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10-2016

Geophysical Survey of Wisconsin Burial Site BDA-0047 Hauge Log Church, Dane County, Wisconsin

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Recommended Citation
Peregrine, Peter N., "Geophysical Survey of Wisconsin Burial Site BDA-0047 Hauge Log Church, Dane County, Wisconsin" (2016). Archaeological Reports. 7.
https://lux.lawrence.edu/archaeological_reports/7

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Introduction

Lawrence University was asked by the Board of the Perry Hauge (pronounced “hog-ee”) Log Church Preservation Association to determine the location of unmarked interments on the Hauge Log Church property, which is listed as Wisconsin burial site BDA-0047 (Figure 1). The site is located in the NE quarter of the NE quarter of the NE quarter of Township 5, Range 6 East, Section 7, Dane County, Wisconsin, and is part of the Town of Perry. The site itself consists of a 45-acre parcel that sits on a hill overlooking the rolling landscape of the Driftless Region of southwestern Wisconsin. The site contains a pioneer church and associated cemetery known together as the Hauge Log Church.

The Hauge Log Church was established in 1851 by Norwegian settlers and was the first Norwegian Lutheran church in western Wisconsin. The church was abandoned in 1887 for a larger facility, but the church and its associated cemetery was maintained by two nearby Norwegian Lutheran churches and was restored in 1926. The church building was added to the National Register of Historic Places in 1974 (#74000071). The church and its cemetery are now owned and maintained by a non-profit corporation, the Perry Hauge Log Church Preservation Association, Inc. There are 11 standing headstones remaining in the cemetery, and at least 10 additional small markers (Figure 2). Dates on the headstones record interments ranging from 1852 to 1913, with the majority dating before the church’s abandonment in 1887 (later interments appear to be those of individuals whose spouses were interred before 1887). Although the church records were destroyed, oral tradition says that perhaps as many as 100 individuals are interred on the church property, including a large number of children who died in an epidemic. The purpose of the survey was to identify as many of these unmarked interments as possible.

Methods

Geomagnetic survey of the Hauge Log Church property took place on October 6 and 7, 2016. Four Lawrence University students collected geomagnetic data under the direction of Peter Peregrine, RPA, from eight complete 20 meter by 20 meter grid units and an additional four partial 20 meter by 20 meter units, covering most of the original church property (the Preservation Association has purchased additional land around the church [parcel 050607184750] to serve as a buffer zone—see Figure 3). The location of the survey units are shown superimposed on an aerial photograph of the church property as Figure 4. Soil resistivity was collected from one 20 meter by 20 meter unit, but the instrument malfunctioned and no additional data were collected using it. The resistivity data are not included in this report.
The magnetometry data were collected using a Geoscan FM256 differential gradiometer. This instrument consists of two magnetometers arranged one atop the other with a 0.5 meter separation. Each magnetometer measures the earth’s magnetic field and the difference between the two readings, which is equivalent to the vertical gradient of the earth’s magnetic field, is recorded. The instrument is sensitive enough to measure tiny variations in the earth’s magnetic field, variations that might be caused by subtle soil changes or the presence of buried materials. For this application sensitivity of the FM256 was set at 1.0 nanotesla, or about 1/25,000th of the earth’s total magnetic field. Data were collected at 0.25 meter intervals along 0.5 meter spaced north-south lines using a “zig-zag” method (collecting data on one line heading north, then collecting on the adjacent line heading south). Complete grid units were each collected at a single time, without interruption.

The raw magnetic data were downloaded from the FM256 into the Geoplot 4.0 (beta version) software package. Analyses conducted on the data involved (in the following order) (1) “destaggering” to remove errors in starting and stopping transects (there was a systematic 5 measurement error which was corrected for all units, other minor corrections were also made, particularly around the church and outhouse); (2) “zero mean grid” to remove grid-to-grid differences in mean values; (3) “zero mean traverse” to remove the striping effect common in zig-zag surveys; (4) “low pass filter” (twice, with a radius of one) to highlight weak anomalies, (which interments frequently are); (5) interpolation (once in the Y-direction) to make every pixel 25 cm by 25 cm. The image resulting from this processing, clipped to show only values plus or minus two standard deviations from the mean, is shown overlain on an aerial photograph of the church property in Figure 5, and is presented on its own as Figure 6. Magnetic highs appear as darker grays; magnetic lows as lighter grays.

