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THE PINELANDS COMMISSION  
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LAURA E. MATOS  
Chair  
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## MEMORANDUM

To: CMP Policy & Implementation Committee

From: Gina A. Berg *gab*  
Director, Land Use Programs

Date: August 20, 2025

Subject: August 29, 2025 Committee meeting

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Enclosed please find the agenda for the Committee's upcoming meeting on Friday, August 29, 2025. We have also enclosed the following:

- minutes from the Committee's July 25, 2025 meeting; and
- Rutgers University Agrivoltaics Program Flyer

The Committee meeting will be conducted in-person and via teleconference. Specific access information will be provided to all Committee members in a separate email. The public is invited to attend the meeting in-person or view and participate in the meeting through the following YouTube link:

[www.youtube.com/c/PinelandsCommission](http://www.youtube.com/c/PinelandsCommission)



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## CMP POLICY & IMPLEMENTATION COMMITTEE MEETING

August 29, 2025 – 9:30 a.m.

**This meeting will be held in person and virtually**

Richard J. Sullivan Center for Environmental Policy and Education  
Terrence D. Moore Conference Room  
15C Springfield Road  
New Lisbon, New Jersey

Watch the meeting on the Pinelands Commission YouTube channel:

[www.youtube.com/c/PinelandsCommission](https://www.youtube.com/c/PinelandsCommission)

**To Provide Public Comment, Please Dial: 1-929-205-6099 Meeting ID: 898 8960 4160**

### **Agenda**

1. Call to Order
2. Adoption of minutes from the July 25, 2025, CMP Policy & Implementation Committee Meeting
3. Rutgers University Agrivoltaics Presentation
4. Update on the Interagency Council on Climate Resiliency
5. Public Comment
6. Adjournment

## **CMP POLICY & IMPLEMENTATION COMMITTEE MEETING**

This meeting was conducted both remotely and in-person  
The public could view/comment through Pinelands Commission YouTube link:

[www.youtube.com/c/PinelandsCommission](http://www.youtube.com/c/PinelandsCommission)

Richard J. Sullivan Center  
15C Springfield Rd  
New Lisbon, New Jersey 08064  
**July 25, 2025 – 9:30 a.m.**

### **MINUTES**

**Members in Attendance:** Jerome Irick, Chair Laura E. Matos, Jessica Rittler Sanchez

**Members in Attendance (Zoom):** Alan W. Avery, Jr., Mark S. Lohbauer, Douglas Wallner

**Members Absent:** Theresa Lettman

**Staff Present:** Gina Berg, John Bunnell, Ernest Deman, Lori Friddell, Susan R. Grogan, Brad Lanute, Paul Leakan, Marc Paalvast, Stacey P. Roth

**Also in attendance:** Michael Eleneski with the Governor's Authorities Unit (Zoom)

#### **1. Call to Order**

Chair Matos called the meeting to order at 9:41 a.m. due to technical difficulties.

#### **2. Adoption of minutes from the June 27, 2025 CMP Policy & Implementation Committee Meeting**

Commissioner Lohbauer moved the adoption of the June 27, 2025 meeting minutes.  
Commissioner Irick seconded the motion. All Ayes. The motion passed.

#### **3. Policy & Implementation Committee FY25 Accomplishments and FY 26 Work Plan** *Attachment A to these minutes and posted on the Commission's website by clicking [here](#).*

Executive Director (ED) Susan Grogan gave a presentation on the proposed projects and initiatives for Fiscal Year 26 through the lens of the Policy and Implementation Committee. She reviewed Fiscal Year 25 accomplishments, noting the impact of implementing adopted Pinelands Comprehensive Management Plan (CMP) amendments both internally and in coordination with other agencies and municipalities. She provided an update on the Kirkwood-Cohansey rule implementation and the status of litigation. She shared a potential timeline for the current CMP rule proposal, which addresses the land capability map for the Black Run watershed, as well as expiration of waivers and certificates of filing, application fees and clarifications for Pinelands Development Credit (PDC) requirements in the Regional Growth Area.

Commissioner Rittler Sanchez asked if written comments were received on the CMP rule proposal. ED Grogan said the Commission has received many email comments and added that

many people gave comments in the recent public hearing for the amendment. She noted that most comments offered support for the redesignation of the Black Run watershed from Rural Development Area to Forest Area. She said upon adoption of this rule change, a lot of work will be involved in its implementation, including changes to maps, application forms, the application fee calculator and various documents, notably Certificates of Filing.

Ms. Grogan reviewed topics of future CMP amendments that staff has been addressing from last year's work plan. Topics include the right of way transmission line pilot program, accessible trails, and gap application approvals. She explained the process for development applications by private entities not requiring county or municipal approval that are known as gap applications. She said a procedure needs to be created to allow the Commission itself to review and act on these applications to ensure CMP standards are met. Staff hope to have a draft amendment on these three topics to the committee in the coming months.

ED Grogan suggested three new procedural items that may require CMP amendments. She noted recent legislation impacting legal advertisement requirements for the Commission and applicants, the need to standardize the 1/3<sup>rd</sup> application fee payments, and revision to escrow payment procedures.

ED Grogan next reviewed the status of Memorandum of Agreements (MOAs), including the Evesham Township accessible trail MOA, a potential South Jersey Transportation Authority (SJTA) Airport MOA amendment, and the review and update of old MOAs. She said the SJTA recently discussed its long-term plans for additional development at the Atlantic City Airport. She said she met with SJTA representatives, and they are coordinating with the Federal Aviation Administration (FAA) on required environmental assessment work and threatened and endangered (T&E) species studies. She said the project will require an amendment to the existing SJTA airport MOA and is included in the 2026 work plan.

Commissioner Rittler Sanchez asked if the FAA is included in coordination efforts. ED Grogan said that Stacey Roth, Chief of Legal and Legislative Affairs, is in touch with both the FAA and SJTA.

Executive Director Grogan noted the need to review and update older existing MOAs. She anticipates an impact on existing MOAs with the adoption of the New Jersey Department of Environmental Protection (NJDEP) Resilient Environments and Landscape (REAL) rules. She suggested implementing an annual update on accomplishments and issues regarding MOAs. The update would likely be provided at a Commission meeting rather than at a P&I meeting.

ED Grogan shared updates on two National Park Service (NPS) Economic Monitoring Projects. She reported on the ongoing development and successful testing phase of the new local conformance and zoning system. She said the system will be informative to both staff and the public and anticipates training seminars next spring. ED Grogan presented the FY26 project included in the NPS work plan to begin developing a new, enhanced application tracking system. She said the goals of the project are to allow better reporting and tracking internally and to offer limited public access to application status.

ED Grogan also discussed additional projects planned for the next fiscal year. She said project selection will begin in the fall for the Pinelands Conservation Fund (PCF) Land Acquisition funding round. She noted that there will be a fourth Permanent Land Protection (PLP) Summit held in the spring, in addition to preparation of the PCF stewardship and monitoring report and annual PLP report to the Commission.

ED Grogan said the Land Use Programs office has been reviewing municipal housing plans submitted in response to the fourth-round affordable housing requirements. Additionally, staff anticipate a local communication facilities cellular plan amendment in the near future and have met with the applicant regarding the process, proposed timing, and cellular plan amendment requirements.

Commissioner Rittler Sanchez asked for clarification about recent substantial changes to the REAL rule proposal that would allow waivers to build affordable housing in areas not usually designated for that purpose. ED Grogan said staff participated in an NJDEP webinar where it was questioned why waivers for affordable housing were being allowed in flood hazard areas. She said NJDEP responded that there are existing exemptions in the current rules that are not being changed. Ms. Roth reported that a developer will still have to make sure buildable property is on higher ground as opposed to a low point. ED Grogan said the NJDEP rule does not obligate the Commission to allow housing of any type in wetlands. She said questions will likely be raised regarding the wording of the NJDEP proposal relating to these changes.

ED Grogan said staff are continuing to monitor Pinelands Infrastructure Trust Fund projects and pending funding. She discussed the possibility of seeking new funding or a new bond act to support infrastructure in Regional Growth Areas, especially in overburdened communities requiring financial assistance to meet their infrastructure goals and considering climate resiliency and affordable housing.

ED Grogan reviewed other required projects such as the upcoming Septic Pilot Program implementation report and recommendations. She said the Cape May County MUA is due to provide a 5-year waste flow report from their landfill. Staff is working on the PDC Bank annual report, which is required by statute to be completed by the end of August. Staff is looking at PDC supply and demand methodologies and reporting and will advise if changes to the PDC program are needed.

ED Grogan said Ms. Roth is drafting legislative changes to the PDC Bank statutes to make the Bank part of the Commission and to allow the Bank to have more authority. She said the Commission will be looking for sponsors and funding sources for these changes and hopes to have it completed before the current Bank rules expire.

ED Grogan shared initiatives relating to climate resiliency including updates needed to the CMP solar facility siting standards and participation with the Board of Public Utilities (BPU) on the dual use solar pilot program. She said Ms. Roth and Commissioner Irick have coordinated with Rutgers University to present their work on agrivoltaic solar projects at the August P&I Committee meeting. Staff continue to attend Interagency Climate Council meetings, which have recently been focused on flooding issues.

ED Grogan shared that staff continue to work on threatened and endangered (T&E) species issues. She noted that Regulatory Programs staff had previously shared application review protocols regarding T&E protections. She said the Commission has a data sharing agreement with NJDEP specific to threatened and endangered wildlife and hopes to expand the agreement to include protected plants.

ED Grogan reported that following the interest of some Commissioners, staff is coordinating with NJDEP regarding research and data related to artificial turf and extreme heat. She anticipates NJDEP Office of Science and Research staff will make a presentation with their findings and recommendations to the P&I Committee at an upcoming meeting, together with a NJDEP Green Acres representative who will address the issues Green Acres considers with grant applications for funding.

ED Grogan said staff continue to research and review enabling legislation to make sure that the Commission is always acting within the limits of its authority before proceeding with any amendments.

Commissioner Rittler Sanchez said she was pleased to see artificial turf on the work plan and recognized other pending issues on the work plan, such as the plant list and solar program, may take precedence. She said artificial turf is a water and heat issue; however more information is needed. ED Grogan said regarding artificial turf, the Commission cannot address it as a public health concern but can address issues related to water quality and stormwater management since those topics are within its authority under the Pinelands Protection Act and the CMP.

ED Grogan said her presentation today focused on P&I Committee topics and not those of the entire Commission. She asked Commissioners to share ideas that they have for any projects or initiatives within the next month to allow for funding consideration during the upcoming budget preparation.

Chair Matos asked for Commissioner comments.

