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INTEGRITY TREE IMAGING
See your tree from the inside out.

Produced using Tree-Radar® Technology

(NDE) Nondestructive Evaluation Method

Client: [redacted]rd **Date:** 8/16/2024
Address: [redacted] Atlanta, GA
Name: 075
Prepared for: Meghan [redacted]
Type: Ginkgo biloba
Location: N33[redacted]47’
W084˚[redacted]

Note: Radar scans are a measurement of the density and soundness of the internal and below-ground structure of the tree. The scans only address the specific areas of the tree where the scans were performed. The internal condition of the trunk/roots from the reported scans are not a diagnosis of the tree’s overall resilience.

Root Scans

1. Standard depth scan

The Ginkgo biloba tree pictured above, is located at 1280 Peachtree St NE, Atlanta, GA. The tree stands on the front lawn of the High Museum of Art. The purpose of the images and the DXF files provided is to accurately identify and locate the critical root structures of this tree. With that information, multiple posts or pilings can be installed in locations under the canopy of the tree without damaging individual roots that support this tree.

In order for the client to identify the exact locations of individual roots, the layout of the scanning patterns using surveying flags as seen in **Figure 2** will need to be replicated, using North, South, East, and West cardinal points. All the circular scans on this project were conducted in the clockwise direction around the trunk of the tree.

In **Figure 2**, the root scanning pattern consists of eight concentric circles. The first circle is two feet from the base of the tree. The following seven circles are two feet apart, each, achieving a total of eight concentric circles. Considering the 8-foot diameter of the base of the tree, this yields a 40' diameter circular imaging pattern. All images that appear in the report and in the DXF files are oriented such that the exact top of each image corresponds to True North. It is critical that True North is located and marked as a reference as this will determine/synchronize the location of the roots from the images. All eight, C1-C8 are complete (fully circular) scan patterns. Again, all eight scans begin at N and end at N going in the clockwise direction. Note: the green dotted lines indicate landmarks for orientation purposes.

Three different **root depths** are identified in the following standard scanned images. In the morphology images, and the plot detection images, the red triangles and roots will represent Zone 1, which is 0-8" deep. The green triangles and roots designate roots in Zone 2, roots 8-16" deep in the soil. Blue triangles and roots designate Zone 3, roots 16" and deeper in the soil. Carefully examine the left-side tool bar that indicates what the image represents.

Three different **root sizes** are identified in the following standard scanned images. In the morphology images, the plot detection images, and in the virtual trench images, the red triangles and roots represent roots ¼-1" in diameter. The green triangles and roots designate roots 1-3" in diameter. Blue triangles and roots designate roots 3" and larger in diameter. Carefully examine the left-side tool bar that indicates what the image represents.

Figure 1 is a combination of all eight of the straight-line scans (virtual trench images) showing each root position in the C1-C8 circular scan patterns completed. The red triangles represent the smallest (1/4-1" diameter) roots that supply nutrients and water. The green triangles are the medium-sized (1-3"diameter) roots, and the blue triangles represent the largest (3" and larger diameter) tree roots. The numbers on the left side of each scan indicate the depth of the roots in inches. The numbers on the top of each scan indicate the exact location in inches along the circular length of each scan. With these

measurements and replicating the locations with survey flags, root locations can be pinpointed. The vertical, green dotted lines are markers we inserted for various fixed objects in the ground, such as an exposed root or exposed wire or pipe. The markers will assist in maintaining proper bearings while locating exact root locations. All the images in **Figure 1** are going to provide the most precise measurements to accurately locate roots. Note that the straight virtual trench images in **Figure 1** are circular scans as seen in **Figure 2** and are listed in order in this document starting with the closest to the tree trunk and proceeding out away from the tree.

Figure 3, the root morphology map from a top-down view, shows the area of the tree bed that was scanned. The top of the scan image and the dotted top black vertical line align with the North (true North) designation in **Figure 2**. The root morphology shows a good cross-section of root size and depth as would be expected in a tree this age. The red roots indicate the roots found in the shallowest section of all the scans. This is Zone 1 and includes all the roots 0-8" in depth. Zone 2 is designated by the green roots which are located 8-16" deep. The blue roots are the deepest roots located 16-30" below ground.

Figure 4 shows the depth of the root system, and **Figure 5** shows the small, medium, and large roots.

Figures 6, 7, and 8 are all root density scans from the top down. Again, the top of each scan image is true North and is oriented exactly to the drawing in **Figure 2**. **Figure 6** reveals the overall density of roots in the eastern quadrant nearest Peachtree Street. **Figure 7** is the density in Zone 2 (8-16" deep). **Figure 8** is the density in Zone 3 (16-30" deep). **Figure 9** reveals healthy and consistent density for a tree this age.

2. Ultra-Deep Scan Images

For the ultra-deep scan images in **Figures 10-16** below, the same rules, directions, and instructions apply that are found in the above description of the Standard scan images. **Figures 10-16** are the same views as **Figures 3-9**, except they are 72" deep instead of 30" deep.

Structural Integrity Levels:

A-Excellent 95-100% sound material present in wood
B-Good 80-94% sound material present in wood
C-Marginal 60-79% sound material present in wood
D-Poor 40-59% sound material present in wood
F-Imminent Failure ≤39% sound material present in wood

Overall Root System Grade: B+ Good/92%

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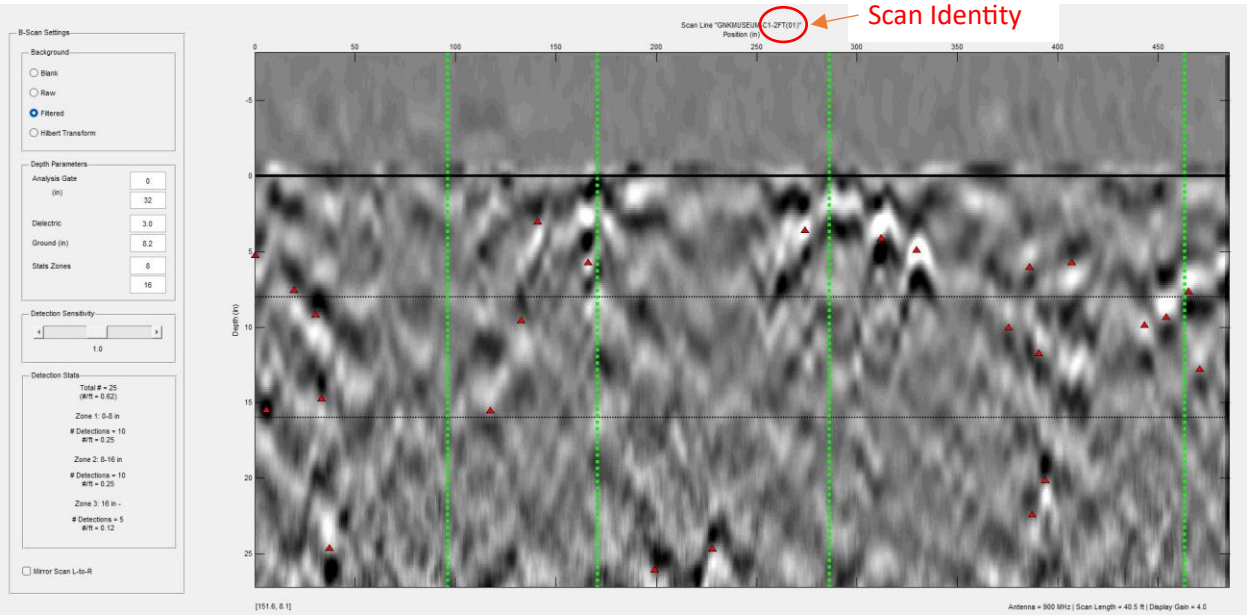
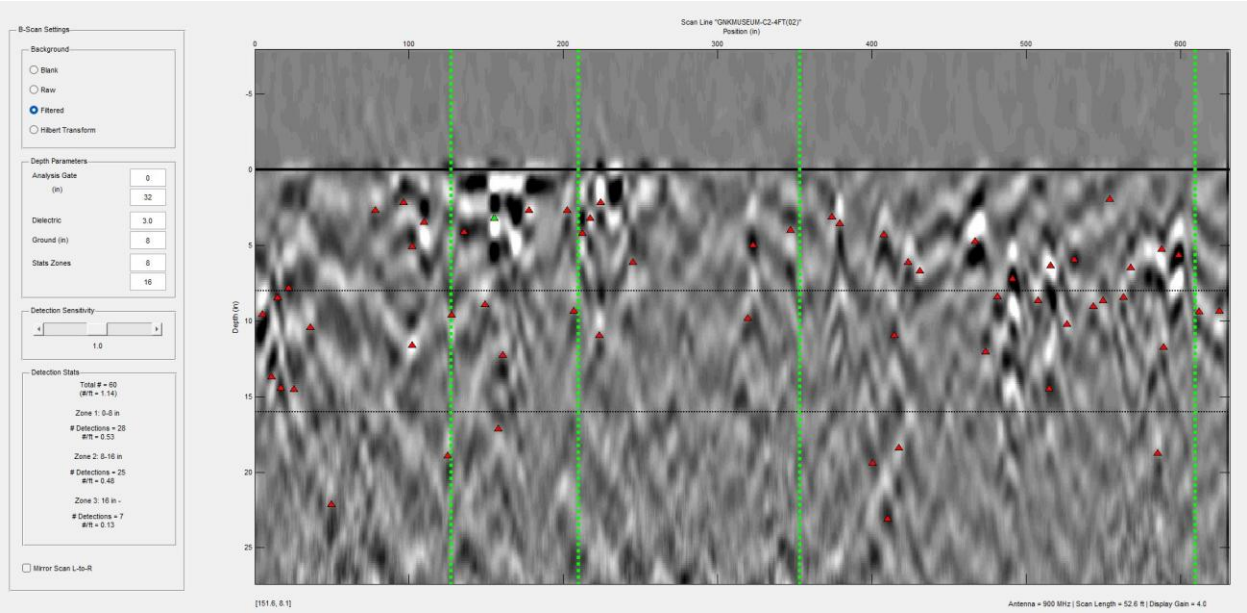
Figure 1—All Eight Virtual Trench Scans





