To Make Memory Material:
Preliminary Geophysical Surveys at Two Potential Burial Sites in Birchtown, Nova Scotia

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Abstract

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By invitation from the community, a geophysical survey was performed on two potential Black Loyalist burial sites in Birchtown, Nova Scotia, in a preliminary effort to verify local traditions regarding their existence and location. This thesis investigates the suitability of geophysical techniques on these late 18th-century burial sites; drawing on oral histories, historical documentation, and comparison against similar burial sites to explore potential social and geographic influences on early Black Nova Scotian burial traditions. Longstanding oral traditions and ethnographic observations of memorial behaviours exhibited by members of the Black Loyalist descendent community appear to support one surveyed site as a memorial space, despite ambiguous geophysical results obscuring its historicity. The results highlighted a contrast in how materiality is used to define Black Loyalist burial landscapes from the archaeological, historical, and community perspectives, and underscores the importance of community engagement in guiding archaeological investigations where physical and historical evidence is sparse.

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Concerning my methodology, special thanks go to Laird Niven and Dr. Katie Cottreau-Robins for introducing me to Black Loyalist archaeology in Nova Scotia and providing considerable insight into the Birchtown area and Black Loyalist history from an archaeological perspective. The assistance of Dr. Jonathan Fowler and Wesley Weatherbee were also invaluable for navigating the various quirks and pitfalls of geophysical survey, graciously providing both access to survey resources and some much-needed technical support.

I would also like to thank several of my friends and family for their assistance and support: particularly my mother Janice Michels, who enthusiastically accompanied several of my trips to Shelburne to assist with data collection; my father (and personal librarian) David Michels, who provided much aid in research and writing; and my friend Logan Robertson who not only provided ample motivational support, but also considerable guidance in my application and receipt of an NS Heritage Research Permit.

Chapter 1: Introduction

1.1 Project Background

October 2023 marked the 20th anniversary of the reinterment of African remains at the New York African Burial Ground. Its rediscovery in the 1990s and the success of community engagement in the burial ground's preservation highlighted a growing desire from Black communities throughout North America to locate and preserve sites of Black community identity, in recent years seeing the foundation of multiple organizations dedicated to locating and curating burial sites, such as the Hamilton Hood Foundation in the Southern USA and REACH in New Brunswick.[1] In addition to the locating of these burial sites, greater attention in Canada has been given more recently to the search for unmarked burials of Indigenous children at various Residential School sites across the country, including Nova Scotia, garnering public interest and discussion around researchers' use of geophysical survey technologies as a faster, less intrusive, and ideally more respectful method of testing for unmarked burials belonging to a minority population.[2]

[1] U.S. National Park Service, 'Reinterment'; Burch, 'Nearly "Erased by History": African Americans Search for Lost Graves'; Bird, 'New Nonprofit Seeks to Locate and Record Gravesites of Black People in New Brunswick'; 'Hamilton Hood Foundation, Inc. - Preserve. Educate. Inspire.'; 'Remembering Each African Cemetery's History In NB'; Martin and Everett, 'A Methodology for the Self-Training and Self-Assessing of New GPR Practitioners: Measuring Diagnostic Proficiency Illustrated by a Case Study of a Historic African-American Cemetery for Unmarked Graves', 311–12; Martindale et al., 'The Challenges of Signal Interpretation of Burials in Ground-Penetrating Radar'.

[2] Fowler and Lewis, 'Investigations at the Shubenacadie Indian Residential School Site'; Gollom, 'How Radar Technology Is Used to Discover Unmarked Graves at Former Residential Schools'; Fowler et al., 'Geophysical Surveys at the SS Atlantic Heritage Interpretation Park', 9.

It is in this context that Saint Mary's University hosted a mini-conference on community-directed and -oriented research.[3] A preliminary presentation of this project, then vaguely outlining the use of geophysical survey to assess commonalities in Nova Scotian Black Loyalist land use, drew the attention of a member of the board of Atlantic Canada's Black Loyalist Heritage Society and an invitation was extended to use geophysical survey technology to investigate multiple sites around the Birchtown area, including two potential burial sites.

Motivations for investigating the two potential burial sites as expressed by a Heritage Society board member included a verification and/or delineation of burials within a small memorial park managed by the Society which is at risk of coastal erosion, and the investigation of neighbour testimonies regarding potential burials at a nearby property, which may be at risk or already destroyed by development.[4] Both sites are currently owned and managed by the Black Loyalist Heritage Society and hence under their stewardship and protection, but confirmation and delineation of burials at either site would allow the Society and the associated Black Loyalist Heritage Center Museum Complex in Birchtown to better assess their allocation of resources for the long-term preservation and maintenance of any burials or associated features.

The Black Loyalist Heritage Society (BLHS), known briefly at their inception as the Shelburne County Cultural Awareness Society has been present in the community collecting histories and genealogies regarding the Black Loyalists and their descendants in the Birchtown

[3] "Community-Based Work in Atlantic Canada" was a one-day multidisciplinary conference hosted by the Atlantic Canada Studies (ACST) department and the Gorsebrook Research Institute at Saint Mary's University in March, 2022. It invited university faculty, industry professionals, and ACST students to present and discuss their local research or collaborative projects which featured significant guidance and/or collaboration with various communities throughout the Atlantic Canadian region.

[4] Graham Nickerson, in discussion with the author, May 2022; Hank Falk, in discussion with the author, November 2022.

area since 1991.[5] Oral histories collected by the Society incidentally as well as by active researchers including former BLHS president Elizabeth Cromwell, archaeologist and historian Carmelita Robertson,[6] 1930s photographer and ethnographer Clara Dennis,[7] and many others helped provide information about life in Birchtown in subject and detail not recorded in official documentary sources such as censes, deeds, and church records. Among these collected oral histories were several local traditions widely held by the community, but not currently supported by available archaeological, material, nor documentary evidence. According to members of the Heritage Society, these traditions held that the small peninsular park identified with plaques and a sign as the "Black Burying Ground" was indeed as labelled, and that local mothers would caution their children to act appropriately around that space out of respect. Similarly, some less-common "rumours" shared by some of the older members of the community suggested that the labelled Black Burying Ground was in fact incorrectly placed, and that burials were located instead a short distance away at what is now the Birchtown Community Hall.[8]

Although historical graves are often subtle and may be difficult to identify with geophysical survey where they occur in small numbers, the sensitive nature of potential human remains gave preference to non-intrusive methods of investigation out of respect for any individuals that may have been there interred. The reasoning behind the selection of

[5] 'The Society | Black Loyalist Heritage Centre & Society'; Niven and Davis, 'Birchtown: The History and Material Culture of an Expatriate African American Community', 62; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 4.
[6] Whitehead, *Black Loyalists*, 181–86.
[7] Ibid., 159.
[8] Nickerson, May 2022; Falk, November 2022.

geophysical survey techniques considered that as a communal burial site, grave shafts at either surveyed site would likely have been grouped with a patterning and density that would be more easily identifiable using ground penetrating radar and electromagnetic induction than comparable burials found in isolation. The assessment of the geophysical survey results, alongside an archaeological assessment of the landscape under ideal conditions would indicate the likelihood of burials being present at either location, based on known Anglo-American trends in 18th and 19th century mortuary tradition, as well as any potential markers of community identity creation and difference as identified in existing Black Atlantic research which may demonstrate use of either site more specifically by Nova Scotian Black Loyalists.[9]

This project is intended as a preliminary study, assessing the utility of geophysical survey technology within a known area of high archaeological potential but which has been primarily investigated in the past through traditional historical and intrusive archaeological methodologies, as well as to identify geophysical indicators of potential burials should environmental conditions prove favourable.

[9] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 266–67; Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 72–78; Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 101–2.

1.2 Historical Background

Loyalism and Birchtown

Many Black Americans joined the British forces during the Revolutionary War following the Dunmore Proclamation of 1775, which promised emancipation and land to any Black individuals willing to defect or otherwise escape slavery. The proclamation was controversial, and the offer expired upon the arrival of military support from Hessian mercenaries, but the impact this exodus of cheap labour had on the American Revolutionary resources meant that some Black migrants continued to be accepted by British forces up to the end of the war.[10]

Beyond the Black population, many promises of land and resources had been made to Americans more generally who had supported or otherwise aligned themselves with a continuance of British colonial rule in North America, with the assumption that British forces would easily quell the rebellion and be able to (re)distribute the considerable swaths of land involved. Their eventual defeat and significant concession of territory to the new United States left the British government with far less land and fewer resources to fulfill these promises and required the evacuation of thousands of Loyalists to elsewhere in the British Empire. As many as 30 000 Loyalists were removed through New York and granted land in what is now Nova Scotia and New Brunswick, creating significant demand for relatively little available property.[11]

There is a common assumption that the majority of the (white) Loyalists were older, wealthier, and generally more conservative landowners, based on the principle that they had

[10] Whitfield, *Blacks on the Border*, 18; Walker, *The Black Loyalists*, 1–4; Whitehead, *Black Loyalists*, 68–69, 115–16.
[11] Walker, *The Black Loyalists*, 12, 18–20; Whitfield, *Blacks on the Border*, 18–19; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 57–58; MacKinnon, *This Unfriendly Soil*, 50–52.

been well-supported by a British Colonial government and had more to lose in the American Revolution than those of lower social and economic status. This idea has been contested in more recent literature, with historians such as Neil MacKinnon, Jerry Bannister, and Liam Riordan highlighting the plurality of motivations for taking either side of the war,[12] even within the white British-American population. This plurality is especially obvious in considering the motivations of Black Loyalists as compared to their white peers, but it should additionally be noted that a variety of motivations and loyalties were present even within this smaller population of Black Loyalists alone. While many opted to join the British forces due to their promises of emancipation, some members of this Black Loyalist population such as Stephen Blucke had been born free and would not have benefited as directly from these promises.[13] There has also been some discussion amongst scholars regarding the inclusion under the label of "Black Loyalism" of a sizeable Black population which had remained enslaved to emigrating white Loyalists, and had undergone the migration from the new United States into Nova Scotia and New Brunswick without being granted emancipation.[14] For the purposes of discussing the majority-free Birchtown and the locating of community infrastructure and land-use projects such as burial sites, a certain degree of agency in planning and implementation must be assumed. For that reason, "Black Loyalist" will be used in the context of this paper to refer specifically to the free and emancipated population, with acknowledgments that the co-

[12] MacKinnon, *This Unfriendly Soil*, 62; Bannister and Riordan, *The Loyal Atlantic*, ix–x.
[13] Niven, *Was This the Home of Stephen Blucke?*, 15–16.
[14] Whitfield, 'Black Loyalists and Black Slaves in Maritime Canada'; Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 28–29; Cottreau-Robins, 'Searching for the Enslaved in Nova Scotia's Loyalist Landscape', 125–26; Whitfield, *Blacks on the Border*, 20–22.

existence of an enslaved population and the plurality of motivations within even the free community are likely to have had influence over those planning and land-use decisions.

Establishment of Birchtown

Following Great Britain's defeat in the American Revolutionary War, the local British North American government was left with far less land and far fewer resources for distribution to Loyalists, who had been promised compensation for resources lost, and rewards for active service during the war. The large volume of British Loyalists evacuated through New York following the war effectively doubled the population of New Brunswick and Nova Scotia, requiring the limited land and provisions to be distributed to a larger population than expected. This lack of resources resulted in smaller parcels of land, long delays, and generally less government support for all migrants evacuated from the United States into Nova Scotia and New Brunswick.[15] White settlers, especially wealthier Loyalists, were typically given higher priority by the government based on the argument that they had suffered greater loss of property and value due to the war. They typically received larger parcels of better, more arable land, and received these land grants far sooner than the Black Loyalists, many of whom were made to wait years.[16]

Regardless of their social status, as part of the larger body of Loyalists being resettled, several areas around Nova Scotia were divided into land grants which were specifically intended

[15] Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 22–24; MacKinnon, *This Unfriendly Soil*, 49–52; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 2.
[16] Walker, *The Black Loyalists*, 19–24, 43–45; MacKinnon, *This Unfriendly Soil*, 51; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 57.

for Black Loyalists. With a population of over 1500 in 1784,[17] the largest of these new free Black settlements was Birchtown, named after Brigadier General Samuel Birch whose signature legitimized the majority of early emancipation certificates for Black Loyalists evacuated through New York.[18]

The general lack of resources and administrative support meant that many of the determinants of land use and development in the Birchtown area were likely severely dependent on, and limited by their immediate environment before cultural preference, to a greater degree than the majority of their white peers in Shelburne. Their lack of initial capital and government or social support meant that many of the Black Loyalists were attempting to build a community with far less than other Loyalist settlements, including fewer architectural resources further limiting construction.[19] The land they received was undeveloped with the requirement that it be developed for grants to be retained, and their arrival in Birchtown as late as September of 1783 gave them little to no time to clear land and construct adequate shelters before the onset of winter.[20] Parcels of land intended for farming had been promised to some members of the Black Loyalists, but were not officially granted for legal use until 1787,[21] and those plots eventually received were often of poor soil and located a considerable distance from

[17] Black Loyalist Heritage Centre & Society, 'Muster Book of Free Blacks'; Niven, *Was This the Home of Stephen Blucke?*, 17; MacKinnon, *This Unfriendly Soil*, 50.
[18] Walker, *The Black Loyalists*, 11–12, 22; Niven and Davis, 'Birchtown: The History and Material Culture of an Expatriate African American Community', 60; Niven, *Was This the Home of Stephen Blucke?*, 15; Niven, *Birchtown Archaeological Survey (1993)*, 2.
[19] MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 73–75.
[20] Niven, *Birchtown Archaeological Survey (1993)*, 2; Walker, *The Black Loyalists*, 19–20; Whitehead, *Black Loyalists*, 159–60.
[21] Burling, 'Bill for Surveying Birch Town', 20 November 1787; Niven, *Was This the Home of Stephen Blucke?*, 18–19; Walker, *The Black Loyalists*, 22–24.

the initially granted plots in town on which the grantees had built their homes, further encumbering attempts towards subsistence and self-sufficiency.[22]

As Nova Scotian Loyalists were being settled in 1783, the Icelandic volcano Mount Laki erupted, resulting in one of the longest and coldest winters on record for Eastern Canada and the United States, followed by an unusually cool and dry summer.[23] The more northern climate of Atlantic Canada was already far colder than many of the relocated Loyalists had been accustomed to, and the additional climatic effect of this volcanic winter severely impacted the amount of food the new settlers were able to grow on their land. Government records indicate that even the longer established pre-Loyalists farms in Nova Scotia were unable to produce enough food to support their own inhabitants, necessitating government relief for a significant portion of the population, beyond just the new Loyalist settlers.[24] Whether due to government mismanagement of distribution or due to the unanticipated volume of Loyalist immigration, the first year's issue of provisions for 1783-84 proved to be insufficient and one report from John Clarkson to politician and abolitionist William Wilberforce in 1791 had claimed that many of the Black Loyalists had not received any provisions at all, even after supplementary rations had been sent from Quebec.[25]

When a smallpox epidemic descended on the province in 1787, many in the Black Loyalist communities were already struggling with starvation and food insecurity. Disease, starvation, and in some cases exposure to elements caused another rise in fatalities for

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[22] Niven and Davis, 'Birchtown: The History and Material Culture of an Expatriate African American Community', 60; Niven, *Was This the Home of Stephen Blucke?*, 18–19.
[23] Wood, 'Climatic Effects of the 1783 Laki Eruption', 64–69.
[24] Walker, *The Black Loyalists*, 52–53.
[25] Ibid., 43–44.

residents in Birchtown, as the more precarious members of the community parted with belongings including clothing in search of food and employment, as recalled by preacher and community leader Boston King:[26]

> *[In the late 1780s], the country was visited with a dreadful famine, which not only prevailed at [Birchtown], but likewise at Chebucto, Annapolis, Digby, and other places. Many of the poor people were compelled to sell their best gowns for five pounds of flour, in order to support life. When they had parted with all their clothes, even their blankets, several of them fell down dead in the streets, thro' hunger. Some killed and eat [sic] their dogs and cats; and poverty and distress prevailed on every side; so that to my great grief I was obliged to leave [Birchtown], because I could get no employment.*[27]

After several years of environmental and social hardship and a general lack of government support, many of the Nova Scotian Black Loyalists accepted new offers for grants of land in Sierra Leone, departing for the new British colony in Freetown in 1791. Over 600 invitations were accepted by Black residents of Birchtown and Shelburne and 544 Black Loyalists travelled from Shelburne County to Halifax to emigrate onwards, comprising up to a half of Birchtown's population, including several of the community's leaders.[28] Although many Black Loyalists and their descendants remained in Birchtown and the surrounding area, the significant drop in population made sustaining community infrastructure difficult and several local services,

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[26] Ibid., 53.
[27] Ashton, 'Memoirs of the Life of Boston King, a Black Preacher (1798)', 30.
[28] Walker, *The Black Loyalists*, 123,128-29; Niven, *Was This the Home of Stephen Blucke?*, 20; Whitehead, *Black Loyalists*, 165–67.

such as Col. Blucke's school, were forced to close.[29] Infrastructure such as a burial ground may have paralleled this sharp decline in use, contributing to its modern ambiguity in location and maintenance.

1.3 Contemporary site assessment

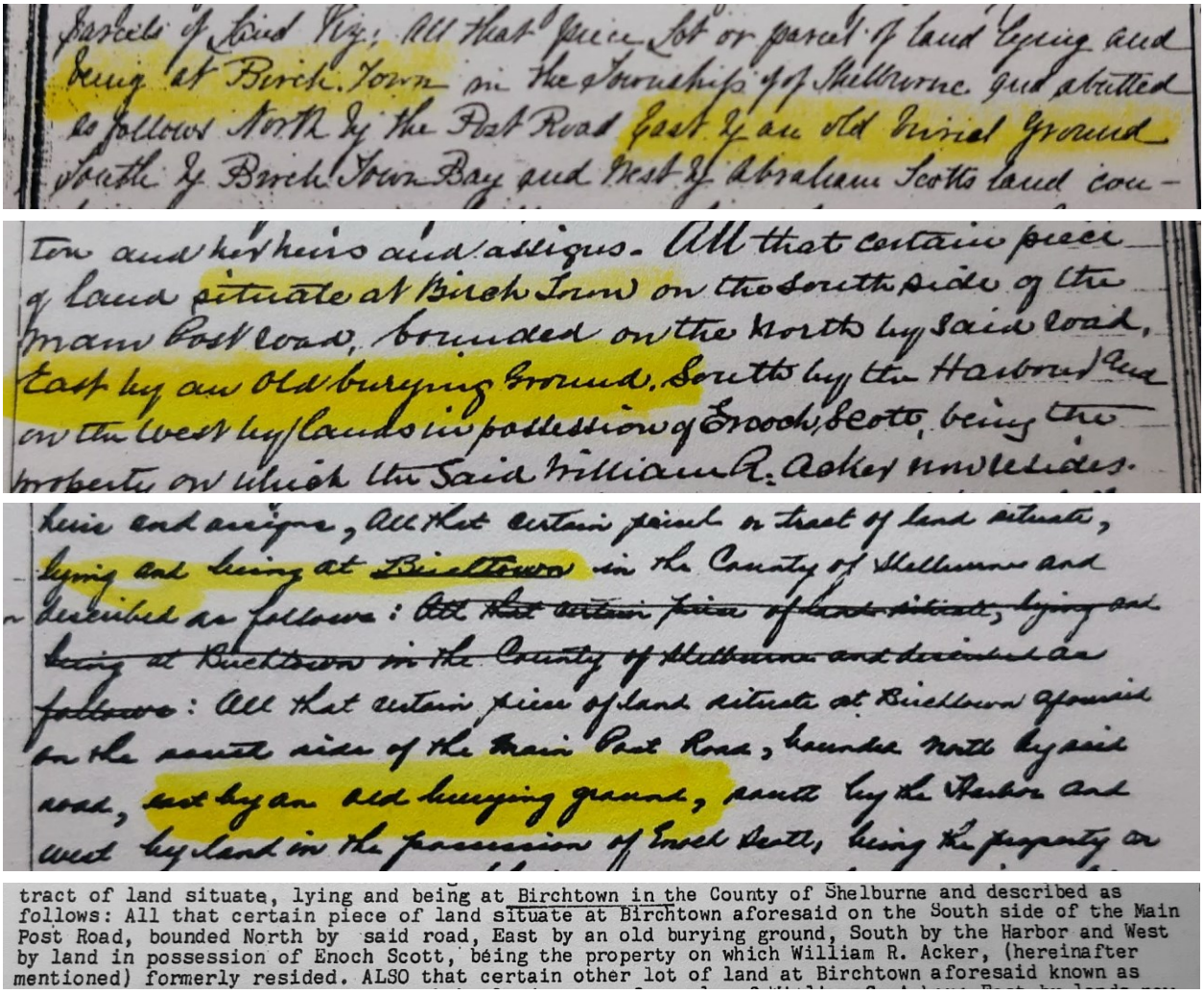
Both potential burial sites surveyed were done so by invitation from members of the Birchtown Museum Complex and Black Loyalist Heritage Society, who had identified these sites based on local oral histories. The majority of these collected testimonies largely agree on the location of the demarcated heritage site park, but the possibility of burials on the property of the current Birchtown Community Hall appears to be more contentious. Personal communication with members of the Black Loyalist Heritage Society recounted testimony from a neighbour, now deceased, who had claimed to have witnessed an accidental exhumation of "definite human remains" including skulls and other identifiable features during either the initial construction of the Community Hall building, or subsequent renovation projects undertaken in the 1960s and 1970s.[30] Though the fate of these witnessed remains is not known, it was suggested likely they had been reburied with construction infill.

Neither site of investigation features grave markers nor other identifiable indicators of burial, but oral testimonies and historical property records (Figure 1) favour a small coastal peninsula managed by the Black Loyalist Heritage Society as the most likely location for a community burial ground. Located on the coast near the museum, the Black Burial Ground and

[29] Niven, *Was This the Home of Stephen Blucke?*, 21; Walker, *The Black Loyalists*, 387–88.
[30] Hank Falk, in conversation with the author, November 2022.; Graham Nickerson, May and July 2022.

Monument Site is easily accessible and identifiable for its manicured lawn, brick and iron gate, and a tree-shaded monument plaque installed in the park's center by The Historic Sites and Monuments Board of Canada (HSMBC) in 1996 (Figure 2, Figure 3).[31] The plaque recognizes the landing of the Black Loyalists in Canada as a national historic event and its position in what is assumed to be a burial ground lends some importance and protection to the site, but a lack of formal historical documentation regarding land use and community structure in the Birchtown area likely prevents any more specific recognition of the plaque's installment site. The plaque's installment there may be something of a compromise; while no formal record of land use exists which would be sufficient for the HSMBC to recognize the park as a cemetery, local oral tradition holds that this small property is a burial ground for the community's early Black settlers and its existence is mentioned in two nearby deeds.[32]

[31] Black Loyalist Heritage Centre & Society, 'Birchtown's Historical Site', accessed 17 October 2021, https://Blackloyalist.com/?page_id=10.
[32] Ibid.; Wylie, 'Birchtown, Nova Scotia', 90–91.



Parcels of land Viz: All that piece Lot or parcel of land lying and being at Birch Town in the Township of Shelburne and described as follows North by the Post Road East by an old Burial Ground South by Birch Town Bay and West by Abraham Scotts land con-

tow and her heirs and assigns. All that certain piece of land situate at Birch Town on the south side of the main Post road, bounded on the North by said road, East by an old burying Ground, South by the Harbour and on the West by lands in possession of Enoch Scott being the property on which the said William R. Acker now resides.

heirs and assigns, All that certain piece or tract of land situate, lying and being at ~~Birchtown~~ in the County of Shelburne and described as follows: ~~All that certain piece of land situate, lying and being at Birchtown in the County of Shelburne and described as follows~~: All that certain piece of land situate at Birchtown aforesaid on the south side of the Main Post Road, bounded North by said road, East by an old burying ground, South by the Harbor and West by land in the possession of Enoch Scott, being the property on

tract of land situate, lying and being at Birchtown in the County of Shelburne and described as follows: All that certain piece of land situate at Birchtown aforesaid on the South side of the Main Post Road, bounded North by said road, East by an old burying ground, South by the Harbor and West by land in possession of Enoch Scott, being the property on which William R. Acker, (hereinafter mentioned) formerly resided. ALSO that certain other lot of land at Birchtown aforesaid known as

Figure 1: Excerpts of land records for a property adjacent the Black Burial Ground and Monument Park site.

From top to bottom:
deed transfer from William R. Acker to Elenor J. Acker, 1869 (Shelburne District Registry of Deeds, Book 18, p.494);
William R. Acker to Rhoda A. Harrington, 1897 (Book 33, p.463);
R. Grandy Irwin to Thomas Goulden, 1944 (Book 64, p.162);
Thomas Goulden to Albert V. Mahaney, 1968 (Book 79, p.70).

All note the existence of an "old burial/burying ground" at the approximate location of the current Black Burial Ground and Monument Park, but no more detail is provided in any of these documents. Highlights added for emphasis.

Geophysical survey for potential burials was also requested on the nearby property of what is currently known and utilized as the Birchtown Community Hall, but which was introduced to the author as "the Old Schoolhouse" (Figure 4). The history of this site is murkier, ironically owing to its continued and varied use when compared to the relative preservation of the Black Burial Ground and Monument Site. Many factors contributed to the under-representation of Black Loyalists generally, and Birchtown more specifically in the historic record. Black communities were often omitted or recorded in less detail in contemporary survey maps, and it was similarly not unheard of for non-Anglican Protestant, or for non-denominational municipal cemeteries to receive less cartographic attention where they were not immediately associated with an officially recognized church building.[33]

In order to meet community requests, the initial goal of this investigation was to attempt to verify the existence or distribution of burials at either site using non-intrusive methods, or to provide reasonable doubt should the data indicate otherwise. These surveys and assessments compared data collected through geophysical survey against patterns of land use or spatial organization identified in Birchtown or comparable mortuary landscapes elsewhere. This required investigation of potential social and environmental influences on the planning and organization of burial landscapes in an early Nova Scotian Black Loyalist context, and raised additional questions around the role of geophysical survey and materiality in the recognition of archaeological sites, especially those of historically marginalized communities. The hope was that the results of the geophysical survey would provide conclusive evidence for either an

[33] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 45–46.

existence or absence of burials at either site, but ambiguity in these results and observations of memorial behaviours exhibited at one of the two sites required additional consideration of the sites as modern social spaces, with perceptions and usage by the descendent community regardless of any ambiguous past or lack of diagnostic material culture.

Figure 2: the Black Burial Ground and Memorial Park, (above) as seen from Birchtown Road.
Below: an interpretive panel adjacent the entry gate.

Its text reads:
"Legend and oral history told that this piece of land was a burial ground for Blacks. There is no formal record of the burial ground, though historical deeds from two adjoining plots of land show that the properties border on 'the burial ground.' Families in the area remember being told not to play on the site, because it was sacred ground.

"There are no records as to who may be buried on the site, though one church record suggests that a man named John Stevens, who died in the 1800s, was buried 'on the northwestern side of Shelburne Harbour,' most likely in Birchtown. Unfortunately, most of the old church records were destroyed in a house fire.

"The burial ground is the first piece of property the Black Loyalist Heritage Society obtained. In 1996, it was recognized with a plaque from the National Historic Sites and Monuments Board of Canada. The Black Loyalist Heritage Society has constructed a retaining wall to protect the site from further water erosion. The Iron Gates located at the entrance of the grounds were donated by Dr. Clifford 'Nick' Skinner of the New Brunswick Black Loyalist Society."

Photos provided by the author.

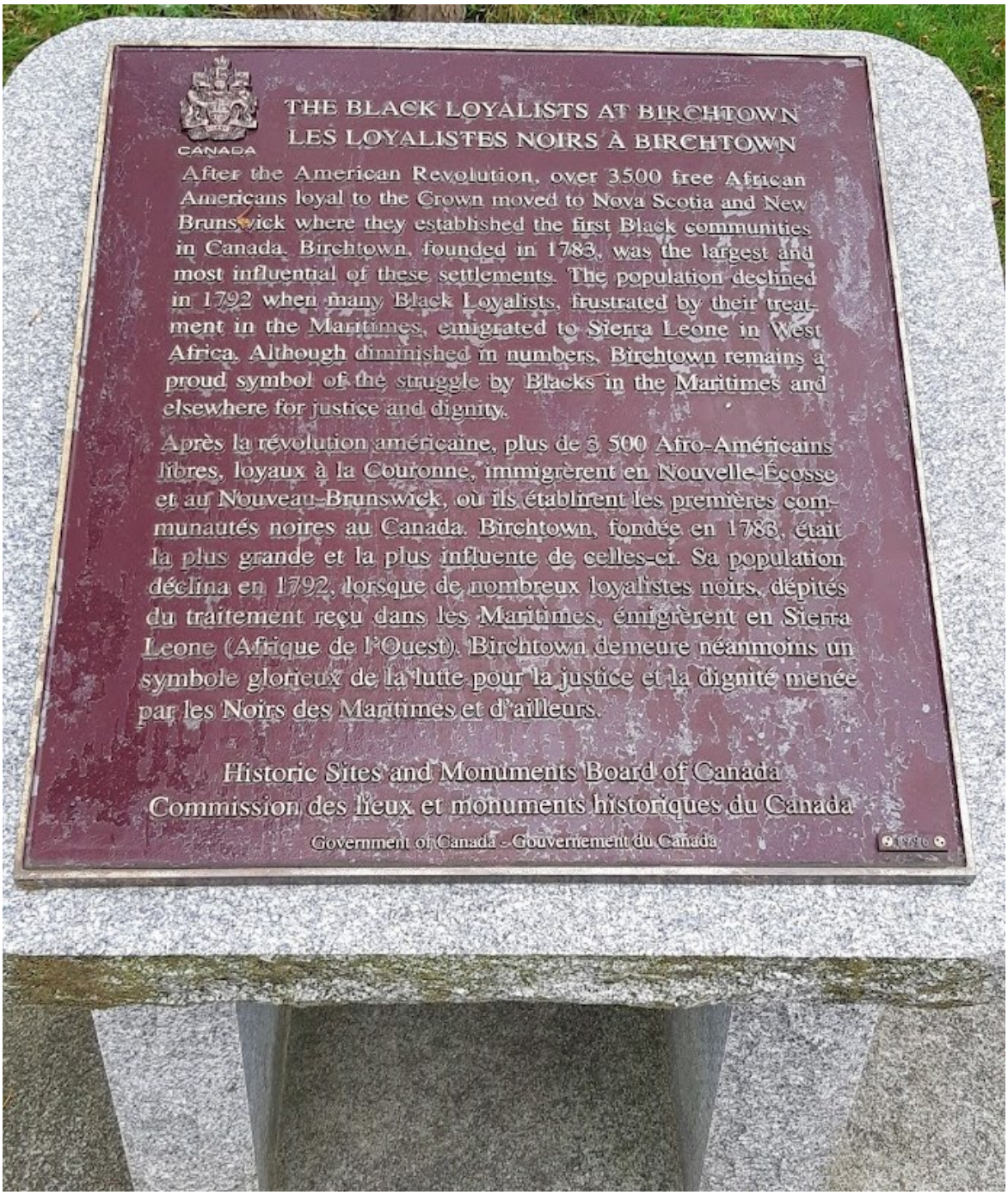


Figure 3: An HSMBC plaque installed at Birchtown in 1996. It recognizes the arrival, settlement, and departure of Black Loyalists in Atlantic Canada as a National Historic Event.

