Report to OSU-Tulsa:

Archaeological Survey Conducted by the Mapping Historical Trauma in Tulsa, 1921-2021 project in June 2021

Introduction

From May 31 - June 18, 2021, the Mapping Historical Trauma in Tulsa (MHTT) project, led by Dr. Alicia Odewale (Assistant Professor of Anthropology, University of Tulsa) and Dr. Parker VanValkenburgh (Assistant Professor of Anthropology, Brown University), conducted a pedestrian survey alongside high resolution GPS mapping on property owned by the Board of Regents for the Agricultural and Mechanical Colleges of the state of Oklahoma. This survey was authorized via email on March 11 from Mr. Ronald Bussert, Vice President of Administration and Finance at Oklahoma State University-Tulsa, writing on behalf of OSU-Tulsa president Dr. Pamela Fry. The MHTT survey team consisted of Dr. Parker VanValkenburg, Dr. Alicia Odewale, Ms. Nkem Ike (Ph.D. student in Anthropology at the University of Tulsa) and fifteen student volunteers. There were 5 different institutions represented across our student volunteers that included high school, undergraduate, and graduate students from Oklahoma State University, University of Oklahoma, The University of Tulsa, Tulsa Community College, and Booker T Washington High School.

Background

The land included in this survey area is owned by the Board of Regents for the Agricultural and Mechanical Colleges and functions as part of the Oklahoma State University-Tulsa (OSU-Tulsa) campus (Hobbs and Feaver 2009). Within this campus landscape our survey focused on an area known as Standpipe Hill.

Figure 1. Image of Standpipe Hill area with OSU-Tulsa’s Signature Gateway visible in the background.

Standpipe Hill, named for a columnar reservoir that stored drinking water for Greenwood and surrounding districts of Tulsa between 1904 and 1924, is an elevated mound overlooking a portion of downtown Tulsa and the Greenwood (Gerkin 2012: Madigan 2001). While this site now holds a tower designed to welcome new OSU-Tulsa students, it also has its own history within the Greenwood District as a site of manufacture of natural resources, a space of religious observance, a site of education with a standing school, a place of wealth signaled by the affluent homes that were once perched on its eastern side, an area of documented conflict during the 1921 Race Massacre, and a place of shelter and remembrance where many climbed to behold the destruction during the attack or tried to locate family members on higher ground they thought would be safe (Johnson 1998; Jones Parrish 1923; Krehbiel 2019; Madigan 2001).

Outside of its function for both water storage and brick manufacture (Johnson 1998), most stories about Standpipe Hill during the 1921 Tulsa Race Massacre have marked this area as a site of violence, as many sources indicate that a machine gun was perched on the hill by the National Guard to establish a battle line and seal off Greenwood from Detroit Avenue (Madigan 2001). However, there are also reports of machine guns being used from this same hill to launch an assault on Mount Zion Baptist Church before the church was burned down (Madigan 2001). While the placement of Mount Zion Baptist Church on the Southeast side of the hill is well documented since the church was rebuilt in the same location, much less is known about the original placement of Paradise Baptist Church that sources indicate was built on the northern side of the hill (Jones Parrish 1923).

More is known about the affluent homes that were built on top of the hill before the 1921 attack began. Sources describe a collection of wealthy homes on the hill that are no longer visible in today's landscape: "On the shoulder of Standpipe Hill where so many of the black doctors and lawyers and businessmen and schoolteachers had their large, beautiful brick houses" (Madigan 2001). Little is known about these homes other than the fact that John Oliphant, a retired judge at the time of the massacre, was one of the first to build a home near the top of the hill (Madigan 2001). Not long after, subsequent properties owned by wealthy Black Greenwood leaders such as Dr. A.C. Jackson, Dr. R.T. Bridgewater, Andrew Smitherman, and Ellis Walker Woods were built on the hill along Detroit Avenue (Johnson 2014; Krehbiel 2019; Madigan 2001). While all of these homes were burned down during the attack, it is unclear how many homes were rebuilt in the aftermath of the Massacre. Today there are no homes, brickyards, or churches on top of Standpipe Hill, and the area remains clear of any standing structures except for the brick tower and stone terraced landscape known as the Signature Gateway, erected by OSU-Tulsa in 2014. Other than this construction, the hill has remained largely undisturbed as a protected space and historical marker since June 2014.

Figure 2. Image of Historical Marker dedicated to Standpipe Hill.

The area around Standpipe Hill remains an important part of our geophysical survey due to its position as a far western point within the boundaries of the Historic Greenwood District. It is also important as one of only a few consistent markers that we have for Greenwood that remains visible through time, before, during, and long after the Tulsa Race Massacre. This is not a site of consistent occupation but a critical site of memory designated on Sanborn Fire Insurance maps as "Standpipe Hill" as early as 1905 (Sanborn map index 1905) and carries the same name and location through time.

Survey Area

The team surveyed approximately 1,005 m^2 (1,202 yd^2) along the sidewalk on the west side of North Detroit Avenue, along the eastern flank of Standpipe Hill. This area was chosen based on our research employing Sanborn fire insurance maps from the early 20th century, which indicate the presence of domestic structures on North Detroit, prior to the 1921 Tulsa Race Massacre. The area highlighted in Figure 3 was chosen for survey due to its accessibility and the feasibility of pulling geophysical instruments. Areas outside of this space were not conducive to geophysical survey due to steep elevation changes and electrical interference from nearby utility poles, power lines and Interstate 244. In addition, no further survey was conducted on top of Standpipe Hill due to security concerns stemming from the steepness of the terrain.

