

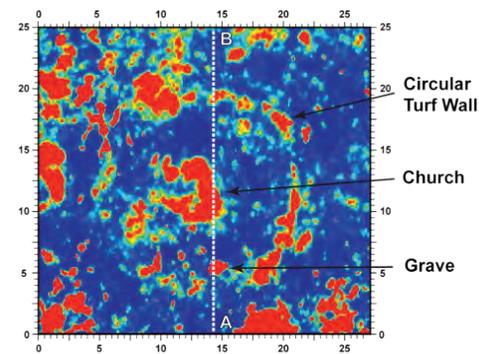
Shallow Geophysics of Cemetery Landscapes

Historic Cemetery Preservation Workshop
Lowell, MA
November 18, 2011

Terms

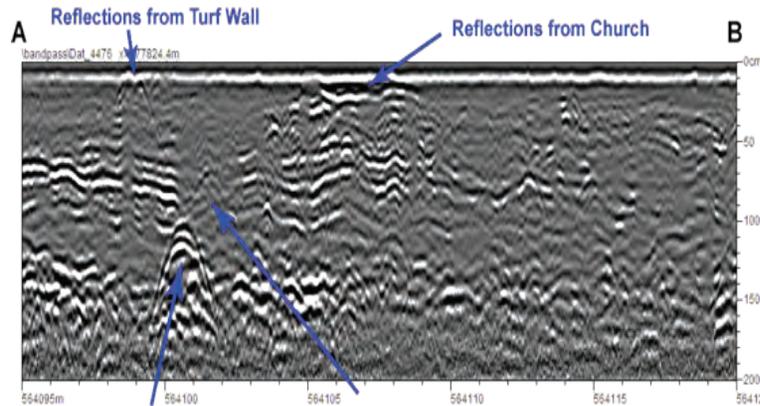


Transect: Most geophysical instruments record lines of data. Along these transect lines, data is recorded with specific coordinates.



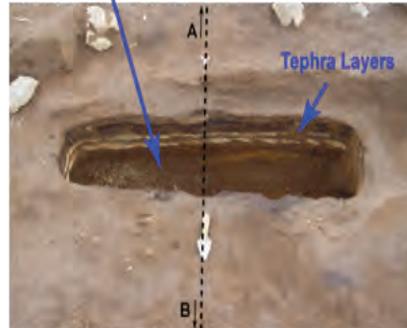
Overlay Image: 21-37 cm (wall) + 106-112 cm (grave)

GPR Slice: linear GPR data from a series of transects at a specific depth range that is plotted to create a map of the subsurface.



Hyperbolic Reflection (reversal?) Due to Skeleton

Break in Tephra Layering



Anomaly: A reading or series of readings that is much stronger or weaker than the surrounding readings

Phase Reversal: GPR microwave reflections depicted in the radargrams in have crests (black) and troughs (white). When part of the wave moves faster (e.g, through air) the crests and troughs can become out of sync.

Acknowledgements

Marblehead Museum and Historical Society,
Marblehead Community Charter Public School, Marblehead Cemetery Commission,
Newport Historical Society,
Salve Regina Cultural and Historic Preservation, National Science Foundation,
Skagafjörður Archaeological Settlement Survey,
Skagafjörður Heritage Museum, National Museum of Denmark,
Massachusetts GIS: <http://www.mass.gov/mgis/massgis.htm>,
Rhode Island GIS: <http://www.edc.uri.edu/rigis/>

FISKE CENTER
FOR ARCHAEOLOGICAL RESEARCH

The Andrew Fiske Memorial Center for Archaeological Research at the University of Massachusetts Boston was established in 1999 through the generosity of the late Alice Fiske and her family as a living memorial to her late husband Andrew. The Fiske Center was formally known as the Center for Cultural and Environmental History.

