Appendix I – Screening Level Noise Analysis Technical Report

Job No. 100512, Walnut Ridge – Missouri State Line (Future I-57) P.E.

Prepared by Garver for the
Arkansas Department of Transportation
In cooperation with the Federal Hwy Administration

This report was funded in part by the Federal Hwy Administration, U.S. Department of Transportation. The views and opinions of the authors expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation.

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Chapter 1 – Introduction

Project Overview

The Federal Highway Administration (FHWA) has established standards for evaluating traffic noise in compliance with 23 United States Code (USC) of Federal Regulations Section 109(h) and (i). These standards are found in 23 Code of Federal Regulations (CFR) Part 772. ARDOT's *Policy on Highway Traffic Noise Abatement* (ARDOT Noise Policy) was developed in accordance with requirements of these FHWA Noise Standards. This Noise Screening Analysis was completed in accordance with the ARDOT Noise Policy for proposed improvements to the United States Highway (Hwy.) 67 corridor in northeastern Arkansas between Walnut Ridge and the Missouri State line.

This Noise Screening Analysis serves to provide the following:

- An overview of the existing and future noise environment
- Predict the potential effects the project would have on the noise environment

1.1 What is the Proposed Project?

The purpose of the project (ARDOT job number 100512) is to enhance connectivity and continuity of the National Highway System, provide a more resilient roadway, and provide for increased opportunity for economic development in northeast Arkansas. The study area is located in Clay, Greene, Lawrence, and Randolph counties in northeast Arkansas. Construction of the connection would complete the improvements of Future I-57 within Arkansas.

The August 2015 Highway 67 Improvement Study prepared by ARDOT, the Executive Summary of which is available in Appendix B of the Final Environmental Impact Statement (FEIS), evaluated five alternative corridors to improve Hwy. 67. The study recommended three action alternatives be carried forward into any future NEPA studies and documented the reason why each alternative was or was not recommended to be carried forward. The three recommended alternative corridors, which were later renumbered in the EIS study, consisted of:

- upgrading existing Hwy. 67 and included bypasses around Pocahontas and Corning;
- an alternative on new location located mostly north of the Dave Donaldson Black River Wildlife Management Area (Black River WMA); and
- an alternative on new location that primarily parallels Hwy. 90 and is south of the Black River WMA.

The Supplementary Notice of Intent (SNOI) was prepared for the Future I-57 project in June 2021 and is available within Appendix A of the FEIS. Figure 1 of the 23 USC Section 139 Coordination Plan within the SNOI document, shows four build alternatives within the Future I-57 Study Area. Three of the alternative corridors are the three corridors recommended by the2015 Highway 67 Improvement Study and the fourth is an alignment entirely along existing Hwy. 67. Because the latter was not retained for further study in the 2015 ARDOT Improvement Study and would not meet the project purpose and need, it was not included in the EIS study. Thus, the three action alternatives considered for the Future I-57 Project were renumbered as Alternatives 1-3 and consisted of the following.

- Alternative 1 - Upgrade existing Hwy. 67 to interstate standards and construct bypasses around Pocahontas and Corning
- Alternative 2 - New location interstate located east and south of existing Hwy. 67 and north of the Black River WMA
- Alternative 3 - New location interstate parallel to and south of Hwy. 90

As documented in Section 2.3 of the FEIS, results of the alternative screening process predicted Alternative 1 would have substantial environmental and community impacts. Therefore, Alternative 1 was eliminated from further consideration and was not carried forward for detailed analysis in the EIS Study.

Alternatives 2 and 3, as shown in **Figure 1**, were retained and considered and evaluated in this noise screening analysis. Several interchange locations are also proposed. Three Missouri Connector Alternatives (Alternatives A-C) were also evaluated. These action alternatives are primarily 400 feet in width; however, the auditory study area extends outward from the proposed travel lanes up to 675 feet. The alternatives evaluated include:

- No Action Alternative (Existing Hwy. 67)
- Alternative 2 (Central alignment on new location – 39 miles)
- Alternative 3 (Eastern alignment on new location – 41 miles)
- Alternative A (Western Missouri connector on new location – 2.5 miles)
- Alternative B (Middle Missouri connector partially on existing Hwy. 67 – 2.3 miles)
- Alternative C (Eastern Missouri connector on new location – 2.8 miles)

The No Action Alternative would not involve the construction of Hwy. 67 but would include normal activities that involve providing for the safety and maintenance of local roadways. The No Action Alternative was compared to the action alternatives developed for this project.

1.2 Why Were Noise Impacts Assessed for This Project?

It is the intent of the ARDOT to evaluate predicted, future traffic sound levels from highway traffic noise that could result in traffic noise impacts for federal Type I projects. Type I projects include those that meet the following criteria:

- Substantially alter the existing horizontal and vertical alignments and topography
- Add through traffic lanes
- Add and relocate interchanges or ramps

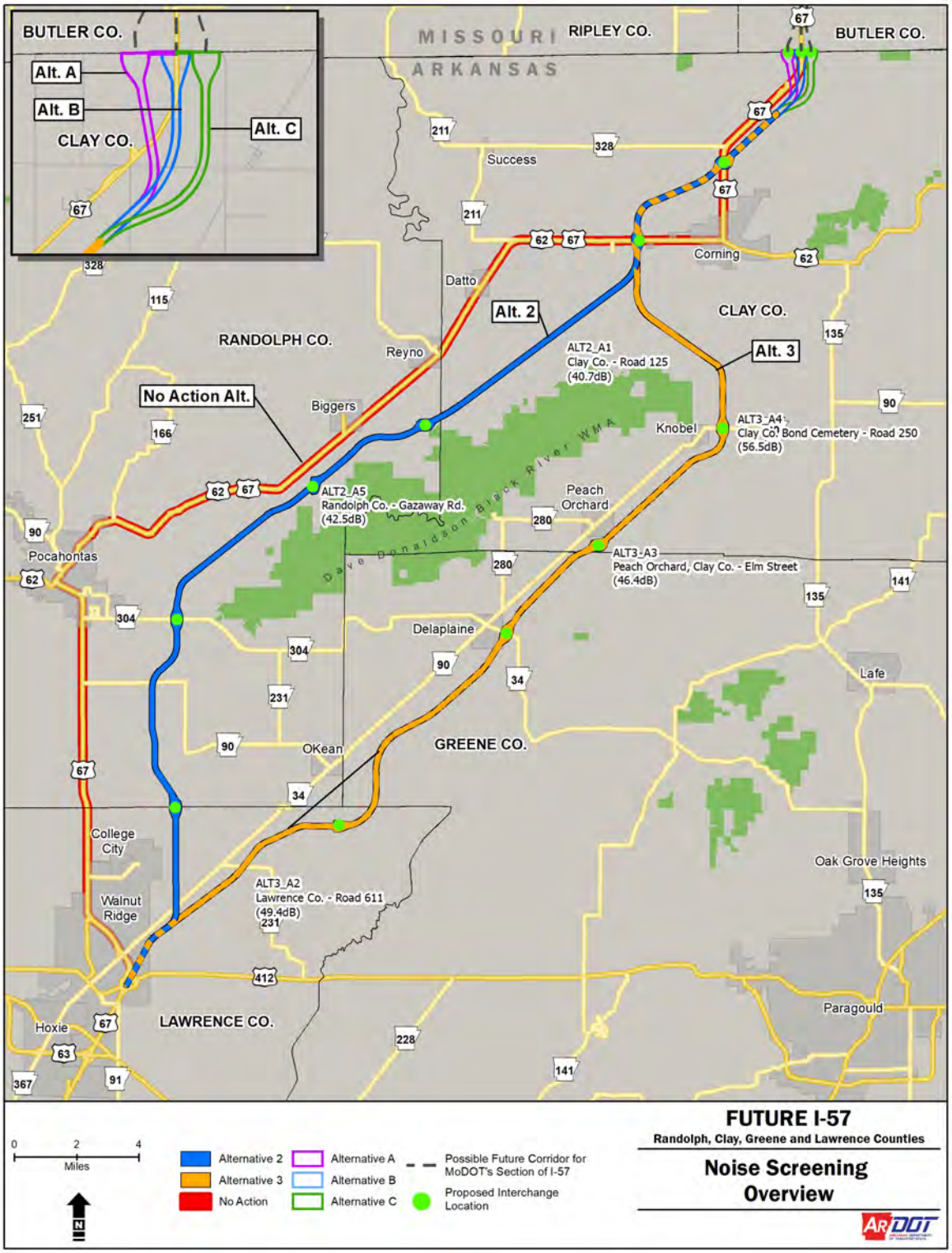
According to ARDOT Noise Policy, a screening level noise analysis (screening analysis) may be performed for projects that are unlikely to cause noise impacts and/or where noise abatement measures are likely to be unfeasible for acoustical or engineering reasons. Factors common to these types of projects include low traffic volumes, slower speeds, the presence of few or no receptors, and the need for roadway access points (e.g., driveways, roadway intersections, etc.).

1.3 Resources Evaluated in This Technical Report?

This technical report includes the evaluation of the following sensitive noise receivers. It should be noted that there are receptors located within the proposed right of way, which are considered relocations for the purposes of this noise screening and not counted as impacted. A total of 200 receptors were evaluated.

- Single family residential properties
- Cemeteries
- Places of worship
- Section 4(f) public recreation properties
- Commercial properties with outdoor seating

Figure 1 - Project Overview



Chapter 2 – What is the Existing Noise Environment?

This section provides background information on traffic noise, screening criteria, and how potential impacts are determined. For the purposes of the noise screening, vehicular traffic is considered the primary source of noise in the project area.

2.1 How is Noise Defined?

Noise is defined as unwanted or excessive sound. The three basic parameters of how noise affects people are summarized below.

Intensity is determined by the level of sound expressed in units of decibels (dB). A 3 dB change in sound level is barely perceptible to most people in typical outdoor settings. However, a 5 dB increase presents a noticeable change, and a 9-10 dB increase in sound level is typically judged to be twice as loud as the original sound, while a 9-10 dB reduction is half as loud. Outdoor conversation at normal levels at a distance of 3 feet becomes difficult when the sound level exceeds the mid-60 dBA range.

Frequency is related to the tone or pitch of the sound. The amplification or attenuation of different frequencies of sound to correspond to the way the human ear hears these frequencies is referred to as "A-weighting." The A-weighted sound level in decibels is expressed as dBA.

Variation with time occurs because most noise fluctuates from moment to moment. A single level called the equivalent sound level (Leq) is used to compensate for this fluctuation. The Leq is a steady sound level containing the same amount of sound energy as the actual time-varying sound evaluated over the same time period. The Leq averages the louder and quieter moments but gives more weight to the louder moments.

For highway noise assessment purposes, Leq is typically evaluated over the worst 1-hour period. The Leq commonly describes sound levels at locations of outdoor human use and activity and reflects the conditions that will typically produce the worst traffic noise (e.g., the highest traffic volumes traveling at the highest possible speeds). Doubling the number of sources (i.e., vehicles) increases the hourly equivalent sound level (Leq) by approximately 3 dB, which is usually the smallest change that people can detect without specifically listening for the change.

2.2 What Factors Affect Traffic Noise Levels?

Many factors affect traffic noise levels, including distance, topography, land cover, buildings, traffic volumes and speeds, and vehicle type. For example, the Leq would generally decrease by 4.5 dBA for doubling of distances when the ground cover is grass, pasture, or other sound absorbing cover. When hard ground cover such as gravel, paved surfaces, and water is encountered, noise levels can be expected to decrease typically by 3 dBA for doubling of distances.

Vehicles classified by FHWA as medium and heavy trucks generate greater sound levels. Higher truck volumes combined with higher highway speeds will produce greater potential for noise impacts. In general, speed increases from 30 to 45 mph will increase sound by 5 to 6 dBA and by another 3dBA with speed increases to 55 mph. Quiet daytime noise levels in rural areas with no significant noise sources might be in the 30 to 40 dBA range, while quiet daytime noise levels in suburban areas might be in the 40 to 50 dBA range.

2.3 How are Noise Levels Predicted?

The FHWA Traffic Noise Model Version 2.5 (TNM) software program is used to predict existing and future Leq(h) traffic noise levels. The TNM straight line model used in the screening level analysis uses the existing year and design year traffic and roadway information. This modeling allows for reasonable estimates of traffic noise using varying offset distances from the highway. Traffic inputs into TNM are further discussed in below.

Noise studies may use the terms "receptor" and "receiver" that are similar but distinct. A receptor can represent a noise-sensitive area, such as the backyard of a single family, restaurant seating area or a park bench. A receptor can also represent the location of a group of receptors with similar land uses. Receivers are described as a TNM modeling point that can represent a single receptor site or a group of receptor sites with similar land uses. TNM receivers may representative several receptors where common noise environments exist.

2.4 What is a Noise Impact?

Traffic noise impacts are determined by comparing design year worst noise hour Leq(h) values to: (1) a set of Noise Abatement Criteria (NAC) defined by the Federal Highway Administration (FHWA) for different land use categories; and (2) existing Leq(h) values. **Table 1** shows the land uses classified as Activity Categories A through G and their corresponding NACs. A noise impact occurs when at a given receptor future noise levels approach by one decibel, meet, or exceed FHWA NAC for its activity category for the design year. A substantial increase occurs when the future noise levels exceed existing noise levels by 10 dB (A) at a given receptor. For screening analysis purposes, the ARDOT noise policy requires determining noise levels within 4 dBA of the NAC value. The screening analysis threshold would therefore be 63 dBA for Activity Categories B and C.

Table 1 – Noise Abatement Criteria (NAC)

Activity Category	Leq(h) dBA	Evaluation Location	Activity Description
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 qualities is essential if the area is to continue to serve its intended purpose.
B*	67	Exterior	Residential properties.
C*	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio stations, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structure, radio studios, recording studios, schools, and television studios.
E*	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D, or F.
F	–––	–––	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	–––	–––	Undeveloped lands that are not permitted.

*Includes undeveloped lands permitted for this activity category.

2.5 What if Noise Impacts are Identified?

Screening analysis results represent a worst-case scenario with higher sound levels than would be expected in detailed modeling. The results may be used to determine the need for detailed analysis if noise impacts are likely and the placement of noise barriers is feasible. If noise impacts are identified as a result of the noise screening, a detailed evaluation of the feasibility of abatement would be conducted in accordance with ARDOT's noise policy and FHWA noise standards (23 CFR 772). Abatement considerations determined to be feasible and reasonable would trigger the need for a detailed noise analysis.

Feasibility refers to one of two criteria defined in the ARDOT noise policy used to evaluate noise abatement and includes a combination of acoustical and engineering factors in the ability of an abatement measure to achieve a substantial noise reduction.

Reasonableness is the second abatement criteria in evaluation of noise abatement and includes the combination of social, economic, and environmental factors, and weighs the amount of a noise barrier against the benefits it would provide.

2.6 How were Noise Study Areas (NSA) Defined?

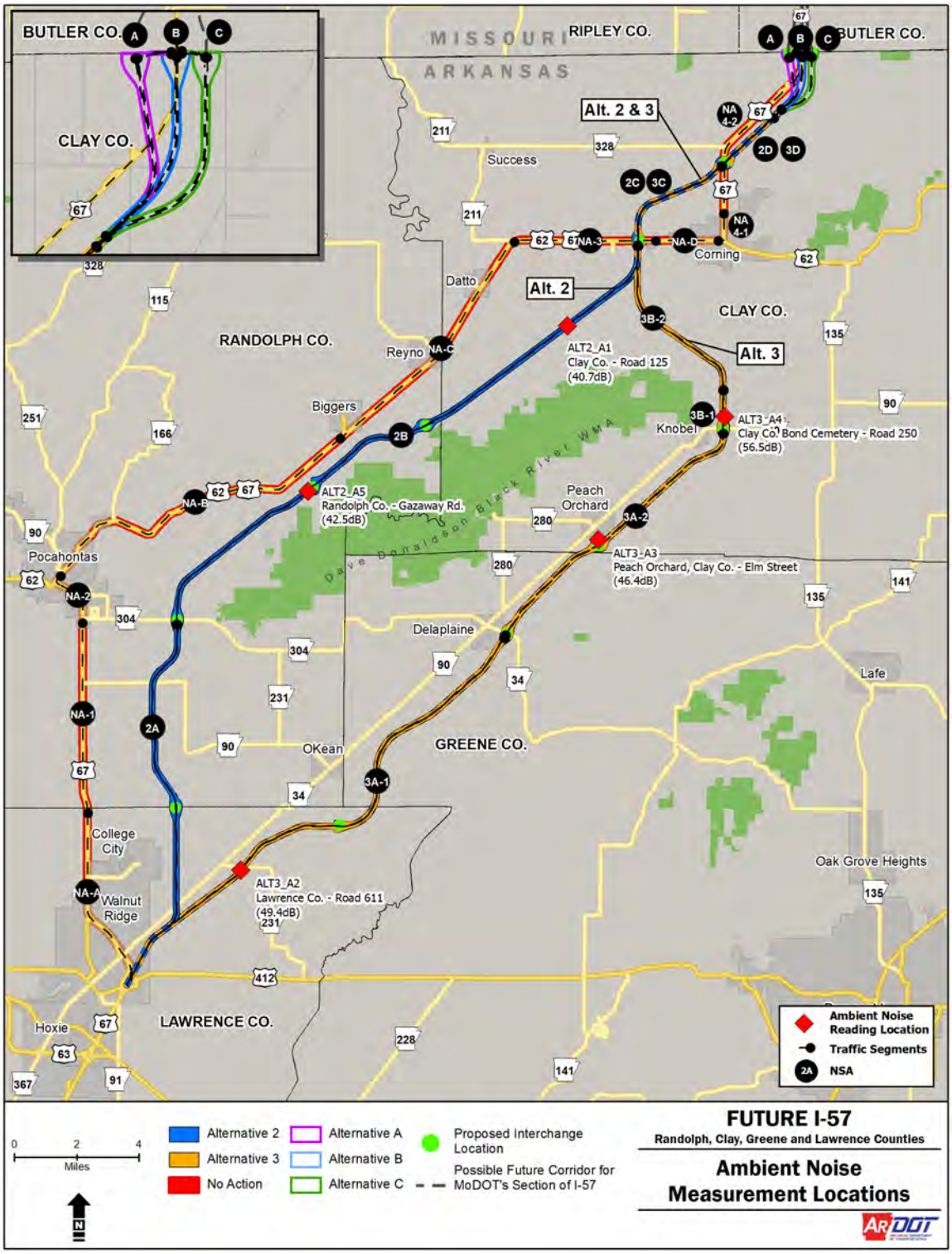
The identification of noise impacts is grouped according to noise study areas (NSA) as defined according to ARDOT's screening level noise analysis process. Impacts are identified by receptor type which involves using a straight line TNM model. For straight line modeling purposes, the receiver placement represents a modeling point in the TNM model at which noise levels are predicted, that is initially used to identify noise buffer zones (NBZ). The straight-line model incrementally places receivers perpendicular to the modeled roadway at 50-foot intervals to determine the distances to which noise impacts and noise levels within 4 dBA of the NAC extend away from the roadway. The NBZ's identify the distance from the centerline of the roadway where the 63 dBA and 66 dBA sound level would occur. The NSAs and associated potential receptors are delineated based on the NBZ and consideration of the Activity Categories as identified in **Table 1**. The NSA locations for each alternative are identified below in **Table 2** and shown in **Figure 2**. NSAs for this project were identified according to the proposed changes in traffic volumes along each alternative. The number following "NSA" identifies the action alternative and the following letter represents the segment of that alternative (i.e., NSA 2A = "Alternative 2", "Segment A").

NBZs are assigned to areas that could experience noise levels of 63 dBA. The tenth value was used for rounding the decibel levels (e.g., 63.3 dBA reported as 63 dBA). Existing and proposed impacts were determined to occur at 66 dBA. The NBZ's for Alternative 2 are shown in **Attachment A**, NBZ's for Alternative 3 are shown in **Attachment B**, NBZ's for Alternatives A, B, and C are shown in **Attachment C**, and NBZ's for the No Action Alternative are shown in **Attachment D**. The different shaded areas were determined based on the predicted distance from the center of the lanes associated with the nearest direction of travel for the proposed action alternatives and from the center of the existing highway for the No Action Alternative. Substantial increase impacts were also evaluated in the same way.

Table 2 – Noise Study Area (NSA) General Locations for Action Alternatives

Alternative 2	
NSA 2A	Located between the interchange of Hwy. 412 and Hwy. 67 near Walnut Ridge and extends north to a proposed interchange at Hwy. 304
NSA 2B	Hwy. 304 to Hwy. 67 West of Corning
NSA 2C	Hwy. 67 West of Corning to Hwy. 67 N of Corning
NSA 2D	Hwy. 67 North of Corning to Alternatives A, B, and C
Alternative 3	
NSA 3A-1	Hwy. 412 & Hwy. 67 to Delaplaine
NSA 3A-2	Delaplaine to Hwy. 90 East of Knobel
NSA 3B-1	Hwy. 90 North approximately 2,500 feet
NSA 3B-2	Approximately 2,500 feet North of Hwy. 90 to Hwy. 67 West of Corning
NSA 3C	Hwy. 67 West of Corning to Hwy. 67 North of Corning
NSA 3D	Hwy. 67 to Missouri State Line
Alternative A	
NSA A	South of Clay County Road 155 to the State Line
Alternative B	
NSA B	South of Clay County Road 155 to the State Line
Alternative C	
NSA C	South of Clay County Road 155 to the State Line
No Action Alternative	
NSA NA-A	Hwy. 67 and Hwy 412 to County Line
NSA NA-1	County Line to Hwy 304
NSA NA-2	Hwy. 304 to Hwy. 90
NSA NA-B	Hwy. 90 to Hwy. 67 Business (south of Biggers)
NSA NA-C	Hwy. 67 Business to Hwy. 211
NSA NA-3	Hwy. 211 to Clay County Road 139
NSA NA-D	Clay County Road 139 to Hwy 67 North (N. Missouri Ave.)
NSA NA-4-1	From Hwy. 67 North (N. Missouri Ave.) to Clay County Road 140
NSA NA-4-2	Clay County Road 140 to the State Line

Figure 2 - Ambient Noise Measurement Locations and NSA Segments



Chapter 3 – How was the Project Modeled and What were the Results?

This section summarizes results of the screening analysis. TNM results tables are provided in **Attachment E**. Screening analysis results represent a worst-case scenario with higher sound levels than would be expected in detailed modeling. The results may be used to determine the need for detailed analysis if noise impacts are likely and the placement of noise barriers is feasible. It may also be used for projects that lack receptors in order to assess impacts on undeveloped land for future land use planning purposes.

3.1 How was the Project Modeled?

Ambient noise measurements were collected on March 2 and 3, 2021 for 15 minutes at five representative locations along Alternative 2 and Alternative 3 that represent the ambient or background noise environment for these two alternatives and for Alternatives A and C, which are utilized in determining if there would be a substantial increase (≥ 10 dBA). Upon coordination with ARDOT, it was determined that applying one conservative ambient reading to identify any substantial increase impacts for Alternative 2 and Alternative 3 would provide a more realistic prediction of the noise environment in an area where the land use along both alternatives is consistent. TNM modeling results determined that the distance to the 66 dBA contour and the distance to identify substantial increase impacts was reasonably uniform along Alternative 2 and Alternative 3. Existing ambient sound levels were compared to the TNM predicted sound levels for each evaluated alternative.

Traffic data prepared for the project was applied to the TNM models developed for each NSA and included proposed 2040 traffic for the action alternatives and both existing 2018 and proposed 2040 traffic for the No Action Alternative. Traffic data used in this screening analysis is included in **Attachment E**. The typical section associated with the action alternatives is included in **Attachment F**.

3.2 What were the Field Measurement Results?

Ambient field measurement locations are shown on **Figure 2** and results are provided in **Table 3**.

Table 3 – Ambient Noise Measurements and Location

Field Measurement Site	General Location	Recorded dB	Segment	Latitude	Longitude
Alt2_A1	Clay Co. - Road 125	40.7	C & D	36.372449°	-90.677335°
Alt2_A5	Randolph Co. - Gazaway Road	42.5	B	36.296970°	-90.827700°
Alt3_A2	Lawrence Co. - Road 611	49.4	A-1	36.120750°	-90.868960°
Alt3_A3	Peach Orchard, Clay Co. - Elm Street	46.4	A-2	36.272680°	-90.660940°
Alt3_A4	Clay Co. Bond Cemetery - Road 250	56.5	B	36.329220°	-90.587490°

Five ambient noise measurements as identified in **Table 3** were collected throughout various locations of the action alternatives. Based on rural nature of the study area, the conservative ambient measurement of 42.5 dB was applied to all action alternatives. This conservative measurement provides the most likely scenario for determination of potential substantial increase impacts along the action alternatives. Based on coordination with ARDOT, the 15-minute ambient noise measurements collected on March 2 and 3, 2021 are still within the ARDOT noise policy on rural projects with scattered noise receptors, modeling of existing noise levels along the entire project is not always necessary. For new alignment roadways where no major roadways are present, ambient

measurements are used to determine the existing noise environment; therefore, the noise conditions along the new alignment alternatives were evaluated by using a conservative ambient reading.

3.3 NSA 2A Modeling Results

As shown in **Attachment A**, NSA 2A is located between the interchange of Hwy. 412 and Hwy. 67 and Hwy. 90., NSA 2A contains very few residences, which would be the primary noise sensitive receptors. The predicted build noise levels range from 63 dBA at 225 feet to 66 dBA at a distance of 170 feet. Substantial increases (59.4 dBA) can be anticipated at 560 feet. Three receptors (shown on detail sheets 2 and 5 of 24 in **Attachment A**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA.

3.4 NSA 2B Modeling Results

NSA 2B is located between a proposed interchange at Hwy. 304 and Hwy. 67 west of Corning and also contains very few receptors. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 225 feet to 170 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. Four receptors (shown on detail sheets 12, 15, and 18 in **Attachment A**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA, one of which falls within the 63 dBA NBZ.

3.5 NSA 2C Modeling Results

NSA 2C is located between Hwy. 67 west of Corning and Hwy. 67 north of Corning. No receptors are located within this NSA. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 210 feet to 162 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. No receptors are located within the 63 NBZ, be impacted by meeting or exceeding the NAC 66 dBA threshold or would be affected substantial increases of ≥10 dBA.

3.6 NSA 2D Modeling Results

NSA 2D is located between a proposed interchange on Hwy. 67 north of Corning and Alternatives A and C. This NSA contains one receptor. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 225 feet to 170 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the nearest direction of travel. The single receptor (shown in detail sheet 24 in **Attachment A**) located in this NSA would be affected by a substantial increase of ≥10 dBA.

Alternative 2 noise level results for compatibility planning are provided in **Table 4**.

