RESULTS OF GROUND PENETRATING RADAR SURVEYS IN THE FT. MYERS – DUNBAR AREA

Prepared for: Florida Department of Environmental Protection's South District

Prepared by: Florida Geological Survey
Clint Kromhout, P.G. #2522
Casey Albritton, G.I.T. #18

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Results of Ground Penetrating Radar Surveys in the Ft. Myers – Dunbar Area

Introduction

Purpose

At the request of the Department of Environmental Protection's (DEP) South District, the Florida Geological Survey (FGS) conducted ground penetrating radar (GPR) surveys in four sites in the Ft. Myers area, August 16 – 18, 2017. Three of the sites are in the incorporated town of Dunbar in central Ft. Myers south of State Road 82 and approximately 2.5 miles west of Interstate 75. The fourth site is located approximately 1 mile west of Interstate 75 on State Road 82, Figure 1. The goals of the GPR surveys are listed below:

GPR Sites and Goals:

- South Street – Lime Sludge Site (Ft. Myers - Dunbar)
  - Attempt to determine the thickness and lateral extent of the excavated zone of the lime sludge pits
- Residences surrounding South Street (Ft. Myers - Dunbar)
  - Attempt to determine if any buried objects or unknown excavations exist
- Auto Parts Salvage Incorporated (Ft. Myers - Dunbar)
  - Attempt to determine if any large buried metal objects are present on site at depth
- U-Pull & Save (Ft. Myers)
  - Attempt to determine the thickness of the concrete pad underlaying the site

Geology

Critical to all geophysical surveys is general understanding of the region's geology. Ft. Myers is generally underlain by complex mixtures of Plio-Pleistocene bedded sands, shells, clays, and carbonate rocks. The thicknesses and presence of these sediment layers vary over distance. Those variable sediments are typical of a historical shallow marine near-shore environment. The sediments comprise the regional surficial aquifer system and range in depth up to 60 feet.

Site History

According to DEP's South District, the Dunbar area of Ft. Myers was platted in the 1920s. The city blocks present within the Dunbar area reflect the original platting. Beginning in the late 1950s, lime sludge wastes were produced by a water treatment plant in the Ft. Myers area near Dunbar. Lime is typical filtering agent to remove contaminants from ground and surface waters for consumption. Arsenic, which is naturally found in the region's groundwater, was filtered out using lime. The lime sludge was then disposed of within a dug pit, the South Street site, Figure 2. According to DEP South District staff, the depth of the lime sludge is believed to be between 12 to 17 feet. Studies to evaluate to characterize the wastes on site, specifically aimed at investigating the site's arsenic, were conducted in 2007 and 2008. The groundwater quality on site has been monitored via six shallow monitoring wells since 2008.

Geophysical Investigation

Description of GPR technique

Ground penetrating radar, GPR, is a tool that uses pulses of electromagnetic energy in the form of radio waves to measure physical properties of the materials and structures below it. The GPR detects the radar signals as they reflect off subsurface materials and structures. The collection of those reflected radar

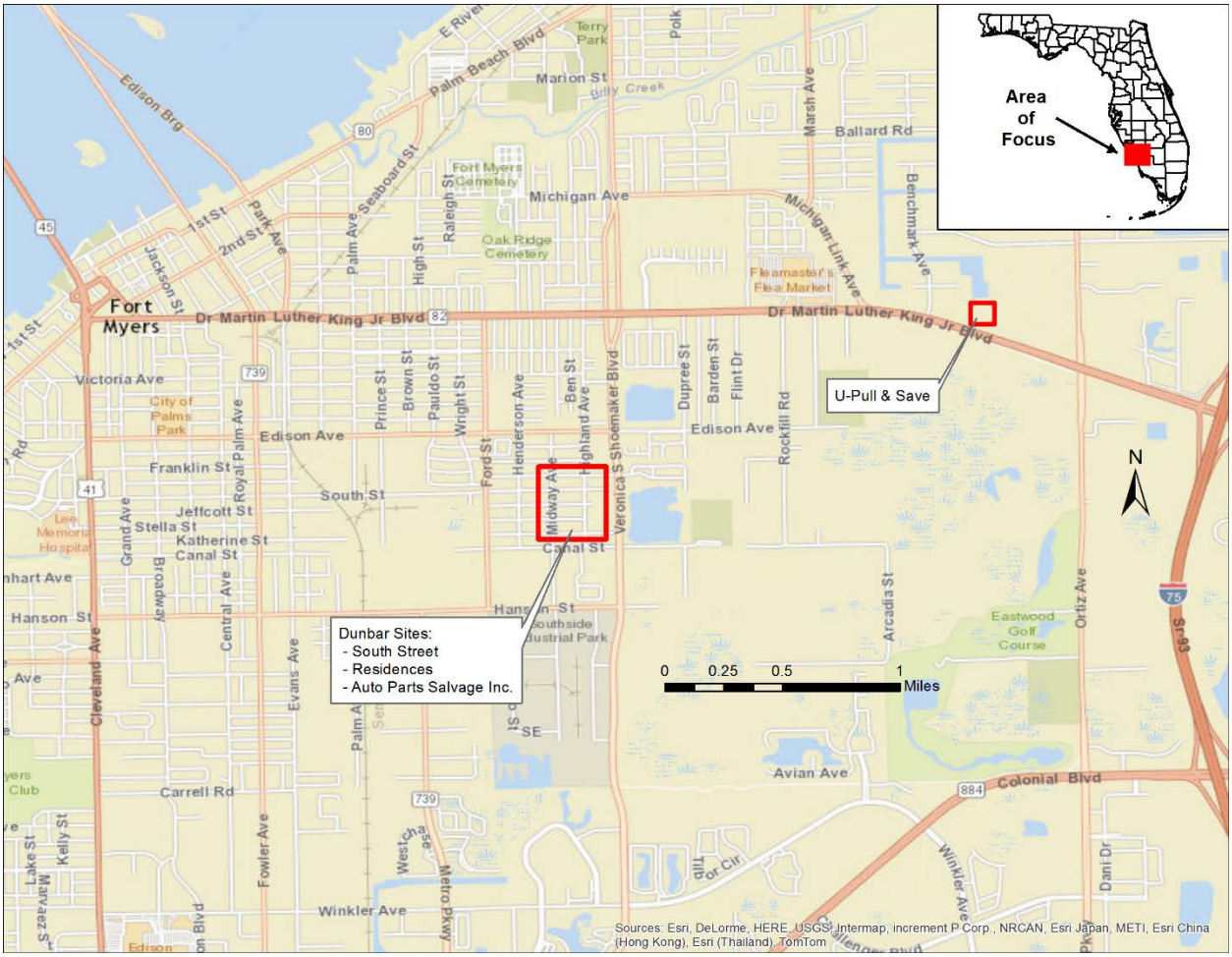


Figure 1. Ft. Myers and survey site locations

signals create an image called a radargram which can then be used to interpret what is seen in the subsurface.

GPR can be used to detect buried structures such as plastic, metal, or concrete utility pipes or metal objects like cables, barrels, or paint cans. GPR can be used to interpret geology, including identification of subsurface rock, sands, clays, saltwater – freshwater interface, or voids. GPR can be used to interpret areas where soil has been disturbed by excavation or back filling. GPR can be used to measure thicknesses of known objects such as road pavement or building foundations. When an object or horizontal reflector is imaged, but the GPR surveyor does not know what the reflector represents, that reflector is referred to as an anomaly. Identification of anomalies is a standard practice in GPR surveys.

GPR does not work everywhere. In areas where highly conductive materials or fluids exist, the radio waves cannot penetrate. Metals, clays, and saltwater are examples of materials through which the radio waves cannot pass.

The depth to which GPR can "see" is dependent upon the composition of the subsurface materials and antenna being used. The higher the frequency of the antenna, the shallower the penetration of the radio waves and the smaller the potential targets that can be imaged. The lower the frequency of the antenna the deeper the penetration of the radio waves and the larger the object must be to be imaged.

GPR equipment

The GPR equipment owned and operated by the FGS is manufactured by MALA Geoscience. The FGS owns four antennas: 50 MHz, 100 MHz, 250 MHz, and 500 MHz. The lower the frequency the antenna, the greater the detection depth, e.g., 50 MHz detects deep and 500 MHz detects shallow. For the purposes of this investigation, the FGS chose to use the 250 MHz antenna. In ideal geologic conditions, a 250 MHz antenna can penetrate and detect to a depth of approximately 30 feet. The GPR antenna, control unit, and GPS receiver (to record location) are mounted to a cart, constructed out of poly-vinyl chloride (PVC) for ease of deployment.

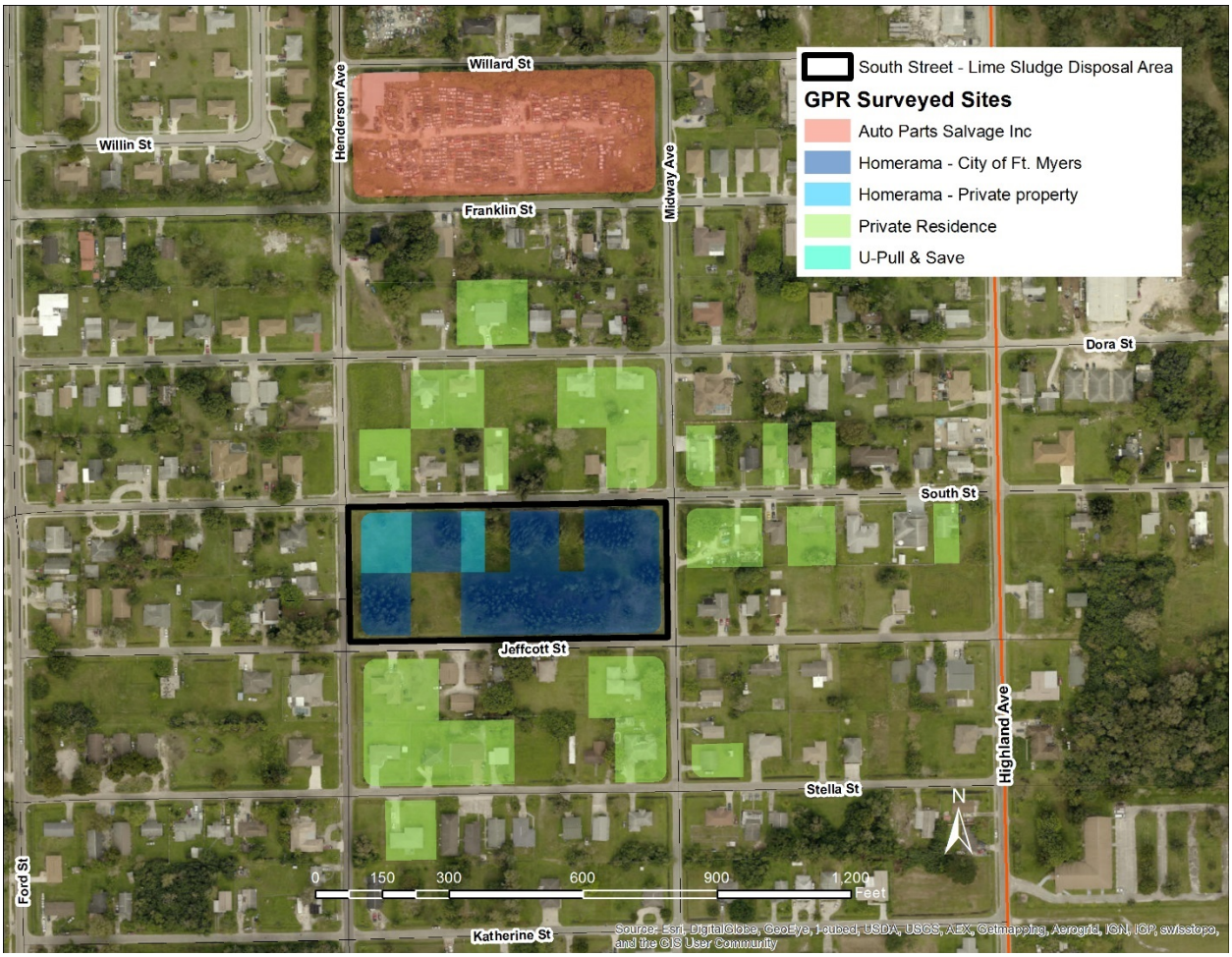


Figure 2. GPR surveyed sites in the Ft. Myers - Dunbar area

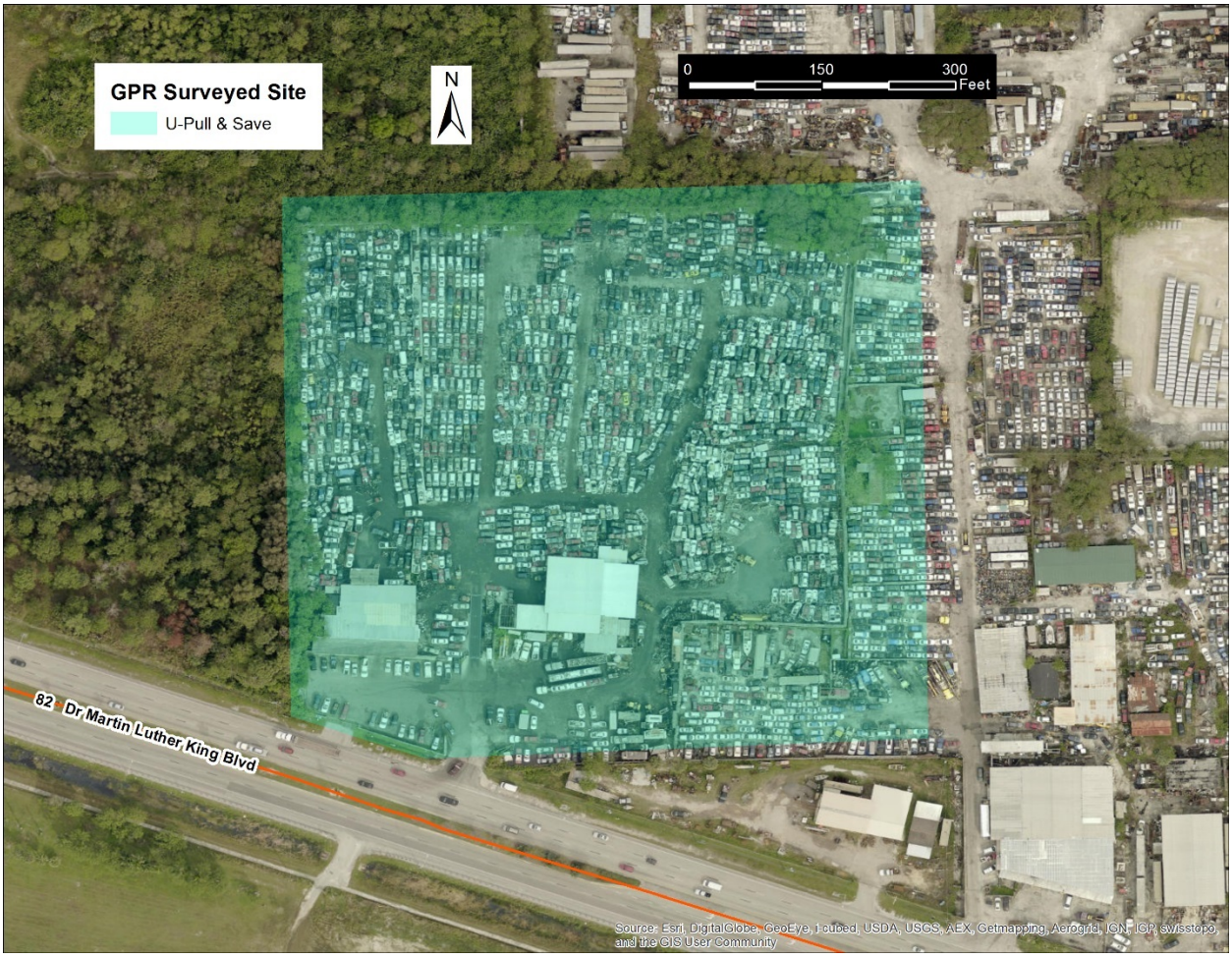


Figure 3 - U-Pull & Save GPR survey site

Method of data acquisition

GPR data are generally acquired by running transects. A transect is an imaginary line from which GPR data is acquired beginning at one end of the line and ending at the other. Along the way the GPR control unit records the electromagnetic waves reflections and stores them in the control unit's hard drive. To correlate those transects to the surveyed location, a GPS receiver operates simultaneously recording the location of the GPR while surveying. Coupling the GPR data with GPS locations allows for the GPR surveyors to identify the locations of any potential anomalies below ground and will allow for additional investigation at later date should a need be determined.

Method of data processing

Once collected, raw GPR data must be processed. Processing was completed using the GPR Slice © software. Radargrams, a graphical representation of GPR transects, are produced providing cross-sections of the subsurface reflections captured by the GPR antenna. Those radargrams are then interpreted.

The raw data are imported into GPR Slice © (Figure 4). The time window (ns) and Universal Transverse Mercator (UTM) coordinates are extracted from the raw data associated with each radargram. An average velocity is then set before processing filters are applied. We used a

conservative velocity of 0.10 m/ns because the surficial geology is primarily saturated calcareous sands with organics and other trace materials. This allows conversion from reflection velocity to depth along the vertical (Y) axis of the radargram. The horizontal (X) axis is lateral distance along the transect, with waypoints shown as labeled vertical lines.

The next post-processing step is to apply a series of filters to the data. The "batch gain-wobble" function is the first filter applied. It subtracts undesirable vibration signals from all radargrams. Next, a bandpass filter was applied to all radargrams to attenuate frequencies above ~450 MHz and below ~150 MHz, reducing noise from frequencies outside that range. This was followed by a filter that reduced background horizontal noise in the radargrams. At this point, radargrams have been processed and interpretation can begin.

Method of data interpretation

Interpretation was made only on radargrams that exhibited quality data. There can be multiple reasons why data quality can be low (see **Limitations** section below for explanation). Anomalies were chosen based on confidence that the anomaly represents a specific anomaly type. If multiple reflectors obscured features at depth, a conservative approach was taken and those potential artifact reflectors were not chosen as anomalies. Below are explanations for each type of anomaly identified.

Anomaly Types:

Type 1 – Utilities – Hyperbolic reflectors in the shallow subsurface were generally identified as possible utilities, especially in residential areas throughout the investigated areas, Figure 4. Often, water mains, stormwater pipes, and sewer lines were crossed during the data collection process and were noted in field observations. Strongly reflecting underground infrastructure has the potential to obscure data collected from beneath that anomaly, effectively limiting what can be "seen" below the feature.

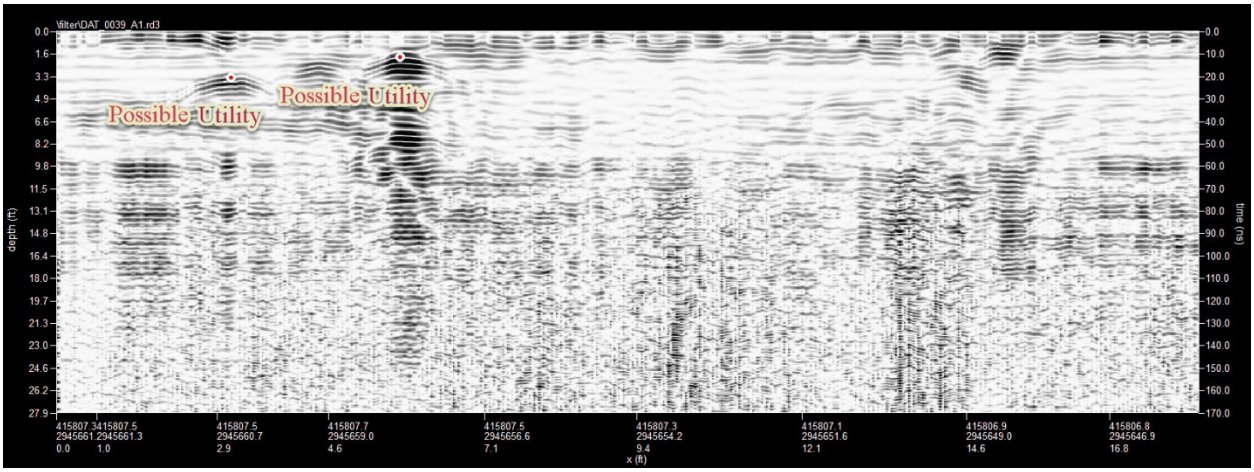


Figure 4 - Radargram with examples of identified possible utilities. The red dots mark tops of the strong reflectors interpreted as possible buried utilities. The dark horizontal signals below the strong reflector are radar echos, or repeats "ringing" signals from above.

Type 2 – Horizons – Reflections of subsurface horizons were encountered throughout the project site, as represented in Figure 5. As the radar wave passes through a different material, the velocity of the wave changes, faster or slower, relative to the material above. A lithologically distinct horizon can be inferred from the reflection. However, the degree of ground saturation and location of the water table can affect this interpretation. Examples of subsurface materials that can create horizons include, but are not limited to: sediment changes such as sand over clay, the top of unexcavated sediment below disturbed excavated sediment, foundation fill over original sediment, rock below sediment, and concrete above sediment.

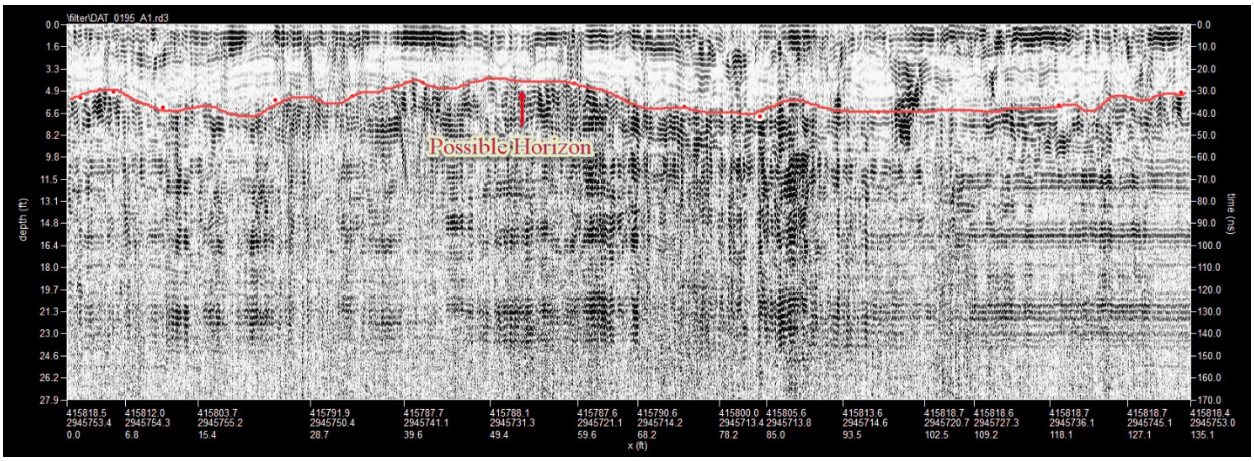


Figure 5 - Radargram with example of identified possible horizon. The red line marks top of an interpreted possible subsurface horizon.

Type 3 – Buried Objects – Potential buried objects in the subsurface of unknown origin were encountered throughout the project area, commonly represented in the radargrams as high amplitude reflectors found deeper than typical locations of utilities (Figure 6). Identification of these objects strictly based on GPR data is nearly impossible. The GPR data, rather, is a starting point for further investigation of these potential buried objects.

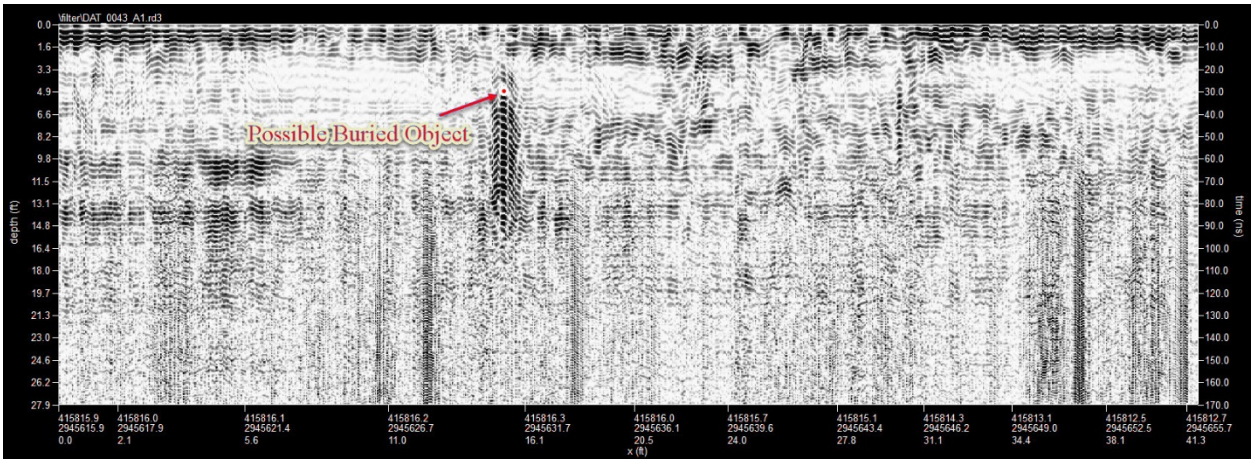


Figure 6 - Radargram with example of identified possible buried object. The red dot marks top of a reflector interpreted as a possible buried object.

Type 4 – Disturbed Areas – Potential disturbed areas were identified where the subsurface characteristics appeared to be altered with respect to natural deposition of the sediments (Figure 7). These represent possible excavated areas or areas within the project site that have subsurface vegetation that may be responsible for the disturbed ground.

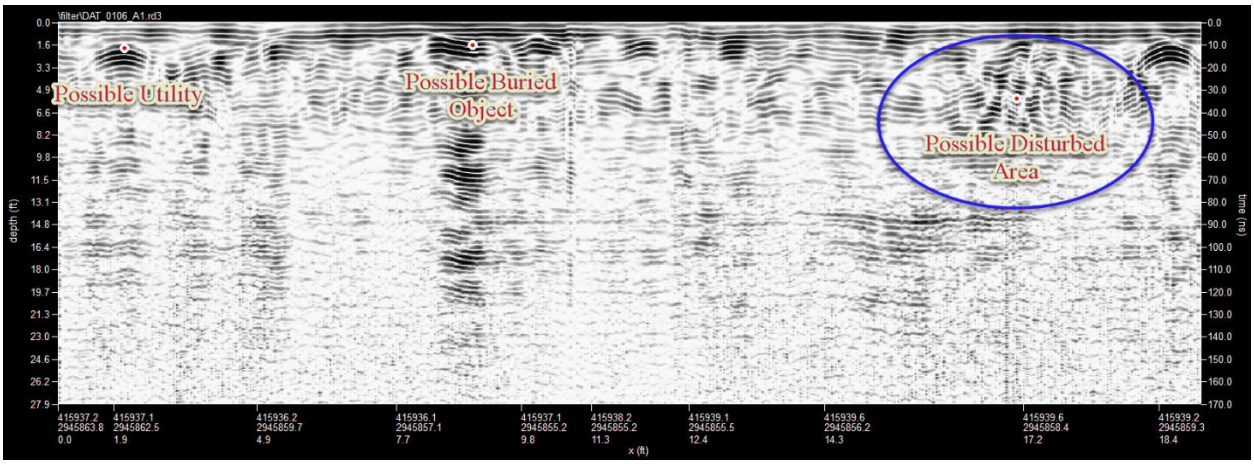


Figure 7 - Radargram with example of identified possible disturbed area. The blue circle with red dot indicates a series of reflectors interpreted as a possible disturbed area.

In summary, anomalies were interpreted using the criteria listed below. The anomalies are listed in order of qualitative confidence from highest to lowest:

- Possible utility – Anomalies characterized by high amplitude, hyperbolic reflectors. Usually located in the shallow (less than 3 feet) subsurface.
- Possible horizon – Anomalies characterized by moderate to high amplitude reflectors that continue laterally in the subsurface and represent a change in the composition of the subsurface material.
- Possible buried object – Anomalies characterized by high amplitude reflectors at depth (greater than 3 feet) that have no apparent surface expression.
- Possible disturbed area – Anomalies characterized by a range of reflection intensities with no apparent orientation that may be indicative of past excavation.

Limitations

The quality and depth of data acquired is highly dependent upon the electromagnetic wave's ability to penetrate through the subsurface sediments. The more conductive a material is the less likely an electromagnetic wave is to pass through it. Conductive sediments and fluids that attenuate, or absorb, the wave produce less or noisy data. Clays and brackish or salt waters are highly conductive and attenuate GPR waves. Freshwater moderately attenuates electromagnetic waves. Low-conductivity sediments, such as dry sand and rock allow for the GPR waves to travel deeper providing ample "clean" data.

On the South Street site, the lime sludge attenuated the GPR wave, not allowing meaningful data collection at depth. The region had been receiving an abundance of daily rainfall resulting in saturated ground conditions which moderately attenuated the GPR waves. An abundance of metal near the vicinity of the GPR antenna can result in noisy data. Data processing can clear up some

of the noise allowing for interpretation. The GPR data collected at the Auto Parts Salvage Inc. site exhibited a noisy response typical of an abundance of metal at land surface.

Common general factors limiting GPR data acquisition:

- Moisture – The amount of moisture in soils can impact the effectiveness of GPR. The elevation of the water table will likely directly correlate to the maximum depth of penetration of the radar.
- Depth Penetration – The depth range of GPR is limited by the electrical conductivity of the ground, the transmitted frequency, and the radiated power. With an increase in conductivity there is a decrease in penetration depth. Good penetration is achieved in dry sandy soils or massive dry materials such as granite, limestone, and concrete. In moist and/or clay-rich soils and soils with high electric conductivity, depth penetration is limited.
- Antenna Frequency – The lower the frequency of the antenna the greater depth of penetration. However, the lower the frequency of the antenna the less resolution and image detail will be captured. Conversely, higher frequency antennas provide higher resolution, more detailed images with much less depth of penetration.
- Size of Target – Due to the 2-D data acquisition of GPR, size of the target cannot be estimated unless a 3-D grid of the project site is made and anomalies are extrapolated between transects to give a rough estimate of the anomaly size. A 3-D survey grid was beyond the scope, time constraints and focus of this project.
- Quantity of Anomalies – The location of buried targets can also limit subsurface detection. For example, a large number of closely spaced, highly reflective anomalies at the surface can obscure detection of subsurface objects because the transmitted radar wave is unable to penetrate deeper as most of the signal is being reflected. This can lead to misinterpretation because of a lack of quality data.
- Composition of Target – The ability to locate a target is dependent upon the electromagnetic conductivity of the target relative to the surrounding material. For example, a highly reflective metal pipe is much easier to locate than empty PVC conduits that have a very low conductivity.

Summary of Survey Results

South Street site

All GPR transects collected on the South Street site are displayed in Figure 8. All anomalies identified are displayed on Figure 9. The lime sludge generally attenuated the GPR waves not allowing for interpretation of thickness of excavated and back filled zone. Figure 10 shows GPR transect 0191 (see Figure 8 for location). The transect begins on the center berm, which runs east-west the width of the property down, on the western end of transect 0191. It then travels north across the lime sludge pit and up on to berm on the northern most edge of the property. Next it travels east along the berm before turning back south passing over the lime sludge pit again and finishing on the center berm again east of the 0191's beginning point.

Possible horizons associated with the top of lime sludge or the berms located in the middle of the South Street site and the site's perimeter were consistently identified on the site (Figure 9). Possible buried objects were also identified on site. Metal objects, such as fencing materials and general refuse, were encountered while conducting the survey transects. Effort was made to remove any visible metal before the GPR passed over the target transects; however, it's very possible there was metal not visible due to thick grass and vegetation or shallowly buried that could not be removed and was picked up by the GPR.

Unfortunately, bad data, data not able to be interpreted, was collected on the following transects: Ls1002, Ls1003, 0180, 0182, and 0194. We believe this bad data was a result of low batteries for transects Ls1002 and Ls1003. We believe uneven rough terrain not allowing the antenna to couple to ground properly caused bad data collection for transects 0180, 182, and 0194. We do not believe an equipment malfunction was a cause for the bad data collection.



Figure 8 – GPR transects on the South Street site.



Figure 9 - GPR anomalies identified on South Street site, based upon transects in Figure 8. The relative size of the colored circles reflects GPS uncertainty.

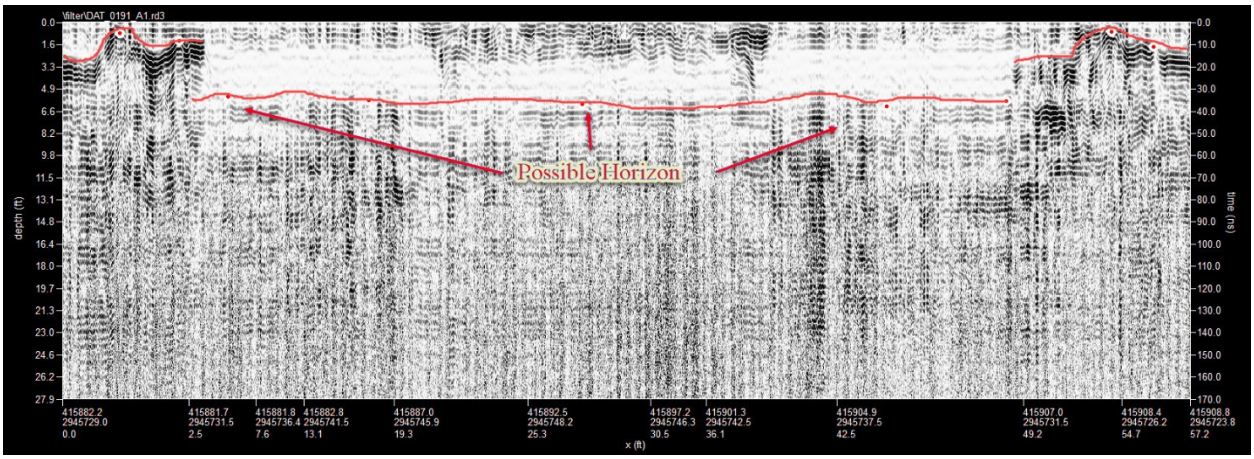


Figure 10 - GPR radargram of transect 0191 exhibiting attenuation of electromagnetic wave through the lime sludge, area denoted by "Possible Horizon" in the middle of the figure.

Residences surrounding South Street site

For these residences, Figures 11, 13, 15, and 17 display the GPR transects and Figures 12, 14, 16, and 18 depict interpreted anomalies. Unfortunately, bad data was collected on the following transects: 3345 South Street transects 1 – 5, 3348 Dora Street transect 1, 3446 South Street transects 3 and 7, 3313 Stella Street transect 6, and 3321 Stella Street transect 2. We believe this bad data was a result of low batteries.



Figure 11 - GPR transects north of South Street site on South and Dora streets.

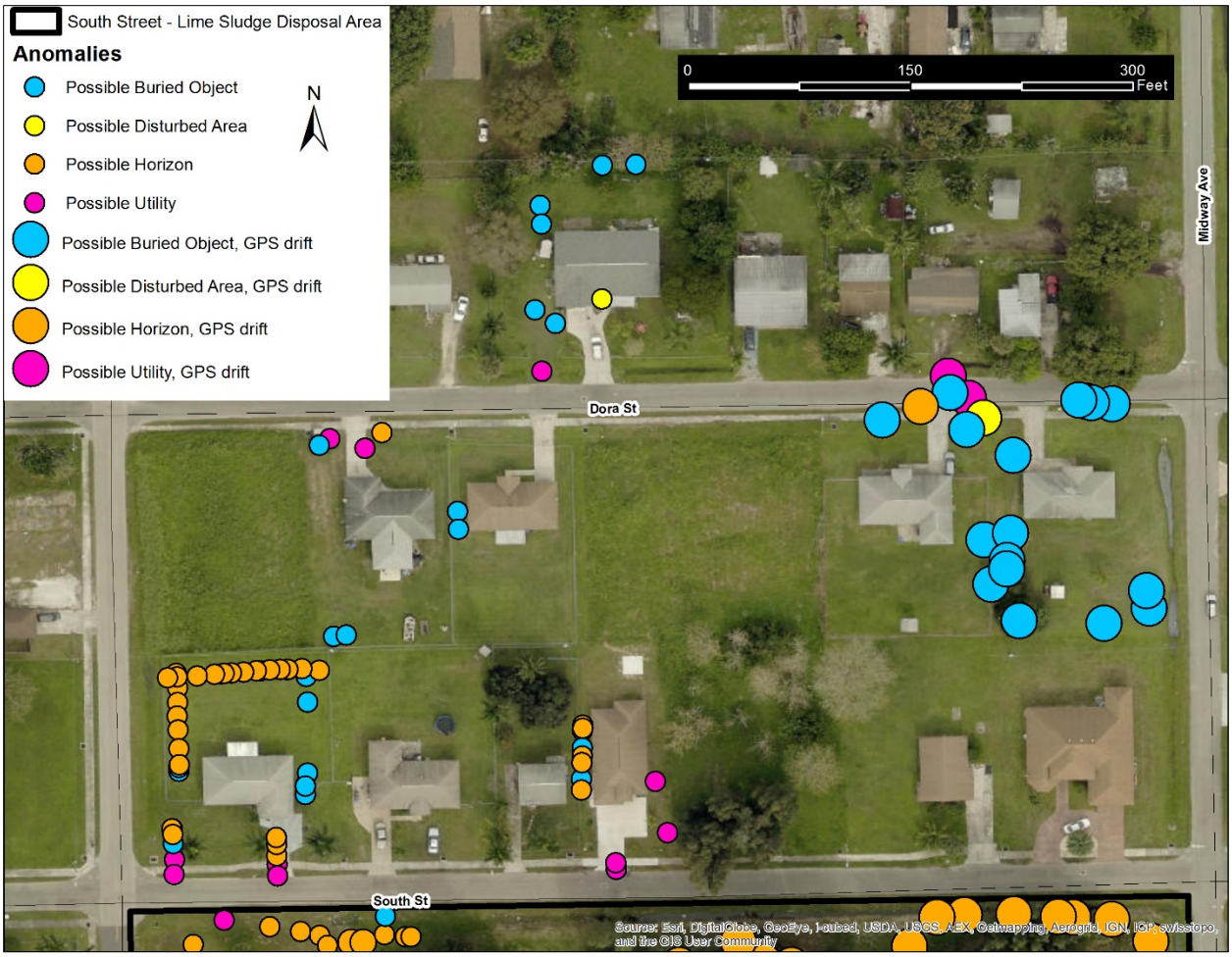


Figure 12 - GPR anomalies identified at the private residences on South and Dora Streets north of South Street site. The relative size of the colored circles reflects GPS uncertainty.

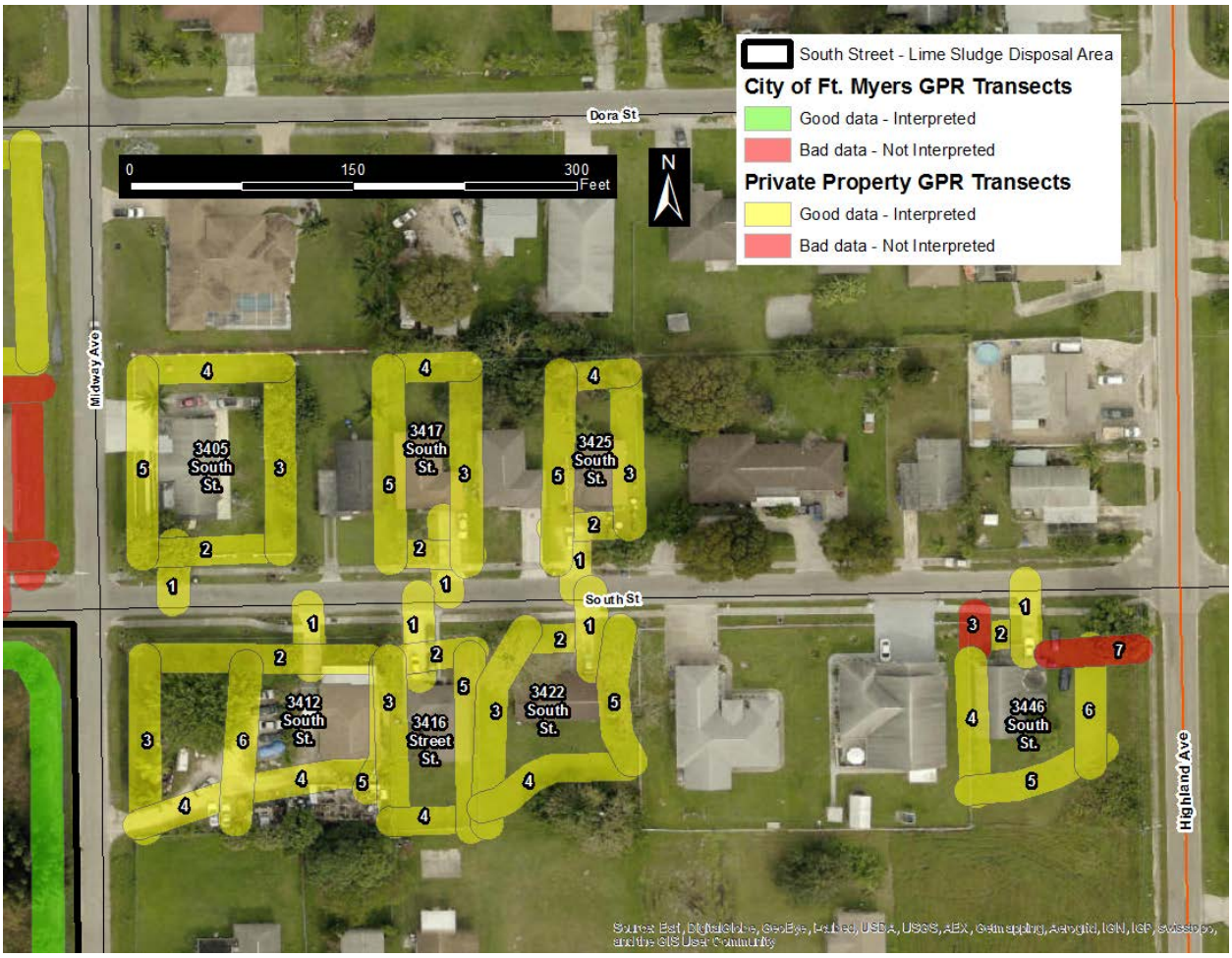


Figure 13 - GPR transects on South Street east of South Street site

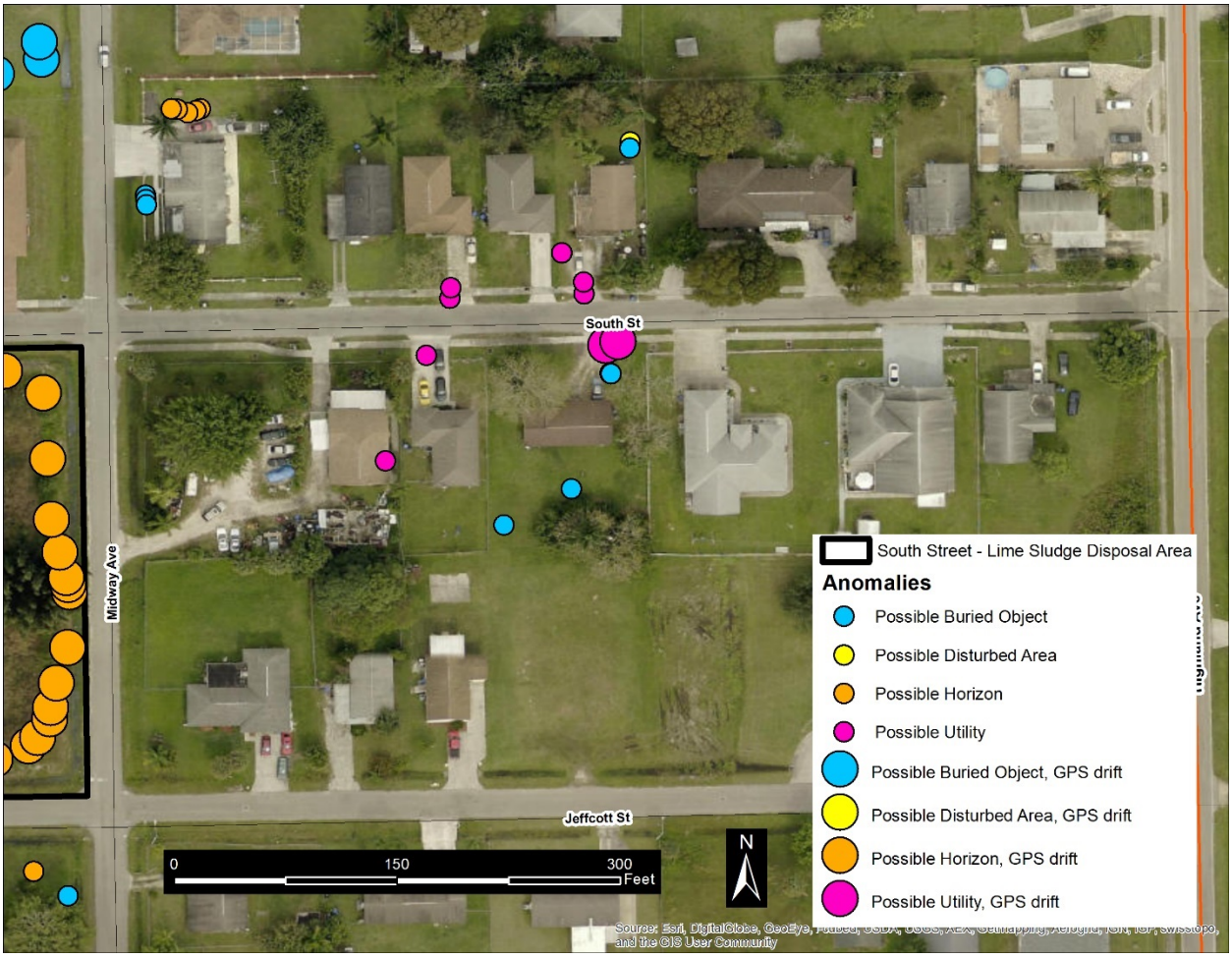


Figure 14 - GPR anomalies identified on private properties on South Street east of South Street site. The relative size of the colored circles reflects GPS uncertainty.

