Alternatives Study for KY 163 in Metcalfe County from KY 90 to the Louie B. Nunn (Cumberland) Parkway at Edmonton, Kentucky

KYTC ITEM NO. 3-129.00

Report of Noise Considerations

Prepared for:

KENTUCKY TRANSPORTATION CABINET (KYTC)
DIVISION OF PLANNING

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1.0 SUMMARY OF FINDINGS

The proposed highway improvement for KY 163 in Metcalf County, from KY 90 to the Louie B. Nunn Parkway, encompasses a rather large study area, with the Louie B. Nunn Parkway forming the northern boundary and KY 90 forming the southern boundary. Along the northern boundary, the project area is bounded by the US 68-KY 80/Nunn Parkway interchange to the west and KY 2399 on the east. At the southern boundary, the east and west boundaries are approximately 2000 feet on either side of KY 163. At this time, alternative routes have not been established, but approximately ten (10) to twelve (12) potential routes will be identified.

Upon evaluating existing geographical spatial data and making field visits to the study area, two (2) potential areas within this study could potentially be affected by the construction of a new route or by reconstructing KY 163 along the existing alignment. Those areas are the City of Edmonton in the north and the intersection of KY 163 and KY 90 to the south. Within both of these locations, certain noise-sensitive receptors might dictate the location of alternatives, based upon the existing activity category associated with that receptor. Noise receptors can be described as specific locations of any property or outdoor activity that is considered to contain noise-sensitive land use. A map showing these noise receptors can be found in **Figure 1**.

The city of Edmonton, Kentucky is located on the northernmost section of the study area along US 68, 0.7 miles south of the Louie B. Nunn Parkway. Driving south through Edmonton, different types of *"Activity Categories"* can be found, such as residential, commercial, or industrial areas as well as schools, churches, parks, historical sites, and cemeteries. A more detailed description of Activity Categories and their decibel (dBA) threshold is found in **Table 1**. This classification system is described in the *FHWA Noise Abatement Criteria (NAC)* policy adopted by the Federal Highway Administration.

The city of Edmonton contains the most transportation-related noise receptors within the study area. Groups of noise-sensitive receptors can be primarily found within three (3) separate areas inside Edmonton. These areas include the intersection of US 68 and KY 163, the intersection of US 68 and KY 681, and the intersection between US 68 and KY 3234. Types of receptors vary between locations, but generally include historical structures, churches, cemeteries, schools, and parks. Residential areas typically have the most potential for noise impacts and can be found in higher numbers throughout the noise-sensitive locations mentioned above. Sub-divisions are prime

examples of residential noise-sensitive clusters, but they are not an immediate concern as very few were found along the major traffic routes within the study area. It should also be noted that many historical structures are identified within the city of Edmonton.

Continuing south along KY 163, the route intersects KY 90 at the southern end of the study area. This intersection is important due to its higher volume of automobile traffic and heavy truck traffic. The source of some of the heavy truck traffic can be attributed to a local lumber company located along KY 163 and Kingsford Charcoal Company, located about 0.25 miles due east of the KY 163/KY 90 intersection. With existing heavy truck traffic already a factor, it can be safely assumed that a new route or reconditioning of the existing route will only increase the current traffic volumes, thus, yielding more noise and noise related impacts to existing residential areas. Residential units are the dominant noises sensitive factor within the southern portion of the study area, even though churches, cemeteries, and a park are located nearby.

TABLE 1.

Noise Abatement Criteria
Hourly A-Weighted Sound Level - decibels (dBA)

Activity Category	$L_{eq}(h)$	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those unique qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.
Source:	Title 23 Code of Federal Regulations (CFR) Part 772, U.S. Department of Transportation, Federal Highway Administration.	

Outside of the two noise-sensitive areas previously mentioned, the remaining study area is void of any real transportation-related noise considerations other than some historical structures found along mostly local roads. County roads cross back and forth throughout the study area, with a small number of residential dwellings scattered along both sides of the road. The residential areas that are present are generally not grouped within a cluster, which would not warrant itself to further noise impact consideration.