The text reads:
"After the American Revolution, over 3500 free African Americans loyal to the Crown moved to Nova Scotia and New Brunswick where they established the first Black communities in Canada. Birchtown, founded in 1783, was the largest and most influential of these settlements. The population declined in 1792 when many Black Loyalists, frustrated by their treatment in the Maritimes, emigrated to Sierra Leone in West Africa. Although diminished in numbers, Birchtown remains a proud symbol of the struggle by Blacks in the Maritimes and elsewhere for justice and dignity."

Photo provided by the author.

Figure 4: Birchtown Community Hall and front lawn during electromagnetic induction survey, as seen from Birchtown Road.

The sign on the left side of the building advertises the Lighthouse Christian Fellowship, which uses the building for religious services. Unlike at the Black Burial Ground Park, no other signage was visible at time of survey which indicated the building or property's prior use as either a school, or burial site.

Photo provided by J. Michels.

Chapter 2: Literature Review

Source material consulted to guide investigations and interpretations into the burial landscape of Birchtown looked at three general areas: the social and physical geography of Birchtown, Black and Anglo-American mortuary landscapes, and methodological comparison.

2.1 Birchtown and Nova Scotian Black Loyalists

Primary historical documents for this area are few, so a combination of contemporary journals and memoirs from Birchtown inhabitants and government officials were used alongside aerial photographs and archaeological reports to illustrate the social and physical landscape of Birchtown as a new Loyalist settlement. Memoirs from community leaders such as Boston King, John Marrant, and David George[34] were especially helpful in illustrating the dynamics of Birchtown from the emic perspective as Black residents. It should still be noted that these three memorialists were all Christian preachers; one Baptist and two Methodist, and any social or religious observations would have been influenced by Euro-Christian doctrine, although interpreted through an African-American cultural lens.[35] Additionally, each of these memoirs were written well after their time in Birchtown. Boston King's memoir, published through *the Methodist Magazine* in 1798 during his two-year stay at Kingswood School in England, recounts his life from his birth under slavery, his travels throughout the Revolutionary War, his arrival in Birchtown and conversion to Christianity, up to his eventual migration to Sierra Leone.[36] His

[34] Ashton, 'Memoirs of the Life of Boston King, a Black Preacher (1798)'; George, 'An Account of the Life of Mr. David George, from Sierra Leone in Africa: Given by Himself in a Conversation with Brother Rippon of London, and Brother Pearce of Birmingham'; Marrant, *A Narrative of the Lord's Wonderful Dealings with John Marrant, a Black : (Now Going to Preach the Gospel in Nova-Scotia), Born in New-York, in North America*.
[35] MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 18, 49.
[36] Ashton, 'Memoirs of the Life of Boston King, a Black Preacher (1798)'.

narrative is brief given its scope, but provides among the most descriptive first-hand accounts of the poverty and hardships endured in Birchtown's early years.

John Marrant also provides an account of his life, detailing being born free in New York, converting to Christianity in South Carolina, and being press-ganged to join the British forces as a musician. Dated in 1785, his account ends with his intention to move to Nova Scotia to work as a church minister.[37] His late arrival in 1787 does not provide any account of Birchtown's poor initial settlement, as King's had, but his considerable discussion regarding his relationship with Christianity and his direct invitation to preach in Nova Scotia provides some insight into what potential sociocultural weight Christianity, and Wesleyanism/Methodism specifically, may have had on Black Nova Scotian communities and their funerary practices.

The account given by David George and published by Bros. Rippon and Pearce in the Baptist Annual Register 1793 very briefly addresses his early life under slavery, but gives considerable attention to his experiences with religion and racism in the Southern USA and in Nova Scotia. In his brief memoirs he recounts the often-tense interplay of race and religion, being both welcomed and rejected by various residents of Birchtown, and his establishment of a Meeting House in Shelburne which included white congregants and may have been a flashpoint for the Shelburne Race Riots.[38]

Historic maps were also consulted, but many demonstrate a lack of detail which made discernment of planning and community organization or municipal infrastructure difficult.

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[37] Marrant, *A Narrative of the Lord's Wonderful Dealings with John Marrant, a Black : (Now Going to Preach the Gospel in Nova-Scotia), Born in New-York, in North America*.

[38] George, 'An Account of the Life of Mr. David George, from Sierra Leone in Africa: Given by Himself in a Conversation with Brother Rippon of London, and Brother Pearce of Birmingham'.

Construction records or similar documentary evidence of community change and development were requested from multiple archival and regulatory bodies, but were not available and likely nonexistent.[39] However, the combination of maps with 20th century aerial photography proved somewhat useful in assessing some more recent development and land use patterns which may be reflective of earlier community organization. This was further aided by a series of archaeological reports concerning several investigations into the Birchtown area from 1993-2000, initiated by archaeologist Steve Powell and continued under Laird Niven.[40] The sites investigated in these reports were primarily domestic and no sites were identified as mortuary or strictly religious in nature, but the recovery of artefacts and location of several structures associated with Black Loyalist occupation provided some material evidence not only of community organization, but also provided some suggestion of what resources were available to the settlers and how they were put to use. Of greatest relevance are the curatorial reports *Birchtown Archaeological Survey (1993)*, which provides a summary of initial archaeological investigations and recovered artefacts, *Archaeological Surveys in Two Black Communities, 1998* which outlines continued research into structural features in both Birchtown and Tracadie, and *Was This the Home of Stephen Blucke?* (2000) which provides a more detailed summary of Colonel Stephen Blucke's affairs in Birchtown and the materiality of a cellar feature believed to have been his original construction. A paucity of artefacts at most excavated sites may be partly explained a short period of occupation and subsequent removal of goods with the out-

[39] Goreham, 'Email Message to Author', March 2023.
[40] Powell, *Archaeological Surveys in Two Black Communities, 1998*; Niven, *Birchtown Archaeological Survey (1993)*; Niven, *Was This the Home of Stephen Blucke?*; Niven and Davis, 'Birchtown: The History and Material Culture of an Expatriate African American Community', 62.

migration to Sierra Leone in 1792, but may also demonstrate the tendency for poverty as described in memoirs, especially when contrasted against the one apparently-middle-class site located near the harbour which was identified as likely belonging to Col. Blucke.[41]

Secondary literature and historiographies of Birchtown generally neglect any mention of burial spaces, likely due to the same dearth of primary materials. They are, however, useful for contextualizing and illustrating the various social, political, and environmental elements influencing the development of Birchtown. Walker's book *the Black Loyalists: the Search for a Promised Land in Nova Scotia and Sierra Leone 1783-1870* covers a significant breadth of Black Loyalist history, from their inception during the Revolutionary War through to their establishment, challenges, and governmental negotiations in Sierra Leone. Walker pays greater attention overall to the community's exodus to Sierra Leone, but alongside Whitehead's *Black Loyalists: Southern Settlers of Nova Scotia's First Free Black Communities* which narratively follows various Black Loyalists through their journeys and hardships from the US to Nova Scotia, both books provide a narrative summary of social history in Birchtown and the gradual development of community identity which helped shape their physical environment.[42] Discussions of religion in Black Loyalist Nova Scotia was particularly crucial for investigation into their mortuary contexts, as Walker's inclusion of Anglican clerical remarks regarding Black enthusiasm for baptism is contrasted against a common prohibition under slavery which prevented their learning or practicing Christian doctrine, highlighting both contemporary desires and social influences and the long-lasting effects chattel-slavery may have had on

[41] Niven, *Was This the Home of Stephen Blucke?*, 23, 27–36.
[42] Walker, *The Black Loyalists*; Whitehead, *Black Loyalists*.

community organization.[43] This social and religious context is expanded in Whitfield's *Blacks on the Border: the Black Refugees in British North America, 1815-1860*, although more briefly as his survey of later African diasporic migrations makes use of the 1783-90s Black Loyalists as a source of comparison for these later waves of immigration.[44]

Previous research into landscape analysis at Birchtown and other early Nova Scotian Black communities provided more in-depth theoretical interpretations into spatial organization at a community level, and suggested potential markers of African cultural heritage in the archaeological record. The most direct example was MacLeod-Leslie's 2002 thesis *Understanding the Use of Space in an Eighteenth Century Black Loyalist Community* which used GIS to analyse distributions of identified or assumed Black Loyalist features in Birchtown through the lens of social and cognitive space.[45] Another was Cottreau-Robins' 2012 thesis *A Loyalist Plantation in Nova Scotia, 1784-1800* which was primarily concerned with General Timothy Ruggles' North Mountain plantation as a case study into the materiality of enslaved Black Nova Scotians, but by its nature discusses many of the challenges and variance of experiences faced by Loyalists, the materiality of race, and questions of identity, agency, and hegemony as they apply to Black Nova Scotian landscapes.[46] Neither of these prior investigations were explicitly concerned with Birchtown's burial landscape, but all discussed the degree of control which the Black Loyalists were able to exert over their environment, with one

[43] Walker, *The Black Loyalists*, 66–67.
[44] Whitfield, *Blacks on the Border*.
[45] MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community'; MacLeod-Leslie, 'Mapping the Black Loyalist Settlement at Birchtown'.
[46] Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800'; Cottreau-Robins, 'Searching for the Enslaved in Nova Scotia's Loyalist Landscape'.

explicitly addressing how that degree of personal and community agency may have influenced the construction of space in Birchtown.[47] Proposals of potentially African styles of community planning are weighed against reminders of their geographic and social constraints, and of the diverse motivations and socio-political identities amongst the Black Loyalists which may mute or obscure specific cultural influences.[48]

2.2 Comparative Literature

Typically, strategies employed in attempts to locate burial sites that are lacking in material or documentary evidence include an investigation in comparative literature, particularly that of burial grounds and community organization of settlements with similar age, religion, ethnicity, and geographic context, as illustrated in Lacy's *Burial and Death in Colonial North America* which details her investigations into 17th-century burials in British Colonial Newfoundland, and her unsuccessful search for an unmarked 1620s burial ground in Ferryland, NFLD.[49] This avenue of investigation is useful for identifying areas of higher archaeological potential, but is dependent on the breadth of the body of literature for the population under investigation, and hence can privilege settlements and organizations with more historical documentation and/or a higher number of surviving and identifiable landscapes and infrastructure projects to provide examples.

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[47] Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800'; Cottreau-Robins, 'Searching for the Enslaved in Nova Scotia's Loyalist Landscape'; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community'; MacLeod-Leslie, 'Mapping the Black Loyalist Settlement at Birchtown'.
[48] Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 26–27, 33–35.
[49] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 6.

Historical and archaeological literature pertaining to the burial practices of Black Americans and Canadians in the late 18th and early 19th century is largely dominated by investigations and discourse around plantations and burials under slavery. These archaeological case studies and their resulting discourse were useful in illustrating forms of material culture or other possible traditions that may have seen continuation of practice after immigration into Nova Scotia.[50]

Beyond this, the utility of these studies on the archaeology of slavery is limited by the general lack of Black agency in the creation and maintenance of their burial landscapes within an enslaved context. For that reason, much of the historical documentation consulted on Black American burial tradition focused on cemeteries and burial grounds which were known to be partly, or entirely used and maintained by contemporary Black communities. Case studies consulted for their archaeological excavations at these cemeteries included the St. Matthew's Northern Burial Ground in Nassau, the New York City African Burial Ground, and the First African Baptist Church in Philadelphia, each important for their detailed record of their materiality and spatial organization.[51] That much of this work features sites in the United States and in the Caribbean may be reflective of their relative population size and are likely to include aspects of cultural traditions and burial practices which would be ill-suited or inapplicable to a colder or rockier geographic context such as Nova Scotia, but as comparative literature they

[50] Orser, 'The Archaeology of the African Diaspora', 67.
[51] Blakely, 'Putting Flesh on the Bones: History-Anthropology Collaboration on the New York City African Burial Ground Project'; Fennell, 'Early African America: Archaeological Studies of Significance and Diversity'; LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States'; McCarthy, 'African Community Identity at the Cemetery'; Rothstein, 'A Burial Ground and Its Dead Are Given Life'; Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*.

illustrate how those traditions may be enacted and what features appear common, particularly from a place of both freedom and social precarity due to racism. Although Col. Blucke was recorded in the Book of Negroes as originating from Barbados,[52] many of the Black Loyalists arrived in Nova Scotia from Virginia, Georgia, and South Carolina, via New York.[53] Datasets provided by the online Trans-Atlantic Slave Trade Database indicate a majority of the Virginian and Carolinian enslaved population abducted throughout the 18th century originated from the Niger River Delta in West Africa and from the West Central African coast, representing predominantly Igbo and BaKongo cultures.[54] These present potential sources of cultural variation and adaptation which may be observed through the above investigations of burials within an Anglo-American mortuary context.

2.3 Geophysics and Local Geography

There have been few burial sites identified to be associated with Nova Scotian Black Loyalists which demonstrate sufficient detail or contemporality as to provide a direct comparison for purposes of historic social and geographic analysis, but provided a methodological model of graves and other burial features as they appear in geophysical survey. Local sites were sought to exemplify what results might be expected both in surficial features and organization, and what features might be visible through the use of geophysical survey on local Nova Scotian soils.

[52] Niven, *Was This the Home of Stephen Blucke?*, 15.
[53] Whitehead, *Black Loyalists*, viii–xi.
[54] 'Trans-Atlantic Slave Trade - Database'; Fennell, 'Early African America: Archaeological Studies of Significance and Diversity', 5–7.

Although no subsurface investigation was performed and surficial information is limited, newspapers and articles referencing known historical Black burial sites in New Brunswick and Nova Scotia were consulted as supplemental to the more detailed records of American sites, providing some insight into what social and geographic features seen in the more Southern examples may have also been enacted in Atlantic Canada. The Conway Black Cemetery near Digby, Nova Scotia provided the most direct example geographically and historically as a burial space established by Black Loyalist residents of Brinley Town, c.1795.[55] This along with multiple sites in New Brunswick, notably including the now-submerged Kingsclear (Early Black) Cemetery,[56] provided some idea of where these spaces were located, their orientations, and what kind of surficial material culture might be visible.

In addition to these known Black burial sites, geophysical survey reports were consulted regarding several other Nova Scotian burial sites which were used or established by populations not exclusively Black, but of comparable social or economic status throughout the 19th century. Because little geophysical data is available on sites known to be early Black Nova Scotian burials, these illustrate not only what resources may have typically been available on an economic or geographic basis, but more importantly the studies' use of geophysics illustrated expected burial features for populations of limited resources specifically in the Nova Scotian context. In contrast with some of the American examples, local geophysical and archaeological

[55] McConnell, 'The Black Cemetery at Conway, Nova Scotia as a Reminder of Brinley Town & the Loyalists'; Smith, 'Father-Son Journey to Digby County Shines Light on Little-Known Black History'.
[56] Bird, 'Volunteers Restore Dignity to Historically Significant N.B. Cemetery'; Bird, 'Keeping the Memory of a Lost Cemetery Alive'; Bird, 'New Nonprofit Seeks to Locate and Record Gravesites of Black People in New Brunswick'; Bird, 'This Stone Revives a Flooded and Forgotten N.B. Black Graveyard'; Mercer, 'To Save Black Loyalist Burial Grounds from Neglect, New Brunswickers Dig into Their Segregated Past'.

investigations found that the general rockiness of Nova Scotia's soils and coastline often resulted in particularly shallow burials. This was notable especially at burial sites belonging to particularly marginalized populations, such as those associated with Alms Houses where soils may have been less friable, or the deceased considered less worthy of the labour required for deeper burials.[57] These reports included a well-researched but inconclusive archaeological resource impact assessment that used geophysical survey to search the *Marshalltown Alms House Cemeteries* near Digby, and a field school's excavation of a *Poor's Farm Cemetery and Dormitories* in Cole Harbour, which was successful in locating and excavating remains.[58] Burials at a few sites including the Marshalltown Alms House proved particularly difficult to find, suggested in the investigation's report to perhaps be due to a paucity of inorganic grave materials which would have had greater resistance to decay and the acidity of Nova Scotian soils, or else their absence may be due to destruction.[59]

Also consulted was a research permit report regarding geophysical survey of an area believed to contain a mass grave for victims of the S.S. Atlantic shipwreck in 1873. Established soon after the ship's sinking but unmarked until 1905, the mass burial site in Terence Bay post-dates burials at Birchtown by almost 100 years and as a disaster site would not have been reflective of typical burial practices. Its example was methodological, as the mass grave proved initially difficult to delineate and salty ocean-spray had significantly obscured conductivity and magnetic susceptibility readings, but the grave's probable extent was eventually identified in the

[57] Davis MacIntyre & Associates, 'Marshalltown Alms House Cemeteries', 39; MacLeod-Leslie, 'Poor's Farm Cemetery and Dorms.', 9–10.
[58] MacLeod-Leslie, 'Poor's Farm Cemetery and Dorms.'; Davis MacIntyre & Associates, 'Marshalltown Alms House Cemeteries'.
[59] Davis MacIntyre & Associates, 'Marshalltown Alms House Cemeteries', 24–40.

GPR survey where the majority-organic mass burial interrupted an otherwise dense and rocky matrix.[60]

Chapter 3: Theoretical Framework

3.1 Social Space

At its core, archaeology and its application of geophysical survey is primarily concerned with the interpretation of the physical environment as indicative of historical human interference and behaviours. Information about materials used by past peoples, their spatial organization, forms of development, and other environmental characteristics are frequently used by researchers and investigators who can use this information to easily identify and name the social nature of the site: as a domestic site for example, or a foundry, or a religious centre. These interpretations are based on the fundamental principle that "space," while referring fundamentally to an objective physical environment, is attributed with social meaning and definition by the human actors which use, shape, and occupy that space. Social and cultural values and assumptions are attached to physical space which work to both describe the form and purpose of a physical environment, as well as to inform expected use and behaviours of the same.[61]

[60] Fowler et al., 'Geophysical Surveys at the SS Atlantic Heritage Interpretation Park', 24–32.
[61] MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 9; Cottreau-Robins, 'Searching for the Enslaved in Nova Scotia's Loyalist Landscape', 129–30; Delle, *An Archaeology of Social Space: Analyzing Coffee Plantations in Jamaica's Blue Mountains*, 8–9.

Landscape Archaeology

Landscape archaeology applies the concept of social space to potential archaeological sites and their environments with the aim to interpret past peoples, cultures, and behaviours through the analysis of their physical environments. The analysis of how an environment is linked to historical documentary and material culture is useful in archaeological investigations not only for the locating of potential sites, but also for informing interpretations of how sites were chosen, practical or cultural decisions behind development, how the land was changed by human behaviour and how human behaviour may have been shaped or limited by the land.[62]

With this project's goal to locate an early Black Loyalist burial space and in the absence of detailed documentary evidence, this analysis of landscape is of greater importance.[63] Short of a few brief mentions in neighbouring property records (Figure 1), no detailed record is yet known which precisely or conclusively identifies the location of the burial ground, nor the manner in which it was arranged, maintained, and commonly used. As such, this investigation makes use of several forms of landscape survey including geophysics in order to assess a probability of burials based on its surficial and subsurface geography, with consideration of potential physical or social influences on the development of a burial space in early Birchtown.

Burial Landscapes

As a subfield of landscape archaeology, burial spaces or burial landscapes exist as a specific form of social space which is understood to be landscapes and their included cultural

[62] Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 93–95; Delle, *An Archaeology of Social Space: Analyzing Coffee Plantations in Jamaica's Blue Mountains*, 8–9, 14–15.
[63] Niven and Davis, 'Birchtown: The History and Material Culture of an Expatriate African American Community', 61–62.

materials which are associated with the burial of the dead and the funerary process. Although 'landscape' is typically understood to mean the geographic or physical environment, there is no single definition and can vary significantly in scale and application, depending on the sites and people involved, and their perspectives on space.[64] In a burial context, this may include the burial itself, its geographic location, organization of burials, forms of memorial or monuments, association with other geographic or anthropogenic features or structures, and various other environmental features which may help investigators deduce how the materiality of these spaces were geographically and socially shaped. Comparison of burial landscapes can also highlight demographic differences: for example, location or iconography may indicate religion or social views on mortality, the quality or economic value of memorial or burial materials may indicate personal or cultural status, and the quantity or condition of burials over a set period may indicate public health or related concerns contemporary with the burials.[65]

Burial spaces within a historic Anglo-American context were typically categorized based on the community or organization by which they were founded and maintained.[66] Of particular interest for this project are *churchyards* or *graveyards*, which are strictly religious burial spaces owned by, and associated with a church; *cemeteries* which in academic discussion refers more specifically to burial spaces which are municipally-owned, nondenominational (but typically

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[64] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 7; Delle, *An Archaeology of Social Space: Analyzing Coffee Plantations in Jamaica's Blue Mountains*, 14; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 259–60.

[65] Bigman, 'Mapping Social Relationships', 17; Hallam and Hockey, *Death, Memory, and Material Culture*, 77–78, 91; Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 12; McCarthy, 'African Community Identity at the Cemetery', 177; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 259–61; Tashjian and Tashjian, 'The Afro-American Section of Newport, Rhode Island's Common Burying Ground', 171.

[66] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 260–61, 265.

Protestant), and often organized to be strictly regimented; and nonspecific *burial/burying grounds* which typically indicated a burial space which was ceremonial and variously organized, but often nominally secular or unrecognized/unconsecrated by the locally dominant religious body.[67]

As inherently physical spaces, social understandings of each form of burial space often includes perspectives of the sites as a form of real property. Real property in Euro-American ontologies further assumes ownership, either public or private, which by nature of their ownership would grant physical control over materials and remains interred within.[68] This however comes with some caveats; as unlike with other forms of land use which may vary significantly between owners—an agricultural plot becoming residential, and then commercial for example—the depositional nature and memorialization of burial sites often assumes or requires their function as burial sites to be relatively static or long-lasting.[69]

Churchyards are defined by their association with a Church, typically Anglican in the early historical-period English colonies. They are typically smaller plots of land which are owned and managed directly by the local parish in accordance with ecclesiastic law, bounded on all sides by walls, fences, or other barriers and surrounding or adjoining their respective church

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[67] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 24–28.

[68] Marsh, 'When Dirt and Death Collide: Legal and Property Interests in Burial Places', 60; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 260–63; Engelhart, 'Equality at the Cemetery Gates: Study of an African American Burial Ground', 2–4.

[69] Engelhart, 'Equality at the Cemetery Gates: Study of an African American Burial Ground', 3; Hallam and Hockey, *Death, Memory, and Material Culture*, 48–51.

building.[70] Because they are defined in association with a church building, the property is also viewed as consecrated and protected primarily, or exclusively in its relation to the church, and protections of the church grounds were not extended in full to the remains there interred.[71] Due to small lot sizes and urban population pressures, disinterment and secondary disposal of remains with intent to reuse space was not uncommon in English churchyards. This practice was less common in the American colonies where ample space allowed crowded churches to establish graveyards on properties nearby, but not immediately adjacent a church building.[72] In either case, until the introduction of secular burial laws in the United States and Canada in the mid-19th and 20th centuries, the lack of legal protection of churchyard remains outside of ecclesiastic law meant that legal protection of remains depended on the sustained maintenance of their attached church, and were vulnerable to destruction should the property ever be deconsecrated.[73]

In contrast, cemeteries are defined as being distinct from churchyards based primarily on their municipal and nondenominational ownership. Not being associated directly with a religious organization or related building, the function of the property as a site for burial and memorialization becomes its primary purpose, rather than a consequence of seeking proximity

[70] Blaney, 'The Treatment of Human Remains under the Ecclesiastical Law of England', 4–5; Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 25; Marsh, 'When Dirt and Death Collide: Legal and Property Interests in Burial Places', 60; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 265–66.

[71] Blaney, 'The Treatment of Human Remains under the Ecclesiastical Law of England', 8–10; Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 40; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 265.

[72] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 25.

[73] Engelhart, 'Equality at the Cemetery Gates: Study of an African American Burial Ground', 3–4; Marsh, 'When Dirt and Death Collide: Legal and Property Interests in Burial Places', 60; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 266.

to consecrated religious structures.[74] Any respect or special provisions given the site is then directly due to its purpose as a burial and memorial site, which often granted burials greater protections and individuality in perpetuity than those at churchyards which were vulnerable to disinterment.[75]

Because formal cemeteries were often municipally owned, they typically would be managed and used by the local demographic majority according to the dominant funerary tradition. Burial grounds, as an arbitrary term more often applied to sites not already identified as churchyards or municipal cemeteries, often referred to burial spaces used by minority populations which either due to segregation or cultural and religious preference could not be buried within other burial spaces which were more widely or legally recognized. As a burial within an 18th century "cemetery" may represent a rejection of Anglicanism, and hence their churchyards, a burial within a "burial ground" may indicate an enclave of socially significant racial, ethnic, or religious difference. The separation of these sites often provide a space for minority communities to include aspects of culturally distinct funerary practices, without the requirements or limitations that may be imposed by a landowner of a churchyard or cemetery.[76] This freedom can often make burial grounds important sites for investigating the creation of new community identities, especially where cultural hegemony or intracommunal diversity requires some cultural negotiation.[77] That a burial space in Birchtown was referred to as a

[74] Marsh, 'When Dirt and Death Collide: Legal and Property Interests in Burial Places', 60; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 262–64.
[75] Blaney, 'The Treatment of Human Remains under the Ecclesiastical Law of England', 6; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 265; Marsh, 'When Dirt and Death Collide: Legal and Property Interests in Burial Places', 61.
[76] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 266–68.
[77] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 45; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 267.

"burial ground" in its earliest mention (Figure 1) is then not surprising as it would have serviced a Black community which was itself physically segregated from Shelburne, but indicates that the property was not officially or directly managed by any ratified government or religious body, despite the strong presence of Christianity, including Anglicanism within the community.[78] Although the distinction may be greater attributed to race than to difference in funerary practice, it also suggests a greater possibility of African Diasporic features that may have otherwise been discouraged at more widely used and regulated spaces. However, the minority use of burial grounds and lack of ownership by a dominant authoritative body coupled with the possibility of difference in observed or recognized mortuary tradition often also meant a lack of recognition or respect outside the minority community, making these spaces particularly vulnerable to destruction.[79]

Sacredness and Profanity

As socially defined spaces, burial landscapes often carry particularly potent values, beliefs, and social assumptions about appropriate behaviours, predominantly related to perceptions of *sacredness*. As a religious concept, it can be difficult to define *sacredness* except in opposition to *profanity*. Definitions of sacredness are often intentionally vague and not exclusive to organized religion or explicitly religious concepts. In lieu of any formal definitions, early socio-cultural anthropologists often assessed the perceived sacredness of objects or spaces based on observations of treatment with a degree of respect or reverence which sets them apart. They are generally protected and isolated from the profane world, although the

[78] Walker, *The Black Loyalists*, 69.
[79] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 267–68.

idea of total sequestration of sacred sites and objects from the profane has been more recently contested.[80]

As the opposite of *sacredness*, *profanity* is defined by sociologist Emile Durkheim as "those things (typically mundane) to which prohibitions are applied" with intent to separate and regulate their contact with those things identified as sacred.[81] Chiefly, although the need for total sequestration is debated, the separation and restrictions observed to be surrounding interaction provide the primary diagnostic elements for recognizing a space or object as sacred, or having sacred qualities.

This concept of sacredness is frequently applied to burial landscapes, but with significant variance between sites in its application and social power. The sacredness of burials within churchyards is most easily attributed to a religious association which did not guarantee undisturbed repose of those interred,[82] whereas secular burials in municipal cemeteries are often still treated as sacred, and occasionally enjoyed greater protections than those within churchyards.[83] This variance in the form of burial sacredness is of concern in academic discussions regarding the dichotomy of sacredness as applied to burial spaces. As mortuary theorists often consider burial spaces and funerary process to be socially transitional or liminal, it suggests that the sacredness of burial spaces cannot be mutually exclusive.[84] Regular use of

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[80] Hallam and Hockey, *Death, Memory, and Material Culture*, 91; Durkheim, *The Elementary Forms of Religious Life*, 36–38.
[81] Durkheim, *The Elementary Forms of Religious Life*, 38.
[82] Blaney, 'The Treatment of Human Remains under the Ecclesiastical Law of England', 8, 12–15; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 266.
[83] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 263–64.
[84] Hallam and Hockey, *Death, Memory, and Material Culture*, 90–93; Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 53.

the site for memorialization also invites regular contact with the site, especially those located in more central or urban areas. This creates a space that can be identified by its demands for respect within its founding community, but may not universally be given a high degree of reverence.

Because the concept of sacredness is not exclusively applied to places and objects which are associated with organized religion, the nature of sacredness has some variance as applied to different forms of burial sites in an Anglo-American Colonial context, although its social weight appears more potent when associated with organized religion.[85] As a British colony, many of the early Nova Scotian burial spaces were Anglican Churchyards, which were seen as sacred specifically because of their association with the Church of England and dependent on the specific and deliberate "consecration" or declaration of the site as sacred by a designated member of the Church. The continuation of the site's consecration had to be maintained through explicit and restrictive laws and etiquette which controlled access and behaviours at the site. Legal property protections included exceptions to allow disinterment and removal of remains at the clergy's discretion, and exclusion of individuals from burial within the grounds was also occasionally used as punishment against those who had violated certain church doctrines; officially just "unrepentant excommunicates," but traditionally including unbaptized children, "heretics," usurers, and victims of suicide,[86] with the aim of protecting the sanctity of the space against a burial perceived to be excessively profane.[87] This suggests that the historical

[85] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 46.
[86] Burn L.L.D., *Ecclesiastical Law*, 1:242–44; Bursell, 'Aspects of Burial and Exhumation', 169–71.
[87] Blaney, 'The Treatment of Human Remains under the Ecclesiastical Law of England', 5; Bursell, 'Aspects of Burial and Exhumation', 170–71; Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 265–66.

doctrine of Anglicanism may not have regarded burials as inherently worthy of special treatment and protection, save a briefly outlined legal requirement for "dignified" burials out of sensitivity to the family of the deceased.[88]

Burials in North America, being further removed from the oversight of the Church of England and in absence of consecrated churches and yards of comparable tenure, placed greater importance on the practicality of access and land-use in locating burial spaces over any association with pre-existing religious buildings.[89] For Black burials in particular, the cemetery at St. Matthew's Parish in Nassau was explicitly required by law to be established on property considered to be unproductive.[90] Despite being established as nondenominational or secular space and hence nominally removed from organized religion, cemeteries appear generally to still be regarded as sacred, or demanding of respect. Reasons proposed include perceptions of the site as a locus for grief, a destination for pilgrimage, and a cultural recognition of the historical tenure of the site.[91] Courtesy often requires a degree of privacy around grief, and avoidance of raucous behaviour in its vicinity. The related suggestions of pilgrimage and permanence attribute a form of sacredness to burial spaces resembling the reverence given a historic site, owing to regular visition and the invitation of reflection and existential consideration that memorials often provide.[92] In the case of minority burial grounds, this

[88] Bursell, 'Aspects of Burial and Exhumation', 178–80.
[89] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 261–62.
[90] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 71–72.
[91] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 264.
[92] Ibid.; Hallam and Hockey, *Death, Memory, and Material Culture*, 185, 189.

pilgrimage and permanence may also be related to the burial space as a site of cultural identity, in addition to any historic or familial significance.

