Sensors & Software

VERIFYING GAS LINE LOCATION

A buried utilities case study

Overview

Verifying the location of buried utilities is a common use of GPR. Gas lines are particularly important targets owing to the dangerous nature of the material carried. In many cases the gas piping is plastic. This study compares use of traditional electromagnetic locating and GPR for a metal gas pipe.

Problem

Many jurisdictions mandate 'call before you dig'. The buried utility owners must verify the location of buried plant in the proposed 'dig area' (usually pipes and cables) using two means. Company records are normally available which indicate if there is buried plant in the area and, if so, give information about size, composition, depth of burial and alignment. the second verification is normally an in filed locate.

GPR solution

This case study involved locating a gas pipe adjacent to a school. The database record indicates a 51.0 mm diameter metal pipe located at a depth of about 1.1 m running beneath the parking lot.

Description	Street Address	Material	Diameter	Depths	Cover Material
Port Credit Secondary School	70 Mineola Road East, Mississauga	Likely steel	2 inch	3' 6"	sand

Typical database record indicating 51.0 mm diameter metal pipe located at a depth of about 1.1 m running beneath a parking lot.

The anticipated location was marked onto a Google Earth image as shown.

The yellow line shows the anticipated location of the gas pipe.

Using the alignment indicated by the database, GPR scanned across the alignment looking for characteristic pipe-like responses. Using the standard 'locate and mark' process of pushing the LMX100 GPR across the alignment and then backing to place a mark on the ground, the pipe was tracked across a parking lot adjacent to the school.

Traditional electromagnetic methods confirmed that the GPR was tracking the gas pipe.

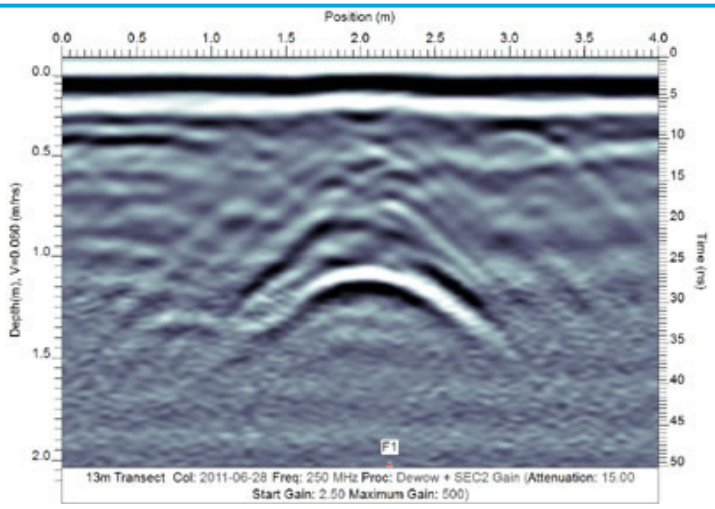
The example GPR transect shows the classic inverted V pipe response. The mark at the bottom of the GPR record indicates the determined location. The excellent agreement between the GPR responses and the EM responses confirmed the GPR successfully verified the location of the pipe. Typically, the features aligned in location within 10 to 15 cm.

Results & benefits

GPR for buried utility verifying has many benefits. Major factors are:

- GPR is self-contained and does not require hooking up to the utility.
- GPR will sense both metallic and non-metallic structures.
- GPR can even sense the disturbance in the soil associated with the utility burial.
- GPR is now simple, easy to use and affordable.

GPR responses vary greatly depending on the target being sought and the host material. GPR response variability can be challenging to new GPR users. When learning about GPR, the best practice is to review several similar case studies to develop an understanding of variability. Check for other insightful information on the resources tab to learn more. Also use info@gprlocates.com to tap into Sensors & Software's technical knowledgebase.



Example GPR transect with the classic inverted V pipe response clearly visible. The F1 mark at the bottom of the GPR record indicates the tracer wire location.

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