



Ground Penetrating Radar Systems, Inc.
Underground Utilities Investigation
Building 7, Oxygen Farm – VA Hospital
Alexandria, LA
November 21, 2017



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Department of Veterans Affairs

Attn: Jerrell W. Poole

Phone: (318) 466-2706

Email: Jerrell.poole@VA.gov

**Re: Underground Utilities Investigation
 Building 7, Oxygen Farm – VA Hospital
 Alexandria, LA**

Dear Mr. Poole:

PROJECT INFORMATION

GPRS appreciates the opportunity to work with the VA on this project. GPRS understood the scope of this project to be locating known and unknown underground utilities in the area of the Building 7, Oxygen Farm project at the VA Hospital in Alexandria, LA. Ground Penetrating Radar (GPR) and Radio Detection (RD) were used to scan the areas shown within this report.

On the following pages, you will find additional information regarding the equipment used to perform this investigation, the survey process executed on site, and information on the results of the survey. Additionally, there are supporting data screen shots and photographs of the areas surveyed for reference.

EQUIPMENT

The following equipment was used on this project:

- GSSI GPR Unit
 - This device transmits an electromagnetic pulse through the ground and displays the reflection(s) onto the SIR-3000/4000 head unit for interpretation.
 - 350/400 MHz antenna
 - GPR signal penetration up to 7'
 - Depth penetration is greatly determined by the soil conditions and ground covering present.
- RD-8000/8100 Locator
 - This device detects live power and RF signals underground.
 - Locates electrical or telephone lines even if they are below the minimum size requirements to be detected by GPR.
 - Detects utilities via induction or conduction with an exposed or known surface of the utility.

This specific antenna and equipment was created and calibrated specifically for locating items such as but not limited to underground utilities, UST's, structural steel, conduit, piping, and other underground anomalies (i.e. voids). This equipment represents one of the latest technologies available from GSSI.

SURVEY PROCESS/RESULTS

GPRS covered all accessible and requested areas of the site as indicated herein and within the supplemental drawings provided with this report. The scans were performed generally in a grid pattern (North-South and East-West), and our equipment was set up and initialized per each type of ground covering. GPR/RD scans were placed roughly on 2'-4' centers in the highly suspect areas and on 6'-8' centers throughout the rest of the project site. This approach allowed for the maximum amount of coverage while still remaining time sensitive to the project. Further, all existing utilities which surfaced near the areas scanned were also induced using a tone produced by the RD device as a supplemental tool to GPR where applicable.

The areas surveyed revealed multiple anomalies/reactions that were characteristic of underground utilities during this investigation. The areas scanned were differentiated by placing scans over areas of suspected utilities versus areas suspected to have no utilities present as well as previous experience throughout the region. The resulting data allowed as a reference point for this particular project. Additionally, select field data and site photographs were retained for this report for reference.

It is our estimate that we were able to penetrate to a depth of approximately 4' using the 350/400 MHz antenna GPR on this project based on the ground coverings and soil conditions encountered.

LIMITATIONS

Please keep in mind that there are limitations to any subsurface investigation. The equipment may not achieve maximum effectiveness due to soil conditions, above ground obstructions, reinforced concrete, and a variety of other factors. No subsurface investigation or equipment can provide a complete image of what lies below. Our results should always be used in conjunction with as many methods as possible including consulting existing plans and drawings, exploratory excavation or potholing, visual inspection of above ground features, and utilization of services such as Dig Alert/Underground Service Alert.