Table 4 – Noise Level Results for Compatibility Planning – Alternative 2

Location	2018		2040		Ambient Measurements (dBA)	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**					
Segment 2A	--	N/A	50	72.5	42.5 dB	0	0	0	3
	--		100	69.2					
	--		170	66.1					
	--		225	63.0					
	--		250	61.8					
	--		310	59.5					
			335	58.6					
			400	56.7					
			450	55.4					
			500	54.2					
			560	52.9					
Segment 2B	--	N/A	50	72.4	42.5 dB	0	0	1	4
	--		100	69.1					
	--		170	66.0					
	--		225	62.8					
	--		250	61.6					
	--		300	59.5					
	--		340	58.1					
	--		400	56.3					
	--		450	55.0					
	--		500	53.8					
	--		550	52.7					
Segment 2C	--	N/A	50	72.0	42.5 dB (A1)	0	0	0	0
	--		100	68.6					
	--		150	66.5					
	--		210	63.1					
	--		250	61.1					
	--		300	59.1					
	--		350	57.3					
	--		425	55.2					

Location	2018		2040		Ambient Measurements (dBA)	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**					
	--		450	54.5					
	--		500	53.3					
	--		550	52.2					
	--		600	51.2					
	--		625	50.7					
Segment 2D	--	N/A	50	72.5	42.5 dB	0	0	0	1
	--		100	69.1					
	--		170	66.1					
	--		225	63.0					
	--		250	61.8					
	--		300	59.8					
	--		350	58.2					
	--		425	56.1					
	--		460	55.2					
	--		500	54.3					
	--		550	53.2					
	--		600	52.2					
	--		650	51.2					
	--		675	50.7					

*** Perpendicular to centerline of Alternative in each direction.**
**** Rounded to tenth value.**

3.7 NSA 3A-1 Modeling Results

NSA 3A-1 is located between the interchange of Hwy. 412 and Hwy. 67 and Delaplaine. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 215 feet to 165 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 560 feet from the nearest direction of travel. Four receptors (shown on detail sheets 4, 7, and 10 in **Attachment B**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA.

3.8 NSA 3A-2 Modeling Results

NSA 3A-2 is located between Delaplaine and Hwy. 90 east of Delaplaine. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 215 feet to 165 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. Three receptors (shown on detail sheets 15 and 16 in **Attachment B**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA.

3.9 NSA 3B-1 Modeling Results

NSA 3B-1 is located north of Hwy. 90 east of Delaplaine and extends adjacent to Clay County Road 250 for approximately 2,500 feet. The predicted 63 dBA and 66 dBA build noise levels in this NSA are anticipated to range from 220 feet to 166 feet respectively. Substantial increases would be encountered out to a distance of approximately 550 feet from the nearest direction of travel. Two receptors (shown on detail sheet 17 in **Attachment B**) are predicted to experience future noise levels within the 63 dBA NBZ. No substantial increase impacts are anticipated within this segment.

3.10 NSA 3B-2 Modeling Results

NSA 3B-2 extends from approximately 2,500 feet north of Hwy. 90 east of Knobel to a proposed interchange at existing Hwy. 67 west of Corning. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 220 feet to 166 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. No receptors are located within the 63 NBZ, be impacted by meeting or exceeding the NAC 66 dBA threshold or would be affected substantial increases of ≥10 dBA.

3.11 NSA 3C Modeling Results

NSA 3C is located between Hwy. 67 west of Corning and Alternatives A, B, and C. No receptors are located within this NSA. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 215 feet to 163 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. No receptors are located within the 63 NBZ, be impacted by meeting or exceeding the NAC 66 dBA threshold or would be affected substantial increases of ≥10 dBA.

3.12 NSA 3D Modeling Results

NSA 3D is located between a proposed interchange on Hwy. 67 north of Corning and Alternatives A and C. This NSA contains no receptors. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 220 feet to 166 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest

direction of travel. No receptors are located within the 63 NBZ, be impacted by meeting or exceeding the NAC 66 dBA threshold or would be affected substantial increases of ≥10 dBA.

Alternative 3 noise level results for compatibility planning are provided in **Table 5**.

Table 5 – Noise Level Results for Compatibility Planning – Alternative 3

Location	2018		2040		Ambient Measurements (dBA)	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**					
Segment 3A-1	--	N/A	50	72.50	42.5 dB	--	0	0	3
			100	69.20					
			170	66.10					
			225	63.00					
			250	61.80					
			310	59.50					
			335	58.60					
			400	56.70					
			450	55.40					
			500	54.20					
			560	52.90					
Segment 3A-2	--	N/A	50	72.10	42.5 dB	--	0	0	3
			96	68.90					
			165	66.00					
			215	63.10					
			250	61.40					
			300	59.40					
			325	58.50					
			400	56.20					
			450	54.90					
			500	53.80					
			550	52.70					
Segment 3B-1	--	N/A	50	72.2	42.5 dB	--	0	1	2
			100	68.8					
			166	66					
			220	62.9					
			250	61.4					
			300	59.4					
			325	58.5					
			400	56.2					
			450	54.9					
			500	53.7					
			550	52.6					

Segment 3B-2	--	N/A	50	72.2	42.5 dB	--	0	0	0
			100	68.8					
			166	66.0					
			220	62.9					
			250	61.4					
			300	59.4					
			340	58.0					
			400	56.2					
			450	54.9					
			500	53.7					
			550	52.6					
			600	51.6					
Segment 3C	--	N/A	50	72.0	42.5 dB	--	0	0	0
	--		100	68.6					
	--		163	66.0					
	--		215	62.9					
	--		250	61.2					
	--		300	59.2					
	--		350	57.5					
	--		425	55.3					
	--		450	54.7					
	--		500	53.5					
	--		550	52.4					
	--		600	51.4					
	--		635	50.7					
Segment 3D	--	N/A	50	72.2	42.5 dB	--	0	0	1
	--		100	68.8					
	--		166	66.0					
	--		220	62.9					
	--		250	61.5					
	--		300	59.5					
	--		350	57.8					
	--		400	56.4					
	--		450	55.1					
	--		500	54.0					
	--		550	52.9					

*** Perpendicular to centerline of Alternative in each direction.**
**** Rounded to tenth value.**

3.13 NSA A Modeling Results

NSA A is located between the ending point of south of Clay County Road 155 and the state line. A total of four receptors were modeled for this NSA. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 225 feet to 170 feet from the center of the nearest direction lane of travel. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the nearest direction of travel. No receptors are located within the 63 NBZ or be impacted by meeting or exceeding the NAC 66 dBA threshold.

A temporary connector corridor on the north end of Alternative A was necessary to include a four-lane roadway that would tie the alternative back to Hwy. 67. The interim connector road would be replaced within the planned interchange at County Road 278 at a later time. The addition of the connector did not result in the need to model any other receptors. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 160 feet to 215 feet from the center of the interim connector. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the center of the interim connector.

3.14 NSA B Modeling Results

NSA B is located between the ending point of south of Clay County Road 155 and the Missouri state line on existing Hwy. 67. A total of three receptors were modeled for this NSA. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 220 feet to 166 feet from the center of the nearest direction lane of travel. Three receptors are located within the 63 dBA NBZ. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the nearest direction of travel.

3.15 NSA C Modeling Results

NSA C is located south of Clay County Road 155 and extends to the state line. A total of three receptors were modeled for this NSA. The ambient noise level in this area was 40.7 dBA. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 220 feet to 166 feet from the center of the nearest direction lane of travel. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. No receptors are located within the 63 NBZ or be impacted by meeting or exceeding the NAC 66 dBA threshold.

A temporary connector road on the north end of Alternative C was necessary to include a four-lane roadway that would tie the alternative back to Hwy. 67. The interim connector road would be replaced within the planned interchange at County Road 278 at a later time. The addition of the connector did not result in the need to model any other receptors. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 150 feet to 200 feet from the center of the interim connector. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the center of the interim connector.

Alternatives A, B, and C noise level results for compatibility planning are provided in **Table 6**.

Table 6 – Noise Level Results for Compatibility Planning – Alternatives A, B, and C (Including Connector Roads for A and C)

Location	2018		2040		Ambient Measurements (dBA)	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**					
Alternative A	--	N/A	50	72.5	42.5 dB	--	0	0	3
	--		100	69.1					
	--		170	66.1					
	--		225	63.0					
	--		250	61.8					
	--		300	59.8					
	--		350	58.2					
	--		425	56.1					
	--		460	55.2					
	--		500	54.3					
	--		550	53.2					
	--		600	52.2					
	--		650	51.2					
Alternative A Connector Road	36	65.8	50	71.7	42.5 dB	0	0	0	0
	68	62.7	100	68.3					
	90	61.4	160	65.9					
	100	60.8	215	62.9					
	150	58.8	250	61.3					
	175	57.5	300	59.4					
	200	56.1	350	57.9					
	250	53.9	425	56.0					
	290	52.4	460	55.2					
	350	50.6	500	54.4					
	600	45.7	600	52.5					

Location	2018		2040		Ambient Measurements (dBA)	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**					
Alternative B	--	N/A	50	72.5	42.5	0	0	3	9
	--		100	69.1					
	--		166	66.3					
	--		220	63.2					
	--		250	61.8					
	--		300	59.8					
	--		350	58.2					
	--		400	56.7					
	--		450	55.4					
	--		500	54.3					
	--		550	53.2					
	--		600	52.2					
Alternative C	--	N/A	50	72.2	42.5	0	0	0	3
	--		100	68.8					
	--		166	66.0					
	--		220	62.9					
	--		250	61.5					
	--		300	59.5					
	--		350	57.8					
	--		400	56.4					
	--		450	55.1					
	--		500	54.0					
	--		550	52.9					
	--		600	51.9					
	--		660	50.7					

Location	2018		2040		Ambient Measurements (dBA)	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**					
Alternative C Interim Connector	50	69.0	50	71.4	42.5	0	0	0	0
	75	67.0	75	69.4					
	--	--	85	51.3					
	90	66.1	85	68.8					
	100	65.6	100	68.0					
	--	--	125	42.5					
	150	63.5	150	65.9					
	175	62.5	--	--					
	200	60.9	200	63.3					
	275	57.3	250	61.0					
	300	56.3	300	59.1					
	350	54.6	350	57.6					
	400	53.1	400	56.2					
	475	51.3	450	55.1					
	500	50.7	500	54.1					
			550	53.1					
			600	52.2					

*** Perpendicular to centerline of Alternative in each direction.**
**** Rounded to tenth value.**

3.16 NSA NA-A Modeling Results

NSA NB-A is located between the interchange of Hwy. 412 and Hwy. 67 and the Lawrence/Clay County Line. A total of 17 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 140 feet to 155 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 260 feet from the center of the roadway and include seven receptors. Existing noise levels ranged from 71.4 dBA to 55.9 dBA, exposing 10 receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 71.9 dBA to 56.4 dBA and not expose any additional receptors to the residential NAC criteria.

3.17 NSA NA-1 Modeling Results

NSA NA-1 is located between the Lawrence/Clay County Line to Hwy. 304. A total of 27 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 145 feet to 162 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 260 feet from the center of the roadway and includes 12 receptors. Existing noise levels ranged from 71.4 dBA to 57.6 dBA, exposing 14 receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 72 dBA to 58.1 dBA and exposes one additional receptor to the NAC B and C criteria.

3.18 NSA NA-2 Modeling Results

NSA NA-2 is located between Hwy. 304 and Hwy. 90. A total of six receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 110 feet to 125 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 210 feet from the center of the roadway and includes one receptor. Existing noise levels ranged from 70.2 dBA to 56.2 dBA, exposing five receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 70.7 dBA to 56.7 dBA and not expose any additional receptors to the NAC B and C criteria.

3.19 NSA NA-B Modeling Results

NSA NA-B is located between Hwy. 90 and Hwy. 67 Business south of Biggers. A total of seven receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 50 feet to 60 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 110 feet from the center of the roadway and includes five receptors. Existing noise levels ranged from 69.7 dBA to 53.4 dBA, exposing two receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 70.2 dBA to 53.9 dBA and not expose any additional receptors to the residential NAC criteria.

3.20 NSA NA-C Modeling Results

NSA NA-C is located between Hwy. 67 Business and Hwy. 211. A total of 16 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 75 feet to 85 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 155 feet from the center of the roadway and includes 15 receptors. Existing noise levels ranged from 68.1 dBA to 52.8 dBA, exposing no receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 68.7 to 53.4 and expose one receptor to the residential NAC criteria.

3.21 NSA NA-3 Modeling Results

NSA NA-3 is located from Hwy. 211 to Clay County Road 139. A total of 33 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 66 feet to 85 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 150 feet from the center of the roadway and includes 27 receptors. Existing noise levels ranged from 68.0 dBA to 51.0 dBA, exposing six receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 68.5 dBA to 51.5 dBA and not expose any additional receptors to the NAC B and C criteria.

3.22 NSA NA-D Modeling Results

NSA NA-D is located from Clay County Road 139 to Hwy. 67 North (N. Missouri Avenue in Corning). A total of 25 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 50 feet to 60 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 110 feet from the center of the roadway and includes 24 receptors. Existing noise levels ranged from 69.7 dBA to 50.4 dBA, exposing one receptor to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 70.3 to 51.0 and not expose any additional receptors to the NAC B and C criteria.

3.23 NSA NA-4-1 Modeling Results

NSA NA-4-1 is located from Hwy. 67 North (N. Missouri Avenue) to Clay County Road 140. A total of four receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 35 feet to 38 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 70 feet from the center of the roadway and includes four receptors. Existing noise levels ranged from 67.8 dBA to 50.7 dBA, exposing no receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 68.3 dBA to 51.2 dBA; however, no receptors are anticipated to be impacted within the NAC B and C criteria.

3.24 NSA NA-4-2 Modeling Results

NSA NA-4-2 is located from Clay County Road 140 to the State Line. A total of 40 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 90 feet to 100 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 175 feet from the center of the roadway and includes 33 receptors. Existing noise levels ranged from 69.0 dBA to 53.1 dBA, exposing seven receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 69.5 to 53.6 and not expose any additional receptors to the NAC B and C criteria.

The No Action Alternative noise level results for compatibility planning are provided in **Table 7**.

Table 7 – Noise Level Results for Compatibility Planning – No Action Alternative

Location	2018		2040		Ambient Measurements (dBA)	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**					
Segment NA-A	50	71.4	50	71.9	NA	10	10	7	0
	100	67.9	100	68.4					
	140	66.1	140	66.6					
	155	65.5	155	66.1					
	200	64.1	200	64.6					
	240	63.0	240	63.5					
	260	62.5	260	63.1					
Segment NA-1	50	71.4	50	72.0	NA	14	15	12	0
	75	69.4	75	69.9					
	100	67.9	100	68.5					
	145	65.9	145	66.5					
	162	65.3	162	65.9					
	200	64.1	200	64.7					
	240	63.1	240	63.6					
	260	62.6	260	63.2					
Segment NA-2	50	70.2	50	70.7	NA	5	5	1	0
	75	68.1	75	68.6					
	110	66.2	110	66.6					
	125	65.5	125	66.0					
	150	64.5	150	65.0					
	200	62.9	200	63.3					
	210	62.6	210	63.0					
Segment NA-B	25	69.7	25	70.2	NA	2	2	5	0
	50	66.2	50	66.7					
	60	65.3	60	65.9					
	75	64.3	75	64.8					
	95	63.1	95	63.6					
	110	62.4	110	62.9					

Location	2018		2040		Ambient Measurements (dBA)	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**					
Segment NA-C	50	68.1	50	68.7	NA	0	1	15	0
	75	66.1	75	66.7					
	85	65.5	85	66.1					
	100	64.7	100	65.3					
	140	63.0	140	63.6					
	155	62.4	155	63.0					
Segment NA-3	50	68.0	50	68.5	NA	6	6	27	0
	75	66.0	75	66.6					
	85	65.4	85	65.9					
	100	64.6	100	65.1					
	150	62.5	150	63.0					
Segment NA-D	25	69.7	25	70.3	NA	1	1	24	0
	50	66.2	50	66.8					
	60	65.3	60	65.9					
	110	62.4	110	63.0					
Segment NA-4-1	25	67.8	25	68.3	NA	0	0	4	0
	35	66.0	35	66.5					
	38	65.5	38	66.1					
	50	64.2	50	64.7					
	70	62.6	70	63.1					
	100	60.8	100	61.3					
Segment NA-4-2	50	69.0	50	69.5	NA	7	7	33	0
	75	67.0	75	67.6					
	90	66.1	90	66.7					
	100	65.6	100	66.1					
	150	63.5	150	64.0					
	175	62.5	175	63.0					

*** Perpendicular to centerline of Alternative in each direction.**
**** Rounded to tenth value.**

The Black River WMA was considered a recreation area and the WMA's Master Plan was reviewed during this noise analysis, which indicates that the highest public use for the WMA is waterfowl hunting within five Greentree Reservoirs (See page 10 and Map 4 on page 18 of the WMA's Master Plan). Based on TNM screening results, the common places of gathering within the WMA would not be impacted. Therefore, no public lands would be impacted by the action alternatives.

Cultural historic sites were also considered in completion of the noise screening. No historic sites would be impacted by noise, Refer to Section 3.16 of the FEIS for further information regarding historic properties.

Chapter 4 – How are Feasibility and Reasonableness Evaluated?

Consideration of noise abatement measures is required when the NAC value is approached or exceeded, or when a substantial increase is predicted. Noise barriers (e.g., walls or berms) are the most common noise abatement measures and are considered feasible when the following criteria are met.

- *Constructability* – a barrier must be able to be physically constructed according to common engineering practices and materials.
- *Noise reduction* – ARDOT defines noise reduction as being at least 5 dBA and must be met for a minimum of one impacted receptor.
- *Safety and maintenance considerations* – a barrier must be accessible for maintenance while not restricting access to other highway components. Flood-prone areas and areas with severe drainage problems may dictate whether a noise barrier is feasible.
- *Access and utility requirements* – Sufficient access from adjacent properties and utility corridors are required, which includes driveway access and would not typically be feasible to construct effective noise barriers.

ARDOT noise policy considers noise barriers reasonable when the following criteria are met:

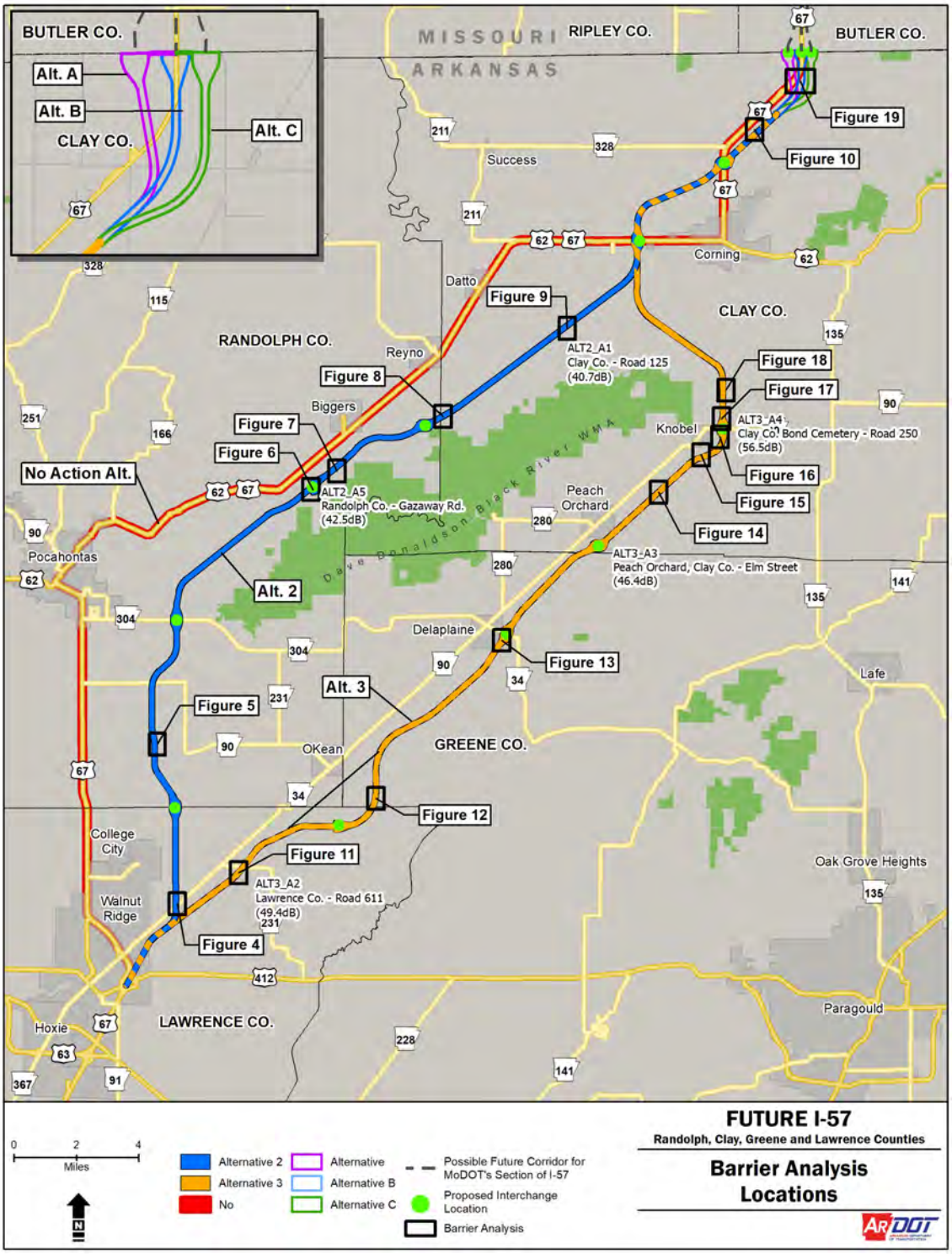
- *Noise reduction* – At least one benefited receptor receives a minimum noise level reduction of 8 dBA (i.e., noise reduction design goal).
- *Public input* – The viewpoints of benefited property owners and residents are solicited and consensus (greater than 50%) of support for or against a noise barrier is achieved.
- *Cost effectiveness* – The total cost for the proposed noise barrier does not exceed $36,000 average allowance per benefited receptor.

Feasibility and preliminary reasonableness determinations are identified for each NSA in which impacted receptors were identified and are summarized below.

Twenty-four potential noise barrier locations were evaluated for the I-57 project where anticipated impacts were identified. The estimated cost of each barrier was based on a consistent height of eight feet with the length based on a distance four times longer than the distance from the receptor to the nearest travel lane. A barrier evaluation that results in exceeding an estimated cost per benefitted receptor (CPBR) of $36,000 would not be considered reasonable to construct according to ARDOT Noise Policy. The cost of $35.00 per square foot for reflective barriers was used in this screening report to determine the estimated CPBR.

The following figures show the barrier locations and identifies the edges of pavement in each travel direction. The distance to the 66 dB buffer for Alternative 2 ranges between 150 to 170 feet from the centerline of the two travel lanes in each direction. **Figure 3** shows the barrier analysis locations.

Figure 3 – Barrier Analysis Locations



4.1 NSA 2A

Three receptors (shown on detail sheets 2 and 5 in **Attachment A** and in **Figure 4** and **Figure 5**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. Two of the impacted receptors are residential properties and located along the east side of a private access road. The western receptor would require a barrier 1,032 feet in length at a cost of $288,960. The receptor closest to Hwy. 34 would require a barrier 852 feet in length and cost $238,560. The distance between these receptors is 1,000 feet. The third receptor is located along Fender Road and would require a barrier 1,220 feet in length at a cost of $341,600. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.

Figure 4 – NSA 2A Impacted Receptors

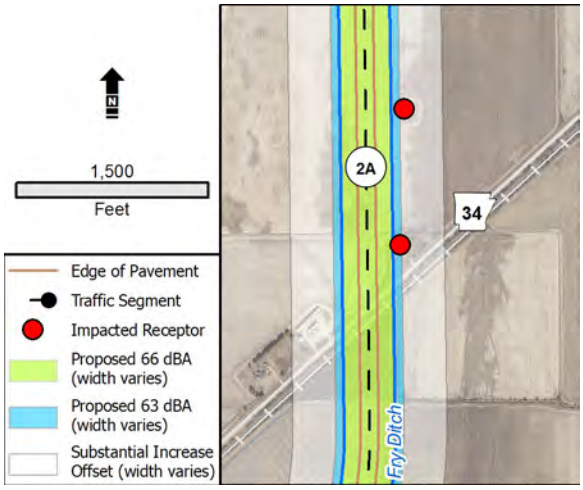
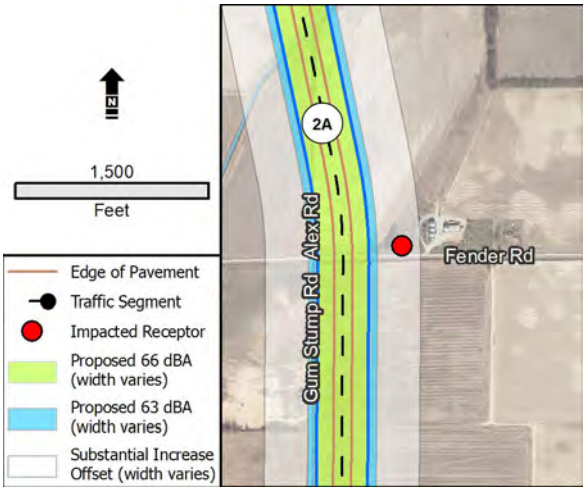


Figure 5 – NSA 2A Impacted Receptors



4.2 NSA 2B

Four receptors (shown on detail sheets 12, 15, and 18 in **Attachment A** and in **Figures 6, 7,** and **8** are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The impacted receptor near the proposed interchange at Gazaway Road could require a noise barrier approximately 730 feet in length and cost $204,400. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.

Figure 6 – NSA 2B Impacted Receptors

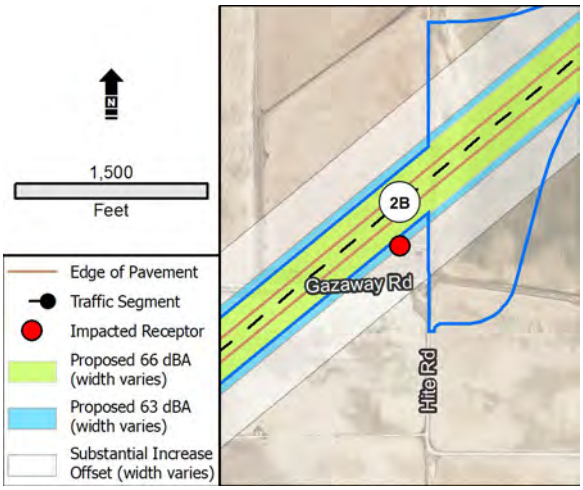
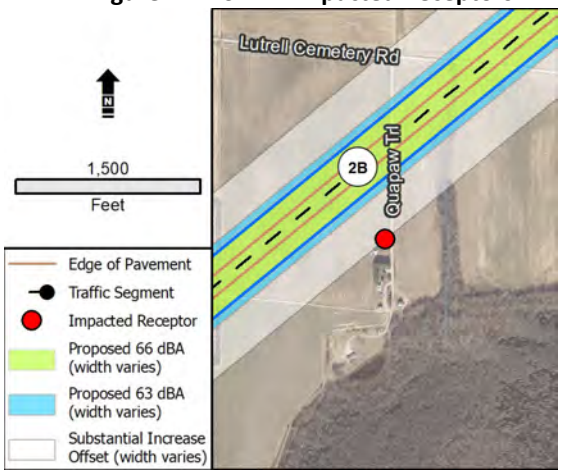


Figure 7 – NSA 2B Impacted Receptors



The impacted receptor along Quapaw Trail is on the edge of the substantial increase impact zone and a noise barrier that is approximately 2,100 feet in length and cost $588,00. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.