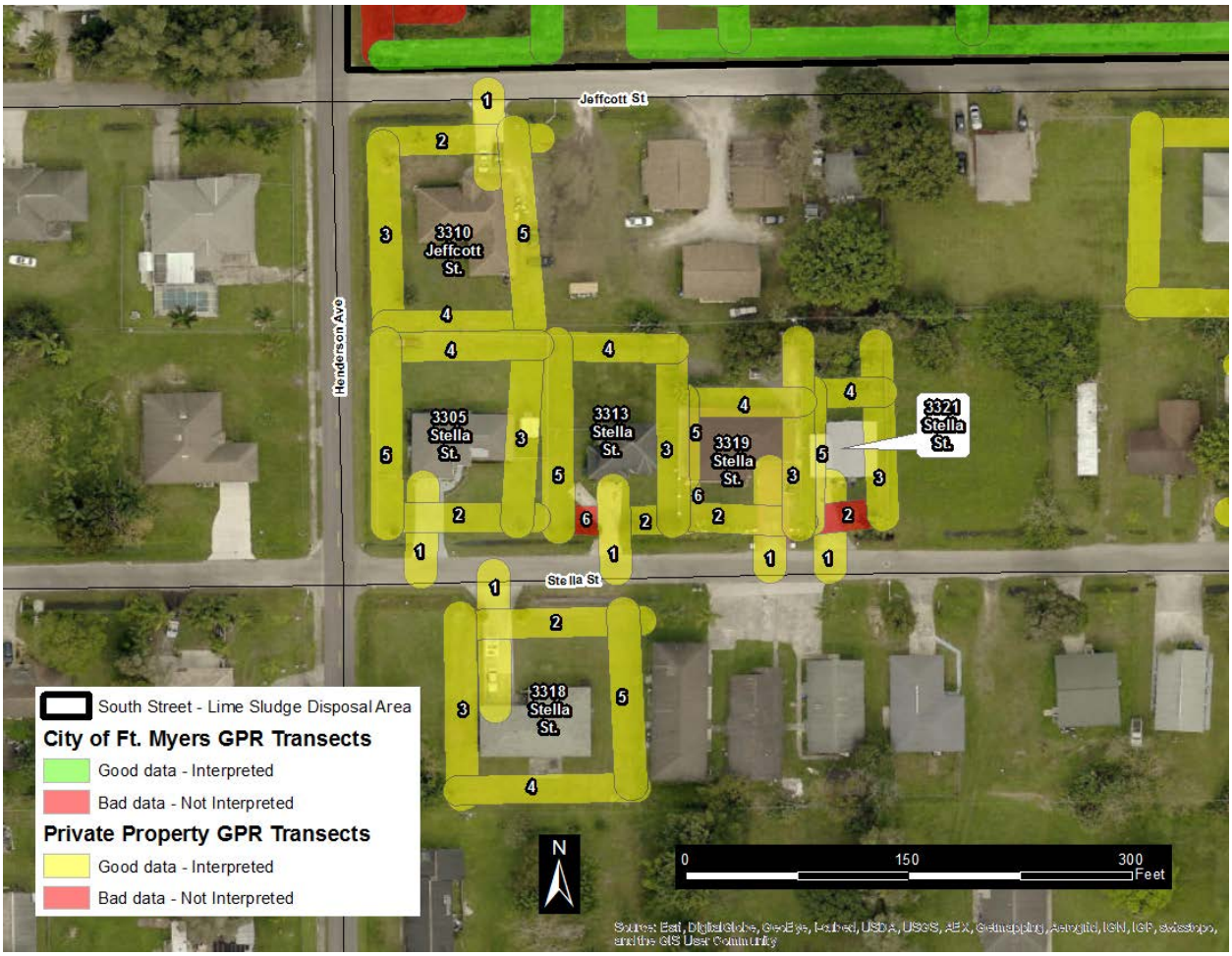


Figure 15 - GPR transects south of South Street site on west side of Jeffcott and Stella streets.

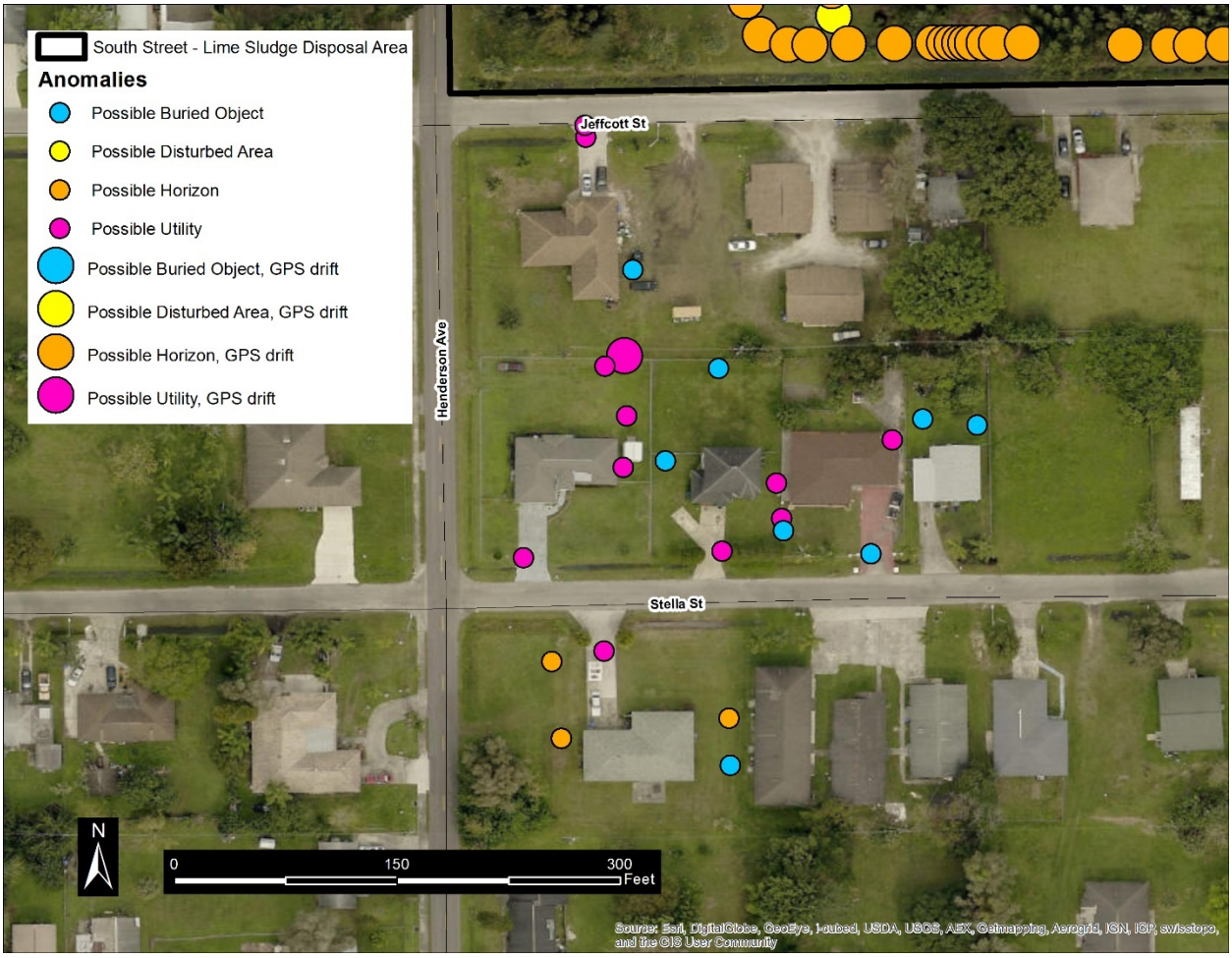


Figure 16 - GPR anomalies identified on Jeffcott and Stella Streets south of South Street site. The relative size of the colored circles reflects GPS uncertainty.

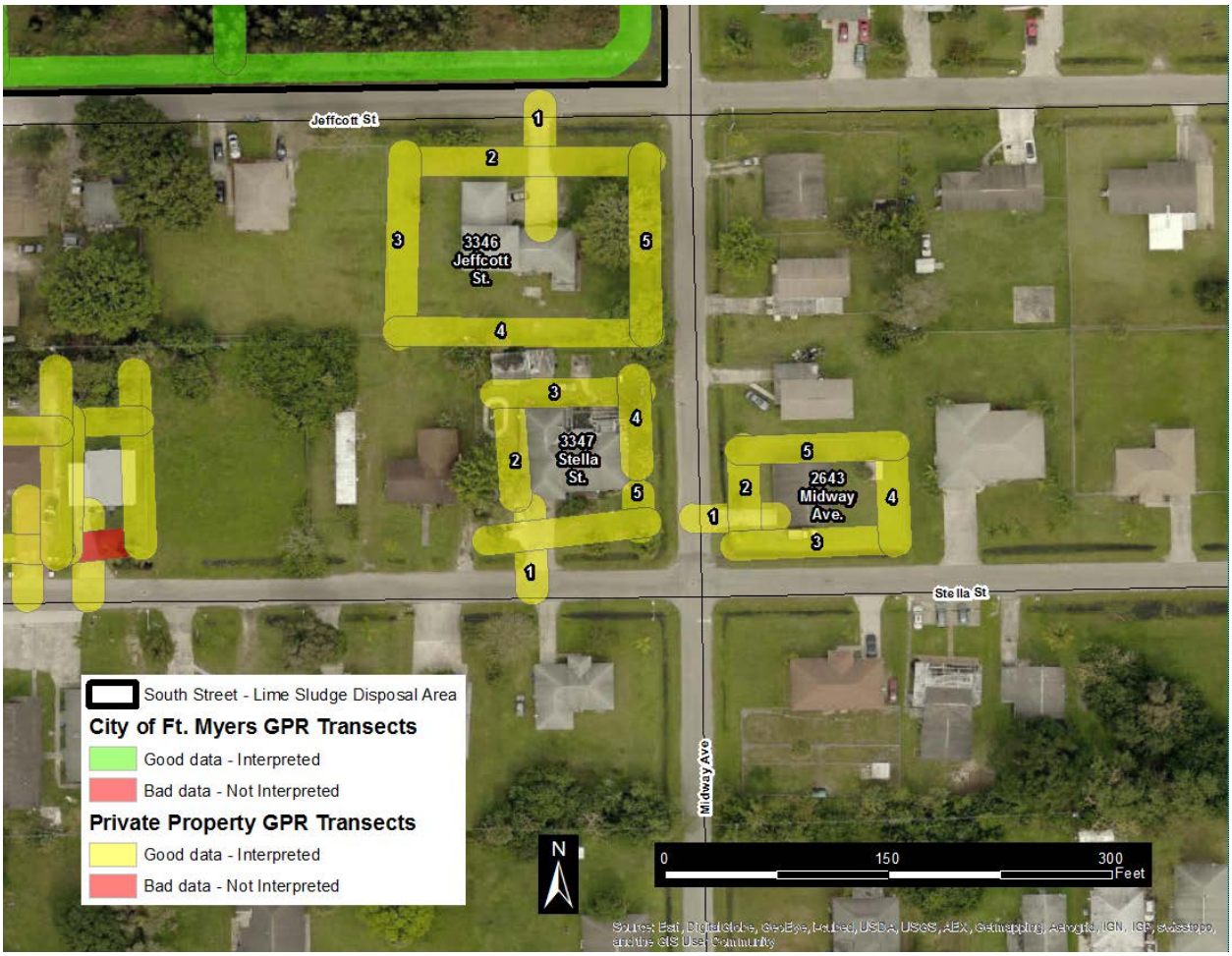


Figure 17 - GPR transects south of South Street site on east side of Jeffcott and Stella streets.

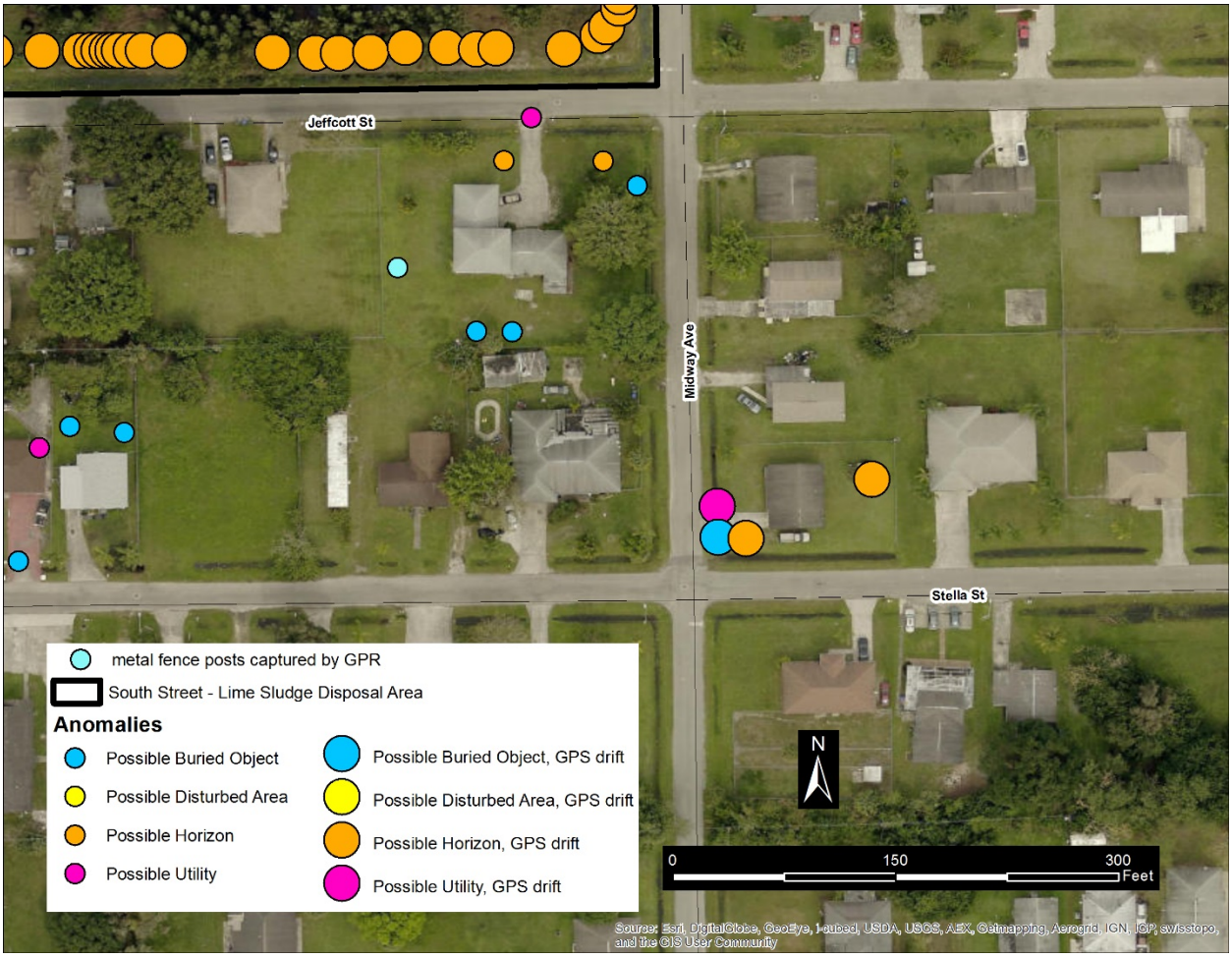


Figure 18 - GPR anomalies identified on Jeffcott and Stella Streets southeast of South Street site. The relative size of the colored circles reflects GPS uncertainty.

Auto Parts Salvage Incorporated site

A possible horizon was identified on site. There was a significant amount of metal objects on the ground and likely just below the ground's surface at this site which could not be avoided. GPR radargram J_1 (Figure 19 & Figure 20) exhibits a large amount of signal ringing represented by the dark vertical streaks, but that ringing did not inhibit interpretation. Effort was made to try and move or avoid metal laying on the ground.

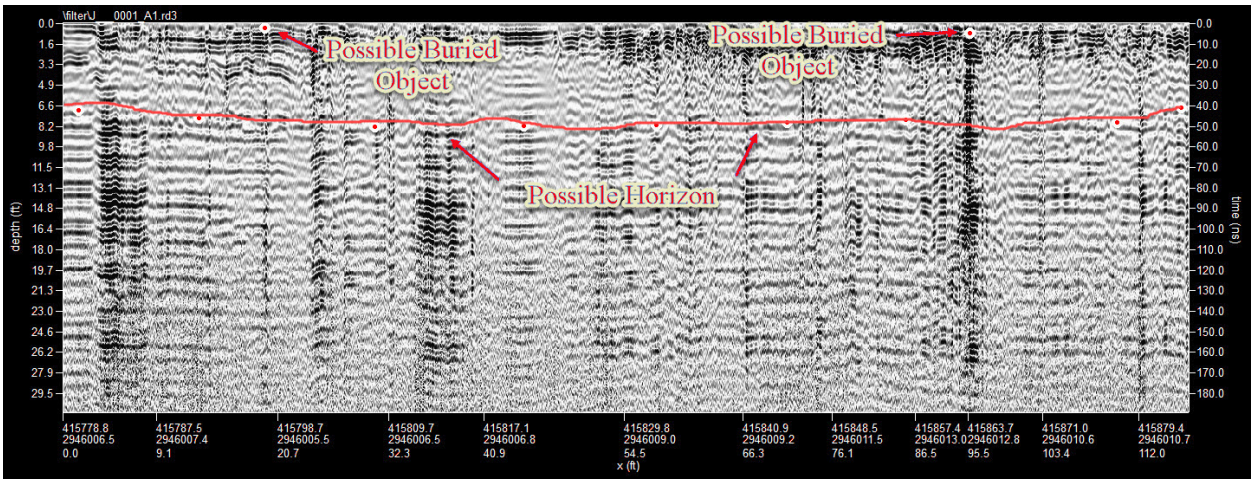


Figure 19 - GPR radargram J_1 from the Auto Parts Salvage Inc site.

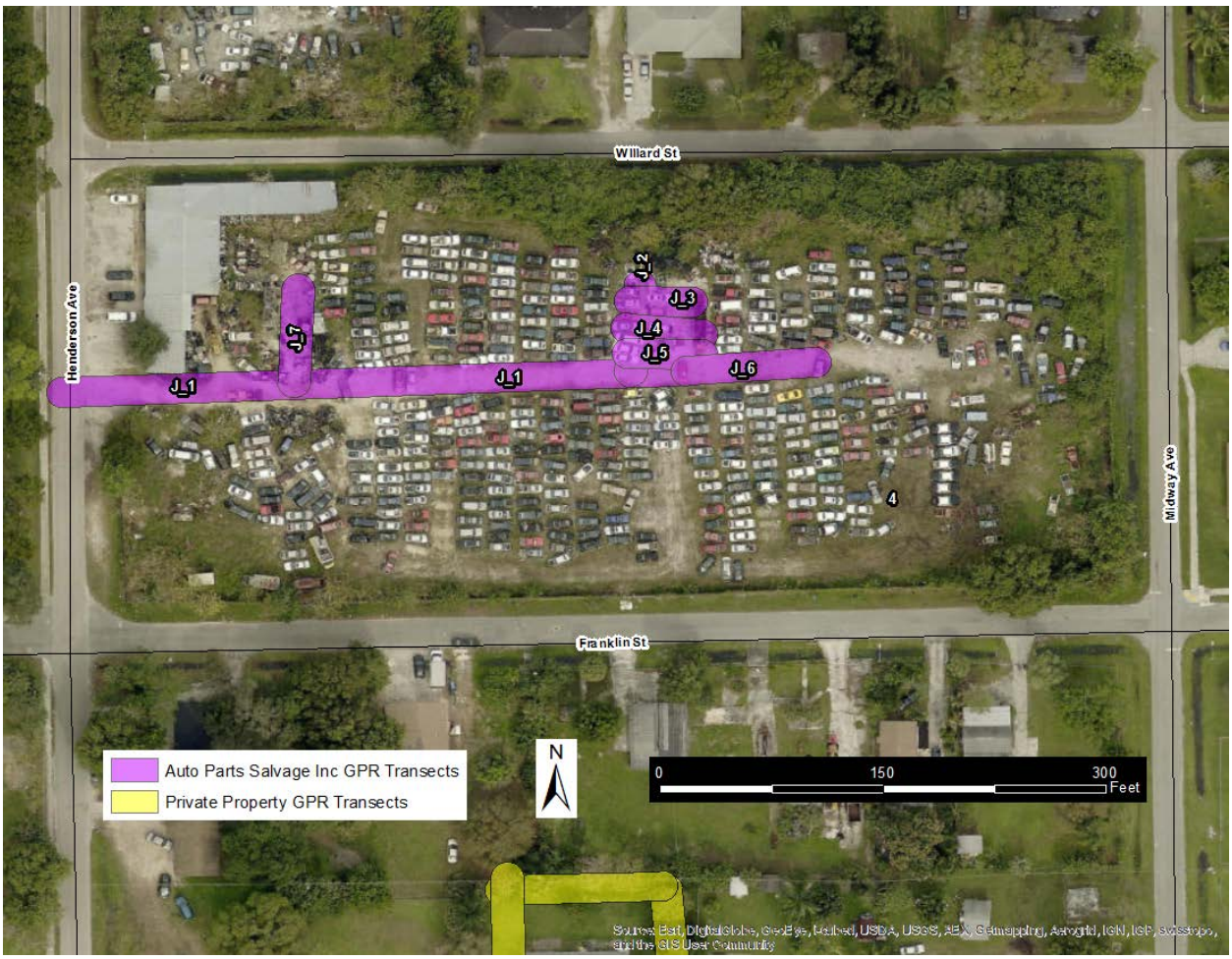


Figure 20 - GPR transects on the Auto Parts Salvage Inc property. Note, the imagery shown above predates the time of the survey. At the time of the survey, vehicles within the salvage yard were in a different configuration.

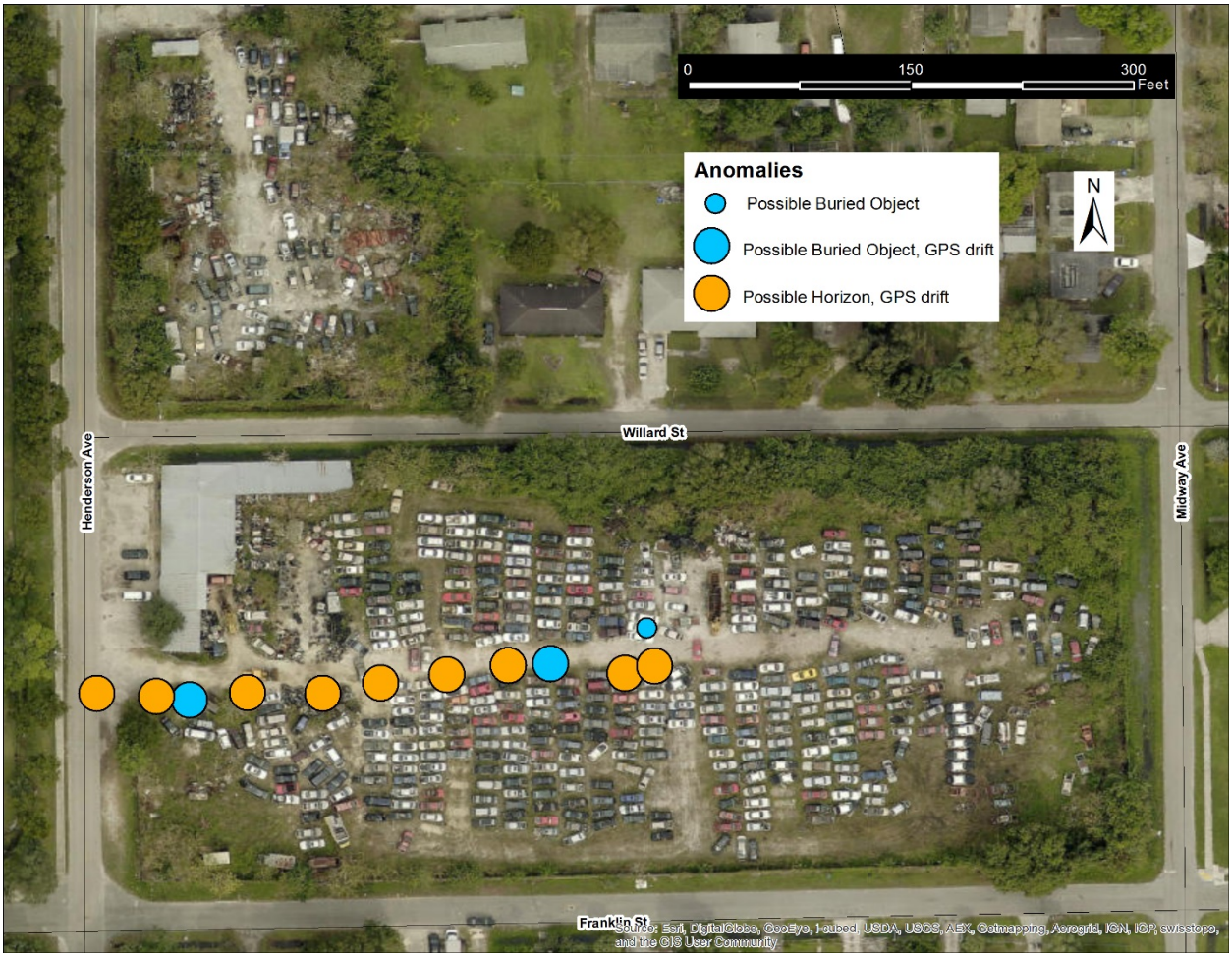


Figure 21 - GPR anomalies identified on the Auto Parts Salvage Parts Inc site. Note, the imagery shown above predates the time of the survey. At the time of the survey, vehicles within the salvage yard were in a different configuration. The relative size of the colored circles reflects GPS uncertainty.

U-Pull & Save site

The GPR radargrams for the U-Pull & Save site suggest the thickness of the concrete may be either 3 or 6 feet, Figure 22. Two potential buried objects were identified; however, those objects may be the result of running the GPR antenna over metal. Efforts were made during data collection to move or avoid metal laying on the ground, which would likely cause interference.

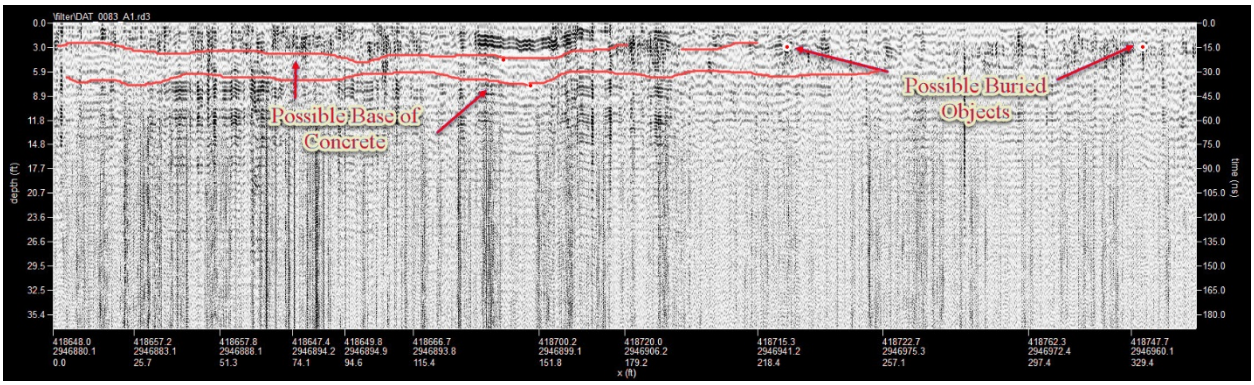


Figure 22 - GPR radargram from U-Pull & Save site, transect 1 (Figure 23), exhibiting possible thickness of concrete and possible buried objects.



Figure 23 – GPR transects on U-Pull & Save site. Note, the imagery shown above predates the time of the survey. At the time of the survey, vehicles within the salvage yard were in a different configuration.

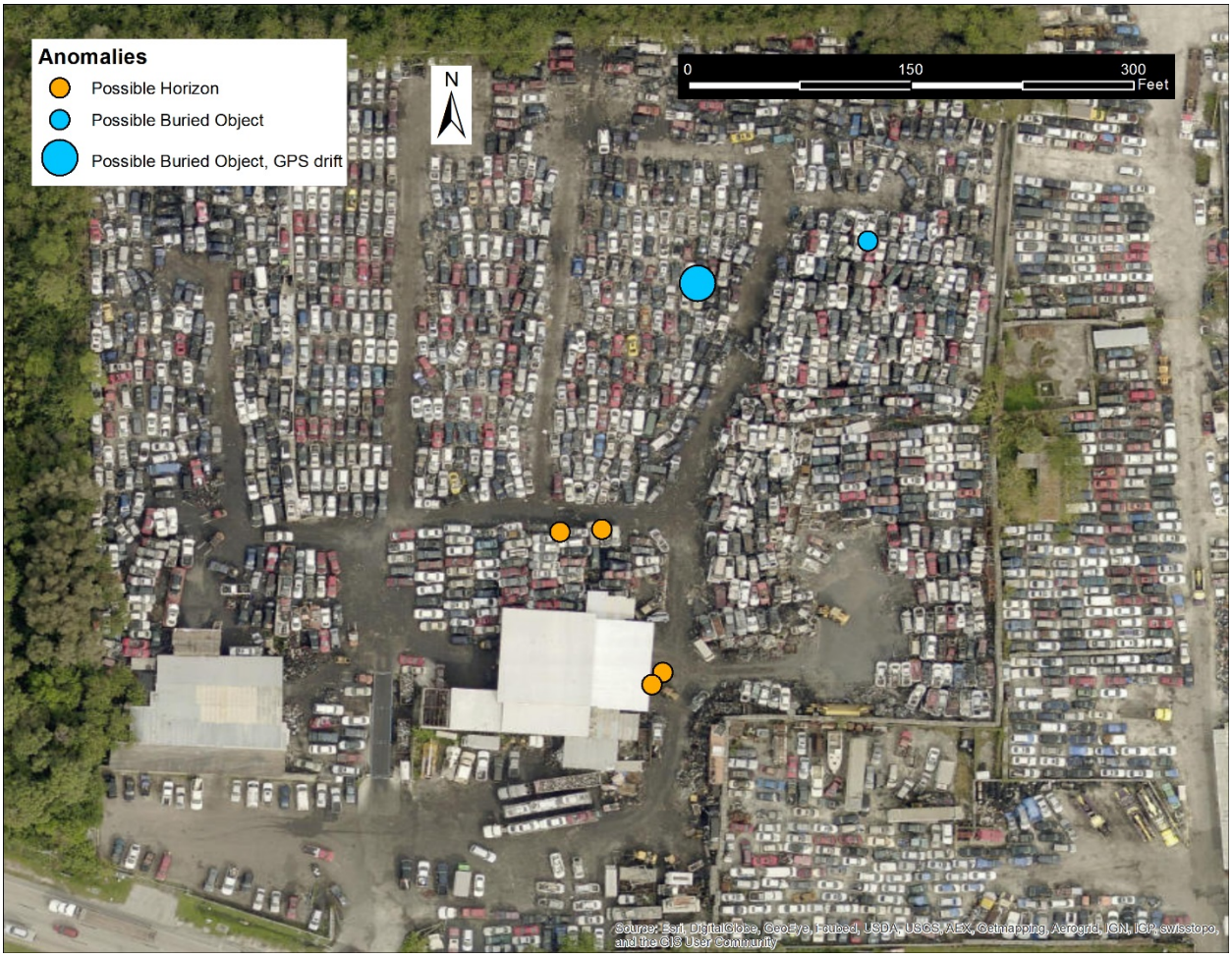


Figure 24 - GPR anomalies identified on the U-Pull & Save site. Note, the imagery shown above predates the time of the survey. At the time of the survey, vehicles within the salvage yard were in a different configuration. The relative size of the colored circles reflects GPS uncertainty.

Recommendations

South Street site

The GPR survey was unsuccessful in determining the thickness of the lime sludge due to radar wave attenuation. We recommend two potential courses of action to determine sludge thickness: 1) exploratory core drilling in multiple locations, or 2) excavate multiple exploratory trenches. Exploratory core drilling is preferential to trenching.

Residences surrounding South Street site

If desire to further characterize identified buried object anomalies exists, limited and targeted exploratory excavations are recommended. Those excavations should indicate if the anomalies identified are anything of concern or simply remnants from home construction. If non-intrusive methods are desired, an electrical resistivity (ER), multiple-electrode resistivity (MER) or multi-channel analysis of surface waves (MASW) survey would likely be capable of imaging the base

of the excavated zone within the pit. The FGS does not have those tools; however, there are multiple consultants in Florida who do.

Auto Parts Salvage Incorporated site

If desire to further characterize buried object anomalies identified on site exists, targeted excavations are recommended.

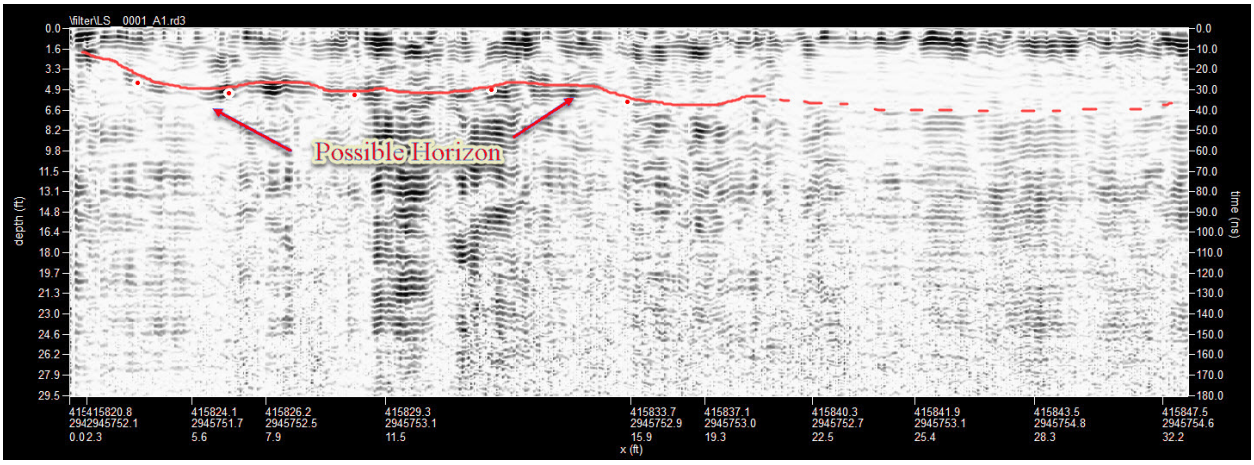
U-Pull & Save site

If desire to further characterize true thickness of the concrete on site exists, targeted exploratory core drilling or excavations at a select number of locations is recommended.

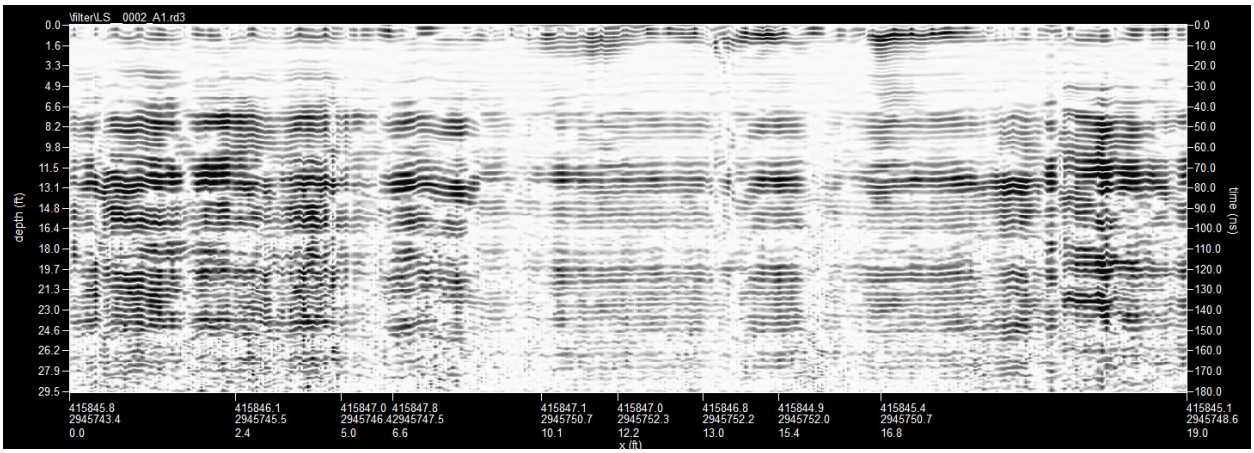
Disclaimer

The report and data contained within provided by the Florida Geological Survey (FGS) is solely for general reference and is not intended to replace site-specific or use-specific investigations. User acknowledges and releases FGS and the Florida Department of Environmental Protection (DEP) from any and all liability, loss, damage or claim arising from any inaccuracies contained therein, and for its use of data for any purpose; including, but not limited to, mapping, engineering, and interpolation of laboratory results. All data provided is distributed on an "as is" basis, without express or implied warranty for any purpose. End-users assume all risks concerning data quality, compatibility, performance, and analytic results. Comments and inquiries regarding FGS data, projects, and other analysis are encouraged. You may notify FGS of any noted or suspected errors or inaccuracies.

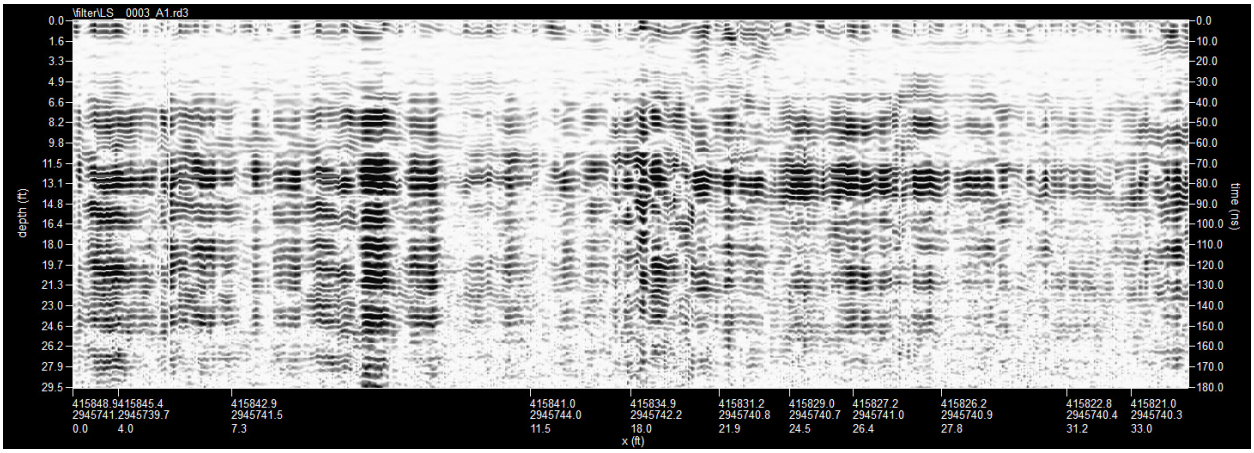
Appendix I. GPR Radargrams



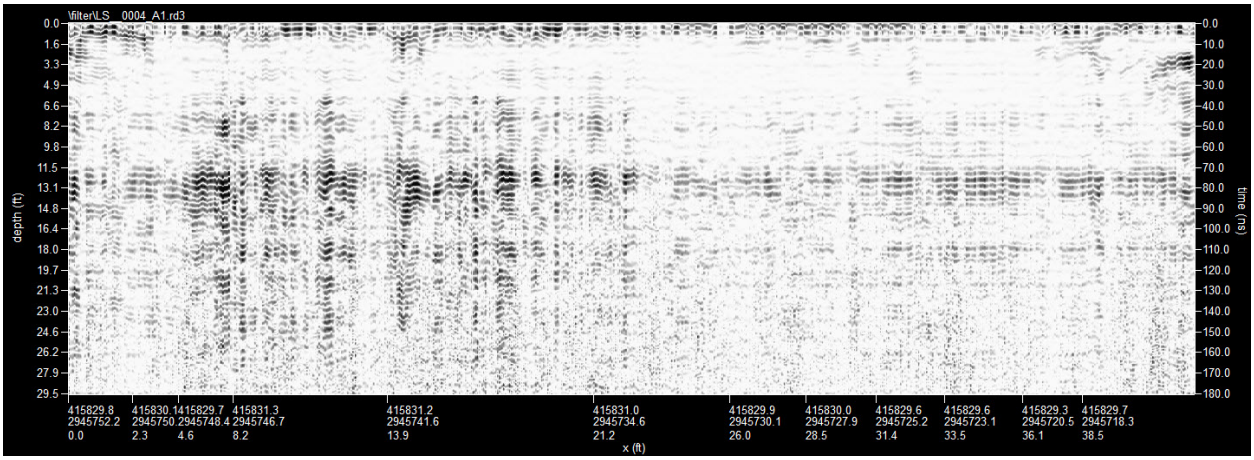
Transect Ls001 from the City of Ft. Myers South Street site.



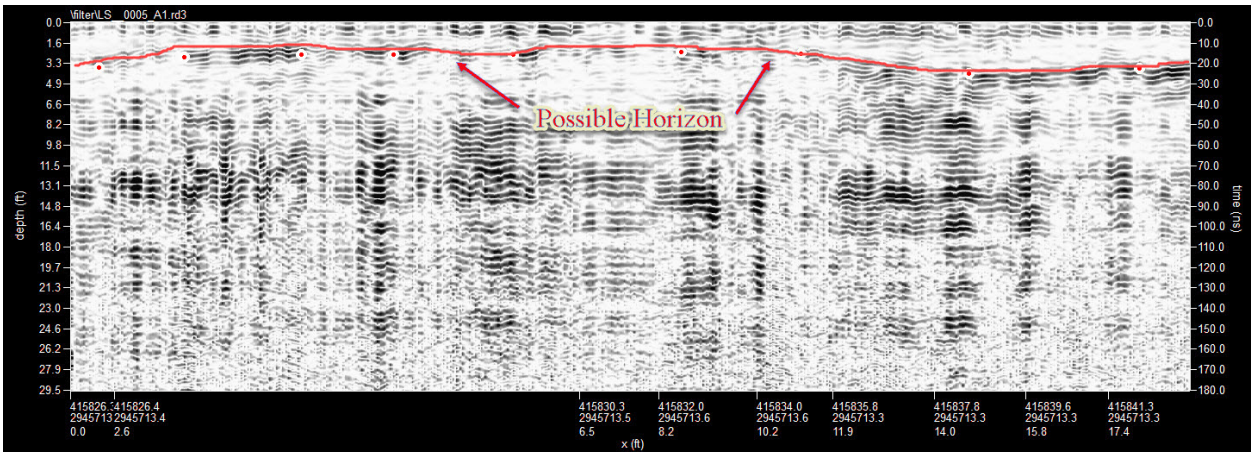
Transect Ls002 from the City of Ft. Myers South Street site.



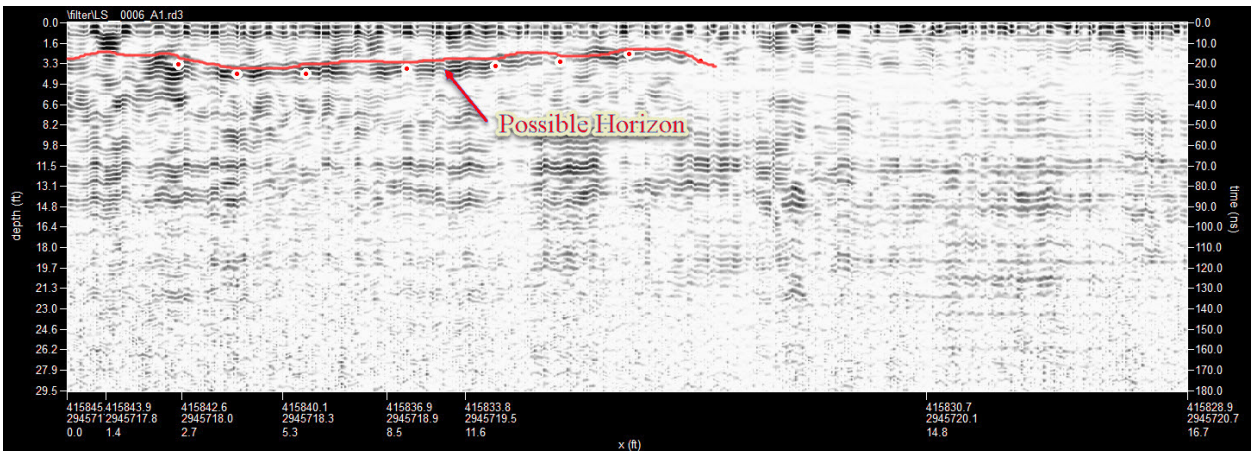
Transect Ls003 from the City of Ft. Myers South Street site.



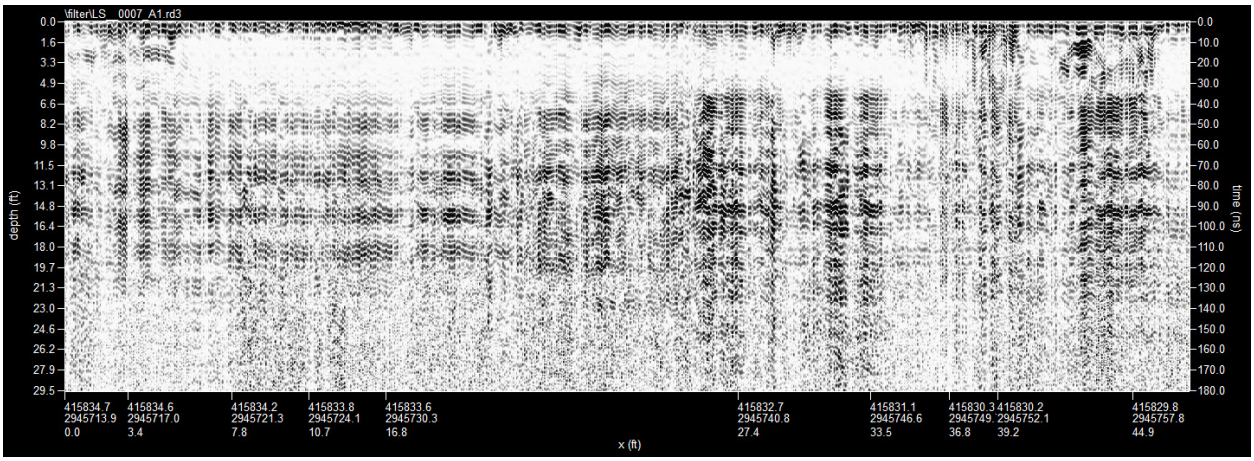
Transect Ls004 from the City of Ft. Myers South Street site.



