Discovering & Documenting a "Lost Lighthouse" in Milwaukee's Lake Park

Phase I Archaeology Survey
Report of Findings
2010-2011

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LAKE PARK FRIENDS

CHAPTER 1

Introduction & History of Lake Park

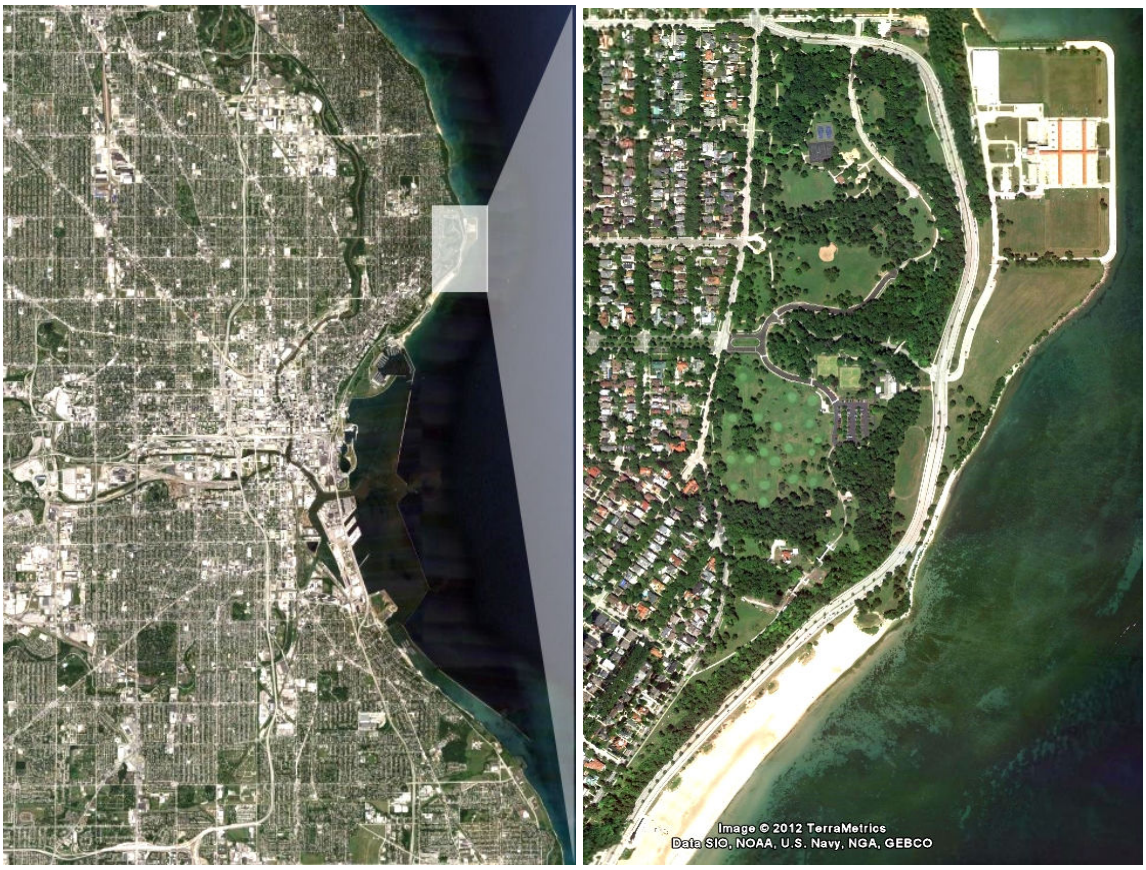


FIGURE 1.0: Satellite view of Milwaukee and Lake Park (Google Earth 2012)

Lake Park is one of the crown jewels in the Milwaukee County Parks system. Located above the shoreline of Lake Michigan, roughly three nautical miles from Milwaukee's inner port entrance, this 131.1 acre park straddles the northern point in the Bay of Milwaukee. This section of land harbors evidence of prehistoric occupation and mortuary practice, specifically with the presence of the City's last extant Woodland Period mound (47-MI-063). An archaeological survey in 1980s confirmed the presence of prehistoric habitation around this mound by identifying lithic (stone tools) artifacts such as flakes and fire cracked rock (James 1980:7&9).

Euro-American occupation of this area first took place in 1849 when it was purchased and developed as farmland by Gustav Lueddemann (also spelled Luddeman), who purchased a large section of what is now the northern 1/3 of the park. He built his home there, keeping much of the native forest intact, and opened his grounds to the public as a picnic and recreation area, known as Lueddemann's on the Lake (not to be confused with Lueddemann's on the River, which Frederick Lueddemann established on the Milwaukee River in Shorewood). Another large landowner of eventual Lake Park was a P. Martineau, who owned much of the southern 1/3 or the current Park (Fig. 2.1)

In the following decades, City government began purchasing land throughout Milwaukee for public park development. Lake Park was selected as one of three parks to be designed by the nationally heralded landscape architect, Frederick Law Olmsted. Inspired by European design and the natural beauty of the site, Olmstead's vision neared completion in l894. By the close of the 19th Century, Lake Park had become a premier destination for public recreation. It has since retained the status as a remarkable public park and retains most of the original designs of Olmsted, along with ornate bridges and natural ravines (Buck 1982, Wahl 1895).

As part of Discovery World's Distant Mirror Archaeology Program and in partnership with the North Point Lighthouse Friends and Lake Park Friends, a preliminary Phase I archaeology survey was performed at the site of the 1855 North Point Lighthouse in Lake Park in July of 2010. These volunteers resurveyed the 1855 parcel, marked its corners and used old photographs and maps of Milwaukee prior to 1900. It was determined that the old Lighthouse was likely located on a bluff terrace across the north ravine adjacent to the current North Point Lighthouse. Survey methods and fieldwork results are discussed in Chapter 3 and 4.

