



# **APPENDIX E**

## **Noise Analysis Technical Memorandum**



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## **Noise Analysis Technical Memorandum**

Shelbyville Municipal Airport – Middle Tennessee University Development  
Shelbyville, Bedford County, Tennessee  
June 6, 2024

Garver is coordinating with the Shelbyville Municipal Airport (SYI), Middle Tennessee State University (MTSU), and the Tennessee Aeronautics Division (TAD) to provide environmental documentation and permitting for the SYI MTSU Development project (Proposed Action), located in Shelbyville, Bedford County, Tennessee. The purpose of the project is to address MTSU program's growth and existing facility deficiencies by relocating their flight training program, Aerospace Department, and aircraft maintenance program from Murfreesboro Municipal Airport (MBT) to SYI. The Proposed Action would be designed to provide the required square footage of educational, aircraft maintenance, administrative, classroom, hangar, landside parking, and laboratory space. The design improvements would be compatible with the existing airport's layout; therefore, the configuration of the existing Runway 18-36 at SYI would not change. However, operations on the existing runway would increase due to the Proposed Action.

FAA Order 1050.1F provides guidance on the preparation of a noise analysis for projects exceeding certain criteria, one of which includes jet operations that exceed 700 annual operations. SYI operation forecasts indicate that more than 700 annual jet operations are anticipated for the Proposed Action by the year 2033. As a result, a detailed noise analysis was performed.

The FAA provides federal compatible land use guidelines for several land uses as a function of day-night average sound level (DNL) values as measured in decibels (dB). FAA Order 5050.4B defines a noise sensitive area as "an area where noise interferes with the area's typical activities or its uses". Noise sensitive areas typically include residential homes, educational institutions, health care facilities, religious structures and sites, parks, recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites. FAA orders 1050.1F and 5050.4B define a significant noise impact as one which would occur if the proposed action would cause noise-sensitive areas to experience an increase in noise of 1.5 dB or more at or above the 65 DNL noise contour when compared to a No Action Alternative for the same time frame.

The FAA's Aviation Environmental Development Tool, Version 3f (AEDT 3f) was used for the noise analysis and creation of the noise contours. Noise exposure maps (NEMs) are depicted in the attached Figures 1, 2, and 3 with noise contours ranging from the 55 DNL up to the 75 DNL contour. This noise analysis incorporated the existing Runway 18-36. The two NEMs developed for SYI include the No Action Alternative and the Proposed Action with the forecasted MTSU operations. The 65 DNL contours generated for both scenarios are shown in comparison on Figure 3 with significant noise impacts illustrated. Both model scenarios included no modifications to Runway 18-36's width, length or weight bearing capacity. Both NEMs were developed based on the FAA statewide Terminal Area Forecast (TAF) operations for Tennessee in 2033. The Proposed Action development would approximately double forecasted operations by 2033 when compared to the No Action Alternative.



The NEM shown as Figure 1 depicts all of SYI's future No-Action 65 DNL and higher noise contours to be located wholly within airport property. No noise-sensitive receptors would be impacted by future conditions without the MTSU relocation.

The Proposed Action NEM shown in Figure 2 indicates that approximately 0.38 acres of the future 65 DNL are located outside current airport property to the east off of Airport Rd. This area is vacant and does not contain any buildings or areas of frequent human use, however the 65 DNL boundary is located approximately 260 ft from a noise-sensitive receptor.

Figure 3 depicts the decibel gain or loss between the No Action noise contours and those of the Proposed Action as well as noise-sensitive receptors in the area. Approximately 29 acres adjacent to the airport's property boundary may experience noise increases meeting reportable impact criteria as outlined in FAA Order 1050.1F. One residence on the east side of the airport property boundary off of Airport Rd. will be impacted by these criteria as shown in Figure 3, exceeding FAA's significance threshold for noise. All other areas experiencing a dB loss or gain within the 65 DNL occur on airport property. Nearby receptors may be temporarily impacted by construction noise. These impacts will be limited and will likely occur during typical workday hours. This construction noise will cease upon completion of the project. Noise impacts due to construction are not anticipated to be above threshold levels deemed incompatible with the existing land use of the airport.

