ILLINOIS DEPARTMENT OF TRANSPORTATION

NOISE ANALYSIS TECHNICAL REPORT

for Improvements to

ILLINOIS ROUTE 131 (Sunset Avenue to Russell Road),

Lake County, IL

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1. INTRODUCTION

This traffic noise study has been conducted to evaluate traffic noise for the proposed improvements of the IL Rte. 131 Project in northeastern Lake County, Illinois.

The study limits and logical termini for the IL Rte. 131 improvements are Sunset Avenue to the south and Russell Road to the north, approximately 7 miles in length. A location map of the project area is shown in Figure 1. Sunset Avenue serves as the project's southern limit since the average daily traffic (ADT) on IL Rte. 131 increases 30% south of Sunset Avenue, and the roadway transitions to a four-lane section. To the north, Russell Road serves as the jurisdictional boundary between Illinois and Wisconsin in this area. In Wisconsin, IL Rte. 131 becomes Wisconsin Rte. 31, the ADT increases by approximately 10%, and the roadway becomes four lanes divided by a grass median. These termini provide logical endpoints to the project since the existing cross section is two-lane undivided and the capacity of the roadway increases at these locations.

IL Rte. 131 is a main north-south route through the following municipalities within the project corridor: Waukegan, Beach Park, Wadsworth, Zion, and unincorporated Benton and Newport Townships. Communities near the project area, but not directly adjacent, include Gurnee to the southeast of the project area; Winthrop Harbor to the east; and Pleasant Prairie, Wisconsin to the north.

The study limits include signalized intersections at Russell Road, IL Rte. 173 (Rosecrans Road), 21st Street, Wadsworth Road, York House Road, and Sunset Avenue. In addition, there are several unsignalized intersections including 9th Street, Kenosha Road, 29th Street, 33rd Street, and Beach Road. Other local streets also intersect IL Rte. 131 within the study limits, but they have much lower volumes and traffic demands.

In general, IL Rte. 131 currently consists of one lane in each direction with turn lane or additional through lane improvements at most signalized intersections and some unsignalized intersections. The right-of-way is typically 82.5-feet wide, with some widening at intersections and areas of new development. The existing posted speed limit along IL Rte. 131 is 45 mph from Sunset Avenue to IL Rte. 173, and increases to 55 mph between IL Rte. 173 and Russell Road. The proposed posted speed along IL Rte. 131 throughout the project is 45 mph.

The proposed study will evaluate existing and future (build and no-build) traffic noise conditions, and if appropriate, potential noise abatement measures.

Within the study area, single-family residential areas and agricultural areas are the predominant land uses. Public/private open space, utility/waste facilities, and transportation also occupy portions of the land adjacent to IL Rte. 131. Intermittent forest/grassland areas and retail/commercial areas account for the balance of land use within the study area.[1]

Much of the current agricultural and single-family residential areas are planned for commercial or business uses in the future. The individual land-use plans of the municipalities within the study area reflect a general trend towards a commercial corridor along this strategic regional arterial (SRA) route.[2]

This report presents the traffic noise analysis conducted for IL Rte. 131.

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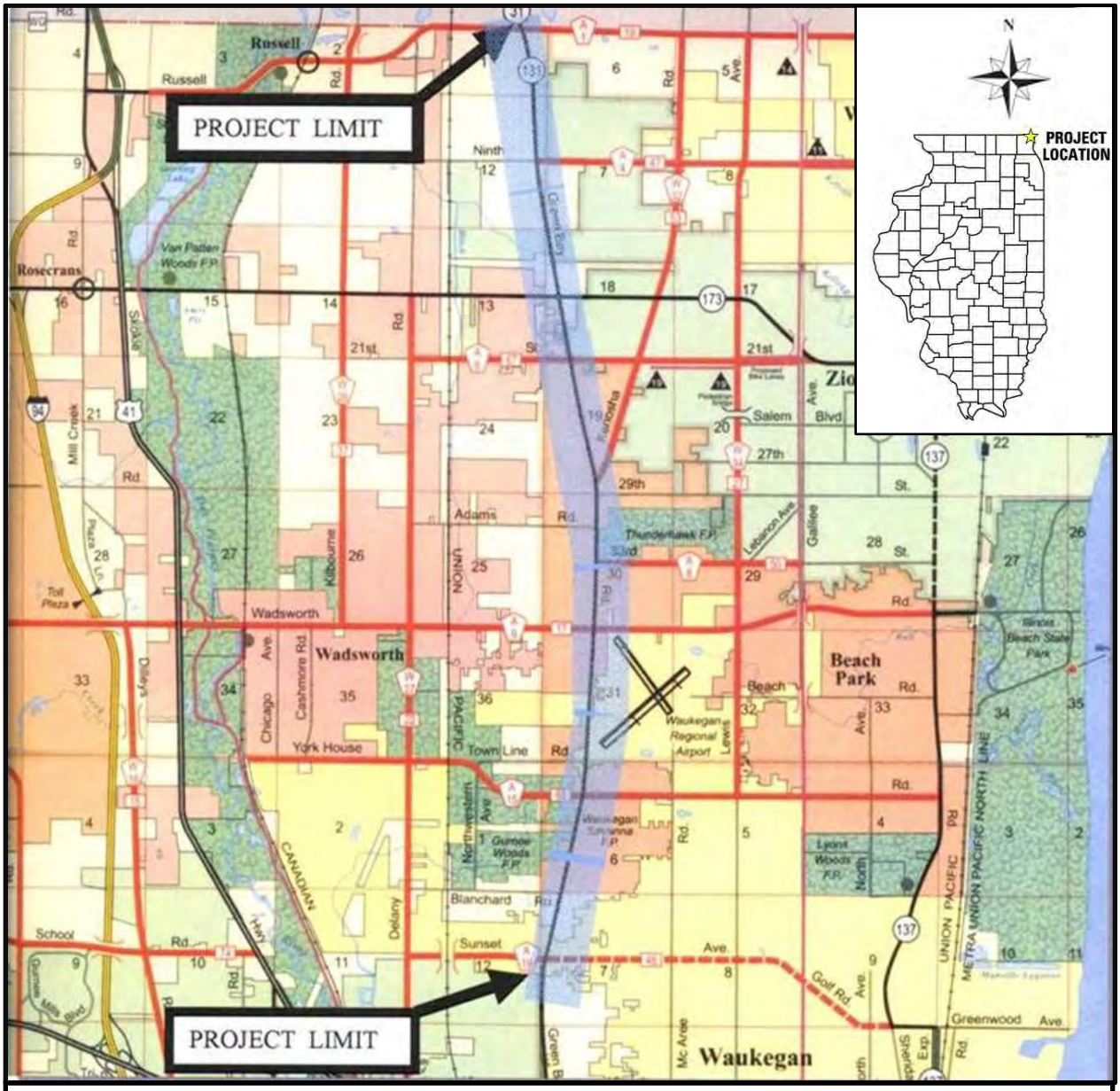
[1] *Lake County 2005 Land Use Map* (October 24, 2007)
[2] *Lake County Future Land Use Map* (Revised November 16, 2010).

Federal and state traffic noise regulations are summarized in **Section 2**. Discussion of common noise environments and noise sensitive receptors is in **Section 3**, addressing field traffic noise monitoring in **Section 4**, a description of the traffic noise analysis methodology in **Section 5**, the TNM results for the existing and future traffic noise levels in **Section 6**, the consideration of traffic noise abatement in **Section 7**, coordination related to undeveloped lands in **Section 8**, discussion of construction noise in **Section 9**, and the traffic noise analysis summary and conclusion in **Section 10**.

Figure 1: Project Location Map



Location Map:
Illinois Route 131 (Russell Road to Sunset Avenue)
Municipalities: Zion, Wadsworth, Beach Park, Waukegan, Gurnee, Winthrop Harbor
County: Lake; Route FAP 880/FAU 2711; Project #: P-91-352-07

2. NOISE BACKGROUND AND REGULATIONS

2.1 Noise Background

Sound is caused by the vibration of air molecules, and is measured on a logarithmic scale using units of decibels (dB). Sound is composed of a wide range of frequencies; however, the human ear is not uniformly sensitive to all frequencies. Therefore, the "A" weighted scale was devised to correspond with the ear's sensitivity. The A-weighting generally weights more heavily noise levels in the humanly audible range and screens out noise levels that cannot be heard but are still generated, such as a high frequency dog whistle. The A-weighted unit is used because:

1) It is easily measured,
2) It approximates the human ear's sensitivity to sounds of different frequencies,
3) It matches attitudinal surveys of noise annoyance better than other noise measurements, and
4) Has been adopted as the basic unit of environmental noise by many agencies around the world in dealing with community noise issues.

The equivalent sound level is the steady-state sound level, A-weighted, that contains the same amount of acoustic energy as the actual time-varying, A-weighted sound level over a specified period of time. If the time period is 1 hour, the descriptor is the hourly equivalent sound level or $L_{eq}(h)$, which is widely used by state highway agencies as a descriptor of traffic noise. It is generally the equivalent level of sound (in decibels or dB(A)) which represents the level of sound, held constant over a specified period of time, which reflects the same amount of energy as the actual fluctuating noise over that time period. $L_{eq}(h)$ is based on the energy average, not a noise level average.

2.2 Federal Regulations

Traffic noise analyses are required for all projects considered a Type I project. The Federal Highway Administration (FHWA) regulations (*23 CFR Part 772*) define Type I projects as follows:

- The construction of a highway on new location; or,
- The physical alteration of an existing highway where there is either:
  + *Substantial Horizontal Alteration*. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future Build condition; or,

  + *Substantial Vertical Alteration*. A project that removes shielding, therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,

- The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
- The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
- The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,

- Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
- The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

This proposed improvement is characterized as a Type I noise project as it includes the construction and widening of existing roadway, and intersection improvements.

The FHWA established noise abatement criteria to determine where noise abatement should be evaluated. Five separate noise abatement criteria (NAC) based upon land use are used by the FHWA to assess potential noise impacts. A traffic noise impact occurs when noise levels approach or exceed the NAC listed in **Table 1**.[3] In determining the applicable noise activity category for the study area, existing land use was reviewed. The applicable NAC for all residential noise receptors evaluated is 67 dB(A) L_{eq}(h).

[3] Based on *23 Code of Federal Regulations Part 772*, Procedures for Abatement of Highway Traffic Noise and Construction Noise. (adopted 2010).

TABLE 1
NOISE ABATEMENT CRITERIA - HOURLY A-WEIGHTED SOUND LEVEL

Activity Category	dB(A) $L_{eq}(h)$	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.
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 structures, radio studios, 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 structures, 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.**

2.3 IDOT Policy

Based on the FHWA regulations, State Highway Authorities are allowed to establish the noise level determined to approach the NAC and the increase in noise levels determined to be a substantial increase. The Illinois Department of Transportation (IDOT) Highway Traffic Noise Assessment Manual and departmental policies[4] define noise impacts as follows:

- Design-year traffic noise levels approach, meet or exceed the NAC, with approach defined as 66 dB(A) for *e.g.*, residential NAC of 67 dB(A) and 71 dB(A) for *e.g.*, restaurant / bars, office NAC of 72 dB(A).

- Design-year L_{eq}(h) traffic noise levels are a substantial increase over existing traffic generated noise levels, defined as an increase of 15 dB(A) or greater.

3. NOISE RECEPTOR SELECTION

Within the study area, single-family residential areas and agricultural areas are the predominant land uses, **Figure 2**. Places of worship, schools, public/private open space, utility/waste facilities, and the Waukegan National Airport occupy portions of the land adjacent to IL Rte. 131. Intermittent forest/grassland areas and retail/commercial areas account for the balance of land use within the study area.[5]

Much of the current agricultural and single-family residential areas are planned for commercial or business uses in the future. The individual land-use plans of the municipalities within the study area reflect a general trend towards a commercial corridor along the IL 131 study area.[6] The vacant and undeveloped areas were reviewed to determine if there are any existing permits for development. Based on the information available from the governing agencies with the permitting jurisdictions, there are no existing permits for development within the project limits.