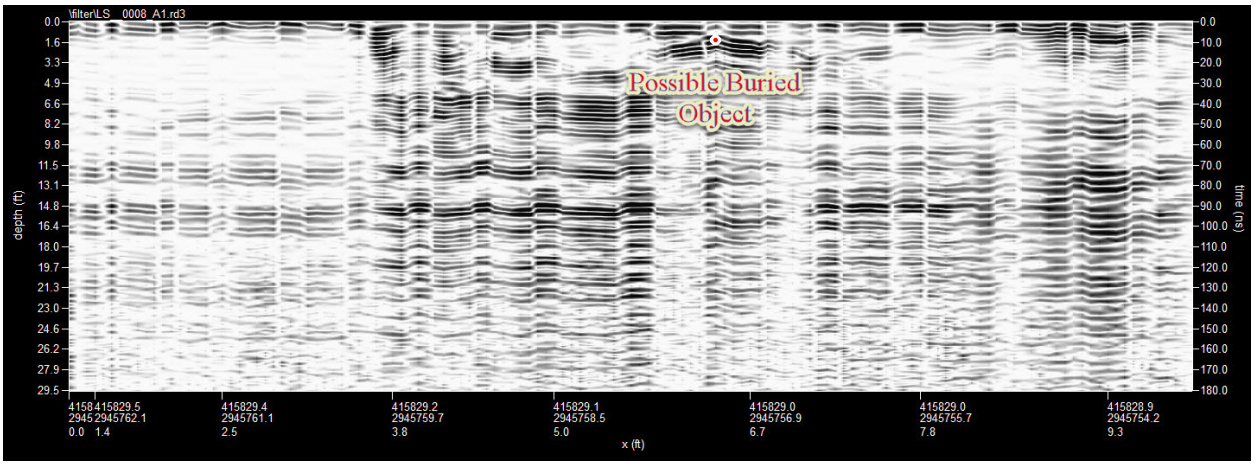
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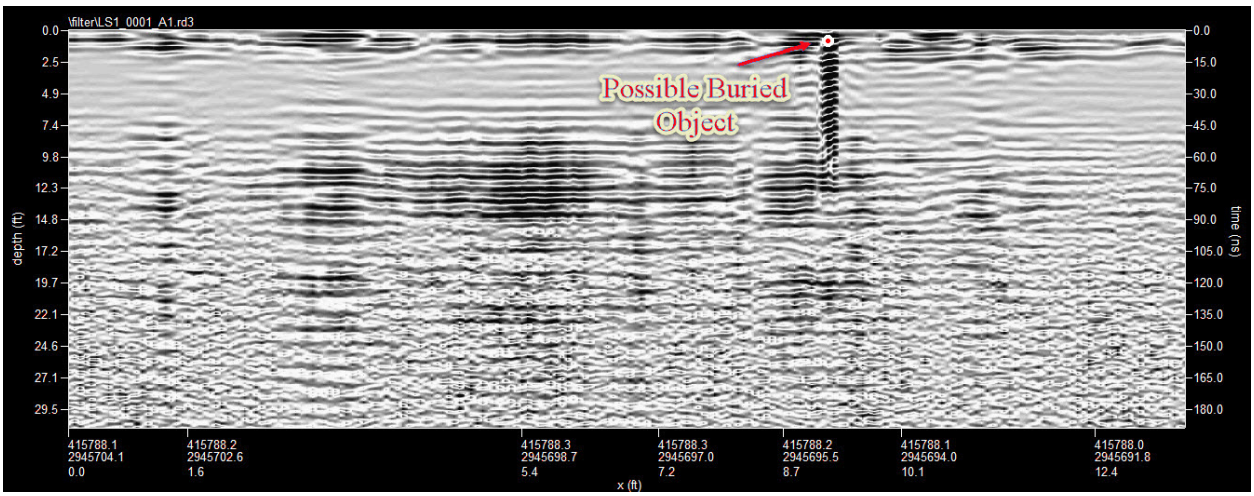
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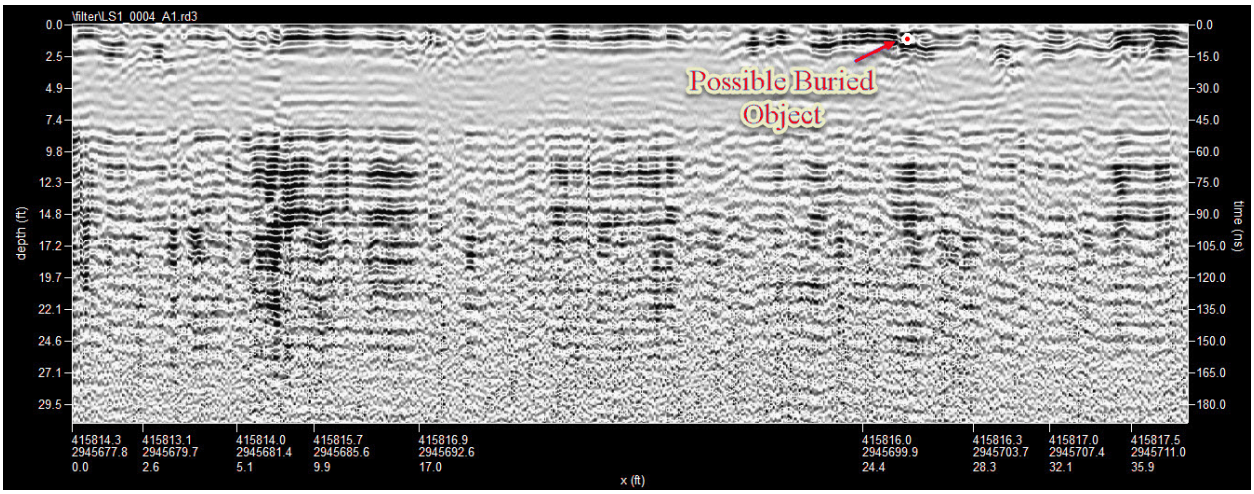
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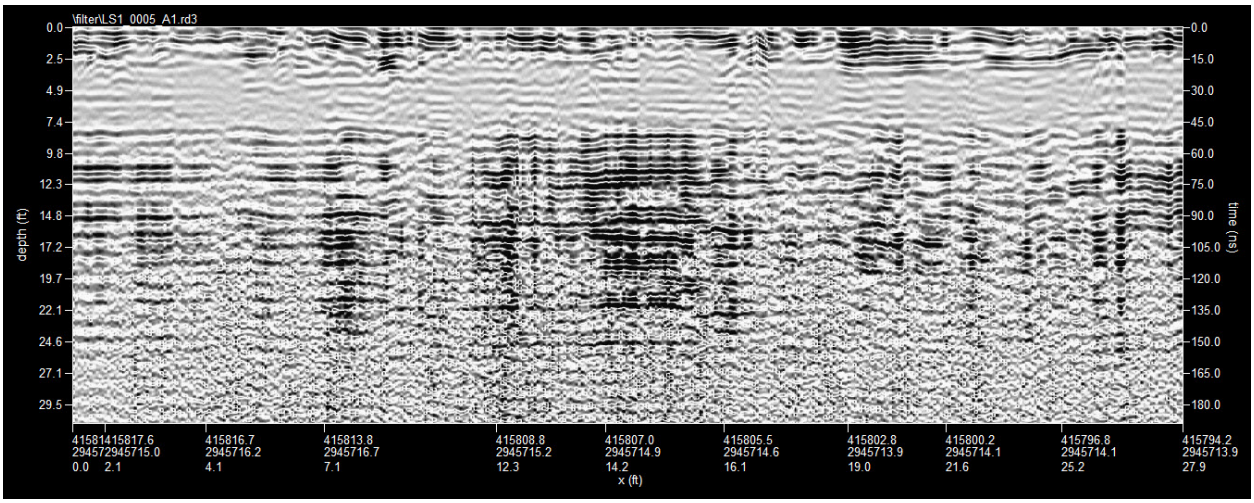
Transect Ls008 from the City of Ft. Myers South Street site.



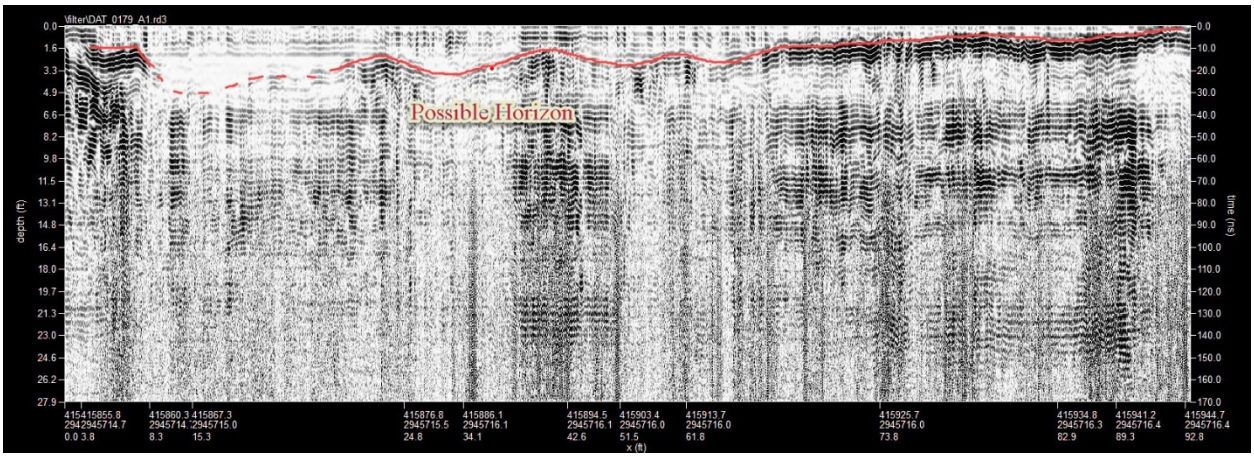
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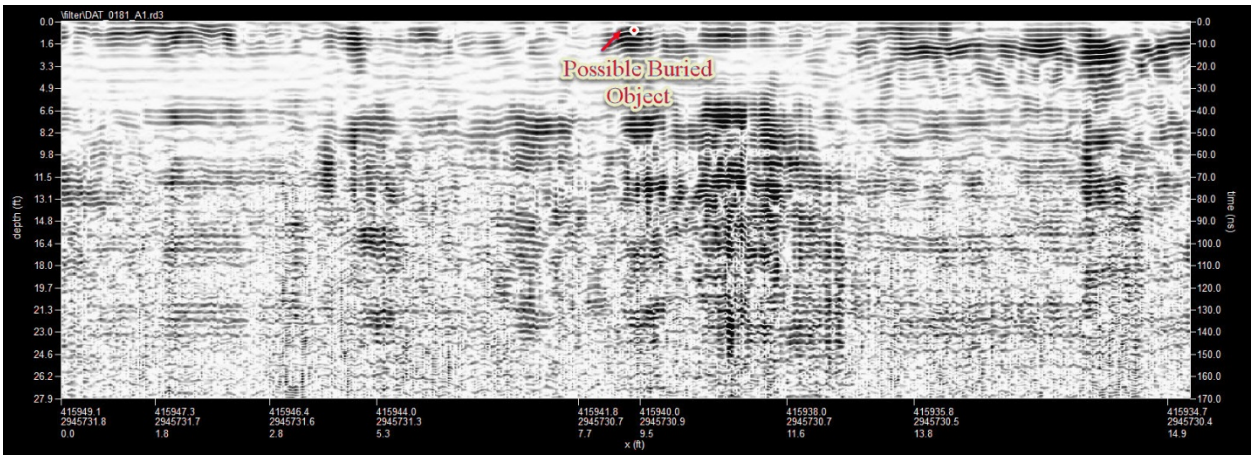
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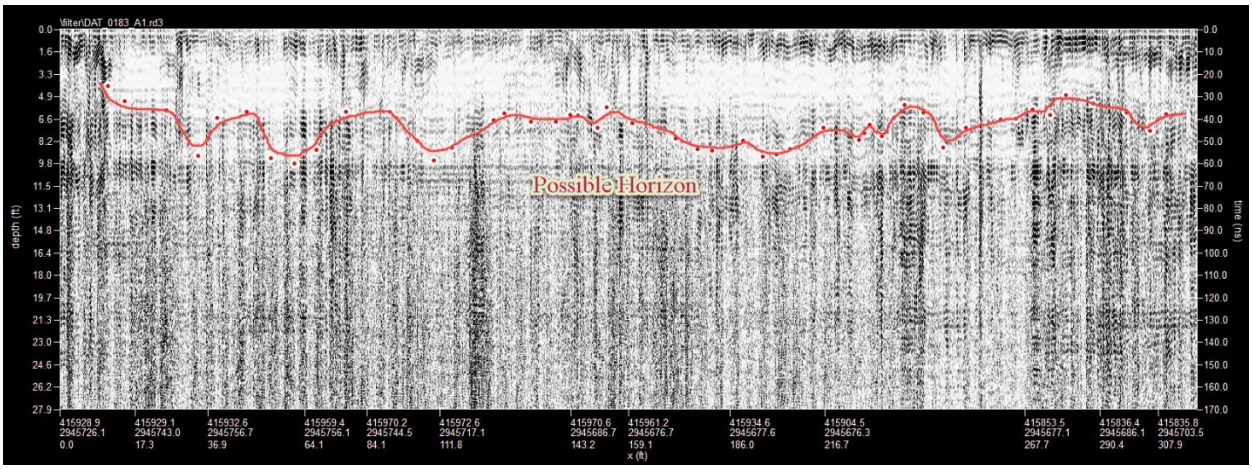
Transect Ls1005 from the City of Ft. Myers South Street site.



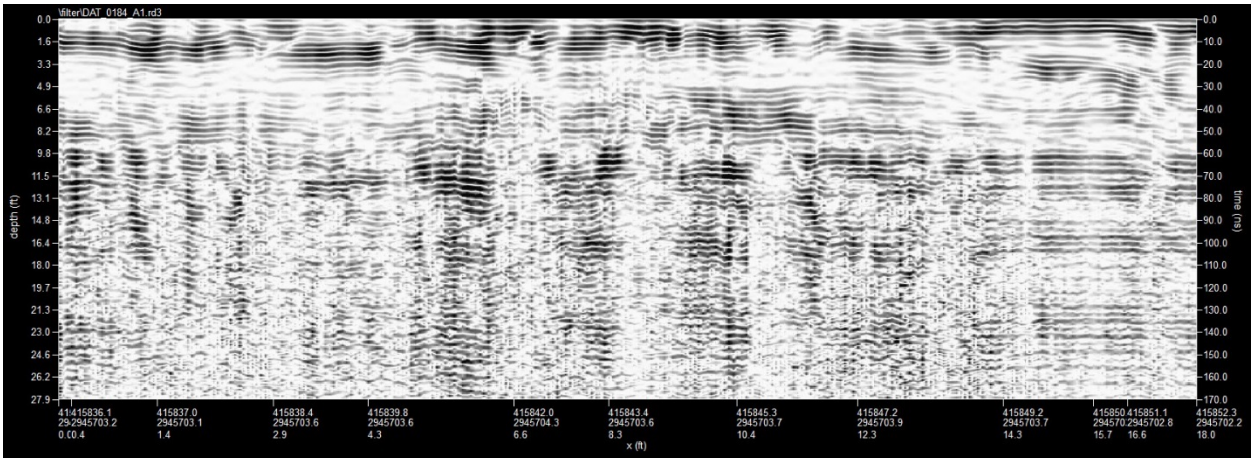
Transect 0179 from the City of Ft. Myers South Street site.



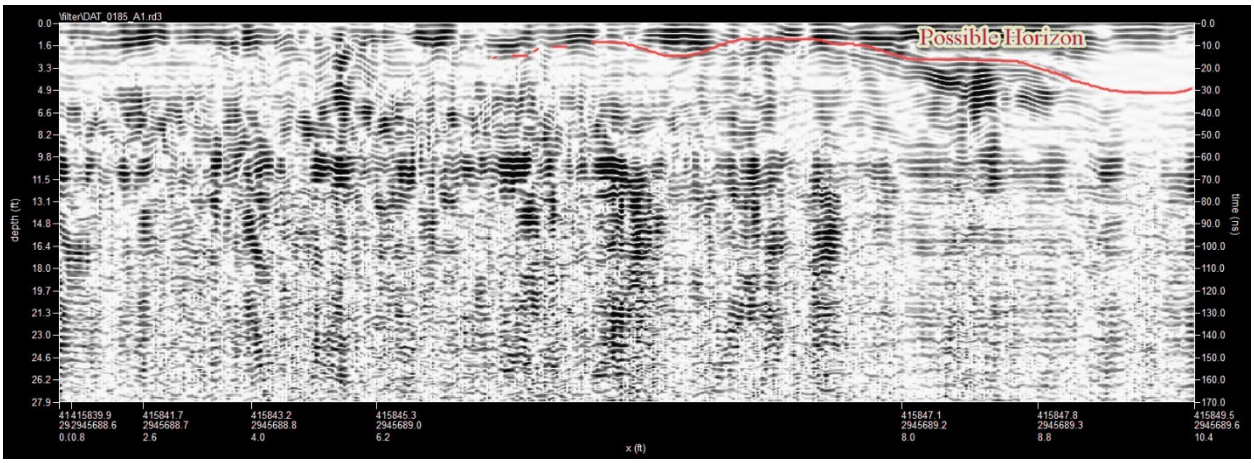
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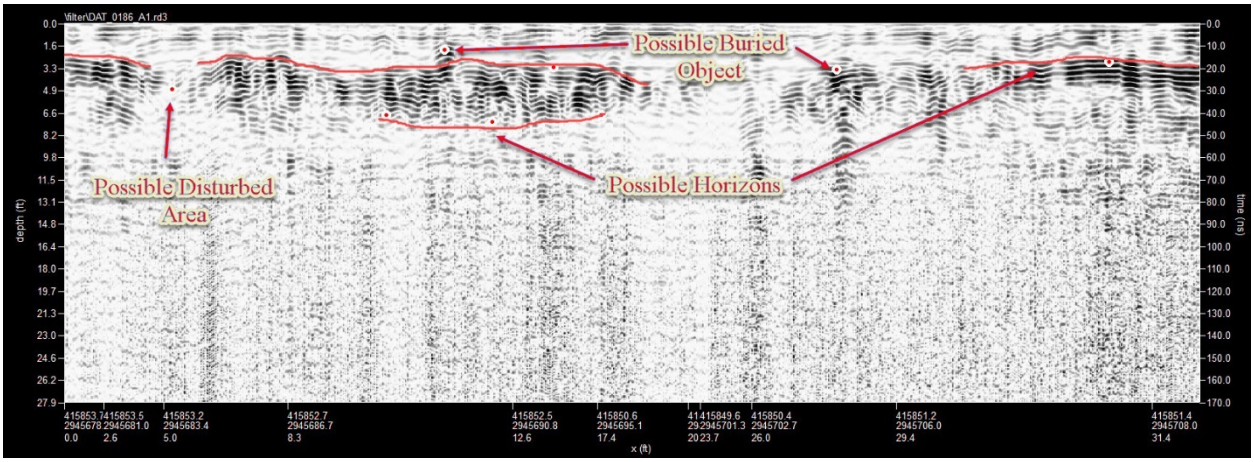
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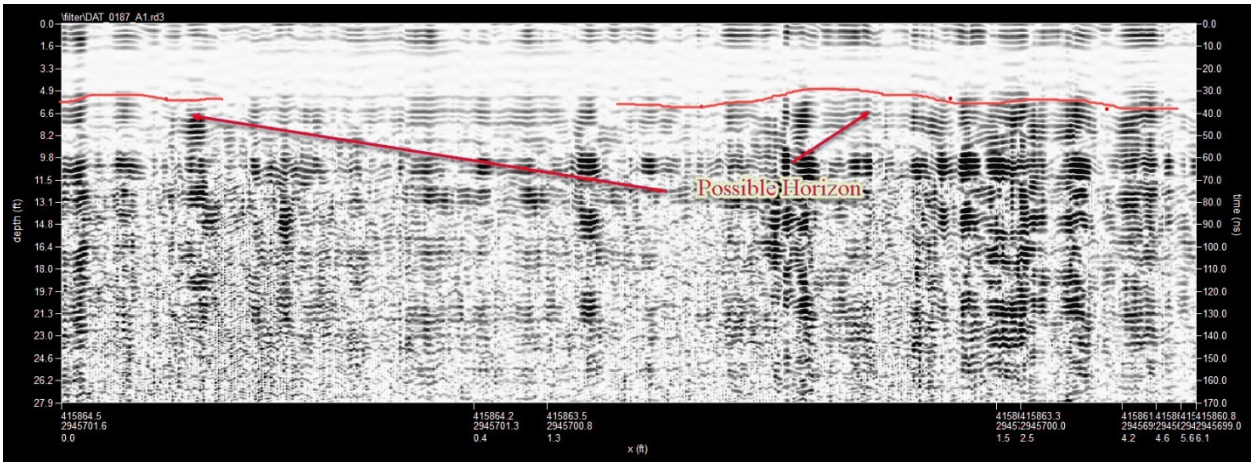
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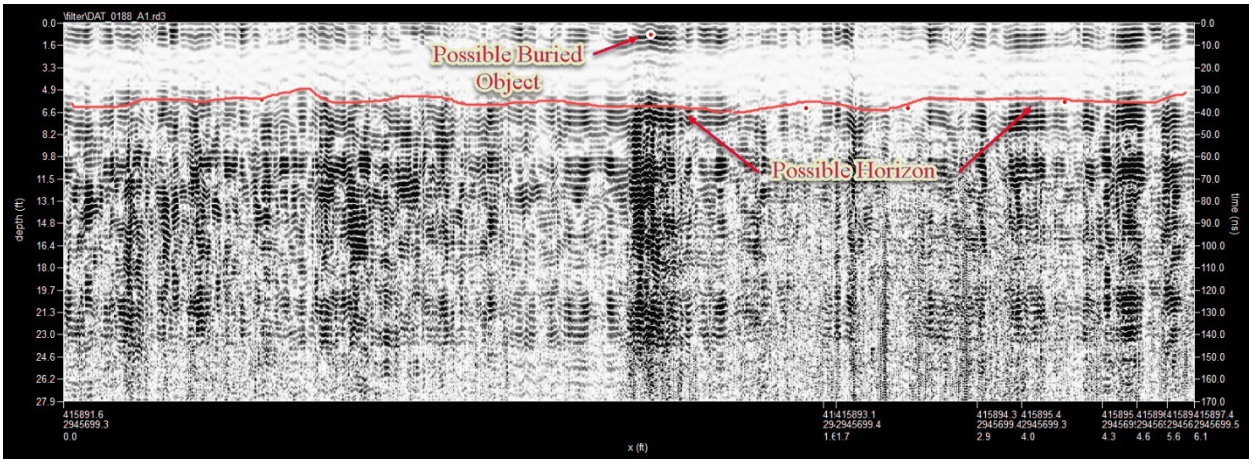
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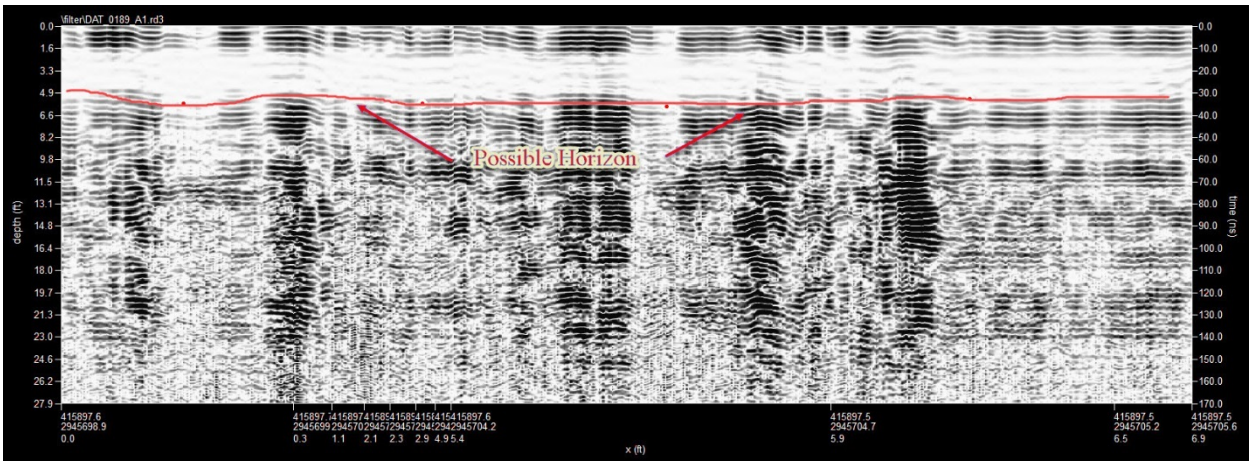
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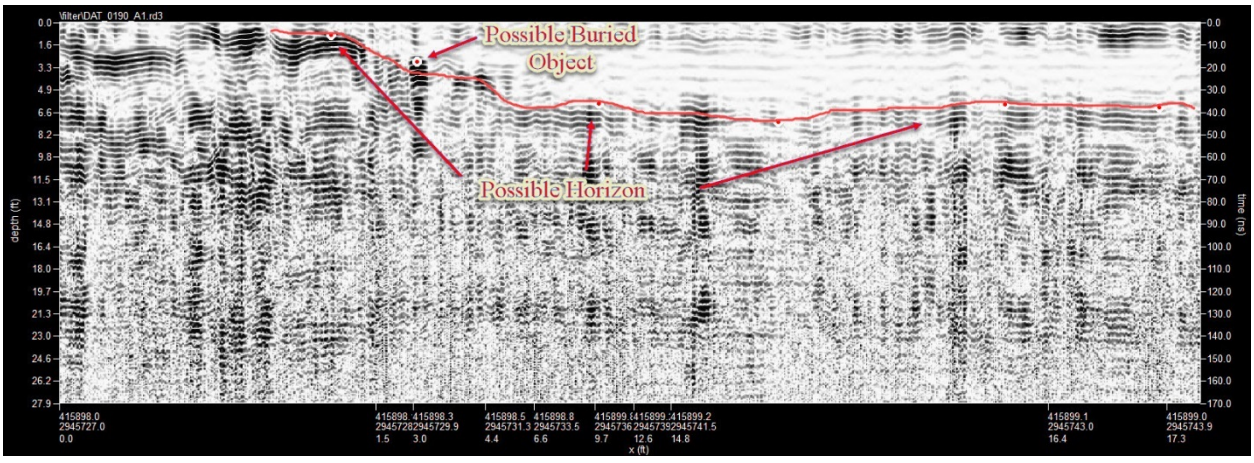
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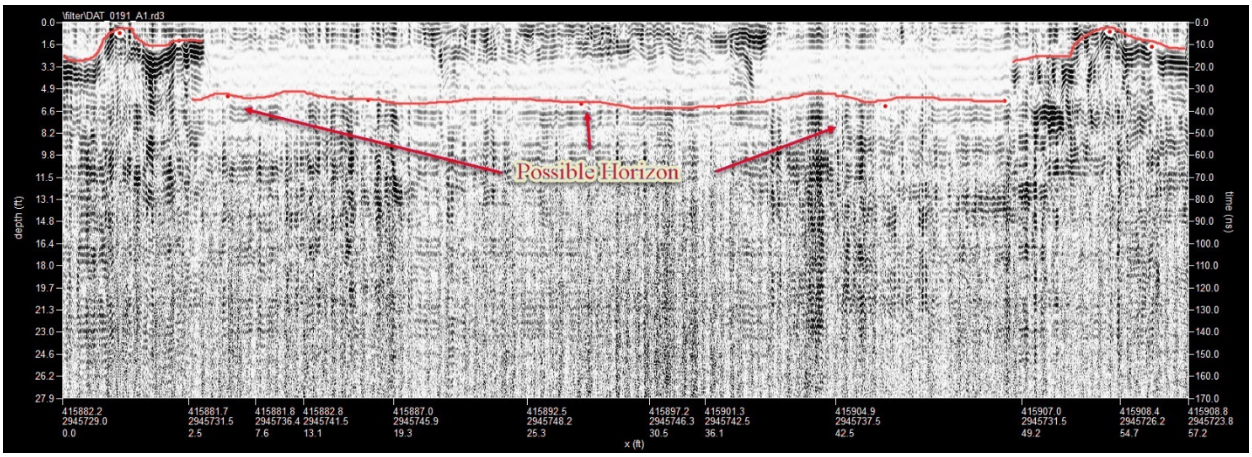
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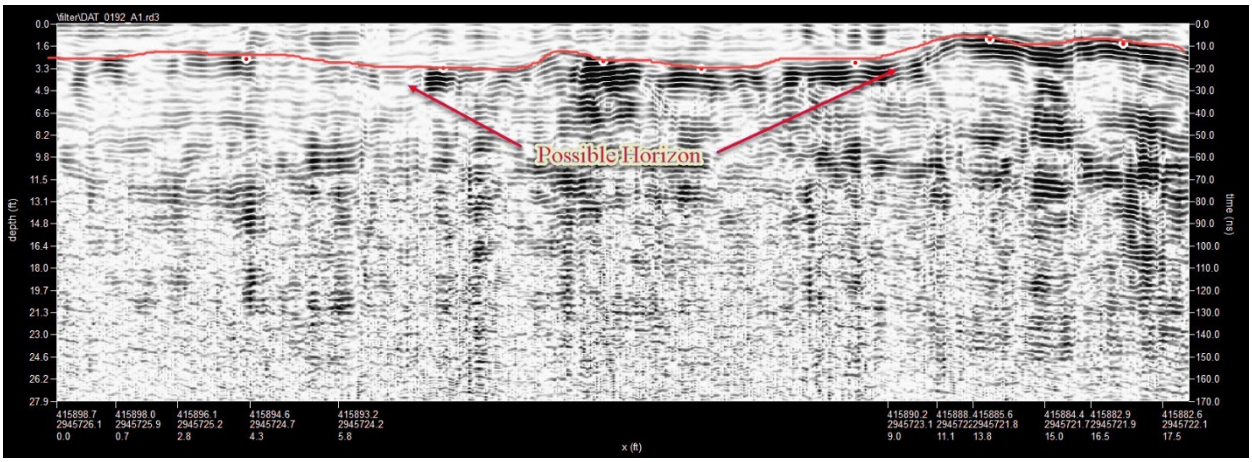
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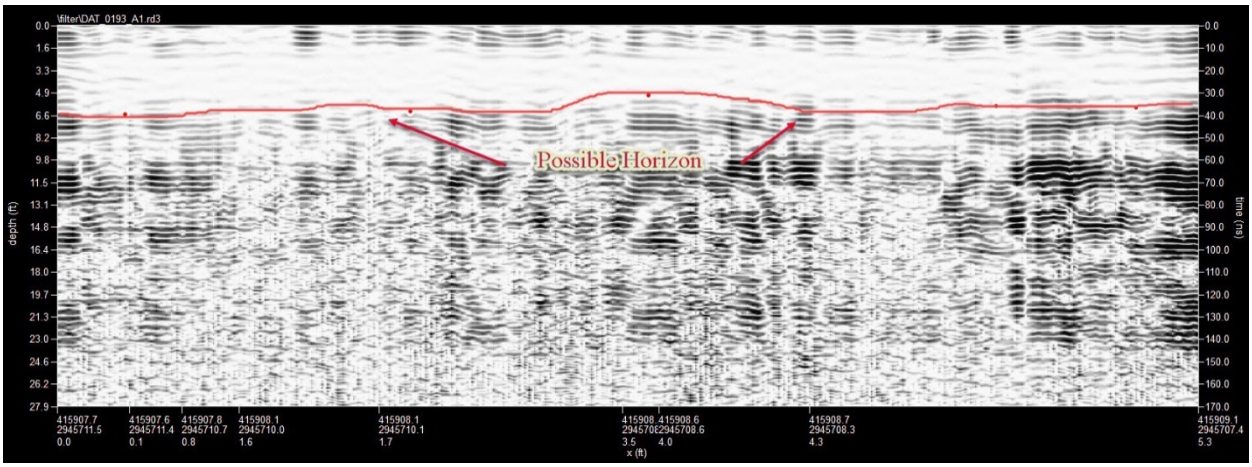
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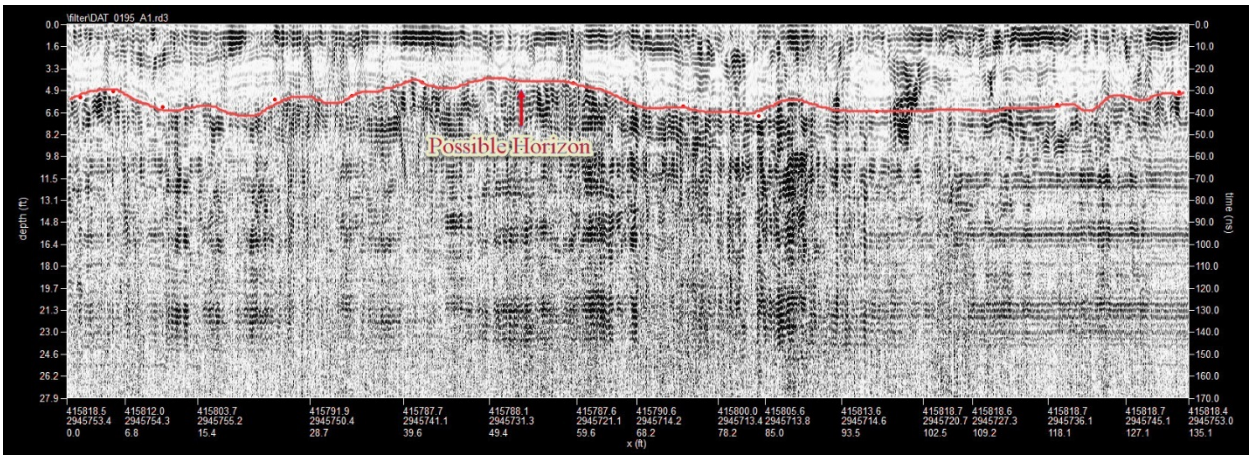
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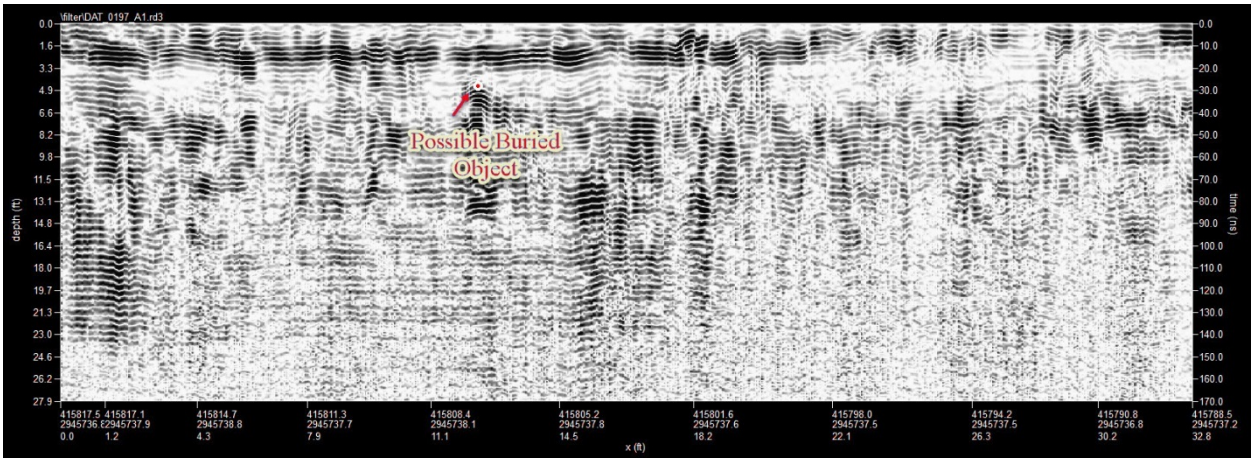
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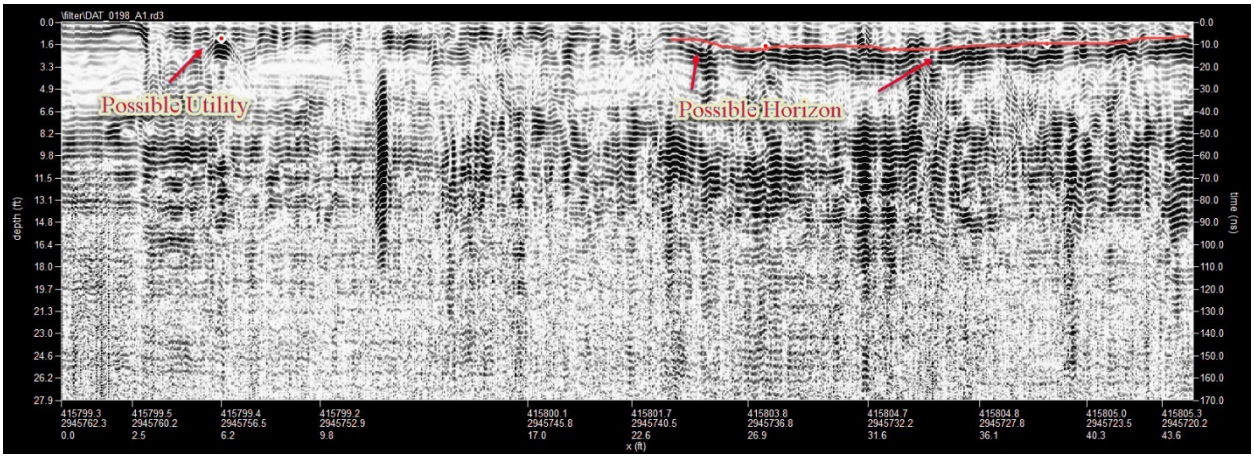
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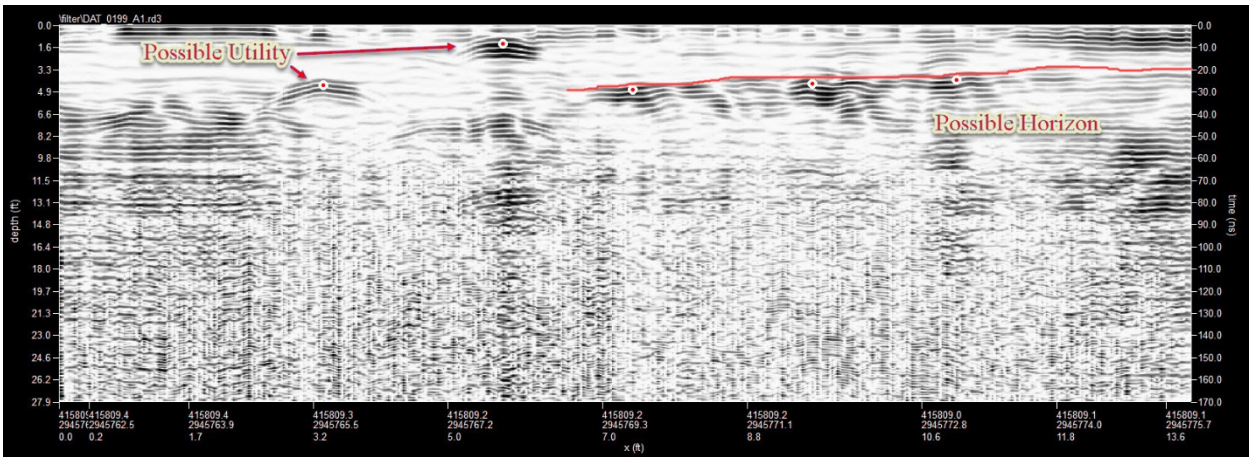
Transect 0195 from private property at the Ft. Myers South Street site.



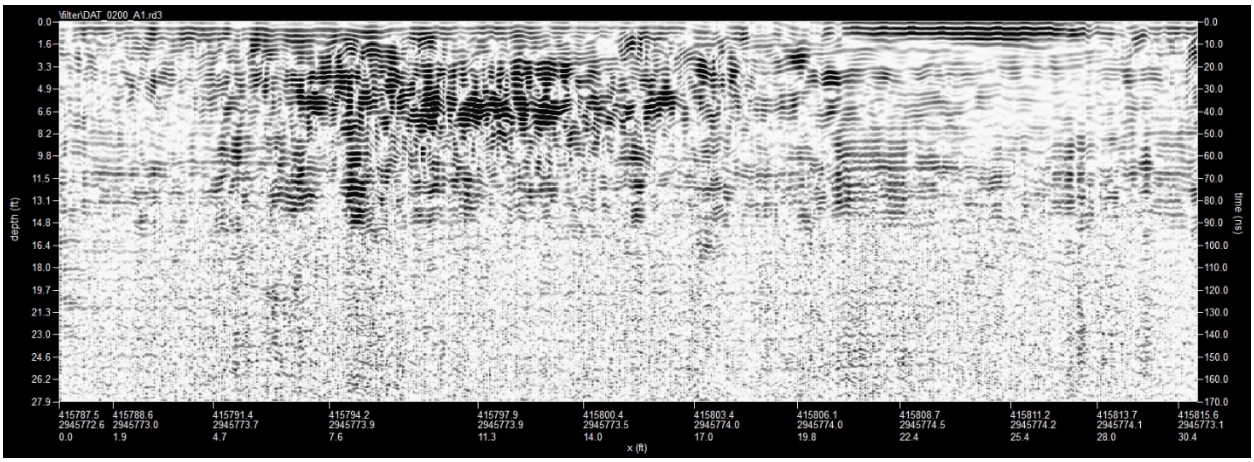
Transect 0197 from private property at the Ft. Myers South Street site.



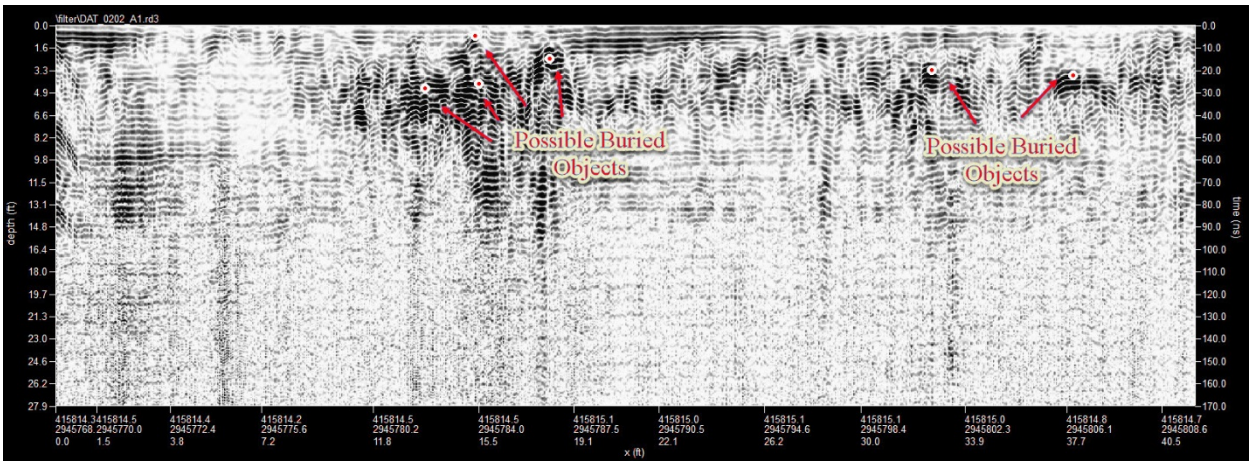
Transect 0198 from private property at the Ft. Myers South Street site.



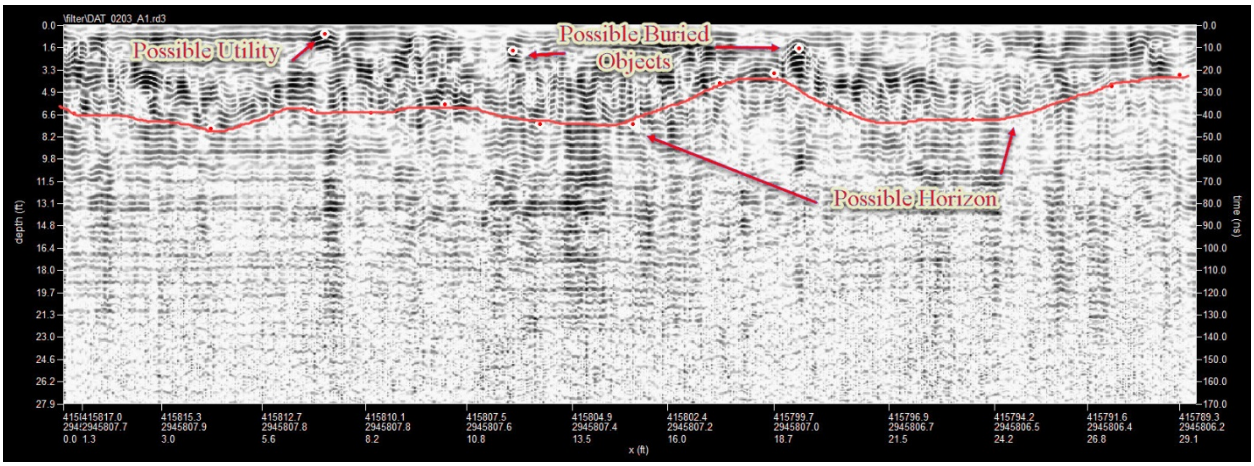
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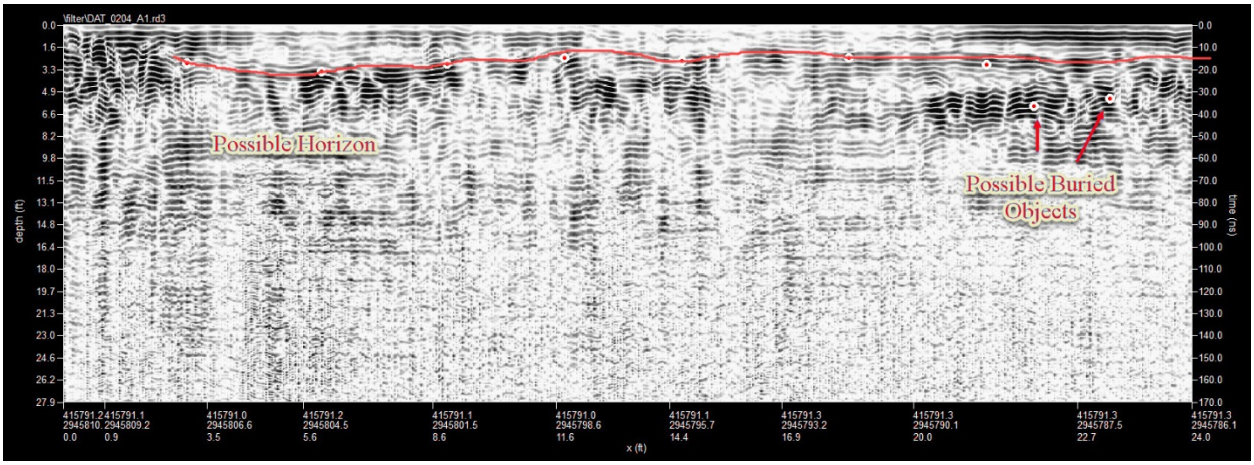
Transect 2 from 3305 South Street.