The impacted receptor along Vinegar Hill Road as shown in **Figure 8** would require a noise barrier that is over 1,300 feet in length and cost $364,000. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.

Figure 8 – NSA 2B Impacted Receptors

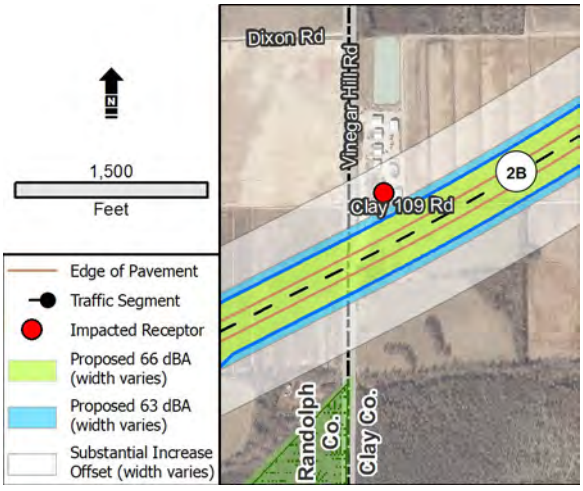
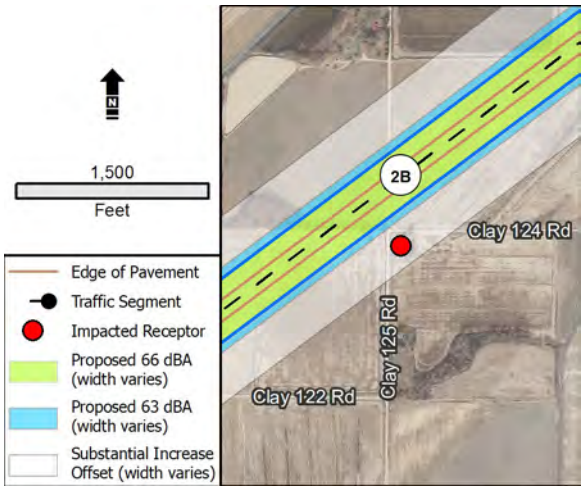


Figure 9 – NSA 2B Impacted Receptors

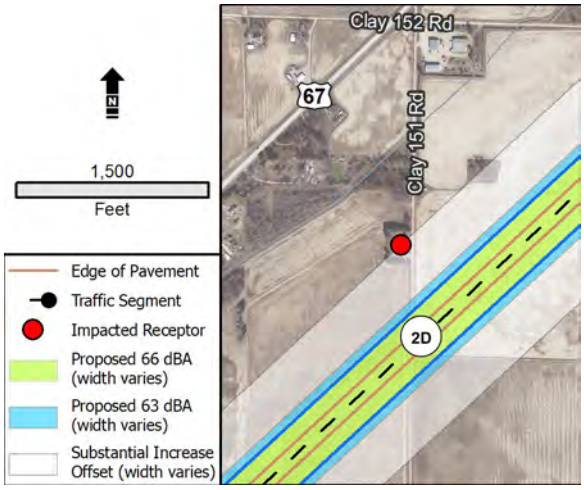


The impacted receptor along Clay County Road 125 as shown in **Figure 9** would require a noise barrier that is over 1,500 feet in length and cost $420,000. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be reasonable to construct. A noise barrier of the height and length to achieve the noise reduction design goal would not prove reasonable due to costs incurred to construct such a barrier.

4.3 NSA 2D

One receptor is predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. Detail sheet 24 in **Attachment A** and **Figure 10** show the location of the impacted receptor, which could require a noise barrier approximately 2,200 feet in length and cost $616,000. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.

Figure 10 – NSA 2D Impacted Receptors



4.4 NSA 3A-1

Four receptors (shown on detail sheets 4, 7, and 10 in **Attachment B** and in **Figures 11, 12,** and **13**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The impacted receptors along Lawrence County Road 611 could require a noise barrier 1,100 feet in length and cost $308,000. The impacted receptor located northeast of Lawrence County Road 234 could require a noise barrier that is approximately 675 feet in length and cost $189,000. The receptor located between Clark Street and Hwy. 34 would require a barrier length of 1,700 feet and cost $476,000. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.

Figure 11 – NSA 3A-1 Impacted Receptors

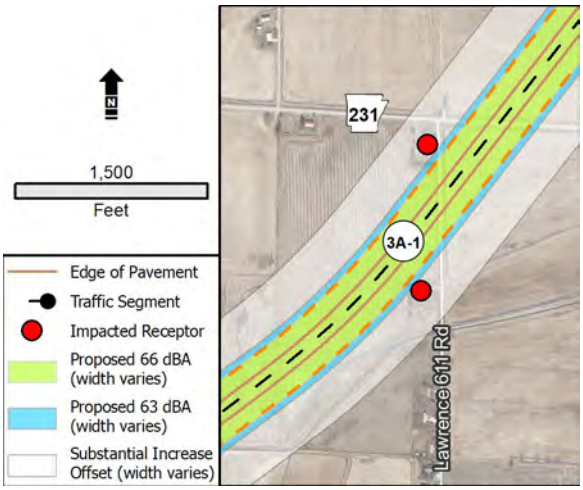


Figure 12 – NSA 3A-1 Impacted Receptors

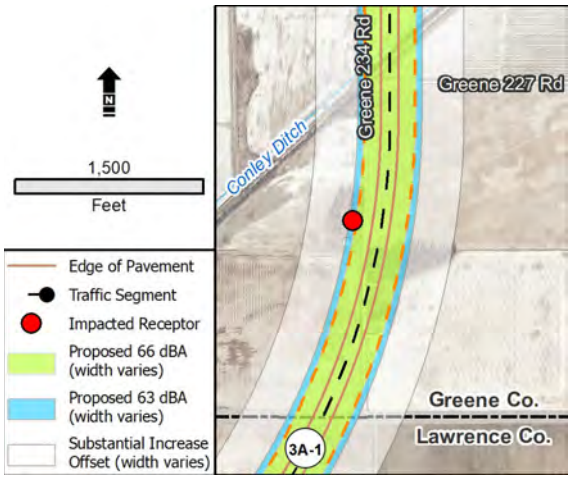
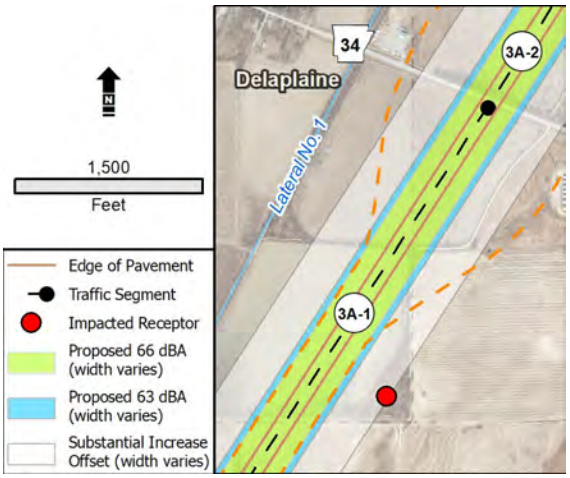


Figure 13 – NSA 3A-1 Impacted Receptors



4.5 NSA 3A-2

Three receptors are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. One receptor, shown on detail sheet 15 in **Attachment B** and **Figure 14**, is located along Clay County 218 Road. The required barrier length would be approximately 1,300 feet and cost $364,000. Two receptors (shown on detail sheet 16 in **Attachment B** and in **Figures 14, 15,**

and **16**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The impacted receptor along Clay County 223 Road could require a noise barrier approximately 1,300 feet in length and would likely not be reasonable due to cost of $364,000. The impacted receptor located east of Clay County Road 227 could require a noise barrier that is over 1,000 feet in length at a cost of $280,000. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.

Figure 14 – NSA 2B Impacted Receptors

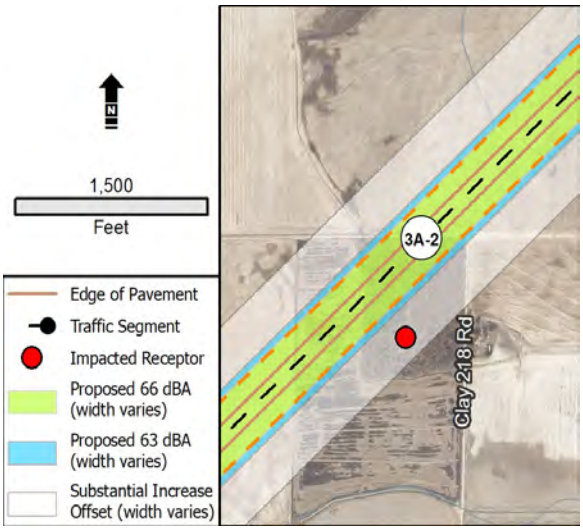


Figure 15 – NSA 3A-2 Impacted Receptors

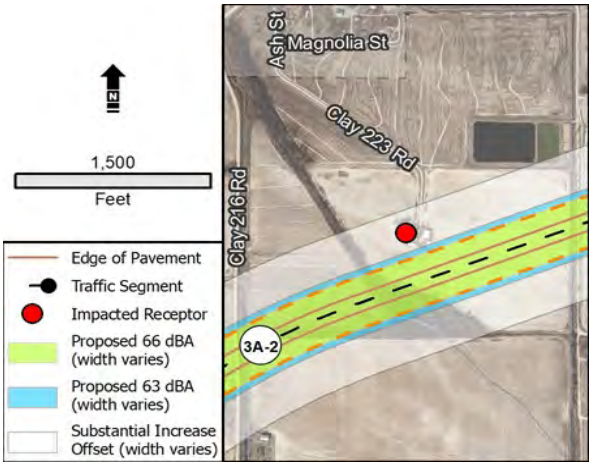
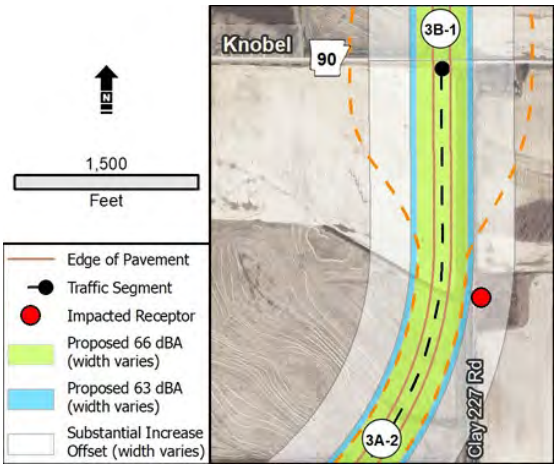


Figure 16 – NSA 3A-2 Impacted Receptors



4.6 NSA 3B-1

Two receptors (shown on detail sheet 17 in **Attachment B** and in **Figure 17 and 18**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. One receptor is the Bond Cemetery along Clay County Road 250 and was evaluated for a barrier. The barrier would be 5,120 feet and cost $179,000. This barrier would not be considered reasonable to construct because it would exceed the CPBR per ARDOT policy. Additionally, a barrier at this location would not be feasible due to the county road located between Alternative 3 and the receptor. The northernmost receptor on the east side of the highway would require a barrier approximately 1,378 feet in length and cost $385,280. Based on ARDOT noise policy, these barriers would exceed the CPBR and would not be considered reasonable to construct.

Figure 17 – NSA 3B-1 Impacted Receptors

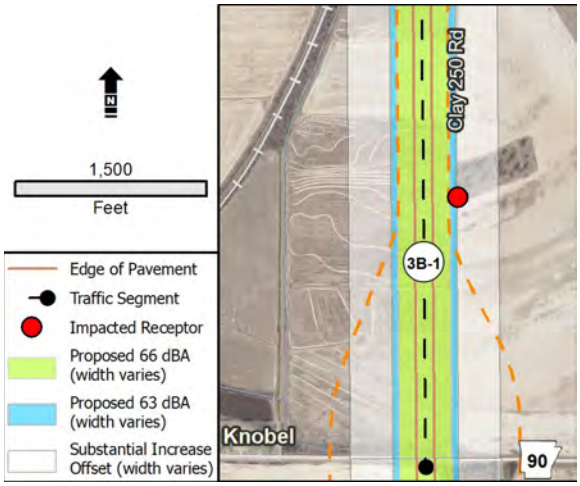
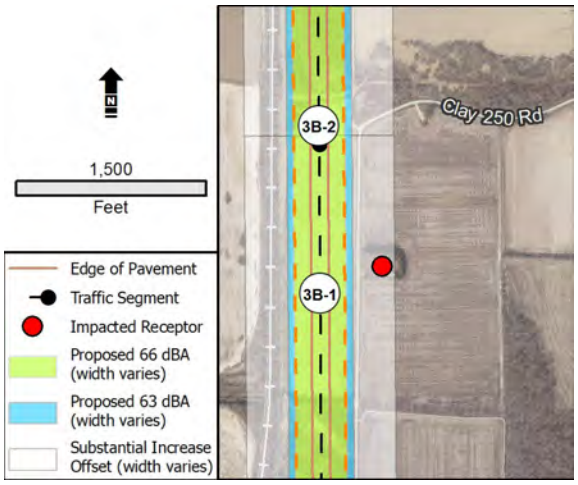


Figure 18 – NSA 3B-1 Impacted Receptors



4.7 NSA 3D

One receptor located along Clay County 151 Road shown on detail sheet 25 in **Attachment B** is predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The receptor would require a noise barrier approximately 2,200 feet in length and cost $616,000. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.

4.8 NSA A

Three receptors (shown in **Attachment C**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The impacted receptor along Clay County Road 155 could require a noise barrier over 2,100 feet in length and cost $588,000. The impacted receptor along Clay County Road 154 could require a noise barrier approximately 1,000 feet in length and cost $280,000. The impacted receptor to the north of Clay County 154 Road and north of Hwy. 67 would require a noise barrier approximately 1,500 feet in length and cost $420,000. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.

4.9 NSA B

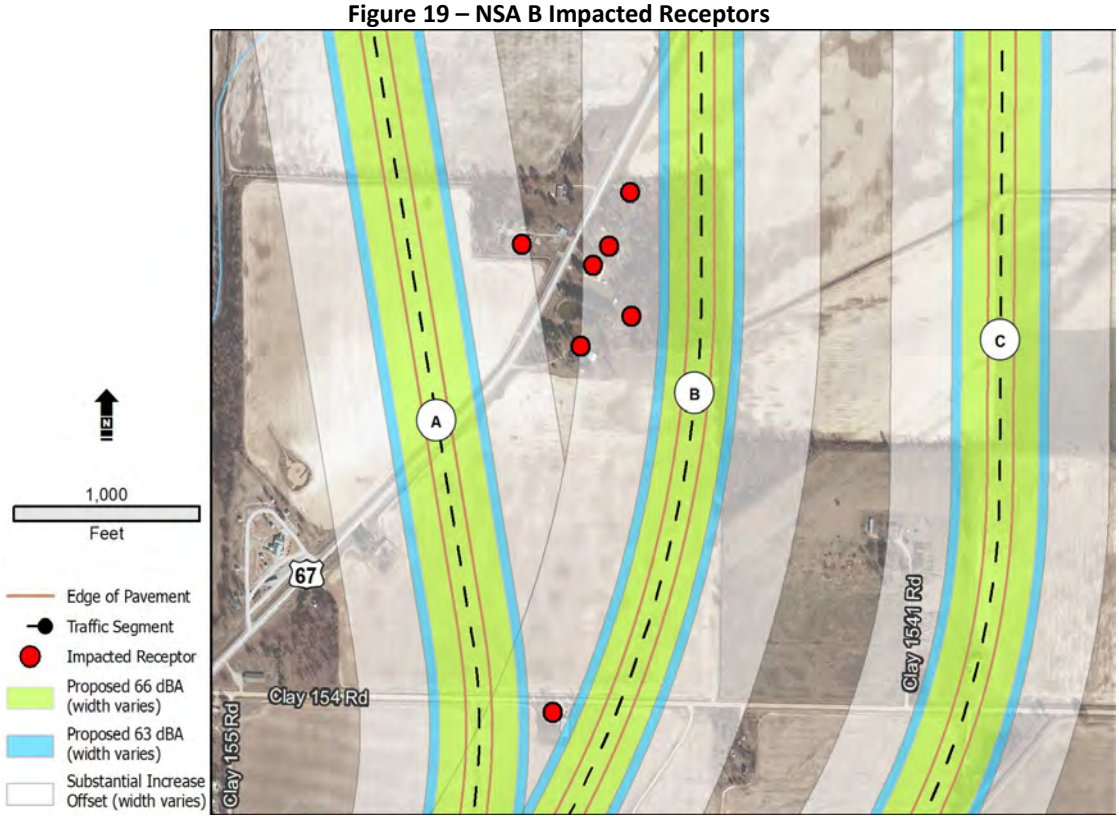
Nine receptors (shown in **Attachment B** and **Figure 19**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The impacted receptor along Clay County Road 155 could require a noise barrier over 2,100 feet in length and cost approximately $588,000.

Two receptors located on the south side of Clay County 154 Road are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The receptor located between Alternative A and Alternative B would require a barrier approximately 1,000 feet in length and cost $280,000. The receptor located east of the Alternative and approximately 900 feet south of Clay 154 Road would require a barrier approximately 1,480 feet in length and cost $414,400.

One other receptor is located east of the Alternative and north of Clay County 154 Road and would require a barrier approximately 744 feet in length and cost $208,320.

A group of five noise receptors on the east side of Highway 67 are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The noise barrier would be over 2,300 feet in length and cost $644,000. The CPBR would be $128,800. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.

Figure 19 – NSA B Impacted Receptors



4.10 NSA C

Three receptors (shown in **Attachment C**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥10 dBA. The impacted receptor along Clay County Road 155 could require a noise barrier over 1,500 feet in length and cost $420,000. The two impacted receptors along Clay County Road 1541 could require a noise barrier almost 2,000 feet in length and cost $560,000. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.

4.11 No Action NSAs

As previously noted, access points such as driveways and intersections are needed along the No Action Alternative, it would not be possible to construct an effective noise barrier accommodating these access points. Major utilities, drainage structures, and other structures would require relocation as a result of the placement of any noise barriers along the existing Hwy. 67. Receptors are shown in detail sheets located in **Attachment D**.

Chapter 5 – How is Construction Noise Handled?

Project construction operations typically increase noise levels. These increases would be temporary and have minimal to minor adverse effects on land uses and activities in the project area. Local ordinances may prohibit temporary construction activities or restrict noise levels or high noise levels between certain time periods (e.g., nighttime and/or weekend work). Construction noise impacts to passing traffic and people living and working near the project can be expected as a result of clearing and grubbing, earth moving activities, and paving operations. Equipment will be maintained with appropriate mufflers to aid in minimizing construction noise levels. Depending on project construction and timing there may be brief construction noise impacts in excess of the substantial increase criteria which will occur during daytime hours.

Chapter 6 – What are the Conclusions of this Noise Screening Analysis?

Activity Categories identified within and adjacent to the alternative corridors include B, C, E, F, and G receptors. Only NAC B and C receptors were specifically identified in the screening analysis for consideration of potential noise barriers for the action alternatives. The project will result in substantial increase (≥ 10 dBA) and NAC impacts as noted below **Table 8**. However, a detailed noise study is not warranted based on the results of the screening level analysis in that the anticipated costs per benefited receptor would prove unreasonable given the sparse nature of the impacted receptors and constructing noise barriers of the length and height required to achieve feasibility and reasonableness criteria.

Table 8 – Noise Level Results Summary

NSA	NAC Impacted Receptors Existing 66dB NBZ	NAC Impacted Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Impacted Receptors by Substantial Increase
NSA 2A	0	0	0	3
NSA 2B	0	0	1	4
NSA 2C	0	0	0	0
NSA 2D	0	0	0	1
NSA 3A-1	0	0	0	4
NSA 3A-2	0	0	0	3
NSA 3B-1	0	0	1	2
NSA 3B-2	0	0	0	0
NSA 3C	0	0	0	0
NSA 3D	0	0	0	1
NSA A	0	0	0	3
NSA A Interim Connector	0	0	0	0
NSA B	0	0	3	9
NSA C	0	0	0	3
NSA C Interim Connector	0	0	0	0
NSA NB-A	10	10	7	0
NSA NB-1	14	15	12	0
NSA NB-2	5	5	1	0
NSA NB-B	2	2	5	0
NSA NB-C	0	1	15	0
NSA NB-3	6	6	27	0
NSA NB-D	1	1	24	0
NSA NB-4-1	0	0	4	0
NSA NB-4-2	7	7	33	0

Chapter 7 – Has Coordination Occurred with Local Officials for Future Noise Levels on Undeveloped Lands?

The ARDOT encourages local communities and developers to practice noise compatibility planning. As presented in **Table 9**, noise level predictions for future build conditions at which 66 dBA or higher noise levels could be experienced were made at incremental distances as measured from the centerline of the direction of travel lanes for the action alternatives. As previously described, rural Activity Categories B and C exterior areas would be impacted within variable distances as a result of substantial increases. However, these predictions do not represent noise levels at every location at a particular distance back from the roadway. Noise levels will vary with changes in terrain and other site conditions.

This information is included to inform local officials and planners of anticipated noise levels so that future development will be compatible. In compliance with federal guidelines, a copy of this screening analysis will be transmitted to the cities and towns located along the alternative corridors for land use planning purposes. Guidance documents on noise compatible land use planning are available from FHWA.

Table 9 – Noise Level Results for Compatibility Planning

NSA	66 dBA Contour Distance (ft) from Nearest Direction of Travel
NSA 2A	170
NSA 2B	170
NSA 2C	162
NSA 2D	170
NSA 3A-1	165
NSA 3A-2	165
NSA 3B-1	166
NSA 3B-2	166
NSA 3C	163
NSA 3D	166
NSA A	170
NSA B	166
NSA C	166
NSA NB-A	155
NSA NB-1	162
NSA NB-2	125
NSA NB-B	60
NSA NB-C	85
NSA NB-3	85
NSA NB-D	60
NSA NB-4-1	38
NSA NB-4-2	100
Alternative A Connector Road	160
Alternative C Connector Road	205

Chapter 8 – What is the Likelihood Noise Barriers would be Constructed?

Based on the screening level noise analysis results, noise barriers would not prove cost effective as a result of the sparse singular locations of the impacted receptors along the action alternatives. Based on ARDOT noise policy, each barrier would exceed the $36,000 CPBR and would not be considered reasonable to construct.

ATTACHMENT A — ALTERNATIVE 2 NOISE SCREENING DETAIL SHEETS

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 1 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 2 of 24

0 500 1,000
Feet

N

Proposed ROW
Alternative 2
Traffic Segment
Edge of Pavement

Impacted Receptor
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)
Substantial Increase Offset (width varies)

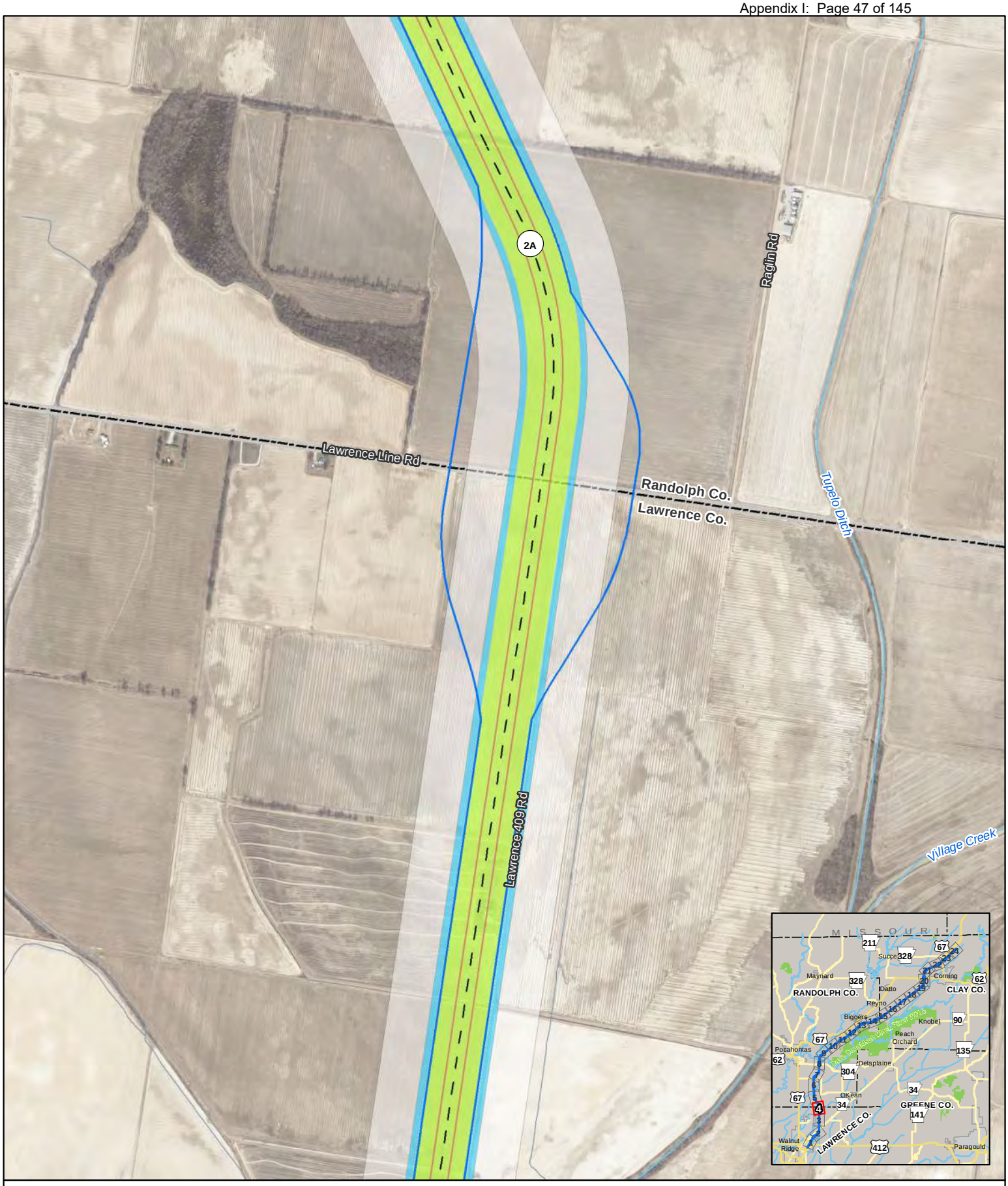
WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 3 of 24