Results

Figure 7 presents the interpreted results of the magnetic survey. A total of 39 suspected unmarked interments are identified from the magnetometry data. With the 21 marked interments (some of which represent couples or families), there are at least 60 individuals represented by the interments indicated on Figure 7, and perhaps more. In addition, it is almost certain that some interments are not visible in the magnetometry data, particularly because some of the marked interments are not visible. The interments appear to be restricted to two general areas, one immediately south of the church and east of the outhouse, and another some 30 meters to the east of the church and covering an area of roughly 20 meters by 20 meters. Other areas seem to lack interments, although, as noted above, some interments are certainly not visible in the magnetometry data. Interments tend to be clustered in early church cemeteries, and it is unlikely that there are isolated interments located outside of these two areas.

There is a third area where interments may be present but that entirely lacks markers. This area is to the immediate north of the church. There appear to be at least three parallel rows of very weak magnetic lows, each ovoid in form. These are interpreted as rows of interments that received treatment very different from the other interments in the cemetery. Other interments at the Hauge Log Church are in a scattered pattern, some in short rows, but none in carefully laid-out rows like those in the area north of the church. The pattern in the area north of the church suggests a carefully planned layout, perhaps associated with a large number of deaths taking
place in a very short period of time. As oral tradition holds that there was an epidemic which
took the lives of a large number of children, this may the area where these children were interred.
There are perhaps 18 interments visible in the magnetometry data, although it would appear that
the magnetic survey did not reach the northern boundary of this area.

It is important to note that neither the area of interments to the south of the church nor the
possible interments to the north are included in the recorded location of Wisconsin burial site
BDA-0047.

**Recommendations**

1. The location of Wisconsin burial site BDA-0047 in the Wisconsin Archaeological Site
   Inventory should be expanded to include the cemetery area to the south of the church and
   the area of possible interments to the north. The recommended expansion is marked on
   the USGS quad map and an aerial photograph of the site in Figure 8.

2. Additional geophysical work should be done north of the church in order to clarify the
   presence of possible interments and their extent. This will require clearing brush and
   may require the permission of the Town of Perry, which owns the adjoining parcel to the
   north (050606498250).

3. If additional geophysical work indicates the north burial area extends beyond church
   property, the Perry Hauge Log Church Preservation Association and Wisconsin State
   Historical Society Burial Sites Office should consult with the Town of Perry to discuss
   extending the recorded location of BDA-0047 north into parcel 050606498250.

4. The current pathway that crosses the possible north burial area from the Hauge Log
   Church to the land owned by the Town of Perry to the north should be closed, as it may
   run on top of interments. A pathway connecting the properties could be placed on the
   western edge of parcel 050607184750. Creation of a new path, wherever placed, should
   be done in consultation with the Wisconsin State Historical Society Burial Sites Office

5. The Perry Hauge Log Church Preservation Association should consider closing the
   driveway west of the parking area near the gate, as the driveway runs very close to the
   eastern burial area and may run across one or more interments. Removal or alteration of
   the driveway should be done in consultation with the Wisconsin State Historical Society
   Burial Sites Office.
References

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Figure 1. Location of Wisconsin burial site BDA-0047.
Figure 2. Example of the ten small markers found during the survey of the Hauge Log Church cemetery.
Figure 3. Aerial photograph of BDA-0047 showing parcel boundaries. The irregularly shaped parcel is the original church property. The surrounding rectangle and the parcel to the north were purchased by the Perry Hauge Log Church Preservation Association to create a boundary around the church property.

Figure 4. Aerial photo of BDA-0047 showing location of survey units.
Figure 5. Aerial photography of BDA-0047 with processed magnetometry data superimposed.
Figure 6. BDA-0047 processed magnetometry data.
Figure 7. Interpreted BDA-0047 magnetometry data.

- Existing headstone where no interment is visible.
- Existing headstone where interment is visible.
- Suspected unmarked interment.
Figure 8. Suggested extension of the location of BDA-0047.