

**GROUND PENETRATING RADAR INVESTIGATIONS AT THE EAST  
PARISH BURIAL GROUND, NEWTON, MASSACHUSETTS**

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CPC staff or staff for the Newton Historical Commission.

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## PROJECT OVERVIEW

On behalf of UMASS Archaeological Services and the ~~Town~~<sup>City</sup> of Newton, Massachusetts, Soil Sight LLC conducted a ground penetrating radar (GPR) survey at selected areas within and adjacent to the East Parish Burial Grounds (Figure 1). The purpose of this geophysical study is to identify locations of potential unmarked human burials outside of the cemetery fence in a public area along Centre Street known as Loring Park. In addition to the Loring Park survey, an area within the burial grounds reputed to be the location of the original 17th century meetinghouse was also surveyed. The meetinghouse area is located inside of the East Parish Burial Ground fence and is memorialized with a large white marble obelisk known as the First Settlers Monument. The GPR results identify anomalies that can be tested by subsurface testing associated with an archaeological field survey.

A total of 74 geophysical anomalies are identified in this report. These anomalies are designated as "Anomaly A" through "Anomaly BV" (Table 1, Table 2). In the Loring Park area located outside of the East Parish Burial Ground fence, 30 GPR anomalies were found to have potential to be unmarked burials. At the meetinghouse area (Area 2) near the First Settlers Monument, 41 anomalies have potential to be burials. Three GPR anomalies in the meetinghouse area have potential to be architectural remains associated with the original Newton Meeting House. An archaeological field survey is recommended to determine the nature of the anomalies.

Loring Park is a flat, grassy area west of the East Parish Burial Ground. It appears to have been graded at some point in the past and it is currently ~20cm lower than the surrounding cemetery. A short stone retaining wall (with chain-link fence on top) separates Loring Park from the East Parish Burial Grounds. In order to create Figure 1, the Town GIS map was overlaid and scaled on top of the 1918 "Plan of the Centre Street Cemetery" and determined that Loring Park is currently 40-50% smaller than it was in 1918. Much of the former Loring Park space is now under the recently widened part of Centre Street near the entrance to the Boston College Law School.

## GEOPHYSICAL NOMENCLATURE

### **Anomalies**

Geophysical responses that are either lower or higher than the natural background level at a site are referred to as *anomalies*. Anomalies can be caused by either natural or cultural phenomenon. In this report, anomalies are alphabetically labeled so as not to be confused with the convention of assigning numbers to archaeological stratigraphy and features. Often, anomalies can be correlated to known historical structures and topographic features by examining historical maps, aerial and historic photographs, oral histories, and field observations.

It is generally impossible to determine the nature of an anomaly without ground truthing with professional archaeological excavation. Soil Sight LLC strongly recommends that a professional archaeologist and Massachusetts Historical Commission (MHC) be consulted prior to testing any of the anomalies reported in this document. A State Archaeologist's Permit will be required prior to conducting any archaeological subsurface testing.

### **Identifying GPR Grave Anomalies**

Prior to entering the field at the Newton East Parish Burial Ground, synthetic radargrams were created to predict what various burial types might look like at this site (Figures 2 and 3). Synthetic radargrams are computer models that can be used to predict what specific GPR anomalies should look like (Conyers and Goodman 1997b:83-94). The PC computer program *2DRaydar* was used to create the synthetic radargrams reproduced in this report (Powers 2001). Three types of coffins (Type I, II, and III) were modeled and one type of graveshaft (Type IV) (Goodman, et al. 2009:504). The East Parish Burial Grounds was then subjected to a series of test lanes across the locations of known (or marked) burials to detect similar geophysical anomalies. (Figures 4, 5, 6 and 7). The models and associated synthetic radargram in Figure 2 demonstrates that very minor differences in coffin shape can cause drastic differences in the GPR response.

#### Anomaly Type I

Coffins with A-shaped lids, also known as peaked or gabled coffins, can produce Type I

GPR anomalies (Figure 2, Figure 4). This type of coffin is associated with mid to late 17th century burials at English colonial cemeteries (Hume 1982:78-83). Type I GPR anomalies resemble a strongman or power lifters 'bent dumbbell'. This type of GPR response is rare and can be difficult to recognize in glacial till soils. The shape of the anomaly can make it look as if there are two very deep burials separated 2-3 meters apart, however the burial is actually located in the middle. These types of coffins are also very narrow at the feet and broad at the shoulders. If the GPR transect crosses the coffin near the feet, the anomaly may look smaller than a typical burial (see Hume 1982: Figure 4-8).

#### Anomaly Type II

Type II anomalies can result from flat-lid coffins (Figure 2). Type II can also result from the bottom of grave shafts and/or possibly from collapsed coffins. This GPR anomaly type can be described as 'planar' because it looks to be made up of a series of flat planes. On Figure 4, Anomaly BC is typical of a planar Type II GPR response, however it is not a grave. Anomaly BC is a shallow foundation that is either associated with the original meetinghouse or the First Settlers Monument. It is likely that this foundation is square in section similar to the Type II coffin in Figure 2.

#### Anomaly Type III

Type III GPR anomalies can be caused by rounded lid coffins (Figure 2). These are the most common anomalies found at both Loring Park and the East Parish Burial Ground. This GPR anomaly type can be referred to as hyperbolic and has been described in detail elsewhere (Conyers and Goodman 1997a:Figure 3). The majority of potential unmarked graves in this report are of this type.

#### Anomaly Type IV

Type IV GPR anomalies may be reflect burial shaft walls or the topmost corners of the burial shaft. Type IV anomalies appear on the radargrams as faint X-like crossing reflections that originate high on the radargram (Figure 3). These anomalies often appear much closer to the surface than one would expect to find a burial. However, in the absence of a coffin or coffin hardware, this type of anomaly can be a useful indicator of the presence of a burial. Type IV can be difficult to identify in very sandy soils due to the diffuse burial shaft - natural soil interface.

No type IV anomalies are identified in this report.

#### GPR Test Lanes at Marked Graves

The results of the test lanes are encouraging (Figures 4, 5, 6, 7). Some early marked graves (1691-1713) were indicated in the radar data as strong GPR anomalies. Many of the marked graves that were tested were represented as distinct, and shallow hyperbolic Type III anomalies. Type III is a common type of GPR grave anomaly in this region and beyond. Unless otherwise noted, potential un-marked graves in this report are Type III (Appendix A and B).

## METHODS

### **Establishing the Survey Grid**

#### Area 1 Loring Park

Before the start of the geophysical survey, a metric archaeological grid was established at the Newton East Parish Burial Ground and Loring park. A Trimble Model 3305 total station and tape measures were used to accomplish this task. In order for future archaeologists and historical researchers to re-establish this survey grid, the grid was referenced to known landmarks at the site.

The eastern stonewall in Loring Park was chosen to establish a baseline for the geophysical survey grid. Since this stonewall ran the entire length of Loring Park, it made sense from a logistics standpoint to orient the survey to this landmark. The Loring Park stonewall was labeled as the West 98 gridline. The remainder of the grid was then oriented at right angles to this wall. The northeasternmost corner of the wall was used as the South 100, West 98 grid point (Figure 8).

### **Area 2, First Settlers Monument**

The Area 2 grid was established with the orientation of the headstones in mind. Headstones are obstructions and often impede GPR survey. It is also important to avoid surveying immediately adjacent to old slate headstones because the GPR equipment can rub or damage the soft slate. Since the headstones in this area have their longest axis oriented

north/south, it is most efficient to also survey in the north/south direction. There is a better chance to cross burials because the bodies are often interred with the long axis laid in an east/west orientation. When surveying in a north/south orientation, there is also less of a chance of going between the rows and missing the burials entirely.

Known landmarks were used to establish the Area 2 grid (Figure 9). Standard tape measures were used to triangulate the grid corners with reference to the First Settlers Monument and the only raised brick with white marble table top crypt in the area (illegible name and date). By using the triangulation measurements provided on Figure 9, any person with two pull tapes can reconstruct the survey grid in this section of the cemetery.

### **Ground Penetrating Radar Field Methodology**

For the GPR survey, a high-resolution 500MHz (center frequency) GPR antenna manufactured by Geophysical Survey Systems Inc (model 3102A) was employed. The radar control unit used during this survey is a SIR-2 digital GPR system. Survey transects were collected every 0.5 meters along north/south (grid) transects across all assessable areas of the two survey areas. A pulse encoder wheel (odometer), mounted to a mobile cart system, controls the distance along survey lines. Along the survey transects, scans (sometimes called traces) are collected at approximately every 2 cm (50 scans per meter). Each data file is collected with a 75 nanosecond (two-way travel time) time window. Data were recorded to the hard drive of the SIR-2 as 16 bit \*.dzt files with 512 samples per trace and were later downloaded for viewing and processing on a PC. All GPR data files are included on the CD-ROM found in the back of this report. Hard copies of all GPR data and field notes can be found in Appendix A and B.

The GPR images reproduced in this report are often referred to as radargrams (Appendix A & B). The depths into the ground are *estimated* from the apparent dielectric permittivity of the soils and are based upon the two-way travel time of the radar waves measured in nanoseconds (ns). At Newton East Parish Burial Ground, every 10ns of two-way travel time equals ~ 47cm depth into the soil.

