

# GROUND PENETRATING RADAR SURVEY OF EDENTON GREEN FOR EARLY STRUCTURAL REMAINS

REU Ocean, Marine, & Polar Science  
Final Presentation

# TEAM MEMBERS



Shanecia Beckworth  
Computer Science, SO



Dominique Marshall  
Meteorology, SR

# MENTORS

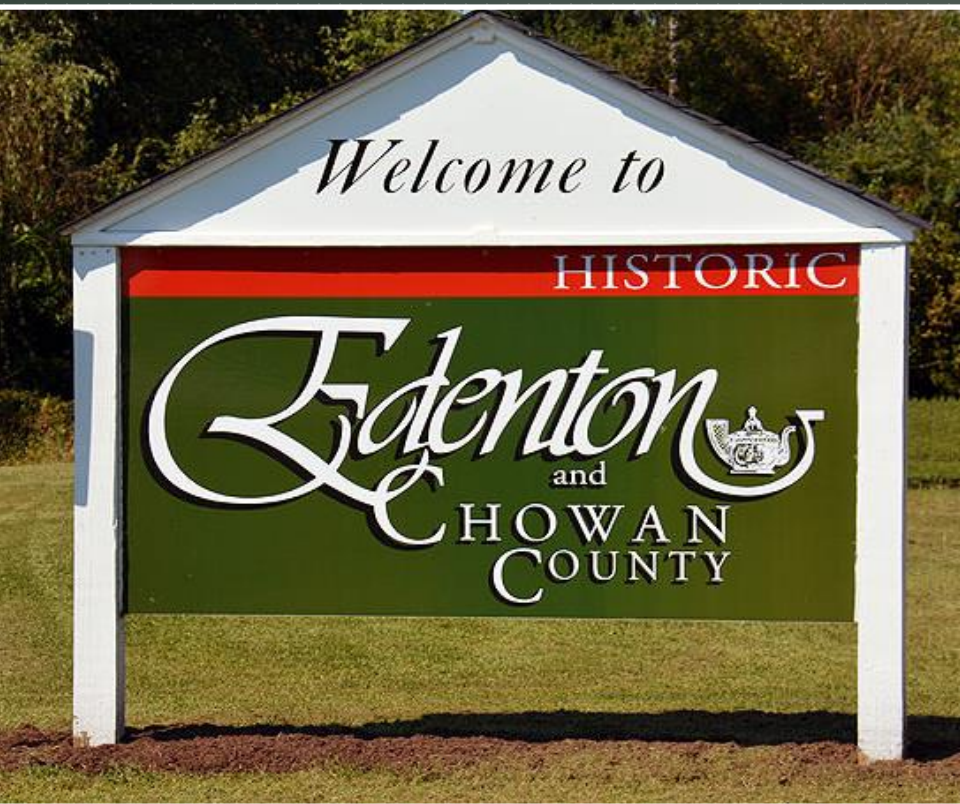


Ryan Lawrence  
UNH PhD Student  
Earth Systems Science



Dr. Malcolm LeCompte  
CERSER FELLOW

# INTRODUCTION



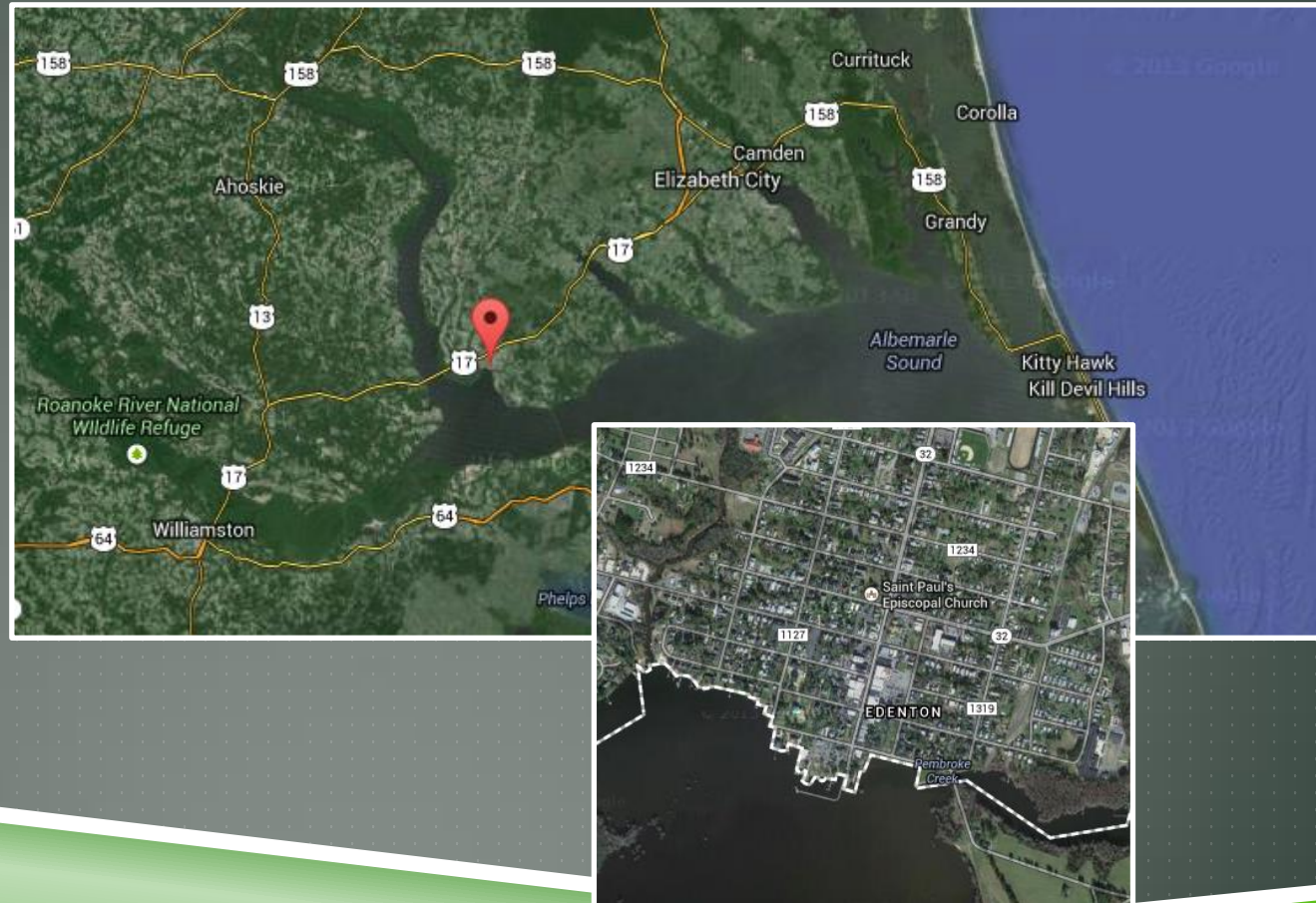
Edenton was established in 1712 as *the Towne on Queen Anne's Creek*. It was later known as *Ye Towne on Mattercommack Creek* and, yet later as *the Port of Roanoke*. It was renamed *Edenton* and incorporated in 1722 in honor of *Governor Charles Eden* who had died that year. From this era, a total of 7 original