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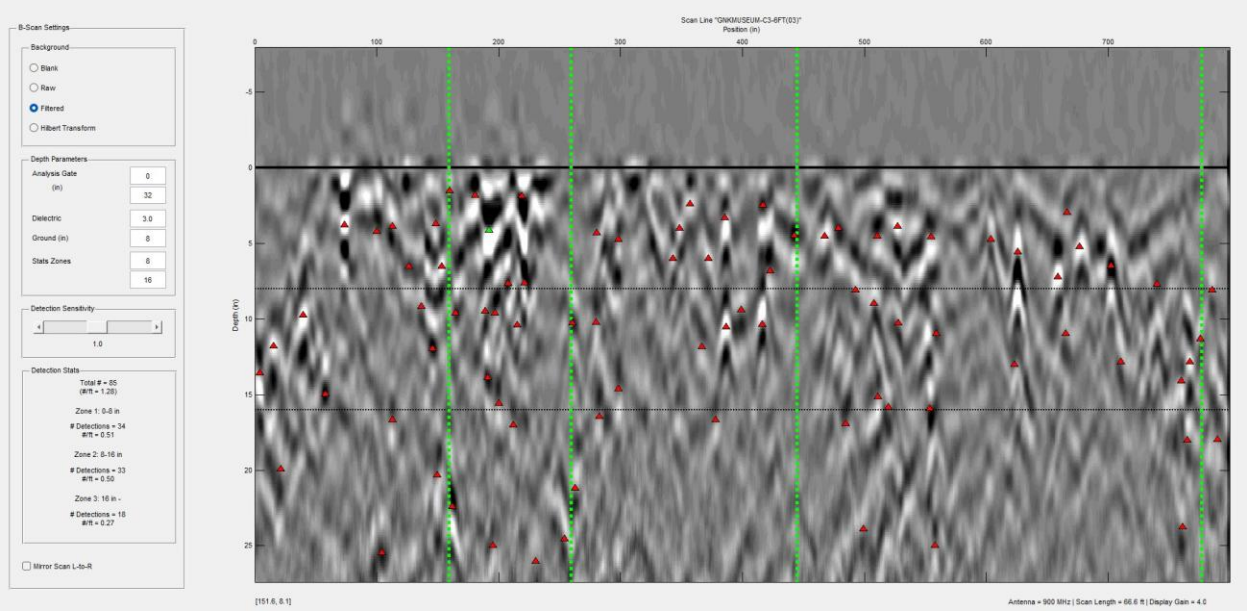

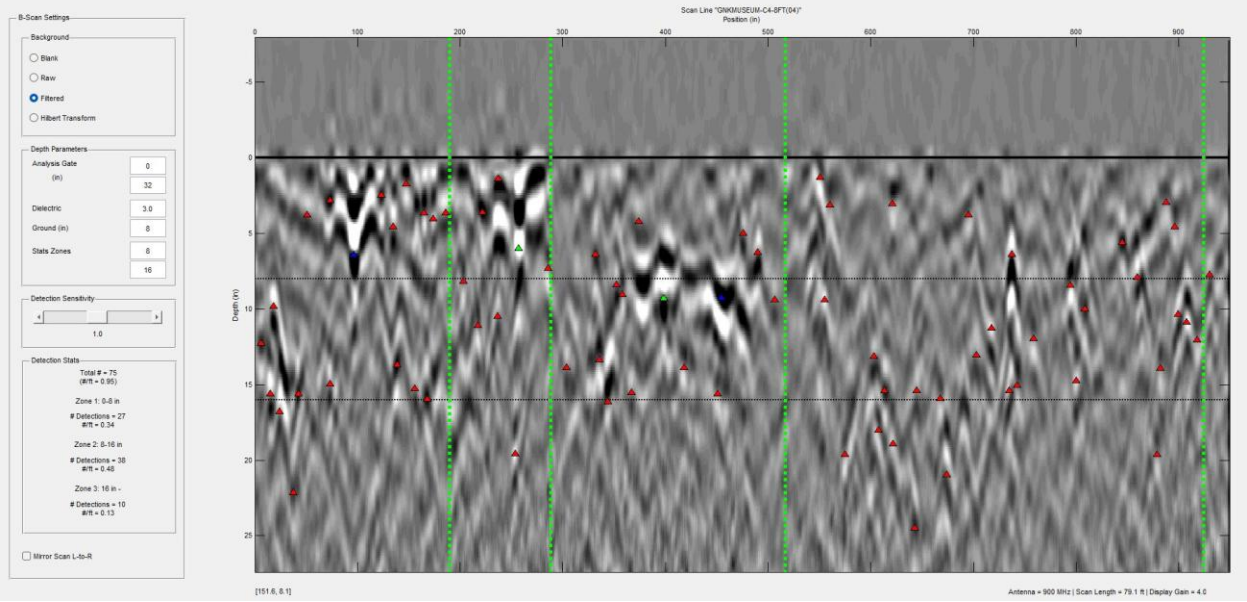

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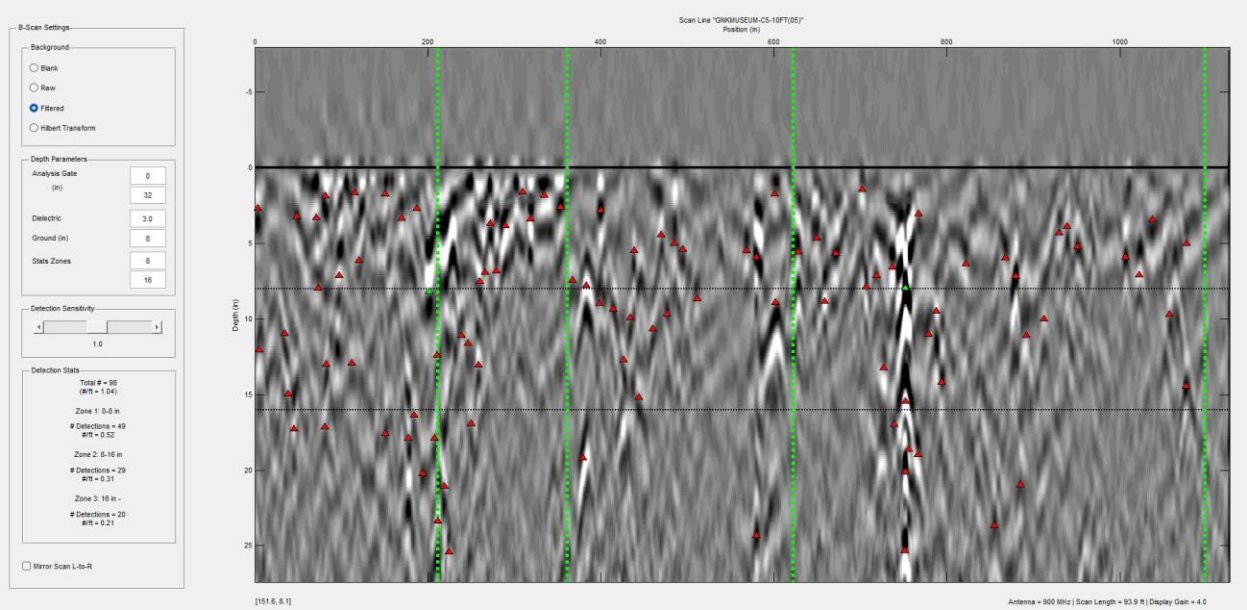