As burial grounds frequently refer to burial spaces used by minority communities, their material difference or separation may cause the space to be recognized or regarded as sacred only by members of its minority community. While community perceptions of sacredness may still influence behaviours within the group, the protections and restrictions which sacredness demands would be of less concern or even invisible to an ignorant, apathetic, or actively colonial hegemonic culture.[93]

3.2 Historical Archaeology of the Black Atlantic

Archaeological study into the African diaspora of the Atlantic region, in this study focusing on the Anglo-American contexts of the late-18th and early-19th centuries, considers a wide range of issues. The interdisciplinary field is predominantly focused on the materiality of African culture and identity outside of Africa, the archaeology of freedom and slavery, and archaeology of race and racism.[94] Although Black Loyalists in Nova Scotia may include a considerable population of enslaved or indentured servants fleeing or accompanying wealthier white Loyalists, the Black Loyalists of Birchtown arrived predominantly as free-born or emancipated British citizens with diverse backgrounds and motivations influencing their landscape and material culture. Alongside varying personal histories with slavery, the settlers had varied economic status, a breadth of skills and occupations, likely varying ethnic origins—

[93] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 267–68.
[94] Orser, 'The Archaeology of the African Diaspora', 63.

albeit often obscured or blended by familial disruption under slavery, but all were commonly affected by cultural hegemony and Colonial Anglo-American concepts of race.[95]

Archaeology of Race, Agency, and Cultural Hegemony

As a somewhat arbitrary and often mutable category of physical characteristics, materiality of race can sometimes be difficult to distinguish and subject to academic discussion on the identification and potential stereotyping of "Africanisms" as ethnic markers.[96] Features identified by the analyst to be ethnic markers may represent African cultural skills using Anglo-American resources, "creolized" skills or practices learned or adapted from plantations or Anglo-American society, or may simply reflect a creative solution to a problem specific to the African diaspora in the American colonies.[97]

English belief in racial essentialism and environmental determinism in the pre-revolutionary American colonies justified to many of them the use of forced Black labour, as it was argued their bodies were naturally more durable and capable of manual labour, especially in tropical climates.[98] Belief in African subservience likely contributed to a policy in post-Revolutionary Nova Scotia that dispensation of provisions to many of the Black Loyalists was conditional on their participation in manual labour related to infrastructure development of the new colonies.[99] Either due to racial essentialism or due to apathy, the Black Loyalists were often considered of low priority for assistance in food and resources, even when compared to

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[95] Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 26, 107–10, 124; Troxler, 'Re-Enslavement of Black Loyalists: Mary Postell in South Carolina, East Florida, and Nova Scotia', 77; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 57–58, 60–65.
[96] Orser, 'The Archaeology of the African Diaspora', 73–75.
[97] Fennell, 'Early African America: Archaeological Studies of Significance and Diversity', 17–18, 21, 25–26.
[98] Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 38–40.
[99] Walker, *The Black Loyalists*, 44–45; Whitfield, *Blacks on the Border*, 19.

European ethnicities such as Irish and Scots who also held low social and economic status amongst an English majority.[100]

Although the archaeology of race focusses primarily on the materiality of oppression, it also encompasses an archaeology of resistance. Records exist of African cultural funerary practices being explicitly banned or regulated at sites such as New York City, Newport in Rhode Island, and Nassau in the Bahamas,[101] but these pressures to conform were varied and not all encompassing. Material culture of Black communities free and enslaved, and their burial landscapes in particular, demonstrate a diversity of reactions to hegemony and oppression. Burials excavated at the First African Baptist Church in Philadelphia appeared to show resistance and solidarity through a greater frequency of African-associated grave goods during times of "heightened racial strife," contrasted against burials in Newport, Rhode Island which appeared to blend or subvert the "colour line" in a segregated cemetery by intentionally styling their grave markers to conform to Euro-American norms.[102]

The variation in responses to racism and hegemony may be attributed to reactions against their environment, but as both examples were subjected to racial pressures, the difference in response is also reflective of community or personal agency. The agency of Black individuals and communities, being their power or ability to act on their own will, was and is

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[100] MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 58; Walker, *The Black Loyalists*, 45–46; Whitfield, *Blacks on the Border*, 19–22.
[101] Fennell, 'Early African America: Archaeological Studies of Significance and Diversity', 12; Tashjian and Tashjian, 'The Afro-American Section of Newport, Rhode Island's Common Burying Ground', 192; Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 72; LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States', 300.
[102] Fennell, 'Early African America: Archaeological Studies of Significance and Diversity', 9–10.

affected by their social environment and the cultural hegemony resulting from, and maintained through histories of slavery and racial segregation in the North American British colonies.[103] This hegemonic context created social and legal limits on how the Black Loyalist communities in Nova Scotia would have been able to behave and organize their space.

As a newly founded community formed of racial minority settlers with uneasy legal status, Birchtown provided one of several Nova Scotian sites for the formation of a new community identity; its burial ground being one such forum for cultural, and likely religious negotiation.[104] Perhaps owing to the chaos of early Loyalist Nova Scotia and the free status of Birchtown residents, no recorded concerns were given regarding any notably African funerary processes in Birchtown, although there is mention of funerals being regularly performed by Anglican clergy (Figure 5).[105]

[103] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 72.
[104] Cottreau-Robins, 'Searching for the Enslaved in Nova Scotia's Loyalist Landscape', 133; Hallam and Hockey, *Death, Memory, and Material Culture*, 189; Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 72.
[105] Walker, *The Black Loyalists*, 69–70.

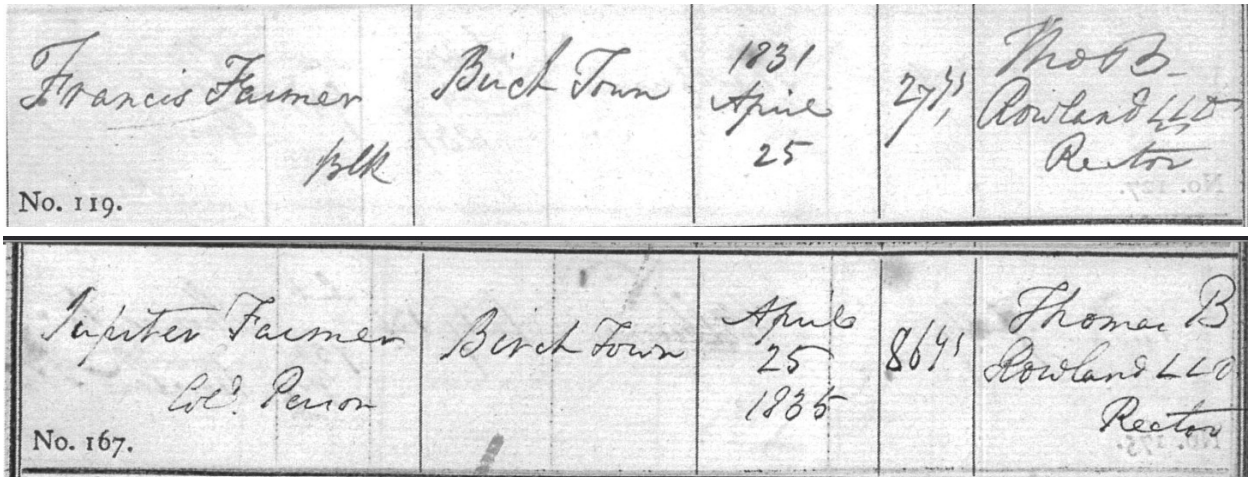

Figure 5: Excerpts from Anglican burial records for Francis Farmer and his father, Black Loyalist Jupiter Farmer.

These records display the deceased's name (and race), place of residence, date of death, and age. The final column records the name of the clergy or official who provided funeral services; stated here to have been Rev. Thomas B. Rowland, Anglican Rector of The United Parishes of St. George and St. Patrick. Beginning the next year in 1836, burial records indicate funeral services in Birchtown continued to be performed by Anglican missionary and white Loyalist descendent Rev. Thomas H. White.

Scans provided by S. Himmelman and the Anglican Diocesan Archives.

Chapter 4: Methodology

4.1 Preliminary Research

The investigation into the location of a Black burial ground in Birchtown was initially, and primarily guided by oral histories and local tradition provided by members of the community, both directly in discussion with the author, and indirectly via members of the Black Loyalist Heritage Society. The use of oral histories in archaeological survey is common, and an important resource for locating and interpreting sites where documentary records are poor.[106] These testimonies also formed the foundation for the historical background research, and decisions made regarding the application and interpretation of geophysical survey.

Previous research into the landscape of Birchtown used GIS to aggregate available documents such as survey maps, sales records, and baptism records to get an idea of the layout of Birchtown in the late 18th-century, relying heavily on an incomplete survey map for a broader outline of the community. Referred to as the "Goulden Map" (Figure 6) after a local resident who discovered it in 1998, the planning map contains only a few names and labelled plot numbers which were able to be matched with surviving land grant records, but remains the most detailed record of land ownership for the initial Birchtown settlers .[107] Spatial analysis of this geographic or otherwise georeferenced data showed how their layouts differed from neighbouring white Loyalist communities like Shelburne, how their planning and building choices reflected their

[106] Niven, *Was This the Home of Stephen Blucke?*, 7, 10–11; Davis MacIntyre & Associates, 'Marshalltown Alms House Cemeteries', 12, 20; Eastaugh, Wadsworth, and Fowler, 'Conductivity Survey: Recommended Data Collection Procedures for Locating Unmarked Graves', 3.
[107] Niven, *Was This the Home of Stephen Blucke?*, 16–17, 42; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 5, 24–26, 97; MacLeod-Leslie, 'Mapping the Black Loyalist Settlement at Birchtown', 56–59.

own experiences and values with emphasis on their agency, and how the availability of resources and the quality of their land dictated its use.[108]

Archival and local geographic research also included aerial photography of the region dating back to 1927; the earliest taken at 1:10 000 scale, and all else taken at 1:15 000 scale and digitized at high resolution. These provided insight into more recent land developments, as well as site conditions at, and around either property within the last 100 years. These were especially important for the Community Hall site, as the selection of aerial photographs taken both before and after the construction of the building around 1960 provided information about the former placement of structures or infrastructure on-site which is currently unavailable from other documentary sources. These photographs were georeferenced in ArcGIS Pro using temporally consistent geographic features or infrastructure as ground control points, and were compared against modern satellite imagery and digital elevation models provided through GeoNOVA. (Figure 7)

[108] MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community'.

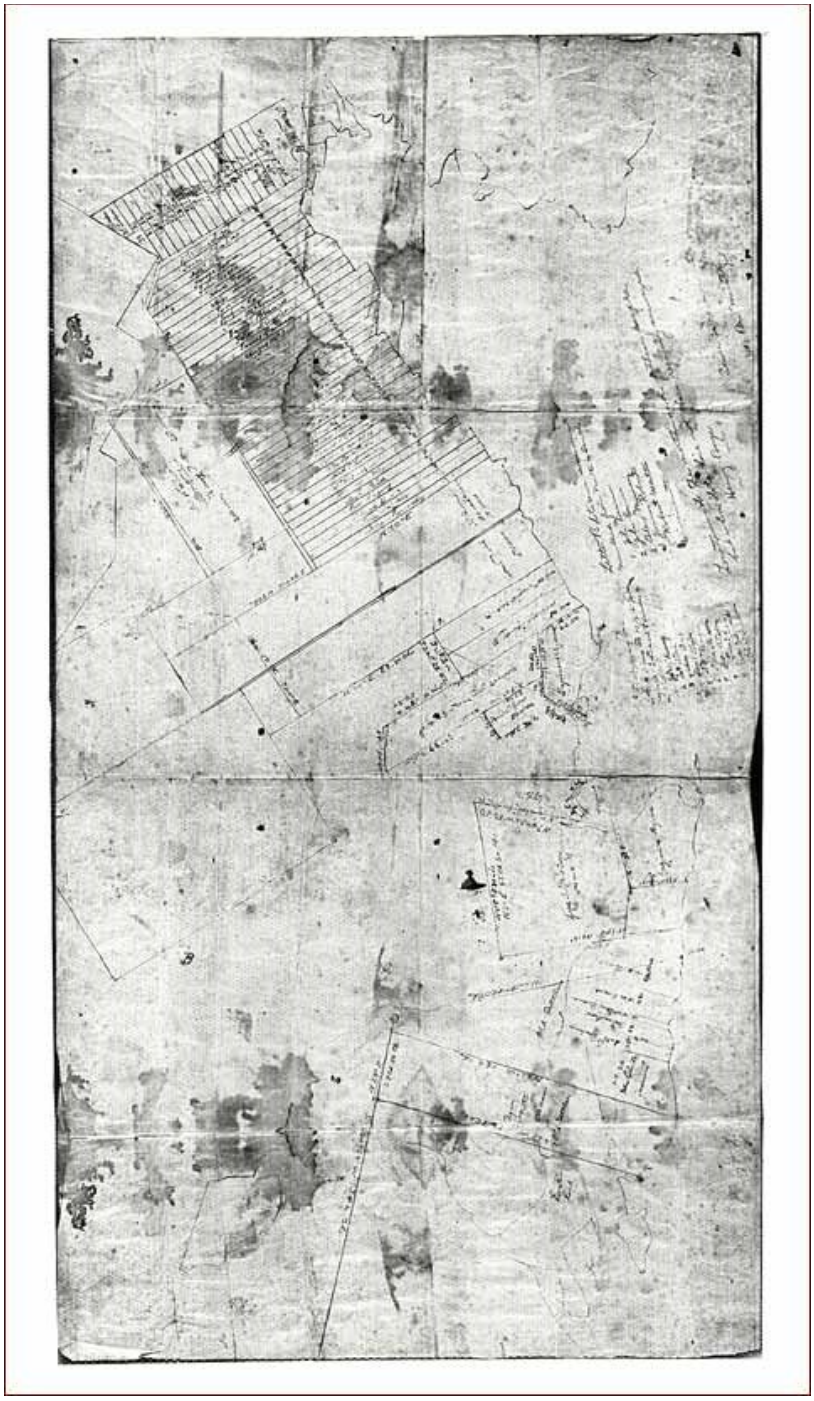

Figure 6: The "Goulden Map." An undated survey map of Birchtown. While no date or signature was provided by the author, it is believed to have been drafted roughly contemporary with the foundation of the settlement. Shelburne Harbour is visible along the right edge of the map, north at top.

Map hosted by the Black Loyalist blog: https://Blackloyalistblog.blogspot.com/2016/04/the-goulden-map.html

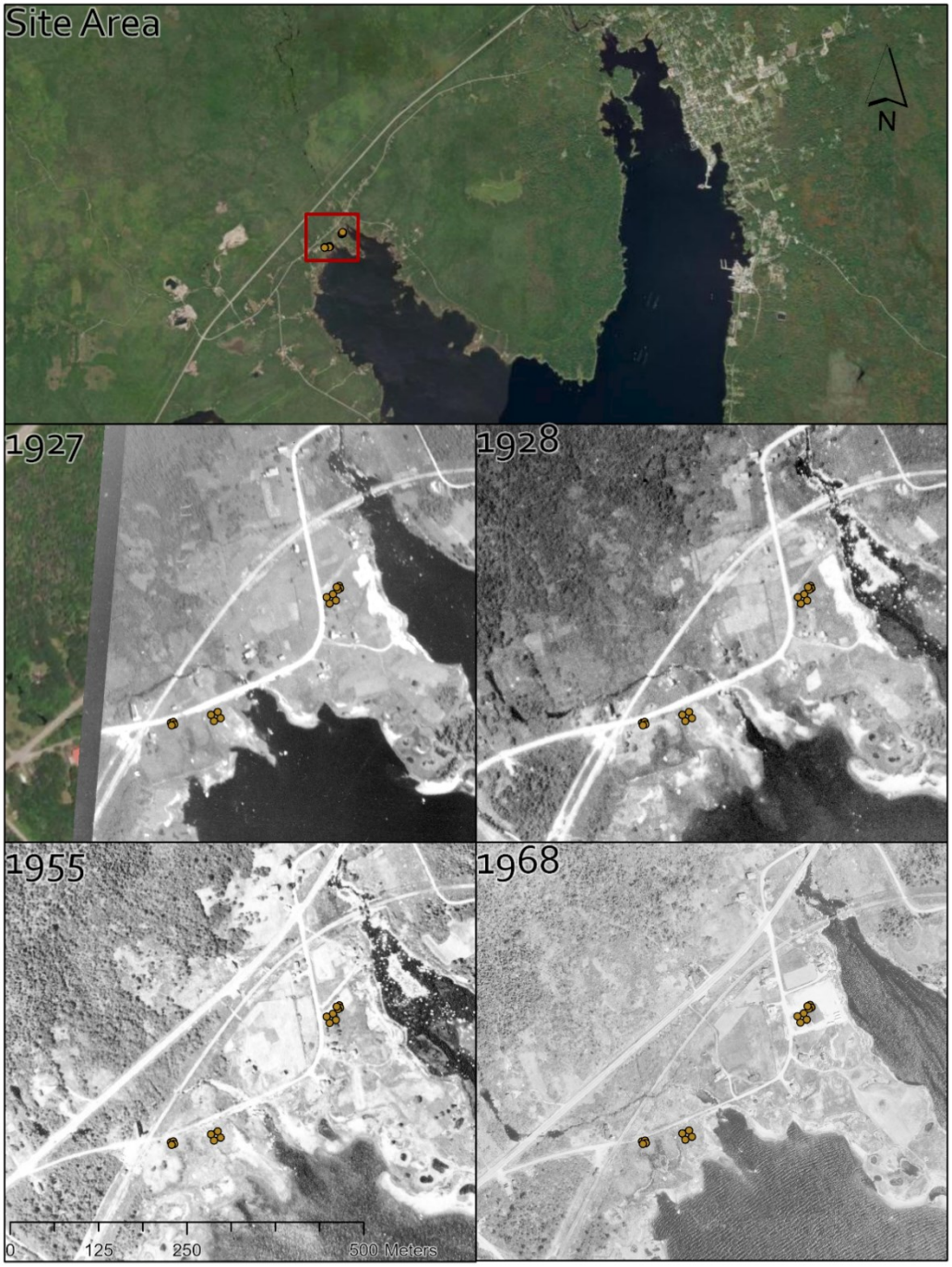

Figure 7: Aerial photography of the study area. Inset map at top shows the extent of the below study area maps, pictured on the northwestern arm of Shelburne Harbour. At top right is the Town of Shelburne. The attached maps depict collected aerial photographs from various years as labelled. Included point data marks the corners of this project's survey grids. Photos are cropped to the survey area.

Aerial photography provided by the National Air Photo Library of Canada: photo numbers KA59_064 (1927), A306_041 (1928), A14739_174 (1955), and A20458_172 (1968).

4.2 Geophysical Survey Techniques

Since this project aims to be entirely unintrusive, multiple geophysical survey technologies were utilized for greater breadth of data collection and better-informed interpretations. These included use of a Noggin 500 series Ground Penetrating Radar (GPR), a Geonics Ltd. EM38b model electromagnetic induction instrument with Allegro CX data logger, and a Leica GS14 model GNSS smart antenna using the geographic projection UTM Zone 20N NAD83 CSRS. The collected data was thereafter processed and analysed using Geonics' DAT38BW and Microsoft Excel software for electromagnetic induction, EKKO_Project v.5 for ground penetrating radar, and ArcGIS Pro for data interpolation, geospatial reference, and visualization.

Where terrain allowed, 3 square survey grids were marked with plastic measuring tapes and non-conductive plastic stakes and flags (Figure 8), and the corners of each recorded using the GNSS antenna to precisely reference the geospatial data into existing mapping coordinates with GIS. The small property sizes and a few large obstacles such as trees or the HSMBC plaque placed some restrictions on grid size and placement. A 10m by 10m grid was established at both surveyed sites, with an additional 4m by 4m grid laid out between the Community Hall building and its gravel driveway. Both GPR and EMI surveys were traversed along alternating X (W-E) and Y (N-S) transects spaced 50cm apart in the larger grids, and 25cm apart in the smaller grid, using non-ferrous plastic flags as guides for the operator and to reduce drift due to operator error.

Although the non-intrusive nature of geophysical survey makes it the preferred option for this project, there are several limitations to the use of geophysical survey technology in

archaeological investigations. Firstly, the dependence of both the GPR and EMI on the transmission and reception of electromagnetic signals makes the utility of both dependent on there being limited external electromagnetic interference.[109] This restricted some of the surveyable area around the Community Hall building (Figure 8), as survey grids had to be planned around avoidance of electrical utilities or other potential sources of electromagnetic interference associated with the building.

Additionally, electrochemical changes in the soil that appear with unusual strength and definition or with a high degree of regularity are likely to be anthropogenic, but these anomalies are only detectable against a relatively uniform, but stratified soil context.[110] Interference can occur with the introduction of materials or contexts which either have stronger electrochemical signatures themselves such as with coastal salt spray; or which by nature of their properties affect how well the instrument's emitted signal travels through the soil medium, such as with waterlogged soils which may amplify signals, or clay soils which heavily attenuate.[111] As both sites surveyed for this project are coastal, have moderately gravelly soils, and stand at low elevations above sea level, some additional noise from gravels and elevated conductive signals due to the water table or salt spray nearer the harbour are expected.

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[109] Clay, 'Conductivity Survey: A Survival Manual', 81–83; Dalan, 'Magnetic Susceptibility', 177; Bevan, *Geophysical Exploration for Archaeology Volume B: An Introduction to Geophysical Exploration*, 1:21, 40; Conyers, 'Ground-Penetrating Radar', 148–49.

[110] Eastaugh, Wadsworth, and Fowler, 'Conductivity Survey: Recommended Data Collection Procedures for Locating Unmarked Graves', 3; Conyers, 'Ground-Penetrating Radar', 140; Dalan and Bevan, 'Geophysical Indicators of Culturally Emplaced Soils and Sediments', 782–85.

[111] Conyers, 'Ground-Penetrating Radar', 141–48; Clay, 'Conductivity Survey: A Survival Manual', 88; Peterson, 'Use of Electromagnetic Induction Tools in Salinity Assessment/Appraisals in Eastern Colorado', 1.

Figure 8: Survey grids laid out at the Black Burial Ground (top), and the Community Hall (bottom). Note the utility lines running to the north side of the building in the second picture.

Photos provided by the author (top) and by J. Michels (bottom).

Both surveyed properties were able to accommodate a survey grid measuring 10 by 10 meters, maximizing the survey area while excluding any obstacles and maintaining a square area for ease of data processing. The grids were placed on each property over areas considered more likely to contain graves, while providing minimal obstacles to the survey equipment. At the Black Burial Ground site, this meant the grid was located near the northwest corner of the park (Figure 8), containing the area between the western retaining wall and the gravel entrance path and aligned with the geography of the park. This allowed survey of an open area of the park, while avoiding the few small trees and the interpretive panels installed at the center, along with the probability of ground disturbance resulting from the installation of these monuments.

At the Birchtown Community Hall site, where a neighbour's testimony described remains being disinterred during the former school building's construction in 1960, the survey grid was established as close to the building as possible to find any potential undisturbed grave shafts, and/or the edge of that original construction trench. As this property had a greater degree of development, and hence a smaller area available with ideal conditions for survey, this grid was established within the fenced front lawn between Birchtown Road and the Community Hall building, including the area roughly in front of the building's front entrance (Figure 8). A second smaller grid measuring 4 by 4 meters was also laid out closely adjacent to the North side of the building where vehicular and pedestrian traffic was less, but overhead power and utility cables provided too much interference for EMI survey. The corners of each grid were recorded for later georeferencing using the Leica GNSS receiver.

4.3 Ground Penetrating Radar

GPR has gained public attention in recent years due to its use in locating unmarked graves at residential schools across the country, a methodological choice made based on its sensitivity to changes in soil density in 3-dimensional space.[112] Because it primarily measures density, this survey method is good for locating built features or voids such as filled-in cellars, graves, or compacted old roads that are no longer visible on the surface. Where the terrain allows it, GPR is useful not only for identifying features, but also for determining approximate depth and size which may be diagnostic for potential grave shafts. Radar emissions are "reflected" back and detected by the GPR wherever there is a change in soil density, in ideal conditions highlighting the sides and fill of a grave shaft as well as their maximum depths.[113]

Both potential burial sites investigated for this project are owned and maintained by the Black Loyalist Heritage Society as public sites with regular visitation, so are managed as open lawns with fewer obstacles to grid survey. GPR surveys at both sites used a preset sample density of 50 readings per metre, a nominal scan depth of 3m, and an estimated radar wave velocity of 0.1 m/ns selected due to the dense and gravelly soil matrix observed at the Community Hall site. The velocity was reduced to 0.08 m/ns at the Black Burial Ground Park site in response to abnormally high tides and significant rainfall which occurred between the survey dates and was expected to have increased the soil's water content within the small peninsula.

[112] Gollom, 'How Radar Technology Is Used to Discover Unmarked Graves at Former Residential Schools'.
[113] Conyers, 'Ground-Penetrating Radar', 139–40, 158; Bevan, *Geophysical Exploration for Archaeology Volume B: An Introduction to Geophysical Exploration*, 1:43–44; Fowler et al., 'Geophysical Surveys at the SS Atlantic Heritage Interpretation Park', 9–11.

The GPR survey data was processed through EKKO_Project v.5 to inspect individual radargrams and their combined slice maps using a local background subtraction and amplitude equalization gain filtering set to moderate-low levels to reduce background noise and highlight any anomalous features which may indicate complete soil horizons or anthropogenic disturbance. The processed grids were then exported into ArcGIS to be georeferenced using the previously recorded grid markers for analysis of any anomalous features within their geographic context, and additional colour ramp contrast correction for readability.

4.4 Electromagnetic Induction

It is generally considered best practice to apply multiple techniques to geophysical survey in archaeological contexts, especially in such sensitive contexts as graves.[114] The use of electromagnetic induction (EMI, also known as conductivity survey) provides an additional stream of data which can aid in interpretations of GPR anomalies by identifying areas of high or low electrical conductivity, or high or low magnetic susceptibility within the soil matrix. While the single variable output of this survey method does not allow the 3-dimensional scans produced by GPR, the comparison of these electromagnetic "heat maps" against the GPR depth slice maps are helpful for identifying the probable material nature of density or electromagnetic anomalies in the GPR data.[115] Graves, being once voids which typically have had larger stones removed, remains and other organic and inorganic grave goods added, and then the void refilled, will typically show differing electromagnetic values than the surrounding matrix. The manner in which these values differ can depend on the site and its local geology, but often

[114] Eastaugh, Wadsworth, and Fowler, 'Conductivity Survey: Recommended Data Collection Procedures for Locating Unmarked Graves'.
[115] Clay, 'Conductivity Survey: A Survival Manual', 80–82; Dalan, 'Magnetic Susceptibility', 161–62.

differences such as decreased compaction in grave infill which allows greater water saturation will produce higher conductive values, which may be compared to observed interfaces or decreases in soil density in the GPR data.[116] The extreme sensitivity of EMI survey to conductive or magnetically susceptible materials also means that strongly responsive materials such as ferromagnetic metals may overload the device sensors in the area around the material. This means that most metal objects or artefacts of notable size would be immediately apparent in the data, but also that EMI survey is better suited for sites where ferromagnetic artefacts are lacking and anthropogenic features are of primary focus.[117]

This project's EMI survey followed the same general methodology as with the GPR, following the same alternating transects at 50cm intervals along both the X and Y axes of the grid. All EMI surveys were performed in the vertical dipole mode, with data collected at a rate of 10 readings per second. Initial data processing was performed using Geonics' DAT38BW software and Microsoft Excel, and interpolation was performed using ArcGIS Pro. Several interpolation methods were tested to transform the EMI transect line data into separate raster images representing either conductivity or magnetic susceptibility results, with ArcGIS's Empirical Bayesian kriging (EBK) interpolation tool consistently showing best results. As the EMI survey produced separated grids for each transect direction, ArcGIS's Cell Statistics spatial analysist tool was then used to merge the separately interpolated North-South and East-West raster images into a single raster which averaged data from both transects.

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[116] Bigman, 'Mapping Social Relationships', 19; Dalan and Bevan, 'Geophysical Indicators of Culturally Emplaced Soils and Sediments', 781–85; Eastaugh, Wadsworth, and Fowler, 'Conductivity Survey: Recommended Data Collection Procedures for Locating Unmarked Graves', 2.

[117] Clay, 'Conductivity Survey: A Survival Manual', 82; Bevan, *Geophysical Exploration for Archaeology Volume B: An Introduction to Geophysical Exploration*, 1:20–21.

Chapter 5: Survey Results

5.1 Black Burial Ground and Monument Site

Located on the coast near the museum, the Black Burial Ground and Monument Site is easily accessible and identifiable for its manicured lawn, brick and iron gate, and a tree-shaded monument plaque installed near the park's center by the National Historic Sites and Monuments Board of Canada in 1996 (Figure 2,Figure 3).[118] The plaque recognizes the landing of the Black Loyalists in Canada as a national historic event and its position in what is assumed to be a burial ground lends some importance and protection to the site, but a lack of formal historical documentation regarding land use and community structure in the Birchtown area likely prevents any more specific recognition by an official government body of the plaque's installment site as a burial ground. The plaque's installment at the park may be something of a compromise; while no formal record of land use exists which would be sufficient for the HSMBC to recognize the park as a cemetery, local oral tradition holds that this small property is a burial ground for the community's early Black settlers and its existence is mentioned in two nearby deeds (Figure 1).[119] Many factors contributed to the under-representation of Black Loyalists generally, and Birchtown more specifically in the historic record. Black communities were often omitted or recorded in less detail in contemporary survey maps, and it was similarly not unheard of for municipal non-denominational cemeteries to receive less cartographic attention where they were not immediately associated with a recognized church building.[120]

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[118] Black Loyalist Heritage Centre & Society, 'Birchtown's Historical Site'.
[119] Ibid.; Wylie, 'Birchtown, Nova Scotia', 90–91.
[120] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 45–46.

Modern property records occasionally associate the land incorrectly with that of a neighbouring property, rather than the Black Loyalist Heritage Society, addressed on the deed under their former name: the Shelburne County Cultural Awareness Society. Although mention of the burial ground in property records is not consistent, reference to its existence can be found as far back as 1869. In this early deed between a William R. Acker and an Elenor Jane Acker concerning the property immediately adjacent (Figure 1, first excerpt), their lot is described as bounded on its east side by "an old burial ground." Later transfers of the same property refer to the same eastern limit as "an old burying ground" in 1894, 1944, 1968, and 1983, and a single recovered deed for the heritage park itself in 1992 refers to it as "those lands which have been used as a burial ground and cemetery for generations." While there is no greater detail pertaining to the condition or occupants of the burial ground, it appears that there was at minimum some local knowledge of burials in that vicinity by the mid-19th century, although its description as "old" from its earliest reference suggests that it may have already fallen out of regular or frequent use by that time.