**Prepared By:**  
GARVER, LLC

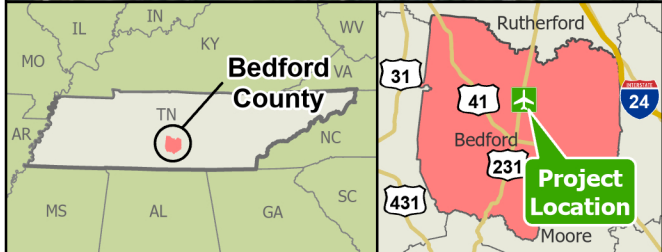
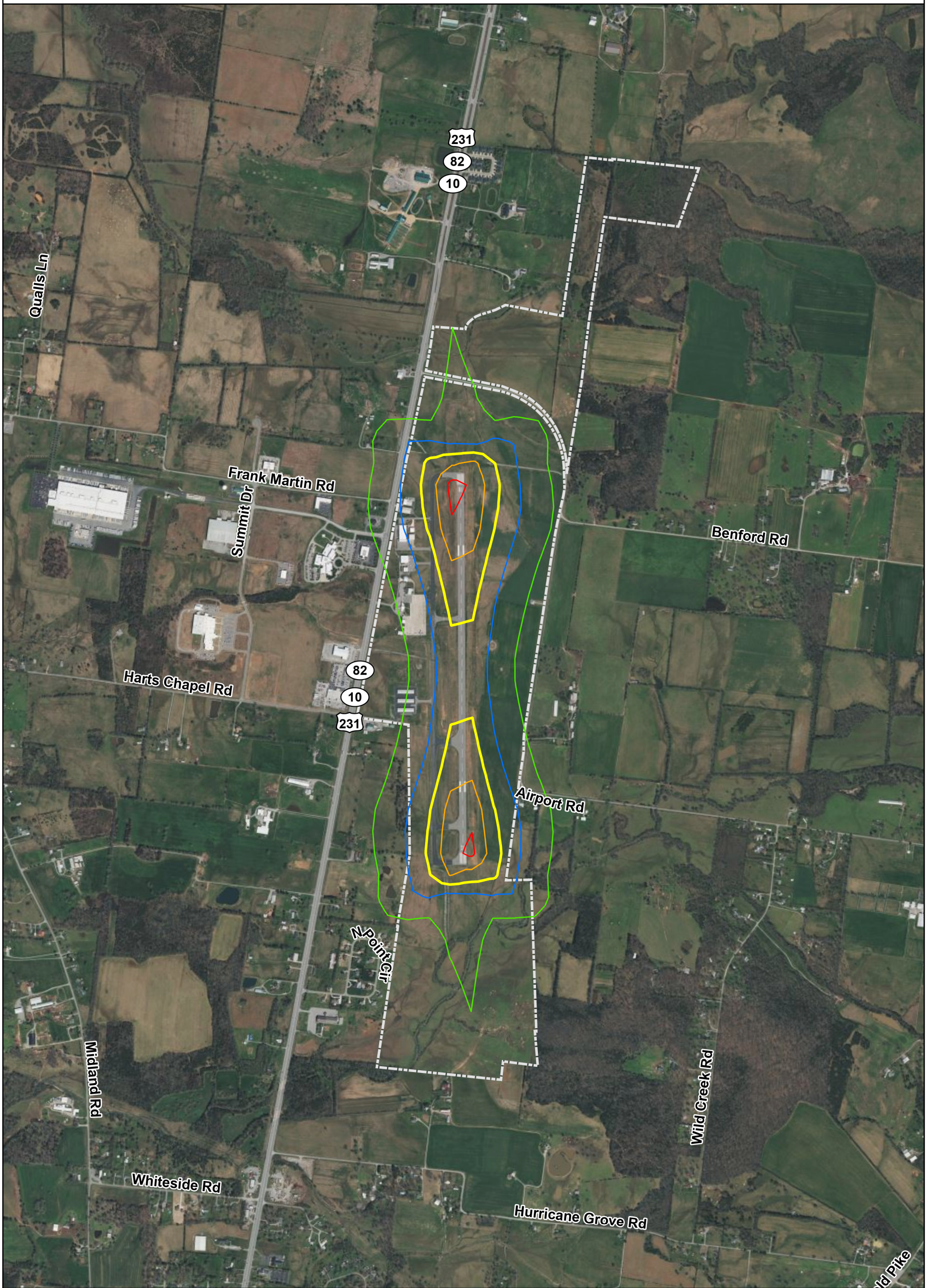


