









Archaeological and Forensic Research in Support of the 1921 Tulsa Race Massacre Graves Investigation:

The 2024 Field Season at Oaklawn Cemetery

compiled by
Kary L. Stackelbeck
Phoebe R. Stubblefield
Amanda L. Regnier

Volume II

Report submitted to the City of Tulsa

by the
Oklahoma Archeological Survey,
University of Oklahoma,
and the
C.A. Pound Human Identification Laboratory,
University of Florida

ARCHAEOLOGICAL AND FORENSIC RESEARCH IN SUPPORT OF THE 1921 TULSA RACE MASSACRE GRAVES INVESTIGATION:

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Kary L. Stackelbeck
Phoebe R. Stubblefield
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with contributions by:

Alex Badillo, Brandi Bethke, Ella Brewer-Jensen, Brooke Drew, Thomas Fenn, Debra Green, Jennifer Haney, Ryan Peterson, and Douglas D. Scott

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C. A. Pound Human Identification Laboratory

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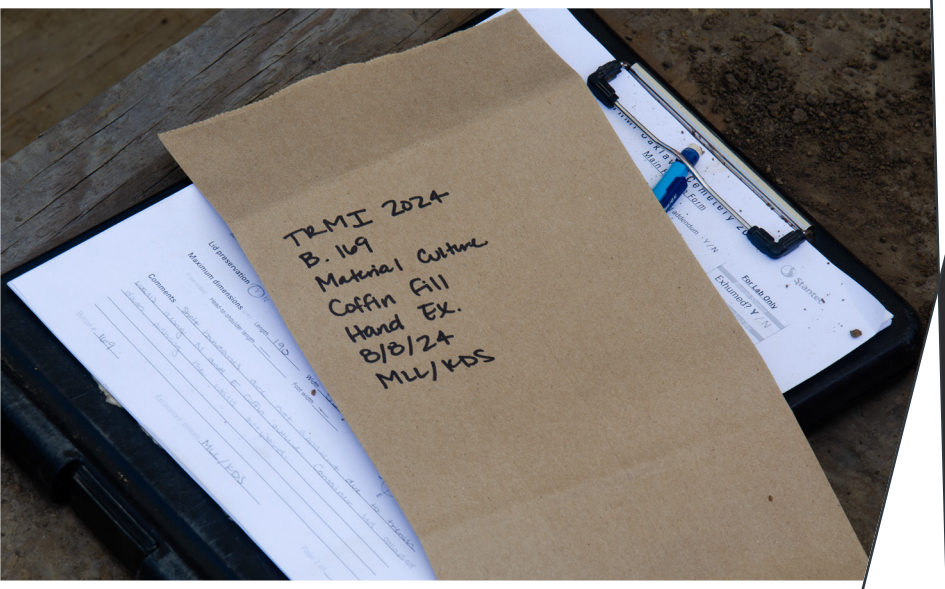

Tulsa Race Massacre Investigations

2024 Burial Descriptions and Site Hardware Typology

Brooke L. Drew

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Burial 008

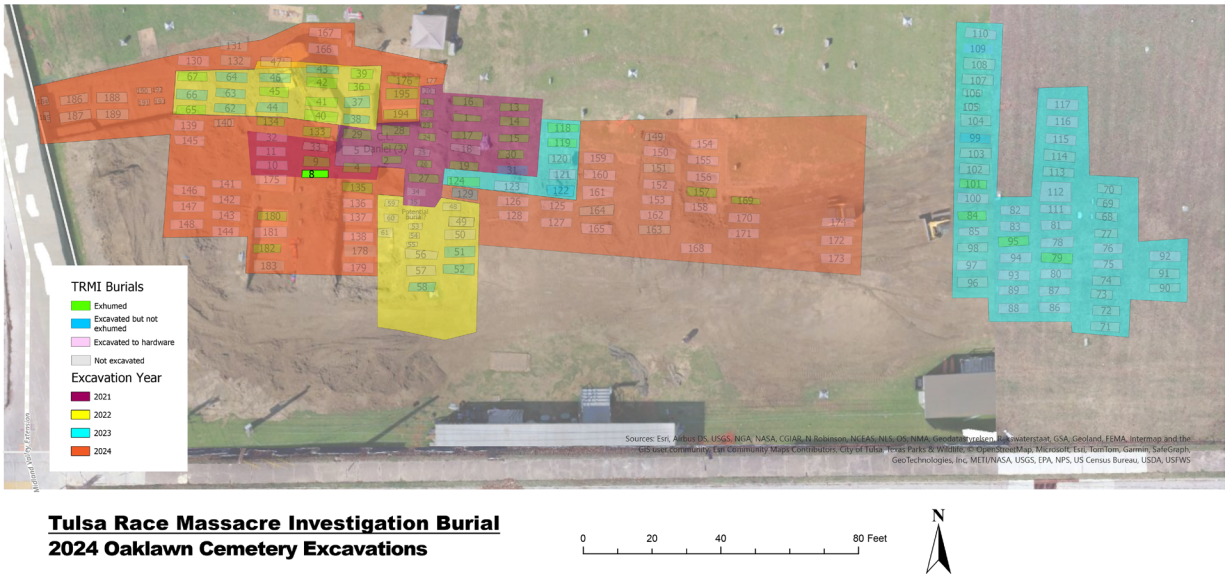


Figure 1 TRMI site map showing location of Burial 008

Final Excavation Status	Exhumed
Started	8/9/2024
Completed	8/9/2024
Excavators	Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.6038
NW ending elevation	98.5672

Burial 008 was originally exposed during the 2021 field season but was not excavated at that time (Figure 1). It was not investigated at that time as the southern portion of the burial shaft went into the trench wall. The burial shaft measured 230 cm long and 60 cm wide.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. Both arms were flexed with the hands crossed over the lower abdomen. Both legs were straight with the ankles uncrossed. The skull was turned towards the south, though, this appears to have been caused by post-depositional processes (Figure 2).

Skeletal preservation was fair to poor. Taphonomic damage resulted in axial element deterioration. Excavators noted most elements were highly friable and the hard clay matrix would remove cortical during excavation. The skull was moderately well preserved with some post-depositional fracturing on the left cranial bones.

Wood preservation was fair, with the south wall partially intact; no samples could be selected for further analysis as the feature was heavily disturbed by water after a significant rain storm. The distribution of wire nails, however, suggested a plain rectangular burial container. The casket measured approximately 170 cm long and 40 cm wide. No other hardware was present.

Several simple clothing related items were found with the decedent during excavation. Two cuprous safety pins of indeterminate type were recovered: one *in situ* under the vertical vertebrae and one in the screen. Additionally, one rivet was found just above the left pelvis and a cuprous snap was found in the screen.

Burial 008 (continued)

Due to the sparse nature of the material culture directly associated with Burial 008, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. This individual was interred in an unadorned rectangular casket consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 42.

SENSITIVE CONTENT

Figure 2 Burial 008 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 010

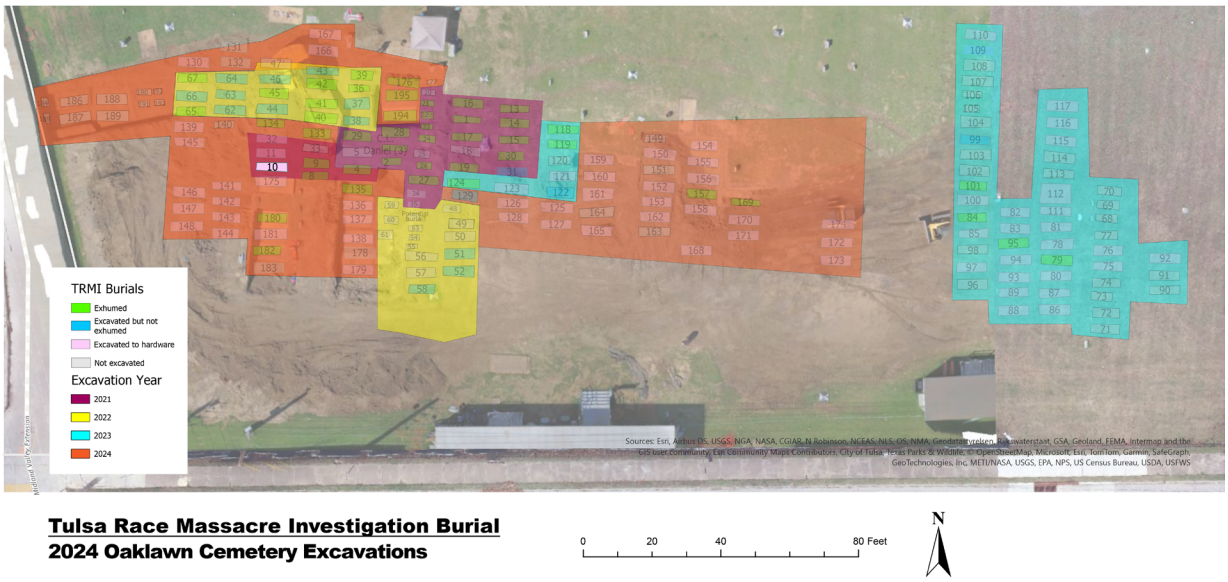


Figure 3 TRMI site map showing location of Burial 010

Final Excavation Status	Excavated to hardware
Started	8/13/2024
Completed	8/13/2024
Excavators	Rebecca O'Sullivan, Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.6201
NW ending elevation	n/a

The Burial 010 shaft was originally uncovered during the initial 2021 field season, but was not excavated at that time. This feature was re-exposed and is now in the west 2024 excavation expansion (Figure 3). The individual shaft measured 230 cm long and 65 cm wide.

The exposed portions of the burial container displayed poor wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 220 cm long and 59 cm wide. Decorative hardware included escutcheons; not all were fully uncovered, but those exposed were identified as Oaklawn Escutcheon Type 03 ovoid white metal types with decorative scroll and filigree motifs (p. 128). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative hardware.

Burial 011

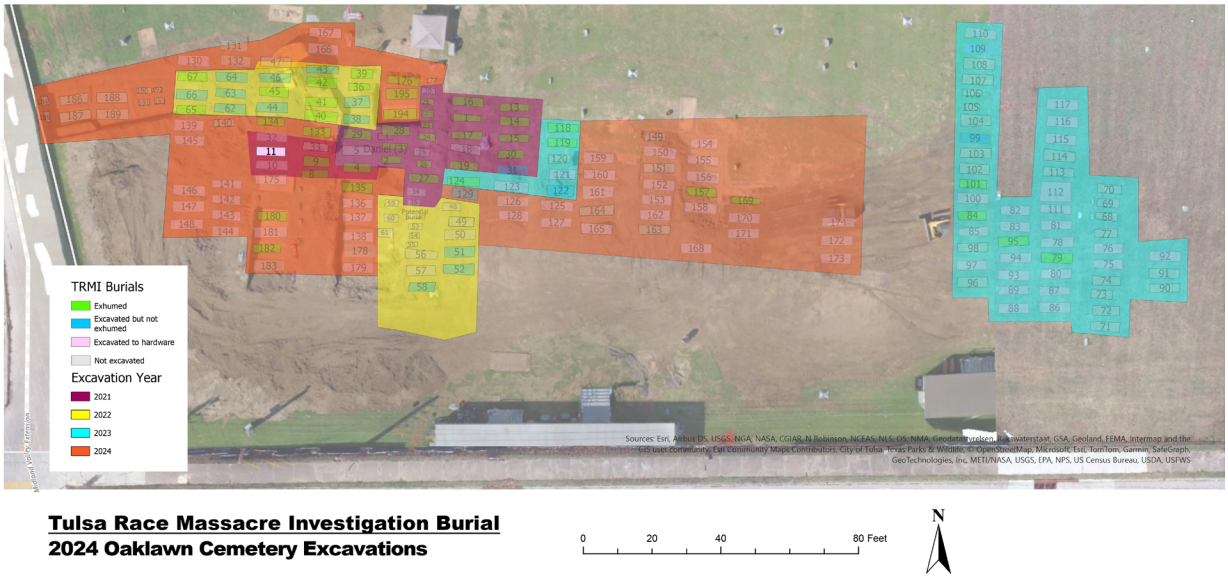


Figure 4 TRMI site map showing location of Burial 011

Final Excavation Status	Excavated to hardware
Started	8/13/2024
Completed	8/13/2024
Excavators	Rebecca O'Sullivan, Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.6174
NW ending elevation	n/a

The Burial 011 shaft was originally uncovered during the initial 2021 field season, but was not excavated at that time. It was re-exposed and is now in the west 2024 excavation expansion (Figure 4). The individual shaft measured 225 cm long and 68 cm wide.

The exposed portions of the burial container displayed exceptionally poor wood preservation. The rectangular casket outline measured 203 cm long and 60 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 4B ferrous double lug short bars (p. 87). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 032

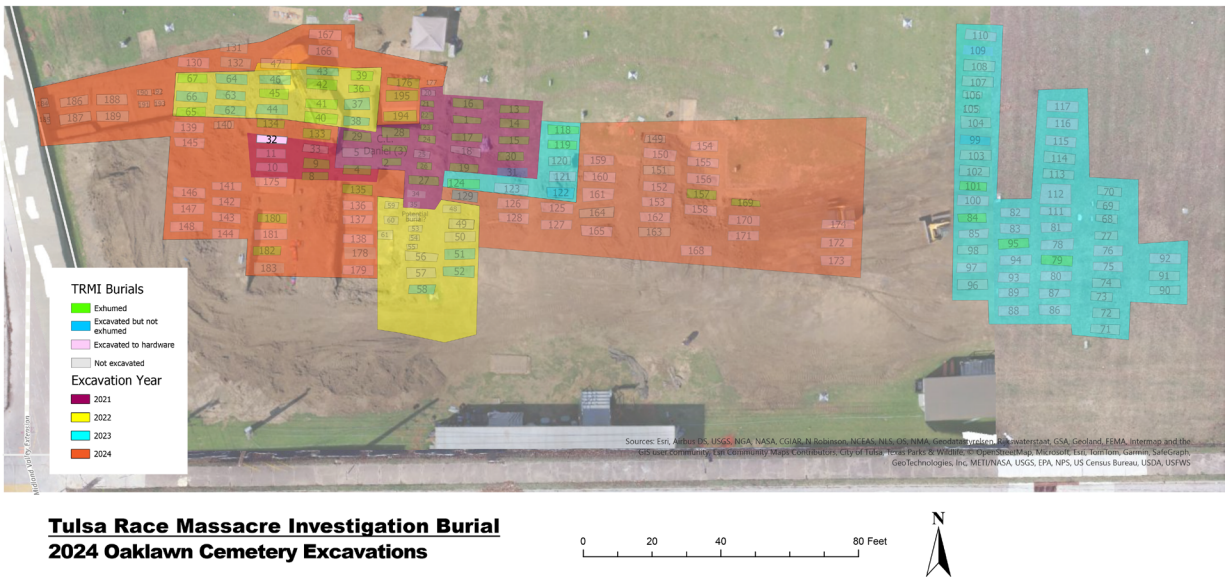


Figure 5 TRMI site map showing location of Burial 032

Final Excavation Status	Excavated to hardware
Started	8/13/2024
Completed	8/13/204
Excavators	Rebecca O'Sullivan, Gretchen Zoeller
NW starting elevation	98.5613
NW ending elevation	n/a

The Burial 032 shaft was originally uncovered during the initial 2021 field season, but was not excavated at that time. It was re-exposed and is now in the west 2024 excavation expansion (Figure 5). The individual shaft measured 222 cm long and 79 cm wide.

The exposed portions of the burial container displayed exceptionally poor wood preservation. The rectangular casket outline measured 208 cm long and 56 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 19 ferrous single double arm lug extension bars (p. 102).

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment.

Burial 047

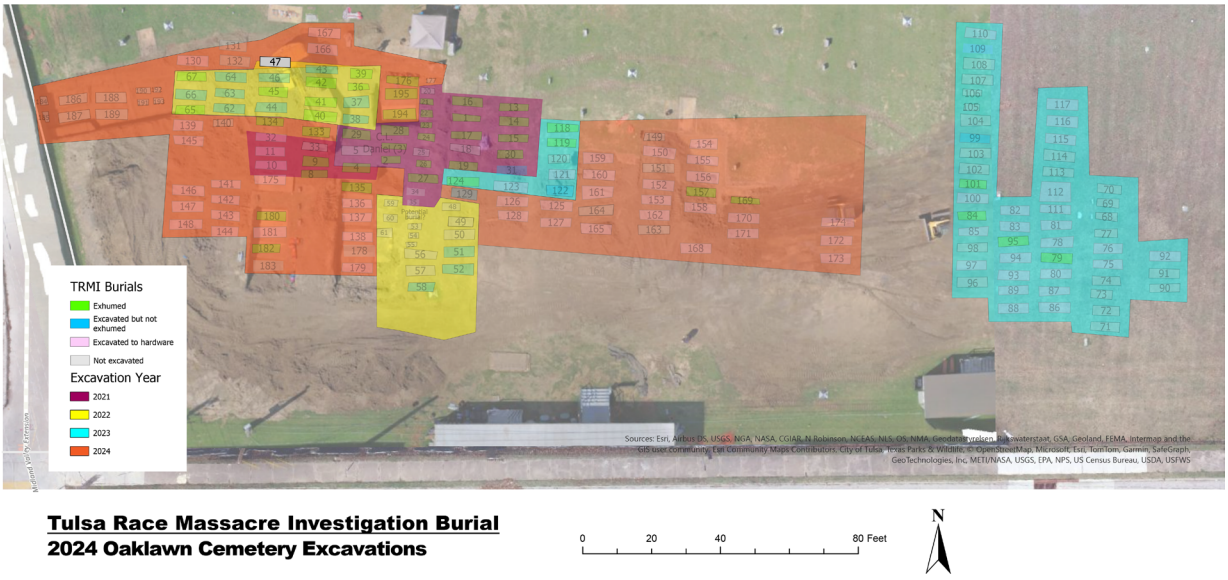


Figure 6 TRMI site map showing location of Burial 047

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
SW starting elevation	99.0362
SW ending elevation	n/a

The Burial 047 shaft was originally uncovered during the initial 2022 field season, but was not excavated at that time due to the majority of the feature being under the north trench wall. It was re-exposed and is now included in the west 2024 excavation expansion (Figure 6). The individual shaft measured 268 cm long and 86 cm wide. This feature was not excavated during this field season due to its associated with Buried Monument 02. No inscription on this partial marble graver marker was identified.

Burial 125

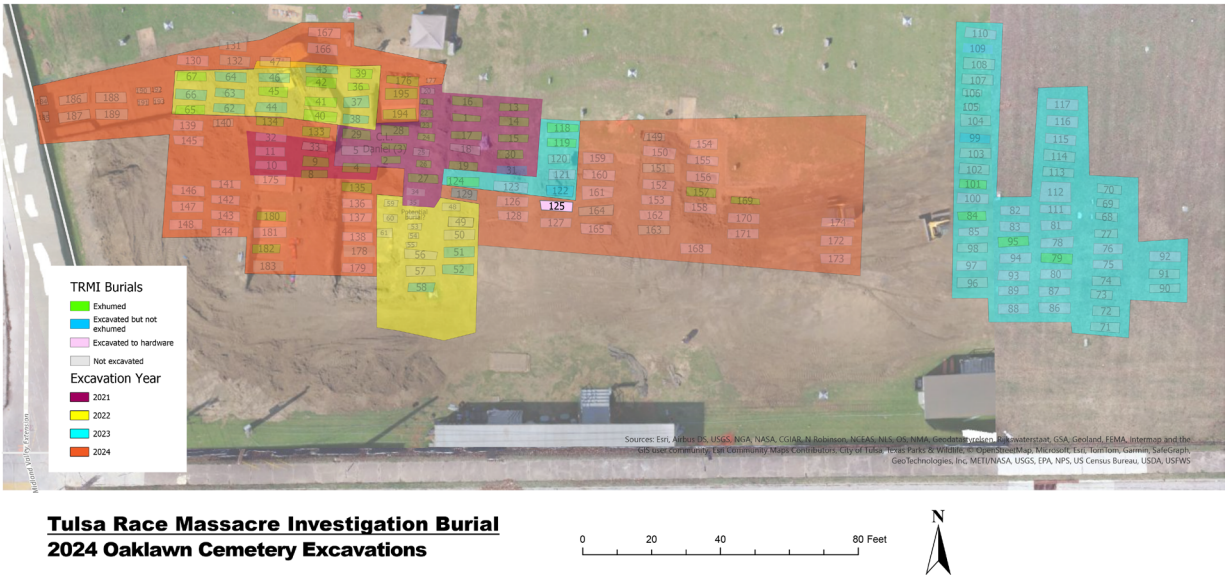


Figure 7 TRMI site map showing location of Burial 125

Final Excavation Status	Excavated to hardware
Started	7/29/2024
Completed	7/29/2024
Excavators	Erin McKendry, Rebecca O'Sullivan
NW starting elevation	98.5780
NW ending elevation	n/a

Burial 125 is located in the east 2024 excavation expansion (Figure 7). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 221 cm long and 71 cm wide.

The exposed portions of the burial container displayed fair wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 215 cm long and 66 cm wide. Decorative hardware included matching white metal thumbscrews and escutcheons; not all were fully uncovered, but those exposed were identified as white metal 3rd generation Oaklawn Thumbscrew Type 01 (p. 121) and Oaklawn Escutcheon Type 03 ovoid white metal types with decorative scroll and filigree motifs (p. 128). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 126

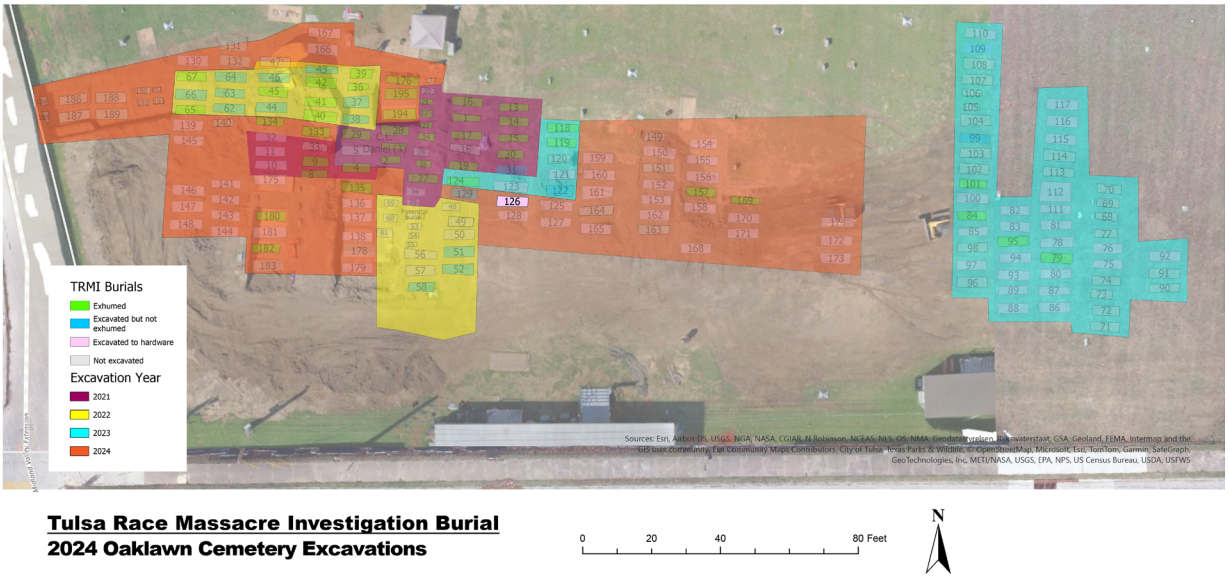


Figure 8 TRMI site map showing location of Burial 126

Final Excavation Status	Excavated to hardware
Started	7/29/2024
Completed	7/29/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.557
NW ending elevation	n/a

Burial 126 is located in the east 2024 excavation expansion (Figure 8). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 219 cm long and 55 cm wide.

The exposed portions of the burial container displayed poor wood preservation; two samples were taken for further analysis. The rectangular casket outline measured 217 cm long and 54 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 20 ferrous and white metal single double arm lugs with either short or extension bars (p. 103). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 127

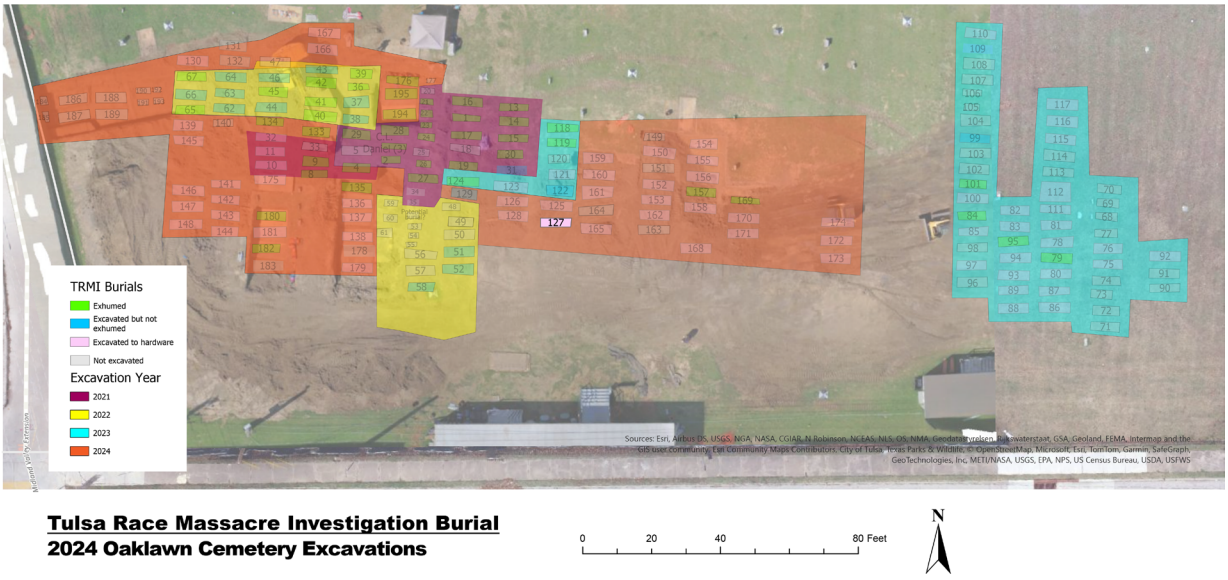


Figure 9 TRMI site map showing location of Burial 127

Final Excavation Status	Excavated to hardware
Started	7/26/2024
Completed	7/30/2024
Excavators	Rebecca O'Sullivan, Gretchen Zoeller
NW starting elevation	98.9073
NW ending elevation	n/a

Burial 127 is located in the east 2024 excavation expansion (Figure 9). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 216 cm long and 70 cm wide.

The exposed portions of the burial container displayed good wood preservation with segments of the lid present. The rectangular casket outline measured 214 cm long and 69 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04 ferrous double lug short bars with an indeterminate bail type (p. 85). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 128

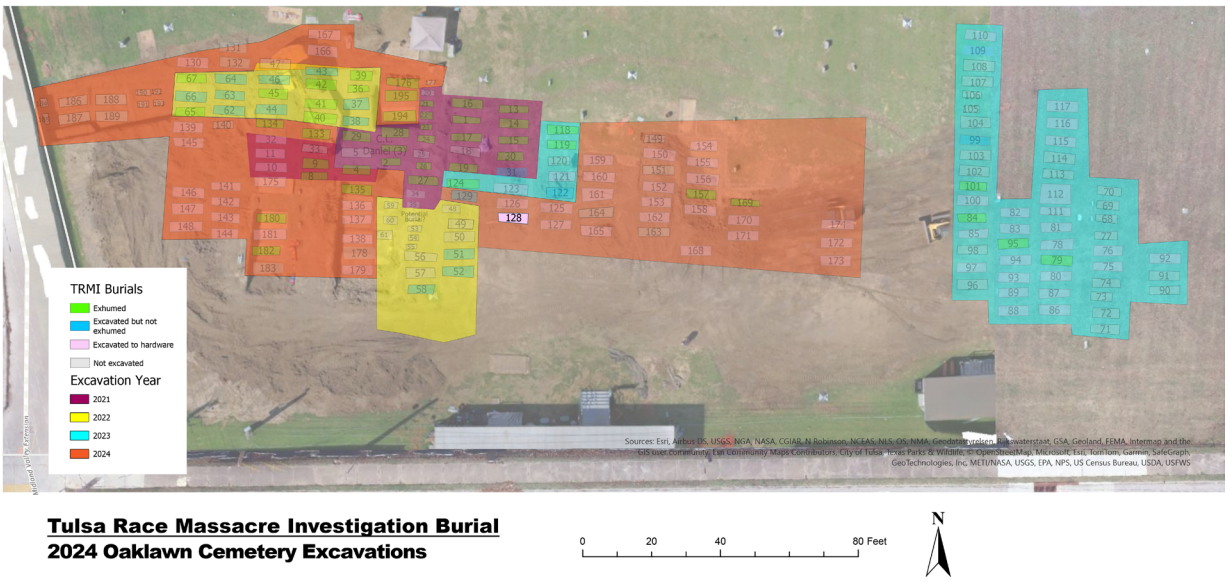


Figure 10 TRMI site map showing location of Burial 128

Final Excavation Status	Excavated to hardware
Started	7/29/2024
Completed	7/29/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.9366
NW ending elevation	n/a

Burial 128 is located in the east 2024 excavation expansion (Figure 10). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 223 cm long and 75 cm wide.

The exposed portions of the burial container displayed poor wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 217 cm long and 54 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 19 ferrous single double arm lug extension bars (p. 102). Additionally, one ferrous rectangular plaque with scroll edges was uncovered (Oaklwawn Plaque Type 03) (p. 111).

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 129

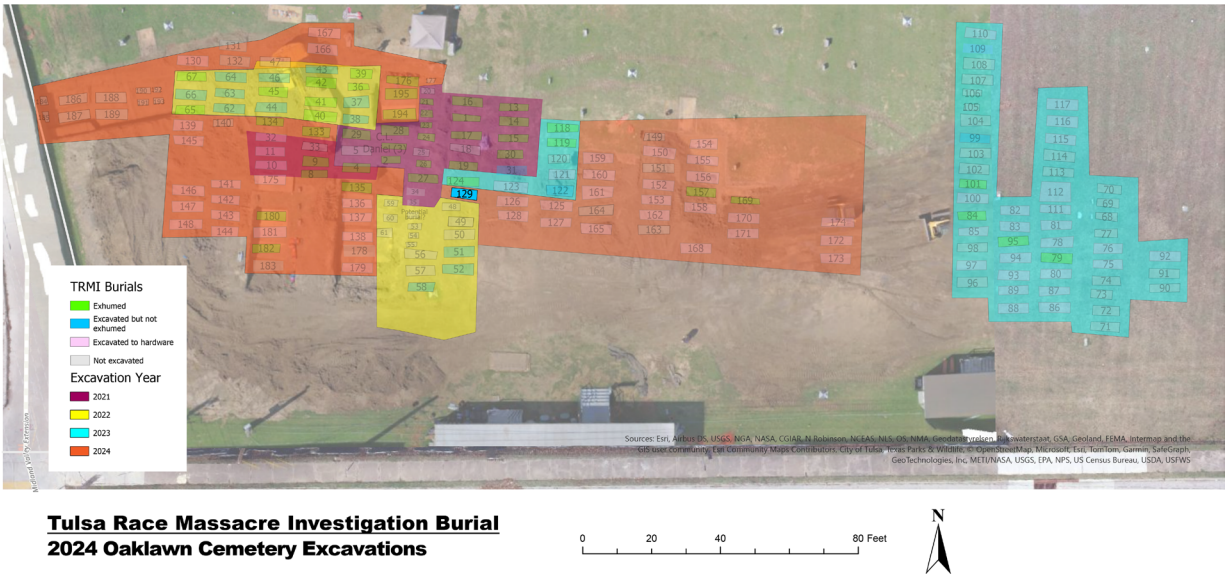


Figure 11 TRMI site map showing location of Burial 129

Final Excavation Status	Excavated but not exhumed
Started	7/29/2024
Completed	7/29/2024
Excavators	Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.4599
NW ending elevation	n/a

Burial 129 is located in the east 2024 excavation expansion (Figure 11). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 229 cm long and 78 cm wide.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. Both hands were resting on or near the pelvis, and both legs were straight with the ankles uncrossed. The original position of the skull as difficult to determinate due to post-depositional processes (Figure 12).

Skeletal preservation was poor. Taphonomic damage resulted in axial element deterioration; cranium was fragmented. Excavators noted that the decedent was placed in a box much too big for their small stature and a field assessment of the exposed dentition resulted in a preliminary determination of an adolescent individual between 13 and 16 years of age. Biological sex estimation was not possible due to the condition of the remains, however, material culture evidence (see below) suggested Burial 129 is the interment of a female.

The exposed portions of the burial container displayed fair wood preservation; one sample was taken for further analysis. Evidence indicated the presence of an outer crate 216 long and 66 cm wide with an internal rectangular casket measuring 201 cm long and 66 cm wide. Decorative hardware included matching white metal thumbscrews and escutcheons: Oaklawn Thumbscrew Type 01 (p. 121) and Oaklawn Escutcheon Type 03 (p. 128). No other decorative hardware, including handles, were uncovered. Excavators also noted several small pink and purple beads throughout the upper thoracic of the decedent, likely the remains of a necklace, suggesting a probable female individual; these were left *in situ* prior to reburial.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment.

Burial 129 (continued)

SENSITIVE CONTENT

Figure 12 Burial 129 photogrammetry model illustrating condition of burial with skeletal remains exposed

Burial 130

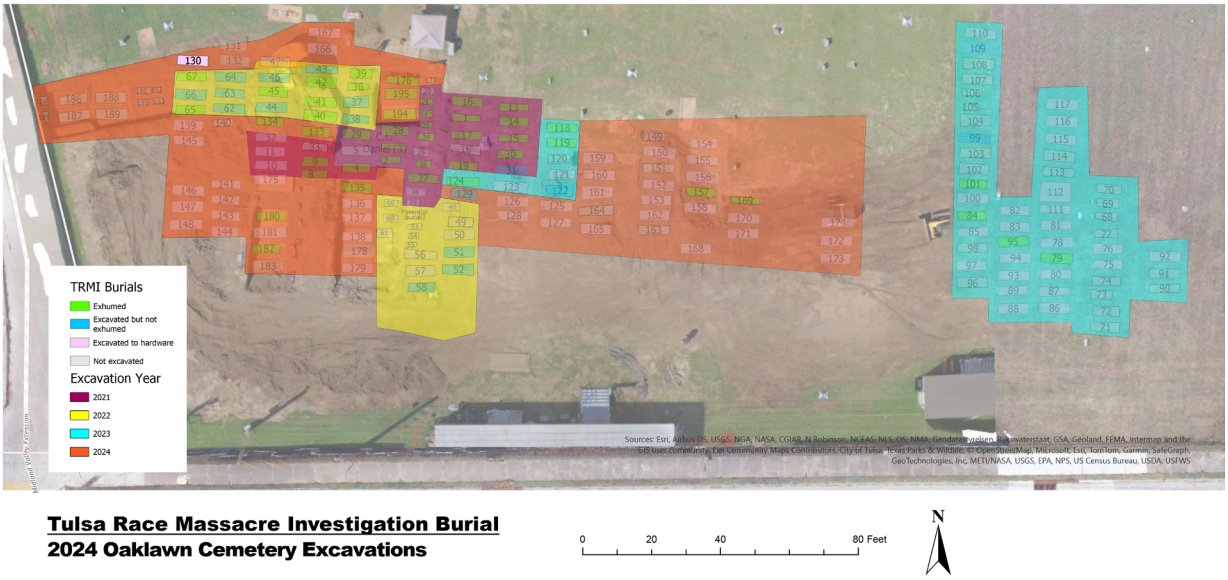


Figure 13 TRMI site map showing location of Burial 130

Final Excavation Status	Excavated to hardware
Started	7/30/2024
Completed	7/30/2024
Excavators	Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.6930
NW ending elevation	n/a

Burial 130 is located in the west 2024 excavation expansion (Figure 13). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 220 cm long and 80 cm wide.

The exposed portions of the burial container displayed good wood preservation with segments of the lid present. The rectangular casket outline measured 201 cm long and 66 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04 ferrous double lug short bars (p. 85). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 131

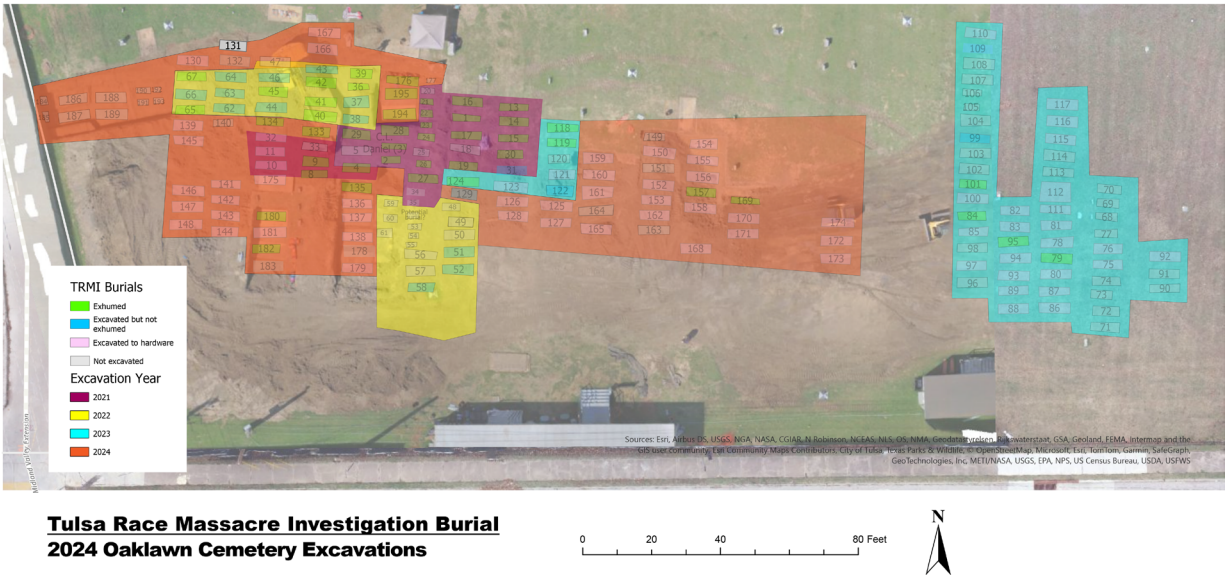


Figure 14 TRMI site map showing location of Burial 131

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
SW starting elevation	98.7820
SW ending elevation	n/a

Burial 131 is located in the west 2024 excavation expansion (Figure 14). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 240 cm long; the width could not be measured due to northern half of the feature being in the trench wall. This is also why the feature was not excavated.

Burial 132

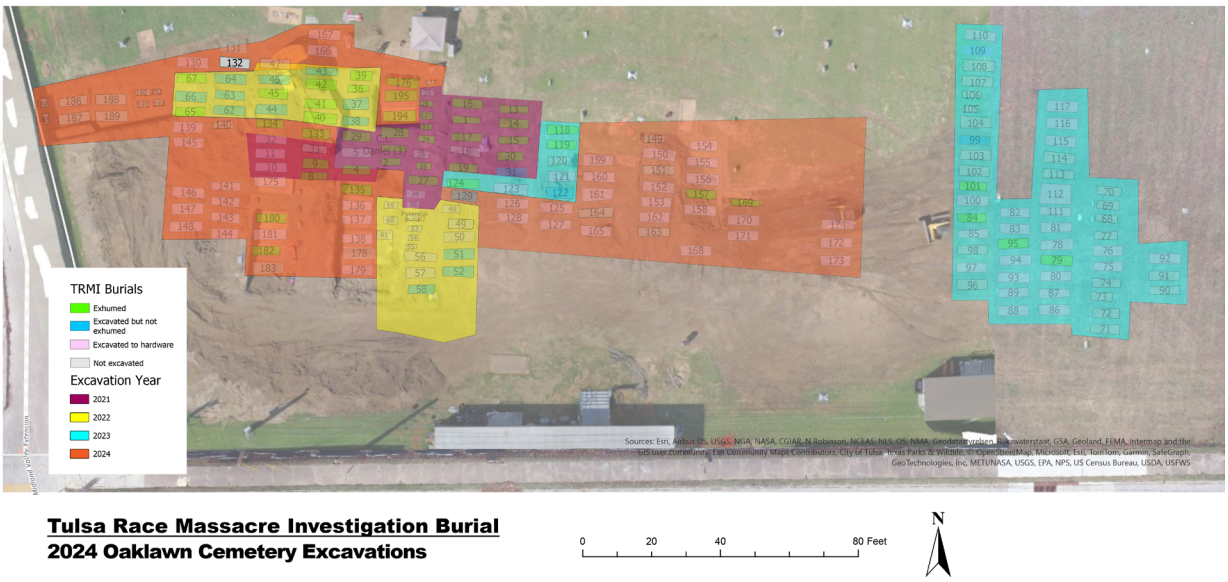


Figure 15 TRMI site map showing location of Burial 132

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	98.7832
NW ending elevation	n/a

Burial 132 is located in the west 2024 excavation expansion (Figure 15). This burial shaft was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 260 cm long and 88 cm wide. This feature was not excavated due to its association with Buried Monument 22. The inscription on this limestone marker indicated this burial was that of Loren KENNEDY whose date of death was 26 March 1923.

Burial 133

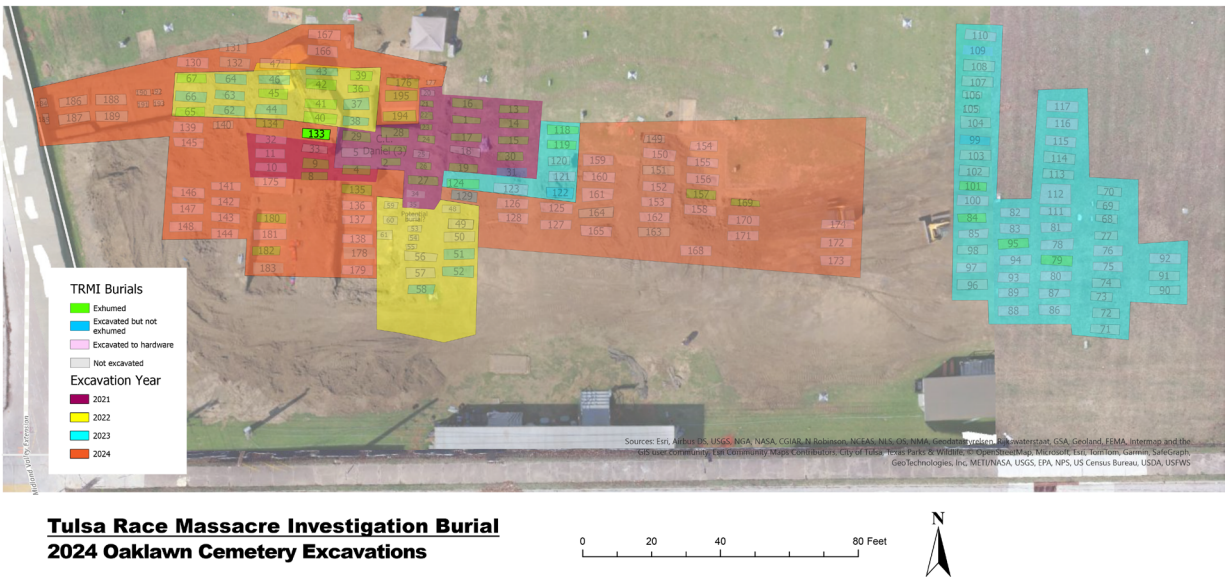


Figure 16 TRMI site map showing location of Burial 133

Final Excavation Status	Exhumed
Started	7/30/2024
Completed	7/30/2024`
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	98.7910
NW ending elevation	98.5071

Burial 133 is located in the west 2024 excavation expansion (Figure 16). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 197 cm long and 64 cm wide.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. The left arm was bent with the hand resting on near the abdomen; the right arm had a more acute flexion resulting in the right hand resting below the pelvis. Both legs were straight with the ankles uncrossed. The cranium was in a natural anatomical position and does not appear to have been displaced by post-depositional processes (Figure 17).

Skeletal preservation was overall fair. Excavators noted that long bone shafts were relatively intact during excavations, but the epiphyses and axial skeleton were spongy with poor preservation. The skull was moderately well preserved, though portions of the frontal bone were fragmentary.

Wood preservation was poor with one sample taken for further analysis. The roughly rectangular casket measured 174 cm long and 48 cm wide at the west end and 51 cm wide on the east end. A relatively low number of wire nails were collected, however, there was a heavier concentration on the east side of the burial container. No other hardware was recovered. No clothing or personal items were found with the decedent.

Due to the sparse nature of the material culture directly associated with Burial 133, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. This individual was interred in an unadorned rectangular casket consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 37.