Commissioner Irick commended ED Grogan for pursuing changes to the PDC Bank. He said he supports discussion of artificial turf and would like to hear how residuals from artificial turf may leach contaminants into the soil and affect groundwater. Commissioner Irick suggested adding additional species, especially those related to the farm community, to the current list of native species. He recommended reaching out to Rutgers University for their native species suggestions. Regarding future projects, he suggested CMP amendments to the definitions for transmission lines that serve more than one dwelling. He said he was pleased to see escrow payments included in future CMP amendments and suggested staff research bonding.

Commissioner Lohbauer commended staff on the comprehensive task and amount of work involved in the CMP review and amendments. He said he was pleased that climate resiliency is still a priority with the committee. He questioned the timeline for the adoption of the NJDEP REAL rules as referenced earlier in the presentation.

ED Grogan explained the NJDEP filed notice to revise their proposal within the last few weeks. The revision needs to be republished and have a new public comment period for the changes. As a result, the adoption is now projected for January 2026.

Commissioner Irick said, regarding the REAL rules, that there was opposition from the farm community to the 5-foot increase in the flood elevation delineating the flood hazard area.

ED Grogan said she will forward to Commissioners a link to the notice of proposed changes.

Commissioner Rittler Sanchez inquired if Commissioner Lohbauer, as former chair of the former Climate Committee, had any additional climate related topics to be added to the workplan.

Commissioner Lohbauer said he provided ideas for specific CMP amendments to the Executive Director and believes those ideas are still concepts for consideration.

Commissioner Wallner supports the effort to coordinate with NJDEP on new T&E species listing. He said he was happy to see the discussion of artificial turf included. He requested clarification whether Evesham Township's MOA for accessible trails is separate from that of the Black Run effort. ED Grogan confirmed the Evesham accessible trails MOA is separate from the rulemaking to re-designate the Black Run watershed from Rural Development Area to Forest Area.

Commissioner Avery commented that the Commission's regulations are often linked to NJDEP regulations and as a result when NJDEP changes their regulations, they impact the Commission, municipalities, and applicants. He referred to stormwater management regulations as an example. He suggested a period of reliance for certificates of filing so that active applicants are not faced with complying with changing regulations and can rely on their certificate of filing as protection against rule changes. He referenced the Coastal Area Facilities Review Act (CAFRA) as having a 5-year protection. Commissioner Avery said infrastructure money will be tight and dependent on federal government funding. He questioned how many new alternative design septic systems were installed within the past year. ED Grogan said not many of the new technologies currently being piloted have been used, but that she will confirm the totals. Regarding artificial turf, Commissioner Avery said while it is good to coordinate with the NJDEP, he believes the Commission's ability to create significant standards is limited. He said standards should come from the Environmental Protection Agency (EPA) or NJDEP.

Commissioner Avery reminded the Committee that staff's time will be impacted with the upcoming Fenwick Manor rehabilitation project.

#### **4. Ground Penetrating Radar Projects Presentation**

*Attachment B to these minutes and posted on the Commission's website by clicking [here](#).*

Marc Paalvast, Cultural Resources Specialist, provided an outline of Ground Penetrating Radar (GPR) technology and its use for archaeological surveys. He presented techniques and methods used in GPR surveying. He explained that GPR does not create lifelike images but rather reflections appearing as hyperbolas and planes and how those shapes are interpreted.

Commissioner Rittler Sanchez inquired if the program accounts for change in direction while surveying. Mr. Paalvast said he finds the data cleaner if you stay in the same direction.

He shared samples of GPR images and the resulting data of hyperbolas and planes. He explained the strength of the reflections are impacted by the relative dielectric permittivity of various elements and soil types and provided a table of values. He said that the dry sands in the Pinelands allow deeper readings.

Commissioner Rittler Sanchez further inquired on multi-directional techniques for surveying. Mr. Paalvast explained that for archeological purposes he finds it beneficial to do more linear transects in one direction.

Mr. Paalvast explained the non-invasive benefits of using GPR in archaeology, as it preserves the integrity of a site without physical excavation, while identifying potential artifacts and structural remains. He said GPR data allows archaeologists to develop research questions and plan or avoid excavations. To that effect, he noted the time and financial benefits of GPR reaching below concrete or pavement.

Mr. Paalvast said GPR is useful in locating and identifying unmarked burials with the purpose of gravesite protection and recognition of the deceased. He presented images of GPR results indicating fallen grave markers, metal, wooden, collapsed caskets or grave shafts. Mr. Paalvast reviewed the current Pinelands Commission GPR equipment and software. He said the 500 MHz auto-calibrating antenna is ideal for archaeological work and produces a better image.

Mr. Paalvast reviewed three Pinelands Commission GPR survey projects. He first presented the St. Mary's in the Pines GPR survey project and provided a history of the 19<sup>th</sup> century St. Mary's in the Pines Church in Pleasant Mills, Atlantic County. The church was constructed in 1827 and destroyed along with many grave markers by wildfire in 1900. He reviewed the fieldwork methods conducted in 2021 and the resulting reflection profiles. He said results suggest the potential of 23 unmarked burials. He suggested more burial sites could exist outside of the surveyed area.

A discussion continued on possible burials beneath the original church foundation and after the date of the fire.

The second GPR survey project presented covered the African Methodist Episcopal Cemetery in Tabernacle, Burlington County. Mr. Paalvast provided a history of the 1816 founding of the African Methodist Episcopal Church, the property deeded in 1868 to the Trustees of the African M.E. Church and shared images of the original structure, noting that the church appears visible in a 1930s historic aerial image. Mr. Paalvast said that the 1937 Veterans Grave Registration survey map shows a grave marker for Civil War veteran George Eares, a named trustee of the church property. He reviewed the fieldwork conducted at the site in September of 2023 and presented findings and survey images. After plotting data point results, Mr. Paalvast said the resulting orientation and grouping indicate the potential for many unmarked burials on the site. The survey results also indicate the possible location of the original building structure.

Mr. Paalvast reported on his most recent fieldwork in April 2025 at Whitesbog Historic Village in Pemberton Township, Burlington County. He said the goal for this project is to identify any potential historic buildings. He reviewed early results from new software showing depth slices that suggest a possible walkway and small structure and said he will continue to analyze survey results.

Commissioners provided positive feedback on the presentation and information gathered.

Mr. Paalvast said the first two survey reports are available on the Commission's website.

Commissioner Lohbauer asked how project sites are selected. Mr. Paalvast responded that work at the St. Mary's location had begun prior to his employment and that he was approached by the Tabernacle Historical Society regarding the African Methodist Episcopal Cemetery.

Commissioner Irick suggested an 1808 cemetery in Landisville as a potential future site for surveying. Mr. Paalvast mentioned he was informed of a potential site beneath a parking lot at Atsion.

Emile DeVito, from the public, inquired how small an air pocket it can detect. Mr. Paalvast said it can detect small pockets and be used for detecting other subsurface features, such as snake dens.

Commissioner Rittler Sanchez said she was interested in dielectric permittivity factors.

## **5. Public Comment**

Emile DeVito of the NJ Conservation Foundation thanked the staff for meeting with the NJDEP regarding dumping concerns on Magnolia Road. He said he was pleased with Pinelands staff attention and concern about the matter and was dissatisfied with the response from NJDEP. He spoke against Green Acres involvement in funding artificial turf projects occurring throughout the state and the destruction of trails and natural parks for recreation complexes with artificial turf.

Heidi Yeh of the Pinelands Preservation Alliance commended the Commission's work plan and the inclusion of artificial turf discussion and the plant species list. She recommended including tree conservation such as no net loss of trees policy or better tree removal enforcement. She said the NJDEP Green Acres artificial turf application process has an addendum to encourage applicants to address and consider certain issues. She remarked that the addendum language is not strong enough and in reviewing completed addendums, she sees a refusal of applicants to engage or respond. As a result, she said the addendum is not effective.


Emile DeVito thanked the Commission for keeping the expansion of the rare plant list on the work plan. He said it is necessary as more park lands are being converted to artificial turf. He said applicants for artificial turf projects should have to do surveys for rare plants and the Green Acres application only requires rare plants be considered. He said if the Commission develops

regulations for artificial turf, he recommends including requirements for protection and surveying of rare plants.

**6. Adjournment**

There being no other business, Commissioner Irick moved to adjourn the meeting. Commissioner Rittler Sanchez seconded the motion. All voted in favor. The meeting was adjourned at 11:16 a.m.

Certified as true and correct:

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Lori Friddell  
Land Use Programs Technical Assistant

Date: August 1, 2025

A close-up photograph of several purple flowers with yellow centers, growing in a field of tall green grass. The flowers are in various stages of bloom, and the background is a soft-focus green.

# **P&I Committee FY26 Proposed Projects and Initiatives**

**July 25, 2025**

# CMP Amendments

- Kirkwood-Cohansey rules
  - Implementation (applications)
  - NJDEP coordination
  - Litigation
- Black Run watershed protection, expiration of waivers and CFs, application fees for violations and LOIs, RGA/PDC flexibility
  - 60-day comment period
  - Response document/adoption notice
  - Implementation

# CMP Amendments

- Right of Way Transmission Line Pilot Program
- Accessible Trails and Wetlands Protection
- Gap approval process
- Standardize 1/3 application fee payments
- Escrow payments and procedures
- Legal advertising requirements for Commission and applicants

# MOAs

- Evesham Accessible Trail MOA
- SJTA Airport MOA Amendment
- Review and update old MOAs
  - Determine impact of REAL rules on existing MOAs
- Annual update on accomplishments and issues

# NPS Economic Monitoring Projects

- Local Conformance/Zoning System development
  - Test and release for staff use
  - Enable public access
  - Municipal training seminar
- PCIS 2.0
  - Enhanced and modernized application tracking and reporting system
  - Public access

# Additional Projects

- PCF Land Acquisition funding round: [project selection](#)
- Fourth Permanent Land Protection Summit
- PCF stewardship and monitoring report
- PLP annual report to Commission
- Affordable housing plans and associated rezonings
- Local communications facilities (cellular) plan amendment

# Additional Projects

- Pinelands Infrastructure Trust Fund
  - project monitoring
  - NJDEP amended rules
  - New Funding/Bond Act
- Septic Pilot Program implementation report and recommendations
- CMCMUA landfill: 5-year waste flow report

# Additional Projects

- PDC Bank annual report
- PDC Supply and Demand
  - Methodologies and estimates
  - Reporting
  - Recommended changes to PDC program
- PDC Bank legislative changes
  - Sponsors
  - Funding source(s)

# Climate Resiliency Initiatives

- CMP solar facility siting standards
- BPU Dual Use Solar Pilot Program participation
- Interagency Climate Council
- T&E plants
  - data sharing agreement with NJDEP
  - expanded protected plant list
- Artificial turf and extreme heat issues
- Research and review of enabling legislation

# Additional Projects

???