ARDOT



Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

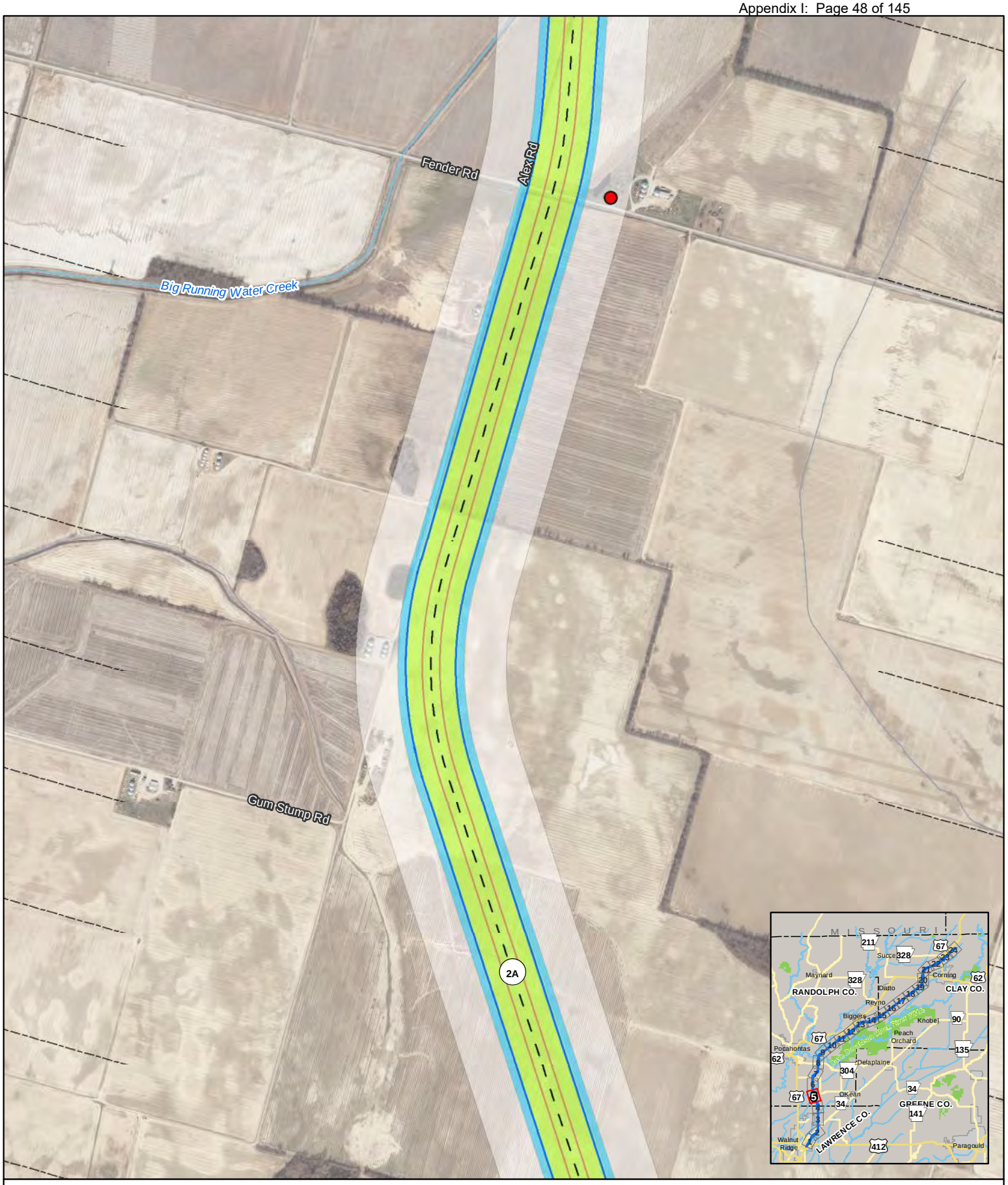
Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 4 of 24



Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 5 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 6 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

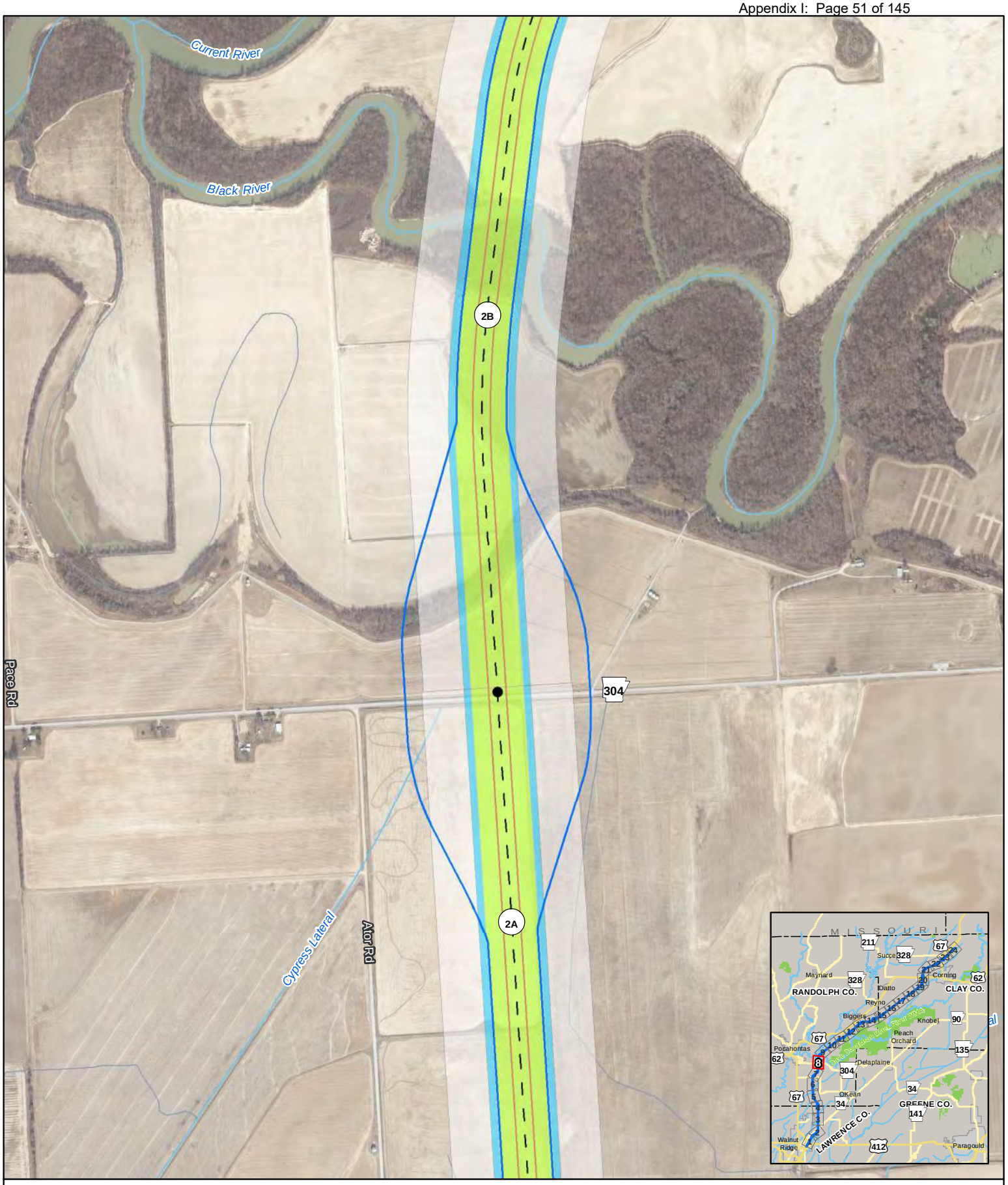
Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 7 of 24



Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 8 of 24

0 500 1,000
Feet

Proposed ROW
Alternative 2
Traffic Segment
Edge of Pavement

Impacted Receptor
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)
Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 9 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 10 of 24

AR DOT

0 500 1,000
Feet

Proposed ROW
Alternative 2
Wildlife Management Area
Traffic Segment
Edge of Pavement

Impacted Receptor
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)
Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 11 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Wildlife Management Area

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 12 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Wildlife Management Area

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 13 of 24

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 14 of 24

Proposed ROW

0 500 1,000
Feet

N

Alternative 2

Green-tree Resevoirs

Wildlife Management Area

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 15 of 24

ARDOT

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 16 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 17 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 18 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 19 of 24

Proposed ROW

0 500 1,000
Feet

N

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 20 of 24

ARDOT

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 21 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 22 of 24

AR DOT

0 500 1,000
Feet

Proposed ROW
Alternative 2
Traffic Segment
Edge of Pavement

Impacted Receptor
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)
Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 23 of 24

Proposed ROW

0 500 1,000
Feet

Alternative 2

Traffic Segment

Edge of Pavement

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 2

Detail 24 of 24

ATTACHMENT B — ALTERNATIVE 3 NOISE SCREENING DETAIL SHEETS

0 500 1,000
Feet

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 1 of 25

ARDOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 2 of 25

0 500 1,000
Feet

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 3 of 25

ARDOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 4 of 25

0 500 1,000
Feet

Proposed ROW
Alternative 3
Edge of Pavement
Traffic Segment

Impacted Receptor
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)
Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 5 of 25

AR DOT

0 500 1,000
Feet

Proposed ROW
- Alternative 3
- Edge of Pavement
- Traffic Segment

- Impacted Receptor
- Proposed 66 dBA (width varies)
- Proposed 63 dBA (width varies)
- Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 6 of 25

0 500 1,000
Feet

N

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 7 of 25

AR DOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 8 of 25

AR DOT

0 500 1,000
Feet

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 9 of 25

ARDOT

0 500 1,000
Feet

Proposed ROW
- Alternative 3
- Edge of Pavement
- Traffic Segment

- Impacted Receptor
- Proposed 66 dBA (width varies)
- Proposed 63 dBA (width varies)
- Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 10 of 25

ARDOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 11 of 25

AR DOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 12 of 25

AR DOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 13 of 25

ARDOT

0 500 1,000
Feet

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 14 of 25

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 15 of 25

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 16 of 25

0 500 1,000
Feet

N

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 17 of 25

AR DOT

0 500 1,000
Feet

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 18 of 25

ARDOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 19 of 25

AR DOT

0 500 1,000
Feet

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 20 of 25

0 500 1,000
Feet

N

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 21 of 25

AR DOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 22 of 25

ARDOT

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 23 of 25

AR DOT

0 500 1,000
Feet

Proposed ROW

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 24 of 25

Proposed ROW

0 500 1,000
Feet

Alternative 3

Edge of Pavement

Traffic Segment

Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

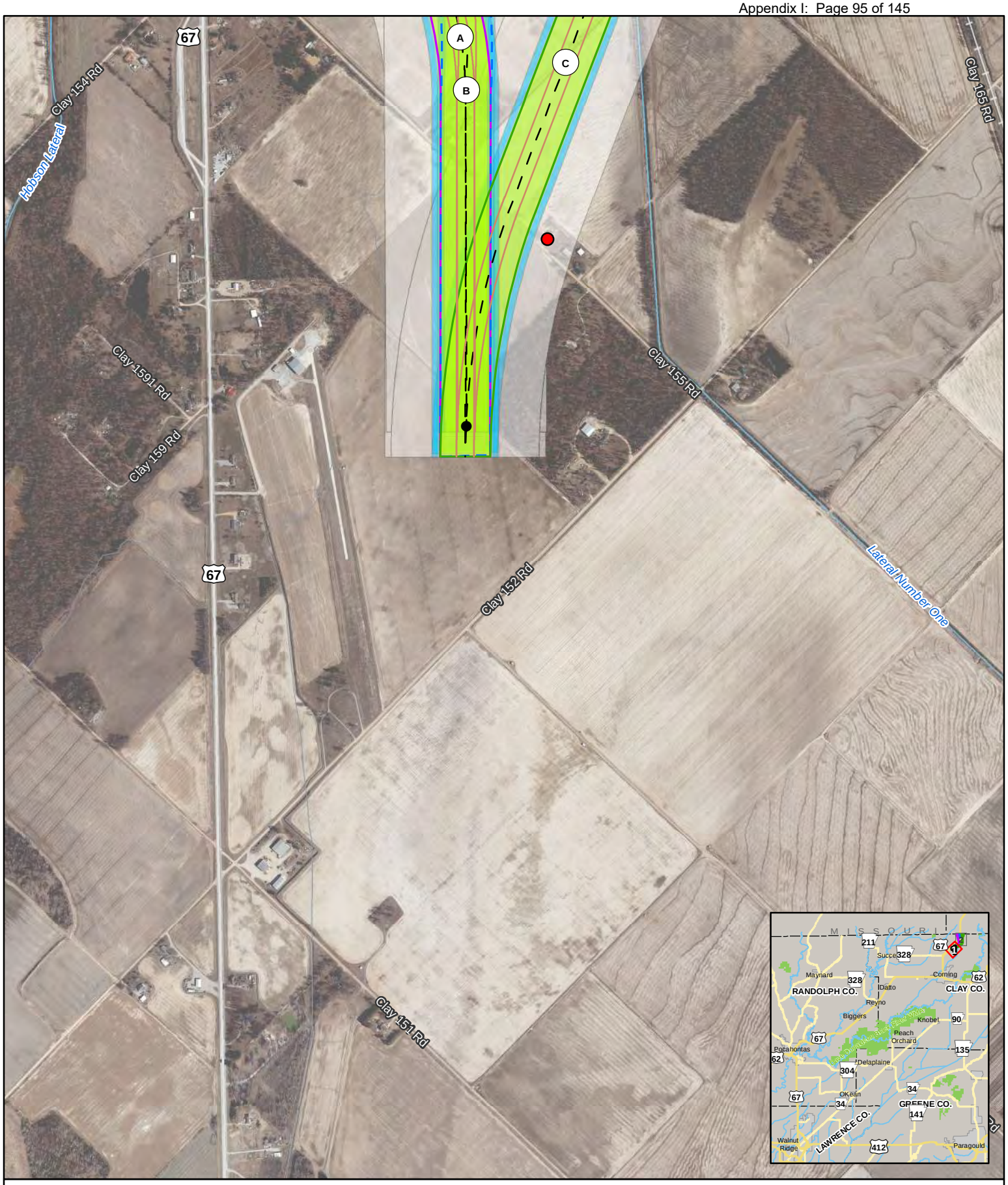
WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignment 3

Detail 25 of 25

ATTACHMENT C — ALTERNATIVE A, B, AND C NOISE SCREENING DETAIL SHEETS



0 500 1,000
Feet

Proposed ROW
Alternative A
Alternative B
Alternative C
Edge of Pavement
Traffic Segment

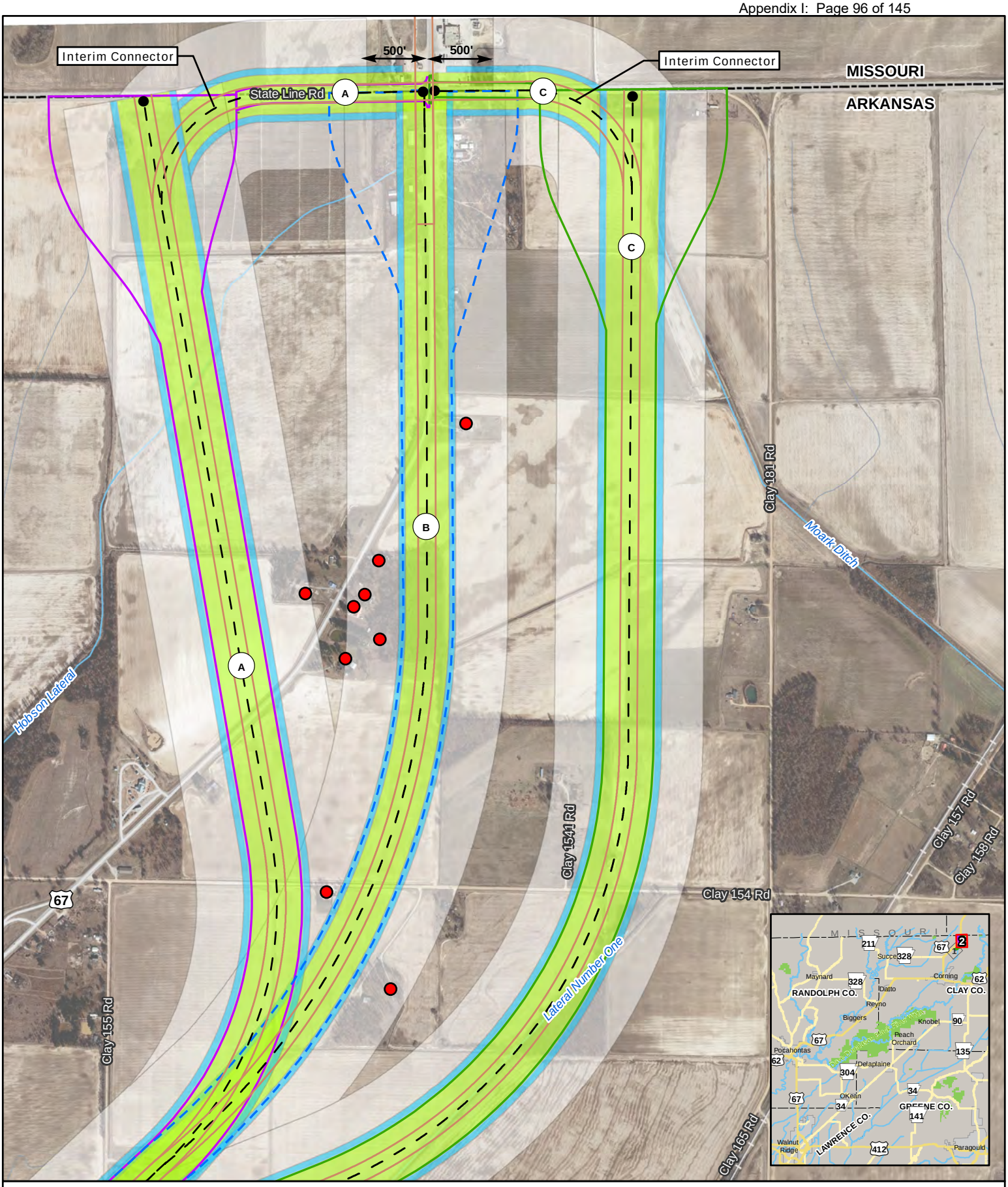
Impacted Receptor
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)
Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignments A, B, C

Detail 1 of 2



Proposed ROW
- Alternative A
- Alternative B
- Alternative C
- Edge of Pavement
- Traffic Segment

Impacted Receptor
- Proposed 66 dBA (width varies)
- Proposed 63 dBA (width varies)
- Substantial Increase Offset (width varies)

0 500 1,000
Feet

N

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

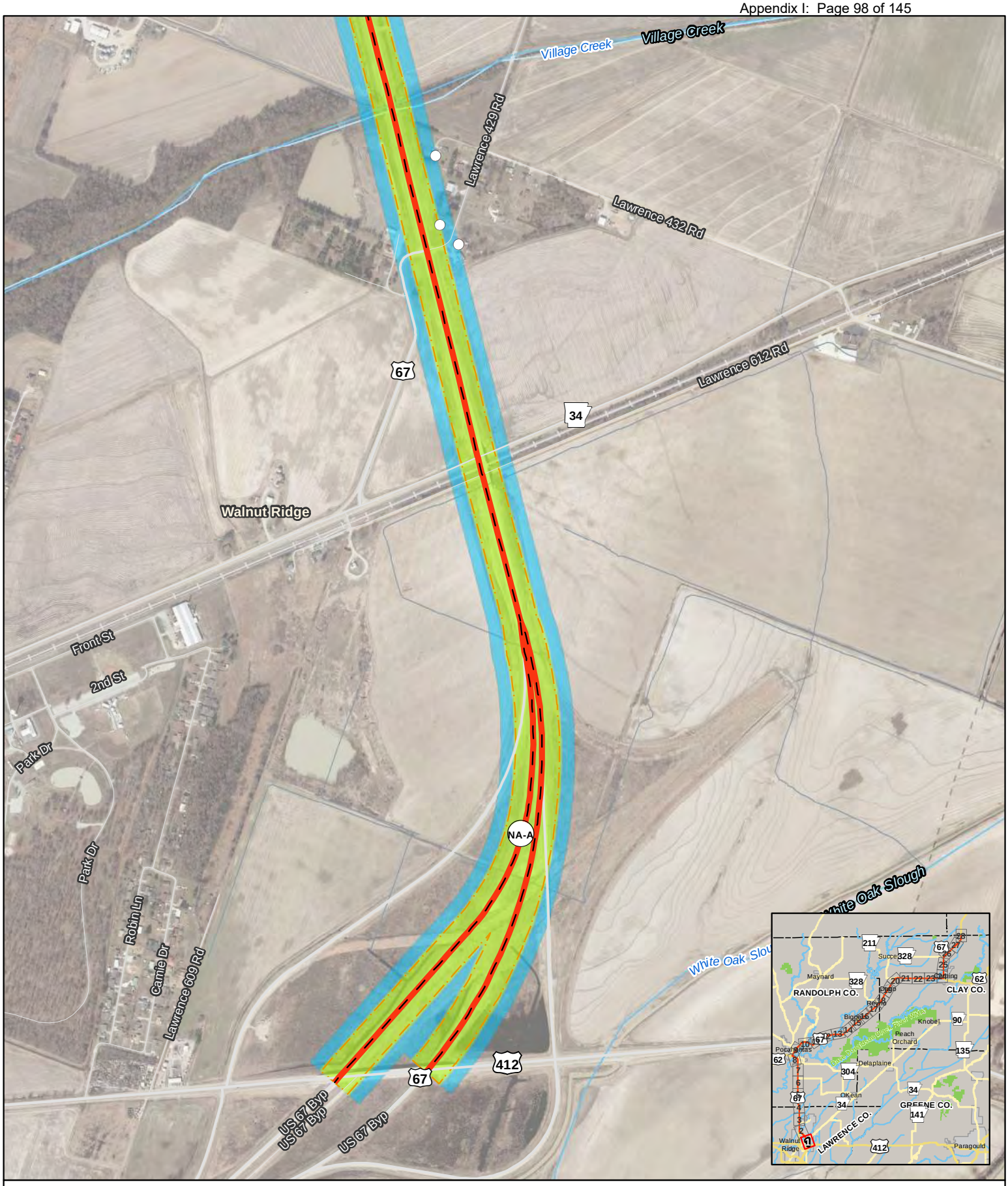
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed Alignments A, B, C

Detail 2 of 2

ARDOT

ATTACHMENT D — NO ACTION ALTERNATIVE NOISE SCREENING DETAIL SHEETS



0 500 1,000
Feet

Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 1 of 28

ARDOT

0 500 1,000
Feet

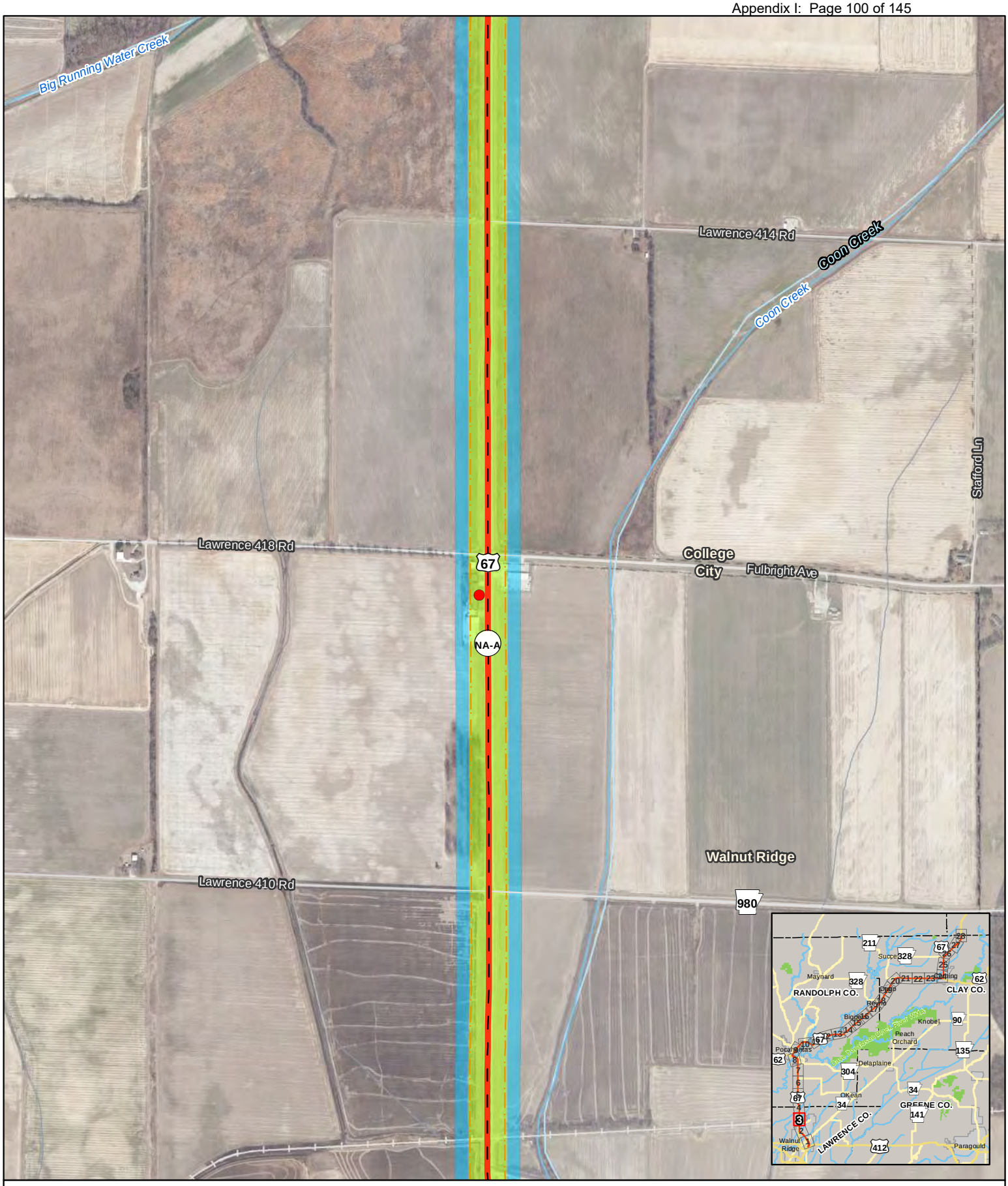
Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 2 of 28



0 500 1,000
Feet

N

Existing Road Centerline

No Action

Impacted Receptor

Receptor

Traffic Segments

Existing 66 dBA (width varies)