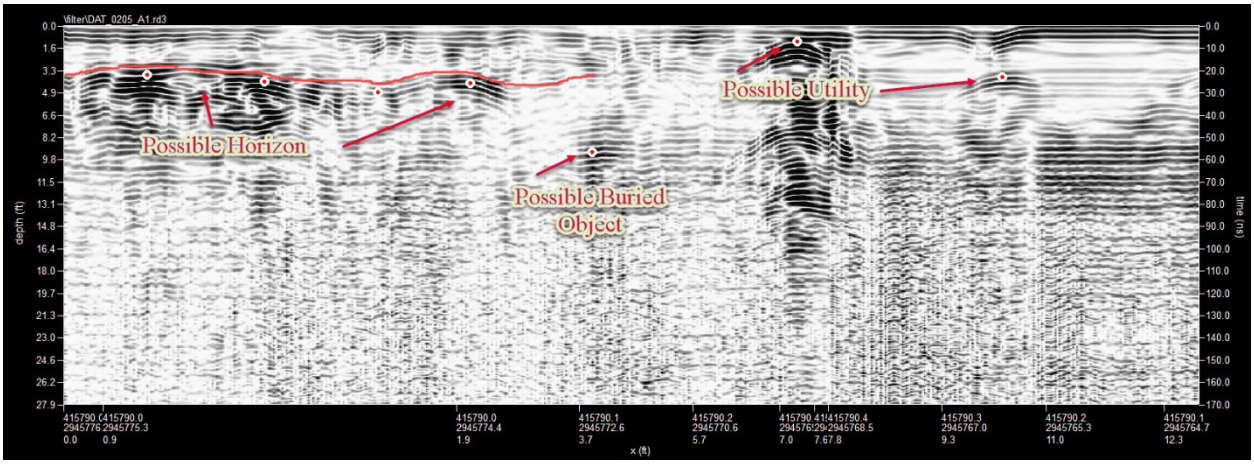
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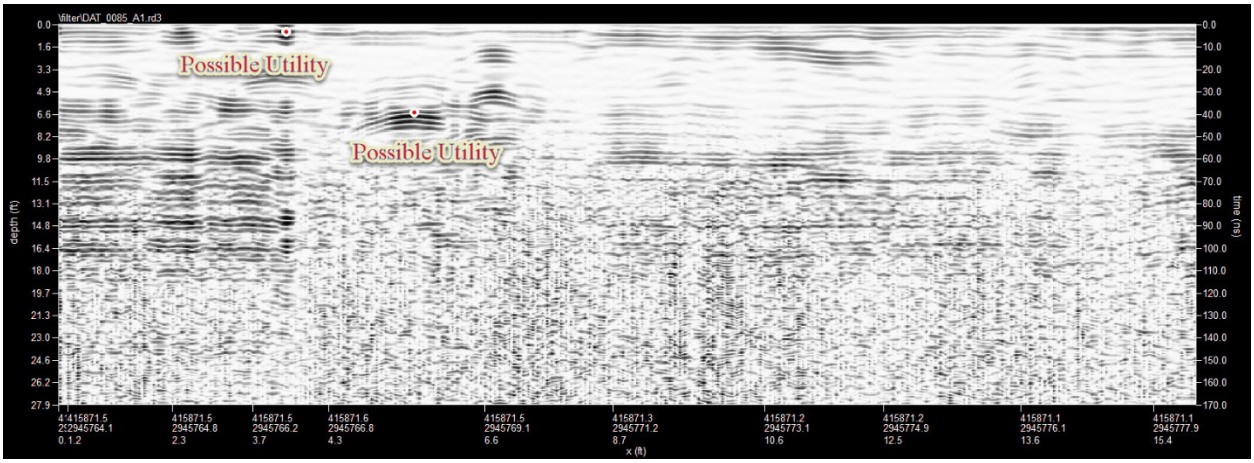
Transect 4 from 3305 South Street.



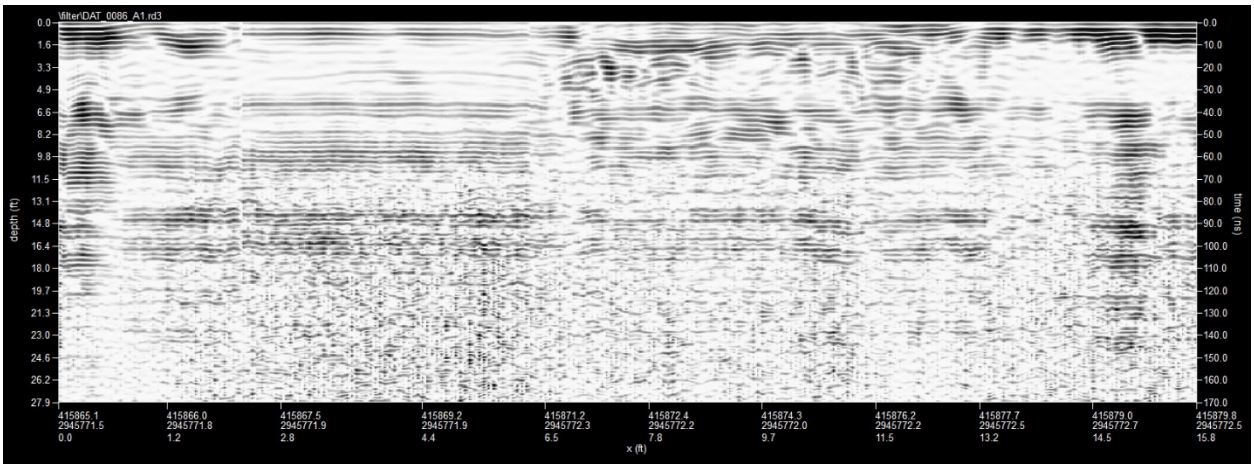
Transect 5 from 3305 South Street.



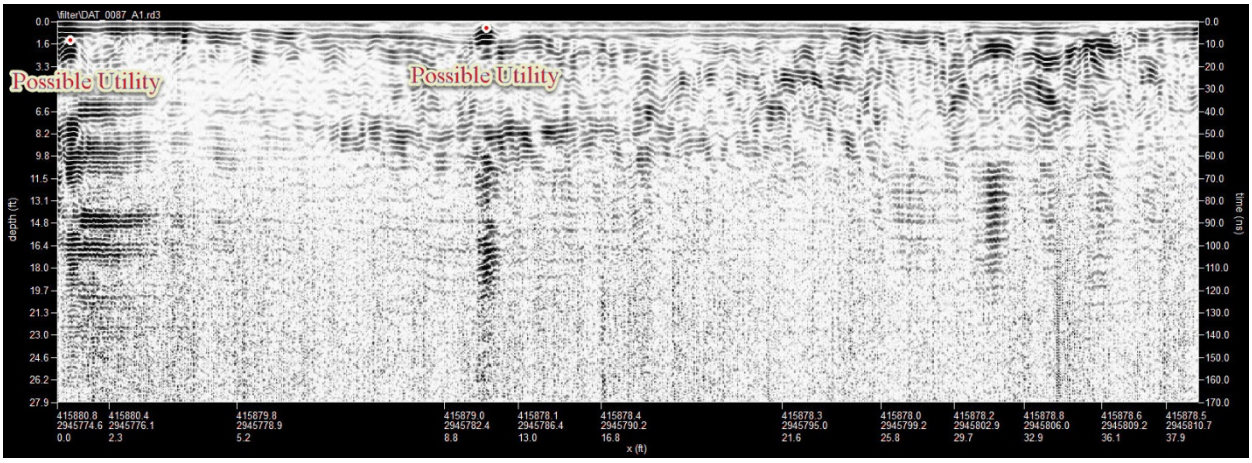
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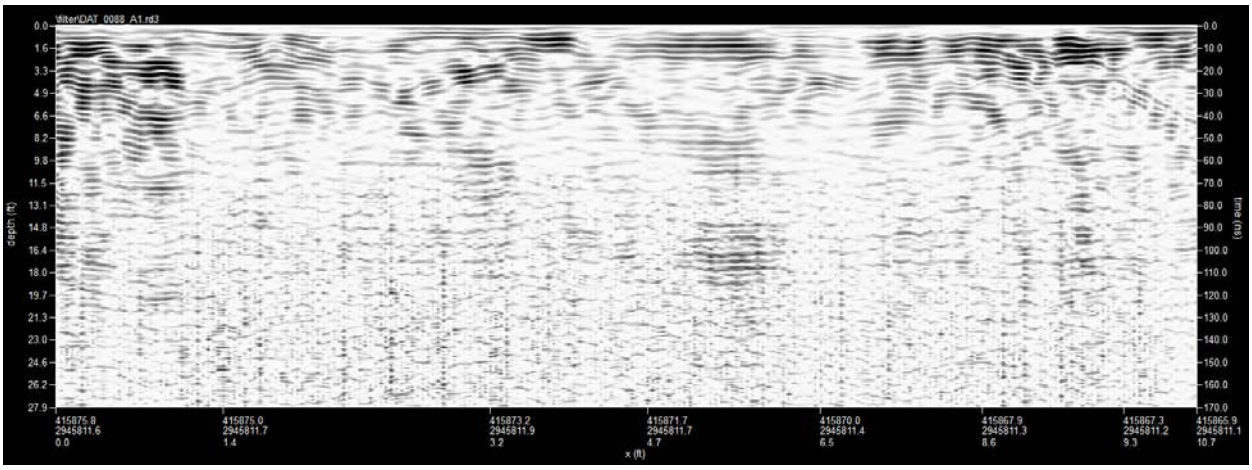
Transect 1 from 3325 South Street.



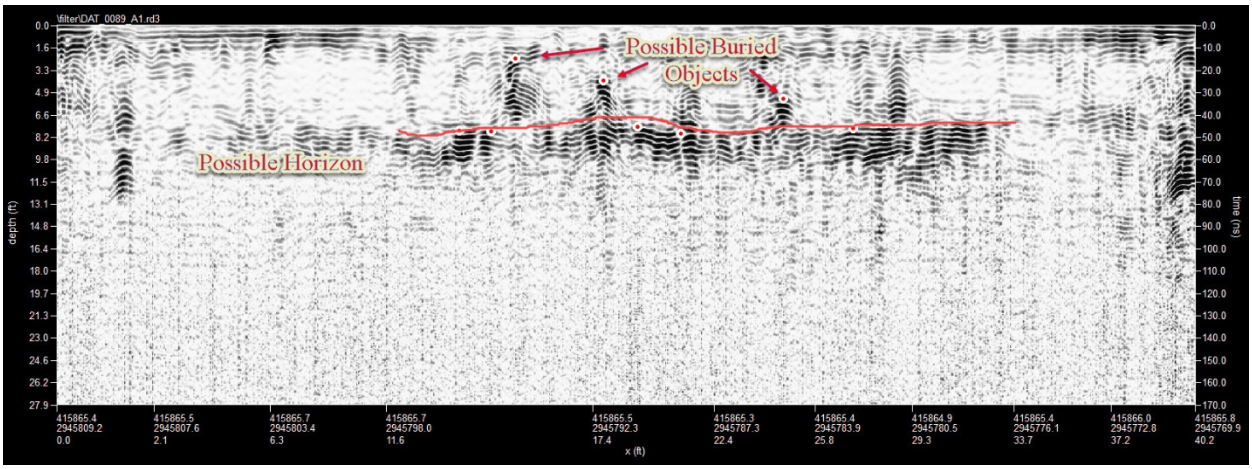
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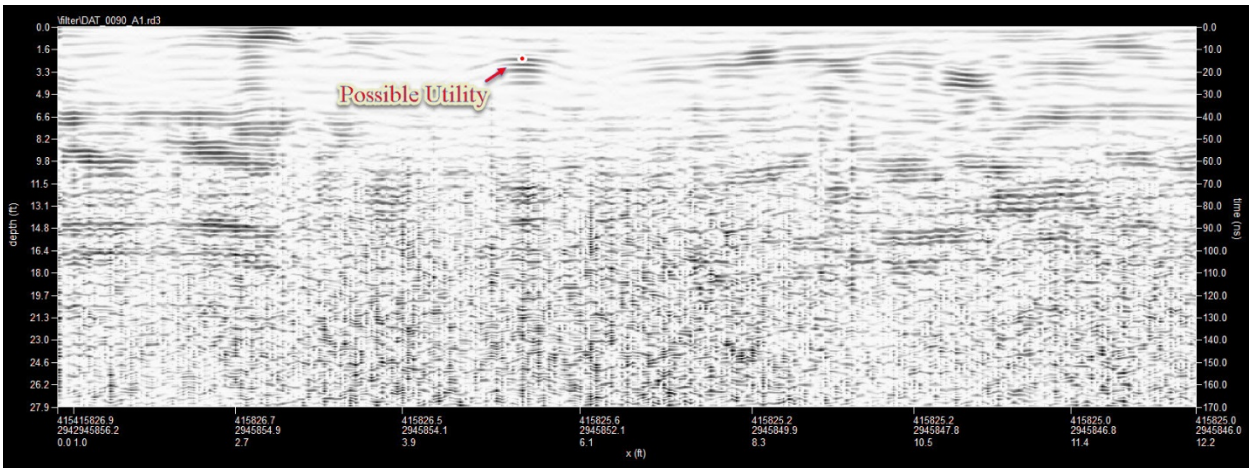
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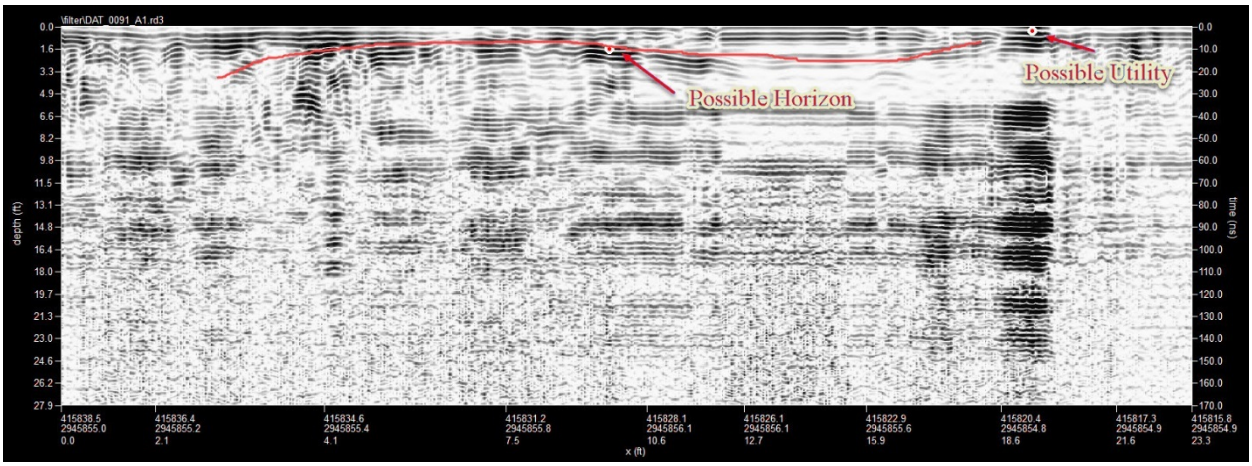
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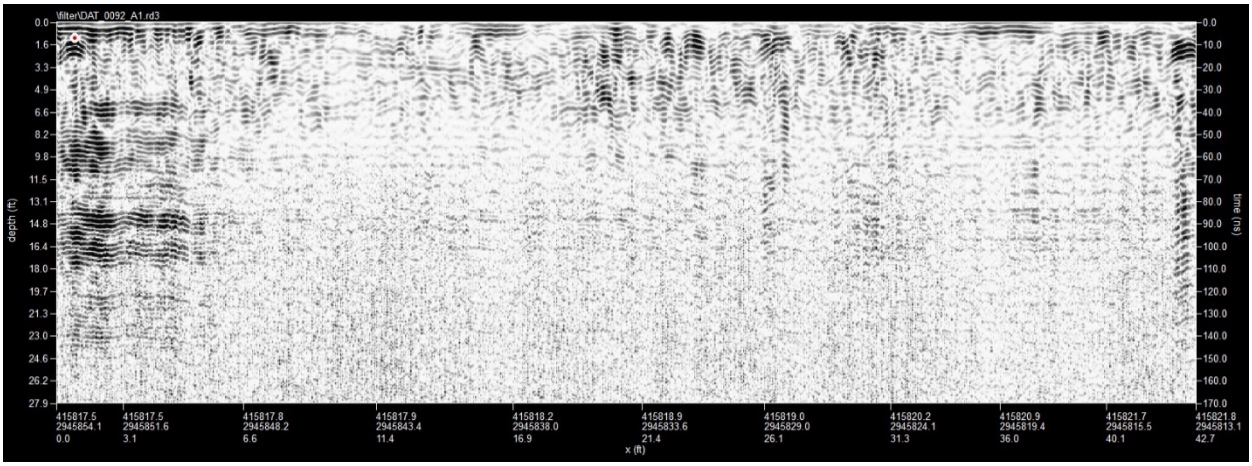
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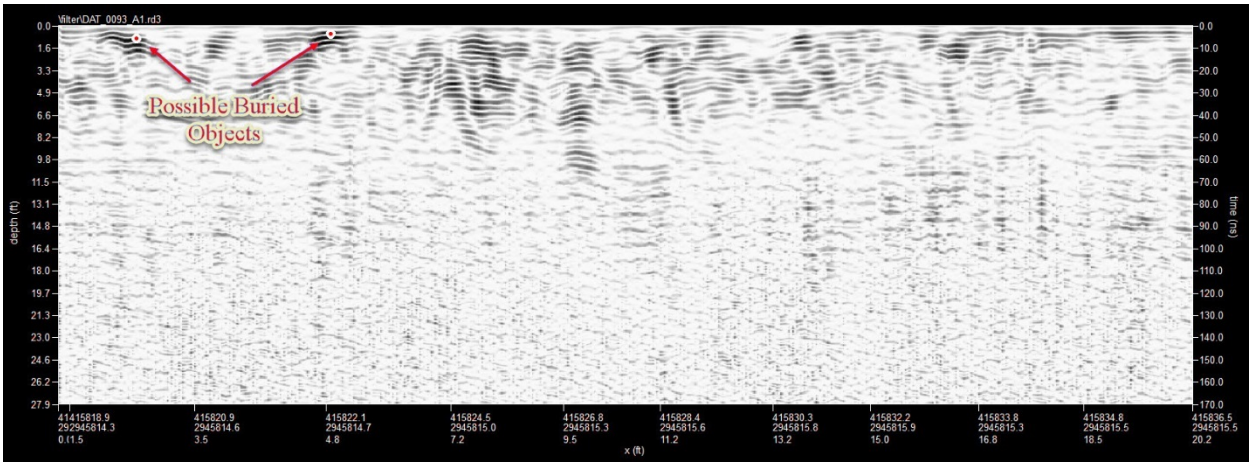
Transect 1 from 3314 Dora Street.



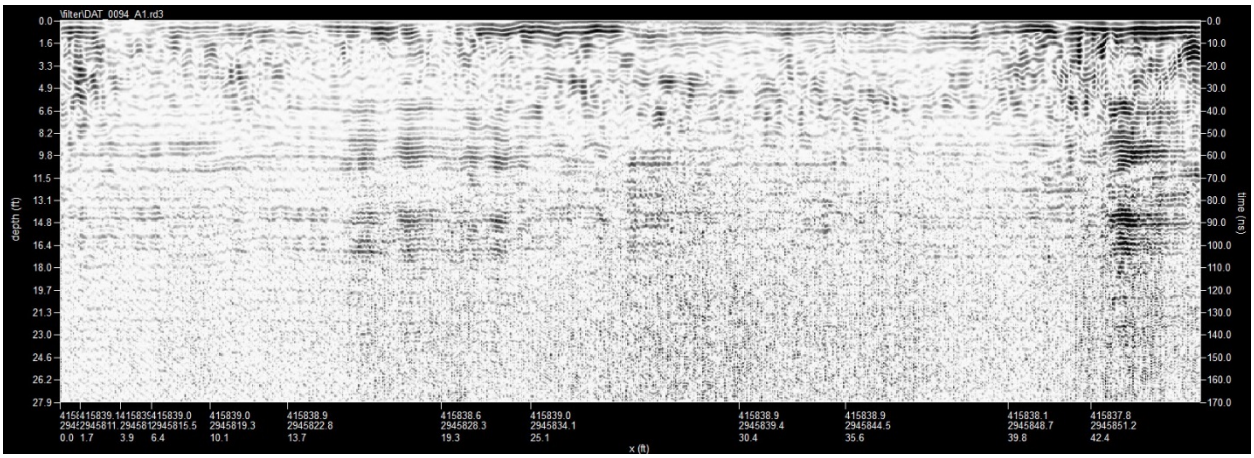
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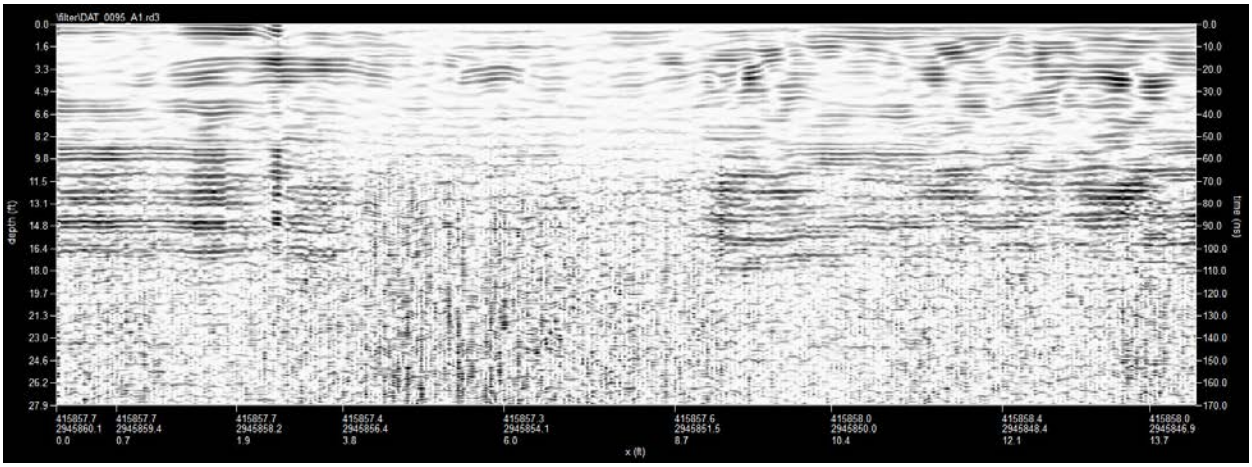
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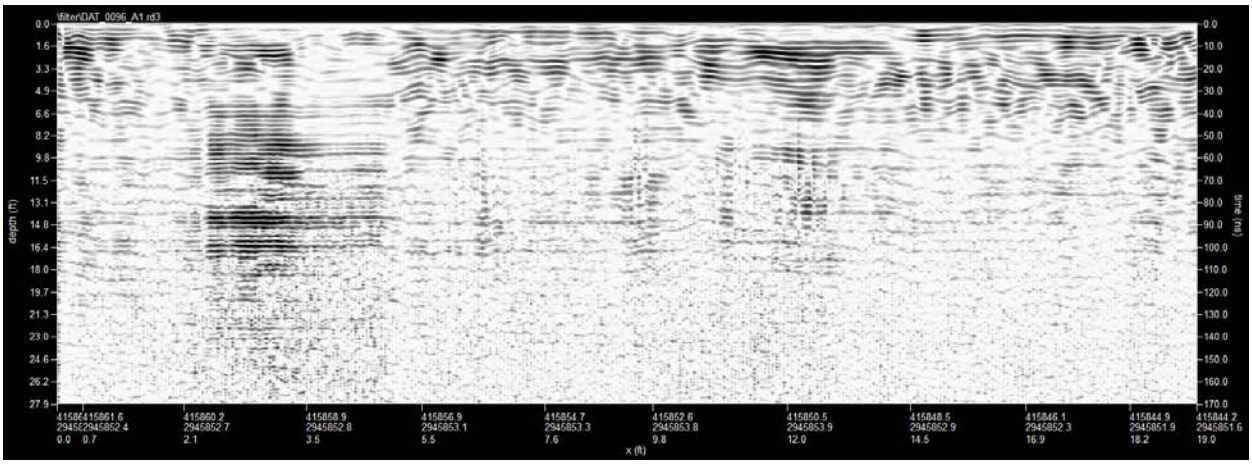
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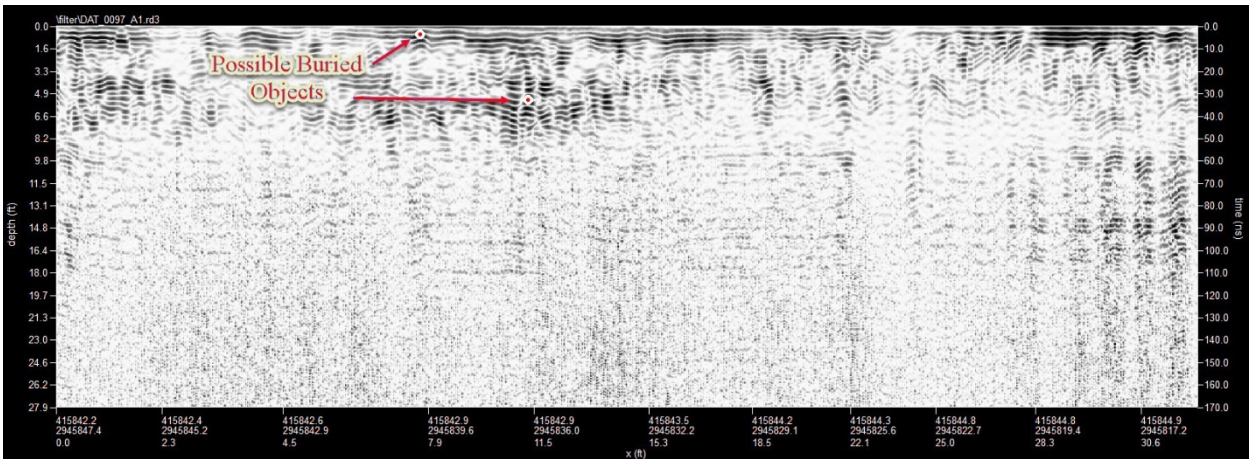
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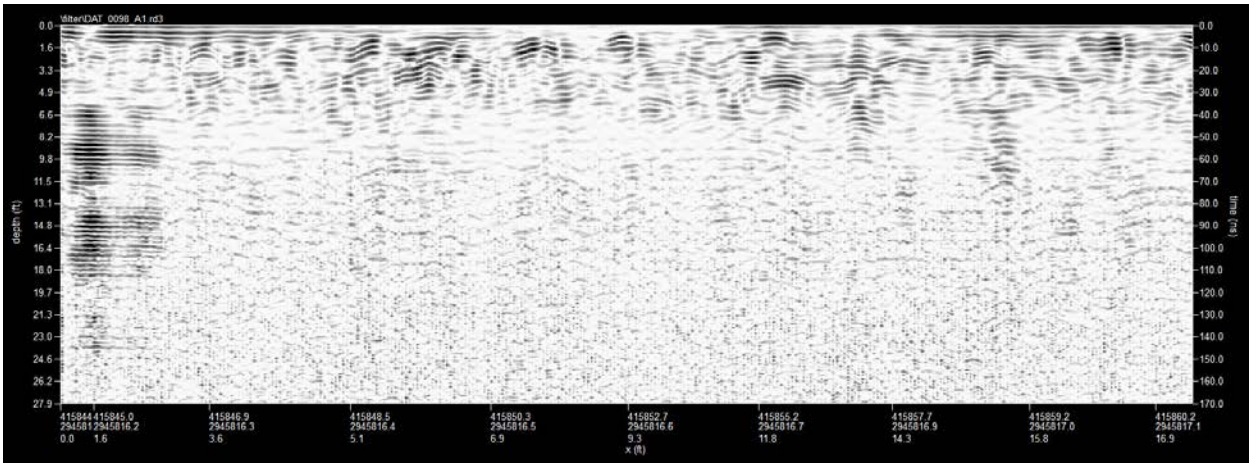
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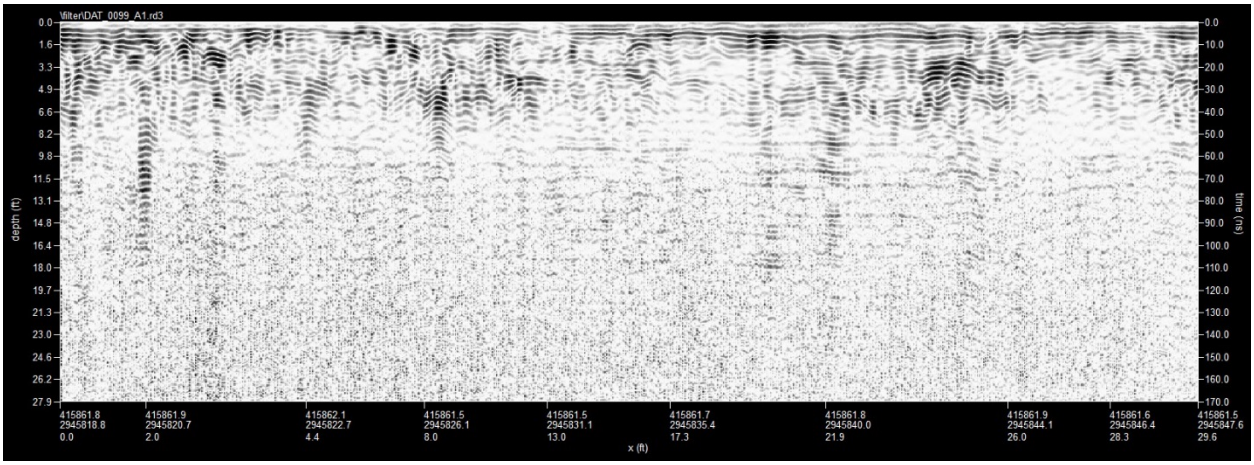
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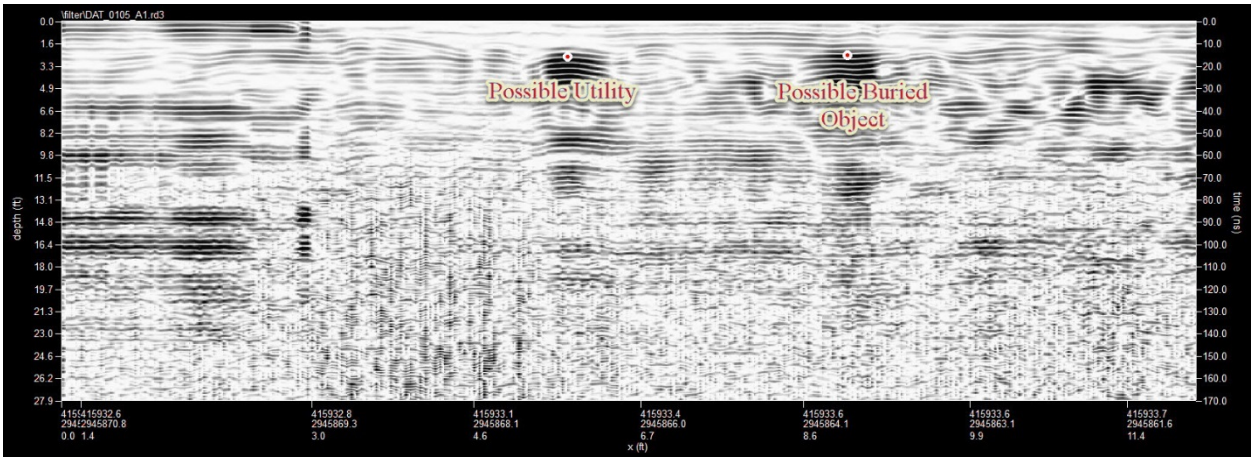
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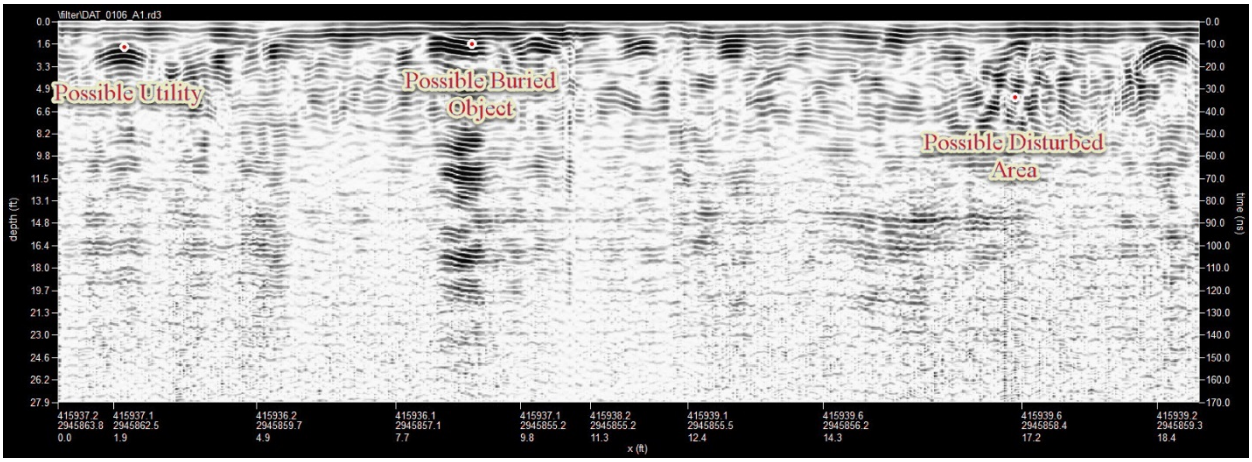
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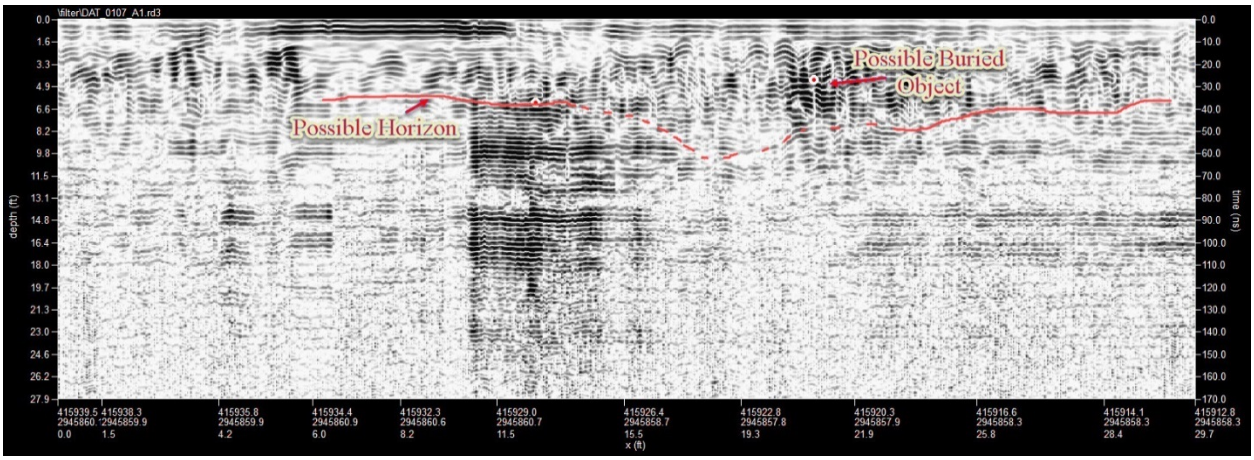
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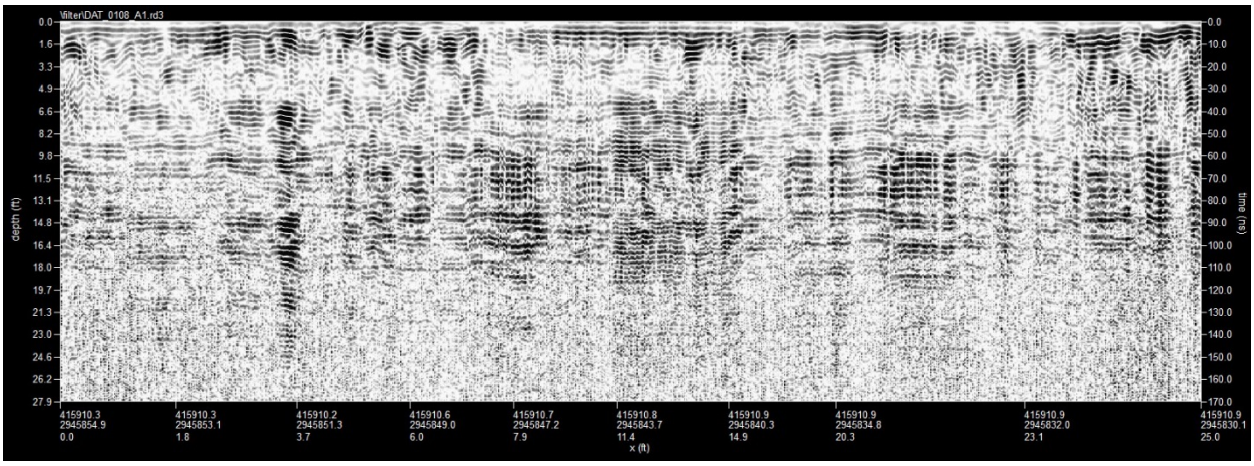
Transect 1 from 3338 Dora Street.



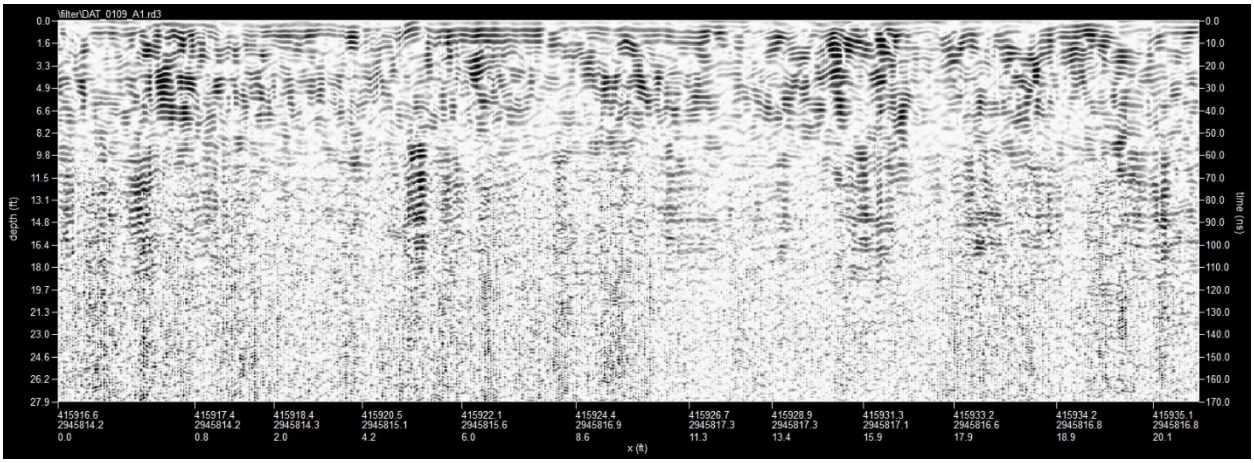
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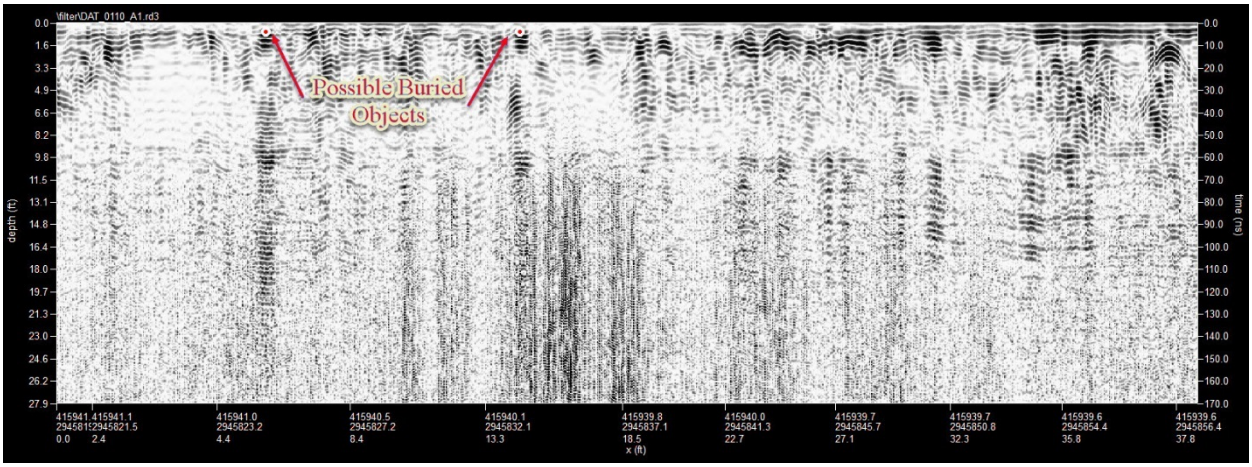
Transect 3 from 3338 Dora Street.



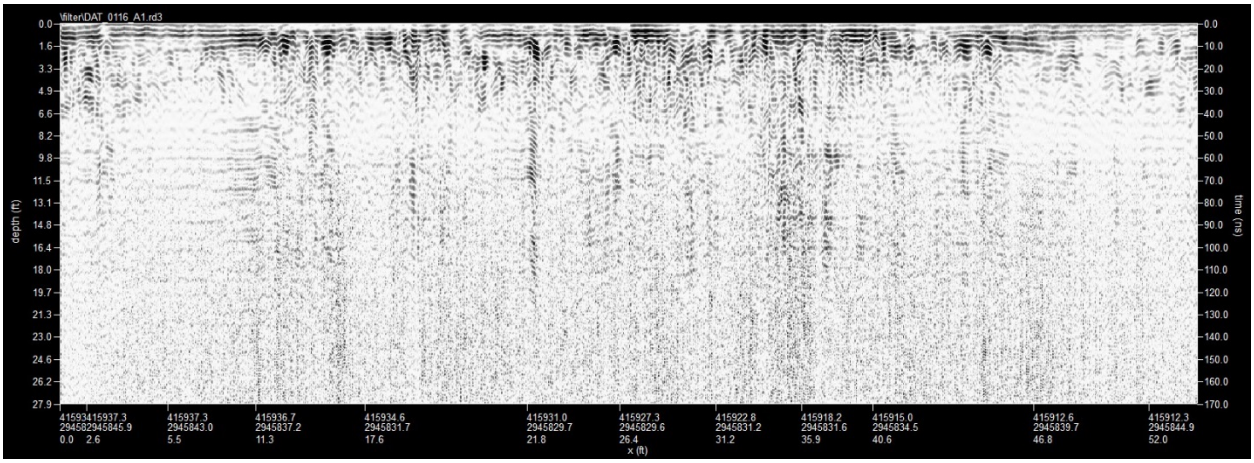
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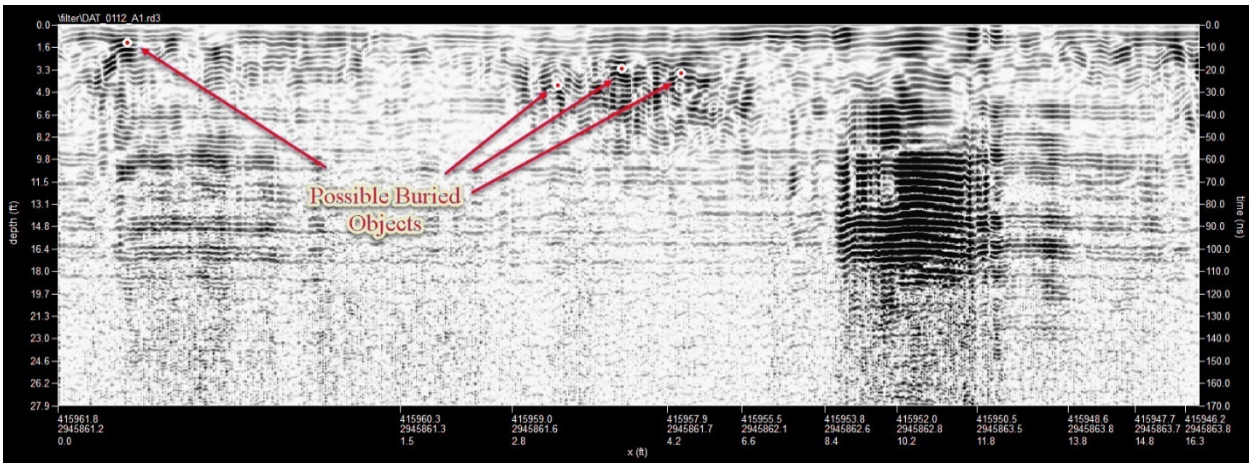
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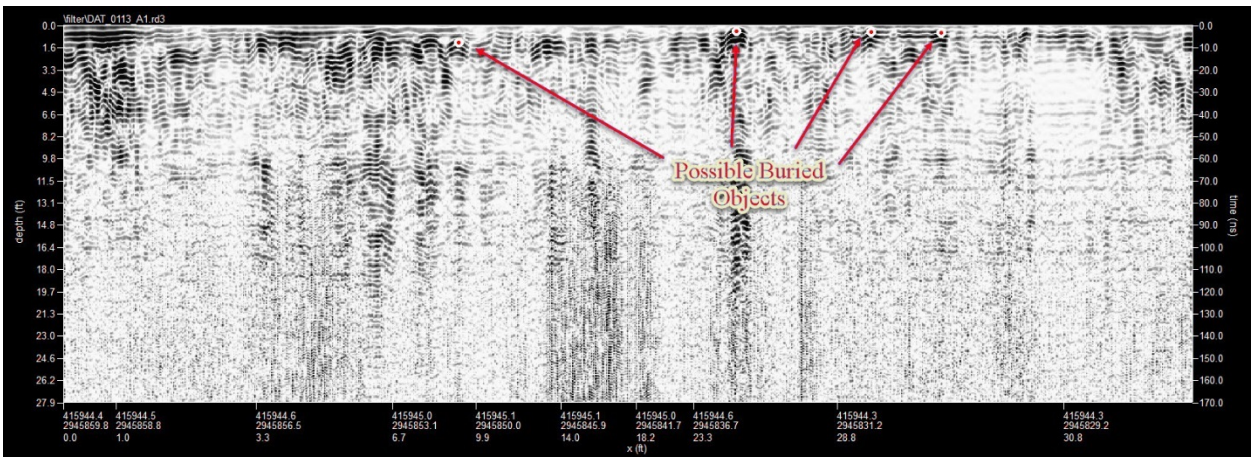
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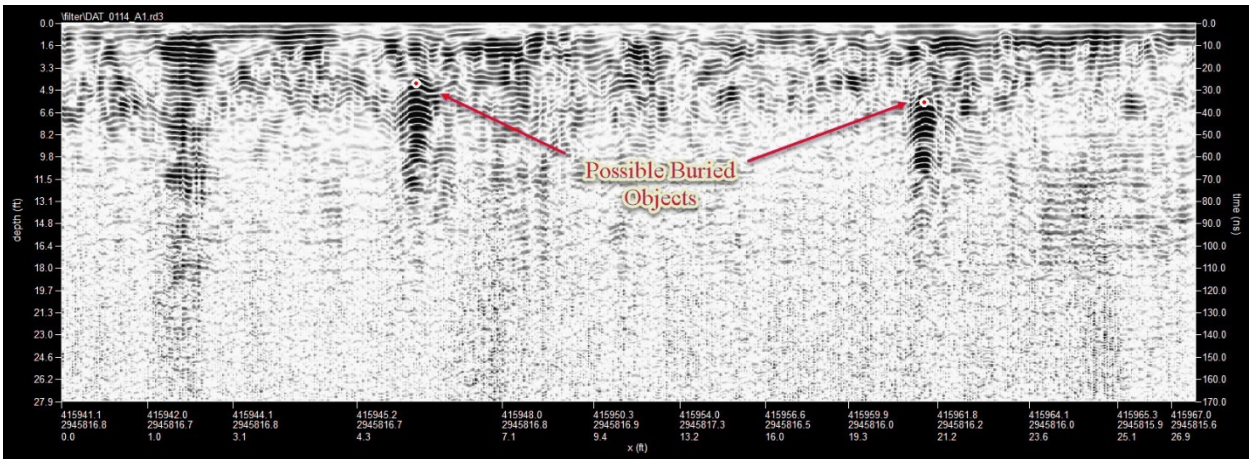
Transect 7 from 3338 Dora Street.