Following the initial survey in 2010, a follow up archaeological survey was conducted in August of 2011. This archaeological survey was performed for education purposes, in the effort of better documenting and preserving the historical record of Lake Park. Another primary goal of the excavation at the "Lost Lighthouse" site was to train 20 Boy Scouts in Archaeology, so they could earn their Archaeology Merit Badges through their participation in the project.

FIGURE 1.1: Lake Park, from Wright's Map of Milwaukee 1888 (AGSL)

FIGURE 1.2: Lake Park Relief Map 2010 (adapted from USGS)

CHAPTER 2

History of North Point Lighthouse

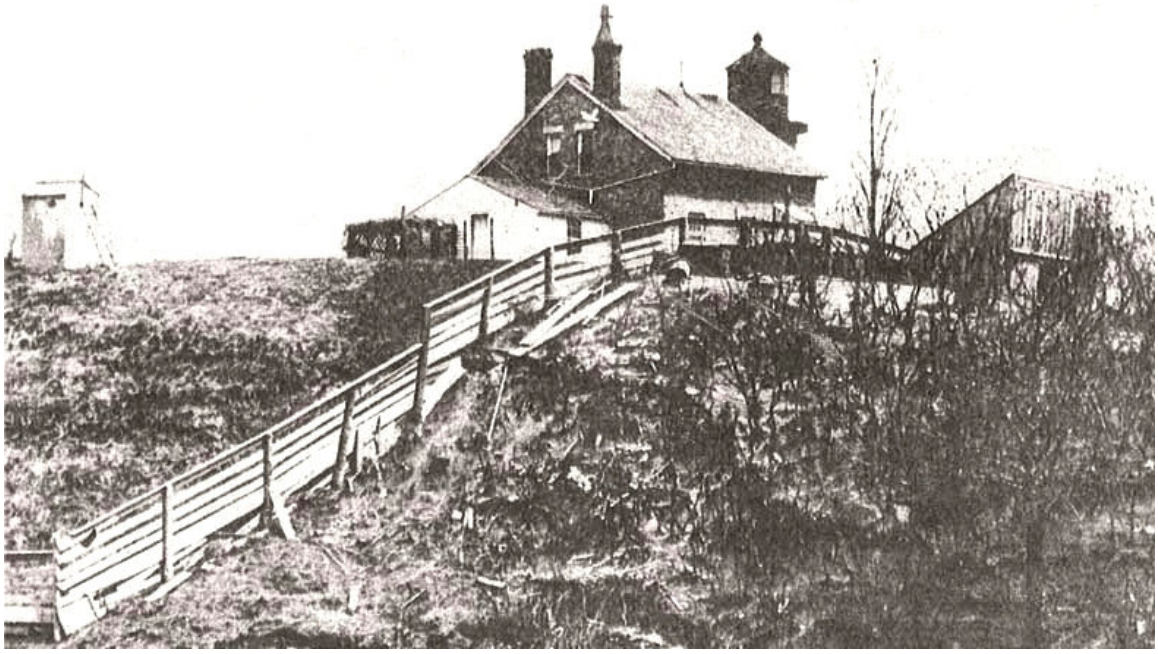


FIGURE 2.0: Southwest view of original North Point Lighthouse 1860s (NPLH)

By 1854 the two-acre site from Wahl Avenue to the lakeshore was acquired by the U.S. Lighthouse Service (Milwaukee Co. Register of Deeds). Four years later on November 22nd 1855, the original 28-foot tall North Point Lighthouse and adjoining Keeper's Quarters built of cream city brick officially opened. At that time, the lighthouse had the highest above-water beacon on the Great Lakes (107 feet) due to its location on the high lake bluff. The lens in the lighthouse was a Fourth Order Fresnel lens manufactured by Barbier, Benard & Turenne of Paris. That lens was replaced in 1868 when the lantern room was rebuilt.

During the 1870s significant bluff erosion resulted in the loss of a portion of the Lighthouse's front yard. It was at this time that the government decided to build a new lighthouse "100 feet" inland off the bluff. On August 4th 1886, Congress approved $15,000 to build the present Lighthouse and Keeper's Quarters. Construction was completed on December 20th 1887, and the new tower was lighted on the night of January 10th, 1888. The new Lighthouse was built with a 39-foot high octagon shaped structure constructed entirely of bolted cast iron sections. The 1868 lens was placed in the new Lighthouse.

FIGURE 2.1: 1880 Milwaukee Fire Insurance Map close-up (Milwaukee Public Library)

FIGURE 2.2: Original North Point Lighthouse (abandoned) ca. 1890s, northeast façade (North Point Lighthouse Friends Inc.)

FIGURE 2.3: Original North Point Lighthouse (abandoned) ca. 1890s, southwest façade (North Point Lighthouse Friends Inc.)

During the 1890s Milwaukee was engaged in a campaign of building public parks for recreation within the burgeoning city. A fine example of this movement came from the pre-eminent 19th Century American landscape architect Frederick Law Olmsted, who submitted a design for Lake Park in 1893. Federal permission was granted to incorporate the lighthouse into the park that same year. By the turn of the 20th Century however, tree growth along the bluff edge began to obscure the light from the lighthouse, resulting in an Act of Congress that stopped funding the Lighthouse and the light was turned off in 1907.

