FIGURE 3. Thomasina Soucy of Acadia First Nation with a fragment of rolled trade copper, an artifact encountered regularly at the site. (Photo courtesy of the Nova Scotia Museum.)

Mi'kmaq tools, strips of European copper rolled and folded, an iron spear point, and the variety of European trade beads all speak to early interactions and exchange. Finally, there are traces of the Basque uncovered in the deepest layers of the midden feature. Do such artifacts link to the time when the Basque and French overlap in the Atlantic northeast or to an earlier period in New France? Comparative analysis is providing clues. We are excited for season three and for the results of recent Lidar data collection, faunal analysis, radiocarbon dating, and ceramic identification.

Modern Archaeology Meets Halifax's Old Burying Ground (*submitted by Jonathan Fowler, Vanessa Smith, and Wesley Weatherbee, Saint Mary's University*): The Old Burying Ground, also known as St. Paul's Cemetery, is the oldest cemetery in Halifax, Nova Scotia. It was established in 1749—the same year the settlement was founded—and continued in busy operation until the 1840s. The cemetery has undergone several modifications and refurbishments, and in 1991 was declared a national historic site of Canada, the first cemetery in the country so recognized. Canada's *Register of Historic Places* cites "the rich variety of styles, poignant images and carving skills displayed on its extensive collection of grave markers" as part of the justification for commemoration.

In an effort to assist The Old Burying Ground Foundation in managing and interpreting the site, our project, launched in 2018, is applying modern archaeological methods to the tasks of mapping and recording the cemetery, both above- and belowground. In this effort we are building on the work of researchers whose efforts have emphasized historical connections and art-historical interpretations (e.g., Shimabuku and Hall 1981; Trask 1978, 2015). Our project outputs will include the use of GIS as a tool for resource management and research and a new website to facilitate public access to information about the Old Burying Ground.

The project's first phase involves a mapping exercise to accurately plot the location of approximately 1200 stones and tabular monuments. For this we are employing a Leica Viva GS14 GNSS antenna, which allows us to rapidly map the stones with subcentimeter accuracy. The instrument, affectionately dubbed "Her Majesty" because of the imperious digital voice residing within, is generally well suited to the task. We noted an improvement in satellite reception with the loss of leaves at the end of the season, and though Her Majesty remains temperamental at times, we expect to be able to survey most of our points with the GS14 by the end of the season. Any remaining problem areas can be filled in later with the total station.

We also conducted a series of geophysical surveys in the autumn of 2018, employing both electromagnetic-induction (EMI) and ground-penetrating-radar (GPR) techniques. The former, which covered the entire site at 50 cm interline spacing, employed the Geonics EM38B in vertical dipole mode, while the latter employed a Noggin 500 by Sensors & Software in a test grid measuring 10 m square. Even though the GPR survey area was small, with a transect interval of 20 cm, it is nonetheless a dense and informative data set. It shows us, among other things, the course of a disused path no longer visible on the surface (Figure 1). Additional GPR surveys will be scheduled next season.

A notable early result of the extensive EMI survey is a soil map of the site based on variations in ground conductivity (Figure 2). When deployed in vertical dipole mode, the EM38B effectively measures this soil property in millisiemens per meter to a depth of approximately 1.5 m (5 ft.) (Clay 2006:83), but most effectively to less than 1 m (Dalan 2006:177). Because soil conductivity is significantly determined by moisture content, which is itself significantly a by-product of soil-particle size, electrical conductivity may be interpreted as a proxy for soil type and hydrology. In this case, we see broadly varying (i.e., probably naturally determined) changes in soil conductivity ranging between about 5 and 17 millisiemens per meter, consistent with a mixed/loam soil (Clay 2016:83).