# Ground Penetrating Radar (GPR) Archaeological Surveys



**Marc Paalvast**

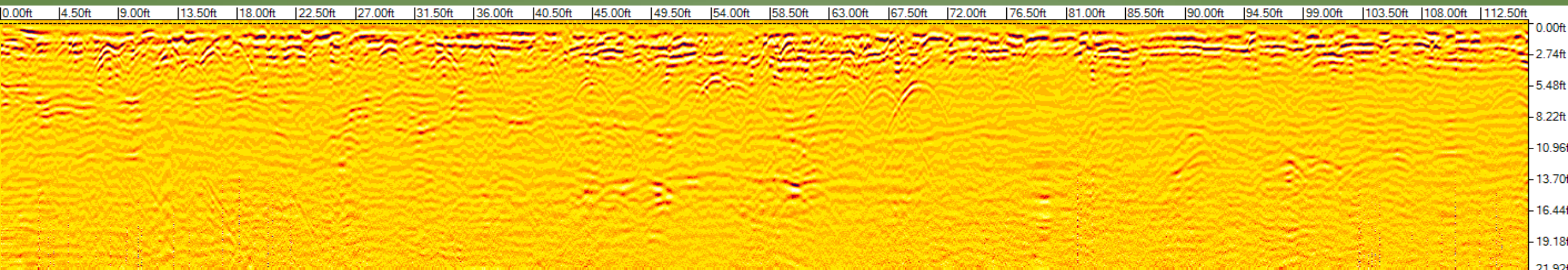
New Jersey Pinelands Commission  
Cultural Resources Specialist



Funded by:

# GPR for Archaeological Surveys - Outline

- Ground Penetrating Radar
  - What is it and how does it work?
  - What are the benefits for archaeology?
  - How can GPR be used for finding unmarked burials?
- St. Mary's in the Pines GPR Survey – Pleasant Mills, Atlantic County
- African Methodist Episcopal Cemetery GPR Survey – Tabernacle, Burlington county
- Whitesbog Historic Village GPR Survey – Browns Mills, Burlington County
  - In progress



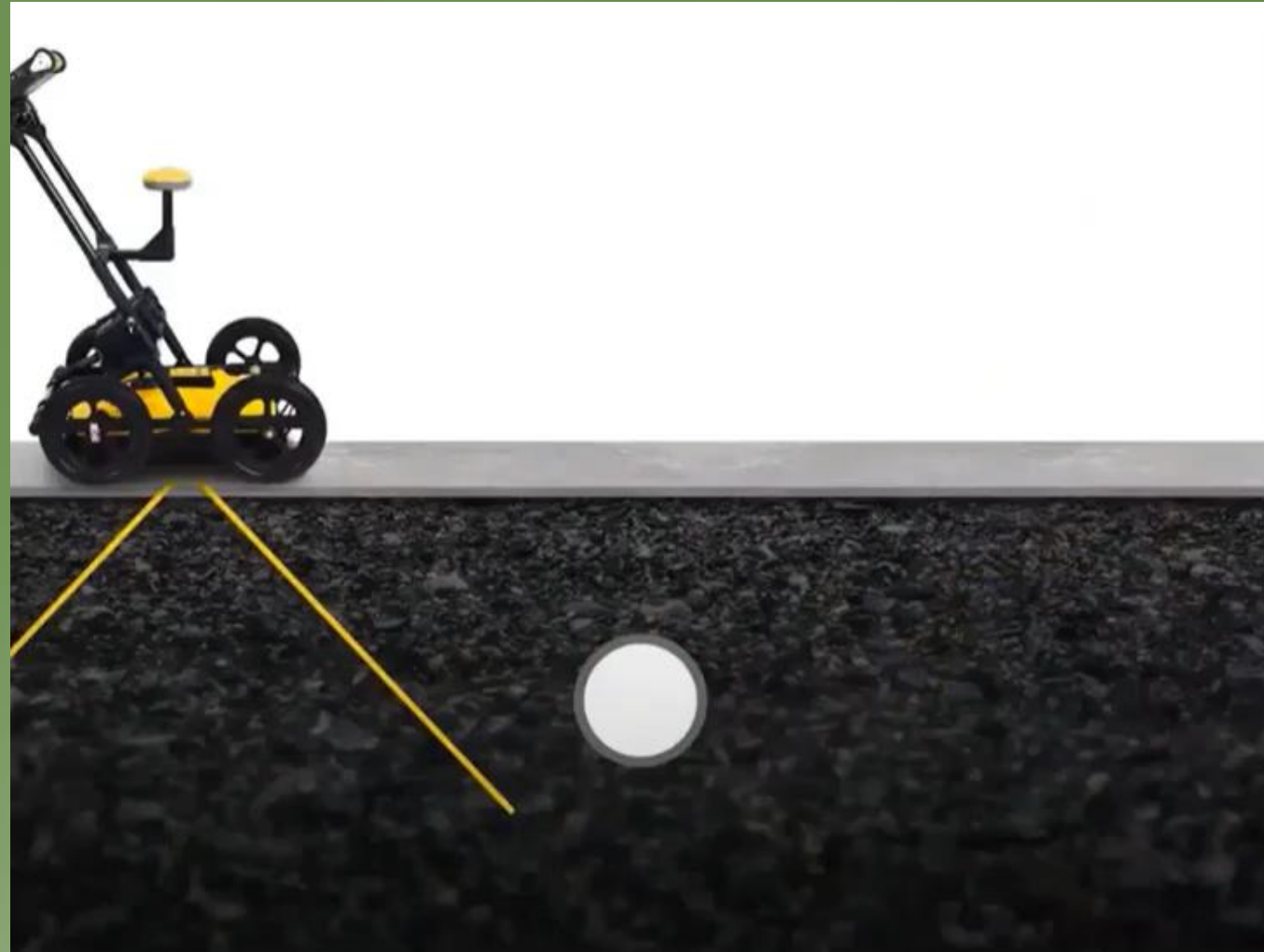
# What is Ground penetrating radar (GPR)?

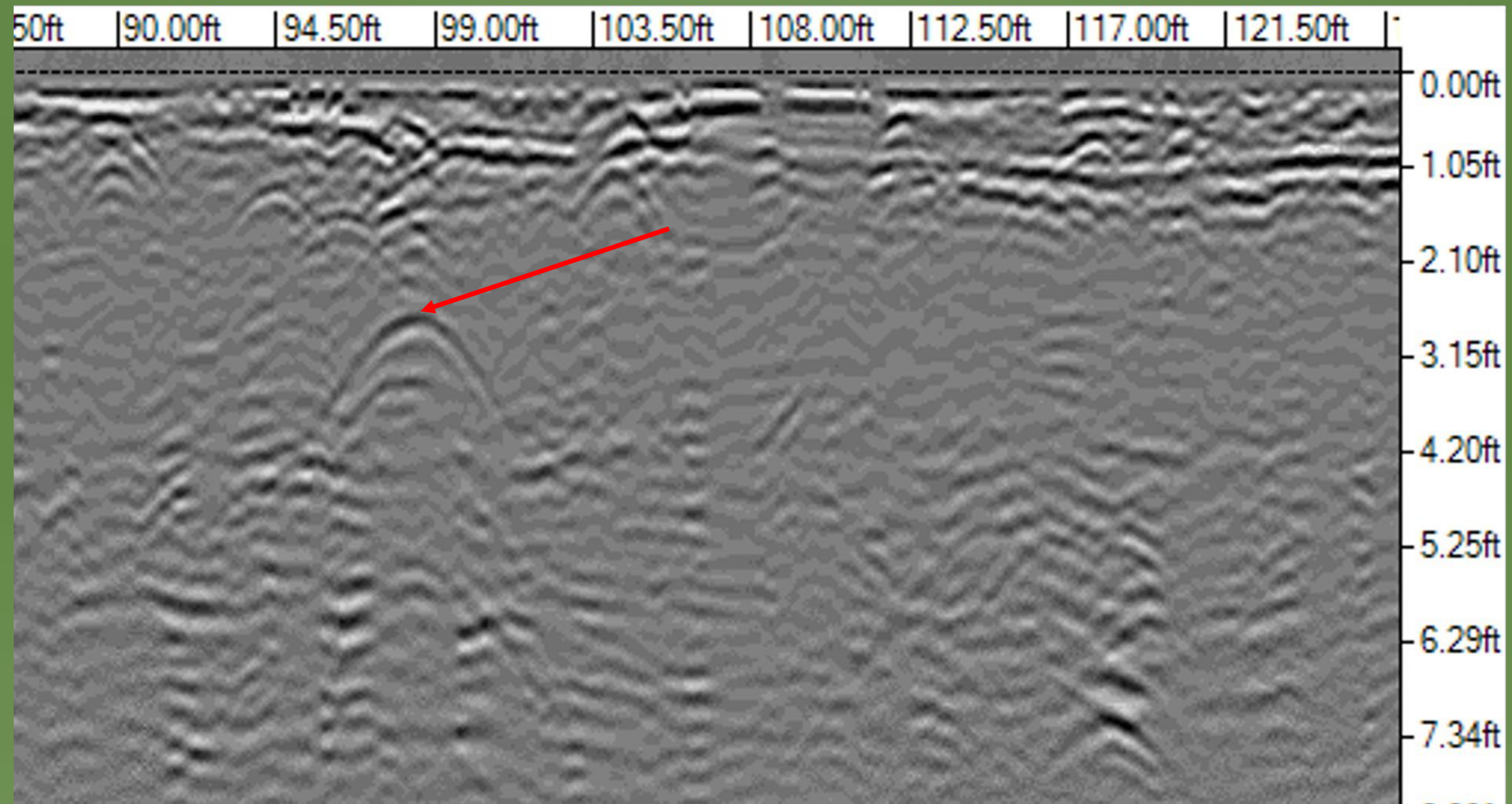
- A geophysical survey method that uses a wheeled device to send and receive electromagnetic waves to create images of the subsurface
- The device is rolled in linear transects much like a lawnmower