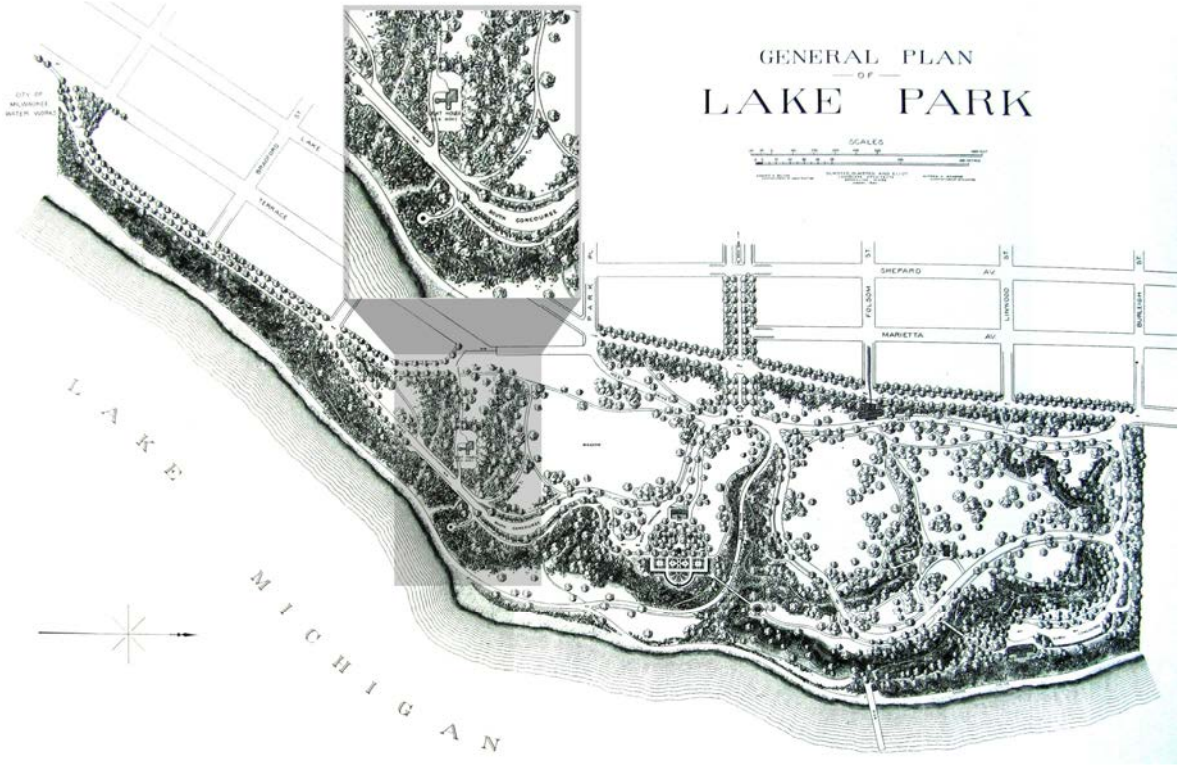


FIGURE 2.4: Adapted from 1895 Olmsted Plan for Lake Park

August 20, 1907, the Merchants and Manufacturers Association of Milwaukee met with Major William V. Judson of the United States Corps of Engineers to consider action to put the light back in operation and maintain it privately. On March 4th 1909, an appropriation of $10,000 was granted to raise the tower and restore the lighthouse to operation. By 1912 work began to build a 35-foot steel structure, atop of which was placed the old light tower with its 1868 lens. The combined height of the new tower was 74-feet tall, making it sufficient to extend above the tree line. Work was completed in April 1913. The North Point Lighthouse continued in operation until 1994 when it was decommissioned by the U.S. Coast Guard.

Through a joint partnership of Lake Park Friends, Watertower Landmark Trust, a citizen group, North Point Lighthouse Friends, Inc., was formed and has worked since that time to restore and preserve these historic structures. In 2003, the property was formally transferred to Milwaukee County and underwent extensive renovation. In 2007, the property opened to the public as a maritime museum and conference center. http://www.northpointlighthouse.org/history.html


FIGURE 2.5: Current North Point Lighthouse and Lion Bridge Concourse ca. 1915.WHS

In a letter from the Office of the Park Commissioners, drafted May 3rd, 1892, it outlines the necessary improvements needed for the North Point Lighthouse property with the development of Lake Park by the Landscape Architecture firm, F.L. Olmsted & Co.

> "…The Commissioners also ask permission, at their own expense, to cause the removal of the decayed and unsightly building which was abandoned some years ago…. The following is a description of the part of the Light-House property not needed for Light-House purposes and the use of which is desired by the City of Milwaukee through the Park Commissioners, as explained above: Description of property of part of lot three, in the southeast one quarter of section fifteen, Town seven, north Range twenty-two east in the Eighteenth Ward of the City of Milwaukee, State of Wisconsin, known as the "North Point Light-House Grounds". Commencing at a point, which is 557.04 feet south of the North Line of Lot three, and 578 feet east of the West line of Lot three, running thence south on a line parallel to the West Line of Lot three, 113.52 feet to a point, thence east on a line parallel to the North of Lot three, to the West Shore Line of Lake Michigan, thence North one line parallel to the West Line of said Lot three 113.52 feet to a point, thence West on a line parallel to the north line of said Lot three from the West Shore Line of Lake Michigan to the point of commencement."
>
> (Christian Wahl, John Bentley, C.E. Lewis, Louis Auer, Charles Manegold Jr.)

This letter is quite useful in describing the location of the then "decayed" original North Point Lighthouse. Moreover, we know now the lighthouse was still standing in 1892. In all likelihood it was leveled a year or so later. How it was torn down has yet to be determined, that is, whether it was pushed over the bluff, or were its bricks salvaged and hauled away? Based on the 1895 plan for Lake Park it is apparent that the original North Point Lighthouse is no longer standing and is replaced with a circular path and possible water feature (Fig. 2.4)