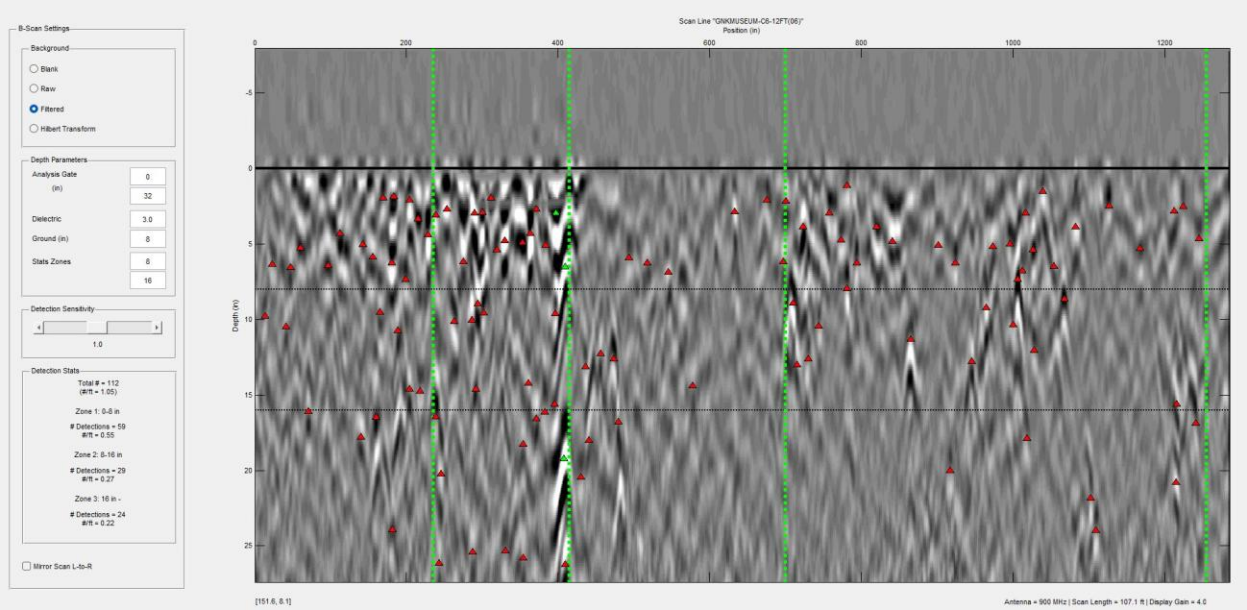

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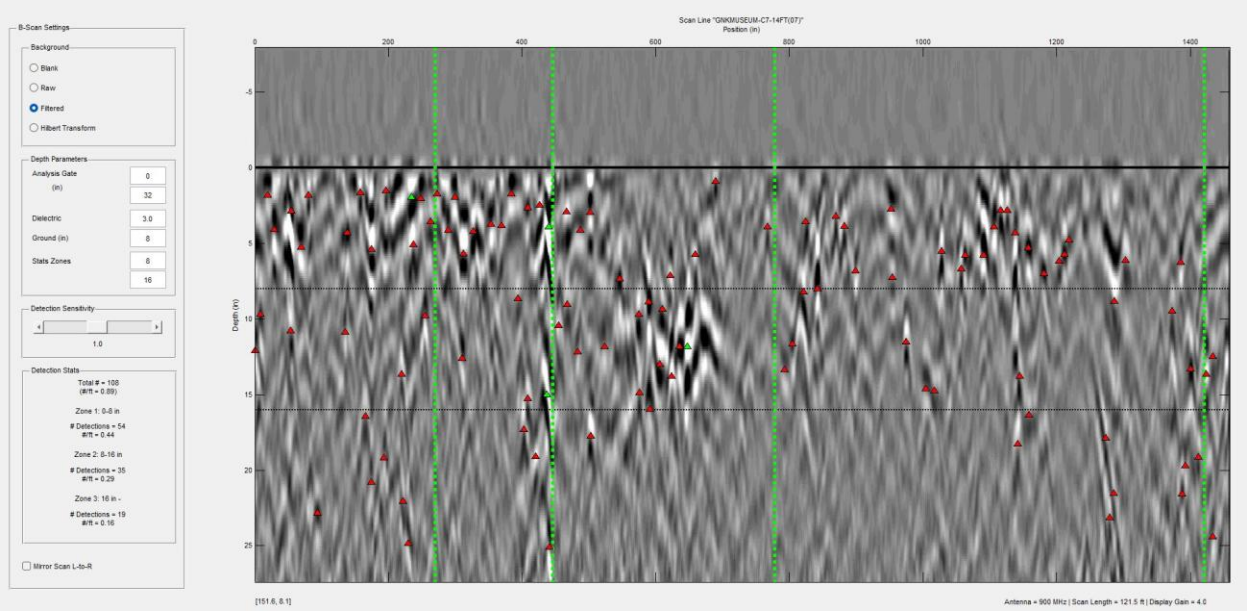

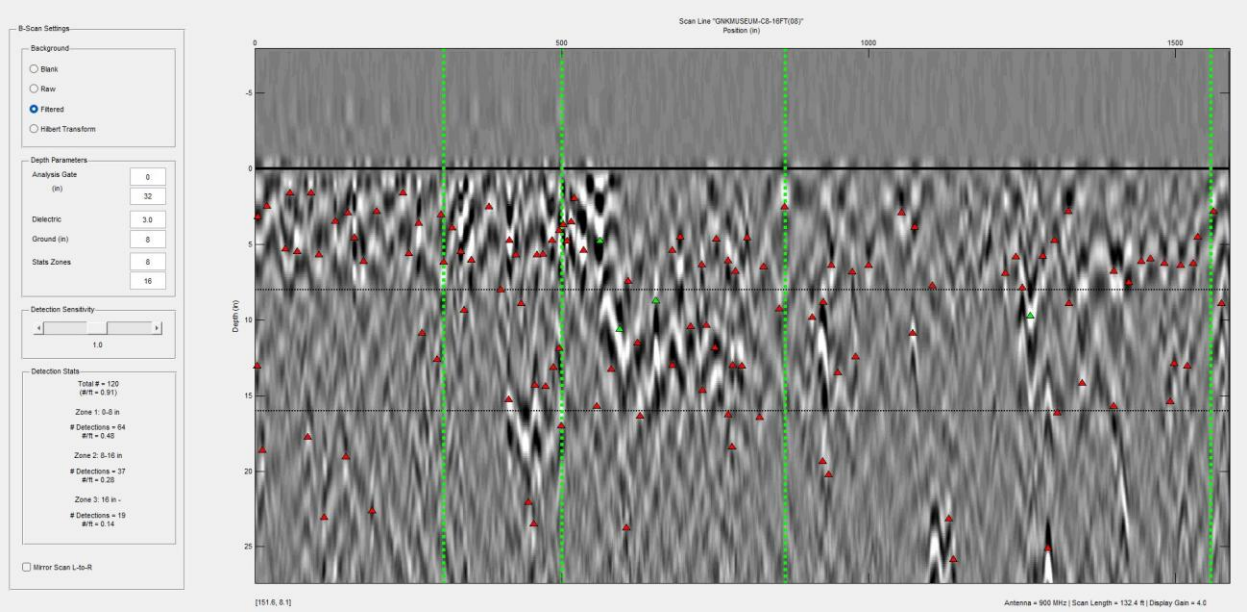

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Figure 2—Hand-Drawn Scan Pattern

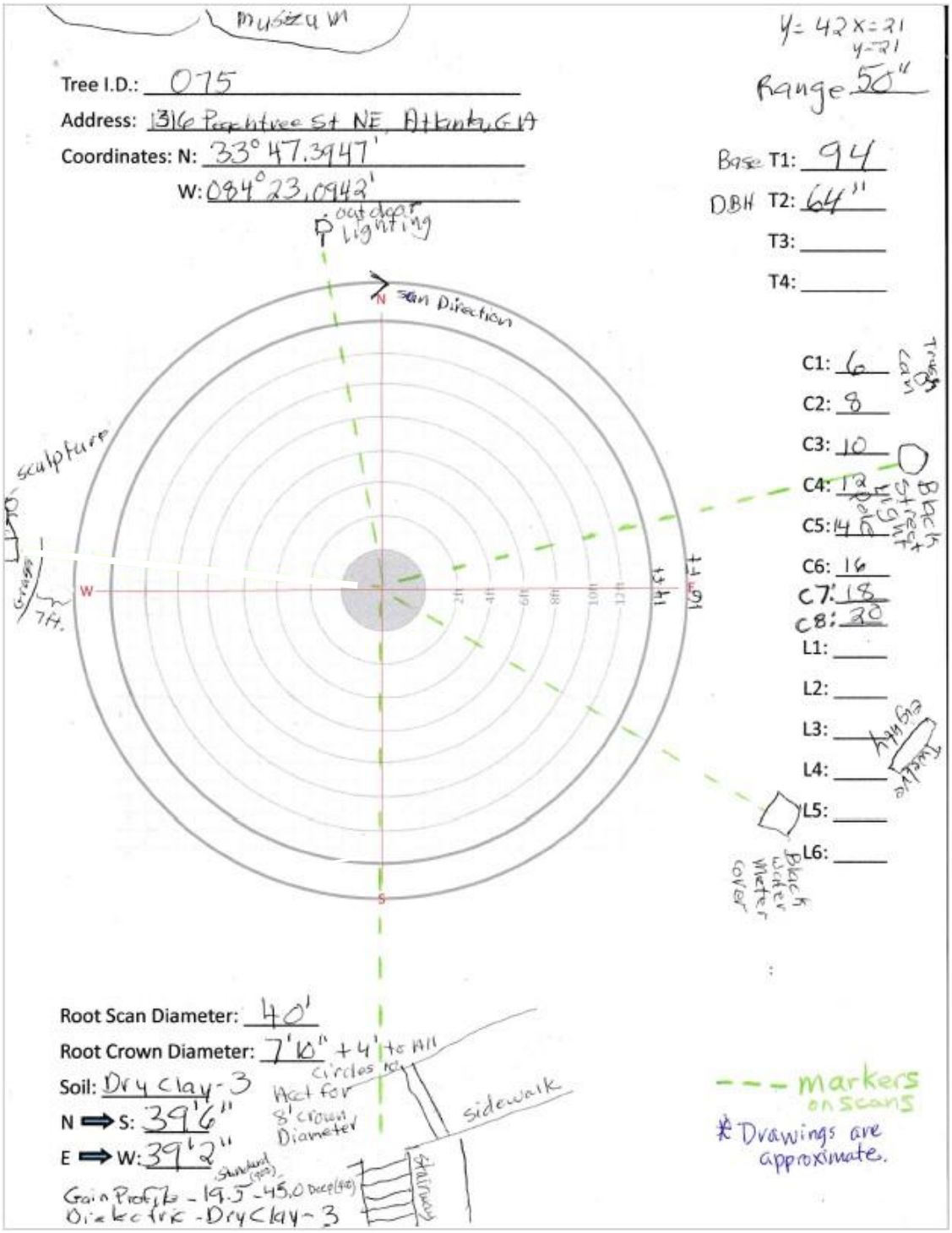

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Figure 3—Morphology (overhead)