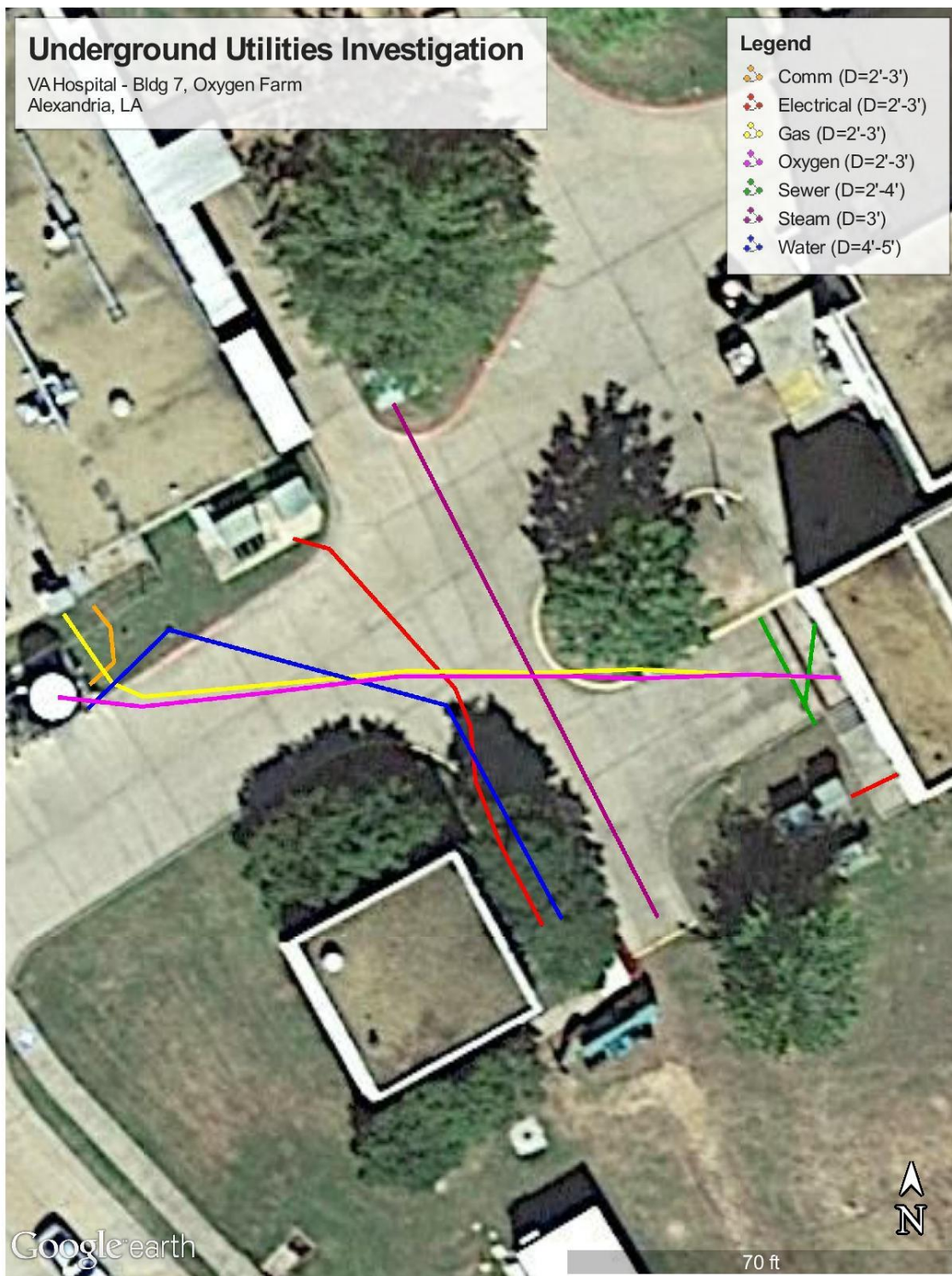
(Please continue to the following pages.)

Underground Utilities Investigation

VA Hospital - Bldg 7, Oxygen Farm
Alexandria, LA

Legend

-  Comm (D=2'-3')
-  Electrical (D=2'-3')
-  Gas (D=2'-3')
-  Oxygen (D=2'-3')
-  Sewer (D=2'-4')
-  Steam (D=3')
-  Water (D=4'-5')