The GPR method uses short pulses of ultra-wideband electromagnetic energy transmitted



into the Earth. Some of this energy is reflected back to the receiving electronics of the radar system where the time and amplitude of the signal are recorded. The electrical properties of the subsurface (dielectric permittivity) determine the speed at which the radar waves travel through the soil. Changes in the electrical properties of the soil cause some of the transmitted energy to be reflected back to the receiving electronics. At the frequencies most often used for archaeological GPR applications (100MHz – 1000MHz), the dielectric permittivity is the most important electrical property to consider except when the electrical conductivity is unusually high. The dielectric permittivity of soils is primarily determined by the water content in the soils. Wet soils have a high dielectric permittivity and cause the radar waves to move slower and also attenuate the radar signal. GPR generally is more effective in dry soils where deeper penetration is possible with less signal attenuation; however sometimes very dry soils provide little contrast for archaeological features to be detected.

The soils at the East Parish Burial Grounds at the time of survey were deemed average to above average for this region with a relative dielectric permittivity estimated at 10. This relative dielectric permittivity is common for moist sand or moist sand with gravels.

### **Computer Processing Methodology**

The GPR data are collected as digital \*.dzt data files and displayed as radargrams (Appendix A & B). Each 2D radargram file is later processed with software including GRORADAR, GPRviewer, and GPRworkbench. Processing steps include background removal filters and increased range gains. After processing the 2D data files, the data was then imported into GPR\_PROCESS to create 3D time slice amplitude maps (Figures 11, 12, and 13). It was found that the subtle GPR anomalies that possibly represent human burials at Newton East Parish Burial Grounds and Loring Park did not translate well on the 3D time-slice amplitude maps. Thus, the GPR data in this report are presented in their native format as 2D radargrams in Appendix A & B. However, the possible architectural features near the First Settlers Monument (Anomalies AG, AS, and BC) did represent well on the time slice amplitude maps, so those maps are presented as figures in this report (Figures 11, 12, and 13).

## GEOPHYSICAL ANOMALIES

### Loring Park

Seventy-four (74) geophysical anomalies are identified in this report. These anomalies are designated as 'Anomaly A' through 'Anomaly BV' (Figure 8, Figure 10, Table 1, Table 2). The Loring Park Area contains 30 anomalies (Figure 8). All 30 anomalies identified in Loring Park have the potential to be human burials. The anomalies are mostly faint hyperbolic Type III, however a few are very strong (for example Anomaly A and S, Table 1).

The Loring Park survey interpretation becomes complicated because the GPR anomalies mostly occur at a depth (~20-30ns) that also appears to contain glacial till (with large cobbles) and probably areas of shallow bedrock. Some of the cobbles in the glacial till likely also produce hyperbolic Type III anomalies adding some amount of uncertainty to the interpretation of this area. The Loring Park anomalies included in this report appear on two or more radargrams, so they have some length to them and are likely not just "point source" hyperbolas from smaller stone cobbles (Coyners and Goodman 1997a: Figure 3). All information available in the data, including size, orientation, and depth are considered before naming anomalies.

All of the anomalies (except "A" and "S") in Loring Park are very similar to each other (depth, size, amplitude and orientation) and occur in two main clusters (Figure 8). One cluster of GPR anomalies is located at the south end of Loring Park, while the other cluster is on the north end. In the middle of these two anomaly clusters is an area that appears to contain shallow bedrock or strong glacial geology (~1 - 1.5 meters deep). Anomalies "A" and "S" are very shallow (~20cm below surface) compared to the others in Loring Park (average ~1 meter below surface). These two anomalies might be of recent origin and related to the park being used as a construction staging area in the recent past, however, their size and orientation indicate that they could also be shallow graves.

### First Settlers Monument, Meeting House Area

Inside of the East Parish Burial Ground near the First Settlers Monument is an area that

apparently contains the earliest burials in the cemetery. Forty-one potential burial anomalies were found in this area (Figure 10). A few of the headstones in this area date to the late-17th century, while many date to the first quarter of the 18th century. According to local history, the meetinghouse was built near this location in ca. 1660, so there is high potential for un-marked burials that may date from the early period. Two possible un-marked graves were recorded that are potentially peaked coffin, Type I anomalies (see Figure 2, Figure 4). This type of burial is generally associated with the mid to late 17th century, or the period when the meetinghouse was in use (Hume 1982:78-83). Although the location of unmarked graves in this area is interesting, the goal of the survey has been to locate the foundation or footprint of the original meeting house.

Anomalies "AG," "AS" and "BC" have potential to be architectural remains associated with Newton's first meeting house (Figures 10, 11, 12, 13). Anomaly BC is a near perfect 25' x 25' square anomaly that looks similar to a building foundation (Figure 10, 11). However, it is believed that this anomaly is likely associated with the First Settlers Monument that dates to the 19th century. Examination of Figure 1 (this report) reveals a square outline labeled "North", "South", "East", and "West" around the First Settlers Monument on the 1918 "Plan of Centre Street Cemetery". At the time the GPR survey was completed, there were no indications on the surface that this square existed. The GPR signature of Anomaly BC is Type II, planar type indicating that it likely has a square cross-section (see Figure 4). It appears to be slab built, either concrete or cut stone, (not a field stone construction) which would be typical of 19th century monument construction. It is possible that this is the meeting house foundation, however the evidence points towards Anomaly BC as being part of the First Settlers Monument. Perhaps it was constructed in the 19th century to memorialize or estimate the original meetinghouse footprint.

Anomaly AS appears to be a wall or foundation, possibly built of fieldstones (Figure 10, Figure 13). It is long (~11- 12 meters) and oriented with its long axis approximately east/west. There appears to be clear delineation where many burial-type anomalies are located north of "AS" and few located to the south. Some of the burial type anomalies (see AF, AM, AN) appear to directly abut Anomaly AS. This anomaly is interpreted as the best candidate for the northern foundation wall of the original ca. 1660 meetinghouse. If Anomaly AS is the northern



foundation wall, then anomaly AG could be interpreted as the inside of the meetinghouse (Figure 12). If this conclusion is correct, then the First Settlers Monument is located at the western most edge of the meetinghouse, or approximately 8 meters west of the our estimated center of the meetinghouse. Archaeological survey is recommended to determine the nature of these anomalies.

## CONCLUSIONS

Ground Penetrating Radar investigations were undertaken at the Newton East Parish Burial Grounds and the adjacent Loring Park. A total of 74 geophysical anomalies and their locations can be found on Figures 8 and 10, and Tables 1 and 2. Hard copies of all ground penetrating radar data and field notes are reproduced in Appendix A & B. Project photos are reproduced in Appendix C.

Thirty geophysical anomalies in the Loring Park area are located in two clusters. One cluster is on the northern end of the area, while the other cluster is on the southern end (Figure 8). Some areas within this park contain shallow bedrock and/or strong glacial geology. All 30 anomalies within Loring Park have the potential to be unmarked burials so future construction activities within this area should take this into consideration.

The area around the First Settlers Monument contained 44 GPR anomalies, of which 41 have the potential to be human burials (Figure 10). Three of these 44 GPR anomalies are possibly associated with the ca. 1660 meetinghouse, which is reported to have been constructed at or near this location. Of particular interest is Anomaly "AS", which could possibly be a buried fieldstone foundation (Figures 10, 13). If correct, the Anomaly AS has the potential to be the northern foundation wall of the original meetinghouse. This would mean that the current location of the First Settlers Monument is located west of the ca. 1660's meetinghouse. This would place the First Settlers Monument approximately 8 meters west of our estimated center of the meetinghouse. An archaeological survey is recommended to verify the nature of these anomalies.