Leigh Mercer  
Environmental Planner

**Attachments:**

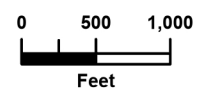
Figure 1  
Figure 2  
Figure 3  
Operations Tables



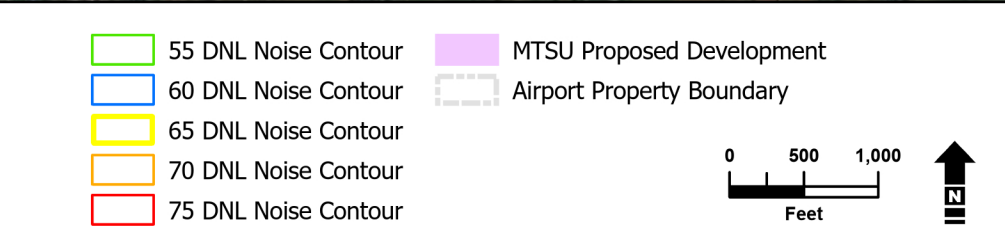
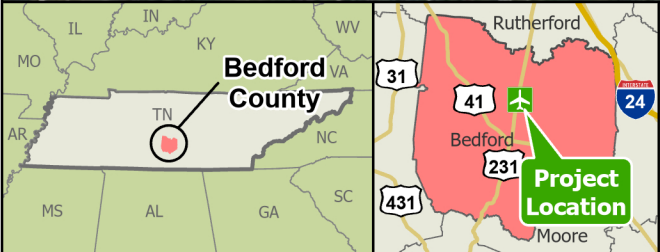
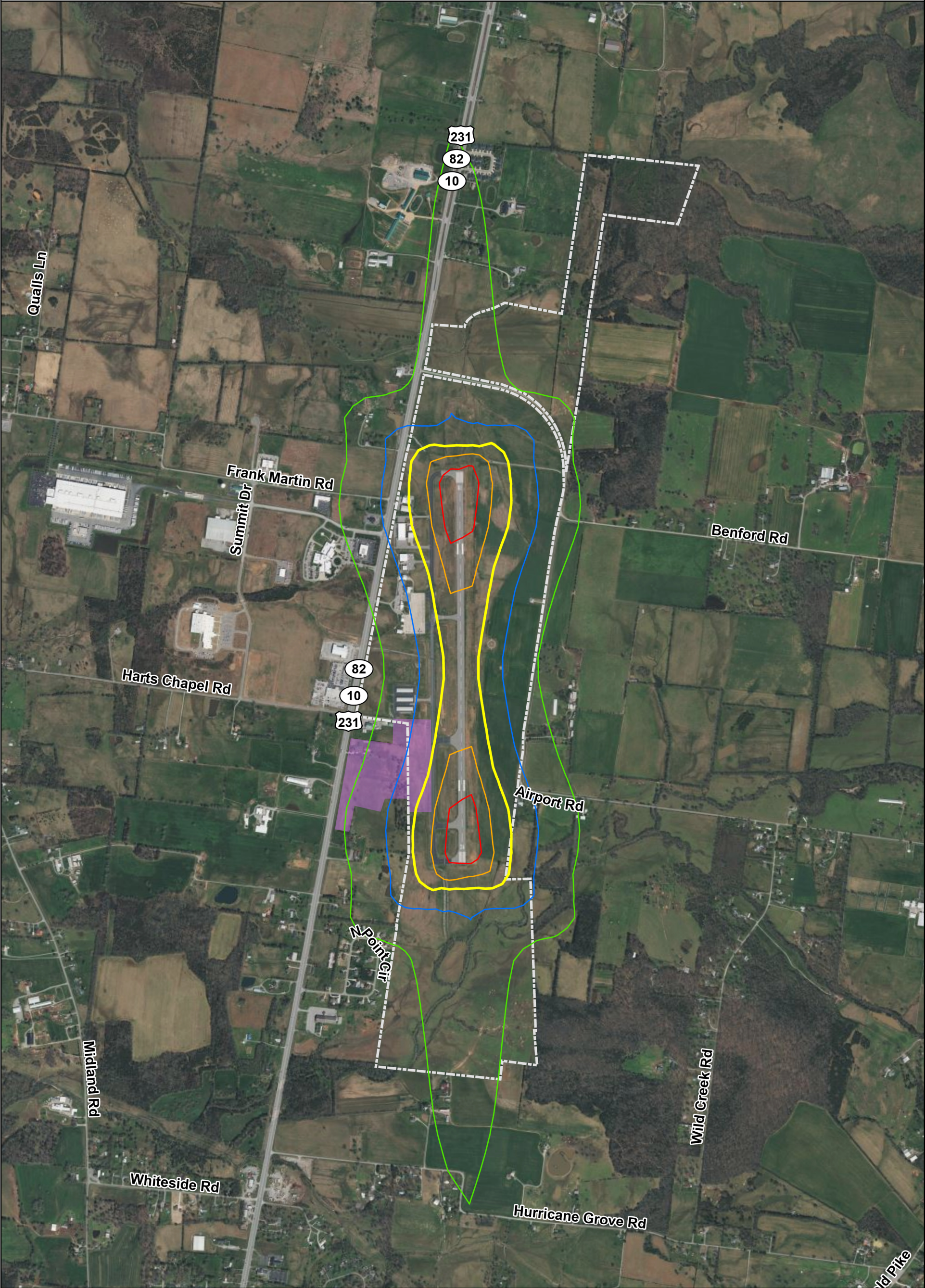