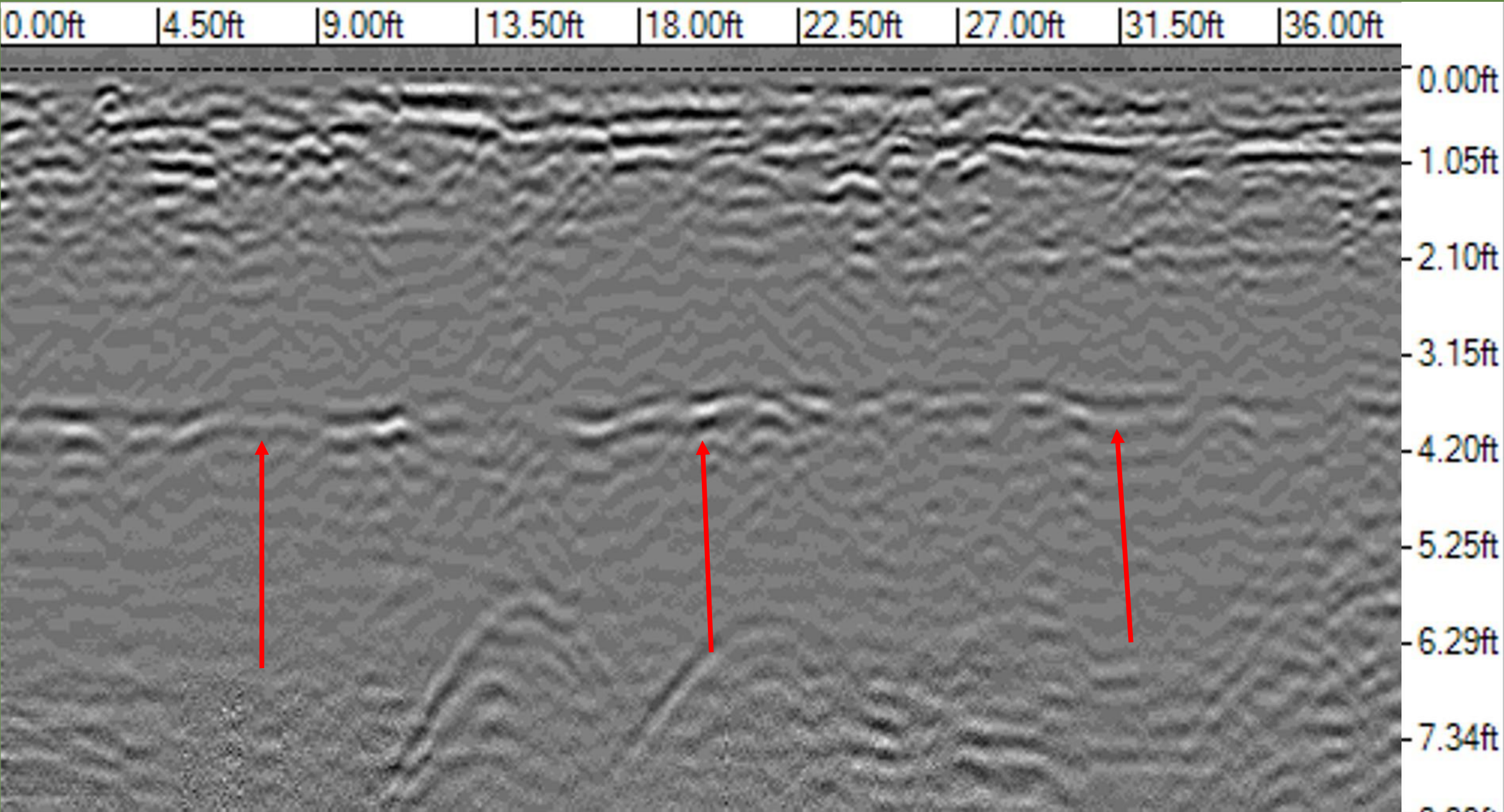


# How does GPR work?

- Transmits high-frequency electromagnetic waves in the form of a large cone into the ground
- Waves are reflected back by subsurface objects or other changes in soils or sediments and recorded
- GPR does not produce lifelike images
- Reflections are usually in the shape of either hyperbolas or planes







# Relative Dielectric Permittivity

- Stronger reflections are created by higher contrast in dielectric permittivity
- Lower numbers allow the GPR waves to pass through them easier
- Higher numbers absorb the waves
- How water soluble is the soil?
- Metal has a permittivity value of infinity. It does not let any of the electromagnetic wave through

<b>Air</b>	1	Frozen Soil/Permafrost	6
Snow Firn	1.5	Dry Salt	6
Dry Loamy/Clayey Soils	2.5	Syenite Porphyry	6
PVC	3	Wet Granite	6.5
Asphalt	3 - 5	Travertine	8
Glacial Ice	3.6	Wet Limestone	8
Dry Clay	4	Basalt	8 – 9
Dry Sands	4	Wet Basalt	8.5
Dry Granite	5	Tills	11
Limestone	4 – 8	Wet Concrete	12.5
Concrete	4 – 11	Volcanic Ash	13
<b>Soils &amp; sediments</b>	4 – 30	Wet Sands	15
Coal	4.5	Saturated sand (20% porosity)	19 – 24
Frozen Sand & Gravel	5	Wet Sandy Soils	23.5
Shale	5 – 15	Dry Bauxite	25
Dry Concrete	5.5	Saturated Sands	25
Dry Limestone	5.5	Wet Clay	27
Dry Sand & Gravel	5.5	Peats (saturated)	61.5
Potash Ore	5.5	Organic Soils (saturated)	64
Sandstone	6	Sea Water	81
Dry Mineral/Sandy Soils	6	<b>Water</b>	81

# What are the benefits of GPR?

- GPR is Non-invasive
- Archaeology is destructive by nature
  - Removes artifacts and features from their context while documenting
- Helps preserve the integrity of the site
  - Identifies potential artifacts and structural remains without physical excavation



# What are the benefits of GPR?

- Developing research questions
- Planning excavations
- Avoidance



# What are the benefits of GPR?

- See below obstructions that prevent manual excavations like concrete or pavement



# GPR for finding unmarked burials

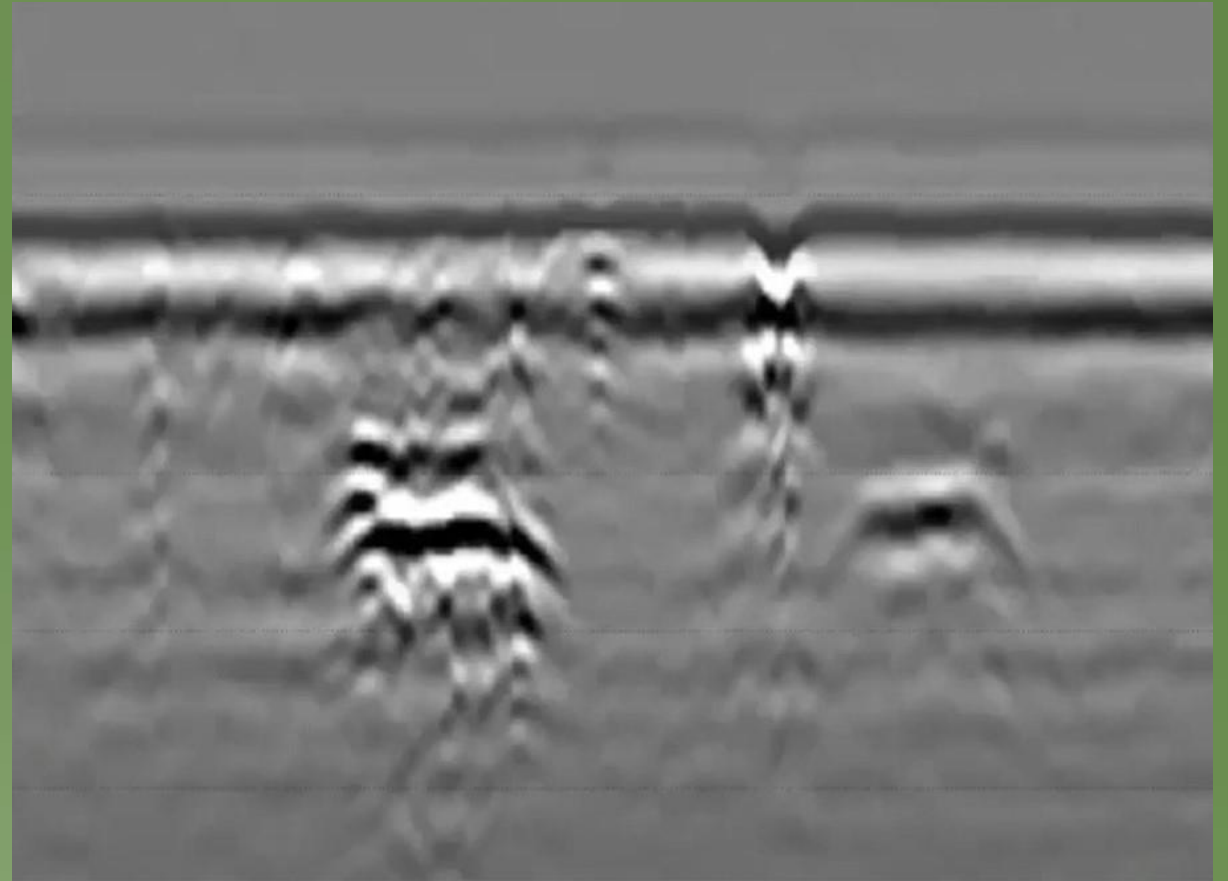
## Purpose:

- Identification of unmarked burials
- Protection from accidental disturbance
- Recognition of the deceased



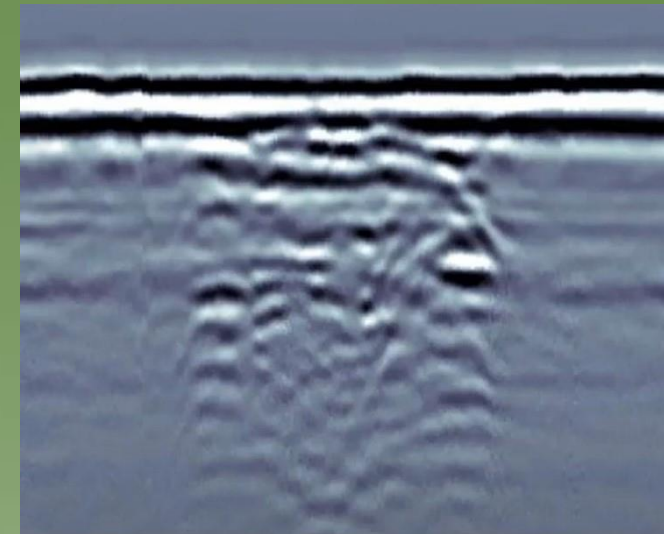
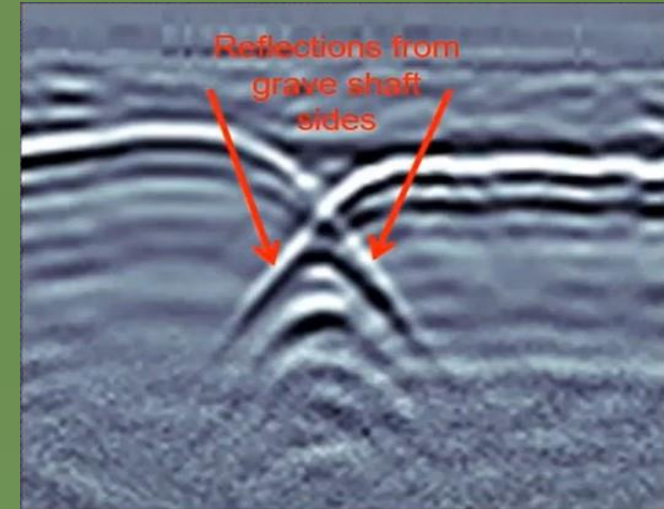
# GPR for finding unmarked burials