2.0 RECOMMENDATIONS

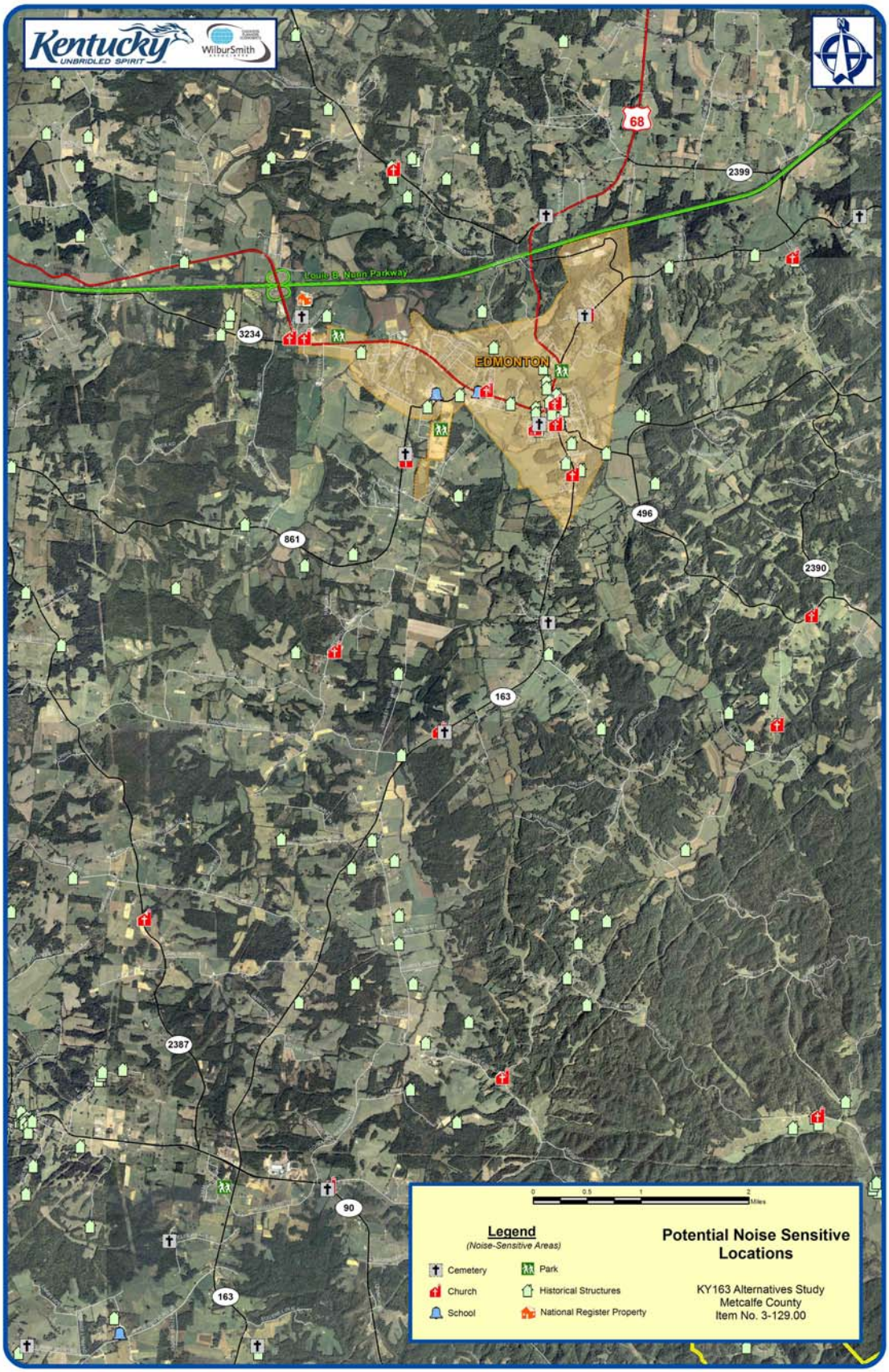
Specific transportation-related noise impacts will not be quantified until potential alternatives have been established. Once established, a more thorough noise analysis may be conducted to determine what impacts exist, if any for each respective alternative within the study area. Based on preliminary investigations, it is unlikely that noise impacts resulting from a potential build alternative will significantly affect either sensitive area. In the next phase of project development, a noise model may be conducted using TNM 2.5, FHWA approved noise software program. This analysis will be performed in accordance with the procedures outlined within the Title 23 Code of Federal Regulations (CFR), Part 772, U.S. Department of Transportation, Federal Highway Administration, Procedures for Noise Abatement of Highway Traffic Noise and Construction Noise and the Kentucky Department of Transportation Noise Abatement Policy (NAC).

A more thorough noise analysis would provide a detailed summary of alternative-dependent noise impacts, but this will be deferred until a future phase of the project. Since each alternative will be geographically unique and will contribute separate noise-related factors, each individual alternative should be studied to determine the impact that each new route would yield. Noise sensitive areas shown in **Figure 1** should be examined closely, as they might have the potential to impact the orientation of a particular alternative. If possible, these areas should be avoided altogether if the project limits of this study allow it. Potential future developed and undeveloped lands for which development is planned or designed should also be taken into account, as noise sensitivity issues might dictate the actual routing of the closest alternative. After each alternative has been studied, a list of future traffic noise impacts should be compiled. This compilation will serve as the final determining factor if noise mitigation efforts would be applicable. A separate noise abatement analysis should be performed only if potential impacted areas exist.

Existing and future traffic volume projections should be established before the noise analysis is scheduled for start-up. These volumes are essential to the noise model and its basis for predicting build and no-build traffic noise levels. Variances with different types of vehicles (autos, medium trucks, heavy trucks, and buses) can alter noise predictions considerably.

After the potential alternatives have been defined, traffic projections compiled, and field readings taken, then an appropriate noise model can be developed.

FIGURE 1.


Kentucky
UNBRIDLED SPIRIT
WilburSmith
68
2399
Louie B. Nunn Parkway
3234
EDMONTON
496
861
2390
163
2387
90
163
0 0.5 1 2
Miles
Legend
(Noise-Sensitive Areas)
Cemetery
Church
School
Park
Historical Structures
National Register Property
Potential Noise Sensitive Locations
KY163 Alternatives Study
Metcalfe County
Item No. 3-129.00