Amongst a wide array of societal, economic, and environmental factors which limit the Black Nova Scotian presence in formal written history, racism and acts of vandalism have also played, and continue to play a role. A deliberate act of arson in 2006 against the Black Loyalist Heritage Society saw the destruction of 18 years of collected research and data, including a significant loss of old church records, vital statistics, and related genealogical information which

may have assisted in the identification of persons interred or provided additional clues towards a precise location of burials.[121]

Oral histories collected by the author mostly corroborated the land registry deeds. The initial invitation extended by a Heritage Society member to survey the property came with an explanation that this location had long been regarded as a burial place, and that generations of local children had been warned to watch their behaviour at that site, given an assumed sacrosanctity.[122] From his testimony, that of a few neighbours, and a continued appearance in the property deed records, it would appear that the local majority agrees on a likely presence of burials at the monument site. That being said, the lack of grave markers and contemporary historical documentation leaves room for doubt. The same Heritage Society member who had extended the invitation to survey also mentioned that a few older community members were unsure about this accepted location. This doubt appears to be in the minority but underscores a desire from several members of the community for more conclusive evidence either way.

Aerial photographs dating back to 1927 show very little development of the Black Burial Ground site prior to the installment of the National Historic Sites and Monument Board's interpretive monument in 1996. Although resolution of the monochromatic photos leaves much to be desired, little is visible in the form of vegetation and no structures are visible in any of the available photos prior to 1996 (Figure 10). A linear feature running roughly northwest to southeast through the center of the site in the 1927 photograph may indicate some form of path through the site, but this discolouration is not clearly present in any photographs from

[121] 'The Society | Black Loyalist Heritage Centre & Society'; Whitehead, *Black Loyalists*, 190–91.
[122] Graham Nickerson (BLHS Board Member) in discussion with the author, June 2022.

following years. There also does not appear to be any steep delineation of the site boundaries, as is clearly visible in both the recent satellite imagery and the elevation data collected in 2019. As the elevation data indicates that the entire site exists less than 2 meters above sea level, with ongoing erosional mitigation methods being employed on-site by the Black Loyalist Heritage Society, including the use of armour stone retaining walls (Figure 9, below).

Figure 9: A portion of the park's low retaining wall, looking south from the eastern side of the park at very low tide. This photo was taken the day after the site was hit by Hurricane Lee in September 2023; at center foreground is some of the erosional damage caused by storm surge. A brief pedestrian survey following the storm did not reveal any exposed artefacts or remains from these washed-out areas.

Photo provided by A. Richardson.

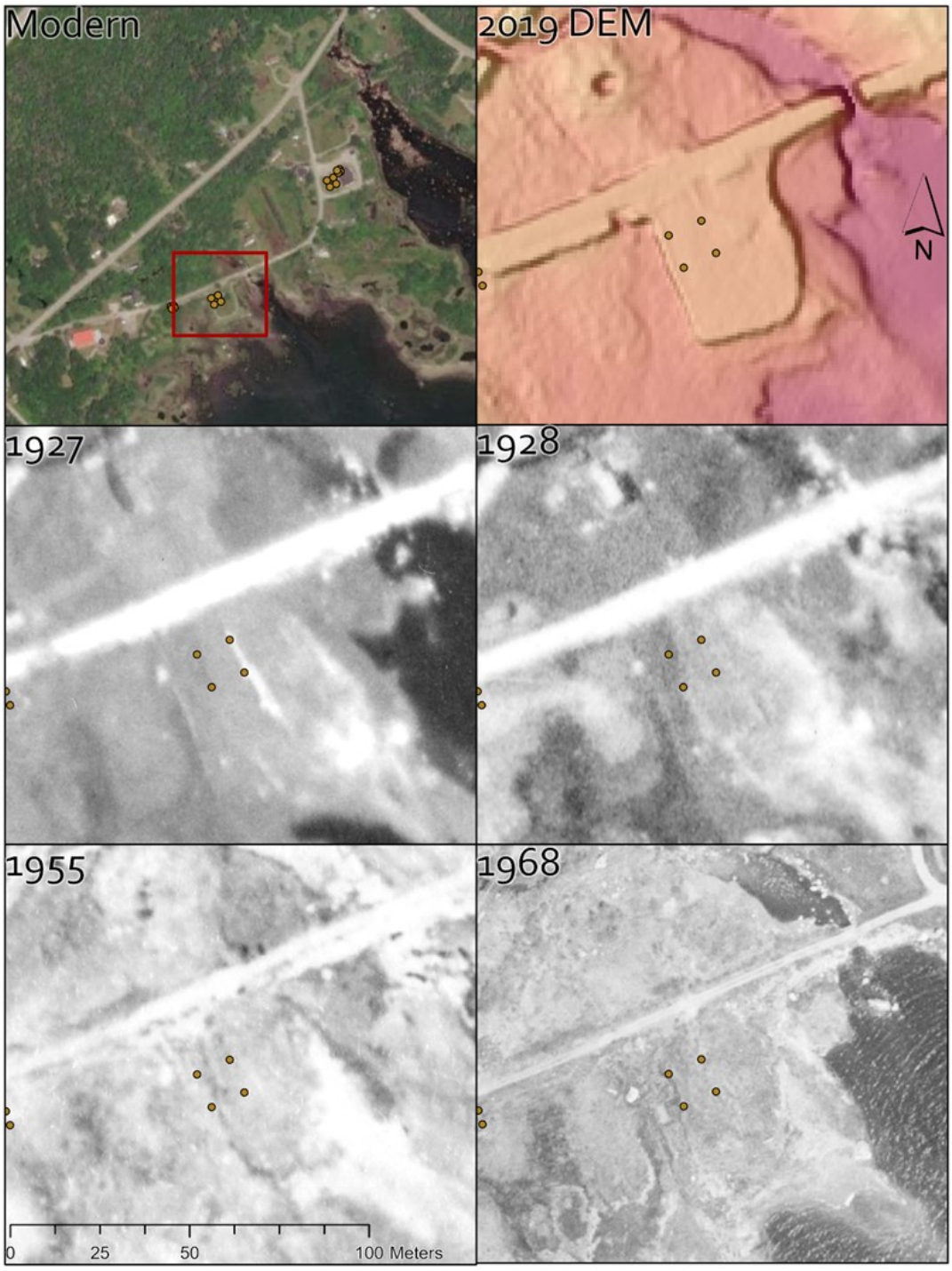

Figure 10: Aerial view of the Black Burial Ground and Monument Site as it appears in modern satellite imagery with following map extents outlined. Also shown is the digital elevation model and aerial photography dating from 1927-1968. Point data marks the corners of this project's survey grid.

Digital Elevation Model data provided by Service Nova Scotia.

Ground Penetrating Radar

A variety of GPR "traits" or anomalies may indicate graves depending on local geology and the forms and features of burial, but features most commonly associated with graves include an increase in radar amplitude in a laterally limited area, or a series of parabolic reflections paired with spots of decreased radar amplitude within a similarly limited area, with either anomalous feature located at a regular depth below the surface which is consistent with expected burial depths given the site's geographic and social context.[123] In addition to the site being very low above sea level, the soils in the park were heavily compacted with a lot of gravel inclusions.[124] The site's coastal location with low elevation and high soil density suggested a moderate likelihood that any burials on-site would be found at shallower depths, where the radar signal is less attenuated but may still be obscured by the stronger radar reflections produced by the rocky, compacted soil. In this case, and in cases where a grave and related materials might have significantly deteriorated, graves can also be associated with discontinuities or irregularities in an otherwise unbroken soil strata resulting from the excavation and infill of grave shafts, especially where such discontinuous areas present as rectilinear in form or arrangement.[125] The relative compaction and density of gravel soil

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[123] Martindale et al., 'The Challenges of Signal Interpretation of Burials in Ground-Penetrating Radar', 4–9; Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 76; Bigman, 'Mapping Social Relationships', 19–20; Conyers, 'Ground-Penetrating Radar', 139–40.

[124] An agricultural study performed around the same time the Birchtown School (now Community Hall) was constructed in 1960 found the entire coastal Birchtown area to be classified as an Aspotogan Series soil: a relatively shallow and poorly draining orthic gleysol. It was also classed as having gently undulating topography (slope under 8%), and being sufficiently stony to seriously hinder cultivation, as attested in historical accounts.
See: Soil Research Institute, 'Soil Map of Shelburne County, Nova Scotia: South Sheet'; MacDougall, Cann, and Hilchey, 'Soil Survey of Shelburne County, Nova Scotia', 21–22.

[125] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 76; Conyers, 'Ground-Penetrating Radar', 158; Davis MacIntyre & Associates, 'Marshalltown Alms House Cemeteries', 31–32.

inclusions suggests this latter feature would be the most likely indicator of potential graves at the park site.

Data collected with ground penetrating radar from multiple surveys of this area did not express strong evidence of burials through any of the three commonly associated features. Individual radargrams appear to display significant amounts of “noise” in the top meter of soil, consistent with expectations based on soil composition. After this top stratum, the signal appears to attenuate rapidly with few, or no additional reflections at greater depths. A strongly reflected horizon is visible across the majority of the survey area, but its size and slope from 0.5m to 1.2m depth below surface across the survey area (Figure 11) suggests that this horizon is likely geological, or hydrological in origin. Should this horizon represent a former soil surface which had been buried during previous efforts to grade or elevate the peninsula, this would push expected depths of burials significantly deeper, but no such evidence of significant material added on the northern side of the site is apparent in the aerial photographs discussed prior. Data was analyzed at various degrees of contrast and gain to minimal effect.

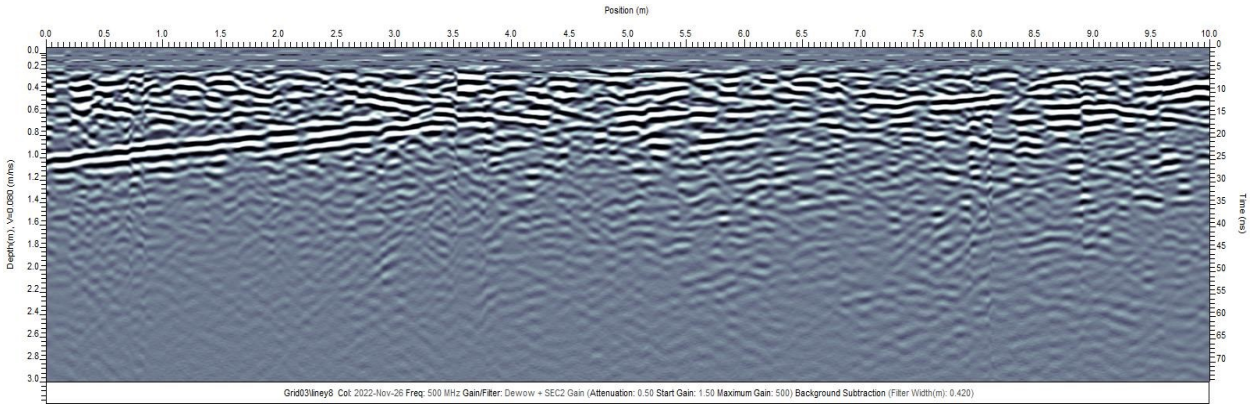

Figure 11: GPR radargram line 8y (metre 4.0 on a north-south transect, north at left). A sloping interface can be seen between 0m and 4m on the left (North) side of the image.

Additional radargrams for the Black Burial Ground site found in Appendix 2.

The consolidation of radargrams into GPR depth slice maps showed some promising reflections at around 1.05m to 1.10m nominal depth below surface (Figure 12), but these do not show the straight edges or east-west orientation expected of grave shafts. The relative size of the anomalies and their consistent depth make it possible these anomalies represent burials; however, the significant density of reflections or "noise" in the slice maps made the determination of potential burial-associated anomalies particularly challenging, and no claims can be made with confidence. Below 1.0m depth is favourable when assessing the probability of anomalies being graves, but an apparent geological horizon observed in the above radargram (Figure 11) and receding at the north end of the following depth-slice map (Figure 12) seems to suggest a buried soil stratum only 50cm-60cm above where these anomalies appear. If this is assumed to be an original soil surface, this would make these anomalies comparatively shallow. It is likely that the poor soil conditions and proximity to water may have significantly limited the depth of graves in that area, and weather-related surface erosion and subsequent grading or landscaping may have changed soil elevations over time. However, other Nova Scotian burial

sites which feature shallow graves such as those at a former Poor Farm in Cole Harbour still show depths upon excavation of 70cm or greater.[126] A surviving photograph of the Anglican burial for victims of the 1873 wreck of the *SS Atlantic* in Lower Prospect also appears to show extremely shallow burials, but this appears to be due to the large number of interments and severe lack of soils in that area necessitating coffins be stacked 2-3 deep in places and leaving little space in the burial trench for infill.[127] The proximity to the surface also introduces a broader range of possibilities for interference relating to previous interactions or disturbances of the topsoil which would affect compaction or soil chemistry, making near-surface anomalies more difficult to confidently associate with burials.[128]

[126] Davis MacIntyre & Associates, 'Marshalltown Alms House Cemeteries', 31–32.
[127] Fowler et al., 'Geophysical Surveys at the SS Atlantic Heritage Interpretation Park', 19–21.
[128] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 78.

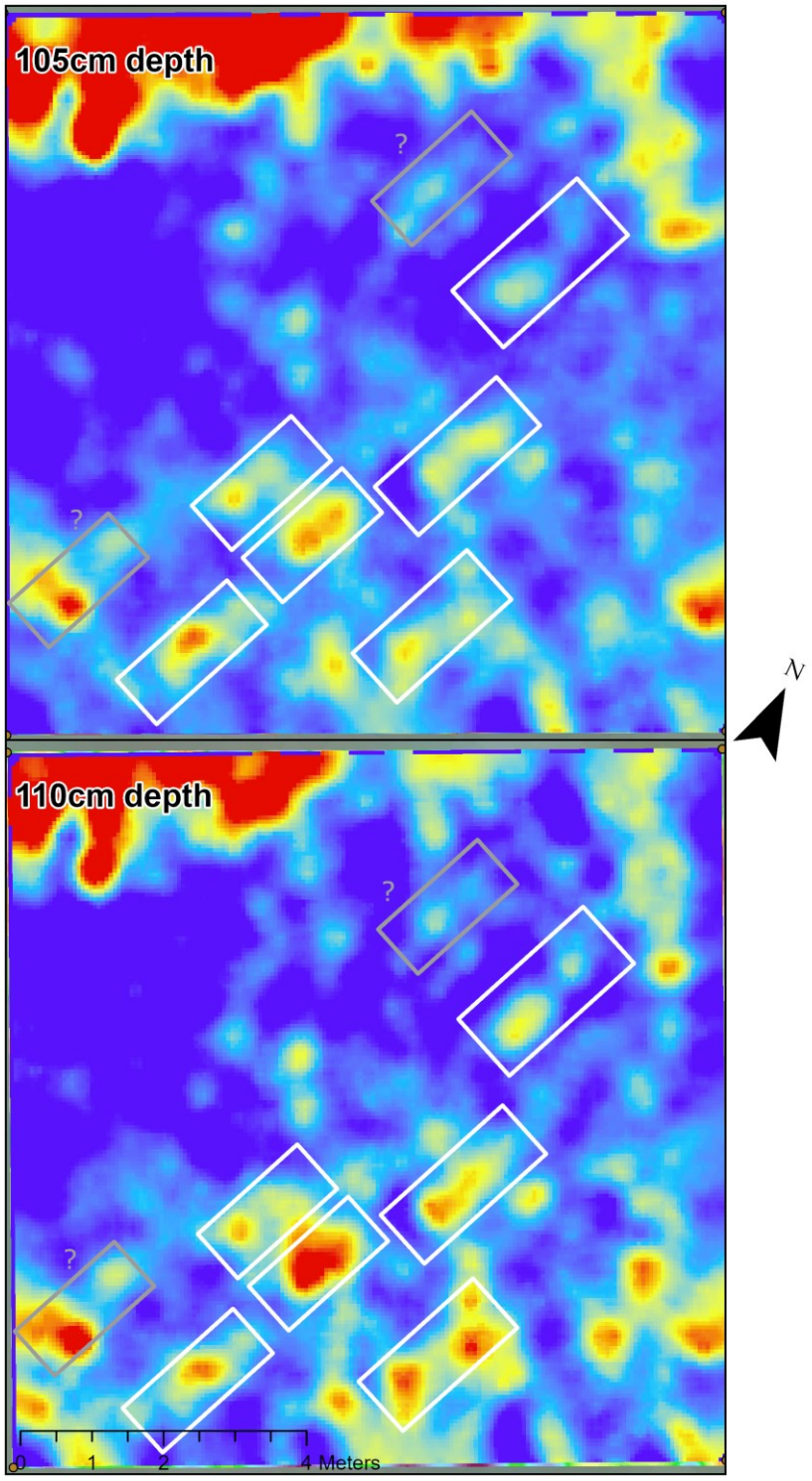

Figure 12: GPR depth slice maps at 105cm and 110cm nominal depth below surface. Data shows a high number of reflections which are likely geological. Strongly reflected anomalies are marked with white rectangles, indicating probable orientation.

Orientation of the anomalies also causes some doubt, as they appear to be oriented roughly north-south, and the difference in magnetic declination of around 13° west in 1800, vs 16° west in 2022 would appear minimal. Burials oriented east-west are typical but not exclusive, and can be influenced by local geography. As the site is situated on a low peninsula, it would appear convenient to organize burials in rows parallel to the road, with a path through the center similar to that which is currently used and maintained; however, the proposed orientations of these anomalies do not appear to neatly align with either the known coastline, nor the orientation of the current roadway and park path. It is possible graves may have been oriented relative to other local geography such as the nearby Acker's Brook, but this would not be practical to prove given the possibility of the brook shifting in its course within the last 200 years. These are features of high amplitude reflections, as opposed to the lower amplitude reflections expected to be observed against a higher-amplitude background, but do indicate an interface in the soil context which may represent void spaces or buried materials. The high amplitude may also suggest that these anomalies are geological in origin, but their proximity to the coast suggests hydrologic interference is a possibility where soils have been disturbed.

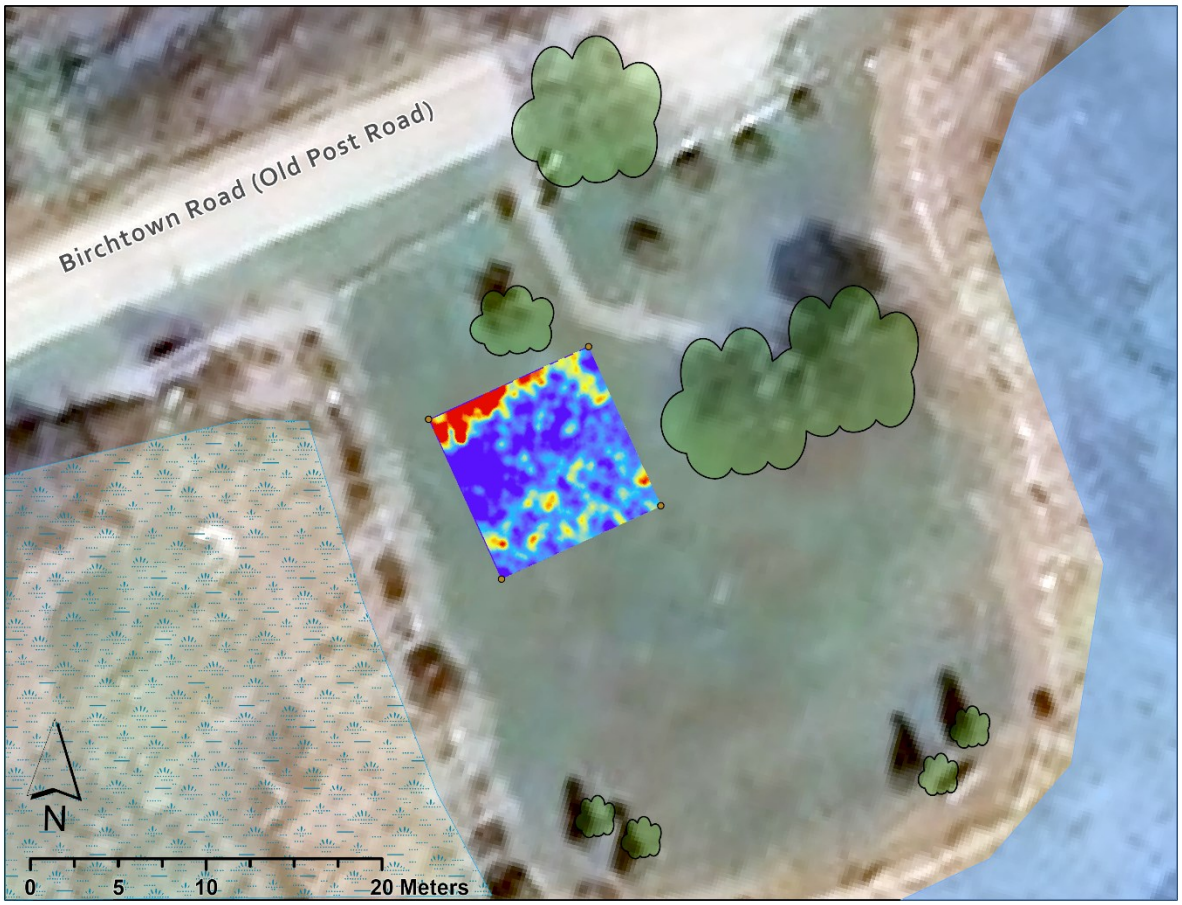

Figure 13: Georeferenced GPR depth slice map at 105cm below surface, relative existing trees and geographic boundaries of the site. Note that no large vegetation nor significant change in coastline is visible in the historic aerial photographs.

Basemap ©Google Earth.

Electromagnetic Induction

As with GPR, electrical resistivity and magnetometry have been used successfully in mortuary contexts in the past where site conditions are favourable, but its reliance on soil chemistry is more effectively utilized for detecting past anthropogenic activity rather than grave structures.[129] For this reason, an EMI survey was performed as a secondary technique in support of density interface data collected from the GPR survey.

The EMI data also proved to be less informative than hoped, and various environmental factors which interfered with instrument calibration resulted in the collection of a small range of dampened magnetic susceptibility values. The conductivity survey performed using the Geonics EM38b is most sensitive to objects within the top 0.5m of soil,[130] which would likely not see below the apparent geological horizon visible in the GPR data, but may show the upper portions of any historical grave shafts assuming these nominal depths are near accurate. No significant conductive or magnetic anomalies are visible which correspond directly with the features detected in the GPR survey (Figure 14). The conductivity results show a gradient with higher apparent conductive readings along the western side of the grid, and a lateral decrease in conductivity as it continues eastward. Since there is very little change in elevation across the survey area it is possible this conductivity gradient is a result of decreasing saline or water intrusion with increased distance from the edge of the neighbouring salt marsh, which is notably less than 10m from the survey grid's western extremity.

[129] Fowler et al., 'Geophysical Surveys at the SS Atlantic Heritage Interpretation Park', 10; Cheetham, 'Geophysical Surveys of Pistil Meadows, Lizard Point (Cornwall) Report II', 5.
[130] 'Geonics EM38-MK2 Ground Conductivity Meter'; Clay, 'Conductivity Survey: A Survival Manual', 84.

An area of decreased conductivity and increased magnetic susceptibility visible along the northeastern side of the grid may be additionally influenced by modern landscaping and traffic through the property, given the survey grid's proximity to the modern path and with the possible path visible in the 1927 aerial photo (Figure 15).

While compaction was less visible in the GPR data along this side, the variation in the EMI results on this side may be attributed to significant interference from the poor soils in the area, which have obscured much of the near-surface layers. Potential grave shafts often appear as areas of reduced conductivity with sometimes points of high magnetism,[131] however no rectilinear feature or clearly defined anomaly which aligns with those in the GPR data are otherwise visible.

[131] Bigman, 'Mapping Social Relationships', 19, 23–24.

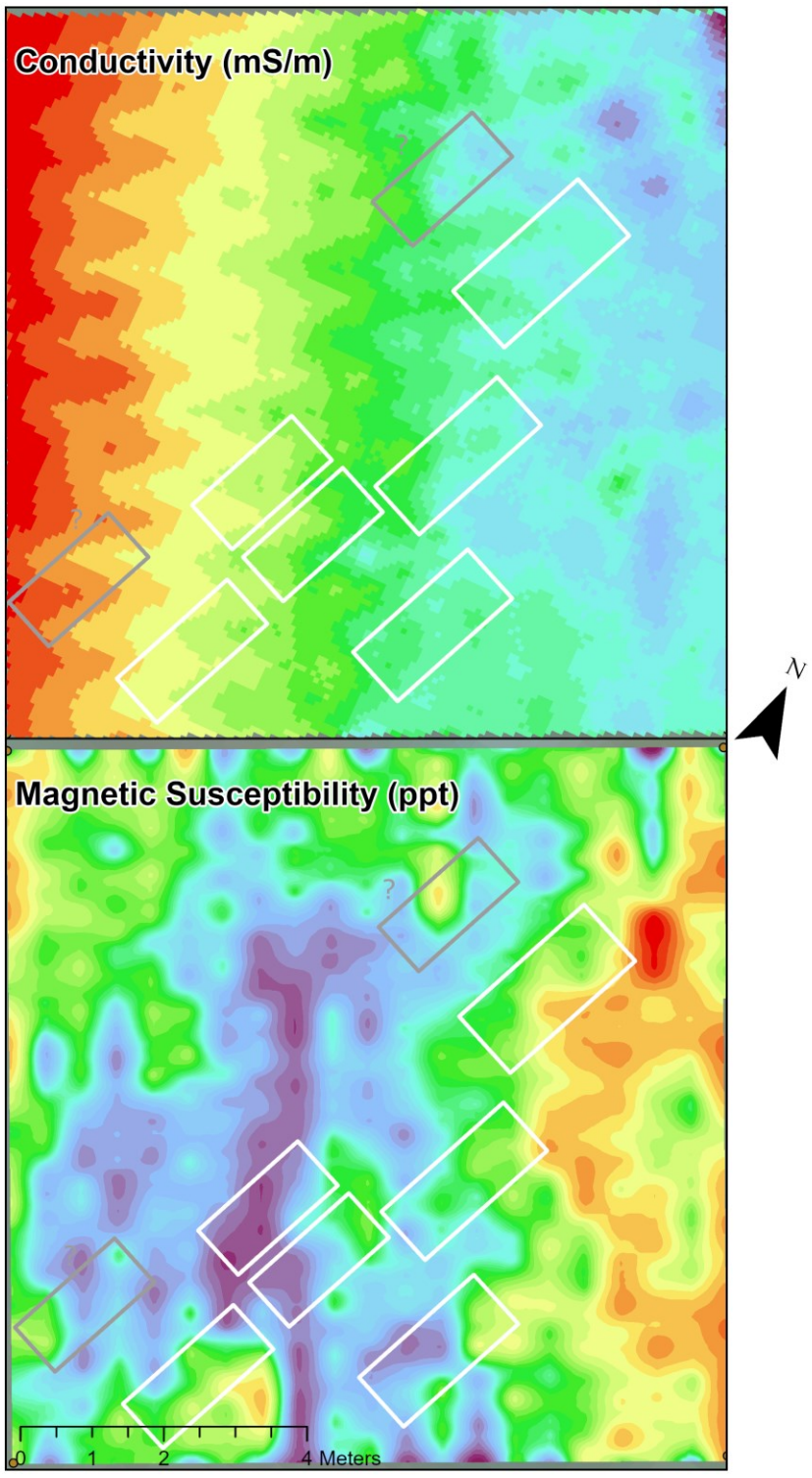

Figure 14: Contour plots of conductivity and magnetic susceptibility results. Anomalies at upper right are likely related to the adjacent gravel path. Marked are the positions of the observed GPR anomalies.

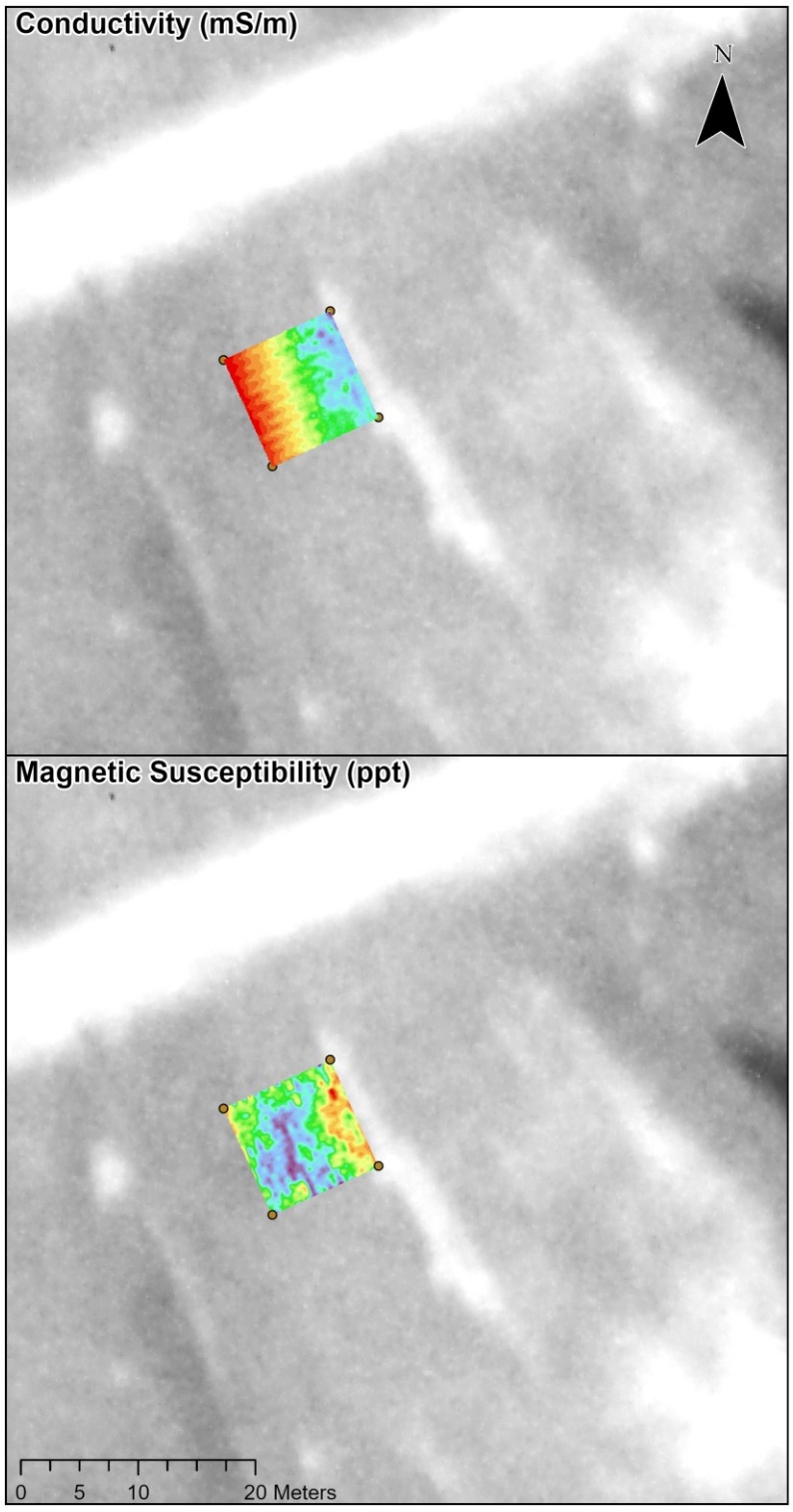

Figure 15: The same EMI contour plots, georeferenced against the 1927 aerial photograph of the site. A pale linear feature visible through the center of the site possibly indicating a former path roughly aligns with the NE side of the survey grid.