buildings still remain in standing from the colonial period including: St. Paul's Church, Iredell House Homesite, Bennett's Tavern, Charleton House, James Coffield House, Cupola House, and the 1767 Colonial Courthouse.



# GEOGRAPHIC CONTEXT

- **Coordinates**  
**36°3'43"N**  
**076°36'21"W**
- **Area**
  - Total** 5.2 sq mi  
(13.5 km<sup>2</sup>)
  - Land** 5.0 sq mi  
(13.0 km<sup>2</sup>)
  - Water** 0.2 sq mi  
(0.5 km<sup>2</sup>)
- Early Colonial Port
- Original State Capitol



# EDENTON GREEN & SITE DESCRIPTION



- ( $36^{\circ} 03' 26''$  N,  $076^{\circ} 36' 29''$  W): Directly across from the Colonial Courthouse
- Approximately a “24m x 109m” rectangle
- Accidental discovery of bricks lead to motivation of GPR survey.

# METHODOLOGY

- ▶ Lab Work
  - ▶ Map Georeferencing
  - ▶ GPR Processing & Analysis
- ▶ Field Work
  - ▶ Grid Establishment
  - ▶ GPR Data Collection



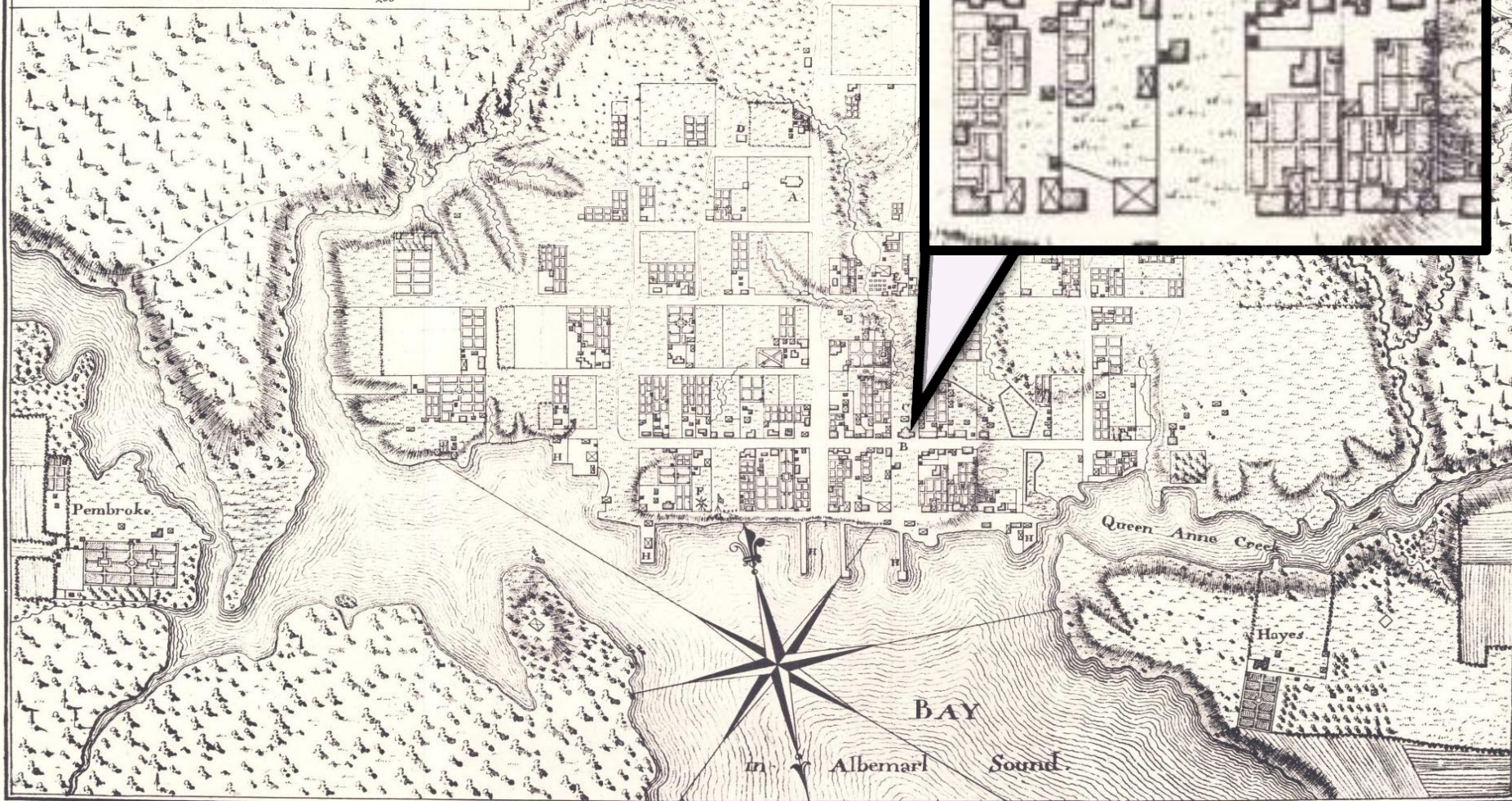
PLAN of the Town & Port of EDENTON  
in Chowan County  
NORTH CAROLINA

REFERENCE

A, Church . B, Court House . C, Goal . D, Schoolhouse.  
E, Tann Yard . F, Wind Mill . G, Flag Staff . H, Wharf.