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

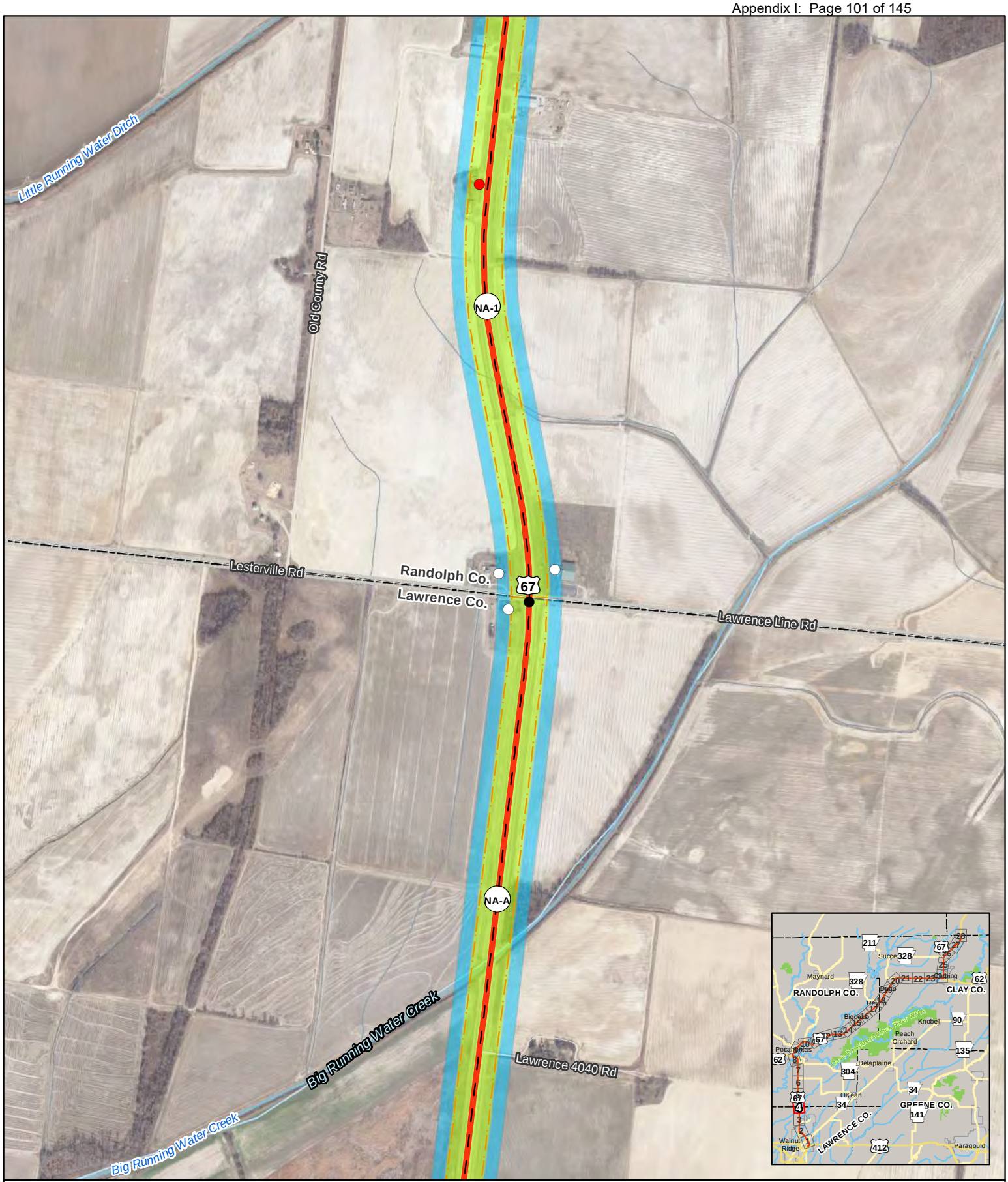
WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 3 of 28

ARDOT



0 500 1,000
Feet

N

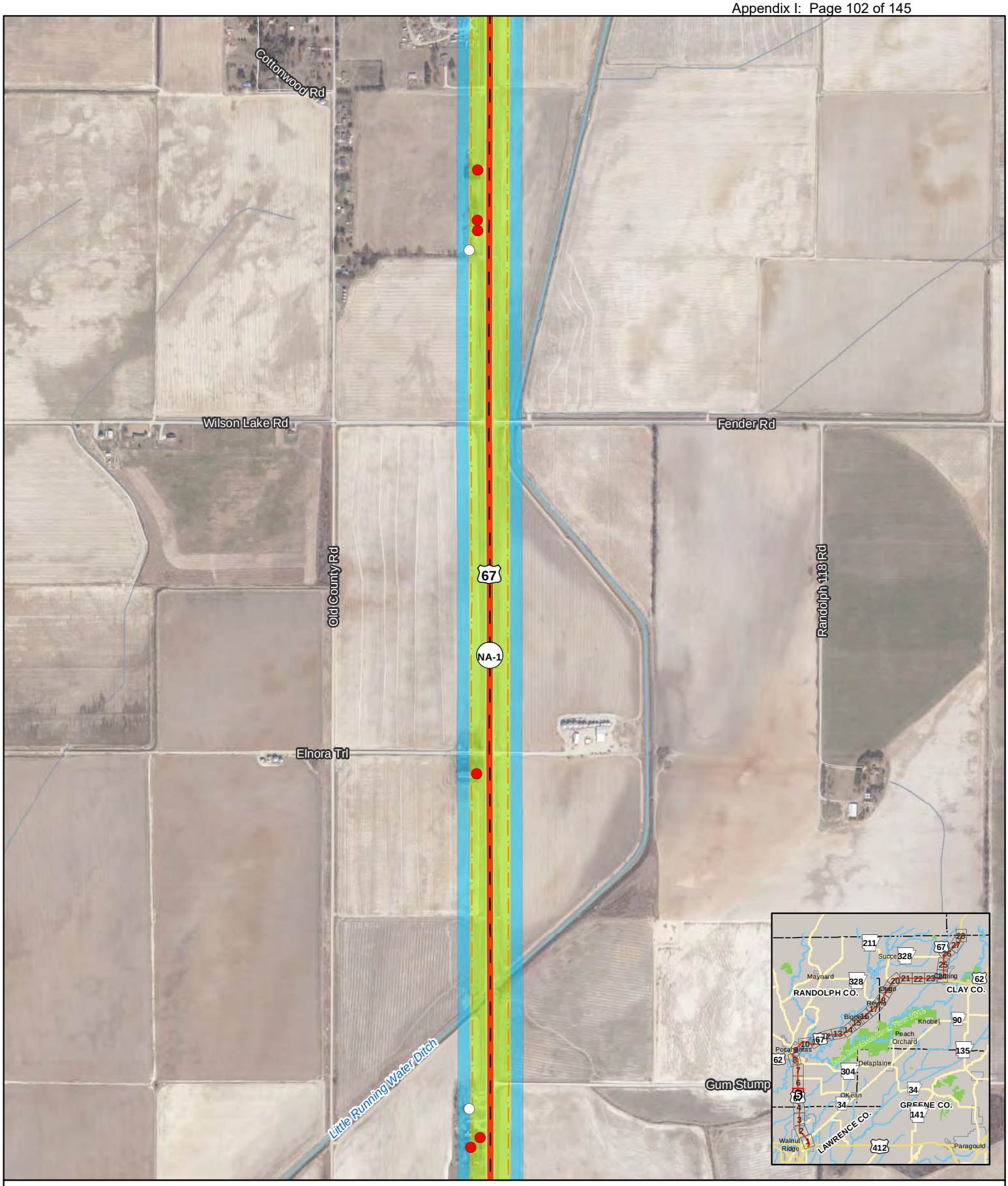
Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

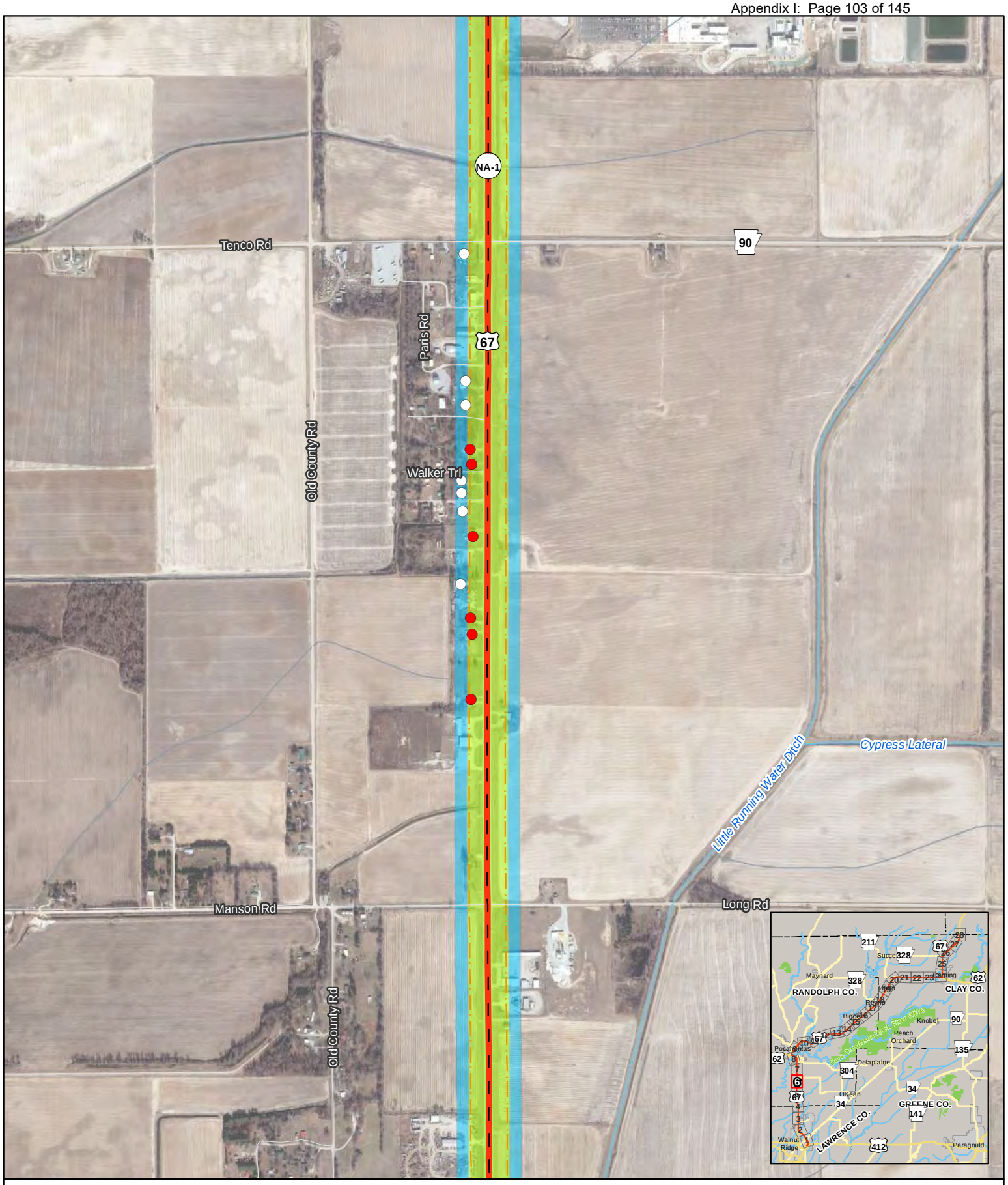
Detail 4 of 28



WALNUT RIDGE - MISSOURI STATE LINE
(FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 5 of 28



0 500 1,000
Feet

N

Existing Road Centerline

No Action

Impacted Receptor

Receptor

Traffic Segments

Existing 66 dBA (width varies)

Proposed 66 dBA (width varies)

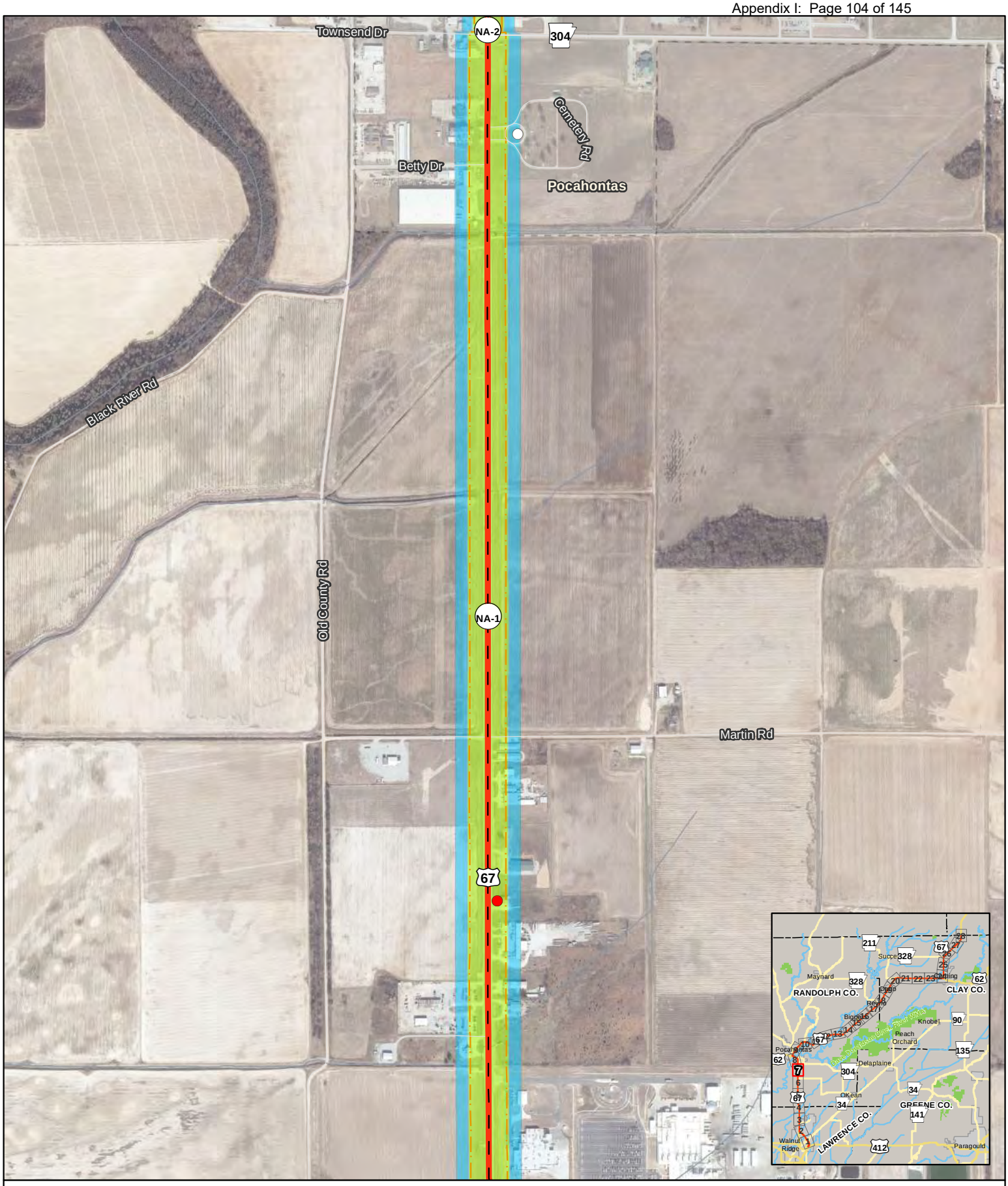
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 6 of 28



0 500 1,000
Feet

N

Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

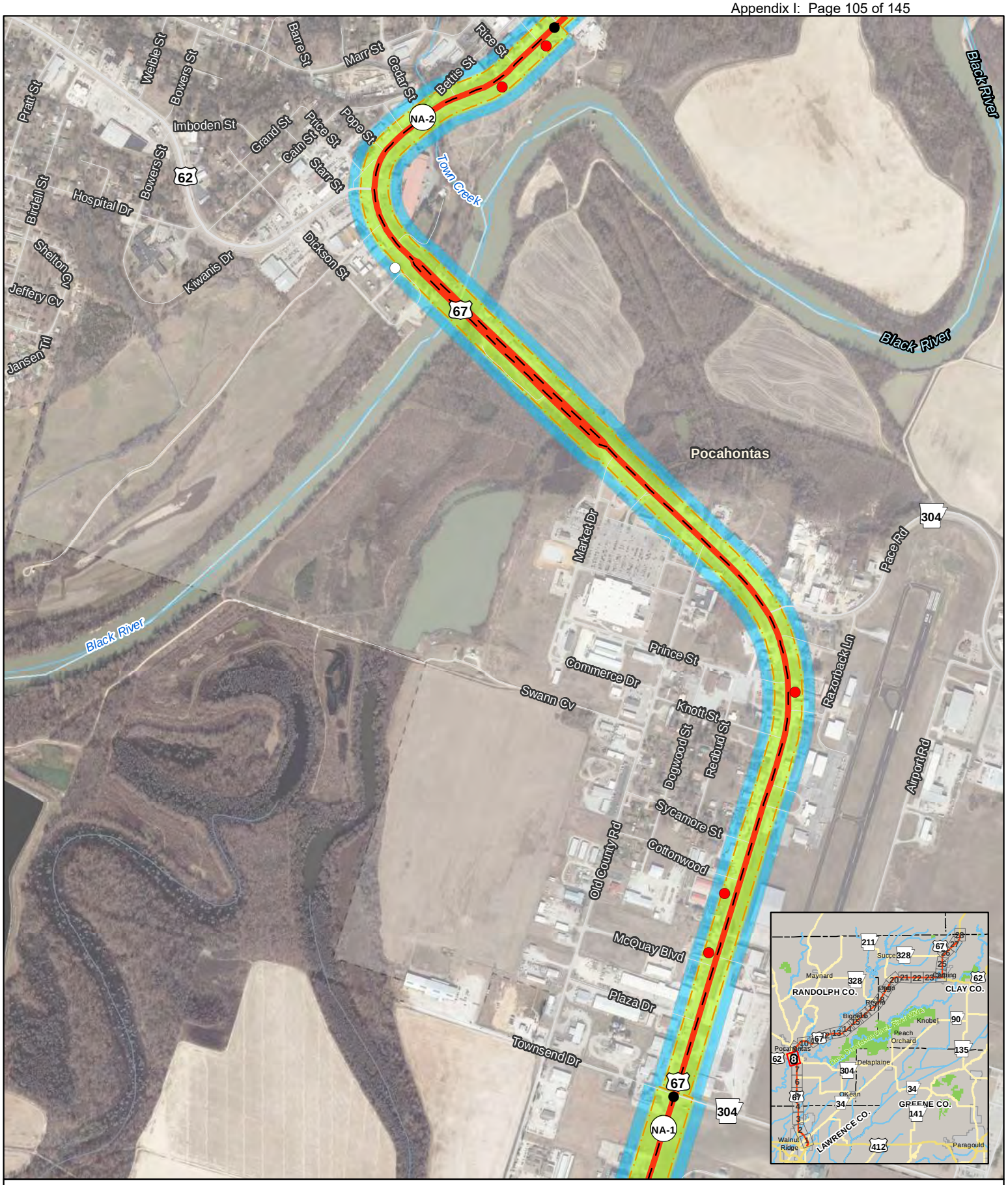
WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 7 of 28

ARDOT



0 500 1,000
Feet

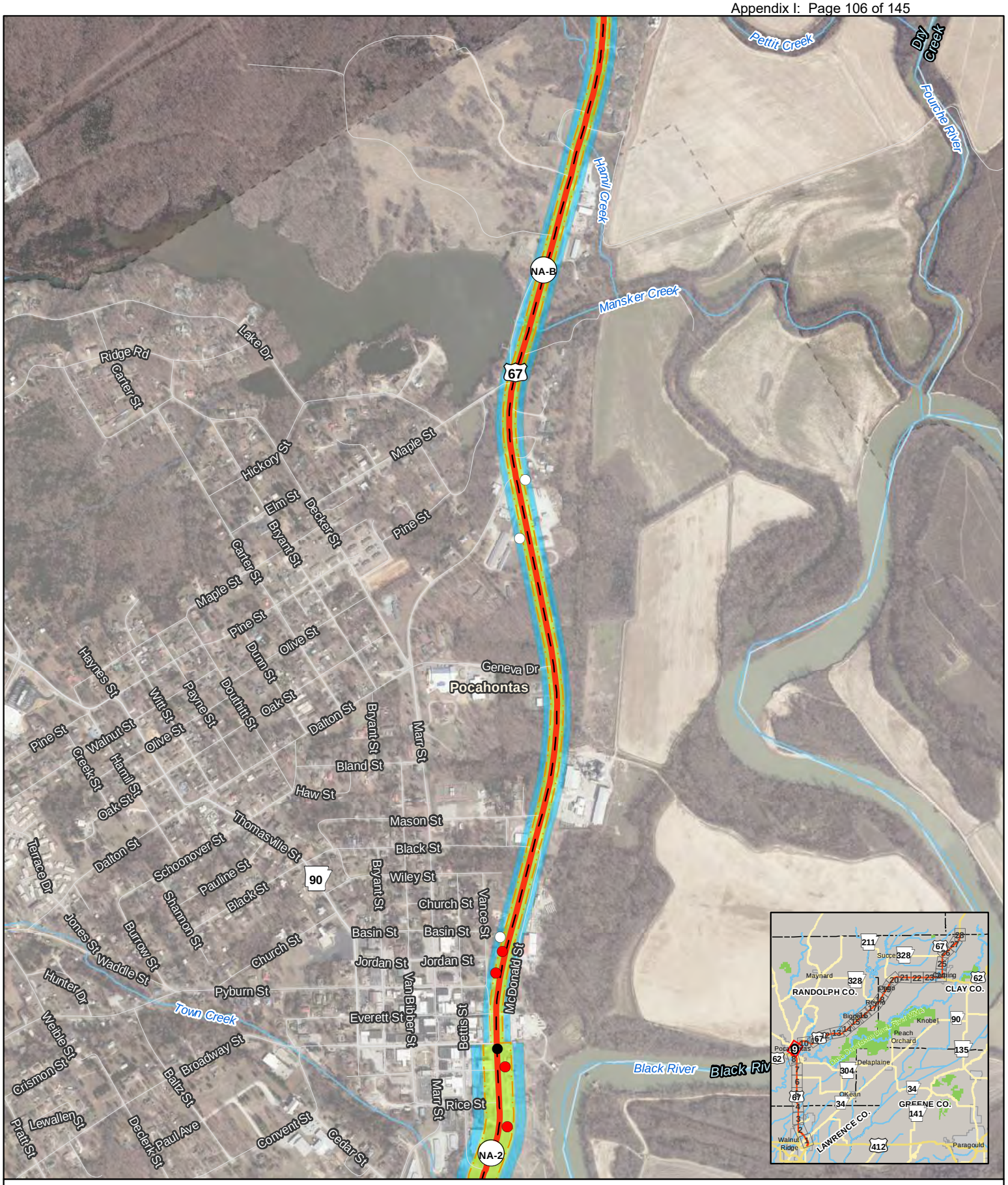
Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 8 of 28



Existing Road Centerline

No Action

0 500 1,000 Feet

Impacted Receptor

Receptor

Traffic Segments

Existing 66 dBA (width varies)

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

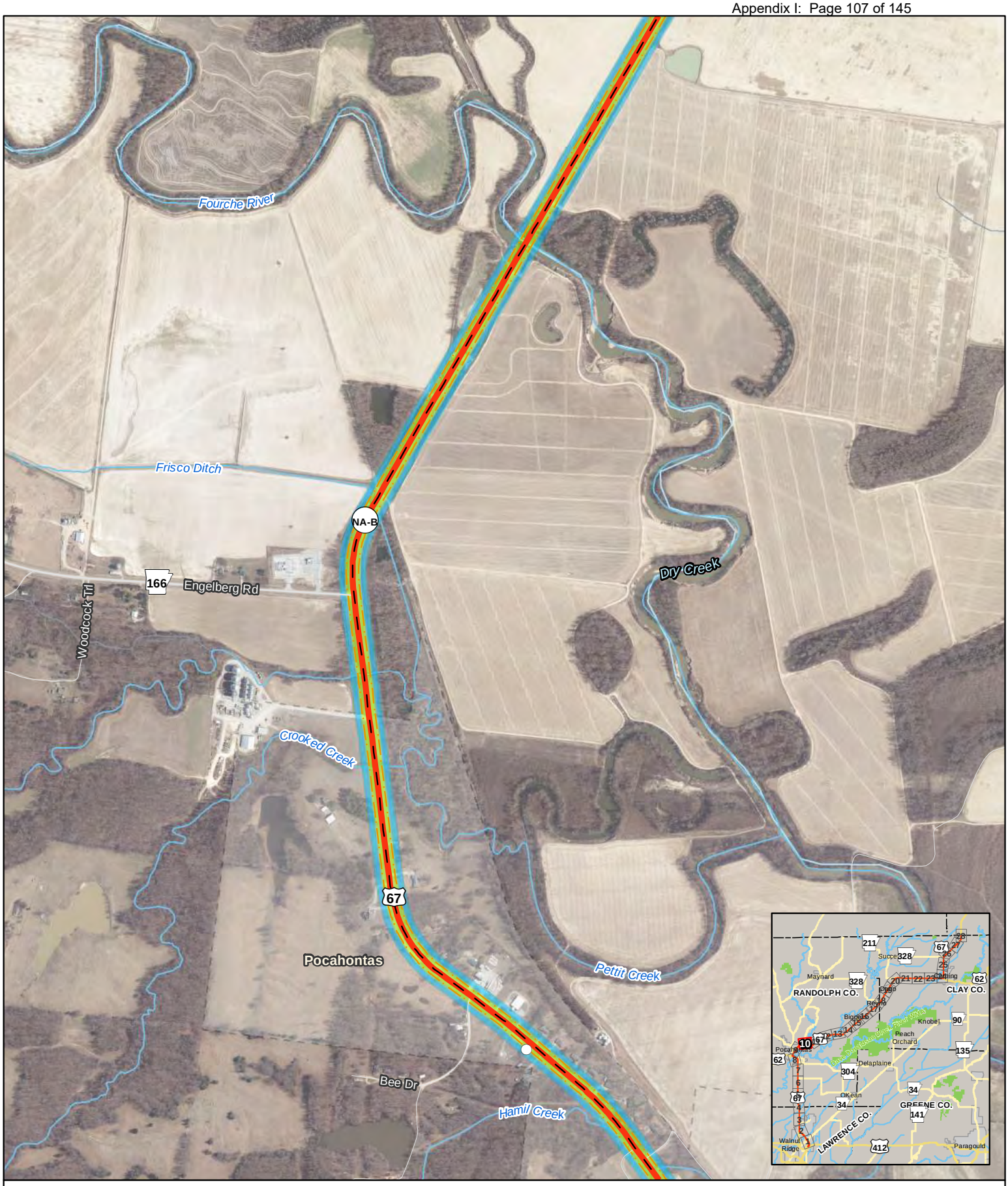
WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 9 of 28

