

## **APPENDIX B GEOPHYSICAL REPORT**



***GEOPHYSICAL INVESTIGATION REPORT***

SITE LOCATION:

**60 Alexander Street,  
Yonkers, New York**

PREPARED FOR:

**PW Grosser Consulting  
630 Johnson Avenue, Suite 7  
Bohemia, New York**

PREPARED BY:

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738 Front Street  
Catasauqua, PA 18032

**July 29, 2015**

Delta Geophysics, Inc. (Delta) is pleased to provide the results of the geophysical survey conducted at 60 Alexander Street, Yonkers, New York.

## **1.0 INTRODUCTION**

On July 22<sup>nd</sup>, 2015 Delta Geophysics personnel performed a limited geophysical investigation at 60 Alexander Street, Yonkers, New York. The area of interest was all accessible areas throughout the property, including the interior of two onsite service garages. Subsurface conditions were unknown at the time of survey.

## **2.0 SCOPE OF WORK**

The survey was conducted to investigate the subsurface for anomalies consistent with underground storage tanks (UST). A secondary objective was to locate and mark detectable underground utilities for the property.

## **3.0 METHODOLOGY**

Selection of survey equipment is dependent site conditions and project objectives. For this project the technician utilized the following equipment to survey the area of concern:

- Geophysical Survey Systems Inc. SIR-3000 cart-mounted Ground Penetrating Radar (GPR) unit with a 400 Mhz antenna.
- Radiodetection RD7000 precision utility locator.
- Fisher M-Scope TW-6 pipe and cable locator.

Ground penetrating radar (commonly called GPR) is a geophysical method that has been developed over the past thirty years for shallow, high-resolution, subsurface investigations of the earth. GPR uses high frequency pulsed electromagnetic waves (generally 10 MHz to 1,000 MHz) to acquire subsurface information. Energy is propagated downward into the ground and is reflected back to the surface from boundaries at which there are electrical property contrasts. GPR is a method that is commonly used for environmental, engineering, archeological, and other shallow investigations.

The GSSI SIR-3000 GPR can accept a wide variety of antennas which provide various depths of penetration and levels of resolution. The 400 MHz antenna can achieve depths of penetration up to about 20 feet, but this depth may be greatly reduced due to site-specific conditions. Signal penetration decreases with increased soil conductivity. Conductive materials attenuate or absorb the GPR signal. As depth increases the return signal becomes weaker. Penetration is the greatest in unsaturated sands and fine gravels. Clayey, highly saline or saturated soils, areas covered by steel reinforced concrete, foundry slag, of other highly conductive materials significantly reduces GPR depth of penetration.

The GPR was configured to transmit to a depth of approximately 10 feet below the subsurface, but actual signal penetration terminated at approximately 1-3 feet below ground surface (bgs). The limiting factor was signal attenuation from near surface soils and reinforced concrete.

The RD7000 precision utility locator uses radio emission to trace the location of metal bearing utilities. This radio emission can be active or passive. Active tracing requires the attachment of a

radio transmitter to the utility, passive tracing uses radio emissions that are present on the utility. Underground electrical utilities typically emit radio signals that this device can detect.

The TW-6 is designed to find pipes, cables and other metallic objects such as underground storage tanks. One surveyor can carry both the transmitter and receiver together, making it ideally suited for exploration type searches of ferrous metal masses. Metal detectors of this type operate by generating a magnetic field at the transmitter which causes metallic objects in the subsurface to generate a secondary magnetic field. The induced secondary field is detected by the receiver, which generates an audible tone equal to the strength of the secondary field.

#### **4.0 SURVEY FINDINGS**

All accessible areas throughout the property were examined during this investigation. Each location was examined with the RD7000 for potential subsurface utilities then surveyed with GPR and TW-6 for other potential anomalies. Based on the data gathered, one metallic anomaly was detected on the subject property.