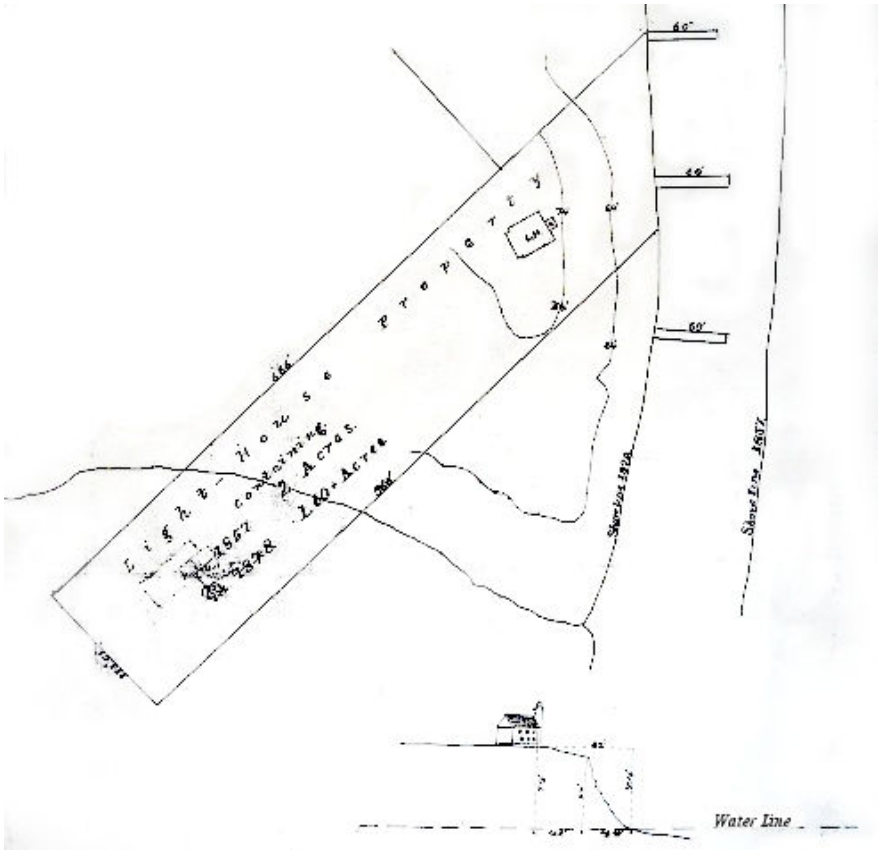


FIGURE 2.6: 1878 plat map of Lighthouse Property (NPLH)

An 1878 plat map (Fig. 2.6) proved extremely useful in determining the original location of the original lighthouse. The original ground surface was determined to be 74 feet above the waterline. That map provided the bases for a modern plat of survey, which was completed by Donald Chaput, in order to determine the original lot boundaries. Therefore, armed with this knowledge of where the original North Point Lighthouse once stood (Fig. 2.7), we began a reconnaissance archaeology survey in July of 2010. The methods and results are discussed in the following chapters.


FIGURE 2.7: Satellite view of current lighthouse (left) and former lighthouse site (circle)

CHAPTER 3

Archaeological Survey Methods

On July 16th 2010, an initial reconnaissance survey was conducted in Lake Park to locate any remains of the original 1855 North Point Lighthouse. To do this, several written records, including historic maps and photographs, were compiled by the North Point Lighthouse Friends. These documents gave us a pretty good idea of where to begin looking. Therefore, a pedestrian survey was performed along the eastern bluff embankment, which quickly revealed a large amount of historic construction and habitation material. 19th century glass and ceramics in general, as well as dozens of cream city bricks in particular, provided evidence of the former lighthouse and keepers quarters. Pin flags were placed beside each artifact, totaling in excess of 100 visible surface artifacts. In addition to a pedestrian survey, one shovel test (40cm x 40 cm) was excavated on the upper terrace to determine the site morphology. Results are discussed in the following section. Its geographic coordinates are: N 43° 3'56.30, W 87°52'11.70.

FIGURE 3.0: Documented artifacts along bluff embankment (July 2010).

The 2011 archaeology survey of the old lighthouse site (aka "Lost Lighthouse") commenced on Tuesday August 9th and Wednesday August 10th, when twenty Boy Scouts participated in documenting the remains of the historic structure. Following a day of training in archaeology at Discovery World, the Scouts and members of the North Point Lighthouse Friends worked to clear fallen debris along the lake bluff embankment, as well as relocating the pin flags that marked the locations of previously identified surface artifacts. Meanwhile, a grid at 5-meter increments was established on the upper terrace surface with flags marking shovel test locations. The site datum (N1000 E1000) was marked with a wooden stake and metal nail. It is located at the extreme southwest corner of the open terrace, and forms the East/West baseline running in a North/South direction.

On the steep bluff slope, the scouts assisted in clearing fallen tree limbs and surface obstructions so as to make it easier to map surface artifacts. The survey grid was then extended south and west down slope embankment, in order to incorporate the visible surface debris of bricks and other historic artifacts, which were previously marked with pin flags.

Finally, a 15meter X 15meter Ground Penetrating Radar grid was established on the upper terrace. The southwest corner of this grid was located at N1015 E1000. The GPR data was collected (primarily by Boy Scouts) in an XY grid format at 50cm transect intervals, for a total of 30 transects North/South [Y] and 30 transects East/West [X]. Three Scouts assisted with this GPR survey, while taking turns pushing the device and recording the location of anomalies with pin flags.

FIGURE 3.1: David Langhoff leading GPS mapping of shovel test

FIGURE 3.2: Shovel Test Excavation Being Performed by Boy Scout

Each shovel test was excavated as a 30-40cm x 30-40 cm square hole aligned in cardinal directions with the survey grid. These shovel tests, were excavated in 10 cm levels, screened through a ¼ wire mesh screen. All artifacts that were encountered were separated per level. The depth of excavations varied depending on soil strata, yet all were terminated 10 cm into the sub clay. Upon excavation completion, a profile illustration was rendered, Munsell soil color and textures described and a photograph of the shovel test profile taken. A total of fourteen shovel tests were excavated during the two days of fieldwork. These results will be described in the following chapter.

On the slope embankment, two unit excavations were established over the top of notable surface artifacts. Unit 1 was 1meter X 1meter with a grid coordinate (NE corner) of N999, E1019. Unit 2 was 50cm X 2 meters (North/South) with a grid coordinate (NE corner) of N984, E1005. These grids were first mapped with surface artifacts, then excavated in 10 cm levels. The results of these unit excavations will be described in the following chapter.