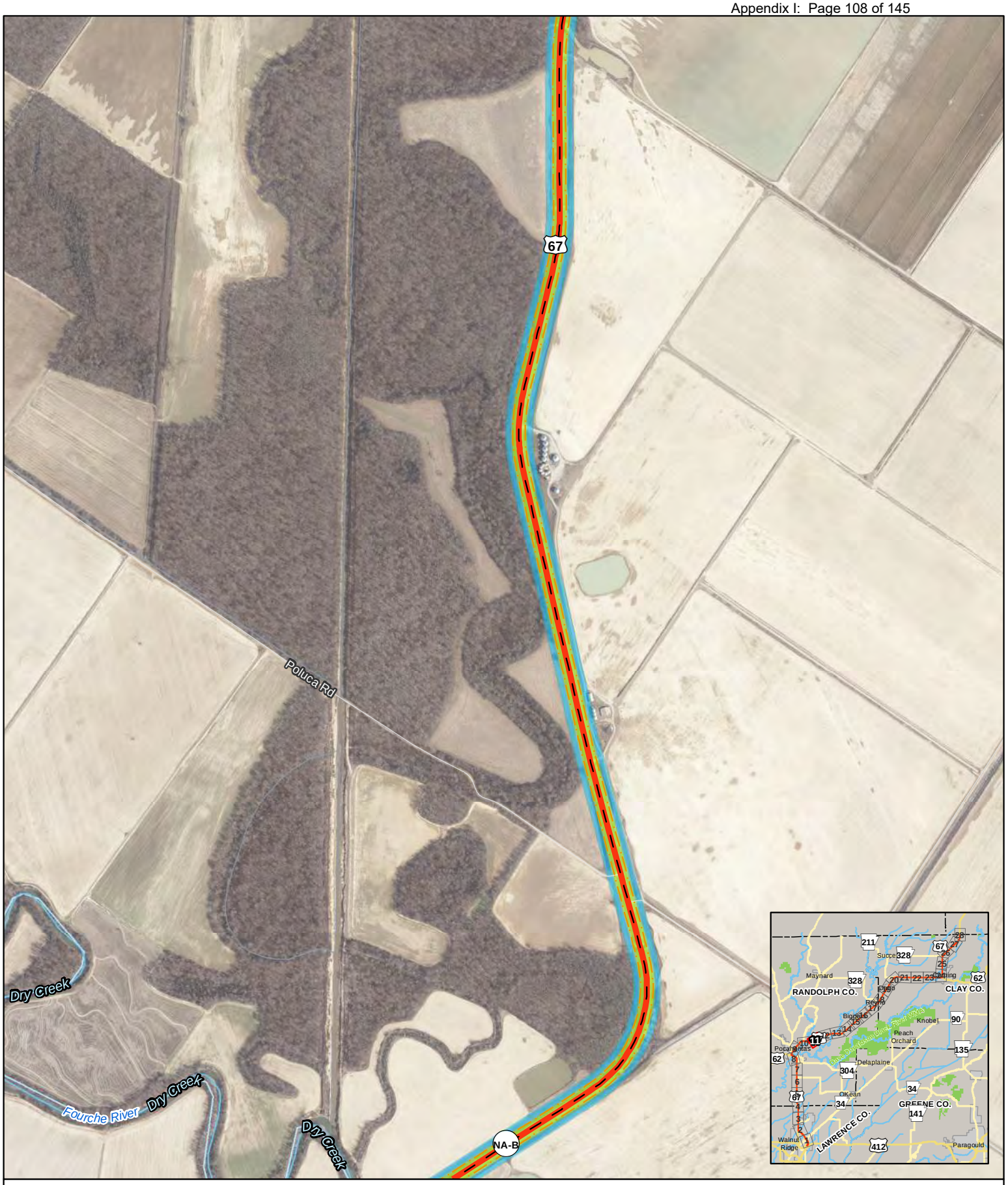
AR DOT



WALNUT RIDGE - MISSOURI STATE LINE
(FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 10 of 28



0 500 1,000
Feet

Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 11 of 28

0 500 1,000
Feet

Existing Road Centerline
No Action

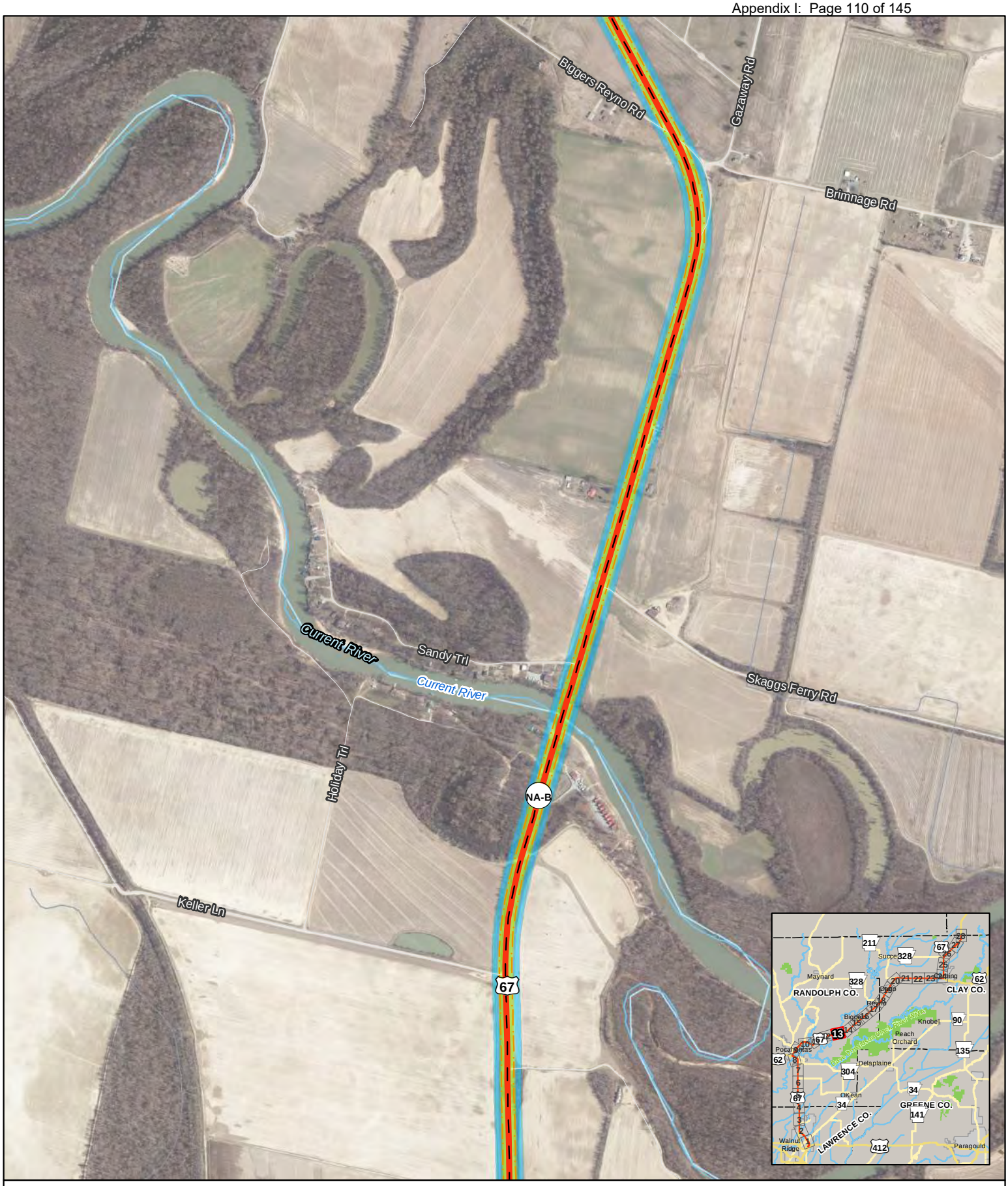
Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

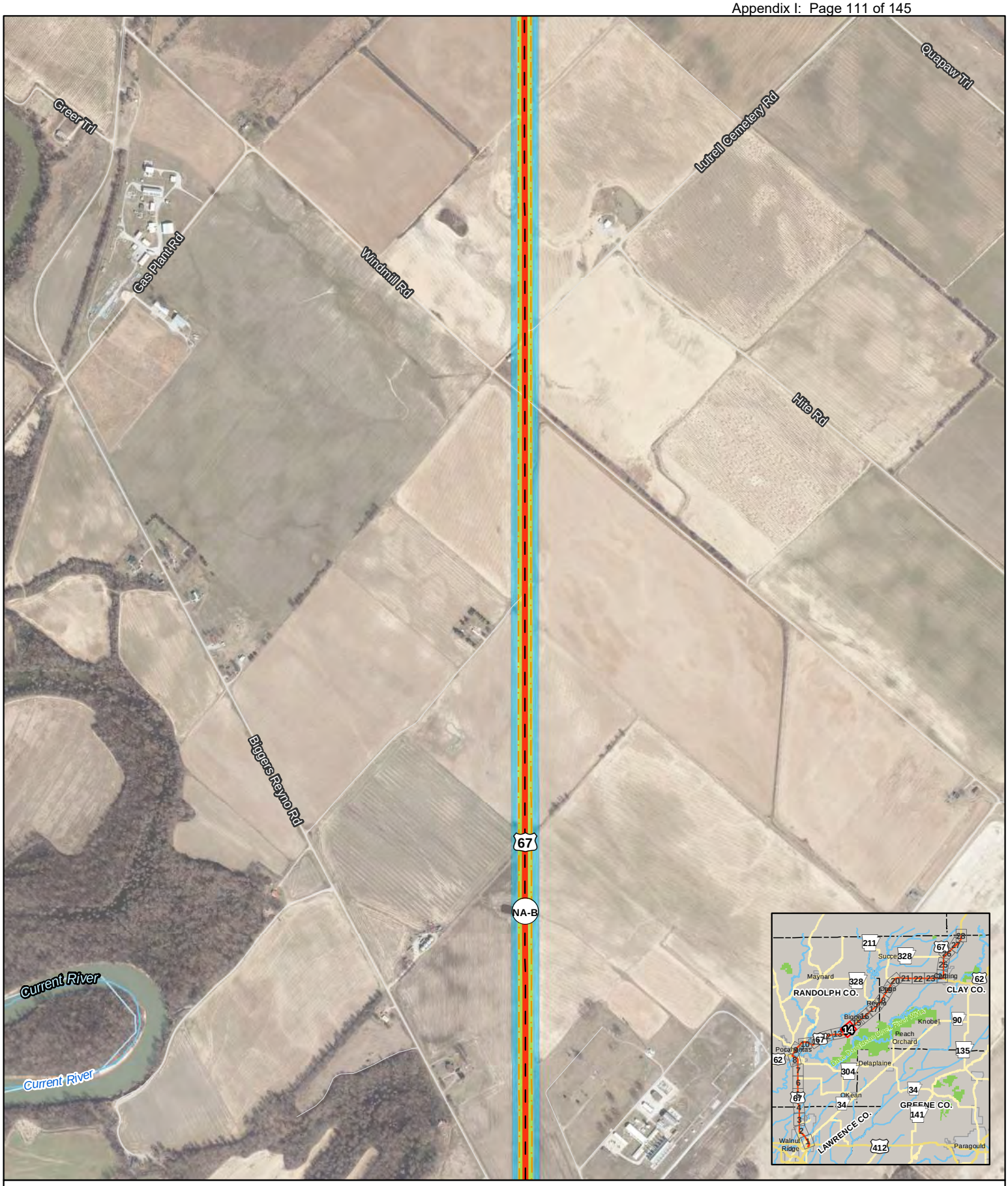
Detail 12 of 28



WALNUT RIDGE - MISSOURI STATE LINE
(FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 13 of 28



0 500 1,000
Feet

Existing Road Centerline
No Action

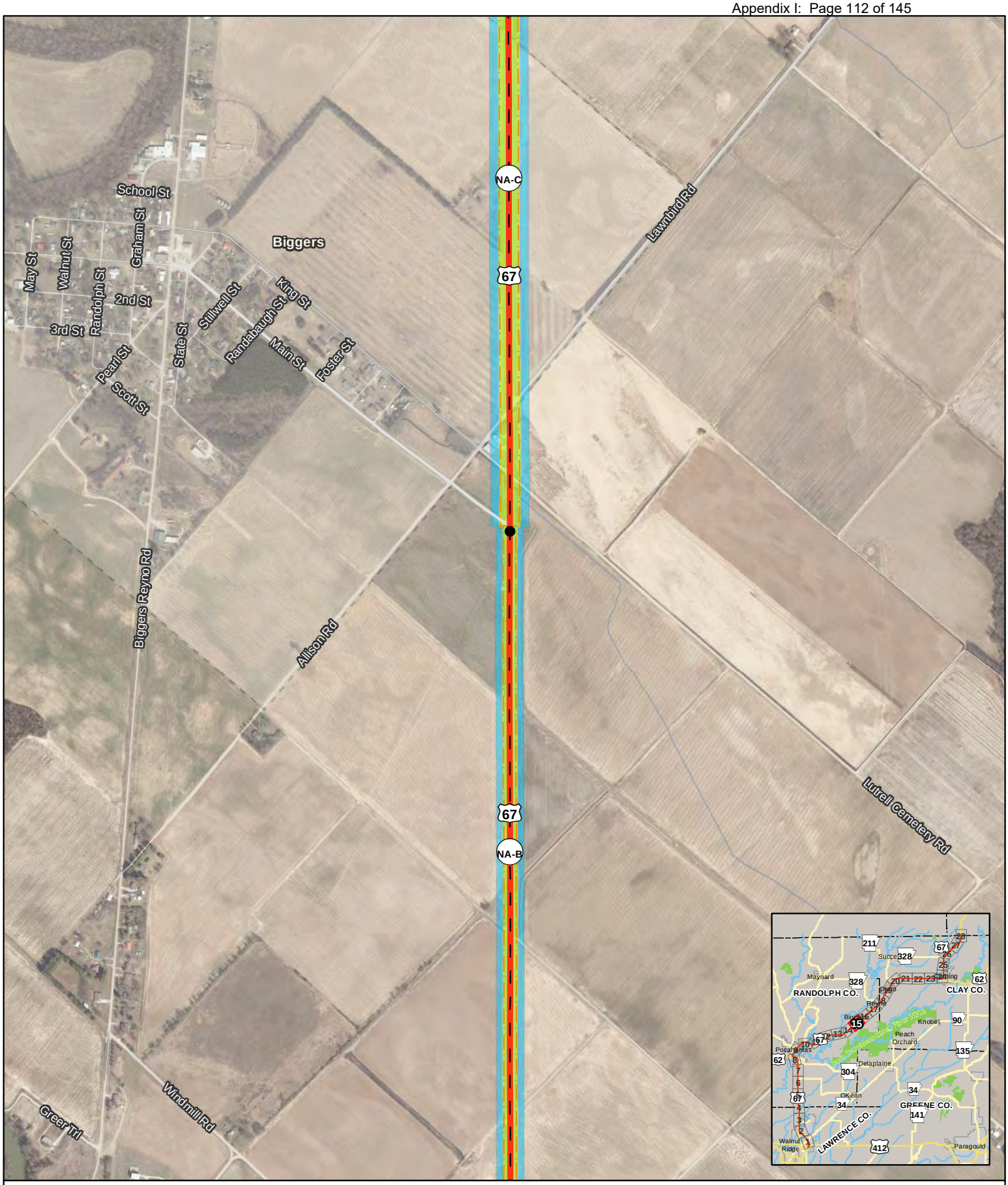
Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 14 of 28



Existing Road Centerline

No Action

0 500 1,000

Feet

Impacted Receptor

Receptor

Traffic Segments

Existing 66 dBA (width varies)

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

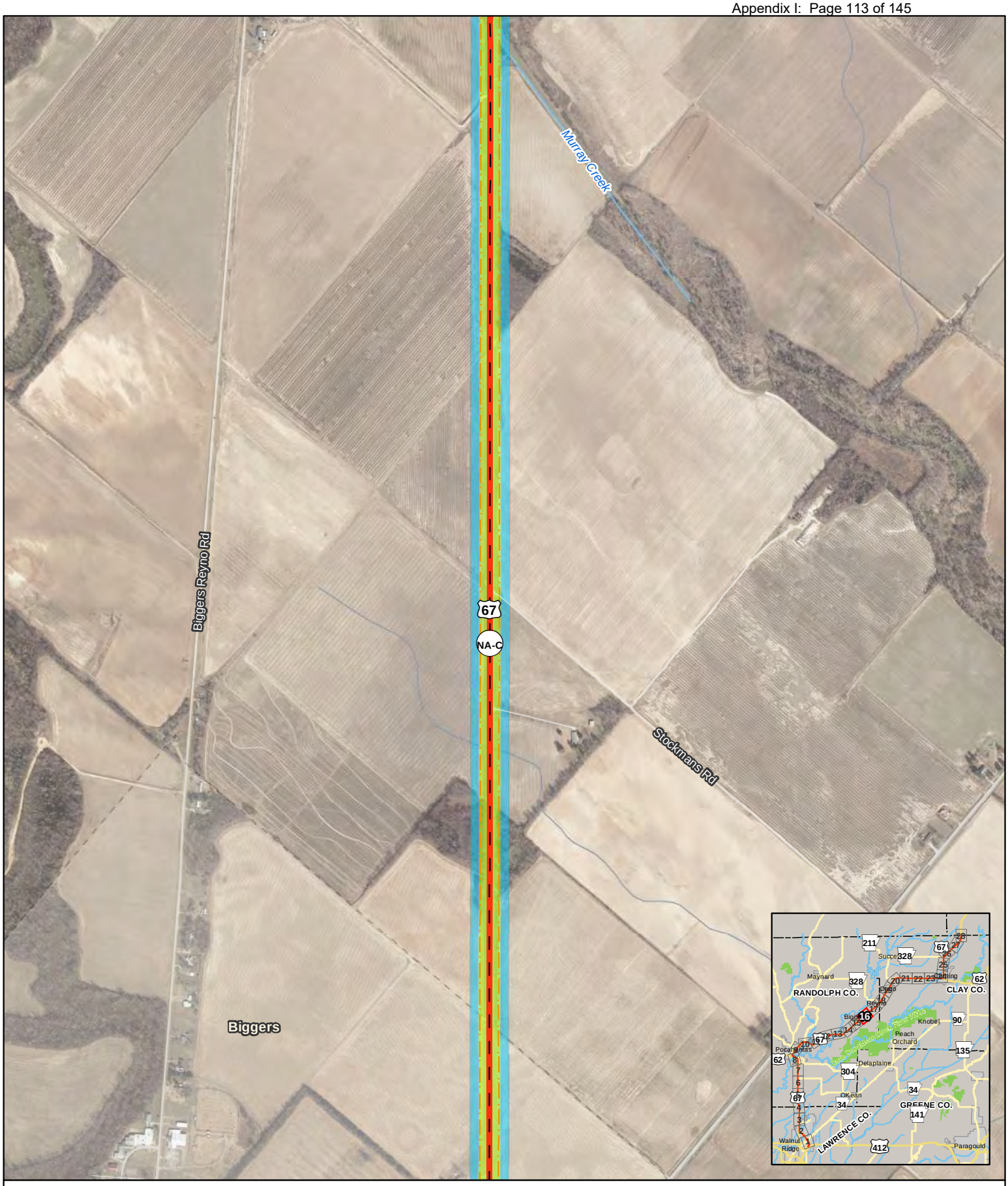
WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 15 of 28

ARDOT



0 500 1,000
Feet

Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

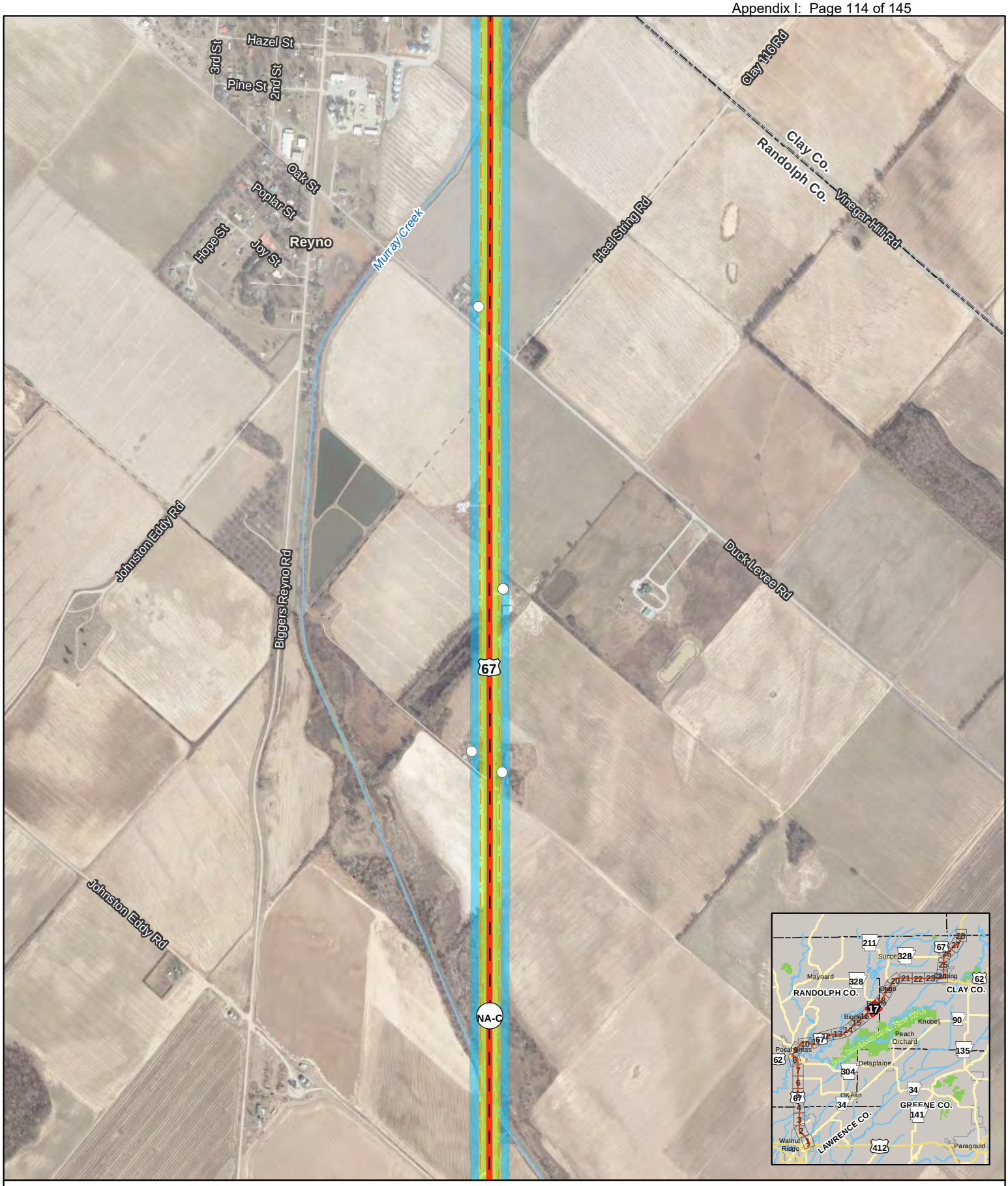
WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 16 of 28

AR DOT



0 500 1,000
Feet

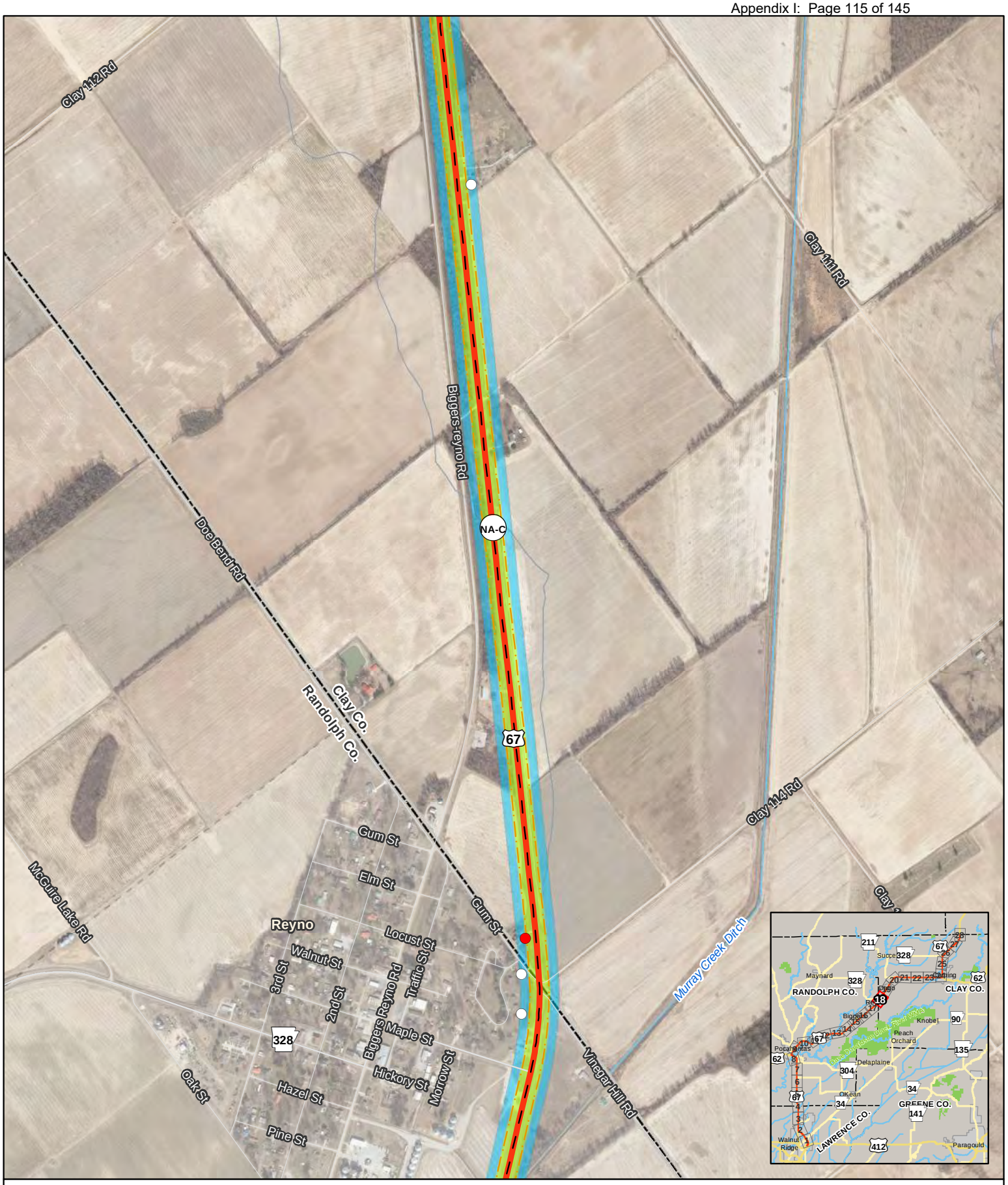
Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 17 of 28



0 500 1,000
Feet

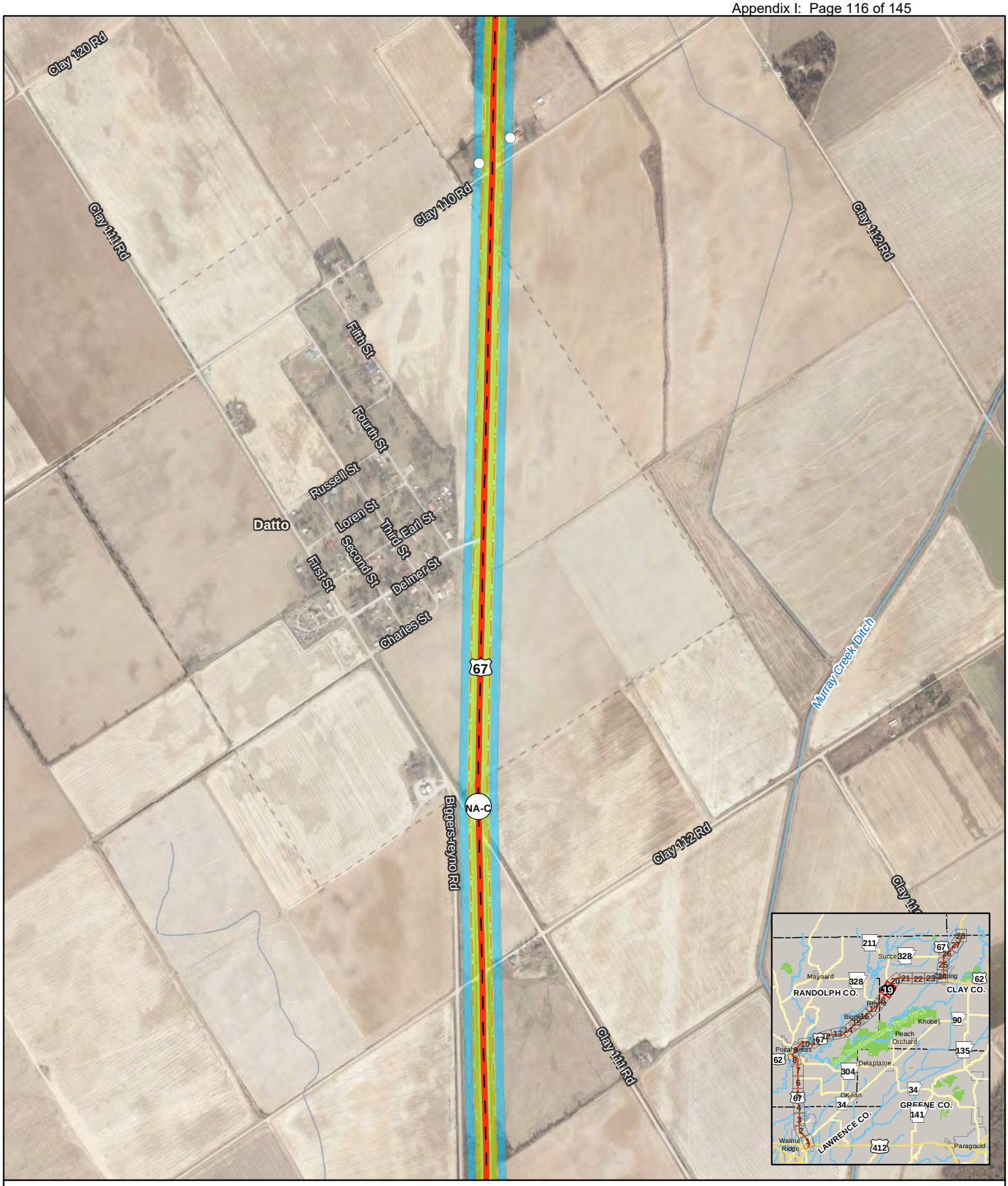
Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 18 of 28