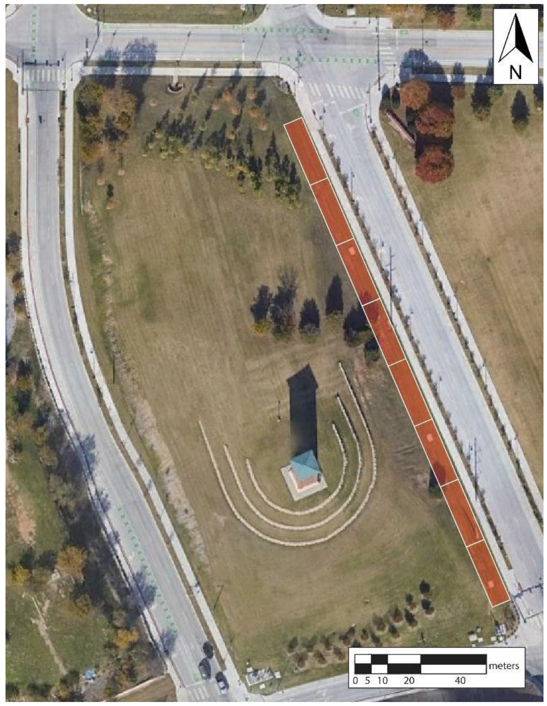


Figure 3. Overhead map of standpipe Hill survey area (orange polygons).

Methods and Technologies

Instrumentation and Positioning. Survey was conducted using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan ground-penetrating radar (GPR) system. Corner stakes were positioned using a laser total station for accurate measuring. Standardized ropes 20 meters in length and marked at 50 cm intervals were then used to guide the gradiometer and GPR operators.

Figure 4. Drs. Amanda Reignier, Alicia Odewale, and Scott Hammerstedt (left to right) laying out GPR survey transect alongside sidewalk on North Detroit Avenue.

Geophysics. Geophysics has become a common tool in archaeology and consists of a number of non-invasive methods to find and analyze subsurface features (Clark 1996; Conyers 2012; Kvamme 2001; Weymouth 1986). Cultural features are usually recognized by contrasts or other differences between the feature and undisturbed surrounding soils. Human activities alter soil texture in many ways, including compaction, stratigraphy, moisture retention, and burning, among others. Geophysical technologies allow us to measure and locate variations of the physical characteristics of the soil. These instruments operate near or at ground surface. The use of the ropes described above allow for spatial control and the subsequent accurate location of soil anomalies detected with geophysical technologies. In many cases, the use of multiple geophysical techniques on the same project has proven useful (e.g., Clay 2001; Hammerstedt et al. 2017).

Ground-penetrating radar (GPR). GPR is commonly used in cemeteries and in other archaeological applications (Conyers 2006, 2012). It is an active technology, meaning it introduces an artificial field to measure response. GPR works by sending pulses of radar into the ground, which are reflected, absorbed, or otherwise deflected by these buried features. The return time of these pulses indicates the depth to the anomaly. Data are collected in sequential profiles, which can then be combined in proprietary software (in this case, RADAN 7) to create three-dimensional views. Data can then be viewed vertically and horizontally to search for anomalies.

Figure 5. Dr. Alicia Odewale operating GSSI UtilityScan GPR

Figure 6. University of Tulsa Ph.D. Student Nkem Ike operating GSSI UtilityScan GPR, alongside Drs. Scott Hammerstedt and Amanda Reignier (left to right)

Soil properties and the frequency of the GPR antenna determine both the depth that the radar pulse will penetrate and its resolution. Higher frequencies will not go particularly deep, but can detect smaller objects. Lower frequencies will go deeper and can detect larger objects (Conyers 2004). The speed of the pulse depends on the composition and moisture levels of the soil through which the signal travels (Conyers 2004, 2012).

Archaeological features appear in the data as multiple types of anomalies. These are generally caused by the deflection/reflection of the radar pulse created by the contrast between a feature or grave and the surrounding soil (Bevan 1991; Conyers 2004, 2012). Hyperbola-shaped anomalies often appear directly over archaeological features. These can mark pits, hearths, burial vaults, air pockets created by coffins, coffin furniture, or buried foundations such as headstones and stone outlines (Bevan 1991; Conyers 2004, 2006, 2012; Gaffney and Gater 2003). However, tree roots, rocks, and rodent burrows can cause similar hyperbolas, thus requiring careful mapping of the survey area and care in interpretation of the data. Generally, if an anomaly appears in the same place in multiple sequential profiles, it is more likely to be archaeological than a naturally occurring feature.

A GSSI Utility Scan with a 350 MHz antenna was used for this project (Figures 3 and 4). It was moved in a sequential zigzag pattern across the survey area and the antenna constantly remained on the ground surface during data collection. Data was collected at 100 readings per meter with 0.5 meter spacing between transects. Signal strength was good to a depth of roughly 2 meters, well within the depth of historic buildings. Data were downloaded into RADAN 7 for processing.

