

# MHT Guidance for Ground Penetrating Radar Surveys in Cemeteries

Ground Penetrating Radar (GPR) may be a beneficial technique for guiding the preservation and interpretation of cemeteries. Cemetery features like buried monument bases, grave shafts, and burial vaults may be discovered using GPR. In the Cultural Resource Management (CRM) field, remote sensing surveys are typically applied during Phase I site identification investigations. However, non-profits, cemetery preservationists, historic site managers, and others may find it beneficial to use GPR in all phases of survey.



An historic cemetery hidden on State lands

While remote sensing surveys including GPR can have a real time prospecting component, archaeological remote sensing surveys funded with State monies must collect and record data in a scientific manner which allows results to be analyzed, reported, and potentially ground-truthed or reproduced.

GPR operators and contractors should be directed to produce data using the following parameters:

- 1) The GPR operator must use equipment or a data recorder that logs individual radargrams.
- 2) The individual radargrams must be post-processed and combined to create a 3-dimensional block of data to produce amplitude time-slices, which are horizontal plans that correspond to different depths below the ground surface (see image below).
- 3) In order to accurately locate geophysical anomalies, remote sensing surveys must employ a grid that is georectifiable to a permanent landmark or spatial datum.
- 4) A maximum transect/traverse spacing interval of 25 centimeters (9.84 inches).

The parallel transect spacing interval is a critical parameter in GPR surveys. Closer transect spacing generates higher resolution amplitude time-slices, which can identify smaller anomalies. GPR surveys in cemeteries should be conducted at a maximum parallel transect spacing of 25 cm to minimize the risk of failing to document burial related anomalies such as sub-adult or misaligned burials. The GPR contractor may choose to use transect intervals less than 25cm based on the expected diameters and spatial patterning of archaeological features generated via background research.

At a minimum, GPR survey reports should list the GPR system(s) employed, the parallel transect spacing, and the individual radar sample intervals along each transect. Reported methodology should also include the software used for data post-processing and the processing treatments. The results and interpretations of the radar anomalies identified in GPR surveys should not be treated as an absolute representation of the buried features. The nature of remote sensing anomalies can only be confirmed through ground-truthing excavations.