Ethnographic Observation

Although outside the original scope of the project, public visitation and observation of the data collection process in Birchtown allowed some opportunity for participant observation regarding local use and behaviours around the site. Initial site assessments and pedestrian survey upon first arrival to the site found a full container of food from a local restaurant which had been placed upright on a rock near the back of the site, apparently untouched; a small peculiarity which was easily dismissed as litter and given little notice. Data collection with the GPR and EM38 began the following Sunday during a community heritage event organized by the nearby Black Loyalist Heritage Centre and Society which brought increased foot traffic to the site, though most were escorted by a museum interpreter and would only venture so far as the HSMBC monument at the center of the park, keeping their distance from the survey grids. One notable exception to this was a younger Black woman who walked past both the museum interpreter and the outlined survey grids to carefully process and lay out various food items, aromatic spices, and flowers at the southwest corner of the property adjacent to one of the park's two benches. Upon approach she explained these items were intended as grave offerings "like when people leave flowers at a grave," which she elaborated with confident assurance that the park had previously been used as a burial ground. Another man appeared to share this belief, similarly passing by the other visitors to the site to kneel with clasped hands at the center of the park in the shade near the HSMBC monument, and spend several minutes silently in the posture of Christian prayer. This man arrived alone and left without speaking to any staff or visitors on site, but his actions appear to support a degree of sacrosanctity ascribed to the site

in a matter which differs from, or is otherwise insufficiently fulfilled by that of the St. Paul's Anglican Church located less than 100m away.

5.2 Birchtown Community Hall

Geophysical survey for potential burials was also requested on the nearby property of what is currently known and utilized as the Birchtown Community Hall, but which was introduced to the author as "the Old Schoolhouse." The history of this site is murkier, ironically owing to its continued and varied use when compared to the relative avoidance of the Black Burial Ground and Monument Site. Notably, there is another building within the Birchtown Museum Complex which bears a sign identifying it as the "Old School House," also presented as such on the Heritage Society's website, but I was cautioned by members of the museum staff that this was just one of a few "old schoolhouses" which had been built in the area.[132] The first known schoolhouse in Birchtown was established in 1785 by Black Loyalist Colonel Stephen Blucke, and operated until its closure in 1796 as a result of dwindling population following emigration to Sierra Leone and a general trend of urbanization towards Halifax County and away from the Shelburne area.[133] Previous archaeological investigations have proposed that Col. Blucke lived very nearby both the Burial Ground site and the current Community Hall site, being on the North side of the old Birchtown Road and on the Eastern bank of the same Acker Brook which runs adjacent to the Burial Ground site. It seems probable that his school would also be in this area.

[132] Nickerson, July 2022.
[133] Walker, *The Black Loyalists*, 83, 387–88; Niven, *Was This the Home of Stephen Blucke?*, 21.

Figure 16: Map Detail by A.F. Church in 1882 showing Birchtown. Note school property underlined at center, between the properties of Roswell Brown and William R. Acker. No label is given for immediate area of current Community Hall.

Map hosted by the Nova Scotia Archives Map Collection.

One of the maps drawn by cartographer A.F. Church in 1882 (Figure 16) identifies a school apparently located on the property immediately West of W. Acker's property and the Burial Ground site, and East of a property labelled as belonging to one R. Brown. This is likely the building currently presented as the "Old Schoolhouse" as part of the Birchtown Museum Complex, built and operated by a Roswell Brown on his own property in 1832 and continuing operation in some capacity until 1960.[134] Note that this map predates the construction of a railroad and the modern highway, which have since intersected Birchtown Road on either side of this property.

Property deeds indicate the Municipality of the Distract of Shelburne was in possession of the current Birchtown Community Centre property from 1961 until its sale to the Birchtown Community Centre Association in 1993.[135] Requests for official documentation regarding the school building and its use during this period were unsuccessful, and inquiries made to the Shelburne County Archives and the Shelburne Municipality Department of Inspection Services regarding construction and renovation at the Birchtown Community Hall site were also unsuccessful as permits were not provided nor recorded locally until the late 1980s.[136] In absence of regulatory or managerial documentation, testimony from neighbours and nearby schools corroborate the building being constructed around the year 1960, and operating as Birchtown Consolidated School until it and two other local elementaries were consolidated

[134] Black Loyalist Heritage Centre & Society, 'Birchtown's Historical Site'; 'Hillcrest Academy - About'.
[135] See: Shelburne District Registry of Deeds, book 205, pages 356-358 (doc. #1534) for the 1993 deed transfer and reference to 2 preceding transfers in 1961 (SDRD 76, p.72) and 1947 (SDRD 74, p.571).
[136] Andrew Goreham, email message to author, March 8-10, 2022.

within the Town of Shelburne in 1992.[137] Prior to this, no structures are visible in aerial photographs and no mention is made in available property records regarding land use.

The property on which the current building stands was once part of a larger parcel which has been subdivided multiple times in the last 200 years, making identification of relevant deeds more challenging. Notes added to an adjacent property's description in the provincial land registry database describe the parcel as being created by subdivisions which predate subdivision control or planning legislation for the Shelburne Municipality, and the written descriptions provided for lot divisions in earlier deeds allows ample room for error.

[137] 'Hillcrest Academy - About'.; Goreham, ibid.; Hank Falk (Birchtown Community Centre Building Manager), in discussion with the author, November 2022.; Nickerson, May 2022.

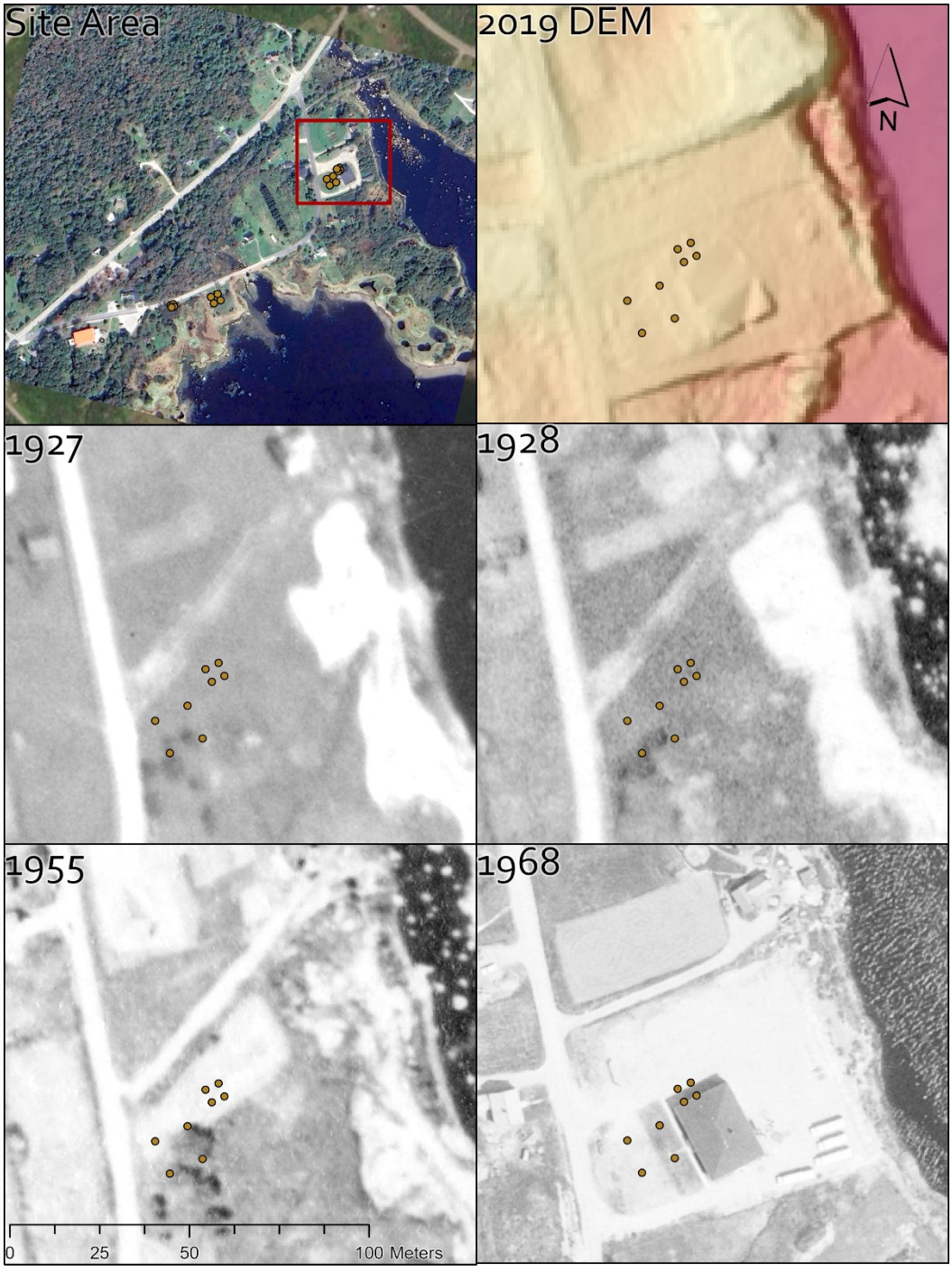

Figure 17: Aerial view of Birchtown Community Hall property as it appears in modern satellite imagery, digital elevation model, and aerial photography dating from 1927-1968. Points mark the corners of this project's survey grids.

Inset basemap ©Google Earth, DEM provided by Service Nova Scotia.

Discussions with neighbours regarding the Community Hall property's use prior to the establishment of Birchtown Consolidated School appeared heavily reliant on the testimony of one neighbour who had been residing immediately adjacent the schoolhouse property during a period of construction or renovation. Unlike the Burial Ground park, no documentary evidence found indicated the existence of burials on the Hall property, although the testimony of this late-neighbour claimed they had personally witnessed exhumation of remains while construction crews were digging out a basement for the building, which was relayed to neighbours as "definite human remains" based on the inclusion of skulls and other easily identifiable features.[138] It was proposed these remains were reburied with the construction infill, and the lack of necessary permitting or related municipal documentation meant it went unreported.

Prior to the property's subdivision and sale to the Municipality in 1961 the parcel of land which is now occupied by the Community Hall was formerly joined with two neighbouring properties to the immediate north and southeast corner. Property records indicate a subdivision of these lots prior to 1947 as each list different owners, but a driveway crossing diagonally through the Community Hall property into the adjacent North lot is easily visible in aerial photographs as late as 1955 (Figure 17). This driveway does not intersect either survey grid and so should not be evident in the survey data. The 1955 photograph also appears to show tree cover which may be visible in the geophysical data as soil disturbance due to roots. Also visible over both grids is a brighter polygonal area, likely indicating tilled or cultivated land which

[138] Falk, November 2022.

would be expected to disturb near surface soils. Another neighbour also mentioned that during or immediately prior to the construction of the schoolhouse, the property had been heavily graded and "entirely gravel pit;" this significant grading is not still evident around the survey area, but a property adjoining the southeast corner which is currently owned by the Province's Department of Transportation and Communications is registered for use as an "Old Gravel Pit." As such, while the aerial photographs and in-person landscape assessment do not suggest significant landscaping-related disturbance had occurred, it seems likely that these brighter areas located on the Eastern side of the property in the three earlier photographs constitute some form of gravel surfacing or exposed soils (Figure 17).

Results from the GPR survey found a high density of radar reflections within the estimated top 50-80cm of soil as expected. Any decreased compaction and ability to hold water, or increase in soil porosity that might indicate a grave shaft relative to an undisturbed matrix would not be detectable near the surface due to the multiple events of ground disturbance, but several strong parabolic point reflections and linear anomalies are visible at greater depths.

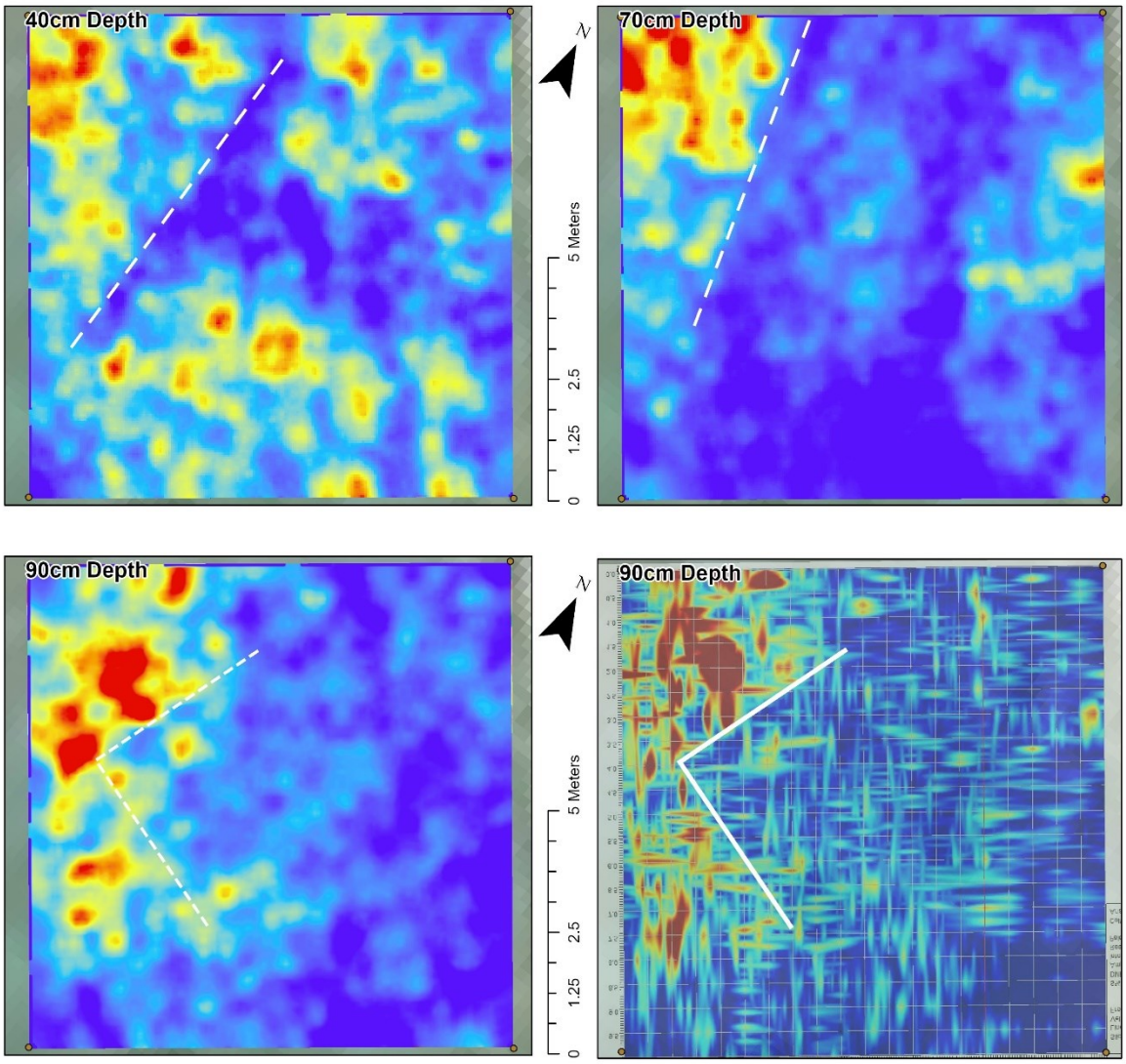

Figure 18: GPR depth slice maps at 40cm, 70cm, and 90cm estimated depth below surface using EKKO_Project's SliceView Lines algorithm, and another at the estimated 90cm depth showing a preliminary SliceView Grid interpolation. Note the appearance of a linear feature or interface in each, albeit with some variance in angle.

See Appendix 3 for additional time-slice depth maps for the Community Hall site.

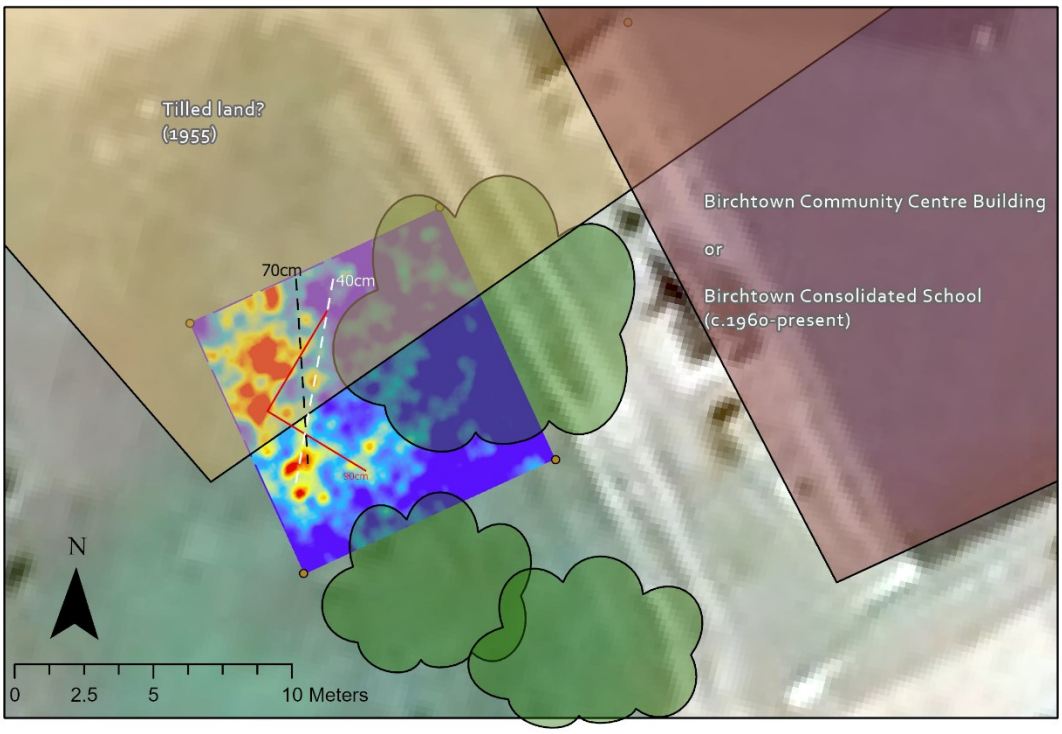

Figure 19: Georeferenced GPR depth slice map at 90cm below surface. Lines indicate linear anomalous features outlined in the slice maps above, or in the radargrams described below, and labelled with their respective depths. Also overlain are trees and other potential sources of ground disturbance present in the aerial photography.

Multiple linear features are visible with increasing depth and with similar orientation. It is unclear whether the high volume of reflections in the northwestern corner of the survey area is geological in origin or perhaps in part reflective of regular traffic over the neighbour's driveway which had formally passed adjacent. Regardless, it provides a background of high amplitude reflections against which a sharp decrease is visible around 40, 70, and 90cm of depth. As seen in Figure 19 above, these features do not appear to align with any current or previous developments on the site during the periods for which aerial photographs exist. To the best of knowledge from the Community Hall's current management, no buried utilities exist in this area which might explain any observed linear anomalies; however, a general lack of noticeable features on the east side of the survey area may be explained by tree removal or construction disturbance, given its proximity to the current Community Hall building.

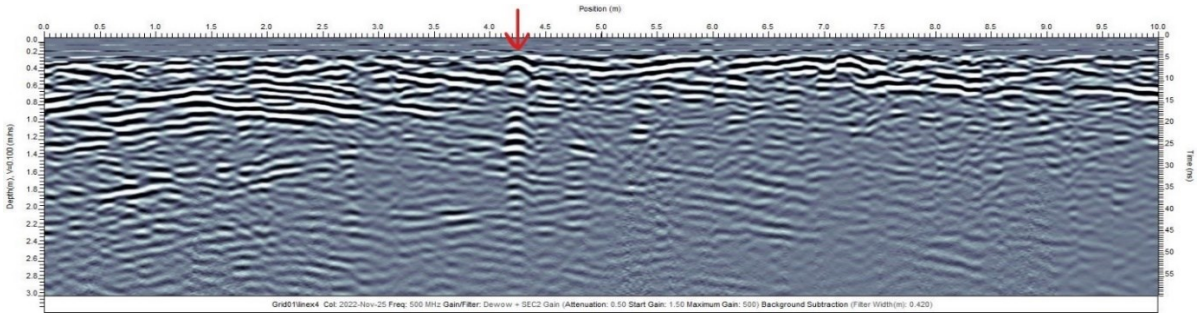

Figure 20: GPR radargram line x4 (metre 2 oriented west to east). Vertically stacked point reflectors marked with arrow. Note depth and density of reflections to left (west) of point stack as compared to the generally shallower reflections at right (east).

The significant disturbance of surface soils appears consistent within individual radargrams, but this rectilinear feature observed at 90cm depth correlates with several strongly contrasting point reflectors or parabolic anomalies. The above radargram (Figure 20) represents a survey line taken with a west to east orientation 2m from the northern extent of the grid, and appears to capture the northern extent of the deeper rectilinear feature visible in the slice

maps. The arrow identifies a narrow vertical stack of point reflectors but with limited response parabolas, which possibly indicate a vertical interface between soil media, or potentially a metal response. The linearity observed with depth, correlated with apparent linearity in the aggregated slice maps which bound an area of low amplitude relative to a high amplitude background suggests a dug feature, but of a size considerably larger than would be typical for individual grave shafts.

The individual radargrams also showed a number of anomalies of 1m-2m in size at around 1.6-1.8m depth visible within this area of decreased amplitude (Figure 21), although with apparently insufficient amplitude to appear clearly in the depth slice maps. Reflections of this size and relatively consistent depth may indicate the bottoms of grave shafts or density changes resulting from decayed caskets and related burial materials, but no regularity or patterning of these reflections was present which would be sufficient to identify these confidently as markers of burials rather than a subtle and intermittently received geologic soil profile.

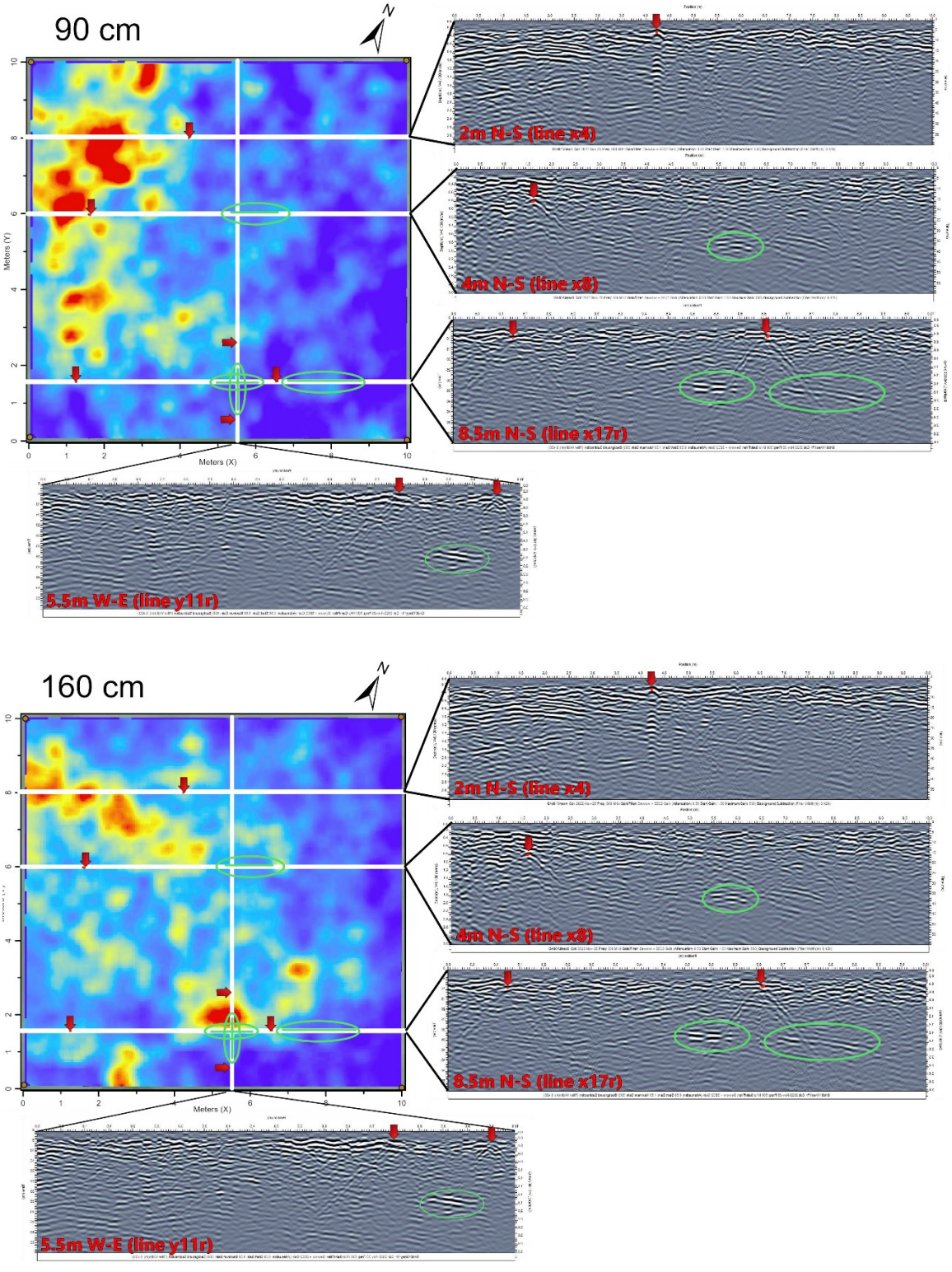

Figure 21: GPR depth slice maps at 90cm and 160cm below surface (estimated) with radargrams of lines x4, x8, and x17 oriented west to east, and line y11 oriented north to south. Lines x17 and y11 were recorded on transects returning to origin and have been horizontally flipped for consistency.
Red arrows indicate strong response parabolas as they appear in radargrams and their relative location in the slice map. Circled are a few of several anomalous reflections visible at around 1.6-1.8m depth.

GPR survey from the smaller grid located immediately north of the Community Hall building presented very strong reflections, but with little discernable organization and has hence been omitted. EMI survey was not done on this grid due to the presence of overhead wires and concern of external electromagnetic interference.

Because conductivity and magnetic susceptibility surveys performed with an EM38 typically only penetrate the top 0.5m of soil with clarity, most potential signatures within the north and east sides of the survey area are likely to be obscured due to aforementioned cultivation or construction-related ground disturbances, with possible exception of strongly electromagnetically responsive materials. Conductivity results at this site appear in a smaller value range than those at the Burial Ground site, potentially due to increased distance from the bodies of water.

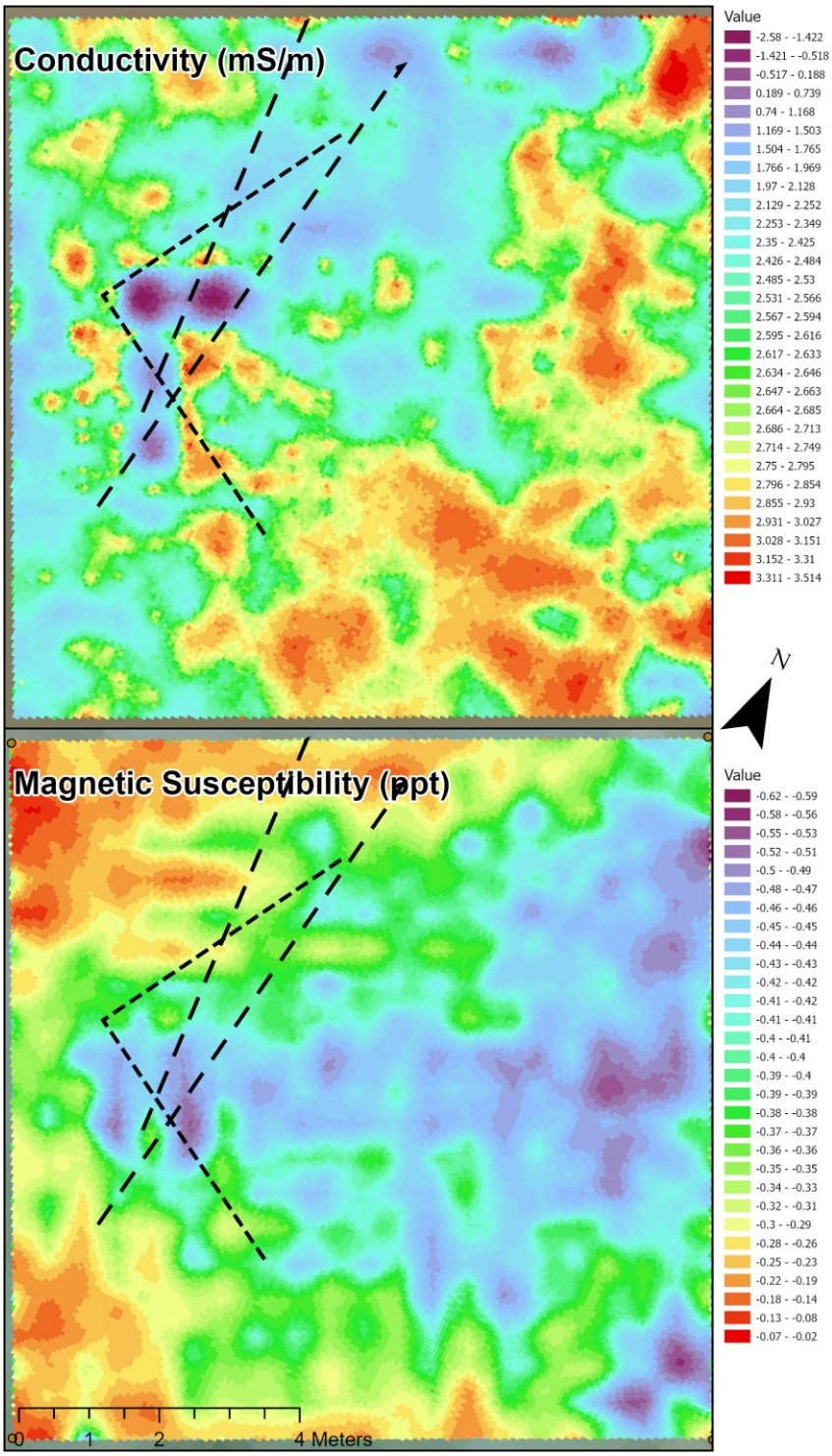

Figure 22: Conductivity and magnetic susceptibility plots, produced through interpolation and averaging of gridded survey transects with both north-south and west-east orientations. Overlaid lines indicate features observed in GPR data. Negative magnetic values are relative, not absolute.

Radar anomalies observed in the GPR survey don't appear strongly in the EM data, with a few exceptions. An abrupt area of high conductivity and low magnetic susceptibility is visible running north to south near the northeast corner (Figure 23, see dashed red line), which seems to correlate with a few radar reflections visible in the GPR depth slice map between 60-75cm depth below surface. This feature appears to parallel the dimensions of the Community Hall building and roughly correlates to the boundary of a lawn visible in 1968 photography. The photography also appears to show a car within the area currently used as a lawn, and one of the owners indicated that a rope and wood post fence which surrounds the survey area was intended to prevent vehicles driving over the lawn.[139] The period of vehicular traffic appears to have lasted only a few decades between establishment of the school and the later establishment of the community centre, and with unknown frequency, as the same 1968 photography appears to show school buses parked behind the building (Figure 17). No significant electromagnetic anomalies appear in either the GPR or EMI results which would be consistent with the assumed direction of travel past the building or easily differentiated from instrument lag, but the compaction and the possibility of soil contamination resulting from regular vehicular traffic can reasonably be assumed to have contributed to some of the electromagnetic noise seen within the top 0.5-0.8m of soil in both the radar and EMI surveys.