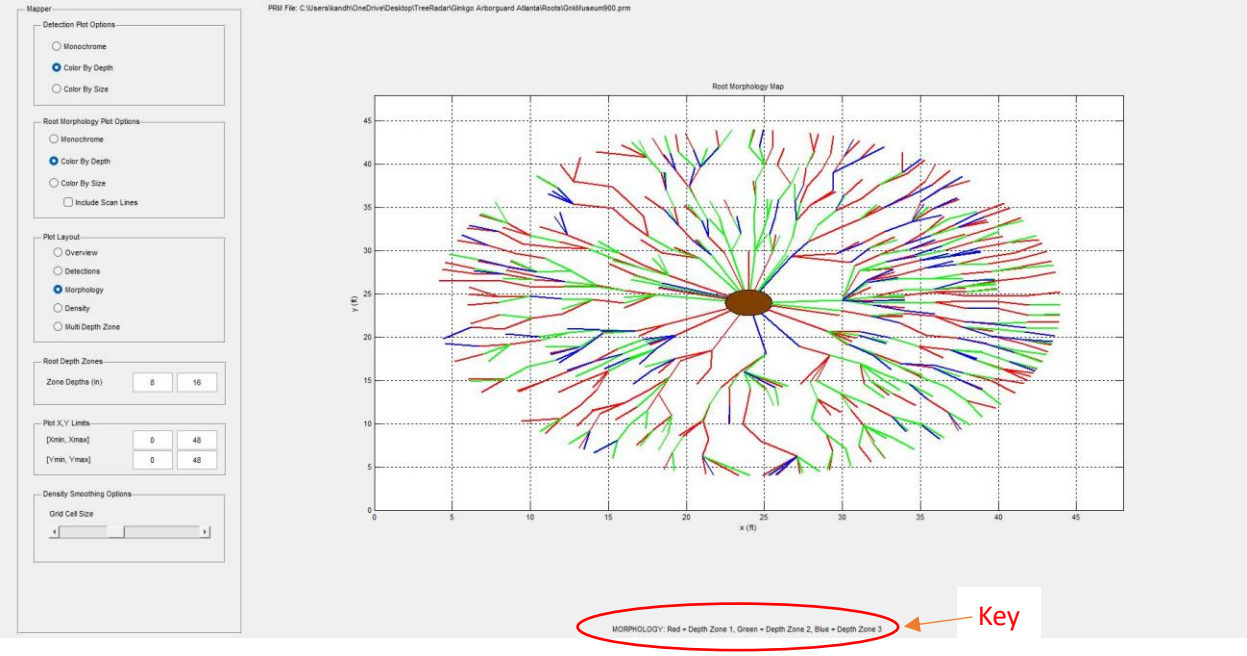

Figure 4—Morphology (depth)

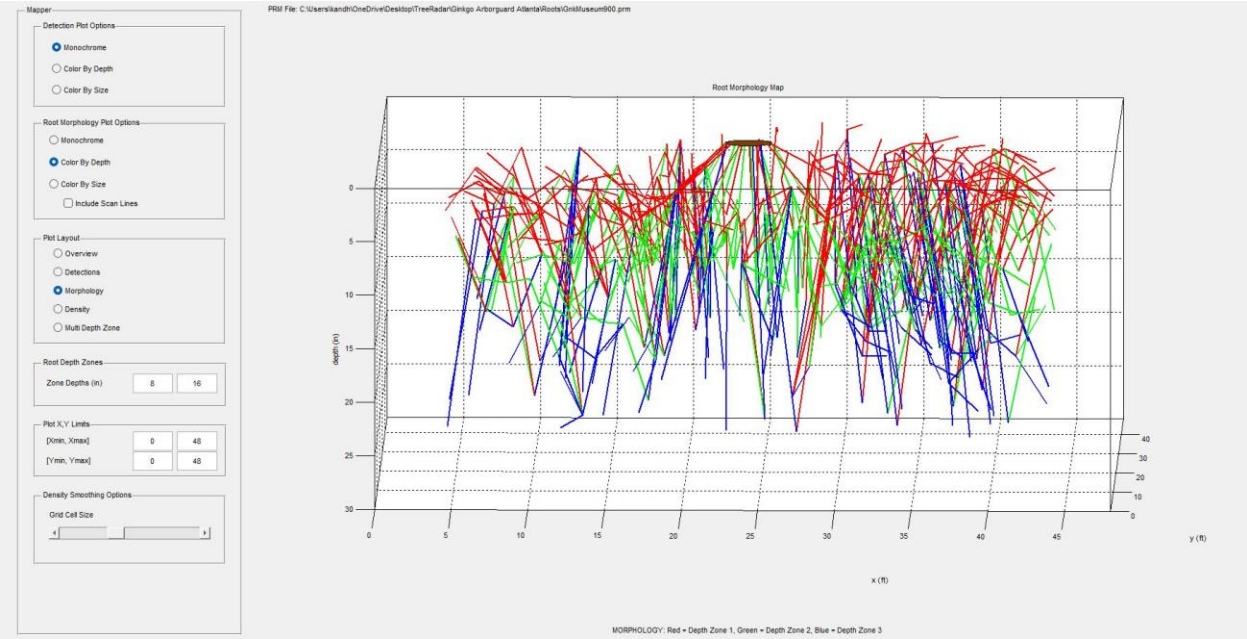

Figure 5—Detections/size

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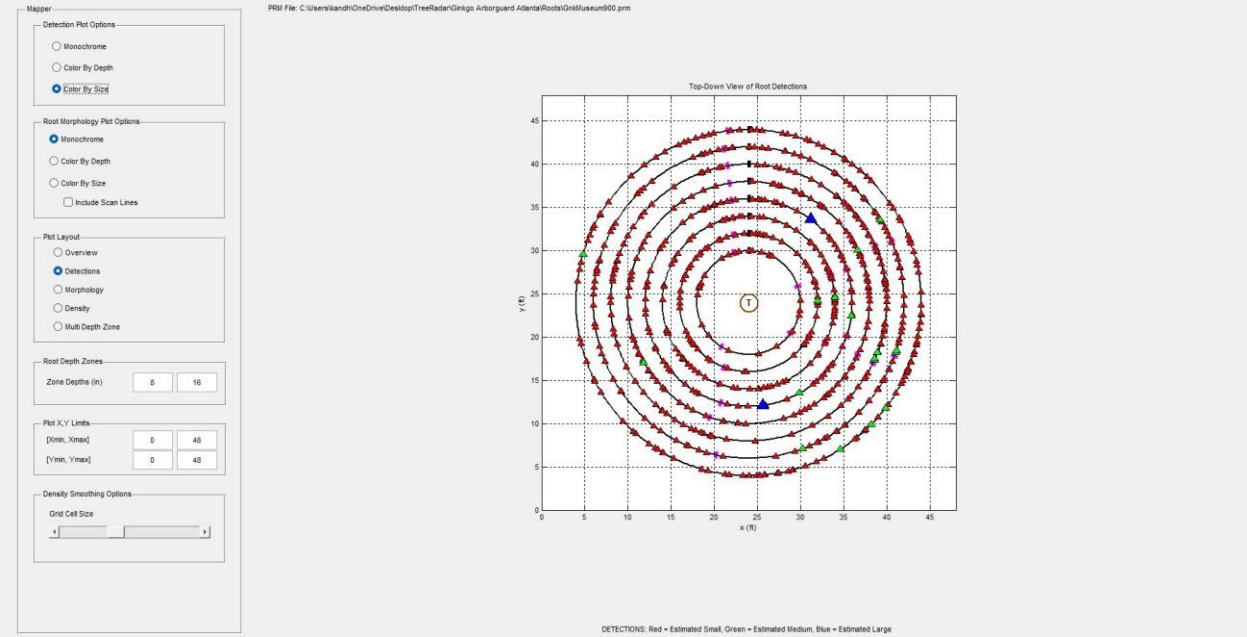