Burial 133 (continued)

SENSITIVE CONTENT

Figure 17 Burial 133 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 134

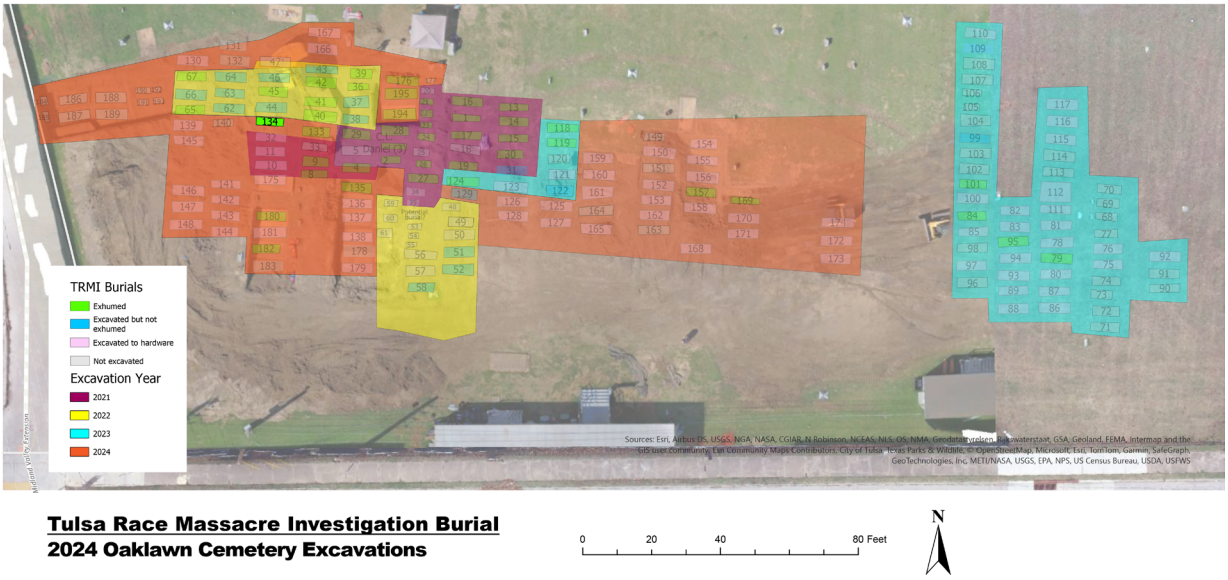


Figure 18 TRMI site map showing location of Burial 134

Final Excavation Status	Exhumed
Started	7/31/2024
Completed	8/2/2024
Excavators	Erin McKendry, Rebecca O'Sullivan
NW starting elevation	98.8109
NW ending elevation	98.6152

Burial 134 is located in the west 2024 excavation expansion (Figure 18). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 201 cm long and 68 cm wide.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. The left arm was bent with the hand resting near the pelvis while the right arm was placed straight at the side. Both legs were straight with the ankles uncrossed. The skull and the mandible appear to have shifted due to post-depositional processes (Figure 19).

Skeletal preservation was good. Excavators noted that most elements were intact, but that the due to soil moisture, the epiphyseal ends were less well preserved. The axial skeleton was highly degraded. The skull was complete at the time of excavation.

Wood preservation was poor with one sample taken for further analysis. The rectangular casket measured 176 cm long and 42 cm wide. A moderate number of wire nails were collected; no other hardware was recovered. No clothing or personal items were found with the decedent.

Due to the sparse nature of the material culture directly associated with Burial 134, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. This individual was interred in an unadorned rectangular casket consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 38.

Burial 134 (continued)

SENSITIVE CONTENT

Figure 19 Burial 134 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 135

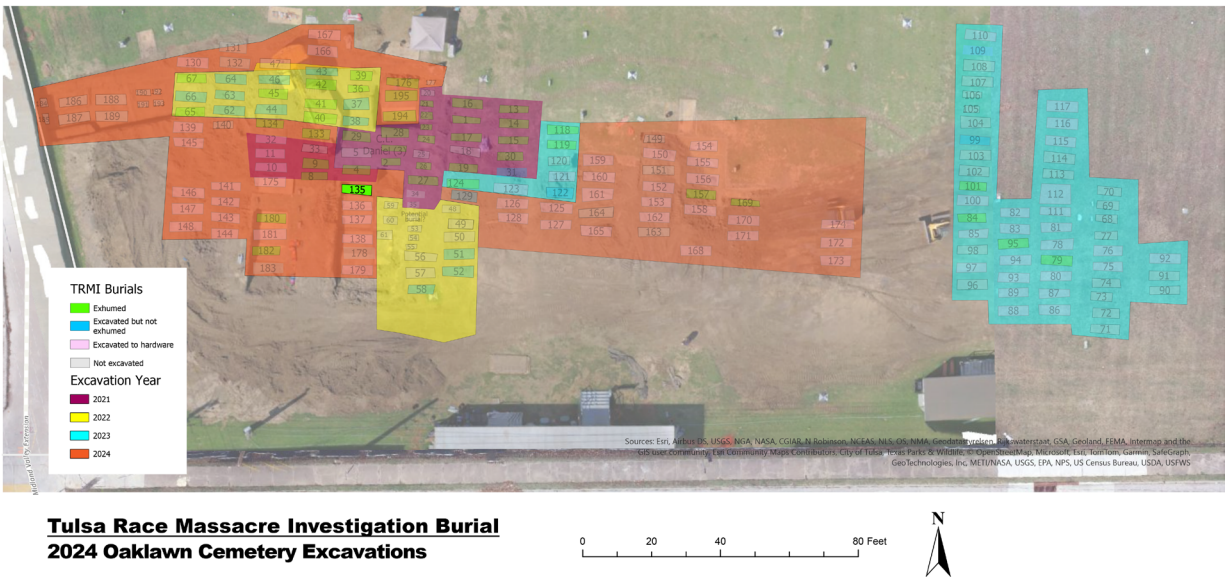


Figure 20 TRMI site map showing location of Burial 135

Final Excavation Status	Exhumed
Started	7/31/2024
Completed	8/5/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	98.6152
NW ending elevation	98.7051

Burial 135 is located in the west 2024 excavation expansion (Figure 20). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 219 cm long and 71 cm wide.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. The left arm was bent with the hand resting near the pelvis while the right arm was placed straight at the side. Both legs were straight with the ankles uncrossed. The skull and the mandible appear to have shifted due to post-depositional processes (Figure 22).

Skeletal preservation was good. Excavators noted that most elements were intact, but that the due to soil moisture, the epiphyseal ends were less well preserved; they also recorded that the ride side of the remains were better preserved than the left. The axial skeleton was more intact than post burials at Oaklawn, but was still somewhat degraded. The skull was complete at the time of excavation.

Wood preservation was fair with much of the coffin lid remaining (Figure 21); two samples taken for further analysis, one from the lid and one from the burial container body. The rectangular casket measured 208 cm long and 53 cm wide. The excavators also noted that the casket was significantly larger than necessary for the size of the individual. A moderate number of wire nails were collected; no other hardware was recovered. A copper rivet and textile fragments were found in the area of the right abdomen and pelvis, suggesting the individual was clothed at the time of internment. A projectile was uncovered under the left pelvis.

Due to the sparse nature of the material culture directly associated with Burial 135, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. In addition to the projectile found under the pelvis, this individual was interred in an unadorned rectan-

Burial 135 (continued)

gular casket too large for his remains, consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 39.

SENSITIVE CONTENT

Figure 21 Burial 135 with coffin lid exposed

SENSITIVE CONTENT

Figure 22 Burial 135 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 136

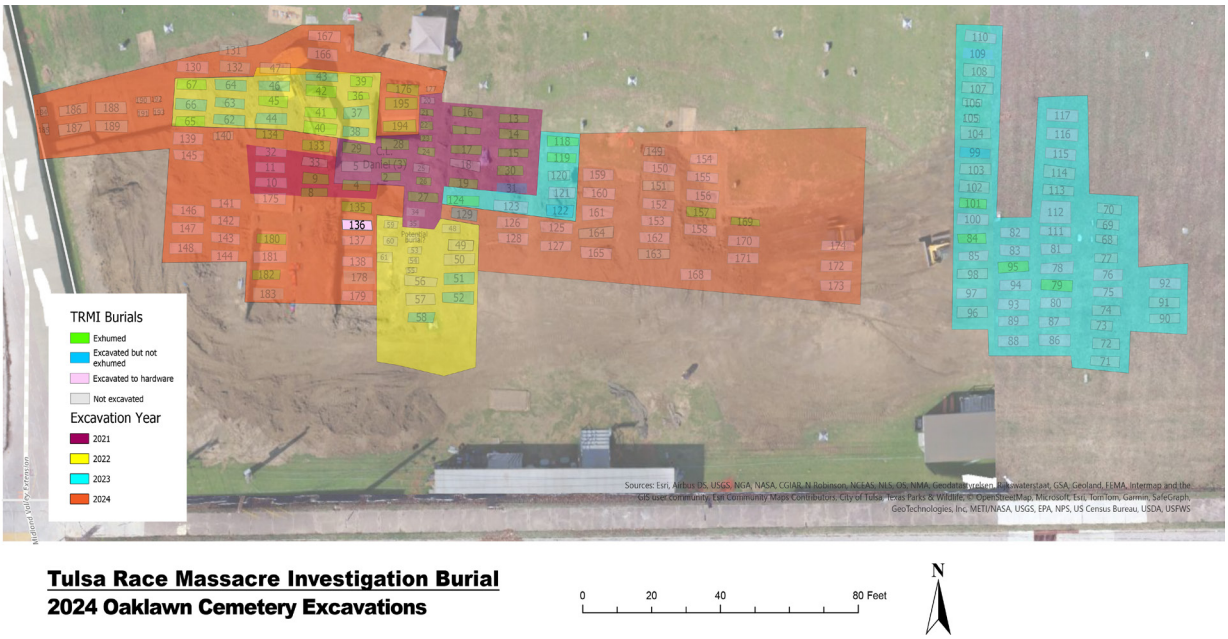


Figure 23 TRMI site map showing location of Burial 136

Final Excavation Status	Excavated to hardware
Started	8/5/2024
Completed	8/5/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	98.5604
NW ending elevation	n/a

Burial 136 is located in the west 2024 excavation expansion (Figure 23). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 211 cm long and 68 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. The rectangular casket outline measured 205 cm long and 53 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 03 ferrous single double arm lug extension bars (p. 84). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 137

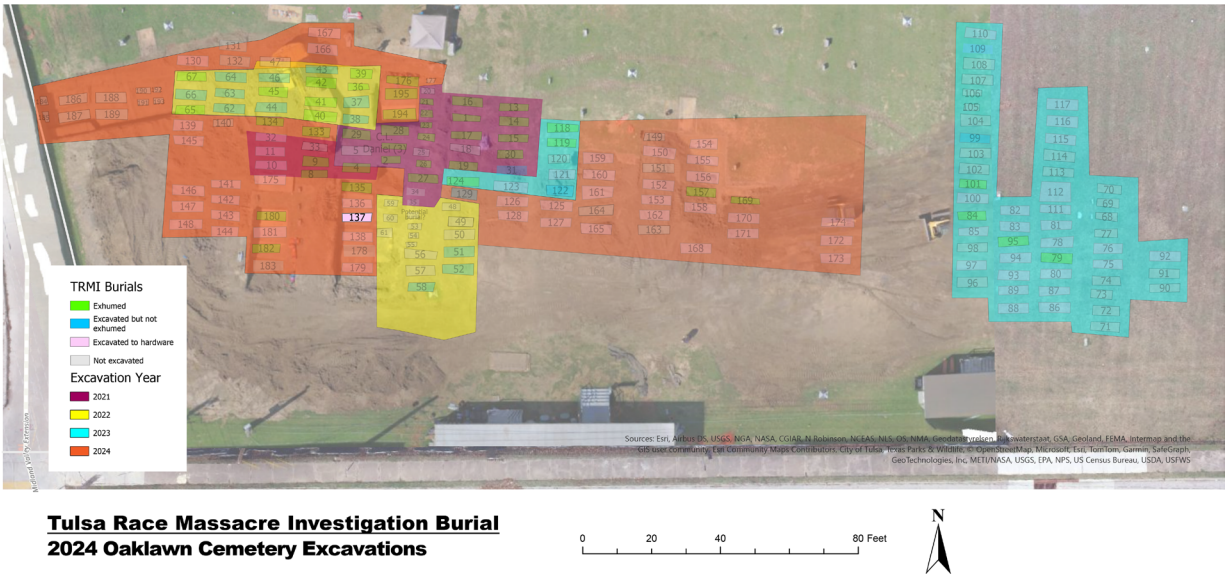


Figure 24 TRMI site map showing location of Burial 137

Final Excavation Status	Excavated to hardware
Started	8/6/2024
Completed	8/7/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	98.5604
NW ending elevation	n/a

Burial 137 is located in the west 2024 excavation expansion (Figure 24). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 253 cm long and 76 cm wide.

The exposed portions of the burial container displayed fair wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 213 cm long and 70 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 01 ferrous single double arm lug extension bars (p. 82). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 138

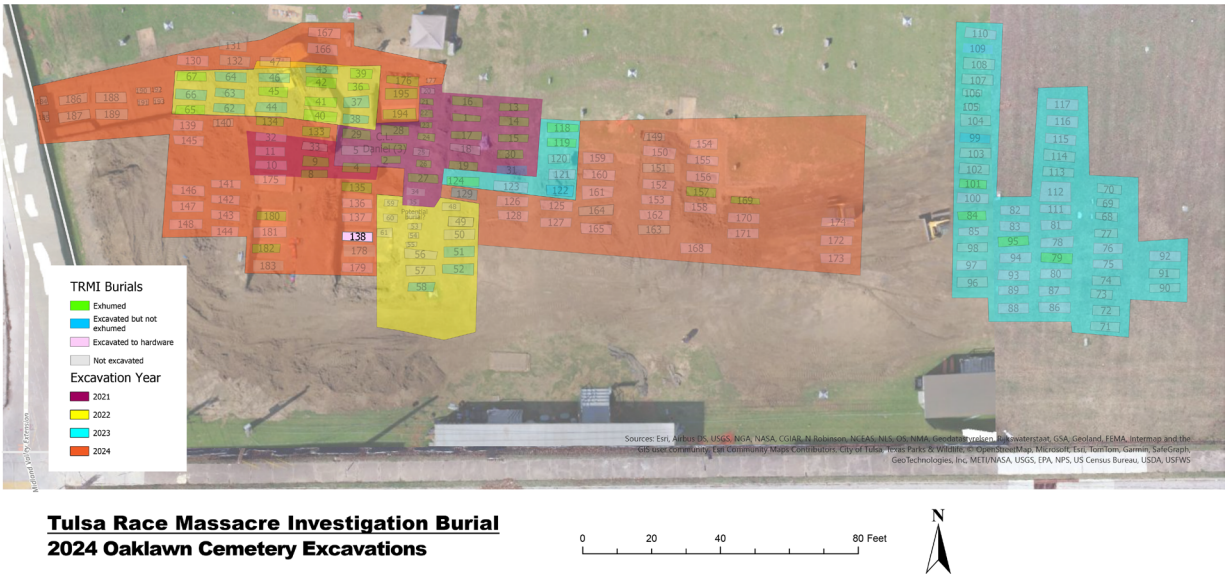


Figure 25 TRMI site map showing location of Burial 138

Final Excavation Status	Excavated to hardware
Started	8/13/2024
Completed	8/13/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	98.5063
NW ending elevation	n/a

Burial 138 is located in the west 2024 excavation expansion (Figure 25). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 261 cm long and 77 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. The rectangular casket outline measured 210 cm long and 77 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 23 white metal double lug short bars (p. 106). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 139

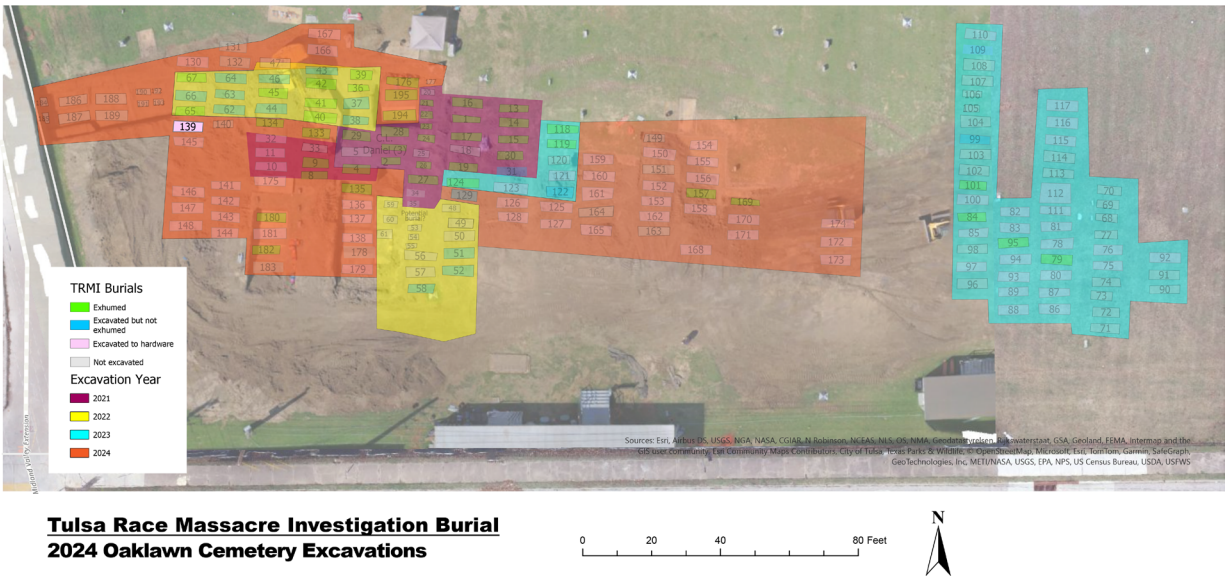


Figure 26 TRMI site map showing location of Burial 139

Final Excavation Status	Excavated to hardware
Started	7/31/2024
Completed	8/1/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.5853
NW ending elevation	n/a

Burial 139 is located in the west 2024 excavation expansion (Figure 26). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 212 cm long and 75 cm wide.

The exposed portions of the burial container displayed poor wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 145 cm long and 49 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 21 white metal double lug short bars (p. 104). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 140

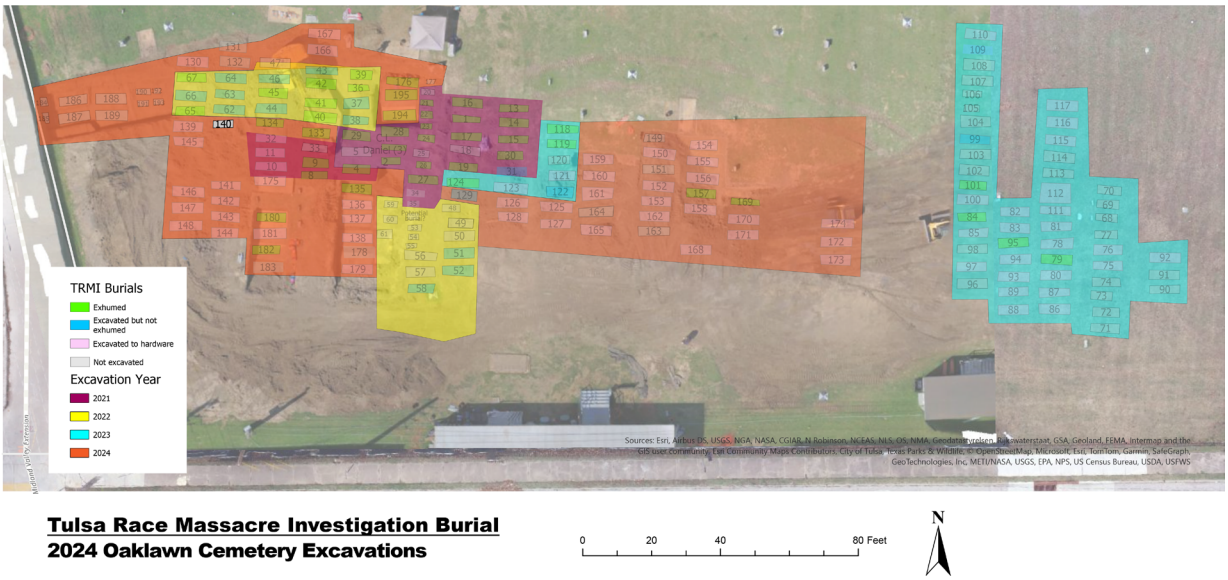


Figure 27 TRMI site map showing location of Burial 140

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	98.6446
NW ending elevation	n/a

Burial 140 is located in the west 2024 excavation expansion (Figure 27). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 175 cm long and 72 cm wide. Because the smaller shaft size likely indicated the interment of a subadult individual, project directors determined excavation was not warranted.

Burial 141

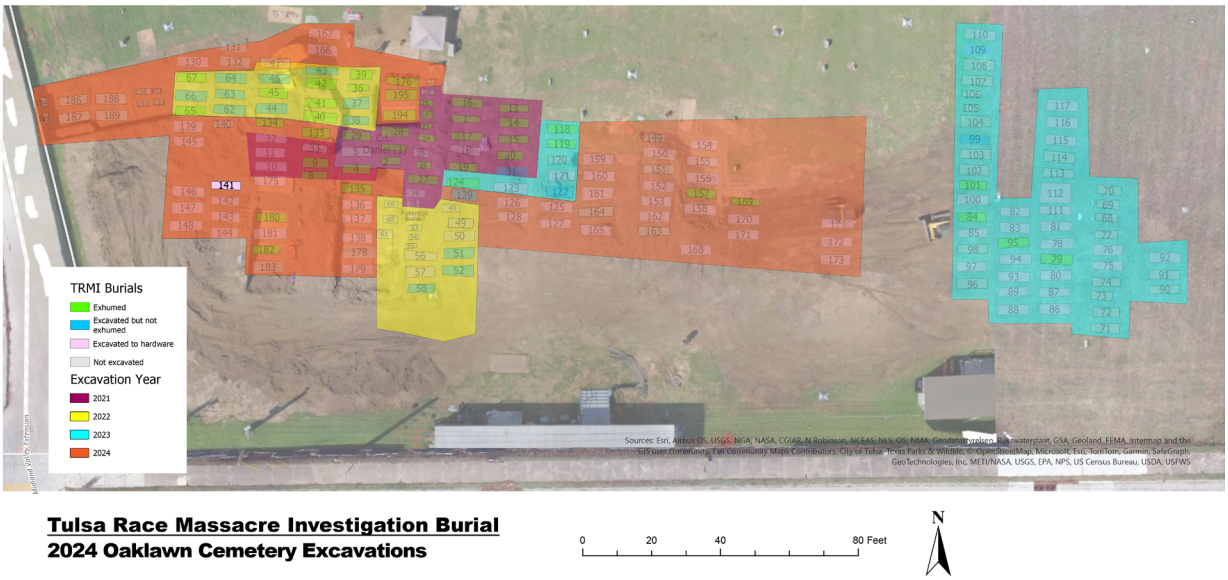


Figure 28 TRMI site map showing location of Burial 141

Final Excavation Status	Excavated to hardware
Started	8/1/2024
Completed	8/2/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.6446
NW ending elevation	n/a

Burial 141 is located in the west 2024 excavation expansion (Figure 28). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 221 cm long and 68 cm wide.

The exposed portions of the burial container displayed poor wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 214 cm long and 58 cm wide. Decorative hardware included handles, thumbscrews, and escutcheons; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 23 white metal double lug short bars (p. 106), white metal 3rd generation Oaklawn Thumbscrew Type 01 (p. 121), and white metal Oaklawn Escutcheon Type 03 (p. 128).

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 142

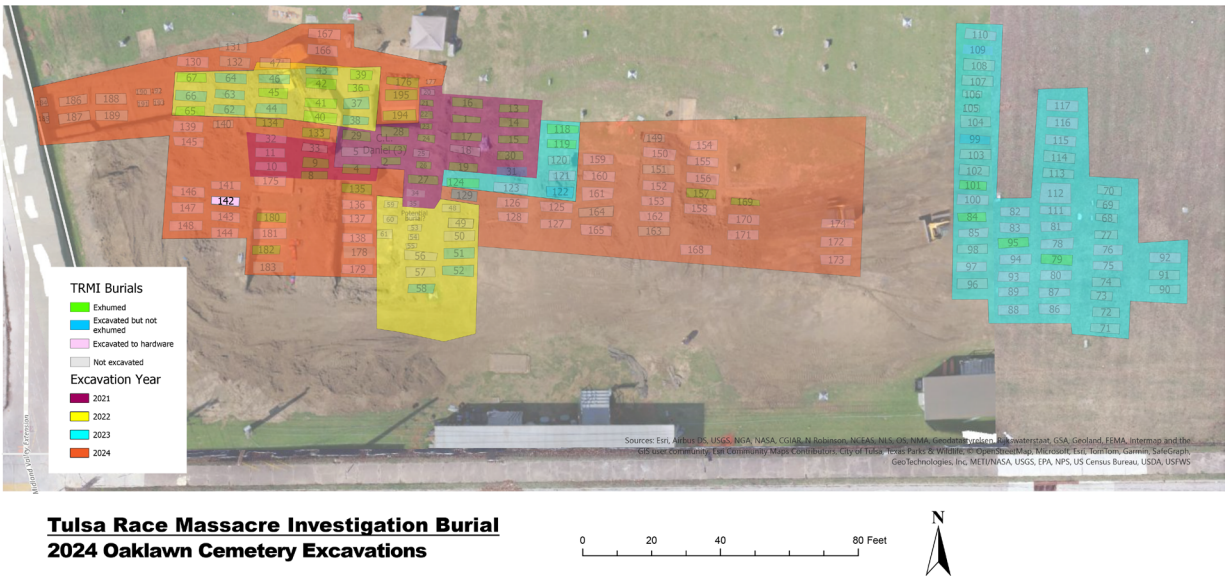


Figure 29 TRMI site map showing location of Burial 142

Final Excavation Status	Excavated to hardware
Started	8/2/2024
Completed	8/2/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.6446
NW ending elevation	n/a

Burial 142 is located in the west 2024 excavation expansion (Figure 29). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 211 cm long and 68 cm wide.

The exposed portions of the burial container displayed poor wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 200 cm long and 51 cm wide. Decorative hardware included handles, thumbscrews, and escutcheons; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 09 ferrous double lug swingbails(p. 92), white metal 3rd generation Oaklawn Thumbscrew Type 01 (p. 121), and white metal Oaklawn Escutcheon Type 03 (p. 128).

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 143

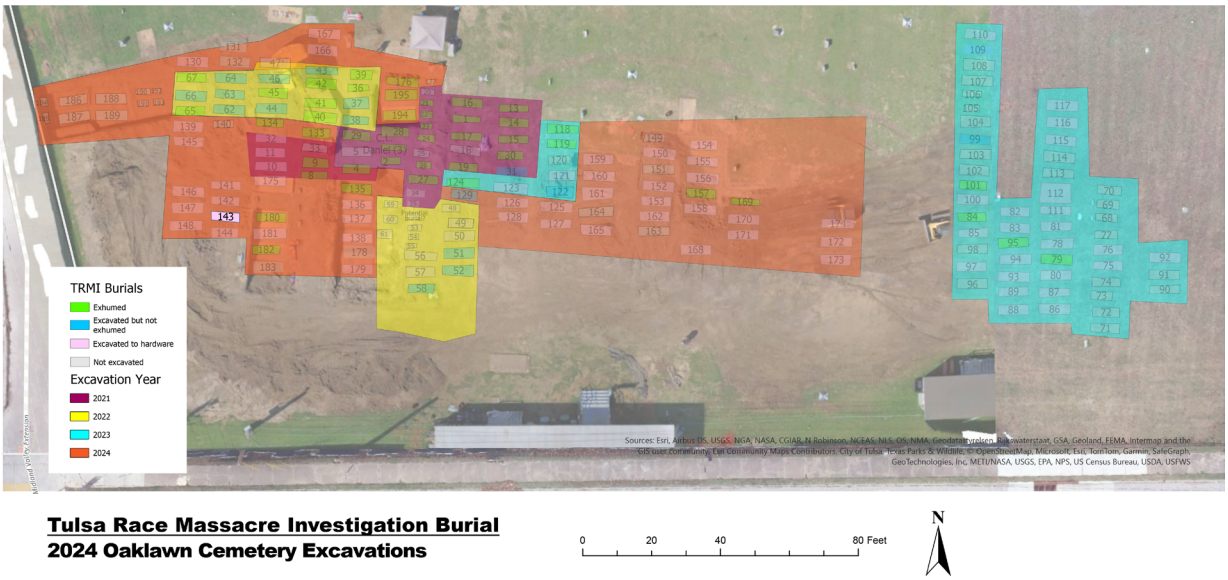


Figure 30 TRMI site map showing location of Burial 143

Final Excavation Status	Excavated to hardware
Started	8/2/2024
Completed	8/2/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.7140
NW ending elevation	n/a

Burial 143 is located in the west 2024 excavation expansion (Figure 30). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 214 cm long and 66 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. The dimensions of the rectangular casket were indeterminate. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04 ferrous double lug short bars (p. 85). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 144

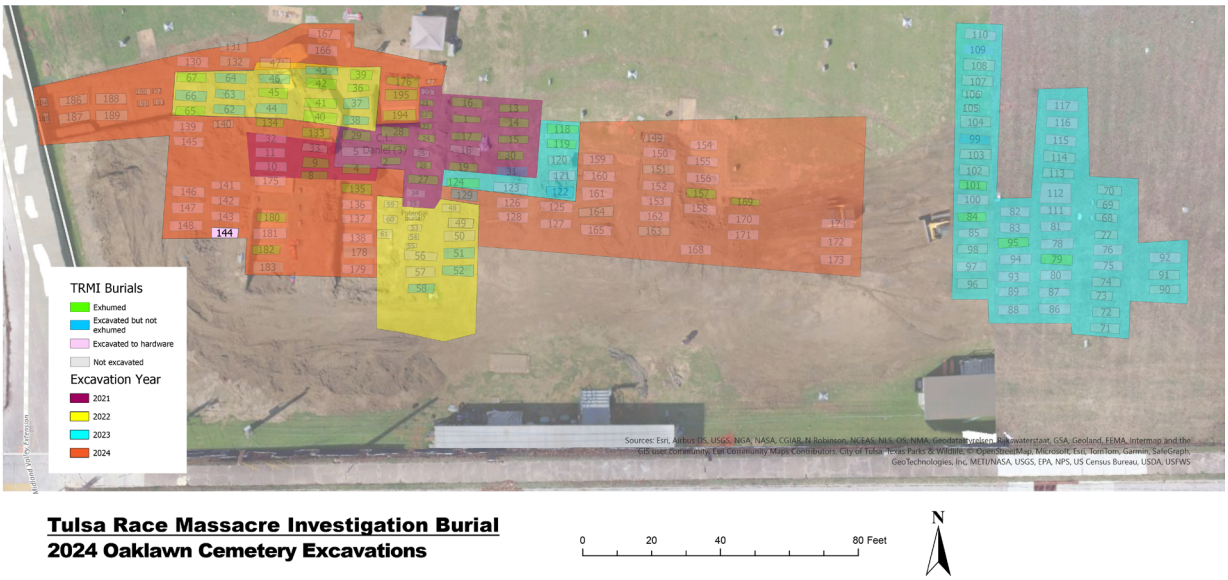


Figure 31 TRMI site map showing location of Burial 144

Final Excavation Status	Excavation to hardware
Started	8/5/2024
Completed	8/5/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.7392
NW ending elevation	n/a

Burial 144 is located in the west 2024 excavation expansion (Figure 31). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 200 cm long and 70 cm wide.

The exposed portions of the burial container displayed fair wood preservation; one sample was taken from the casket for further analysis. Evidence indicated an outer crate 195 long and 61 cm wide with an internal octagonal casket measuring 190 cm long and 47 cm wide; a second wood sample was collected from the outer crate. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 23 white metal double lug short bars (p. 106). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 145

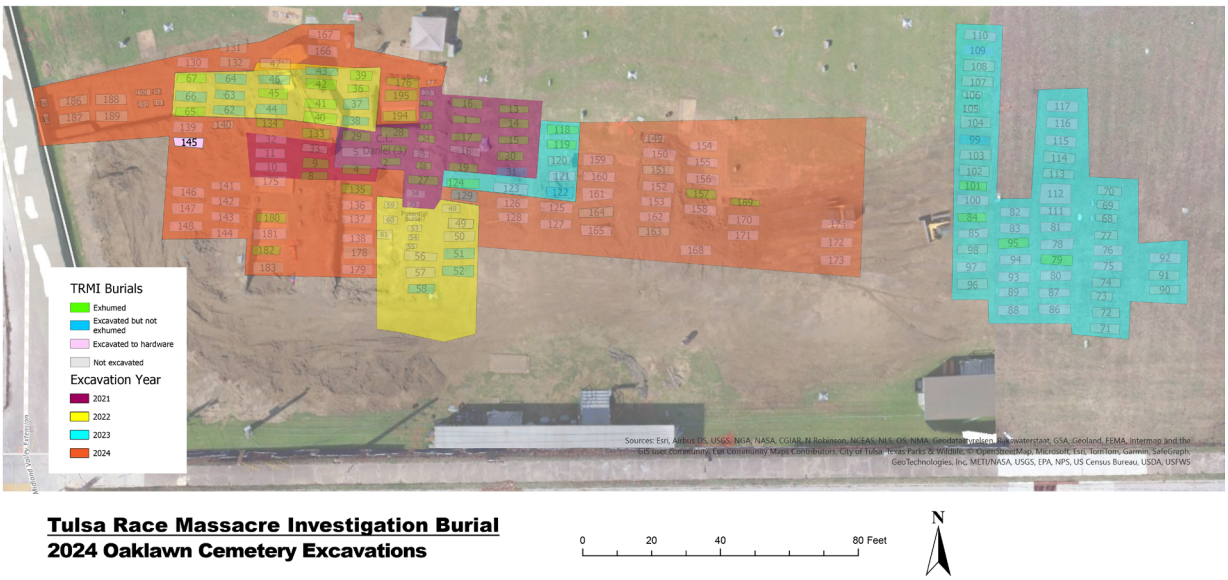


Figure 32 TRMI site map showing location of Burial 145

Final Excavation Status	Excavated to hardware
Started	8/1/2024
Completed	8/1/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.5469
NW ending elevation	n/a

Burial 145 is located in the west 2024 excavation expansion (Figure 32). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 212 cm long and 68 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. Evidence indicated an outer crate 202 long and 68 cm wide with an internal octagonal casket measuring 202 cm long and 48 cm wide; a second wood sample was collected from the outer crate. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 19 ferrous single double arm lug with indeterminate bail form (p. 102). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 146

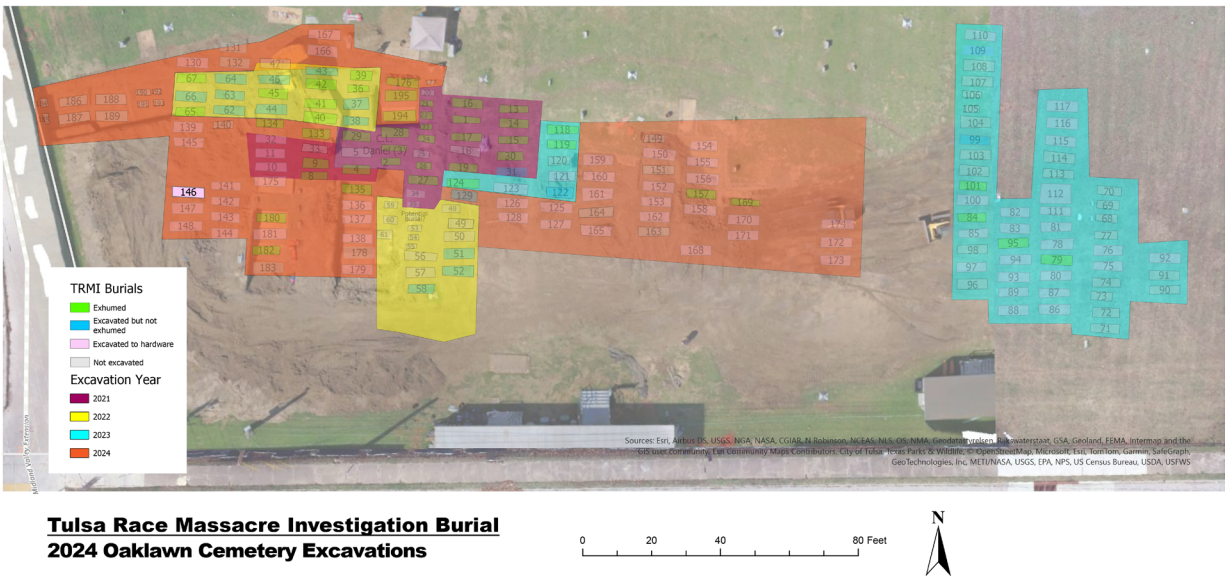


Figure 33 TRMI site map showing location of Burial 146

Final Excavation Status	Excavated to hardware
Started	8/5/2024
Completed	8/5/2024
Excavators	Tyler Donaldson, Izzy Ortt
NW starting elevation	98.5469
NW ending elevation	n/a

Burial 146 is located in the west 2024 excavation expansion (Figure 33). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 228 cm long and 75 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. Evidence indicated an outer crate 214 long and 66 cm wide with an internal octagonal casket measuring 52 cm wide; the length of the casket was indeterminate as excavation was suspended after hardware was uncovered at the east side of the burial. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 07 ferrous double lug short bars (p. 90). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 147

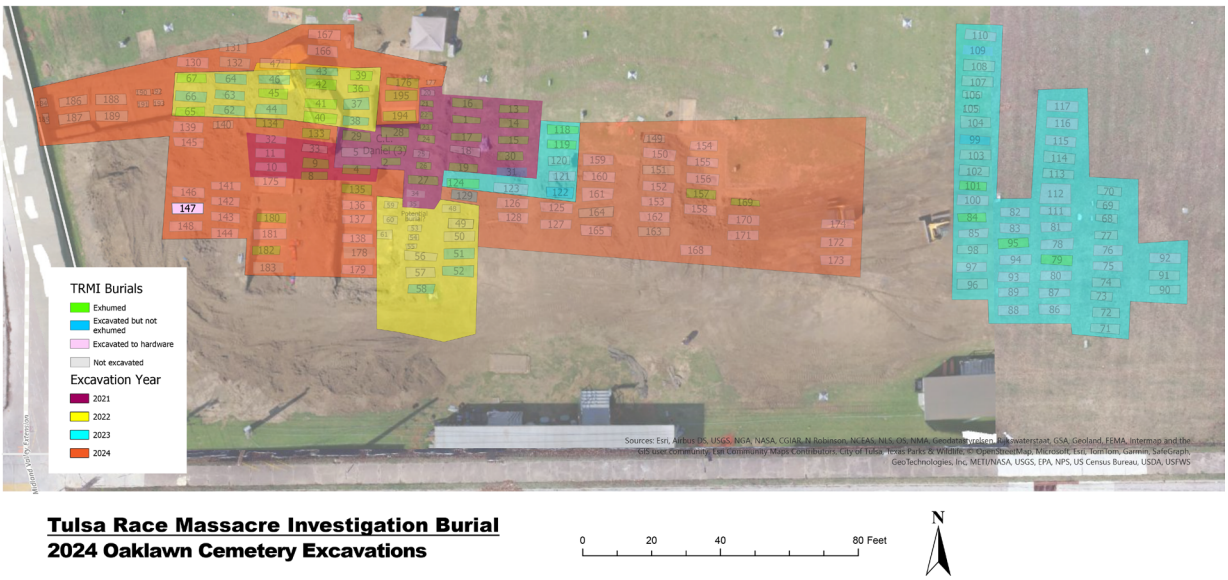


Figure 34 TRMI site map showing location of Burial 147

Final Excavation Status	Excavate to hardware
Started	8/5/2024
Completed	8/5/2024
Excavators	Tyler Donaldson, Izzy Ortt
NW starting elevation	98.8258
NW ending elevation	n/a

Burial 147 is located in the west 2024 excavation expansion (Figure 34). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 220 cm long and 81 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. Evidence indicated an outer crate 218 long and 69 cm wide with an internal rectangular casket. The dimensions of the casket were indeterminate as the excavation was suspended when hardware was uncovered prior to fully defining the outline. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 23 white metal double lug short bars (p. 106). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 148

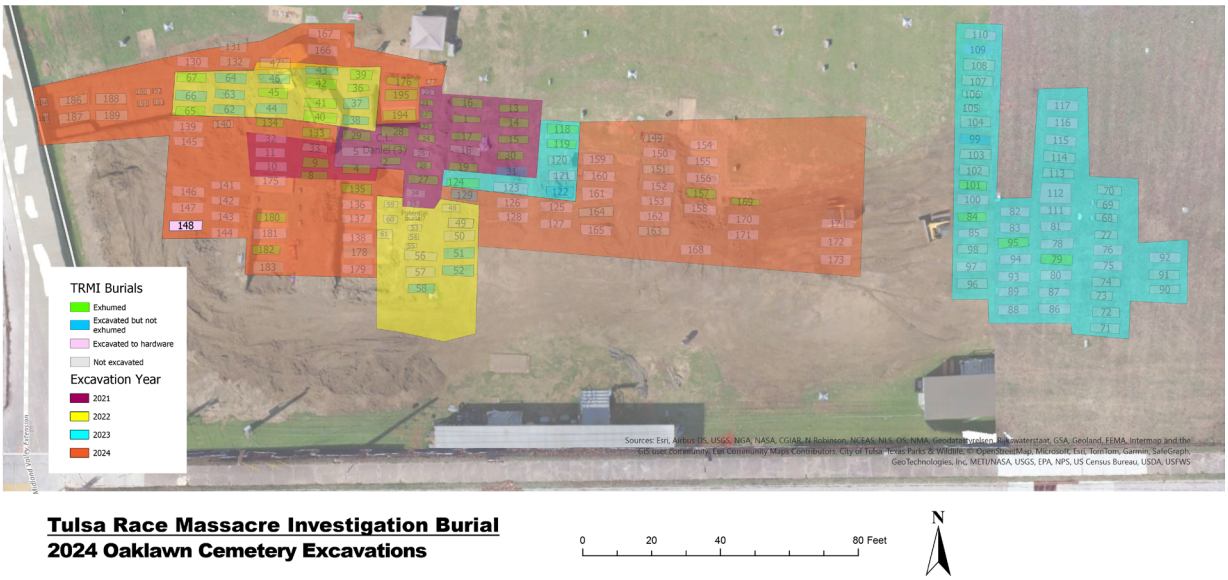


Figure 35 TRMI site map showing location of Burial 148

Final Excavation Status	Excavated to hardware
Started	8/5/2024
Completed	8/5/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.8258
NW ending elevation	n/a

Burial 148 is located in the west 2024 excavation expansion (Figure 35). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 234 cm long and 75 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. The dimensions of the rectangular casket were indeterminate as the excavation was suspended when hardware was uncovered prior to fully defining the outline. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 24 ferrous single double arm lug short bars (p. 107). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment.

Burial 149

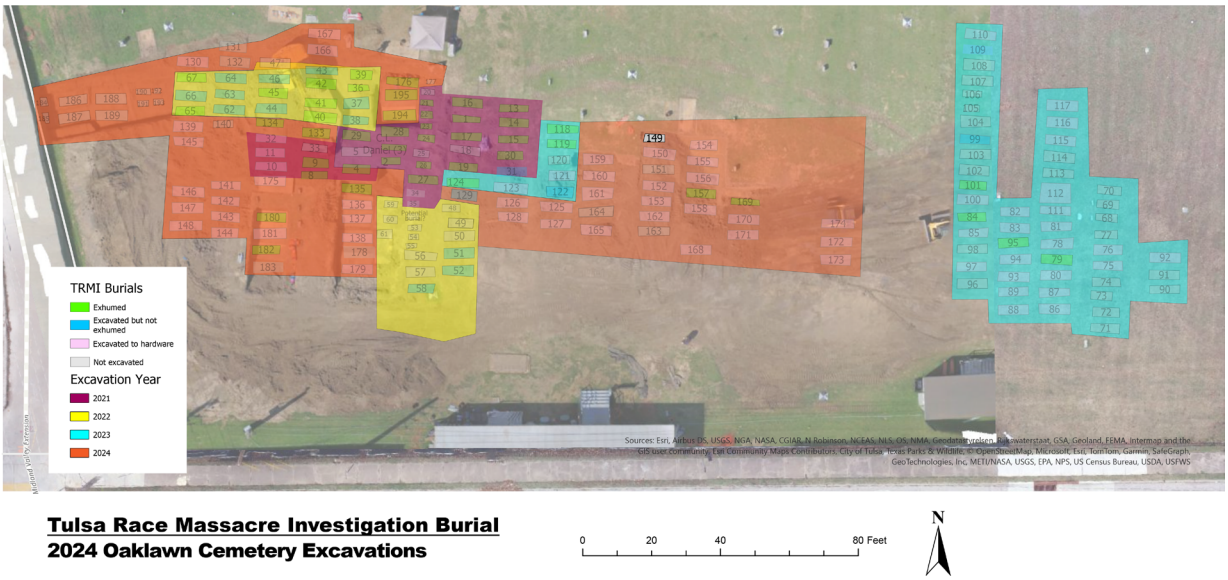


Figure 36 TRMI site map showing location of Burial 149

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	99.2627
NW ending elevation	n/a

Burial 149 is located in the east 2024 excavation expansion (Figure 36). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 190 cm long and 64 cm wide. Because the smaller shaft size likely indicating the interment of a subadult individual, project directors determined excavation was not warranted.