- 55 DNL Noise Contour
- 60 DNL Noise Contour
- 65 DNL Noise Contour
- 70 DNL Noise Contour
- 75 DNL Noise Contour

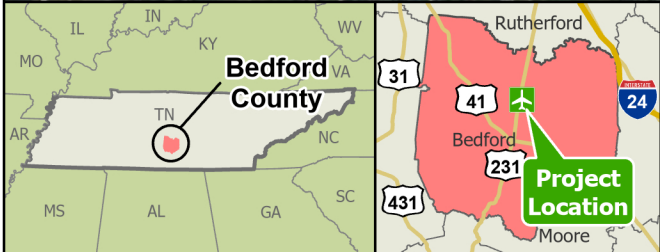
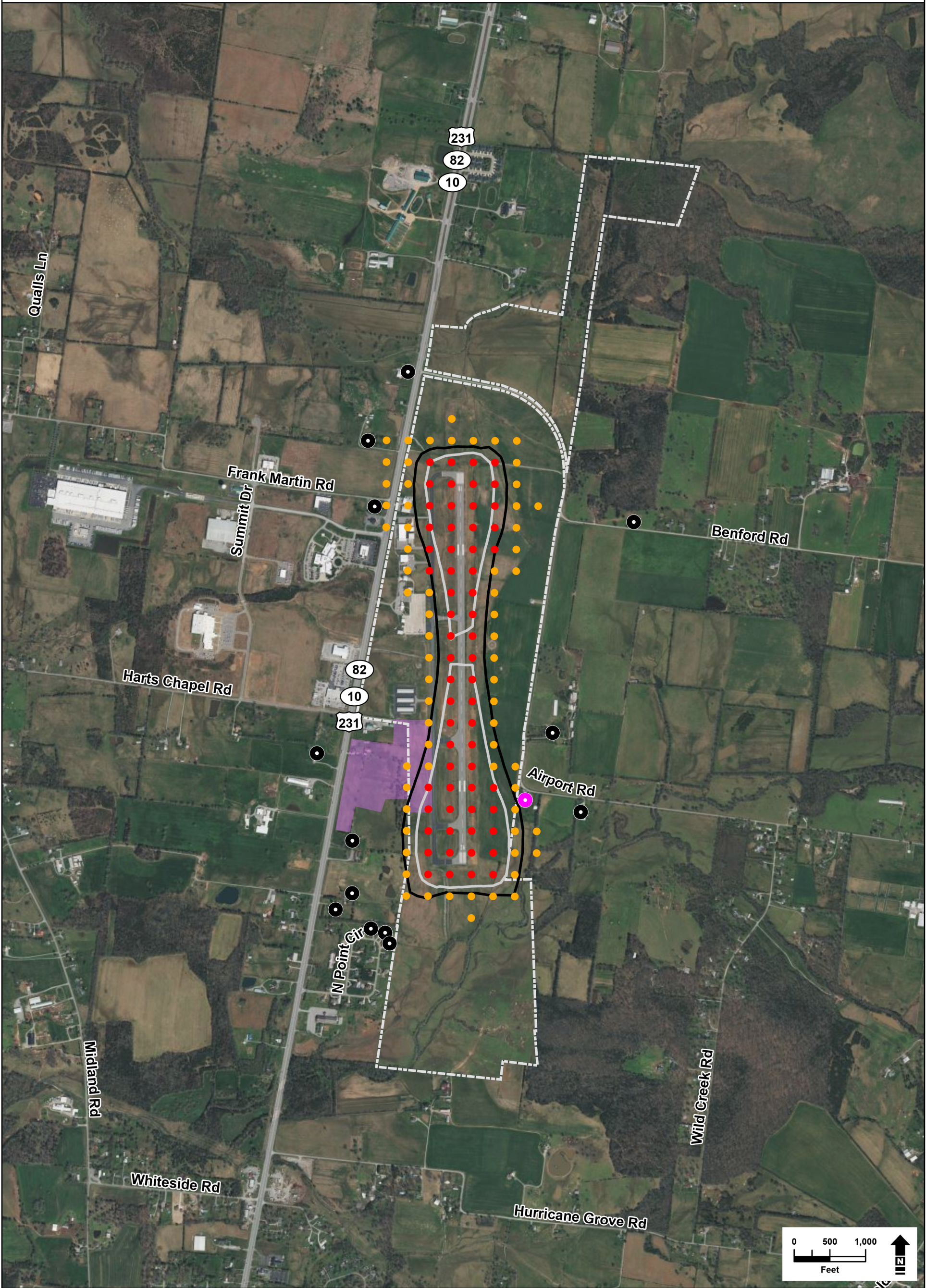
Airport Property Boundary