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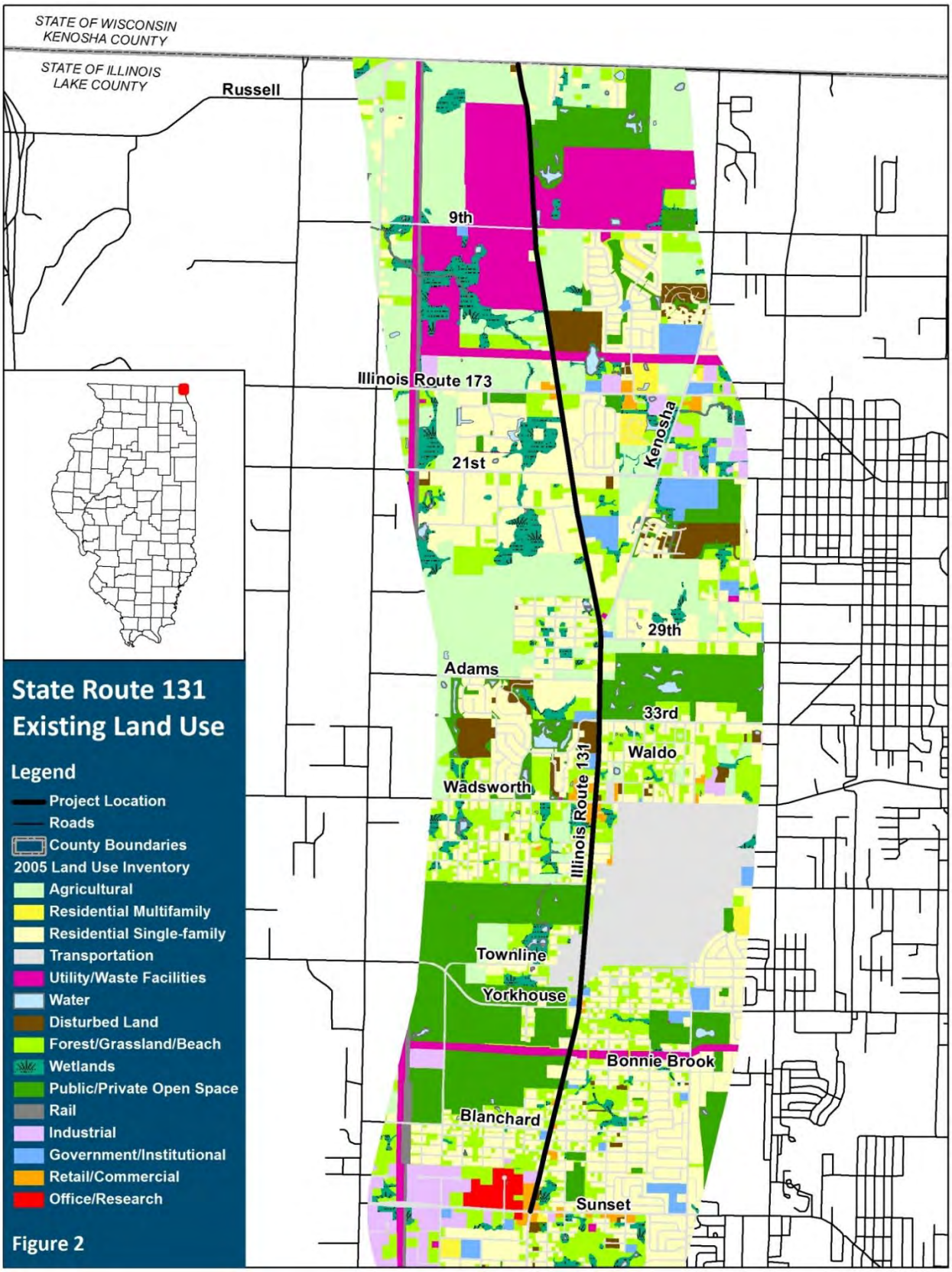
[4] Incorporated in the *Bureau of Design and Environment Manual* (BDE Manual), Chapter 26-6, Illinois Department of Transportation, Springfield, Illinois (revised May 2017); and the *Highway Traffic Noise Assessment Manual* (HTNMA), Illinois Department of Transportation, Division of Highways, Bureau of Design and Environment, Springfield, Illinois (May 2017).
[5] *Lake County 2005 Land Use Map* (October 24, 2007)
[6] *Lake County Future Land Use Map* (Revised November 16, 2010).

Figure 2: Existing Land Use Map



The traffic noise study evaluates the study area using common noise environments (CNEs). A CNE is a group of receptors within the same activity category that are exposed to similar noise sources and levels within 500 feet of the existing and proposed roadway alignments. The project limits contain 45 CNEs based on changes in traffic along IL 131 and changes in Activity Categories defined in **Table 1**. The project limits contain 45 CNEs (CNE 1 through CNE 46 with the exception of CNE 25 that was designated as a relocation after completion of the noise analysis). Within each of the CNEs, the closest receptor was selected to represent the CNE, thereby representing the worst-case traffic noise condition. The represented receptors within the CNEs will have similar traffic noise levels as the selected receptor.

Table 2 lists the receptor and CNE number, land use description, Activity Category and NAC from **Table 1** and the approximate distance to the existing IL Rte. 131 edge of pavement for each of the representative receptors. **Figure 3**, in Appendix A, provides an aerial of the study area presenting the proposed improvements, limits of the CNEs and representative receptors (N1 - N24 and N26 – N46).

The remaining vacant and undeveloped areas were reviewed to determine if there are any existing permits for development. Based on the information available from the governing agencies with permitting jurisdiction, there are no existing permits for development within the project limits.

TABLE 2
REPRESENTATIVE NOISE RECEPTORS

Receptor/CNE	Land Use Description	Activity Category (NAC dB(A))	Distance (Feet) to IL Rte. 131 Existing Edge of Pavement
N1 / CNE 1	Single Family Residential	B (67)	73
N2 / CNE 2	Single Family Residential	B (67)	74
N3 / CNE 3	Place of Worship	C (67)	215
N4 / CNE 4	Single Family Residential	B (67)	62
N5 / CNE 5	Single Family Residential	B (67)	113
N6 / CNE 6	Single Family Residential	B (67)	302
N7 / CNE 7	Single Family Residential	B (67)	85
N8 / CNE 8	Single Family Residential	B (67)	77
N9 / CNE 9	Active Sports Area (Golf Course)	C (67)	72
N10 / CNE 10	Single Family Residential	B (67)	137
N11 / CNE 11	Single Family Residential	B (67)	88
N12 / CNE 12	Single Family Residential	B (67)	103
N13 / CNE 13	School	D (52)	163
N14 / CNE 14	Single Family Residential	B (67)	34
N15 / CNE 15	Single Family Residential	B (67)	76
N16 / CNE 16	Single Family Residential	B (67)	375
N17 / CNE 17	Active Sports Area (Golf Course)	C (67)	107

Receptor/CNE	Land Use Description	Activity Category (NAC dB(A))	Distance (Feet) to IL Rte. 131 Existing Edge of Pavement
N18 / CNE 18	Single Family Residential	B (67)	90
N19 / CNE 19	Single Family Residential	B (67)	137
N20 / CNE 20	Single Family Residential	B (67)	122
N21 / CNE 21	Single Family Residential	B (67)	123
N22 / CNE 22	Single Family Residential	B (67)	100
N23 / CNE 23	Single Family Residential	B (67)	150
N24 / CNE 24	Single Family Residential	B (67)	95
N26 / CNE 26	Single Family Residential	B (67)	58
N27 / CNE 27	Single Family Residential	B (67)	92
N28 / CNE 28	Office	E (72)	129
N29 / CNE 29	Single Family Residential	B (67)	56
N30 / CNE 30	Place of Worship	C (67)	175
N31 / CNE 31	Single Family Residential	B (67)	125
N32 / CNE 32	Single Family Residential	B (67)	59
N33 / CNE 33	Park	C (67)	62
N34 / CNE 34	Single Family Residential	B (67)	357
N35 / CNE 35	Single Family Residential	B (67)	47
N36 / CNE 36	Place of Worship	D (52)	113
N37 / CNE 37	Single Family Residential	B (67)	44
N38 / CNE 38	Single Family Residential	B (67)	107
N39 / CNE 39	Single Family Residential	B (67)	105
N40 / CNE 40	Single Family Residential	B (67)	63
N41 / CNE 41	Office	E (72)	97
N42 / CNE 42	Single Family Residential	B (67)	67
N43 / CNE 43	Office	E (72)	111
N44 / CNE 44	Single Family Residential	B (67)	86
N45 / CNE 45	Office	E (72)	30
N46 / CNE 46	Single Family Residential	B (67)	28

4. FIELD NOISE MEASUREMENTS

Actual noise level measurements characterize existing conditions and are used to validate TNM®2.5 to ensure it accurately predicts each area's noise environment. The traffic volumes and conditions during the actual noise level measurements need to be considered when evaluating field measurements as typical for the area. The following methodology was used to collect noise level measurements.

Traffic noise levels measured during monitoring events are representative of the traffic characteristics (volume, speed and composition) for the period of time measured. This may or may not be the peak-hour noise condition at the location being measured. In addition, the noise levels are also influenced by other noise sources in the area other than the traffic noise and the characteristics of the location, such as shielding afforded by existing berms or structures. Consequently, comparison of the noise levels between locations needs to also consider the variations in site characteristics in addition to varying traffic conditions.

The IDOT Highway Traffic Noise Assessment Manual recommends that in most cases, traffic noise monitoring occurs for 25 to 50 percent of receptor locations selected for noise modeling. Due to the varying land uses along the corridor, many receptors would likely have similar monitored noise levels from similar location, topography, and traffic conditions. Fewer than 25 percent of receptors for this project were monitored, but the receptors monitored are representative of the project area. Noise monitoring was conducted at field sites FS-1 through FS-6. The noise monitoring locations are presented in Appendix A on **Figure 3**.

4.1 Traffic Volumes

Traffic volumes along IL Rte. 131 were simultaneously counted during each 20-minute noise measurement at field sites FS-1 through FS-6. The traffic was counted and classified as automobiles (vehicles with 2-axles and 4-tires), medium trucks (vehicles with 2-axles and 6-tires) and heavy trucks (vehicles with 3 or more axles). The 20-minute traffic counts were multiplied by 3 to estimate the hourly traffic volumes for the validation runs to compare the measured noise levels with the modeled noise levels using the traffic data counted during the noise measurements.

The traffic data counted during the noise monitoring measurements were compared to the peak-hour traffic volumes used for the noise modeling. The automobile volumes counted during the measurement ranged from 17% to 32% of the estimated peak-hourly volumes and the truck volumes ranged from 3% to 4% of the estimated peak-hourly volumes. Trucks account for 13 to 14% of the measured traffic during the noise measurements, compared to the 4 to 14% projected for the daily average.

4.2 Time and Day for Measurements

Noise monitoring was conducted at all sites on June 14, 2011 between the hours of 8:00 AM and 11:10 AM. Traffic was moving under free-flow conditions during the monitoring period.

4.3 Weather Conditions

Weather conditions have some effect on the noise measurement readings. Noise measurements cannot be taken if the wind speed exceeds 12 mph. A wind screen was used at all times during the monitoring to reduce wind noise. The conditions during the monitoring are summarized as follows:

WEATHER CONDITIONS DURING THE NOISE MONITORING

Condition	Required	Actual
Pavement	Dry	Dry
Humidity	Less than 90%	69 - 77
Temperature	14 to 112 degrees F	59 - 62
Wind Speed	Not Greater than 12 m.p.h.	6 - 12

The weather conditions during the noise monitoring were within the recommended ranges for all parameters listed.

4.4 Instrumentation

A Norsonic 118, Integrating Sound Level Meter/Real Time Analyzer (SLM) Type I was used for monitoring the L_{eq}(h) "A" weighted noise level. The instrument was calibrated prior to use. The instrument was set up approximately five feet from the ground and the measurement was conducted for twenty minutes. The noise meter was set in a location where human activity typically occurs or in a location representative of that location.

4.5 Field Noise Monitoring Results and Model Validation

Table 3 summarizes the noise monitoring results for the six locations monitored in the field and the validation results. TNM®2.5 was used to validate the predicted noise levels through comparison with the measured and predicted noise levels. The traffic data counted during the noise measurements was used in TNM®2.5 to model the noise levels during each measurement period. Monitored noise levels are within 3 dB(A) of the modeled noise levels which validates the TNM®2.5 model.

TABLE 3
NOISE MONITORING RESULTS, L_{eq}(h)

Receptor	Distance to Nearest Roadway Centerline, ft.	Noise Level Monitored, dB(A)	Modeled Noise Levels, dB(A)*	Difference in Noise Level, dB(A) L_{eq}(h) (Modeled Minus Monitored)
FS-1	90	64	65	1
FS-2	116	59	62	3
FS-3	172	57	58	1
FS-4	112	61	62	1
FS-5	180	60	58	-2
FS-6	81	66	67	1

*Modeling methodology and results are presented in Section 5 and Section 6, respectively

5. NOISE ANALYSIS METHODOLOGY

Modeling of the traffic noise levels at the forty-five (45) representative receptors located within the project limits were conducted utilizing TNM®2.5. Prediction of noise levels is one step in assessing potential noise impacts and abatement strategies. Traffic noise levels for the 45 receivers were predicted using existing (2012) and future (2040) traffic volumes.

Inputs into TNM®2.5 include traffic volume, traffic mix (automobiles, medium trucks, and heavy trucks), receptor distance, elevation, and average speeds during free-flowing conditions. Information sources used in the analysis are briefly described in the following subsections. The TNM®2.5 files for the IL Rte. 131 were provided to IDOT on a CD.

5.1 Traffic Volumes

The Chicago Metropolitan Agency for Planning (CMAP) provided traffic data for the IL Rte. 131 study corridor and IDS data for eleven of the intersections in the study area from Sunset Avenue on the south to Russell Road on the north. The IDS included AM and PM peak hour traffic volumes for the years 2008 and 2030.[7] In the fall of 2010 CMAP updated the regional traffic model to 2040 projections.[8] Based on these projections the IDS data was updated to 2012 and 2040 volumes. The PM peak hour traffic was used as a worst-case traffic noise scenario as these volumes resulted in the loudest L_{eq}(h) noise levels for a majority of receptors. The planned Kenosha Road safety improvement relocation is not included in the future no build and future build conditions.

5.2 Traffic Composition

Three types of vehicles (automobiles, medium trucks, and heavy trucks) were input into TNM®2.5. The vehicle mix varied along the corridor ranging from 86.4% automobiles with 9.1% medium trucks and 4.6% heavy trucks to 94.8% automobiles, 2.7% medium trucks and 2.5% heavy trucks.

5.3 Receptor Distance/Elevation

Table 2 included the distances of the representative receptors from the IL Rte. 131 existing edge of pavement. The distance and elevation of each receptor directly affects the predicted traffic noise level. These distances vary from 30 feet at Receptor N45 to 375 feet at Receptor N16.

5.4 Speed Conditions

The average speed during free flow conditions for the individual roadways was used for the noise analysis and has been input into the model as 5 mph above the posted speed limit. The existing posted speed limits in the project limits are 45 - 55 mph for IL Rte. 131. The proposed future posted speed limits for IL Rte. 131 will be 45 mph along the entire project corridor.