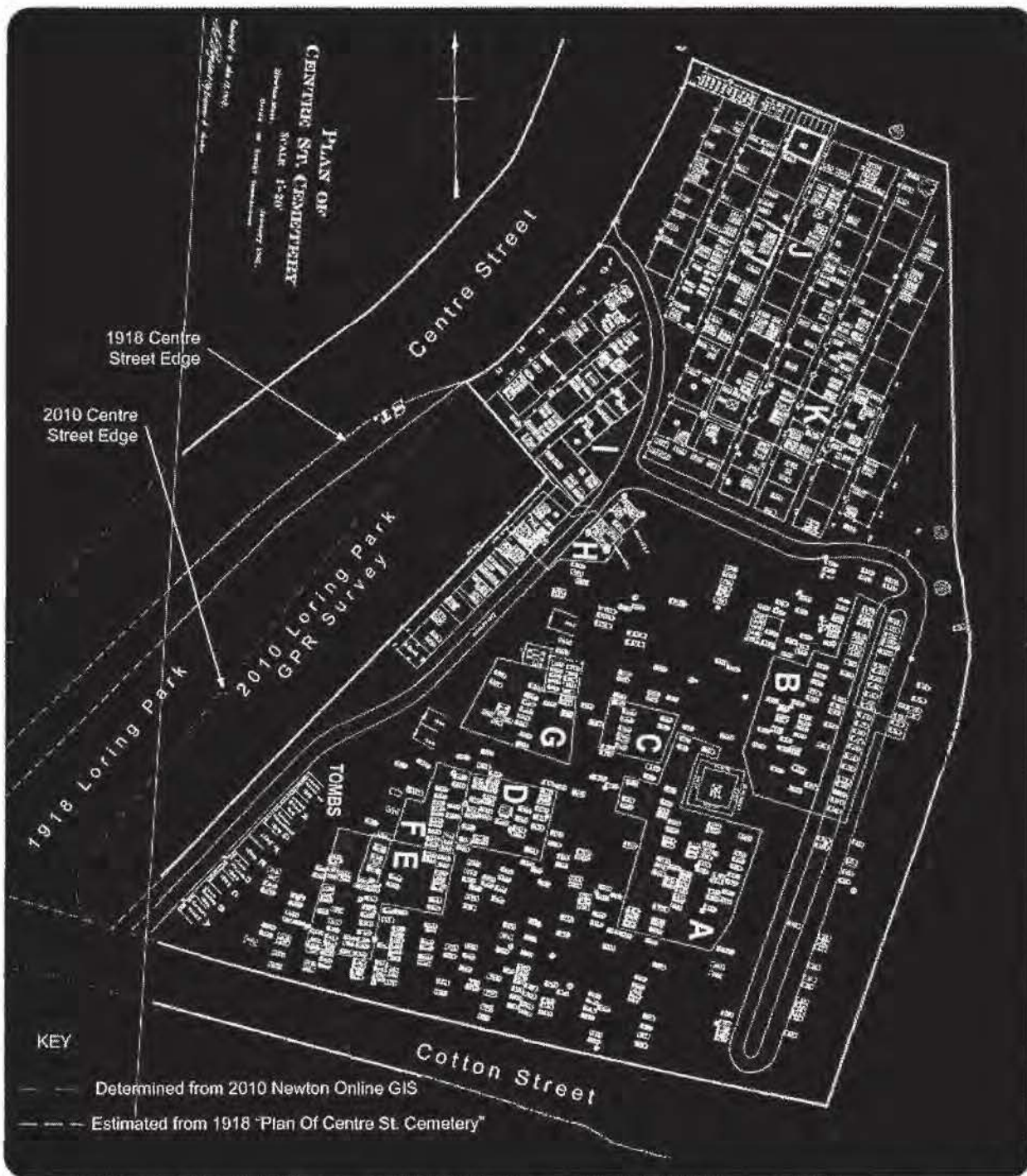
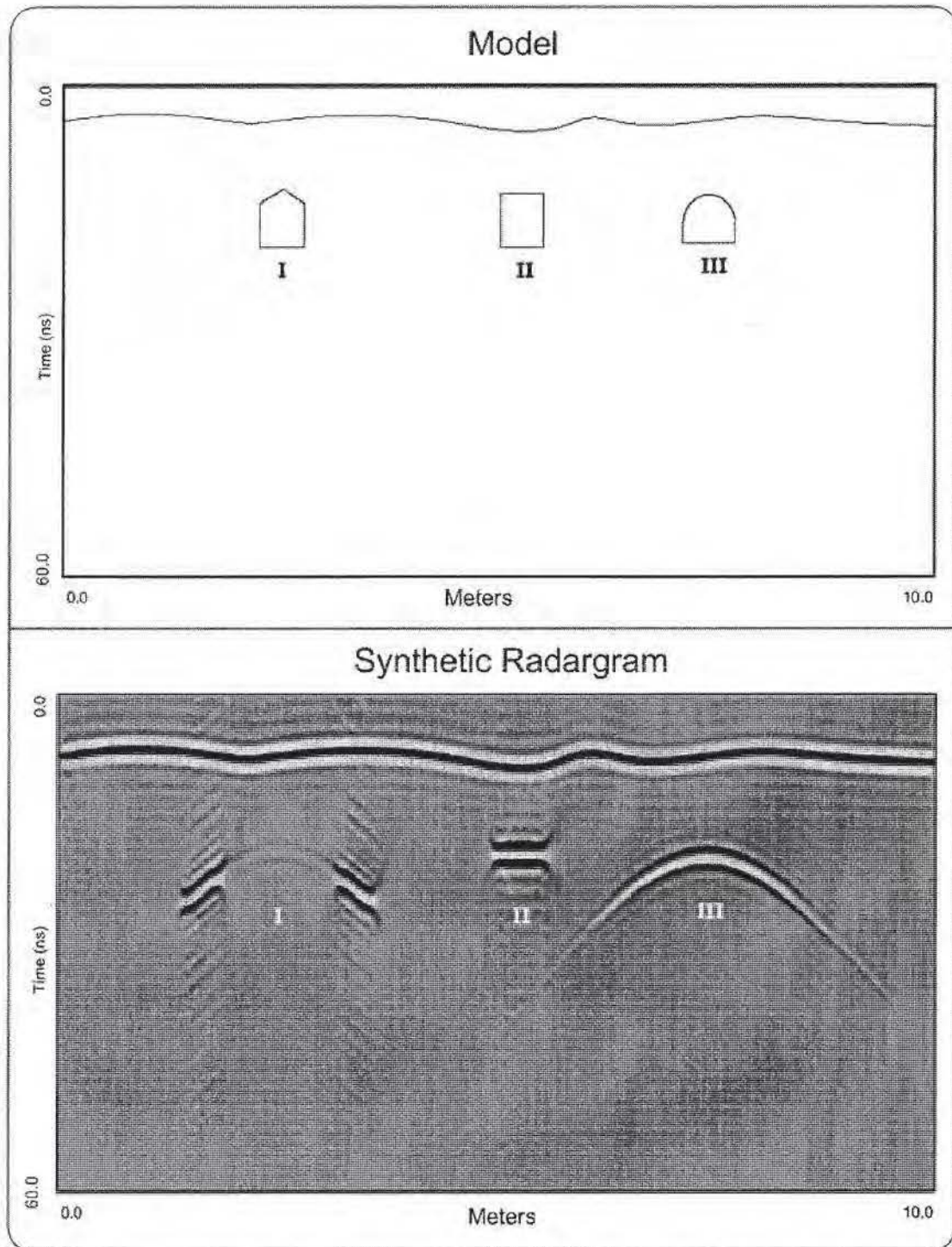
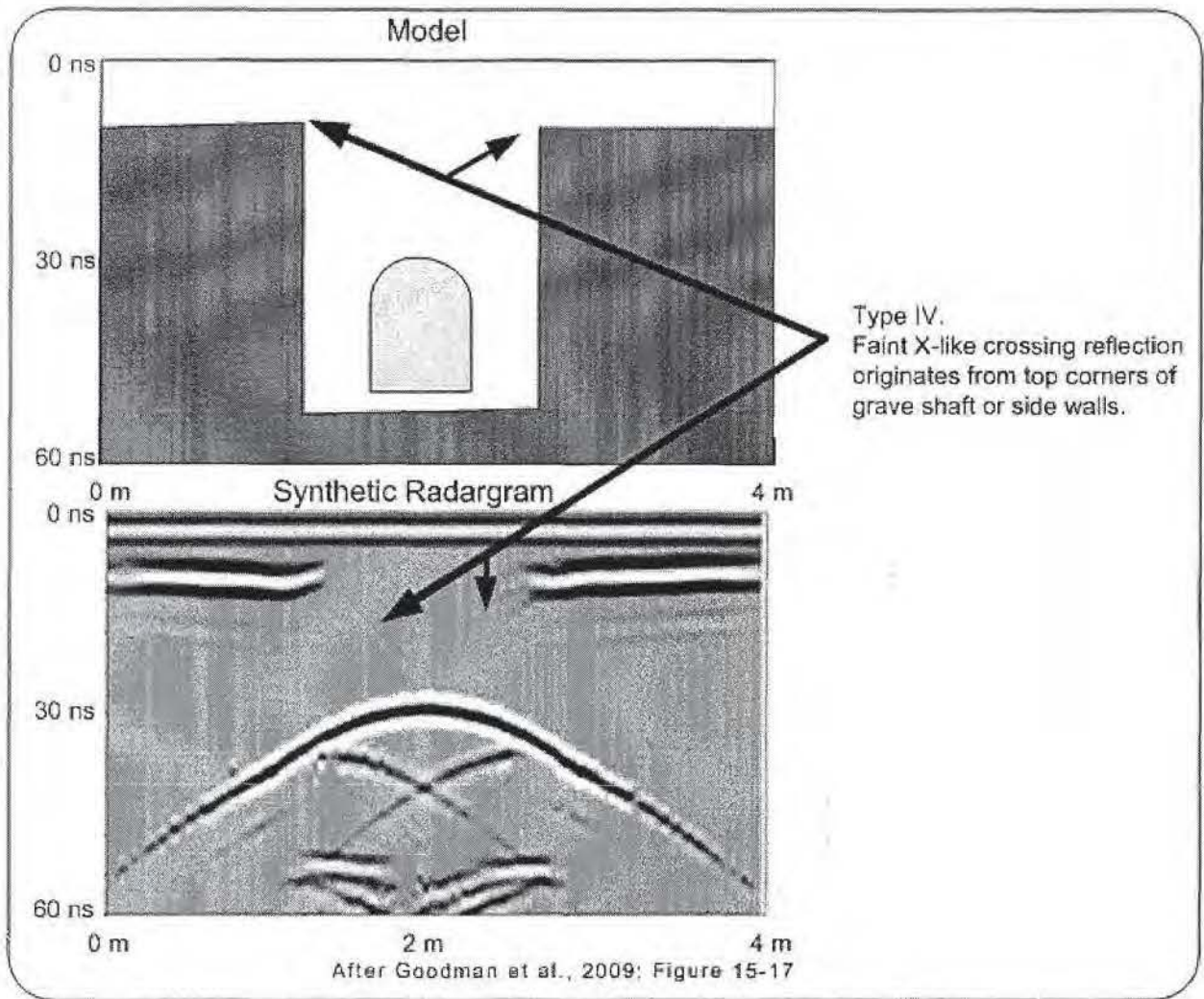


Figure 1. 1918 Plan of the Centre Street Cemetery with overlaid data from the Newton town GIS. Note that in 1918, Loring Park was approximately twice as large as it is now.

