a high pressure detergent steam cleaning equipment, followed by a nanograde methanol swabbing if gross contamination was present. This will be followed by a controlled water rinse. Any down-hole equipment (auger flights, rods, sampling equipment, etc.) coming in contact with gross contamination (i.e. free phase product) will be steam-cleaned between uses. Otherwise equipment will be scrubbed manually with potable water and Alconox as needed to remove soil between uses.

- Sampling equipment and probes will be decontaminated in an area covered by polyethylene sheeting adjacent to the sampling location.

- In cases of gross contamination (i.e. free phase product) rinse water will be collected for proper disposal according to municipal, state or federal regulations. Contaminated solids (disposable gloves, clothing, polyethylene tubing and sheeting, etc.) will be collected and characterized for proper disposal.

- Decontamination procedures will be fully documented in the field notebook. The following information should be recorded: Site location, date, time and weather; sample location where equipment used; location where decontamination was performed; field personnel performing the decontamination; decontamination procedures; disposal of rinse water if necessary; samples collected for QA/QC and analytical results.

- Health and safety procedures associated with decontamination are found in the Health and Safety Plan.

SOP 11.00 SAMPLE CUSTODY PROCEDURES

- Sample custody procedures will be followed in order to create an accurate written record. This record can be used to trace the possession and handling of all samples from collection, through all transfers of custody until the samples are delivered to the analytical laboratory. Custody for samples will be maintained by field personnel collecting the samples until they are properly transferred. The following procedures are based on ASTM Designation D 4840-88, standard methods found in DEP (1991), and USPEA (1987) guidance documents.

- A self-adhesive waterproof sample label will be affixed to each sample container before or immediately thereafter sample collection. A waterproof pen will be used to record information on the label. The label should include a unique identifier and may include the following information:

  Project Number
  Sample ID Number
  Sample Location
  Sample Matrix
  Date and Time of Sample Collection
  Designation as Grab or Composite Sample
  Parameters to be Tested
  Preservative
  Initials of Sampler

- All sample containers will be supplied by a state-certified laboratory. Commercially purchased sample containers will be pre-cleaned and quality controlled according to EPA recommended washing procedures and specifications (Level I and/or Level A according to the vendor's specifications).

- Chemical preservatives will be added to the sample containers by the state-certified laboratory providing the containers. Tables 1 and 2 indicate the type of preservation which will be used.

- Chain-of-custody records will be filled out by the sampler using information from the sample labels and field notes made at time of sample collection. The chain-of-custody will include the dates and times of collection and receipt. The chain-of-custody will document any tampering that may have occurred; if there are no such comments then no tampering was observed. An example of the chain of custody (provided by Spectrum Analytical, Inc. of Agawam, Massachusetts) is included.

- One chain-of-custody record will be used for each packaged lot of samples. Where the chain-of-custody consists of more than one page, each page will be sequentially numbered and show the total number of pages. More than one chain-of-custody may be used for one packaged lot.

- Samples will be stored in a thermally insulated container with ice until released to the laboratory, a courier, or transferred to a dedicated and secured sample storage refrigerator. Each cooler will contain sufficient ice to insure that a 4°C temperature is maintained, and will be packed in a manner to prevent damage to the sample containers. The field chain-of-custody records, completed at the time of sample collection, will be placed inside the cooler for transport to the laboratory. These forms will be sealed in a zip-lock type plastic bag to protect them against moisture.

- The chain-of-custody form will be signed by the relinquishing party and the receiving party. The reason for transfer (i.e. courier, shipment of sample) will be indicated each time the sample custody changes.

- The method of shipment to the laboratory will be noted on the chain-of-custody (i.e. hand delivered to laboratory, laboratory courier, commercial shipping). When a commercial shipper is used for sample transport, the chain-of-custody will be signed as relinquished to the shipper, sealed in a zip-lock type bag to protect it from moisture, and placed inside the cooler. The shippers package handling number will be noted on the chain-of-custody, if available. The cooler will then be sealed and a custody seal attached. A copy of the shipping papers will be maintained with the copy of the chain-of-custody.

- Upon receipt by the laboratory, internal laboratory records will document sample custody until its final disposition.

SOP 21: INSTALLATION OF SUBSURFACE VAPOR IMPLANTS TO EVALUATE SOIL VAPORS

This SOP documents the installation and sampling of soil vapor points utilizing vapor implants for use during site characterization and/or vapor intrusion assessments. The data derived from this procedure will assist in evaluating the presence of source mass and/or determining if the vapor intrusion pathway is completed in situations where subsurface contamination is beneath or in close proximity to a building. These procedures should be utilized in conjunction with additional methodologies as required by State guidelines (VT ANR Vapor Intrusion Guidance, March 24, 2020) as multiple lines of evidence in addition to this procedure are required to conduct a comprehensive site characterization and vapor intrusion assessment.

1.0 Materials and Equipment

The following materials and equipment will be available during installation of soil vapor points utilizing vapor implants:

- Health and safety equipment;
- Field book;
- Hand auger, pig tail auger, soil probe, or direct push technology (DPT) rig
- Plastic sheeting (for spoils)
- 2 Buckets (for spoils and decon)
- Decon brush
- Glass beads
- Driller's sand
- Bentonite (granular)
- Cement
- Mixing bin
- Water
- Alconox
- 1/4" Stainless steel implants w/tips
- 1/4" Teflon, Teflon-lined, or Nylaflow tubing
- 1/4" tubing caps
- Core drill (if subslab)
- Roadbox or floor cover

2.0 Installation of Soil Vapor Points Utilizing Vapor Implants

Prior to installing any subsurface devices, request the property owner to mark all underground utilities, including any utilities buried beneath the slab (underslab utilities) if subslab points will be installed and comply with any requirements under ATC’s Subsurface Work Policy #33.. Review any available design or construction plans and perform an inspection on your own of all electrical, fuel, communications, and other utility conduits and sweeps. Comply with DigSafe requirements and hire a private utility location contractor or geophysical firm to verify the owner's markings and any unknown utilities not covered by

DigSafe.

- If installing a subslab point, use a core drill to drill through the slab, appropriately sized for the roadbox or floor cover. Clean out the concrete dust with a shop vac. Minimize tracking on floor by using plastic sheeting around the hole.

- Use a small-diameter hand auger, pig tail auger, soil probe or DPT rig to remove soil core to appropriate depth. Utilize the smallest diameter tool possible.

- Log and field-screen soils in accordance with your work plan.

- Decontaminate probe tools between points with alconox and water.

- Attach 1/4-inch Teflon, Teflon-lined Nylaflow tubing to vapor implant and install in bottom of soil core with tubing extending above the surface and capped.

- Pour glass beads into annulus space up to at least one inch above the top of the implant and add one inch of driller's sand.

- Pour granular bentonite into annulus space up to the bottom of the slab or within 4-6" of the ground surface; hydrate the bentonite by pouring water into the hole every 4-6".

- Cut and re-cap tubing as appropriate and install roadbox or floor cover.

3.0 Leak Testing

Perform lead testing in accordance with SOP #27 under separate cover.

4.0 Field-Screening and Differential Pressure Testing

Perform field-screening and differential pressure testing in accordance with SOP #27 under separate cover.

5.0 Vapor Point Sampling

Perform vapor point sampling for offsite laboratory analyses in accordance with SOP #24 under separate cover.

REFERENCES:

VTDEC Vapor Intrusion Guidance, March 24, 2020