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[7] Donald P. Kopec, IL 131 (Green Bay Road) from Russell Road to Sunset Avenue, IDOT, addressed to Diane M. O'Keefe, February 20, 2009.

8 Derek Johnson, IL 131 Traffic Volume Projected Percent Increase, addressed to Donald Wittmer and Suheil Acra, May 5, 2011.

6. TNM RESULTS

6.1 Existing, No-Build and Build Receptor Noise Evaluation

Existing (2012), No-build (2040), and build (2040) traffic noise levels were modeled at the 45 representative receptors with TNM®2.5. These representative receptors represent Activity Category B, Category C, Category D, and Category E land uses. **Table 4** presents the results of the TNM®2.5 modeling at the representative receptors. Detailed modeling results for each noise sensitive receptor are included in Appendix B. The receptor locations are presented in Appendix A on **Figure 3**.

TABLE 4
TRAFFIC NOISE PREDICTION RESULTS

Receptor/CNE	Activity Category (NAC dB(A))	Existing Noise Level, dB(A)	No-Build Noise Level, dB(A)	Build Noise Level, dB(A)	Increase from the Existing to Build Scenario, dB(A)	Impact Distinction
N1 / CNE 1	B (67)	68	70	72	4	Impact
N2 / CNE 2	B (67)	68	70	72	4	Impact
N3 / CNE 3	C (67)	59	61	64	5	No Impact
N4 / CNE 4	B (67)	69	72	74	5	Impact
N5 / CNE 5	B (67)	62	66	68	6	Impact
N6 / CNE 6	B (67)	55	58	60	5	No Impact
N7 / CNE 7	B (67)	65	68	72	7	Impact
N8 / CNE 8	B (67)	66	69	73	7	Impact
N9 / CNE 9	C (67)	67	70	72	5	Impact
N10 / CNE 10	B (67)	61	65	69	8	Impact
N11 / CNE 11	B (67)	63	67	69	6	Impact
N12 / CNE 12	B (67)	62	67	71	9	Impact
N13 / CNE 13	D (52)	35	39	41	6	No Impact
N14 / CNE 14	B (67)	68	72	73	5	Impact
N15 / CNE 15	B (67)	68	72	72	4	Impact
N16 / CNE 16	B (67)	54	58	60	6	No Impact
N17 / CNE 17	C (67)	67	70	71	4	Impact
N18 / CNE 18	B (67)	67	71	71	4	Impact
N19 / CNE 19	B (67)	63	67	68	5	Impact
N20 / CNE 20	B (67)	64	68	70	6	Impact
N21 / CNE 21	B (67)	63	67	69	6	Impact
N22 / CNE 22	B (67)	65	68	70	5	Impact
N23 / CNE 23	B (67)	62	65	68	6	Impact
N24 / CNE 24	B (67)	66	70	71	5	Impact

Receptor/CNE	Activity Category (NAC dB(A))	Existing Noise Level, dB(A)	No-Build Noise Level, dB(A)	Build Noise Level, dB(A)	Increase from the Existing to Build Scenario, dB(A)	Impact Distinction
N26 / CNE 26	B (67)	67	71	72	5	Impact
N27 / CNE 27	B (67)	64	68	71	7	Impact
N28 / CNE 28	E (72)	64	68	68	4	No Impact
N29 / CNE 29	B (67)	68	72	73	5	Impact
N30 / CNE 30	C (67)	62	65	66	4	Impact
N31 / CNE 31	B (67)	64	67	68	4	Impact
N32 / CNE 32	B (67)	67	71	73	6	Impact
N33 / CNE 33	C (67)	68	71	72	4	Impact
N34 / CNE 34	B (67)	53	56	58	5	No Impact
N35 / CNE 35	B (67)	69	72	73	4	Impact
N36 / CNE 36	D (52)	39	42	43	4	No Impact
N37 / CNE 37	B (67)	70	73	73	3	Impact
N38 / CNE 38	B (67)	67	68	69	2	Impact
N39 / CNE 39	B (67)	66	68	69	3	Impact
N40 / CNE 40	B (67)	69	71	72	3	Impact
N41 / CNE 41	E (72)	67	69	70	3	No Impact
N42 / CNE 42	B (67)	67	70	72	5	Impact
N43 / CNE 43	E (72)	66	68	69	3	No Impact
N44 / CNE 44	B (67)	67	69	71	4	Impact
N45 / CNE 45	E (72)	73	74	75	2	Impact
N46 / CNE 46	B (67)	72	74	74	2	Impact

The existing exterior 2012 noise levels range from 53 dB(A) at N34 to 73 dB(A) at N45. The projected No-build exterior 2040 traffic noise levels range from 56 dB(A) at N34 to 74 dB(A) at N45 and N46. Traffic noise levels increase between 1 dB(A) and 4 dB(A) from the existing scenario to the No-build scenario due to an increase in traffic volumes.

The projected Build exterior 2040 traffic noise levels range from 58 dB(A) at N34 to 75 dB(A) at N45. The projected Build 2040 noise levels increase between 2 dB(A) and 8 dB(A) from the existing condition.

Under the 2040 build scenario, 36 receptors would approach, equal or exceed their respective NAC, and therefore warrant a noise abatement analysis for receptors with exterior areas of frequent human use. None of the representative receptors are considered impacted due to a substantial increase (greater than 14 dB(A) in traffic noise levels between the Existing and Build condition. Representative receptors with a predicted noise impact are identified in **Table 4**.

7. ABATEMENT ANALYSIS

7.1 Abatement Alternatives

Traffic noise abatement measures were considered for the 32 representative receptors that approach, equal, or exceed the NAC of 67 dB(A) L_{eq}(h), 31 Activity Category B receptors and one Activity Category C receptor (N30) which had an outdoor activity area. The most feasible approach to abating noise impacts in this area would be to construct a noise barrier. This may include a noise barrier, an earth berm or a combination of both. Noise barriers placed adjacent to the roadway will attenuate traffic-related noise and are the most practical measure for this project. An effective noise barrier must be tall enough to break the line-of-sight between the receptor and source and typically extends beyond the last receptor four times the distance between the receptor and noise barrier. Noise barriers have a zone of effectiveness, or shadow zone, which is generally within 200 feet of the noise barrier; therefore, less noise reduction is achieved as the distance between the receptor and the noise barrier increases.

TNM®2.5 was used to perform the noise barrier feasibility and reasonableness evaluation for the impacted receptors. When determining if an abatement measure is feasible and reasonable, the noise reductions achieved and total cost per residence benefited are considered.

7.2 Feasibility and Reasonableness

An abatement analysis of noise abatement measures was conducted in conformance with FHWA requirements contained in Title 23 *Code of Federal Regulations* Part 772 for each of the impacted receptors. In order for a noise abatement measure to be constructed, it must meet both the feasibility and reasonableness criteria, described below.

7.2.1 Feasibility

The feasibility evaluation is a combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure. The acoustical portion of the IDOT policy, as required by FHWA regulations, considers noise abatement to be feasible if it achieves at least a 5 dB(A) traffic noise reduction for at least two impacted receptors. Factors including but not limited to safety, barrier height, topography, drainage, utilities, maintenance, and access issues also are considered.

7.2.2 Reasonableness

As per the FHWA regulations, a noise abatement measure is determined to be reasonable when all three of the following reasonableness evaluation factors are met:

- cost effectiveness of the highway traffic noise abatement measure;
- achievement of IDOT's noise reduction design goal of at least 8 dB(A); and,
- consideration of the viewpoints of the benefited receptors (property owners and residents) results in a majority desiring the abatement.

A noise abatement measure is considered cost-effective to construct if the noise barrier construction cost per benefited receptor is less than the allowable cost per benefited receptor. A benefited receptor is any receptor that is afforded at least a 5 dB(A) traffic noise reduction from the proposed noise abatement measure. The FHWA regulations allow each State Highway Authority to establish cost criteria for determining cost effectiveness.

IDOT policy establishes the actual cost per benefited receptor shall be based on a noise barrier cost of $30 per square foot, which includes engineering, materials, and construction. The base value allowable cost per benefited receptor is $30,000 per benefited receptor, which can be increased based on three factors as summarized below:

- the absolute noise level of the benefited receptors in the design year build scenario before noise abatement;
- the incremental increase in noise level between the existing noise level at the benefited receptor and the predicted build noise level before noise abatement; and
- the date of development compared to the construction date of the highway. These factors are considered for all benefited receptors.

Absolute Noise Level Consideration

Predicted Build Noise Level Before Noise Abatement	Dollars Added to Base Value Cost per Benefited Receptor
Less than 70 dB(A)	$0
70 to 74 dB(A)	$1,000
75 to 79 dB(A)	$2,500
80 dB(A) or greater	$5,000

Increase in Noise Level Consideration

Incremental Increase in Noise Level Between the Existing Noise Level and the Predicted Build Noise Level Before Noise Abatement	Dollars Added to Base Value Cost per Benefited Receptor
Less than 5 dB(A)	$0
5 to 9 dB(A)	$1,000
10 to 14 dB(A)	$2,500
15 dB(A) or greater	$5,000

New Alignment / Construction Date Consideration

Project is on new alignment OR the receptor existed prior to the original construction of the highway	Dollars Added to Base Value Cost per Benefited Receptor
No for both	$0
Yes for either	$5,000

Note: No single optional reasonableness factor shall be used to determine that a noise abatement measure is unreasonable.

The IDOT noise reduction design goal is to achieve an 8 dB(A) traffic noise reduction at a minimum of one benefited receptor. If a noise abatement option is feasible, achieves the cost-effective criterion, and achieves the IDOT noise reduction design goal, the benefited receptors will be solicited for their opinion on the construction of the noise barrier.

7.3 Noise Barrier Analysis

TNM®2.5 was used to model 75 noise barriers for the CNEs with representative receptors within the project limits that approached, equaled or exceeded the NAC. When determining if an abatement measure is feasible and reasonable; the noise reductions achieved, number of residences benefited, total barrier cost, and total cost per residence benefited are compared to IDOT's feasibility and reasonableness criteria. The noise barriers, B1 through B74 are shown in Appendix A on **Figure 3**. A detailed summary of the noise abatement analysis is included in Appendix C.

7.3.1 Feasibility

Fifty-seven noise barriers could not achieve the feasibility criteria of at least a 5 dB(A) reduction for at least two impacted receptors. Therefore, noise barriers B1, B3, B4, B6, B7, B8, B11, B13, B14, B15, B16, B17, B18, B19, B20, B21, B22, B23, B24, B26, B27, B28, B30, B32, B34, B37, B38, B39, B40, B41, B42, B43, B44, B46, B47, B47a, B48, B49, B50, B51, B53, B55, B56, B57, B59, B60, B61, B62, B64, B65, B66, B68, B69, B70, B71, B72, and B74 were found to be not feasible and not considered in any further analysis.

7.3.2 Reasonableness

7.3.2.1 Noise Reduction Design Goal

Seven of the 18 feasible noise barriers could not achieve the noise reduction design goal of an 8 dB(A) traffic noise reduction at one or more benefited receptors. Therefore, noise barriers B5, B25, B29, B35, B52, B54, and B58 were found to not be reasonable and considered in any further analysis.

Eleven of the remaining 18 feasible noise barriers would meet the first criterion of reasonableness, as they achieved the IDOT noise reduction design goal of at least an 8 dB(A) traffic noise reduction at one or more benefited receptors. Noise barriers B2, B9, B10, B12, B31, B33, B36, B45, B63, B67, and B73 were then evaluated for cost-effectiveness. **Table 5** summarizes the adjusted allowable cost per benefited receptor calculations for the 11 noise barriers. **Table 6** presents the traffic noise abatement results.

Table 5
Adjusted Allowable Cost Per Benefited Receptors

Barrier Number	Receptor / CNE Analyzed	Total Number of Benefited Receptors	Adjustment Factor Range	Allowable Cost Per Benefited Receptor
B2	R2, R4 / CNE 1	2	$1,000	$31,000
B9	R16, R17 / CNE 4	2	$1,000 - $2,000	$31,500
B10	R18, R19 / CNE 4	2	$0 - $2,000	$31,000
B12	R20a, R21 / CNE 4	2	$1,000 - $2,000	$31,500
B31	R52, R53 / CNE 14	2	$0 - $2,000	$31,000
B33	R58 - R67 / CNE 14	10	$0 - $2,000	$31,400
B36	N15, R91 / CNE 15	2	$1,000	$31,000
B45	R106, R108 / CNE 26	2	$1,000 - $2,000	$31,500
B63	R142, R143 / CNE 32	2	$2,000	$32,000
B67	R150 / CNE 37	3	$1,000	$31,000
B73	R164 / CNE 44	2	$1,000	$31,000

Table 6
Traffic Noise Abatement Results

Barrier Number	Receptor / CNE Analyzed	Barrier Length, feet	Barrier Height, feet	Total Barrier Square Footage	Total Noise Barrier Cost[1]	Total Benefited Receptors	Noise Barrier Cost Per Benefited Receptor	Allowable Cost Per Benefited Receptor
B2	R2, R4 / CNE 1	240	9 - 11	2,463	$73,890	2	$36,945	$31,000
B9	R16, R17 / CNE 4	182	9 - 11	1,891	$56,730	2	$28,365	$31,500
B10	R18, R19 / CNE 4	243	11 - 13	3,028	$90,840	2	$45,420	$31,000
B12	R20a, R21 / CNE 4	315	13 - 19	5,538	$166,140	2	$83,070	$31,500
B31	R52, R53 / CNE 14	297	13 - 15	4,256	$127,680	2	$63,840	$31,000
B33	R58 - R67 / CNE 14	854	10 - 13	9,792	$293,760	10	$29,376	$31,400
B36	N15, R91 / CNE 15	347	7 - 15	3,707	$111,210	2	$55,605	$31,000
B45	R106, R108 / CNE 26	375	9 - 21	6,262	$187,860	2	$93,930	$31,500
B63	R142, R143 / CNE 32	217	7 - 9	1,728	$51,840	2	$25,920	$32,000
B67	R150 / CNE 37	493	9 - 15	5,627	$168,810	3	$56,270	$31,000
B73	R164 / CNE 44	261	17 - 19	4,719	$141,570	2	$70,785	$31,000

[1] Based on $30.00 per square foot.