Burial 150

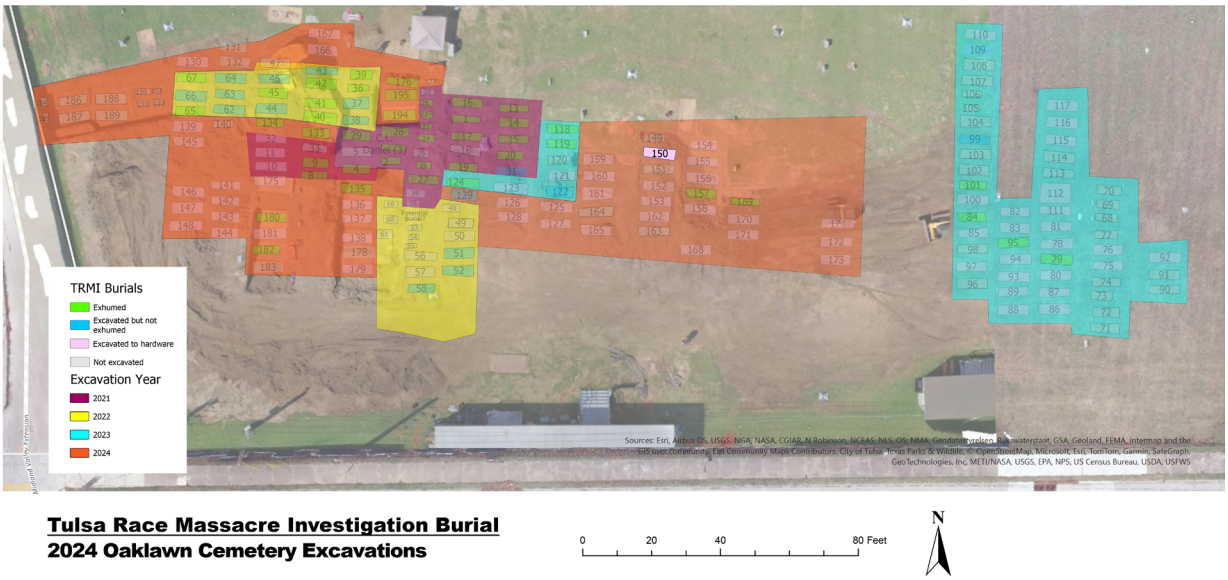


Figure 37 TRMI site map showing location of Burial 150

Final Excavation Status	Excavated to hardware
Started	8/6/2024
Completed	8/7/2024
Excavators	Tyler Donaldson, Izzy Ortt
NW starting elevation	99.2404
NW ending elevation	n/a

Burial 150 is located in the east 2024 excavation expansion (Figure 37). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 231 cm long and 80 cm wide.

The exposed portions of the burial container displayed poor wood preservation; one sample was taken for further analysis. Evidence indicated an outer crate 231 long and 69 cm wide with an internal rectangular casket; the casket dimensions were indeterminate as excavation was suspended after hardware was uncovered prior to the casket outline being fully uncovered. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 22 white metal double lug short bars (p. 105). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 151

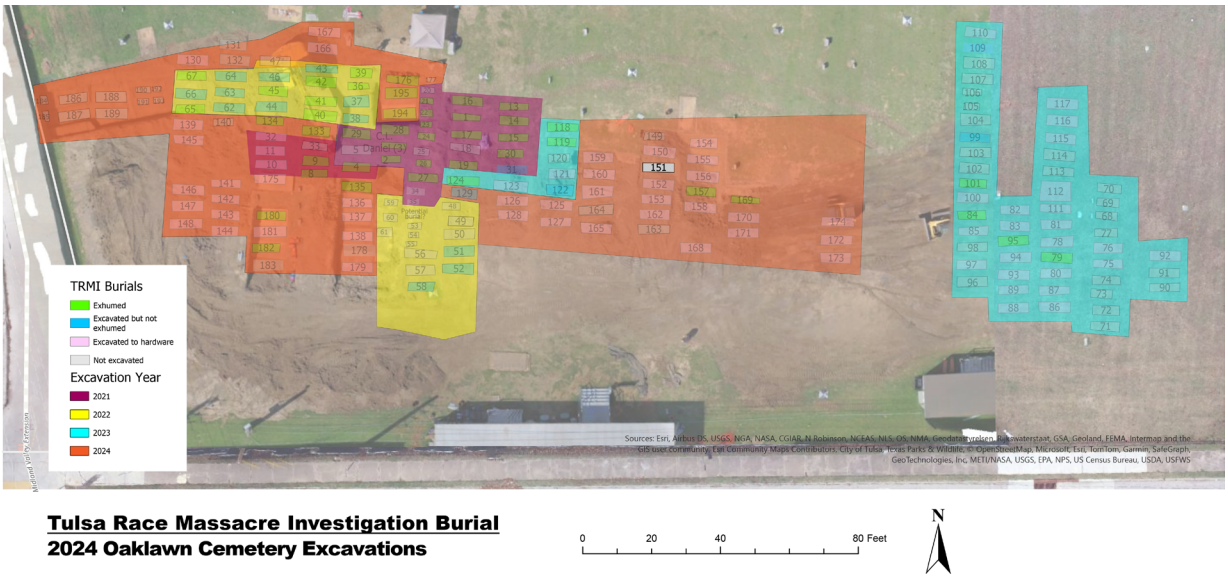


Figure 38 TRMI site map showing location of Burial 151

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	99.1664
NW ending elevation	n/a

Burial 151 is located in the east 2024 excavation expansion (Figure 38). This burial shaft was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 276 cm long and 83 cm wide. This feature was not excavated due to its associated with Buried Monument 30. No inscription was preserved on the fragmented marker.

Burial 152

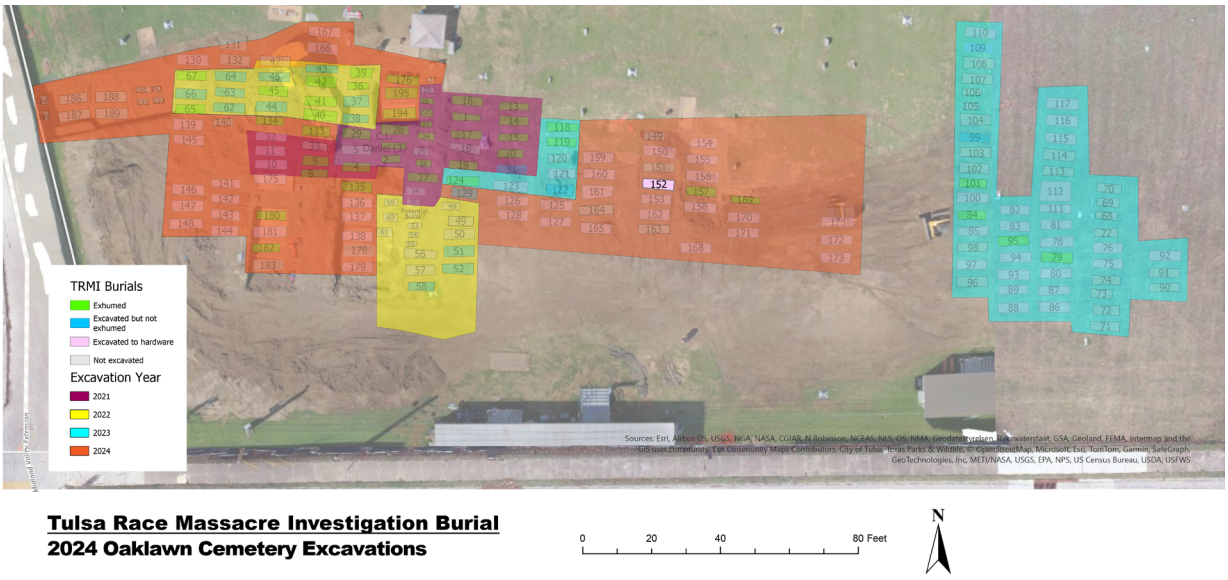


Figure 39 TRMI site map showing location of Burial 152

Final Excavation Status	Excavated to hardware
Started	8/6/2024
Completed	8/6/2024
Excavators	Erin McKendry, Rebecca O'Sullivan
NW starting elevation	98.9107
NW ending elevation	n/a

Burial 152 is located in the east 2024 excavation expansion (Figure 39). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 224 cm long and 75 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. Evidence indicated an outer crate 216 long and 66 cm wide with an internal rectangular casket; the casket dimensions were indeterminate as excavation was suspended after hardware was uncovered prior to the casket outline being fully uncovered. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04 ferrous double lug short bars (p. 85). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 153

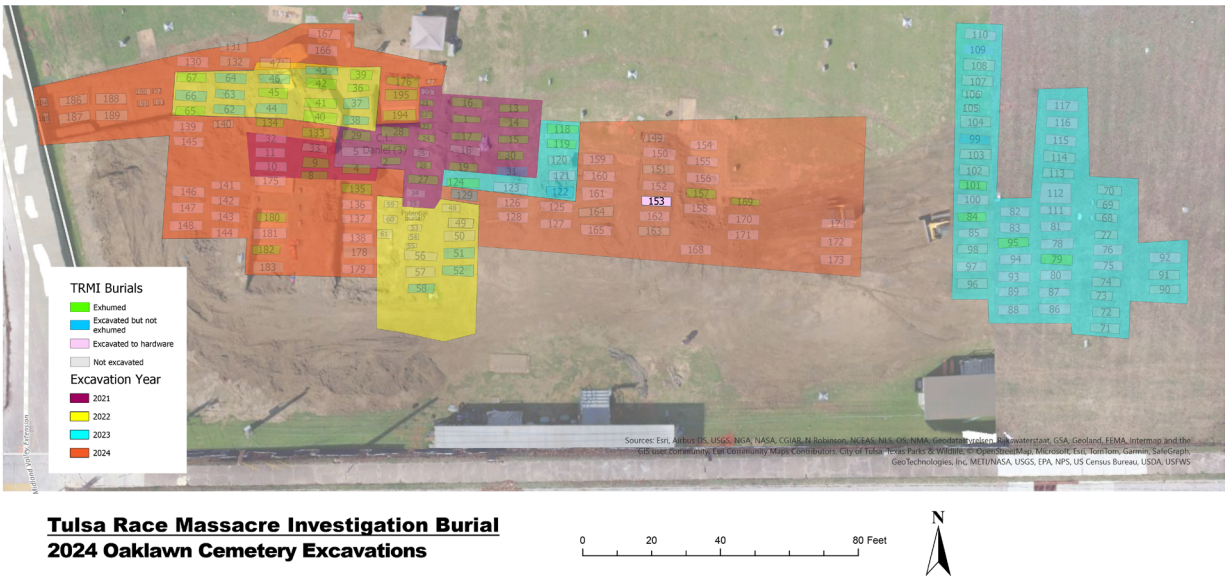


Figure 40 TRMI site map showing location of Burial 153

Final Excavation Status	Excavated to hardware
Started	8/6/2024
Completed	8/6/2024
Excavators	Erin McKendry, Rebecca O'Sullivan
NW starting elevation	98.748
NW ending elevation	n/a

Burial 153 is located in the east 2024 excavation expansion (Figure 40). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 215 cm long and 66 cm wide.

The exposed portions of the burial container displayed fair wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 206 cm long and 355 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 10 ferrous double lug swingbail (p. 93). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 154

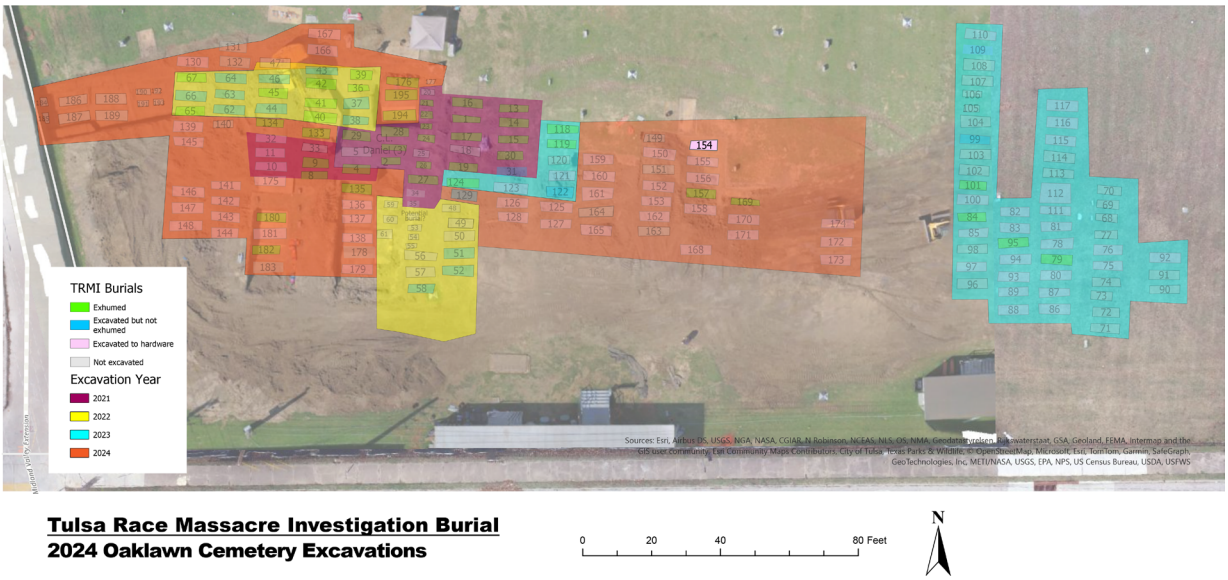


Figure 41 TRMI site map showing location of Burial 154

Final Excavation Status	Excavated to hardware
Started	8/7/2024
Completed	8/7/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.7480
NW ending elevation	n/a

Burial 154 is located in the east 2024 excavation expansion (Figure 41). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 193 cm long and 70 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. The rectangular casket outline measured 175 cm long and 55 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04A ferrous double lug swell short bars (p. 85). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 155

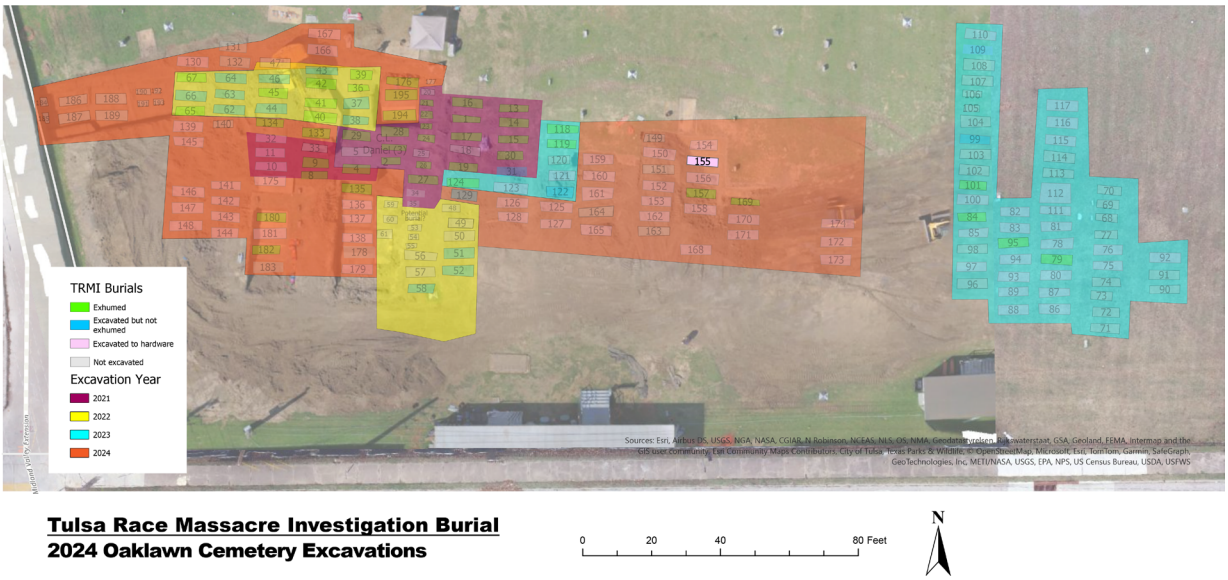


Figure 42 TRMI site map showing location of Burial 155

Final Excavation Status	Excavated to hardware
Started	8/7/2024
Completed	8/7/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	98.748
NW ending elevation	n/a

Burial 155 is located in the east 2024 excavation expansion (Figure 58). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 218 cm long and 66 cm wide.

The exposed portions of the burial container displayed good wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 200 cm long and 58 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 01 ferrous single arm double lug extension bars (p. 82). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 156

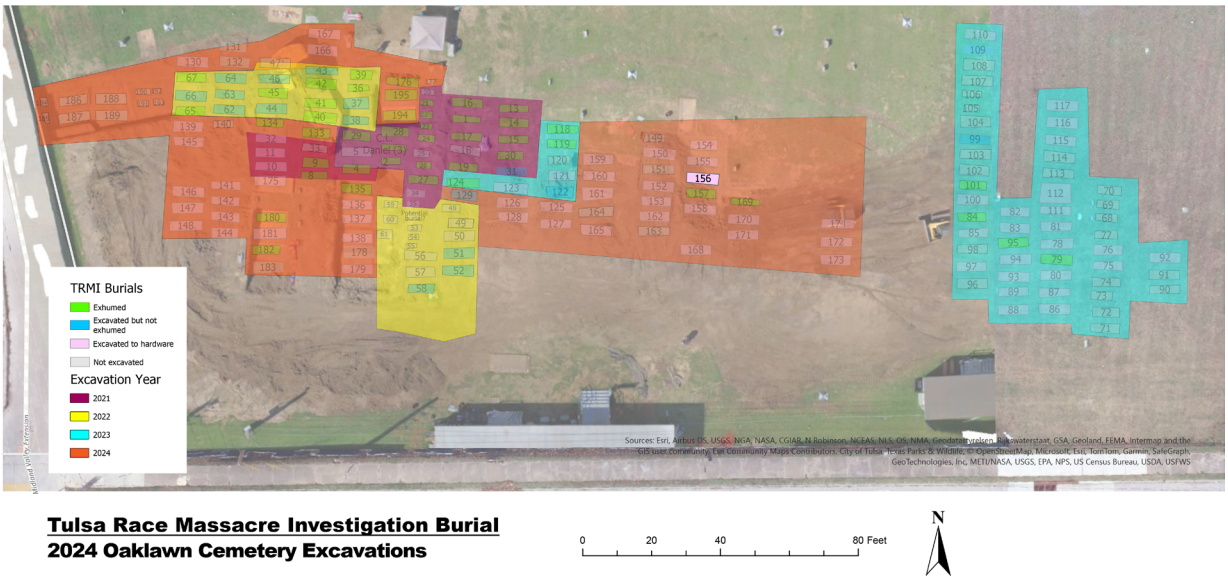


Figure 43 TRMI site map showing location of Burial 156

Final Excavation Status	Excavated to hardware
Started	8/7/2024
Completed	8/7/2024
Excavators	Tyler Donaldson, Izzy Ortt
NW starting elevation	99.2317
NW ending elevation	n/a

Burial 156 is located in the east 2024 excavation expansion (Figure 43). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 234 cm long and 78 cm wide.

The exposed portions of the burial container displayed good wood preservation, particularly along the crate lid; one sample was taken for further analysis. Evidence indicated an outer crate 200 long and 72 cm wide with an internal rectangular casket; the casket dimensions were indeterminate as excavation was suspended after hardware was uncovered prior to the casket outline being fully uncovered. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 01 ferrous single arm double lug extension bars (p. 82). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 157

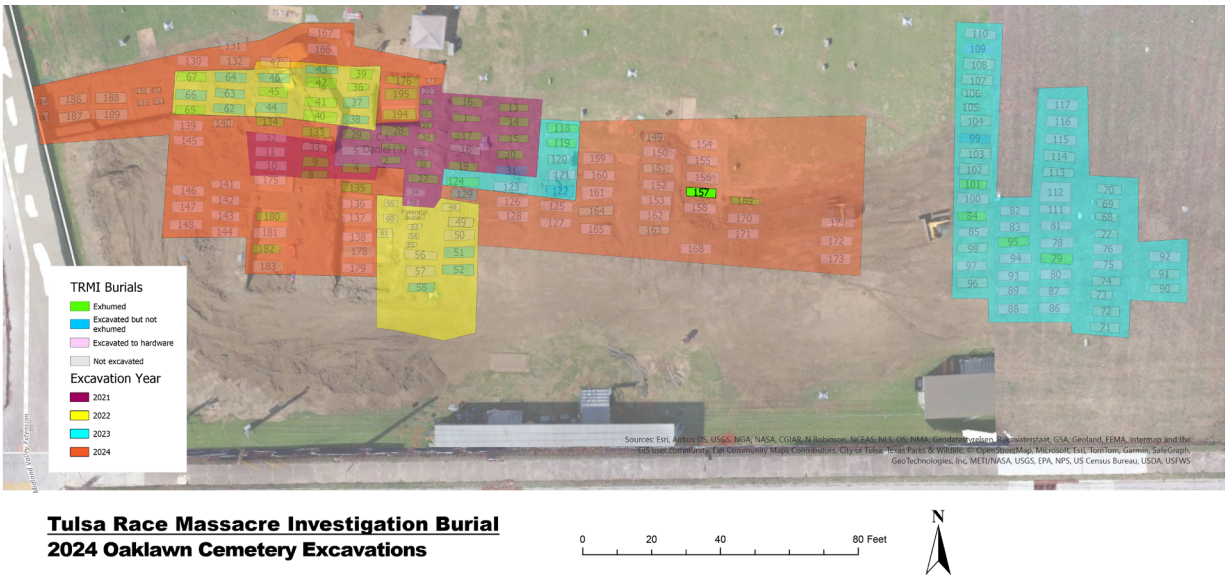


Figure 44 TRMI site map showing location of Burial 157

Final Excavation Status	Exhumed
Started	8/8/2024
Completed	8/13/2024
Excavators	Tyler Donaldson, Izzy Ortt
NW starting elevation	99.1092
NW ending elevation	98.9272

Burial 157 is located in the west 2024 excavation expansion (Figure 44). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 221 cm long and 61 cm wide.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. Both arms were placed straight at the side and appeared to be somewhat flared away from the body. Both legs were straight with the ankles uncrossed. The head was bent and turned towards the south; the alignment of the cervical vertebrae suggest this was the way in which the decedent was placed in the burial container. Excavators noted this body placement was likely the result of the decedent being too large for the burial container (Figure 46).

Skeletal preservation was better than average with excavators noted that many elements were exhumed with minimal fragmentation. The axial skeleton was significantly better preserved most burials at Oaklawn, but was still somewhat degraded. The skull was mostly complete at the time of excavation, but was fragmented near the left orbital.

Wood preservation was fair with much of the coffin lid remaining (Figure 45); two samples taken for further analysis, one from the lid and one from the burial container body. The rectangular casket measured 181 cm long and 51 cm wide. A moderate number of wire nails were collected; no other hardware was recovered. No clothing or personal items were found. A small, slightly deformed pewter pellet was found in the coffin fill near the remains.

Due to the sparse nature of the material culture directly associated with Burial 157, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. In addition to the pellet found in the burial, this individual was interred in an unadorned rectangular casket too small for his remains, consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 41.

Burial 157 (continued)

SENSITIVE CONTENT

Figure 45 Burial 157 photogrammetry model illustrating intact coffin lid wood

SENSITIVE CONTENT

Figure 46 Burial 157 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 158

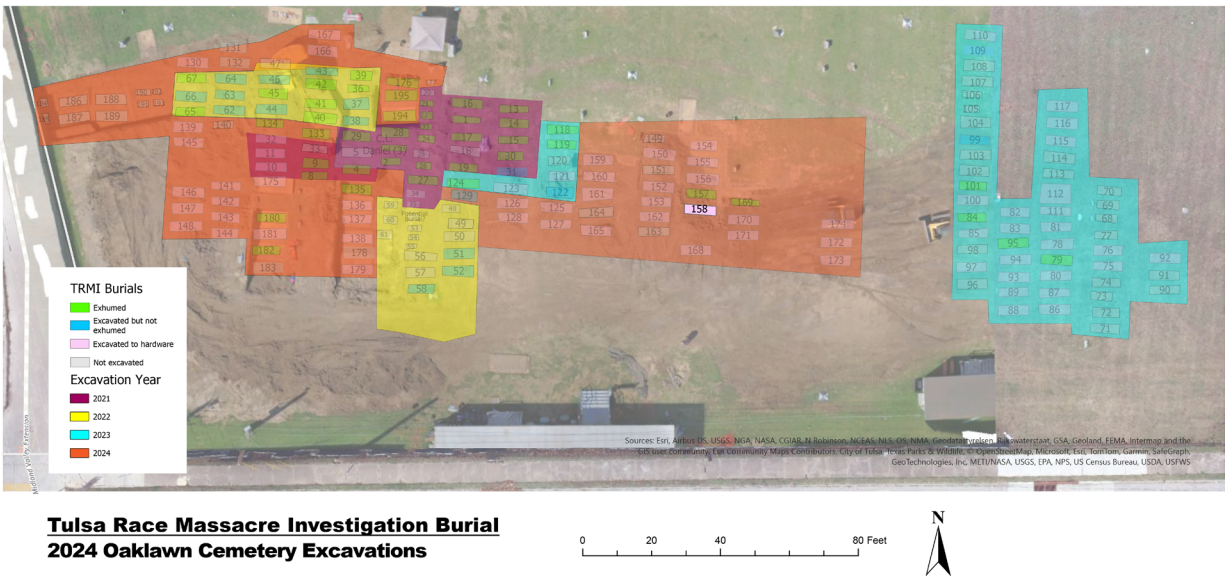


Figure 47 TRMI site map showing location of Burial 158

Final Excavation Status	Excavated to hardware
Started	8/7/2024
Completed	8/7/2024
Excavators	Erin McKendry
NW starting elevation	98.997
NW ending elevation	99.2000

Burial 158 is located in the east 2024 excavation expansion (Figure 47). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 227 cm long and 70 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. The rectangular casket outline measured 194 cm long and 65 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 10 ferrous double lug swingbail (p. 93). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 159

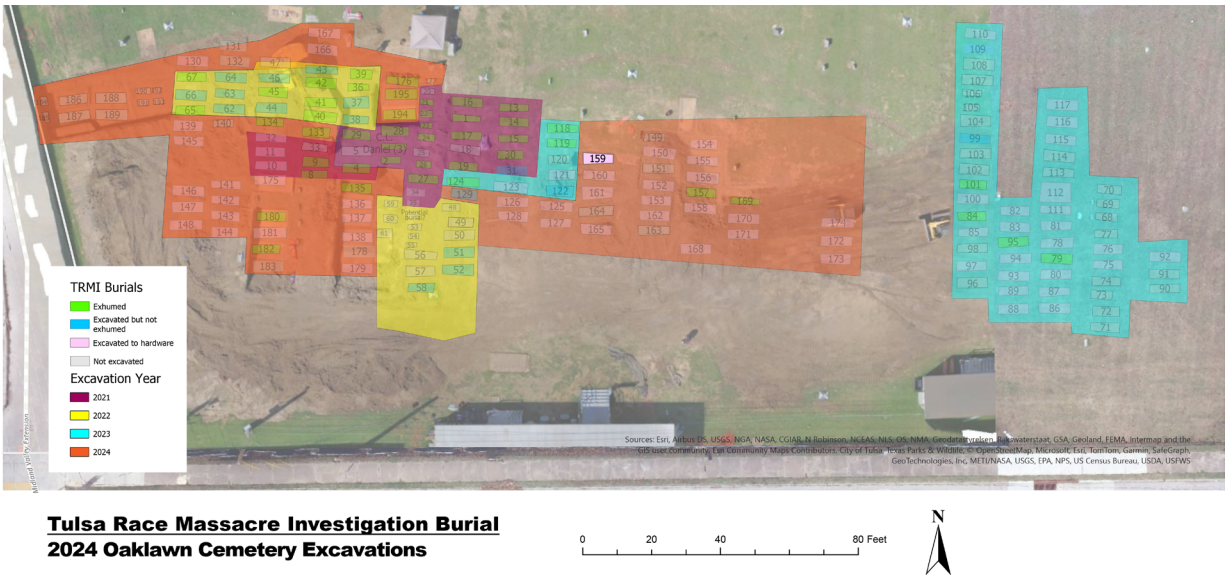


Figure 48 TRMI site map showing location of Burial 159

Final Excavation Status	Excavated to hardware
Started	8/5/2024
Completed	8/5/2024
Excavators	Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.9230
NW ending elevation	n/a

Burial 159 is located in the east 2024 excavation expansion (Figure 48). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 202 cm long and 68 cm wide.

The exposed portions of the burial container displayed fair wood preservation; no samples were collected for further analysis. The rectangular casket outline measured 188 cm long and 49 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04 ferrous double lug short bars (p. 85). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 160

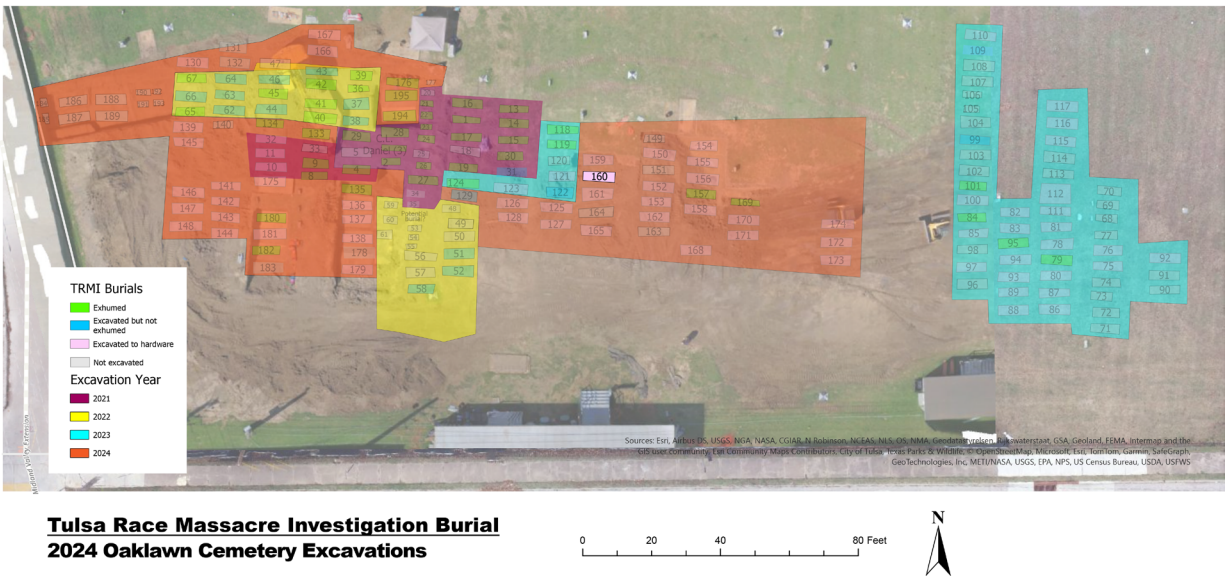


Figure 49 TRMI site map showing location of Burial 160

Final Excavation Status	Excavated to hardware
Started	8/5/2024
Completed	8/5/2024
Excavators	Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.9402
NW ending elevation	n/a

Burial 160 is located in the east 2024 excavation expansion (Figure 49). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 218 cm long and 64 cm wide.

The exposed portions of the burial container displayed fair wood preservation; no samples were collected for further analysis. The rectangular casket outline measured 197 cm long and 44 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04 ferrous double lug short bars (p. 85). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 161

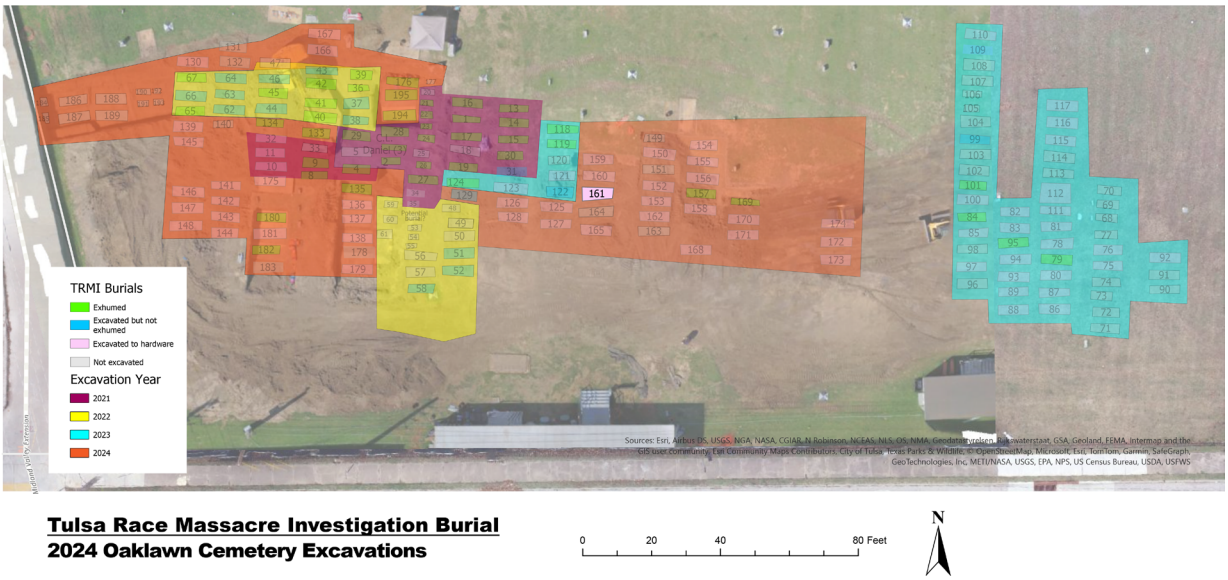


Figure 50 TRMI site map showing location of Burial 161

Final Excavation Status	Excavated to hardware
Started	8/6/2024
Completed	8/6/2024
Excavators	Jeremy Wilson. Gretchen Zoeller
NW starting elevation	98.7807
NW ending elevation	n/a

Burial 161 is located in the east 2024 excavation expansion (Figure 50). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 255 cm long and 90 cm wide.

The exposed portions of the burial container displayed fair wood preservation; no samples were collected for further analysis. Evidence indicated an outer crate 240 long and 88 cm wide with an internal rectangular casket measuring 208 cm long and 46 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 17 white metal single double arm short bars (p. 100). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 162

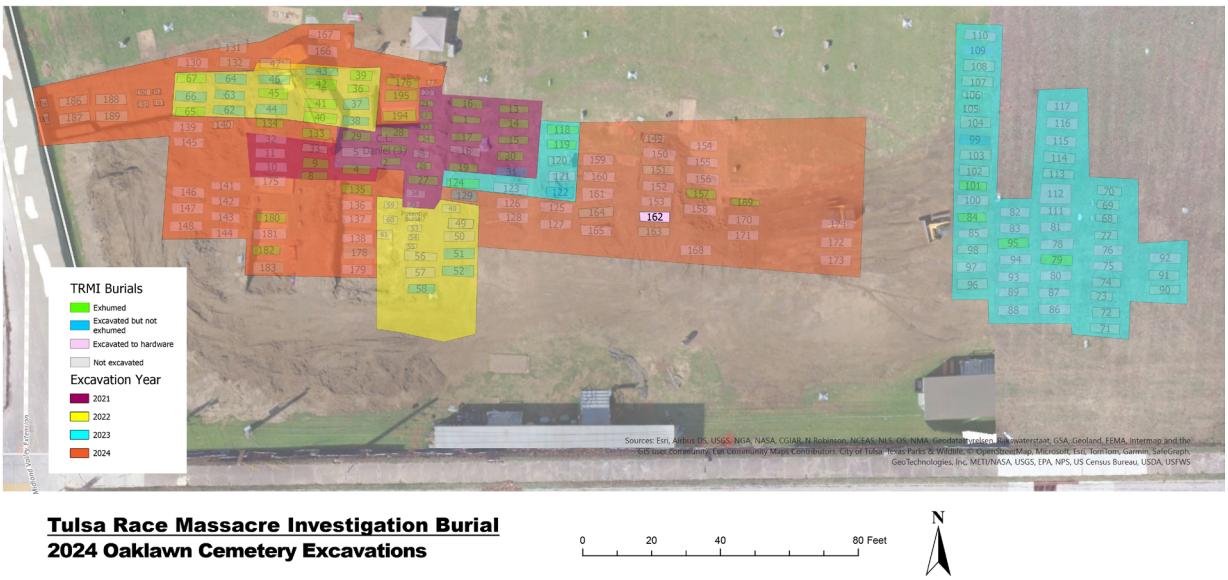


Figure 51 TRMI site map showing location of Burial 162

Final Excavation Status	Excavated to hardware
Started	8/6/2024
Completed	8/6/2024
Excavators	Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.8128
NW ending elevation	n/a

Burial 162 is located in the east 2024 excavation expansion (Figure 51). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 220 cm long and 80 cm wide.

The exposed portions of the burial container displayed fair wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 215 cm long and 62 cm wide. Decorative hardware included escutcheons; not all were fully uncovered, but those exposed were identified as Oaklawn Escutcheon Type 03 white metal decorative ovoids (p. 128). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 163

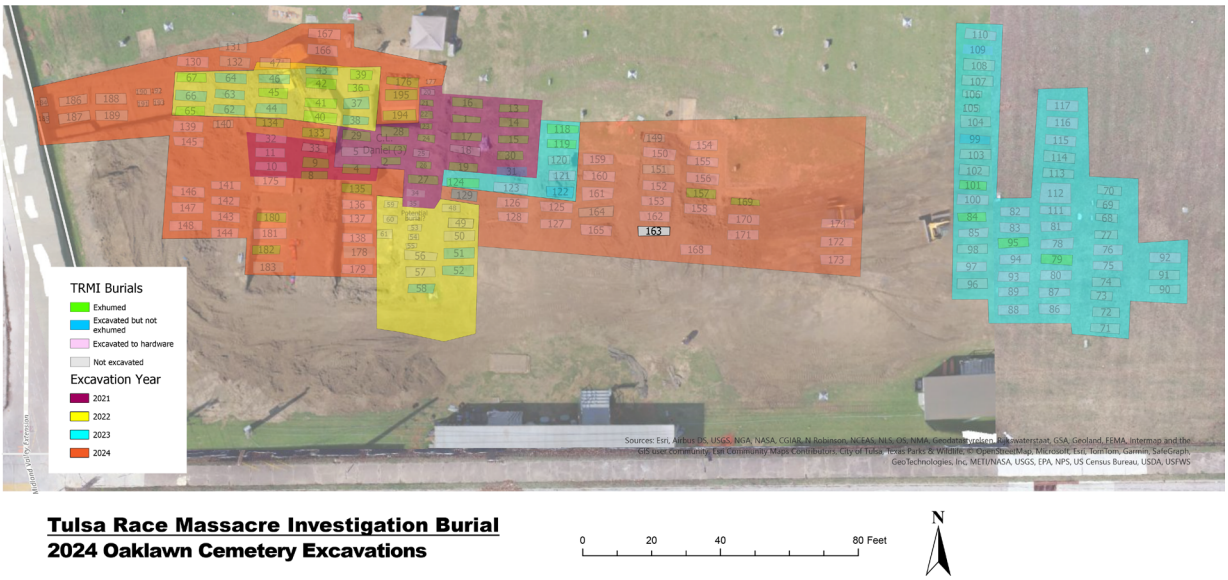


Figure 52 TRMI site map showing location of Burial 163

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	98.9997
NW ending elevation	n/a

Burial 163 is located in the east 2024 excavation expansion (Figure 52). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 280 cm long and 89 cm wide. This feature was not excavated due to its likely association with Buried Monument 31. The inscription on this granite marker indicated this burial was that of Sonnee FRAZIER who was 45 years of age when he passed on 08 June 1925.

Burial 164

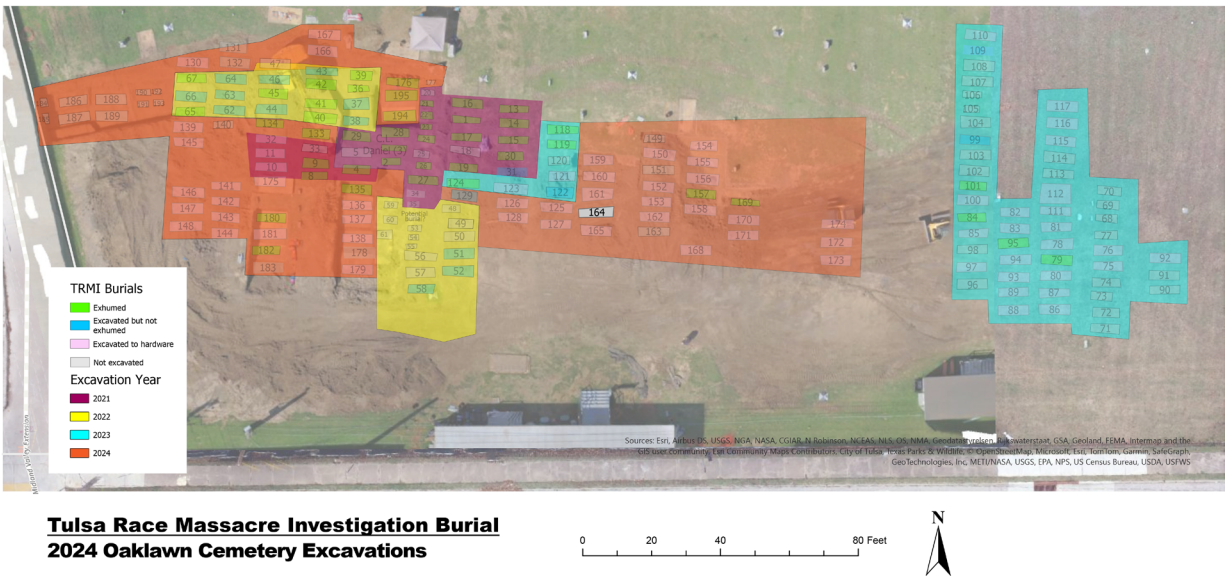


Figure 53 TRMI site map showing location of Burial 164

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	99.0085
NW ending elevation	n/a

Burial 164 is located in the east 2024 excavation expansion (Figure 53). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 297 cm long and 94 cm wide. This feature was not excavated due to its apparent association with the extant marker for Fredonia MAGILL who was 29 years of age when she passed on 03 September 1923.

Burial 165

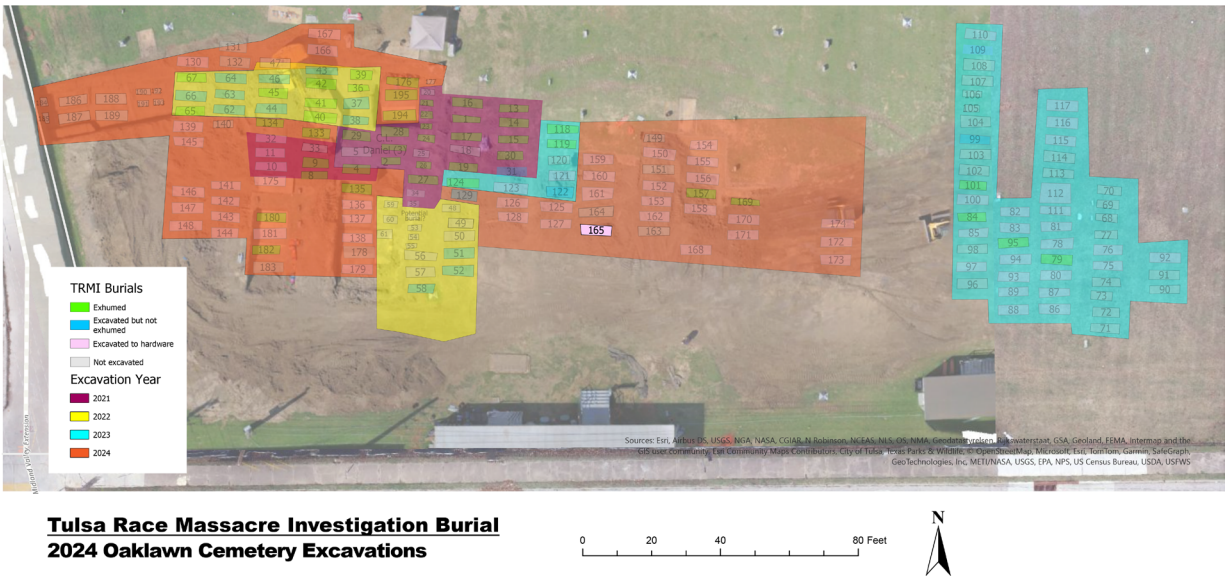


Figure 54 TRMI site map showing location of Burial 165

Final Excavation Status	Excavated to hardware
Started	8/5/2024
Completed	8/6/2024
Excavators	Erin McKendry, Rebecca O'Sullivan
NW starting elevation	99.013
NW ending elevation	n/a

Burial 165 is located in the east 2024 excavation expansion (Figure 54). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 229 cm long and 88 cm wide.