Survey'd & Drawn in June 1769. By C. J. Sauthier.

0 20 40 60 80 100 120 140 160 180 200 Fathom.



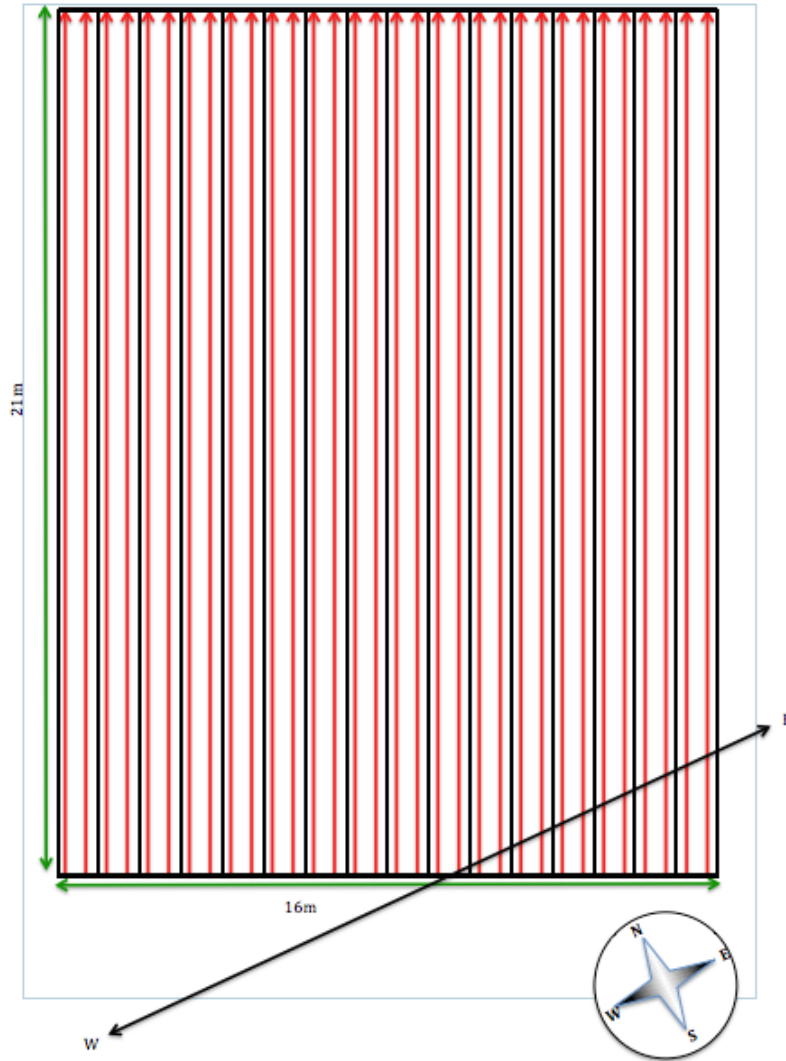


# DIGITAL ORTHO QUARTER QUAD



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014-06-23 13:27:55,780 id1[5663:d07] This process is attempting to exclude an i
tem from Time Machine by path without administrator privileges. This is not supp
orted.
014-06-23 13:27:55,780 id1[5663:d07] This process is attempting to exclude an i
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Restored file: ENVI_EX1.
Loaded DLM: MAP_PE.
Loaded DLM: PNG.
Loaded DLM: JPEG.
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# FIELD SURVEY



Transect 

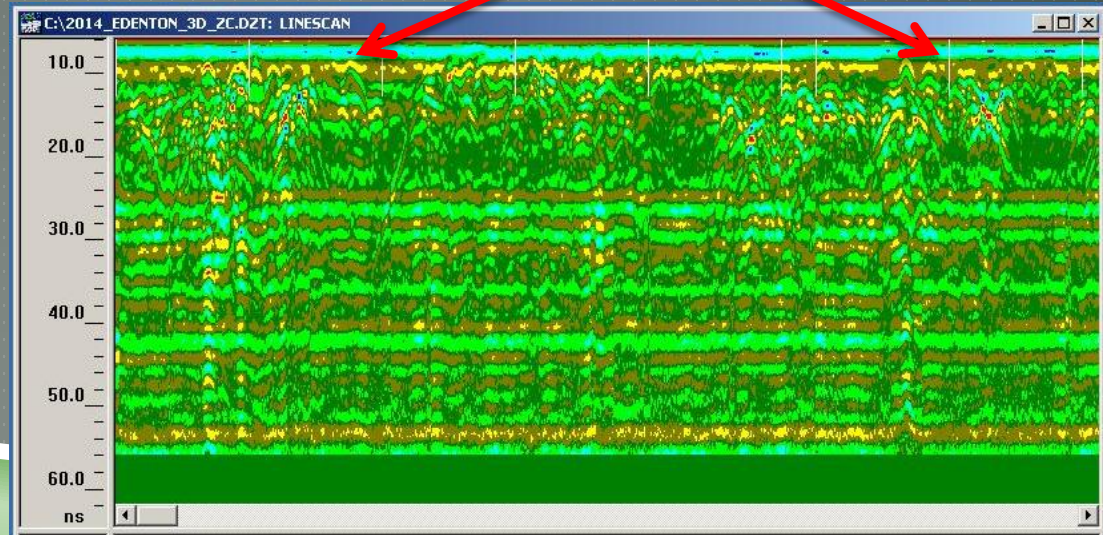
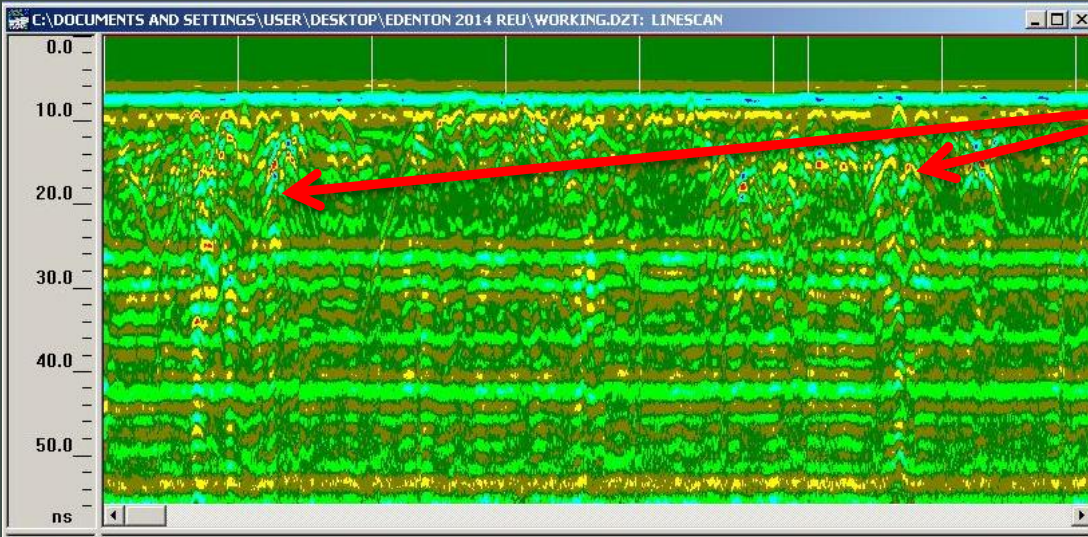
# DATA PROCESSING