Three of the 11 noise barriers which were feasible (5 dB(A) reduction for at least two impacted receptors) and reasonable (8 dB(A) traffic noise reduction at one or more benefited receptors) were found to cost-effective and reasonable as stand-alone barriers (B9, B33, and B63). The other 8 noise barriers were not cost-effective.

7.3.2.2 Cost-Averaging

Cost averaging of noise barriers uses the cumulative average estimated build cost of noise abatement per benefited receptor and the cumulative average adjusted allowable cost per benefited receptor. For a noise barrier to be considered as part of a cost averaging evaluation, the estimated build cost of the noise barrier per benefited receptor may not exceed two times the adjusted allowable cost per benefited receptor. If the noise barrier collective average estimated build cost per benefited receptor is less than the collective average adjusted allowable cost per benefited receptor the noise barrier achieves the cost reasonableness criterion.

After each noise barrier has been evaluated independently, the noise barriers are ranked in order of increasing ratio of the estimated build cost per benefited receptor to the adjusted allowable cost per benefited receptor. This method ranks them in order of increasing cost effectiveness based on the ability to achieve the economic reasonability criterion. The noise barriers with values greater than 2.0 are removed from the evaluation, as these will be the ones for which the estimated build cost is more than double the adjusted allowable cost per benefited receptor.

The three noise barriers that were found to be cost-effective and reasonable as stand-alone noise barriers were cumulatively averaged with 4 other noise barriers that did not exceed the two times the adjusted allowable cost per benefited receptor. The results of the cost averaging analysis are presented in **Table 7**. Based on the cumulative cost averaging analysis one more noise barrier was determined to be cost-effective, (B2).

Table 7
Cost Averaging Analysis Summary

Barrier Number	CNE No.	No. of Benefited Receptors	Noise Barrier Cost	Estimated Build Cost Per Benefited Receptor	Adjusted Allowable Cost Per Benefited Receptor	Ratio of Est. Build/ Adjust. Allowable	Cumulative Estimated Build Cost/Benefited	Cumulative Adjusted Allowable Cost/Benefited	Result of Determination
B63	32	2	$51,840	$25,920	$32,000	0.81	$25,920	$32,000	Cost-Effective Stand Alone
B9	4	2	$56,730	$28,365	$31,500	0.90	$27,143	$31,750	Cost-Effective Stand Alone
B33	14	10	$293,760	$29,376	$31,400	0.94	$28,738	$31,500	Cost-Effective Stand Alone
B2	1	2	$73,890	$36,945	$31,000	1.19	$29,764	$31,438	Cost-Effective Cumulative
B10	4	2	$90,840	$45,420	$31,000	1.47	$31,503	$31,389	Not Cost-Effective
B36	15	2	$111,210	$55,605	$31,000	1.79	$33,914	$31,350	Not Cost-Effective
B67	37	3	$168,810	$56,270	$31,000	1.82	$36,830	$31,304	Not Cost-Effective

7.3.3 Solicitation of Viewpoints

The final component of reasonableness is obtaining the viewpoints of benefited receptors, as outlined in Chapter 26-6 of the BDE Manual and the IDOT Highway Traffic Noise Assessment Manual. The viewpoints of benefited receptors shall be solicited through public involvement, for the 4 noise barriers determined to be feasible, achieve the noise reduction design goal, and cost-effectiveness. The viewpoints of benefited receptors for the four barriers shall be solicited to determine the desire for implementation of the noise abatement measure. Benefited receptors include property owners and renters/leasers residing on the benefited property.

7.4 Statement of Likelihood

Based on the traffic noise analysis and noise abatement evaluation conducted, highway traffic noise abatement measures are likely to be implemented based on preliminary design. The 4 noise barriers determined to meet the feasibility and reasonableness criteria, either as being cost-effective stand alone or cumulative are identified in **Table 7**. If it subsequently develops during final design that constraints not foreseen in the preliminary design or public input substantially change, the abatement measures may need to be modified or removed from the project plans. A final decision on the installation of abatement measures will be made upon completion of project's final design and the public involvement process.

8. COORDINATION WITH LOCAL OFFICIALS FOR UNDEVELOPED LANDS

The project limits are completely within Lake County and is adjacent to portions of the City of Waukegan, City of Zion, Village of Beach Park, and Village of Wadsworth. The *Regional Framework Plan, Lake County, Illinois*[9] was reviewed for future land use goals for the undeveloped lands along the project. **Figure 4** depicts the future land use within the project limits. The distance from the roadway where the traffic noise levels approaches the NAC (66 dB(A) for Activity Category B) in the build condition was estimated for the undeveloped agricultural land**.** If these were developed in the future, this is where a traffic noise impact would be assessed. In addition to the letter, an exhibit will be provided depicting the approximate distance where the NAC is expected to approach the NAC with incorporation of the proposed changes to IL Rte. 131.

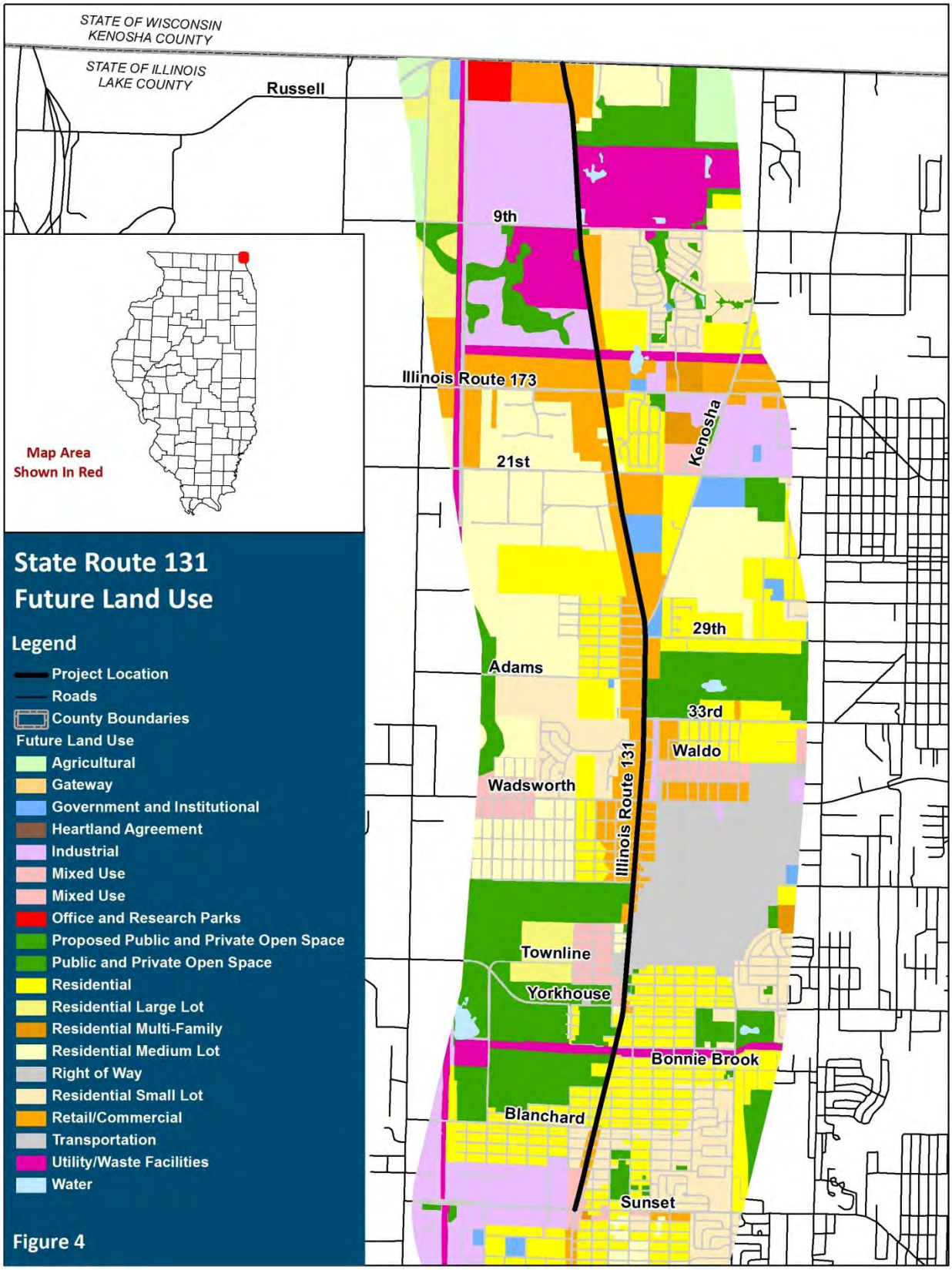
There are several scattered parcels of vacant or undeveloped lands along the IL Rt. 131 study corridor. Future noise levels at adjacent developed properties were used to establish the distances to 66 and 71 dB(A) L_{eq}(h). Lands that could be developed in the future as Activity Categories B or C have a 139 ft. distance to 66 dB(A) along IL Rte. 131, from Sunset Ave to IL Rte. 173 (13 parcels in this area will be subject to this criteria), and from IL Rte. 173 to Russell Rd (1 parcel in this area will be subject to this criteria) the distance would be 163 ft. Lands that could be developed as Activity Category E have an 83 ft. distance to 71 dB(A) from Sunset Ave to IL Rte. 173 (41 parcels in this area will be subject to this criteria); from IL Rte. 173 to Russell Rd (10 parcels in this area will be subject to this criteria) it would be 114 ft. These distances were developed to assist local planning authorities in developing land use control over the remaining undeveloped lands along the project in order to prevent further development of incompatible land use.

The fifth combined Corridor Planning Group (CPG) and Technical Advisory Group (TAG) meeting for the IL Rte. 131 (Green Bay Road) project was held on Monday, August 29, 2016. After the

[9] Lake County Planning, Building and Development Department. Adopted: November 9, 2004. Revised: February 13, 2007 and July 8, 2008.

presentation and the open question and answer session, the project team met with each municipality in attendance individually to specifically discuss how the noise analysis affects each community for undeveloped lands. The noise analysis was discussed with the City of Zion and Village of Beach Park. The IDOT project team sent this same information to the local agencies who were not in attendance, which included Village of Wadsworth, City of Waukegan, Newport Township, Benton Township, Waukegan Township and Lake County. See Appendix D for the information shared with the local agencies on the noise analysis of undeveloped lands.

Figure 4: Future Land Use Map



9. CONSTRUCTION NOISE

Trucks and machinery used for construction produce noise which may affect some land uses and activities during the construction period. Residents along the alignment will at some time experience perceptible construction noise from implementation of the project. To minimize or eliminate the effect of construction noise on these receptors, mitigation measures have been incorporated into the Illinois Department of Transportation's Standard Specifications for Road and Bridge Construction as Article 107.35.

10. SUMMARY

This traffic noise study has been conducted to evaluate traffic noise for the proposed IL Rte. 131 improvements. Traffic noise was evaluated at 45 receptor locations. The existing exterior 2012 noise levels range from 53 dB(A) at N34 to 73 dB(A) at N45. The projected exterior no-build 2040 traffic noise levels range from 56 dB(A) at N34 dB(A) to 74 dB(A) at N45 and N46. Traffic noise levels increase between 1 dB(A) and 4 dB(A) from the existing scenario to the No-build scenario due to an increase in traffic volumes.

The projected existing build 2040 traffic noise levels range from 58 dB(A) at N34 to 75 dB(A) at N45. The projected Build 2040 noise levels increases between 2 dB(A) and 8 dB(A) from the existing condition.

Under the 2040 build scenario, 38 receptors would approach, equal or exceed their respective FHWA NAC, and therefore warrant a noise abatement analysis for receptors with exterior areas of frequent human use. None of the representative receptors are considered impacted due to a substantial increase (at least 15 dB(A) or greater) in traffic noise levels between the Existing and Build condition.

Seventy-five noise barriers were evaluated. Fifty-seven noise barriers were not feasible, seven noise barriers did not achieve design goal of at least 8 dB(A) for at least one benefited receptor. The remaining 11 feasible noise barriers that achieved the noise reduction design goal were evaluated for cost-effectiveness. Three noise barriers met the feasibility and reasonability criterion as being a cost-effective stand-alone noise barrier. Cost averaging resulted in one additional noise barrier becoming cost-effective.

