

Appendix C

Landfill Gas Probe Construction

APPENDIX C

GAS PROBE CONSTRUCTION

The Environmental Monitoring Plan for the High Acres Landfill and Recycling Center requires the installation of several new gas probes. The gas probes are intended to collect soil gas samples from above the water table. The procedures described below will be used to construct the new gas probes. A typical gas probe detail is included in this appendix as Figure A.

Construction in General

Construction techniques are designed such that soil gas samples may be collected (see attached Figure). The gas probes will be installed above the water table. Screen lengths may be extended to intercept permeable layers. Precautions will be taken during drilling and construction of gas probes to avoid introducing contaminants into a borehole. Equipment placed into the boring will be properly decontaminated before use at the site and between boreholes. Gas probe borings will have an inside diameter at least four inches. The borings will be drilled with 2 1/4 inch inside diameter (minimum) hollow stem augers. Drilling and gas probe construction will be done under the on-site supervision of a qualified engineer or geologist who will also prepare the boring logs and gas probe installation diagrams.

Construction of Gas Probes

Gas probe screens and risers will be constructed of schedule 40 polyvinyl chloride (PVC). Joints, caps, and end plugs are to be secured threads with Teflon tape, or force fittings. Solvents and glues or other adhesives will be prohibited. Caps will be fitted with ports that allow measurement of explosive gas concentrations, pressure and water level. The inside diameter of each gas probe screen or riser pipe will be nominally one inch. A permanent mark will be made at the top of the riser pipe to provide a datum for subsequent water level measurements.

Gas probe screens will be factory constructed nonsolvent welded slotted screens. The slot size of the screen will be compatible with the sand pack gradation. Water table variations, site stratigraphy, and groundwater flow will be considered in determining the screen length, materials, and position.

The filter pack surrounding the gas probe screen will consist of clean, inert, nominal 3/8 inch diameter filter material. The filter pack will be placed in the annular space around the gas probe and extend two feet above the top, and six inches below the bottom, of the

screen. The sand pack will be checked for proper placement. A finer grained filter pack material six inches thick will be placed at the top of the filter pack between the filter material and the bentonite seal.

Bentonite will be placed above the sand pack to form a seal at least one foot thick. If pellets or chips are used, sufficient time will be allowed for hydration of the bentonite prior to emplacement of overlying materials.

Grout of cement/bentonite will fill the remaining annular space to the surface seal. The grout mixture will be placed using a tremie pipe. Auger flights or casing will be left in the hole before grouting to prevent caving.

A protective steel casing, at least two inches larger in diameter than the gas probe casing, will be placed over the gas probe casing and secured in a surface seal. A distinctive, readily visible marker will be permanently affixed to the protective casing or near the gas probe to identify the gas probe number. A drain hole will be drilled at the base of the protective casing. The annulus of the protective casing will be filled with gravel.

A concrete surface seal designed to last throughout the planned life of the gas probe will be constructed. Any damaged or deteriorated surface seals will be reported to the department and repaired or replaced in an appropriate manner.

Survey

The locations and elevations of the new gas probes will be surveyed to obtain their location and plotted on a map. The vertical location of the ground surface and the mark made on the top of the gas probe will be accurately measured to the nearest 100th foot.

