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Chicora Foundation, Inc.

Memo

To: Mr. Roger Mederos

From: Michael Trinkley, Ph.D., RPA

CC:

Date: November 17, 2008

Re: Penetrometer survey of a possible cemetery

On November 7, 2006 Nicole Southerland and Ashley Guba visited your property in Easley for the purpose of conducting a penetrometer survey on a possible cemetery situated in Pickens County about 2,000 feet north-northeast of the intersection of N. Fishtrap Road and SC 124 (Figure 1). This memo will provide you with an overview of our work and findings.

Methods

There are a variety of geophysical techniques that can be used to identify probable grave locations. For this work we have used a penetrometer.

Figure 1. Suspect area shown on the USGS Greenville 7.5 topographic map.

More precise and reliable than a probe, the hand penetrometer measures soil compaction in pounds per square inch (psi). Areas of posited graves will have lower psi readings than those areas where there has been no digging. Like probing, the penetrometer is used at set intervals along grid lines established perpendicular to the suspected grave orientations. The readings are recorded and used to develop a map of probable grave locations. We have found very consistent ranges in soil compaction at cemeteries throughout the region and have previous experience in Piedmont and Blue Ridge areas ranging from

Charlotte, North Carolina (Settlers' Cemetery) to Waynesville, North Carolina (Maple Grove Cemetery), south to a cemetery in Douglas, Georgia (City of Douglas). This is a relatively common forensic anthropology technique and the penetrometer is used extensively by the FBI to locate clandestine graves. While it is never possible in our field to offer guarantees, I have tremendous confidence in the penetrometer as our foundation has used it successfully at dozens of cemeteries.


Figure 2. Example of penetrometer use.

This technique *can* be affected by very dry soils (which was a slight concern in your area), by graveled plots (not an issue), or by artificial compaction (this did not seem to be a concern for your property). The inverse of the compaction is the disturbance of soil for something like planting a tree, which would show a reading similar to that of an occupied grave.

At this particular site, we were shown the suspect area, which was covered in a second growth pine and hardwood forest, by your realtor, Ms. Mary Jane Freeman. The area was marked by many yucca plantings throughout an area of about 100 feet square. Although no distinct grave depressions could be discerned, the area does have undulating topography. Large rocks were also noted in the area, but no commercial grave stones were found. We tested at approximately 2 foot intervals running north to south in an effort to identify graves (which are normally oriented east-west). We then moved to the east and the west off the line and in turn worked north and south in the same manner as the previous line.


Figure 3. View of the area showing yucca and fieldstones.

Identified graves would be marked by placing surveyor pen flags at the head and foot, with flagging tape stretching between the two flags. Each such marking would reflect the head, foot, and centerline of the grave. Actual width dimensions would typically be between 1.5 and 2-feet on both sides of this centerline.

Findings

Marked graves are generally found to exhibit between 50 and 100 psi at depths from 1 foot to 3 feet (the maximum depth of penetration). Areas thought to be non-graves usually reveal compaction over 200 psi, which generally occurs at less than 1 foot in depth. In examining the area of your property, we found that all penetrometer readings were over 200 psi. Most of the readings were identified within the first couple of inches of soil, while the deepest compact reading was no more than 0.8 foot in depth.

Areas outside the suspect area were also tested with the penetrometer to see if the readings were similar. We found that the surrounding area provided readings of over 200 psi, much like the possible cemetery. It should be noted, however, that we have gone to known cemeteries in the upstate (e.g. Greenwood County) and found very similar compact readings.

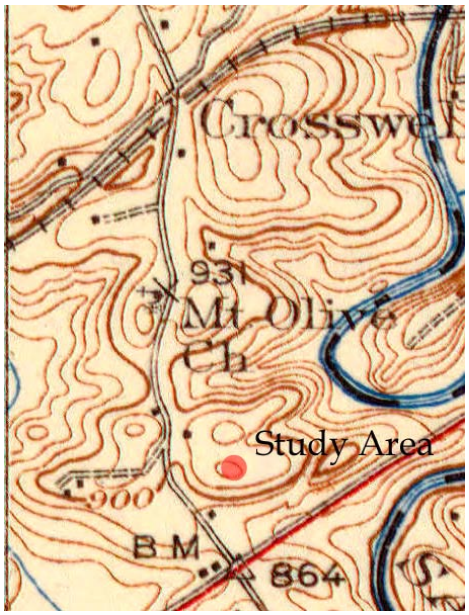

Figure 4. Portion of the 1939 topographic map showing the Mt. Olive Church and Cemetery to the north of the study area.