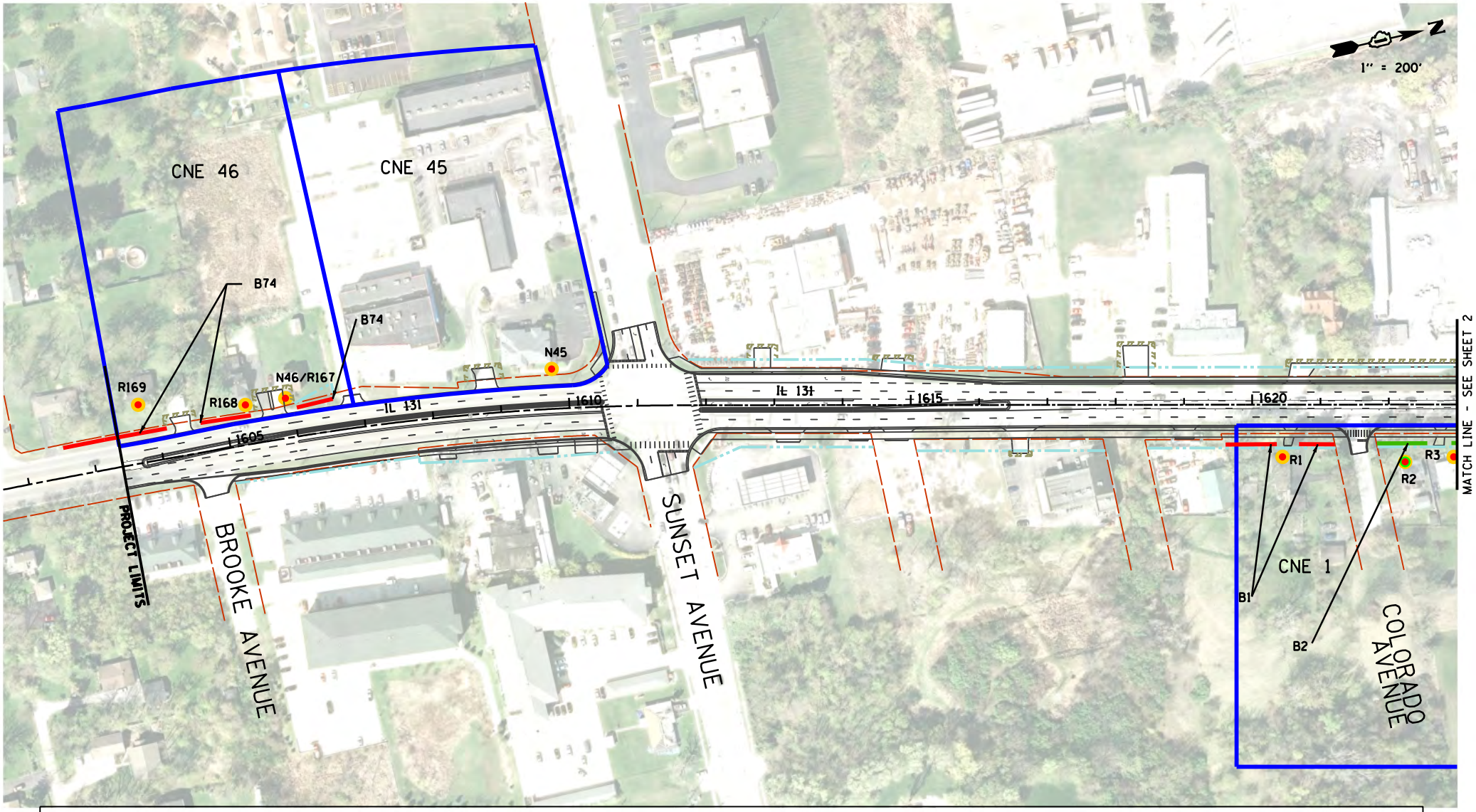
Based on the traffic noise analysis and noise abatement evaluation conducted for the proposed IL Rte. 131 improvements, noise barriers meeting IDOT's definition of feasibility and reasonableness have been identified for implementation at four locations based on preliminary design. These four noise barriers are identified in **Table 7** and shown in Appendix A on **Figure 3**. The final step in determining reasonableness is to solicit the viewpoints of the benefited receptors.

If it subsequently develops during final design that constraints not foreseen in the preliminary design occur, or the benefited receptors viewpoints substantially changes reasonableness, the abatement measure may need to be modified or removed from the project plans. A final decision on the installation of abatement measures will be made upon completion of project's final design and the public involvement process.

APPENDIX A

FIGURE 3

NOISE MONITORING, RECEPTORS AND NOISE BARRIER LOCATIONS



LEGEND:

- COMMON NOISE ENVIRONMENT
- NOISE MODELING SITES
- NOISE MEASUREMENT SITES
- IMPACTED RECEPTORS
- BENEFITED RECEPTORS
- EXISTING ROW
- PROPOSED ROW
- TEMPORARY CONSTRUCTION EASEMENT
- PERMANENT EASEMENT
- RETAINING WALL
- NOISE ABATEMENT MEASURE NOT FEASIBLE
- NOISE ABATEMENT MEASURE NOT REASONABLE (DOES NOT ACHIEVE NOISE REDUCTION DESIGN GOAL)
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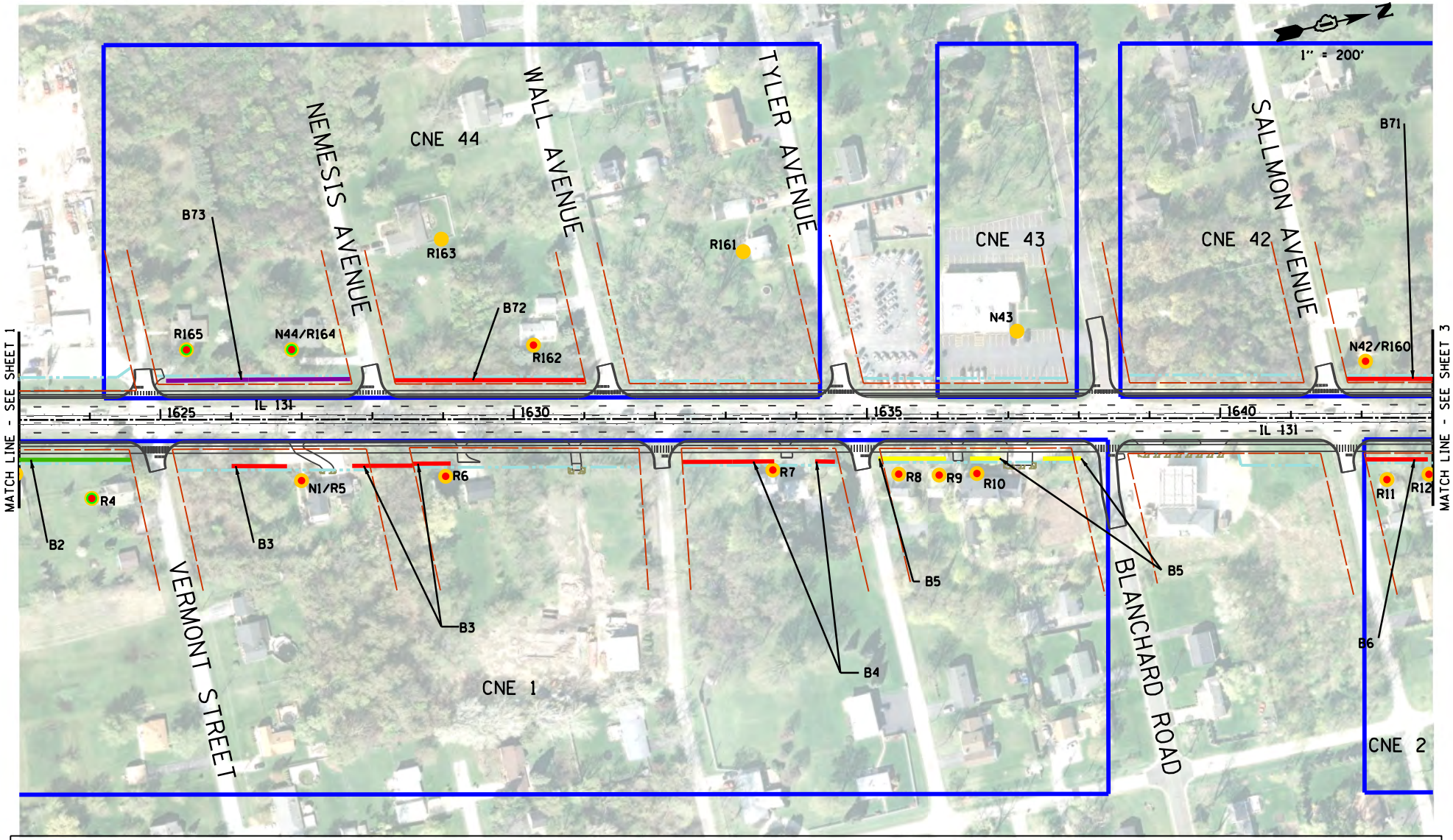
ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
NOISE MONITORING, RECEPTORS AND MODEL NOISE BARRIER LOCATIONS

AUGUST 2017



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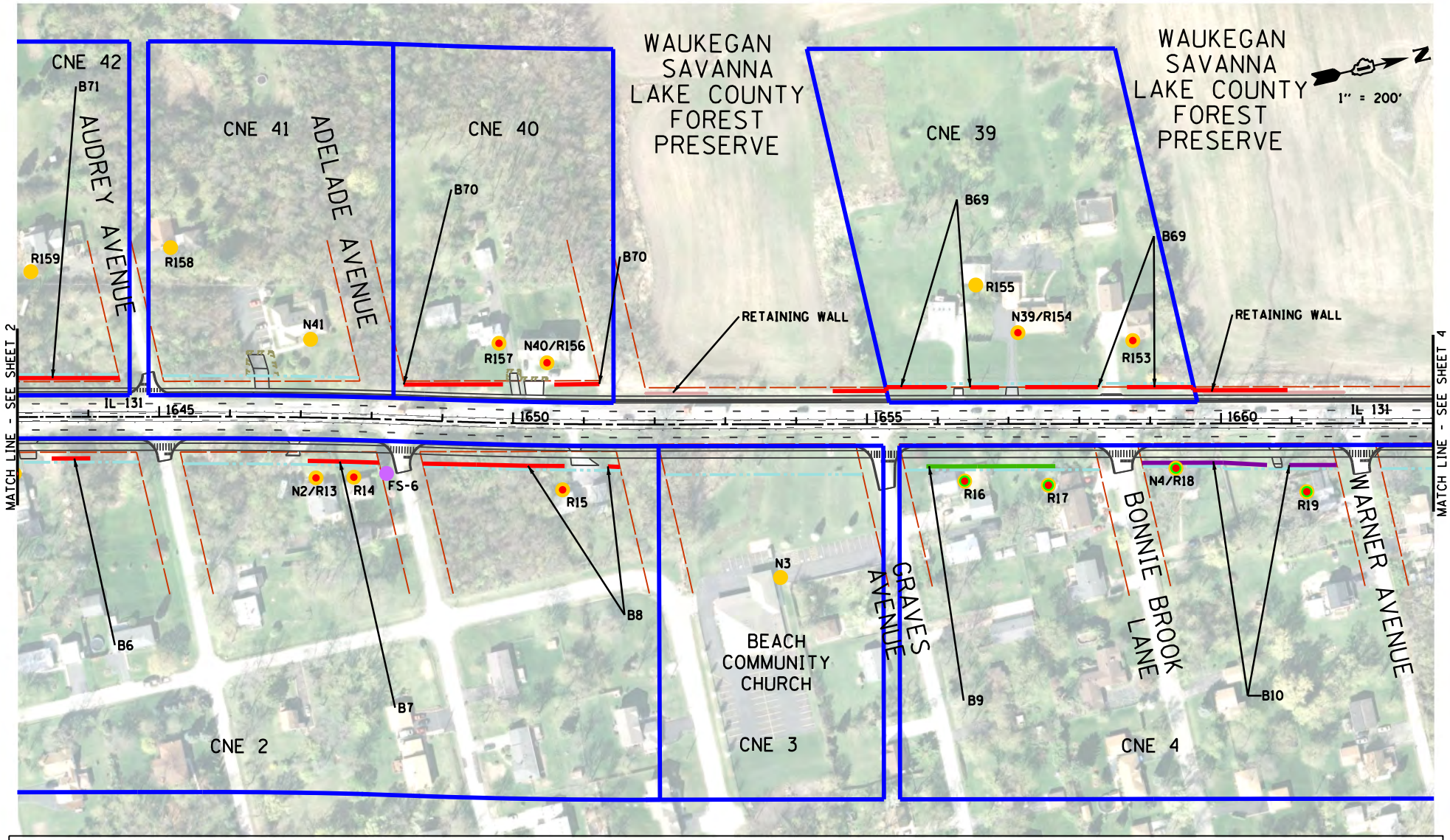
AUGUST 2017