As an international leader in interdisciplinary research, the Fiske Center promotes a vision of archaeology as a multi-faceted, theoretically rigorous field that integrates a variety of analytical perspectives into its studies of the cultural and biological dimensions of colonization, urbanization, and industrialization over the past thousand years in the Americas and the Atlantic World. Intellectually the Center's staff is committed to building a highly integrated archaeology that embraces the multiplicity of methodological and theoretical approaches the field offers. As part of a student centered urban public university, the Center maintains a program of local archaeology with a special emphasis on research that meets the needs of cities, towns, and Tribal Nations in New England and the greater Northeast. The Fiske Center also seeks to understand the local as part of a larger Atlantic World.

For more information see
<http://www.fiskecenter.umb.edu/>.



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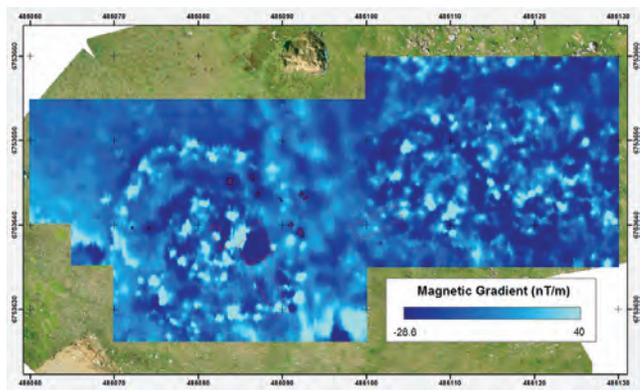
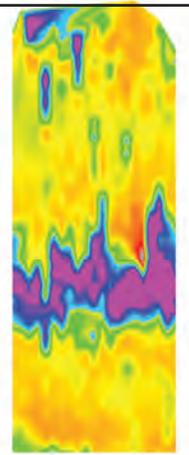
Kathryn Catlin (MHC), John Steinberg (UMass Boston), John Schoenfelder (UMass Boston), Brian Damiata (UCLA), William Gillis (Houghton Mifflin Harcourt)

Shallow Geophysical Methods

Magnetometry: uses changes in the Earth's magnetic field to plot anomalies. Many anomalies have a positive and negative aspect.



Conductivity: sends an alternating current into the ground and measures the resulting magnetic field. Results have two components, the bulk conductivity and the in-phase.



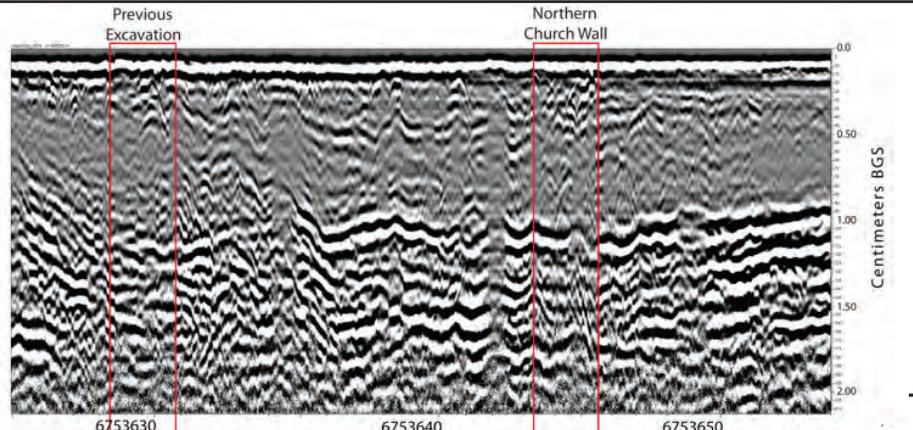
Be an informed user: understand the physics, the instrumentation, and the uncertainty

Technique: Careful notes, precise maps, and an accurate survey grid

Tailor your survey to the cemetery landscape

Consult with your archaeogeophysicist from survey planning through final preservation plan

Ground Penetrating Radar (GPR): sends microwaves into the ground and receives the reflections from interfaces with different characteristics. GPR produces a radargram.



Resistivity: sends a direct current into the ground and measures the strength of the current. Here the results are plotted as a pseudoprofile