Another area of variable conductivity and magnetic amplitude seen above in the southeast corner (Figure 22, circled in Figure 23) corresponds to an area of decreased radar reflections observed at multiple depths. This anomaly highlights the area of a small surface

[139] Falk, November 2022.

depression, which likely muted readings collected due to temporarily increased height of the data instruments above the soil surface in this small area. Comparison against the 1968 aerial photo appears to show a path running between this depression to the front entrance to the Community Hall, so it is possible this represents a (partially) collapsed void but is likely that this reflects a more modern feature.

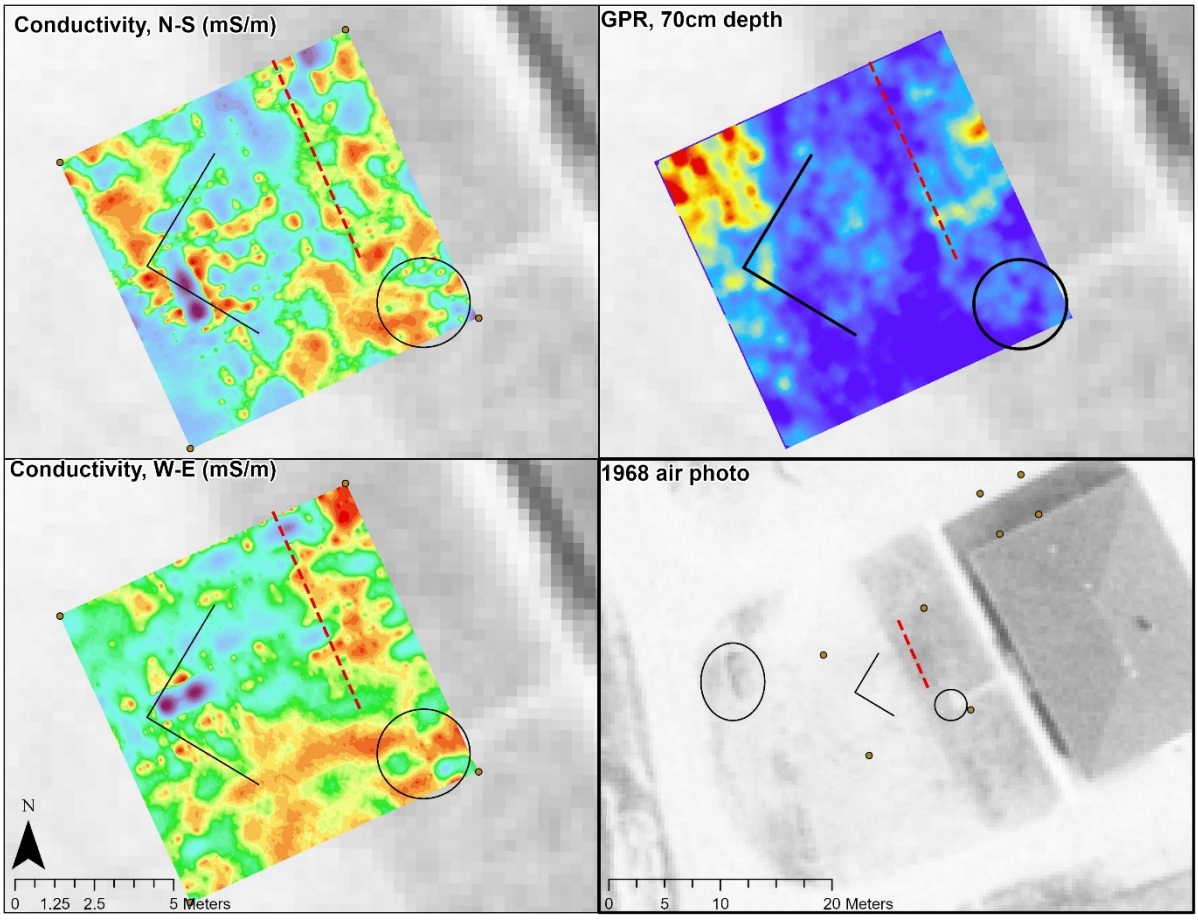

Figure 23: Comparison of survey results, with conductivity results separated by collection orientation. The dashed red line indicates the edge of an area of increased electromagnetic amplitude in both EMI and GPR surveys. The object circled at left in the 1968 aerial photo appears to be a car.

A strong conductive low paired with a very slight increase in magnetic susceptibility is visible inside the corner of the deep rectilinear feature observed in the GPR survey, as seen in Figure 22Figure 23. The shape appears to show aberration along transects with sufficiently high

amplitudes that the combination and averaging of both the north-south and west-east survey orientations did little to blur or smooth these aberrations. When viewed separately as in Figure 23, both anomalies show a bimodal pattern of an extreme low trough, followed by a small increase to near-background levels, then another extreme low following the direction of travel along the relevant transect. Similar features with a conductive low-high-low pattern have been observed elsewhere to counterintuitively indicate the presence of metals, as an object with particularly high conductivity which is located at a moderate-shallow depth which does not immediately overload the sensor and which is too small for its exact size and shape to be determined may sometimes appear to reverse the polarity of apparent conductivity readings.[140] The small size combined with the inversion of apparent conductivity results in paired amplitude peaks at a distance roughly equivalent to that of the electromagnetic dipole coils on the EM38. A couple of features observed with this low-high-low amplitude contour during a 1993 survey at an American Civil War-era domestic site were identified as iron objects smaller than 0.5m in size and around 0.45m below surface.[141] In that case, the bimodal conductive readings were also associated with magnetic anomalies which makes the comparison helpful for interpreting the above conductive as a probably highly conductive object, but indicates that this anomaly observed at the Birchtown Community Hall site is likely non-ferrous, as it is comparatively non-magnetic. Common potential materials with high conductive but non-magnetic properties may include aluminum, bronze, brass, copper, and a few other precious metals. While it is tempting to think of memorial bronzes or other potential grave goods, its proximity to the corner of the

[140] Bevan, *Geophysical Exploration for Archaeology Volume B: An Introduction to Geophysical Exploration*, 1:24.
[141] Ibid., 1:22–24, 110–11.

radar feature and to the edge of the ambiguously landscaped area as seen in 1955 seems to suggest a greater likelihood that this is representative of more modern waste, such as an aluminum fence anchor. If this conductive anomaly is indeed modern, it may suggest that the corresponding GPR anomaly is similarly modern, but no ground disturbance of that shape or size is visible in any of the aerial photographs and lateral aberration or staggering visible between the electromagnetic survey orientations makes it difficult to confidently ascertain whether or not the radar and conductive anomalies are directly related.

Although the magnetic susceptibility map shows an area of low amplitude through the center to left sides consistent with the radar results, and some small conductive peaks or abrupt changes in amplitude especially in the north-south survey orientation appear to roughly match features observed in the radar data, little is visible which might be confidently interpreted as graves. Linear features observed in the radar data do not align with known historical structures or land development as demonstrated in Figure 19, and the depth of these vertical soil interfaces and of several 1m-2m reflections are certainly compelling features in a search for unmarked burials, although the latter lacks clarity and regularity. There is also a lack of linear or sequential features of low conductivity, with or without small magnetic anomalies and with sufficient size, regularity, and clarity which might indicate burials. As a neighbour had previously proposed the remains supposedly exhumed may have been reinterred during the construction process,[142] there exists the possibility that such a large trench may represent a mass burial of disturbed remains rather than a remainder of organized, undisturbed shafts. This is, however, mere

[142] Falk, November 2022.

speculation, and is doubtful to be visible by any method of ground-truthing beyond traditional excavation.

Chapter 6: Discussion

The goal of this project as requested by members of the community was to attempt to confirm the existence of burials at either of two potential sites using geophysical survey methods for ground-truthing. Ethnographic observations of behaviours on-site were incidental, but highlighted the existence of differing perspectives of space as applied to the two Birchtown sites. The need for physical evidence of burials for the recognition and protection of the space from a legal perspective were not satisfied through the use of geophysical survey, nor are there presently existing any known markers at either site which may provide adequate material evidence to support any legal arguments regarding either site's use as a burial space. Conversely, memorial or reverent behaviours observed at the marked Black Burial Ground site show some degree of continued use of the property as a site associated with memory, if not explicitly of sacredness. From this local ethnographic perspective, the social role of a burial space as a location of memory which demands respect is maintained and reinforced through continual use, regardless of physical evidence or lack thereof. In essence, the Black Burial Ground park is treated or regarded functionally by these members of the community as a burial ground, but discovery of material evidence is still required to enforce the legal protections offered in perpetuity to officially recognized burial sites.

6.1 Material evidence in archaeology and law

Archaeology frequently uses historical and modern ethnographic sources to guide investigations and inform interpretations, but the field is primarily defined by its use of material culture and the physical environment to inform our understandings of people and culture in a predominantly historical context. It is typically used in tandem with historical records but is often used to verify or expand on historical record or to illuminate where the record is lacking, putting greater emphasis on material evidence to fill these documentary gaps without the aid of contemporary explanation.[143] Discussions of archaeological methodology have increasingly addressed the need for local or descendents' knowledge to be included in archaeological research,[144] but the nature of this material focus means that any conclusions made from an archaeological perspective require material evidence to support claims. Geophysical survey technology becomes particularly appealing in contexts where excavation or more invasive methods of ground-truthing may be unavailable specifically because it of its use in detecting and measuring variance in the physical or chemical properties of a soil context, effectively providing an indirect method of locating, viewing, and recording a potential archaeological site based on observed physical features. In a sense, geophysical survey provides a form of material evidence which may be used sometimes to verify the existence of a site, or often to focus feature investigations.

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[143] Cottreau-Robins, 'Searching for the Enslaved in Nova Scotia's Loyalist Landscape', 129–30; Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 101–2; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 8, 17; Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 77–78.

[144] Cottreau-Robins, 'A Loyalist Plantation in Nova Scotia, 1784-1800', 134–37; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 75.

In Canadian archaeology, the burden of material evidence is additionally important where archaeological or cultural heritage sites and are protected or otherwise defined and constrained by law. From a legal perspective, burial spaces are seen as sites of conflict between "the rights of the living to have a memorial for the dead and the rights of other living people to use the land in (what to them is) a more productive fashion,"[145] exacerbated by the assumed perpetuity of a burial space's sacredness and preservation, potentially resulting in a hesitancy to apply those legal protections without certainty. Cases based on testimony may be successfully heard in court where this conflict occurs, but pre-emptive legal identification and protection of these spaces frequently requires the conclusivity of material evidence. Such material evidence for recognition of "abandoned cemeteries" as outlined in the Nova Scotia Cemeteries and Monuments Protection Act includes either "monuments" identifiable as a memorial feature, or the discovery of human remains "where there is no evidence on the surface of land that the land is a cemetery."[146] This requirement is largely practical in consideration of the above land-use conflict, but creates some difficulty in recognizing some older sites without significant ground disturbance and potentially disturbance of burials themselves. This is often especially felt in minority communities, where poverty, destruction, or neglect over time can severely limit surviving material culture.[147]

In the case of both Birchtown sites investigated, the materiality of geophysical investigation also provided some understanding into the physical needs of the sites, in addition to any legal concerns. Positive delineation of the sites would allow caretakers information to

[145] Engelhart, 'Equality at the Cemetery Gates: Study of an African American Burial Ground', 9.
[146] Nova Scotia Legislature, Cemeteries and Monuments Protection Act, secs 2, 8.
[147] Engelhart, 'Equality at the Cemetery Gates: Study of an African American Burial Ground', 14.

better assess proper maintenance, including specific concerns surrounding the Black Burial Ground site's vulnerability to coastal erosion.

6.2 Results of Geophysical Survey

As others have noted, it would be impossible to confidently identify historic burials without the confirmation provided by subsequent excavation.[148] Particularly strong or well-defined geophysical anomalies may be accepted with reasonably high-confidence where investigations involve very sensitive contexts such as with the search for unmarked burials of Indigenous children at former Canadian Residential Schools, or in cases where graves are already suspected with high probability such as an extension of a known burial site.[149] In these cases the results are accepted in terms of probability and are typically presented with that caveat in mind, in the interest of not disturbing features that are interpreted as having a high likelihood to be graves. Although non-intrusive methods were similarly preferred for this investigation, neither method of remote-sensing proved able to identify features or anomalies of sufficient strength, density, patterning, or clarity for any such assertions to be made about either potential burial site at Birchtown without this subsurface testing. While some notable features were visible, their relative lack and limited ability for interpretation would make these results better suiter towards support of, and aid in locating and interpreting any future excavations, or subsequent surveys with greater sample density.

[148] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 76.
[149] Eastaugh, Wadsworth, and Fowler, 'Conductivity Survey: Recommended Data Collection Procedures for Locating Unmarked Graves', 7.

GPR features observed at the Black Burial Ground site did not show many clear reflections which might indicate soil interfaces or voids within grave shafts, but the same lack of defined anthropogenic features and the presence of what appears to be an undisturbed geological soil horizon also seems to indicate a historical lack of structures on site. The absence of these features is particularly evident when compared to similar surveys taken from other locations within the study area, and appears to both corroborate the apparent lack of structures or ground disturbance patterns visible in the aerial photographs, and suggests that the existence of any unseen foundations or sub-surface structural features built and subsequently demolished prior to the capture of these photographs would be unlikely.

Subtler features observed in the GPR data which correspond minimally with the conductive and magnetic susceptance data are not clearly defined, and may be easily dismissed in absence of other avenues of investigation. The apparent avoidance of land development and the site's long-standing oral tradition as a burial ground makes interpretation of these features as potential graves more plausible, but still requires additional study to verify any observed anomaly.

Geographic information may also be used to determine the probability of burials at either site, where comparison against similar sites and landscape analysis previously done on the Birchtown community may suggest patterns or preferences in spatial organization as it pertains to burial spaces in Black Loyalist, and Black Nova Scotian communities. As a historically marginalized population, literature of potential comparative free Black Loyalist sites elsewhere is relatively poor, but comparison against a few more prominent Black burial sites throughout

North America may be used as representative of the North American African Diaspora to show several points of physical and potentially social similarity.

The St. Matthew's Northern Burial Ground in Nassau, Bahamas, used by both free and enslaved Black Bahamians beginning in the late 18th century, was established apparently within the community of St. Matthew's Parish and with a considerable degree of a freedom in planning and land use. The Burial Ground is located nearby the St. Matthew's Anglican Church building constructed in 1802 to accommodate the influx of Loyalists, but a burial marker dated to 1733 in the adjacent Central Burial Ground suggests their establishment significantly predates both the church building, and the establishment of the St. Matthew's Parish in 1796.[150] At the time of their founding, it appeared the Nassau burial grounds were not associated with any religious building or organization that was documented or later recognized by the Anglican Church.

Similar to both potential Birchtown sites, the Northern Burial Ground is located at sea level immediately adjacent the coastline, necessitating the installation of a protective sea wall along the waterfront in 1883.[151] Excavation of these burials found that although some reclamation of the coastline had occurred in that area increasing their distance to the waterfront, remains were consistently encountered below the water table, where the grave shafts would quickly flood.[152] Specific documentary or ethnographic supporting evidence was not provided and likely was not available, but given the inclusion of grave goods typically associated with early Black American burials, the project archaeologist suggested that

[150] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 69–72.
[151] Ibid., 74.
[152] Ibid., 81–82.

interments into standing water may have been intentional, and drew comparisons to a similar practice observed in Black American burials in the 1960s.[153]

One way in which the Nassau burial ground apparently differs from the Birchtown sites was in the discovery of buried stone grave markers. Many of the Nassau burials appeared to have been disinterred and relocated off-site during the installation of a sidewalk through the area in the 1930s, and remaining stone markers were placed face-down and buried during construction[154]. The result was that no such markers were visible at the surface, nor were they clearly visible within geophysical survey and were only discovered through excavation of areas which the GPR survey indicated were of higher probability of finding grave shafts. Ultimately they indicated that although the cemetery appeared unmarked, the lack of surficial markers was due at least in part to neglect or intentional destruction, in addition to any potential cultural or economic limitations to the installment and survival of burial markers.

In 1991, the New York City African Burial Ground in downtown Manhattan was also discovered accidentally during construction. It had been used from the mid-1600s up to 1795 by both the free and enslaved Black population of New York City, until it was gradually destroyed or built over as development of buildings and infrastructure encroached on the site throughout the 19th and 20th centuries.[155] Although not a coastal site, researchers noted the establishment of the burial ground immediately adjacent the former Collect Pond, a body of water which was

[153] Ibid., 82.
[154] Ibid., 74, 81–88.
[155] LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States', 299; Rothstein, 'A Burial Ground and Its Dead Are Given Life'.

then located at the outskirts of the town.[156] As one of the archaeologists on the excavation project, Dr. LaRoche did not mention standing water in excavated units as was observed at the Burial Ground in Nassau, but suggested the New York African Burial Ground's proximity to the Collect Pond may have had some spiritual significance as it mirrored similar mortuary associations with water observed in West and West Central African cultures.[157]

Black Loyalist burial sites in New Brunswick varied in location, but several were located adjacent water as with those in Nassau, Manhattan, and in Birchtown. The Kingsclear Black Cemetery was established on the banks of the St. John River, below the train tracks and segregated from the community's majority white cemetery which was established uphill. Although many cemeteries in the area were relocated prior to the installation of the Mactaquac Dam in the 1960s, the Kingsclear Black Cemetery was the only cemetery marked within the relocation project's documentation as "Not to be Moved or Disturbed."[158] It was suggested these graves may have been missed due to their being unmarked,[159] but ultimately they were submerged with the dam's completion. In this case, the example of the Kingsclear Black Cemetery shows both a geographic proximity to water, but also evidence of neglect, erasure, and/or intentional destruction through development which obscures its location and effectively prevents access.

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[156] LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States', 299–300.
[157] Ibid.
[158] Bird, 'This Stone Revives a Flooded and Forgotten N.B. Black Graveyard'; Bird, 'Keeping the Memory of a Lost Cemetery Alive'.
[159] Bird, 'Keeping the Memory of a Lost Cemetery Alive'.

Several of the known Black Loyalist burial spaces in New Brunswick feature stone headstones which likely aided in the continued recognition of their existence and location, but this was not typical for many early Black Canadian burials. Where poverty and famine marred the early years of Loyalism in Nova Scotia and New Brunswick, stone headstones were too great an expense for many of these early Black Loyalist refugees.[160] Their graves may have once been marked with fieldstones or with wood which has since decayed, but without accurate cemetery or census records descendants of individuals interred at these sites are largely dependent on references made in local deeds and related property records for locating their ancestor's graves.[161]

In Nova Scotia, several headstones marking graves of Black Loyalists and their descendants have survived at the Conway Black Cemetery, which was established to service the Black Loyalist community of Brinley Town.[162] Brinley Town was established in 1785 although with considerable difficulty and reluctance, and apparently without a detailed community plan. Early references to the cemetery include a 1922 deed of sale from which the cemetery property is reserved, and a Dominion Atlantic Railway Plan from 1913 which outlines all but its southernmost extent, overlooking but not immediately adjacent the coastline.[163] Many of the visible headstones are in poor condition and several are broken or worn, and those still legible display death dates ranging from 1926-1973.[164] Given their broad spacing however, and

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[160] Mercer, 'To Save Black Loyalist Burial Grounds from Neglect, New Brunswickers Dig into Their Segregated Past'.
[161] Ibid.
[162] Smith, 'Father-Son Journey to Digby County Shines Light on Little-Known Black History'; McConnell, 'The Black Cemetery at Conway, Nova Scotia as a Reminder of Brinley Town & the Loyalists'.
[163] McConnell, 'The Black Cemetery at Conway, Nova Scotia as a Reminder of Brinley Town & the Loyalists', 1–2.
[164] Ibid., 10.

documentation of the cemetery which appears to predate these burials, it seems likely that in addition to the damaged headstones, there may be many earlier burials at the site which are presently unmarked.

When compared against the Birchtown sites, the destruction and subsequent ignorance of the St. Matthew's Parish, New York, and Kingsclear burial grounds presents the possibility of destruction which hindered visibility at either Birchtown site, but especially for the Birchtown Community Hall. Investigation of the Community Hall site was requested specifically due to a neighbour's testimony regarding a similar disinterment of remains during construction, disturbing a potential burial site which had otherwise been unknown and unmarked. Assuming this testimony is correct and remains were indeed disinterred, it would mean that the construction would have destroyed archaeological contexts for much of this site, and the probable boundaries of this disturbance are clearly visible in the geophysical data. In contrast, no such development or significant disturbance appears to have occurred at the Black Burial Ground site in any available data source, so destruction of this kind appears unlikely at that location.

History of racial violence in and around the Shelburne area beginning from the two towns' founding in 1783, and notably including the Shelburne Race Riots in 1784, resulted in the destruction of a considerable amount of Black-owned property in both Shelburne and Birchtown, with limited documentary record to the extent of the damage.[165] Although the

[165] Whitfield, *Blacks on the Border*, 20; Walker, *The Black Loyalists*, 48–49; Whitehead, *Black Loyalists*, 161; George, 'An Account of the Life of Mr. David George, from Sierra Leone in Africa: Given by Himself in a Conversation with Brother Rippon of London, and Brother Pearce of Birmingham', 338.

Shelburne Race Riots occurred very soon after the towns' founding, it raises the possibility of deliberate destruction of grave markers during that or later events, especially given the notable inclusion of a church building in the destruction.[166] Conversely, discussions of landscape analysis and community organization around Birchtown have addressed the possibility that the Riots and subsequent events of racial violence prompted concentration of domestic structures and other town development further upland from the coast.[167] From this perspective which assumes community design was influenced to limit access and prevent additional destruction, European-style grave markers may have been intentionally removed or omitted in interest of preventing and mitigating damage.[168] Evidence of this mitigation behaviour had been observed at an African Burial Ground for enslaved individuals located at the University of Virginia, wherein it was proposed that grave markers were deliberately omitted to prevent grave robbing for medical cadavers, an issue which was known and documented in legal court records.[169] This conclusion was dependent on the legal documents for explanation, but the case illustrates how racial prejudice might affect the installment or survival of burial monuments or markers.

Discussions with a couple local residents of Birchtown and a with previous researcher indicated the existence of small field stones laid out at the perimeter of the nearby Mizpah Cemetery. These were located at what used to be the back of the cemetery, opposite from the entrance, before new road construction past the area relocated the cemetery's driveway through this back area. It was believed that these field stones marked Black graves, especially

[166] Whitehead, *Black Loyalists*, 161.
[167] MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 81.
[168] Mercer, 'To Save Black Loyalist Burial Grounds from Neglect, New Brunswickers Dig into Their Segregated Past'.
[169] Engelhart, 'Equality at the Cemetery Gates: Study of an African American Burial Ground', 12.

given their segregation at the back of a majority white burial space.[170] Field stones were cheap options and not uncommon at Black burial sites, but were easily overlooked as natural features and would occasionally be removed without knowledge of their intentional placement.[171] This presents the additional option that any coastal burial space may have originally been marked with field stones, which have since been removed. Mounds of field stones have been found throughout the Birchtown area that had been proposed as possible grave markers alike those said to have been observed for burial of Nova Scotian Maroons in the late 18th century, however archaeological investigations of these mounds in 1998 appear to rule this out. Although apparently deliberately placed and shaped, the soil under the mounds was not disturbed, no artefacts or evidence of remains were encountered in survey nor excavation, and their size and organic clustering appears inefficient.[172]

Any of these causes or motivations for a lack of observed materiality are speculation and should not be read as excusing a lack of physical evidence, but as a number of potential explanations why a burial space with a relatively central location which was apparently established and maintained by its own community may be now unmarked. Historical documentary evidence regarding the Birchtown Burial Ground is extremely limited in scope and does not make any mention to the existence of markers from its earliest apparent reference in an 1869 deed, and no record appears to exist regarding burials or related goods observed at the Community Hall site. As with the Northern Burial Ground in Nassau, it is possible that evidence of markers in some form which were not visible through geophysical survey may be uncovered

[170] Laird Niven, in conversation with the author, July 2022.
[171] McCarthy, 'African Community Identity at the Cemetery', 15; Whitehead, *Black Loyalists*, 190.; Niven, 2022.
[172] Powell, *Archaeological Surveys in Two Black Communities, 1998*, 14–17.

through excavation, but as with the Conway Black Cemetery near Digby, it seems likely that few markers would have survived.

Researchers at both the Nassau and New York burial grounds made explicit reference to the establishment of the respective burial grounds adjacent bodies of water, and proposed similarities to West African burial traditions. In both cases these proposals are strengthened by the discovery of marine grave goods, such as decorative shells commonly associated with Africa and early Black Americans.[173] A similar proximity to water is also seen regarding the Kingsclear Cemetery in New Brunswick which was established near the previous extent of the St. John River,[174] but this proximity appears unremarked and is without the supportive material evidence afforded by either historic documentation of funerary tradition and intent, or the discovery of water-associated burial goods such as was found at both the Nassau and New York sites. The Conway Cemetery near Digby also overlooks water but is located further uphill. It is possible that decisions regarding the placement of burial spaces were greater influenced by considerations of the properties' economic value, as a few of the comparative sites were notably required not to occupy land that was deemed economically valuable.[175] Regardless of motivation, given that both potential burial sites in Birchtown are coastal, it remains notable that several of these comparative sites appear to show some preference for proximity to bodies of water.

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[173] LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States', 300–302; Samford, 'The Archaeology of African-American Slavery and Material Culture', 101; Rothstein, 'A Burial Ground and Its Dead Are Given Life'.
[174] Bird, 'This Stone Revives a Flooded and Forgotten N.B. Black Graveyard'.
[175] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 72.

6.3 Social Results

Where geophysical survey falters is where historic sites have limited surviving material evidence, either due to destruction or due to advanced decay of predominantly organic material culture and remains. These cases may be proven through the discovery of more subtle interfaces and discolorations of the soil or fragmented remains during systematic excavation, but preliminary evidence of their existence may be predominantly social.

Socially, burial spaces and their associated material culture relay information about those interred within and those who had carried out the interment. They typically seek to memorialize the dead, but are established and maintained by the living and hence reflective of the living community and both how they wish to publicly remember the dead, and to what aspects of the deceased might a visitor have access.[176]

As Birchtown is separate from Shelburne, and as grave markers believed to indicate Black burials appeared segregated from the majority white burials, the Black Loyalist community in Birchtown was historically, socially, and physically both a part of broader Nova Scotian society, and segregated from it. This separation allows them some cultural freedom within legal and moral bounds of the broader British Nova Scotian society, but their separation also limits the community's support and historical documentation. This may indicate a higher likelihood of African cultural tradition in how a burial ground in Birchtown may have been organized and maintained, but with the caveat that greater social and historical documentation

[176] Orser, 'The Archaeology of the African Diaspora', 67; Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 11–12, 53; Hallam and Hockey, *Death, Memory, and Material Culture*, 90-94,147.

of the Nassau and New York sites indicate that African cultural elements were often limited either by legal requirement or pragmatic social desire to conform with the dominant Euro-American practice.[177] Burial grounds for minority communities, as well as those for populations of low socio-economic status more generally, were not always recognized as sacred by the dominant culture, making them vulnerable to destruction and potentially adding pressure to conform to more broadly recognized signifiers of a space meant to be respected.[178]

Memoirs and journals concerning Birchtown appear to show an increasingly strong adherence to Christianity from the town's founding and leading up to the Black Loyalists' exodus to Sierra Leone, although these testimonies are primarily provided by, and from the perspective of Protestant Christian leaders in the community.[179] These memoirs and church records indicate that funerals in early Birchtown were frequently performed by an Anglican priest from the Shelburne church, or by their appointed deacon, either of whom would travel to the community to deliver services on-site.[180] This proposes an interesting dynamic for Black Loyalist funerals, as the memoirs and journals from Birchtown's Black pastors indicated that the predominant Protestant denomination amongst the Birchtown population was Methodism and Wesleyanism,

[177] LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States', 300; Fennell, 'Early African America: Archaeological Studies of Significance and Diversity', 9–10.
[178] Rugg, 'Defining the Place of Burial: What Makes a Cemetery a Cemetery?', 267–68; Orser, 'The Archaeology of the African Diaspora', 67–69; Bigman, 'Mapping Social Relationships', 17–18.
[179] George, 'An Account of the Life of Mr. David George, from Sierra Leone in Africa: Given by Himself in a Conversation with Brother Rippon of London, and Brother Pearce of Birmingham', 337–40; Ashton, 'Memoirs of the Life of Boston King, a Black Preacher (1798)', 29–30; Pybus, '"One Militant Saint": The Much Traveled Life of Mary Perth', 6–7; Matwawana, 'History of the African Methodist Episcopal Church', 19–20; Walker, *The Black Loyalists*, 72–76.
[180] Walker, *The Black Loyalists*, 70.

followed by the Baptist Church,[181] and later documentation of the Nova Scotia Black Loyalists following their exodus to Sierra Leone noted a specific distaste for Anglicanism in the new colony.[182] These memoirs also mentioned the existence of religious "meeting-houses" or house-churches in the Birchtown township, majority Methodist or Wesleyan, [183] but precise locations of these are unknown. It is possible that any burial spaces may have originally been associated with one of these chapels as a churchyard, but none of these chapels mentioned by contemporary authors have survived, nor were their locations documented.

Assuming these testimonies regarding Anglican oversight of Birchtown funerals represented a majority, it can be assumed that the interments would have largely followed Anglican Church doctrine, with some allowance for deviation. This typically required the deceased be interred on land, and that a burial ground be walled or fenced to delineate its boundaries.[184] Anglican Canon Law was not always as closely followed in the American colonies as it was in England,[185] and although several courses of stone walls can be found throughout Birchtown for apparently domestic or livestock purposes,[186] no evidence of enclosure is visible on the soil surface nor in historical aerial photography at either potential burial site. It is

[181] Matwawana, 'History of the African Methodist Episcopal Church', 19–20; Ashton, 'Memoirs of the Life of Boston King, a Black Preacher (1798)', 29–30; Walker, *The Black Loyalists*, 73–76.
[182] Walker, *The Black Loyalists*, 200–202.
[183] Ashton, 'Memoirs of the Life of Boston King, a Black Preacher (1798)', 28–29; George, 'An Account of the Life of Mr. David George, from Sierra Leone in Africa: Given by Himself in a Conversation with Brother Rippon of London, and Brother Pearce of Birmingham', 338–39; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 85; Walker, *The Black Loyalists*, 69–74; Niven, *Was This the Home of Stephen Blucke?*, 19–20.
[184] Blaney, 'The Treatment of Human Remains under the Ecclesiastical Law of England', 5–6; Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 25, 54–55, 137.
[185] Lacy, *Burial and Death in Colonial North America: Exploring Interment Practices and Landscapes in 17th-Century British Settlements*, 45–46.
[186] Niven, *Birchtown Archaeological Survey (1993)*, 7–9, 66.

possible that some of the linear features observed in the geophysical data at the Community Hall site may represent such an enclosure which has since been buried, but the ambiguity of what a fence may represent would require additional supportive evidence to rule out more common uses. Alternatively, the location of the Black Burial Ground site on a small peninsula bounds the site with coastline on three sides, effectively preventing encroachment and reducing the amount of fencing which may have been required.