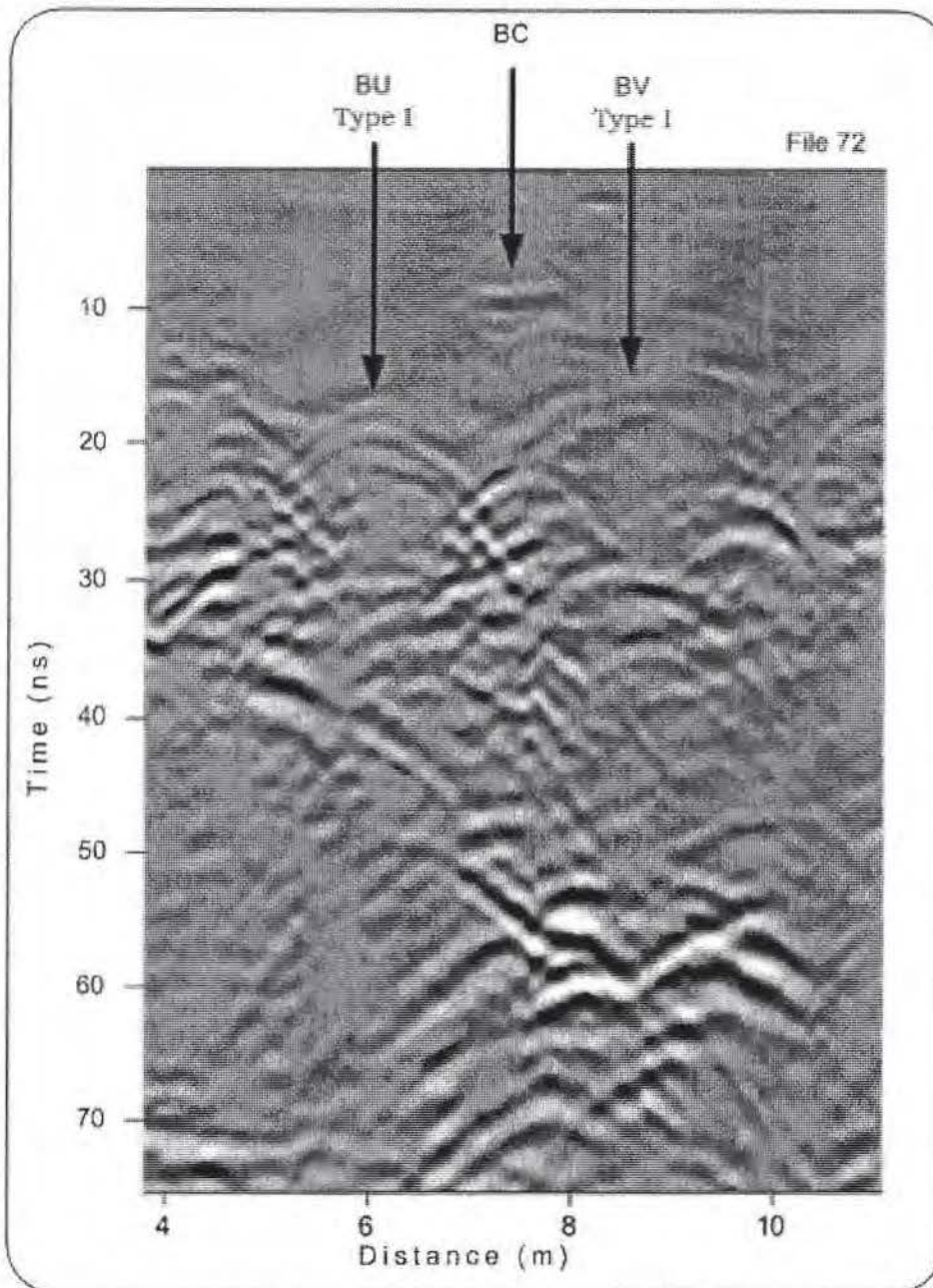


**Figure 2. Top:** Three simple coffin models buried in dry sand and covered by dry loam. Only the top of the coffins are active for the computer simulation to reduce any complex reflections from the inside of the coffins. **Bottom:** Synthetic radargram created in a computer simulation used to predict the response from the three coffin models Type I, II, and III above.

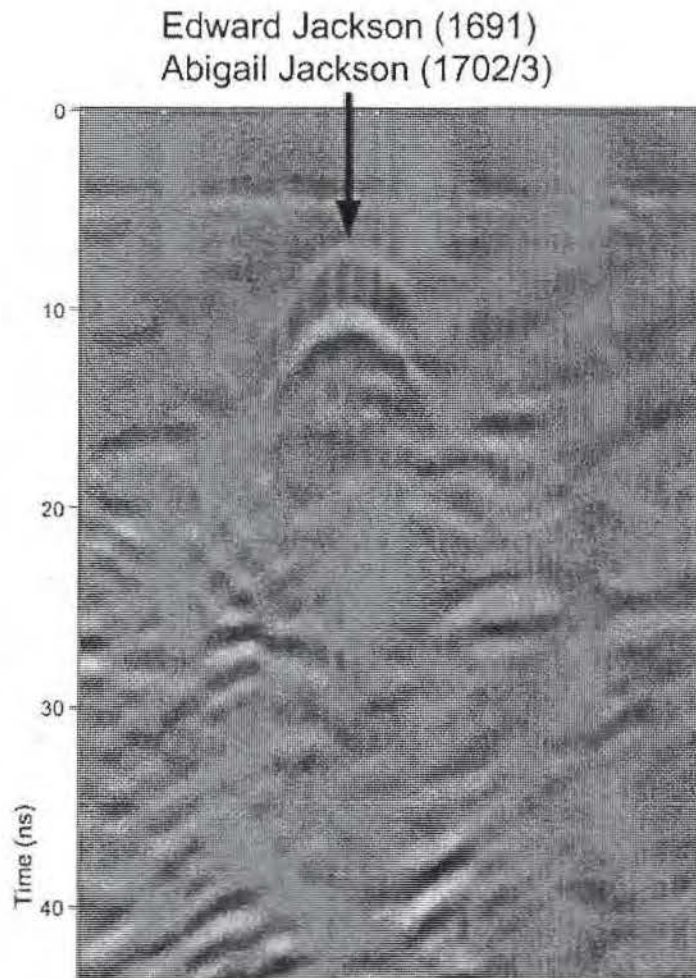


**Figure 3.** A more complex synthetic radargram created to model the GPR response from a grave burial shaft. Type IV grave anomalies are created when GPR signals reflect off the walls of the burial shaft. Please also note the complex anomalies created from the reflections inside of the coffin (Goodman, et al. 2009).



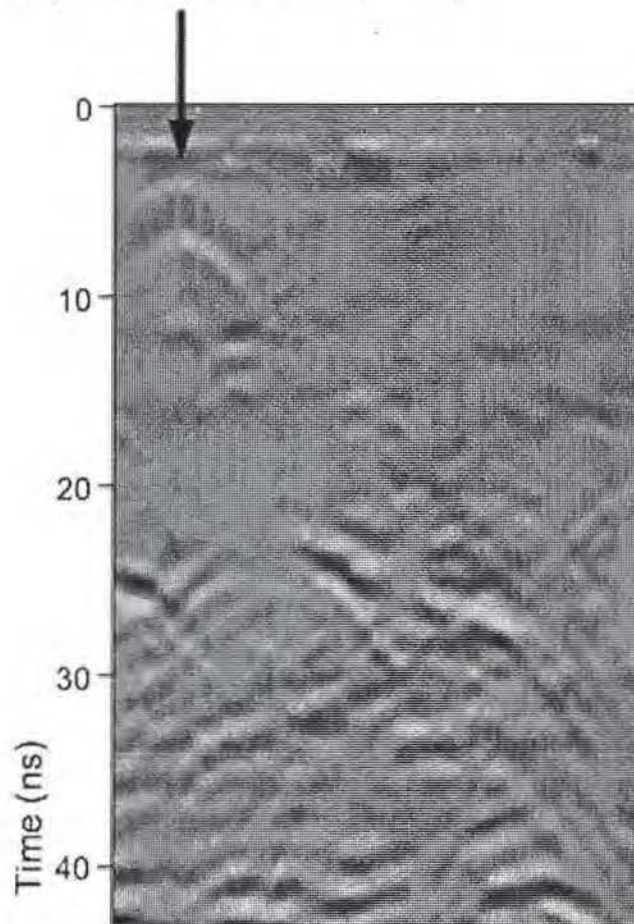


**Figure 4:** Type I GPR Anomalies "BU" and "BV" are possible indications of a peaked coffin at these two locations. GPR Anomaly BC is a nice example of a Type II planar anomaly. However, BC is likely part of the First Settlers Monument installation and not a grave. Every 10ns equals ~ 47cm depth into the soil.