The exposed portions of the burial container displayed fair wood preservation; one sample was taken for further analysis. Evidence indicated an outer crate 216 long and 70 cm wide with an internal rectangular casket; the casket dimensions were indeterminate as excavation was suspended after hardware was uncovered prior to the casket outline being fully uncovered. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 19 single double arm lug extension bars (p. 102). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 166

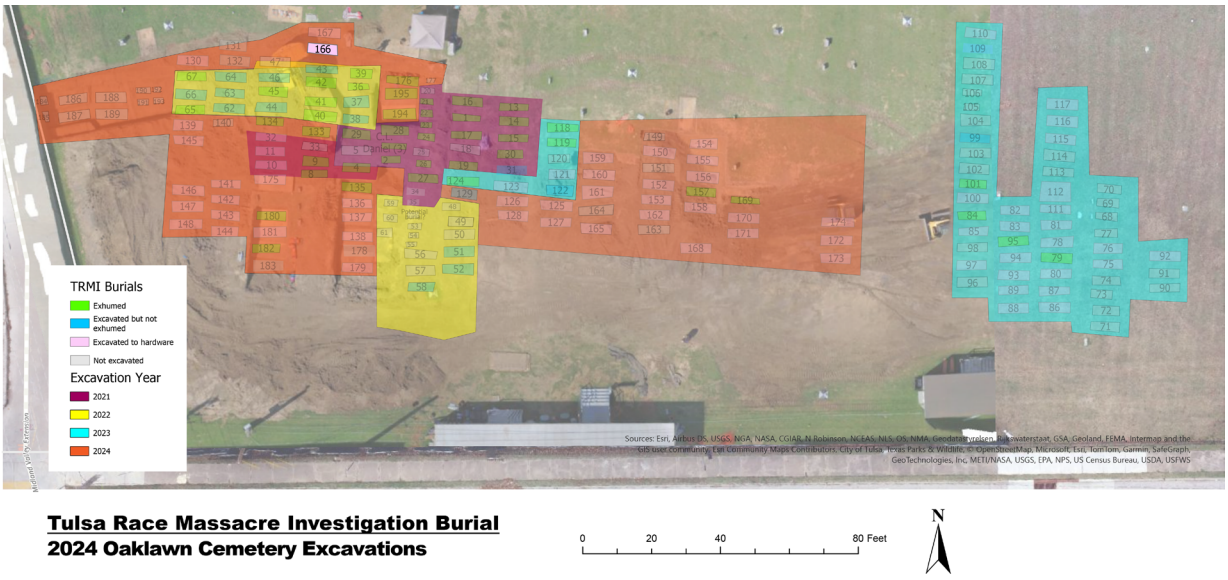


Figure 55 TRMI site map showing location of Burial 166

Final Excavation Status	Excavated to hardware
Started	8/6/2024
Completed	8/6/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	99.0671
NW ending elevation	99.2914

Burial 166 is located in the west 2024 excavation expansion (Figure 55). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 223 cm long and 75 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. The rectangular casket outline measured 210 cm long and 65 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04A ferrous double lug swell short bars (p. 86). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 167

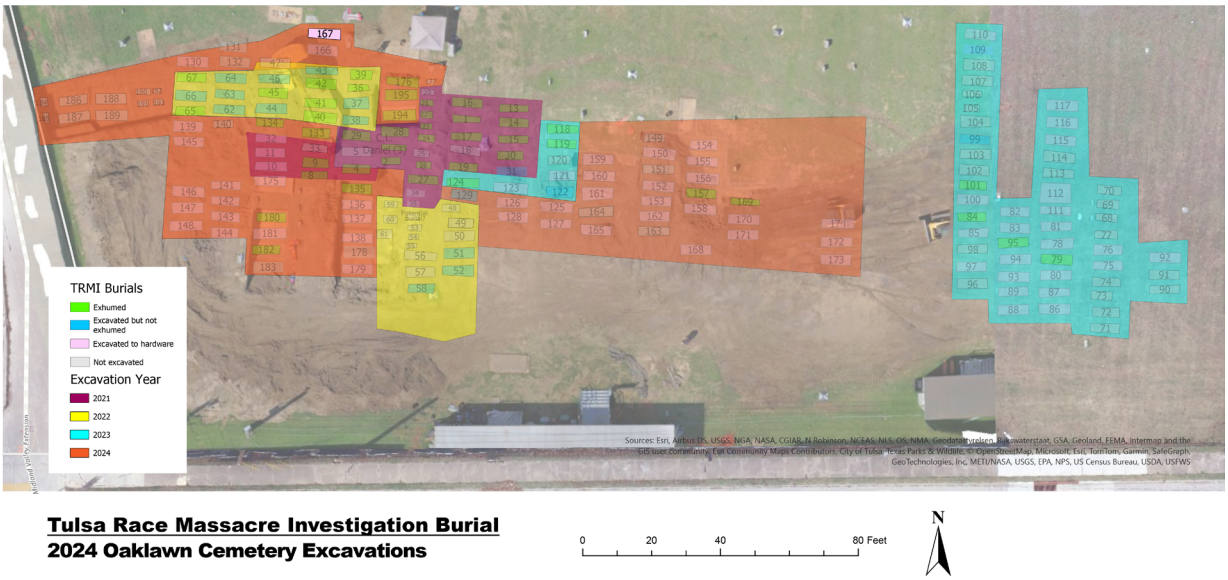


Figure 56 TRMI site map showing location of Burial 167

Final Excavation Status	Excavated to hardware
Started	8/6/2024
Completed	8/6/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	99.0853
NW ending elevation	n/a

Burial 167 is located in the west 2024 excavation expansion (Figure 56). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 232 cm long and 72 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples could be collected for further analysis. The rectangular casket outline measured 217 cm long and 63 cm wide. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04A ferrous double lug swell short bars (p. 86). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 168

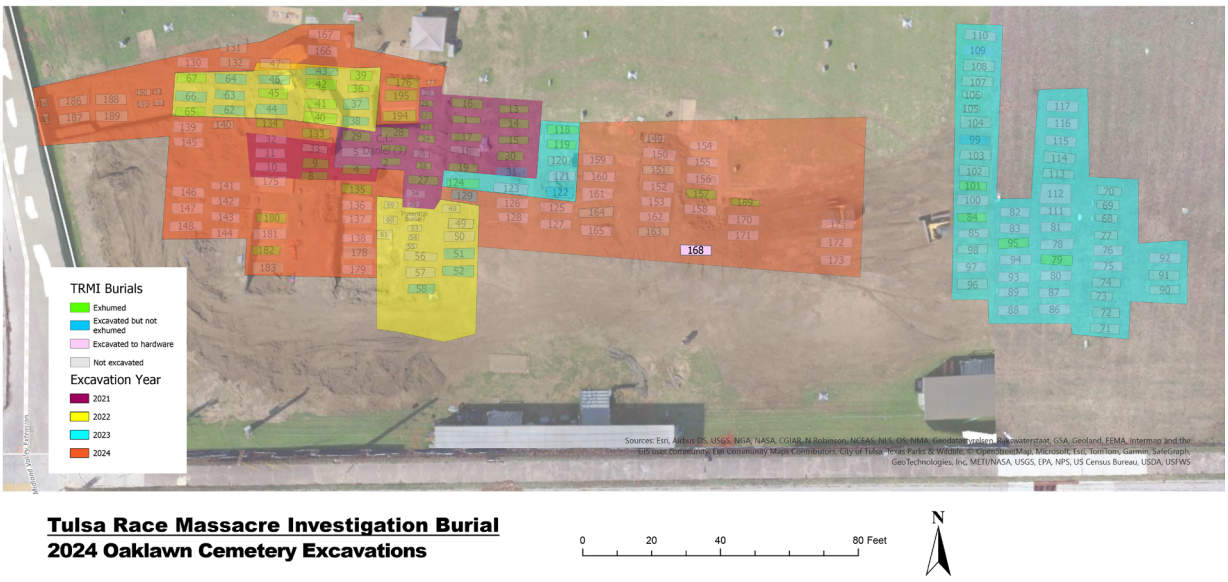


Figure 57 TRMI site map showing location of Burial 168

Final Excavation Status	Excavated to hardware
Started	8/7/2024
Completed	8/7/2024
Excavators	Jeremy Wilson, Gretchen Zoeller
NW starting elevation	99.0646
NW ending elevation	n/a

Burial 168 is located in the west 2024 excavation expansion (Figure 57). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 228 cm long and 82 cm wide.

The exposed portions of the burial container lid displayed excellent wood preservation; no samples were collected for further analysis. The rectangular casket outline measured 217 cm long and 63 cm wide. Decorative hardware included a plaque; not all were fully uncovered, but those exposed were identified as an Oaklawn Plaque Type 04 plain ferrous rectangle (p. 112). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 169

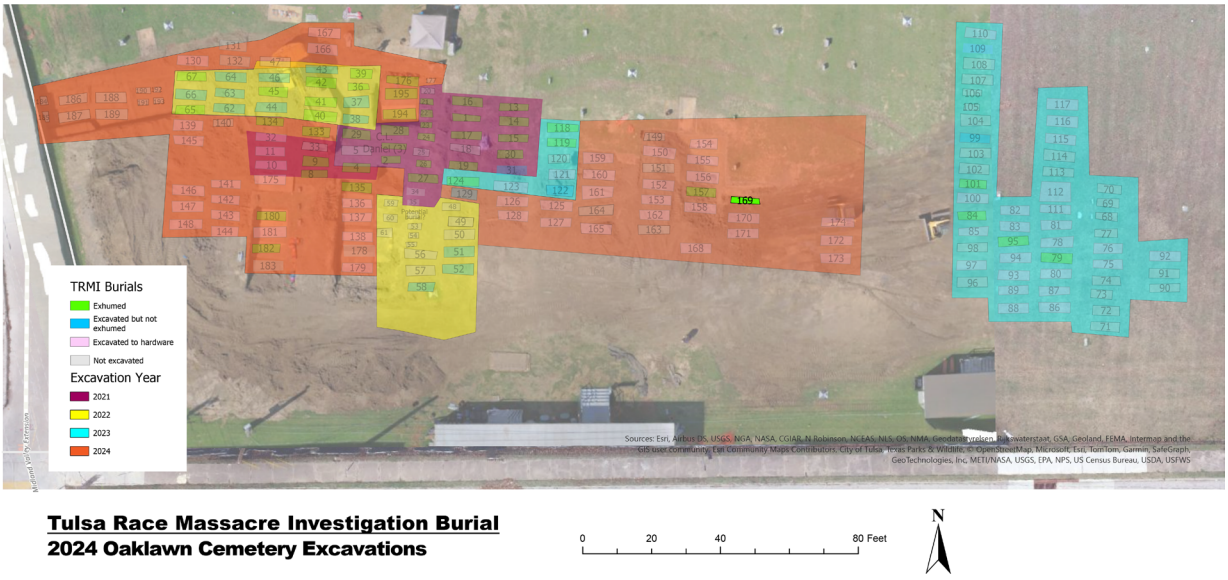


Figure 58 TRMI site map showing location of Burial 169

Final Excavation Status	Exhumed
Started	8/8/2024
Completed	8/14/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	98.9447
NW ending elevation	98.8408

Burial 169 is located in the east 2024 excavation expansion (Figure 58). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 256 cm long; an accurate width measurement could not be taken as the north side of the shaft extended into the south wall of the trench.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. Both arms were placed straight at the side; both legs were straight with the ankles uncrossed. The skull was crushed against the west end of the burial container, though it appears this was due to post-depositional movement of the body—likely floating from ground water—as the disarticulated feet were in situ at the east end of the casket (Figure 60).

Skeletal preservation was overall good despite the taphonomic damage caused by the shifting of the remains; the skull was the most impacted. The axial skeleton was better preserved than most burials at Oaklawn, but was still somewhat degraded.

Wood preservation was excellent with much of the coffin lid remaining (Figure 59); three samples taken for further analysis, one from the lid, one from the burial container body, and one from the casket bottom. The rectangular casket measured 190 cm long and 53 cm wide. A moderate number of wire nails were collected; no other hardware was recovered. No clothing or personal items were found.

Due to the sparse nature of the material culture directly associated with Burial 169, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. This individual was interred in an unadorned rectangular casket consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 40.

Burial 169 (continued)

SENSITIVE CONTENT

Figure 59 Burial 169 with coffin lid exposed

SENSITIVE CONTENT

Figure 60 Burial 169 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 170

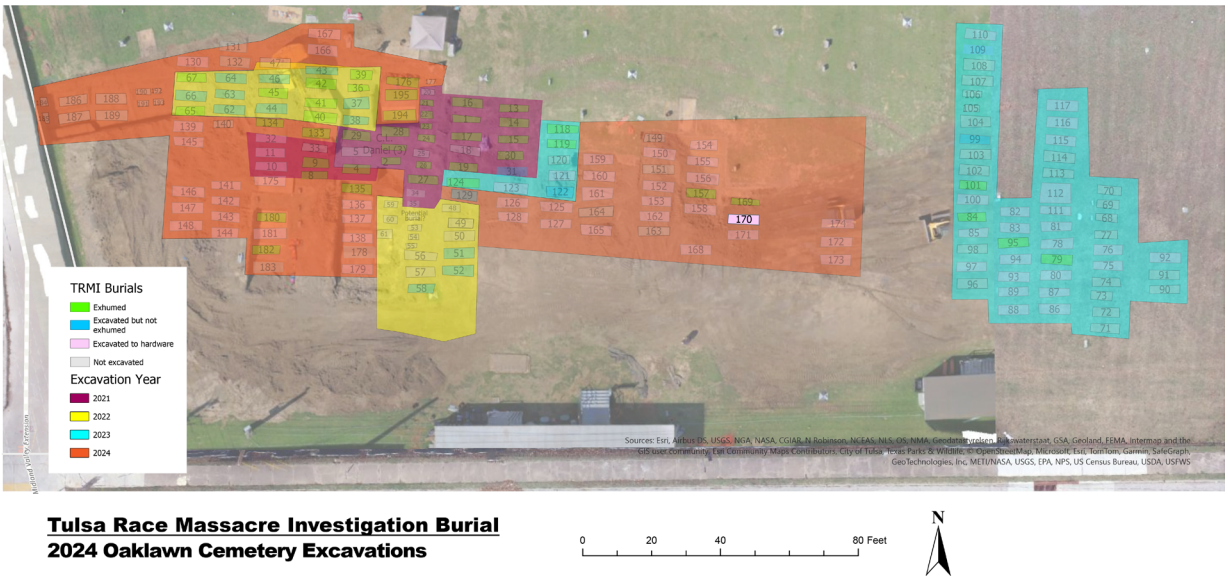


Figure 61 TRMI site map showing location of Burial 170

Final Excavation Status	Excavated to hardware
Started	8/14/2024
Completed	8/14/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	98.8274
NW ending elevation	n/a

Burial 170 is located in the east 2024 excavation expansion (Figure 61). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 278 cm long and 88 cm wide.

The exposed portions of the burial container displayed fair wood preservation; no samples were collected for further analysis. Evidence indicated an outer crate 219 cm long and 65 cm wide with an internal rectangular casket; measuring the casket outline was not possible after much of the feature was inundated with water after a severe storm. In addition to wire nails, non-decorative utilitarian hardware included ferrous internal casket lid closures, suggesting a commercially manufactured burial case. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 14 white metal single double arm lug (p. 97). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 171

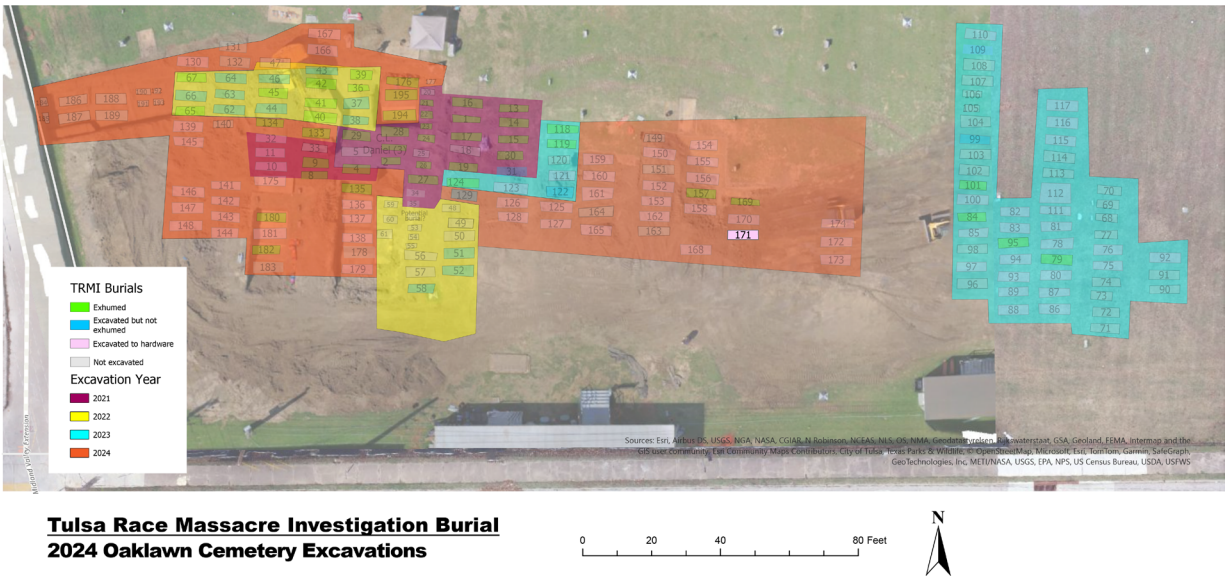


Figure 62 TRMI site map showing location of Burial 171

Final Excavation Status	Excavated to hardware
Started	8/7/2024
Completed	8/7/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	99.0900
NW ending elevation	n/a

Burial 171 is located in the east 2024 excavation expansion (Figure 62). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 274 cm long and 84 cm wide.

The exposed portions of the burial container displayed good wood preservation; two samples were taken for further analysis. Evidence indicated an outer crate 214 cm long and 72 cm wide with an internal rectangular casket; measuring the casket outline was not possible after much of the feature was inundated with water after a severe storm. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 04 ferrous double lug short bars (p. 85). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 172

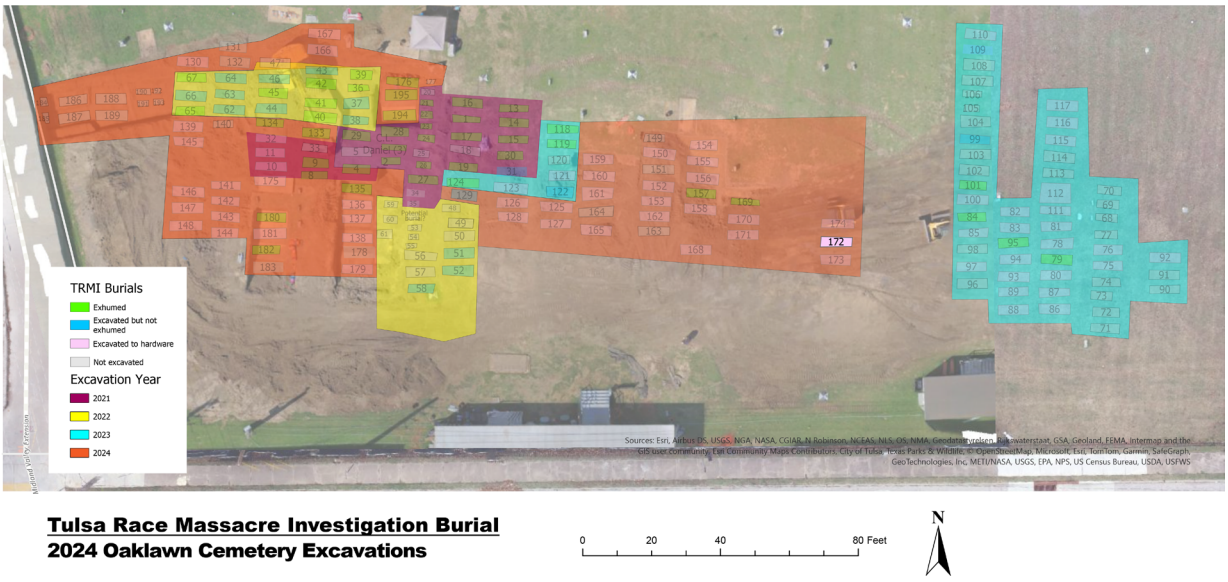


Figure 63 TRMI site map showing location of Burial 172

Final Excavation Status	Excavated to hardware
Started	8/13/2024
Completed	8/13/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	99.4366
NW ending elevation	n/a

Burial 172 is located in the east 2024 excavation expansion (Figure 63). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 275 cm long and 89 cm wide.

The exposed portions of the burial container displayed fair wood preservation; no samples were collected for further analysis. The rectangular casket outline measured 215 cm long and 62 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 19 ferrous single double arm lug extension bars (p. 102). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 173

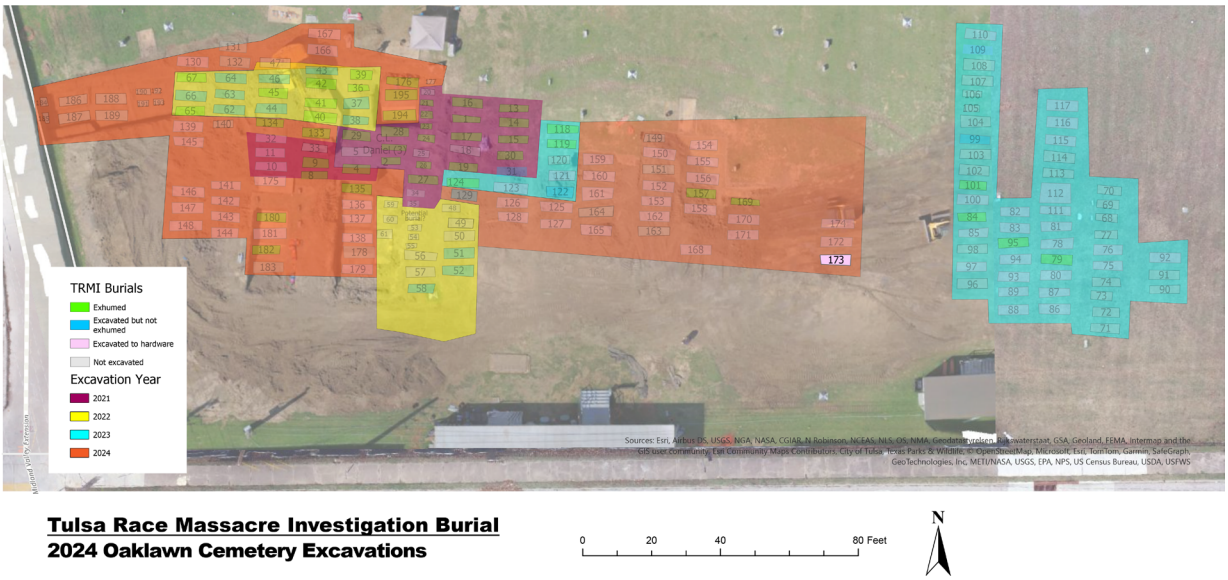


Figure 64 TRMI site map showing location of Burial 173

Final Excavation Status	Excavated to hardware
Started	8/7/2024
Completed	8/7/2024
Excavators	Jeremy Wilson, Gretchen Zoeller
NW starting elevation	99.4674
NW ending elevation	n/a

Burial 173 is located in the east 2024 excavation expansion (Figure 64). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 227 cm long and 83 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples were collected for further analysis. The rectangular casket outline measured 215 cm long and 72 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 19 ferrous single double arm lug extension bars (p. 102). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 174

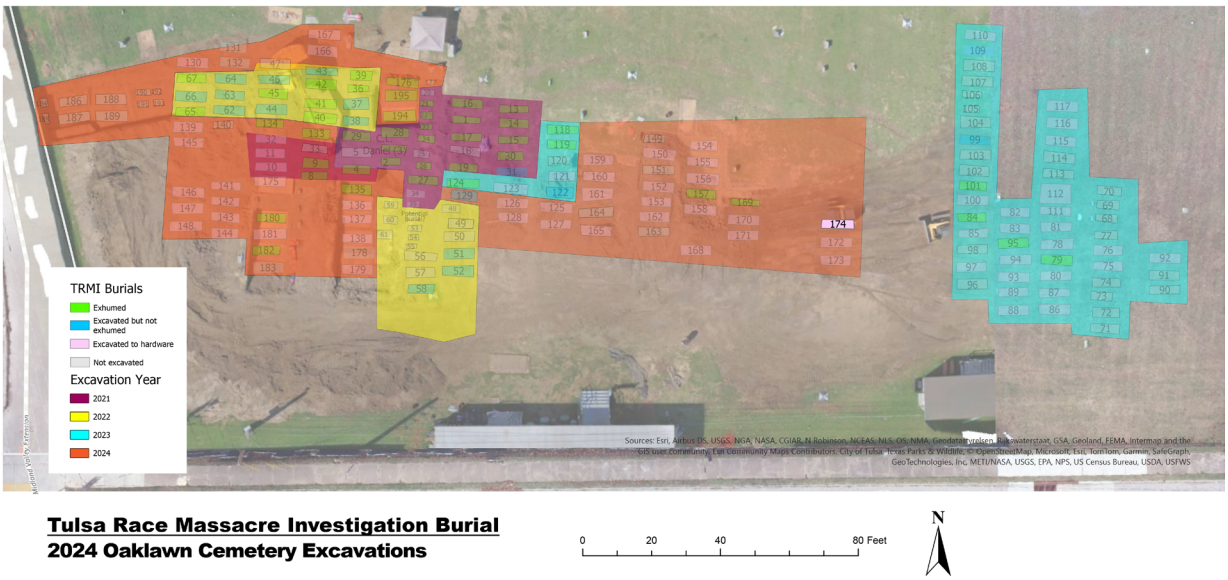


Figure 65 TRMI site map showing location of Burial 174

Final Excavation Status	Excavated to hardware
Started	8/7/2024
Completed	8/8/2024
Excavators	Kelsey Kreiser, Allie Powell
NW starting elevation	99.4108
NW ending elevation	n/a

Burial 174 is located in the east 2024 excavation expansion (Figure 65). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 236 cm long and 68cm wide.

The exposed portions of the burial container displayed poor wood preservation; one sample was taken for further analysis. The rectangular casket outline measured 224 cm long and 57 cm wide. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 09 ferrous double lug swingbails (p. 92). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 175

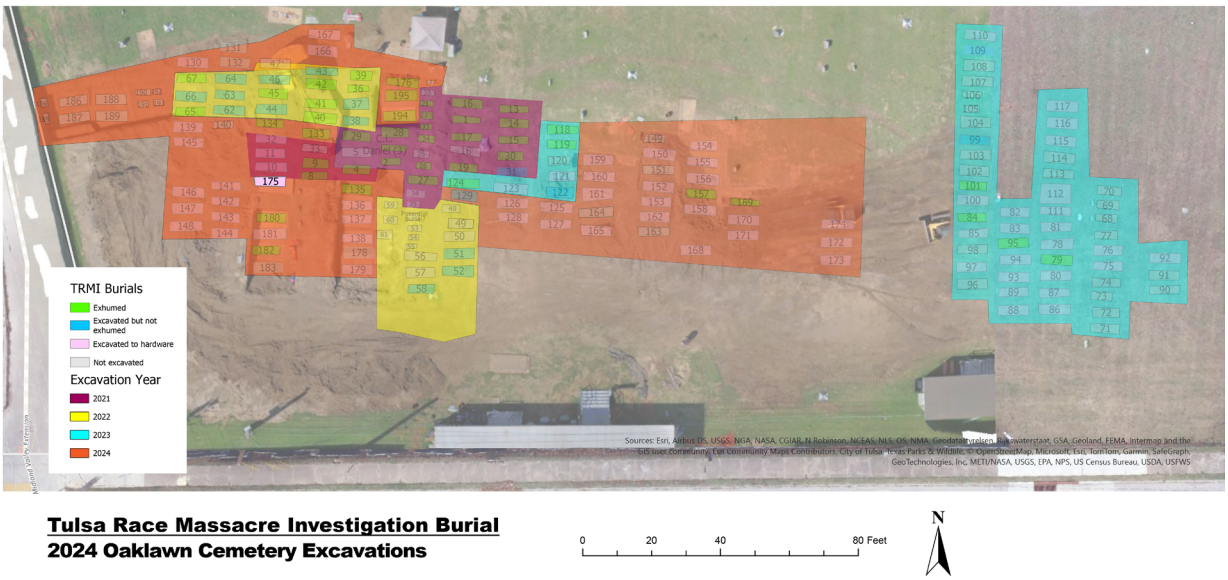


Figure 66 TRMI site map showing location of Burial 175

Final Excavation Status	Excavated to hardware
Started	8/8/2024
Completed	8/13/2024
Excavators	Erin McKendry, Jeremy Wilson
NW starting elevation	98.5953
NW ending elevation	n/a

Burial 175 is located in the west 2024 excavation expansion (Figure 66). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 230 cm long and 75 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples were collected for further analysis. The rectangular casket outline measured 215 cm long and 62 cm wide. Decorative hardware included a plaque; not all were fully uncovered, but those exposed were identified as Oaklawn Plaque Type 03 ferrous scroll edged rectangle (p. 111). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 176

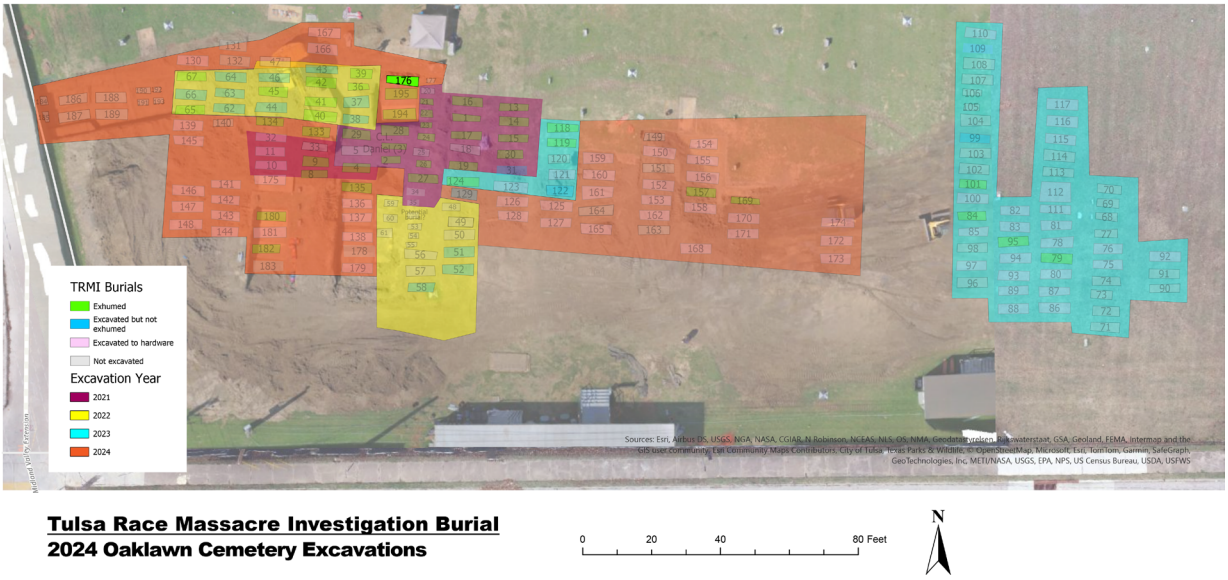


Figure 67 TRMI site map showing location of Burial 176

Final Excavation Status	Exhumed
Started	8/6/2024
Completed	8/13/2024
Excavators	Rebecca O'Sullivan, Gretchen Zoeller
NW starting elevation	99.0637
NW ending elevation	99.0568

Burial 176 is located in the west 2024 excavation expansion (Figure 67). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 237 cm long and 75 cm wide.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. The left arm was bent with the hand resting on the abdomen, while the right hand was on the pelvis. The left leg was slightly bent, but the right was straight. The skull was in a natural anatomical position (Figure 68).

Skeletal preservation was fair, though, the skull was heavily damaged. Long bone shafts were relatively intact, but the epiphyses and axial skeleton were less well preserved.

Wood preservation was fair with one sample taken for further analysis. Unlike most excavated Oaklawn burials, this decent was interred in a six-sided coffin measuring 202 cm long, 60 cm wide at the west end, and 30 cm wide at the east end. It was unclear if this was simple tapered or kerfed coffin. Numerous wire nails were collected; no other hardware was recovered. No clothing or personal items were found.

Due to the sparse nature of the material culture directly associated with Burial 176, it was difficult to assign a precise date of interment. The presence of a six-sided coffin was unusual, but because this burial container form was used throughout the 20th century, what was observed is consistent with an early to mid-1920s interment. This individual was interred in an unadorned burial container consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 43.

Burial 176 (continued)

SENSITIVE CONTENT

Figure 68 Burial 176 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 177

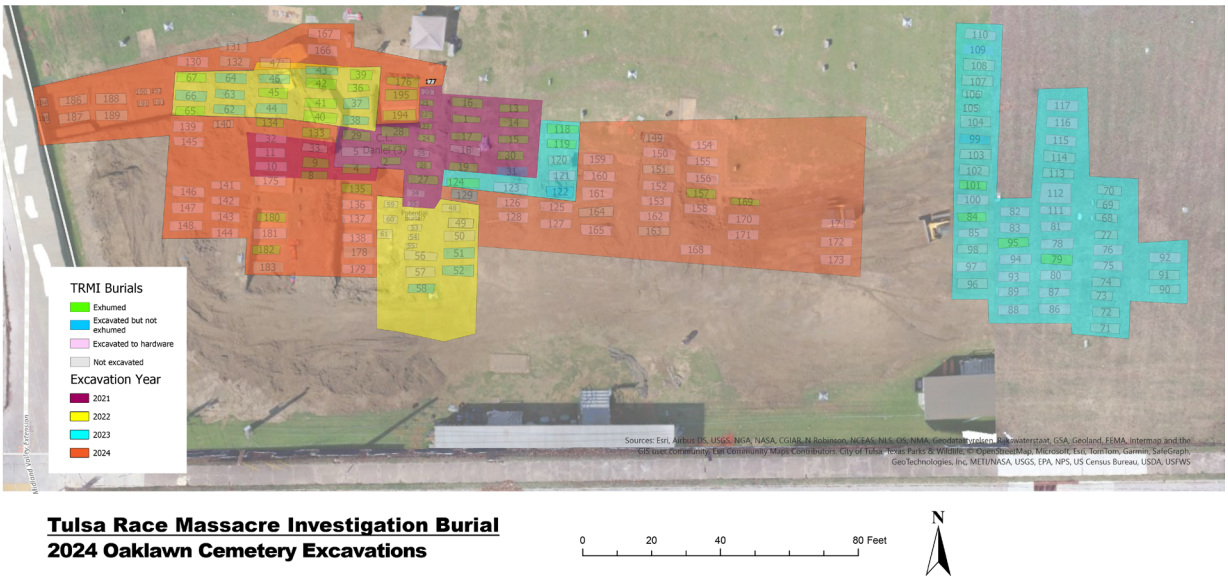


Figure 69 TRMI site map showing location of Burial 177

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	99.0657
NW ending elevation	n/a

Burial 177 is located in the west 2024 excavation expansion (Figure 69). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 65 cm long and 39 cm wide. Because the smaller shaft size likely indicated the interment of a subadult individual, project directors determined excavation was not warranted.

Burial 178

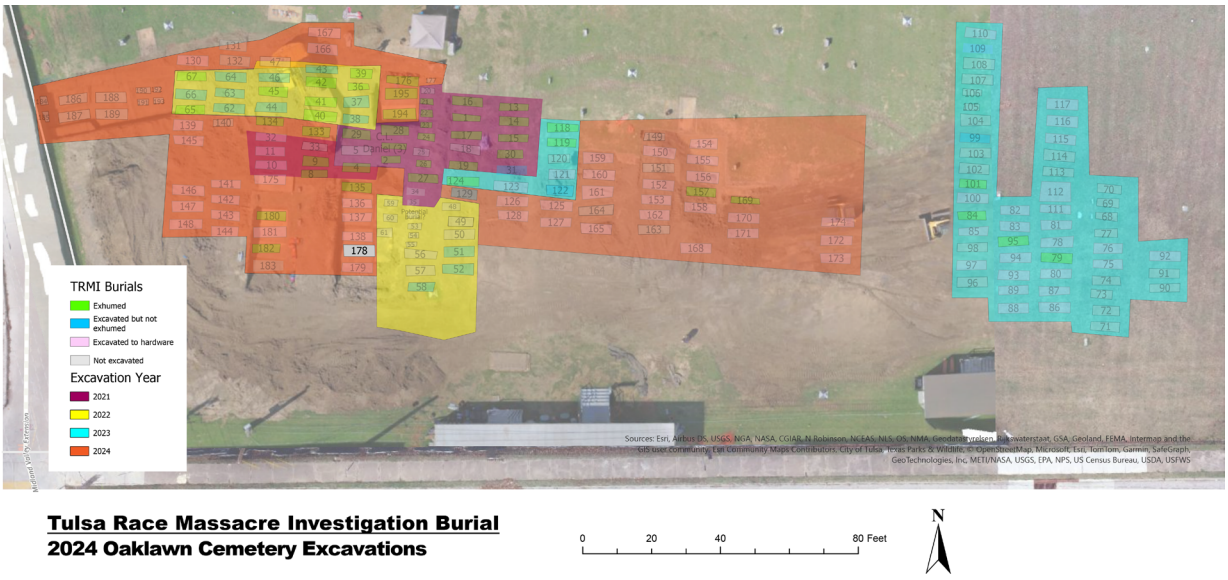


Figure 70 TRMI site map showing location of Burial 178

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	99.9086
NW ending elevation	n/a

Burial 178 is located in the west 2024 excavation expansion (Figure 70). This burial shaft was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 274 cm long and 101 cm wide. A temporary marker was recovered in situ at the west in of the shaft. Because of this and the fact that the burials to the immediate north and south of this feature contained decorative coffin hardware, project directors decided no further investigation was needed.

Burial 179

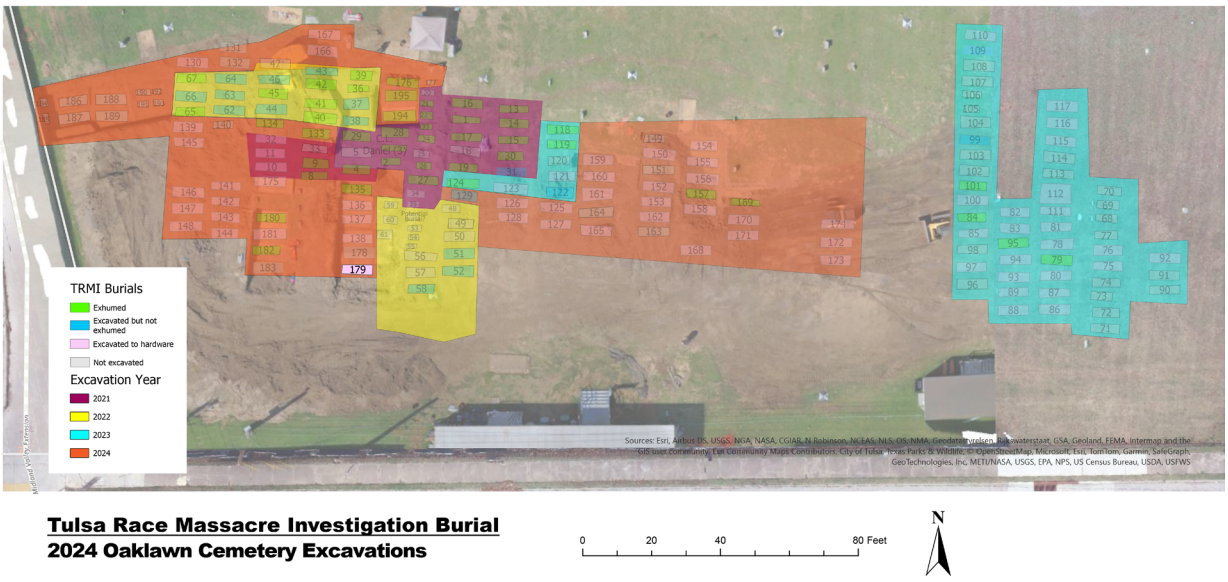


Figure 71 TRMI site map showing location of Burial 179

Final Excavation Status	Excavated to hardware
Started	8/9/2024
Completed	8/9/2024
Excavators	Ryan Peterson, Kary Stackelbeck
NW starting elevation	98.8127
NW ending elevation	n/a

Burial 179 is located in the west 2024 excavation expansion (Figure 71). This feature was partially exposed during initial mechanical stripping of the excavation area where the backhoe uncovered decorative hardware. The individual shaft measured 272 cm long and 89 cm wide.

Because of the early exposure of the hardware, project directors decided no further investigation was needed. As a result, the shape and size of the burial container as well as the decedent's body position and the preservation of the remains was indeterminate.

Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 23 white metal double lug short bars (p. 106). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment. Excavation of this burial was terminated upon discovery of decorative casket hardware.

Burial 180

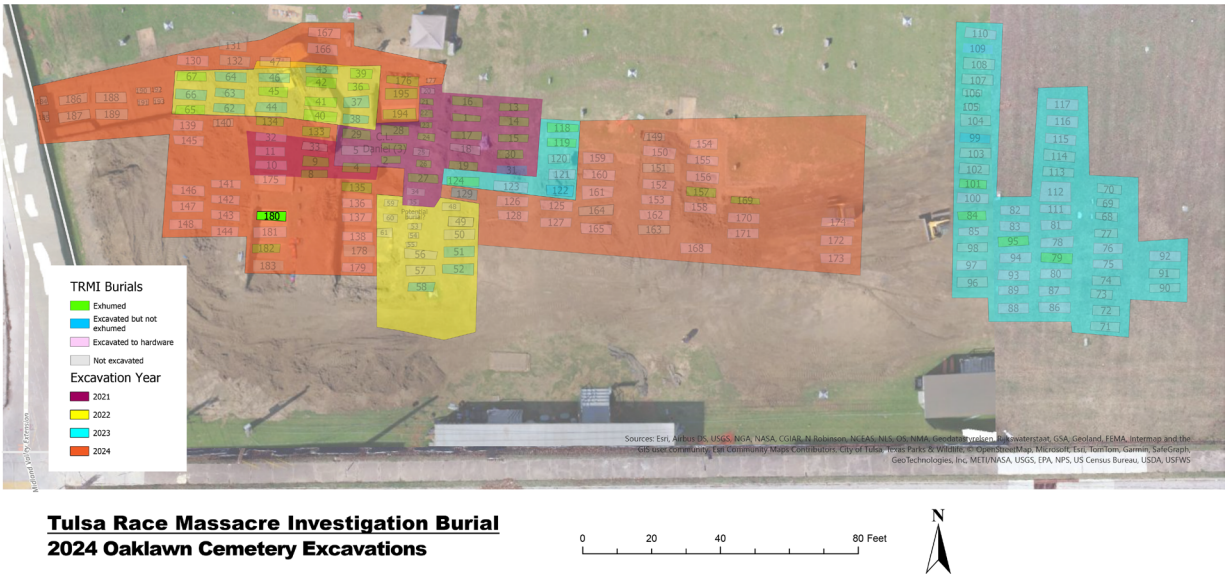


Figure 72 TRMI site map showing location of Burial 180

Final Excavation Status	Exhumed
Started	8/14//2024
Completed	8/16/2024
Excavators	Michael Loughlin, Kathleen Settle
NW starting elevation	99.4108
NW ending elevation	indeterminate due to soil slumpage from rain storm

Burial 180 is located in the west 2024 excavation expansion (Figure 72). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 256 cm long and 87 cm wide.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. The left arm was bent with the hand resting on the pelvis, while the right arm was bent so the right hand was resting on the left forearm. Both legs were straight with the ankles uncrossed. The skull was in anatomical position, though it rolled backwards during decomposition. It appeared the decedent may have been slightly too large for the burial container as the body was situated at an angle with the feet tucked tight against the end (Figure 73).

Skeletal preservation was excellent, though the axial skeleton was somewhat degraded. The skull was the most impacted with some damage to the left orbit documented.

Wood preservation poor with only one sample taken for further analysis. The measurements for the rectangular casket were not gathered as the feature was destroyed by a rain storm the day after exhumation. A moderate number of wire nails were collected; no other hardware was recovered. No clothing or personal items were found.

Due to the sparse nature of the material culture directly associated with Burial 180, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. This individual was interred in an unadorned rectangular casket consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 45.

Burial 180 (continued)

SENSITIVE CONTENT

Figure 73 Burial 180 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 181

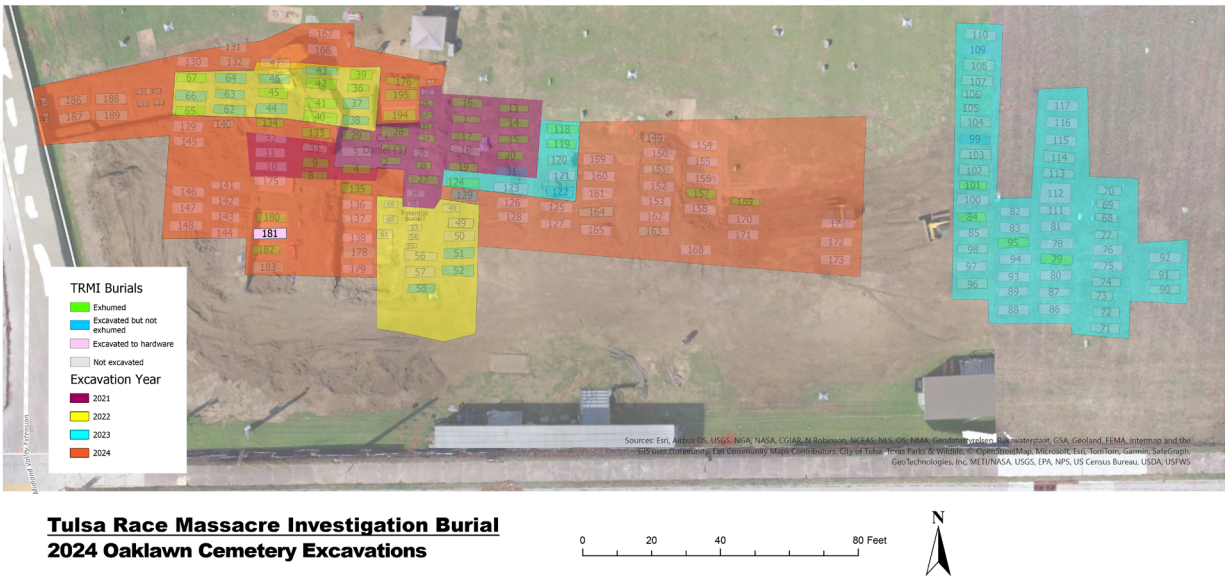


Figure 74 TRMI site map showing location of Burial 181

Final Excavation Status	Excavated to hardware
Started	8/15/2024
Completed	8/15/2024
Excavators	Tyler Donaldson, Izzy Ortt
NW starting elevation	98.5861
NW ending elevation	n/a

Burial 181 is located in the west 2024 excavation expansion (Figure 74). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 215 cm long and 69 cm wide.

The exposed portions of the burial container displayed poor wood preservation; no samples were obtained for identification. Evidence indicated an outer crate that measured approximately 213 cm long and 65 cm wide with an internal rectangular container. The dimensions of the casket were indeterminate as the excavation was suspended when hardware was uncovered prior to fully defining the outline. Decorative hardware included handles; not all were fully uncovered, but those exposed were identified as Oaklawn Handle Type 09 ferrous double lug swingbails (p. 92). No other decorative hardware was uncovered.

The lack of a robust TPQ for the coffin hardware made it difficult to assign a precise date of interment, however, what was observed is consistent with an early to mid-1920s interment.

