

Proposal for non-invasive topographic and magnetometry surveys at Chapman State Park, MD intended to identify the nature and extent of archaeological features.

Project directors:

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Overview

The following document provides an outline of a proposed first season of research, namely a magnetometry survey and topographic survey, intended to help identify the nature and extent of archaeological features within the area surrounding Mt. Aventine in, Charles County, MD. This project will use students from Howard Community College within an inter-disciplinary research study that will combine non-invasive survey methods with archival research to identify the nature and extent of the archaeological features associated with the historic development of this site. In doing so, this project will rely on the generous support and collaboration of Dr. Lewis Somers of Geoscan Research USA and Archaeo-Physics LLC, and Dr. James Gibb of Gibb Archaeological Consulting. These surveys are expected to take place over two consecutive weekends in September 2011.

Mt. Aventine is the main house associated with a nineteenth century plantation, located in western Charles County, Maryland, adjacent to the Potomac River (Little, 1994). The Chapman family owned and developed this land from the mid-eighteenth century, and it is the location and extent of this and of any potentially earlier occupation and activity that provide the basis for this research proposal.

Magnetometry survey offers the most rapid ground coverage of the various non-intrusive archaeological survey techniques and responds to a wide variety of geomagnetic anomalies caused by past human activity including thermoremanently magnetized features such as kilns and furnaces as well as in-filled ditches and pits (Jones, 2008:20-21). Fired brick, ceramic and metal objects can also produce strong magnetic readings. The potential for geophysical techniques to assist in decisions relating to cultural resource management is becoming increasingly recognized by United States agencies such as the Department of Defense (Somers and Hargrave, 2003). When combined with a topographic survey, the data produced from this magnetometry survey has the potential to provide valuable information on the location, nature and extent of archaeological features and human activity within and around Mt. Aventine. When used in conjunction with the historical archives, these features may be attributable to known buildings and activities on-site. This data also provides the potential to add to and enhance our understanding of the site, currently only known via its documentation in written sources.

Significance

This project is centered on establishing data to help answer three key research questions:

1. What is the degree of preservation and extent of sub-surface archaeology in the open grassland areas within and around Mt. Aventine?
2. What is the potential for non-invasive survey (specifically a combination of magnetometry survey and topographic survey) in identifying and interpreting archaeological features of the eighteenth and nineteenth centuries in this region?
3. How will the findings of these surveys support and/or contradict the narrative for this site available from a study of the historical archives associated with Mt. Aventine (using Little, 1994 as a starting point for relevant archives)?

This project will provide new data which may prove significant in the future management of this site by the DNR and the educational programming coordinated by the Friends of Mt. Aventine and Chapman State Park. In so doing, the effectiveness of non-invasive archaeological survey applications as a means of archaeological enquiry will also be demonstrated.

In addition to providing new data and clarifying current research questions, the inter-disciplinary nature of this project will expose students from Howard Community College to the applications of physics, math, geology, archaeology and history as part of this research. This project reflects Howard Community College's values by providing student training and educational opportunities via collaborations with leading companies and researchers, within a framework of sustainable cultural resource management. Furthermore, the results from this project will be used as part of a grant request to the National Science Foundation for the purchase of geophysical survey equipment for future use by students within the department of Social Sciences at Howard Community College.

Objectives

The objectives of these surveys are as follows:

- To provide an overview of probable archaeological features within the grassland areas of Chapman State Park.
- To attempt to identify the exact location and extent of documented features including the eighteenth-century Chapman home; a speculated timber-frame building, which could be indicated by large cornerstones (Somers, pers. comm.), and family cemetery (Little, 1994: 5). There are also regional parallels for earlier earthfast structures with or without a brick foundation and cellar (Gibb, pers. comm.).
- To demonstrate the effectiveness of magnetometry survey for the prospection and interpretation of Colonial archaeology within the region.
- To provide opportunities for anthropology and history students from Howard Community College to receive training in archaeological survey methods and archival research.

- To support the Friends of Chapman State Park by providing the above information for use within their own programming.

Outcomes

The outcomes of this research project will be disseminated in stages. The initial research, consisting of a magnetometry survey and topographic survey of open grassland areas surrounding Mt. Aventine will be accompanied by a survey of historical archives pertaining to the extent and use of the site in the eighteenth and nineteenth centuries. Results from this two-fold approach will be disseminated by the project directors with the assistance of students and project collaborators in the form of a report for use by the DNR and Friends of Chapman State Park.

A second stage of dissemination and publication will result from the subsequent analyses of this research, which may include conference papers and journal articles written in collaboration by the project directors, project collaborators and/or undergraduate students.

Equipment and Methodology

The first stage to the non-invasive survey will be to establish a grid extending across the survey area. This will be achieved by using a Sokkia SET 310 total station to create a known point (STN), the location of which will be tied into a permanent feature on-site (i.e. corner of a building) so that no physical marker of this point need remain in situ. From this known point, a series of temporary grid markers will be laid out at 100 meter intervals across the survey area. These temporary markers will be 2" wooden survey stakes, which will be inserted approximately 6" in to the ground. This is the only invasive aspect of these surveys. Once these surveys are complete, the stakes will be removed. With the grid established, both the topographic survey and magnetometry survey can be conducted.

Topographic survey:

This survey will use a Sokkia SET 310 total station with a single prism to produce a topographic survey with points taken at 5 meter intervals. In areas of potential interest, the density of recorded points will be higher.

Magnetometry survey:

This survey will use a Geoscan fluxgate gradiometer (FM 36 or 256). Traverses of 100 meters in length will be walked (where feasible), with sampling intervals of 0.25 meters and traverse separations every 0.5 meters.

Schedule

This research is anticipated to take place over two weekends in September. On the weekend of September 3rd, 2011, the survey grid will be established. On the weekend of September 10th 2011 the topographic and magnetometry surveys will take place. This latter survey may continue in to the Monday or Tuesday of the following week (12th and 13th).

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