- Fallen grave markers
- Caskets
  - Metal caskets create very strong reflections
  - Wooden caskets create weaker reflections
    - If intact, air inside casket will likely contrast and cause a visible reflection
    - If collapsed, weaker reflections from casket, human remains, or offerings



# GPR for finding unmarked burials

- Grave shafts
  - Sides of grave shaft can be recorded as an X-shaped reflection
  - See breaks in soil stratigraphy (reflection planes)
  - See differences in natural soil and refilled grave shafts



# GPR Equipment

- US Radar Q5 series cart mounted GPR unit
  - Tablet with Radar Controller software
  - 500MHz auto-calibrating antenna
- Pin Flags
- Tape Measures
- GPS
- Notebook
- Camera

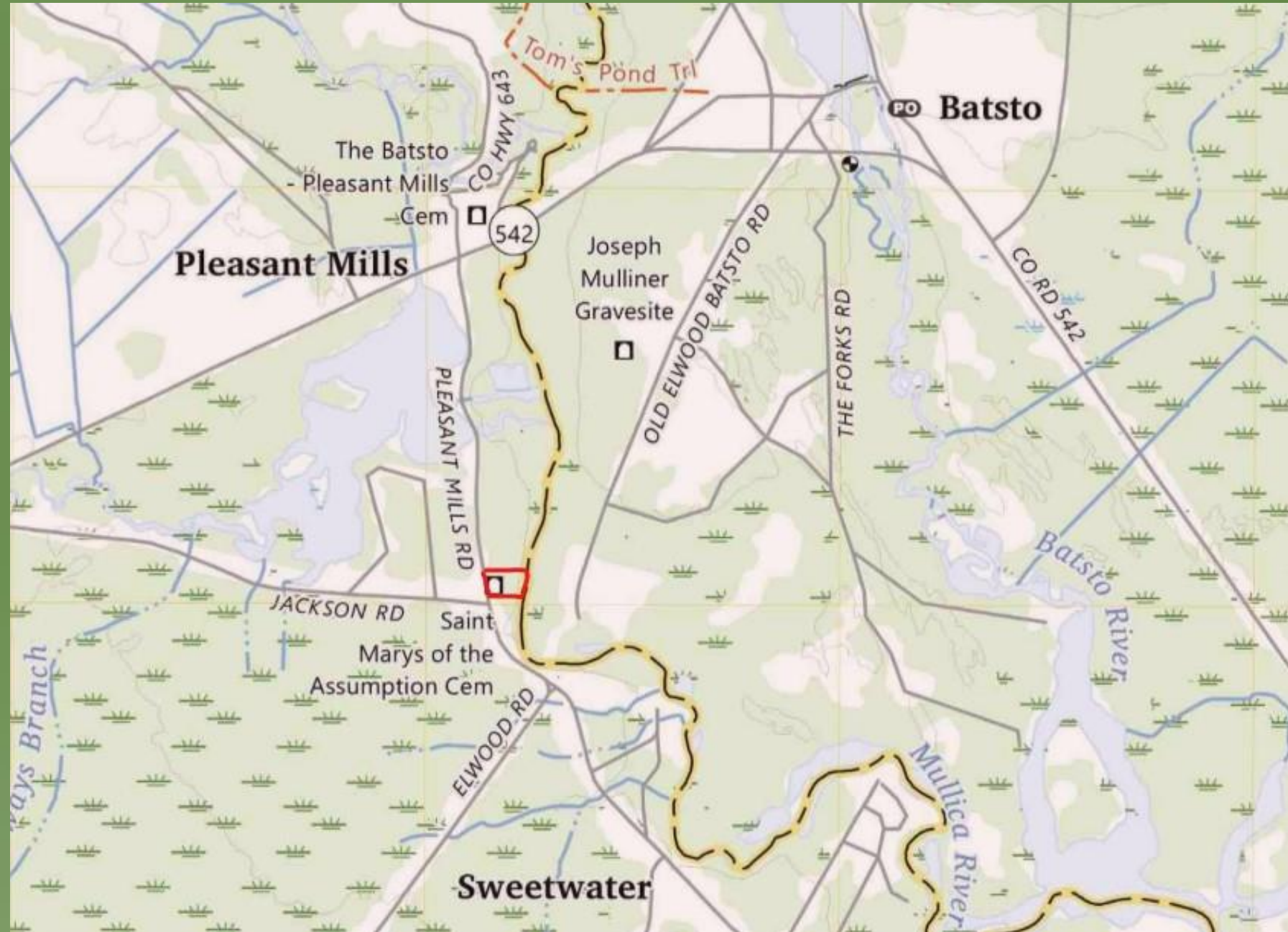


# Pinelands Commission GPR Surveys

- St. Mary's in the Pines GPR Survey – Pleasant Mills, Atlantic County
- African Methodist Episcopal Cemetery GPR Survey – Tabernacle, Burlington county
- Whitesbog Historic Village GPR Survey – Browns Mills, Burlington County
  - In progress

# St. Mary's in the Pines GPR Survey

Pleasant Mills,  
Atlantic County



# St. Mary's in the Pines - History



- 1826: Land donated by Jesse Richards, iron master at Batsto Iron Works
- 1827: Church building was erected
- 1830: Building was formerly dedicated
- 1860: Last church service was held
- 1900: Wildfire destroyed building



Watercolor by Carol Freas;  
Courtesy of The Mullica in  
the Pines Historical Society.

# GPR Survey Methods – St. Mary's

- Fieldwork conducted on October 26 and 27, 2021
- A 70-foot baseline was established along the northern boundary
- Transects were oriented N to S and marked out at 5-foot intervals (total of 16)
- Test passes over marked burials