Since the penetrometer proved to be inconclusive, about four exploratory shovel tests were excavated from the area. The shovel tests measured about one foot square and were dug to examine the profile of the soil. The USDA *Soil Survey of Pickens County* (Byrd 1972: Sheet 34) says that the soils in this area should resemble the Cecil Series. This series is generally well drained and has a surface layer of yellowish red sandy loam to a depth of 0.4 foot over a layer of red clay loam, which extends to about 0.7 foot in depth. The actual shovel tests produced a surface layer of grayish brown loamy clay to about 0.6 foot in depth over a yellowish brown loamy clay. The soil was filled with rocks that are generally found in the area. The soil survey reveals that this area is eroded.

The shovel tests did indicate some form of disturbance, although I cannot say that it represents grave shafts. At the base of each shovel test, which extended about 1.0 foot in depth, the penetrometer was again used with results showing just under 200 psi for about 0.5 foot before the heavily compacted soils prevented further penetration.

An attempt was also made to examine historic maps of the area to see if the cemetery would be shown. Very few maps were found of the area. The 1939 15' Greenville topographic map (surveyed from 1933 to 1935) shows Mount Olive Church and Cemetery about a mile from the N Fishtrap Road and SC 124 intersection, but no evidence of a cemetery in the study area. The 1959 15' Greenville topographic map continues to show the church and cemetery, but no evidence of a cemetery on your property (Figure 4).

I would also like to briefly mention the plantings found on the area. While no definite patterning was obvious, both yucca and holly are found within the 100 foot square area. Both plantings were historically used in cemeteries and it is not be uncommon for yucca to spread new growth around the area. Even though there was no discernable pattern, the plantings do appear to be contained within the suspect area.

Along the lines of patterning, the fieldstones that were observed also failed to provide any discernable patterning. We did not witness, for example, a fieldstone next to a possible sunken grave. The stones also did not appear to be arranged in any sort of lines. This, however, does not necessarily mean that a cemetery does not exist. Historic African-American cemeteries may not display a "typical" cemetery

layout as modern European cemeteries exhibit. For example, the use of fieldstones or plantings, such as yucca, could have been used to mark a grave. In addition, years of burials may cause overlapping, creating the undulating effect in the topography, which could be why no distinct graves were noted.

Figure 5. Shovel testing in the suspect area showing vegetation and topography.

We did briefly walk on other parts of your property to observe the topography and general setting. We noticed that in other areas, similar undulating topography was observed with stones on the surface. I also noticed at least one area where stones had been manually piled, showing the possibility of stones being displaced through the years.

Recommendations

Unfortunately, it is not possible to definitively identify or rule out a cemetery on the property – the penetrometer study failed to identify clearly defined graves and the ground exhibited unusually high compaction than is generally found in cemeteries. I understand there is no indication of a cemetery based on your title search and I see that the nearby African American church had a cemetery on its own property since at least 1938. Nevertheless, there are other features that *sometimes* do point to the presence of an African American cemetery,

I am concerned about the plantings (typical of historic cemeteries), the undulating topography (found in some historic African-American cemeteries), and a soil profile different than what is described by the USDA (which may signify some sort of ground disturbance). These few things make it possible to think that a cemetery may be located on the grounds.

Perhaps the easiest approach would be to mark off possible cemetery area. I do, however, understand this affects property values and may affect future construction activities in the area.

As I have explained, the only way to identify a cemetery with certainty is to strip the upper foot of soil and look for grave shafts. This would not disturb the actual remains if any were present, although it is intrusive. In such a heavily wooded area it would also require several days of time using a bobcat and this would cost perhaps $4,000 to $5,000.

Another option we have discussed is the use of ground penetrating radar. The soils of the study area has a moderate potential for GPR, although I am concerned about the large number of tree roots – these can often make interpretation of GPR data difficult. When we have need of GPR studies we use GEL Geophysics in Charleston, SC. They are very qualified and have done extensive work with cemetery identification. I don't want to quote their costs, but I do suspect it would be less than site stripping – so you may wish to consider that option before stripping. The contact person is Mr. Scott Carney, (843) 769-7379, sdc@gel.com. Feel free to mention that I suggested you contact him. Should you pursue this approach I would be interested in learning of their results. On the other hand, if you wish to pursue site stripping, let me know and I will explain the process in more detail and provide you with a more definite budget.

Summary

In conclusion, the penetrometer study was inconclusive. We were unable to identify specific plots that might be identified as a burial. The vegetation and topography, however, are common for historic cemeteries. It would be better to err on the side of caution and assume that this is a cemetery. However, I understand that it is your priority to identify if this area is a cemetery. If you still find that blocking off the area is not an option, I would recommend the use of GPR or stripping to look for grave shafts.

I am enclosing our invoice for the work at the agreed rate.

We appreciate you contacting us and providing the opportunity to work with you. If you have any questions concerning the findings, please contact me at 803/787-6910 or by e-mail at trinkley@chicora.org.