Raw Data

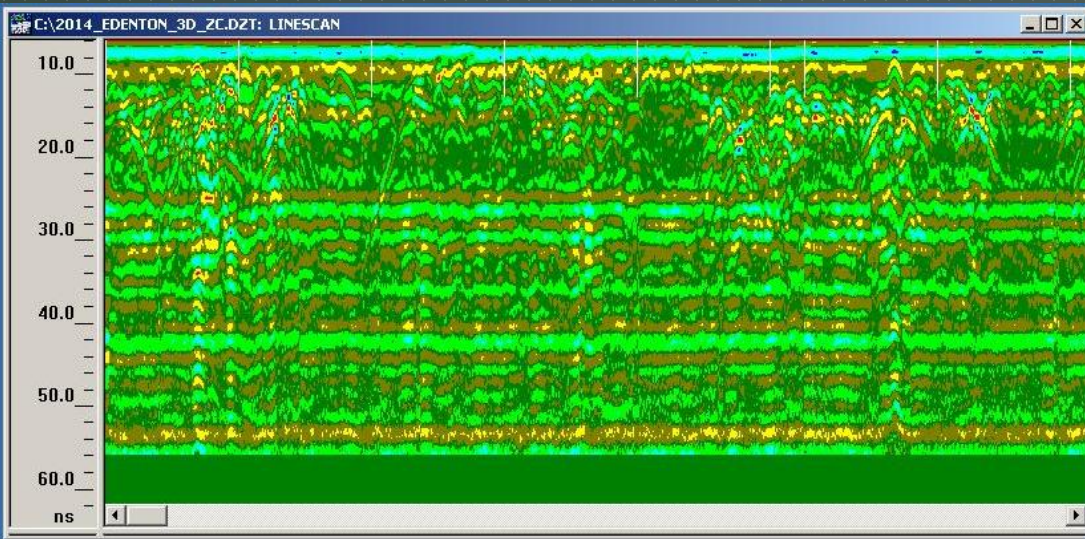
Hyperbolas indicate there are features present.