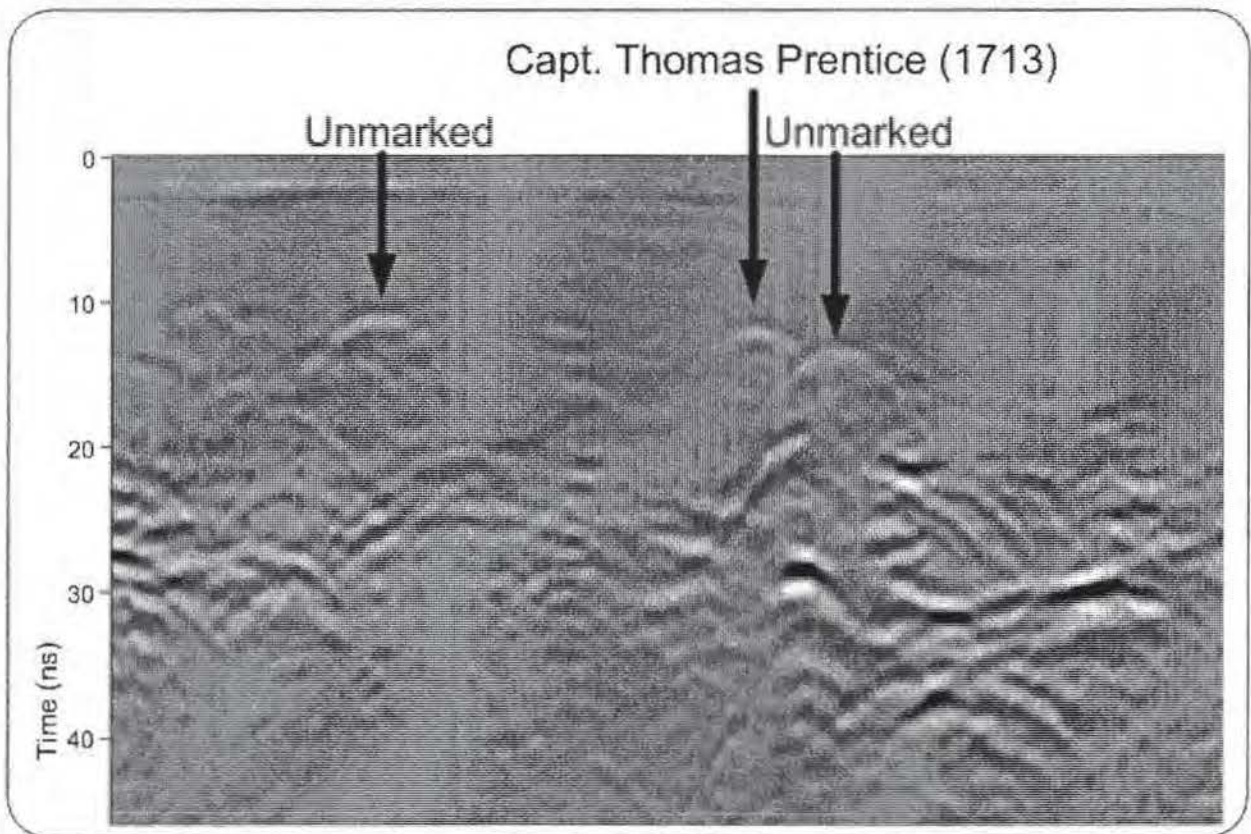


**Figure 5.** Late 17th/ early 18th century marked burials at Newton east Parish Burial ground. Two names are on one headstone. The burial shows up as a hyperbolic, Type III grave anomaly. Every 10ns equals ~ 47cm depth into the soil.

Capt. Thomas Oliver (1713)



**Figure 6.** The burial of Capt. Thomas Oliver (1713), East Parish Burial Ground, Newton, MA shows up as a strong, yet very shallow (~20cm) hyperbolic Type III grave anomaly. Every 10ns equals ~ 47cm depth into the soil.



**Figure 7.** The burial of Capt. Thomas Prentice (1713), East Parish burial Ground, Newton, MA shows up on the radargram as a strong hyperbolic, type III anomaly. Two possible unmarked graves on either side appear as very similar hyperbolic anomalies. Every 10ns equals ~ 47cm depth into the soil.