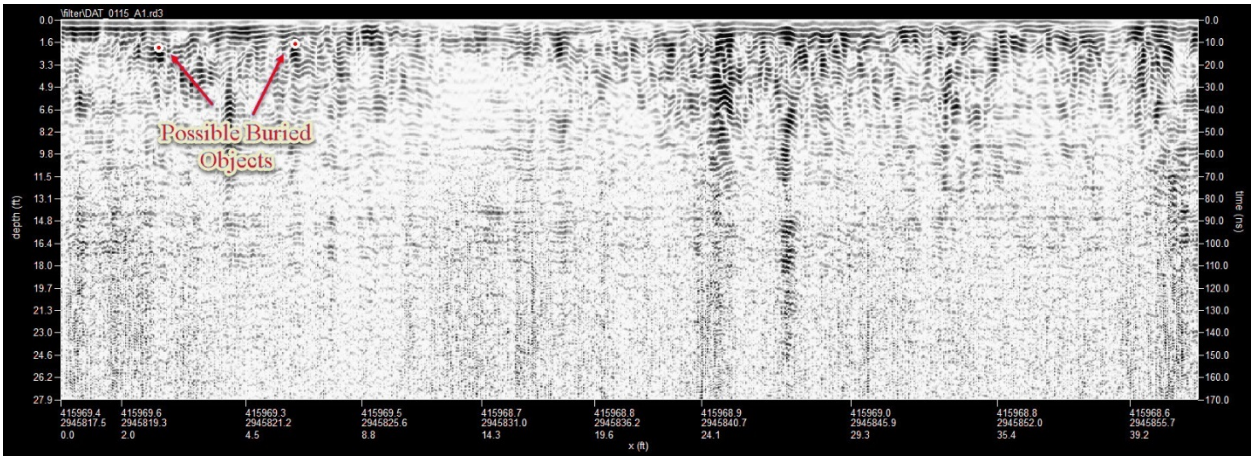
Transect 2 from 3348 Dora Street.



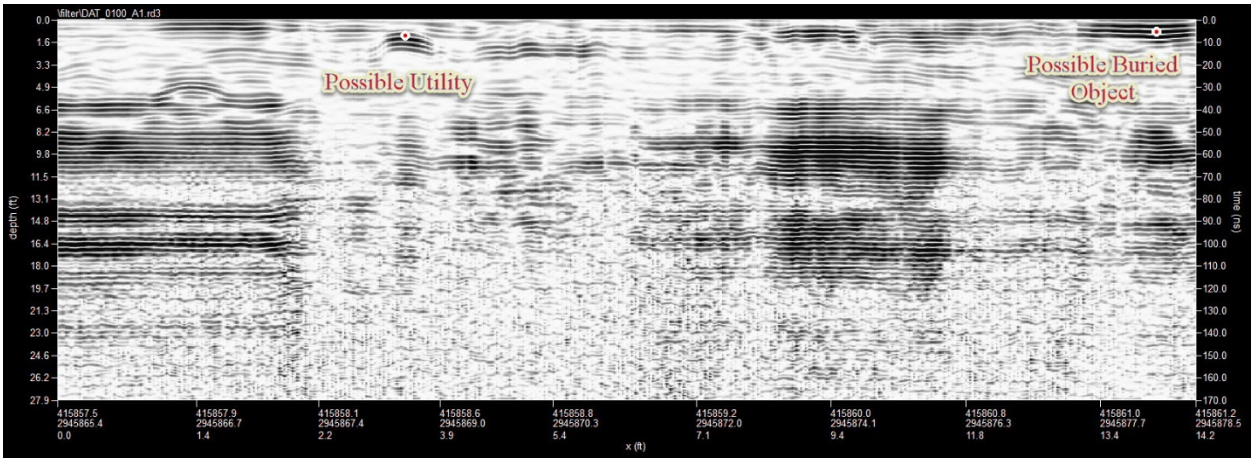
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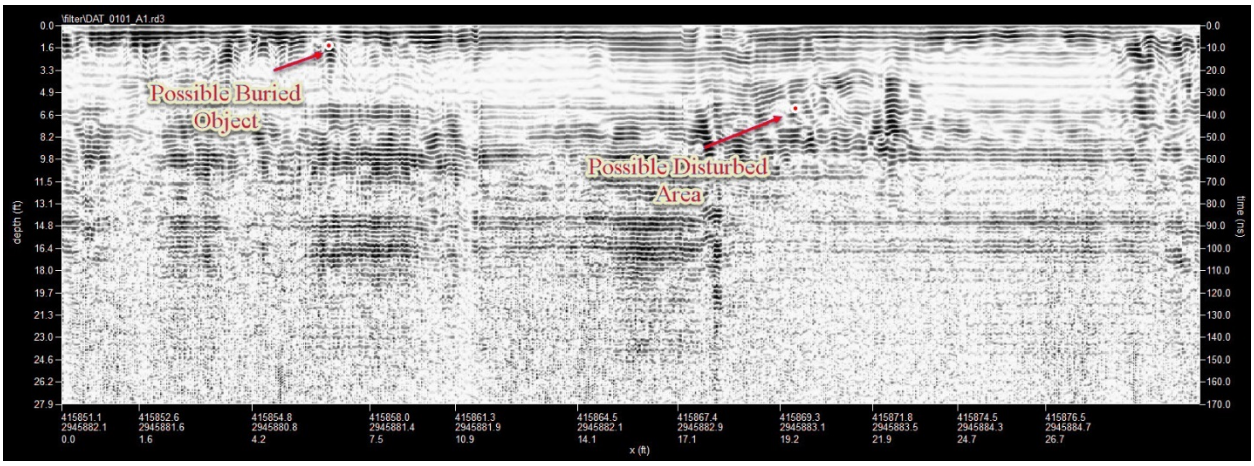
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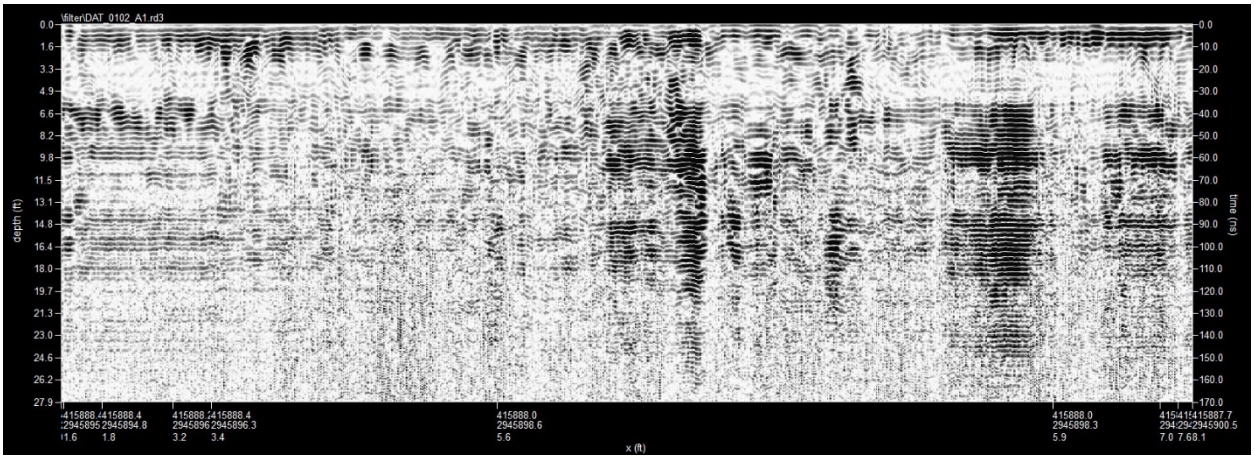
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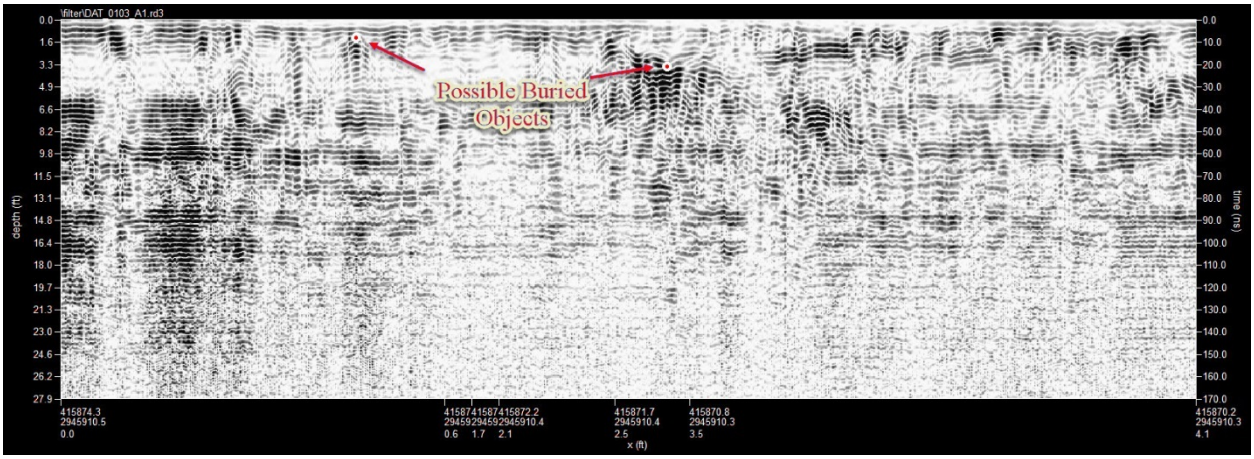
Transect 1 from 3321 Dora Street.



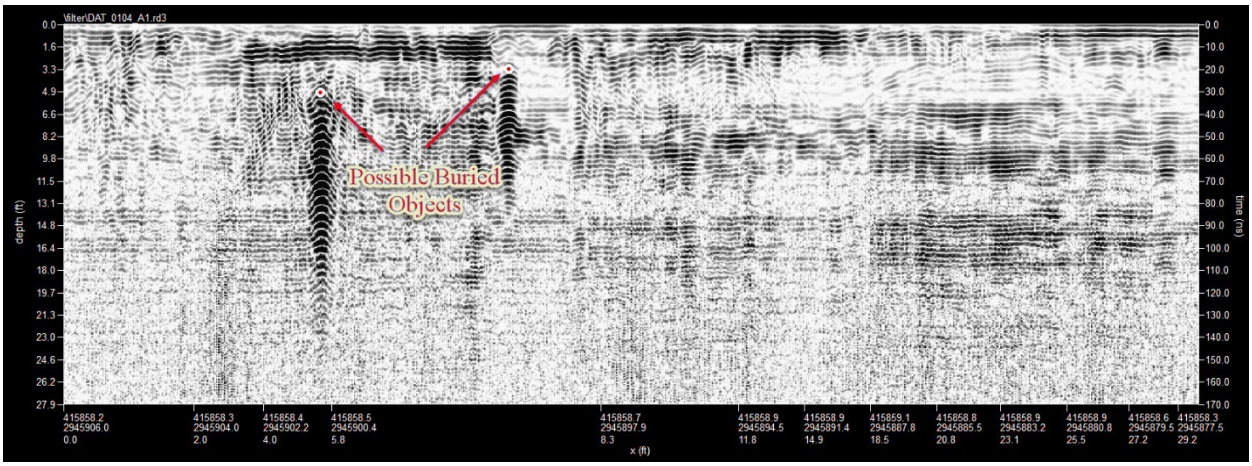
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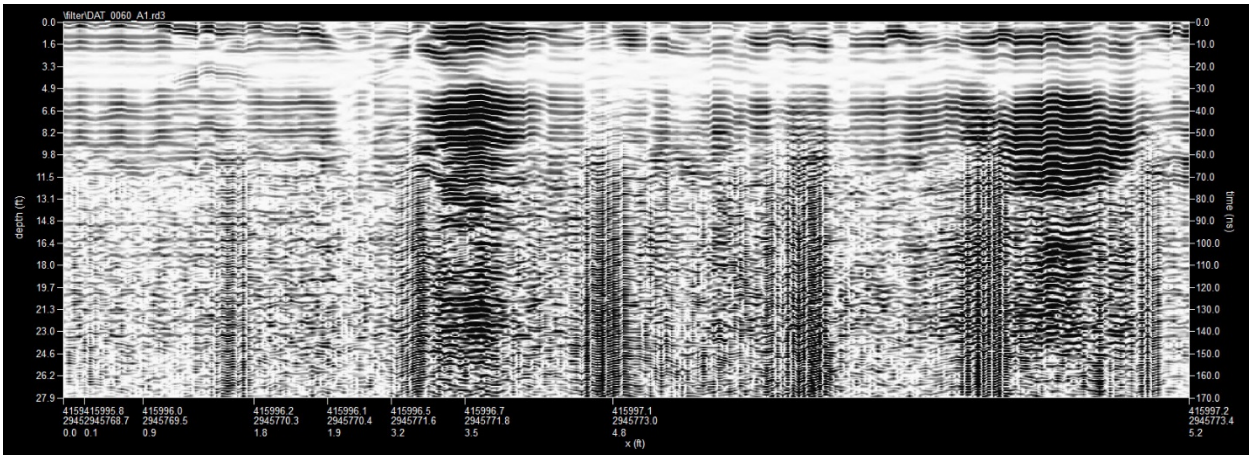
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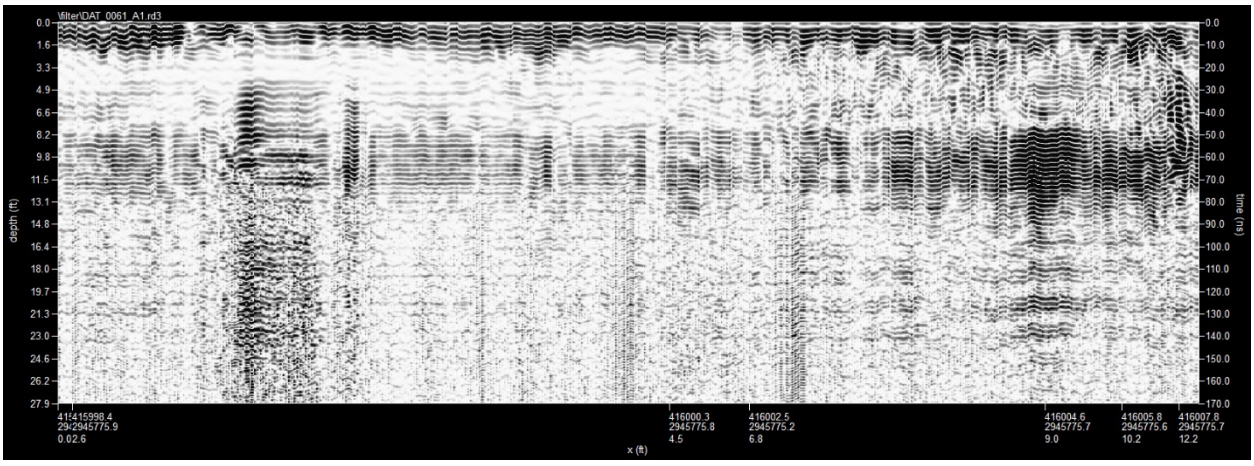
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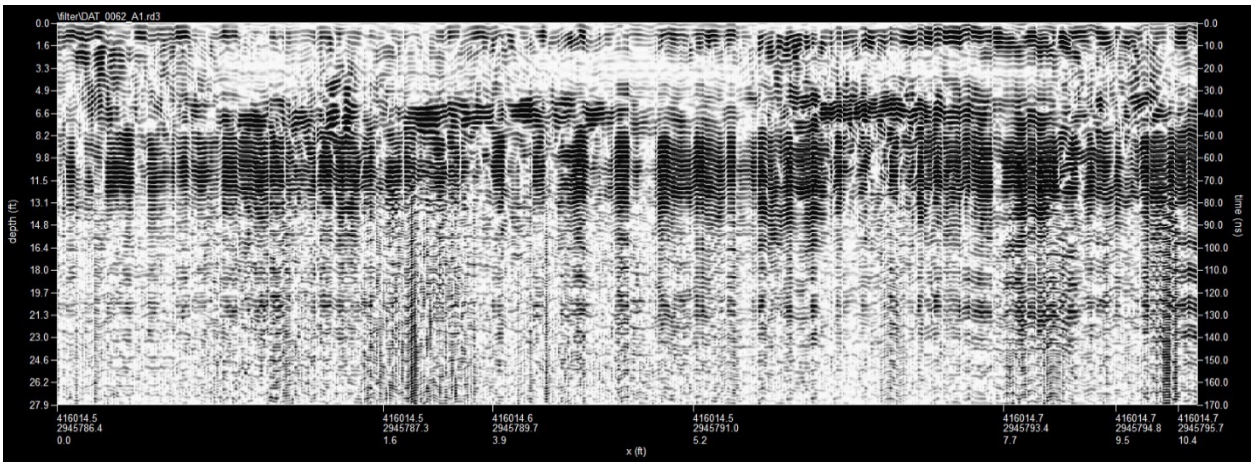
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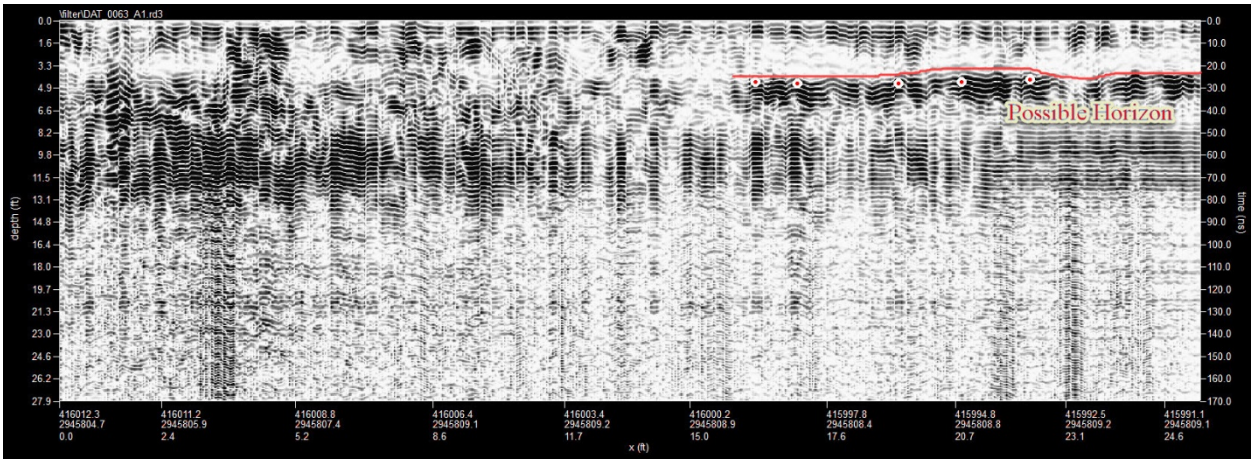
Transect 1 from 3405 South Street.



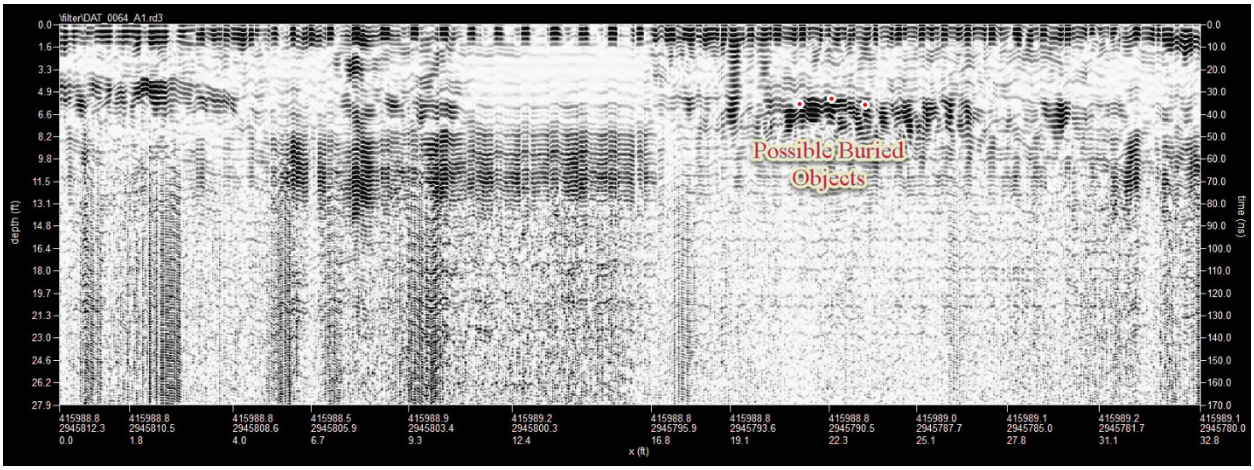
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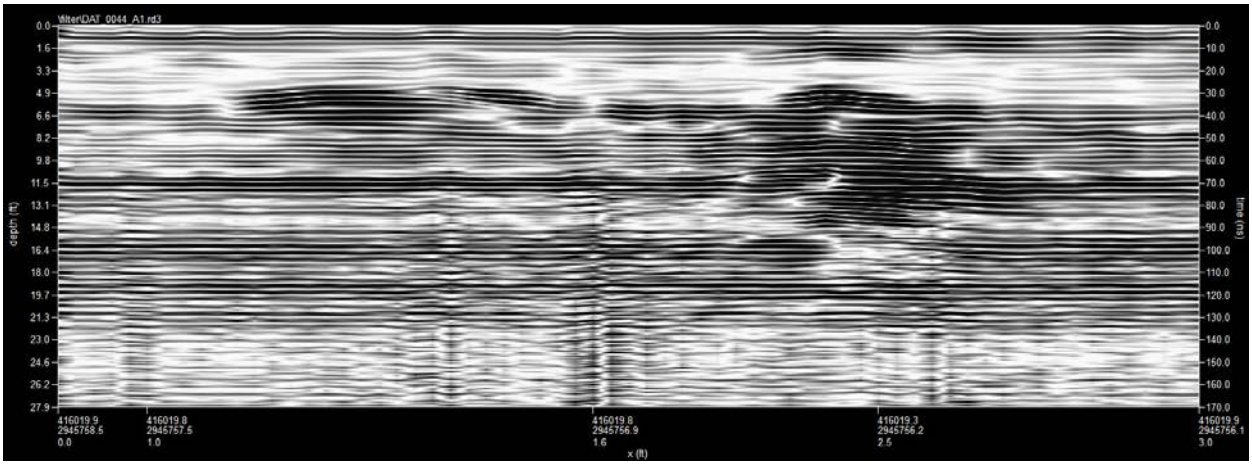
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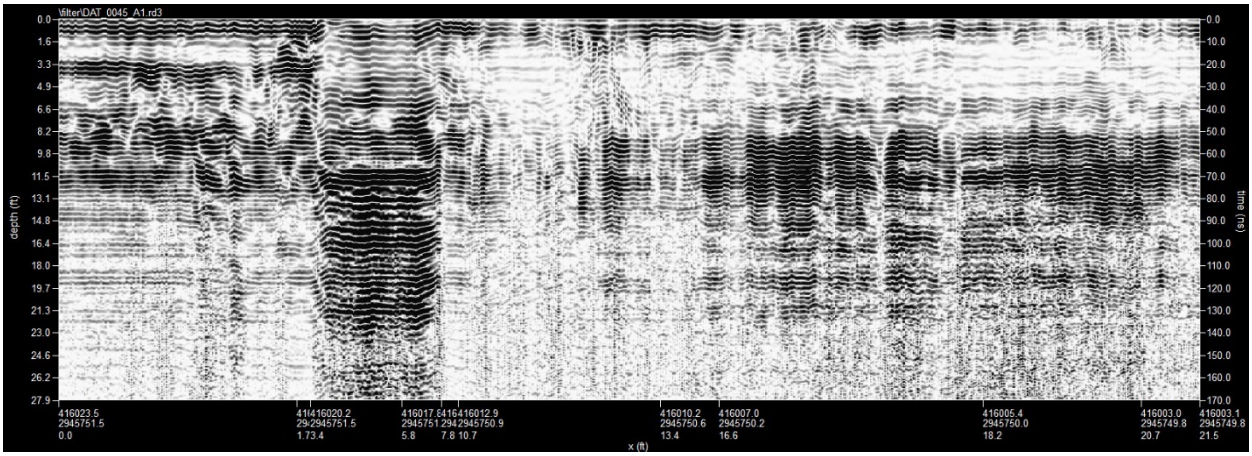
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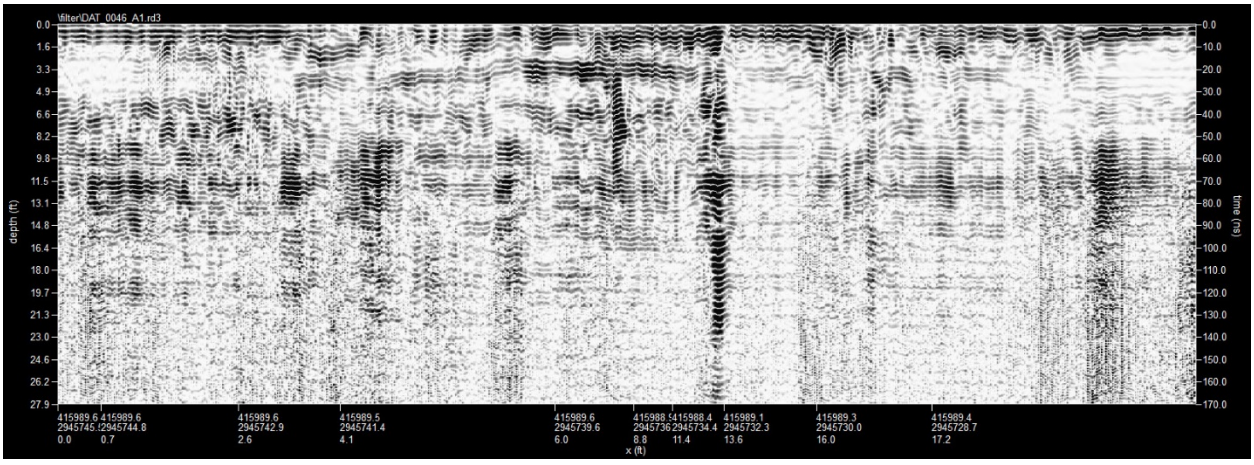
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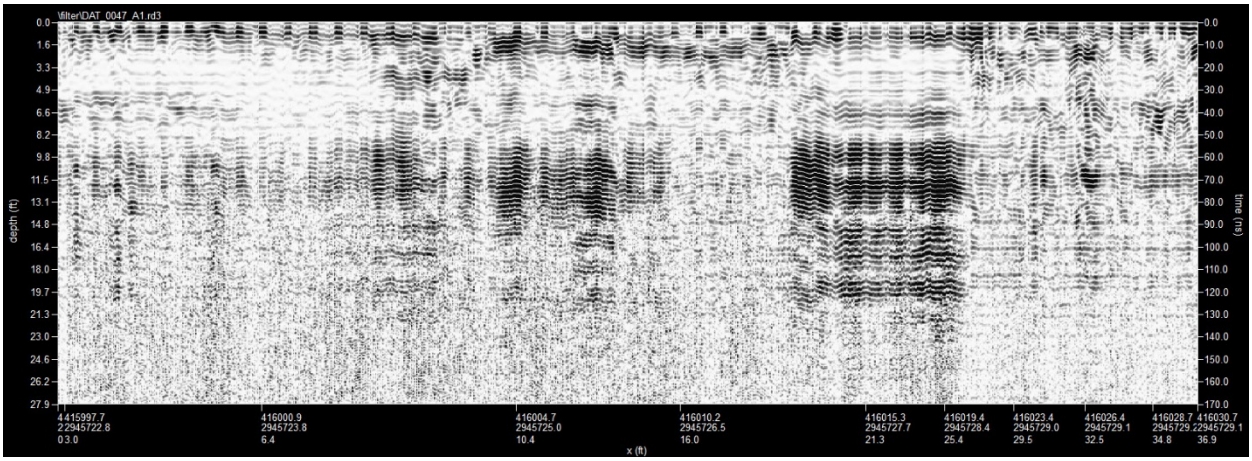
Transect 1 from 3412 South Street.



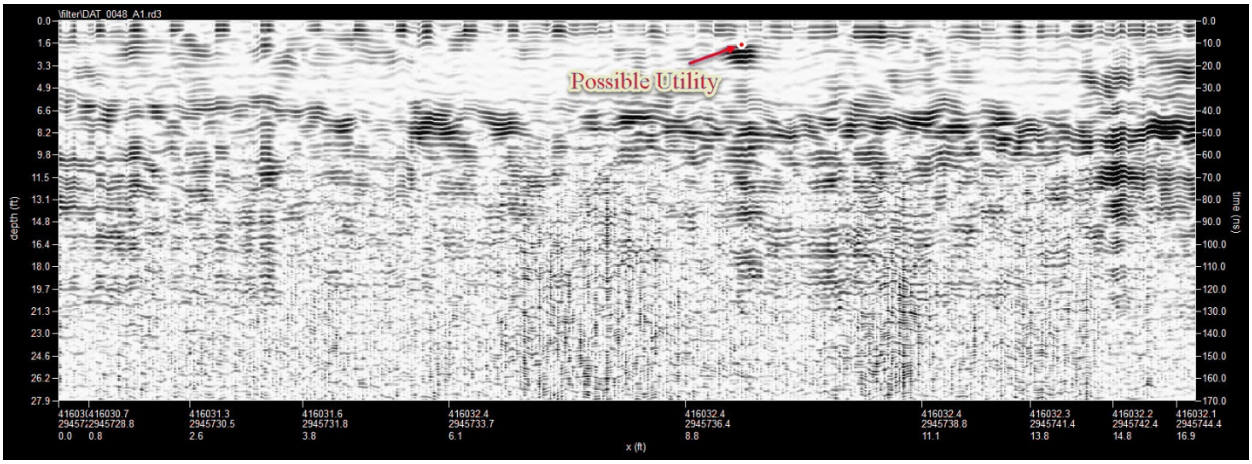
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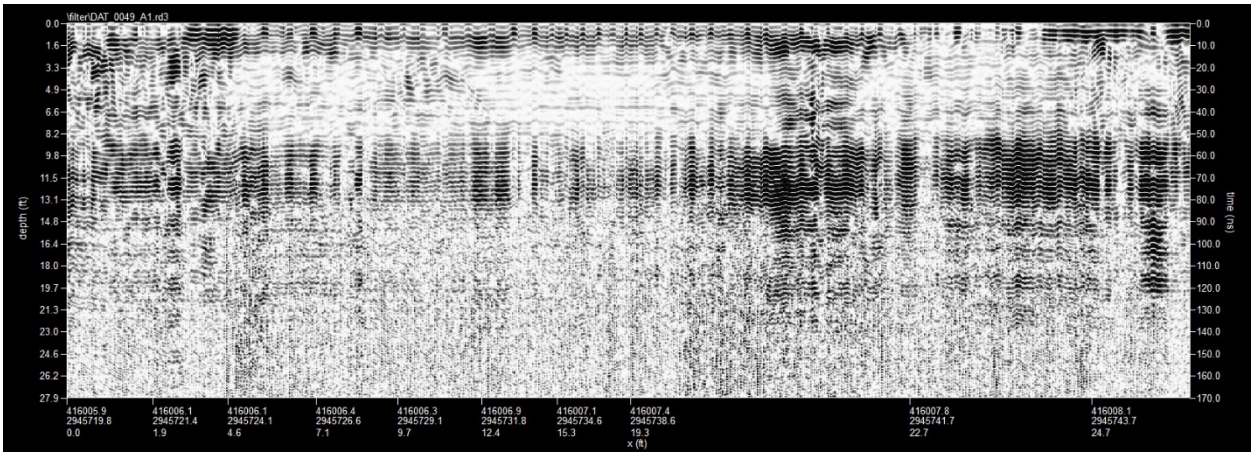
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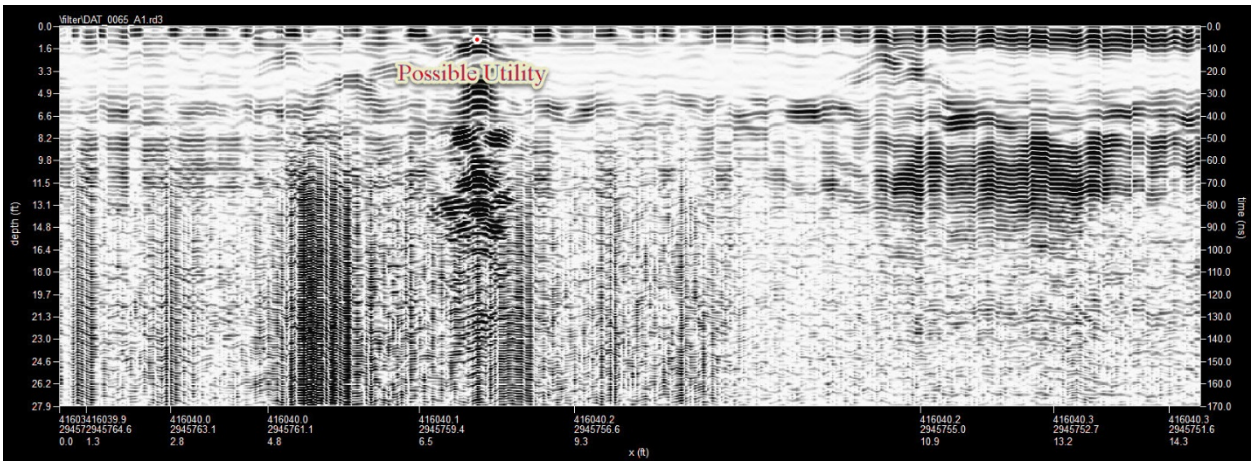
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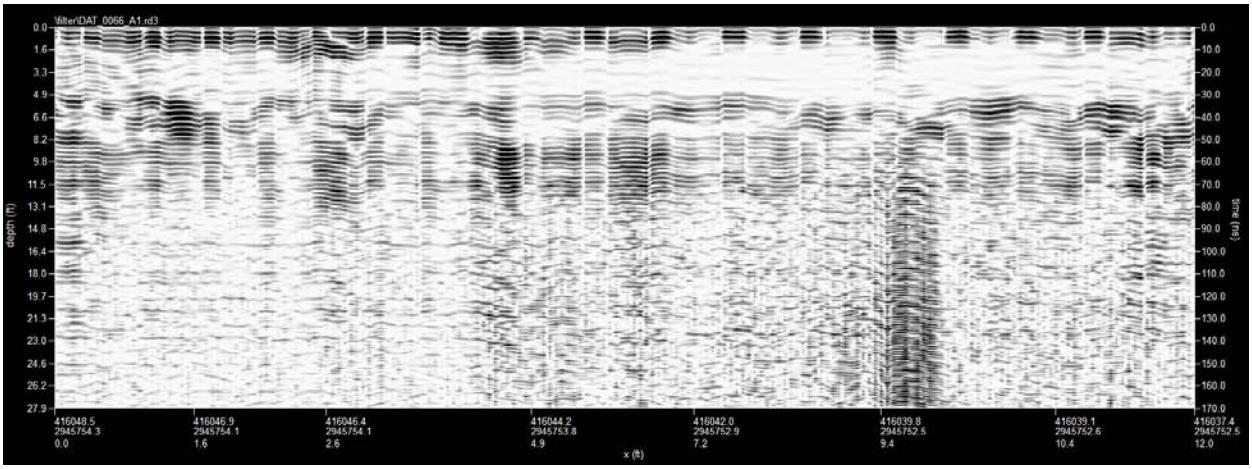
Transect 5 from 3412 South Street.



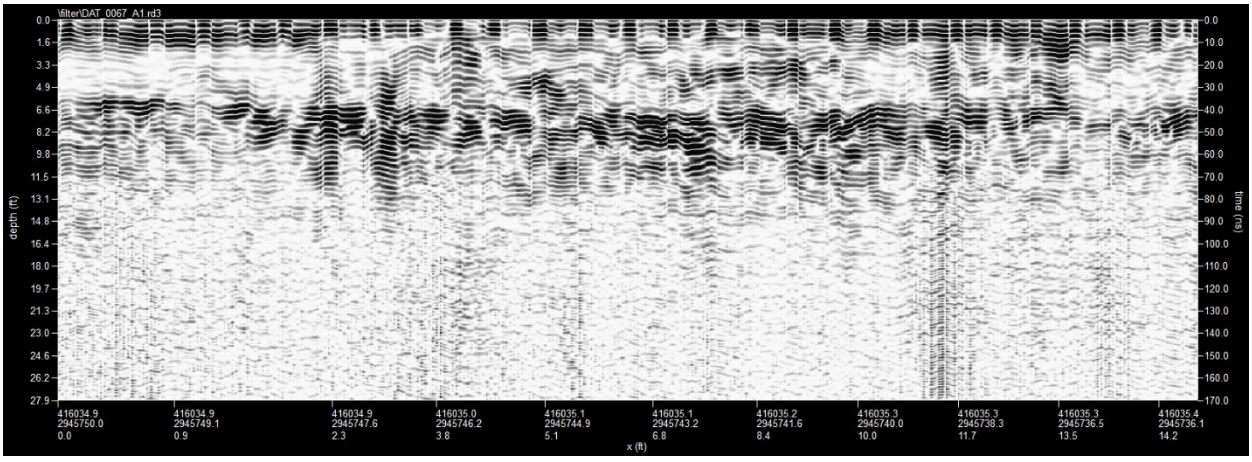
Transect 6 from 3412 South Street.



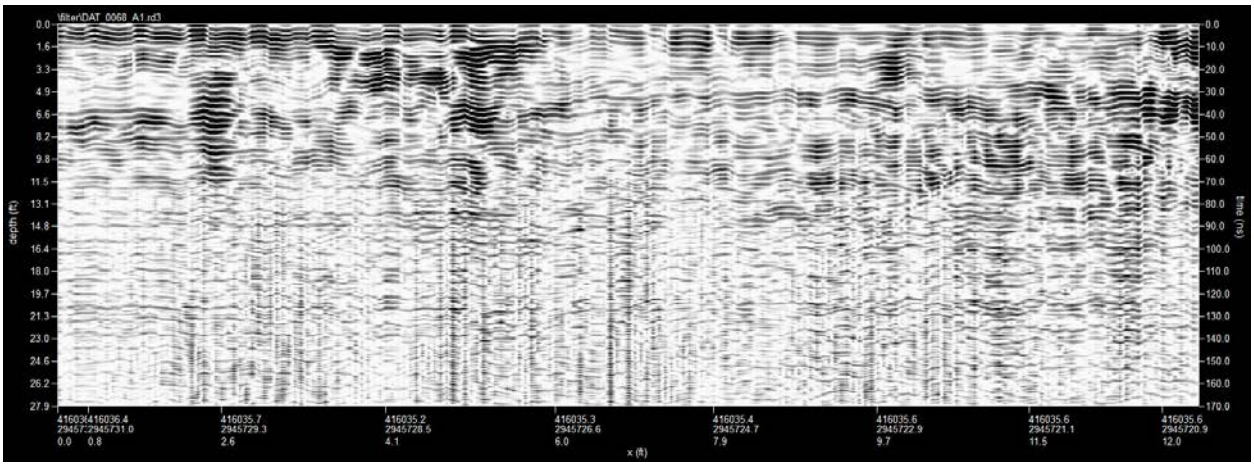
Transect 1 from 3416 South Street.



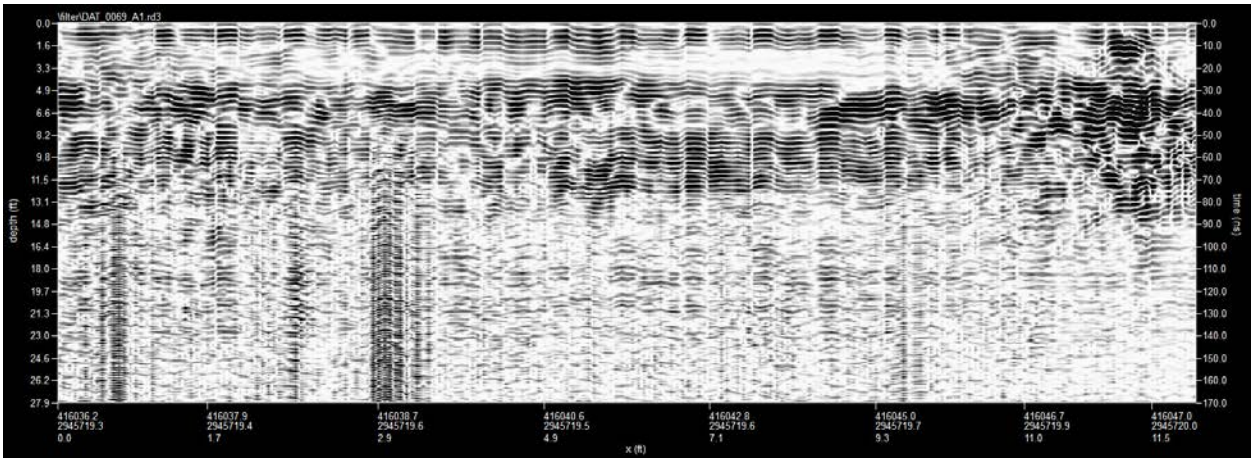
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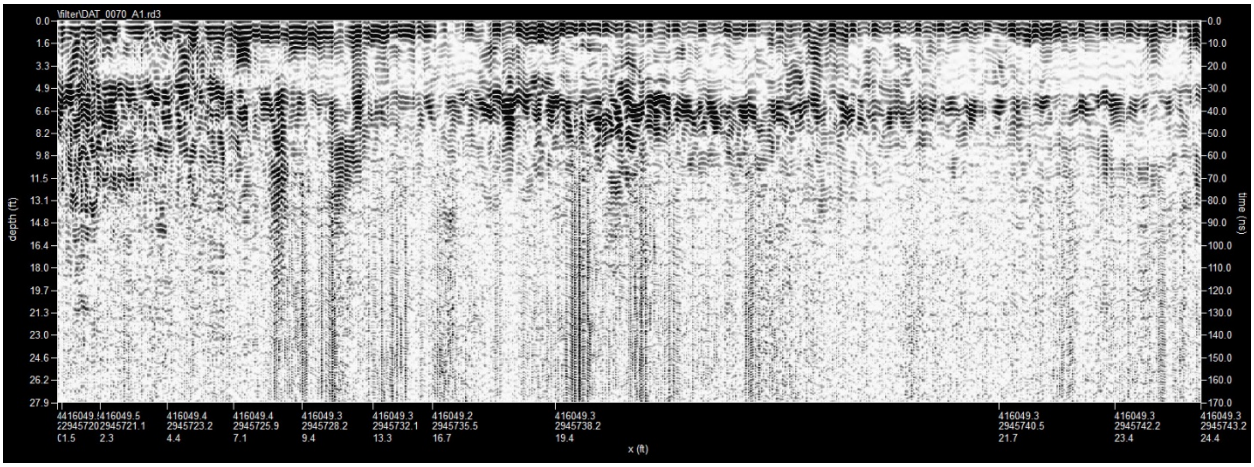
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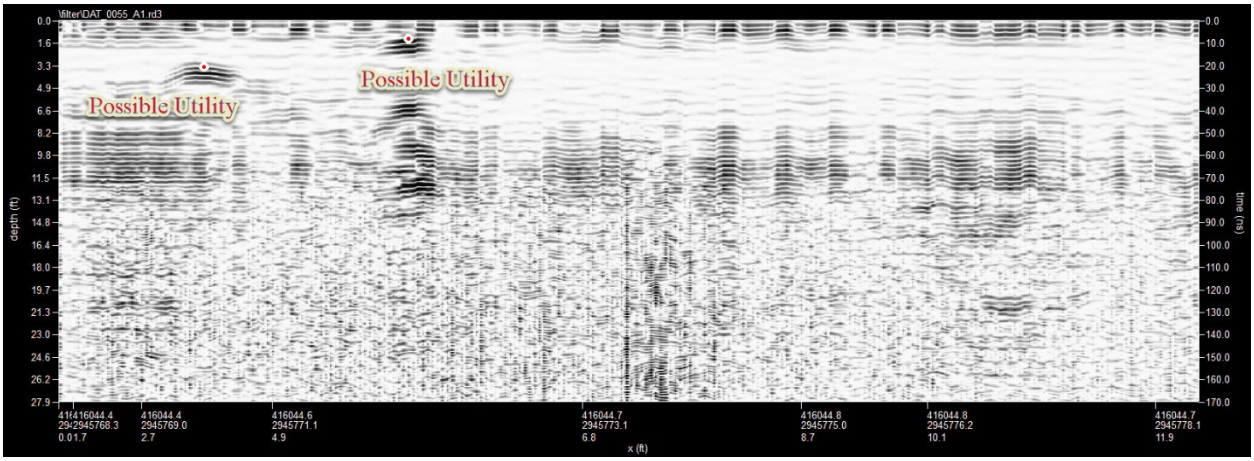
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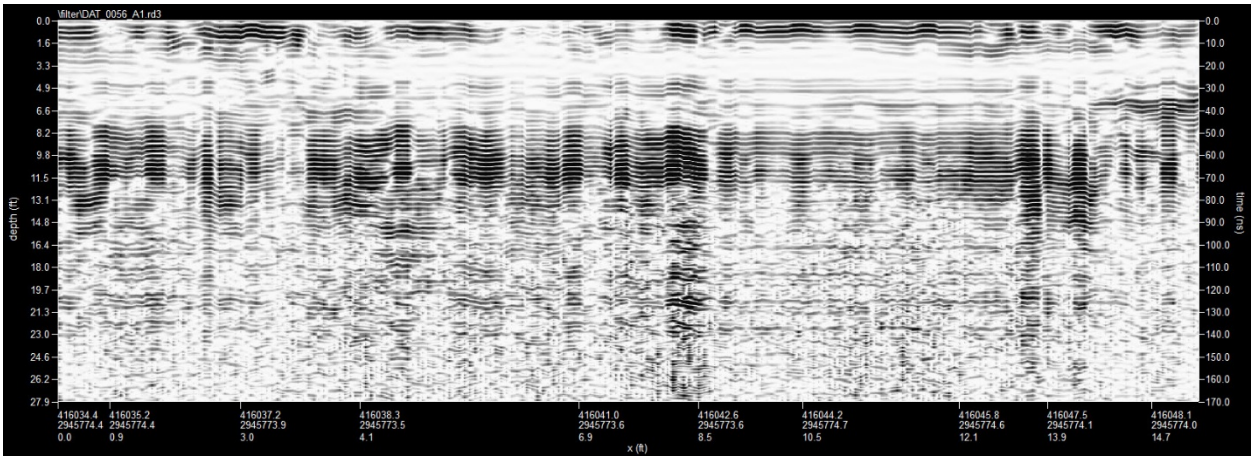
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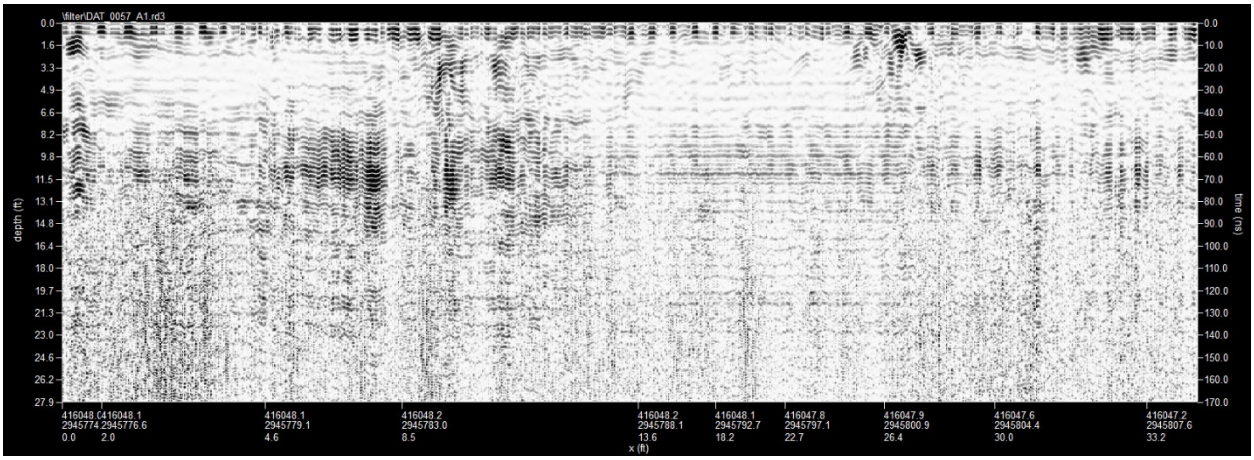
Transect 6 from 3416 South Street.