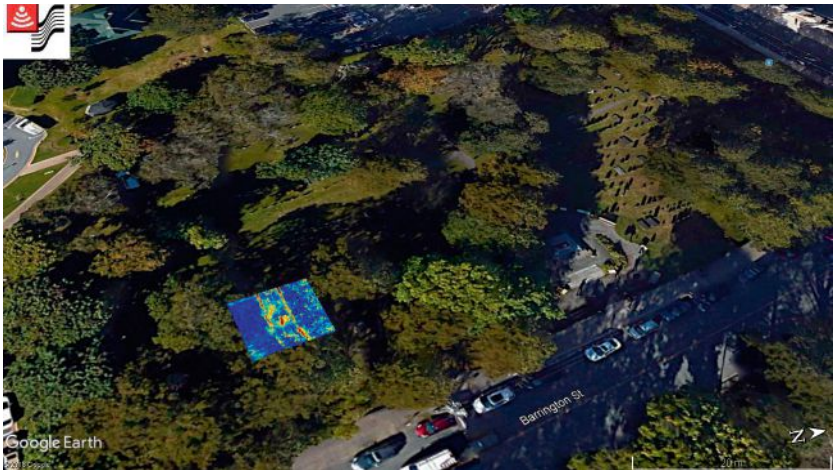

FIGURE 1. GPR slice map revealing a disused path through the cemetery. Though only superficially buried, this feature is not visible on the surface.

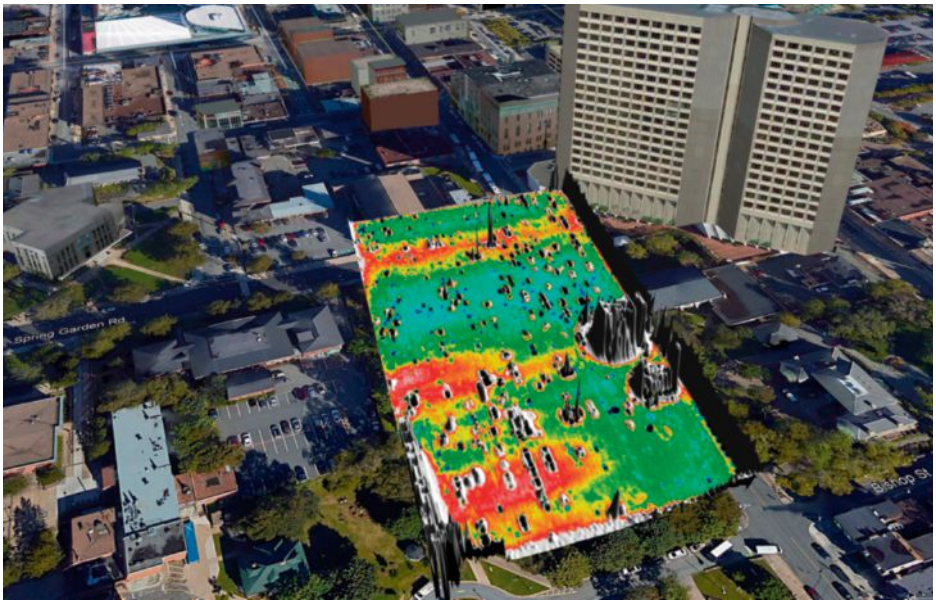

FIGURE 2. Soil-conductivity map showing natural soil changes in the cemetery. Localized spikes in the data are mostly attributable to the iron fence bordering the property, iron elements in some of the monuments, and lead flashing used to conserve several of the stones.

Another component of the project has been to digitize an archive of older, medium-format black-and-white negatives, transferring this significant body of data into a more accessible format. In 1984, in advance of the last major refurbishment of the cemetery, The Old Burying Ground Foundation commissioned photographer Kathleen Flanagan to conduct a comprehensive photographic survey of the site's extant monuments. The photography was linked to the production of a large-scale site map, with each monument assigned a unique reference number. This comprehensive photographic archive, comprised of approximately 2500 negatives, constitutes a valuable heritage resource and is itself an artifact. The images capture demographic, genealogical, and stylistic information that has degraded or disappeared in the intervening decades and represent a visual condition report of the cemetery as it was in 1984.

To date, 70% of the archive has been completed. As we work through the lengthy process of scanning and postprocessing, we are starting to see the anticipated progression of death's heads, cherubs, draped urns, and willows so artfully discussed by Dethlefsen and Deetz (1966) and Deetz (1977). The images are also revealing the shift from headstones imported from New England to regional carving traditions and choices, as well as giving voice to local stories of conflict, disease, loss, and murder.