##### *Metallic Anomaly*

The metallic anomaly was located with TW-6 and confirmed with GPR. The anomaly measures approximately 9 feet by 6.5 feet. It is located in the southeast portion of the parking lot approximately 13 feet from the fence. GPR transects over this area imaged a cylindrical feature at 3 feet bgs. The metallic anomaly is a potential UST.

Delta observed two suspect copper lines protruding from the ground in the service garage of the original building. The area surrounding the lines was full of automotive parts and equipment and was not able to be surveyed for potential anomalies. A faint signal was detected with the RD 7000 immediately outside the building adjacent to the suspect lines. The entire area contains reinforced concrete which limited the use of both the TW-6 and GPR. GPR signal penetration throughout the area terminated at less than 1 foot bgs.

##### *Utility Survey*

Delta performed a utility survey across the client specified area. The following utilities were identified: electrical conduits, water, storm sewer, sanitary sewer, and product piping. All utilities were marked onsite with appropriate colors. Anomalous features, product lines, and unknown utilities were marked onsite in pink paint.

The floor drains located in the large service garage were traced to the oil / water separator. Due to limited space around the oil / water separator Delta was not able to detect an outlet sewer line.

A site map (072215) is included with all located subsurface features.

#### **5.0 SURVEY LIMITATIONS**

GPR depth of penetration was limited to approximately 1-3 feet bgs. The limiting factor was due to conductive soils and reinforced concrete. Parked vehicles and automotive parts / debris were located in the northeast portion of the property which prevented Delta from surveying the area for potential anomalies.