Results and Interpretations

As noted above, 1,005 m^2 (1,202 yd^2) was surveyed using GPR at the base of the east side of Standpipe Hill. This included the base of the hill as well as the paved sidewalk between the hill and North Detroit Avenue (Figure 3). No features of archaeological interest were noted, although three fiberoptic service pits were clearly visible both on the surface and in the data; one example can be seen in Figure 7.

Based on these results, we do not recommend archaeological excavations in the surveyed area of Standpipe Hill. However, our reconnaissance identified the remains of historic building foundations, drainage features and artifact scatter on the western edge of Standpipe Hill, along Martin Luther King, Jr. Blvd, depicted in Figures 8 and 9. Should OSU-Tulsa be amenable to the possibility, we recommend continued research in this area, to be discussed between the MHTT project and the administration of OSU-Tulsa. Additional geophysical survey in this location would be useful for identifying the extent of historic building foundations that remain in this portion of Standpipe Hill, allowing for their conservation. In addition, we believe that surface survey, involving the systematic collection of artifacts on the site's surface, without invasive excavations, might prove valuable in establishing the age of the remains present and whether more intensive investigation would be valuable. We look forward to the opportunity to discuss these possibilities with you.

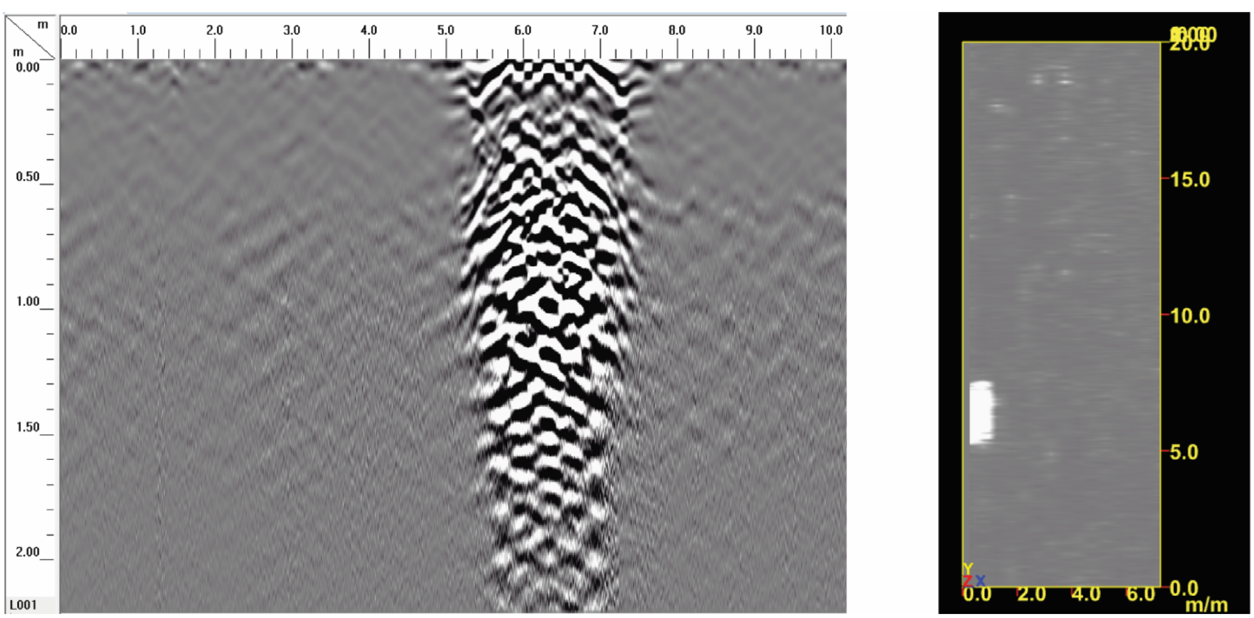


Figure 7. Fiberoptic pit in profile (left) and in horizontal time slice 70 cm below surface (right).

Figure 8. Remains of Historic construction and artifacts eroding from the western edge of standpipe hill, along Martin Luther King, Jr. Boulevard

Figure 9. Historic Artifacts eroding from the western edge of standpipe hill, along Martin Luther King, Jr. Boulevard

2021 Survey Field Season

Overview

Between June 1 and June 18, 2021, MHTT team members conducted non-invasive archaeological research on OSU-Tulsa's campus, focusing specifically on the area of Standpipe Hill bounded by Martin Luther King, Jr. Boulevard on the west, Detroit Avenue on the East, East John Hope Franklin Boulevard on the north and the I-244 access road on the south. Project work focused on this area of campus for two reasons: 1) the historical significance of Standpipe Hill within the history of Greenwood; and 2) the continued presence (as indicated in Figures 8 and 9 above) of the remains of historic structures in this area, visible in the northwest corner of the survey block. Team members sought to record the presence of surface artifacts and architecture in order to document extant heritage and also to create a map of areas most likely to still contain subsurface structures or other historic remains.