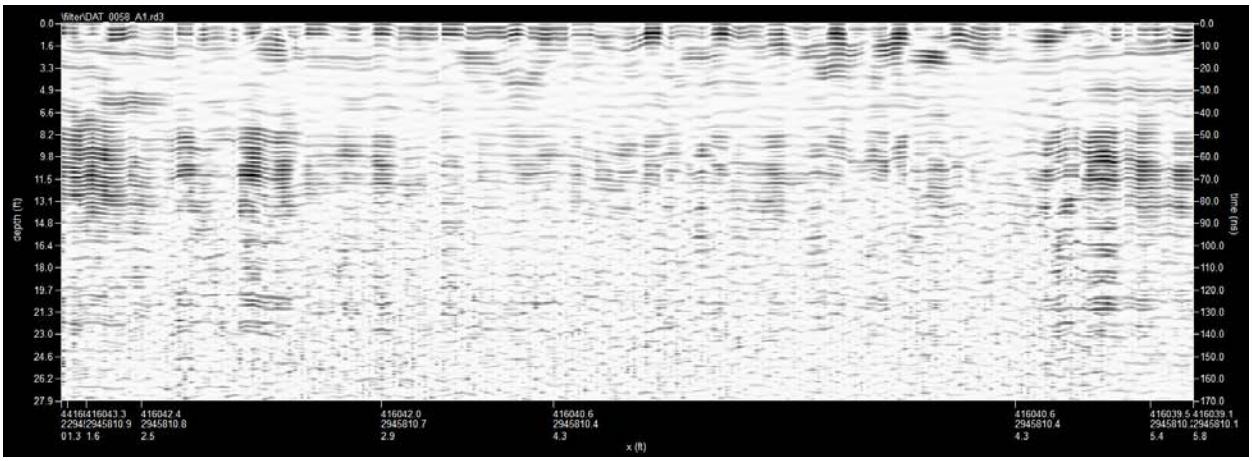
Transect 1 from 3417 South Street.



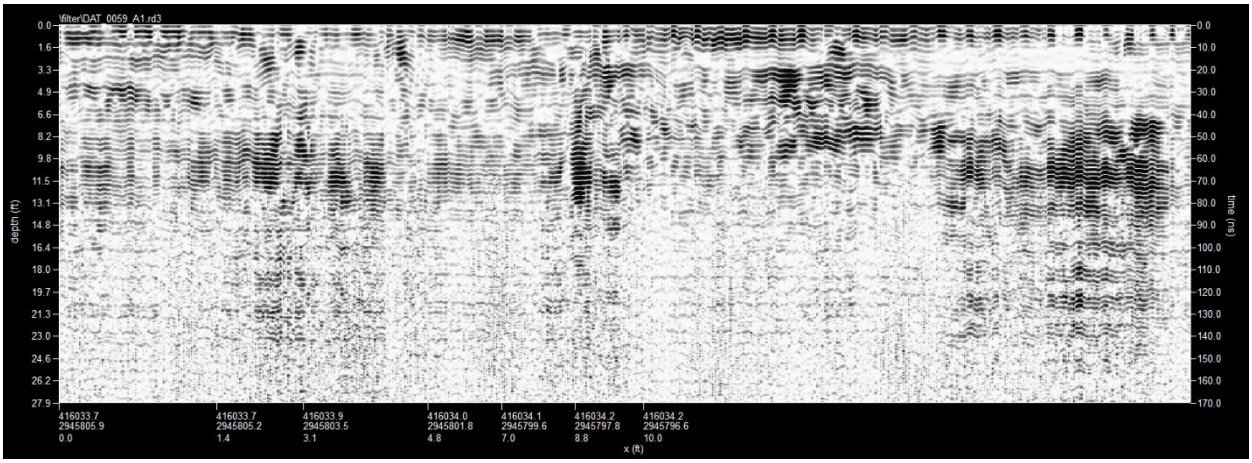
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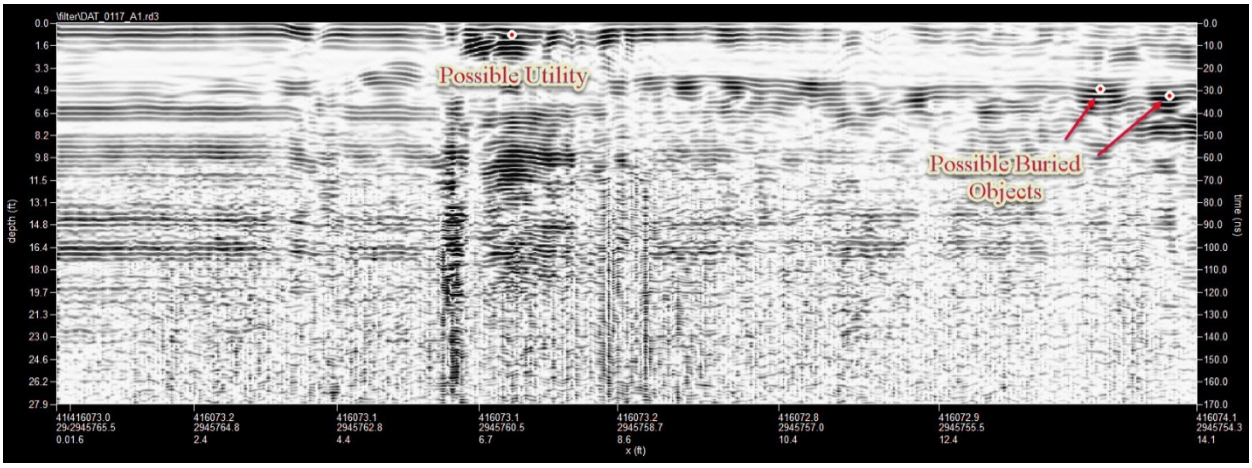
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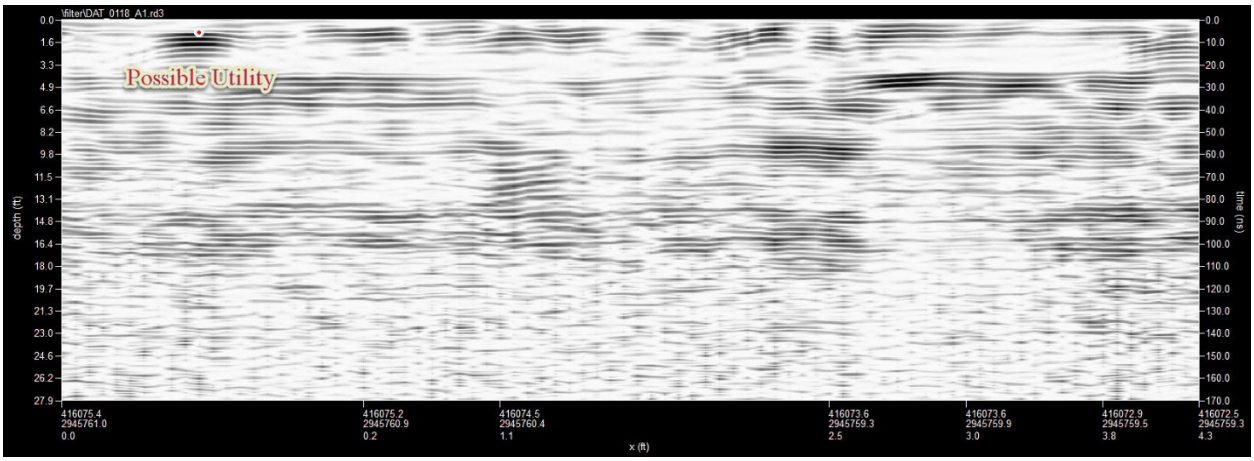
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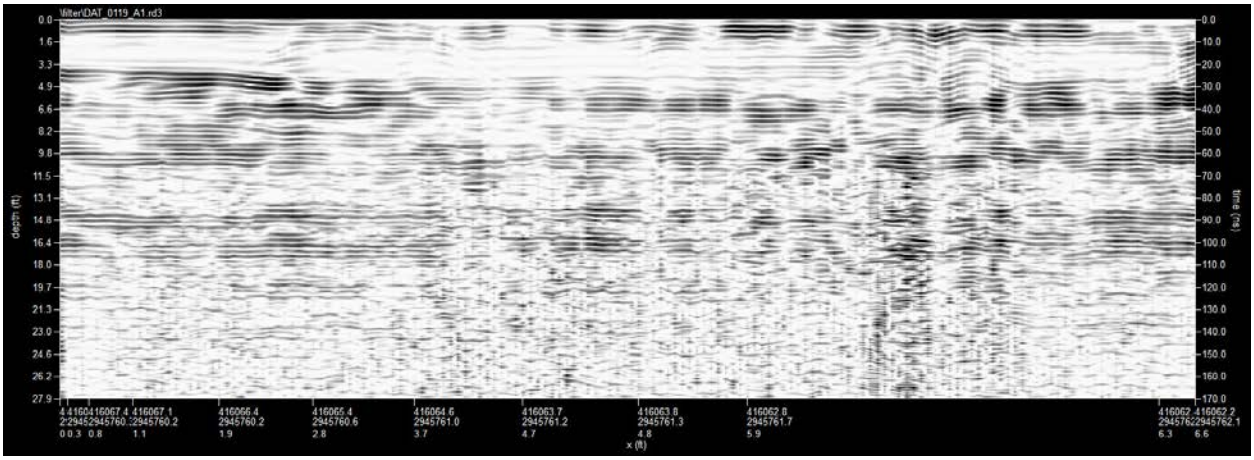
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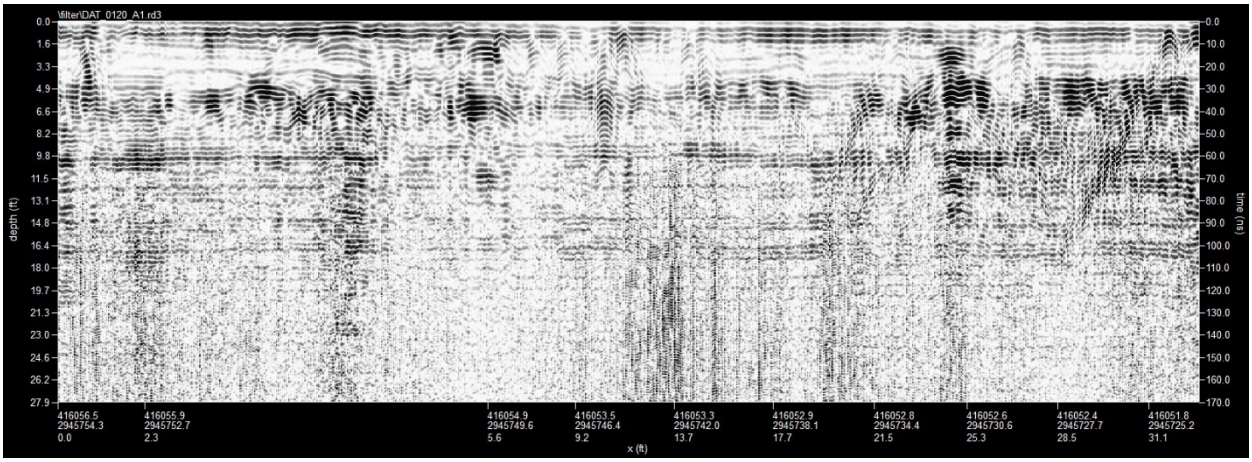
Transect 1 from 3422 South Street.



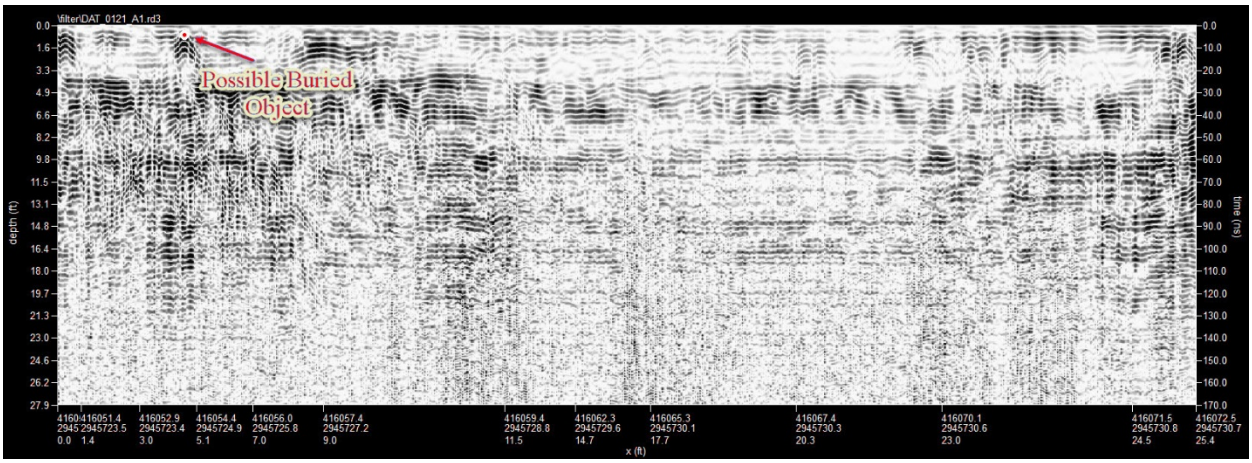
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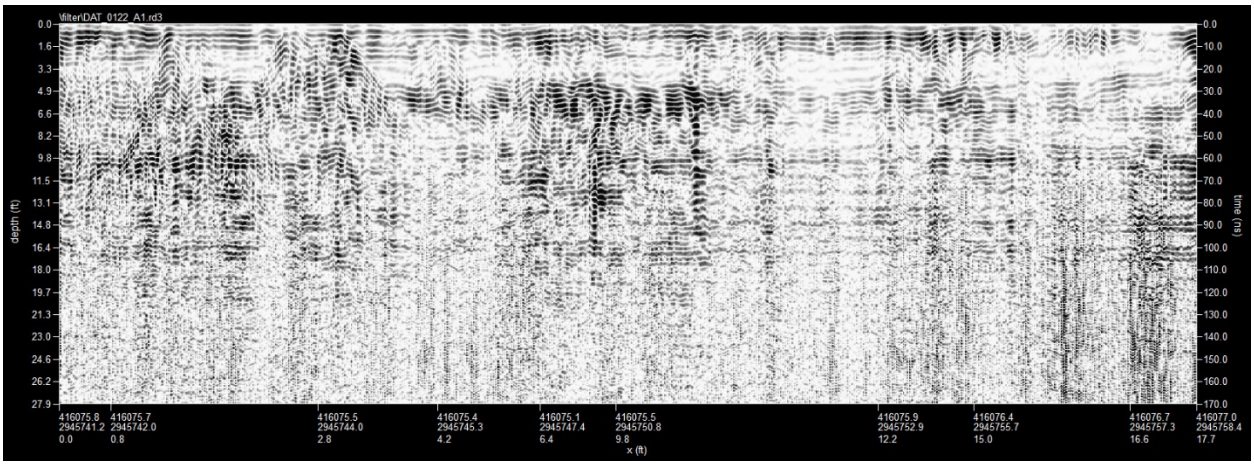
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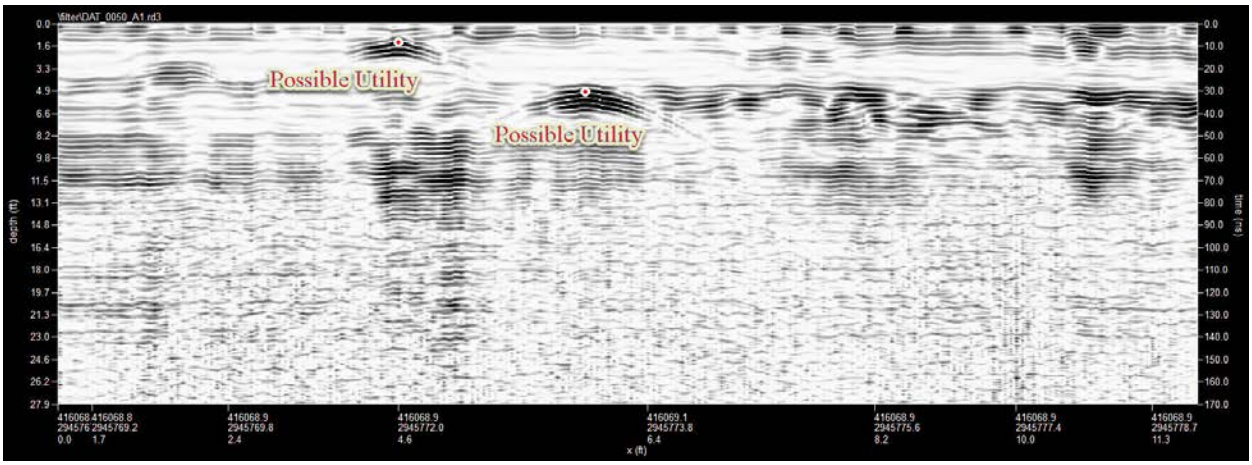
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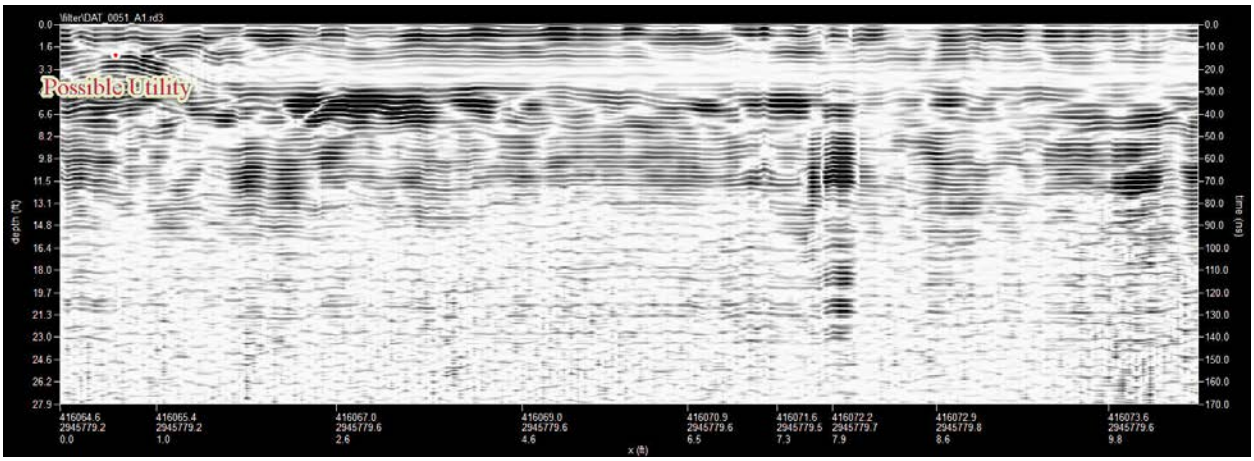
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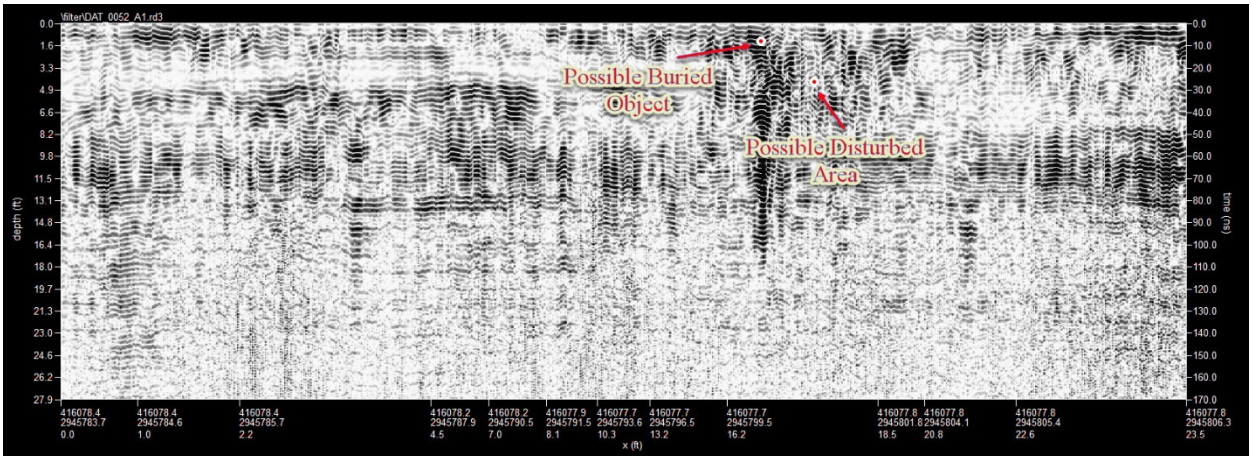
Transect 6 from 3422 South Street.



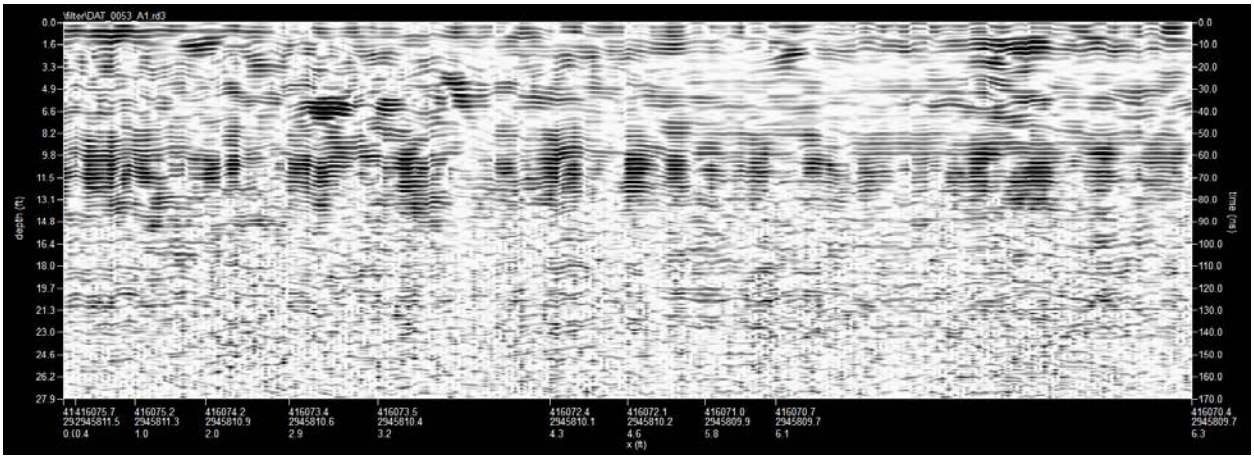
Transect 1 from 3425 South Street.



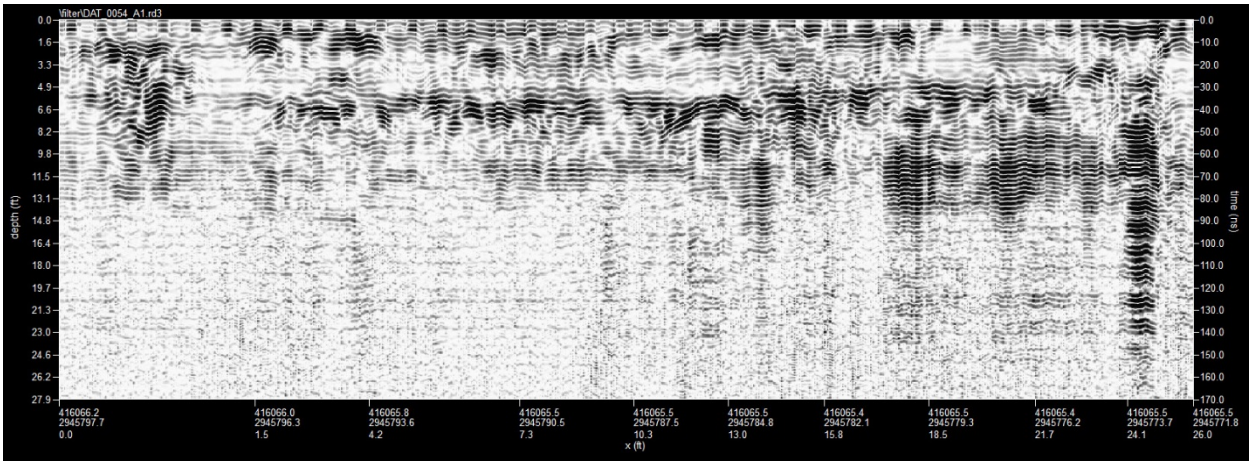
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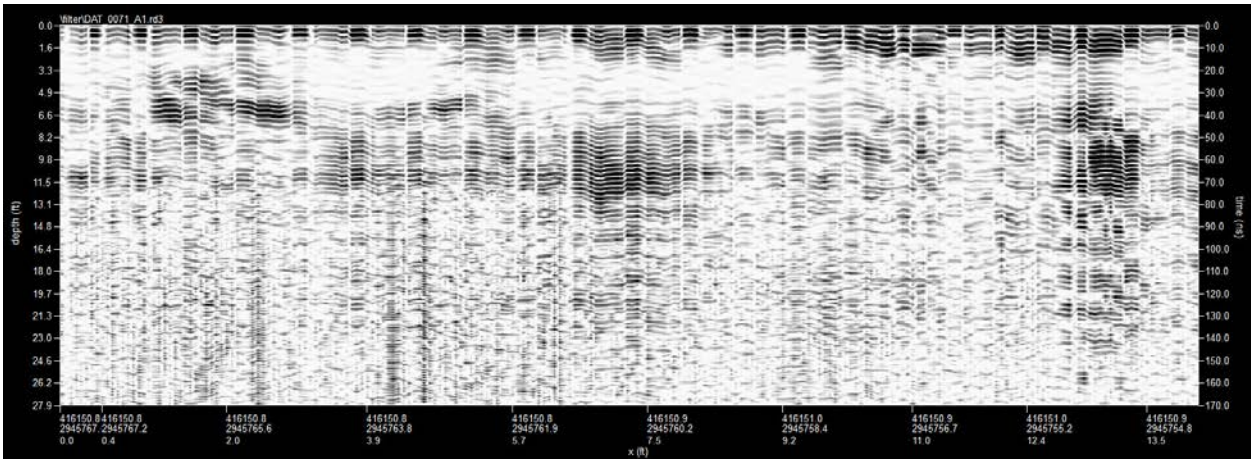
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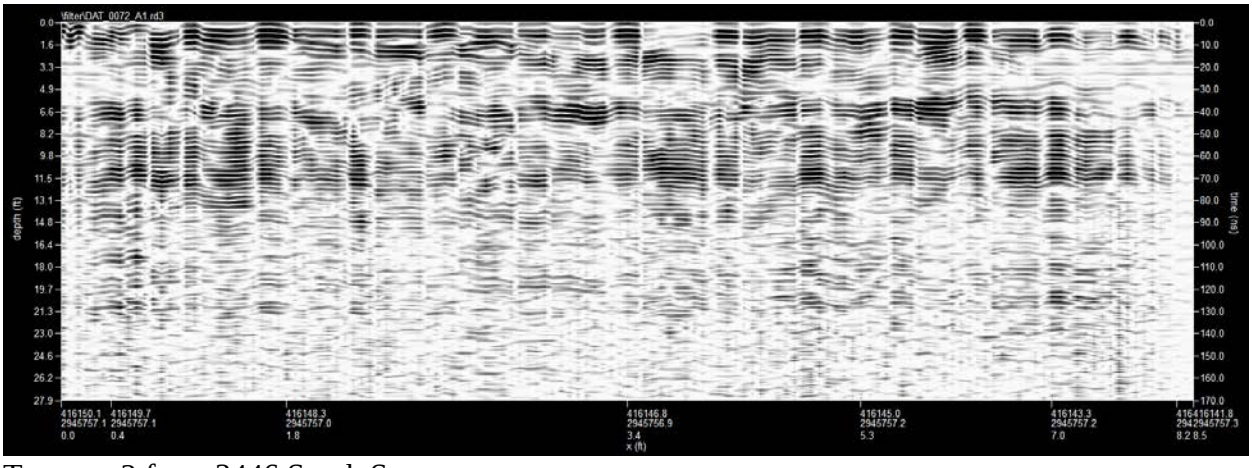
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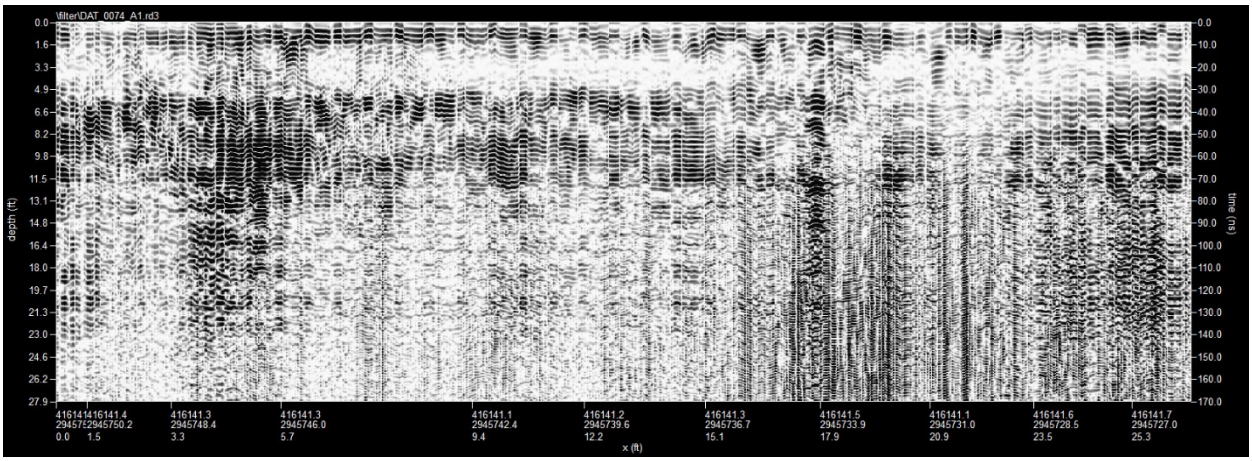
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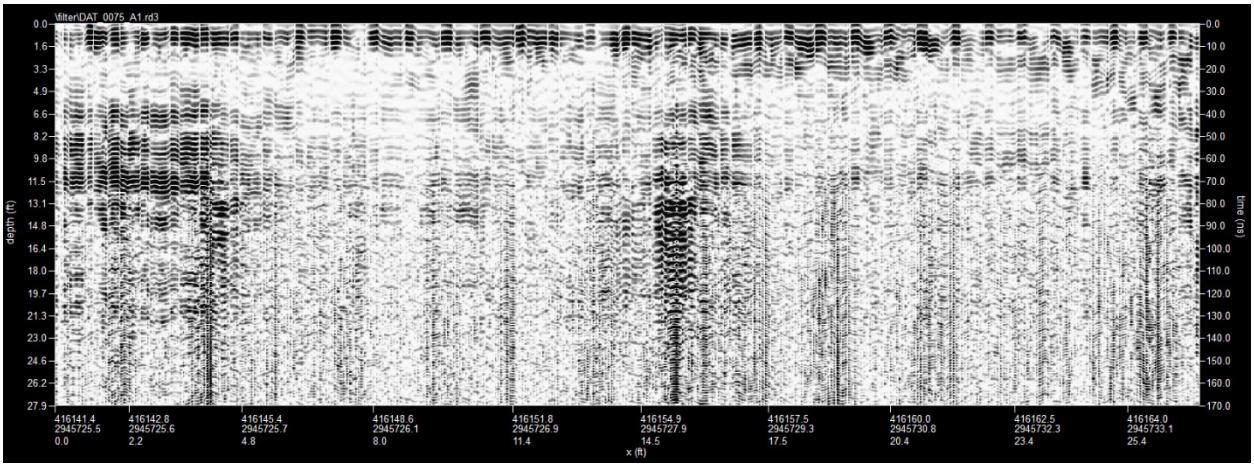
Transect 1 from 3446 South Street.



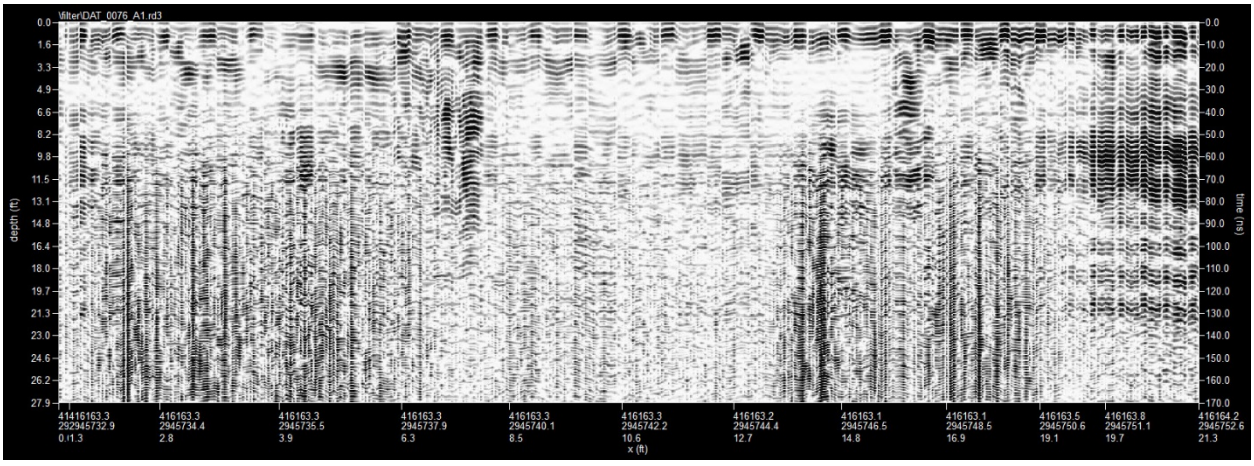
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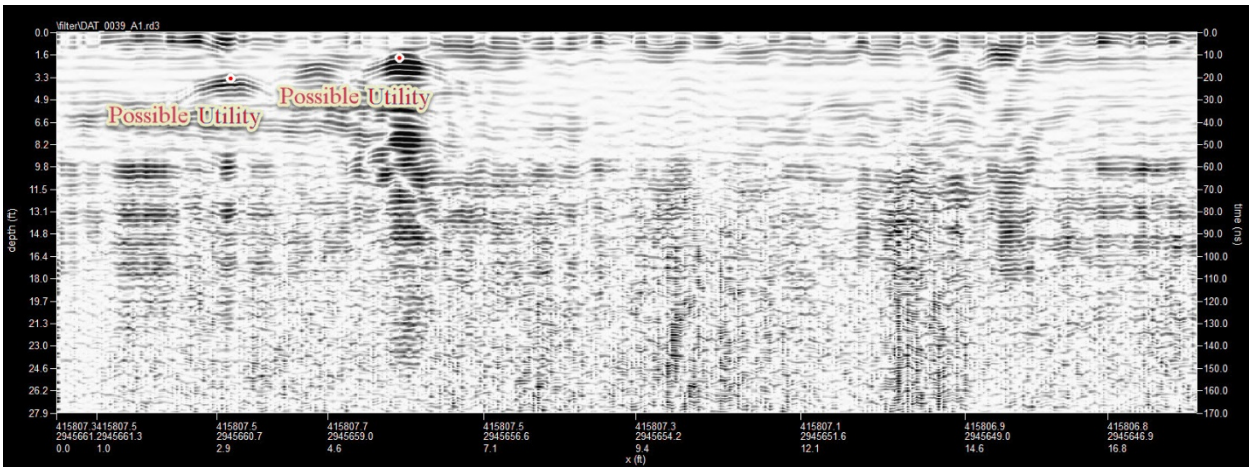
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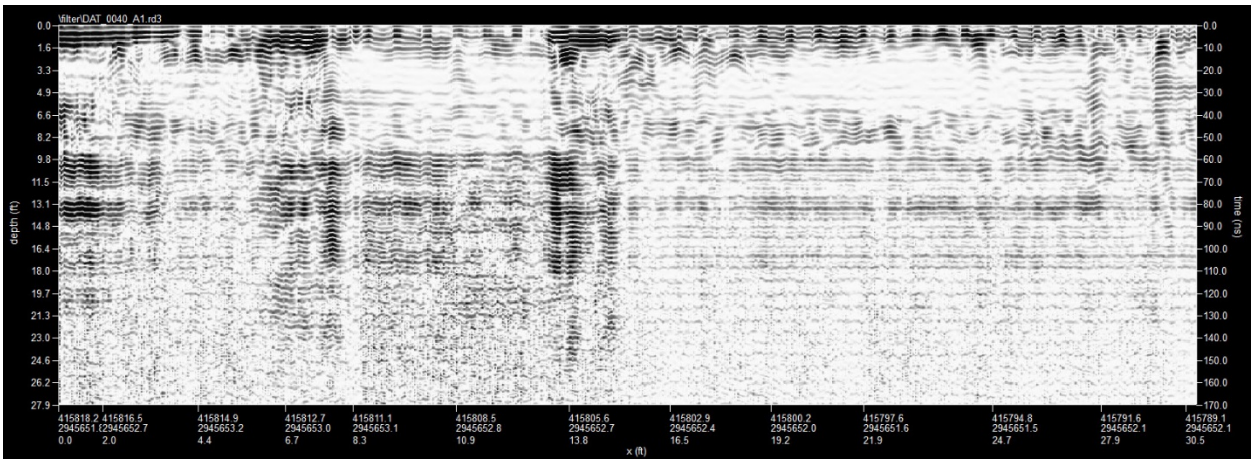
Transect 5 from 3446 South Street.



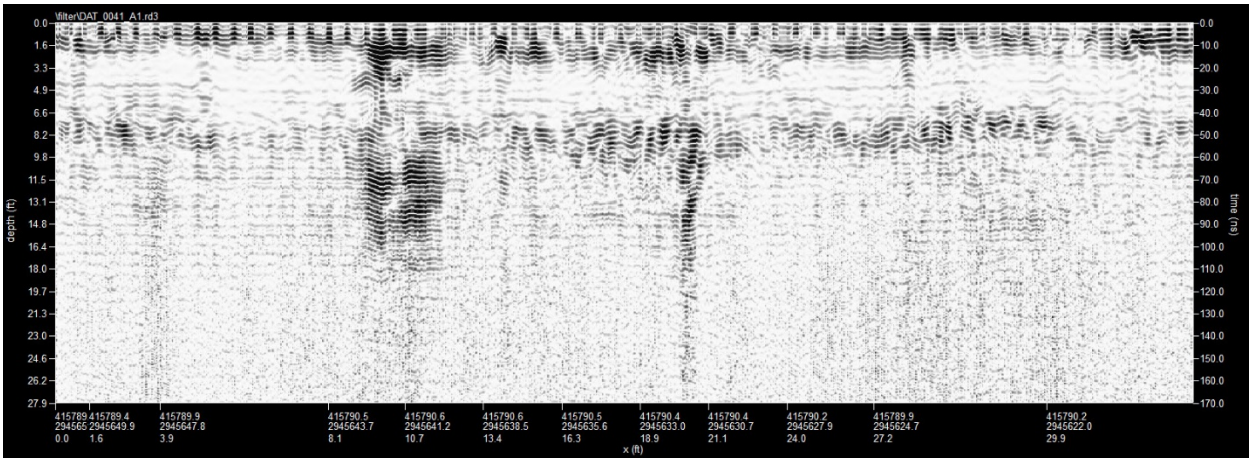
Transect 6 from 3446 South Street.



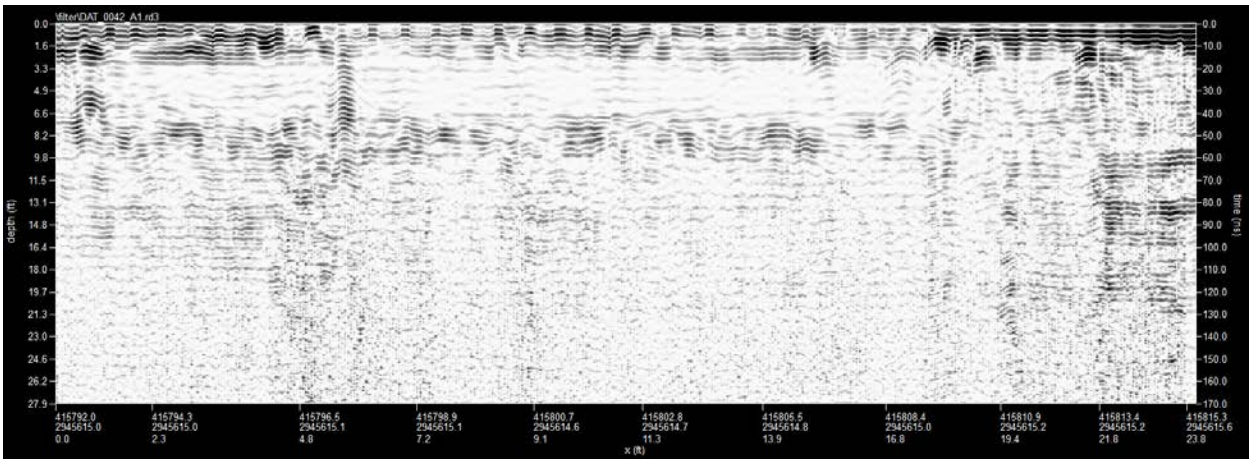
Transect 1 from 3310 Jeffcott Street.



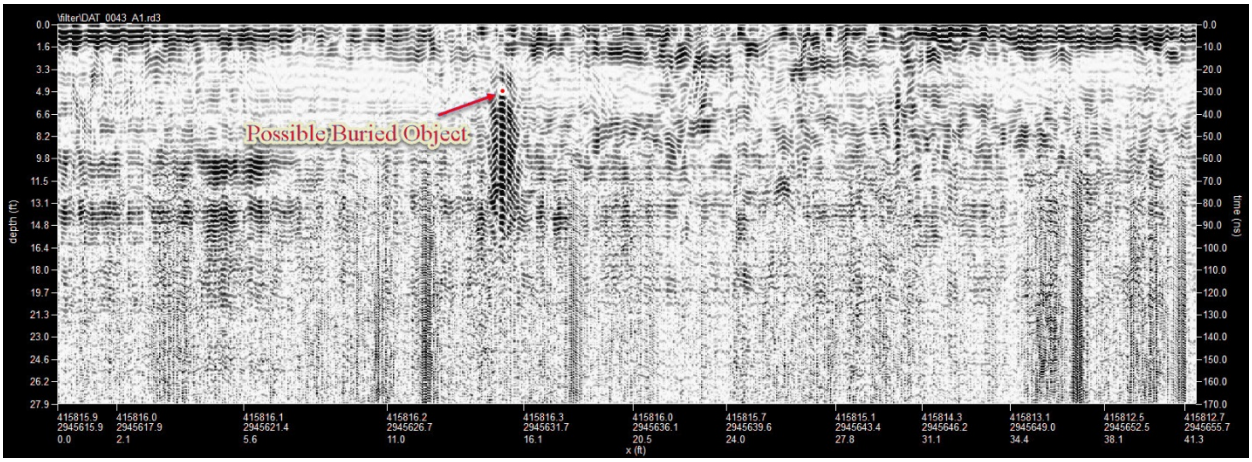
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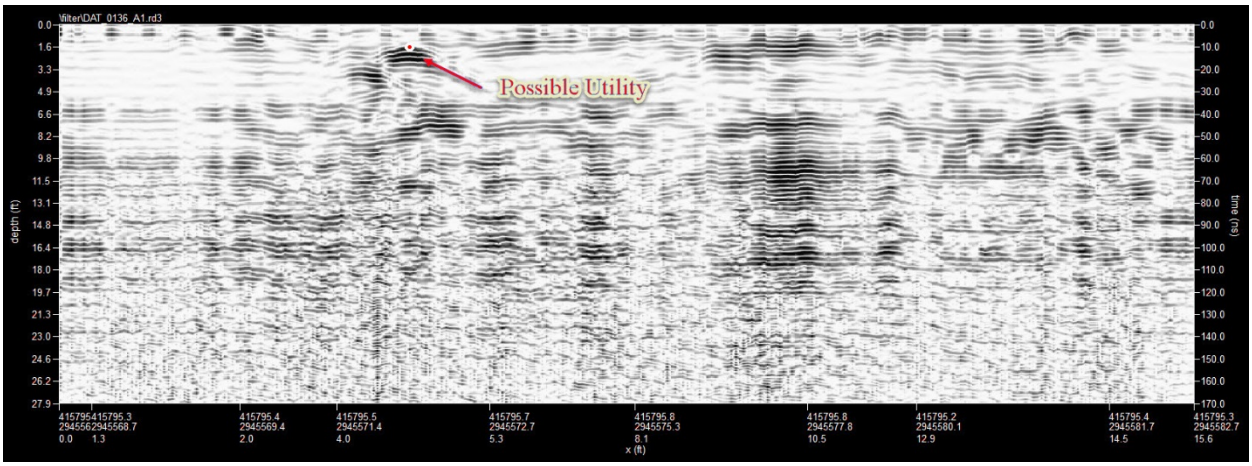
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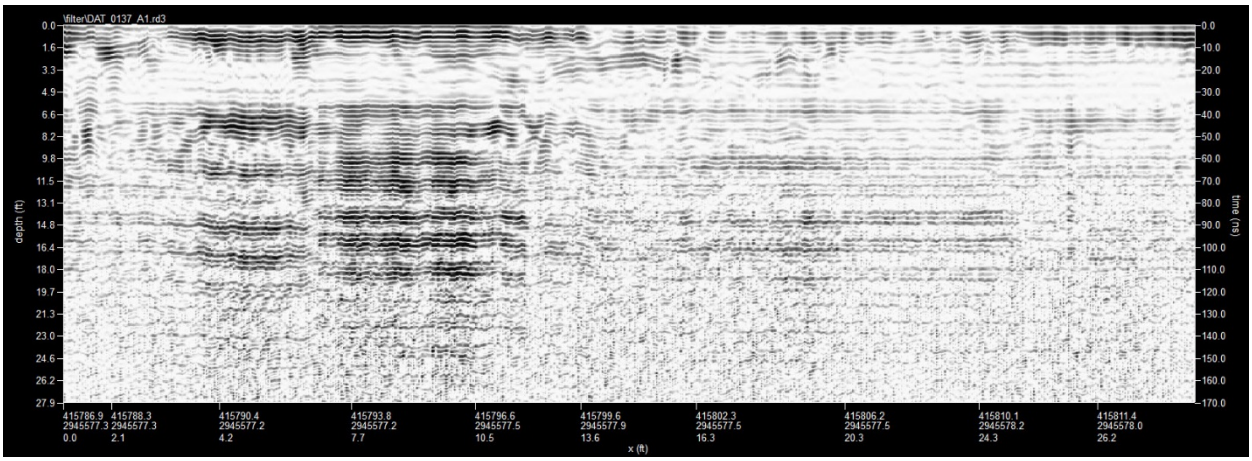
Transect 4 from 3310 Jeffcott Street.