Burial 182

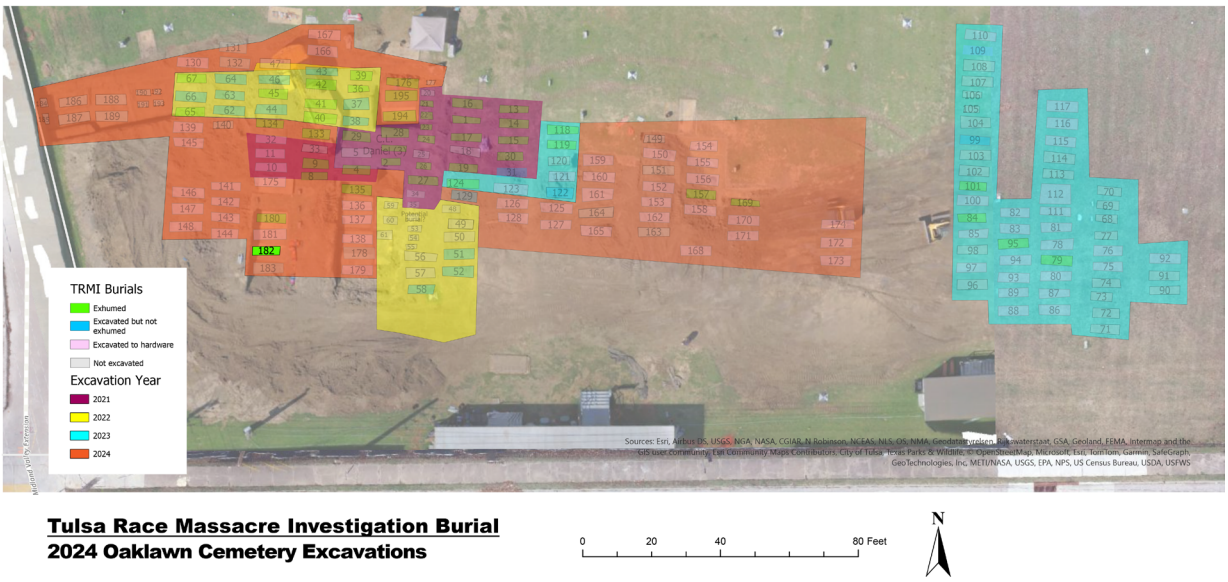


Figure 75 TRMI site map showing location of Burial 182

Final Excavation Status	Exhumed
Started	8/13/2024
Completed	8/14/2024
Excavators	Tyler Donaldson, Izzy Ortt
NW starting elevation	98.6282
NW ending elevation	indeterminate due to soil slumpage from rain storm

Burial 182 is located in the west 2024 excavation expansion (Figure 75). This feature was exposed during initial mechanical stripping of the excavation area.

This individual was placed with the head oriented to the west. The body was found to be in an extended supine position. Both arms were placed straight at the sides, and both legs were straight with the ankles uncrossed. The skull had drifted from a natural anatomical position, but the articulation of the cervical vertebrae indicated the neck had been bent and the head turned to the south. It appeared this placement was necessary as the decedent was too tall for the burial container (Figure 76).

Skeletal preservation was good, though, the axial skeleton was somewhat degraded. Excavators also noted the epiphyseal ends fragmented more during exhumation. Other than being displaced, the skull was intact.

Wood preservation was poor with only one sample taken for further analysis. The rectangular casket measured 181 cm long and 48 cm wide. A moderate number of wire nails were collected; no other hardware was recovered. Three white ceramic buttons were found under the thorax during the exhumation process and were sent with the remains to the lab. The presence of the buttons indicates the decedent was dressed when interred.

Due to the sparse nature of the material culture directly associated with Burial 182, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. This individual was interred in an unadorned rectangular casket too small for his frame,consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 44.

Burial 182 (continued)

SENSITIVE CONTENT

Figure 76 Burial 182 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 183

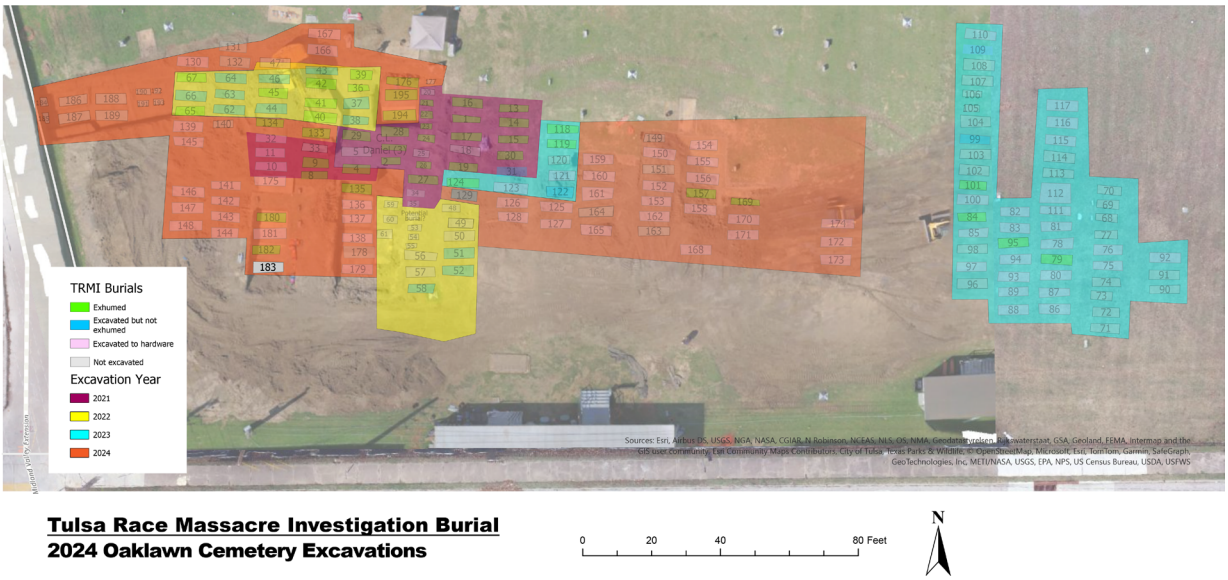


Figure 77 TRMI site map showing location of Burial 183

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	99.8922
NW ending elevation	n/a

Burial 183 is located in the west 2024 excavation expansion (Figure 77). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 272 cm long and 83 cm wide. A temporary marker was recovered in situ at the west in of the shaft; project directors decided no further investigation was needed.

Burials 184 —193

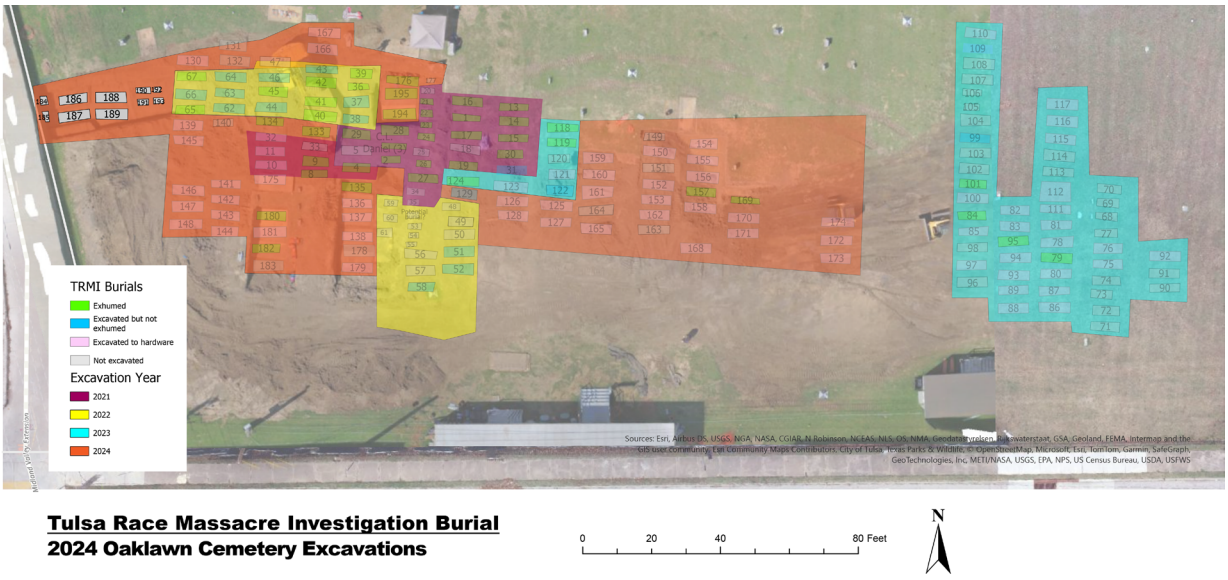


Figure 78 TRMI site map showing location of burial shafts in western exploratory trench including shaft outlines for Burials 184 —193

Final Excavation Status	Not excavated
Started	n/a
Completed	n/a
Excavators	n/a
NW starting elevation	98.9477 (average)
NW ending elevation	n/a

Burials 184 through 193 are located in the western most portion of the west 2024 excavation expansion. This portion of the trench was expanded to the western fence line in order to document the boundaries of Oaklawn Cemetery's potter's field. The subadult coffin outlines for Burials 190, 191, 192, and 193 were all included in one large burial shaft. Burials 186, 187, 188, and 189 were adult interments in individual shafts. Burials 184 and 185 were truncated by the fence line and pedestrian path which runs along this side of the cemetery. This stripping provided evidence that the modern cemetery boundaries are further east than the original property (Figure 78).

Burial 194

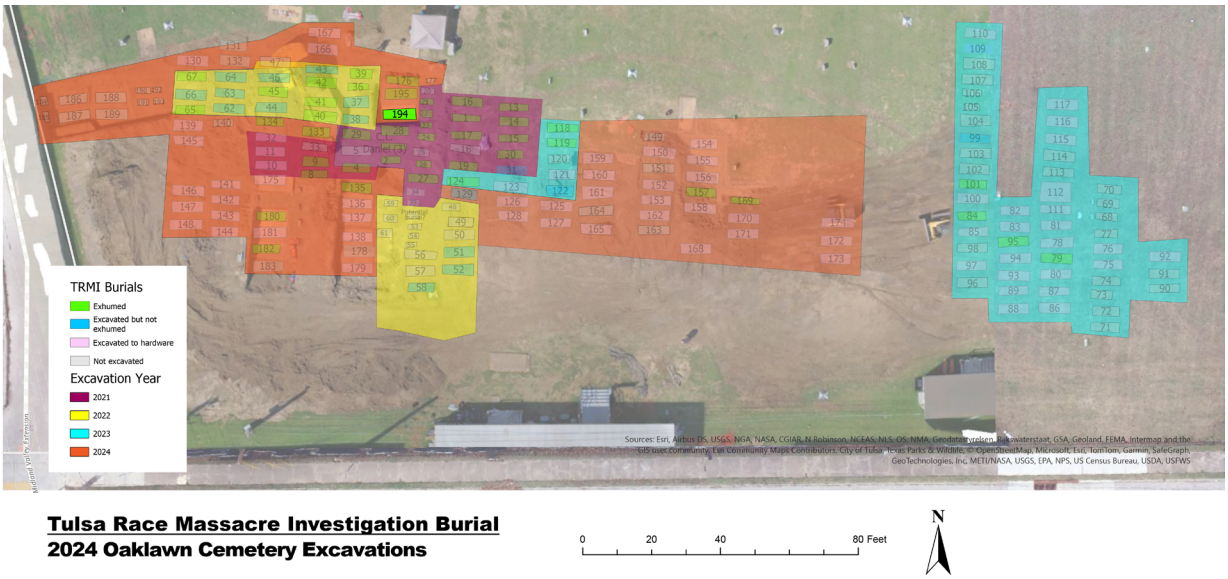


Figure 79 TRMI site map showing location of Burial 194

Final Excavation Status	Exhumed
Started	8/14/2024
Completed	8/16/2024
Excavators	Rebecca O'Sullivan, Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.7792
NW ending elevation	97.7402

Burial 194 is located in the west 2024 excavation expansion (Figure 79). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 238 cm long and 80 cm wide.

This individual was placed with the head oriented to the west. The original body placement was difficult to determine as the remains appear to have shifted to the east side of the burial container. The excavators noted that the elements were somewhat jumbled, though the arms and segments of the thorax were articulated, but out of anatomical position. The arms appeared to have been flexed to a degree in which the hands were up near the sternum, and the legs were also bent towards the chest. Based on this limb placement, it appears the decedent was interred in the large container in a semi-flexed position. The skull was facing both down and to the south, though it was unclear if this was its originally placement or a result of the post-depositional movement of the remains (Figure 81).

Skeletal preservation was good, though, the axial skeleton was somewhat degraded in addition to the displacement mentioned above. Excavators noted a fair amount of cortical flaking due to the moist silt layer adhering to the remains; it should be noted that this soil texture was different from the surrounding burials which were predominately clay loam. The skull was intact with the exception of a fragmented temporal bone.

Wood preservation was excellent with almost the entire container lid still present; two wood samples were taken for further analysis, one from the lid and one from the container body (Figure 80). The rectangular container measured 210 cm long and 58 cm wide, much larger than most excavated Oaklawn caskets. The excavators noted they believed this was more likely a shipping crate or some other re-purposed container. Wire nails were the only hardware collected. A gold ring was found on the left hand—presumably a wedding ring. The signet-style band had a maker's mark for Ostby and Barton jewelers on the inside surface and included a 10K gold designation (Figure 82 and Figure 83). A projectile was also discovered lodged in the left pelvis (Figure 84).

Burial 194 (continued)

Due to the sparse nature of the material culture directly associated with Burial 194, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. The makers of the wedding ring were active throughout the 20th century. In addition to the projectile observed in the remains, this individual was interred in an unadorned unusually large burial container that was likely necessary given the unusual body position. All these factors are consistent with the expected burial treatment for massacre victims. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 46.

SENSITIVE CONTENT

Figure 80 Burial 194 photogrammetry model illustrating coffin lid exposed

SENSITIVE CONTENT

Figure 81 Burial 194 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

Burial 194 (continued)

SENSITIVE CONTENT



Figure 82 Burial 194 photogrammetry model detail illustrating the wedding ring on still on left hand

Figure 83 Wedding ring recovered from the left hand of Burial 194 decedent

SENSITIVE CONTENT

Figure 84 Burial 194 photogrammetry model detail illustrating the location of the projectile in the pelvis

Burial 195

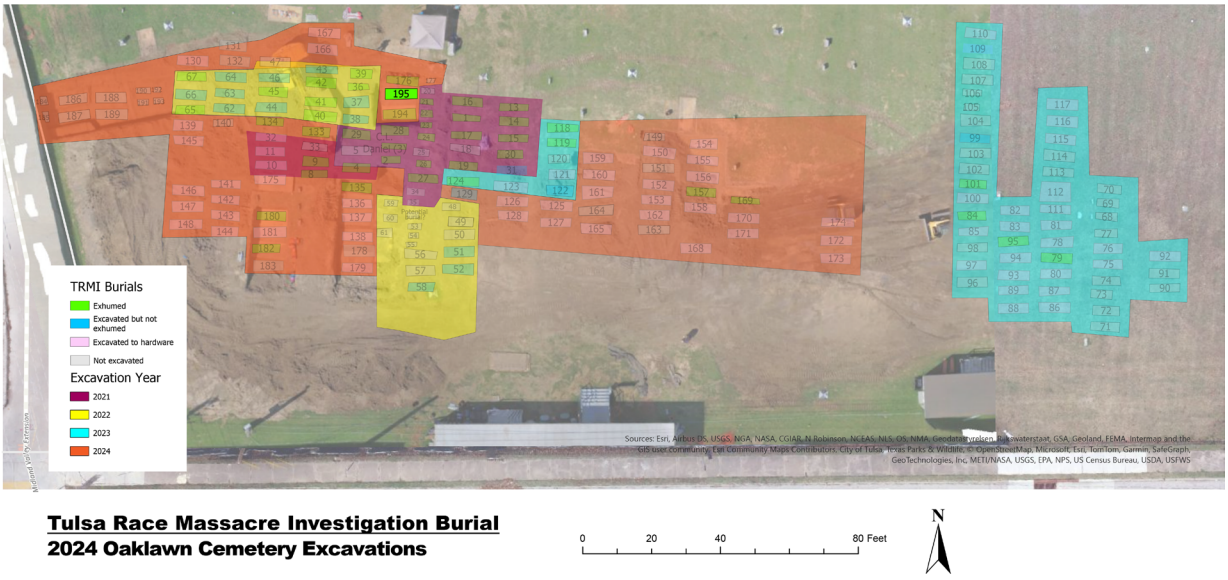


Figure 85 TRMI site map showing location of Burial 195

Final Excavation Status	Exhumed
Started	8/14/2024
Completed	8/16/2024
Excavators	Rebecca O'Sullivan, Jeremy Wilson, Gretchen Zoeller
NW starting elevation	98.9052
NW ending elevation	98.8481

Burial 195 is located in the west 2024 excavation expansion (Figure 85). This feature was exposed during initial mechanical stripping of the excavation area. The individual shaft measured 217 cm long and 74 cm wide. Precise measurements of the container were not possible due to poor preservation, but it was clear to the excavators that the shaft was much larger than the container.

This individual was placed with the head oriented to the west. The body placement appeared to be extended supine, but displacement and the irregular placement of limbs made it difficult to determine. Excavators noted the pelvis, left femur and most of the axial skeleton were articulated and in anatomical position, but the left lower limb was located to the side and at an angle to the left femur. Additionally, the right tibia was located slightly west of and under the right pelvis. The arms appear to have shifted against the south wall and under the thorax on the left. No hand or foot elements were recovered. (Figure 86).

Skeletal preservation was fair. Many elements, including the cranium, thorax, and lower appendages, showed evidence of significant burning. This appears to have affected both bone color and preservation. The skull, in particular, was fragmented and poorly preserved.

Wood preservation poor and no samples could be collected for further analysis. The rectangular container measured 163 cm long and 59 cm wide. Wire nails were the only hardware collected. Clothing items included small buttons above the left pelvis that were removed with the remains to the lab. Burnt textile fragments were also distributed throughout the east half of the burial. A projectile was also discovered above the left pelvis (Figure 87).

Due to the sparse nature of the material culture directly associated with Burial 195, it was difficult to assign a precise date of interment; however, what was observed is consistent with an early to mid-1920s interment. This individual, who exhibited signs of interpersonal violence, was interred in a small, unadorned rectangular casket container of thin wood. The remains were exhumed and taken to the forensic laboratory for examination and were designated Oaklawn Unknown # 47.

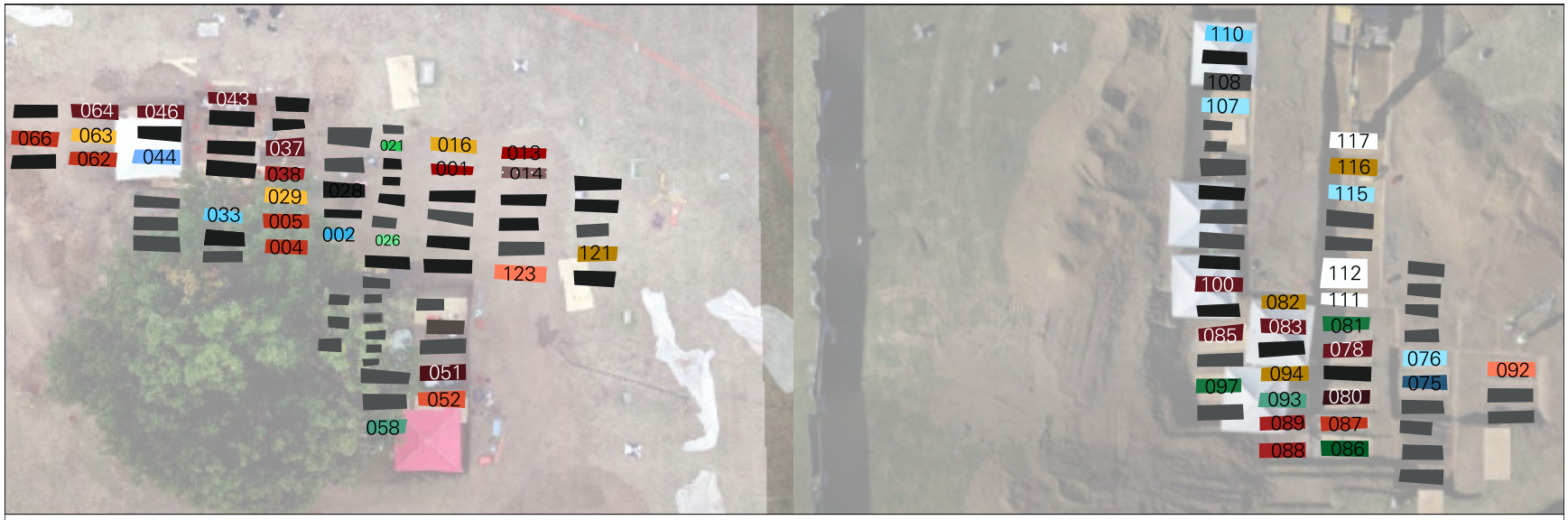
Burial 195 (continued)

SENSITIVE CONTENT

Figure 86 Burial 195 photogrammetry model illustrating condition of burial with skeletal remains fully exposed

SENSITIVE CONTENT

Figure 87 Burial 195 photogrammetry model detail illustrating the location of the projectile above the pelvis



Tulsa Race Massacre Investigations | Oaklawn Cemetery Handle Typology

Final Excavation Status

- No decorative coffin hardware
- Not excavated
- Excavation suspended, coffin hardware likely present

0 20 Feet

0 5 10 Meters

N

Ferrous Single Double Arm Lug Extension Bar Types

- Handle Type 01
- Handle Type 03
- Handle Type 12
- Handle Type 19

Ferrous Double Lug Short Bar Types

- Handle Type 07
- Handle Type 04A
- Handle Type 04B

Ferrous Double Lug Hollow Swingbail Types

- Handle Type 09
- Handle Type 10
- Handle Type 11
- Handle Type 16

White Metal Single Double Arm Lug Extension Bar Types

- Handle Type 13
- Handle Type 17
- Handle Type 18

White Metal Double Lug Short Bar Types

- Handle Type 02
- Handle Type 08
- Handle Type 15
- Handle Type 14

White Metal Faux Handle Types

- Handle Type 05
- Handle Type 06

Plaque present without handles

- Ferrous type

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 01
Lug Material	ferrous
Lug Form/Style	single double arm lug; scalloped profile
Bail Material	ferrous/wood
Bail Form	square reeded extension bar
End Cap Material	white metal
End Cap Form	rectangular

Burials

Burial	No.
001	2
013	2
137	2?
155	2?
156	ind

Maker/Patent Information

Maker/Patent	TPQ Year	Source
S & Co 2151 / PAT 6.25.1_"	1912	US Utility Patent number 1,030,434



Excavated example | Burial 001



Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 02
Lug Material	white metal
Lug Form/Style	double lug / shell detail
Bail Material	ferrous
Bail Form	short bar
End Cap Material	white metal
End Cap Form	cylindrical

Burials

Burial	No.
002	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
Parsons / 280	c.1900	Weston Solutions 2009





Excavated example | Burial 002

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 03
Lug Material	ferrous
Lug Form/Style	single double arm lug
Bail Material	ferrous/wood
Bail Form	square reeded extension bar
End Cap Material	white metal
End Cap Form	pointed

Burials

Burial	No.
004	2
005	2
029	2
062	2
066	2
087	2
136	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 004



Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 04
Lug Material	ferrous
Lug Form/Style	guitar-shaped double lug
Bail Material	indeterminate
Bail Form	indeterminate
End Cap Material	indeterminate
End Cap Form	indeterminate

Burials

Burial	No.
127	ind
130	6
143	ind
152	ind
158	ind
160	ind
171	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c.1900	TBD



Excavated example | Burial 016 (reverse)

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 04A
Lug Material	ferrous
Lug Form/Style	guitar-shaped double lug
Bail Material	ferrous
Bail Form	swell short bar
End Cap Material	white metal
End Cap Form	cylindrical

Burials

Burial	No.
016	6
154	ind
166	ind
168	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c.1900	TBD



Excavated example | Burial 016

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 04B
Lug Material	ferrous
Lug Form/Style	guitar-shaped double lug
Bail Material	ferrous
Bail Form	(probable) short bar
End Cap Material	ferrous
End Cap Form	cylindrical

Burials

Burial	No.
011	ind
044	6
063	6
082	6
094	6
116	ind
121	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 044

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 05
Lug Material	white metal; stamped
Lug Form/Style	faux single lug swingbail infant handle
Bail Material	n/a
Bail Form	n/a
End Cap Material	n/a
End Cap Form	n/a

Burials

Burial	No.
021	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
Parsons	c. 1894	TBD



Excavated example | Burial 021



Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 06
Lug Material	white metal
Lug Form/Style	faux double lug short bar; filigree details
Bail Material	white metal
Bail Form	swell short bar; cast with lug arms
End Cap Material	white metal
End Cap Form	cylindrical; cast with short bar

Burials

Burial	No.
026	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
Parsons	c.1895	maker's mark



Excavated example | Burial 026



Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 07
Lug Material	ferrous
Lug Form/Style	fan-shaped double lug
Bail Material	ferrous
Bail Form	round short bar
End Cap Material	ferrous
End Cap Form	cylindrical; cast with short bar

Burials

Burial	No.
028	6
063	6
146	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 028

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 08
Lug Material	white metal
Lug Form/Style	double lug; filigree details
Bail Material	probable ferrous & metal
Bail Form	short bar
End Cap Material	white metal
End Cap Form	cylindrical; filigree & knob details

Burials

Burial	No.
033	Ind
110	Ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
PATENTED / _ 3 1895 / SM & CO	1895	Hacker-Norton and Trinkley 1984:33



Excavated example | Burial 033

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 09
Lug Material	ferrous
Lug Form/Style	scalloped square "wing"
Bail Material	ferrous
Bail Form	hollow swingbail
End Cap Material	n/a
End Cap Form	n/a

Burials

Burial	No.
038	6
088	ind
089	ind
142	ind
174	ind
181	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 038

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 10
Lug Material	ferrous
Lug Form/Style	arabesque "wing"
Bail Material	ferrous
Bail Form	hollow swingbail
End Cap Material	n/a
End Cap Form	n/a

Burials

Burial	No.
037	6
043	6
046	6
064	6
078	6
083	6
085	Ind
100	6
153	6
158	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 043

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 11
Lug Material	ferrous
Lug Form/Style	leaf
Bail Material	ferrous
Bail Form	hollow swingbail
End Cap Material	n/a
End Cap Form	n/a

Burials

Burial	No.
051	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 051

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 12
Lug Material	ferrous
Lug Form/Style	single double arm; art deco details
Bail Material	ferrous
Bail Form	square reeded extension bar
End Cap Material	white metal
End Cap Form	rectangular

Burials

Burial	No.
052	2

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 052

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 13
Lug Material	white metal
Lug Form/Style	single double arm; linear details
Bail Material	ferrous
Bail Form	square reeded extension bar w/ short bar at west and east ends
End Cap Material	white metal
End Cap Form	rectangular; linear details

Burials

Burial	No.
058	2/2
093	2/2

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 058

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

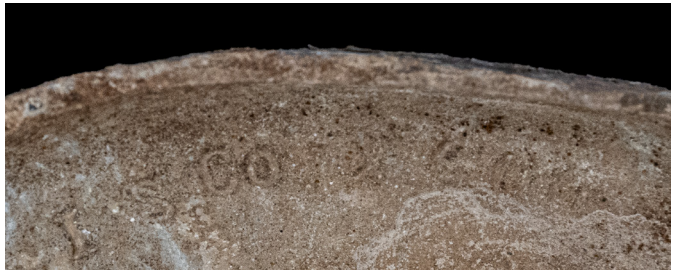
Type No.	Handle Type 14
Lug Material	white metal; gray/silver paint
Lug Form/Style	double lug; small square
Bail Material	white metal; gray/silver paint
Bail Form	swell short bar
End Cap Material	white metal
End Cap Form	cylindrical; gray/silver paint

Burials

Burial	No.
075	ind.
170	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
International Silver Co.	TBD	TBD



I. S. Co. X 600



Excavated example | Burial 075

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 15
Lug Material	white metal
Lug Form/Style	double lug; knob and oval details
Bail Material	indeterminate
Bail Form	(probable) short bar
End Cap Material	indeterminate
End Cap Form	indeterminate

Burials

Burial	No.
076	Ind
107	Ind
115	Ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
International Silver Co?	1885	TBD





Excavated example | Burial 076

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 16
Lug Material	ferrous
Lug Form/Style	double lug; rectangular w/scallop top
Bail Material	ferrous
Bail Form	hollow swingbail
End Cap Material	n/a
End Cap Form	n/a

Burials

Burial	No.
080	Ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 080

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 17
Lug Material	white metal
Lug Form/Style	single double arm; intricate scroll motif
Bail Material	ferrous
Bail Form	square reeded short bar
End Cap Material	white metal
End Cap Form	rectangular, scroll details

Burials

Burial	No.
081	8
097	ind
161	8

Maker/Patent Information

Maker	Est. TPQ Year	Source
International Silver Co.	1914	maker's mark
-	1900	USD40198





Excavated example | Burial 081

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 18
Lug Material	white metal
Lug Form/Style	single double arm
Bail Material	ferrous
Bail Form	square reeded (probable) extension bar
End Cap Material	indeterminate
End Cap Form	indeterminate



Burials

Burial	No.
086	2

Maker/Patent Information

Maker	Est. TPQ Year	Source
Sterling Casket Hardware Company	1916	USD48961



Excavated example | Burial 086

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 19
Lug Material	ferrous
Lug Form/Style	single double arm; plain
Bail Material	ferrous
Bail Form	circular extension bar
End Cap Material	indeterminate
End Cap Form	indeterminate

Burials

Burial	No.
032	ind
092	ind
128	ind
145	ind
165	ind
173	2

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 092

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 20
Lug Material	ferrous
Lug Form/Style	single double arm; plain
Bail Material	ferrous
Bail Form	rectangular; indeterminate bar type
End Cap Material	white metal w/ silver paint
End Cap Form	rectangular;

Burials

Burial	No.
123	Ind
126	Ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 126

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 21
Lug Material	white metal
Lug Form/Style	double lug short bar; shell and filligree
Bail Material	wood/ferrous
Bail Form	circular, style indeterminate
End Cap Material	white metal
End Cap Form	cylindrical; shell detail

Burials

Burial	No.
139	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
Parsons	c.1895	maker's mark





Excavated example | Burial 139

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 22
Lug Material	white metal
Lug Form/Style	double lug short bar; shield shape
Bail Material	thin white (sheet?) metal
Bail Form	swell "rope"
End Cap Material	white metal
End Cap Form	cylindrical

Burials

Burial	No.
150	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 150

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 23
Lug Material	white metal
Lug Form/Style	double lug short bar; general shield
Bail Material	ferrous with wood core
Bail Form	indeterminate
End Cap Material	white metal
End Cap Form	cylindrical

Burials

Burial	No.
138	ind
141	ind
144	ind
179	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD





Excavated example | Burial 141

Oaklawn Cemetery Section 20 Handle Typology

Handle Type & Form

Type No.	Handle Type 24
Lug Material	ferrous
Lug Form/Style	single double arm lug short bar
Bail Material	ferrous with wood core
Bail Form	reeded square
End Cap Material	white metal
End Cap Form	rectangular

Burials

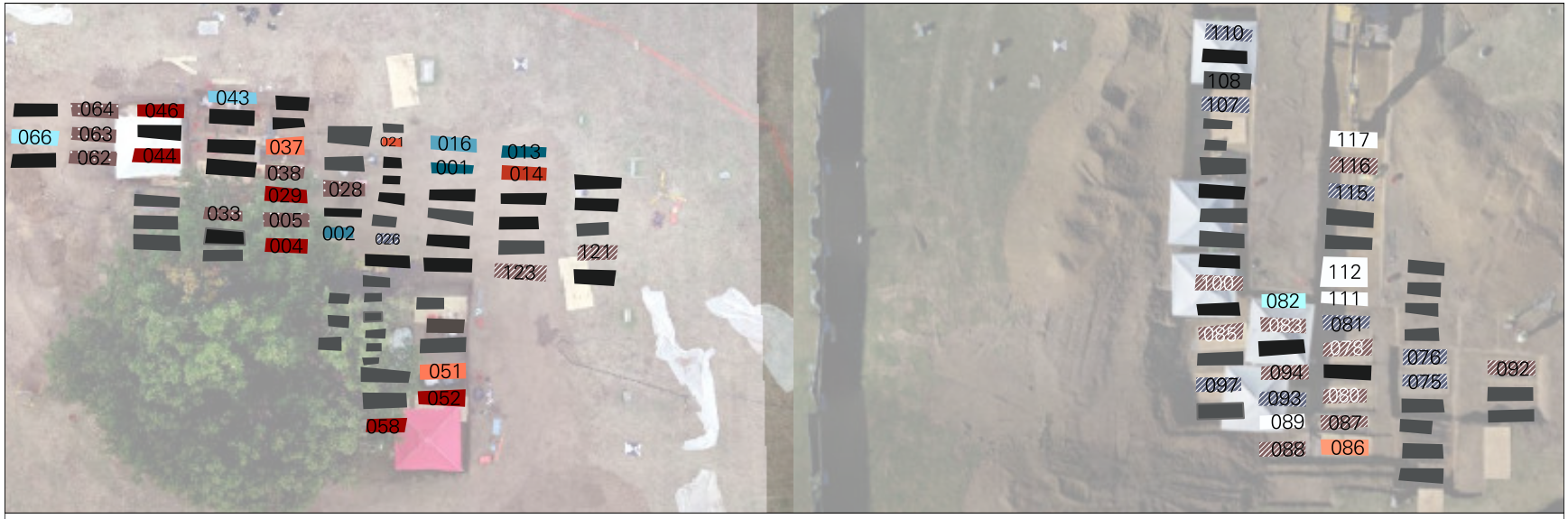
Burial	No.
148	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 148



Tulsa Race Massacre Investigations | Oaklawn Cemetery Plaque Typology

Final Excavation Status

- No decorative coffin hardware
- Not excavated
- Excavation suspended, coffin hardware likely present

Ferrous Types

- Plaque Type 03
- Plaque Type 04
- Plaque Type 06
- Plaque Type 08
- Plaque Type 11

White Metal Types

- Plaque Type 01
- Plaque Type 02
- Plaque Type 05
- Plaque Type 07
- Plaque Type 09
- Plaque Type 10

Handles ONLY

- Ferrous type
- White metal type

Handles present but feature not full exposed

- Ferrous type
- White metal type

0 20 Feet

0 5 10 Meters

N

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 01
Shape	oval
Material/Finish	white metal
Inscription	At Rest

Burials

Burial	No.
001	1
013	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
° 16 ELGIN	TBD	maker's mark



Excavated example | Burial 001

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 02
Shape	rounded rectangle
Material/Finish	white metal
Inscription	Our Darling

Burials

Burial	No.
002	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 002

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 03
Shape	rectangular/scroll edges
Material/Finish	ferrous, possible silver plating
Inscription	At Rest

Burials

Burial	No.
004	1
029	1
044	1
046	1
052	1
058	1
128	1
175	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	early 20th century	Hacker-Norton and Trinkley 1894:25)



Excavated example | Burial 004

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 04
Shape	plain rectangle
Material/Finish	ferrous
Inscription	[indeterminate]

Burials

Burial	No.
014	1
168	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 014

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 05
Shape	rectangular; scroll edge detail
Material/Finish	white metal; silver plating probable
Inscription	At Rest

Burials

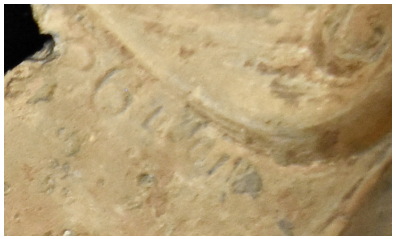
Burial	No.
016	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
Elgin Silver Plate Company	early 20th century	marker's mark



Excavated example | Burial 016



Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 06
Shape	trapezoid; Cherub motif
Material/Finish	ferrous; stamped
Inscription	[indeterminate]

Burials

Burial	No.
021	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 021

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

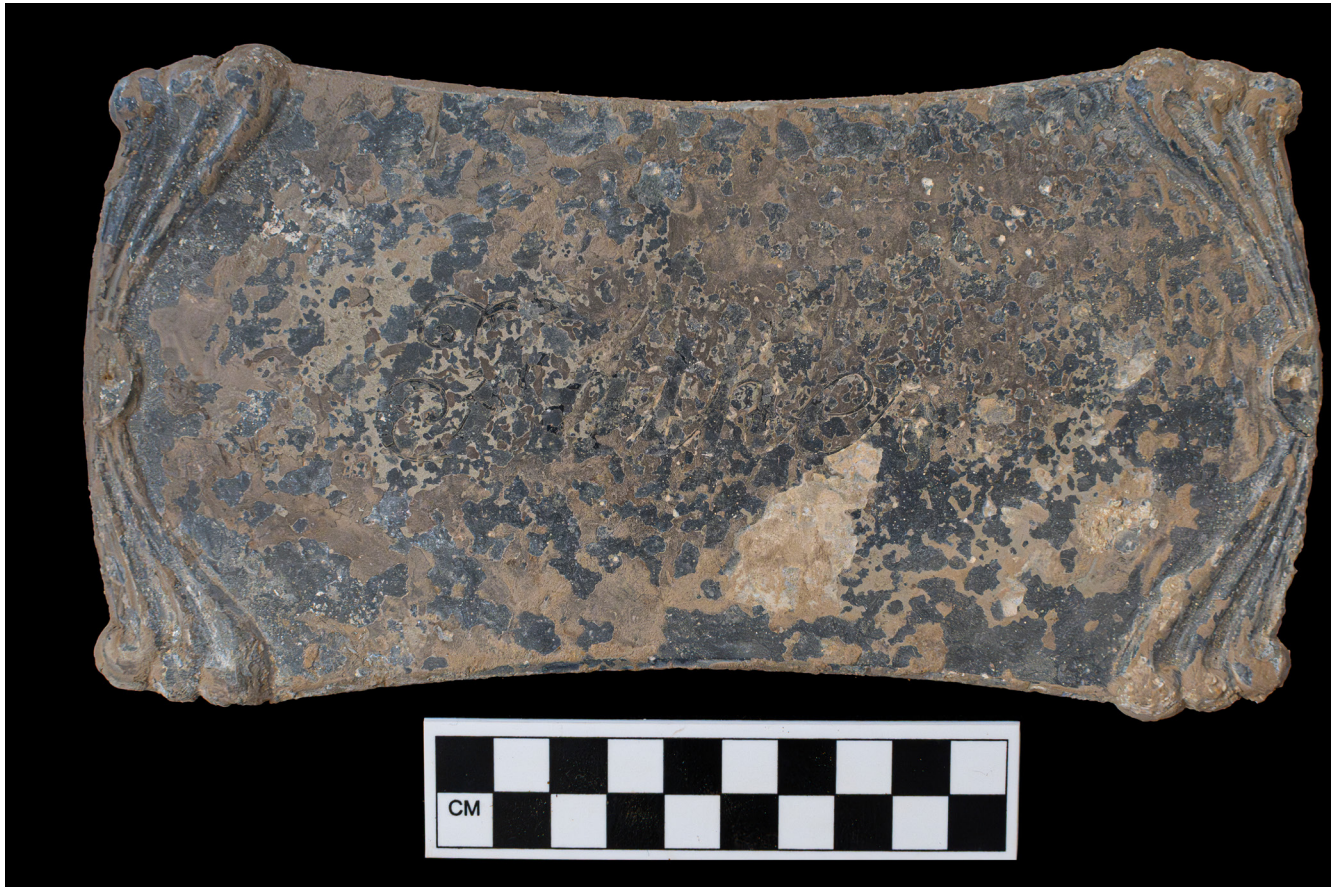
Type No.	Plaque Type 07
Shape	rectangular with ribbon details
Material/Finish	white metal, possible silver plating
Inscription	Father

Burials

Burial	No.
043	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 043

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 08
Shape	probable oval; filigree details
Material/Finish	ferrous; possible silver plating
Inscription	At Rest

Burials

Burial	No.
037 (probable)	1
051	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 051

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 09
Shape	rectangular; linear details
Material/Finish	white metal; silver paint
Inscription	At Rest

Burials

Burial	No.
066	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD



Excavated example | Burial 066

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 10
Shape	rectangular
Material/Finish	white metal
Inscription	At Rest

Burials

Burial	No.
082	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	1920	mark





Excavated example | Burial 082

Oaklawn Cemetery Section 20 Plaque Typology

Handle Type & Form

Type No.	Plaque Type 11
Shape	rounded square
Material/Finish	ferrous; silver plating/decorative coffin screw
Inscription	[indeterminate]

Burials

Burial	No.
086	1

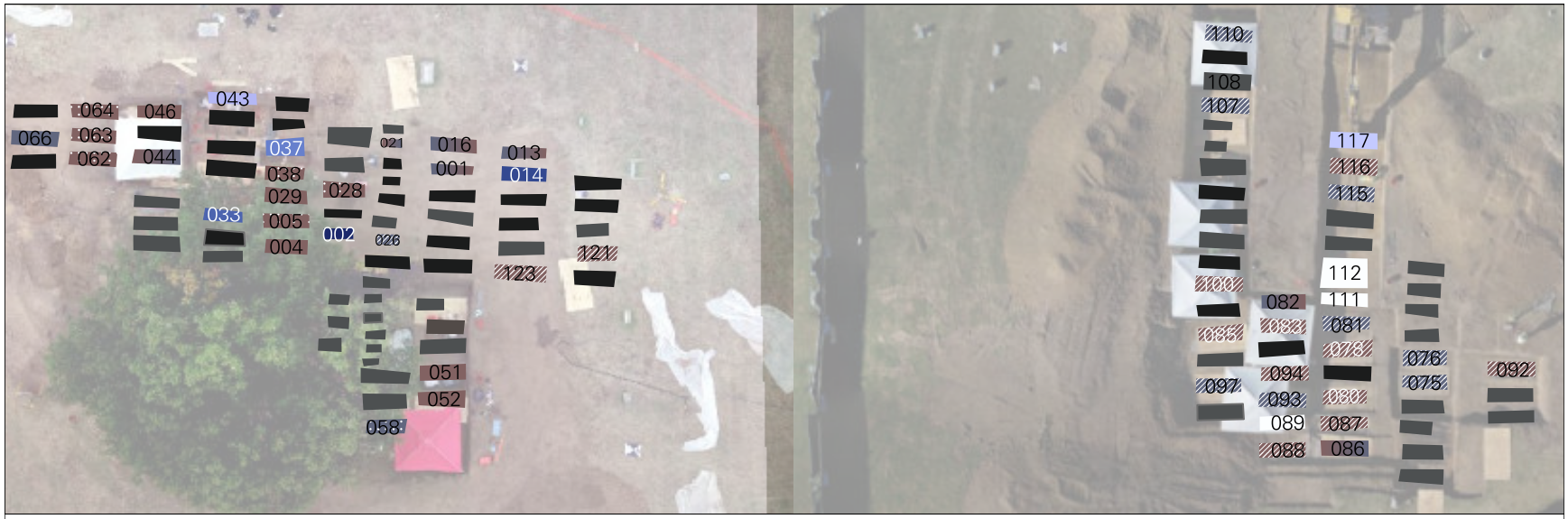
Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	TBD	TBD





Excavated example | Burial 086



Tulsa Race Massacre Investigations | Oaklawn Cemetery Thumbscrew/EscutcheonTypology

Final Excavation Status

- No decorative coffin hardware
- Not excavated
- Excavation suspended, coffin hardware likely present

0 20 Feet

0 5 10 Meters

N

White Metal Types

- Thumbscrew Type 01/Escutcheon Type 01
- Thumbscrew Type 02/Escutcheon Type 02
- Thumbscrew Type 03
- Thumbscrew Type 04
- Thumbscrew Type 05/Escutcheon Types 03, 04 & 05
- Escutcheon Types 06

Handles ONLY

- Ferrous type
- White metal type

Handles present but feature not full exposed

- Ferrous type
- White metal type

Handle and plaque ONLY

- Ferrous handles/ferrous plaque
- Ferrous handles/wnite metal plaque
- White metal handles/ferrous plaque
- White metal handles/white metal plaque

Oaklawn Cemetery Section 20 Thumbscrew Typology

Handle Type & Form

Type No.	Thumbscrew Type 01
Shape	scallop/shell
Material/Finish	white metal
Form	third generation

Burials

Burial	No.
002	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 002



Thumbscrew from 1908 Mound Coffin Company catalog (p. 448)

Oaklawn Cemetery Section 20 Thumbscrew Typology

Handle Type & Form

Type No.	Thumbscrew Type 02
Shape	scalloped/shell
Material/Finish	white metal
Form	third generation

Burials

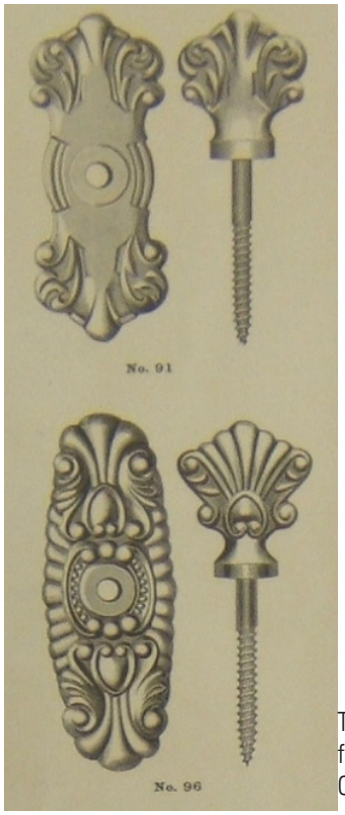
Burial	No.
014	4
125	1
129	8
141	ind
142	ind
181	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 014



Thumbscrews and escutcheons from the 1904 Gate City Coffin Company catalog (p. 183)

Oaklawn Cemetery Section 20 Thumbscrew Typology

Handle Type & Form

Type No.	Thumbscrew Type 03
Shape	knob
Material/Finish	white metal
Form	re-purposed viewing window caplifter

Burials

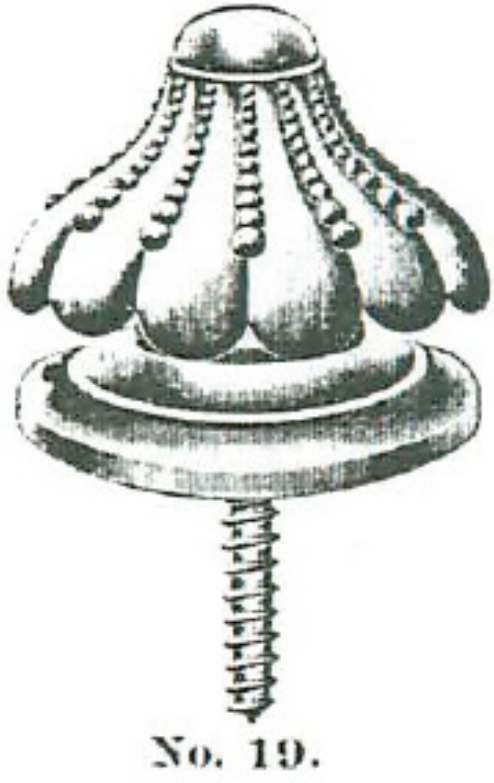
Burial	No.
033	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 033



Caplifter from the 1905 Chattanooga Coffin Company catalog (p. 156)

Oaklawn Cemetery Section 20 Thumbscrew Typology

Handle Type & Form

Type No.	Thumbscrew Type 04
Shape	triangular
Material/Finish	ferrous
Form	third generation

Burials

Burial	No.
037	6

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 037

Oaklawn Cemetery Section 20 Thumbscrew Typology

Handle Type & Form

Type No.	Thumbscrew Type 05
Shape	fan
Material/Finish	white metal
Form	third generation

Burials

Burial	No.
043	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 043



Thumbscrews and escutcheons from the 1904 Gate City Coffin Company catalog (p. 183)

Oaklawn Cemetery Section 20 Escutcheon Typology

Handle Type & Form

Type No.	Escutcheon Type 01
Shape	scalloped rectangle
Material/Finish	white metal
Form	decorative

Burials

Burial	No.
002	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 002

Oaklawn Cemetery Section 20 Escutcheon Typology

Handle Type & Form

Type No.	Escutcheon Type 02
Shape	scalloped rectangle
Material/Finish	white metal
Form	decorative

Burials

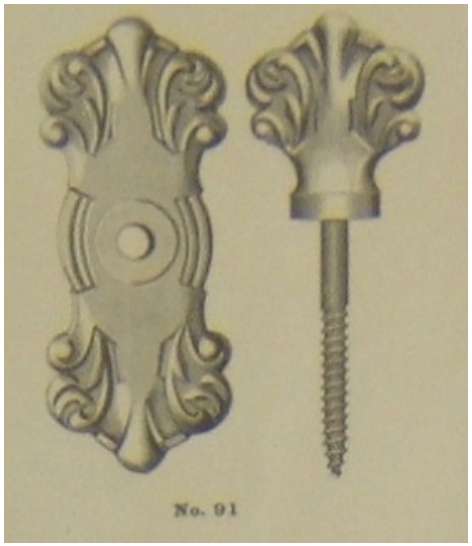
Burial	No.
014	4

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 014



Thumbscrews and escutcheons from the 1904 Gate City Coffin Company catalog (p. 183)

Oaklawn Cemetery Section 20 Escutcheon Typology

Handle Type & Form

Type No.	Escutcheon Type 03
Shape	ovoid
Material/Finish	white metal
Form	decorative

Burials

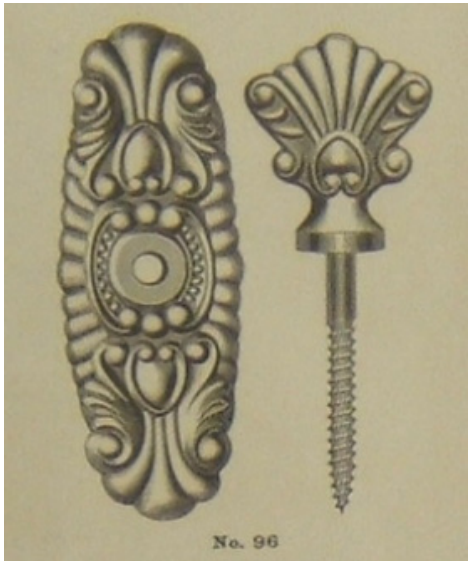
Burial	No.
010*	ind
043	ind
125	1ind
129	8
141	ind
142	ind
162	ind
181	ind

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 043



Thumbscrews and escutcheons from the 1904 Gate City Coffin Company catalog (p. 183)

Oaklawn Cemetery Section 20 Escutcheon Typology

Handle Type & Form

Type No.	Escutcheon Type 04
Shape	ovoid
Material/Finish	white metal
Form	decorative

Burials

Burial	No.
043	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 043



Thumbscrew from 1908 Mound Coffin Company catalog (p. 448)

Oaklawn Cemetery Section 20 Escutcheon Typology

Handle Type & Form

Type No.	Escutcheon Type 05
Shape	scalloped rectangle
Material/Finish	white metal
Form	decorative

Burials

Burial	No.
043	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 043



Escutcheons from the 1905 Chattanooga Coffin Company catalog (p. 158)

Oaklawn Cemetery Section 20 Escutcheon Typology

Handle Type & Form

Type No.	Escutcheon Type 06
Shape	scalloped ovoid
Material/Finish	white metal
Form	decorative

Burials

Burial	No.
117	1

Maker/Patent Information

Maker	Est. TPQ Year	Source
none found to date	c1890s-1920s	Drew and Peterson 2023



Excavated example | Burial 117

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APPENDIX B

ANALYSIS OF FIREARM EVIDENCE FROM TRAUMA VICTIMS BURIED IN OAKLAWN CEMETERY, TULSA, OKLAHOMA

ANALYSIS OF FIREARM EVIDENCE FROM TRAUMA VICTIMS BURIED IN OAKLAWN CEMETERY, TULSA, OKLAHOMA

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Introduction

A group of firearms related artifacts from burials exhumed from the Oaklawn Cemetery in Greenwood area of Tulsa, Oklahoma were analyzed. The group consisted of eight bullets, six shot pellets, several unidentified lead fragments, and one primer. They were examined in an attempt to determine the type of ammunition and possible weapon type they were fired from.