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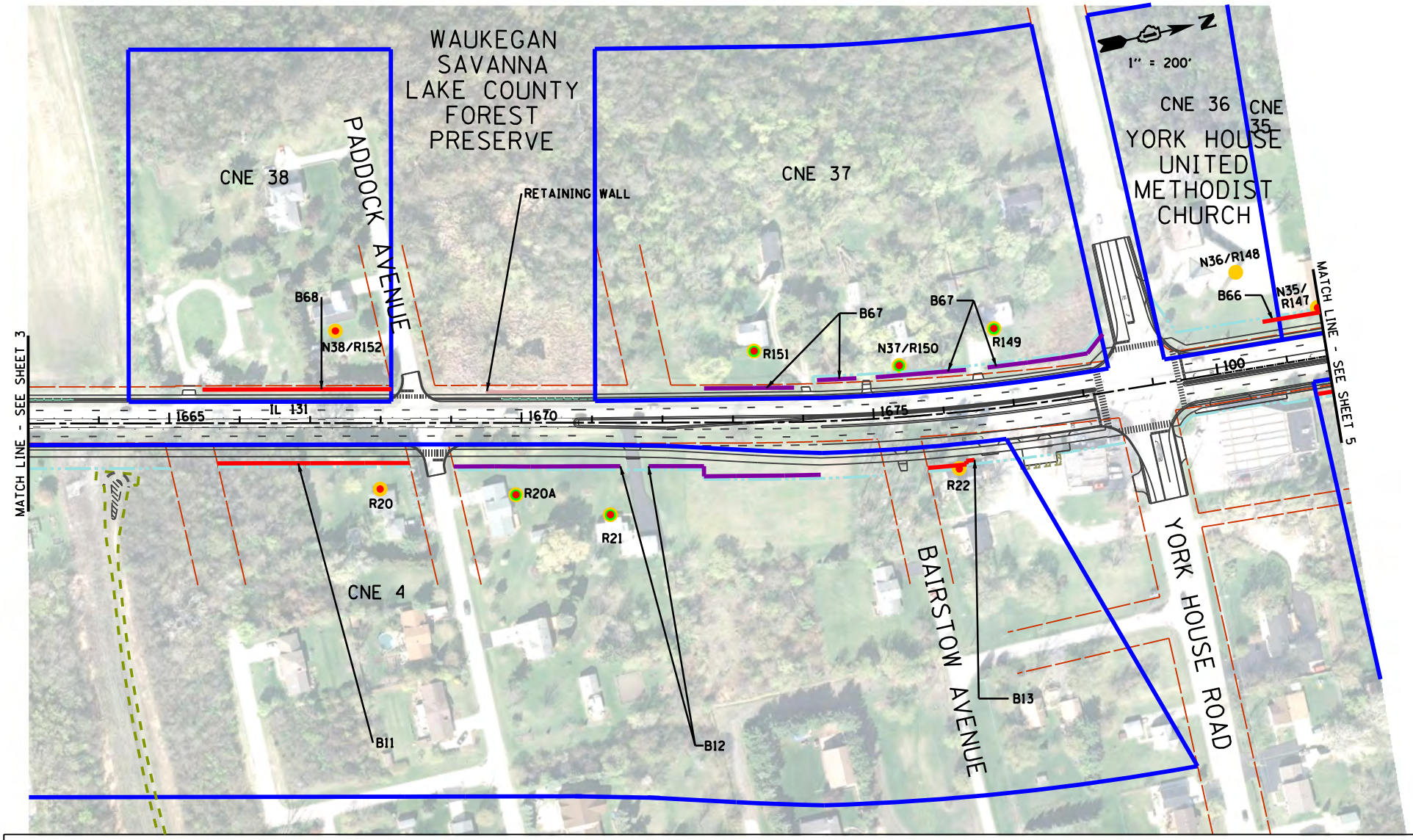

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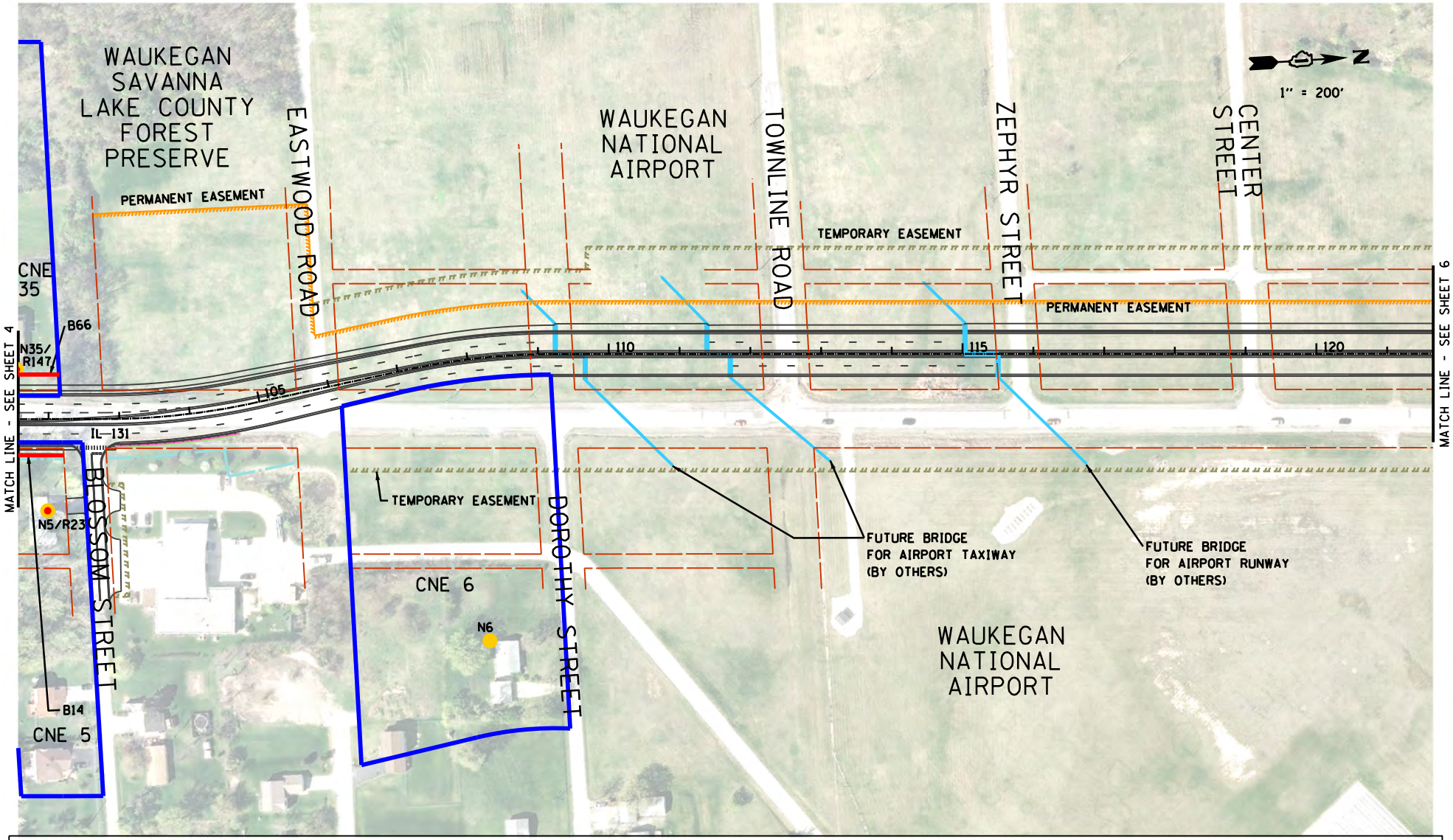

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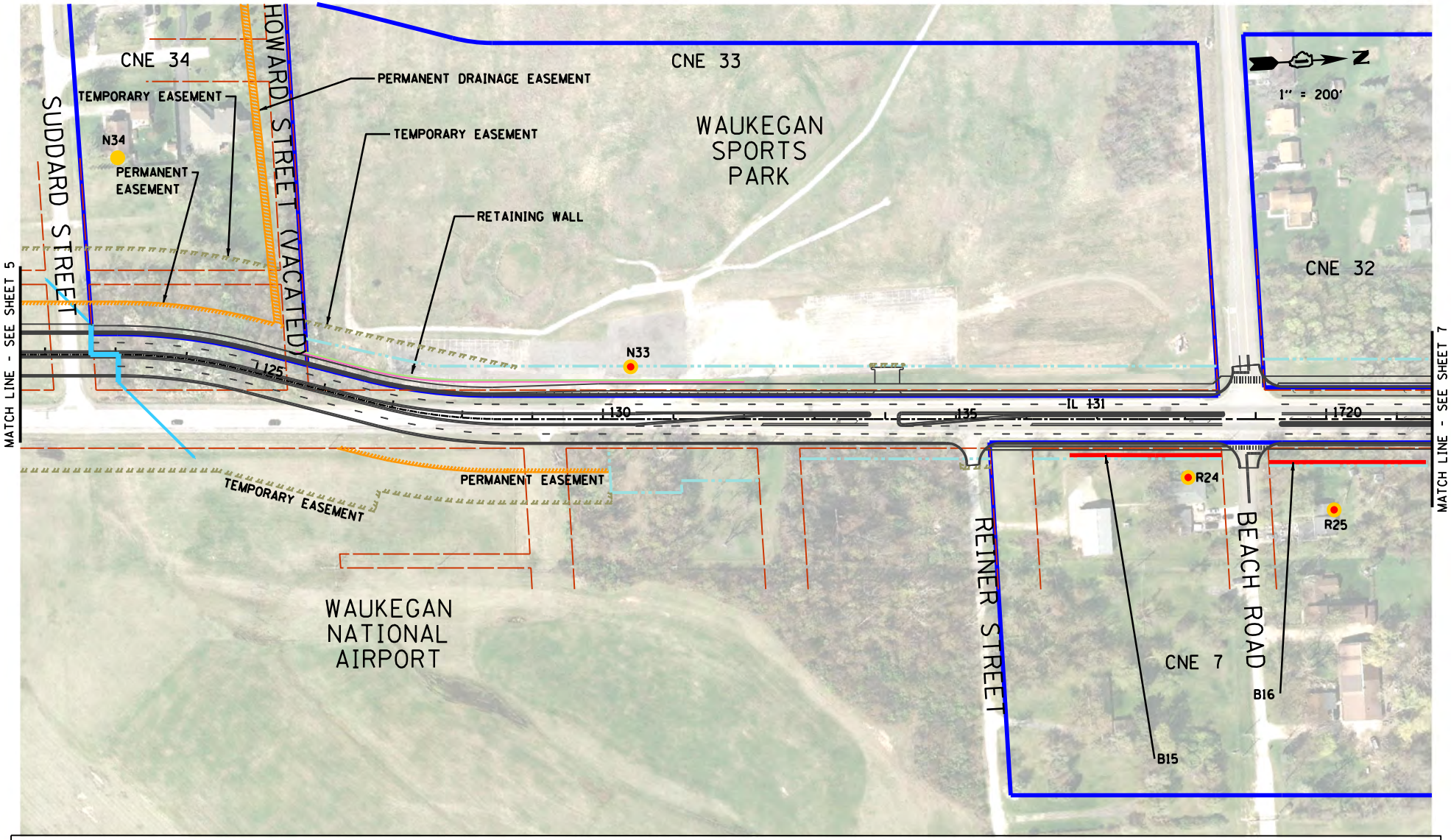

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
NOISE MONITORING, RECEPTORS AND MODEL NOISE BARRIER LOCATIONS

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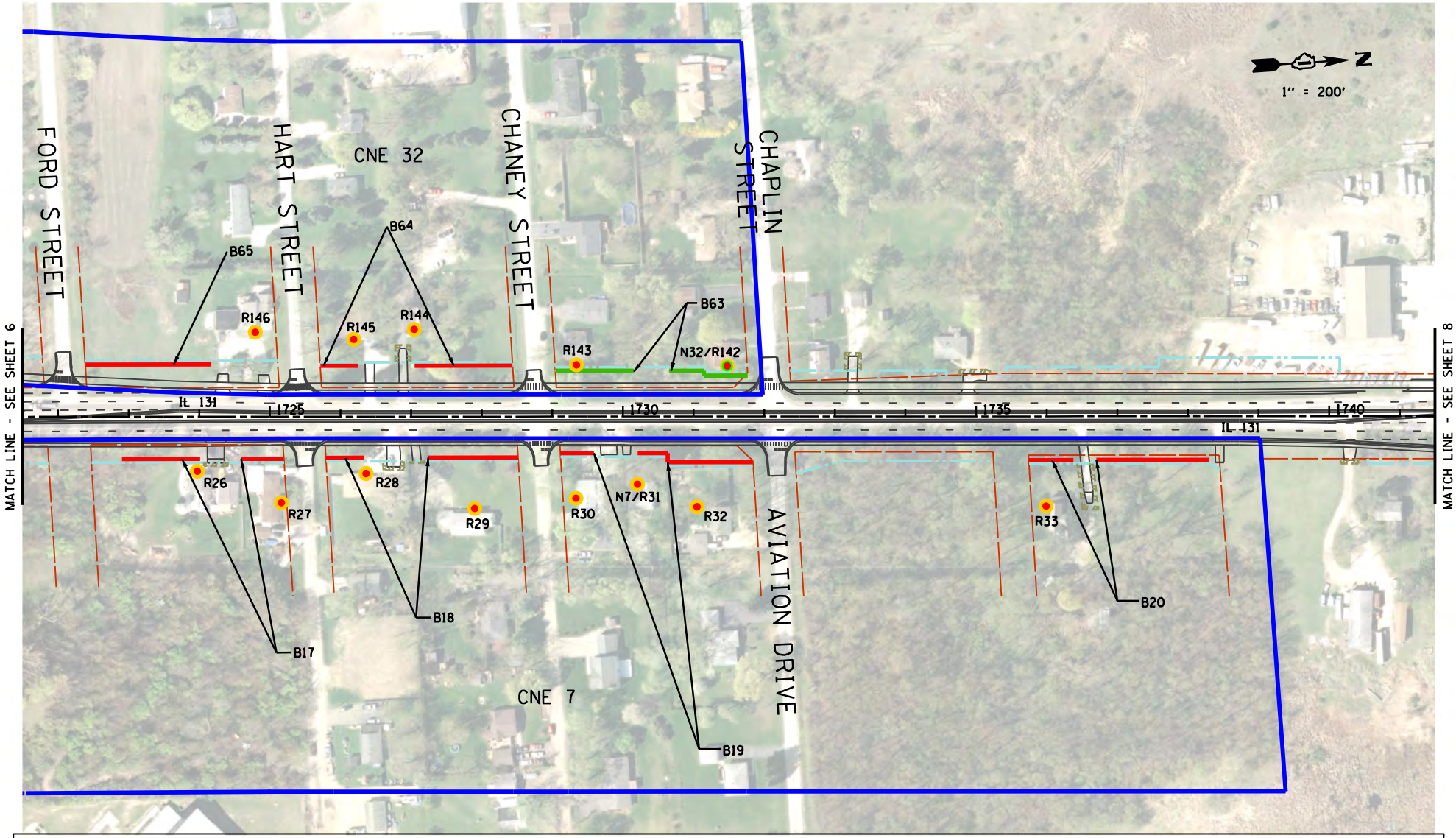