Material evidence of social behaviours which are generally not visible at the typical resolution used in archaeological geophysical survey include potential "Africanisms" in grave goods, typically including various shells, broken utensils, and broken dishware.[187] Despite the shallow depth of GPR reflections, no artefacts were observed nor collected from the surface over several visits to either site over a year period, nor were any recovered following erosional damage to the site caused by Hurricane Lee. This may be reflective of a higher volume of traffic through the area to either the Community Hall or to the nearby Black Loyalist Heritage Centre Museum, but no mention was made from neighbours or museum staff regarding any such discoveries which would specifically tie mortuary practices to that property. Presence of these artefacts may have helped locate a site for further investigation and type evaluation, but given a scarcity of artefacts generally, and especially of diagnostic artefacts recovered from excavated

[187] McCarthy, 'African Community Identity at the Cemetery', 178–80; LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States', 300–302; Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 82–83; Rothstein, 'A Burial Ground and Its Dead Are Given Life'.

domestic sites nearby,[188] a comparative lack of grave goods in early Birchtown burials might be expected.

In addition to shells and domestic goods, excavations at the St. Matthew's Northern Burial Ground in Nassau showed a significant assemblage of butchered fragments of faunal remains throughout the site. Food waste from chicken, fish, and machine-cut pork found in shallow layers were originally dismissed as 20th century deposits, but continued inclusions of butchered animal bone which increasingly showed evidence of older, non-mechanical processing with increased depth prompted re-evaluation.[189] Alongside the ceramics and other grave goods, it is possible these ecofacts represent an extended period of meat-based grave offerings.

In a contemporary context, the rededication of the African Burial Ground in New York during the excavation and research process included ritual offering of food items, presented by a Yoruba practitioner Chief Elegba who was invited to lead the ceremony. The main part of this offering was honey; noted by researchers involved to be a departure from the more traditional animal sacrifice[190] which may have been more closely represented by the volume of butchered meat bones recovered in excavations of the Nassau site. The departure from tradition observed at the New York site's reinterment ceremony was explained to involve traditional African cultural elements, but adapted to the needs and preferences of the descendants who had been

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[188] Niven, *Birchtown Archaeological Survey (1993)*, 9–25; Powell, *Archaeological Surveys in Two Black Communities, 1998*, 11–13; Niven, *Was This the Home of Stephen Blucke?*, 14; MacLeod-Leslie, 'Understanding the Use of Space in an Eighteenth Century Black Loyalist Community', 3.

[189] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 80–83.

[190] LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States', 303.

living in the U.S. for generations.[191] It was also noted that visitors to the New York African Burial Ground site continue to leave tributes on the graves long after it was made a National Monument Site under the management of the U.S. National Park Service, to a degree that there is now a requirement that visitors intending to pour "'libations' of any kind" acquire a permit in advance.[192]

The food offerings observed left by a local at the Birchtown Black Burial Ground appeared to follow this Black American practice with a similar departure from tradition, including fresh fruits and warm spices and possibly a bowl of chili, but not full cuts of meat as was observed in Nassau or mentioned in comparison to New York. Regardless, it seems to indicate a continuation of this site's use socially as a burial space.

[191] Ibid.
[192] Ibid., 308; U.S. National Park Service, 'Reinterment'.

Chapter 7: Conclusion

Local tradition, oral testimony, and surviving property records seem to indicate high archaeological potential for both properties surveyed, although neither provided conclusive evidence through geophysical survey. A few areas were highlighted which appeared anomalous but were otherwise too diffuse to confidently interpret as graves, especially within the radar survey. Additional geophysical survey covering a larger area with greater sample density guided by this preliminary study may have much greater success in identifying the anomalies outlined above, but ultimately future sub-surface testing would be required to confirm whether these geophysical features are representative of Black Loyalist development.

In addition to the technological limitations of seeking 18th-19th century burials in a rocky coastal environment, interpretation of the results was made more difficult by the same lack of documentary evidence this project was intended to supplement. Comparison against historical and archaeological records of similar burials located elsewhere in the Black Anglo-American Atlantic world also showed considerable variation in how various factors cultural and environmental factors influenced burial practices, including race, religion, poverty, and local social status. While there were some trends, such as the observation of water-associated burials at Nassau,[193] or a tendency towards cheaper or fewer materials, several cases provided examples of local reactions to external social or environmental pressures specific to their local context, as seen in the comparison of burials in Newport, RI which appears to adhere closely to European burial norms, versus burials in Philadelphia, PA in which the community chose to

[193] Turner, *Honoring Ancestors in Sacred Space: The Archaeology of an Eighteenth-Century African-Bahamian Cemetery*, 81–82.

rebel or reject those norms in favour of more African cultural elements.[194] At its establishment, Birchtown was unique in its sizable free or emancipated population and its distance from white settlements which may have allowed for a greater degree of self-determination in community activities, but was also limited by regular involvement of the Anglican Church in religious services, threats of racial violence as with the Shelburne Race Riots in 1784, and general poverty which greatly reduced available resources in an already challenging natural landscape. Until Birchtown's burial landscape can be conclusively found and its features analyzed, the lack of surviving historical and ethnographic documentation leaves a lot of questions regarding what weight each potential influence may have had. What percentage of funerals were performed by Shelburne's Anglican clergy? What weight had Anglican, Methodist and Wesleyan, or Baptist doctrine over mortuary decisions, especially as compared to African cultural elements? What priority was given to burials for the allocation of resources? Any of these questions answered would shed some light on mortuary decisions in Birchtown, and the likelihood of burials being found at either site.

A lack of historical records complicates the interpretation of historical social space, and this project has had to be careful of associating modern spatial interpretations onto historical spaces for the purposes of determining historical or archaeological sites and land use. For example, although coastal properties are frequently considered desirable real estate, a historical observer may have associated a coastal site with labour such as fishing, shipping, or transport. This, however, relates specifically to the archaeological assessment of a site as a historical

[194] Fennell, 'Early African America: Archaeological Studies of Significance and Diversity', 9–10.

landscape at a specific point in time. As the community around these sites have changed over time, these properties evolve and take on new meanings which must be taken into consideration when working with communities and their heritage.

The Community Hall property does not appear to be widely known nor treated as a burial ground, but testimony and ethnographic observations demonstrates the Black Burial Ground park is viewed and used locally as a memorial space, regardless of the dearth of historical or archaeological evidence of past use. While this modern use may sometimes suggest past land use through the continuation of local tradition, this does not constitute conclusive evidence for archaeological survey. The geophysical survey results were inconclusive, and no material or documentary evidence is currently known which can definitively prove the existence of burials at either site, but modern site associations attributed to the Black Burial Ground have effectively made the property a memorial site which fulfills the same social function in the community. This may be subject to change should future study find stronger evidence of burials at the park or elsewhere in Birchtown, but in many cases where Black Canadian and American burials have been abandoned, unmarked, or damaged, precise locations and identities of individuals—while desired, were considered of secondary importance to just having a place to memorialize. Members of descendent communities have expressed the importance of these sites as providing a feeling of "closeness with ancestors,"[195] and on a community level for providing these ancestors with respect and dignity they were not given in life.[196] In addition to the religious behaviours observed on-site during this project's field work, recent years have also

[195] Burch, 'Nearly "Erased by History": African Americans Search for Lost Graves'.
[196] LaRoche, '"As Above, So Below": Ritual and Commemoration in African American Archaeological Contexts in the Northern United States', 299–301.

seen the Black Burial Ground Park being used as a space for local memorial events and ceremony relating to Black Nova Scotian history.[197]

Law concerning abandoned cemeteries and archaeological sites requires strong documentary or material evidence for designation of the real property as a protected site. This evidential requirement is arguably reasonable given the limitations a mortuary designation would impose on future development and land-use projects but can make it difficult to protect sites; especially those of minority communities which for various reasons have not much surviving evidence of their existence. Although geophysical results are generally only accepted in terms of "probability" rather than certainty of buried remains, a legal compromise may be for the Minister outlined by Nova Scotia's Cemeteries and Monuments Protection Act to accept alternative, non-material evidence in support of a cemetery's designation without need for ground-disturbance or direct discovery of human remains. For Birchtown's Black Burial Ground site this may include the mentions made in neighbouring property records in addition to the oral histories, and/or additional geophysical survey data should future study find more conclusive evidence of burials.

Additionally, there is still a desire from Birchtown's descendent community to know, with evidence, where their ancestors are buried with as much precision as is realistically possible. A memorial site makes a compromise in a similar manner as might a cenotaph and may be sufficient where more personal alternatives are not available, but they do not bring the closure of a known grave. As a researcher performing a preliminary study, there is an additional hope

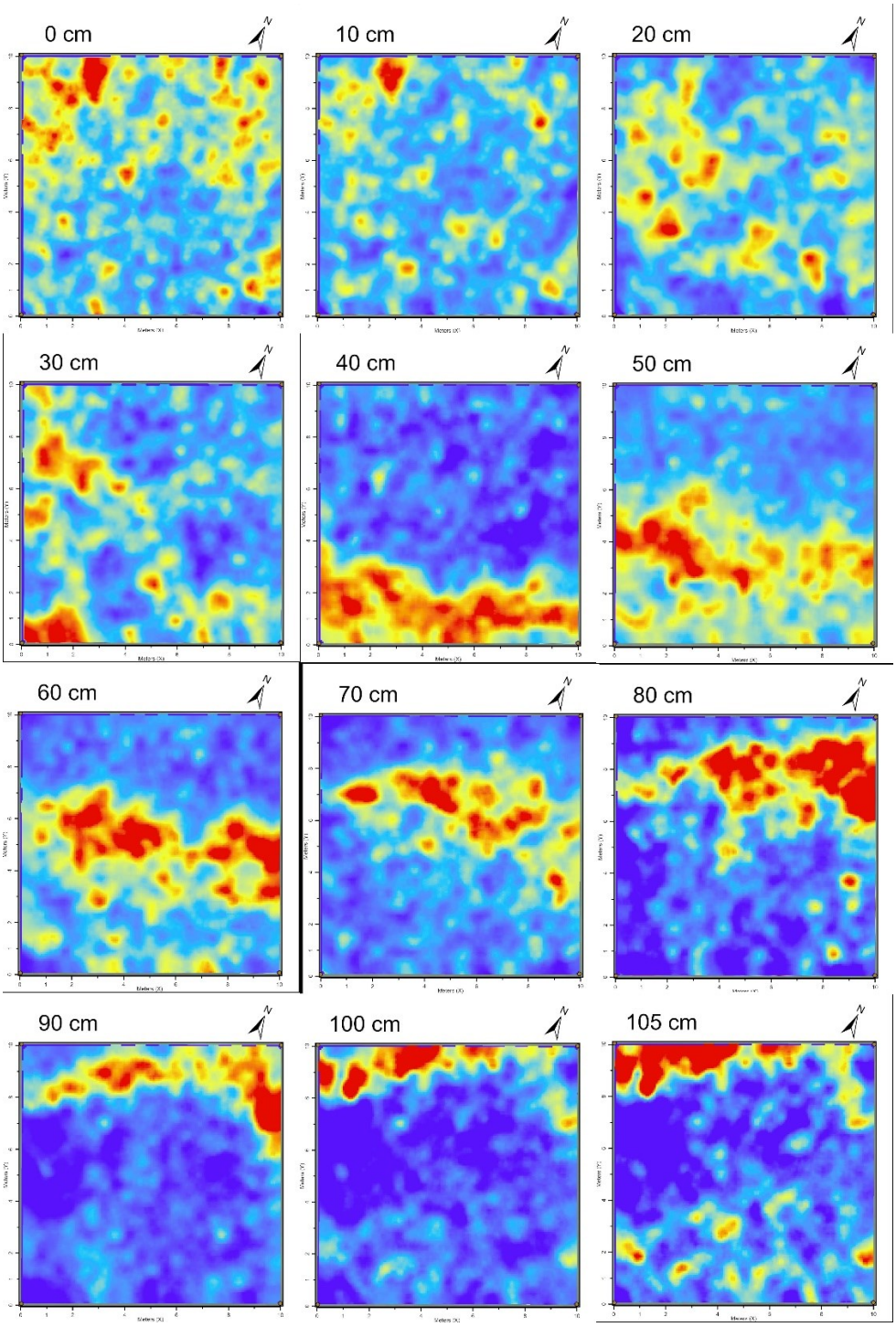
[197] Johnson, '"Remember the Hope, the Pain:" Black Loyalist Heritage Center in Birchtown Event Reflects on Slave Trade and Its Abolition'.

that with so many social/religious/environmental questions surrounding the mortuary culture of Birchtown—and of the Nova Scotian Black Loyalists more generally, more conclusive evidence from an academic perspective might not only help find this closure for the descendants of Birchtown residents, but potentially answer a few of these questions and aid in discovery or delineation of burials in other Nova Scotian Black Loyalist communities in turn.

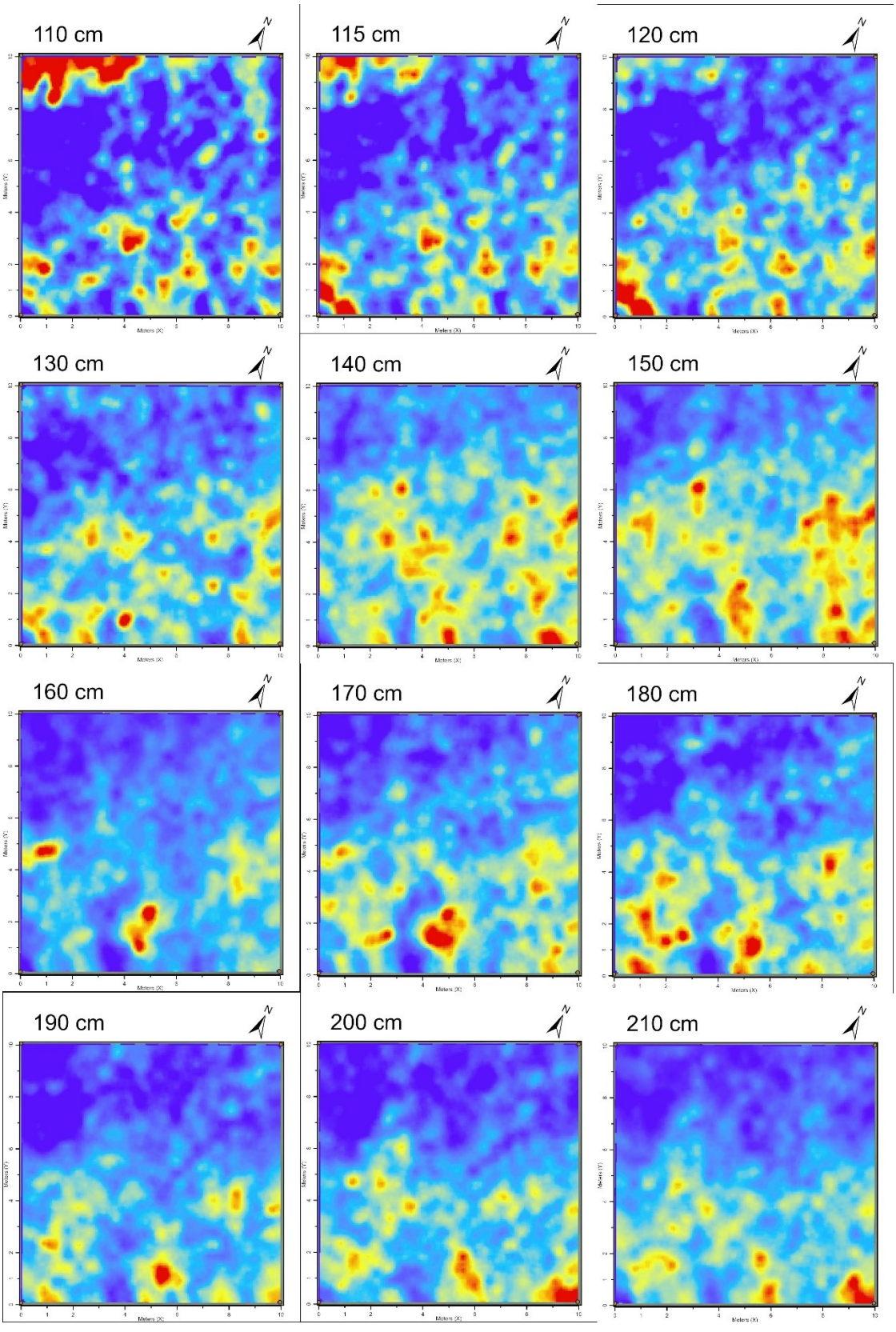
As it is, the Black Burial Ground Park remains under the ownership and protection of the Black Loyalist Heritage Society, who maintain the property as a site of memorialization and respect for the Nova Scotian Black Loyalists and their descendants, until such a time that more concrete evidence locating Birchtown's burial land is uncovered.

Appendix:

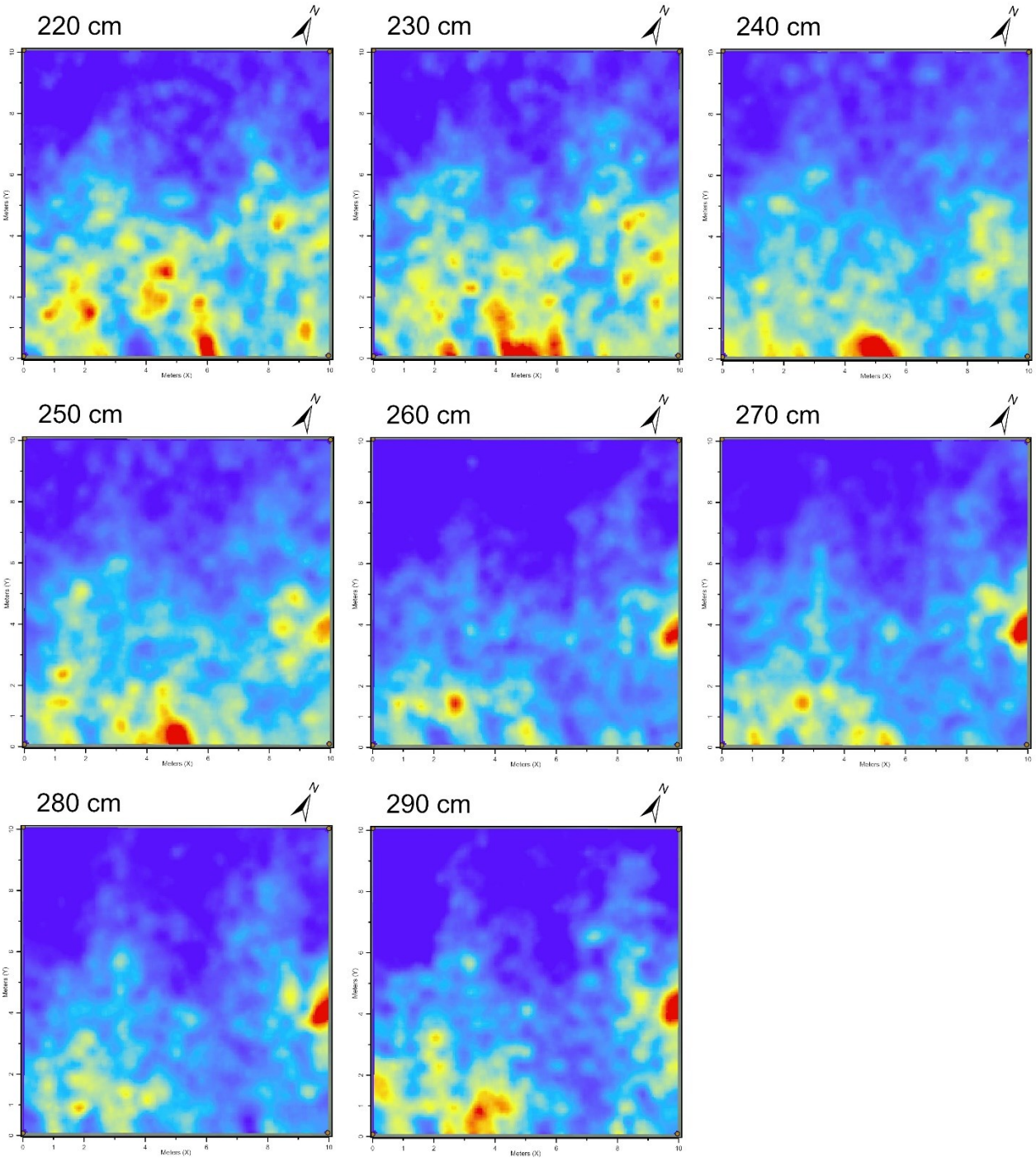
1. GPR depth slice maps: *Black Burial Ground and Monument Site*



1.1: Time-slice maps 0cm-105cm below surface, showing nominal depths for the Black Burial Ground site.

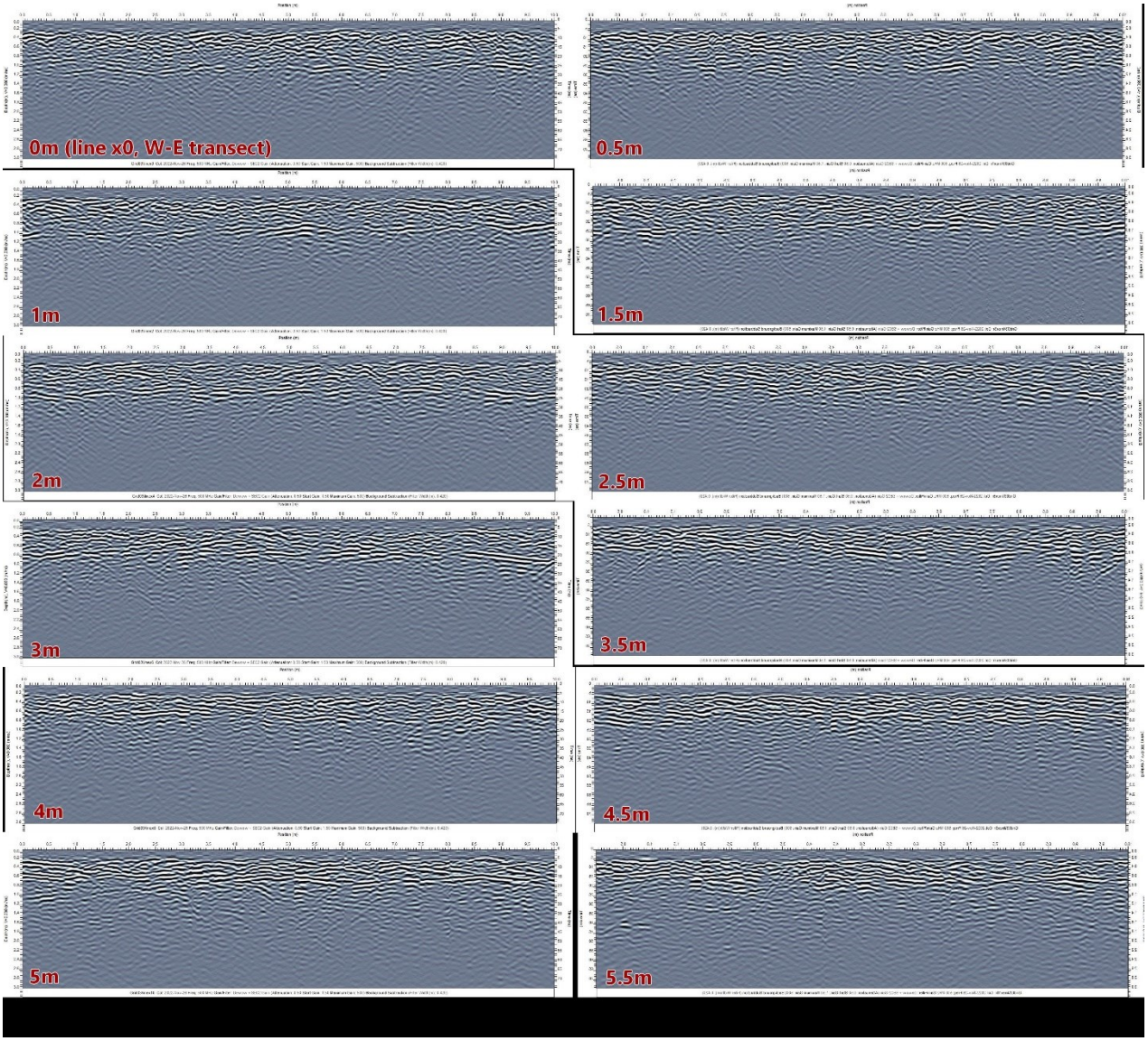


1.2: Time-slice maps 110cm-210cm below surface, Black Burial Ground site.

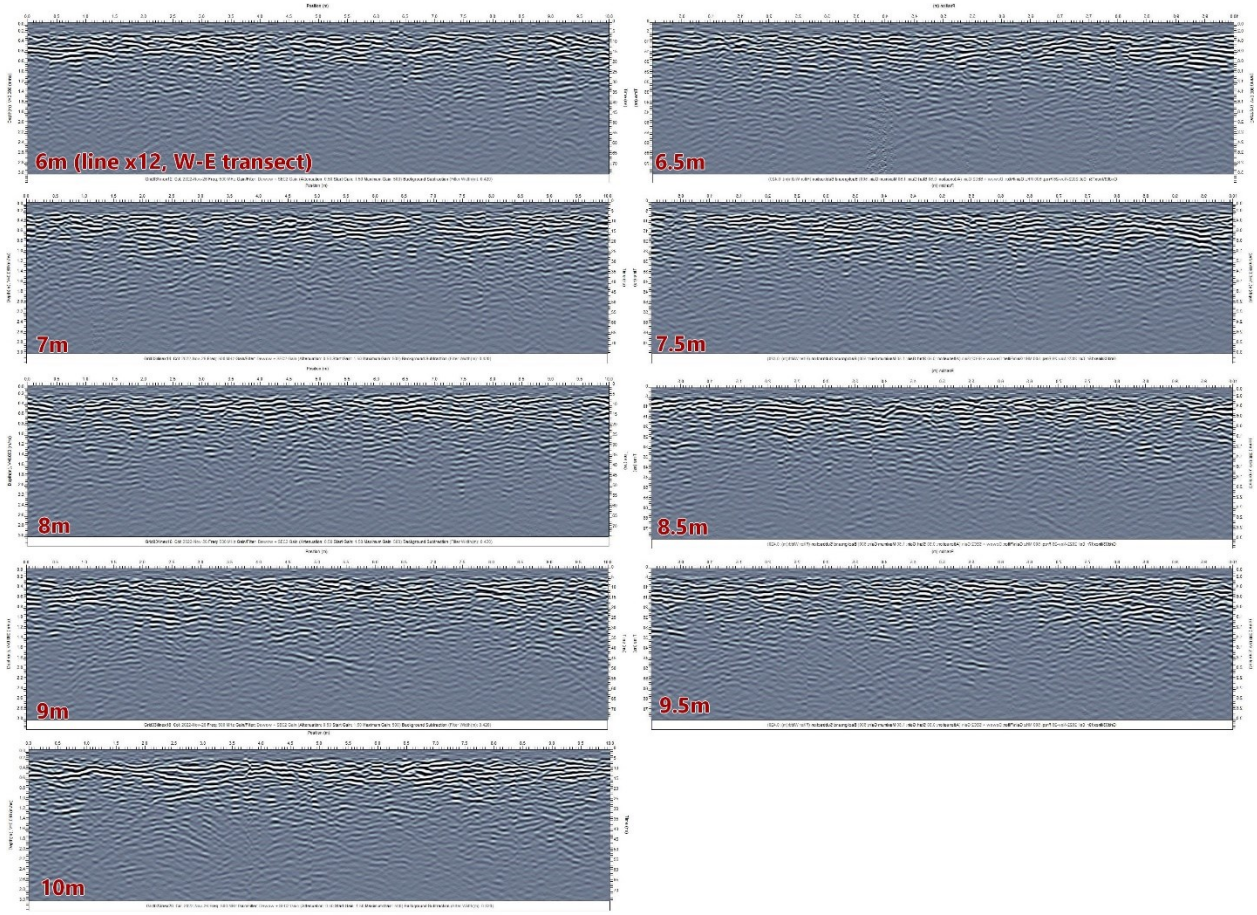


1.3: Time-slice maps 220cm-290cm below surface, Black Burial Ground site.

