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Environmental Assessment



Environmental Assessment

Using GPR for borehole clearing

Environmental site assessments often require sites to be cleared for borehole drilling. In this example, GPR was used to map storage tank locations at the gas station to allow borehole soil sampling to be safely performed.

A gas station sale required an environmental site assessment. This site had known subsurface obstructions including buried utilities, old foundations, buried tanks and other possible buried debris. The goal of the assessment was to determine if hydrocarbons had leaked into the soil by conducting a borehole soil sampling program.

GPR is commonly used prior to such borehole programs to identify areas clear of subsurface obstructions. Clearing programs will often use multiple methods. Metal pipes and cables are often identified using traditional electromagnetic tracking techniques.

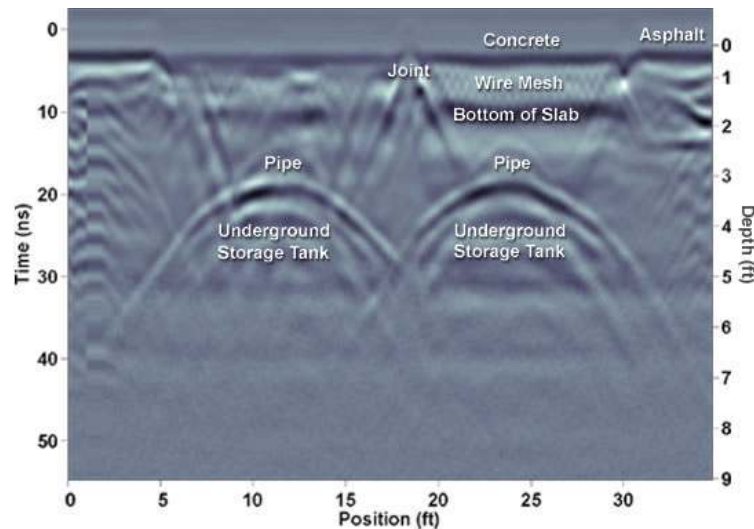
Scanning the area with GPR provides the benefit of detecting both the metal pipes and cables as well as non-metallic structures. As a result, areas of disturbed soil, undocumented utilities, and storage tanks can be identified.

A Noggin® 250 SmartCart® system was used during this investigation. The GPR cross-section below shows the response from two buried tanks located under a concrete pad plus the presence of some of the buried product pipe.

Once all of the subsurface features were located, borehole locations were selected in favorable areas.

GPR is a useful tool for planning borehole locations as part of environmental and geotechnical investigations.

The normal approach is to scan over the area with GPR, much like mowing the grass. Any localized changes are immediately visible on the real-time display and can be immediately marked out. While GPR cannot uniquely identify the type of target, as-built drawings and records plus onsite visual observations can usually provide this information. Performing a GPR survey at this gas station ensured that the required borehole sampling program could be executed safely.



Example of a GPR cross section that shows two underground fuel tanks beneath a concrete slab and associated product piping.

Results & Benefits

Planning the location of boreholes is a very common geotechnical problem. This case study illustrates the use of GPR to identify underground obstructions and define clear zones for borehole drilling.

The benefits of GPR include:


- Very quick deployment on site.
- Immediate visual response with depth estimate.
- Detection of all manner of buried obstructions.
- Complements other techniques such as EM induction and magnetics.
- Inexpensive, fast and simple.

[Click here to learn more about Noggin® GPR](https://www.sensoft.ca/products/noggin/overview/) < <https://www.sensoft.ca/products/noggin/overview/> >



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