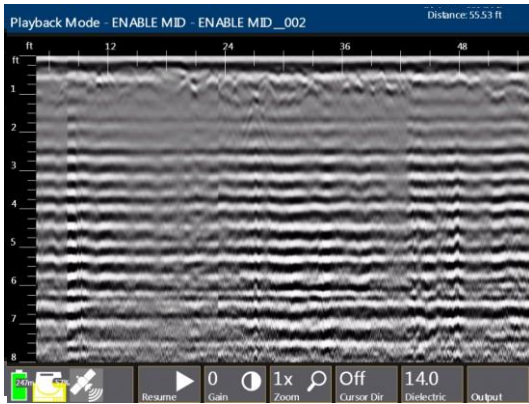


UTILITIES MAP

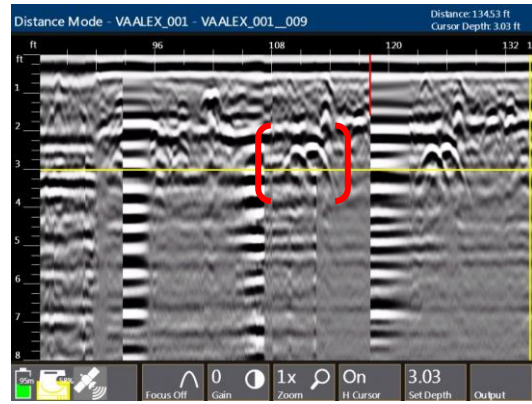
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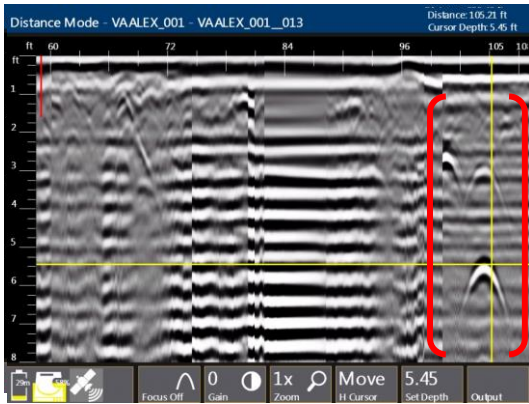
**SUBSURFACE
SCANNING
SOLUTIONS**



GPR data screenshot taken scanning at *a previous* project site with no apparent utility-like anomalies. This type data was used throughout the scanning process as a reference to this particular project.



GPR data screenshot with multiple utility-like anomalies shown for comparison to that of the data provided with an apparent utility-like anomaly.



Additional GPR data screenshot with additional utility-like anomaly for reference.



Typical Field Markings



Typical Field Markings



Typical Field Markings

GPR DATA AND SITE PHOTOS

Underground Utilities Investigation
Bldg 7, Oxygen Farm – VA Hospital
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Typical Field Markings



Typical Field Markings



Typical Field Markings



Typical Field Markings



Typical Field Markings

GPR DATA AND SITE PHOTOS

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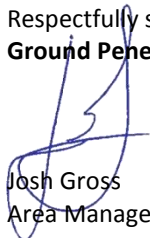
CONCLUSION

Ground Penetrating Radar Systems, Inc. has been in business for over 16 years and our primary function is to provide answers to our customers concerns which lie below the surface. As a result, GPRS has performed concrete scanning, void detection, UST locating, and underground utility locating projects for over 30,000 customers throughout the United States, the Caribbean, and Canada. Our technicians are educated in a world-class training facility and spend ample time with an experienced GPRS Team Member to ensure that they are able to perform our customer's locating needs at the highest level of competency and professionalism. Our experience, our commitment to providing subsurface answers, and our pursuit of excellence in all our provided services pledges confidence that GPRS has provided similar answers with regards to the needs of this project.

The results within this report are based on the field findings from the GPR investigation conducted. The data included within only represents a portion of the data collected from this site as a representative sample. Based on the accessible areas scanned, GPRS believes underground utilities to be present in the areas scanned as shown within the aerial map, supporting data, and photographs within this report. It should be noted that some underground utilities (i.e. small irrigation lines, utilities deeper than effective depth lines, PVC/terra-cotta lines, etc.), in addition to those located within the area scanned, may have not been located due to soil conditions, ground covering, etc. Additionally, due to some likely non-conductive soils some false-positive readings are likely to have been encountered. Given these limitations, it is our standard practice to mark out all anomalies and reactions when found and where present. GPRS's standard procedure is to over-mark an area to ensure the highest levels of safety and to limit potential shutdown or service interruptions. Additional exploration measures may be required in order to confirm or deny the presence of these anomalies and reactions (i.e. probing, limited excavations, daylighting, etc.).

GPRS appreciates the opportunity to offer our services, and we look forward to continuing to work with you on future projects. Please feel free to contact us for additional information or with any questions you may have regarding this GPR Investigation.

Respectfully submitted,
Ground Penetrating Radar Systems, Inc.



Josh Gross
Area Manager | Gulf Coast Region
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