ENVIRONMENTAL PROBING INVESTIGATIONS, INC.

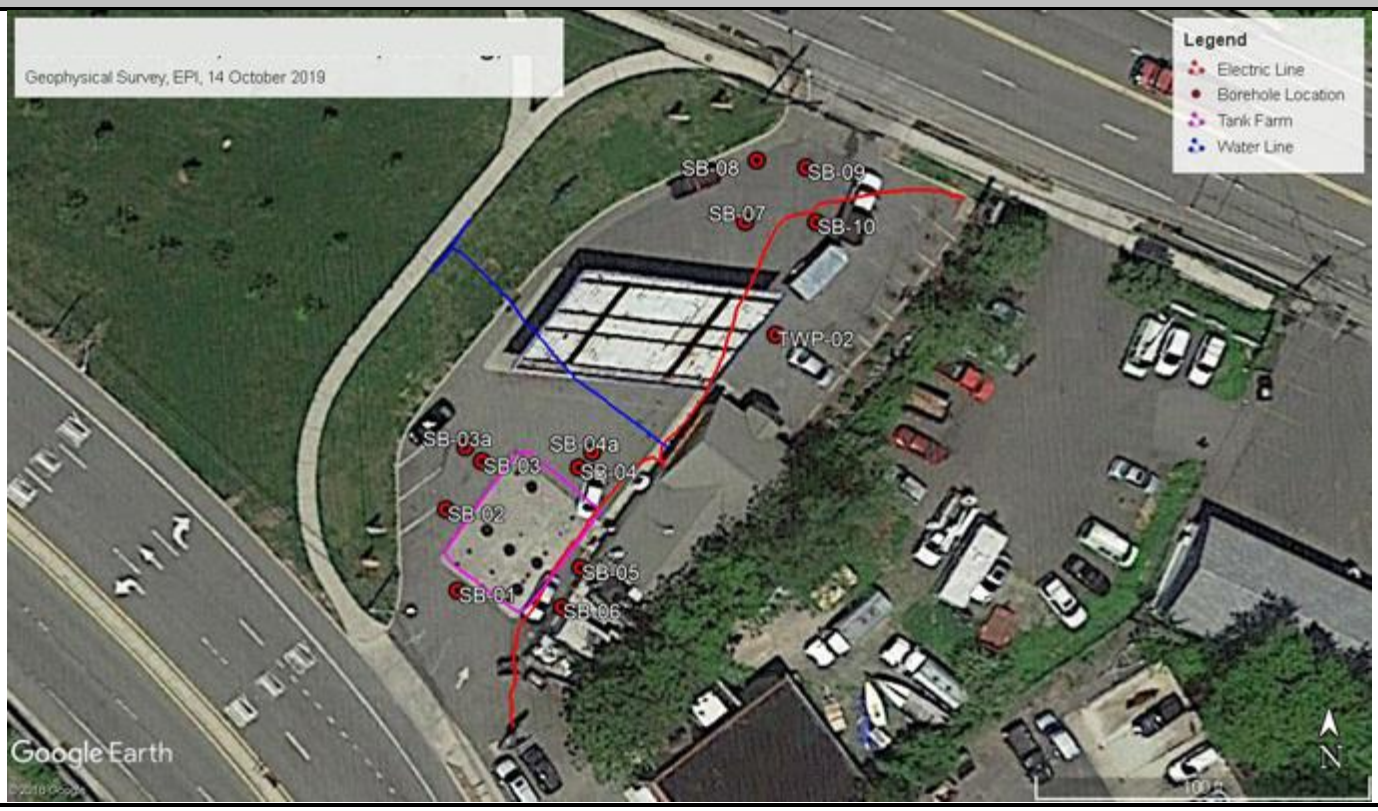
833 MONMOUTH ROAD
CREAM RIDGE, NJ 08514
609.758.9000

SUBSURFACE SURVEY REPORT

DATE	October 14, 2019	**CLIENT**	
WEATHER	Sunny, 60s	**PROJECT NAME**	
EPI Geophysicist	Paul McLeod	**PROJECT ADDRESS**	

EQUIPMENT USED

GPR: GSSI SIR-3000 RADAR SYSTEM- 400 MHz antenna	**X**
RADIO FREQUENCY (RF) LINE TRACING: VIVAX/METROTECH – vLOCPro2	**X**
TRIMBLE Geo7X GPS	**X**



PROJECT SCOPE

Environmental Probing Investigations, Inc. (EPI) was contracted by ABC company to map utilities and clear a series of borehole locations at a gas station.

ENVIRONMENTAL PROBING INVESTIGATIONS, INC.
833 MONMOUTH ROAD
CREAM RIDGE, NJ 08514
609.758.9000

Geophysical Survey Results

The GPR survey made use of a GSSI SIR-3000 together with a 400 MHz antenna mounted on a cart. The method involves the transmission of microwave-like signals directly down into the ground and the reception of those same signals as they reflect back up to the receiver. The method works best in dry, sandy, resistive soils with an approximate depth of penetration of around 8'. In damp, clayey, conductive soils the depth of penetration may be as little as 2-3'. The soils at this particular project site allowed a signal penetration down to a depth of around 5-6'. Survey lines were run in at least two perpendicular directions at a line spacing of around 4'.

Line Tracing was undertaken with a Vivax-Metrotech system, specifically the Loc-10Tx (10 Watt) transmitter and a VLocPro2 receiver. The system works on at least two modes including a passive mode where the receiver detects any lines carrying current as well as an induction/conduction mode. In the induction/conduction mode, a specific radio frequency is transmitted into a cable or pipe (either through direct connection or through inductive coupling) and that same frequency is then detected with the receiver to trace the location of the buried pipe or cable. Electric and water lines were mapped using line tracing, while fuel lines were located indirectly by detecting their trenches with GPR.

Upon completion of the geophysics fieldwork, all of the results were surveyed using a Trimble Geo7X. The uncorrected location data from this instrument has an accuracy of approximately 2', but correction with Pathfinder software increases the accuracy to approximately 1'.

Limitations

EPI completes non-intrusive geophysical surveys using equipment and techniques consistent with the standards of the subsurface utility mapping industry. However, there can be no guarantee that every target will be detected at a particular site. Sub-surface conditions may prevent some or all geophysical methods from detecting a particular target. Targets that are non-metallic or deep, as well as areas that are paved or covered with re-enforced concrete may difficult to locate.

Every reasonable effort was made to locate all systems of interest whether indicated on records available to us or not, but EPI does not guarantee that all existing utility systems can or will be detected. The results of this investigation should only be used as a tool and should not be considered a guarantee regarding the presence or absence of USTs or piping.