Methods

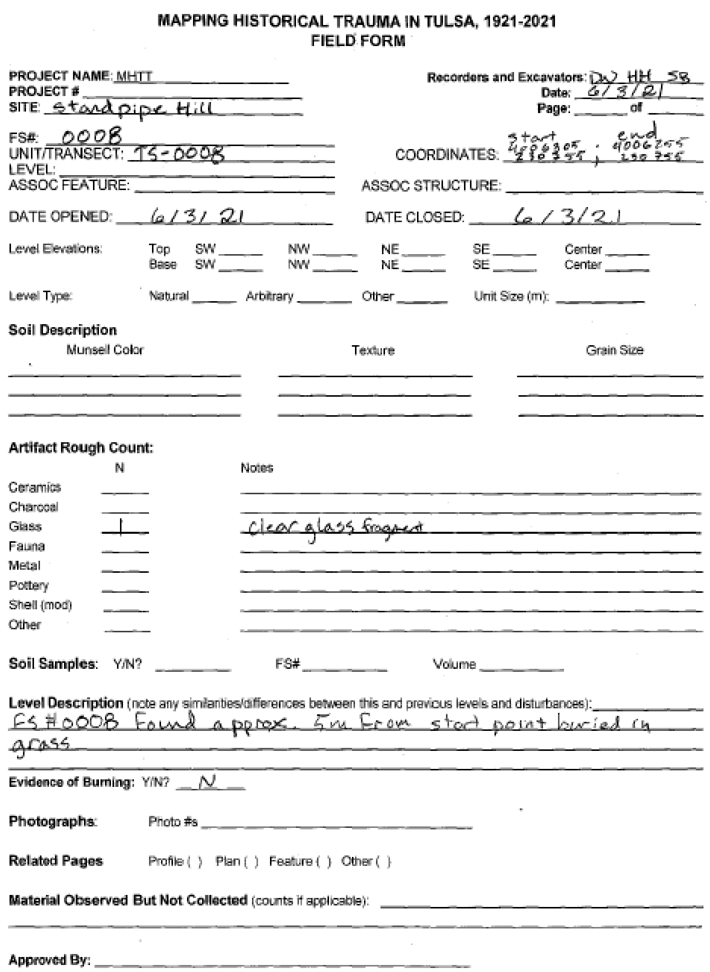
<u>Pedestrian Survey</u>

Over the course of 2 weeks, from June 1 - 18th, 2021, MHTT team members conducted a pedestrian archaeological survey to map artifacts and historic structures within the block indicated above. Following established procedures, the pedestrian survey was conducted using an interval sampling method, in which 50-meter long transects, each separated by 5 meters, were laid out throughout the survey block using survey flags. To ensure both spatial precision (and the precise orientation of transects in the north-south direction), the beginnings and ends of each transect were placed using a high-resolution, RTK GPS base-rover pair (Emlid Reach RS+) and marked with survey flags. Each transect was given a running number, preceded by the code "TS," such that the first transect recorded was TS-0001 andt he last transect walked on Standpipe hill was TS-0077. (See Figure 10 below.)

Figure 10.Transects walked on standpipe hill survey block

After transects were laid out, student volunteers were separated into groups of 3-4 and assigned to specific transects, along which they walked slowly, keeping their eyes fixed on the ground to look for individual artifacts and structures found within one meter of the given transect line. To maintain the correct orientation along that line, each team stretched out a long measuring tape, pulling it taut and staking it into the ground using a nail. As students discovered artifacts, they marked them with survey flags, which they would then label using a sharpie. All structures were given sequential numbers with the prefix “STR,” while all artifacts were given sequential numbers with the prefix “FS” (standing for Field Specimen). All finds that were collected were recorded on a survey form, and photographed in place. Subsequently, our GPS survey team recorded each point in the project database using the team’s RTK base-rover pair, registering it in Universal Trans Mercator (UTM) coordinates. All finds were then placed in a bag and tagged with the same information recorded in information that matched what was recorded on the survey form to ensure no artifact would become disconnected from his original context of discovery.

Figure 10. MHTT Volunteers using measuring tape to mark off transects



MAPPING HISTORICAL TRAUMA IN TULSA, 1921-2021
FIELD FORM

PROJECT NAME: MHTT
PROJECT #
SITE: standpipe Hill

Recorders and Excavators: DW HH SB
Date: 6/3/21
Page: ____ **of** ____

FS#: 0008
UNIT/TRANSECT: TS-0008
LEVEL:
ASSOC FEATURE:

COORDINATES: start 4006305, 230355 ; end 4006255, 230755
ASSOC STRUCTURE:

DATE OPENED: 6/3/21
DATE CLOSED: 6/3/21

Level Elevations: Top SW ____ NW ____ NE ____ SE ____ Center ____
Base SW ____ NW ____ NE ____ SE ____ Center ____

Level Type: Natural ____ Arbitrary ____ Other ____ Unit Size (m): ____

Soil Description

Munsell Color	Texture	Grain Size

Artifact Rough Count:

	N	Notes
Ceramics		
Charcoal		
Glass	1	Clear glass fragment
Fauna		
Metal		
Pottery		
Shell (mod)		
Other		

Soil Samples: Y/N? ____ FS# ____ Volume ____

Level Description (note any similarities/differences between this and previous levels and disturbances):
FS #0008 Found approx. 5m from start point buried in grass

Evidence of Burning: Y/N? N

Photographs: Photo #s ____

Related Pages Profile ( ) Plan ( ) Feature ( ) Other ( )

Material Observed But Not Collected (counts if applicable):

Approved By:

Figure 11. Copy / Example of Field Sample Form

Dendrochronological Analysis
Two arborists and nature interpreters, Amy and Joe Marcoux, conducted incremental bore testing on 6 trees around our selected area of investigation to estimate the age of the trees around each site and identify them to species. Since we were primarily interested in the trees that are native to Oklahoma and/or possibly planted by earlier residents of Greenwood, conducting this non-invasive analysis provided another dating method for our site that also informed our overall site interpretation. The Marcoux team were able to identify all the trees on the hill to species.