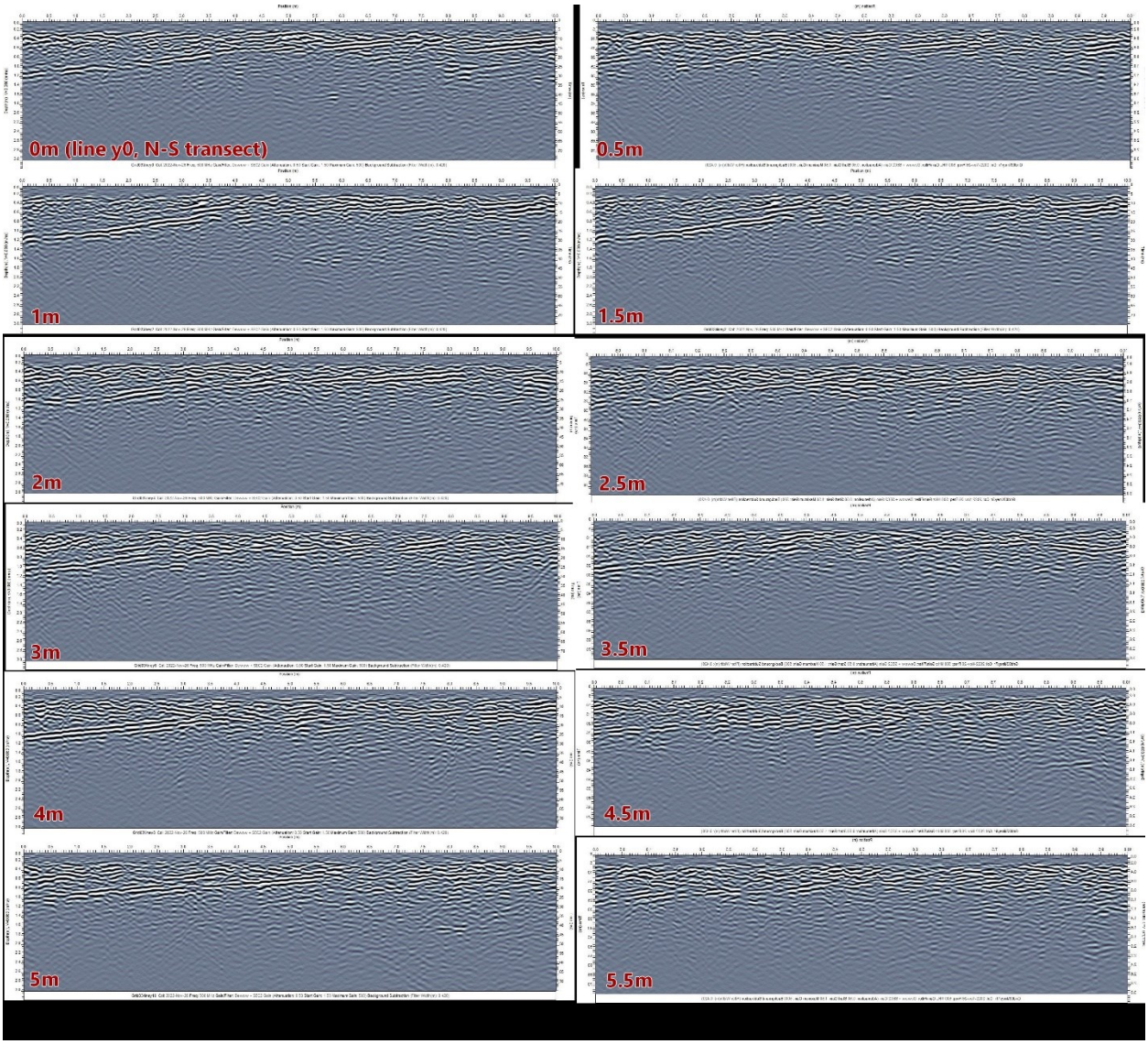
2. GPR radargrams (profile) for the Black Burial Ground and Monument Site



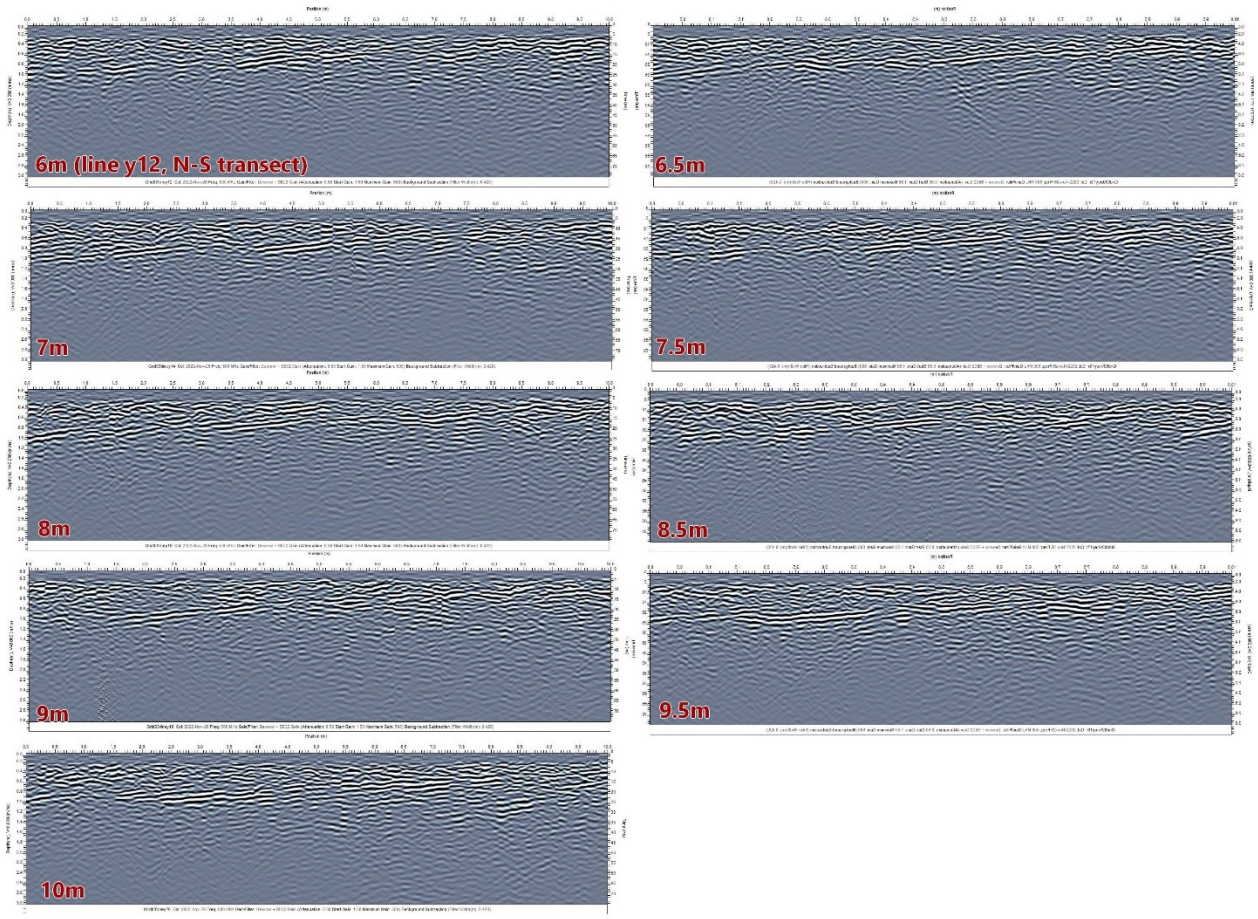
2.1: Radargrams of X-axis (W-E) transects 0m (line x0) to 5.5m (x11), listed north to south for the Black Burial Ground site. West at left.



2.2: Radargrams of X-axis (W-E) transects 6m (line x12) to 10m (x20), listed north to south for the Black Burial Ground site. West at left.

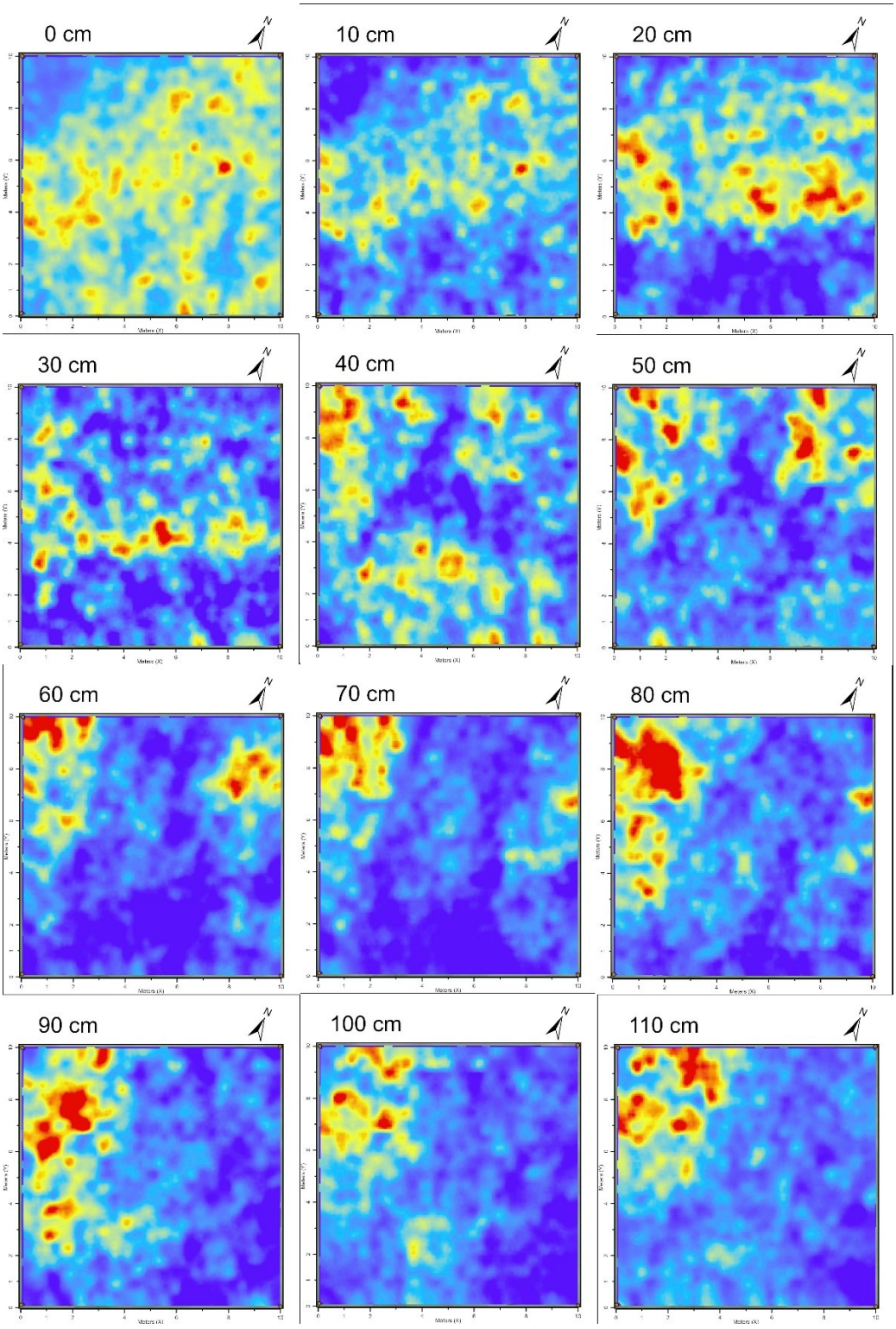


2.3: Radargrams of Y-axis (N-S) transects 0m (line y0) to 5.5m (y11), listed west to east for the Black Burial Ground site. North at left.

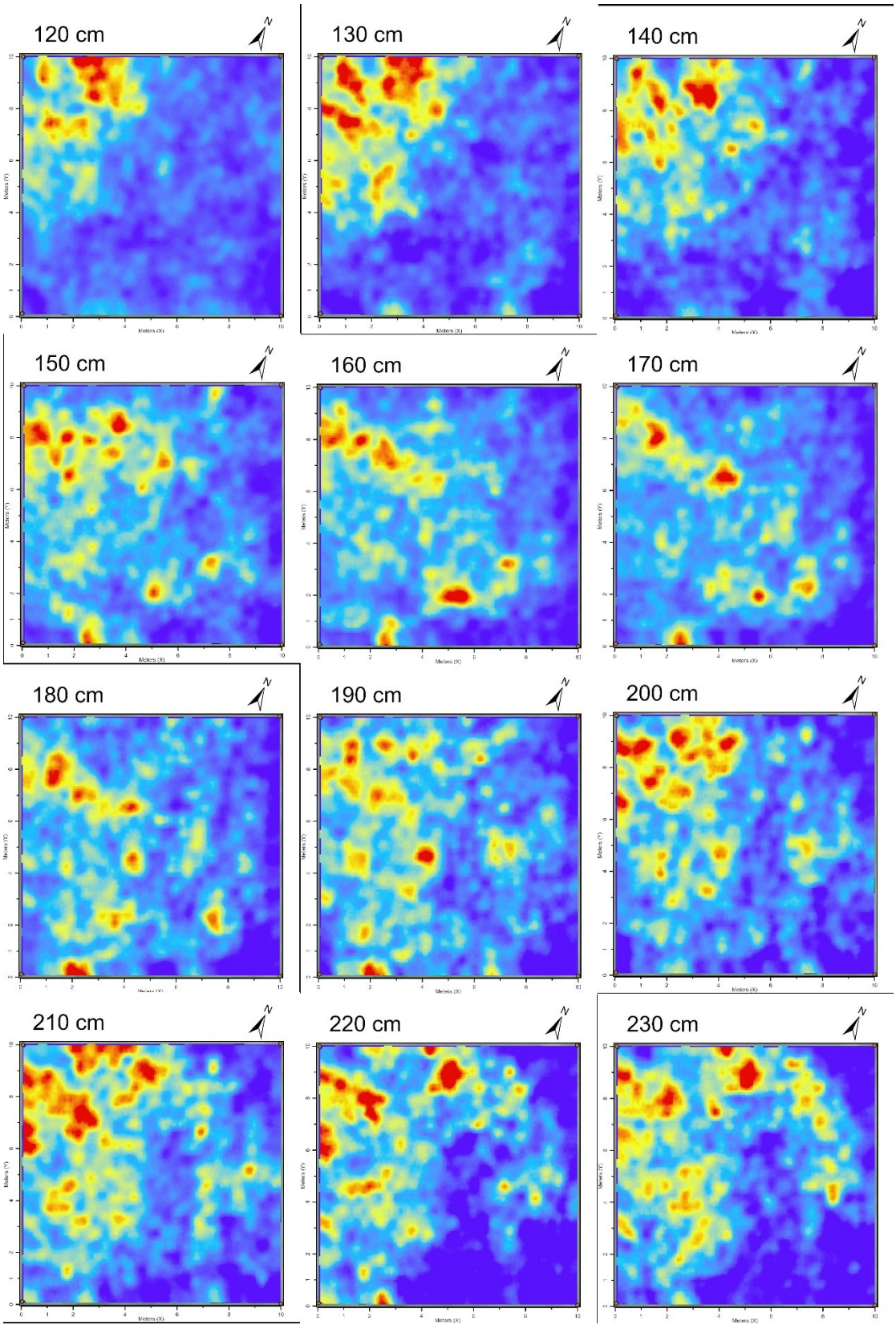


2.4: Radargrams of Y-axis (N-S) transects 6m (line y12) to 10m (y20), listed west to east for the Black Burial Ground site. North at left.

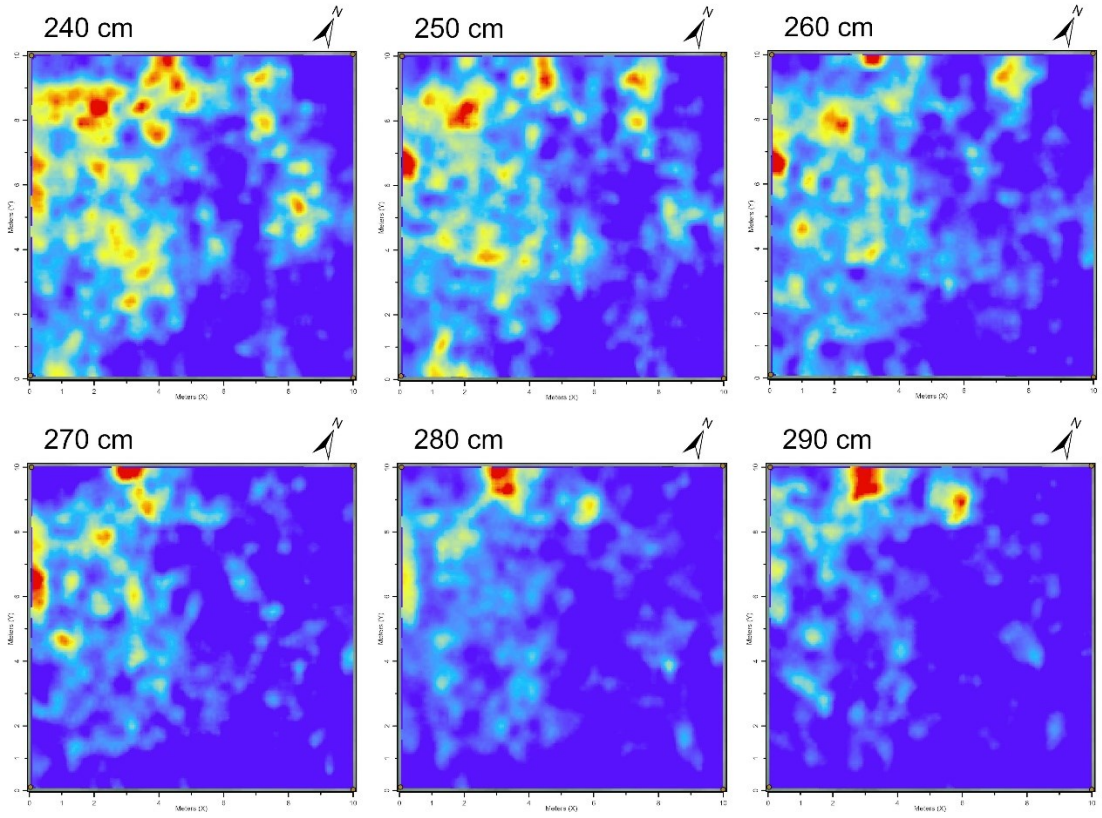
3. GPR depth slice maps: *Community Hall site*



3.1: Time-slice maps 0cm-110cm below surface, showing nominal depths for the Community Hall site.

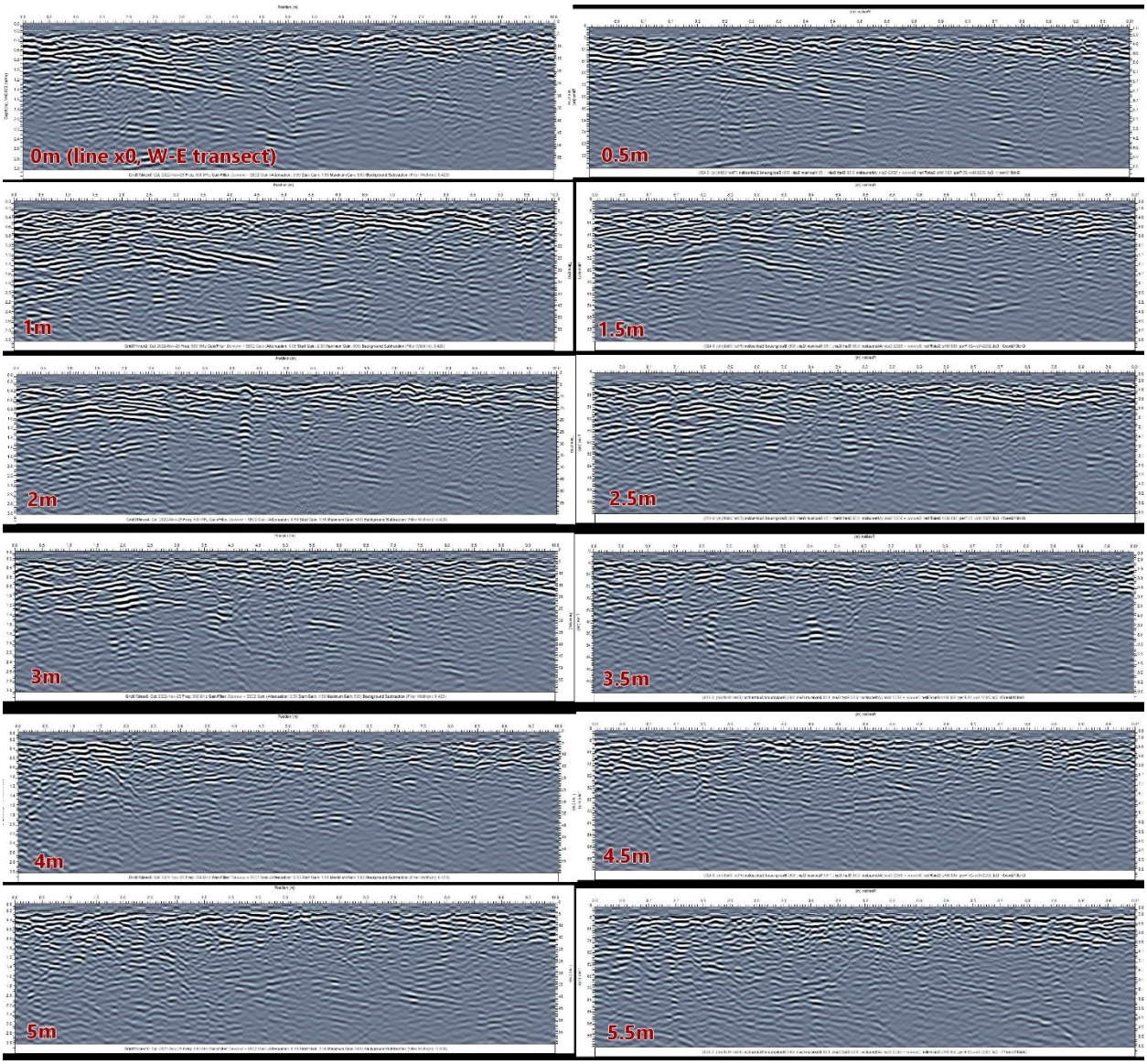


3.2: Time-slice maps 120cm-230cm below surface, for the Community Hall site.

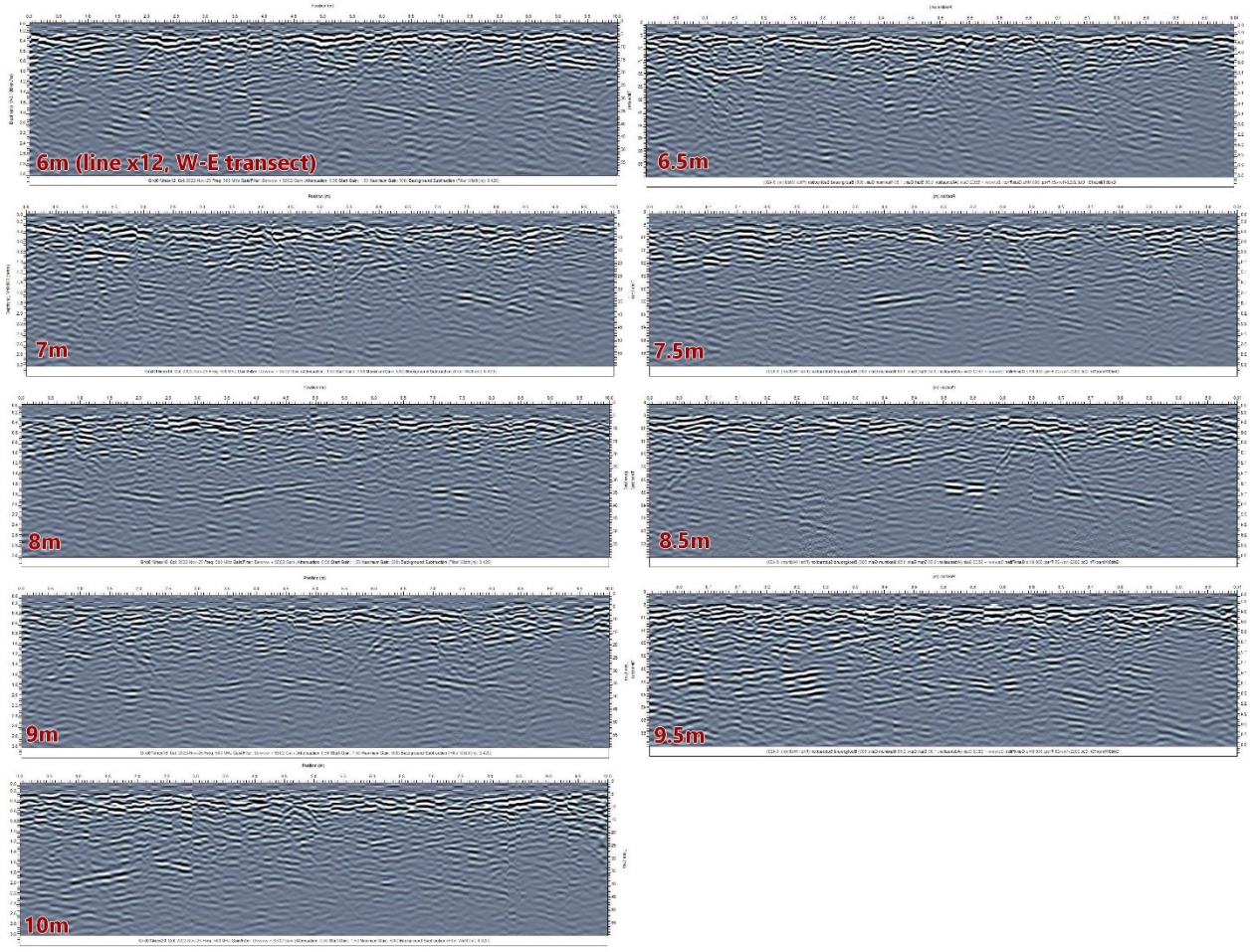


3.3: Time-slice maps 240cm-290cm below surface, for the Community Hall site.

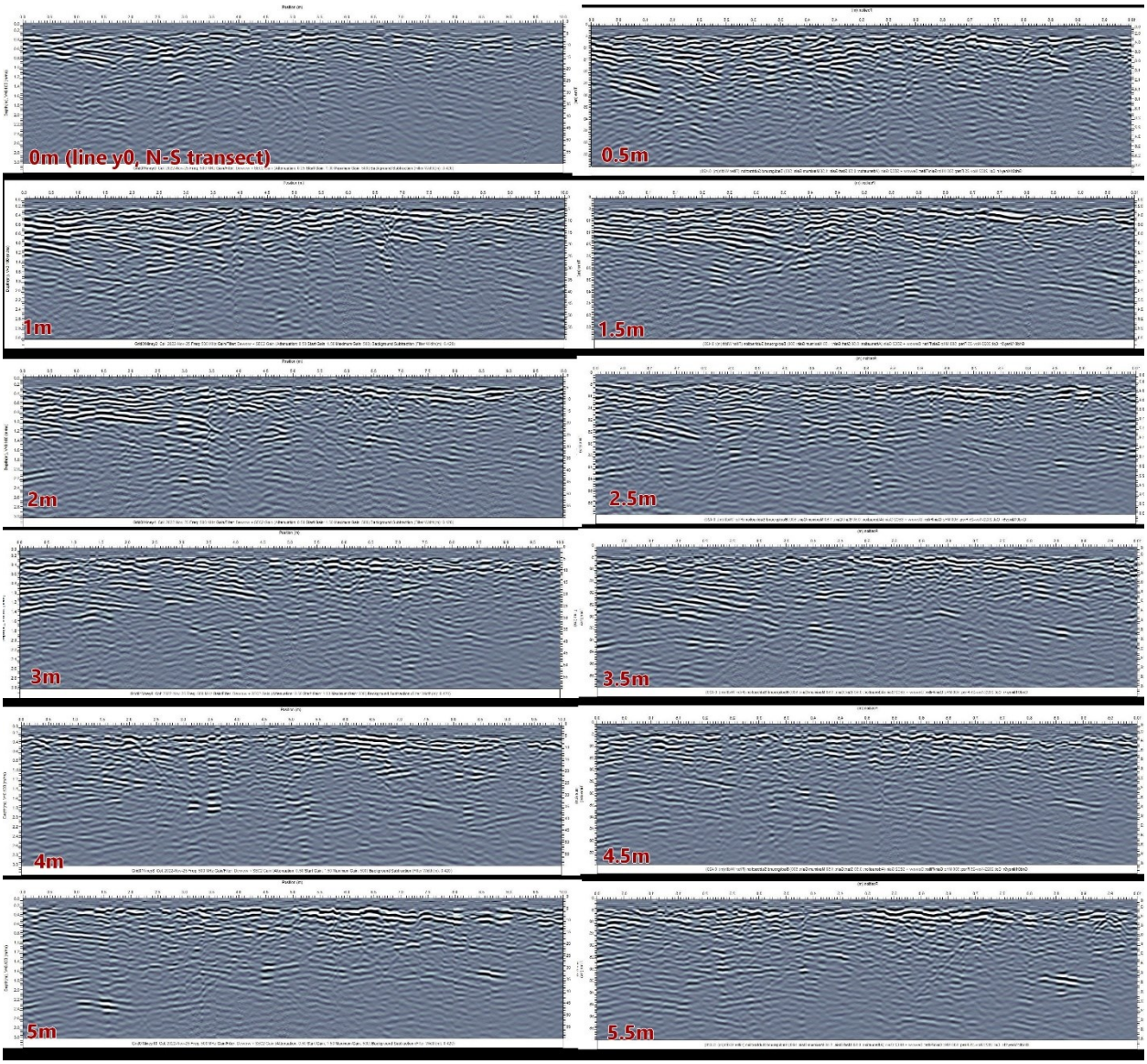
4. GPR radargrams (profile) for the Community Hall site



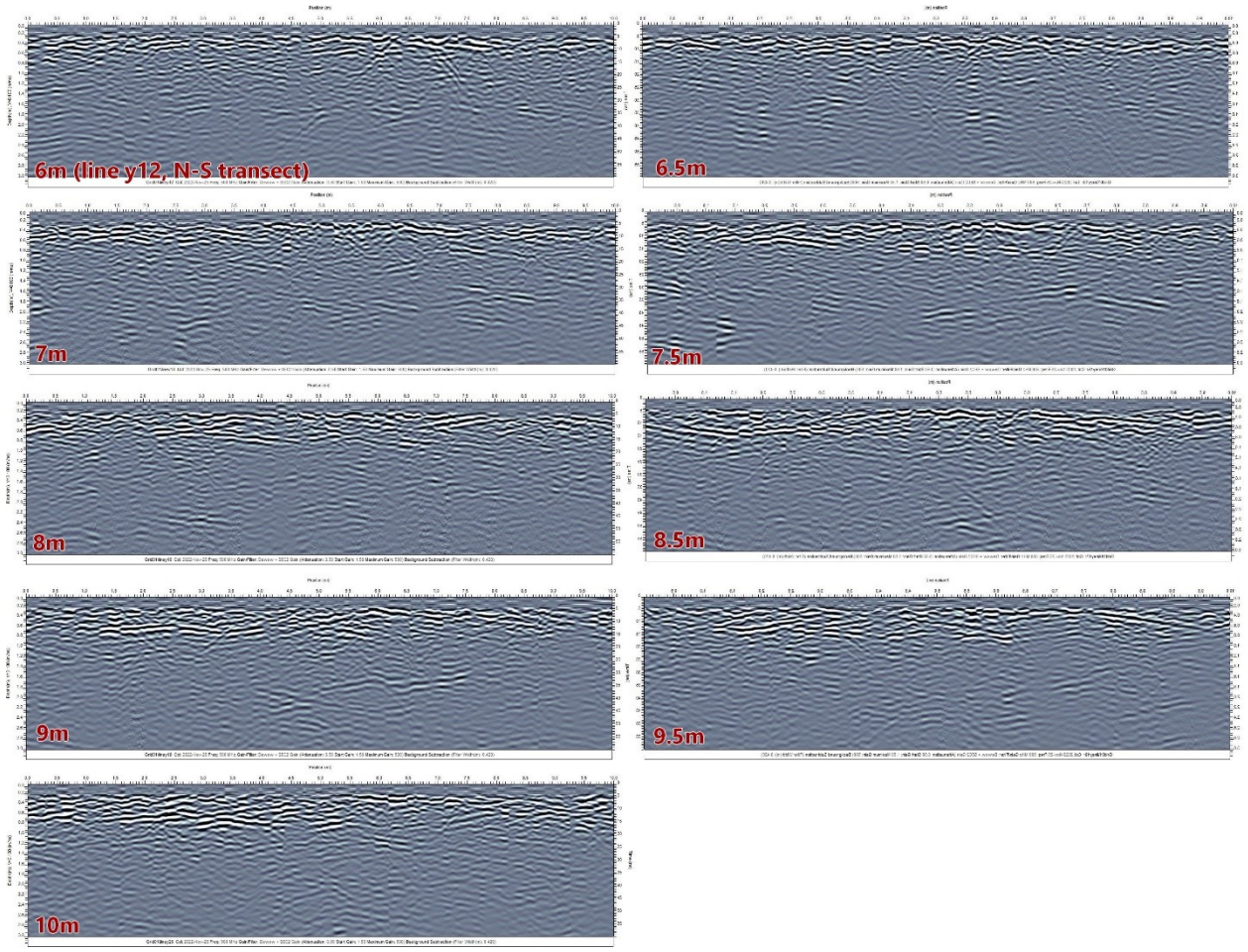
4.1: Radargrams of X-axis (W-E) transects 0m (line x0) to 5.5m (x11), listed north to south for the Community Hall site. West at left.



4.2: Radargrams of X-axis (W-E) transects 6m (line x12) to 10m (x20), listed north to south for the Community Hall site. West at left.



4.3: Radargrams of Y-axis (N-S) transects 0m (line y0) to 5.5m (y11), listed west to east for the Community Hall site. North at left.



4.4: Radargrams of Y-axis (N-S) transects 6m (line y12) to 10m (y20), listed west to east for the Community Hall site. North at left.

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