Removal of dead-space

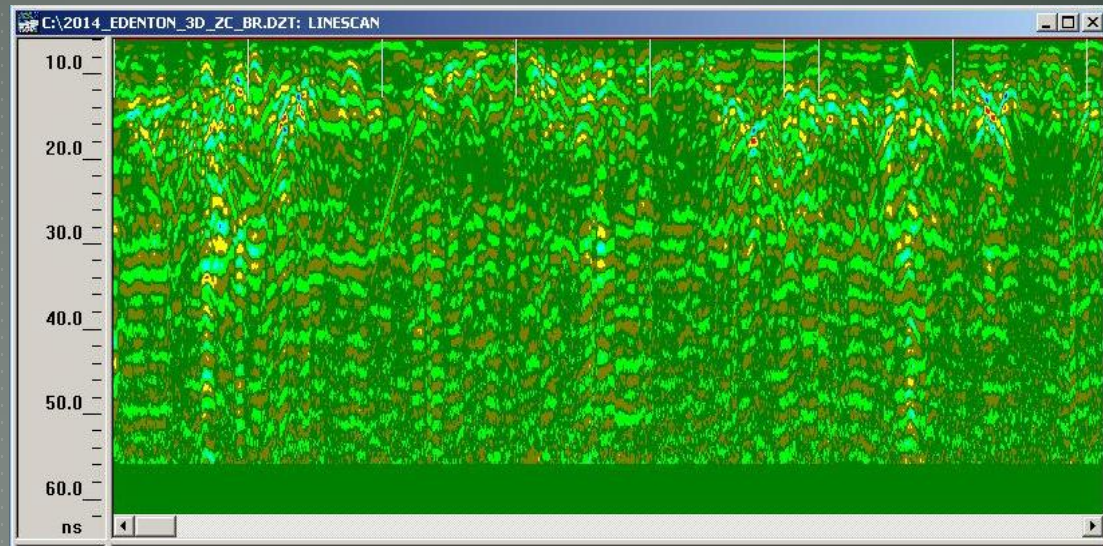
Zero Point Correction



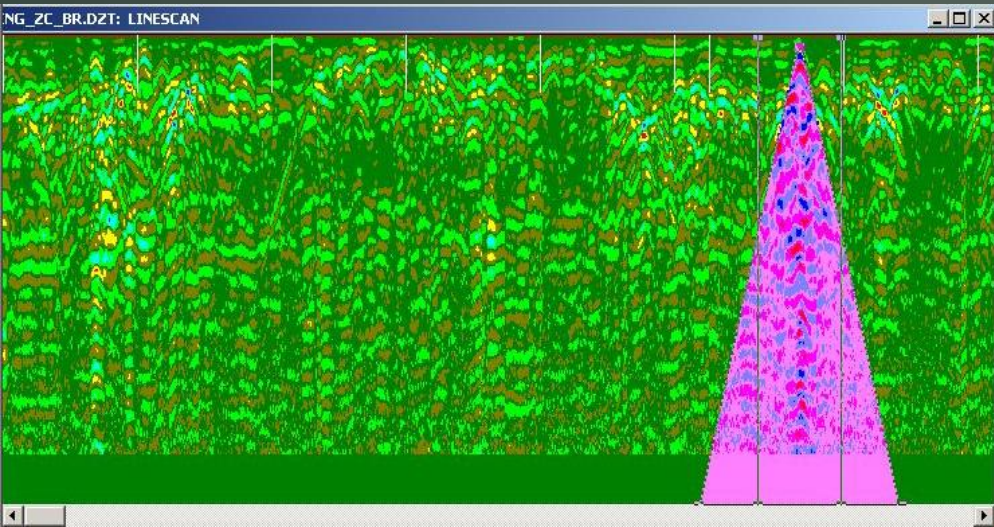
# DATA PROCESSING



Background Noise Cancellation

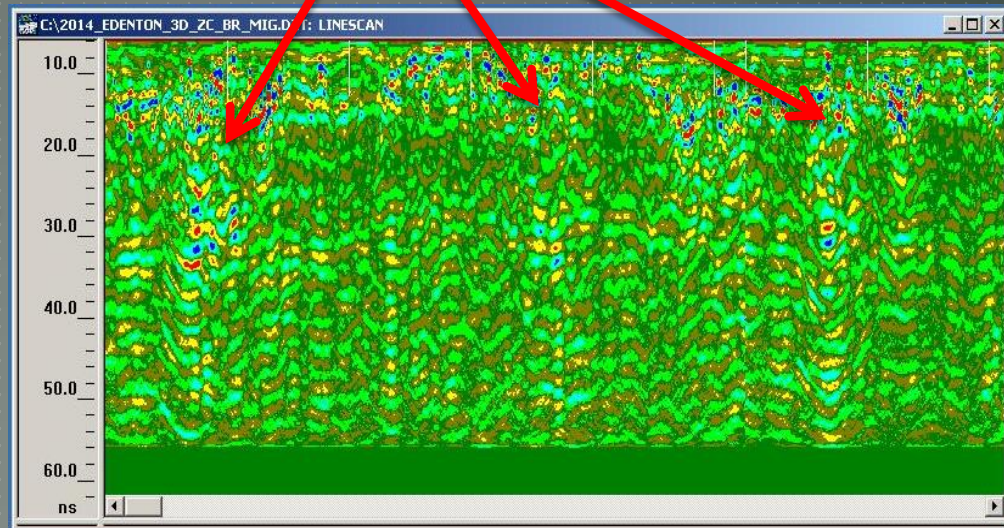


# DATA PROCESSING

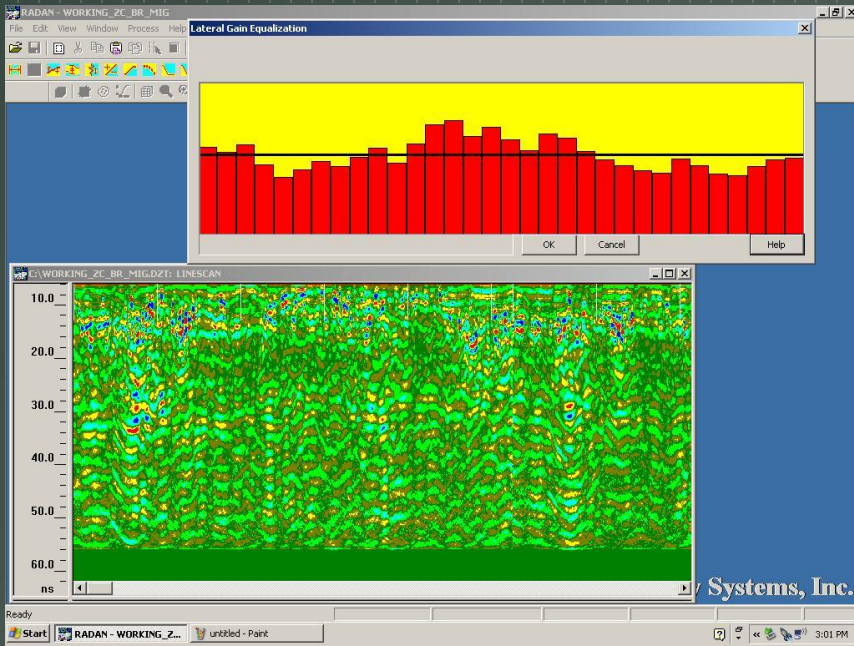


Less hyperbolas: more visible features

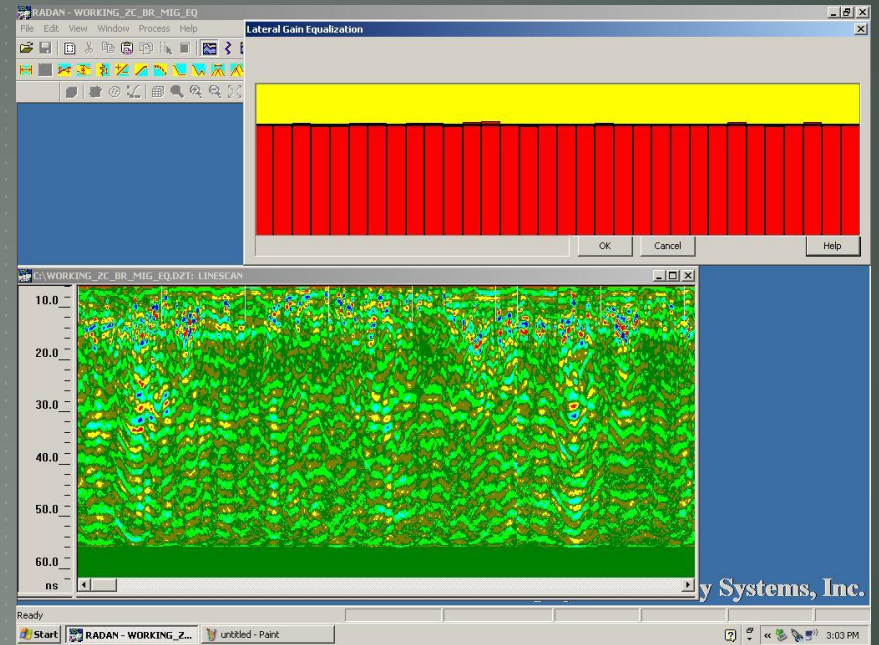
Velocity Migration  
(Dielectric Constant)