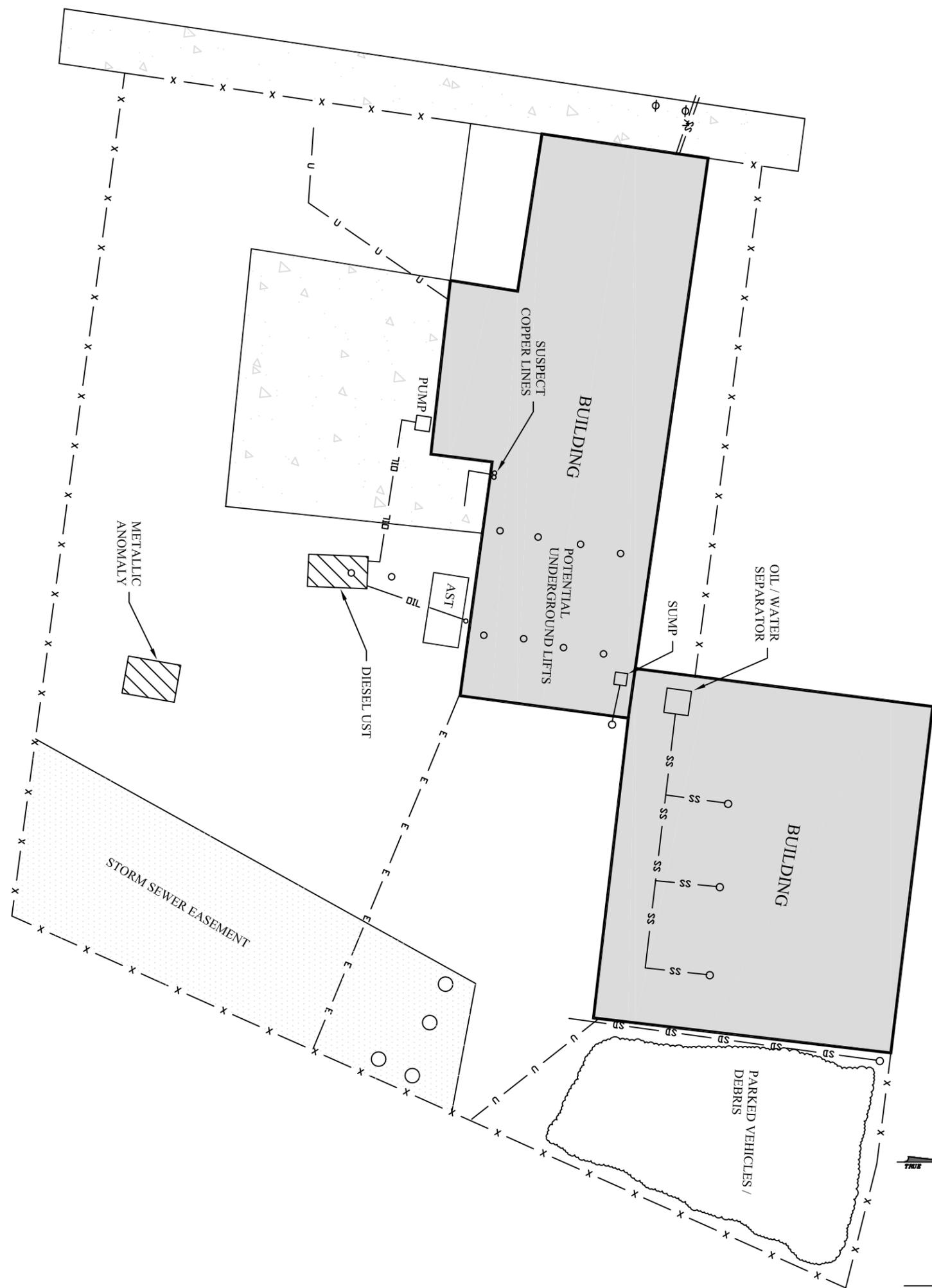
## **6.0 WARRANTIES AND DISCLAIMER**

As with any geophysical method, it must be stressed that caution be used during any excavation or intrusive testing in proximity to any anomalies indicated in this report. In addition, the absence of detected signatures does not preclude the possibility that targets may exist. To the extent the client desires more definitive conclusions than are warranted by the currently available facts; it is specifically Delta's intent that the conclusions stated herein will be intended as guidance.

This report is based upon the application of scientific principles and professional judgment to certain facts with resultant subjective interpretations. Professional judgments expressed herein are based on the facts currently available within the limit or scope of work, budget and schedule. Delta represents that the services were performed in a manner consistent with currently accepted professional practices employed by geophysical/geological consultants under similar circumstances. No other representations to Client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any report, document, or otherwise.

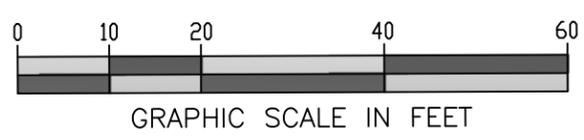
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LEGEND

- VALVE/DRAIN COVER
- MANHOLE COVER
- ⊕ UTILITY POLE
- ☀ LIGHT POLE
- ☀ FIRE HYDRANT
- E — ELECTRIC
- G — GAS
- T — TELECOMMUNICATION
- SD — STORM SEWER
- SS — SANITARY SEWER
- W — WATER
- U — UNKNOWN UTILITY
- X — FENCE



NOTES:  
 This site plan was produced from data positioned by differential GPS measurements collected in the field. Due to the errors normally present in DGPS data, this document is not intended or represented to be of survey precision. Caution should be used in all field measurements based on this site plan.  
 As with any geophysical method, it must be stressed that caution be used during any excavation or intrusive testing in proximity of any anomalies indicated in this document. The absence of detected signatures does not preclude the possibility that targets exist. The geophysical data and results presented in this site plan are based upon the application of scientific principles and professional judgements to certain facts with resultant subjective interpretations. Professional judgements expressed herein are based on the facts currently available within the limits of the existing data, scope of work, budget, and schedule.  
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DATE	7/22/15
SCALE	1" = 20'
DWG NO.	072215
SHT NO.	1 OF 1
PROJECT.	

**GEOPHYSICAL INVESTIGATION**  
**60 ALEXANDER STREET, YONKERS, NEW YORK**  
 FOR  
**PW GROSSER**



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