The author documented and analyzed one lead bullet from the 2023 excavations, and two bullets previously analyzed from images (Scott 2022). These were examined at the University of Tulsa McFarlin Library on April 7, 2023. The bullets are in the custody of Dr. Angela Berg, Office of the Chief Medical Examiner's Office. She brought the bullets to The TU Library where facilities for examination were made available by Dr. Robert Pickering (Interim Dean of the Library) and Ms Terri Wickliffe. Overall project coordination was done by Dr. Kary Stackelbeck, Oklahoma State Archaeologist.

On September 19, 2024, five bullets, lead shot pellets, lead fragments, and the primer were examined at the on-site laboratory in the Oaklawn Cemetery. Dr. Kary Stackelbeck facilitated the examination. One additional artifact was received by the author on November 14, 2024, and examined on November 15, 2024.

Firearm Identification: History and Theory

By way of background, law enforcement agencies have long used the investigative technique of firearm identification as an aid in solving crimes. Two methods commonly used by law enforcement agencies include analyses of bullets and cartridge cases (Haag 2006; Harris 1980; Hatcher, Jury, and Weller 1977; Gunther and Gunther 1935) to identify weapon types from which they were fired. Firearm identification specialists are routinely successful in matching bullets and/or cartridge case characteristics to the crime weapon simply by demonstrating that the firing pin, extractor marks, or the land and groove marks among others made by a rifled barrel during firing could only have been made by a certain weapon. In the event that weapons used in a crime are not recovered, trained experts can say with certainty, on the basis of class and individual characteristics from recovered bullets and cartridge cases that specific types and numbers of weapons were used in a specific event or events.

Firearm identification procedures, often erroneously called forensic ballistics, are analogous to wear pattern analysis of the archaeological profession. Firearm and tool mark identification is based on the concept of pattern transfer theory. Like wear pattern analysis, firearm identification did not spring up overnight but has an evolutionary history. Berg (1977:535-37) provides a history of firearms identification that has its earliest known beginnings in a London murder case in 1835. A London police officer helped to secure a conviction by proving a bullet (ball) with a peculiar flaw could have only been cast in the defendant's mold, which had the same flaw. Another case of incipient firearm identification occurred in determining who caused the death of Confederate General Stonewall Jackson on May 2, 1863. Examination of the bullet recovered from his body proved it to be of a type and caliber used by the Confederate Army. The conclusion was that Jackson was killed by one of his own pickets.

Other cases followed in the ensuing years with each building on the earlier conclusions. In 1900 Dr. Albert Hall published the first truly scientific treatment on forensic ballistics and began its advancement as a common tool of law enforcement. By 1925 the field of firearms identification was becoming well established, and in that year the

greatest single advancement occurred to ensure a solid footing for its future. The comparison microscope was used for the first time and became the standard tool of the firearm examiner. With the publication of several textbooks in 1935 (e.g., Gunther and Gunther 1935) the field was firmly established and now nearly every major law enforcement agency has a staff firearm examiner. Since 1984 the principles of firearm identification have been applied to historic conflict sites (e.g., Scott 1989; Scott et al. 1989; Scott 2010; Scott and Mcfeaters 2011).

The principles of Firearm and Tool Mark Identification currently employed in the field of forensic science were applied to the analysis of the firearms related artifacts from the Oaklawn Cemetery investigations. The method of examination included surface examination of each bullets under 10X to 20X magnification using a headband magnifier or a hand magnifier loop. The bullet diameter and all visible land and grooves widths were measured with a digital caliper in inches. Each bullet was weighed on a digital scale in both grains and grams. Each bullet was also examined under higher magnification using a Dino-Lite Edge digital microscope that has a 10X to 200X magnification capability. The microscope also has the capability to capture and annotate jpeg images. The shot pellets, lead fragments, and the primer were also analyzed in a similar manner.

The bullets' weight, diameter, and land and groove measurements were entered into a General Rifling Characteristic database maintained by the Association of Firearm and Toolmark Examiners (AFTE). This is a proprietary database available only to firearm examiners and members of AFTE. The use of the database aided in determining the possible firearm type from which the bullets were fired.

Firearm and Bullet Terminology

A standard cartridge is comprised of the following components (Figures 1, 2):

1. **Projectile**: This is the actual bullet that leaves the barrel.
2. **Powder**: Powder is the actual propellant that moves the projectile.
3. **Cartridge Case**: The shell of the cartridge that contains the primer, powder, and bullet.
4. **Primer**: It is a small cup on the head of a cartridge case that when struck by a firing pin ignites the propellent charge.



Figure 1. *Components of a cartridge.*

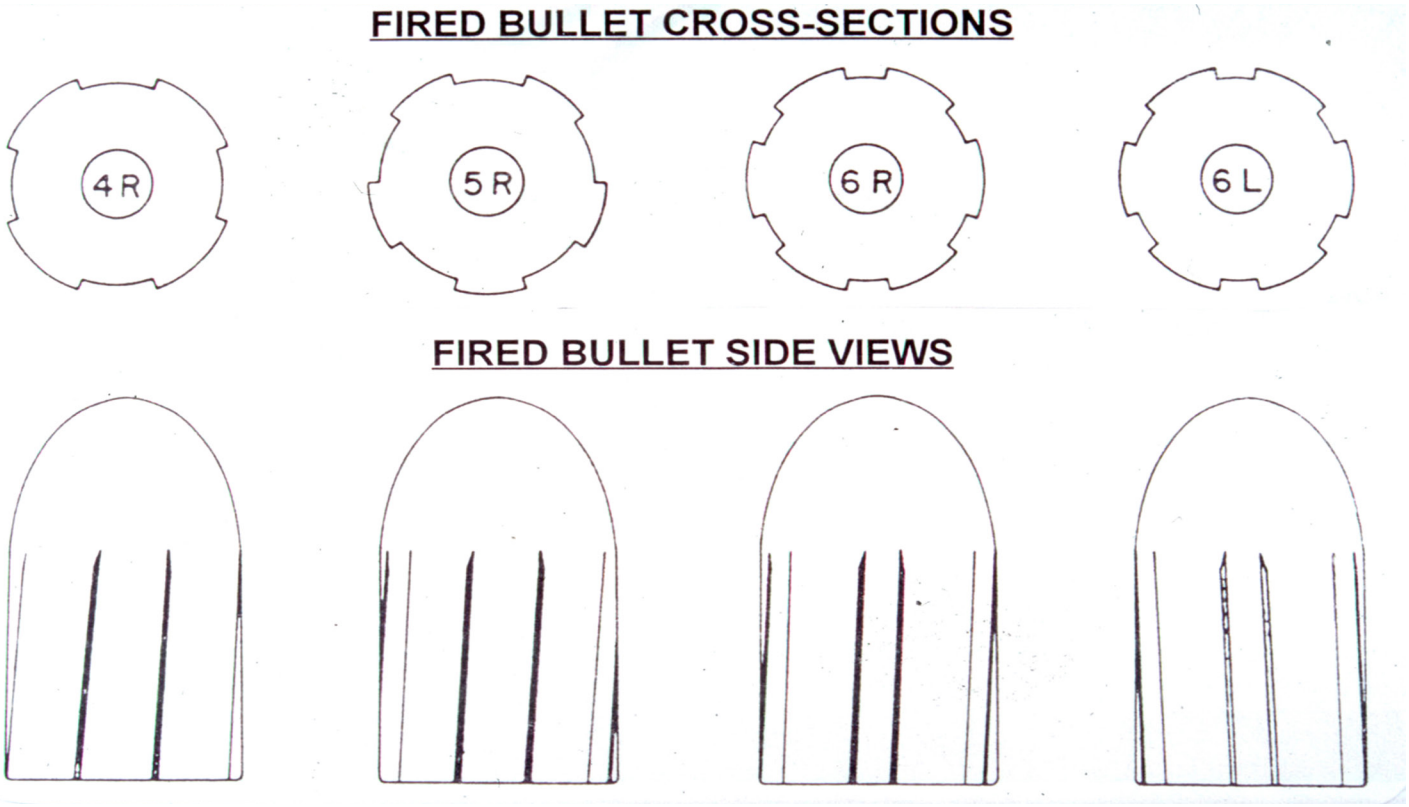

Figure 2. *Rifling is impressed on a bullet when fired. The image illustrates the difference between right and left twist or pitch and the number of land and groove impressions that aid in identifying firearm types.*

Analysis

Burial 27, OU 18, Catalog 368, is a nominal .38-caliber lead bullet, weighing 8.5 grams. The bullet exhibits significant impact deformation to the nose and one side is consistent with striking a soft media target at a medium to high velocity. Soft media may include but is not limited to soft woods, soils, and tissue and muscle. The impact damage has obscured most diagnostic features (Figure 3). However, parts of some bullet's diagnostic features are present. The bullet is a flat base, probably round nosed lead bullet. A single cannelure or lubricating groove is present near the base of the bullet. It is knurled to help hold lubricant in place.

The bullet weight was converted from grams to grains (the standard weight measure for American bullets). It weighs 131.1 grains. Impact and oxidation over time has contributed to the loss of some lead. The bullet may have been an approximately 140 grain type when originally pressed. That weight is consistent with a revolver bullet (Barnes 2006).

Impact damage has obscured most land and groove information, however one land and one groove impressed by the rifling when the bullet was fired were measurable. The groove is .108 inch wide and the land is about .096 inch wide. The land and groove impressions are from a left-hand twist rifled bore.

A search of the AFTE General Rifling Characteristics database (a proprietary site only available to law enforcement and members) for .38-caliber firearms with a left-hand twist rifling and minimum land and groove widths as measured returned a list of eighty-three .38-calibler firearms. The list has a number of duplicate firearms. Eliminating those brands or types that were manufactured after 1925 reduced to the list to three possible manufacturers who produced .38-caliber firearms with a left-hand twist rifling in the circa 1920 era. The most probable is the Colt firearms company. Colt produced at least twelve different revolver models in .38-caliber during this era (Flayderman 1990:90-101). Two other companies manufactured firearms may be candidates. The Hopkins and Allen Company started in 1868 but went bankrupt in 1916 when its machinery was sold to another company. The other is Forehand and Wadsworth (aka Forehand Arms) which was founded in 1871. It was sold to Hopkins and Allen in 1902. Both



Figure 3. *Catalog 368 from Burial 27 showing the flat base and impact damage to the nose and body.*

Forehand and Wadsworth and Hopkins and Allen manufactured black powder firearms, although both made the transition to smokeless powder firearms in the early 1900s. Hopkins and Allen made most of the Forehand Arms guns under contract prior to their acquisition of the company in 1902.

The bullet was examined under magnification to determine if stippling was present on the lead, a tell-tale indication that a bullet was fired in a black powder cartridge. No evidence of stippling was noted. The bullet was likely fired from a smokeless powder cartridge. Bullet 368 was likely fired in a Colt revolver, although Hopkins and Allen or a Forehand and Wadsworth firearms cannot be definitively ruled out.

Burial 27, OU 18, Catalog 379 is a bullet measuring approximately .36-inch in diameter as originally reported (Scott 2022) but was remeasured at .391 inch. The measurement is imprecise due to extensive impact deformation (Figure 4). The bullet weighs 9.25 grams or 142.7 grains. The diameter and weight are consistent with a nominal .38-caliber bullet that has suffered impact damage. Actual and nominal diameters vary by several hundredths of an inch depending on the manufacturer. The bullet is more heavily impact damaged than Bullet 368, but most of the same observations can be made. The bullet exhibits significant impact deformation consistent with striking a soft media target. The bullet is probably a round nosed lead bullet. A single cannelure or lubricating groove is present near the base of the bullet. It appears to be knurled to help hold lubricant in place.

Impact deformation and oxidation over time has likely contributed to the loss of some lead.

The rifling land and grooves evident in the images is less clear than Bullet 368, but the measured width of the one set is .121 inch for the groove and the land of .101 inch. The land and grooves have a left-hand twist. The same



Figure 4. *Catalog 379 from Burial 27 showing the knurled lubricating groove and a rifling land impression.*

observations on the type of firearm in which the bullet was fired are relevant for this bullet as for Bullet 368. Bullet 379 was likely fired in a Colt revolver, although a Forehand and Wadsworth or a Hopkins and Allen firearm cannot be ruled out.

Whether the two bullets were fired from the same firearm cannot be determined due to the damage to the bullet and the amount of oxidation to the lead. Both have destroyed individual characteristics, leaving only the class characteristics present.

Burial 42, OU 21, Catalog 1479, consists of four lead fragments that are likely pieces of the same bullet that partially disintegrated or splintered on impact (Figure 5). One large fragment and three smaller ones have a total combined weight of 9.77 grams or150.6 grains. The largest fragment appears to be a flat based bullet that has mushroomed due to high velocity impact. Several fragments of what appear to be bone are embedded in the lead matrix in the area of what would have been the bullet nose and body (Figure 6). No rifling impressions or identifying class characteristics were observed. The combined weight is consistent with bullets 368 and 379.

Burial 135, OU 39, Catalog 1326 is a lead bullet in a nominal .32-caliber (Figure 7). The bullet measures .326-inch diameter and has a slightly recessed base. One lubricating cannelure is present. It weighs 5.38 grams/83.08 grains. The bullet is heavily oxidized but exhibits minimal impact deformation. A single land impression was observed present and appears to have a left-hand twist. The land impression measured .052-inch wide.

A search of the AFTE General Rifling Characteristics database (a proprietary site only available to law enforcement and members) for .32-caliber firearms with a left-hand twist rifling and minimum land widths as



Figure 5. *Catalog 1479 from Burial 42 was significantly deformed by high impact velocity. One lead splinter fragment is visible in the upper left corner.*



Figure 6. *Detail photo micrograph of Catalog 1479, a deformed lead bullet showing possible bone fragments embedded in the lead matrix.*



Figure 7. *Catalog 1326 from Burial 135, a nominal .32-caliber lead bullet with partial land impression evident.*

measured returned a list of fourteen .32-calibler firearms. The list has a number of duplicate firearms. Eliminating those brands or types that were manufactured after 1925 reduced to the list to three possible manufacturers who produced .32-caliber firearms with a left-hand twist rifling in the circa 1920 era. They are Colt, Smith and Wesson, and Winchester. The lack of other observable characteristics limits further identification of the brand or model.

Burial 135, OU 39, Catalog numbers 1466, 1467, 1468, and 1469, are four lead shot pellets embedded in the left foot bones (Figure 8). A fifth shot pellet (Catalog 1470) is embedded in the distal left tibia. It was not available for analysis. No attempt was made to remove the pellets from the bone matrix. All measurements are approximate as whole shot pellets where not observable. All four shot pellets are deformed by impact. Embedded in the first metatarsal near the distal end is a single deformed lead shot pellet (Catalog 1466) measuring approximately .194-inch in diameter. In the same area of the second metatarsal is another deformed lead shot pellet (Catalog 1467) measuring .138-inch in diameter. The third shot pellet (Catalog 1468) is embedded in the third cuneiform and measures .141-inch in diameter and the fourth shot pellet (Catalog 1469) is embedded in the cuboid. It measures .147-inch diameter.

The three smaller lead shot embedded in the foot bones are consistent with a Number 3 lead shot size (Barnes 2003:456). The larger shot observed in the first metatarsal is consistent with a BBB sized shot. Whether this means the individual suffered shotgun injuries from two different shot shell loads or if the larger shot was an aberrant pellet in a single shot column or simply a significantly deformed smaller shot pellet cannot be reliably determined.



Figure 8. *Lead shot pellets embedded in the bones of Burial 135 left foot, Catalogs 1466, 1467, 1468, and 1469.*

Burial 157, OU 41, Catalog 1397 is a small, deformed lead shot pellet, possibly hardened with tin or antimony. It weighs .082 grams or 1.2 grains which calculated to approximately a .097-inch diameter (Figure 9). This diameter is equivalent to a No. 7 ½ shot size. The fragment is very distorted by impact but its original spherical form is clearly evident under magnification. The deformation is consistent with striking soft media at medium to high velocity.

Burial 194, OU 46, Catalog 1445 is a cupronickel jacketed round nosed bullet. It is .471-inch diameter and weighs 14.56 grams/224.8 grains (Figure 10). It is very oxidized and no lands or groove impressions are visible. The bullet diameter and weigh are consistent with a .45-caliber ACP type bullet. ACP are the initials for Automatic Colt Pistol but this does not indicate that it was fired in a Colt semiautomatic firearm. Although there is no observable impact deformation the absence of observable land and groove impressions precludes determining the firearm type from which the bullet was fired.

Burial 194, OU46, Catalog 1465 is an oxidized small lead bullet (Figure 11) with two lubricating or crimping cannelures near the base. It has impact damage to the nose and one edge of the base. It measures .228-inch in diameter and weighs 1.76 grams/27.2 grains. It is consistent with a .22-caliber bullet. There are no observable land and groove impressions evident.

Burial 195, OU 47, Catalog 1452 is an impact damaged lead bullet with a slightly recessed base (Figure 12). The bullet is round nosed with one lubricating cannelure visible. It measures .361-inch in diameter, and weights 7.75grams/119.62 grains. There is one land impression visible but it is very oxidized. It measured approximately



Figure 9. *Catalog 1397, a lead shot pellet found with Burial 157. It is deformed by impact with a soft medial target.*



Figure 10. Catalog 1445 from *Burial 194, a nominal .45-caliber jacketed bullet.*



Figure 11. *Catalog 1465 from Burial 194, an impact damaged lead .22-caliber bullet.*



Figure 12. *Catalog 1452 from Burial 195, a very oxidized nominal .38 caliber or .380 caliber bullet.*

.036-inch wide. The oxidation likely has resulted in some lead loss but the weight and diameter are consistent with a nominal .38-caliber or .380-caliber bullet.

A search of the AFTE General Rifling Characteristics database (a proprietary site only available to law enforcement and members) for .38-caliber firearms with a left-hand twist rifling and minimum land widths as measured returned a list of two .38-calibler firearms. Eliminating those brands or types that were manufactured after 1925 reduced to the list to one likely manufacturers who produced .38-caliber firearms with a left-hand twist rifling in the circa 1920 era. It is the Colt Company, possibly in .38 Special-caliber. The lack of other observable characteristics limits further identification of the model.

Burial 195, OU 47, Catalog 1472 consists of six non-diagnostic lead fragments (Figure 13). The unidentified lead fragments weighed .06 grams/0.96 grains.

Burial 195, OU 47, Catalog 1473 is a cuprous cartridge primer (Figure 14). It is .17- inch diameter and .114-inch depth. It has a rounded head and appears to be unfired. The measurements are consistent with what is known today as a small pistol/small rifle primer (https://ballistictools.com/articles/primer-pocket-depth-and-diameter.php)

A variety of ammunition catalogs and price lists are readily available on websites. The International Ammunition Association website maintains digital scans of several ammunition company catalogs (http://cartridgecollectors.org/ammunition-catalogs). Small pistol and small rifle primers are listed for sale for reloading cartridges in the Peters, Union Metallic Cartridge Company, and Western Cartridge Company catalogs for the 1910-1921 era that are consistent with Catalog 1473.

Burial 195, OU 47, Catalog 1474 consists of two impact damaged lead shot pellets (Figure 15) each of which are approximately .07-inch in diameter. This diameter is consistent with a Number 10 sized shot (Anon. 2001:10).



Figure 13. *Catalog 1472 from Burial 195, six unidentified lead fragments.*



Figure 14. *Catalog 1473 from Burial 195, interior and exterior views of the small pistol primer.*



Figure 15. *Catlog 1474, Burial 195, two impact damaged lead shot pellets.*

Burial 195, OU 47, Catalog 1475 (Figure 16) is a very oxidized lead bullet that measures approximately.372-inch diameter and weighs 7.86 grams/121.39 grains. Two lubricating cannelures are visible, otherwise there are no observable diagnostic characteristics. The bullet is consistent with a nominal .38-caliber.

Burial 195, OU 47, Catalog 1496 is an undetermined and unidentified number of very small lead fragments embedded in a soil matrix. The lead and soil matrix weighed 0.39 grams/0.59 grain.

Comments

The firearms evidence assemblage examined indicates there are five-gun types minimally represented. Precise determination of the gun brands or models was not possible due to the extensive oxidation that is present on the bullets. One gun type is the .22-caliber (1 bullet). Second is the .32-caliber (1 bullet) that was fired from one of three firearms types, Colt, Smith & Wesson, or a Winchester manufactured firearms. The third type is the .38-caliber (4 bullets). One is definitely a Colt in .38 Special-caliber. One has no observable diagnostic characteristics and the other two are consistent with a Colt revolver although neither the Hopkins and Allen or the Forehand and Wadsworth firearms can be ruled out. The fourth is the .45-caliber (1 bullet). No observable diagnostic characteristics were visible to determine brand or model. The fifth firearm type is the shotgun (7 shot pellets). A single unfired pistol sized primer was also examined.

Burial 27 had two .38-caliber bullets recovered though it is unclear if they were fired from the same weapon. This individual was minimally struck by bullets fired from one or two guns.



Figure 16. *Catalog 1475, Burial 195 a very oxidized lead bullet in nominal .38-caliber.*

Burial 42 contained four lead fragments that appear to be from a single bullet; the weight that was consistent with each of the bullets recovered from Burial 27. This individual was struck minimally by a single bullet.

Burial 135 had a .32-caliber bullet and 4 lead shot pellets indicating minimally being shot with two different firearms.

Burial 157 had a single lead shot pellet associated with the remains.

Burial 194 had a .22-caliber bullet and one .45-caliber jacketed bullet recovered indicating being shot minimally by two different caliber firearms

Burial 195 had two .38-caliber bullets, two shot pellets, and more than six unidentified lead fragments associated with the remains. This indicates that minimally the person was shot with at least one .38-caliber firearm, one .38-Special-caliber firearm, and a shotgun.

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APPENDIX C

ANALYSIS OF WOOD SAMPLES FROM THE 2024 FIELD SEASON AT OAKLAWN CEMETERY

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Jennifer M. Haney, Ph. D.

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APPENDIX C-1: ANALYSIS OF WOOD SAMPLES FROM THE 2024 FIELD SEASON AT OAKLAWN CEMETERY

Jennifer M. Haney, Ph. D.

This appendix presents the results of an analysis of 44 wood samples recovered during the July and August 2024 excavations at Oaklawn Cemetery, Tulsa, Oklahoma. Overall, wood samples from 29 burial cases, 3 exterior (shipping) crates, and 1 charred (construction/architectural) timber fragment from within a burial case were examined. Finally, a brief overview of wood analyzed from burial contexts at Oaklawn between 2020 and 2024 is discussed and a complete inventory of the wood specimens analyzed from burial contexts between 2020-2024 at Oaklawn Cemetery is included in Appendix C-2.

Methods

In most instances, individual wood specimens were assigned a unique field catalog number which allowed extant wood from various portions/boards of burial cases or shipping containers/exterior crates to be individually identified, however, some proveniences represented wood collected from screened contexts. These screened contexts represent multiple boards and the exact proveniences of these fragments to a burial case location (lid, wall, or floor) could not be determined. When possible, a sample was cut/collected during excavation from individual boards by field personnel. It should be noted that although boards were originally recovered during the excavation as single (sometimes large) specimens, the individual wood samples often became fragmented during cutting and/or prior to analysis. As such, the counts and weights presented in the appendix table following this discussion represent the state of the analyzed samples; these data do not represent the counts/weights of the wood specimens as originally excavated which were not available to the analyst. Further, not all available boards were sampled by field personnel who typically only sampled one board per burial case/crate wall, lid, or floor.

Each specimen was examined at low power with a dissecting binocular microscope (14-90x) for overall anatomical structure/orientation and macroscopic details, such as gross anatomy, including the size/presence of longitudinal and transverse resin canals. It was especially important to examine both the tangential and radial sections because most of the specimens had modern root damage on the cross section that superficially resembled resin canals. After each specimen was categorized as hardwood or softwood, further anatomical details were noted. Finally, hand-cut thin-sections were completed with a razor blade and examined under high magnification (100-1000x). All wood sections were temporarily mounted in ordinary tap water and no slides were retained after the identification was finalized. Wood specimens were identified to the lowest possible taxonomic unit possible given limitations in wood anatomy and post-depositional changes.

Results

2024 Season

During the 2024 season, wood specimens (n = 44) were examined from 32 burial proveniences, including 29 burial cases, 3 exterior crates, and 1 burial content. Most (n = 43) of the specimens were desiccated, however, one sample was carbonized (Table C-1.1). For the most part, wood taxa were found to be consistent by provenience. In other words, as far as may be determined from the examined samples, most of the burial cases or exterior crates were found to be made of a single wood taxon/group or the level of possible wood identification could not disprove a single wood taxon, although relatively few samples were analyzed per burial case. For example, a south wall board from Burial case 157 was assigned to the southern, hard pine group (more on this below) but the sample from the lid could only be identified as a conifer. Although these two samples could easily be from different pine species or even different conifers (e.g., pine and bald cypress), the condition of the samples and/or the limitations of wood anatomy limit further precision and these specimens then are assumed to be consistent.

However, several situations (Burials 126, 10, and 169) require clarification because more than one wood type was positively identified within these burial proveniences. The wood identified from the main container of Burial 126 was different from the wood identified from the handle bail core, as indicated on Table C-1.1. In this situation, the different woods likely resulted from the nature of coffin manufacture and construction. The choice of hardware often represented a chance to customize the burial case, and a range of handle options were sold.

The situations with Burials 10 and 169 are not as straightforward. Desiccated pine fragments were recovered from the Burial 10 shaft during the 2020 season; however, these fragments were incredibly small and since Burial 10 was not investigated at that time, their provenience could not be positively associated with the burial case. Burial 10 was subsequently investigated during the 2024 season and a single wall sample from the burial case was identified as bald cypress. As such, it may be that two types of wood were used in the construction of the Burial 10 case or the initial pine samples might simply have been recovered from within the shaft. Likewise, a single lid sample from Burial 169 contained both pine and bald cypress, suggesting that this burial case may also have been constructed from multiple types of wood. However, in both cases, it may also be possible that the samples represent mixed contexts. For example, if Burial 169 originally was encased within an exterior crate which was not detected during excavation, then poor preservation may have conflated the lid samples, mixing the two containers or if the shaft fill contained small pieces of wood, then these wood pieces might have been adjacent but not a portion of the burial case.

Table C-1.1. Summary of 2024 Season Wood Provenience and Taxonomic Identifications.

Provenience	conifer	bald cypress	pine	southern, hard pine group	white pine group	larch
Burial Case 10		X			X[1]	
Burial Case 125		X				
Burial Case 126		H		X		
Burial Case 128		X				
Burial Case 129		X				
Burial Case 130				X		
Burial Case 133				X		
Burial Case 134				X		
Burial Case 135				X		
Burial Case 137				X		
Burial Case 139	X					
Burial Case 141	X					
Burial Case 142		X				
Burial Case 143				X		
Ext crate 144	X					
Burial Case 144		X				
Burial Case 148	X					
Burial Case 150			H			
Burial Case 153		X				
Burial Case 155		X				
Burial Case 156		X				
Burial Case 157				X		
Ext crate 161				X		
Burial Case 162	X					
Burial Case 165					X	
Burial Case 169		X	X			
Ext crate 171		X				
Burial Case 174		X				
Burial Case 176		X				
Burial Case 180			X			
Burial Case 182				X		
Burial Case 194		X				
Contents, Burial 195						X[2]
Totals	5	14	2	10	2	1

H designates handle wood identification; these are excluded from the final counts

1 Samples identified in 2020

2 Carbonized wood

Broadly speaking, the taxonomic identifications may be divided among six taxa groups including conifer (n = 5), bald cypress (n = 14), pine (n = 2), southern or yellow/hard pine group (n = 10), soft/white pine group (n = 2), and larch (n = 1) (see Table C-1.1). Although the current sample of burial case woods favors the use of bald cypress (burial cases, n = 14), southern pines (n = 10) were well represented. These data suggest that the selection of (southern) pine and bald cypress coffins may reflect increased local accessibility and/or possibly production. Three exterior crates or containers were present in the sample, from Burials 144, 161, and 171, and these were identified to the taxonomic level of bald cypress (n = 1), southern pine (n = 1), and conifer (n = 1).

Conifers

All (n = 44) of the wood specimens recovered during the 2024 season excavations were classified as conifer and more specifically to either bald cypress (*Taxodium distichum*), pine (*Pinus* spp.), or larch (*Larix* spp.). Any conifer which could not be more specifically identified was left at the level of phylum (*Coniferophyta*), which includes seven plant families (e.g., *Pinaceae*, *Podocarpaceae*, *Araucariaceae*, *Cephalotaxaceae*, *Taxaceae*, *Cupressaceae*, and *Taxodiaceae* [not all of which include native taxa]).

Many pine trees cannot be identified to the specific level from wood anatomy alone but are largely grouped by subgenus, section, etc. Based principally on minute cellular anatomy, most pine (n = 10) samples from this season were identified or tentatively identified (*cf.*) to the southern yellow/hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus,* subsection *Australes* [*sensu* Price, Liston, and Strauss 1998]). Commercially, these pines are sold interchangeably as members of the southern yellow pine group (Wood Database 2020). Most commonly, the commercially available southern pines include shortleaf pine (*P. echinate*), slash pine (*P. elliotti*), longleaf pine (*P. palustris*), and loblolly pine (*P. taeda*) but other pines may less frequently be encountered, such as pitch pine (*P. rigida*) and pond pine (*P. serotina*), among others.

Only one 2024 pine sample was identified to the soft or white pine group (*Pinus* spp., subgenus *Strobus* [*sensu* Price, Liston, and Strauss 1998]). Individual soft pine species cannot be reliably separated based on minute anatomy either; however, commercially important taxa include eastern white pine (*Pinus strobus*), western white pine (*P. monticola*), and sugar pine (*P. lambertiana*). Commercially, these pines are sold interchangeably as members of the white pine group (Wood Database 2020).

While no coffin/casket production figures could be located for Oklahoma, one source noted that nearly 69 percent of early twentieth century coffins produced in Arkansas were made of shortleaf pine, a member of the southern pine group (Graves et al. 1912: 19). A further 26 percent were made from (bald) cypress (Graves et al. 1912: 19). Graves and colleagues (1912: 39) also note the use of longleaf pine, another member of the southern pine group, for the construction of coffins in Arkansas, however, no estimate of production figures was provided. Suggesting a local manufacture, the wood characteristics from Burials 157 and 180 (pine, *Pinus* spp.) are of note as the resin was still liquid, suggesting that the wood was not properly dried before use. Likewise, the presence of multiple woods from the burial case of Burial 169 may indicate local manufacture if the sample's provenience is secure.

Contents of Burial 195

Two fragments were examined from a carbonized timber found with the remains of Burial 195. As with the other wood samples, these fragments represented a larger wood fragment, however, the full timber fragment could not be examined by the analyst. These carbonized fragments had a maximum thickness of approximately 1 inch, suggesting that the lumber was purchased as a board of 5/4 thickness. The width and length of the fragments measured approximately 1.5-x-1.5 inches, but the overall board dimensions could not be obtained.

Based on the minute wood anatomy, these fragments were assigned as larch (*Larix* spp.) and based on the small bands of late wood, the fragments are consistent with western larch (cf. *L. occidentalis*); however, the European larch (*L. decidua*) cannot be ruled out from anatomy alone. Larch is not native to Oklahoma and so this lumber would have been purchased. Three species of larch are native to the United States and include tamarack (*L. laricina*), the subalpine larch (*L. lyallii*), and western larch (*L. occidentalis*); however, only tamarack and western larch are commercially exploited (Record and Hess 1943). The European larch was introduced in the 19th century and so it too could have been available for purchase without considering importation. Principally, western larch is used in building materials, such as edge-grained flooring and interior finish materials (Panshin and de Zeeuw 1980).

Summary

Wood specimens from the 2024 archaeological excavation at Oaklawn Cemetery were examined and included 32 burial proveniences. Most of the specimens were desiccated, however, one sample was carbonized. Broadly speaking, the taxonomic identifications may be divided among 6 taxa groups including conifer, bald cypress, pine, southern or yellow/hard pine group, soft/white pine group, and larch. As noted previously and in Table C-1.1, the current sample of burial case woods favors the use of bald cypress and pines. This pattern is consistent with and reinforces the data from the 2020-2021 and 2022-2023 excavation seasons (see below and also Haney 2022, 2024). Within this 2024 sample, the wood types were largely consistent by provenience, however, several inconsistencies were noted in the burial cases of Burials 10 and 169.

From the wood assignments alone, most of the burial cases could not be assigned as manufactured locally or purchased as a finished product, however, in three instances – Burials 169, 157, and 180 – the wood analysis may provide some evidence in this debate. The burial cases of Burials 157 and 180 were likely made locally because the lumber had not been properly dried, and the pine resin was still liquid and flowing from fresh cuts/breaks during analysis. Finally, the burial case from Burial 169 may also be of local manufacture based on the use of multiple woods in its manufacture.

Discussion: 2020-2024 Excavation Seasons

Over the course of investigations, wood specimens were examined from 80 burial cases and 12 exterior crates, as well as other proveniences including coffin contents and general fill.

These wood samples have been classified into 13 taxa or wood groups. These include true hickory group (*Carya* spp.), chestnut (*Castanea dentata*), yellow poplar (*Liriodendron tulipifera*), conifer (*Coniferophyta*), bald cypress (*Taxodium distichum*), hemlock (*Tsuga* spp.), pine (*Pinus* spp.), southern hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus,* subsection *Australes*), soft/white pine group (*Pinus* spp., subgenus *Strobus*), Ponderosa pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*, subsection *Ponderosae*), fir (*Abies* spp.), arborvitae (*Cupressaceae , Thuja* spp.), and redwood (*Sequoia sempervirens*) (Table C-1.2). Overall, wood types were largely consistent within proveniences, that is within individual burial cases or crates, however, a few exceptions did occur. Two of these exceptions involve lid samples where two different woods were identified (e.g., Burials 30 and 169). Since these two exceptions concern a possible lid specimen, it remains possible that one of the wood samples had collapsed down from overlying fill or an unidentified crate and thus, may not have been part of the burial case. Alternatively, it also remains possible that the lid was made of different or multiple woods because it was visible/exposed while the walls may have been covered in some manner with veneer or fabric which was not preserved.

Table C-1.2. Cross Tabulated Summary of Wood Identifications by Provenience from Excavation Seasons 2020-2021 (Haney 2022), 2022-2023 (Haney 2024), and 2024.

Provenience	hickory	chestnut	yellow poplar	conifer	bald cypress	hemlock	pine	southern, hard pine group	white pine group	ponderosa pine group	fir	arborvitea	redwood
2020-2021 ext crate				1		1							
2020-2021 burial case[1,2]	1				10		2	5	1				
2022 ext crate				1	1								
2022 burial case		1	1	3	7		4	2					
2023 ext crate					1		1	1			1	1	1
2023 burial case				1	3		5	3		1	1	1	
2024 ext crate				1	1			1					
2024 burial case[2,3]				4	13		3	9	1				
Total	1	1	1	11	36	1	15	21	2	1	2	2	1

1 Burial case 30 has two woods or types identified, including hickory and southern, hard pine. This inflates the counts for the 2021 season burial cases by one.

2 Burial case 10 is represented in the 2020 data with white pine group and 2024 data with bald cypress, likewise inflating the burial case count.

3 Burial case 169 in the 2024 data also has two identified woods, bald cypress and pine, which inflates the burial case count.

Hardwoods

As may be seen from Table C-1.2, only three proveniences contained hardwoods (e.g., hickory, chestnut, and yellow poplar) over the course of the project. The first hardwood was recovered from the lid sample of Burial 30 and was assigned as a member of the true hickory group (*Carya* spp.), which includes shagbark hickory (*C. ovata*), shellbark hickory (*C. laciniosa*), pignut hickory (*C. glabra*), and mockernut hickory (*C. tomentosa*). Hickory is among the densest (i.e., hardest) native woods and the various taxa (both true and pecan) are commercially sold interchangeably as simply hickory (Wood Database 2021a, 2021b). Although the true hickories tend to be somewhat denser than the pecan hickories, the amount of variability is negligible (Wood Database 2021b).

A bar handle core from Burial 52 was assigned as chestnut (*Castanea dentata*). Chestnut was a popular choice for caskets and coffins owing to its durability and its ease of workability (Panshin and de Zeeuw 1980). Since no wood sample was recovered from the burial case associated with this bar handle, it is impossible to know but given the differential preservation, the burial case was unlikely to have been made of chestnut.

The third hardwood was recovered from Burial 43 where a wall sample was identified as whitewood or yellow/tulip poplar (*Liriodendron tulipifera*). This whitewood specimen also had a consistent layer of light-colored pigment on one side. This may have been milk paint and was colored white, cream, or perhaps a very light blue.

Conifers

A fairly wide range of conifers were represented in the wood assemblage from Oaklawn, including bald cypress (*Taxodium distichum*), hemlock (*Tsuga* spp.), pine (*Pinus* spp.), southern hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus,* subsection *Australes*), soft/white pine group (*Pinus* spp., subgenus *Strobus*), Ponderosa pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*, subsection *Ponderosae*), fir (*Abies* spp.), arborvitae (*Cupressaceae , Thuja* spp.), and redwood (*Sequoia sempervirens*).

Most of the burial cases were made of pine (n = 36) or bald cypress (n = 33). Several low frequency woods, including fir and arborvitae, were also found within the assemblage. While fir is not commonly used for coffins, giant arborvitae is commonly used for coffins and caskets owing to its durability (Panshin and de Zeeuw 1980). The assemblage of exterior crates likewise provided few surprises being constructed of hemlock, bald cypress, pine, fir, arborvitae, and redwood. All these woods are common for crate and box construction (Panshin and de Zeeuw 1980). While some of these crate woods are also commonly used for coffins/caskets, such as redwood, they did not appear in the Oaklawn assemblage. Although conifer price may not have been an issue in the early twentieth century, regional abundance and availability may have played a role with regional timber featuring more prominently than timber sourced from either coast.

Local Manufacture

Since most of the burial cases have been made of bald cypress or pine (see Table C-1.2), these likely represent a mix of local and non-local manufacture. Although it has been suggested that many, if not most, of the burial cases were purchased from suppliers/manufacturers, this may not have been true of Burials 65, 95, 157, and 180. All the wood specimens examined from these

proveniences had not been seasoned and properly dried prior to use. As such, it seems likely that these burial cases were made by a local carpenter rather than purchased from a manufacturer/supplier. While it is possible that these burial cases were constructed in haste or when seasoned wood supplies were in short supply, it is also possible that the comparatively inexpensive nature of pine burial cases may have strongly influenced the carpenter's choice of wood. Of the 92 containers (cases and crates) thus far examined, only four have not been properly dried and so they are apparently outliers within the examined sample at Oaklawn.