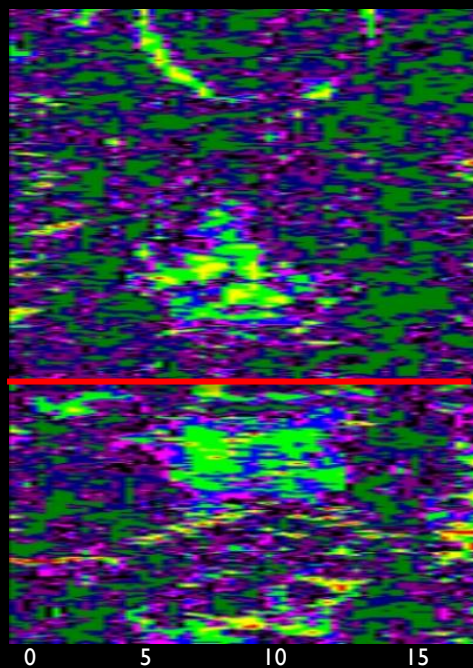
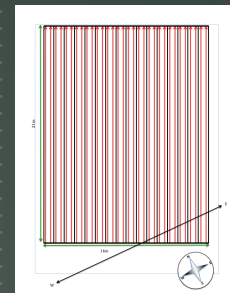
# DATA PROCESSING