Results

Field Survey

In the 77 transects we walked on the surveyed portion of Standpipe Hill, we recorded and recovered a total of 179 artifacts and the foundations of two historic structures. Each artifact type that shared the same provenience information was bagged together and assigned a field specimen number. A total of 94 field specimen numbers were assigned to the recovered artifacts, each representing a unique spatial location, archaeological context, and associated features[1]. Out of the total number of artifacts, the most abundant classes represented in this surface collection were glass (by count, n=87) and metal (by weight, 3044g). Notable amounts of ceramics (581.70g) and architectural material (2903.60g) were also present. All recovered artifacts were cleaned, rebagged, and temporarily stored at the Historical Archaeology and Heritage Studies Laboratory at The University of Tulsa. Modern waste from the site was not recorded.

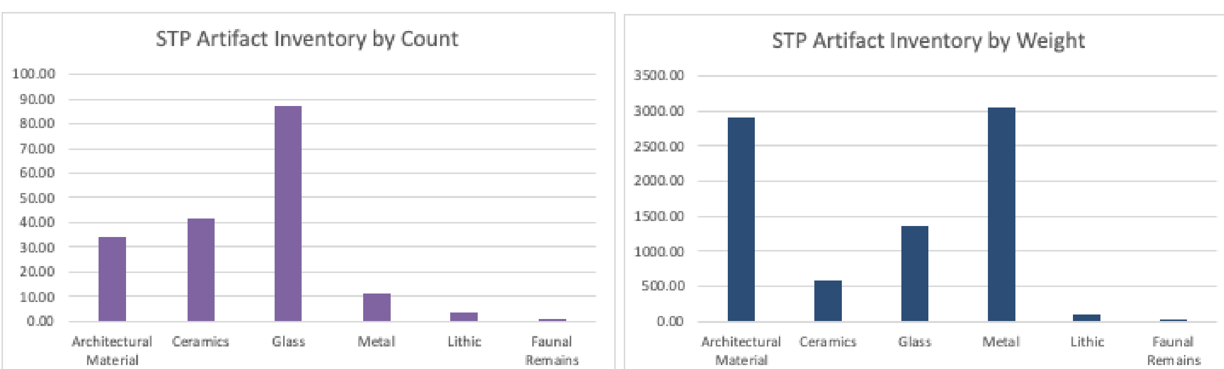


Figure 12. Artifact frequency chart, by count (left); artifact frequency chart, by weight (right)

[1] The discrepancy in numbers here is due to the fact that i cases where multiple artifacts of the same type (e.g., ceramics, metals, or bricks) were recovered in the same location, a single field specimen number was assigned. For example, a group of three ceramic sherds tha all recovered from within 10cm of one another on the same transect line, would be bagged together and assigned one FS number.

The locations from which artifacts were collected are depicted in Figure 13 below. A kernel density plot based on these locations (Figure 14) provides a slightly easier way of visualizing artifact distribution across the landscape, with particularly high concentration in the northwest corner of the survey block, a partial “ring” of density closer to the hill’s summit, and a small area of artifact scatter on the hill’s southern slope.

The majority of recovered artifacts are found in downslope areas, suggesting that erosion is a significant factor determining their locations. However, the high concentration of artifacts in the northwest corner of the survey block in association with structural remains (depicted in Figure 15) suggests that some artifacts may be found roughly *in situ* – that is, close to where they were initially deposited. An even more intriguing pattern is present in Figure 16, in which we see a close association between modern artifact distribution and the presence of structures in the 1919 Sanborn Fire Insurance Maps of Standpipe Hill. In the northwest corner, many artifacts appear to have been brought to the surface through the growth of trees — a process called floralturbation, in which tree roots naturally pull artifacts from lower levels in the soil back up to the surface. However, the same pattern can also occur when the ground is disturbed through modern cultural site disturbance to make way for new fiber optic lines, trees, etc. Regardless of the causes of these developments, the pattern suggests that there may be substantially more artifacts buried in portions of Standpipe Hill where they are currently not visible on the surface