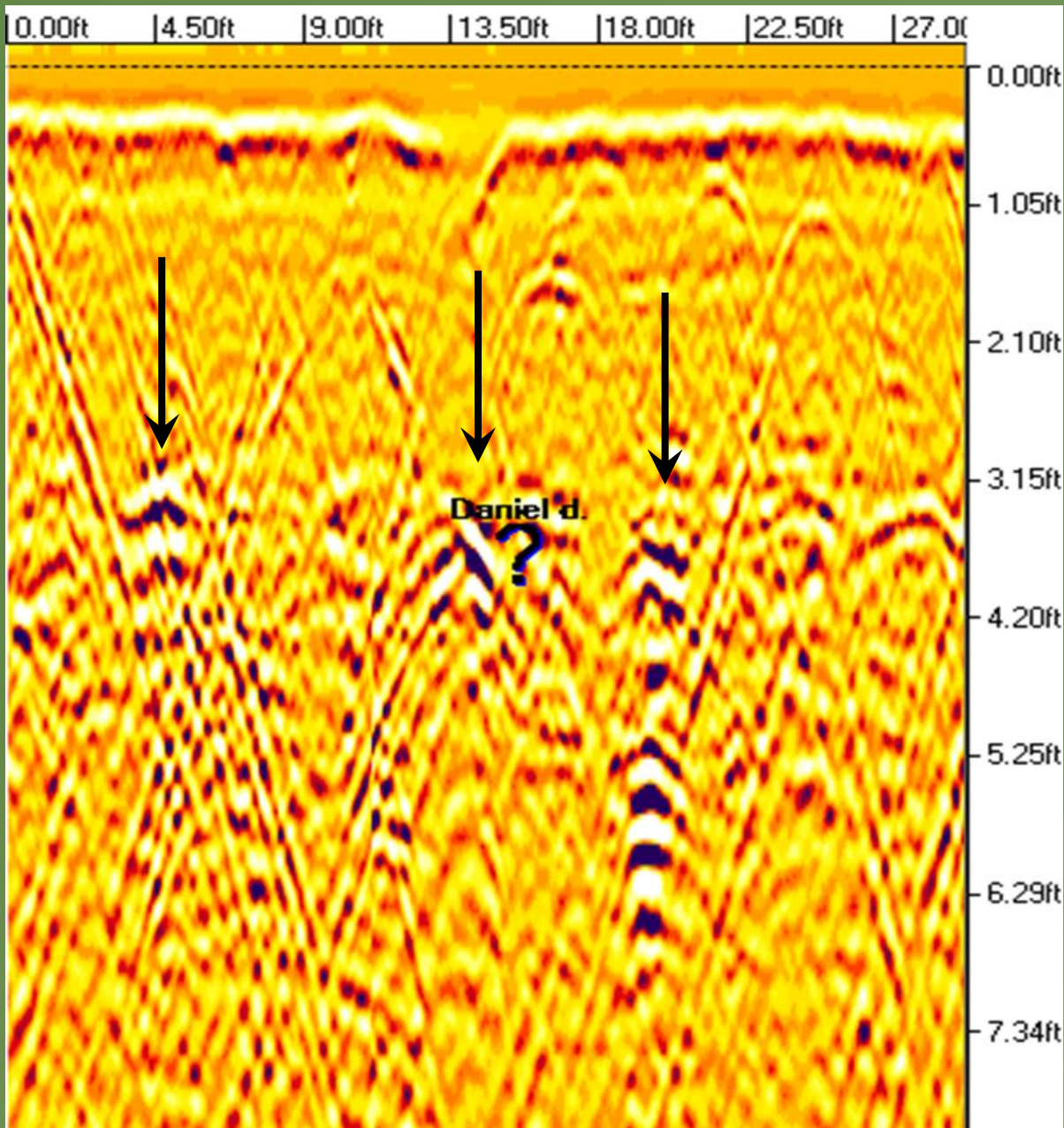




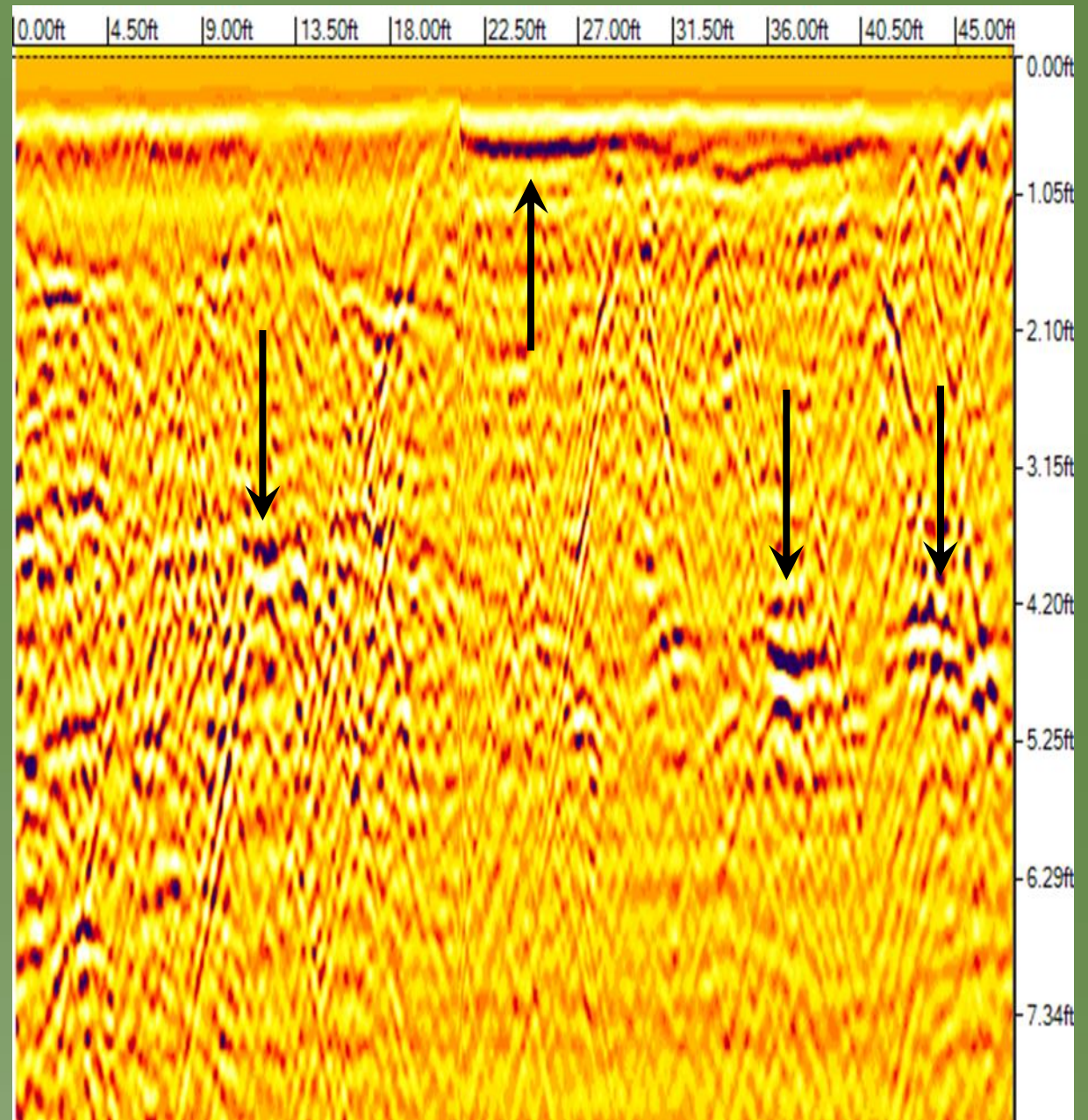
FRANZ ROEHLINGERS  
FAMILIE

FRANZ FROBENDER  
Wife von H. K. K. K.  
geb. 1852

LORENZ MAGDALENA  
geborene B...



Reflection Profile – Test Transect 2



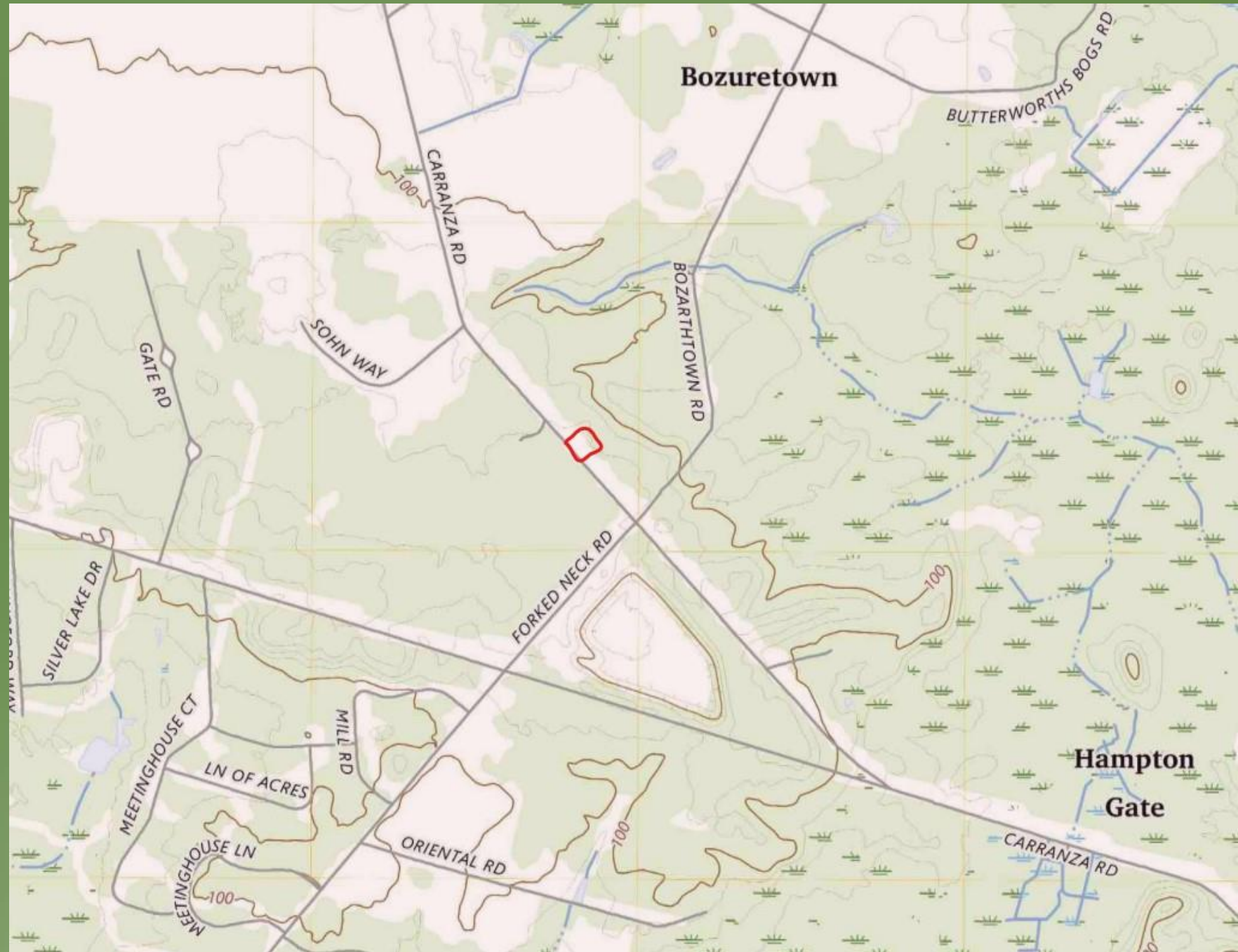
Reflection Profile – Transect 4

- Conclusions-
- 23 potential unmarked burials
- Some identified below church foundation which could represent burials or offerings
- Could be more outside of surveyed area



# African Methodist Episcopal Cemetery GPR Survey

Tabernacle Twp.,  
Burlington County



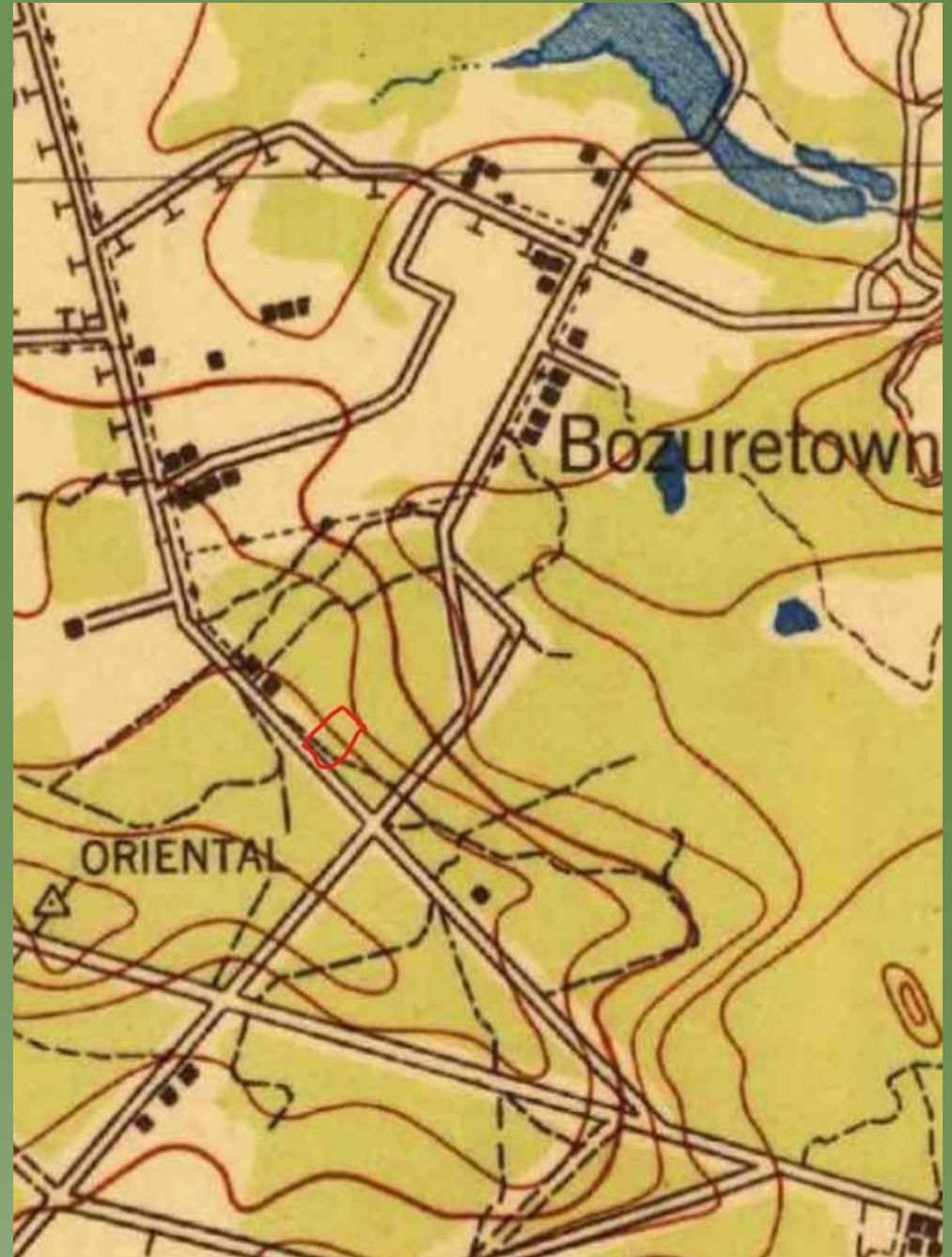
# AME Church Cemetery- History



- 1816: AME Church was founded in Philadelphia
- 1868: Property sold to the "Trustees of the African M.E. Ch."
  - Deed names George Eayers, David Thompson and Stacey Mires
- 1930: Church appears visible in historic aerial image
- 1937: Veterans Grave Registration survey map depicts George Eares grave marker and "Foundation of old church"



1930 aerial image



1942 USGS topo map

WOODLAND

20  
↓  
Geo. H. EARES.