Ground Penetrating Radar

Prior to performing a phase I survey, ground penetrating radar (GPR) was also employed over a section of the site. The GPR used was a Noggin Smart Cart 500MHz unit owned by Discovery World. 500MHz is an ideal frequency to test for buried foundation walls and human disturbances within the first 1 to 2 meters below the current ground surface (Kenyon 1977). This same device was employed with sufficient success in Juneau Park, also under the auspices of Discovery World and its Distant Mirror Archaeology Program. Therefore, a 15 meter x 15 meter GPR survey grid was established over the existing survey grid. The southwest corner (XY beginning point) was located at grid N1015 E1000. The GPR collected data in an XY grid configuration, where transects were 50cm apart. In total 30 lines were collected North/South (x) and 30 lines East/West (y). The devise was calibrated to dry soil (0.65 meters per nanosecond at a maximum depth of 1.5 meters below surface.

The initial field results indicated that there was a significant degree of subsurface disturbance, particularly between 20-75cm below the ground surface (Fig.3.3). These subsurface anomalies are shown as hyperbolic arcs where the buried object is identifiable at the underside of the arc, as the radar energy passes down and over it. It is only in post processing that the entire 15x15 meter grid can be dissected into depth slices, whereby revealing larger patterns in the data. Figure 3.4 shows a density of subsurface anomalies on the North, East and South perimeters of the grid at a depth of ca. 30cm below surface. There is not enough of a pattern to determine any intact foundations however. Figure 3.5 shows the GPR overlay of the 15x15meter grid at a depth of 31-61cm below surface. The compiled data suggests a similar patter as the previous depth slice, but with a stronger concentration of buried anomalies on the southern parameter. It is entirely possible that these anomalies correspond to the original lighthouse and keepers quarters, but no definitive foundation walls were observed. **Note: the vertical stripe down the middle of the grid is an error in the data and therefore not a cultural feature.

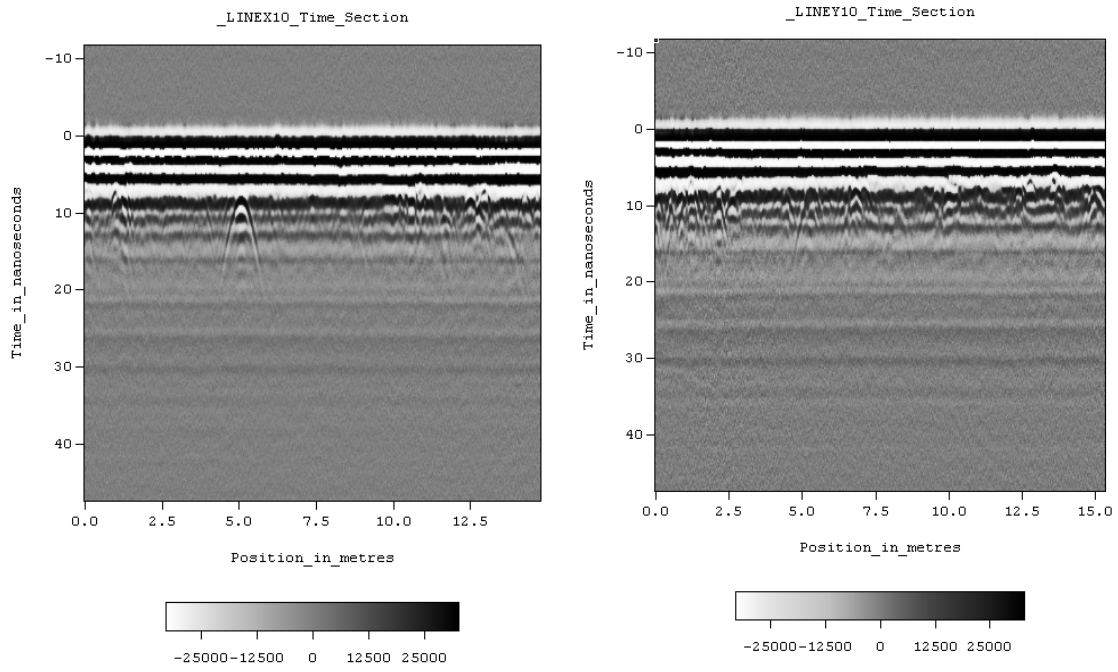


FIGURE 3.3: Hyperbola vertical cross sections of transect X line 10 & transect Y line 10

FIGURE 3.4: GPR XY Grid 0-31cmbs Overlay on Lighthouse Site

FIGURE 3.5: GPR XY Grid 31-61cmbs Overlay on Lighthouse Site

CHAPTER 4

Excavation Field Results

The results from the initial reconnaissance survey shovel test on July 16th 2010, provided evidence for intact cultural remains from the original 1855 North Point Lighthouse. The soil morphology was as follows: The "A" horizon was from 0-40 centimeters below surface (cmbs), which was loam in texture and 10YR 2/2 in color. A mixture of "A/B" horizons were noted from 40-60cmbs with a 10YR 2/2 and 10YR 4/4 color. Finally the substrata clay "B" horizon was excavated from 60-70cmbs 7.5YR 5/6. The artifacts identified in this shovel test which were located in the A horizon included: one square nail (4cm in length), one cream glazed stoneware rim fragment (3cm x 4cm), several small fragments of roof slate, as well as one small iron bracket fragment (3cm x 3 cm).

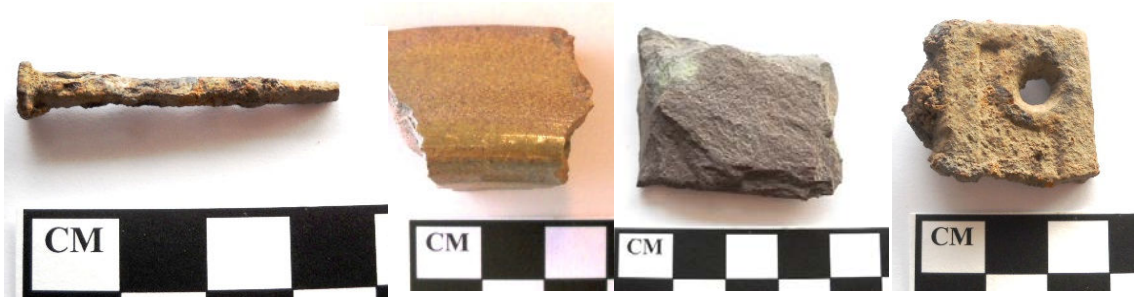


FIGURE 4.0: Artifacts obtained from 2010 reconnaissance survey shovel test: square nail, stoneware jar rim, roof slate fragment, iron bracket with nail hole.