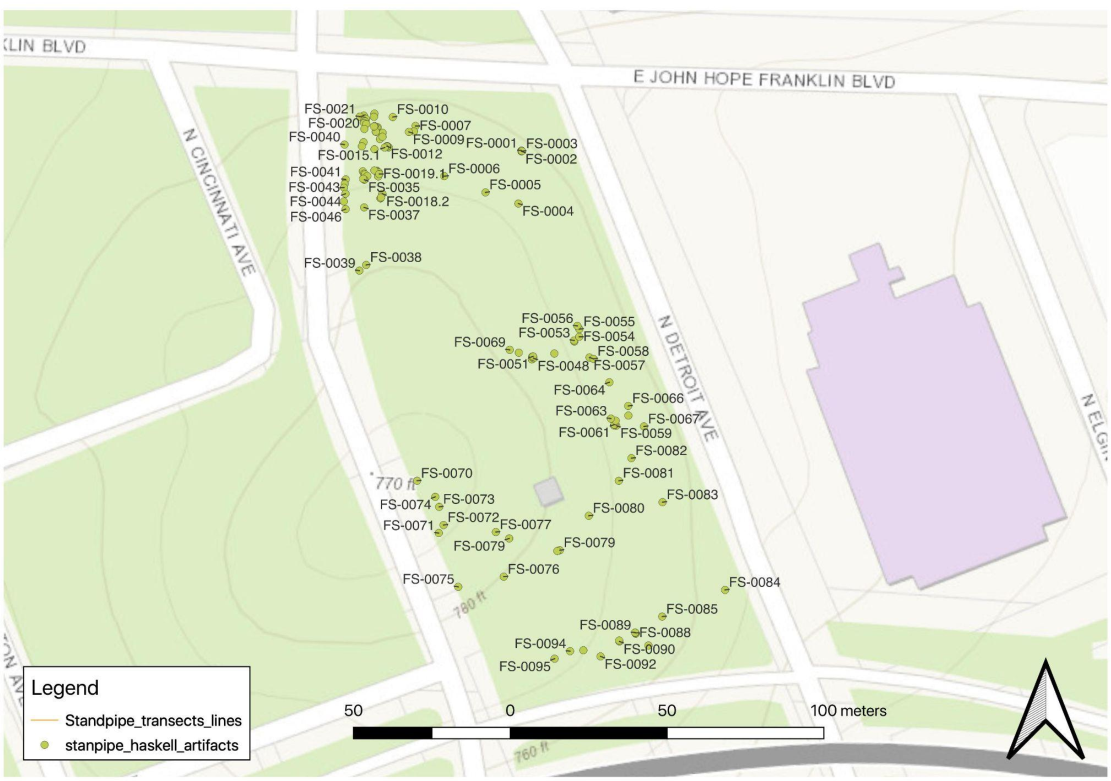


Figure 13. Artifacts recorded by MHTT 2021 Standpipe Hill Survey

Figure 14. Density Map of Artifacts

Figure 15. Remains of historic structures recorded by MHTT 2021 Standpipe Hill Survey. The structures consist of what appear to be a single wall from a domestic structure, as well as a drain.

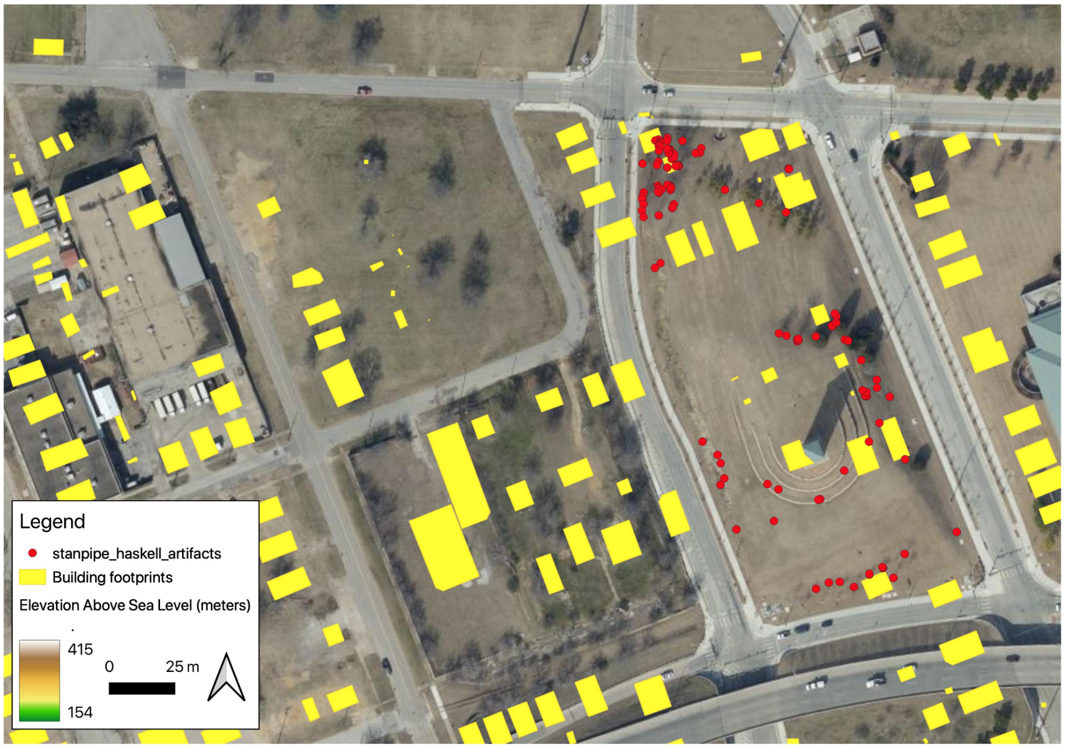


Figure 15. Relationship between structures on 1919 Sanborn Map and recovered surface artifacts