Figure 6—Root Density

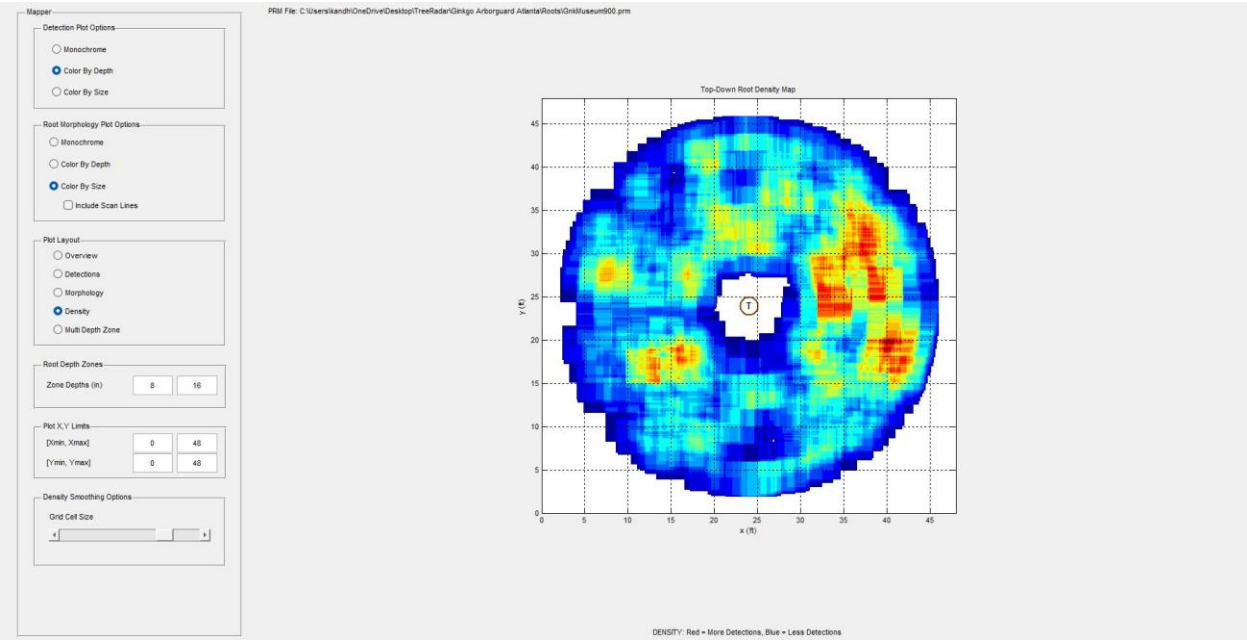

Figure 7

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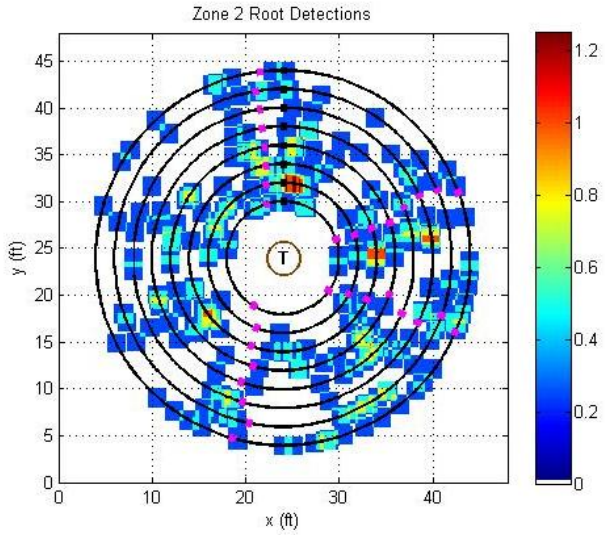

Figure 8

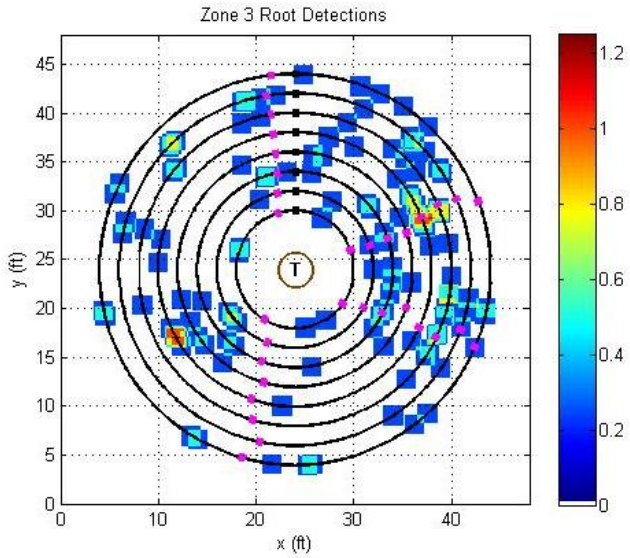

Figure 9—Density Graph

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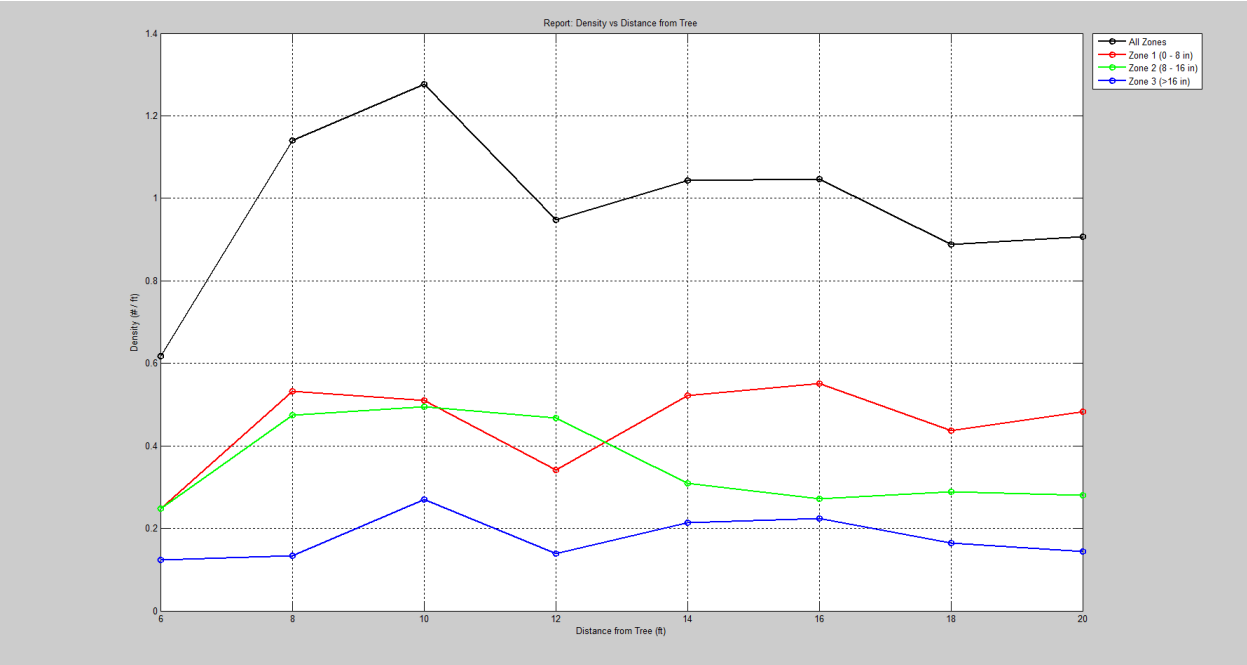

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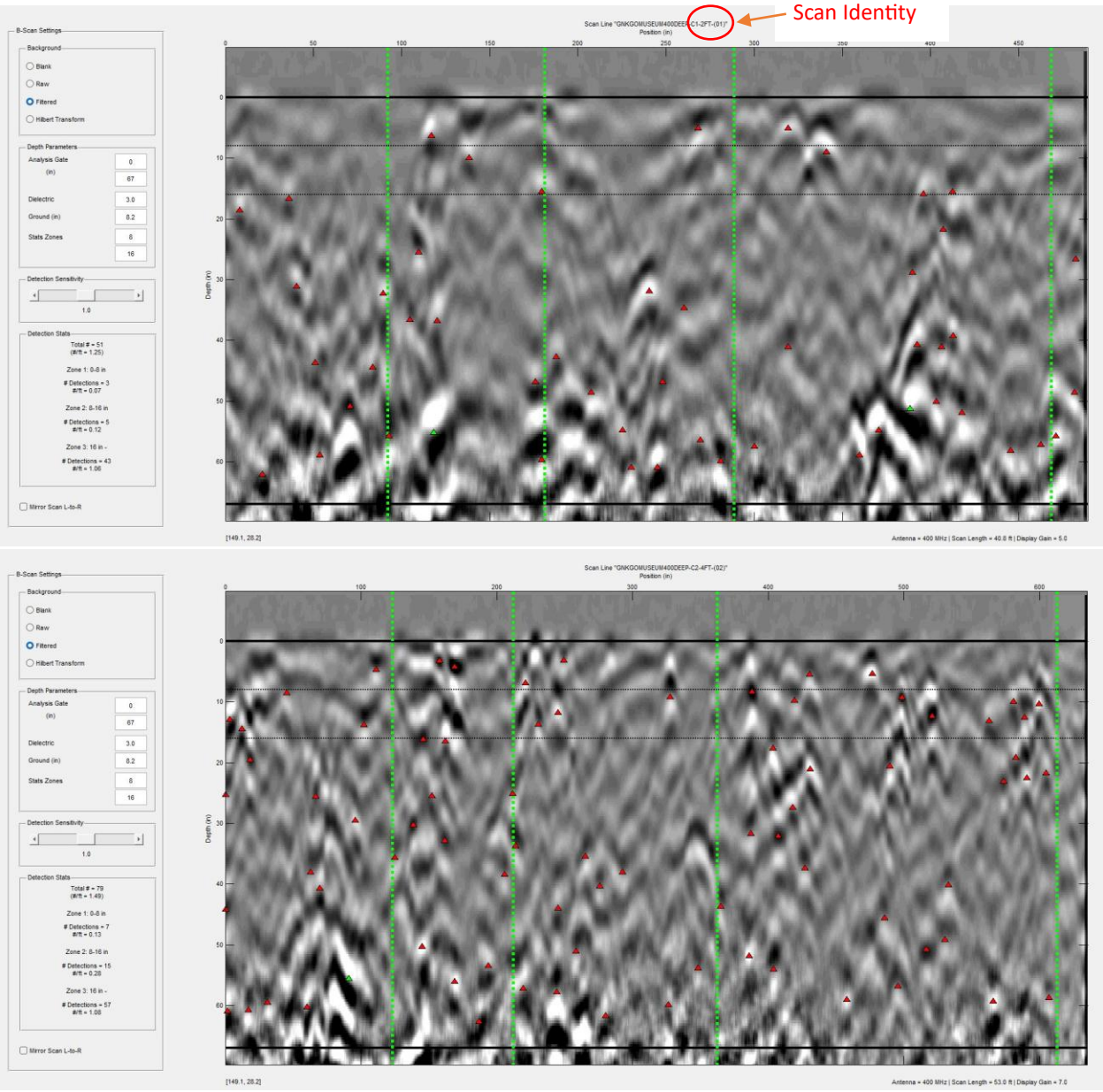
Figure 10—Eight Ultra-Deep Virtual Trench Scans



