Groundwater Monitoring for Underground Storage Tanks

Overview

When properly installed and performed, groundwater monitoring (GM) is an acceptable leak detection method for underground storage tanks (USTs) and piping that were installed prior to September 15, 2010 in Virginia (9VAC25-580-160.6). This fact sheet provides a brief overview of how to conduct the method, as well as required recordkeeping.

How does groundwater monitoring (GM) work?

- This method involves inspecting monitoring wells, which are strategically placed around the underground storage tank (UST) and/or associated piping, for the presence of petroleum floating on the groundwater surface.
- GM can be conducted manually by using a bailer to collect and inspect groundwater samples, or by using a dipstick with water- and petroleum-finding paste. Alternatively, GM can be conducted continuously with electronic probes that can detect the presence of petroleum on the groundwater.

Will groundwater monitoring work for my UST system?

- Groundwater monitoring can meet release detection requirements for USTs and piping installed prior to September 15, 2010. *(Note: all pressurized piping systems must also have automatic line leak detectors.)*
- A site assessment is required to determine whether the product type, groundwater depth and flow direction, monitoring well placement and construction, and general geology (e.g., soil/backfill permeability) of the site will support groundwater monitoring. **This can only be done by a trained professional**. All groundwater monitoring site assessments performed after January 1, 2018, must be signed by a professional engineer or geologist.
    - GM cannot be used for products that easily dissolve in water, e.g., high-ethanol fuels (E85 and above).
- The monitoring device (handheld device or electronic probe) must be able to reliably detect the presence of 1/8 inch of free product floating on top of the groundwater in the monitoring wells.

Picture

What are the operational requirements?

- Conduct monitoring of each monitoring well at least every 30 days. Keep a monthly log including the name of the person taking measurements, the location of each well, and the date and observations for each well.
    - If conducting continuous monitoring, check the oil/water interface probe status. (Probe must be operated in accordance with manufacturer's instructions.)
    - If conducting manual monitoring, collect your liquid sample from the groundwater well and check for signs of petroleum (e.g., floating on top, odor).
    - If petroleum product is found floating on the groundwater in any well, **immediately** contact your service company to identify the source of the leak, empty the leaking tank/shut down the fuel grade of a leaking pipe, and report a release to DEQ (https://www.deq.virginia.gov/get-involved/about-us/contact-us).
- Annually assess the monitoring device. For bailers or dipsticks, visually inspect (e.g., for cracks, holes, worn off measurements) and replace equipment that is no longer functional/operable. For oil/water interface probes, test according to manufacturer's instructions or industry standard; keep a record of the testing method and results.

What records do I need to keep?

- A site assessment for groundwater monitoring must be maintained for as long as the method is used.
- At least the previous 12 months of monthly monitoring logs
- A visual inspection record of any handheld equipment, such as bailers and measuring devices (can be recorded on DEQ's *Annual Leak Detection Equipment Operability Check* form, Page 4)
- An annual test of any electronic sensors used for monitoring (and automatic tank gauge, if used), according to manufacturer's instructions or industry standard, including the testing method and results
- Written documentation of any maintenance or repairs of release detection equipment must be maintained for at least one year; DEQ recommends maintaining this documentation for as long as the method is used.

For more information:

- Contact the Office of Spill Response & Remediation at tank@deq.virginia.gov, or contact your regional DEQ Office: https://www.deq.virginia.gov/get-involved/about-us/contact-us