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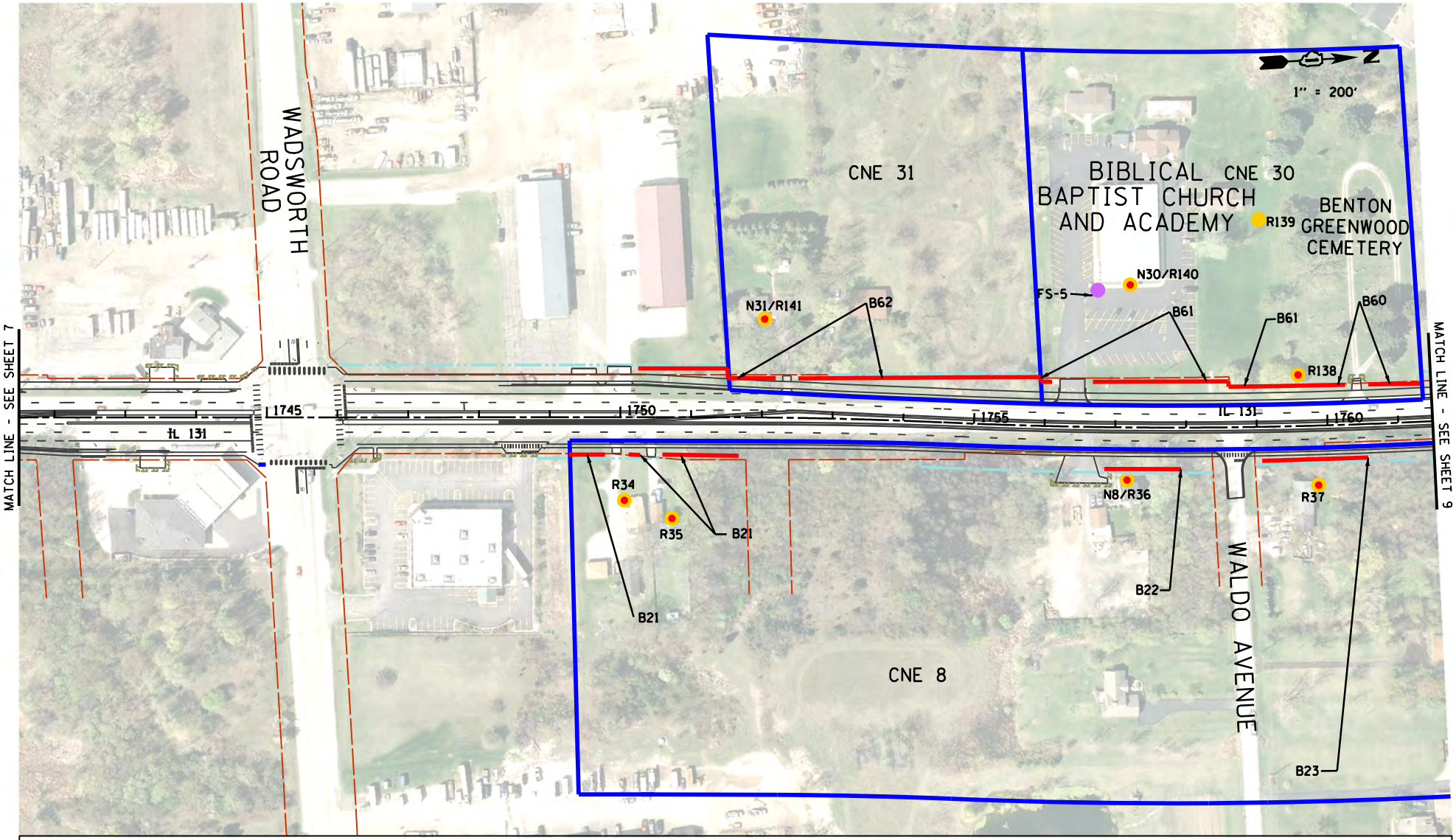
ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
NOISE MONITORING, RECEPTORS AND MODEL NOISE BARRIER LOCATIONS

AUGUST 2017



LEGEND:

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- NOISE MODELING SITES
- NOISE MEASUREMENT SITES
- IMPACTED RECEPTORS
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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

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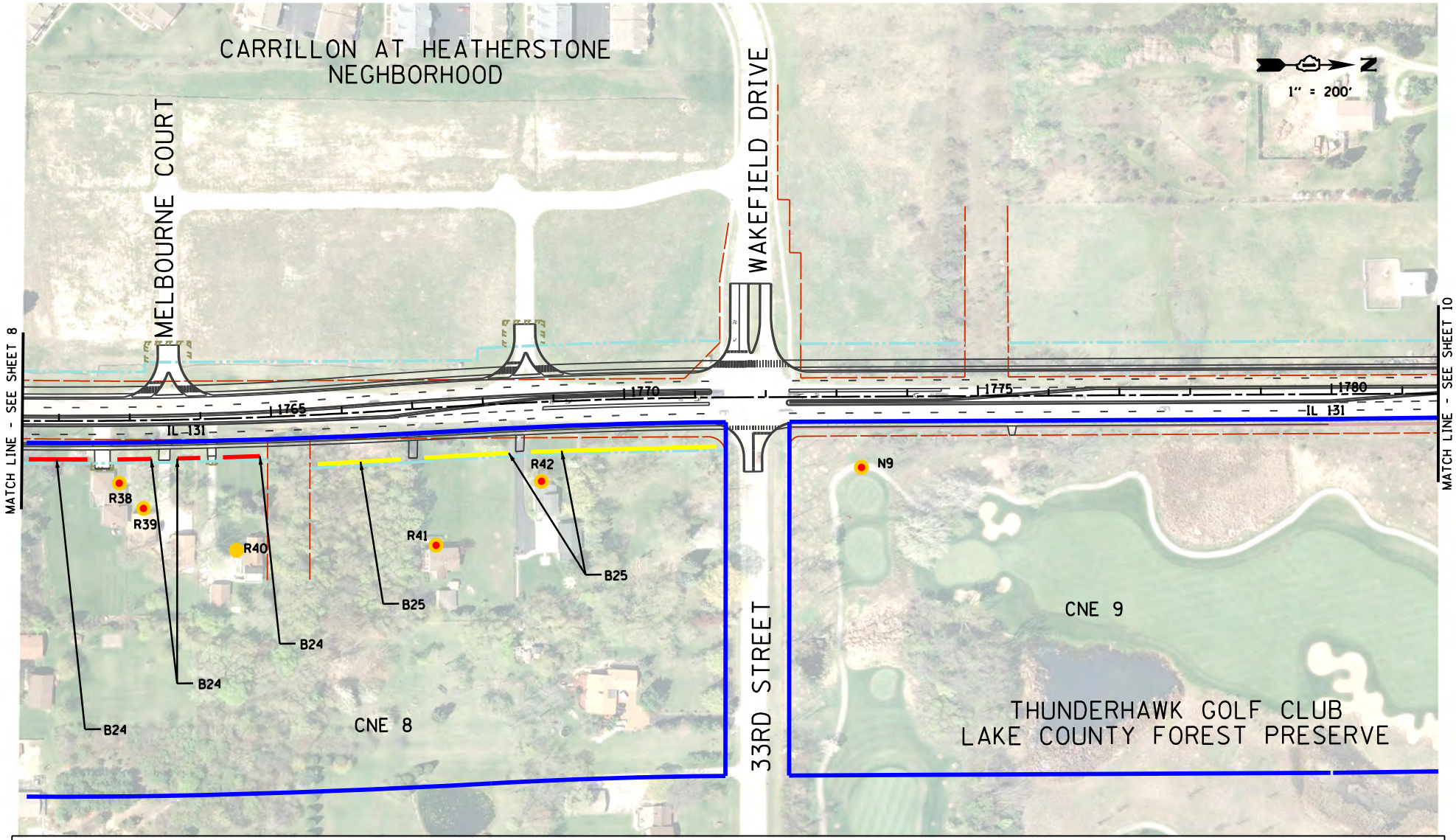

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
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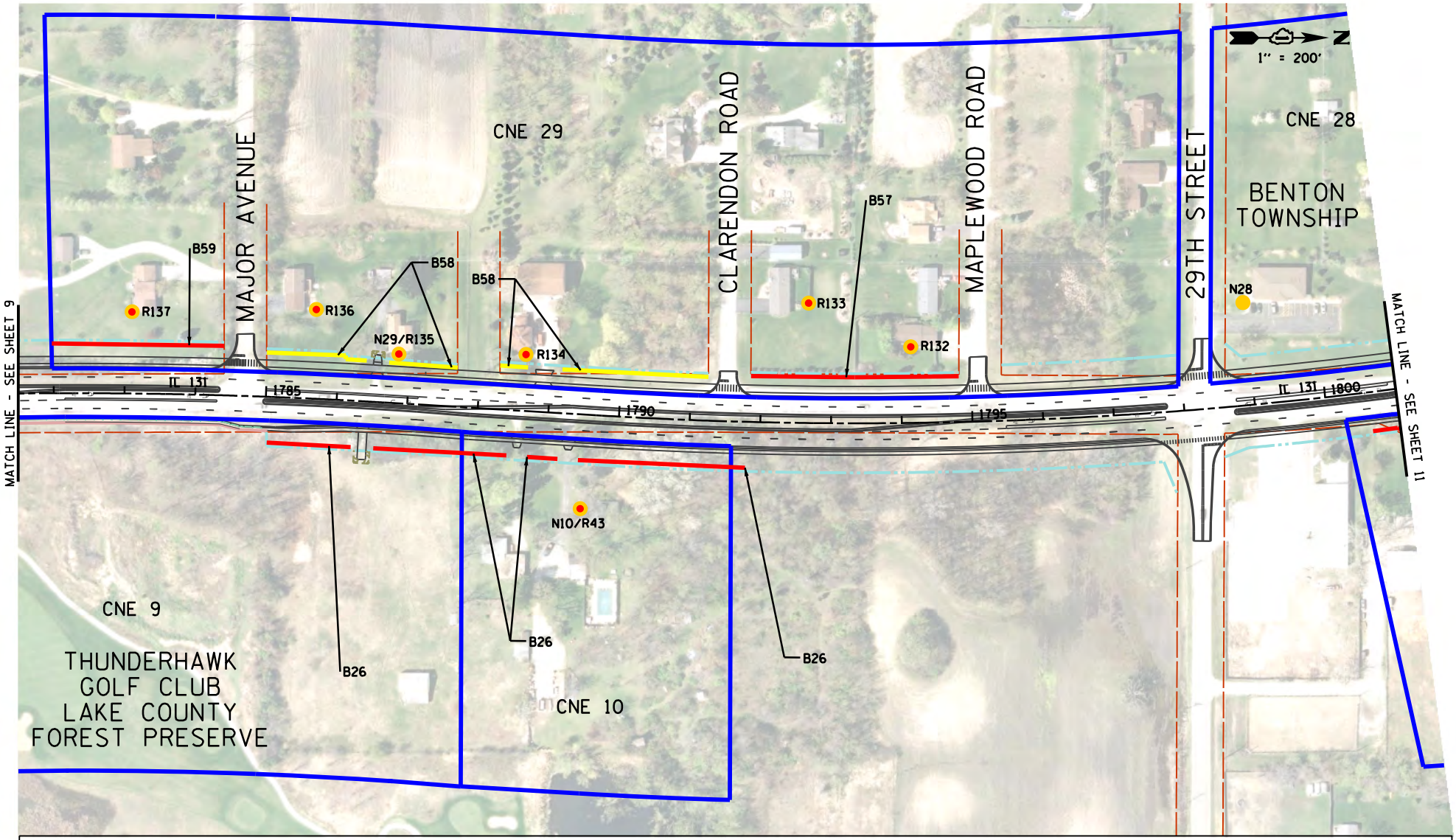