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Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2020	Burial	1	30		Original Box 2, Core into geophys Block 1, Soil Anomaly 6	3	18.35	desiccated wood; white pine group (*Pinus* spp., subgenus *Strobus*)
2020	Burial	1	30		Original Box 2, Core into geophys Block 1, Soil Anomaly 6	13	33.03	desiccated wood; pine (*Pinus* spp.)
2021	Burial	1	89		Sample 1 - southern portion of south wall, burial case	1	25	desiccated wood; bald cypress (*Taxodium distichum*)
2021	Burial	1	90		Sample 2 - southern wall, burial case	1	77.5	desiccated wood; bald cypress (*Taxodium distichum*)
2021	Burial	1	91		Sample 3 - southwest corner of south wall, burial case			(not examined largely dirt)
2021	Burial	1	92		Sample 4 - northwest corner of north wall, burial case	1	2.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	1	93		Sample 5 - northeast corner of north wall, burial case	6	3.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	2	261		Sample 1 - south wall, burial case	5	6.5	desiccated wood; bald cypress (*Taxodium distichum*)

APPENDIX C.2: WOOD CATALOG FOR THE 2020-2024 FIELD SEASONS AT OAKLAWN CEMETERY

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2021	Burial	3	312		Sample 1 - west wall, burial case	10	9.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	3	313		Sample 2 - north wall, burial case	8+	7	desiccated wood; tentative southern, hard pine group (cf. *Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	3	314		Sample 3 - east wall, burial case	46	19	desiccated wood; tentative southern, hard pine group (cf. *Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	3	315		Sample 4 - south wall, burial case	9	10.5	desiccated wood; tentative southern, hard pine group (cf. *Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	3	316		Sample 5 - floor, burial case	1	15	desiccated wood; tentative southern, hard pine group (cf. *Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	4	226		Sample 1 - southeast corner with nail, burial case	1	34.5	desiccated wood; conifer (*Coniferophyta*)
2021	Burial	4	263		Sample 2 - lid near sternum, burial case	1	5.5	desiccated wood; bald cypress (*Taxodium distichum*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2021	Burial	4	293		Sample 3 - floor, burial case	NA	NA	(no wood present)
2021	Burial	4	305		Sample 4 - west end wall, exterior crate	5+	9	desiccated wood; tentative hemlock (cf. *Tsuga* spp.)
2020	Burial	6	46		Original Box 18, Block 6	2	0.39	(modern) wood; indeterminate hardwood taxa
2020	Burial	7	44		Original Box 16, Block 7	1	0.09	partially carbonized; tentative elm (cf. Ulmus spp.)
2021	Burial	9	310		Sample # - overlying fill	NA	NA	(no wood present)
2020	Burial	10	42		Original Box 14, Block 10	1	0.58	desiccated wood; white pine group (*Pinus* spp., subgenus *Strobus*)
2020	Burial	10	42		Original Box 14, Block 10	1	0.11	desiccated wood; tentative white pine group (cf. *Pinus* spp., subgenus *Strobus*)
2024	Burial	10	1400	2	Sample 3 - north central wall, burial case	1	4.5	desiccated wood; bald cypress (*Taxodium distichum*)
2021	Burial	13	78		Sample # - upper board on north side, burial case	NA	NA	(bag missing)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2021	Burial	13	105		Sample # -north wall, burial case	2	1.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	13	119		Sample 2 - north wall, burial case	1	6.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	13	125		Sample 2 - east end, burial case	7	36	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	14	213		Sample 1 - south wall with ornamental tack, burial case	3	2.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	14	214		Sample 2 - north wall, burial case	10	0.5	desiccated wood; tentative southern, hard pine group (cf. *Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	14	258		Sample 3 - lid over right clavicle, burial case	1	1	desiccated wood; tentative southern, hard pine group (cf. *Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	15	135		Sample # - floor below right shoulder, burial case	1	14	desiccated wood; bald cypress (*Taxodium distichum*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2021	Burial	16	159		Sample 1 - south wall, burial case	2	17	desiccated wood; bald cypress (*Taxodium distichum*)
2021	Burial	17	209		Sample 1- lid, southwest corner, burial case	5	59	desiccated wood; bald cypress (*Taxodium distichum*)
2021	Burial	17	210		Sample 2 - southeast wall, burial case	10+	28	desiccated wood; bald cypress (*Taxodium distichum*)
2021	Burial	17	211		Sample 3 - northeast wall, burial case	24+	4	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	17	252		Sample 4 - north wall, burial case	1	89.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	17	253		Sample 5 - east wall, burial case	1	17.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	19	121		Sample 1 - lid, burial case	1	26.5	desiccated wood; tentative pine (cf. *Pinus* spp.)
2021	Burial	19	122		Sample 2 - west portion north wall, burial case	1	50.5	desiccated wood; tentative pine (cf. *Pinus* spp.)
2021	Burial	19	141		Sample 3 - lid, burial case	7	83	desiccated wood; tentative pine (cf. *Pinus* spp.)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2021	Burial	19	142		Sample 4 - side, burial case	12+	234.5	desiccated wood; tentative pine (cf. *Pinus* spp.)
2021	Burial	19	160		Sample 5 - north wall, burial case	1	51	desiccated wood; tentative pine (cf. *Pinus* spp.)
2021	Burial	19	161		Sample 6 - south wall, burial case	7	7.5	desiccated wood; tentative pine (cf. *Pinus* spp.)
2021	Burial	21	179		Sample 1 - southwest inner container, burial case	2	6	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	21	180		Sample 2 - northeast inner container, burial case	2	28.5	mineralized wood; conifer (*Coniferophyta*)
2021	Burial	21	181		Sample 3 - northwest, exterior crate	1	23	mineralized wood; conifer (Coniferophyta)
2021	Burial	24	144		Sample 1 - north wall, burial case	1	5	(no wood present)
2021	Burial	26	189		Sample 1 - north wall, burial case	6	2.5	desiccated wood; bald cypress (*Taxodium distichum*)
2021	Burial	26	190		Sample 2 - south wall, burial case	1	5	desiccated wood; bald cypress (*Taxodium distichum*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2021	Burial	26	197		Sample 3 - floor, burial case	3	4.5	desiccated wood; conifer (*Coniferophyta*)
2021	Burial	27	371		Sample 1 - no additional details listed	16+	18.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	28	309		Sample 1 - no additional details listed	16	0.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2021	Burial	29	302		Sample 1 - west wall, burial case	1	49.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	29	333		Sample # - east wall, burial case	1	11.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	30	361		Sample # - possible lid, burial case	2	70	desiccated wood; true hickory group (*Carya* spp.)
2021	Burial	30	362		Sample # - east wall, burial case	1	92	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2021	Burial	30	363		Sample # - floor, burial case	1	40.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2021	Burial	31	360		Sample # - lid, burial case	2	18.5	desiccated wood; pine (*Pinus* spp.)
2021	Burial	31	369		Sample # - southwest corner, burial case	1	28	desiccated wood; pine (*Pinus* spp.)
2022	Burial	36	646	5	Sample 1 - lid, burial case	2	6.5	desiccated wood; bald cypress (*Taxodium distichum*)
2022	Burial	37	493	5	Sample 1 - lid, burial case	3	3.0	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2022	Burial	37	513	20	Sample 2 - lid, burial case	4	166	desiccated wood; bald cypress (*Taxodium distichum*)
2022	Burial	37	640	31	Sample 3 - came out with N central handle, burial case	1	11.5	desiccated wood; bald cypress (*Taxodium distichum*)
2022	Burial	38	583	4	Sample 1 - west wall, burial case	1	28	desiccated wood; tentative southern, hard pine group (cf. *Pinus* spp., subgenus *Pinus*, section *Pinus*)
2022	Burial	38	584	5	Sample 2 - east wall, burial case	1	14	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2022	Burial	39	453	3	Sample 1 - lid, burial case (over cranium)	7	44	desiccated wood; conifer (*Coniferophyta*)
2022	Burial	40	406	3	Sample 1 - south wall, burial case	2	12.5	desiccated wood; conifer (*Coniferophyta*)
2022	Burial	40	409	4	Sample 2 - north wall, burial case	1	4.5	desiccated wood; pine (*Pinus* spp.)
2022	Burial	40	452	7	Sample 3 - floor, burial case	1	4.5	desiccated wood; pine (*Pinus* spp.)
2022	Burial	41	587	3	Sample 1 - southwest corner, burial case	6	5	desiccated wood; conifer (*Coniferophyta*)
2022	Burial	41	596	5	Sample 2 - north wall, burial case	20+	168	desiccated wood; conifer (*Coniferophyta*)
2022	Burial	42	420	3	Sample 1 - lid, burial case	41+	10.5	desiccated wood; bald cypress (*Taxodium distichum*)
2022	Burial	42	421	4	Sample 2 - west wall, burial case	14+	2.0	desiccated wood; bald cypress (*Taxodium distichum*)
2022	Burial	42	476	10	Sample 3 - floor, burial case	1	41.5	desiccated wood; bald cypress (*Taxodium distichum*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2022	Burial	43	521	5	Sample 1 - plaque sample	3	7.5	mineralized wood; Indeterminate (almost no wood present)
2022	Burial	43	673	19	Sample 2 - indeterminate wall, tentative milk paint, burial case	1	3	desiccated wood; yellow poplar (*Liriodendron tulipifera*)
2022	Burial	44	414	3	Sample 1 - north wall, exterior crate	7	7.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2022	Burial	44	422	5	Sample 2 - east wall, exterior crate	1	3.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2022	Burial	44	463	16	Sample 3 - south central floor, burial case	22	84	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2022	Burial	45	634	5	Sample 1 - north wall, burial case	5	9	desiccated wood; tentative pine (cf. *Pinus* spp.)
2022	Burial	45	635	6	Sample 2 - floor, burial case	2	9.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2022	Burial	46	416	7	Sample 1 - lid?, approx above left shoulder, fabric & coprous pin underneath, burial case	1	12.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2022	Burial	51	488	5	Sample 1 - northwest corner, burial case	50+	115.5	desiccated wood; bald cypress (*Taxodium distichum*)
2022	Burial	51	519	7	Sample 2 - south wall, burial case	15+	54	desiccated wood; bald cypress (*Taxodium distichum*)
2022	Burial	51	520	8	Sample 3 - lid, burial case	40+	43.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2022	Burial	52	610	12	Sample 1 - from handle bar core, burial case	1	0.5	desiccated wood; chestnut (*Castanea dentata*)
2022	Burial	58	489	3	Sample 1 - south wall, burial case	24	4	desiccated wood; conifer (*Coniferophyta*)
2022	Burial	58	522	6	Sample 2 - plaque, exterior crate	2	4.5	desiccated wood; conifer (*Coniferophyta*)
2022	Burial	62	631	3	Sample 1 - lid, burial case	13+	135	desiccated wood; tentative pine (cf. *Pinus* spp.)
2022	Burial	62	686	6	Sample 2 - floor, burial case	2	22	desiccated wood; pine (*Pinus* spp.)
2022	Burial	64	693	17	Sample 1 - unknown location	3	54.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2022	Burial	65	650	4	Sample 1 - floor, burial case	4	13	desiccated wood; pine (*Pinus* spp.)
2022	Burial	65	651	5	Sample 2 - north wall, next to radius/ulna on north side, burial case	1	14.5	desiccated wood; pine (*Pinus* spp.)
2022	Burial	65	652	6	Sample 3 - southwest wall, burial case	2	107.5	desiccated wood; pine (*Pinus* spp.)
2022	Burial	67	670	6	Sample 1 - floor, burial case	18+	82	desiccated wood; pine (*Pinus* spp.)
2023	Burial	75	899	5	Sample 1 - possible lid, burial case	1	9.5	desiccated wood; pine (*Pinus* spp.)
2023	Burial	75	900	6	Sample 2 - possible lid, exterior crate	6	46.5	desiccated wood; conifer (*Coniferophyta*)
2023	Burial	75	901	7	Sample 3 - south wall, exterior crate	6	14.5	desiccated wood; fir (*Abies* spp.)
2023	Burial	76	889	5	Sample 1 - lid, burial case	1	45	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2023	Burial	78	848	7	Sample 1 - burial case	1	15	desiccated wood; tentative western redcedar (cf. *Thuja plicata*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2023	Burial	79	1062	15	Sample 1 - east wall	1	18	desiccated wood; tentative fir (cf. *Abies* spp.)
2023	Burial	80	998	4	Sample 1 - wood sample, no additional information	1	17	desiccated wood; bald cypress (*Taxodium distichum*)
2023	Burial	81	769	4	Sample 1 - lid, burial case	1	8.5	desiccated wood; cypress family, tentative arborvitea (*Cupressaceae* [cf. *Thuja occidentalis*])
2023	Burial	84	780	8	Sample 1 - south wall, burial case	1	119	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2023	Burial	84	840	7	Sample 2 - north wall just below the knee, burial case	1	7.5	desiccated wood; pine (*Pinus* spp.)
2023	Burial	84	841	9	Sample 3 - removed from between legs, just below knee, burial case	1	3.5	desiccated wood; pine (*Pinus* spp.)
2023	Burial	86	877	2	Sample 1 - south wall, exterior crate	1	10	desiccated wood; tentative redwood (cf. *Sequoia sempervirens*)
2023	Burial	86	878	3	Sample 2 - lid, exterior crate	4	24.5	desiccated wood; tentative redwood (cf. *Sequoia sempervirens*)

APPENDIX C.2: WOOD CATALOG FOR THE 2020-2024 FIELD SEASONS AT OAKLAWN CEMETERY

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2023	Burial	87	783	1	Sample 1 - lid, east end, exterior crate	1	58.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2023	Burial	87	786	4	Sample 2 - northeast corner of north wall, exterior crate	1	44.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2023	Burial	92	856	1	Sample 1 - south wall, exterior crate	25	117	desiccated wood; bald cypress (*Taxodium distichum*)
2023	Burial	92	857	2	Sample 2 - north wall, exterior crate	15	132	desiccated wood; cypress family (*Cupressaceae*)
2023	Burial	92	858	3	Sample 3 - west wall, exterior crate	5	142	desiccated wood; cypress family (*Cupressaceae*)
2023	Burial	92	859	4	Sample 4 - east wall, exterior crate	0	0	EMPTY BAG
2023	Burial	92	860	5	Sample 5 - lid, exterior crate	15	31	desiccated wood; cypress family (*Cupressaceae*)
2023	Burial	93	959	3	Sample 1 - wood sample, no additional info	1	1.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2023	Burial	95	1063	4	Sample 1 - north wall	5	3.5	desiccated wood; pine (*Pinus* spp.)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2023	Burial	99	1015	1	Sample 1 - wood sample, south wall	4	10	desiccated wood; tentative ponderosa pine group (cf. *Pinus* spp., subgenus *Pinus*, section *Pinus, subsection Ponderosae*)
2023	Burial	110	1026	6	Sample 1 - prob lid ?, copper hardware remmants	5	61.5	desiccated and mineralized wood; tentative bald cypress (cf. *Taxodium distichum*)
2023	Burial	117	931	2	Sample 1 - southern wall/lid ?	9	17	desiccated wood; tentative pine (cf. *Pinus* spp.)
2023	Burial	118	1044	1	Sample 1 - wood sample, no additional info	2	266.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2023	Burial	119	1064	3	Sample 1 - lid sample	3+	0.5	desiccated wood; conifer (*Coniferophyta*)
2023	Burial	122	1065	2	Sample 1 - lid sample	1	30.5	desiccated wood; pine (*Pinus* spp.)
2023	Burial	123	1037	3	Sample 1 - lid, northeast corner, exterior crate	5+	233.5	desiccated wood; pine (*Pinus* spp.)
2023	Burial	124	1080	1	Sample 1 - lid wood sample	8+	13	desiccated wood; tentative pine (cf. *Pinus* spp.)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2023	Burial	124	1081	2	Sample 2 - east wall	15+	46.5	desiccated wood; conifer (*Coniferophyta*)
2023	Burial	124	1096	NA	Sample 3 - wood fragments near left tibia	2	0.62	desiccated wood; conifer (*Coniferophyta*)
2023	Burial	124	1097	NA	Sample 4 - wood fragments near left femur, distal anterior for. proj.	2	1.1	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	125	1118	3	Sample 1 - top of south wall, east side, burial case	2	2	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	126	1152	5	Sample 1 - south wall, burial case	3	5	desiccated wood; pine (*Pinus* spp.)
2024	Burial	126	1153	6	Sample 2 - north wall, burial case	2	23.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	126	1154	7	Sample 3 - handle bail core, burial case	1	2	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2024	Burial	128	1140	2	Sample 1 - lid, burial case	9	8	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2024	Burial	129	1138	19	Sample 1 - north side, burial case	8	7	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	129	1191	20	Sample 2 - lid above left humerus, burial case	7+	63.5	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	130	1171	10	Indeter, screen recovery	2	6	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	133	1175	4	Sample 1 - east wall, foot end, burial case	2	81.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	134	1315	1	Sample 1 - general, burial case	5	16	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	135	1319	2	Sample 1 - lid, burial case	8	55	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	135	1320	3	Sample 2 - north wall, northeast corner, burial case	1	105	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	137	1353	3	Sample 1 - west wall, burial case	1	69	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2024	Burial	139	1196	2	Sample 1 - south wall, burial case	5	0	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	141	1218	3	Sample 1 - northwest wall, burial case	4	8	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	142	1220	1	Sample 1 - south wall, burial case	20	25	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	142	1222	3	Sample 2 - lid near north wall, burial case	11	5.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2024	Burial	143	1230	3	Sample 1 - lid near northeast corner, burial case	2	2	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	144	1210	2	Sample 1 - north wall, burial case	2	0.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2024	Burial	144	1211	3	Sample 2 - north wall, exterior crate	17	1	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	148	1252	2	Sample 1 - north wall, burial case	12	0	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	150	1297	2	Sample 1 - handle core, northeast corner, burial case	1	10	desiccated wood; tentative pine (cf. *Pinus* spp.)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2024	Burial	153	1305	2	Sample 1 - southeast wall, burial case	3	7	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	155	1341	2	Sample 1 - north wall, burial case	3	48.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2024	Burial	156	1348	2	Sample 1 - southwestern lid by handle, burial case	1	9.5	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	157	1390	5	Sample 1 - south wall, burial case	1	33.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	157	1392	7	Sample 2 - east end of lid, burial case	27+	29	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	161	1281	2	Sample 1 - east wall, exterior crate?	1	245.5	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	162	1310	1	Sample 1 - southeast wall, burial case	3	4	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	165	1291	2	Sample 1 - north wall, burial case	13+	42	desiccated wood; white pine group (*Pinus* spp., subgenus *Strobus*)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2024	Burial	169	1416	3	Sample 1 - lid, burial case	12+	38.5+	desiccated wood; bald cypress (*Taxodium distichum*); pine (Pinus spp.)
2024	Burial	169	1417	4	Sample 2 - south wall, burial case	3+	59.5	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	169	1422	9	Screen recovery	NA	NA	desiccated wood; conifer (*Coniferophyta*)
2024	Burial	171	1369	3	Sample 1 - south wall, exterior crate	3	14.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2024	Burial	171	1370	4	Sample 2 - lid, exterior crate	3+	2.5	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2024	Burial	174	1364	3	Sample 1 - south wall, burial case	4	24	desiccated wood; tentative bald cypress (cf. *Taxodium distichum*)
2024	Burial	176	1379	3	Sample 1 - southwest corner, burial case	4	10	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	180	1443	6	Screen recovery	1	9.5	desiccated wood; pine (*Pinus* spp.)

Season	Proven Category	Burial #	Cat #	Lot #	Location Description	Ct	Wt (g)	Final Wood Taxa/Description
2024	Burial	182	1424	1	Sample 1 - north wall, burial case	1	10	desiccated wood; southern, hard pine group (*Pinus* spp., subgenus *Pinus*, section *Pinus*)
2024	Burial	182	1425	2	Sample 2 - south wall, burial case	3	175	desiccated wood; pine (*Pinus* spp.)
2024	Burial	194	1449	6	Sample 1 - crate lid, burial case	30+	918.5	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	194	1450	7	Sample 2 - crate lid cross beam, burial case	1	4.5	desiccated wood; bald cypress (*Taxodium distichum*)
2024	Burial	195	1458		Sample 1 - wood on ribs/verts, burial case contents	2	7	carbonized wood; larch (*Larix* spp. [cf. *L. occidentalis]*)

APPENDIX D

REPORT ON PORTABLE X-RAY FLUORESCENCE (PXRF) ANALYSIS OF A METAL FRAGMENT FROM BURIAL 157, OAKLAWN CEMETERY, TULSA, OK

REPORT ON PORTABLE X-RAY FLUORESCENCE (PXRF) ANALYSIS OF A METAL FRAGMENT FROM BURIAL 157, OAKLAWN CEMETERY, TULSA, OK

by Thomas R. Fenn and Ella Brewer-Jensen

Introduction

A fragment of a small unidentified metal object from Burial 157 was submitted for evaluation and examination to the Fenn Laboratory for Archaeological Sciences and History (FLASH). This evaluation was made using a portable X-Ray Fluorescence (pXRF) analysis instrument as the method for determining its composition. The pXRF instrument works by generating primary X-rays which interact with the surface of the object being examined. These interactions cause secondary X-rays to be generated and fluoresce from atoms of elemental constituents comprising the object material. The energies of these secondary X-rays are characteristic of the type of atom they originated from, therefore allowing us to determine which elements are present in the object and at what approximate proportions. This method was chosen for this project due to its non-destructive nature. Although limited in sensitivity and precision compared to other chemical analysis methods, for this project pXRF was effective in quickly identifying major and minor elements and their relative proportions, thus assessing the alloy types of these keys and metal objects and subsequently informing anthropological interpretations of the keys' historic significance.

The limitations of pXRF as a chemical analysis method include its relatively shallow analytical depth (although this varies with material density). As such, the data reflect the compositions of the surface and very near-surface material of the unknown metal sample. The presence of any plating on the surface, if preserved, could also affect the results. Despite these limitations, pXRF can be a highly useful method in the analysis of archaeological metals, especially non-ferrous alloys, due to its ability to quickly determine alloy types and detect a wide range of metallic elements at concentrations as low as 10 parts-per-million (ppm).

Analytical Procedure

The instrument used in this study is a Bruker TRACER 5g hand-held portable X-ray fluorescence (pXRF) unit, with a rhodium (Rh) thin window X-ray source tube (see conditions and specifications in Table 1). For analysis, the instrument was placed in a tabletop stand on a flat, steady surface with the X-ray aperture pointing straight upwards. Each object was placed directly on top of the aperture and then covered with a protective steel cap to prevent any X-rays from escaping.

The object of interest in this analysis consisted of a small heavily corroded metal fragment recovered from Burial 157. The fragment was placed in a pill bottle (typical plastic bottle you get prescriptions in) for transportation to the facility where I conducted the pXRF analysis. In the time that the fragment was recovered, placed in the container and transported to my laboratory, it completely crumbled apart into tiny fragments (Figure 1). The remains of this fragment were now all tiny particles about the size of fine sand (Figure 2). However, one of the strengths of the pXRF is that it can take readings of materials through thin sheets of plastic, which does not affect the outcome of the compositional analysis (elements composing the plastic are carbon and nitrogen, neither of which can be measured with a pXRF anyway). Therefore, the fin-grained remnants of the metal fragment were collected and placed in a thin polyethylene plastic bag (Figures 3 and 4), and the sample analyzed through the plastic bag with the pXRF instrument. Three analyses were taken on the sample, which all looked identical, and a spectrum from one of those analyses is presented in Figure 5.

Table 1. Operating Conditions and Specification Details for the pXRF instrument.

Category	Condition/Specification
Manufacturer:	Bruker
Model:	TRACER 5g
Voltage (keV):	40
Current (μA):	25
Collimator size (mm):	8
Acquisition time (s):	60
Air or Vacuum?	Air
Gas purge?	No
Filters used? Which?	Yes, #3 (75 μm Cu, 25 μm Ti, 200 μm Al)
Analytical Mode:	Spectrometer Mode
Software Package:	Artax-Spectra, Ver. 8.0.0.476



Figure 1. *General photograph of the sample at the time it arrived at the FLASH facility.*



Figure 2. *Detail of the sample condition at the time it arrived at the FLASH facility.*

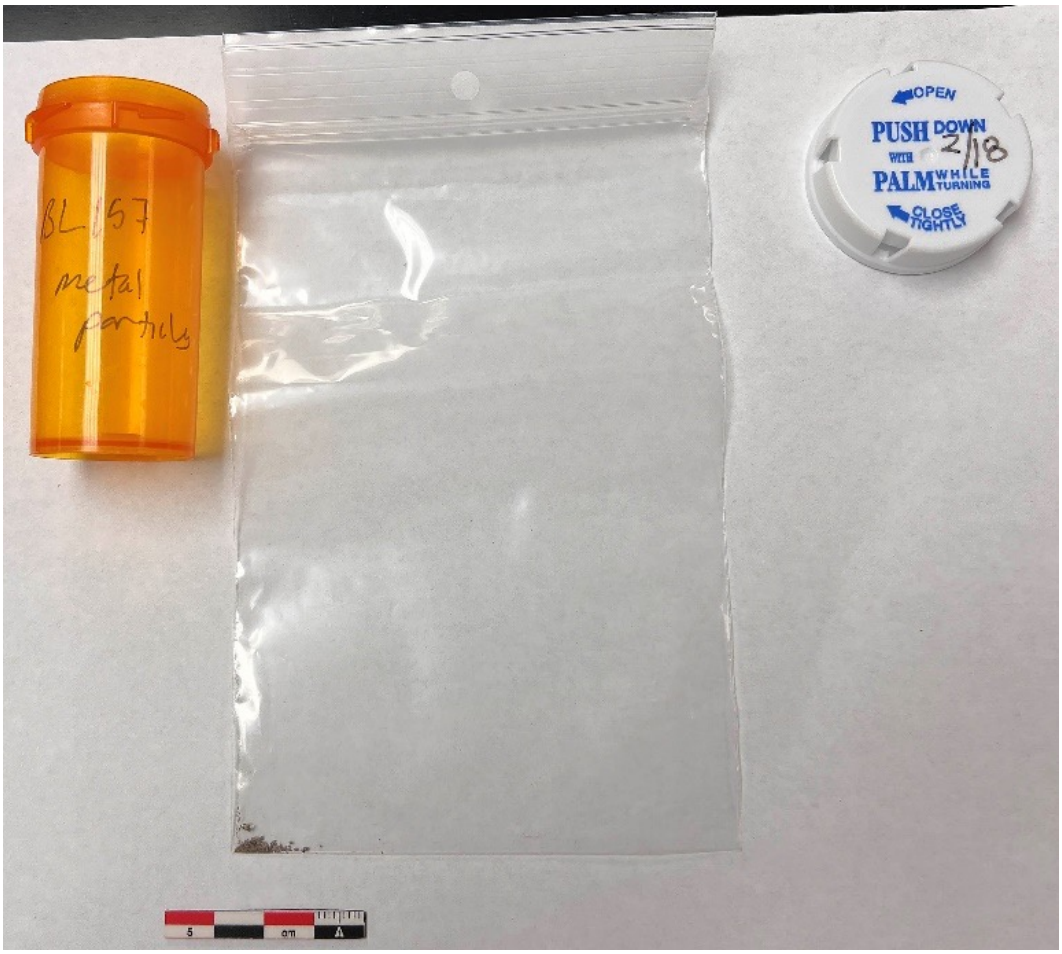

Figure 3. *General photograph of the sample at the time it arrived at the FLASH facility after placement in a thin polyethylene plastic bag.*

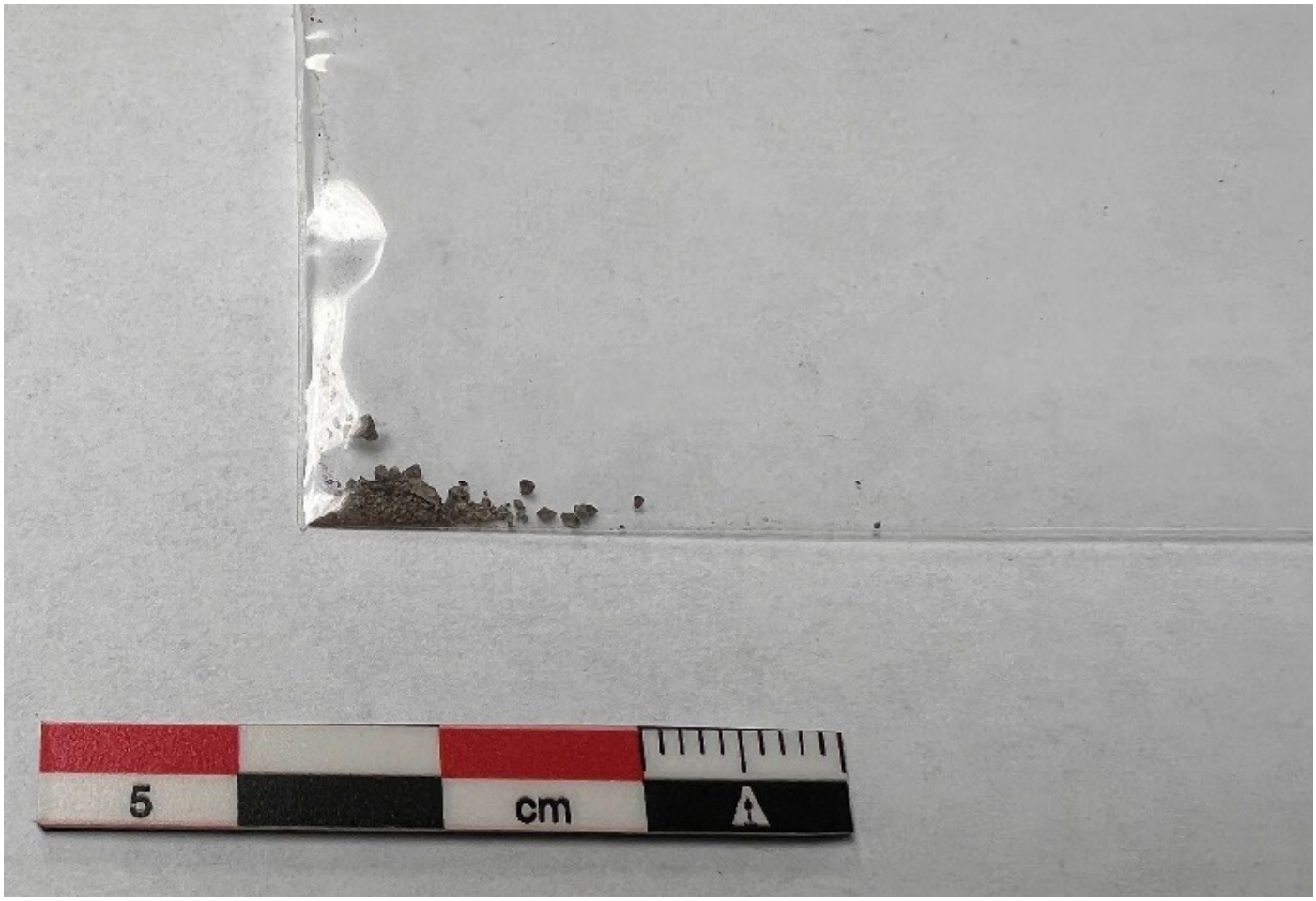

Figure 4. *Detail of the sample condition at the time it arrived at the FLASH facility after placement in a thin polyethylene plastic bag.*

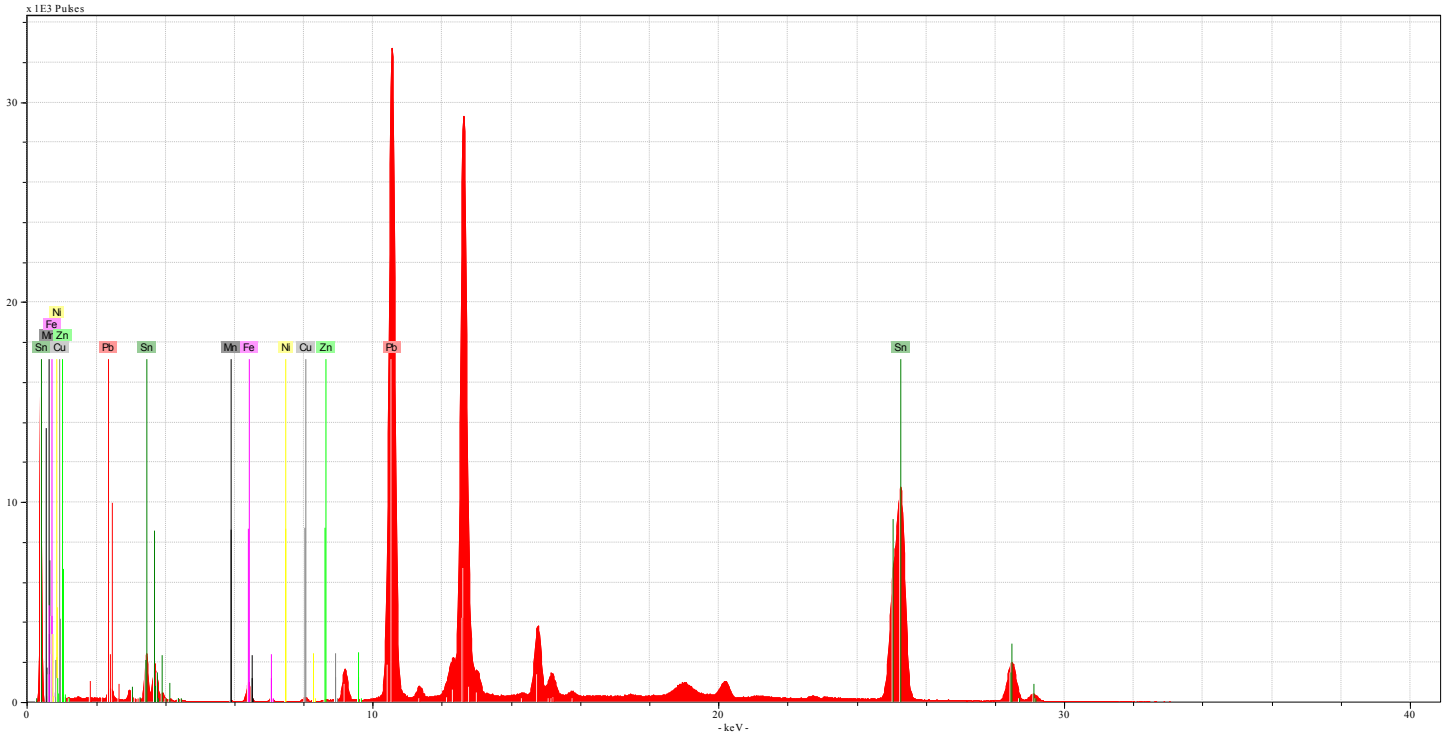

Figure 5. *Spectrograph of a typical analysis of the unidentified metal sample fragment from Burial 157. Note: The predominant signals are for lead (Pb) and tin (Sn) with minor and traces amounts of (in order from highest to lowest counts): iron (Fe), copper (Cu), zinc (Zn), manganese (Mn) and nickel (Ni), and aluminum (Al).*

Results and Discussion

The predominant signal counts recorded for the unidentified metal fragment are for the elements lead (Pb) and tin (Sn) with minor and traces amounts of (in order from highest to lowest counts): iron (Fe), copper (Cu), zinc (Zn), manganese (Mn) and nickel (Ni), and aluminum (Al). As clearly indicated in the spectrograph, the elements other than lead and tin likely are related to corrosion products (e.g., iron, aluminum, manganese), while a few might also be trace elements contained within the original metal (e.g., copper, zinc, nickel). No standard was run during the analysis so there is no way to calculate the exact concentration of each element. However, lead has a tendency to fluoresce easily when bombarded with X-rays, and so the resulting peaks are not a reflection of the true concentration of the elements but rather a combination of its abundance and its tendency to fluoresce easily. Conversely, tin has tendency to be more difficult to fluoresce and will tend to produce a lower peak that doesn't necessarily reflect the true concentration of tin in the metal. Therefore, when considering the two elements and their respective peaks, it is probable that the concentrations of the two elements are more likely in the 50% range for each of them.

The combination of tin and lead as an alloy only occurs commonly in a few ways over the past 100 years or so. First is as solder, a low melting alloy of lead and tin commonly used in electrical/electronic work, or in plumbing for joining pipes. Modern solders are typically sold as containing 60% tin and 40% lead, or 50%/50% of each, but tin concentrations can range from between about 5 to 70%. The second common recent alloy use is as pewter, another alloy of lead and tin (though often with other metals as well) used for a variety of tableware (plates, cups, mugs, candlesticks, etc.), but also for odd assortments of items such as pilgrim badges, buckles, snuff boxes and such. Modern pewter alloys typically contain about ~92% tin, 6–7% antimony, and 1–2% copper, sometimes also with bismuth or silver additions. However, the chemical formula for ancient and historic pewters has a fair amount of variability in practice. Eighteenth century French pewter comprised tin and copper in a 100:5 ratio, but also comprised tin and lead in a 100:15 ratio, with the lead portion varying up to 16.5 and in certain cases even up to 83.5 parts per 100 parts of tin (Gale 1909:17), while American pewter of the same period closely followed the French formulae.

Conclusions

Due to the poor preservation conditions of the unidentified metal object found in Burial 157, and due to the rapid degradation of the object sample submitted for analysis to the FLASH facility, a detailed visual examination of the object fragment and interpretation were not possible. However, the heavy corrosion and deteriorated object condition did not prevent compositional analysis of the object fragment with pXRF, which was successfully conducted in the FLASH facility. Results of that analysis indicate a binary alloy of tin and lead, a metal alloy typical of either solder or pewter during the 19th or early 20th centuries.

References

Gale, Edward J.
1909 *Pewter and the Amateur Collector*. Charles Scribner's Sons, New York.

APPENDIX E
UPDATED LANDFORM HISTORY OF OAKLAWN CEMETERY BASED ON 2022-2024 GEOARCHAEOLOGICAL ASSESSMENTS

UPDATED LANDFORM HISTORY OF OAKLAWN CEMETERY BASED ON 2022-2024 GEOARCHAEOLOGICAL ASSESSMENTS

by Debra Green

Introduction

Geoarchaeological investigations during the 2022-2024 field seasons builds on previous interpretations developed from the 2020-2021 field seasons in the Sexton and Original 18 (Block A) areas, which revealed the presence of two buried relict ephemeral (seasonal) creek channels, among other observations (Green et al. 2022). These creeks comport roughly to those displayed on historic topographic maps for this vicinity (e.g., Green et al. 2022:Figures 4.2-4.3), although the scale of those maps makes it difficult to georeference them precisely to the modern setting. Initial review of those historic maps and modern topographic maps suggests that one of the creeks flowed from the north (referred to hereafter as Sexton Creek), meandering south roughly along the west side of Oaklawn Cemetery. The second creek (referred to hereafter as New Potter's Field Creek) flowed east/northeast into the cemetery, then meandered west/southwest where it joined Sexton Creek southwest of the cemetery before draining into the Arkansas River. A 1917 map of the cemetery (Figure 2.12, this volume) and a 1918 Aero View of Tulsa (Green et al. 2022:Figure 4.6) support our assessment that both relict creek channels were filled in prior to 1921. The Aero View also illustrates two other details: 1) heavy vegetation along the southwestern and far western boundaries of the cemetery; and 2) a raised railroad line west of the cemetery. These details suggest the presence of wet, marshy conditions and seasonal highwater table, likely due to the buried ephemeral creek channels.

Subsurface investigations (e.g. backhoe trenching, mechanical augering and coring) of the Sexton and Original 18 areas exposed buried sediment deposits associated with both a fluvial setting (water transport) and a residuum landform (i.e., *in situ* weathered sediments) (Green et al. 2022). An intact buried surface soil was encountered in the northwest corner of the Sexton Area Block roughly 4-6 meters (13-18 feet) below the modern surface and several layers of fill. An intact buried surface was similarly documented in the Original 18 area under the modern surface and layers of fill, albeit at a shallower depth. The results suggest significant landscape modification was added in these sections of the cemetery—presumably to deal with the on-going battle with the water table and expand the area for placement of burial plots in the New Potters Field.

Beyond the layers of fill sediment, our excavations have recovered numerous historic artifacts that were deposited in the creek channels from the period prior to the establishment of the cemetery through at least the early 20th century (Regnier 2022, 2024, and this volume). Additionally, we documented buried sections of asphalt in the Sexton area—likely associated with the perimeter road that once existed in this part of the cemetery (Green et al. 2022: Figure 4.14). No graves were documented in the Sexton Area, but numerous burials have been documented in the Original 18 area. The shafts for these graves were excavated into layers of fill; additional layers of fill were placed over these burials. Few of these graves have associated markers visible on the ground surface.

Taken collectively, the stratigraphic units observed in 2020 and 2021 indicated a complex and varied taphonomy of historic anthropogenic deposits and natural landscape. Geoarchaeological assessments of the stratigraphic units observed in excavation Blocks B-I during the 2022-2024 field seasons affirm these earlier interpretations, particularly as they pertain to the buried New Potter's Field Creek and the heavily modified landscape that holds many burials we now know to be present in this part of Oaklawn Cemetery.

The following discussion summarizes the results of geoarchaeological investigations from the 2022-2024 field seasons. The discussion is organized by the two distinct landforms observed in profiles of Excavation Blocks B-I (Figure 1) consisting of residuum weathered from shale of Pennsylvanian age and a fluvial terrace associated with the ephemeral creek along the southern border of the cemetery.

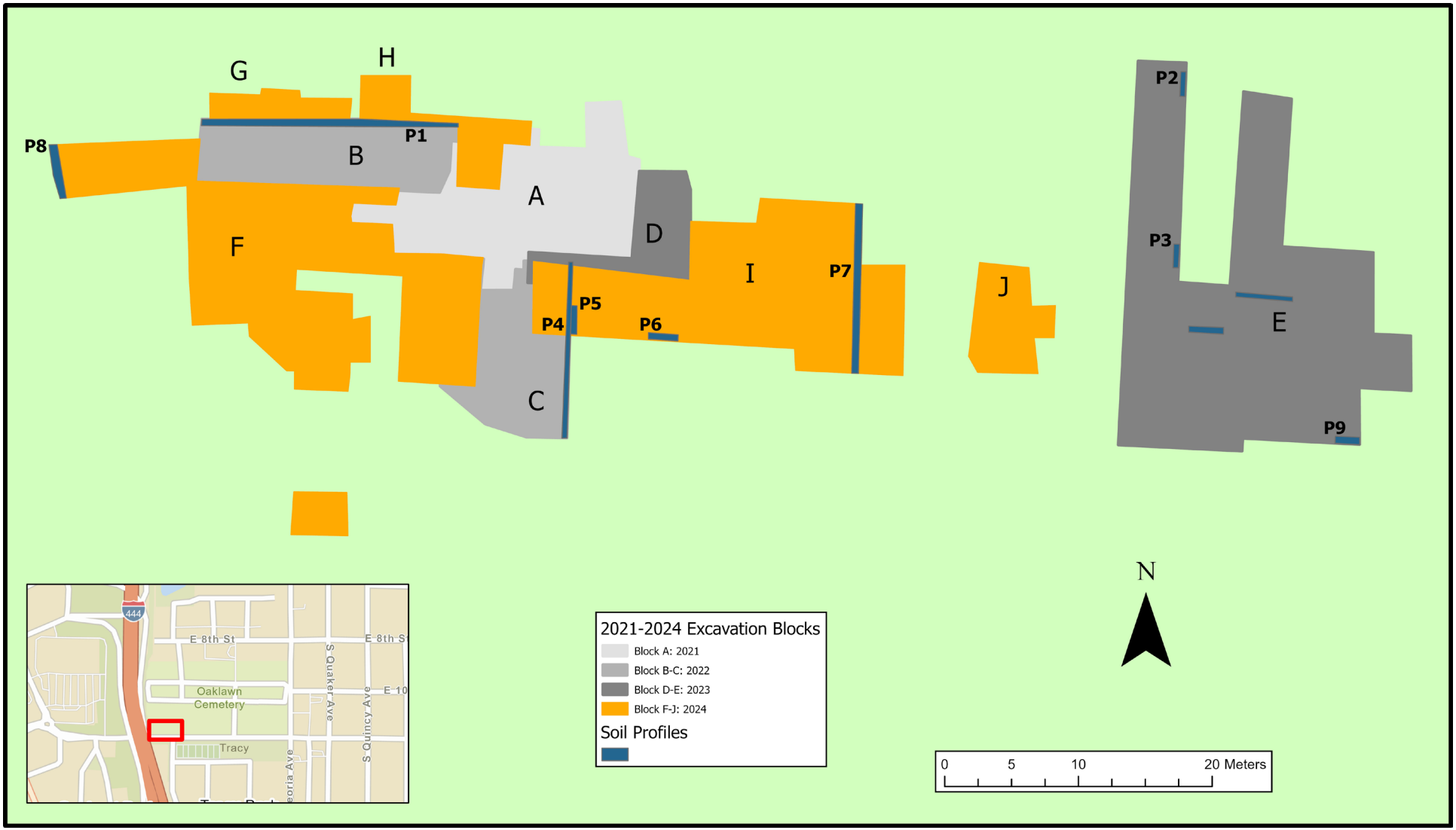

Figure 1. *Map of excavation Blocks A-J displaying the position of the soil profiles described in the text.*

Residuum Landform Profiles

Excavation of Block B revealed six stratigraphic units (I-IV) in Profile #1 (Table 1, Figure 2). The units are consistent with burial and landscape modified fill material above the natural weathered residuum associated with the Dennis soil series. The basal deposit, Unit V is the natural subsurface argillic soil (Bt horizon) characterized by intermingled yellowish brown (10YR 5/8) and brownish yellow (10YR 5/6) silty clay with few fine dark manganese concretions and iron depletions in the matrix, consistent with poorly drained soils that formed in weathered shale. Above Unit V is a series of dark yellowish brown (10YR 3/4 and 4/4) gravelly clay, silt, and red (2.5YR 4/6) sandy modified deposits (Units III, IIIb, & IV). Unit IV consists of reworked gravelly clay and red sand. The red sand has a similar lithology to the red sand observed just below the sod layer (20-30 cmbs) of the profiles in the Sexton area and other excavated Block areas.

Table 1. Unit descriptions for Profile #1, Block B, North Wall (2022)

Depth (cm)	Unit	Description
0-25	I	Very dark grayish brown (10YR 3/2) moist, clay loam; strong fine coarse granular structure; friable, firm; many fine and few large roots; clear wavy boundary.
25-70	II	Reddish yellow (7.5YR 6/6) moist, gravelly clay; massive structure; very hard, very firm; few fine prominent pinkish gray (7.5YR 6/2) iron depletions and black (7.5YR 2.5/1) manganese (Mn) nodules; few fine oxidized Fe masses; abrupt wavy boundary.
35-95	III	Dark yellowish brown (10YR 3/4) moist, silt loam; weak fine granular structure; hard, firm; many medium distinct gray (10YR 6/1) iron depletions in the matrix; few fine oxidized Fe masses; abrupt irregular/broken boundary.
60-75	IIIb	Dark yellowish brown (10YR 3/4) moist, gravelly silty clay; poorly sorted, coarse grained, 20% angular pebble size siltstone; abrupt broken boundary.
65-100	IV	Intermingled dark yellowish brown (10YR 4/4) moist, silty clay and red (2.5YR 4/6) moist, sand; massive structure; very hard, firm; abrupt irregular/broken boundary.
70-100	V	Intermingled yellowish brown (10YR 5/8) and brownish yellow (10YR 6/6) moist, silty clay; strong, medium, sub angular blocky structure; very hard, very firm; few fine dark manganese concretions; common medium prominent yellowish red (5YR 4/6) masses of oxidized iron in matrix.