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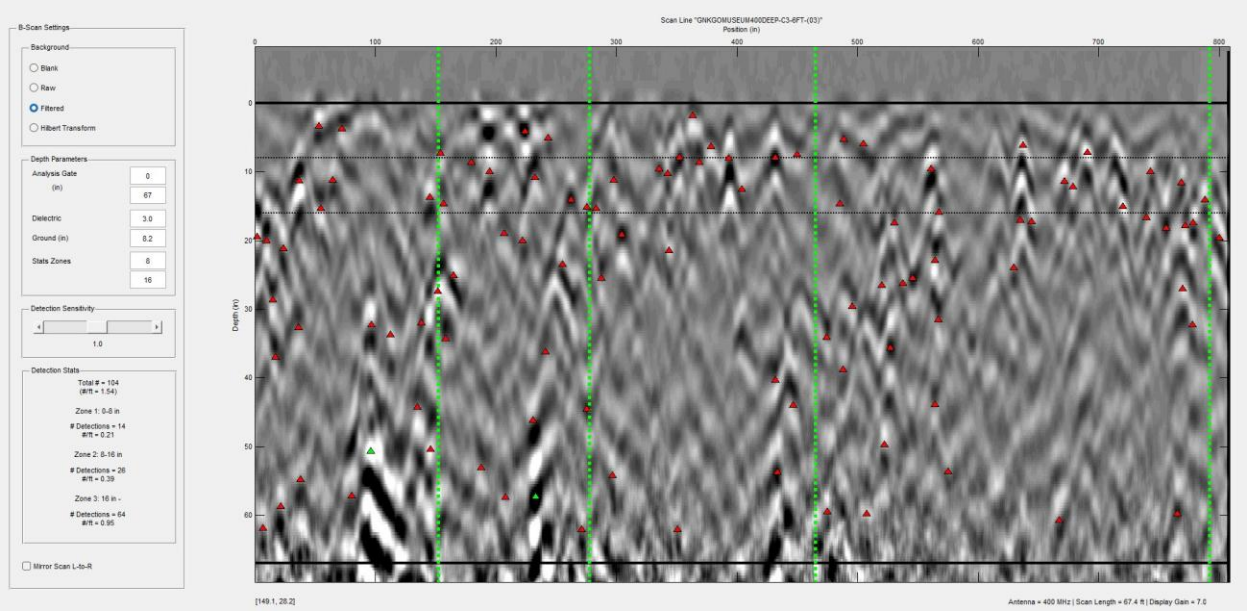

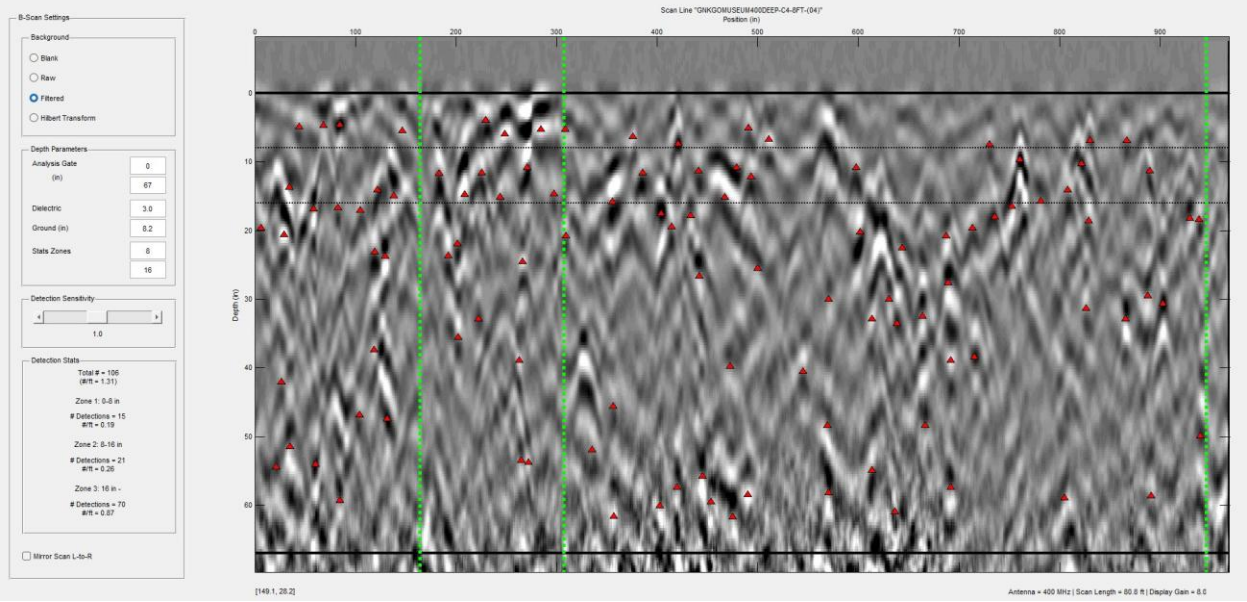

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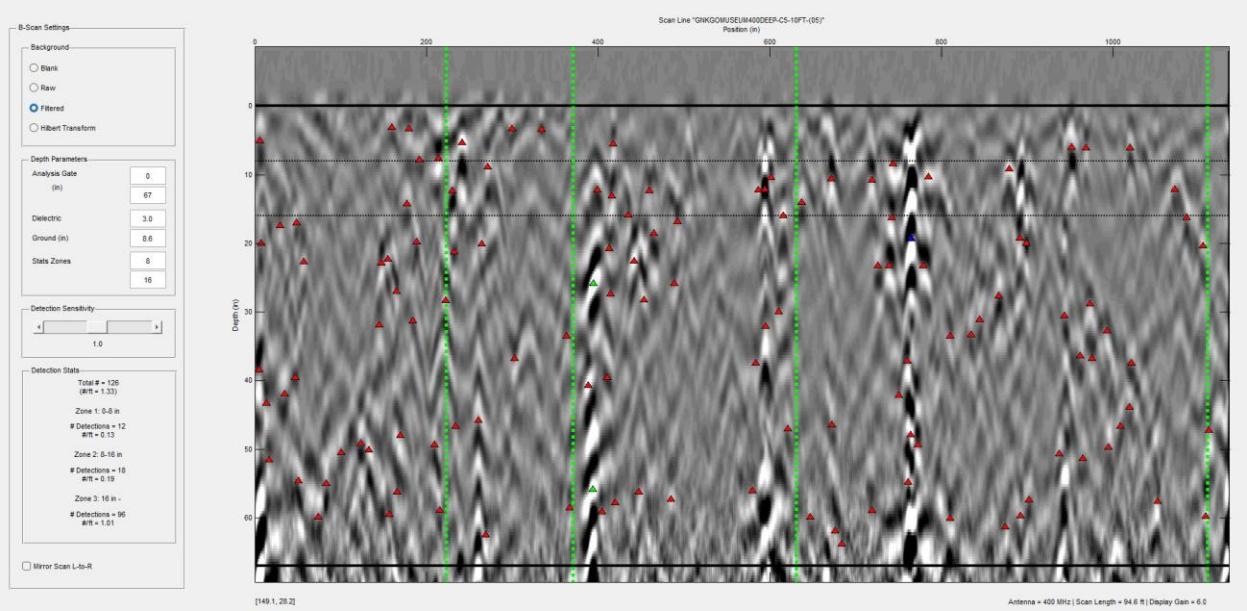