In addition to digitization, we are working with the Nova Scotia Museum curators to locate and photograph an array of gravestone fragments from the Old Burying Ground housed in their collections in order to round out and update the corpus of gravestone imagery from the cemetery. These digital images will contribute an important visual element to GIS output planned for the cemetery. Together with the demographic information clearly legible in the older photographs and the extremely accurate mapping generated by the GNSS survey, this geospatial database will offer a robust and highly informative research tool for historians, archaeologists, and genealogists seeking to better understand the Old Burying Ground and those interred there.

Taking this work one step further, we are employing digital photogrammetry as a means of rendering 3-D models of the stones for analysis and interpretation using the structure-from-motion software, Agisoft Photoscan. Structure-from-motion software is rapidly becoming a part of the modern archaeological tool kit for documenting, mapping, analyzing, and presenting heritage resources (Chibunichev et al. 2018; Howland et al. 2014). The Old Burying Ground is well suited to the application of digital photogrammetry for the purpose of producing a versatile digital record of heritage monuments in their current state of preservation.

Photography-collection methodologies for documenting stones vary with the level of detail required. Three-dimensional models intended for presentation are produced using relatively small numbers of digital photographs taken in sequence in 360° around the monument. A model of the headstone of John and Jane Conway uses only 27 photographs captured with a Samsung Galaxy Note 9, and was processed in only 5 minutes and 31 seconds using low-quality settings at the sparse- and dense-point-cloud generation, mesh generation, and texture-mapping stages (Figure 3). The number of photographs needed to obtain the degree of overlap required for this 3-D model was low because the monument fits within the frame of the photographs.

Producing 3-D models for detailed analysis requires more photographs, as do cases with heavily weathered epigraphy, which necessitate capturing photographs closer to the monument. French researchers have recently investigated the application of digital photogrammetry in order to visualize highly weathered epigraphy with promising results (Samaan et al. 2016). To refine our methodology for recording subtle epigraphic details, a digital single-lens reflex camera will be used to capture the photographs and the camera will be calibrated using Agisoft Lens. The large file sizes and high-end hardware necessary to visualize the higher-resolution 3-D models make these tools less accessible overall, and therefore justify the expedient production of lower-quality models for general documentation and presentation. Our future endeavors will employ this methodology in hopes of recovering lost inscriptions at the site. By making use of archaeology's modern tool kit in the study of the site, we hope this multiyear project will not only assist community members in managing the cultural resource, but will also allow this remarkable place and its many stories to be better shared with the broader public.

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FIGURE 3. A digital-photogrammetry-derived 3-D model of the grave marker of John and Jane Conway located in the Old Burying Ground. (Click on video in original digital edition.)

Canada - Québec

A Massive Stone Structure, Rich Privies, and Other Surprises: **Université Laval's Field School at the Anderson Site, Québec City** (*submitted by Rachel Archambault, Serena Hendrickx, and Anne Laberge, master's students, Université Laval*): The Université Laval field school in archaeology provides practical training for undergraduate and graduate students. Undergraduate students typically experience their first excavation and become familiar with the different field methods. They are also encouraged to promote archaeology by talking with visitors, which teaches them how to explain archaeology and the importance of involving local communities. The summer of 2018 was the second year of the Université Laval field school at the Anderson site. This year, we opened two units, 3A and 4A, located in what we thought was the backyard of Hedley Lodge, built by the Anderson family in 1812–1814 and demolished during the 1960s. The site was named after Anthony Anderson, an English farmer and butcher, who bought the land in 1812. Archival sources indicate the Anderson household was a lively place for weddings and agricultural fairs (Houde-Therrien et al. 2018).

In 3A, we found three wooden structures, preliminarily interpreted as two trash pits and one privy (Figure 1). The first structure was the bottom of a wooden barrel, filled with organic sediments and raspberry seeds. The top of the barrel was probably ripped off when they demolished the house or when they paved this area, so we only had less than twenty centimeters of deposit. Within this small deposit, we found a lot of small animal bones (of fish and of dogs and other small mammals), ceramic sherds, medicine bottles, textiles, and buttons. The second structure was a small rectangle made of wood pieces, the top of which was likely ripped off, which contained a few artifacts (glass, ceramics, and an artillery button) but no organic sediments. Based on the material culture recovered, we can date both