The results from the Boy Scout shovel test excavations are described in the following section, moving along transects on the North Baseline E1000 east to E1020. Shovel Test coordinates that are highlighted in **bold text** indicate "positive" shovel tests where 19th Century artifacts were observed and/or collected. The site map (Fig. 4.2) shows the location and distribution of positive vs. negative shovel tests.

FIGURE 4.1: 2010 Survey (left) & 2011 Excavation with Boy Scouts (right)

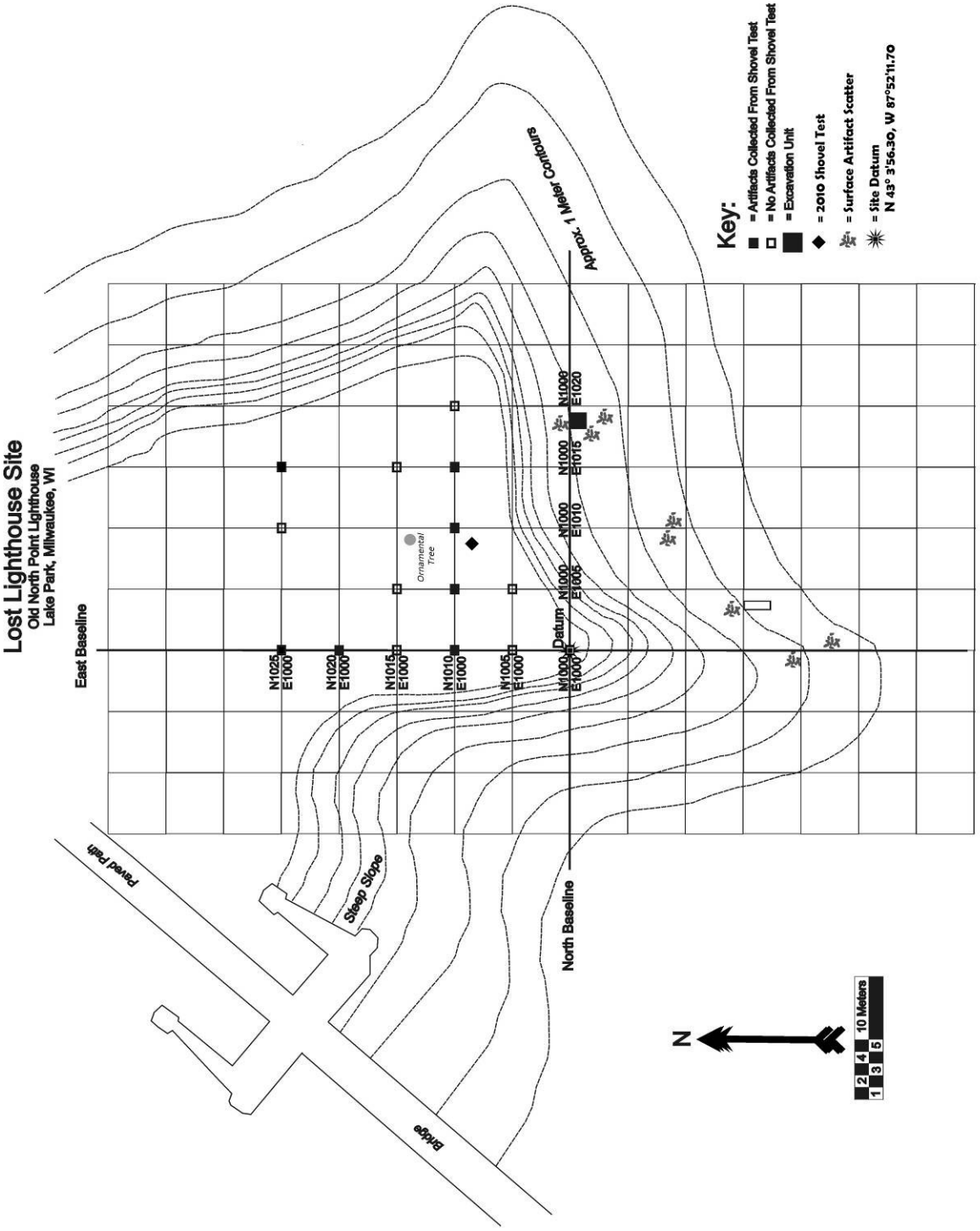


FIGURE 4.2: Five-meter excavation grid map with shovel test locations. Site datum at N1000 E1000. Geographic coordinates N 43° 3'56.30, W 87°52'11.70.

Excavated Shovel Test Results

N1005 E1000: This shovel test yielded modern clear bottle glass in the A horizon (0-20cmbs) with minor fragments of cinder. Excavation was terminated 5cm into clay substrata (20-25cmbs). No artifacts were collected.

N1010 E1000: Modern clear bottle glass and a bottle cap was discovered in the A horizon (0-10cmbs) with significant limestone, mudstone and cinder fragments from 10-20cmbs. Excavation was terminated 10cm into clay substrata (20-30cmbs). No artifacts were collected.

N1015 E1000: Once again modern clear bottle glass and cinder fragments found in A horizon (0-20cmbs) with sterile clay between 20-30cmbs.