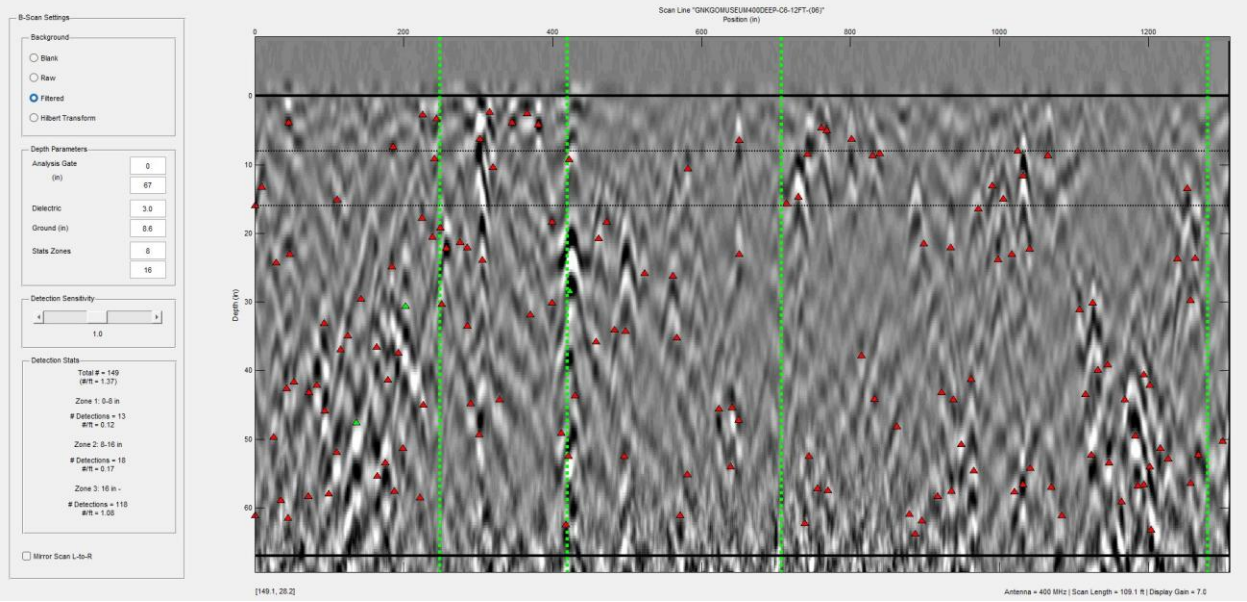

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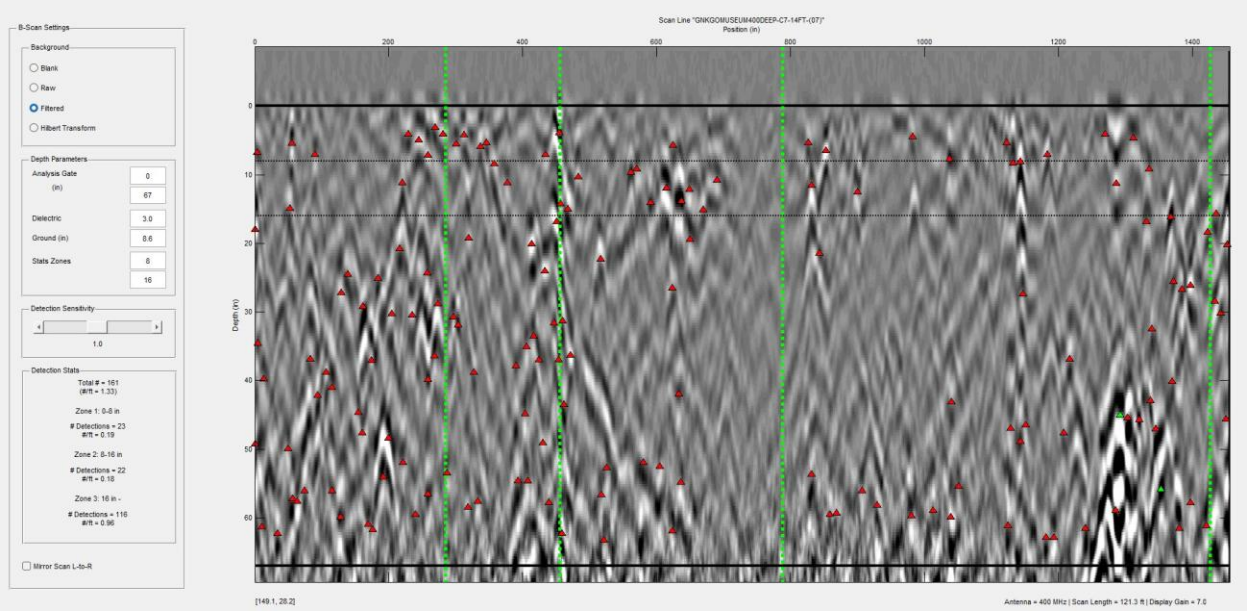

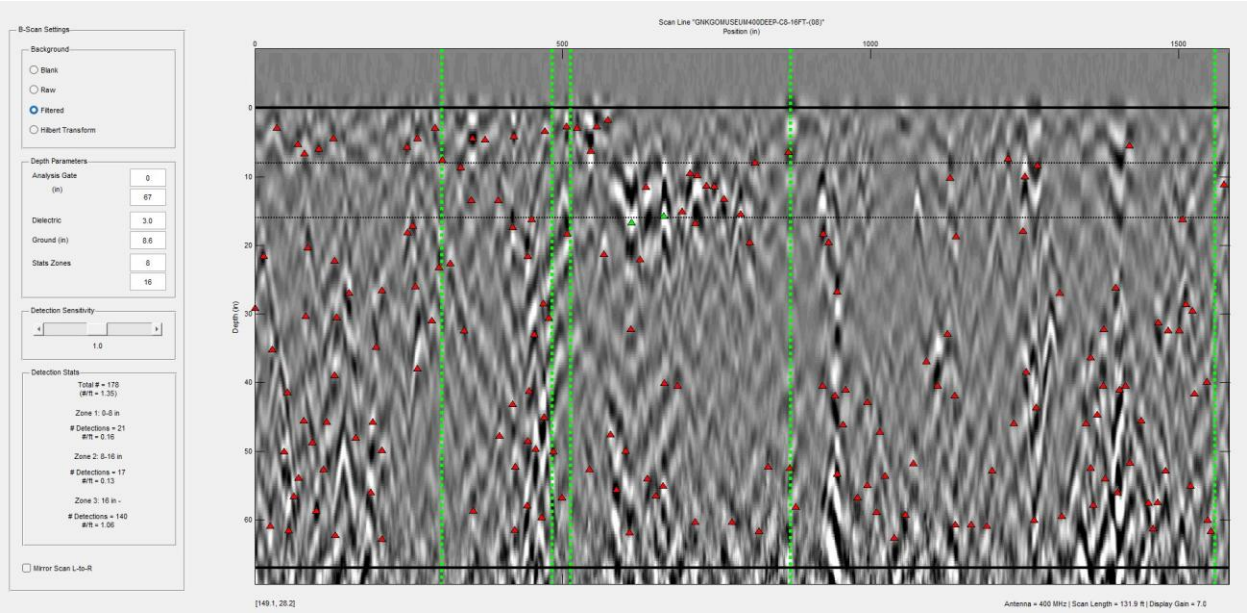

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Figure 11—Morphology (overhead, deep scan)

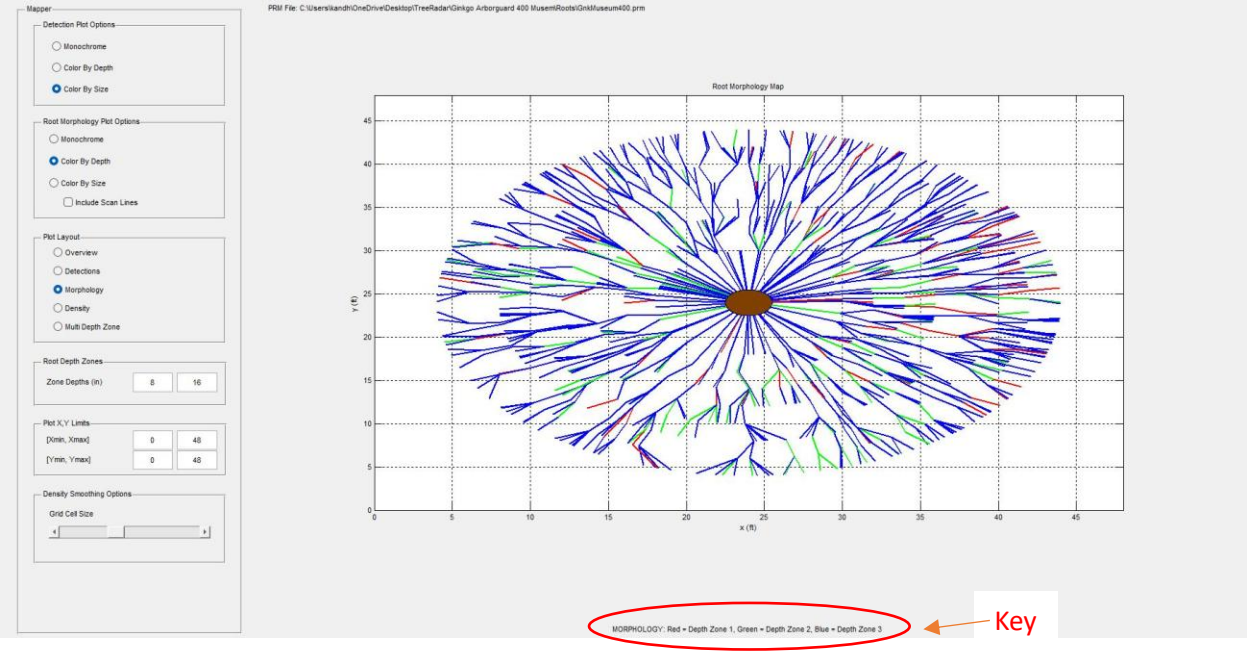

Figure 12—Morphology (3-D, deep scan)