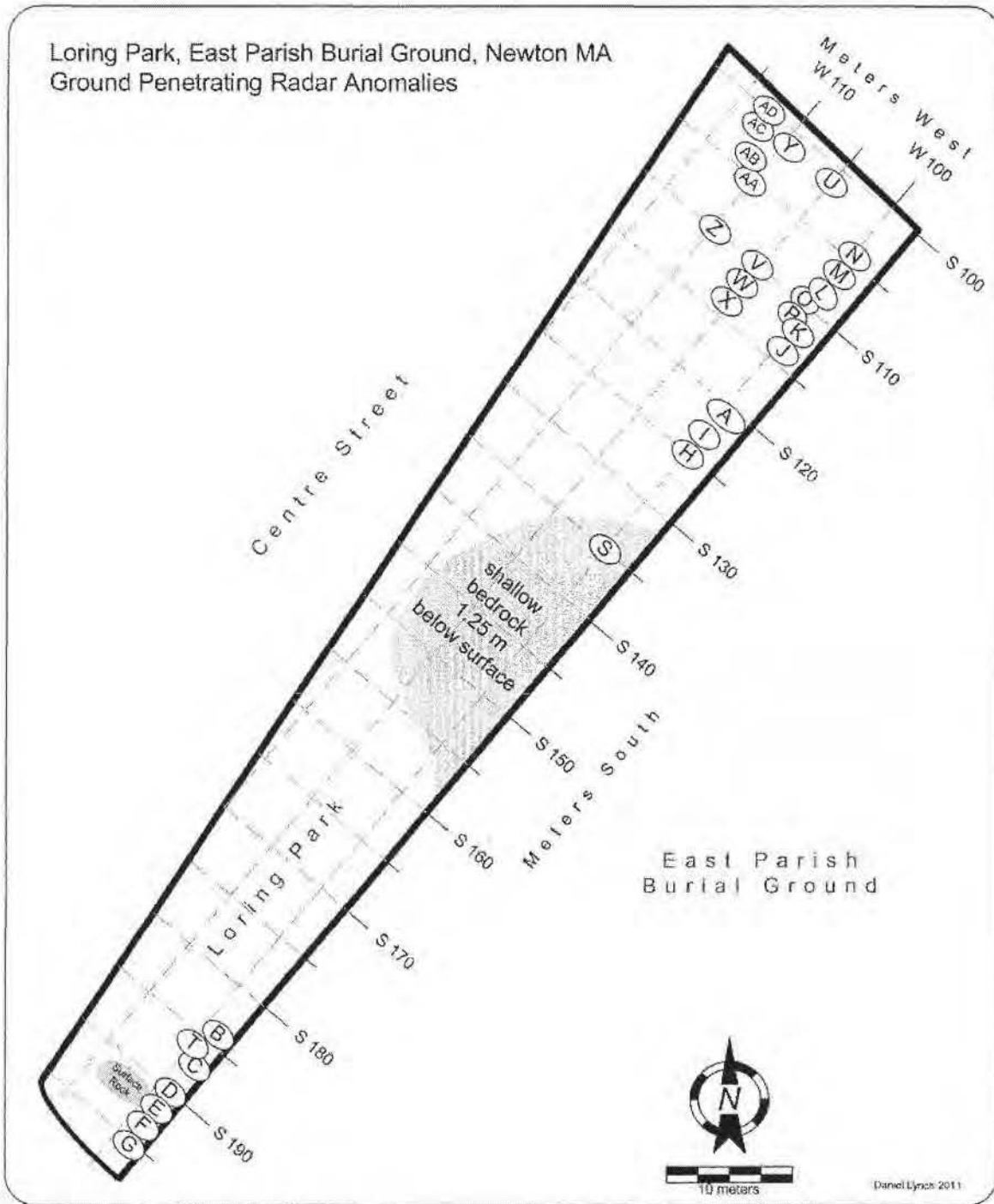
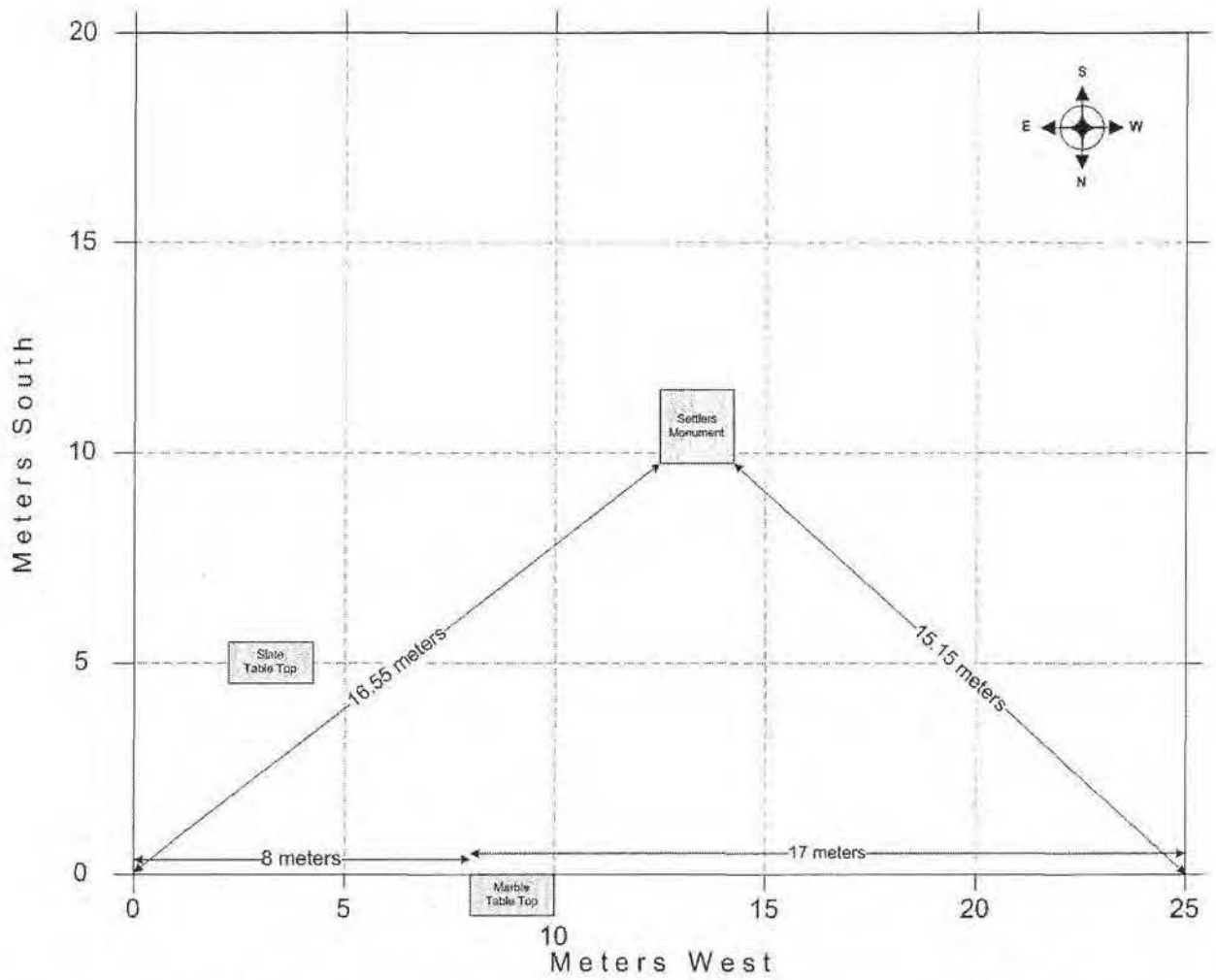
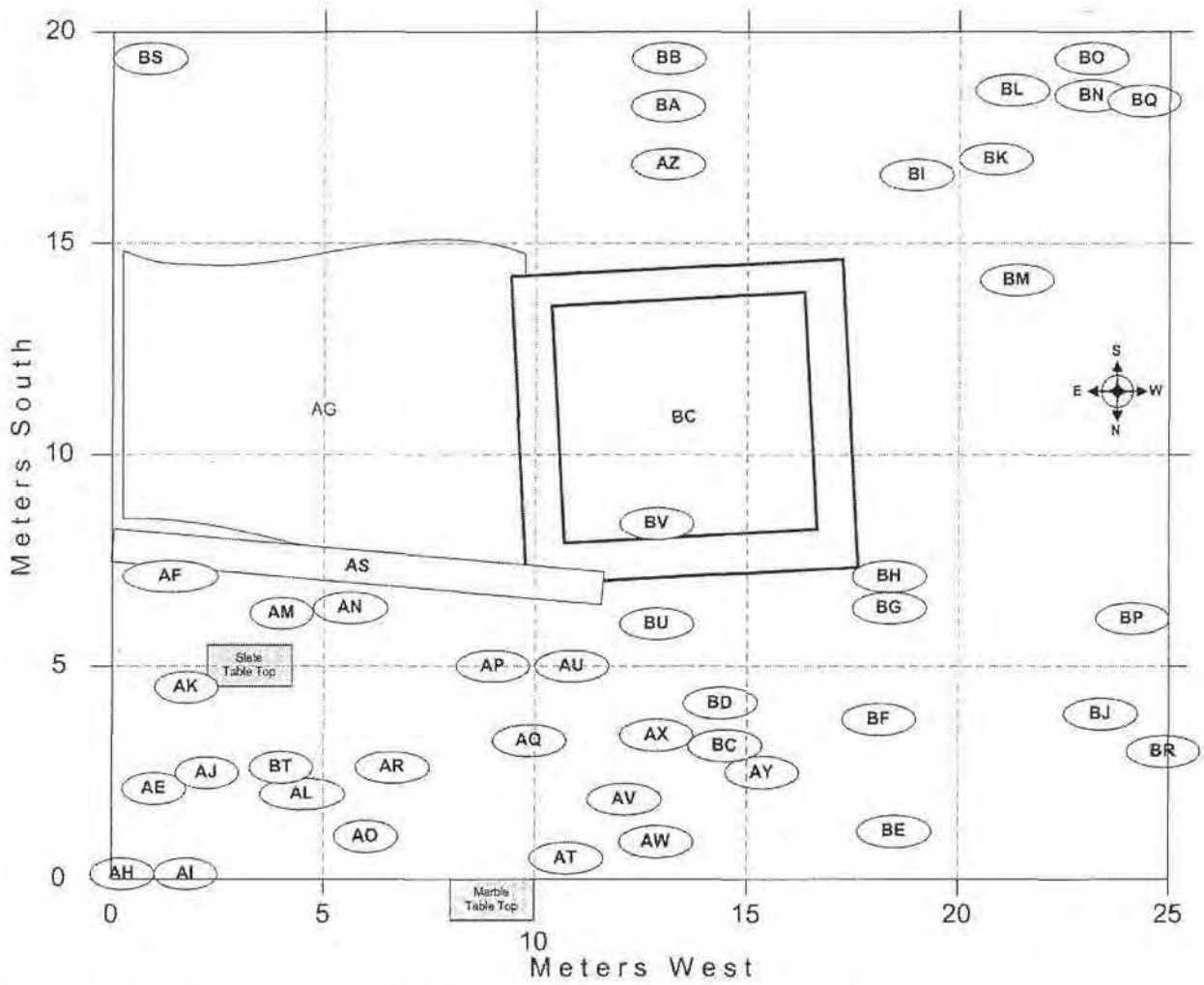


Figure 8. Location of the 30 GPR anomalies in Area 1, Loring Park.

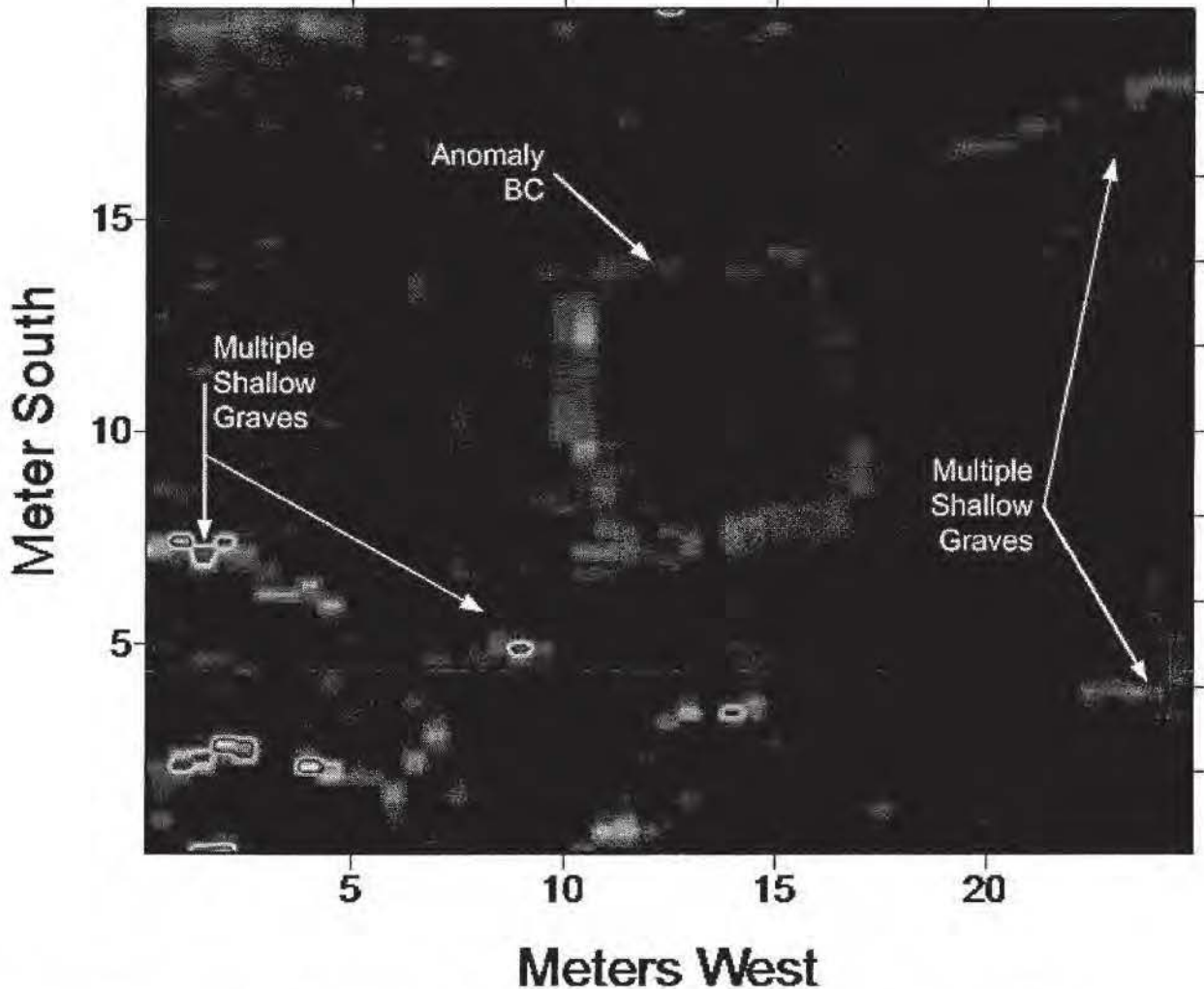


**Figure 9.** Triangulation measurements used to layout the Area 2 GPR grid at the location of the First Settlers Monument.