Geologic Sampling

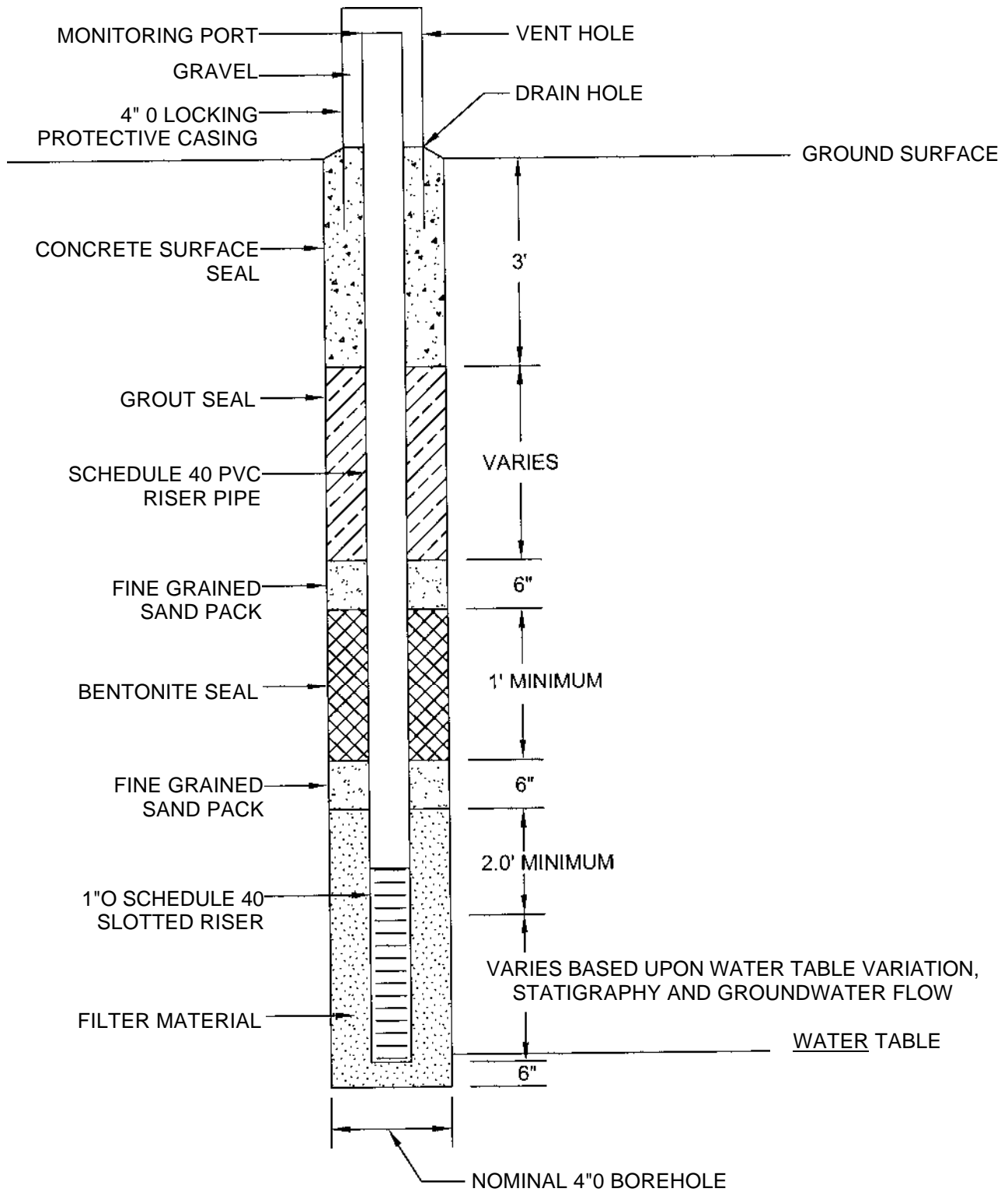
Overburden will be sampled continuously to the bottom of the boring. Soil borings will be sampled using the split spoon method. Samples will be retained in labeled glass jars. Samples will be securely stored and accessible throughout the life of the facility.

Logs

Drilling logs will be provided to NYSDEC for each soil boring. These logs will provide soil classification according to the Unified Soil Classification System (USCS). The USCS visual method will be used on all samples supplemented by the USCS laboratory tests on a representative number of samples from each stratigraphic unit and each screened interval. Logs also will contain a description of matrix and clasts, mineralogy,

roundness, color, appearance, odor, and behavior of materials using an appropriate descriptive system. A clear description of the system used will be included with the logs. Gas probe logs will contain drilling information as observed in the field including; moisture content; location of the water table during drilling, water loss during drilling; depth to significant changes in material and rock; sample recovery measured in tenths of a foot; hammer blow counts, and other pertinent comments; the method of drilling, and anomalous features such as gas in the gas probe.

Gas probe completion logs will contain a diagram of the completed probe, pertinent details on construction, a description of the materials used, and elevations of gas probe features.



**WASTE
MANAGEMENT**

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NEW YORK

TYPICAL GAS
PROBE DETAILS
DWG. NO. gas_probe.dwg
FIGURE A