N1020 E1000: This shovel test resulted in the usual modern artifacts in the A-horizon (brown bottle glass and clear glass shards) from 0-20cmbs. However, at 20 cmbs below a strata break (A/B horizon 20-30cmbs) the base of a small earthenware flowerpot was discovered and collected. The excavation was terminated at 40cmbs.

N1025 E1000: The topsoil A-horizon occurred between 0-12cmbs, below which a fill layer was detected (12-45cmbs). In this mottled clay loam strata large amounts of cinder chunks were observed, one small metal rod, a square nail and a small cream city brick fragment. These artifacts were collected (Fig. 4.3). The excavation was terminated 5cm into the sterile clay at 50cmbs with a munsell color of 10YR 6/4.

FIGURE 4.3: Shovel Test N1025 E1000 with Recovered Artifacts

N1005 E1005: In this shovel test a small fragment of clear glass and white ware ceramic was noted but not collected in the A-horizon between 0-18cmbs. The B-horizon clay substrata was encountered at 18cmbs and termination of the shovel occurred at 25cmbs.

N1010 E1005: As usual, mid-late 20th century artifacts (pull tab, plastic, clear bottle glass) were noted between 0-20cmbs. Also noted and collected was a small 19th century white ware ceramic fragment with internal gold flecking, found between 10-20 cmbs. The sterile B-horizon occurred between 20-30cmbs.

N1015 E1005: This shovel test yielded no artifacts. The A-horizon was between 0-20cmbs, with a lens of limestone pebble-sized chunks noted between 10-20cmbs. Meanwhile, the sterile B-horizon was noted between 20-30cmbs.

N1010 E1010: Artifacts noted in this excavation were fragments of highly vitrified cinder (obsidian-like) along with a cream brick fragment, two square nails and three fragments of earthenware. Each of these artifacts were collected between 10-30cmbs (10YR4/3). Sterile clay (7.5YR 5/6) was encountered at 30-40cmbs.

N1025 E1010: This excavation encountered large amounts of cinder between 0-15cmbs. Below this strata was an impenetrable layer of gravel fill from 15-30cmbs. No observable cultural artifacts were noted.

N1010 E1015: In this shovel test a two square nails and a small blue-transfer ceramic sherd were found in the A-horizon between 5-30cmbs. Interestingly, a very large roof slate was discovered at 27cmbs and bisected the south half of the shovel test. Because it extended beyond the shovel test parameters, it was left in place; however, a smaller fragment was collected as a sample (Fig. 4.4).

FIGURE 4.4: Shovel Test N1010 E1015 with in situ roof slate at 27 cm below surface, including artifacts recovered from shovel test (note nail hole in slate fragment)

N1015 E1015: No artifacts were observed or recovered from this shovel test. The A-horizon was noted between 0-30cmbs with minor flecks of cinder present. Excavation was terminated at 40cmbs.

N1025 E1015: The soil morphology of this shovel test was similar to N1025 E1010, in that lots of gravel was encountered throughout the excavation. Greater than 30 small fragments of cream city brick were collected between 0-30 cmbs. Moreover large fragments of cinder, metal and glass were noted but not collected between 0-30cmbs.

N1010 E1020: This shovel test located along the eastern extent of the upper terrace yielded no evidence of cultural artifacts. A-horizon occurred from 0-30 cmbs, while the B-horizon was noted from 30-40cms.

Bluff Excavation Unit

In addition to the shovel tests on the upper terrace, a 1x1 meter unit was excavated and exposed on the east bluff embankment. Its coordinates were N999 E1019. This unit yielded abundant evidence of construction material most certainly attributable to the 1855 North Point Lighthouse. Specifically, more than a dozen cream bricks (most were complete), as well as two large fragments of limestone blocks were uncovered but left in situ (Fig. 4.5). The unit was excavated to a maximum depth of 40 cm below the current slope, whereby exposing a midden of cream brick and limestone blocks. 19th Century artifacts that were observed and collected between 0-40cm below the surface include: Blue transfer print ceramics, stoneware, a sawn faunal bone, an iron door hinge, a shell button and a fragment of a glass gaming marble (Fig. 4.6). In all likelihood these artifacts are from the occupants of the former lighthouse and keepers quarters.