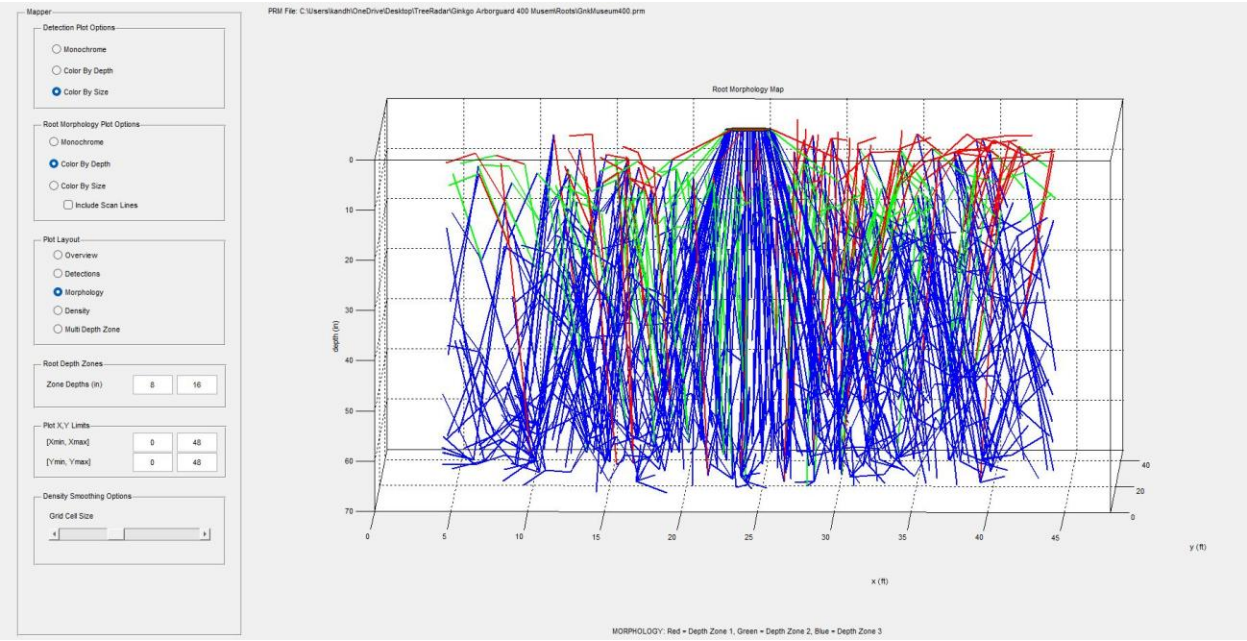

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Figure 13—Detections/size

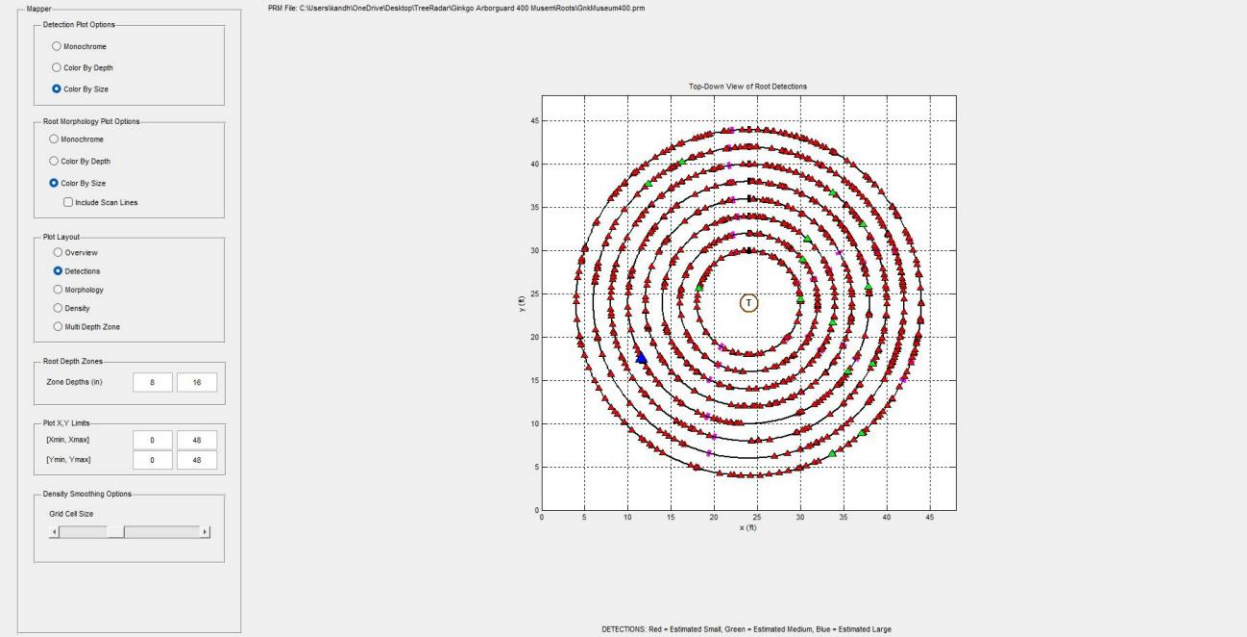

Figure 14—Density

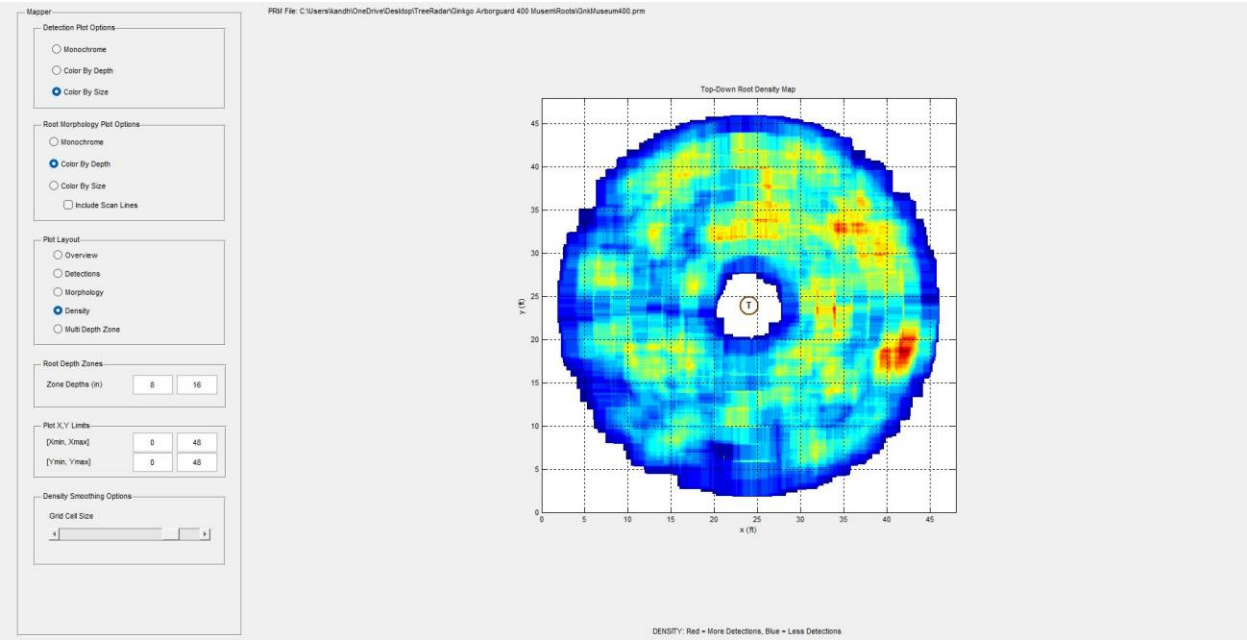

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Figure 15

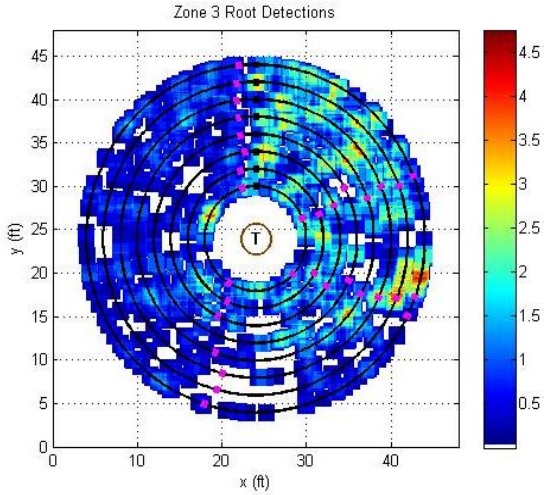
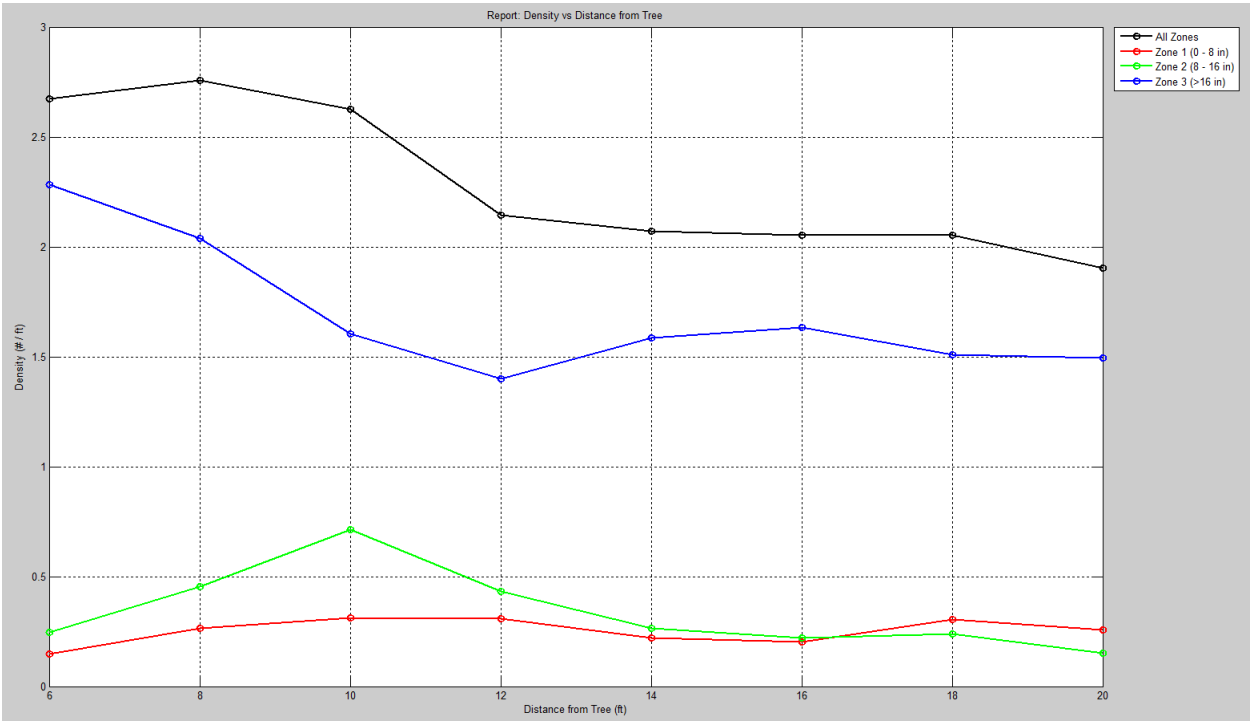


Figure 16— Density Graph (deep scan)



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