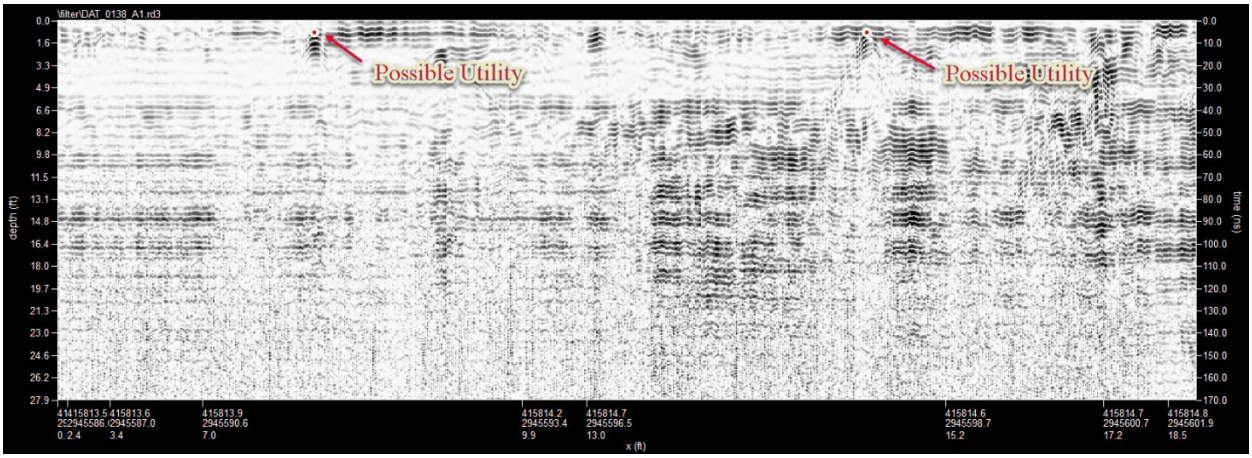
Transect 5 from 3310 Jeffcott Street.



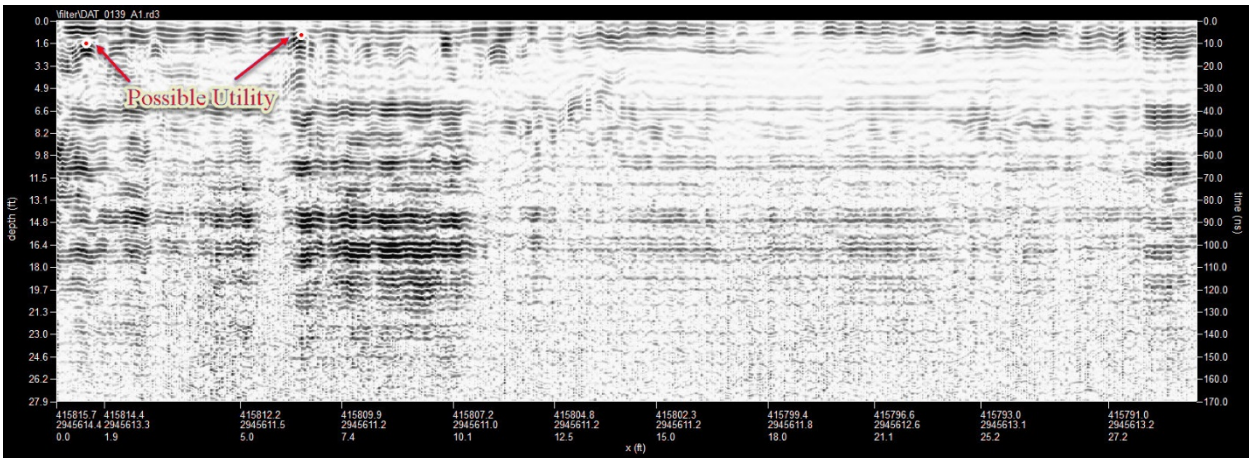
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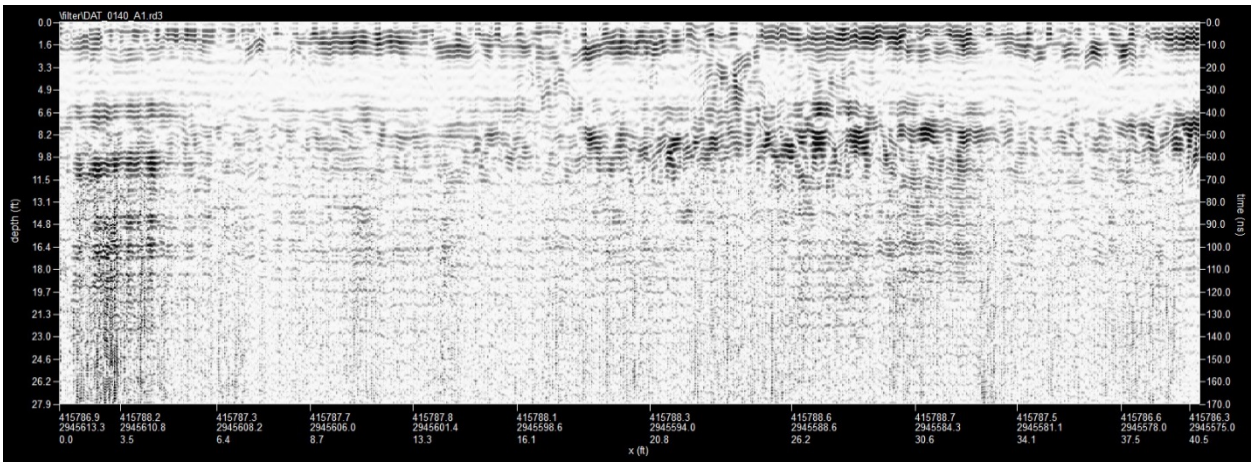
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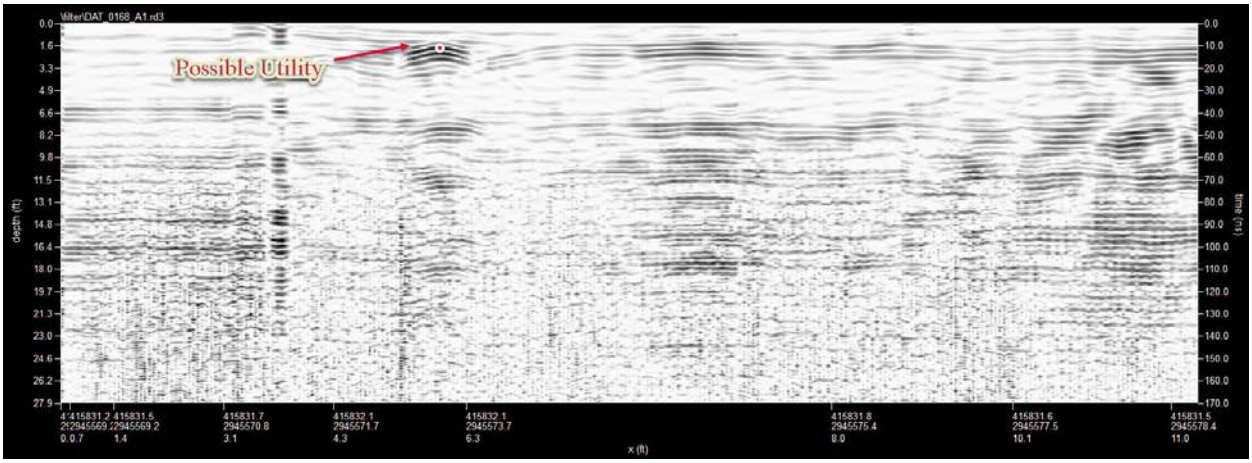
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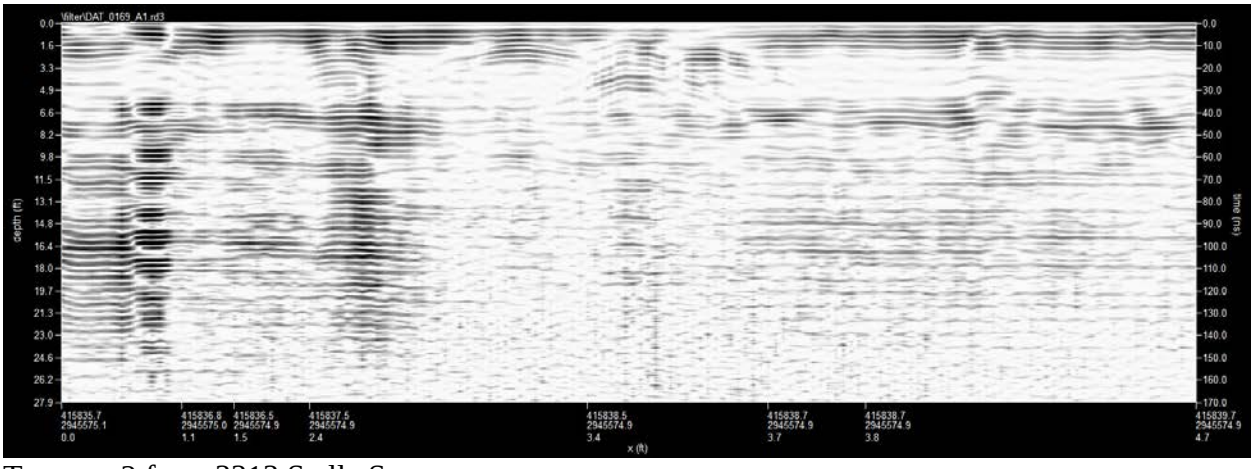
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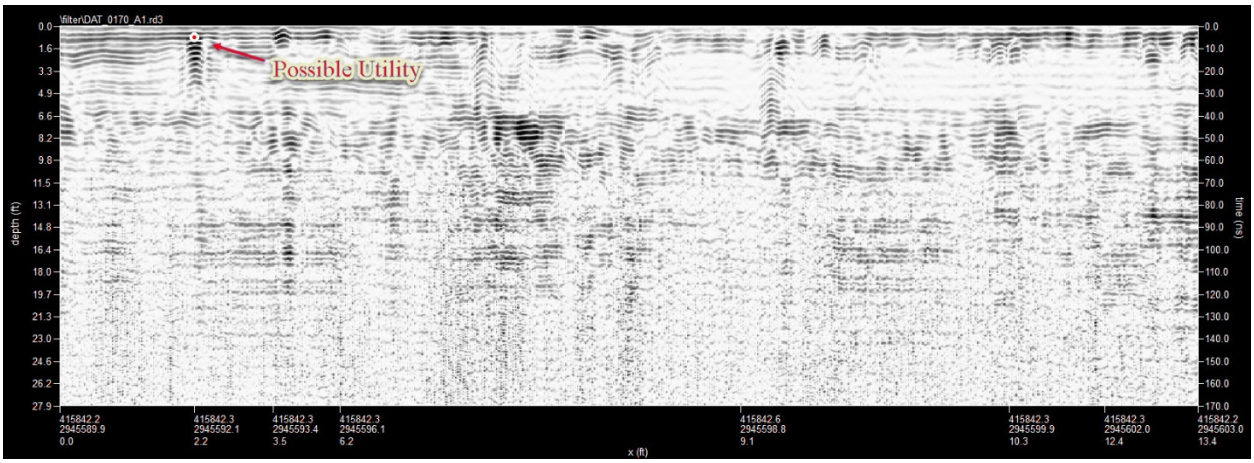
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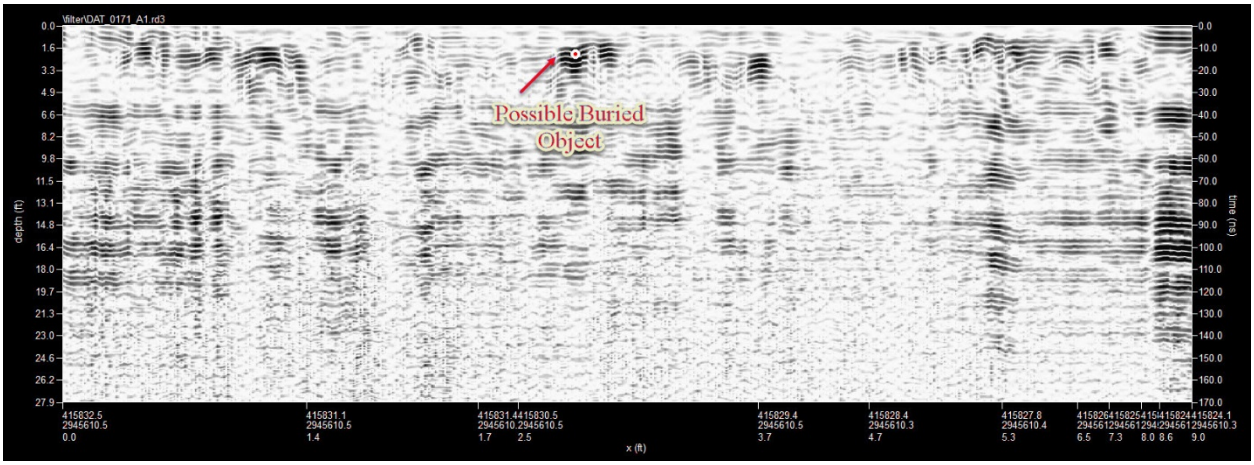
Transect 1 from 3313 Stella Street.



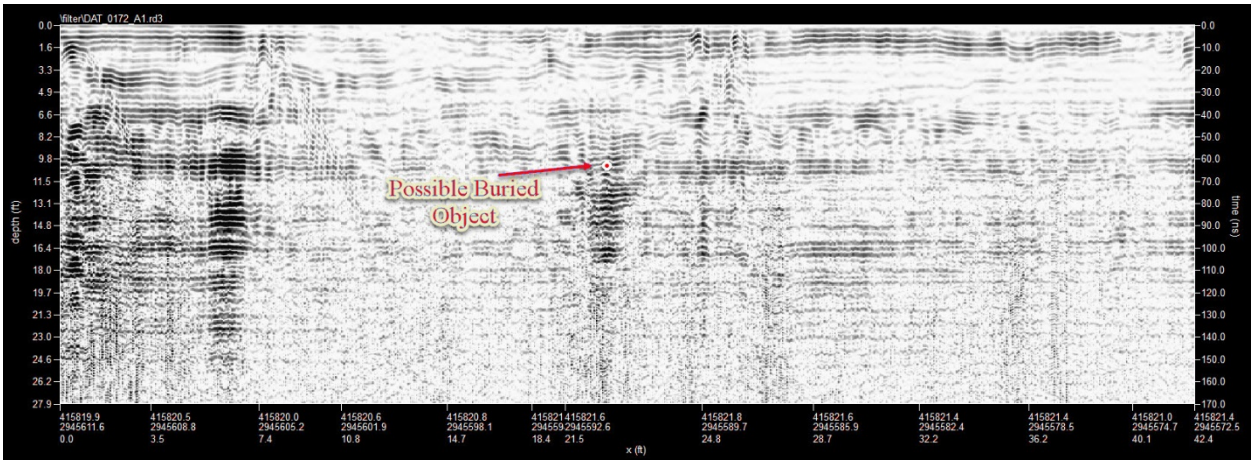
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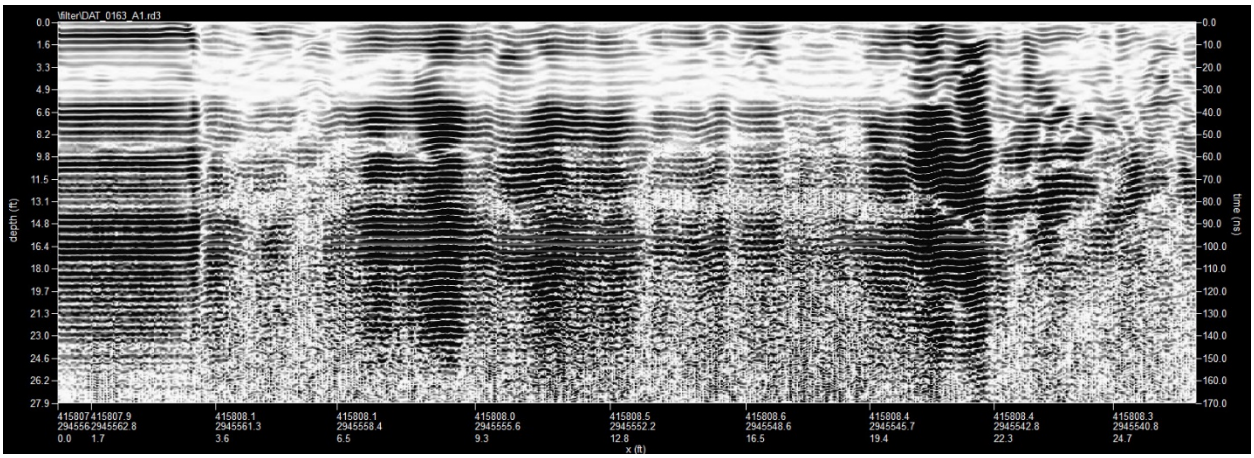
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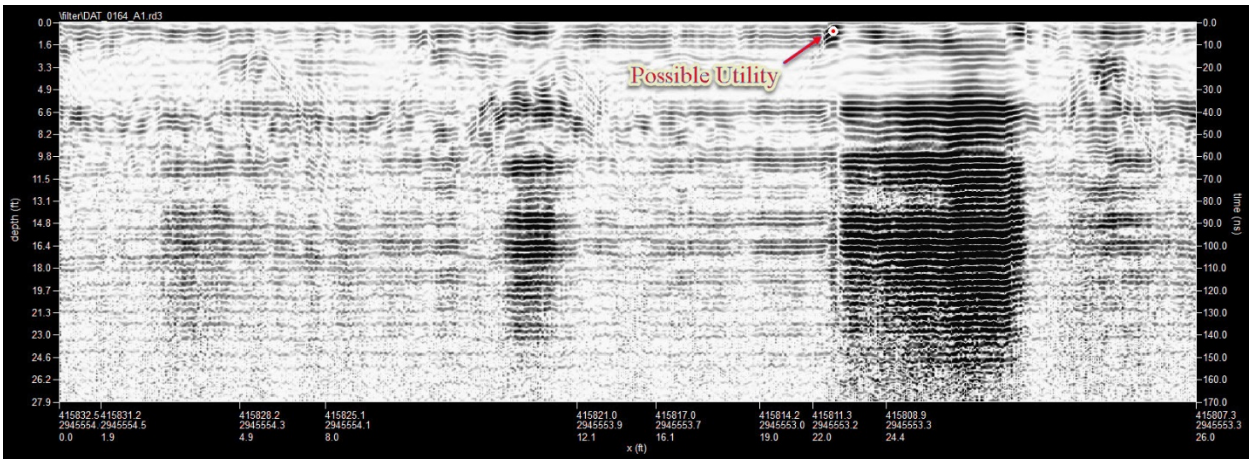
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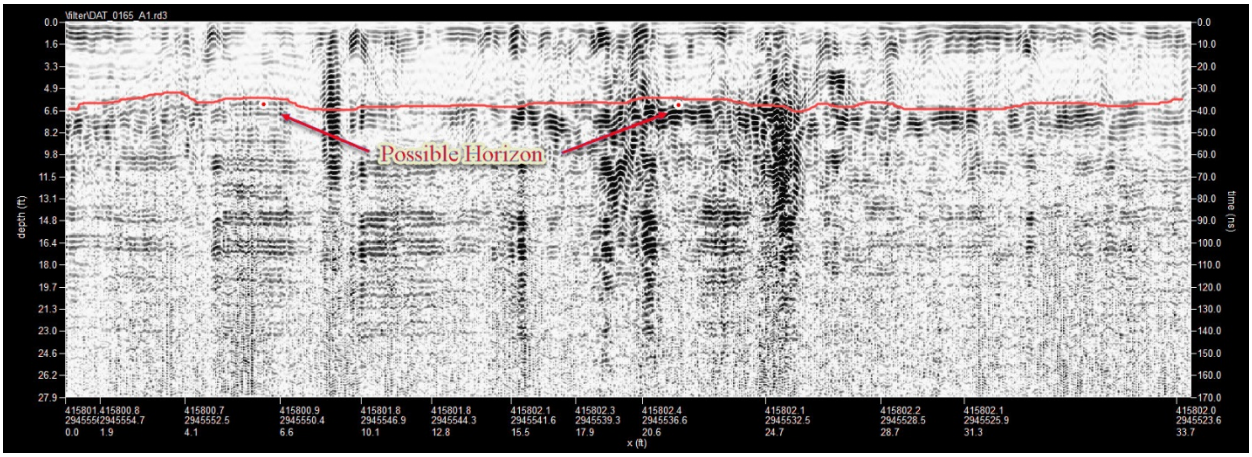
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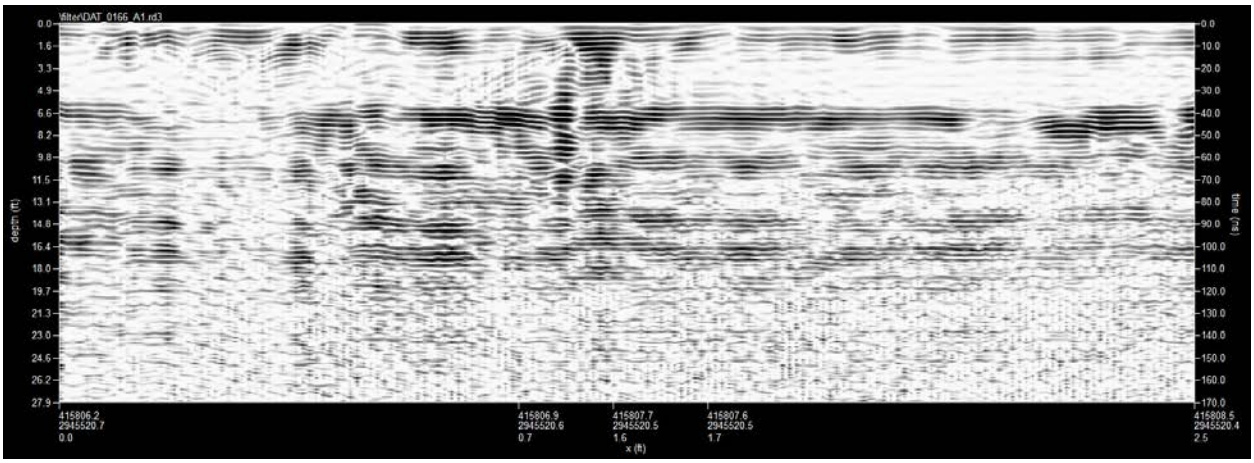
Transect 1 from 3318 Stella Street.



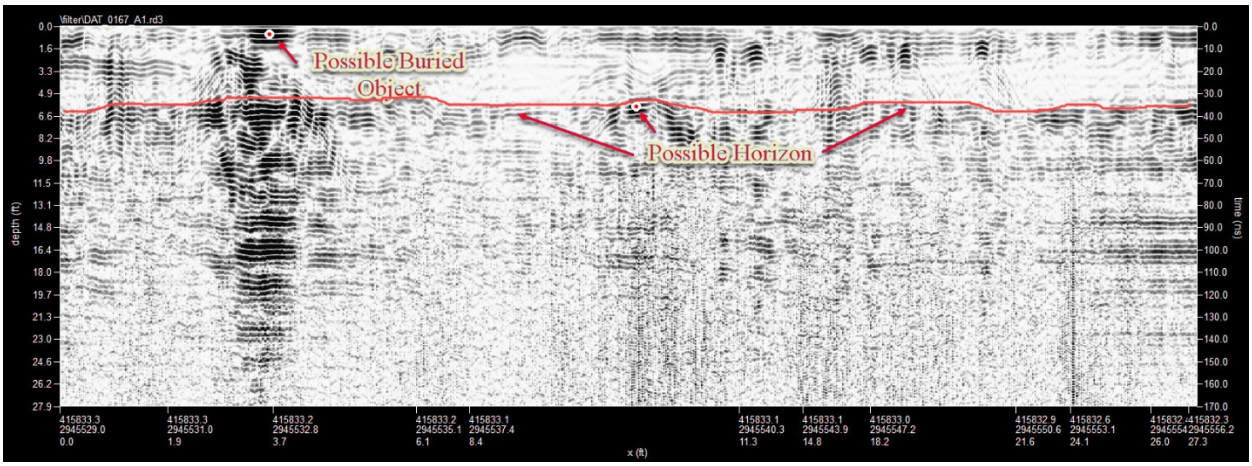
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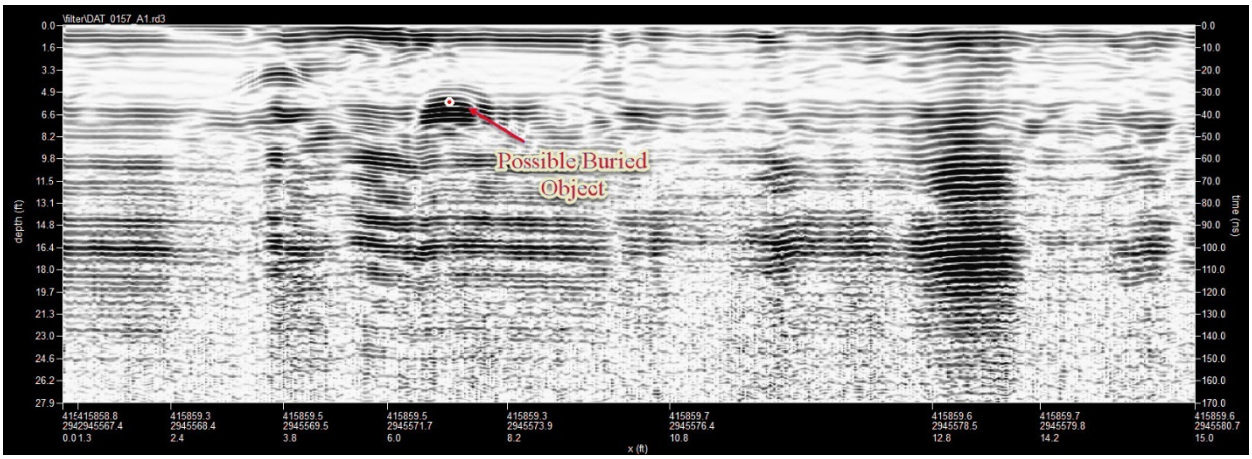
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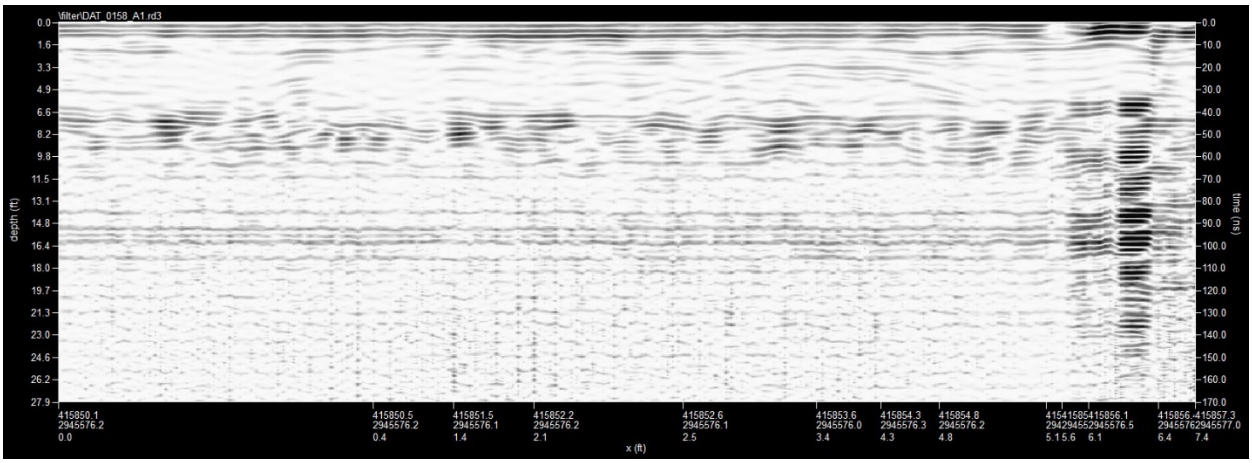
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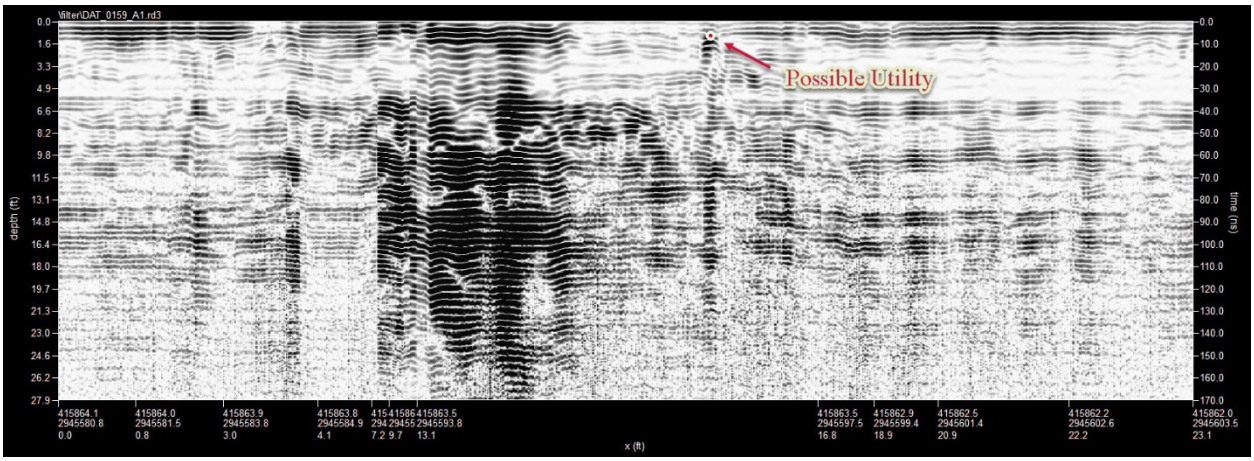
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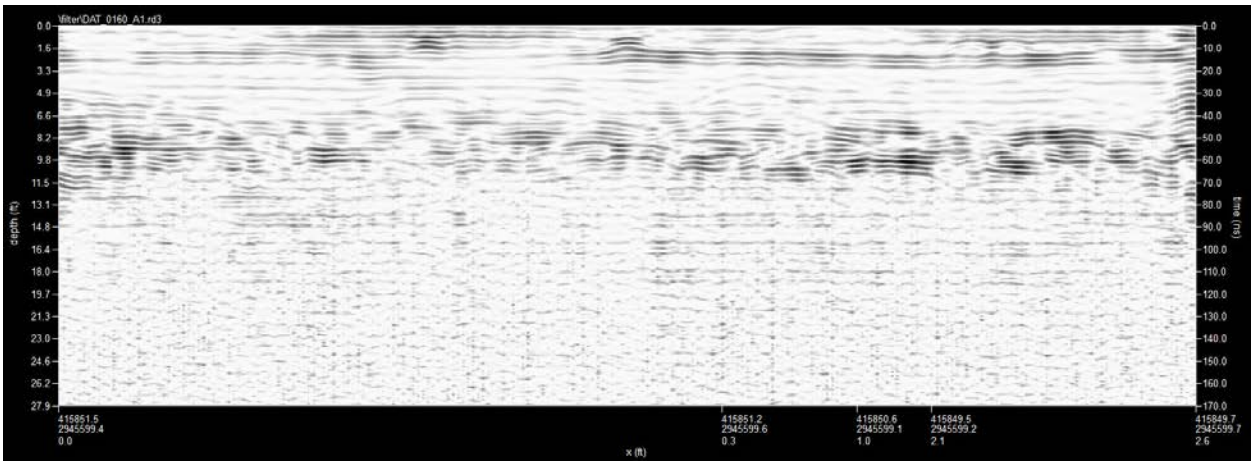
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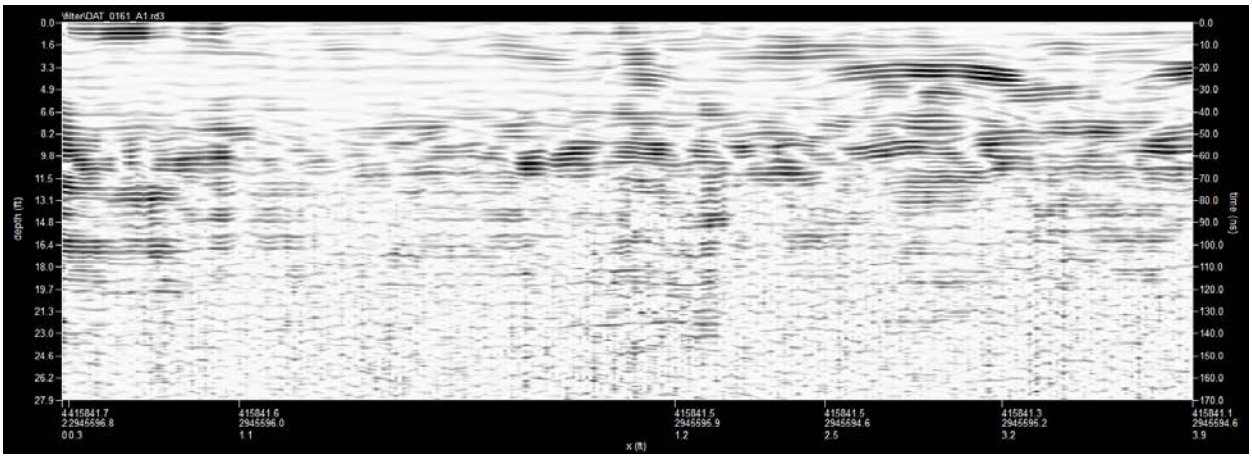
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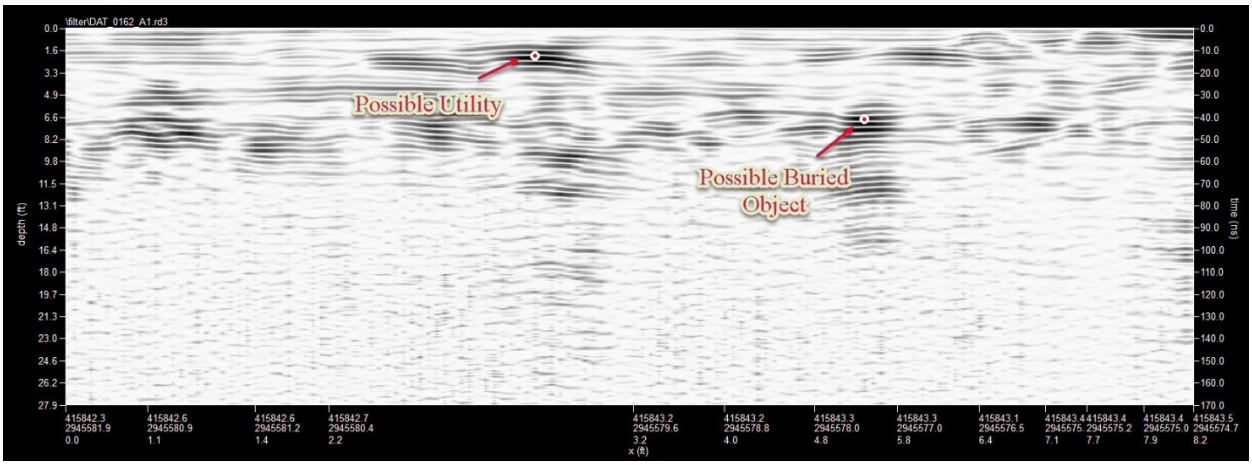
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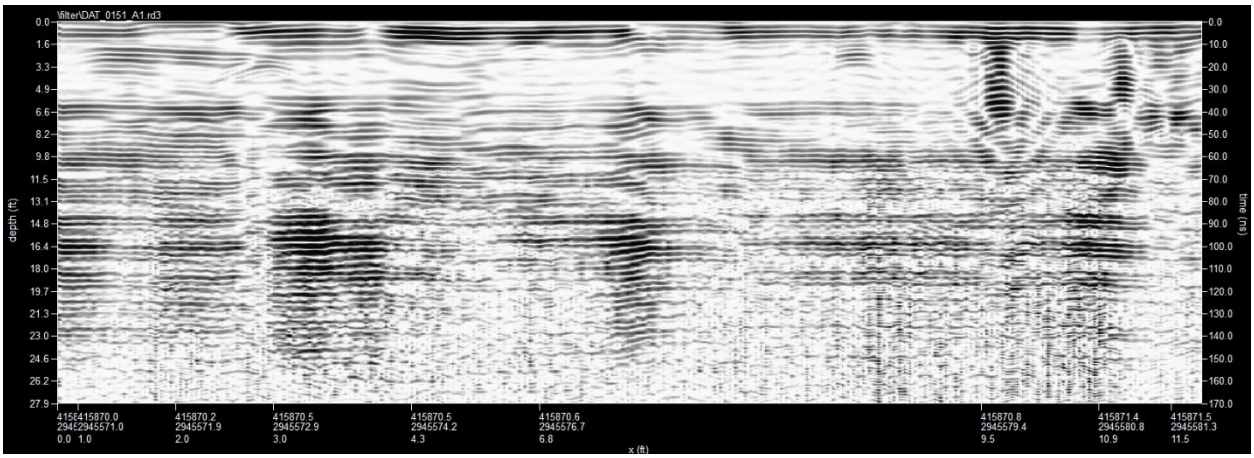
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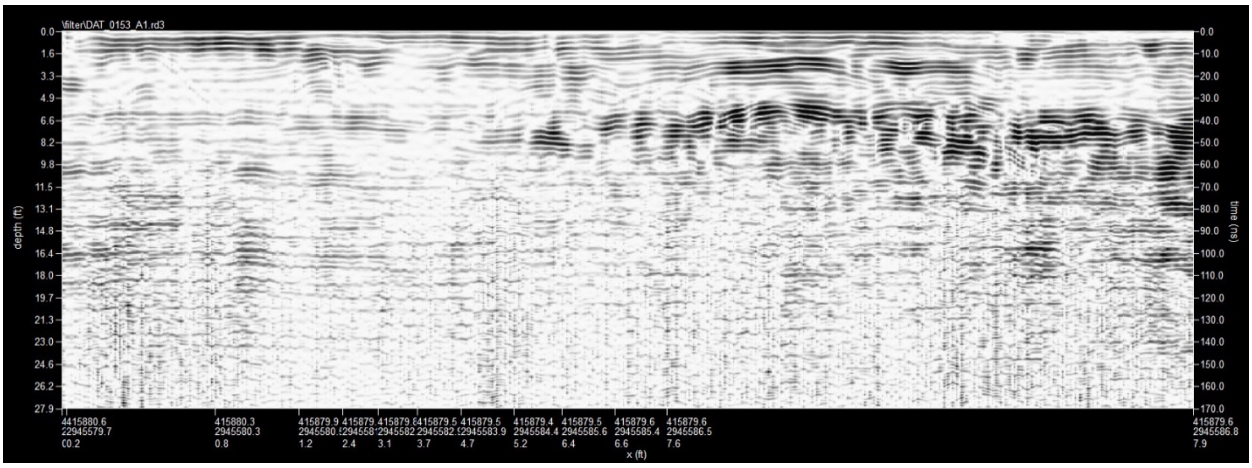
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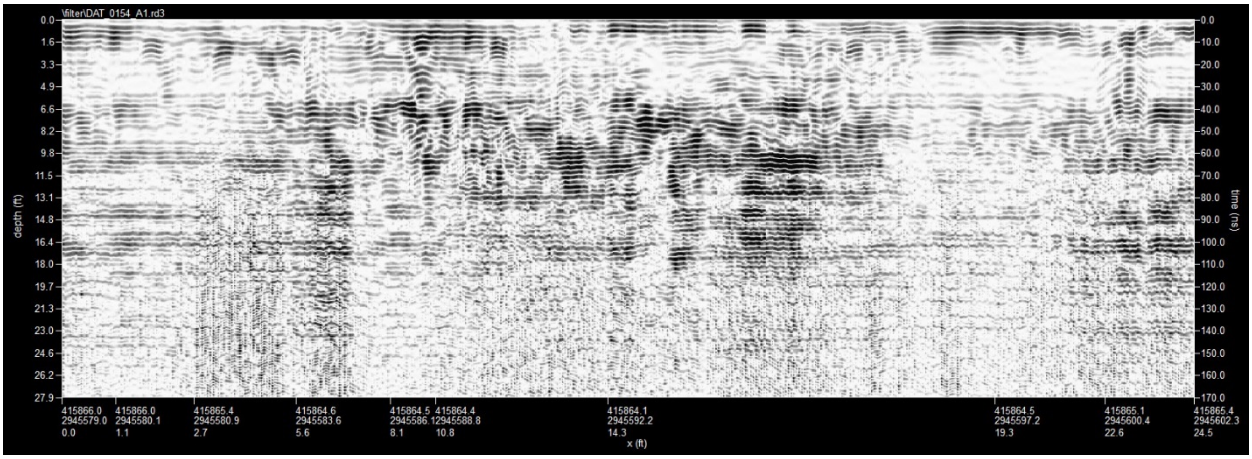
Transect 6 from 3319 Stella Street.



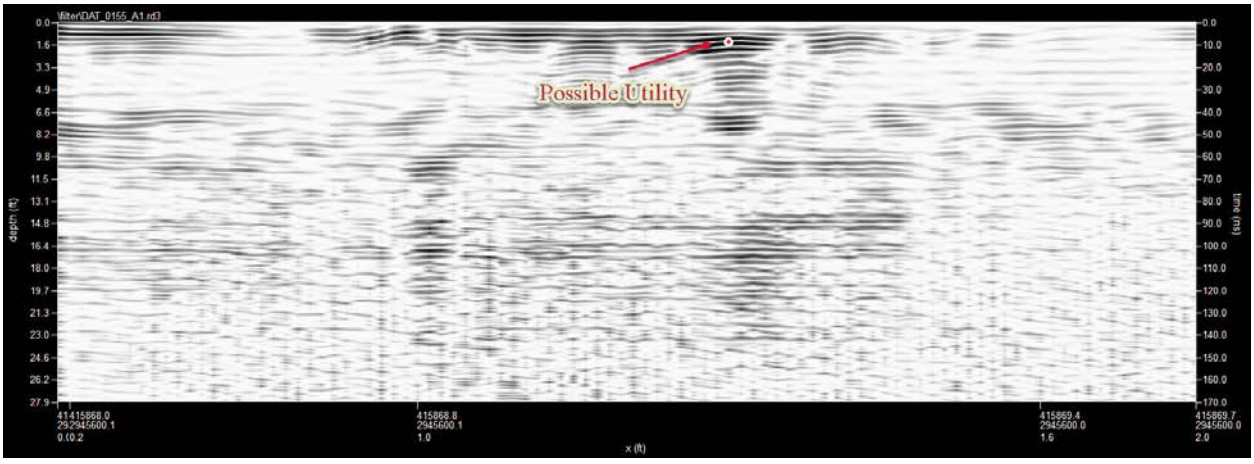
Transect 1 from 3321 Stella Street.