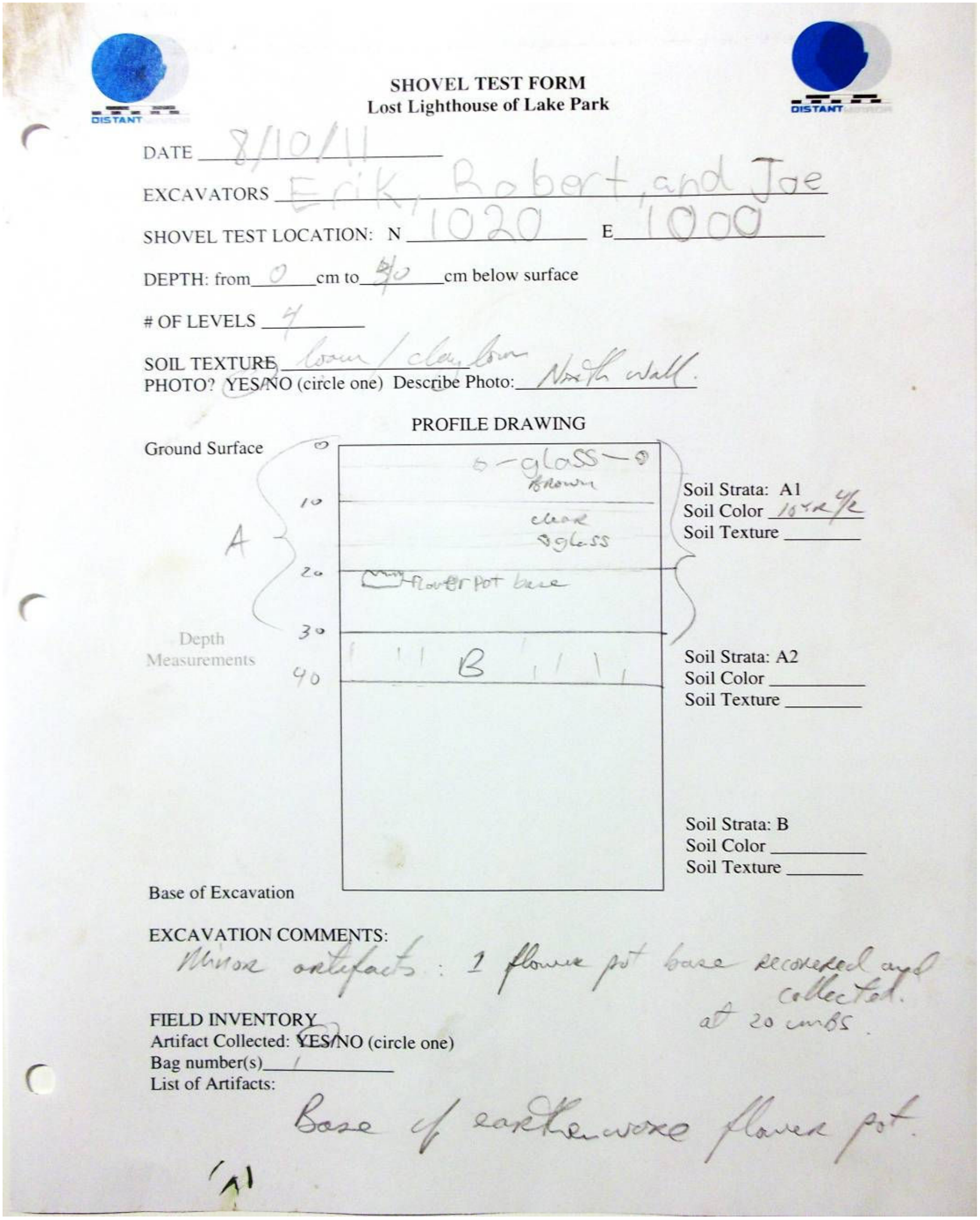
FIGURE 4.5: Unit N999 E1019 (1x1meter) Excavation with boy scouts

FIGURE 4.6: Faunal bone, iron door hinge, stoneware jar, shell button, marble fragment

Bluff Embankment Surface Artifacts

FIGURE 4.7: Cream brick with mortar, clay drain pipe, roof slate, various types of container glass (19th-early 20th century), ceramics.

Boy Scout Shovel Test Form



SHOVEL TEST FORM
Lost Lighthouse of Lake Park

DATE 8/10/11

EXCAVATORS Erik, Robert, and Joe

SHOVEL TEST LOCATION: N 1020 E 1000

DEPTH: from 0 cm to 40 cm below surface

OF LEVELS 4

SOIL TEXTURE loam / clay loam

PHOTO? YES/NO (circle one) Describe Photo: North Wall.

PROFILE DRAWING

Ground Surface 0

glass
Brown
10
clear glass
A
20
flower pot base
30
Depth Measurements
B
40

Soil Strata: A1
Soil Color 10YR 4/2
Soil Texture

Soil Strata: A2
Soil Color
Soil Texture

Soil Strata: B
Soil Color
Soil Texture

Base of Excavation

EXCAVATION COMMENTS:
Minor artifacts: 1 flower pot base recovered and collected. at 20 cmbs.

FIELD INVENTORY
Artifact Collected: YES/NO (circle one)
Bag number(s) 1
List of Artifacts:
Base of earthenware flower pot.

FIGURE 4.8: Example of a Shovel Test Form completed by Boy Scouts in 2011.

CHAPTER 5

Conclusions and Future Recommendations

The conclusions that can be drawn from this preliminary archaeological survey of the original North Point Lighthouse, aka the "Lost Lighthouse Site" are the following:

First, it is evident that this archaeological survey has positively identified the location of the historic lighthouse and keepers quarters in Lake Park. This confirmation comes from mid-late 19th Century artifacts found both on the lake bluff embankment (Fig. 4.7) and in shovel tests on the upper terrace. Most significantly, these artifacts include an abundant amount of cream bricks and other construction material atibutable to the former lighthouse and keepers quarters. Second, we know that these structures made of "Cream City" brick stood for approximately thirty-eight years (1855-1893), based on written documents and map records. Third, ground penetrating radar data suggests that little, if any, intact subterranean foundations remain of the original structure. There are however significant anomalies in the data that suggests there are still cultural features/artifacts buried at this location.

It is my recommendation to continue filling in the gaps of the archaeology grid that were not excavated in 2011, in order to obtain a better sense of artifact type and distribution across the upper terrace. Moreover, it is recommended to complete the 1meter x 1meter excavation grid on the bluff embankment, in order to determine the extent and depth of these architectural remains. Additionally, further soil coring on the slope may provide insight into other brick midden areas. Also, a more complete ground penetrating radar survey over the entire upper terrace would allow for a more detailed analysis of potential intact cultural features. It would also behoove the Milwaukee County Park system to provide signage or a monument to mark the location of this historic structure and its role in the maritime landscape of Milwaukee. Perhaps the North Point Lighthouse Friends in conjunction with the Lake Park Friends could work together to implement this signage/monument. Finally, it is advised that the artifacts removed through this excavation be available for public display both at the North Point Lighthouse museum, as well as at Discovery World in their Distant Mirror Archaeology exhibit. Long term curation of the artifacts will be stored at UW-Milwaukee's Department of Anthropology.

Milwaukee County Parks continue to provide fertile ground for public archaeology and the citizens of this community and beyond stand to benefit from preserving and celebrating the rich heritage of the city. It is hoped that through similar collaborations between public and private cultural institutions, such as Discovery World, North Point Lighthouse Friends Inc. Lake Park Friends, etc., much more will be revealed about the forgotten yet significant aspects of Milwaukee's past. The outcome of these collaborations through similar archaeological programs, onsite signage and public exhibitions, ought to engender a deeper sense of awareness and respect for Milwaukee's unique history for generations to come.

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