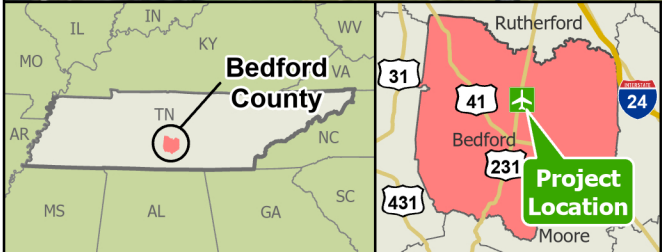
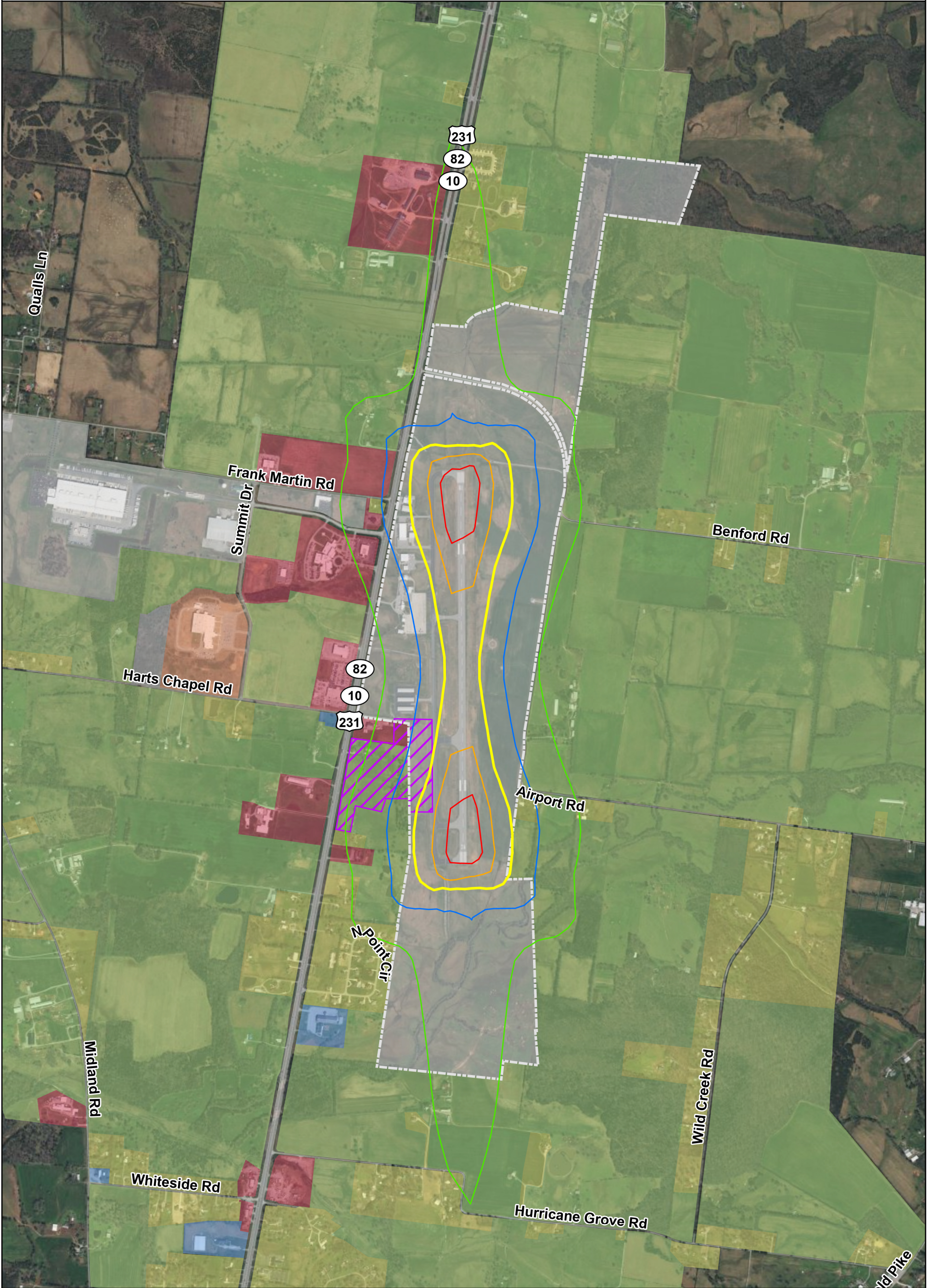
- |                     |   |  |                           |
|---------------------|---|--|---------------------------|
|                     | 2033 No-Action Alternative 65 DNL       |  | Receptor (Impacted)       |
|                     | 2033 Proposed Action Alternative 65 DNL |  | Receptor (No Impact)      |
| <b>Noise Impact</b> |   |  | Airport Property Boundary |
|                     | 60dB <= Alt < 65dB; Alt >= (Base + 3dB) |  | MTSU Proposed Development |
|                     | 65dB <= Alt; Alt >= (Base + 1.5dB)      |  |                           |







**SHELBYVILLE MUNICIPAL AIRPORT**  
SHELBYVILLE, TENNESSEE  
2033 PROPOSED ACTION ALTERNATIVE - NOISE EXPOSURE MAP



<ul style="list-style-type: none"><li>55 DNL Noise Contour</li><li>60 DNL Noise Contour</li><li>65 DNL Noise Contour</li><li>70 DNL Noise Contour</li><li>75 DNL Noise Contour</li></ul>	<p>Existing Land Use Type</p> <ul style="list-style-type: none"><li>Agriculture/Vacant; Farm</li><li>Commercial</li><li>Industrial</li><li>Public/Semi-Public</li><li>Religious</li><li>Residential</li></ul>	<ul style="list-style-type: none"><li>MTSU Proposed Development</li><li>Airport Property Boundary</li></ul>
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