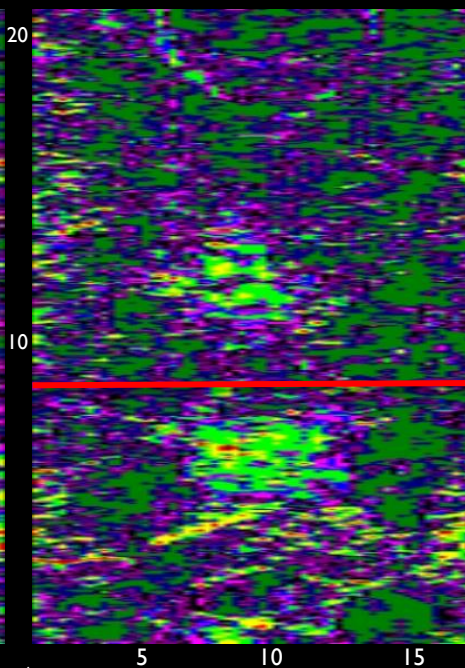
Gain Normalization



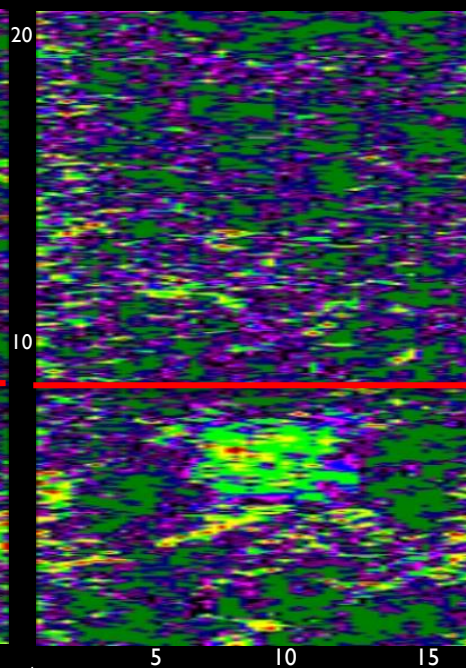
# 2-D DEPTH DATA SLICES



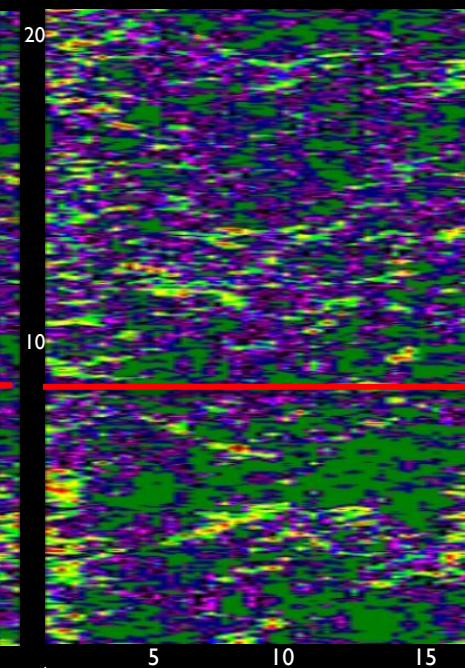
Depth: 0.32m



Depth: 0.54m



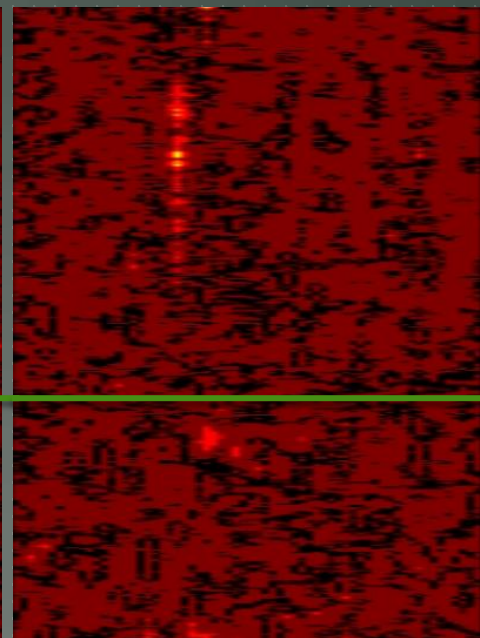
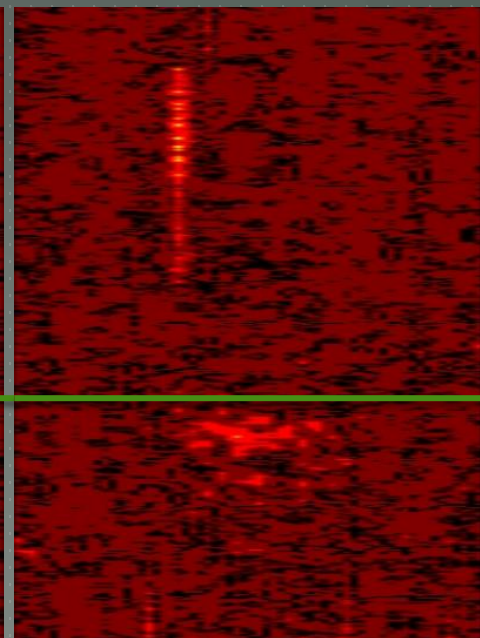
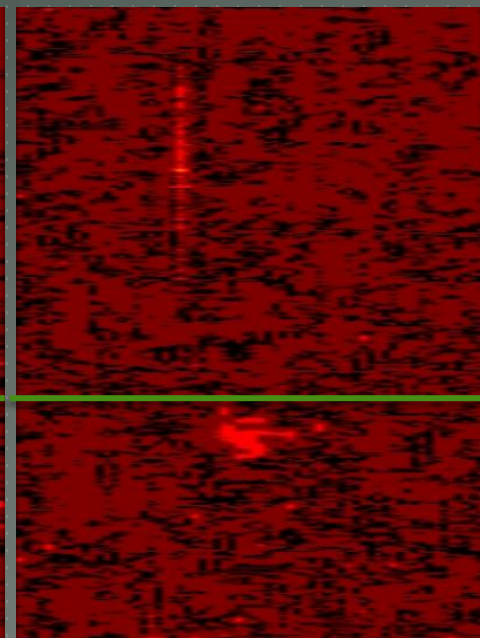
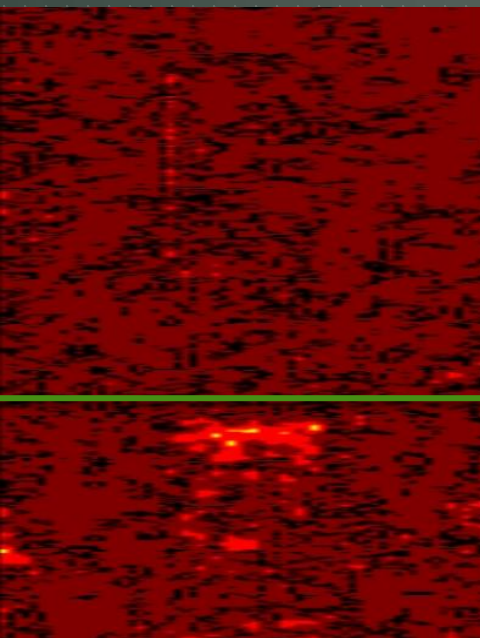
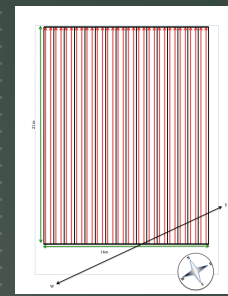
Depth: 0.6m