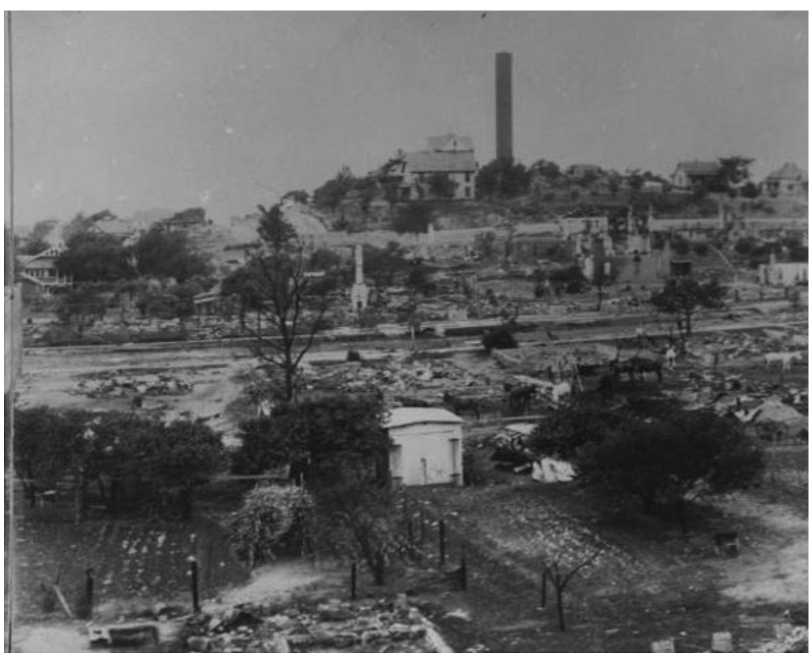


Figure 16. Historical photo of property destruction in Greenwood on June 1, 1921 after the Tulsa Race Massacre with Standpipe Hill in the background. Photo courtesy of Tulsa City County Library, accession #A2455.

Figure 17. Historical photo of Mrs. E.G. Fike and Miss Mattie Lou Disher sitting at the top of Standpipe Hill on September 23, 1910. Standpipe Hill served as Tulsa and Greenwood's first water tower. Photo courtesy of Tulsa City County Library, accession #A1177.

Dendrochronological Analysis

A few of these species, including Hackberry trees, proved to be informative to our interpretation of the space as a cultural landscape. During our survey, we identified a cluster of Hackberry (*Celtis occidentalis*) trees on the northwest side of the hill. Arranged in a semi-regular pattern, the trees appear to be growing along the boundaries of a former structure. While only a single wall of this structure is faintly visible on the surface today, the rectangular arrangement of the trees bears witness to a more extensive outline. The fact that these are Hackberry trees is significant, because the species they are known to develop a very tough and wart-covered bark as they age that they use as insulation from damage, especially from fire. In addition to their unique bark characteristics, Hackberries are also commonly used for medicinal purposes, since the bark and fruit they produce can be used to treat colds and sore throats. This provides a possible explanation for the common species name, Hackberry. In historical instances where fires have occurred and damaged the landscape, it is often hackberry trees that grow back or heal first, but when they grow back they develop a thicker, stronger, wartier bark as insulation, as a memory of what happened. Estimating the age of these trees that can date back to the 1920s and 1960s era, we can use these trees as markers of where foundations possibly remain in the landscape below the surface but also bear witness to the widespread destruction by fire during the attack on Greenwood in 1921 and the destruction during the period of urban renewal and imminent domain in the 1960s and 70s.

<u>Laboratory Analysis</u>

Artifact analysis was conducted inside the Historical Archaeology and Heritage Studies Laboratory at The University of Tulsa. Artifacts were processed in accordance with their associated bag and field specimen number. Students were given a field lab guide and directed to only process one bag of artifacts at a time. For every bag of artifacts recovered, students were instructed to place all cultural material on a single tray, with the associated bag and bag tag as seen in Figure 18 below. Students then roughly sorted all the cultural material by material type, creating separate piles for metal, ceramics, glass, and architectural material. Once the accuracy of this sorting process was checked by the lab director, the student was then able to fill out a bag tag which included a count of each artifact pile. Once the bag tag was filled out the student then proceeded to the washing stage. Once the artifacts were washed, using only water and a toothbrush, they were left out to dry overnight and rebagged the next day. To avoid exacerbating any existing corrosion already present in the metal artifacts, students were instructed to dry brush these artifacts instead of submerging them in water. But whether dry brush or water cleaned, the weight of every artifact was recorded in grams along with any diagnostic elements on the lab analysis form.

Figure 18. Students processing artifacts in the Historical Archaeology and Heritage Studies Laboratory

Proposal for Research in 2022

Overview

For the MHTT project, our collaboration with Oklahoma State University - Tulsa in 2021 was a significant success. We were able to offer free training to nearly 20 local students and uncovered a great deal of undocumented history and remaining cultural materials on Standpipe Hill. Based on this experience, we would like to propose a continuation of this collaboration in 2022, with a focus on new historical sites and landscapes contained within what is currently OSU-Tulsa's campus.

In this second stage, we plan to build on our work at Standpipe Hill by including a new pedestrian survey of the southern portions of B.S. Roberts Park along with an area to the west of B.S. Roberts Park and the north of OSU-Tulsa's main campus, which historically was the location of a Brick Plant. Both B.S. Roberts Park and the Historic Brick Plant area show signs of having exposed structural features that are visible above ground, which provide a solid starting point for our survey team. In addition, we propose a drone lidar survey of these two areas, along with a geophysical (ground penetrating radar and magnetometry) survey of two additional areas listed below.