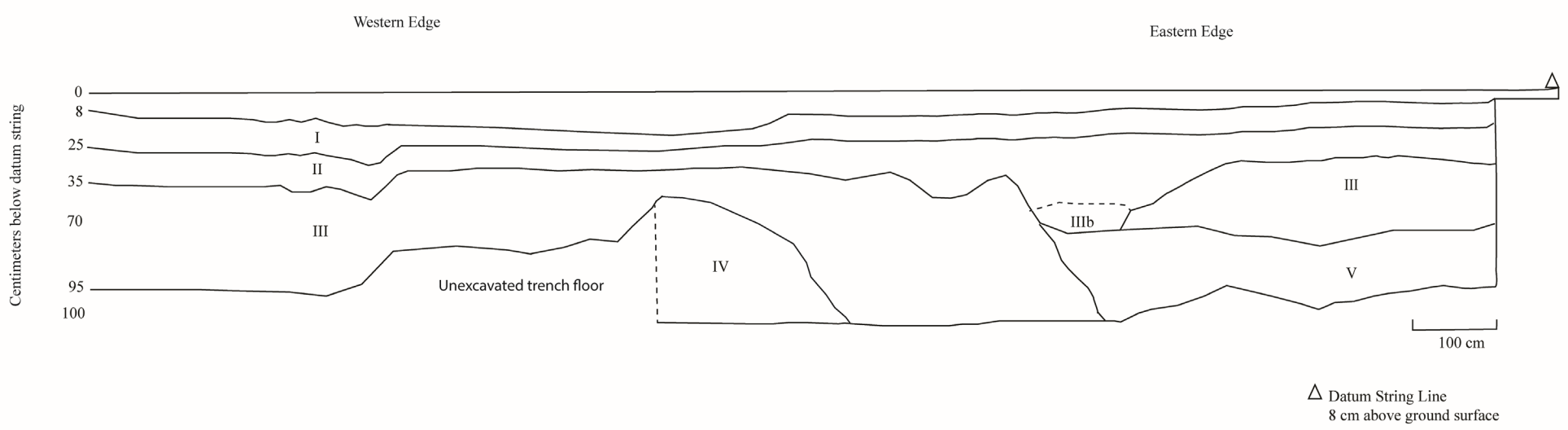

Figure 2. *Line drawing of Profile #1, Block B, North Wall.*

Above Unit IV are two dark yellowish brown (10YR 3/4) disturbed gravelly clay and silty deposits associated with burial fill and landscape modification activities. These units tend to retain some of the natural soil characteristics such as iron depletions and presence of dark manganese concretions/nodules. These units are consistent with other units associated with human activities of digging burial graves and soil movement to deal with the subsidence that occurred in this section of the cemetery due to the creek channel and associated seasonal high-water table. The overlying units (Unit I-II) are characterized by reddish yellow (7.5YR 6/6) gravelly clay Unit II and very dark grayish brown (10YR 3/2) clay loam Unit I, disturbed surface soil. Unit I was disturbed by prior excavations of Block A.

Profile #2 in Block E at B109 and B110 (Table 2) consists of six stratigraphic units (I-VI). At the base of the profile, Unit VI is dark yellowish brown (10YR 4/6) clay with distinct horizontal streaks of gray (10YR 6/1) iron depletions mottled with iron (Fe) soft masses. Unit VI is characteristic of one of the Dennis soil series designated subsurface Bt horizons. A yellowish brown (10YR 5/4) disturbed gravelly clay unit (Unit V) abruptly overlies the basal unit in an irregular/broken pattern. The gravelly clay unit is buried by a series of light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 3/4) silty deposits (Units II-IV) containing angular siltstone pebbles and rounded cobble-size dolomite rocks. The surface unit (Unit I) is compact and disturbed due to backhoe and other mechanized activities associated with early phases of the project. Units I-IV are consistent with the movement of soil from grave excavation and landscape leveling at the contact between the residuum land surface and the creek channel that created a bowl-shape in this section of the cemetery.

Table 2. Unit descriptions for Profile #2, Block E, North End of East Wall (2023).

Depth (cm)	Level	Description
0-30	I	Dark grayish brown (10YR 4/2) moist, brown (10YR 4/4) dry, clay loam; weak fine granular structure; firm, friable; many fine and medium roots; disturbed and compacted by backhoe trenching; abrupt wavy boundary.
30-58	II	Dark yellowish brown (10YR 3/4) moist, brown (10YR 4/3) dry, silt clay; massive structure; firm, hard; few fine roots; clear wavy boundary.
58-90	III	Light yellowish brown (10YR 6/4) moist, dark yellowish brown (10YR 4/4) dry, gravelly silt loam; massive structure; hard, extremely firm; 80% angular siltstone pebbles and rounded dolomite cobbles; abrupt irregular boundary.
90-105	IV	Light yellowish brown (10YR 6/4), yellowish brown (10YR 5/6) dry, silt loam; massive structure; friable, firm; many coarse distinct dark grayish brown (10YR3/2) mottles; abrupt irregular boundary.
105-115	V	Yellowish brown (10YR 5/4) moist, brownish yellow (10YR 6/8) dry, gravelly clay; massive structure; firm, hard; many prominent dark grayish brown (10YR 3/2) mottles; abrupt irregular boundary.
115+	VI	Dark yellowish brown (10YR 4/6) moist, brownish yellow (10YR 6/8) dry, clay; massive structure; common coarse Fe soft masses; common distinct horizontal streaks of gray (10YR 6/1) iron depletions.

Relict Creek Terrace Landform

Profile #3 exposed in the west wall of Block E between Burials 100 and 102 (Table 3) displays evidence that the relict creek channel may have meandered to the northwest. The basal unit of Profile #3 consists of moderately sorted, coarse-grained sandy sediments consistent with fluvial sediments. Basal Unit VIII consists

Table 3. Unit descriptions for Profile #3, Block E, South End near Burials 100 & 102 (2023).

Depth (cm)	Unit	Description
0-16	I	Dark brown (10YR 3/3) moist, grayish brown (10YR5/2) dry, clay loam; strong fine to coarse granular structure; firm, slightly hard; many fine to medium roots; disturbed and compacted by backhoe trenching; abrupt wavy boundary.
16-35	II	Brown (10YR 4/3) moist, dark yellowish brown (10YR 4/4) dry, gravelly sandy loam; massive structure; friable, very firm; few fine roots; 30% angular pebble size gravels; abrupt wavy boundary.
35-52	III	Dark yellowish brown (10YR 3/6) moist, yellowish brown (10YR 5/6) dry, gravelly clay; massive structure; hard, firm; few fine roots; cultural material consisting of a large red brick; 5% angular weathered dolomite, siltstone, and shale small cobble size rocks; abrupt wavy boundary.
52-71	IV	Very dark grayish brown (10YR 3/2) moist, dark yellowish brown (10YR 3/4) dry, gravelly clay loam; firm when dry, friable when moist; few medium roots; cultural material consisting of a nail and metal fragments; 70% angular pebble-to-small cobble size angular siltstone and shale; abrupt irregular/broken boundary.
71-81	V	Intermingled yellowish brown (10YR 5/4) and brownish yellow (10YR 6/6) moist, gravelly clay; massive structure; hard, firm; 1% siltstone angular pebble size gravels; abrupt irregular/broken boundary.
81-98	VI	Intermingled brown (10YR 4/3) and yellowish brown (10YR 5/8) moist, gravelly clay loam; massive; 40% pebble size angular siltstone and few fine dark manganese concretions; common prominent streaks of light greenish gray (Gley 1, 8/1) iron depletions; abrupt, irregular boundary.
98-110	VII	Yellowish brown (10YR 5/6) moist, brownish yellow (10YR 6/8) dry, clay loam; massive structure; with faint weak bedding of siltstone in the upper and lower 10 cm; firm when dry, friable when moist; few fine dark manganese concretions with laminated streaks of yellowish red (5YR 4/6) oxidized iron (Fe); abrupt, irregular/broken boundary.
110-120	VIII	Dark yellowish brown (10YR 4/4) moist, yellow (10YR 7/8) dry, sandy loam; single grain, firm, very friable; moderately sorted coarse-grained.

of dark yellowish brown (10YR 4/4) sandy loam. Unit VIII likely represents the channel of the relict stream due to the presence of moderately sorted and coarse-grained sand. Mantling the sandy basal unit is a series of thin yellowish brown gravelly clay loam fill deposits (Units V - VII) separated by abrupt, irregular/broken boundaries. The series of thin gravelly clayey units are characterized by streaks of light greenish gray (Gley 1, 8/1) iron depletions, manganese concretions, and laminated streaks of yellowish red (5YR 4/6) oxidized iron (Fe). These redoximorphic features are consistent with natural soil processes due to the changes in seasonal water table. The upper portion of the trench profile consists of gravelly clay units (Units III & IV) capped by loamy modified deposits (Units I-II) recently disturbed by backhoe trenching and other activities associated with the project.

Profile #4 in excavation Block C revealed five stratigraphic units (Table 4, Figure 3). Basal Units III, IIIb and IV are consistent with creek sediments observed in other excavation areas along the southern most portions of the cemetery study area. Units IV and IIIb consist of horizontal dark- and light-colored silt lamination beneath homogeneous red sand capped by surface sod. The basal units are dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) silt with miscellaneous metal, broken and whole glass bottles, and nails present. The horizontal laminae sedimentary features are consistent with fluvial accumulated sediments.

Table 4. Unit descriptions for Profile #4, Block C, East Wall (2022).

Depth (cm)	Level	Description
0-20	I	Very dark grayish brown (10YR 3/2) moist, sandy loam; strong large granular structure; very friable; many fine roots; clear smooth boundary.
20-30	II	Strong brown (7.5YR 5/8) moist, very fine sand; single-grained; well-sorted; loose; few fine and medium roots; abrupt irregular boundary.
30-95	III	Dark brown (10YR 3/3) moist, silt; few large distinct strong brown (7.5YR 4/6) mottles; strong medium granular structure; hard, firm; few faint lamination; few fine roots; abrupt- to clear wavy boundary.
70-95	IIIb	Very dark grayish brown (10YR 3/2) moist, silt loam; massive structure; very friable, firm; faint fine broken laminated silt; clear broken boundary.
95-120	IV	Very dark grayish brown (10YR 3/2) moist, silt loam; massive structure; very friable, firm; faint fine broken laminated silt; few coarse Fe soft masses; common distinct horizontal streaks of gray (10YR 6/1) iron depletions.

Three profiles were described in excavation Block I (Profiles #5, 6, & 7). Profile #5 consists of six stratigraphic units (I – IIId) (Table 5, Figure 4). The basal deposit, Unit III, consists of brown (10YR 4/3) laminated silt with intrusive (Units IIIb-d) dark yellowish brown (10YR 3/4) to dark grayish brown (10YR 3/2) silt to clay loam deposits. Unit III contained a dense concentration of metal and glass artifacts. The horizontal stratified silt suggests the artifacts were being buried by small and fluvial depositional events consistent with other areas associated with the ephemeral creek. The upper profile consists of dark yellowish brown (10YR 4/4) gravelly clay fill (Unit II) containing red brick fragments, nails, charcoal and cobble-size dolomite rocks. The fill material is capped by the disturbed sod level (Unit I).

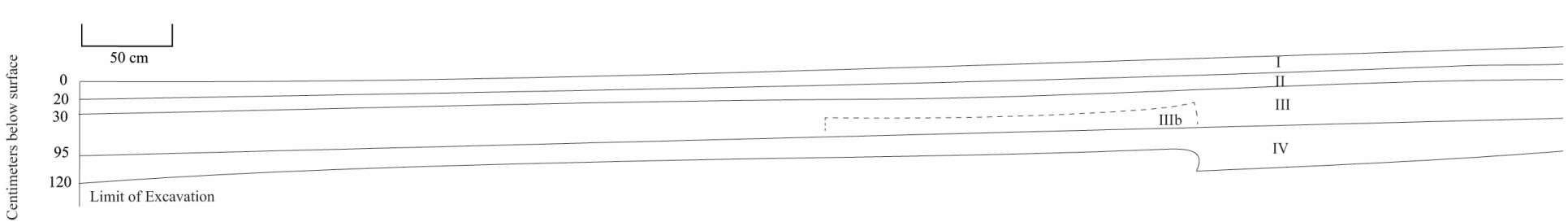

Figure 3. *Line drawing of Profile #4, Block C, East Wall.*

Table 5. Unit descriptions for Profile #5, Block I, West Wall (2024).

Depth (cm)	Level	Description
0-25	I	Dark brown (10YR 3/3) moist, clay loam; granular to massive structure; friable, firm; many fine and large roots; disturbed by project activities; abrupt wavy boundary.
25-75	II	Dark yellowish brown (10YR 4/4) moist, gravelly clay loam; massive structure; hard, firm; many distinct yellowish brown (10YR 5/8) mottles; cultural material consisting of nails, red brick fragments; cobble size weathered dolomite rocks; abrupt broken boundary.
75-170	III	Brown (10YR 4/3) moist, silt; massive structure; dark grayish brown (10YR 4/2) distinct fine laminated silt; very friable, firm; few medium roots; bucket auger containing silt and historic period artifacts and charcoal to an additional 45 cm.
100-150	IIIb	Very dark grayish brown (10YR 3/2) moist, silty clay loam; massive structure; very friable, firm; faint fine broken laminated silt; clear broken boundary.
100-120	IIIc	Dark grayish brown (10YR 3/2) moist, clay loam; massive, friable, firm; few distinct dark grayish brown (10YR 4/2) mottles; clear broken boundary.
75-80	IIId	Dark yellowish brown (10YR3/4) moist, silt; very friable, friable; faint fine laminated silt; gradual smooth boundary.

The stratigraphic units observed in Profile #5 of Block I supports earlier interpretations of the complexity and varied taphonomy of the historic anthropogenic and natural deposits in the southwest section of the cemetery. The terrace sediments (laminated silt) associated with the relict creek channel is present in this portion of the cemetery and was buried by gravelly clay fill material to elevate and attempt to level the area above the original waterlogged low-lying section of the landform caused by the relict creek incising its channel into the residuum landform.

Profile #6 located south of B127 is characterized by five stratigraphic units (Table 6). The base of the profile is characterized by the very dark grayish brown (10YR 3/2) laminated silt (Unit V) containing artifacts of varying densities. Above the fluvial silt is brown (10YR 4/3) and strong brown (7.5YR 5/6) compact clay (Unit IV) with streaks of gray (10YR 6/1) iron depletions consistent with changes in the water table. Unit IV contained scattered nails and unidentified metal fragments. Unit IV is beneath a very dark grayish brown (10YR 3/2) gravelly silty clay unit (Unit III) separated by an abrupt broken boundary. Unit III was observed in sections of Block A abruptly above the natural yellowish brown clayey subsurface soil (Bt horizon) and interpreted as the original A horizon prior to being disturbed and redeposited over portions of the graves.

The upper Units I & II consist of more loamy sediments containing miscellaneous fragments of flat glass and construction bitumen. The presence of these disturbed units is consistent with other areas of the cemetery where material was brought in to deal with the sinking bowl-shaped landform caused by changing water table levels during seasonally high precipitation events.

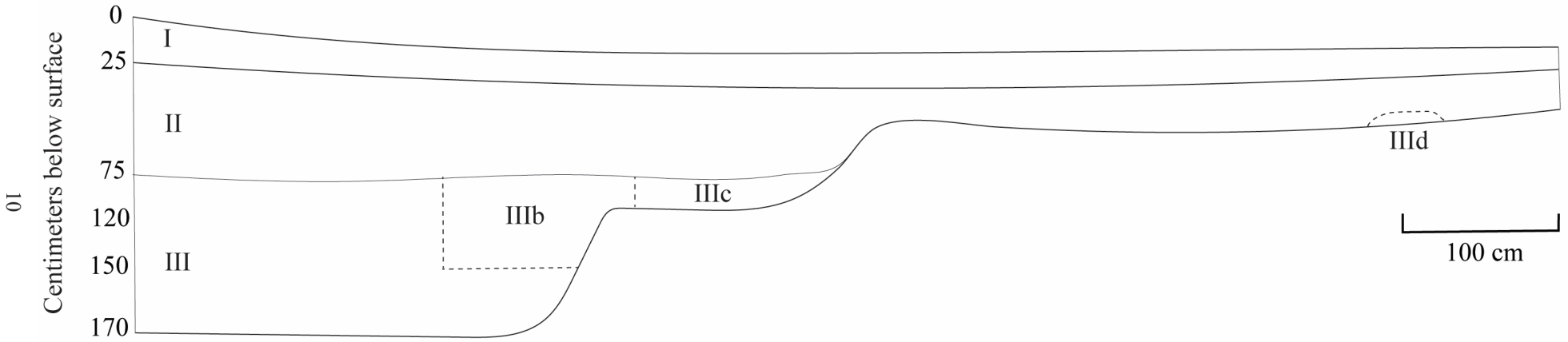

Figure 4. *Line drawing of Profile #5, Block I, West Wall.*

Table 6. Unit descriptions for Profile #6, Block I, South of Burial 127 (2024).

Depth (cm)	Unit	Description
0-10	I	Very dark gray (10YR 3/1) moist, Dark grayish brown (10YR 4/2) dry, clay loam; strong fine to coarse granular structure; loose, friable; many fine to medium roots; abrupt smooth boundary.
10-32	II	Dark brown (10YR 3/3) moist, very grayish dark brown (10YR 3/2) dry, silt loam; single grained structure; friable, very firm; few fine faint mottles; few, fine roots; flat glass and bitumen fragments; abrupt gradual boundary.
32-70	III	Very dark grayish brown (10YR 3/2) moist, very dark gray (10YR 3/1) dry, silty clay; moderate fine crumbly structure; firm, friable; 10% angular pebble size siltstone; few fine roots; abrupt irregular/broken boundary.
70-76	IV	Brown (10YR 4/3) moist, strong brown (7.5YR 5/6); clay massive structure; common coarse Fe soft masses; common distinct horizontal streaks of gray (10YR 6/1) iron depletions; few fine roots; nails/metal fragments; abrupt irregular boundary.
76-100+	V	Very dark grayish brown (10YR 3/2) to pale brown (10YR 6/3) moist, faint laminated silt loam and sand; soft, friable; few fine and medium roots; historic period artifacts.

Profile #7 extends north-to-south along the east wall and is the largest profile described in Block I. The profile contains deposits from both the residuum landform (Unit VI) and relict creek fluvial terrace (Unit V) (Table 7, Figures 5 and 6). The basal units consist of the dark brown (10YR 2/2) to black (10YR 2/1) laminated silt and sand and sections of the yellowish brown (10YR 5/8) clay residuum soil (Bt horizon). Both units were disturbed by excavation of the burial shafts as evident by the abrupt and broken boundaries between units. These units are beneath a series of disturbed clayey and sandy deposits used to level and fill the bowl-shaped landform caused by the relict creek channel.

Profile #8 is in the west wall in Block F at the sidewalk/fence that bisects B184 and B185 along the west edge of the cemetery. The deposits in Block F are a mix of laminated fluvial sediments, residuum natural subsurface soil, grave shafts, and fill material (Table 8, Figure 7). The basal units consist of black (Gley 1 2.5N) fluvial silt and sand (Unit V) and natural sections of the yellowish brown (10YR 5/8) subsurface clay residuum soil (Unit VII). Both units were disturbed by excavation of the grave shafts (Units VI-VIII). These units are beneath a series of disturbed very dark grayish brown (10YR 3/2) and brown (10YR 4/3) loamy to light yellowish brown (10YR 6/4) clayey units (Units I-IV) used to level and fill the creek channel and subsequent burials due to subsidence caused by the water table and natural slope of the junction between the relict Sexton and New Potters Field creeks to the southwest of the cemetery (Figure 9).

At the time of recording, Profile #9 was unlike any other documented in the New Potters Field to-date. This profile exposes a feature with numerous bricks (see Stackelbeck and Green 2024:Figure 2.16); its exact nature has not yet been determined, but we suspect it is a brick-lined grave shaft. Located in the southeast corner of Block

Table 7. Unit descriptions for Profile #6, Block I, South of Burial 127 (2024).

Depth (cm)	Unit	Description
0-10	I	Black (10YR 2/1) moist, brown (10YR4/3) dry, silt loam; strong fine to coarse granular structure; hard, friable; many fine to medium roots; abrupt smooth boundary.
10-30	II	Very dark brown (10YR 2/2) moist, brown (10YR 3/3) dry, loam; moderate coarse granular structure; hard, friable; many fine roots; thin siltstone gravel lens in the lower 5 cm; abrupt smooth boundary.
30-55	III	Dark reddish brown (5YR 3/3) moist, yellowish red (5YR 5/6) dry, loamy sand; single-grained, well sorted; friable, loose; abrupt smooth boundary.
20-85	IV	Intermingled very dark grayish brown (10YR 3/2) and yellowish brown (10YR5/6) moist, yellowish brown (10YR 5/8) and dark grayish brown (10YR 4/2); silty clay; massive structure; abrupt wavy boundary.
85-160+	V	Black (10YR2/1) moist, very dark brown (10YR 2/2) dry; prominent laminated silt loam and sand; soft, friable; historic period artifacts; abrupt broken boundary.
100-160+	VI	Intermingled yellowish brown (10YR 5/8), brownish yellow (10YR 6/6) dry, and gray (10YR 6/1) silty clay; weak coarse blocky structure; very hard, firm; patchy clay films on faces of peds; few fine dark manganese concretions in the matrix; few black (10YR 2/1) films and masses on vertical faces of peds; abrupt broken boundary.

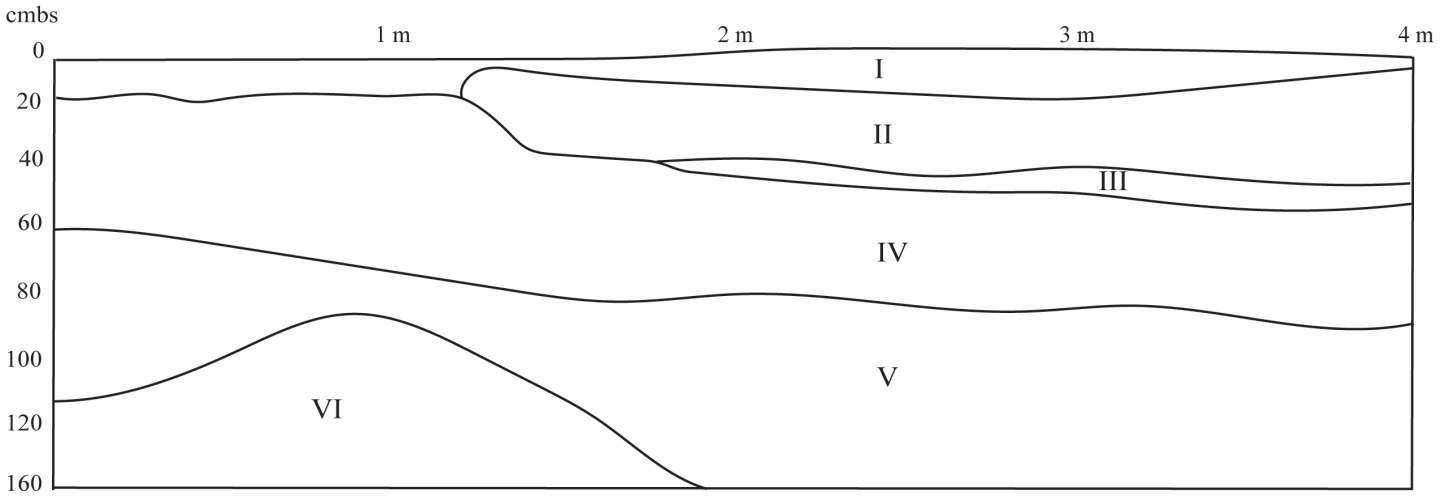

***Figure 5**. Line drawing of Profile #7, Block I, North End of East Wall.*

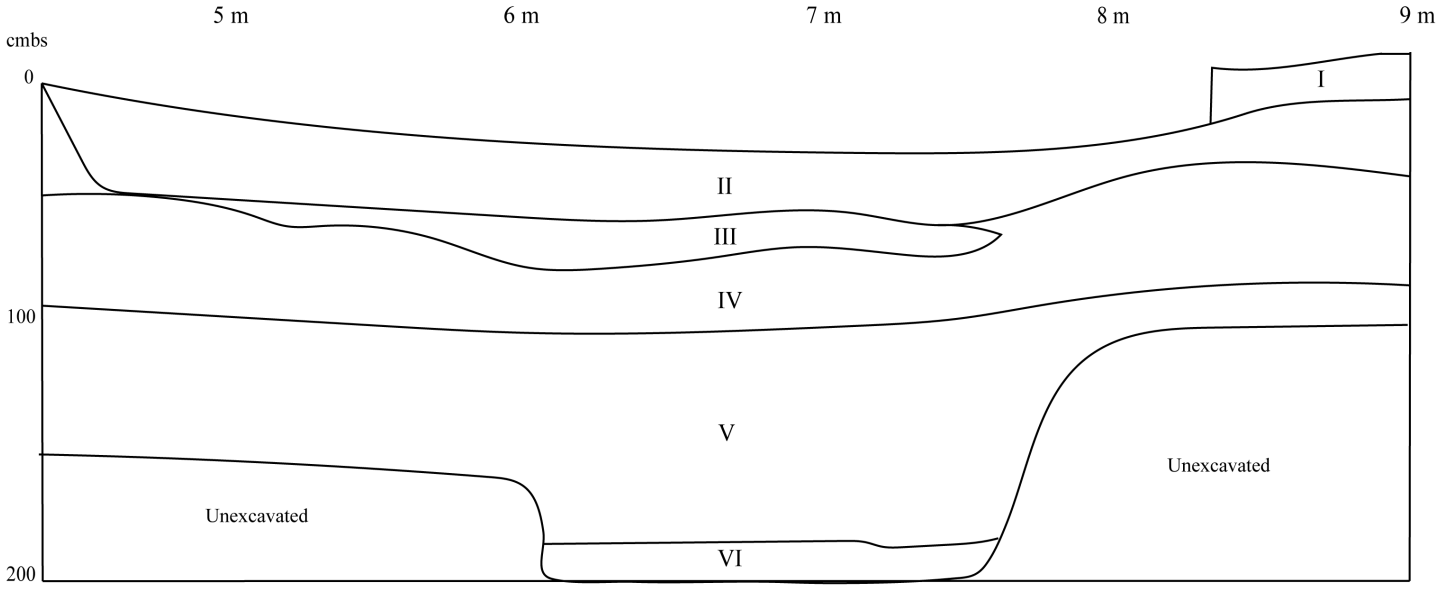

***Figure 6**. Line drawing of Profile #7, Block I, South End of East Wall.*

Table 8. Unit descriptions for Profile #8, Block F, West Wall at Sidewalk/Fence (2024).

Depth (cm)	Unit	Description
0-10	I	Very dark grayish brown (10YR 3/2) moist, grayish brown (10YR5/2) dry, clay loam; strong fine to coarse granular structure; loose, friable; many fine to medium roots; abrupt smooth boundary.
10-25	II	Brown (10YR 4/3) moist, very dark grayish brown (10YR 3/2) dry, sandy loam; single grained structure; friable, very firm; few medium roots; small cobble size dolomite rocks; intermingled with Unit I; abrupt wavy boundary.
25-59	III	Dark grayish brown (10YR 4/2) moist, very dark gray (10YR 3/1) dry, silt loam; moderate fine subangular blocky structure; firm, friable; few fine roots; abrupt irregular/broken boundary.
59-106	IV	Light yellowish brown (10YR 6/4) moist, strong brown (7.5YR 4/6); silty clay; moderate medium subangular blocky structure; common coarse Fe soft masses; common distinct horizontal streaks of gray (10YR 6/1) iron depletions; 30% angular pebble size siltstone and dolomite gravels; clear broken boundary.
106-125+	V	Black (Gley 1 2.5N) moist, faint laminated silt loam and sand; soft, friable; few fine and medium roots; historic period artifacts.
59-125+	VI-IX Burial Shafts	Intermingled brown (10YR 4/3) and yellowish brown (10YR 5/8) moist, gravelly clay; massive; 20% pebble size angular siltstone and few fine dark manganese concretions; common prominent streaks of light greenish gray (Gley 1, 8/1) iron depletions; abrupt, irregular/broken boundary.
50-110+	VII	Intermingled yellowish brown (10YR 5/8), brownish yellow (10YR 6/6) dry, and gray (10YR 6/1) silty clay; weak coarse blocky structure; very hard, firm; patchy clay films on faces of peds; few fine dark manganese concretions in the matrix; few black (10YR 2/1) films and masses on vertical faces of peds; abrupt broken boundary.

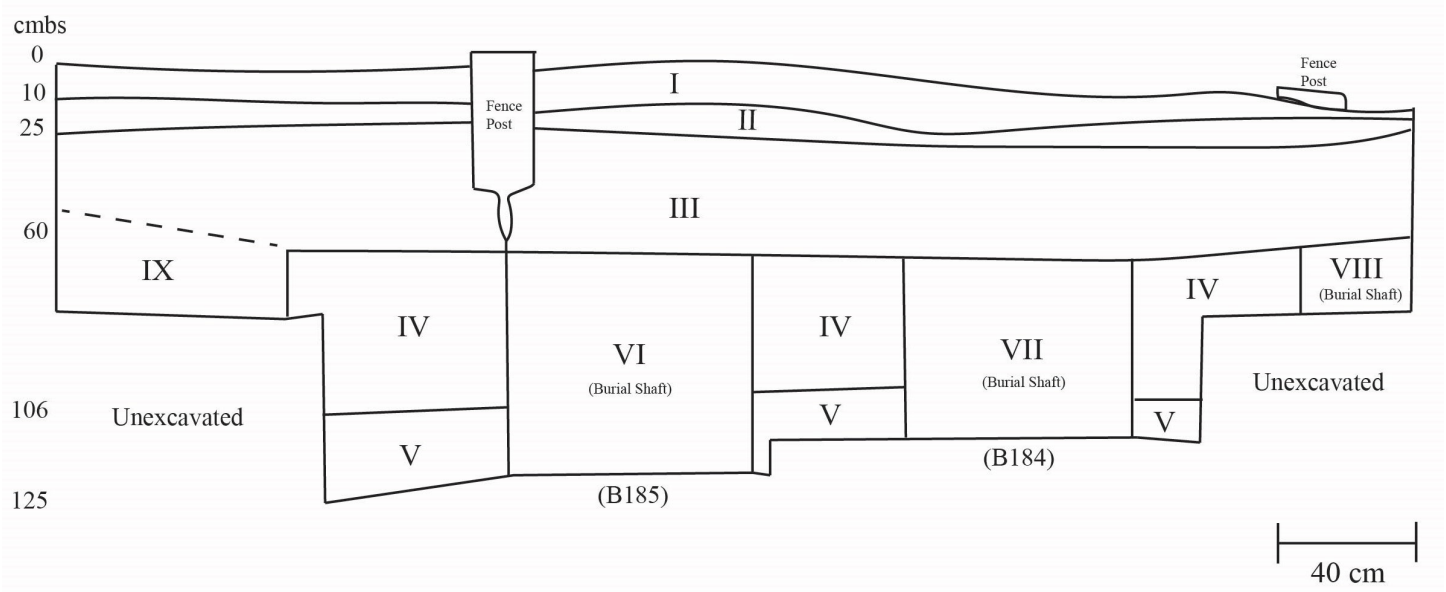

Figure 7*. Line drawing of Profile #8, Block F, West Wall.*

E south of B71 (Table 9, Figure 8), Profile #9 consists of three stratigraphic units. The basal deposit (Unit III) is dark grayish brown (10YR 4/2) silt loam with fine distinct brownish yellow (10YR 6/8) mottling and horizontal streaks of gray (6/1) iron depletions consistent with changes in the water table. Exposed along the bottom of Unit III was a series of horizontally placed mortar-covered red bricks. These mortar-covered bricks are very similar to those documented as expedient markers among several graves to the north of this profile (see Stackelbeck and Green 2024:Figure 2.14). The overlying Unit II is characterized by very dark grayish brown (10YR 3/2) silty clay, with distinct yellow (10YR 7/6) mottles. Above Unit II is the dark grayish brown (10YR 4/2) clay loam Unit I, disturbed surface soil. The top of Unit I is compacted and has been moderately disturbed by project activities (e.g., heavy machinery). Approximately 20 cmbs of this unit are comprised by six intact horizontally positioned red bricks exposed in the trench wall. The units are reworked sediments and represent significant disturbance and earth moving in this section of the block.

Table 9. Unit descriptions for Profile #9, Block E, South Wall near Burial 71 (2023).

Depth (cm)	Level	Description
0-48	I	Dark grayish brown (10YR 4/2) moist, brown (10YR 4/4) dry, clay loam; weak fine granular structure; friable; many fine and medium roots; disturbed and compacted by backhoe trenching, 20 cmbs 6 intact horizontal red bricks; abrupt smooth boundary.
48-100	II	Very dark grayish brown (10YR 3/2) moist, brownish yellow (10YR 6/6) dry, silty clay; massive structure; firm, hard; common fine to large distinct yellow (10YR 7/6) mottles; few fine roots; diffuse irregular boundary.
100-122	III	Dark grayish brown (10YR 4/2) moist, yellowish brown (10YR 5/6) dry, silt loam; massive structure; friable; few medium roots; red bricks with mortar coating present near base of level; many fine distinct brownish yellow (10YR6/8) mottles; common distinct horizontal streaks of gray (10YR 6/1) iron depletions.



Figure 8. *Photograph of Profile #9, Block E, South Wall near B71.*

Oaklawn Landform Summary

The 2022-2024 geoarchaeological assessments support earlier interpretations of the complex and varied taphonomy of the natural landforms and historic anthropogenic deposits relative to the buried relict creek channel that meandered along the southern portion of Oaklawn Cemetery. The buried New Potter's Field Creek channel continues to alter the deposits because of the seasonal changes to the water table. The LiDAR image in Figure 9 illustrates the approximate path of the relict channel (red meandering line in lower left corner) supporting earlier information gathered from topographic maps and 2020-2021 geoarchaeology investigations (Green et al. 2022). The course of the channel can be mapped based on the dark colored laminated fluvial deposits exposed at the base of the excavation blocks, from east to west. The relict New Potter's Field Creek channel flows into excavation Block E somewhere in the southeast corner, meandering northwest into Block I where it changes its course and flows south through the southwest corner of Block I and into Block C. Based on the 2021 geoarchaeological investigations, fluvial sediments were observed along the south wall of Block A. These sediments were reworked (e.g. gravelly, mottled with yellowish clay, absence of laminae) in part as a result of grave shaft excavations. The presence of the dark colored silty and sandy fluvial sediments in Block A suggests the creek channel continued to meander west and south through the New Potter's Field. The profile observed in Block F indicates that the Sexton Creek is present along the western edge of the cemetery where it likely joins the Potter's Field Creek somewhere in the far southwest corner or outside of Oaklawn.

The difference in lithology of the natural deposits indicates different geologic histories. The weathered residuum from shale is defined by yellowish brown silty clay deposited during the Pennsylvania period (320 million years ago). The residuum landform is weathered from shale and is characterized by an A-Bt1-Bt2-Bt3-

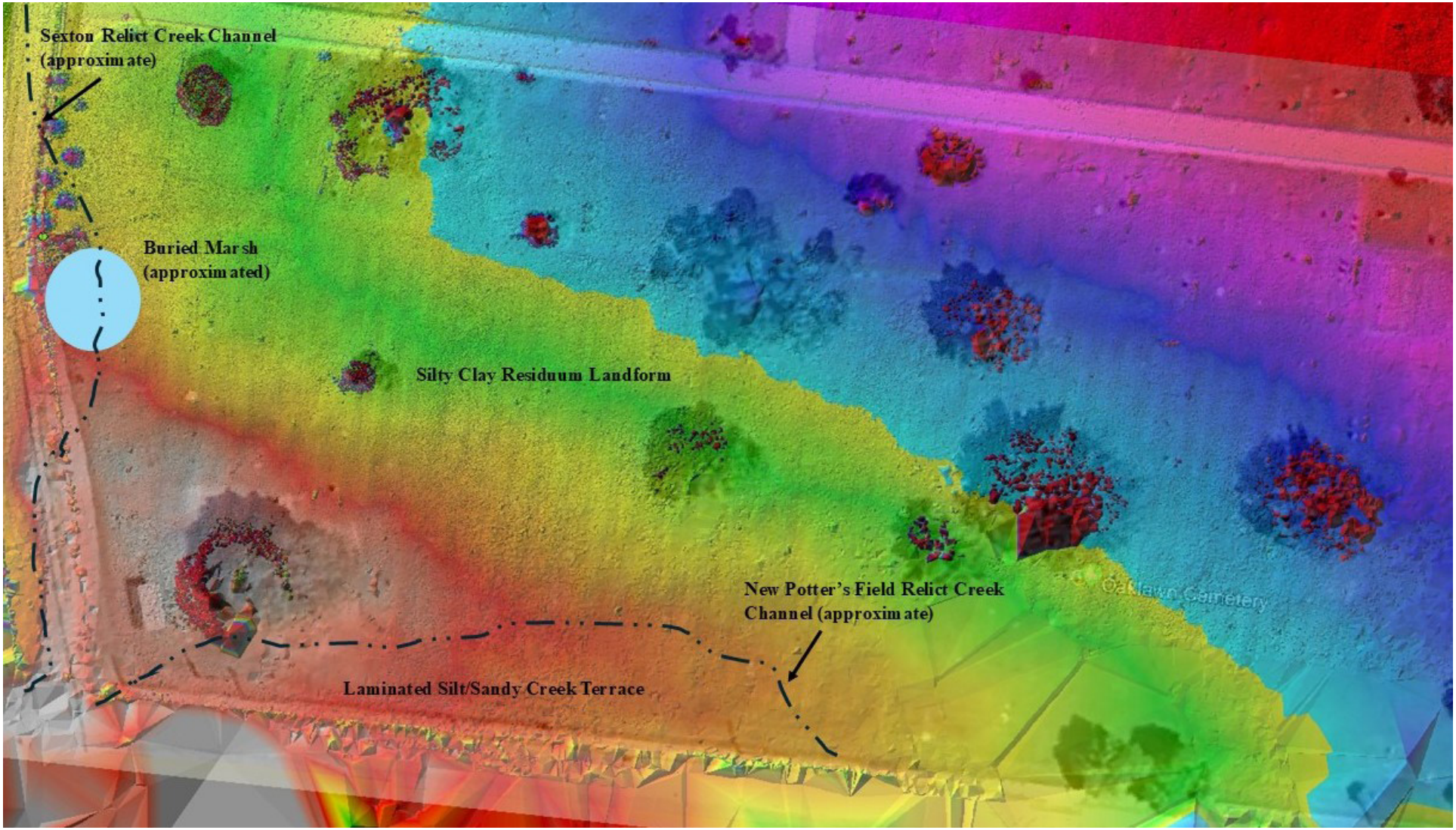

Figure 9. *LiDAR image of the southwest corner of Oaklawn Cemetery displaying: 1) the approximate positions of buried relict creek channels along the western and southern boundaries; 2) the approximate positions of the residuum and relict creek terrace landforms; and the location of a likely buried marsh that was encountered during the 2020 excavations in the Sexton Area.*

Bt4-C soil profile where it hasn't been disturbed by human activities. Both the Sexton and the New Potter's Field Creek channels have incised into residuum landform. The result is the deposition of dark grayish brown/black fine-grained laminated fluvial terrace sediments along the southern edge of the cemetery. The late 18th- to early 19th century artifact density clusters also support the geomorphology of the creek channel path across the southwest corner of the cemetery (see Regnier, this volume). The inclusion of geoarchaeological investigation has been vital to deciphering the taphonomy of the Oaklawn Cemetery deposits. The complex association between human modified landscape change and natural soil formation processes, combined with the physical geologic properties of the weathered residuum shale and fluvial terrace landforms challenged clear observations of the burial shafts during each field season as a result of the post-burial transformation of the deposits.

APPENDIX F
LETTER FROM THE FAMILY
OF C. L. DANIEL

Honoring the Memory and Legacy of C.L. Daniel, Tulsa Race Massacre Victim

For the family of C.L. Daniel, today serves as a profound reminder of the enduring power of love, especially a mother's devotion. C.L. Daniel, the youngest of Thomas and Amanda Daniel's seven sons, grew up under the care of a vigilant and dedicated mother. While DNA provided the scientific key to his identity, letters written on Amanda's behalf offered the context and connection that confirmed C.L was killed in the massacre. Amanda's perseverance in seeking redress serves as clear, indisputable proof that C.L. Daniel was indeed a victim of the 1921 Tulsa Race Massacre.

Over the past two years, we have felt as if our ancestors were with us, guiding us and those dedicated to this project.

C.L. Daniel's journey—from his early days in Newnan, Georgia, to his World War I military service, to his tragic end as a victim of the 1921 Tulsa Race Massacre—has been brought to light thanks to the dedication of his family and a team of committed researchers and scientists. Today represents more than a memorial for C.L. Daniel and those still resting in unidentified graves; it is a long-awaited acknowledgment of lives impacted by the massacre and a testament to the resilience of the Greenwood community, which has sought recognition and justice for their loved ones over generations. We are profoundly grateful to the Greenwood descendant community.

The family also extends heartfelt gratitude to the City of Tulsa and Mayor G.T. Bynum for their commitment to the 1921 Graves Investigation, which led to the successful identification of C.L. Daniel. This investigation has provided acknowledgment and recognition for the families of those lost, empowering voices that have long been silenced. It is our sincerest hope that this project continues well into the future.

The family wishes to publicly acknowledge and thank the scientists at Intermountain Forensics Lab and the entire investigative genetic genealogy team, especially Janel Daniels and Alison Wilde. Additionally, we extend our gratitude to Dr. Phoebe Stubblefield, Director of Forensic Anthropology from the University of Florida, and Dr. Kary Stackelbeck, State Archaeologist from the University of Oklahoma and their staff, for their tireless work. These teams have illuminated C.L. Daniel's story, reinstating his place in history and preserving his memory for future generations.

On behalf of C.L. Daniel's great-nieces and nephews, we thank you for honoring the life and memory of our great-uncle. His story and death serve as a reminder for all to remain committed to remembrance, justice, and healing.

In unity and remembrance,

The Family of C. L. Daniel

The Family of C.L. Daniel

(For any additional inquiries, contact Stacy Daniel Brown and Andrew Poythress at Cldaniel1921@gmail.com)

APPENDIX G
PARTICIPANTS IN THE 2024 EXCAVATIONS AT OAKLAWN CEMETERY

PARTICIPANTS IN THE 2024 FIELD SEASON AT OAKLAWN CEMETERY

The fieldwork that has been conducted to-date could not have been possible without incredible support and active participation by numerous individuals. Those who assisted specifically with the forensic anthropology laboratory and escorting decedents are listed in Chapter 5 of this volume. The list below includes: 1) City of Tulsa personnel who assisted with the logistical coordination, communications, and other essential tasks; 2) those individuals who assisted with the archaeological monitoring, excavations, screening, analyses, and documentation; and 3) others whose contributions may not be otherwise noted in the body of the report. We regret any oversights if we have missed anyone.

City of Tulsa Personnel

- Mayor G. T. Bynum
- Terry Ball
- Michelle Brooks
- Kyra Carby
- Cassia Carr
- Thomas Chandler
- Carson Colvin
- Mark Hogan
- Tim McCorkell
- Brian Nutt
- Rodrigo Rojas
- James Wagner
- Mark Weston
- Security Personnel
- Other Public Works Personnel

Archaeological Monitoring and Test Excavations

- Brenda Nails-Alford, Community Member
- Jennifer Haney, Oklahoma Archeological Survey
- Michael Loughlin, Stantec
- Ryan Peterson, Stantec
- Amanda Regnier, Oklahoma Archeological Survey
- Kary Stackelbeck, Oklahoma Archeological Survey

Burial Excavators (Stantec)

- Tyler Donaldson
- Michael Loughlin
- Kelsey Kreiser
- Erin McKendry
- Izzy Ortt
- Rebecca O'Sullivan
- Eric Prendergrast
- Ryan Peterson

- Allie Powell
- Kathleen Settle
- Jeremy Wilson
- Gretchen Zoeller

Heavy Machinery Operator

- Brett Hayes, Stantec

Screeners (Stantec)

- Matt Compton
- Kristin Coon

Artifact Analysis and Photography:

- Brooke L. Drew, Stantec
- Amanda Regnier, Oklahoma Archeological Survey
- Elizabeth Crisp, Oklahoma Archeological Survey

Photogrammetry, Digital Data Capture, and Mapping (Stantec):

- Alex E. Badillo
- Eric Prendergast
- Christopher Blair
- Amanda Regnier, Oklahoma Archeological Survey
- Phillip Miller, Oklahoma Office of the Chief Medical Examiner

Assistance with Report Graphics

- Conrad Aaron, Oklahoma Archeological Survey
- Alex E. Badillo, Stantec

Profile mapping

- Debra Green, Oklahoma Archeological Survey
- Conrad Aaron, Oklahoma Archeological Survey
- Jennifer Haney, Oklahoma Archeological Survey
- Kary Stackelbeck, Oklahoma Archeological Survey

Report Compilation and Formatting

- Amanda Regnier, Oklahoma Archeological Survey

Historic Records Research

- Luke Williams, Tulsa Historical Society and Museum

Others

- Michelle Burdex, Greenwood Cultural Center