Depth: 0.7m



# 2-D DEPTH DATA SLICES



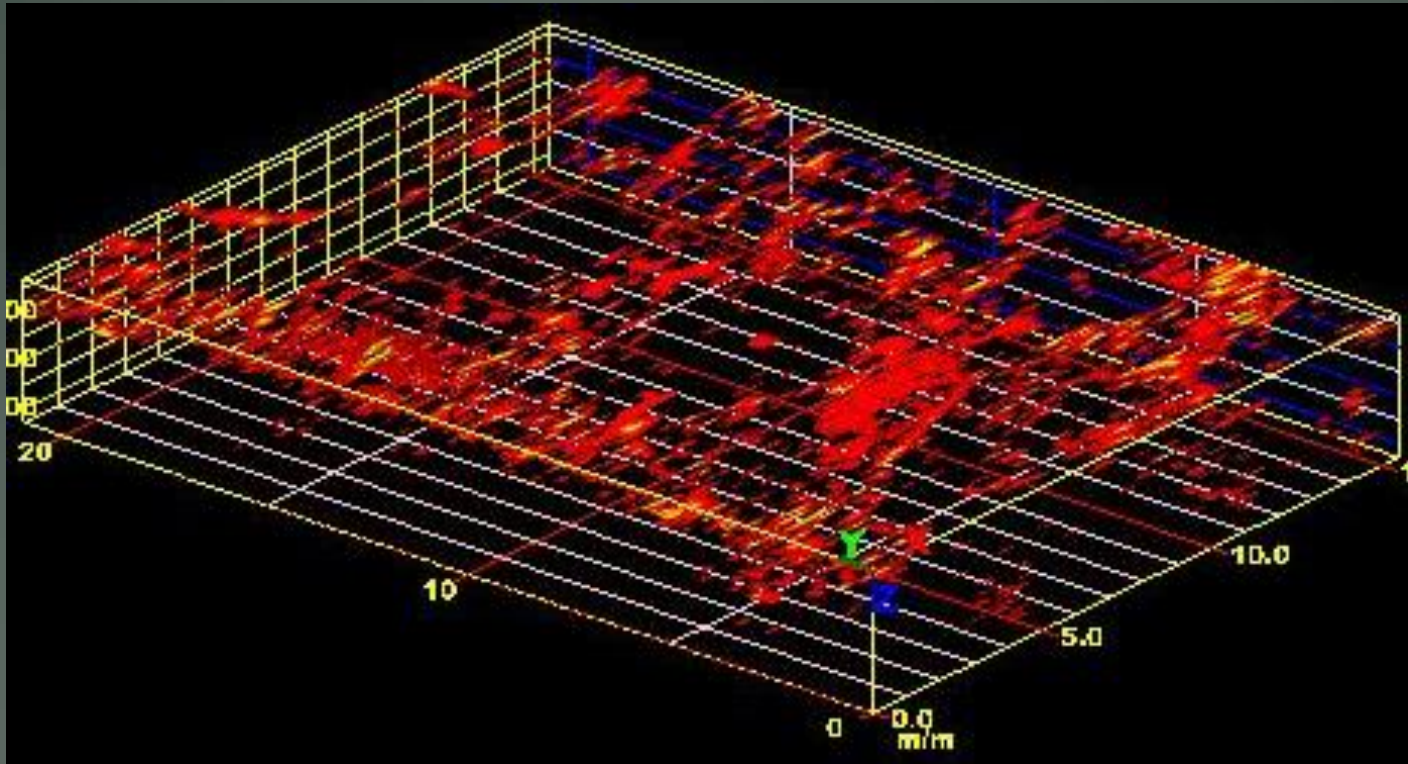
Depth: 1.68m

Depth: 2.00m

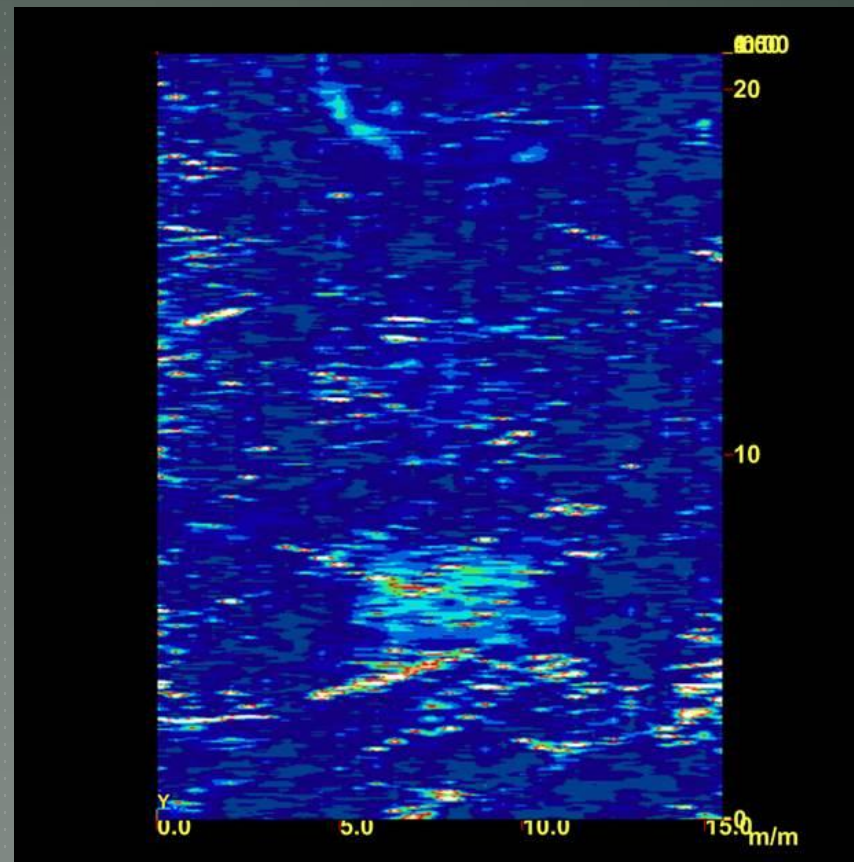
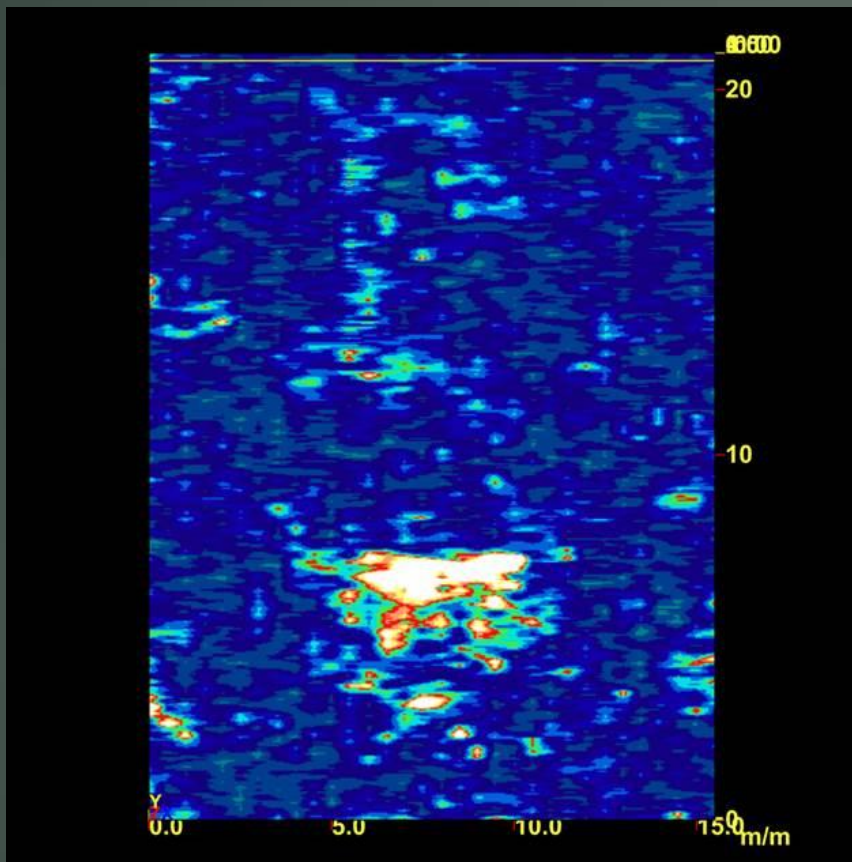
Depth: 2.50m

Depth: 3.02m

# 3D COMPILATION DATA FIGURE



# GEOPHYSICAL SURVEY SYSTEMS, INC. VALIDATION



# CONCLUSION & FUTURE WORK

Now that the data has been received and analyzed it has been concluded features suggest that there are a number of artifacts some appear to be anthropogenic buried beneath the green. The next step will come from the North Carolina State Archaeologist, with a determination on excavation of the surveyed field or a possible extended survey to determine in there may be more history buried beyond the bounds constructed.

Local citizens heard about the work being done on the green and brought attention to what may be another great site. Located on Mosley Street in Edenton a family has dug up what appears to be artifacts of the past. They too have expressed an interest in having a GPR survey to unveil what may be beneath.



# ANY QUESTIONS?

# ACKNOWLEDGEMENTS



# ACKNOWLEDGEMENTS (CONTINUED)

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Sara Gale

Dan Welch

Jerome Climer

Guy Simmons

The citizens of Edenton

# THANK YOU!