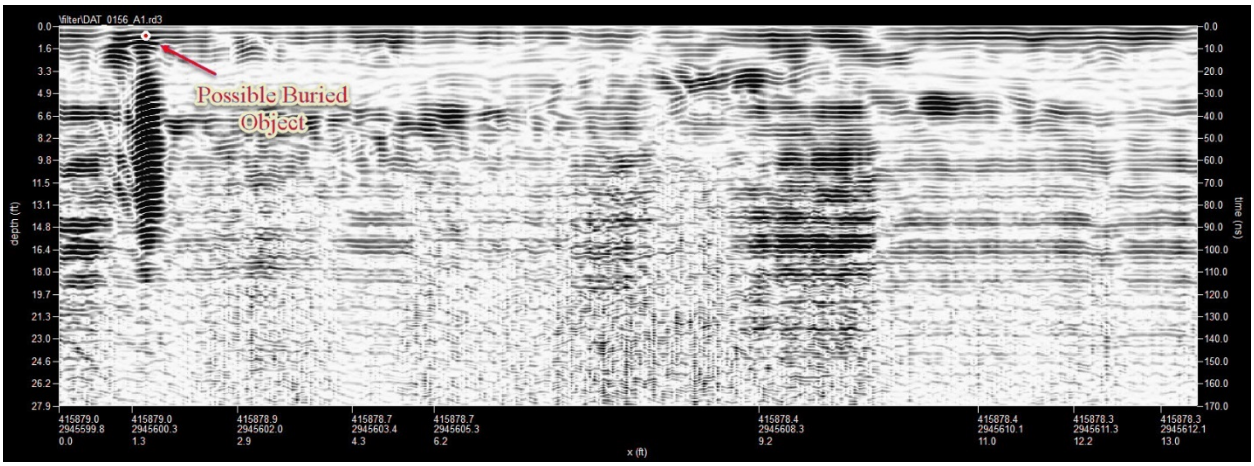
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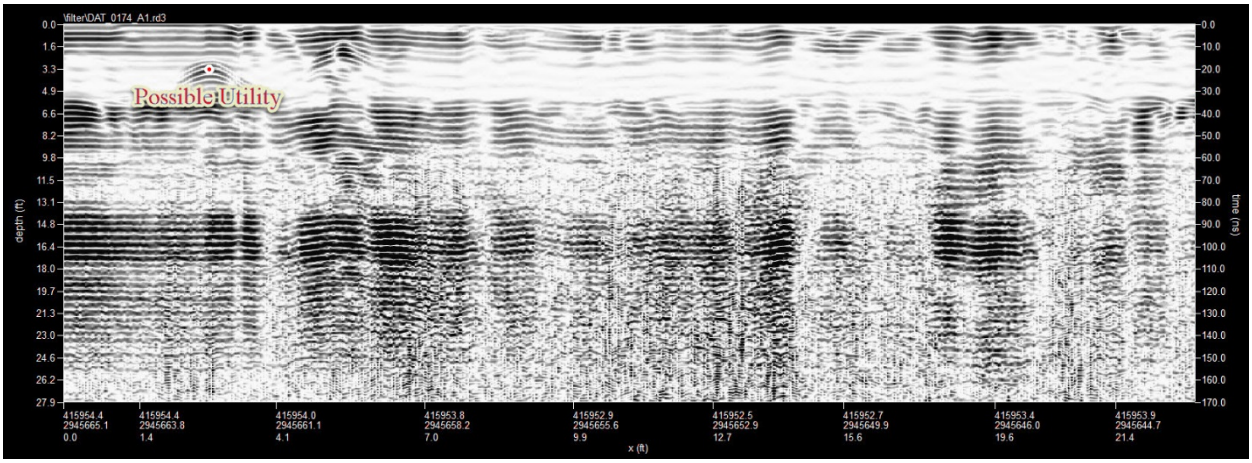
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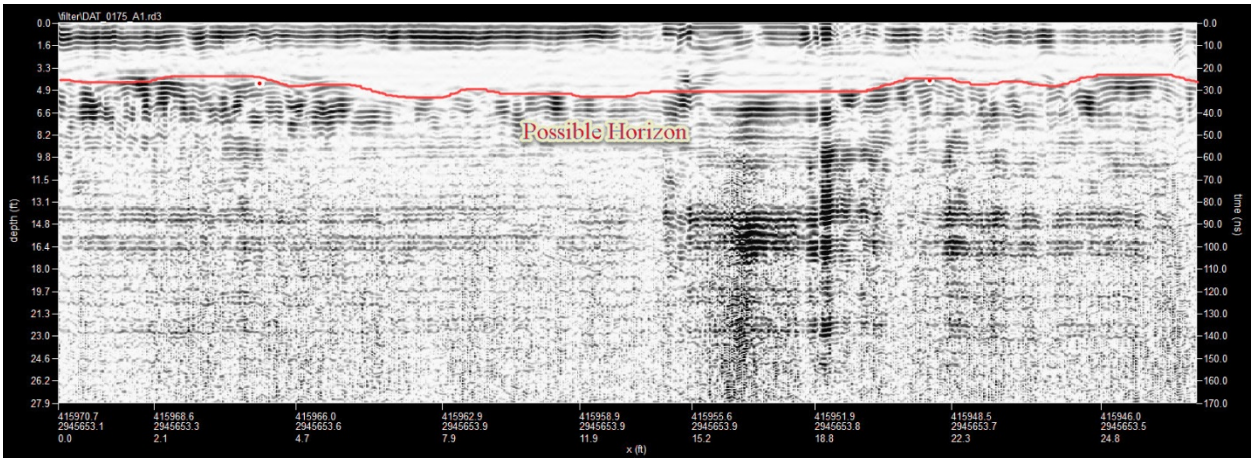
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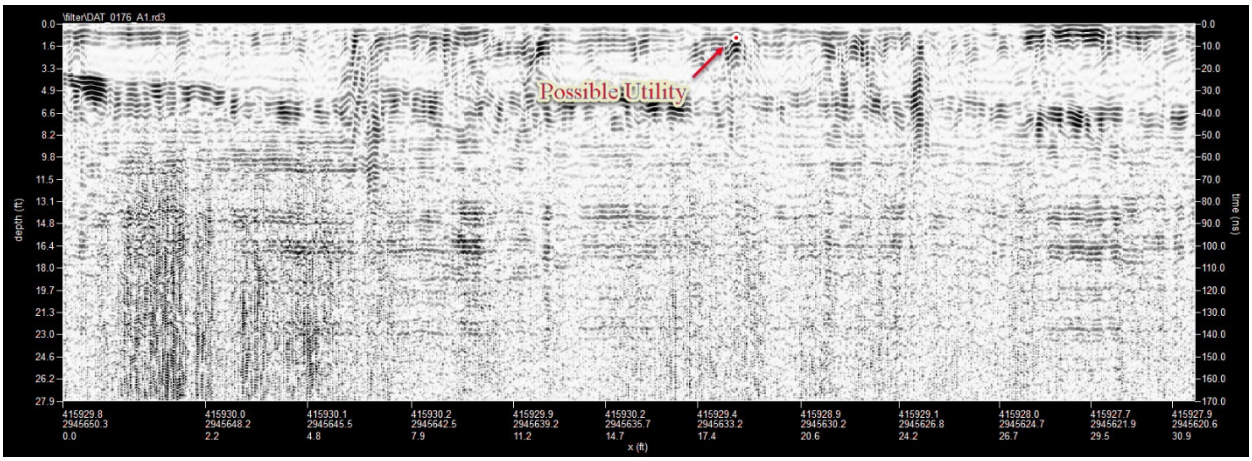
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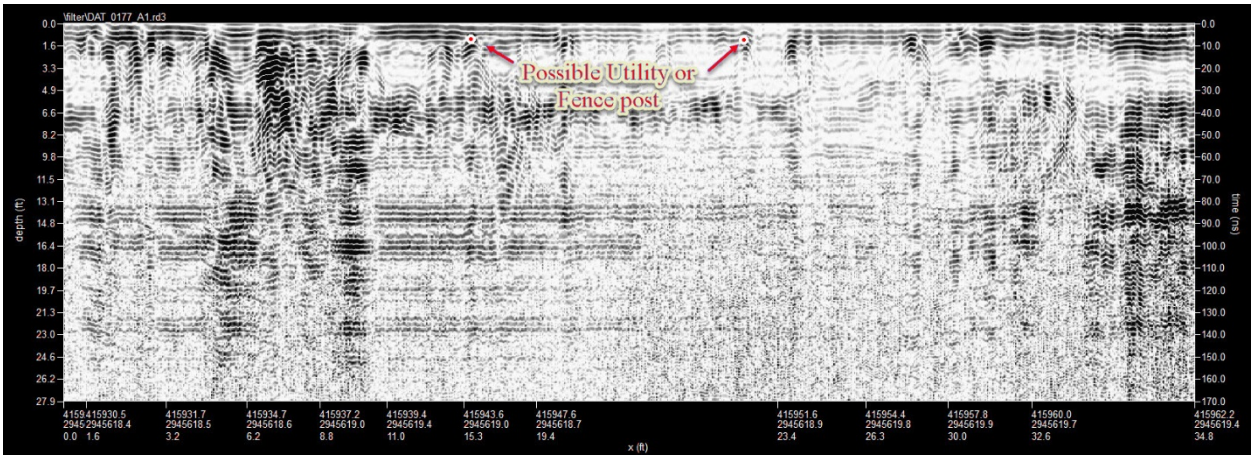
Transect 1 from 3346 Jeffcott Street.



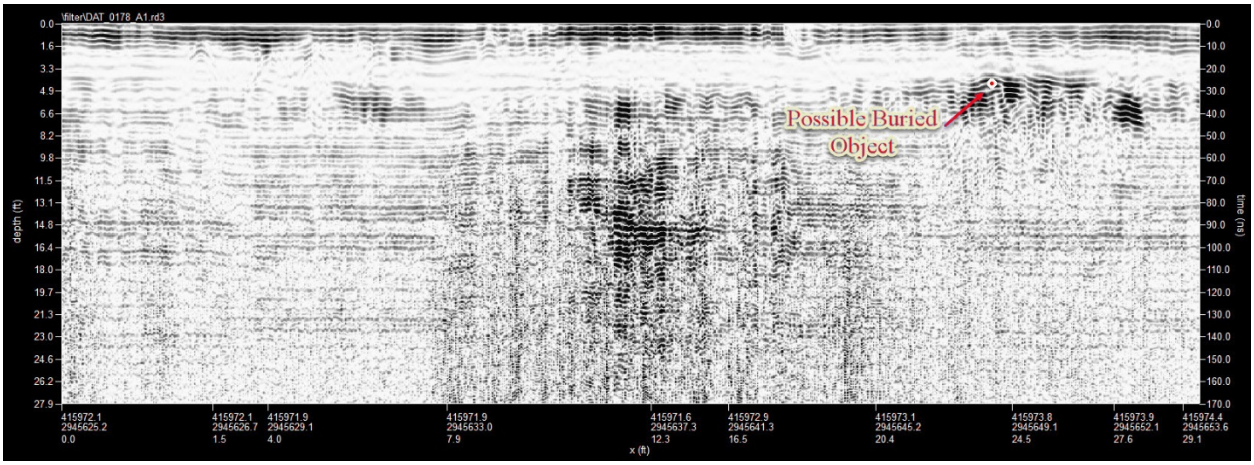
Transect 2 from 3346 Jeffcott Street.



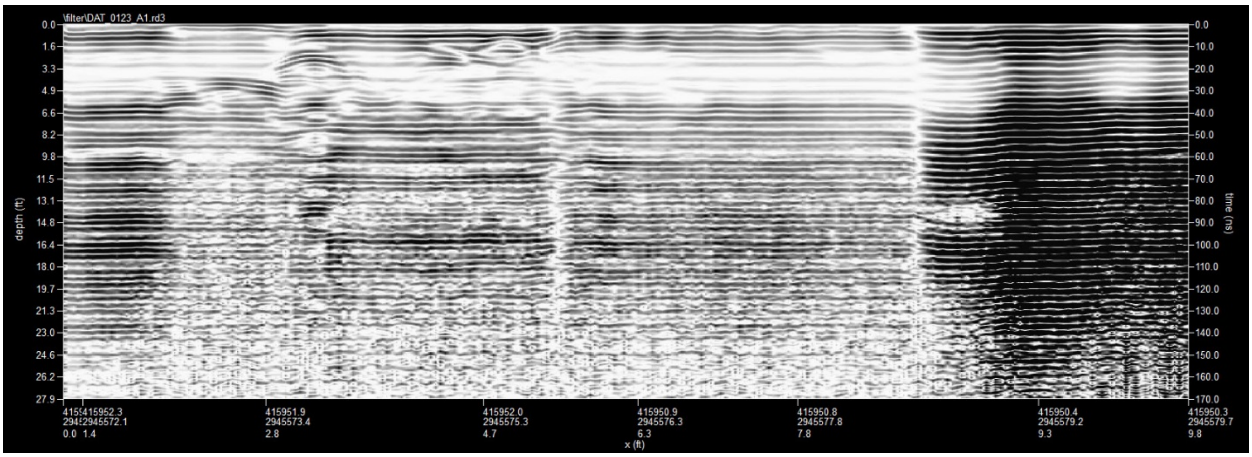
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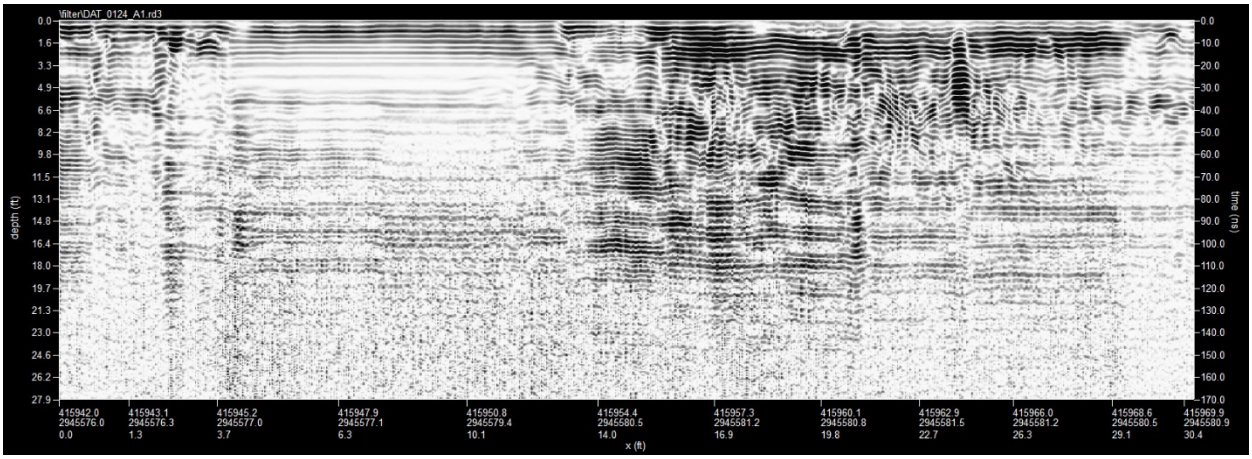
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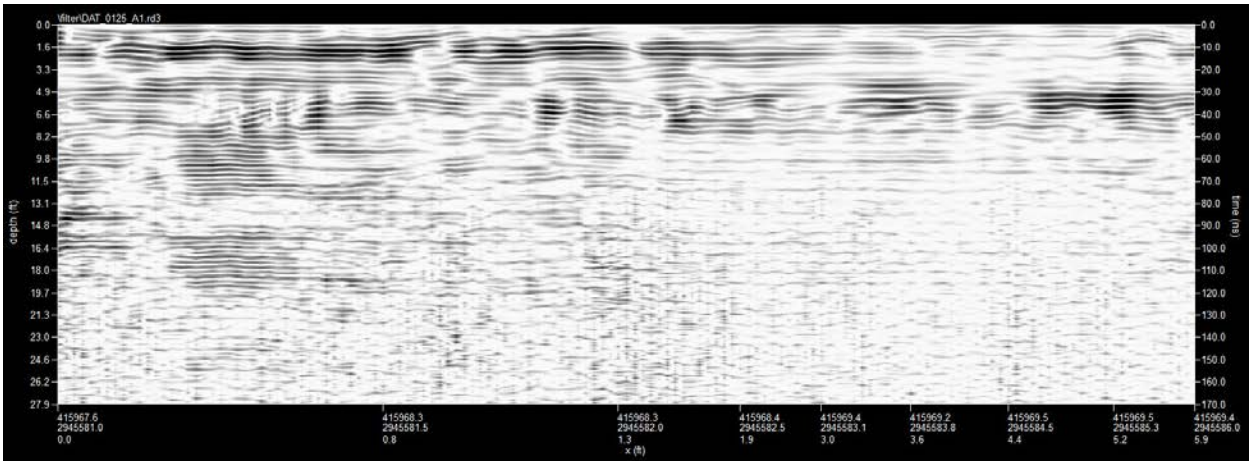
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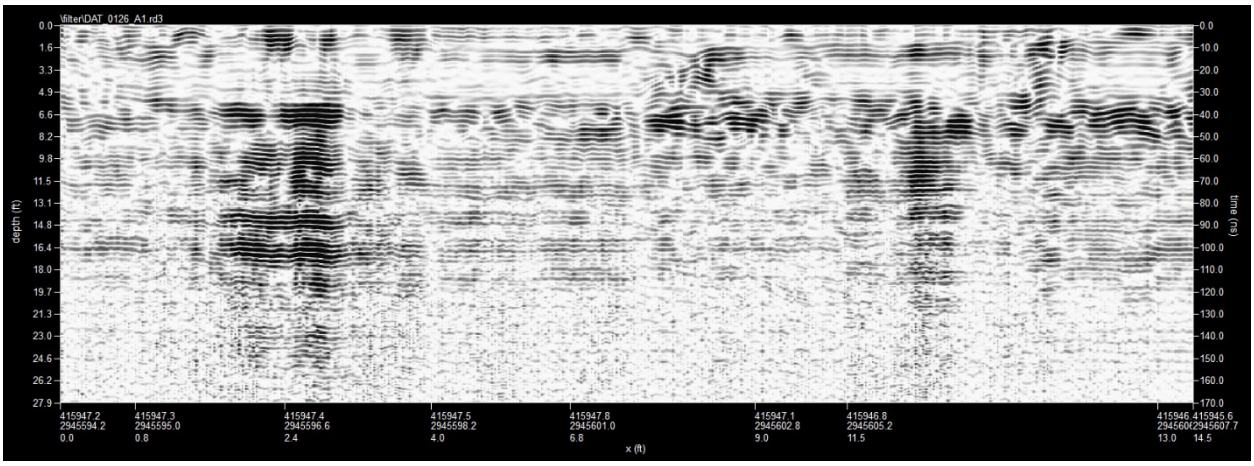
Transect 1 from 3347 Stella Street.



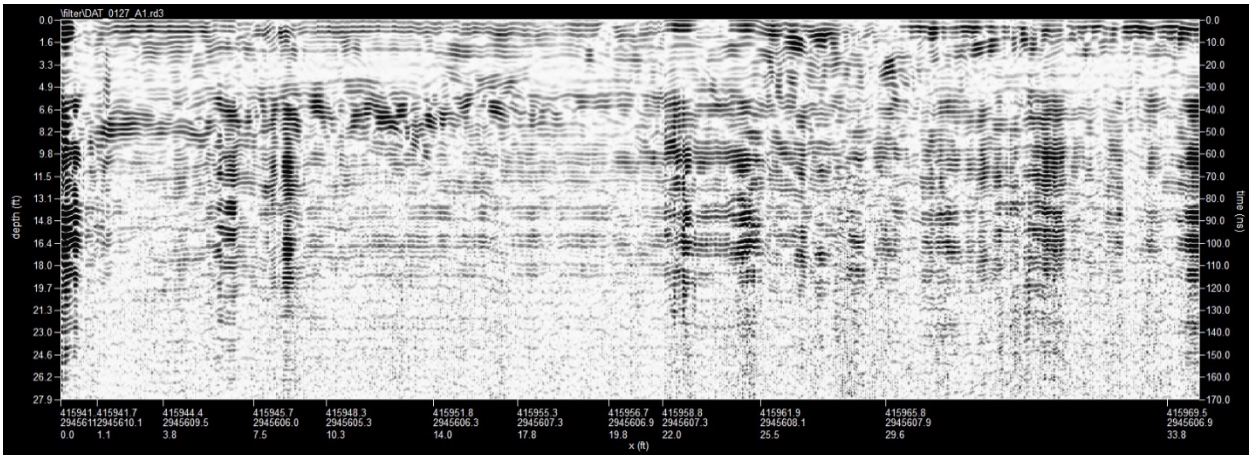
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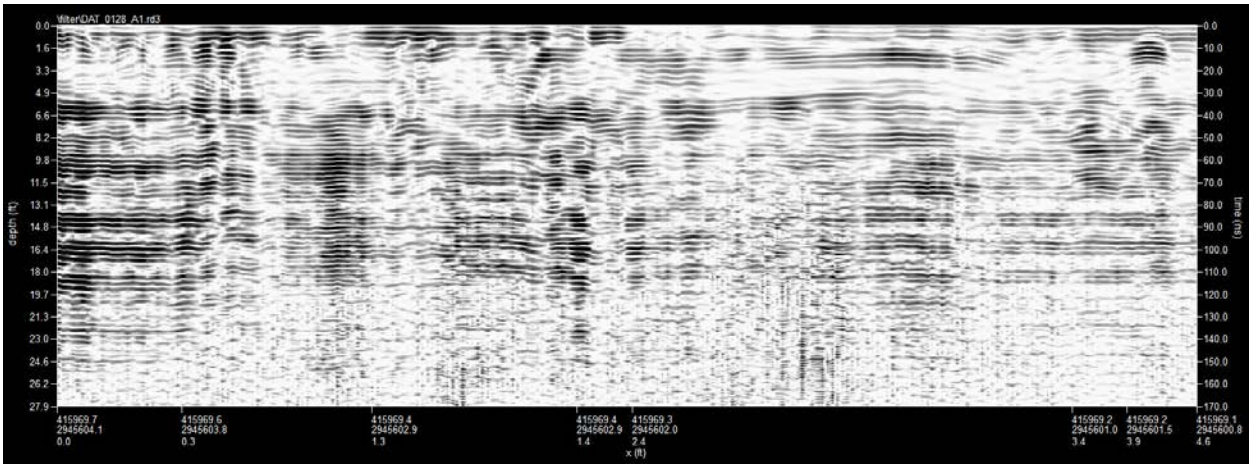
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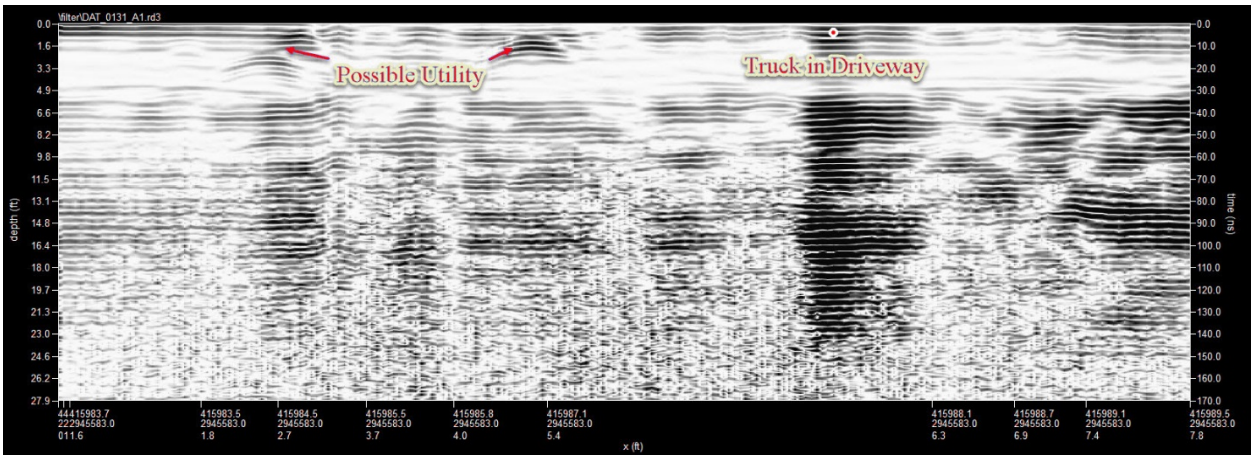
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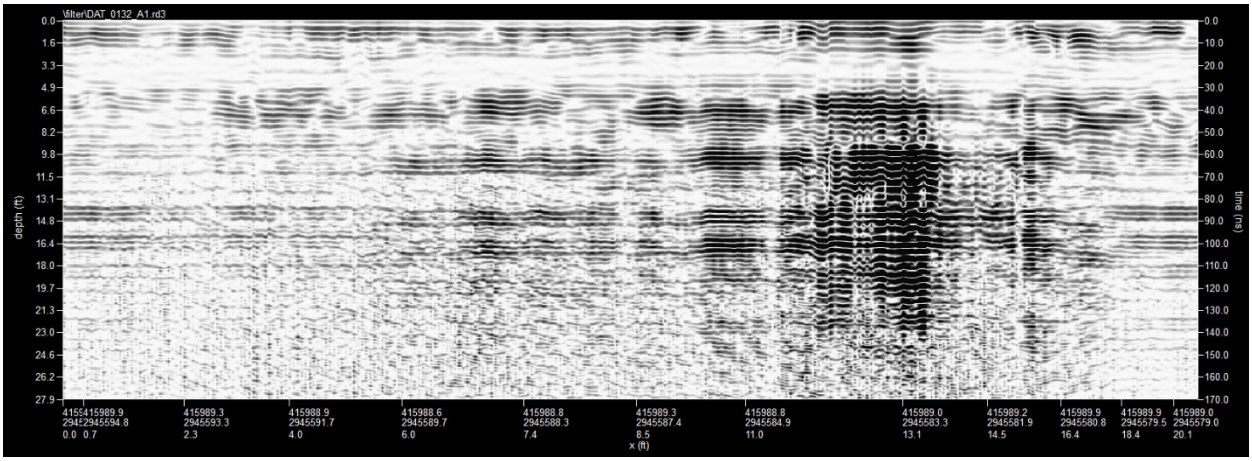
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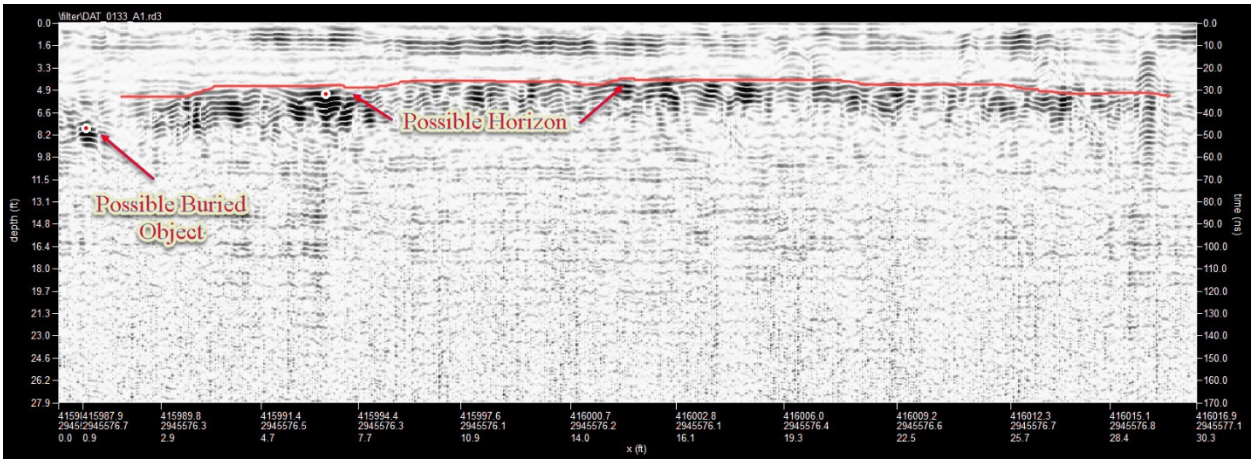
Transect 6 from 3347 Stella Street.



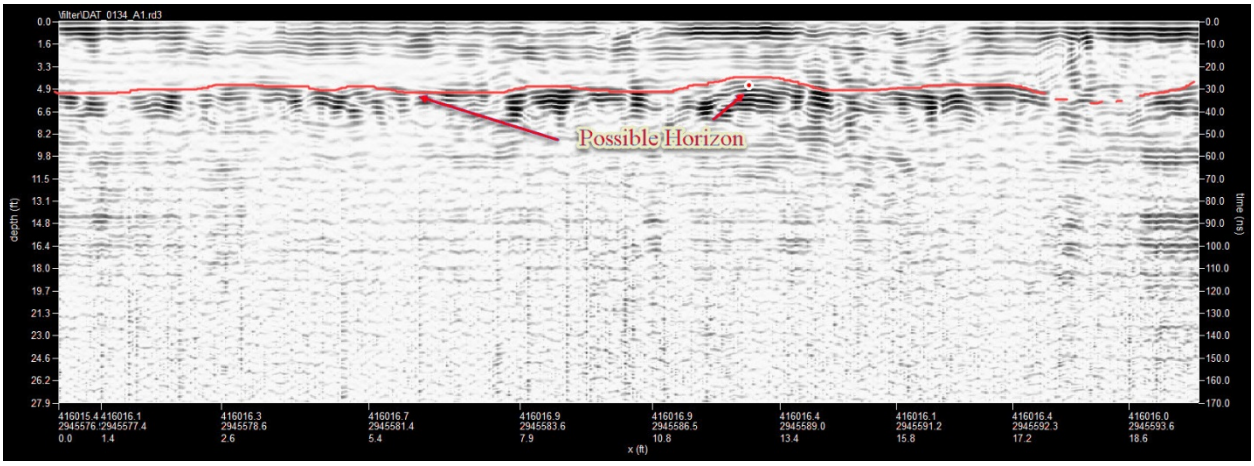
Transect 1 from 2643 Midway Avenue.



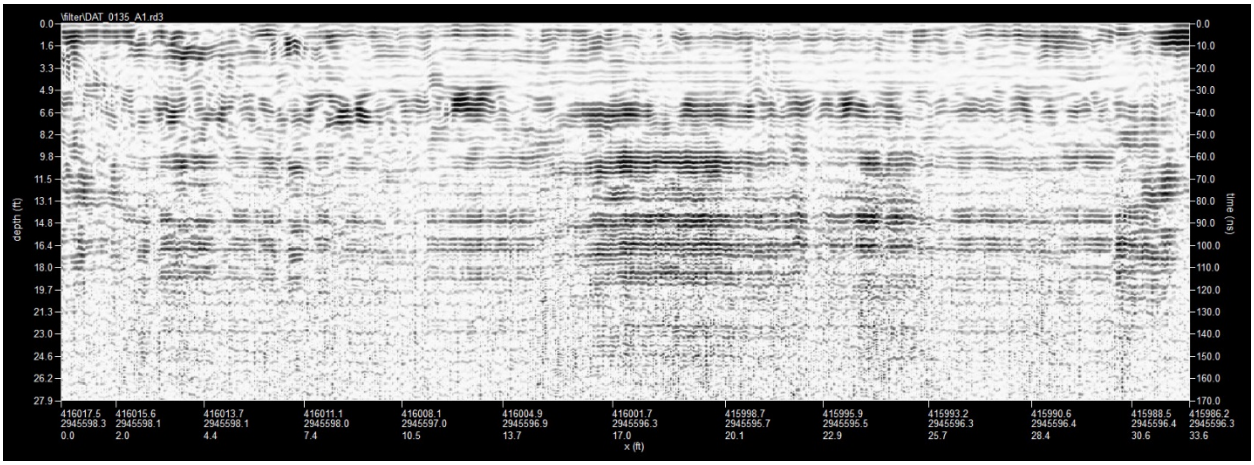
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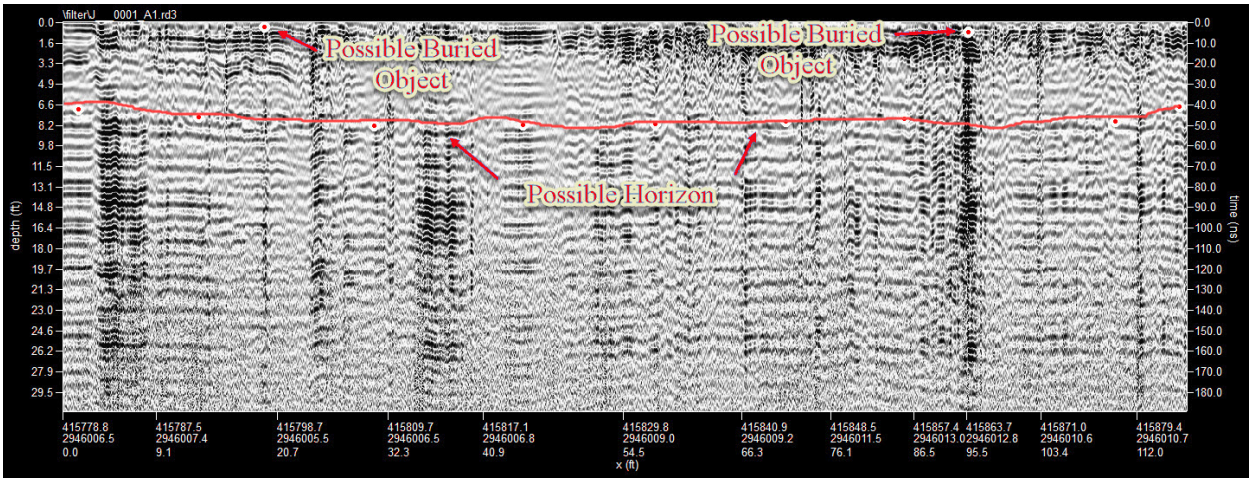
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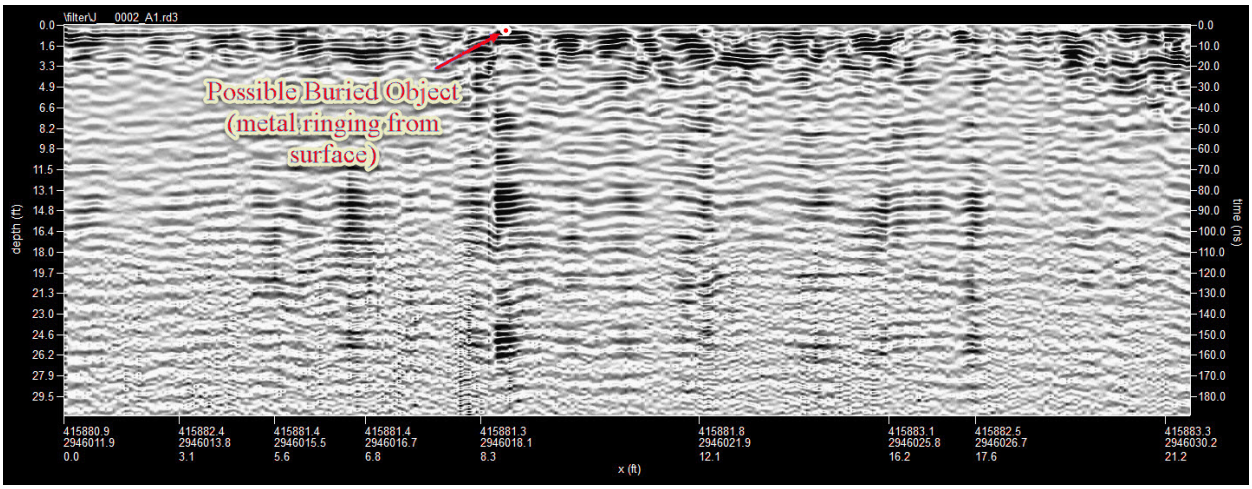
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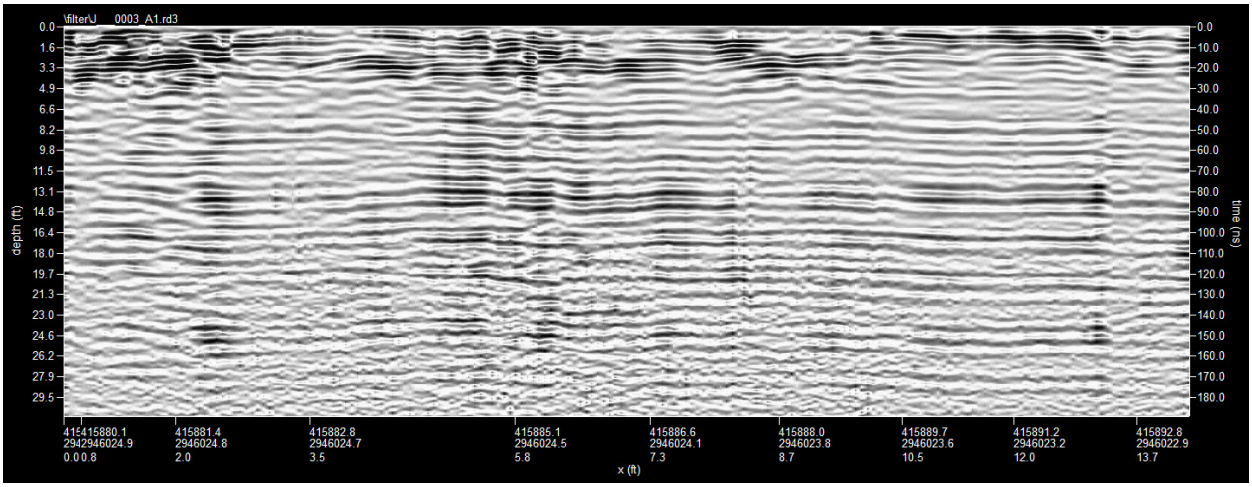
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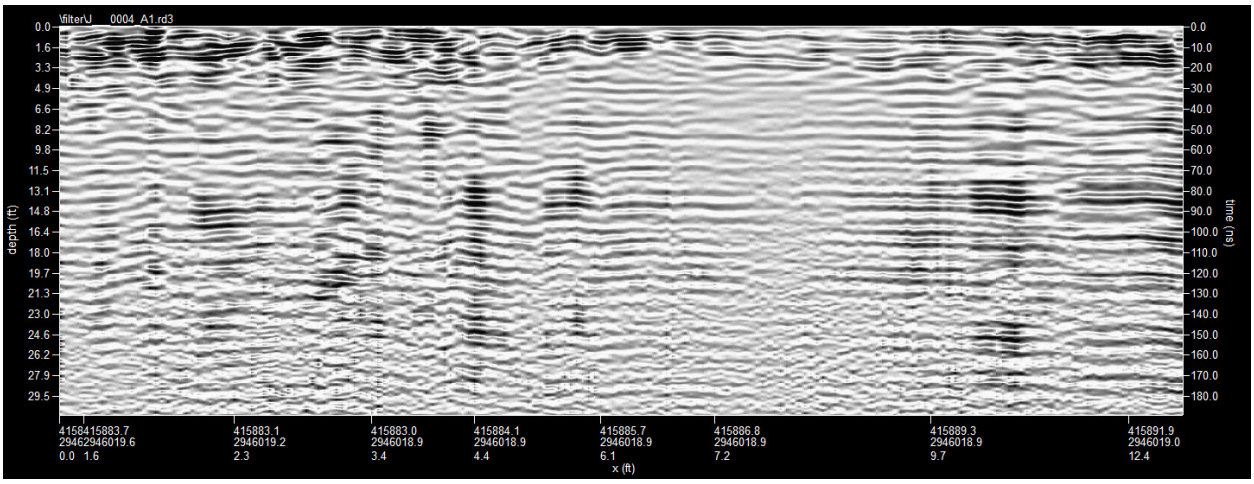
Transect J_1 from the Auto Parts Salvage Inc site.



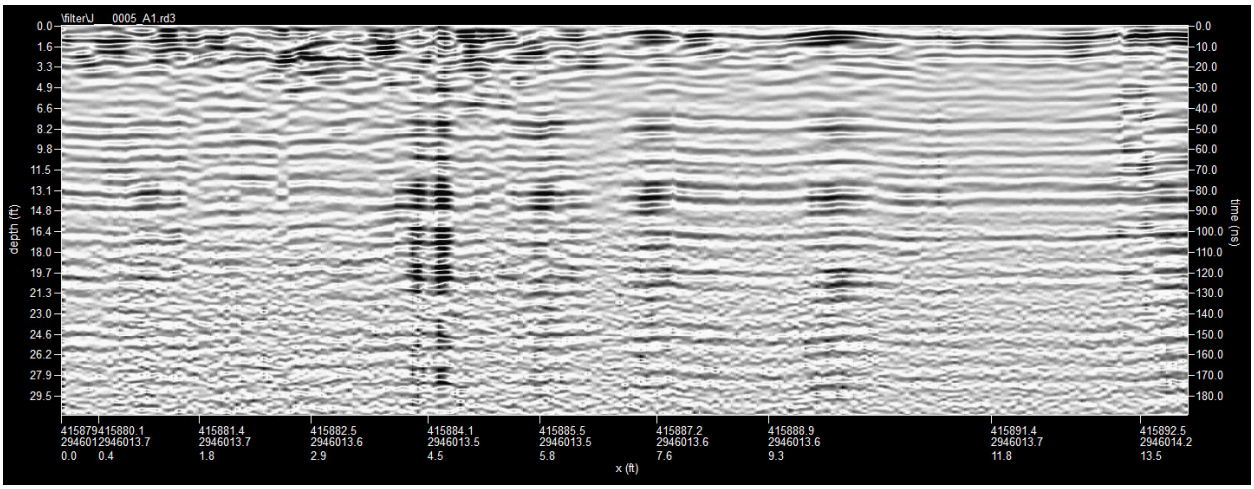
Transect J_2 from the Auto Parts Salvage Inc site.



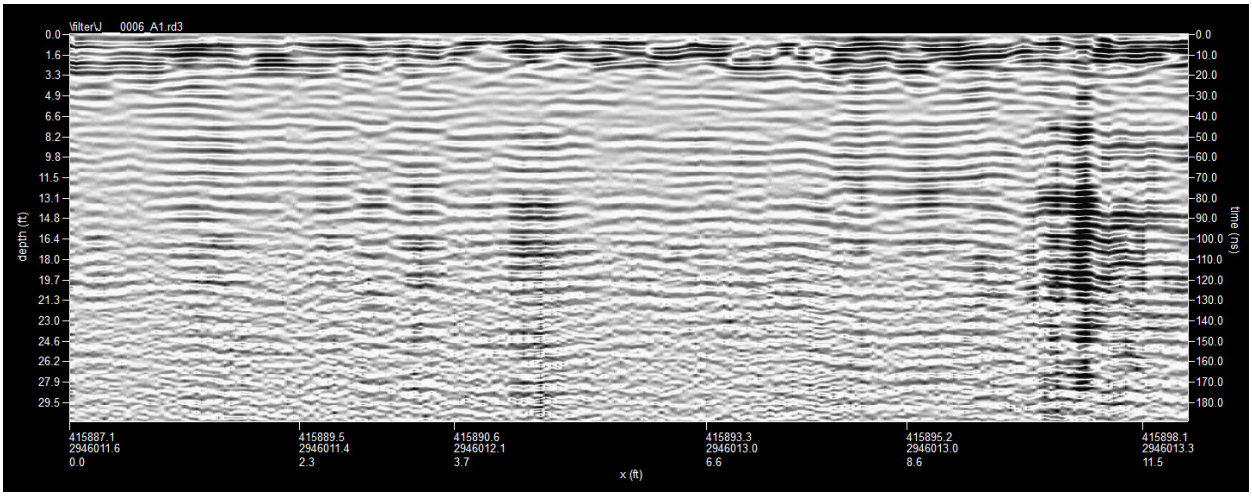
Transect J_3 from the Auto Parts Salvage Inc site.



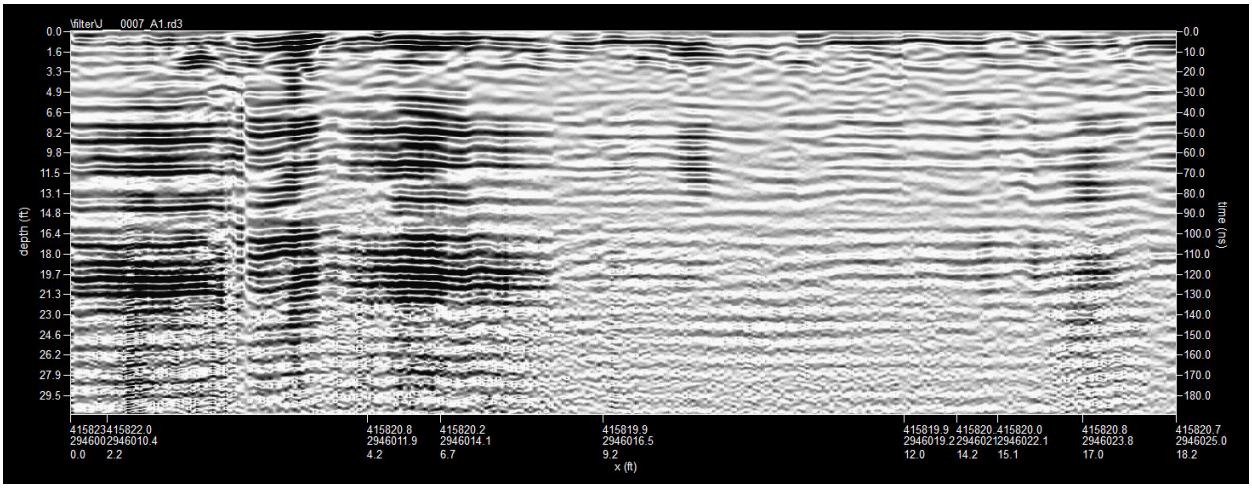
Transect J_4 from the Auto Parts Salvage Inc site.



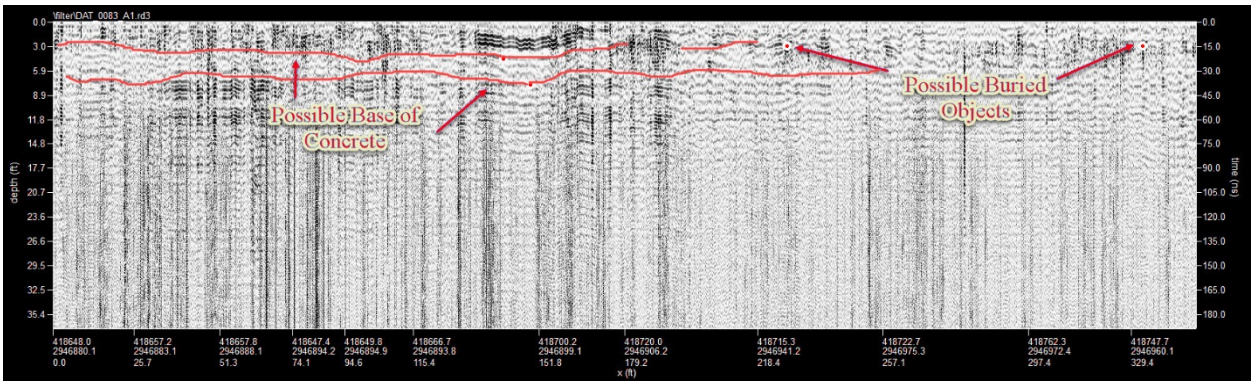
Transect J_5 from the Auto Parts Salvage Inc site.



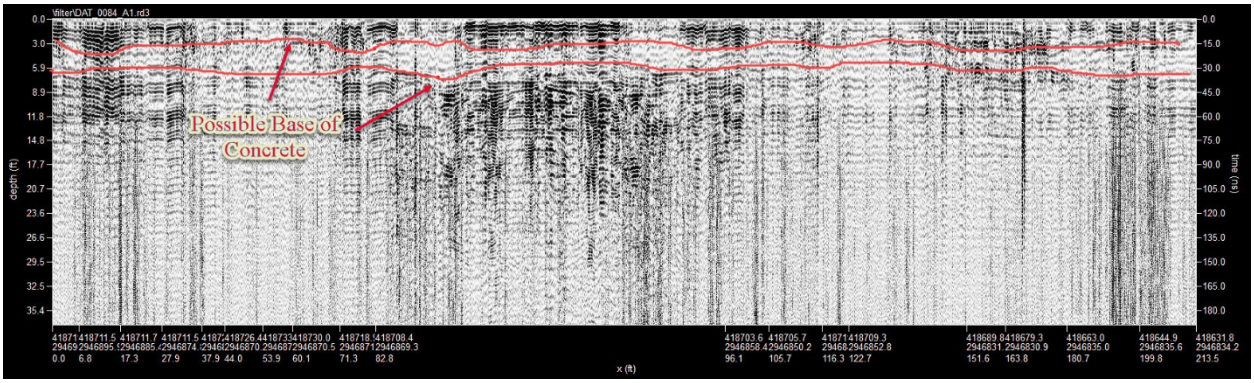
Transect J_6 from the Auto Parts Salvage Inc site.



Transect J_7 from the Auto Parts Salvage Inc site.



Transect 1 from the U-Pull and Save site.



Transect 2 from the U-Pull and Save site.