PRIVATE ROAD.

WOODLAND

FOUNDATION  
OF  
OLD  
CHURCH.

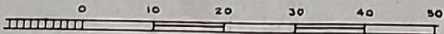
WOODLAND

TO TABERNACLE  
ABOUT 3 MILES.

OLD TUCKERTON ROAD

TO CARANZA MONUMENT.

AFRICAN CEMETERY AT HAMPTON GATE  
TABERNACLE TOWNSHIP  
Scale: One Inch = 10 Feet.



-LEGEND-

Numbers appearing in the pathways  
at the foot of burial sites indicates  
the following Wars -

War of the Rebellion - No. 20

- ▬ GRAVE WITH MONUMENT
- ▬ GRAVE WITHOUT MONUMENT

S/21  
RF

**WORKS PROGRESS ADMINISTRATION**

WILLIAM M. J. ELY STATE ADMINISTRATOR

DIVISION of WOMEN'S and PROFESSIONAL PROJECT

MRS. ELIZABETH C. D. VANN STATE DIRECTOR

WILLIAM A. KEARNS ASST STATE DIRECTOR

**VETERANS GRAVES REGISTRATION**

STATE WIDE PROJECT No. WORKS PROGRESS ADMINISTRATION  
sponsored by

WILLIAM A. HIGGINS ADJUTANT GENERAL STATE of NEW JERSEY  
Under Direction Of  
J. E. LAURENCELLE  
*filed Jun 8 1938*

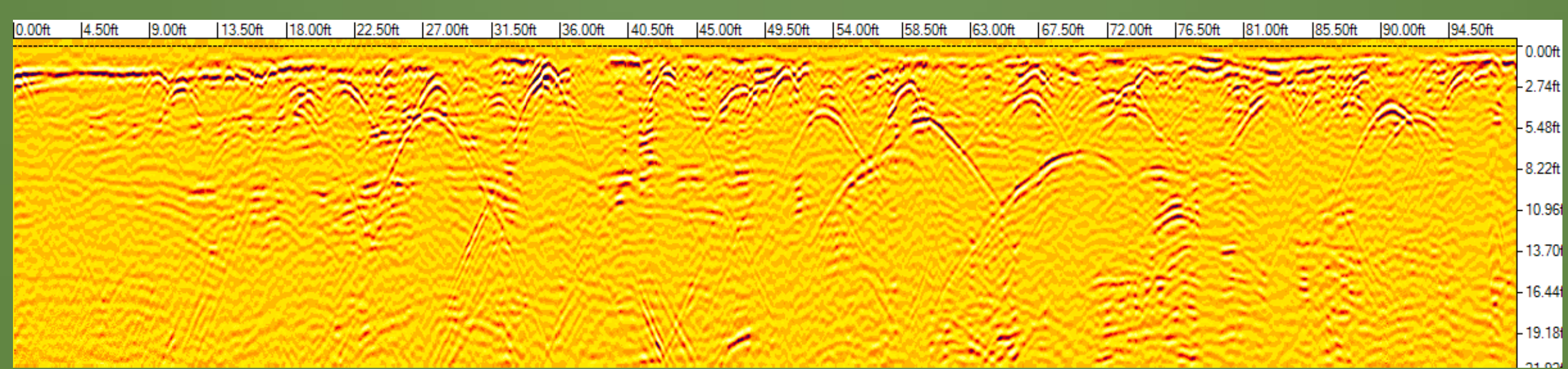
COUNTY of BURLINGTON

Delimited by W.H.K. Date Jan. 21, 1937  
Wm. H. Kenderdine - Engineer Francis J. Mulrany - County Supervisor

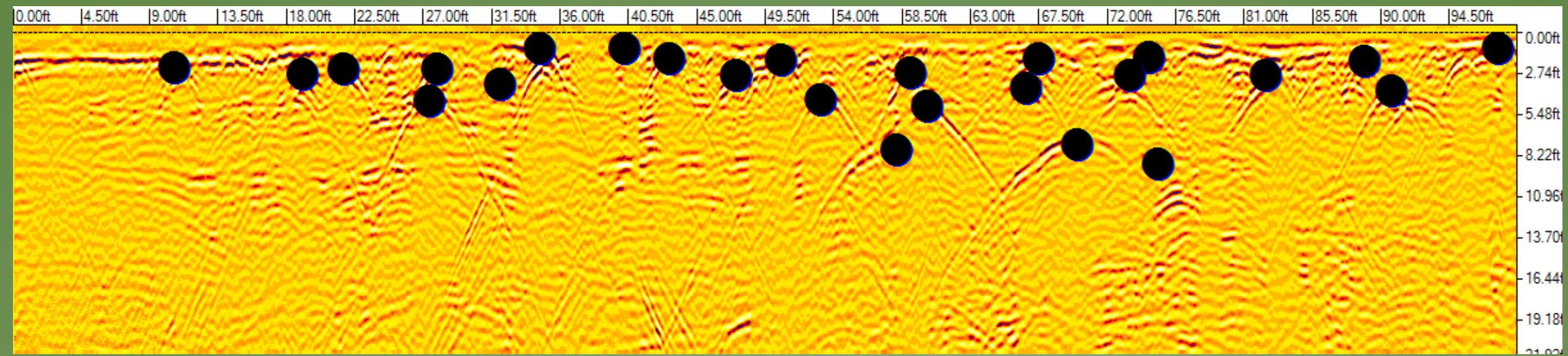
# GPR Survey Methods – AME Church

- Fieldwork conducted on September 21, 2023
- Baseline established between Lots 28 and 32
- End line established on N side of access road
- Transects were run parallel to Carranza Road and marked out at 2-foot intervals (total of 96)





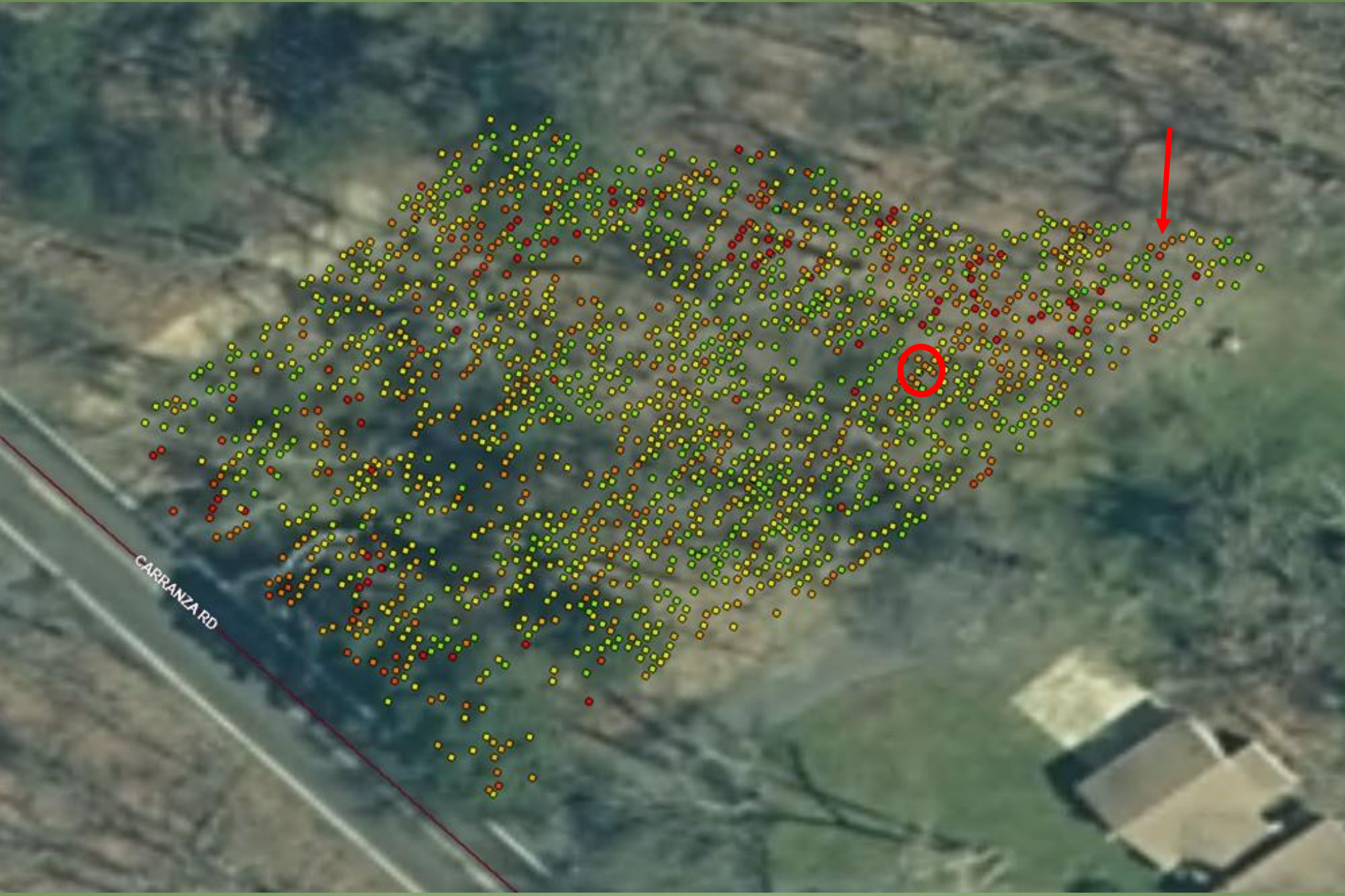
Reflection Profile – Transect 64



Reflection Profile – Transect 64 with mark up

Estimated Depth (feet bgs)	Total Number of Anomalies
0-0.5	5
1	333
2	419
3	436
4	322
5	122
6	33
7	34
8	28
9	19
10	4
11	16
12 to 17	11
<b>TOTAL</b>	<b>1782</b>