**Figure 10.** GPR anomalies at the Area 2 GPR grid at the location of the First Settlers Monuments.

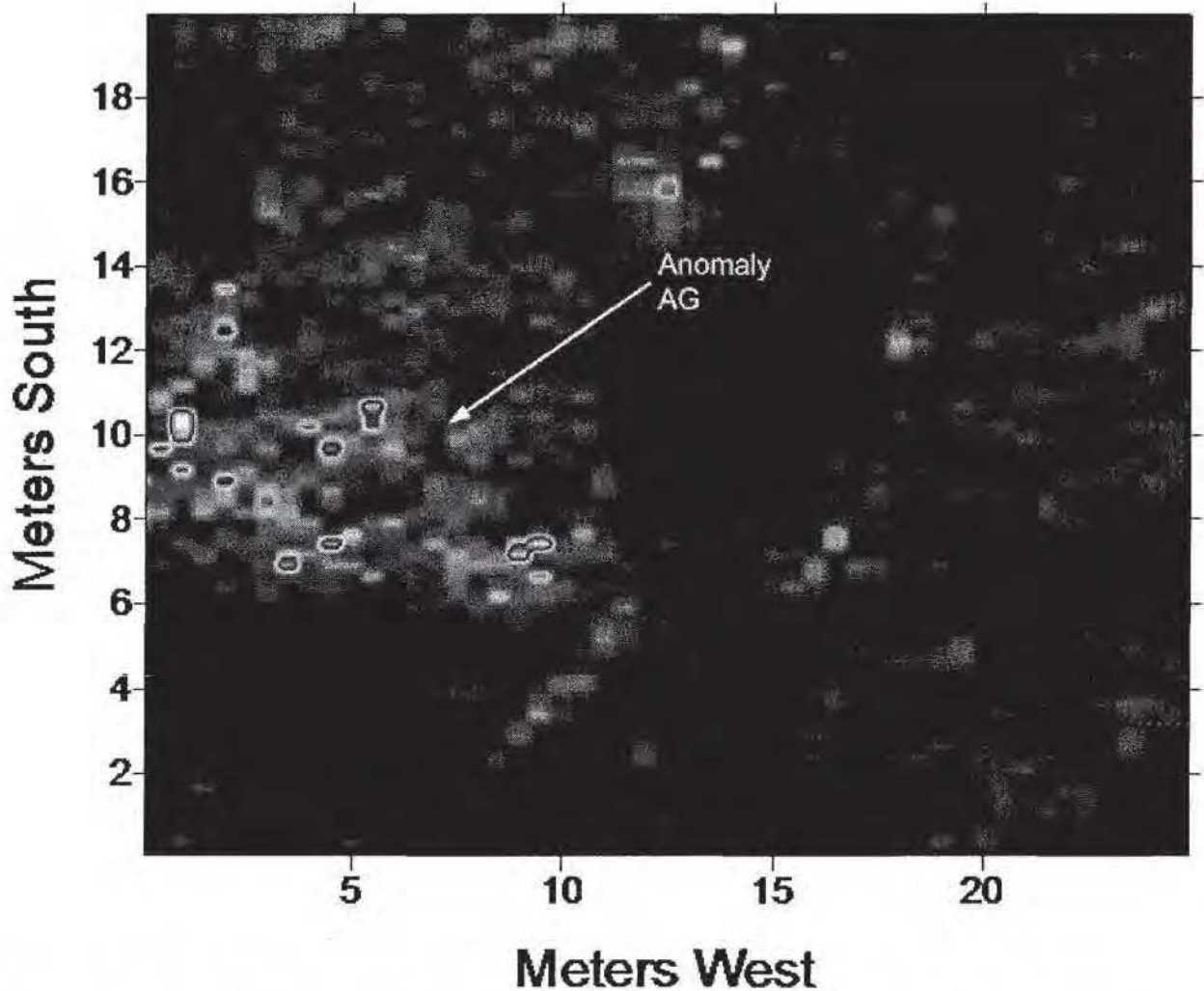
## Depth 0.29-0.42 meters (1' - 1.4')



**Figure 11.** GPR time-slice amplitude map at a depth of 6-9ns (.29 - .42 meters). The large square in the middle of the image is anomaly BC and is likely part of the 19th century First Settlers Monument (see rectangle drawn on the 1918 map in Figure 1, this report). However, it is also possible that this could be Newton's first meetinghouse.

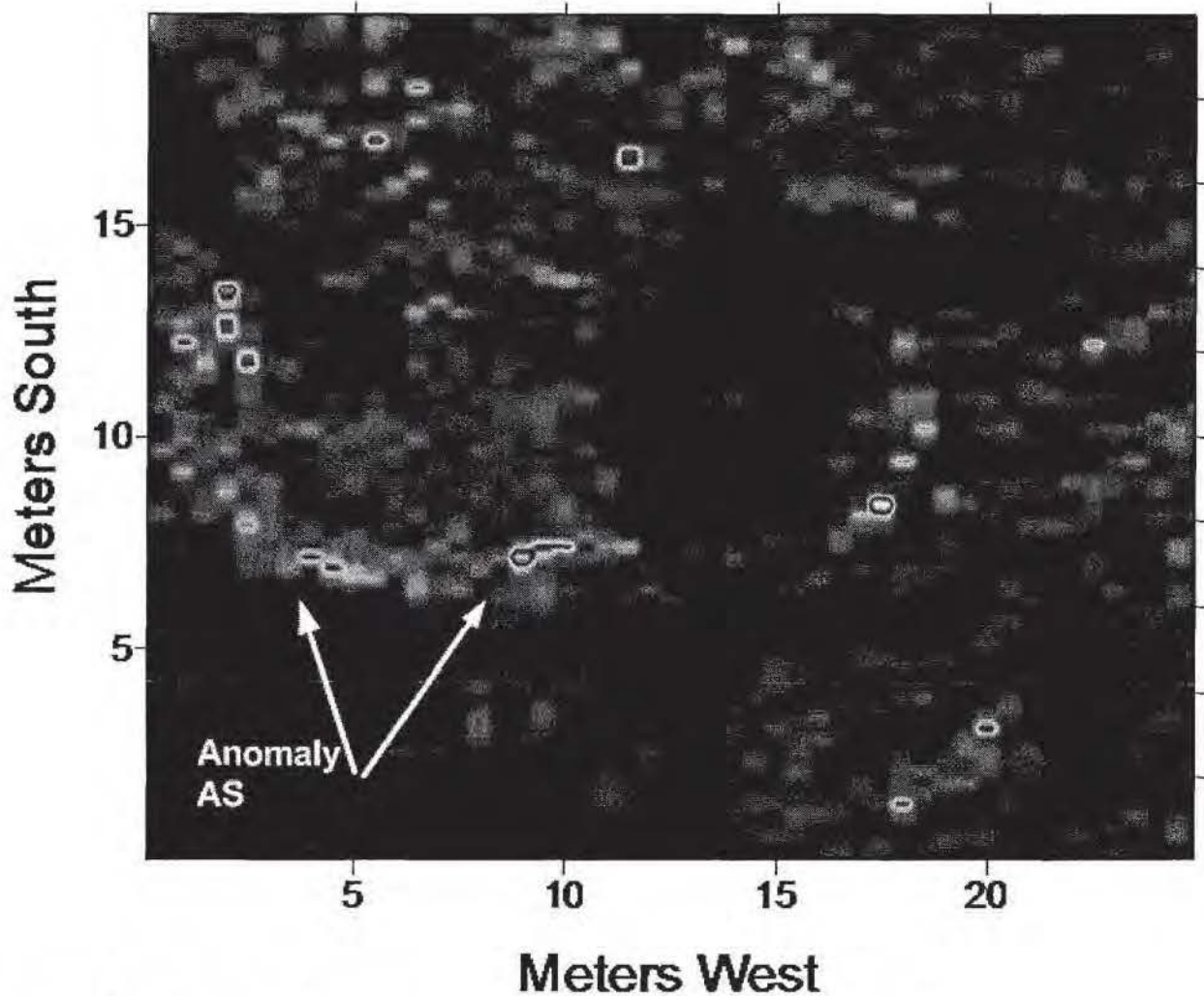


## Depth 0.86 - 1.0 meters (2.8' - 3.2')



**Figure 12.** GPR time-slice amplitude map at a depth of 18-21ns (.86 - 1.0 meters). Note the large Anomaly AG (possible rubble or floor) on the left side of the image. Anomaly AS (possible wall/foundation) is also visible in this image (but better seen is Figure 13). Compare to Figure 10, this report.