We propose to conduct a pedestrian survey in June 2022 in the areas depicted in the map below, following the same methodologies we employed in the 2021 field season. The survey team will consist of graduate, undergraduate, and advanced high school students from all over the Tulsa area. All student participants receive free training in survey and artifact recovery, artifact processing, material culture analysis, cataloging, and mapping to be undertaken over the course of two weeks. In preparation for the start of our second field season, we recruited a new group of over 15 student volunteers from different levels. And with a new grant from National Geographic Society, we will be able to not only establish continuity with the group of students we previously trained but offer them an invitation to return to our survey team as paid student fieldwork leaders. Of the 12 students who worked with us last year, five will be selected as student fieldwork leaders to assist us in training the next cohort of students who will begin working with us in June 2022. Having the ability to financially support these student fieldwork leaders is essential to our plan to build up a continuous pipeline of Tulsa born archaeologists from high school to graduate school, who will not only be equipped with archaeological training and historical knowledge of Greenwood but will also have the capacity to train others, gain supervisory experience, and be well poised to explore a career in this field should they choose to continue on in their training.

In addition, in collaboration with the Oklahoma Archaeological Survey and the firm Archaeogeophysical Associates, we propose to conduct geophysical (ground penetrating radar and magnetometry) survey in the OETA parking lot and north Dunbar School areas listed below, as well as drone lidar survey of BS Roberts park and the Brick Plant Area. As in our previous field season, geophysical survey will allow for imaging of subsurface structures in areas that have been substantially modified, such as the parking lot, while drone lidar will allow for the collection of ground return data - and therefore the generation of very high resolution digital elevation models of ground surfaces. We propose to conduct both in the fall, as the OAS is conducting other research over the summer and Archaeogeophysical Associates recommends flying lidar after the trees in the brick plant area have shed their leaves, in order to allow for a greater number of ground returns – and therefore, a higher resolution model.

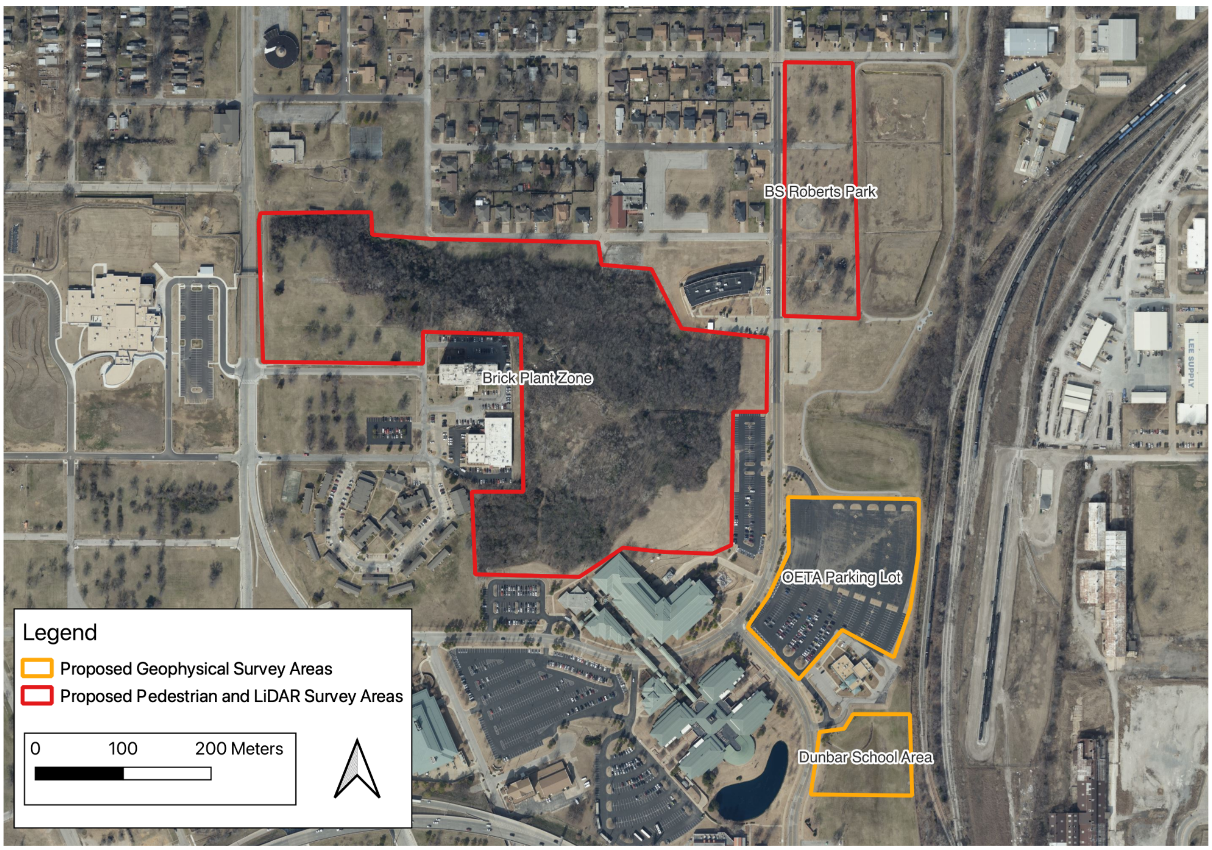


Figure 19. Map of Proposed 2022 Work Areas

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