- Image shows all data points between 0 and 9.5 feet deep
- Red/Orange indicates depth of ≈4 to 7 feet
- Possible burial noted on far edge of cemetery (arrow)
- George Eares tombstone (circled)



- Map showing all anomalies found below 5.5 feet
- Almost none in area where building likely stood
- Surrounding building on front and back
- Data points include both marked and unmarked burials
- Note orientation of multiple point anomalies





## Conclusions-

- Potential for many unmarked burials on the site
  - Several near Carranza Road
  - One in rear of the site (possibility for more in unmaintained woods)
- Building was likely located in the area with few subsurface anomalies

# Whitesbog Historic Village GPR Survey

Browns Mills,  
Burlington County

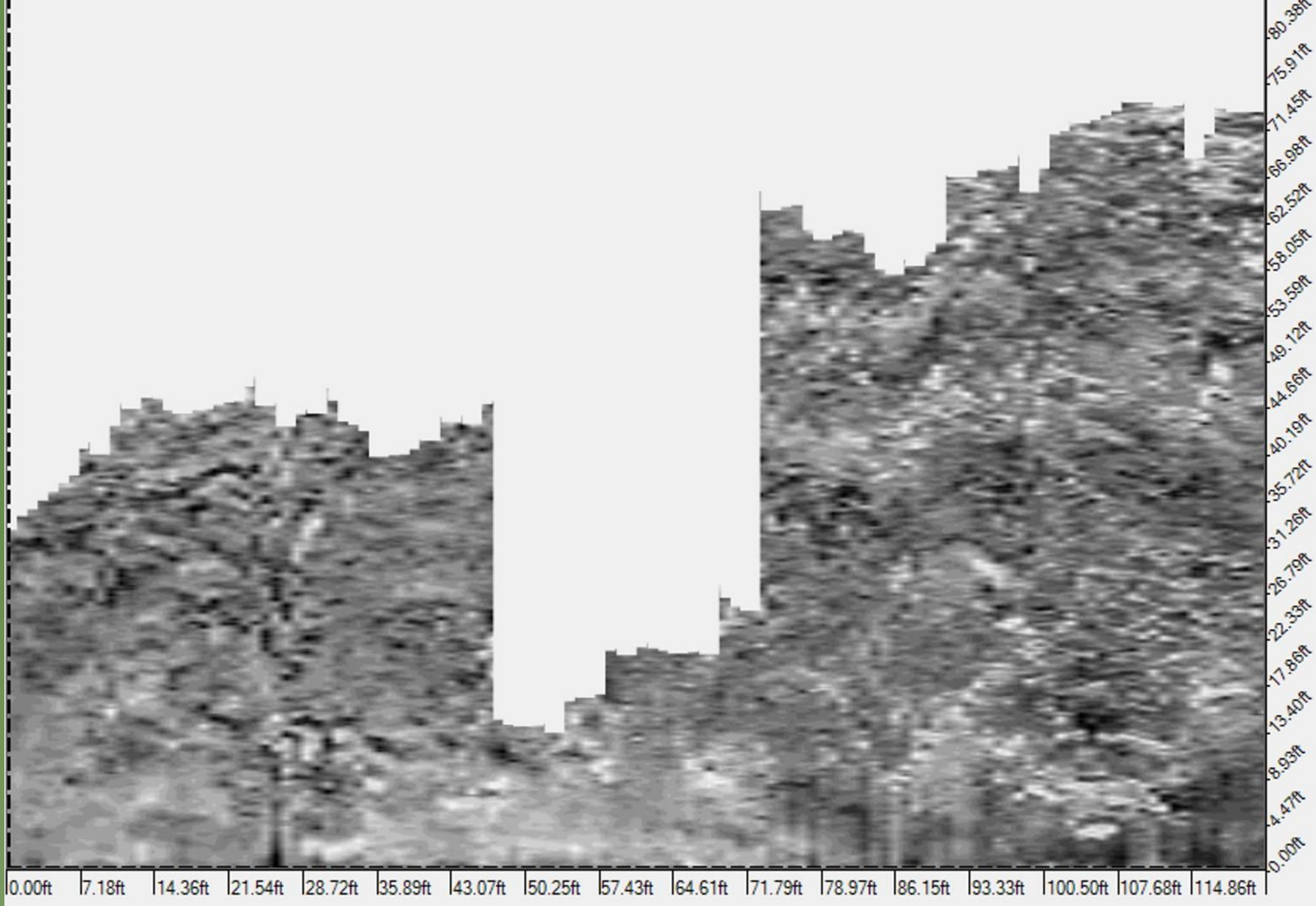


# Whitesbog Historic Village

- Fieldwork conducted on April 9-10, 2025
- Baseline established along N Whitesbog Road
- Transects set at 1-foot increments and walked toward the NE ending at woodline
- Total of 124 transects recorded



- Goal for project is to identify if this portion of Whitesbog had historic buildings
- Depth Slice shows data from all 124 transects at a depth of .5ft
- Possible walkway and small structure in lower left
- More to come...



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# THANK YOU!

- Questions?

- For Pinelands GPR Surveys go to <https://www.nj.gov/pinelands/landuse/culturalres/>



## Rutgers Agrivoltaics Program (RAP)

The Rutgers Agrivoltaics Program (RAP) consists of a multidisciplinary group of faculty and staff committed to conducting applied agrivoltaics research and outreach. RAP is part of the New Jersey Agricultural Experiment Station and Rutgers Cooperative Extension, which provide research, outreach and education resources to residents, communities, and businesses in New Jersey and beyond.

### RAP Mission

Our mission is to investigate the opportunities and challenges associated with agrivoltaics in New Jersey and to conduct research and outreach that focuses on combining agricultural production and solar power generation simultaneously on the same plot of land.

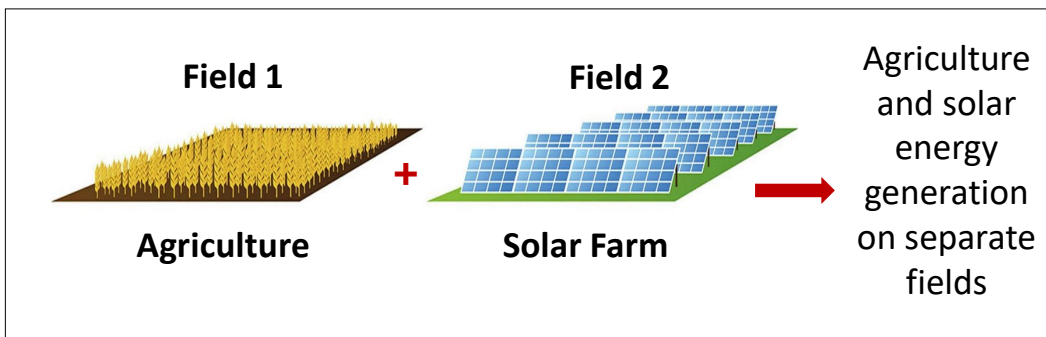
### GOAL 1: Keeping New Jersey's Farmland in Agricultural Production

Agrivoltaics can play a key role in keeping New Jersey's farms viable by providing an additional revenue stream for farmers. Agrivoltaic systems can be designed to be compatible with a large variety of agricultural production systems.

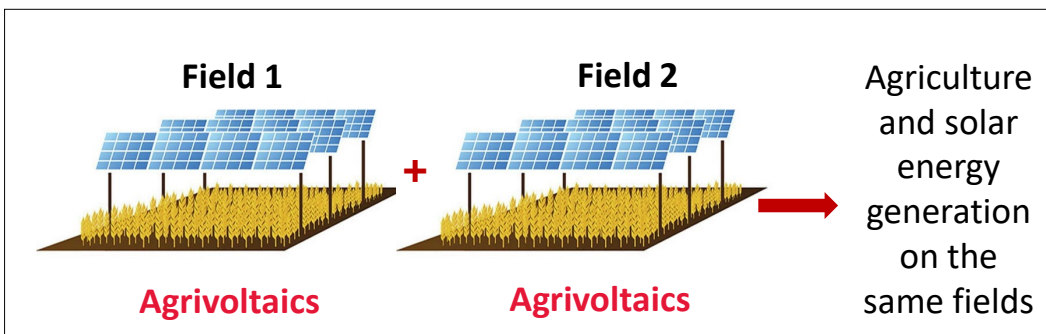
### GOAL 2: Increasing New Jersey's Renewable Energy Capacity

Agrivoltaics can contribute to New Jersey's renewable energy goals, while minimally impacting the State's approximately 700,000 acres of farmland. New Jersey is home to more than 10,000 farms, with around one third of these farms on preserved land. Agrivoltaics can help keep New Jersey's agricultural industry viable, while adding much needed renewable electricity production capacity.

## Is the simultaneous dual-use of land for agriculture and solar energy production a good fit for New Jersey?



Using land for traditional solar power generation to meet New Jersey's renewable energy goals will reduce the amount of productive farmland since it can no longer be farmed



Agrivoltaics can increase the profitability of the land, while maintaining its agricultural productivity and contributing to New Jersey's renewable energy goals

# Rutgers Agrivoltaics Program Sites

## Animal Farm New Brunswick



**170 kW<sub>DC</sub> Installed**

**Large Animal Grazing and Forage Production**



**Vertical bifacial panels for beef cattle grazing and forage production**



**Grass evaluation to better understand how solar panels affect forage growth**

Cook Campus Animal Farm  
College Farm Rd.  
New Brunswick, NJ 08901

## RAREC Upper Deerfield



**255 kW<sub>DC</sub> Installed**

**Staple and Specialty Crop Production**



**Tomato, eggplant & pepper under double wide single-axis tracker arrays**



**Soybeans under single wide single-axis tracker arrays**

Rutgers Agricultural Research and Extension Center  
121 Northville Rd.  
Bridgeton, NJ 08302

## Snyder Farm Pittstown



**95 kW<sub>DC</sub> Installed**

**Hay Production**



**Hay production under single wide single-axis tracker arrays**



**Processing hay between single-axis tracker arrays**

Clifford E. & Melda C. Snyder Research & Extension Farm, 140 Locust Grove Rd.  
Pittstown, NJ 08867