## Depth 1.0 - 1.15 meters (3.3-3.8')



**Figure 13.** GPR time-slice amplitude map at a depth of 21-24ns (1.0 - 1.15 meters). Anomaly AS (possible fieldstone wall/foundation) is visible in this image however it appears somewhat straighter East to West at this depth. Compare to Figure 10, this report.

**Table 1. Geophysical Anomalies**

ANOMALY	AREA	COORDINATE	NOTES
A	Loring Park	S121 W99 S121 W100.5	GPR File 11, 14, 15, 16 Appendix A, possible unmarked grave.
B	Loring Park	S184 W 99	GPR File 12, 13, 15, Appendix A, possible unmarked grave.
C	Loring Park	S187 W 99	GPR File 12, 13, 15, 16 Appendix A, possible unmarked grave.
D	Loring Park	S190 W 99	GPR File 12, 13, 15, 16 Appendix A, possible unmarked grave.
E	Loring Park	S191.5 W 99	GPR File 12, 13, Appendix A, possible unmarked grave.
F	Loring Park	S192.75 W 99	GPR File 12, 13, Appendix A, possible unmarked grave.
G	Loring Park	S195 W 99	GPR File 12, 13, 15 Appendix A, possible unmarked grave.
H	Loring Park	S125 W 99.5	GPR File 14, 15, Appendix A, possible unmarked grave.
I	Loring Park	S123 W 99.5	GPR File 14, Appendix A, possible unmarked grave.
J	Loring Park	S113.5 W 99.5	GPR File 14, Appendix A, possible unmarked grave.
K	Loring Park	S112.5 W 99.5	GPR File 14, Appendix A, possible unmarked grave.
L	Loring Park	S 108 W 99.5	GPR File 14, 15, Appendix A, possible unmarked grave.
M	Loring Park	S 106.25 W 99.5	GPR File 14, 15, Appendix A, possible unmarked grave.
N	Loring Park	S 105 W 99.5	GPR File 14, 15, Appendix A, possible unmarked grave.
O	Loring Park	S 109 W 100	GPR File 15, Appendix A, possible unmarked grave.
P	Loring Park	S 111 W 100	GPR File 15, Appendix A, possible unmarked grave.
Q	Loring Park	S 115 W 100	GPR File 15, Appendix A, possible unmarked grave.
R	Loring Park	S 116.5 W 100	GPR File 15, Appendix A, possible unmarked grave.
S	Loring Park	S 135 W 100 S 135 W 100.5	GPR File 15, 16 Appendix A, possible unmarked grave.
T	Loring Park	S 186 W 100	GPR File 15, Appendix A, possible unmarked grave.



U	Loring Park	S 102 W 105	GPR File 25, 26, 28 Appendix A, possible unmarked grave.
V	Loring Park	S110 W105.5	GPR File 26, 27, Appendix A, possible unmarked grave.



Table 1		Table 1	
W	Loring Park	S111.5 W105.5	GPR File 26, 27, Appendix A, possible unmarked grave.
X	Loring Park	S113.5 W105.5	GPR File 26, 27, Appendix A, possible unmarked grave.
Y	Loring Park	S102 W109 S102, W110	GPR File 33, 34, 35, Appendix A, possible unmarked grave.
Z	Loring Park	S110 W109	GPR File 33, 34, Appendix A, possible unmarked grave.
AA	Loring Park	S105.5 W110 S105.5 W110.5	GPR File 35, 36 Appendix A, possible unmarked grave.
AB	Loring Park	S104 W111.5	GPR File 38, 39, Appendix A, possible unmarked grave.
AC	Loring Park	S101.5 W111.5 S101.5 W112.5	GPR File 38, 39, 40 Appendix A, possible unmarked grave.
AD	Loring Park	S101 W111.5 S101 W112.5	GPR File 38, 39, 40 Appendix A, possible unmarked grave.
<b>END</b>		<b>LORING</b>	<b>PARK AREA</b>

**Table 2**

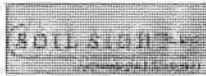
<b>ANOMALY</b>	<b>A REA</b>	<b>COORDIN ATE</b>	<b>NOTES</b>
AE	2	S02 W01	GPR File 48, 49, Appendix B, possible unmarked grave.
AF	2	S 07 W01	GPR File 48, 49, 50, 51 Appendix B, Headstone marked "Wiswell". Possibly two graves in close proximity aligned east to west.
AG	2	S10 W05.5 (center)	GPR Files 46 thru 67 , Appendix B, large anomaly at 20 nano seconds (~95 cm deep). Possible rubble layer or floor of the meeting house. Best seen on GPR slice 7.
AH	2	S0.5 W0	GPR File 46, Appendix B, possible unmarked grave.
AI	2	S 0.25 W1.5	GPR File 49, 50, Appendix B, possible unmarked grave.
AJ	2	S2.5 W 1.5	GPR File 49, 50, Appendix B, possible unmarked grave.
AK	2	S 4.75 W1.5	GPR File 48, 49, 50 Appendix B, possible unmarked grave.
AL	2	S 1.75 W 4	GPR File 54-57, Appendix B, Marked headstone Edward (1691) and Abigail (1702) Jackson. see also anomaly BT.
AM	2	S 6 W 4	GPR File 54, 55, Appendix B, possible unmarked grave.
AN	2	S 6 W5.5	GPR File 56, 57, 58, 59 Appendix B, possible unmarked grave.
AO	2	S 1 W6	GPR File 58, 59, Appendix B.
AP	2	S 5 W 9	GPR File 64, 65, Appendix B.
AQ	2	S 3 W 9.5	GPR File 65, Appendix B, marked Samuel Oliver (1729) headstone.
AR	2	S 3W 7	GPR File 60, Appendix B, possible unmarked grave.
AS	2	East side S7.5 W0  West side S7 W12	GPR Files 46 thru 70, Appendix B. Possibly buried stone foundation? or linear feature. This could be the north foundation wall of the East Parish Meetinghouse. Probably related to anomaly AG. Potential unmarked graves, anomalies AF, AM, AN, AP are abutting or in close proximity to this anomaly. Best viewed on GPR file 54 and 55.
AT	2	S 1 W10.5	GPR File 66, 67, 68, 69, Appendix B, marked Grave, Capt. Thomas Oliver (1713) headstone.
AU	2	S 5 W 10.5	GPR File 68, 69, Appendix B, possible unmarked grave.
AV	2	S 2.5 W 12	GPR File70, Appendix B, possible unmarked grave.

AW	2	S1 W 13	GPR File 72, Appendix B, possible unmarked grave.
AX	2	S3 W13	GPR File 72, Appendix B, possible unmarked grave.
AY	2	S2.5 W15.5	GPR File 76, Appendix B, marked grave Judith Williams (1724).
AZ	2	S17 W13	GPR File 72, Appendix B, Planar Type II anomaly, marked grave Lois fuller (1749).
BA	2	S18.5 W13	GPR File 72, Appendix B, Planar Type II anomaly, marked grave Surfman Fuller (1747).
BB	2	S19.5 W13	GPR File 72, Appendix B, marked grave John Fuller (1720).
BC	2	S3 W14	GPR File 66-80, Appendix B, possible recent north, south, east, west rectangle around the monument from the 1918 map (see Figure 1 "Plan of Centre Street Cemetery"). Anomaly could also be the Meeting House foundation, although it is rather shallow and only 25' x 25' square. This does not appear to be made of stone.
BD	2	S4.5 W14	GPR File 74, Appendix B, possible unmarked grave.
BE	2	S1 W17.5	GPR File 81, 82, Appendix B, possible unmarked grave.
BF	2	S3 W17.5	GPR File 80, 81, Appendix B, possible unmarked grave.
BG	2	S6 W17.5	GPR File 80, 81, Appendix B, marked grave Capt. Thomas Prentice (1709).
BH	2	S7 W17.5	GPR File 80, 81, Appendix B, possible unmarked grave.
BI	2	S16.25 W18.5	GPR File 83, 84, 85 Appendix B, possible unmarked grave.
BJ	2	S4 W23	GPR File 91, 92, Appendix B, possible unmarked grave.
BK	2	S17 W21	GPR File 87, 88, 89, Appendix B, marked grave, Jonathan Drew (1700)
BL	2	S18.5 W21	GPR File 87, 88, Appendix B, possible unmarked grave.
BM	2	S14 W21	GPR file 88, 89, Appendix B, marked grave, Mary Drew (1719).
BN	2	S18 W23	GPR File 92, 93, Appendix B, possible unmarked grave.
BO	2	S19 W23	GPR File 92, 93, Appendix B, possible unmarked grave.
BP	2	S 7 W 24	GPR File 94, Appendix B, possible unmarked grave.
BQ	2	S 19 W24	GPR File 94, Appendix B, possible unmarked grave.



BR	2	S3 W25	GPR File 96, Appendix B, marked grave, John Spring (1717)
BS	2	S 16 W 01	GPR File 48, Appendix B, possible unmarked grave
BT	2	S 2.5 W 4	GPR File 54, 55, Appendix B, Possible unmarked grave. Possibly associated with Anomaly AL, Marked headstone Edward (1691) and Abigail (1702) Jackson. This might be a case of 1 headstone marking two close burials and Anomaly BT is one of two associated burials.
BU	2	S5.5 W13	GPR File 72, Appendix B, Rare Type I Anomaly. Possible unmarked grave.
BV	2	S8.5 W13	GPR File 72, Appendix B, Rare Type I Anomaly. Possible unmarked grave.
<b>END</b>		<b>AREA 2</b>	





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