0 500 1,000
Feet

N

Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 19 of 28

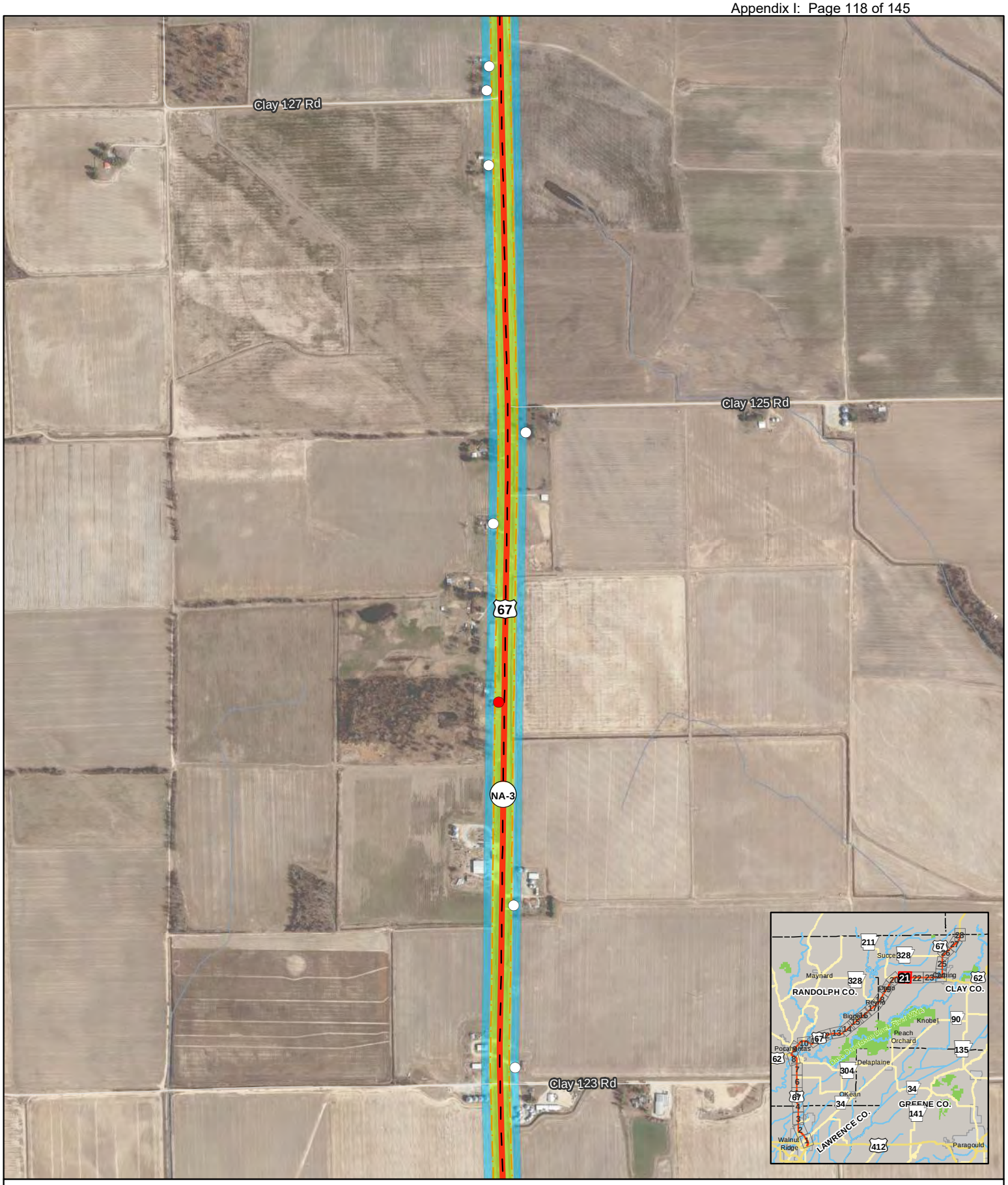
ARDOT

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 20 of 28



0 500 1,000
Feet

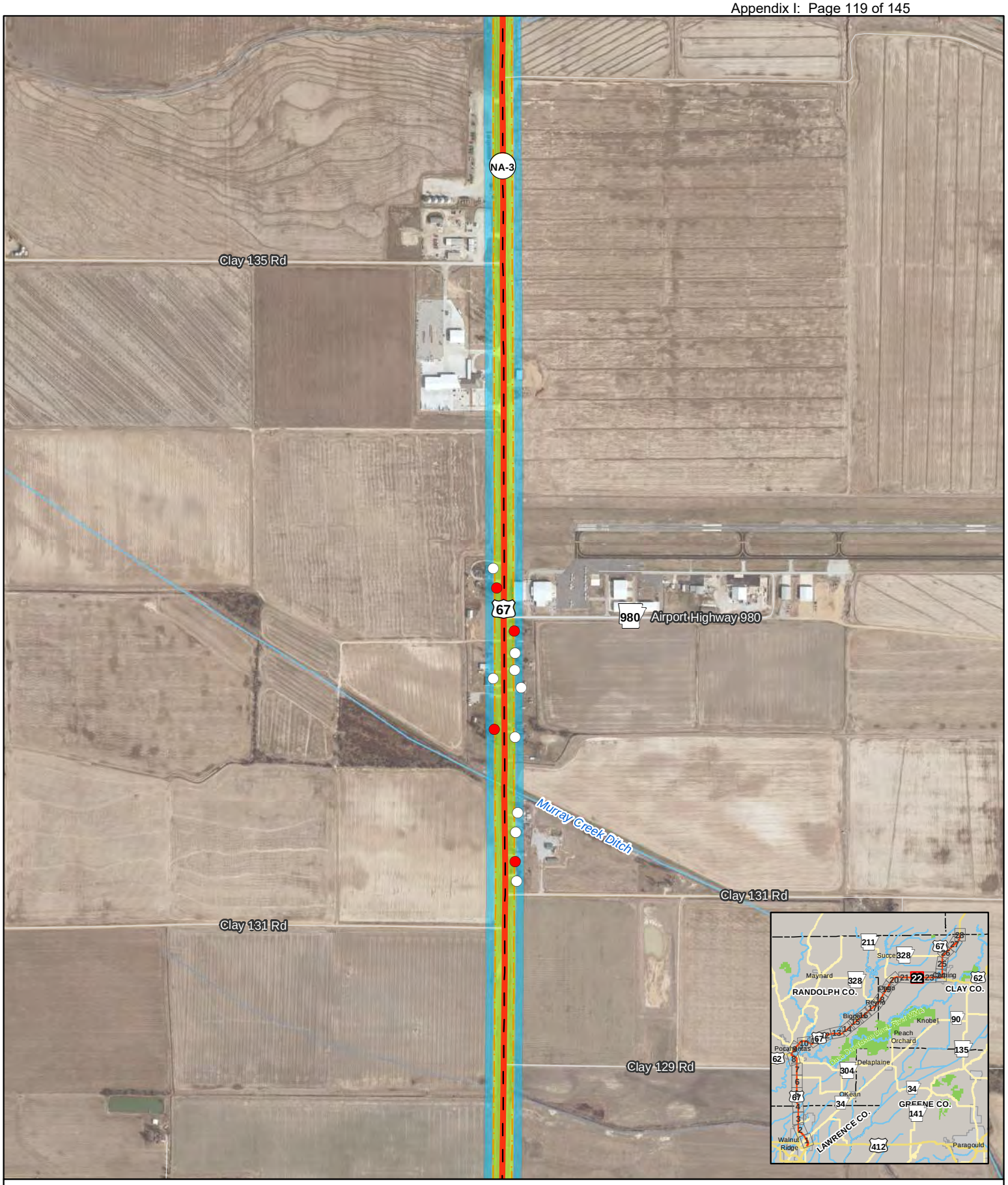
Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 21 of 28



0 500 1,000
Feet

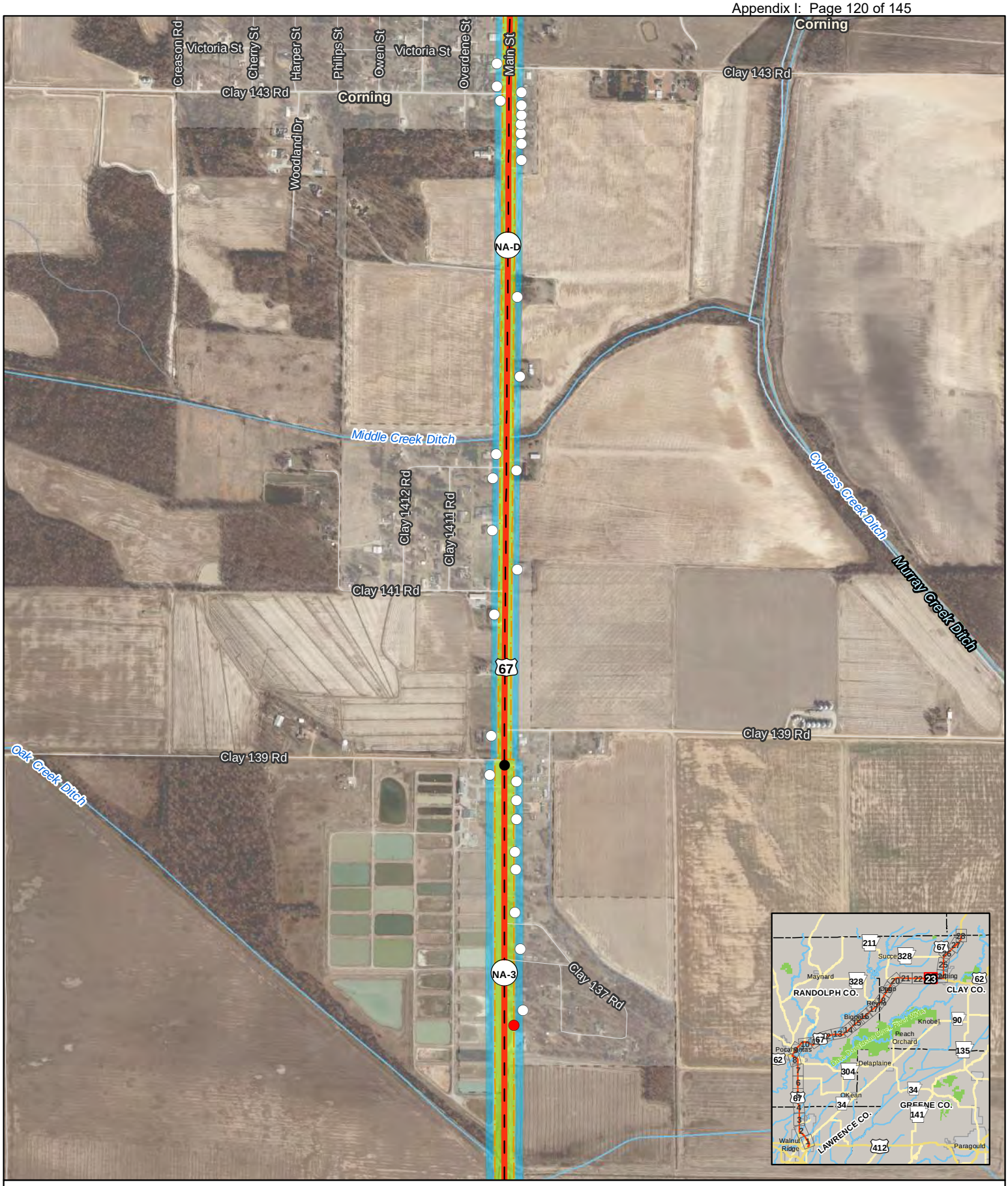
Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 22 of 28



0 500 1,000
Feet

Existing Road Centerline
No Action

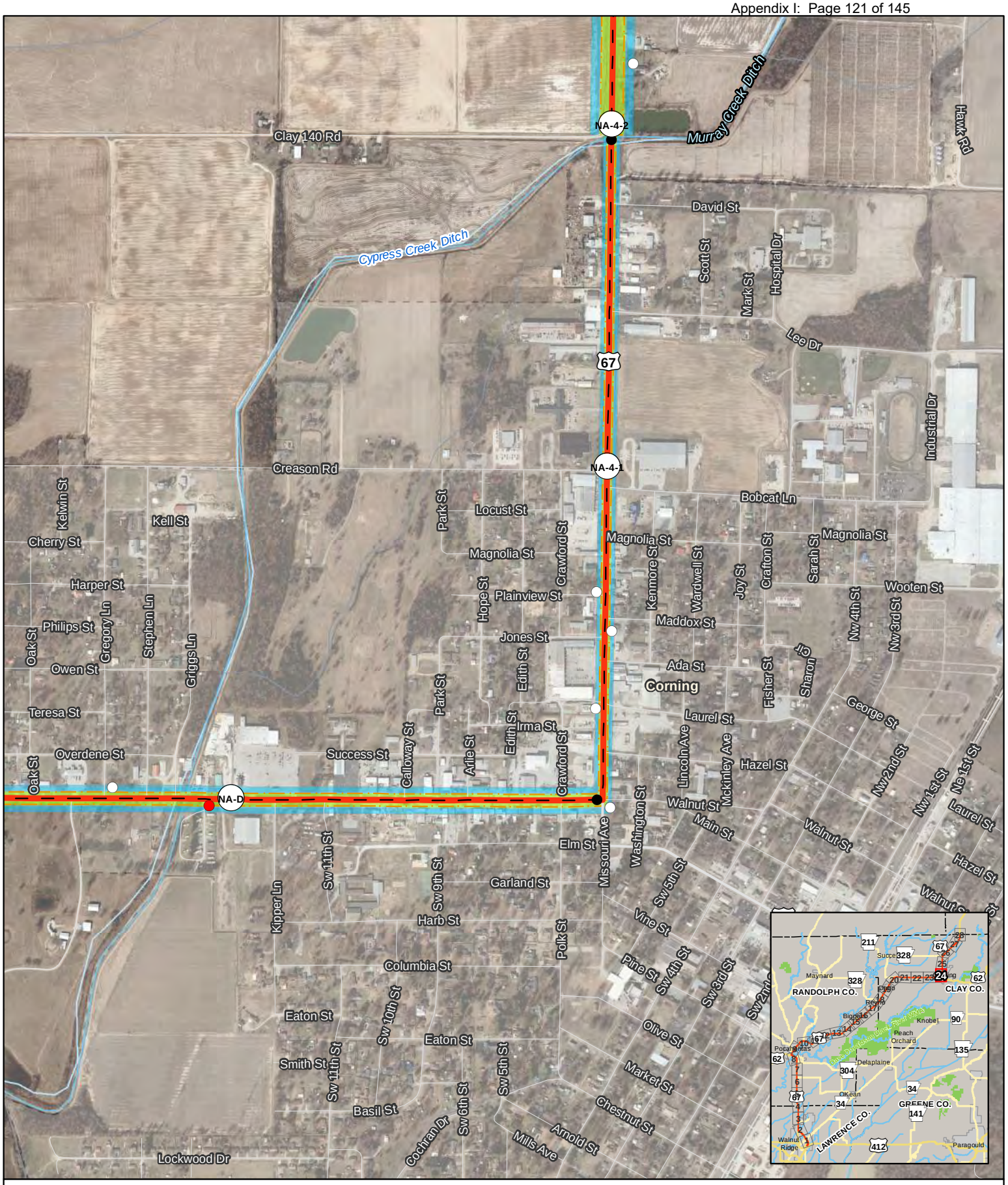
Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 23 of 28



0 500 1,000
Feet

N

Existing Road Centerline
No Action

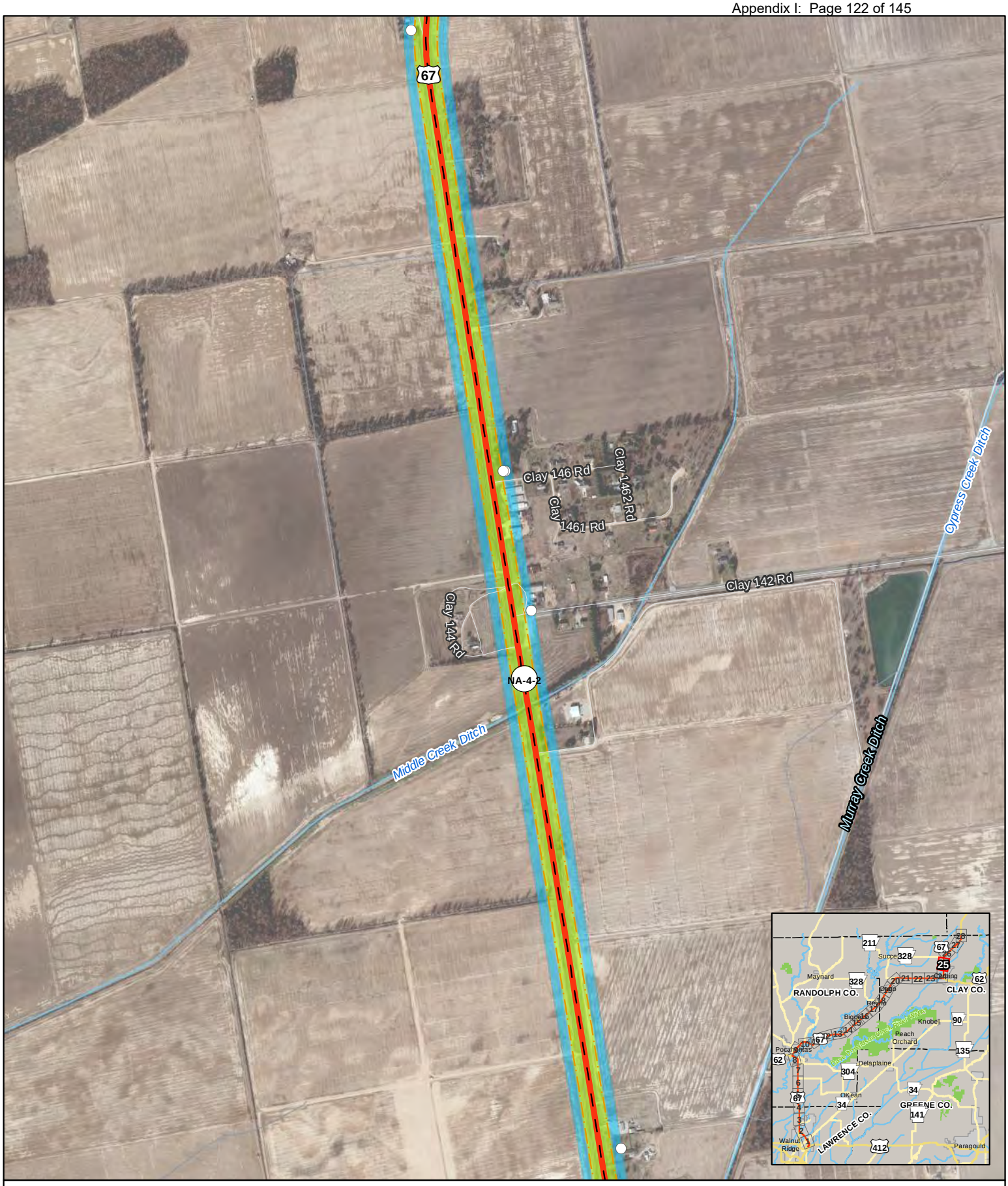
Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 24 of 28

ARDOT

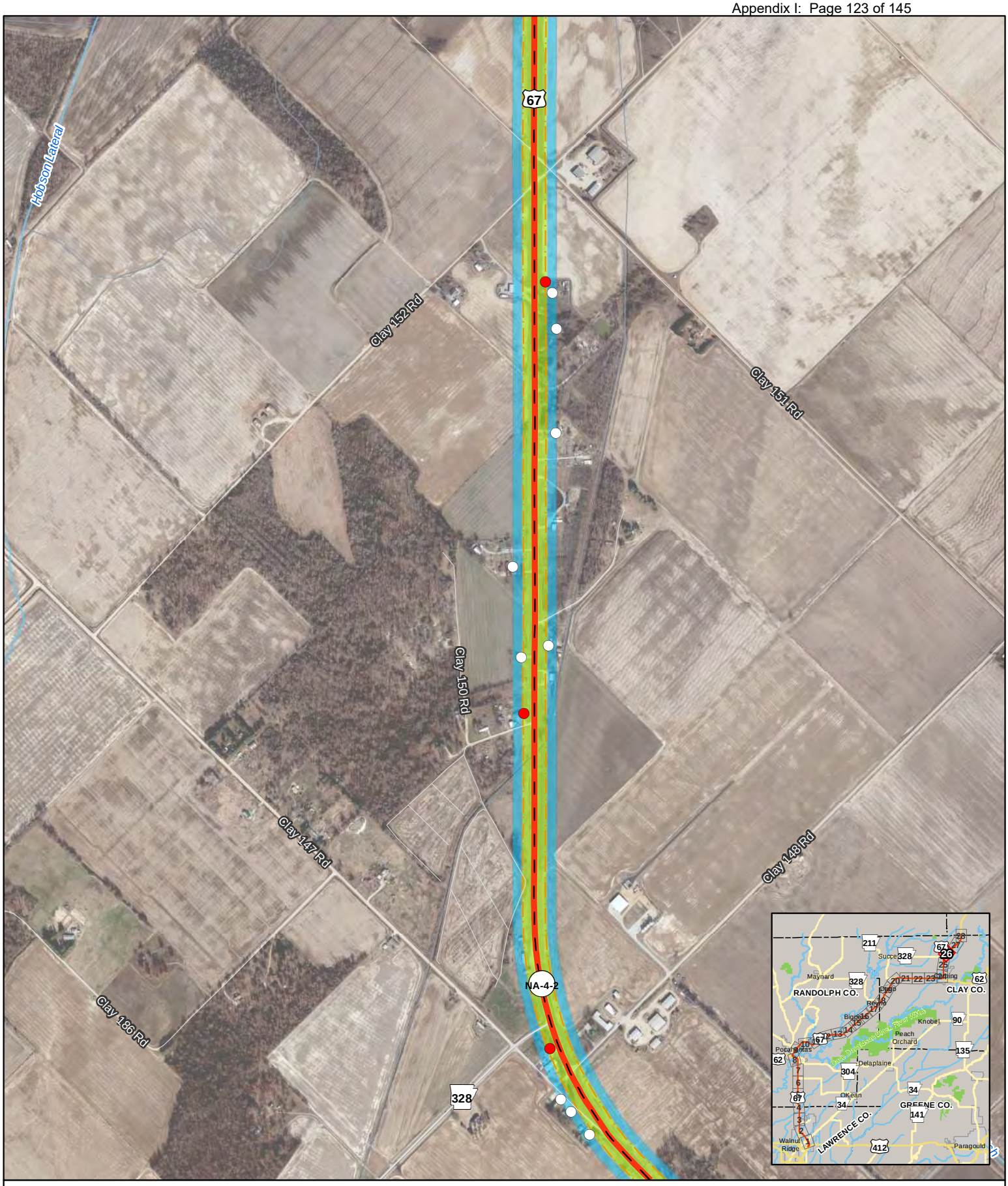


WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 25 of 28



WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 26 of 28

0 500 1,000
Feet

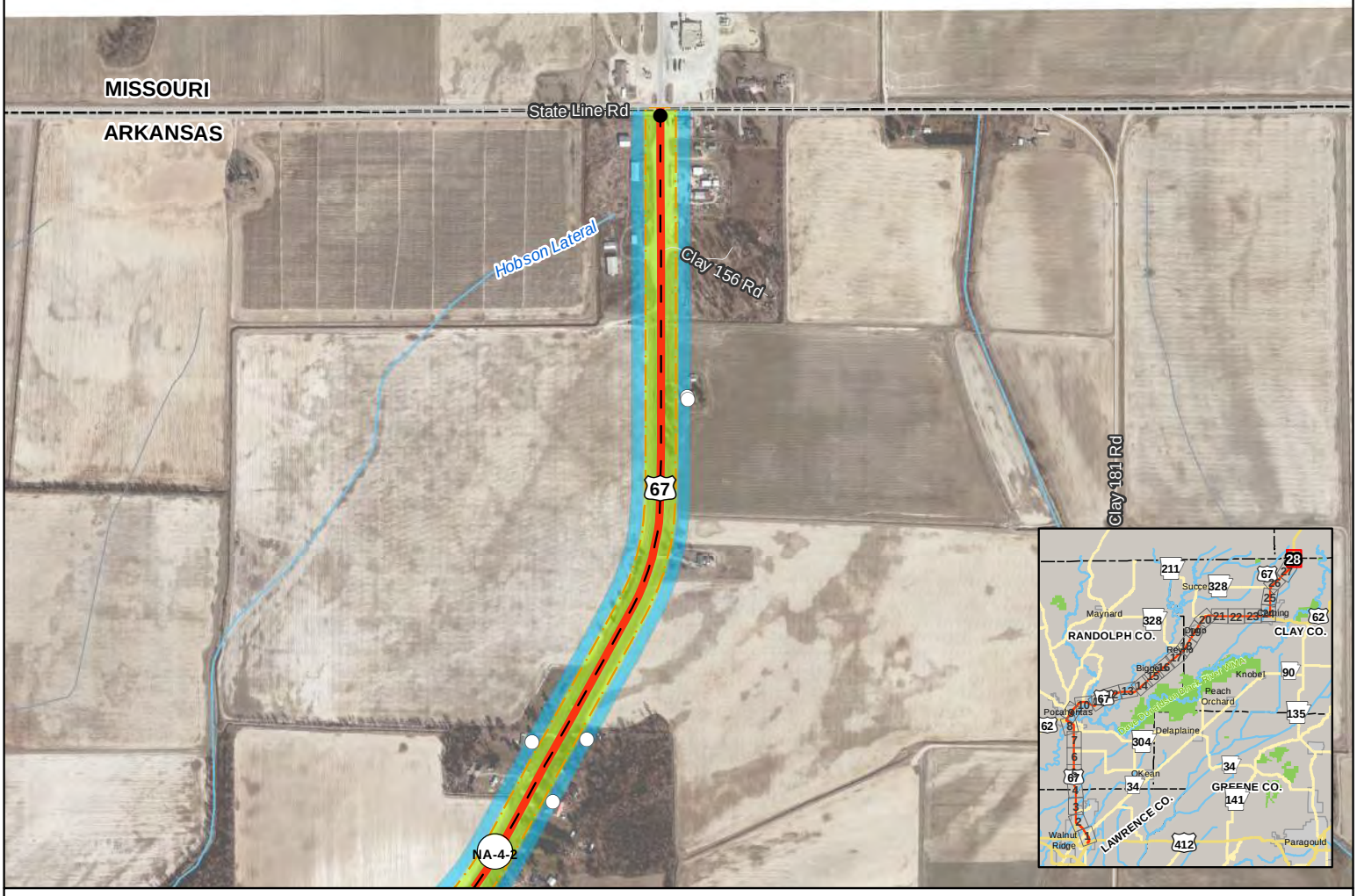
Existing Road Centerline
No Action

Impacted Receptor
Receptor
Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)
Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)
Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 27 of 28



WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57)

Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis
Proposed No Action Alignment

Detail 28 of 28

ATTACHMENT E — TRAFFIC DATA AND TNM RESULTS

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt2 Segment A - Both Directions - Hwy 412 & Hwy 67 to Black River

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 | 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

40

2040 | PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 75 | **Kfactor** 8% | **D** 52%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					2.8%	48.2%			
2018									
2040	7,100	51%	580	429	8	143	215	5	72

Garver
Ryan Mountain

22-Sep-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVE
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Alt2_Segment A
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0.0	72.50	66	72.5	10	Snd Lvl	72.5	0	8	-8
100	2	1	0.0	69.20	66	69.2	10	Snd Lvl	69.2	0	8	-8
170	3	1	0.0	66.10	66	66.1	10	Snd Lvl	66.1	0	8	-8
225	4	1	0.0	63.00	66	63	10	----	63	0	8	-8
250	5	1	0.0	61.80	66	61.8	10	----	61.8	0	8	-8
310	6	1	0.0	59.50	66	59.5	10	----	59.5	0	8	-8
335	7	1	0.0	58.60	66	58.6	10	----	58.6	0	8	-8
400	8	1	0.0	56.70	66	56.7	10	----	56.7	0	8	-8
450	11	1	0.0	55.40	66	55.4	10	----	55.4	0	8	-8
500	12	1	0.0	54.20	66	54.2	10	----	54.2	0	8	-8
560	40	1	0.0	52.90	66.0	52.9	10	----	52.9	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	11	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt 2 Segment B - Both Directions - Black River to Hwy 62 West of Corning

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

2040 PROPOSED

Operating Speed: 75 **Kfactor** 8% **D** 62%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					2.5%	39.5%			
2018									
2040	8,700	42%	701	577	7	116	289	4	59

Garver
Ryan Mountain

2-May-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Alt2_Segment B
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	72.4	66	72.4	10	Snd Lvl	72.4	0	8	-8
100	2	1	0	69.1	66	69.1	10	Snd Lvl	69.1	0	8	-8
170	3	1	0	66.0	66	66	10	Snd Lvl	66	0	8	-8
225	4	1	0	62.8	66	62.8	10	----	62.8	0	8	-8
250	5	1	0	61.6	66	61.6	10	----	61.6	0	8	-8
300	6	1	0	59.5	66	59.5	10	----	59.5	0	8	-8
340	7	1	0	58.1	66	58.1	10	----	58.1	0	8	-8
400	8	1	0	56.3	66	56.3	10	----	56.3	0	8	-8
450	11	1	0	55.0	66	55	10	----	55	0	8	-8
500	12	1	0	53.8	66	53.8	10	----	53.8	0	8	-8
550	31	1	0	52.7	66	52.7	10	----	52.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	11	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt 2 Segment C - Both Directions - Hwy 62 to Connectors

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 75 **Kfactor** 8% **D** 55%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					2.1%	38.9%			
2018									
2040	8,500	41%	650	541	6	104	271	3	52

Garver
Ryan Mountain & Dave Bednar

20-Jun-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Alt2_Segment C
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Calculated Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	72.0	66	72	10	Snd Lvl	72	0	8	-8
100	2	1	0	68.6	66	68.6	10	Snd Lvl	68.6	0	8	-8
162	3	1	0	66.1	66	66.1	10	Snd Lvl	66.1	0	8	-8
210	4	1	0	63.1	66	63.1	10	----	63.1	0	8	-8
250	5	1	0	61.1	66	61.1	10	----	61.1	0	8	-8
300	6	1	0	59.1	66	59.1	10	----	59.1	0	8	-8
350	7	1	0	57.3	66	57.3	10	----	57.3	0	8	-8
425	8	1	0	55.2	66	55.2	10	----	55.2	0	8	-8
450	11	1	0	54.5	66	54.5	10	----	54.5	0	8	-8
500	12	1	0	53.3	66	53.3	10	----	53.3	0	8	-8
550	31	1	0	52.2	66	52.2	10	----	52.2	0	8	-8
600	33	1	0	51.2	66	51.2	10	----	51.2	0	8	-8
625	34	1	0	50.7	66	50.7	10	----	50.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt2 Segment D - Both Directions - Hwy 67 N. of Corning to Connectors

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 75 **Kfactor** 8% **D** 53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					3.2%	51.8%			
2018									
2040	6,300	55%	526	367	9	150	184	5	75

Garver
Ryan Mountain & David Bednar

2-May-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Alt2_Segment D
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n	Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB			dBA	dB	dB	dB
	50	1	1	0	72.5	66	72.5	10	Snd Lvl	72.5	0	8	-8
	100	2	1	0	69.1	66	69.1	10	Snd Lvl	69.1	0	8	-8
	170	3	1	0	66.1	66	66.1	10	Snd Lvl	66.1	0	8	-8
	225	4	1	0	63.0	66	63	10	----	63	0	8	-8
	250	5	1	0	61.8	66	61.8	10	----	61.8	0	8	-8
	300	6	1	0	59.8	66	59.8	10	----	59.8	0	8	-8
	350	7	1	0	58.2	66	58.2	10	----	58.2	0	8	-8
	425	8	1	0	56.1	66	56.1	10	----	56.1	0	8	-8
	460	11	1	0	55.2	66	55.2	10	----	55.2	0	8	-8
	500	12	1	0	54.3	66	54.3	10	----	54.3	0	8	-8
	550	31	1	0	53.2	66	53.2	10	----	53.2	0	8	-8
	600	33	1	0	52.2	66	52.2	10	----	52.2	0	8	-8
	650	34	1	0	51.2	66	51.2	10	----	51.2	0	8	-8
	675	36	1	0	50.7	66	50.7	10	----	50.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	14	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt3 Segment A-1 - Both Directions - Hwy 412 & 67 Interchange to Delaplaine

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

2040	PROPOSED	

Operating Speed: 75 **Kfactor** 8% **D** 52%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					2.8%	48.2%			
2018									
2040	6,400	51%	523	387	7	129	194	4	65

Garver
Ryan Mounta

20-Jun-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: S
PROJECT/C I-57 ARDOT No. 100512
RUN: Alt3_Segment A-1
BARRIER DI INPUT HEIGHTS
ATMOSPHE 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h dBA	No Barrier LAeq1h Calculated dBA	Crit'n dBA	Increase over existing Calculated dB	Crit'n Sub'l Inc dB	Type Impact	With Barrier Calculated LAeq1h dBA	Noise Reduction Calculated dB	Goal dB	Calculated minus Goal dB
50	1	1	0.0	72.10	66	72.1	10	Snd Lvl	72.1	0	8	-8
100	2	1	0.0	68.70	66	68.7	10	Snd Lvl	68.7	0	8	-8
165	3	1	0.0	66.00	66	66	10	Snd Lvl	66	0	8	-8
215	4	1	0.0	63.10	66	63.1	10	----	63.1	0	8	-8
250	5	1	0.0	61.40	66	61.4	10	----	61.4	0	8	-8
300	6	1	0.0	59.40	66	59.4	10	----	59.4	0	8	-8
325	7	1	0.0	58.50	66	58.5	10	----	58.5	0	8	-8
400	8	1	0.0	56.20	66	56.2	10	----	56.2	0	8	-8
450	11	1	0.0	54.90	66	54.9	10	----	54.9	0	8	-8
500	12	1	0.0	53.80	66	53.8	10	----	53.8	0	8	-8
550	31	1	0.0	52.70	66	52.7	10	----	52.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	11	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt3 Segment A-2 - Both Directions - Delaplaine to Hwy 90

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

40

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 75 **Kfactor** 8% **D** 52%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					2.8%	48.2%			
2018									
2040	6,400	51%	523	387	7	129	194	4	65

Garver
Ryan Mounta 6-Aug-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: S

I-57
ARDOT
No.
PROJECT/C 100512
RUN: Alt3_Segment A-2
BARRIER DI INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHE 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0.0	72.10	66	72.1	10	Snd Lvl	72.1	0	8	-8
96	2	1	0.0	68.90	66	68.9	10	Snd Lvl	68.9	0	8	-8
165	3	1	0.0	66.00	66	66	10	Snd Lvl	66	0	8	-8
215	4	1	0.0	63.10	66	63.1	10	----	63.1	0	8	-8
250	5	1	0.0	61.40	66	61.4	10	----	61.4	0	8	-8
300	6	1	0.0	59.40	66	59.4	10	----	59.4	0	8	-8
325	7	1	0.0	58.50	66	58.5	10	----	58.5	0	8	-8
400	8	1	0.0	56.20	66	56.2	10	----	56.2	0	8	-8
450	11	1	0.0	54.90	66	54.9	10	----	54.9	0	8	-8
500	12	1	0.0	53.80	66	53.8	10	----	53.8	0	8	-8
550	31	1	0.0	52.70	66	52.7	10	----	52.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	11	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt 3 Segment B-1 - Both Directions - Hwy 90 to 2,500 feet north (adjacent to existing roadway)

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 75 **Kfactor** 8% **D** 62%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					2.7%	43.3%			
2018									
2040	7,500	46%	604	476	8	120	239	4	61

Garver
Ryan Mountain and David Bednar

24-Jul-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Alt3_Segment B-1
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	72.2	66	72.2	10	Snd Lvl	72.2	0	8	-8
100	2	1	0	68.8	66	68.8	10	Snd Lvl	68.8	0	8	-8
166	3	1	0	66	66	66	10	Snd Lvl	66	0	8	-8
220	4	1	0	62.9	66	62.9	10	----	62.9	0	8	-8
250	5	1	0	61.4	66	61.4	10	----	61.4	0	8	-8
300	6	1	0	59.4	66	59.4	10	----	59.4	0	8	-8
325	7	1	0	58.5	66	58.5	10	----	58.5	0	8	-8
400	8	1	0	56.2	66	56.2	10	----	56.2	0	8	-8
450	11	1	0	54.9	66	54.9	10	----	54.9	0	8	-8
500	12	1	0	53.7	66	53.7	10	----	53.7	0	8	-8
550	31	1	0	52.6	66	52.6	10	----	52.6	0	8	-8
600	33	1	0	51.6	66	51.6	10	----	51.6	0	8	-8
650	34	1	0	50.6	66	50.6	10	----	50.6	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt 3 Segment B-2 - Both Directions - 2,500 feet north of Hwy 90 to Hwy 62 W. of Corning (new alignment)

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

2040	PROPOSED	

Operating Speed: 75

Kfactor	8%	D	62%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					2.7%	43.3%			
2018									
2040	7,500	46%	604	476	8	120	239	4	61

Garver
Ryan Mountain and David Bednar

20-Jun-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Alt3_Segment B-2
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n	Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB			dBA	dB	dB	dB
	50	1	1	0	72.2	66	72.2	10	Snd Lvl	72.2	0	8	-8
	100	2	1	0	68.8	66	68.8	10	Snd Lvl	68.8	0	8	-8
	166	3	1	0	66.0	66	66	10	Snd Lvl	66	0	8	-8
	220	4	1	0	62.9	66	62.9	10	----	62.9	0	8	-8
	250	5	1	0	61.4	66	61.4	10	----	61.4	0	8	-8
	300	6	1	0	59.4	66	59.4	10	----	59.4	0	8	-8
	340	7	1	0	58.0	66	58	10	----	58	0	8	-8
	400	8	1	0	56.2	66	56.2	10	----	56.2	0	8	-8
	450	11	1	0	54.9	66	54.9	10	----	54.9	0	8	-8
	500	12	1	0	53.7	66	53.7	10	----	53.7	0	8	-8
	550	31	1	0	52.6	66	52.6	10	----	52.6	0	8	-8
	600	33	1	0	51.6	66	51.6	10	----	51.6	0	8	-8
	650	34	1	0	50.6	66	50.6	10	----	50.6	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt 3 Segment C - Both Directions - Hwy 62 to Hwy 67 N. of Corning

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

2040	PROPOSED	

Operating Speed: 75

Kfactor	8%	D	55%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					2.3%	43.7%			
2018									
2040	7,500	46%	573	452	6	115	227	4	58

Garver
Ryan Mountain and David Bednar

20-Jun-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Alt3_Segment C
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	72.0	66	72	10	Snd Lvl	72	0	8	-8
100	2	1	0	68.6	66	68.6	10	Snd Lvl	68.6	0	8	-8
163	3	1	0	66.0	66	66	10	Snd Lvl	66	0	8	-8
215	4	1	0	62.9	66	62.9	10	----	62.9	0	8	-8
250	5	1	0	61.2	66	61.2	10	----	61.2	0	8	-8
300	6	1	0	59.2	66	59.2	10	----	59.2	0	8	-8
350	7	1	0	57.5	66	57.5	10	----	57.5	0	8	-8
425	8	1	0	55.3	66	55.3	10	----	55.3	0	8	-8
450	11	1	0	54.7	66	54.7	10	----	54.7	0	8	-8
500	12	1	0	53.5	66	53.5	10	----	53.5	0	8	-8
550	31	1	0	52.4	66	52.4	10	----	52.4	0	8	-8
600	33	1	0	51.4	66	51.4	10	----	51.4	0	8	-8
635	34	1	0	50.7	66	50.7	10	----	50.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alt3 Segment D - Both Directions - Hwy 67 to Alternative A or C

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 75

Kfactor	8%	D	53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					3.2%	50.8%			
2018									
2040	6,000	54%	501	355	9	137	178	5	69

Garver
Ryan Mountain and David Bednar

20-Jun-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Alt3_Segment D
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	72.2	66	72.2	10	Snd Lvl	72.2	0	8	-8
100	2	1	0	68.8	66	68.8	10	Snd Lvl	68.8	0	8	-8
166	3	1	0	66.0	66	66	10	Snd Lvl	66	0	8	-8
220	4	1	0	62.9	66	62.9	10	----	62.9	0	8	-8
250	5	1	0	61.5	66	61.5	10	----	61.5	0	8	-8
300	6	1	0	59.5	66	59.5	10	----	59.5	0	8	-8
350	7	1	0	57.8	66	57.8	10	----	57.8	0	8	-8
400	8	1	0	56.4	66	56.4	10	----	56.4	0	8	-8
450	11	1	0	55.1	66	55.1	10	----	55.1	0	8	-8
500	12	1	0	54.0	66	54	10	----	54	0	8	-8
550	31	1	0	52.9	66	52.9	10	----	52.9	0	8	-8
600	33	1	0	51.9	66	51.9	10	----	51.9	0	8	-8
660	34	1	0	50.7	66	50.7	10	----	50.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alternative A - Both Directions

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 75

Kfactor	8%	D	53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					3.2%	51.8%			
2018									
2040	6,300	55%	526	367	9	150	184	5	75

Garver
Ryan Mountai

20-Jul-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SC
PROJECT/CO I-57 ARDOT No. 100512
RUN: Proposed Alternative A
BARRIER DES INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHER 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	72.5	66	72.5	10	Snd Lvl	72.5	0	8	-8
100	2	1	0	69.1	66	69.1	10	Snd Lvl	69.1	0	8	-8
170	3	1	0	66.1	66	66.1	10	Snd Lvl	66.1	0	8	-8
225	4	1	0	63.0	66	63	10	----	63	0	8	-8
250	5	1	0	61.8	66	61.8	10	----	61.8	0	8	-8
300	6	1	0	59.8	66	59.8	10	----	59.8	0	8	-8
350	7	1	0	58.2	66	58.2	10	----	58.2	0	8	-8
425	8	1	0	56.1	66	56.1	10	----	56.1	0	8	-8
460	11	1	0	55.2	66	55.2	10	----	55.2	0	8	-8
500	12	1	0	54.3	66	54.3	10	----	54.3	0	8	-8
550	31	1	0	53.2	66	53.2	10	----	53.2	0	8	-8
600	33	1	0	52.2	66	52.2	10	----	52.2	0	8	-8
650	34	1	0	51.2	66	51.2	10	----	51.2	0	8	-8
675	36	1	0	50.7	66	50.7	10	----	50.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	14	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alternative A Connector (Existing from NB Segment 4-2)

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 | 2040

Roadway Cross-Sections: Two 12' travel lanes with 8' paved shoulders

2018 EXISTING

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 55

Kfactor	8%	D	53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					3.2%	51.8%			
2018	6,800	29%	555	509	4	43	509	4	43
2040					0				0

Garver
Ryan Mour

8-Jan-22
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: 57-NB-Seg.4-2 for Existing Connector A
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHI 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h		Increase over existing		Type Impact	With Barrier Calculated Noise Reduction LAeq1h			
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc		Calculated	Goal		Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	69.0	66	69	10	Snd Lvl	69	0	8	-8
75	2	1	0	67.0	66	67	10	Snd Lvl	67	0	8	-8
90	3	1	0	66.1	66	66.1	10	Snd Lvl	66.1	0	8	-8
100	4	1	0	65.6	66	65.6	10	----	65.6	0	8	-8
150	5	1	0	63.5	66	63.5	10	----	63.5	0	8	-8
175	6	1	0	62.5	66	62.5	10	----	62.5	0	8	-8
200	7	1	0	60.9	66	60.9	10	----	60.9	0	8	-8
275	8	1	0	57.3	66	57.3	10	----	57.3	0	8	-8
300	11	1	0	56.3	66	56.3	10	----	56.3	0	8	-8
350	12	1	0	54.6	66	54.6	10	----	54.6	0	8	-8
400	31	1	0	53.1	66	53.1	10	----	53.1	0	8	-8
475	33	1	0	51.3	66	51.3	10	----	51.3	0	8	-8
500	36	1	0	50.7	66	50.7	10	----	50.7	0	8	-8

Dwelling Units	# DUs	oise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alternative A Interim Connector

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Two 12' travel lanes with 8' paved shoulders

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 55 **Kfactor** 8% **D** 53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS	MT	HT
					3.2%	51.8%			
2018									
2040	6,300	55%	526	367	9	150	367	10	150

Garver 6-Jan-22
Ryan Mountai TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Proposed Alternative A Connector
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	71.7	66	71.7	10	Snd Lvl	71.7	0	8	-8
100	2	1	0	68.3	66	68.3	10	Snd Lvl	68.3	0	8	-8
160	3	1	0	65.9	66	65.9	10	----	65.9	0	8	-8
215	4	1	0	62.9	66	62.9	10	----	62.9	0	8	-8
250	5	1	0	61.3	66	61.3	10	----	61.3	0	8	-8
300	6	1	0	59.4	66	59.4	10	----	59.4	0	8	-8
350	7	1	0	57.9	66	57.9	10	----	57.9	0	8	-8
425	8	1	0	56.0	66	56	10	----	56	0	8	-8
460	11	1	0	55.2	66	55.2	10	----	55.2	0	8	-8
500	12	1	0	54.4	66	54.4	10	----	54.4	0	8	-8
550	31	1	0	53.4	66	53.4	10	----	53.4	0	8	-8
600	33	1	0	52.5	66	52.5	10	----	52.5	0	8	-8
650	34	1	0	51.7	66	51.7	10	----	51.7	0	8	-8
675	36	1	0	51.2	66	51.2	10	----	51.2	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	14	0	0	0
All Impacted	2	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alternative B - Both Directions

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

2040 PROPOSED

Operating Speed: 75

Kfactor	8%	D	53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					3.2%	51.8%			
2018									
2040	6,300	55%	526	367	9	150	184	5	75

Garver
Ryan Mountai

22-Sep-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SC
PROJECT/CO I-57 ARDOT No. 100512
RUN: Proposed Alternative B
BARRIER DES INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHER 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	72.5	66	72.5	10	Snd Lvl	72.5	0	8	-8
100	2	1	0	69.1	66	69.1	10	Snd Lvl	69.1	0	8	-8
166	3	1	0	66.3	66	66.3	10	Snd Lvl	66.3	0	8	-8
220	4	1	0	63.2	66	63.2	10	----	63.2	0	8	-8
250	5	1	0	61.8	66	61.8	10	----	61.8	0	8	-8
300	6	1	0	59.8	66	59.8	10	----	59.8	0	8	-8
350	7	1	0	58.2	66	58.2	10	----	58.2	0	8	-8
400	8	1	0	56.7	66	56.7	10	----	56.7	0	8	-8
450	11	1	0	55.4	66	55.4	10	----	55.4	0	8	-8
500	12	1	0	54.3	66	54.3	10	----	54.3	0	8	-8
550	31	1	0	53.2	66	53.2	10	----	53.2	0	8	-8
600	33	1	0	52.2	66	52.2	10	----	52.2	0	8	-8
660	34	1	0	51.0	66	51	10	----	51	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alternative C - Both Directions

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh.

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 75

Kfactor	8%	D	53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
					3.2%	50.8%			
2018									
2040	6,000	54%	501	355	9	137	178	5	69

Garver
Ryan Mountain

20-Jul-21
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Proposed Alternative C
BARRIER DES INPUT HEIGHTS
ATMOSPHER 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Calculated Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	72.2	66	72.2	10	Snd Lvl	72.2	0	8	-8
100	2	1	0	68.8	66	68.8	10	Snd Lvl	68.8	0	8	-8
166	3	1	0	66.0	66	66	10	Snd Lvl	66	0	8	-8
220	4	1	0	62.9	66	62.9	10	----	62.9	0	8	-8
250	5	1	0	61.5	66	61.5	10	----	61.5	0	8	-8
300	6	1	0	59.5	66	59.5	10	----	59.5	0	8	-8
350	7	1	0	57.8	66	57.8	10	----	57.8	0	8	-8
400	8	1	0	56.4	66	56.4	10	----	56.4	0	8	-8
450	11	1	0	55.1	66	55.1	10	----	55.1	0	8	-8
500	12	1	0	54.0	66	54	10	----	54	0	8	-8
550	31	1	0	52.9	66	52.9	10	----	52.9	0	8	-8
600	33	1	0	51.9	66	51.9	10	----	51.9	0	8	-8
660	34	1	0	50.7	66	50.7	10	----	50.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alternative C Connector (Existing from NB Segment 4-2)

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Two 12' travel lanes with 8' paved shoulders

2018 EXISTING

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 55

Kfactor	8%	D	53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS	MT	HT
					3.2%	51.8%			
2018	6,800	29%	555	509	4	43	509	4	43
2040				0	0	0	0	0	0

Garver
Ryan Mountain and David Bednar Jr.

8-Jan-22
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: 57-NB-Seg.4-2 for Existing Connector C
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	69	66	69	10	Snd Lvl	69	0	8	-8
75	2	1	0	67	66	67	10	Snd Lvl	67	0	8	-8
90	3	1	0	66.1	66	66.1	10	Snd Lvl	66.1	0	8	-8
100	4	1	0	65.6	66	65.6	10	----	65.6	0	8	-8
150	5	1	0	63.5	66	63.5	10	----	63.5	0	8	-8
175	6	1	0	62.5	66	62.5	10	----	62.5	0	8	-8
200	7	1	0	60.9	66	60.9	10	----	60.9	0	8	-8
275*	8	1	0	57.3	66	57.3	10	----	57.3	0	8	-8
300	11	1	0	56.3	66	56.3	10	----	56.3	0	8	-8
350	12	1	0	54.6	66	54.6	10	----	54.6	0	8	-8
400	31	1	0	53.1	66	53.1	10	----	53.1	0	8	-8
475*	33	1	0	51.3	66	51.3	10	----	51.3	0	8	-8
500	36	1	0	50.7	66	50.7	10	----	50.7	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	13	0	0	0
All Impacted	3	0	0	0
All that meet NR Goal	0	0	0	0

NOISE DATA WORKSHEET

Job No: 100512

Job Name: I-57 Walnut Ridge to Missouri State Line

Roadway Reference: I-57 Alternative C Connector Future Conditions

County: Lawrence, Randolph, Clay

Design Year: 2040

Year(s) To Be Modeled: 2018 2040

Roadway Cross-Sections: Two 12' travel lanes with 8' paved shoulders

2040 PROPOSED

Note: DHV = (ADT)(K)
DDHV = (ADT)(K)(D)
K - Percent of ADT occuring in design hour
D - Directional Distribution

Operating Speed: 55 **Kfactor** 8% **D** 53%

Traffic Data:

YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS	MT	HT
					3.2%	50.8%			
2018									
2040	6,000	54%	501	355	9	137	355	9	138

Garver
Ryan Mountain

8-Jan-22
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-57 ARDOT No. 100512
RUN: Proposed Alternative C Connector
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
50	1	1	0	71.4	66	71.4	10	Snd Lvl	71.4	0	8	-8
75 - R-5	2	1	42.5	69.4	66	26.9	10	Both	69.4	0	8	-8
85 - R-6	3	1	51.3	68.8	66	17.5	10	Both	68.8	0	8	-8
100 - R-3	4	1	57.3	68.0	66	10.7	10	Both	68	0	8	-8
125 - R-4	5	1	42.5	66.9	66	24.4	10	Both	66.9	0	8	-8
150	6	1	0	65.9	66	65.9	10	----	65.9	0	8	-8
200	7	1	0	63.3	66	63.3	10	----	63.3	0	8	-8
250	8	1	0	61.0	66	61	10	----	61	0	8	-8
300	11	1	0	59.1	66	59.1	10	----	59.1	0	8	-8
350	12	1	0	57.6	66	57.6	10	----	57.6	0	8	-8
400	31	1	0	56.2	66	56.2	10	----	56.2	0	8	-8
450	38	1	0	55.1	66	55.1	10	----	55.1	0	8	-8
500	39	1	0	54.1	66	54.1	10	----	54.1	0	8	-8
550	41	1	0	53.1	66	53.1	10	----	53.1	0	8	-8
600	42	1	0	52.2	66	52.2	10	----	52.2	0	8	-8

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	15	0	0	0
All Impacted	5	0	0	0
All that meet NR Goal	0	0	0	0

ATTACHMENT F — ACTION ALTERNATIVES TYPICAL SECTION

I-57 typical section as of 2-8-2021

This is what the typical section will look like. (2) 12’ lanes, 10’ outside, 6’ inside shoulder, 60’ median, 30’ clearzone at 6:1 and 3:1 slope outside the clearzone.