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
NOISE MONITORING, RECEPTORS AND MODEL NOISE BARRIER LOCATIONS

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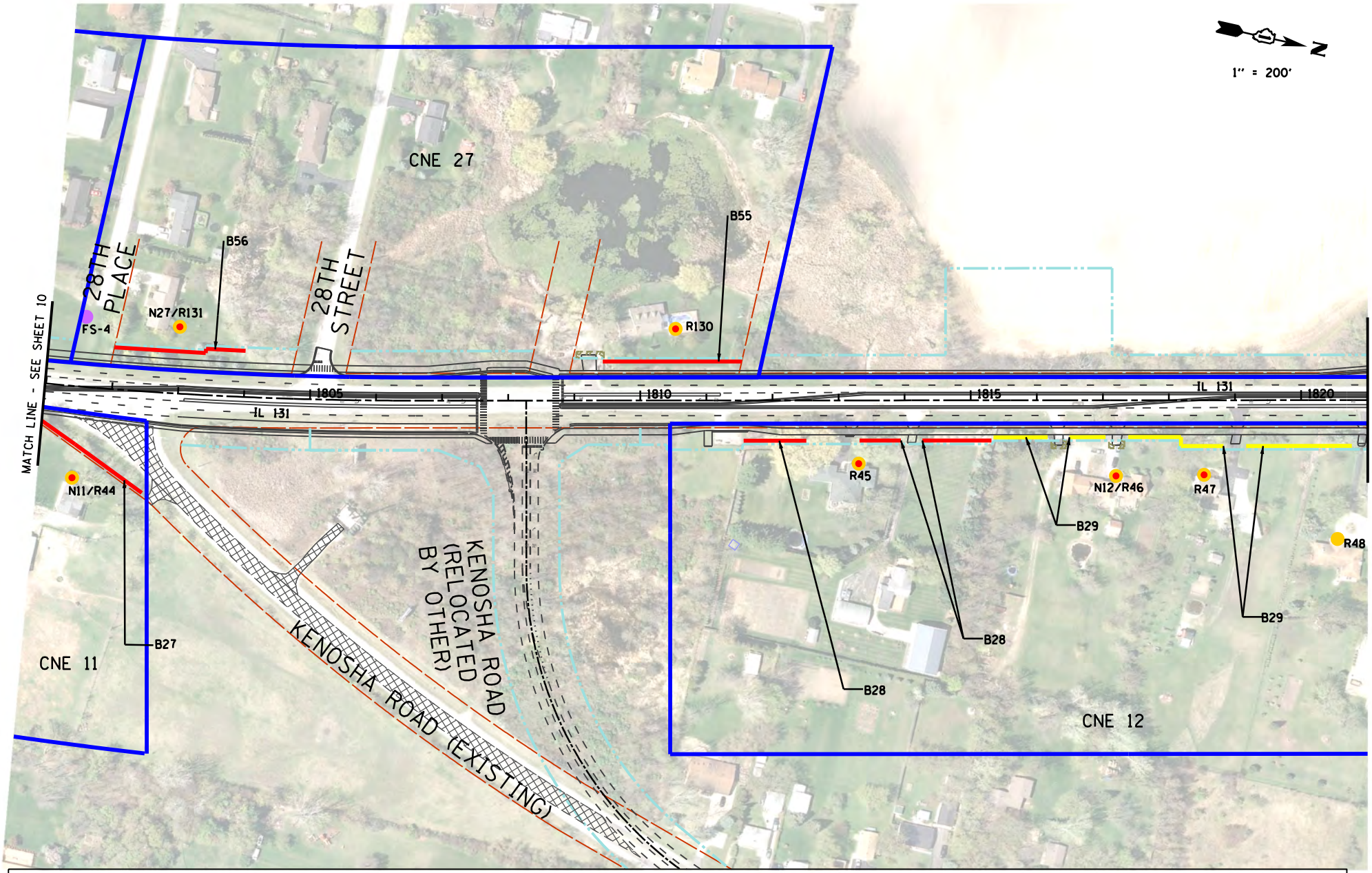

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
NOISE MONITORING, RECEPTORS AND MODEL NOISE BARRIER LOCATIONS

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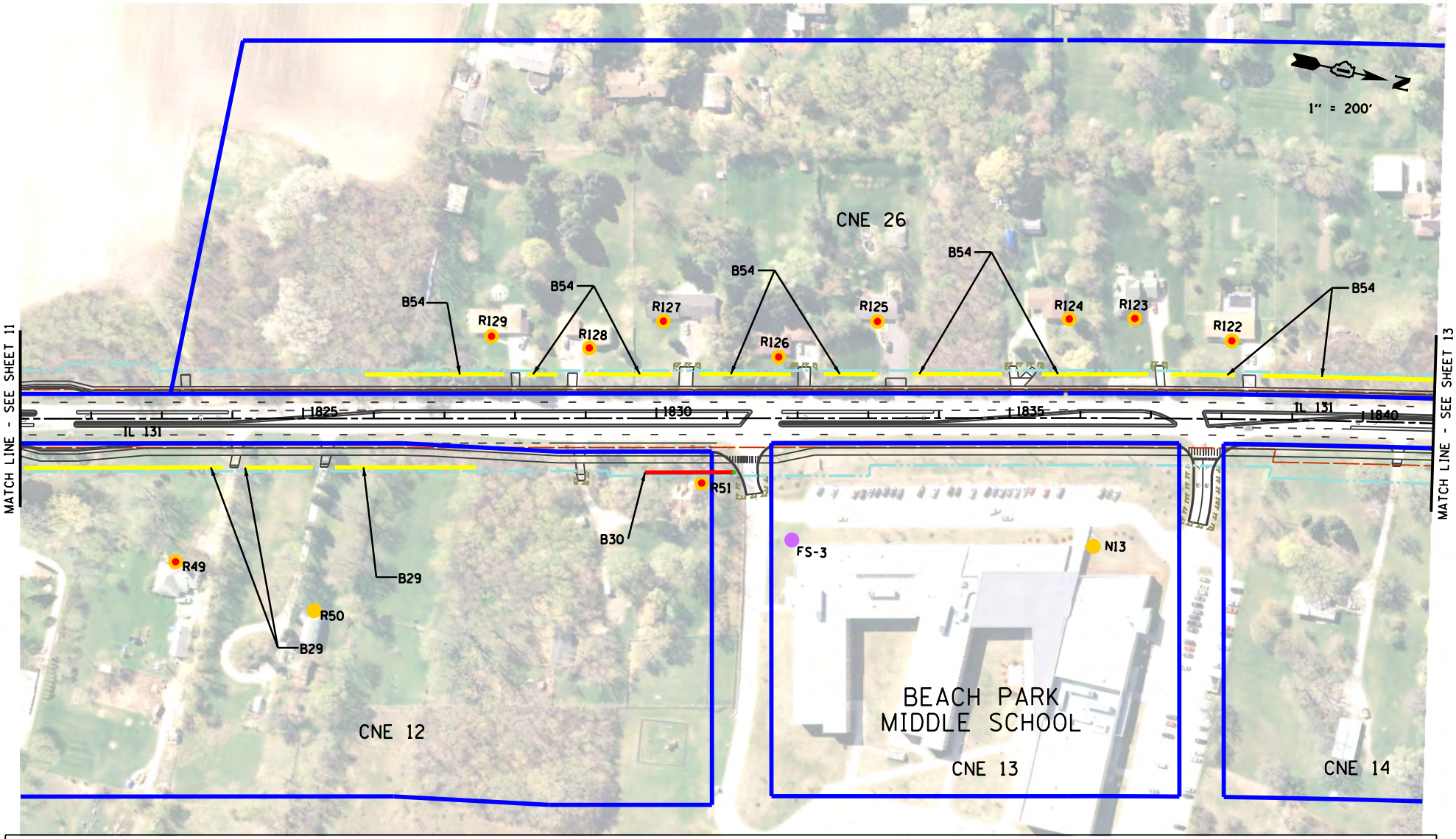

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
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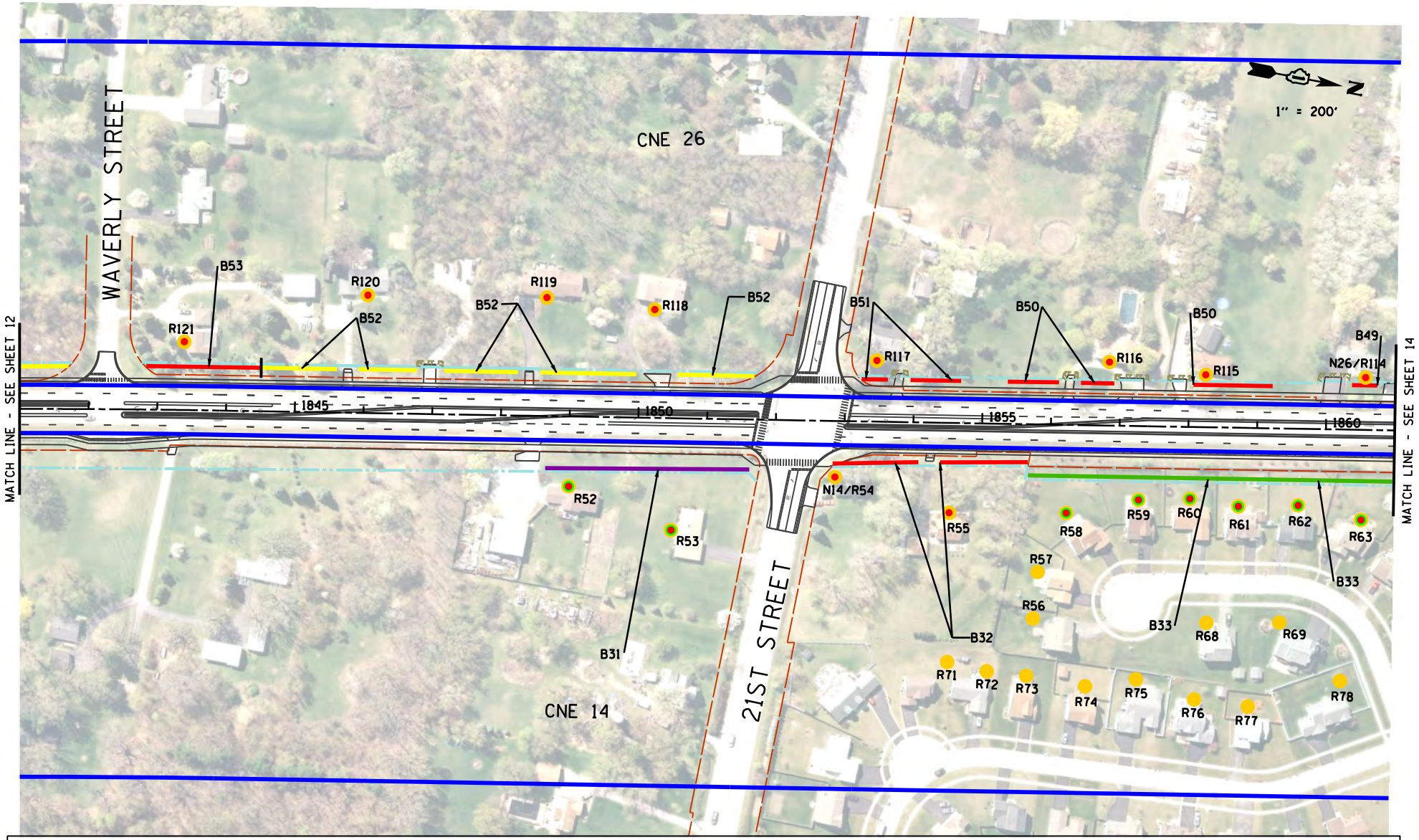

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
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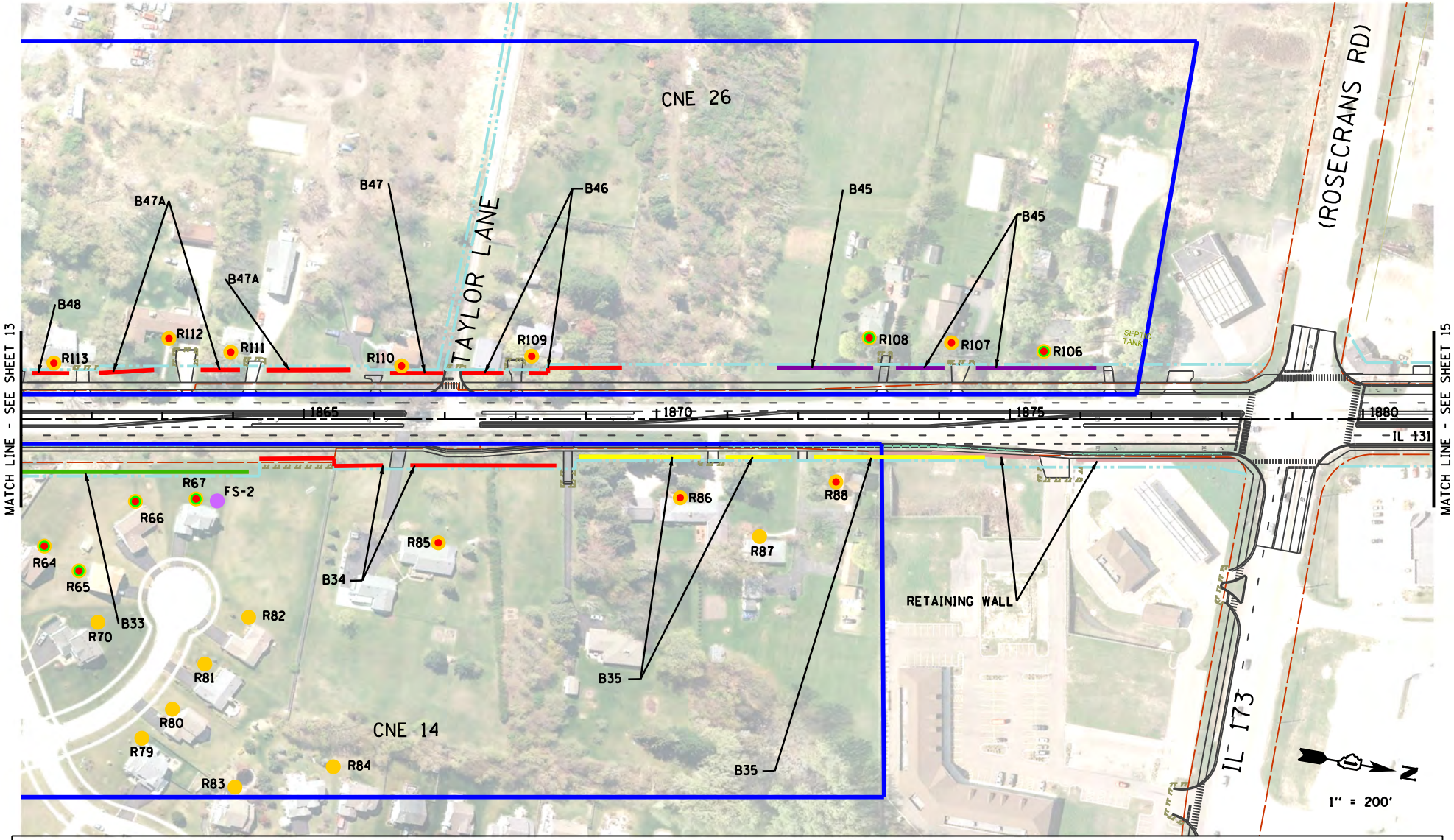

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
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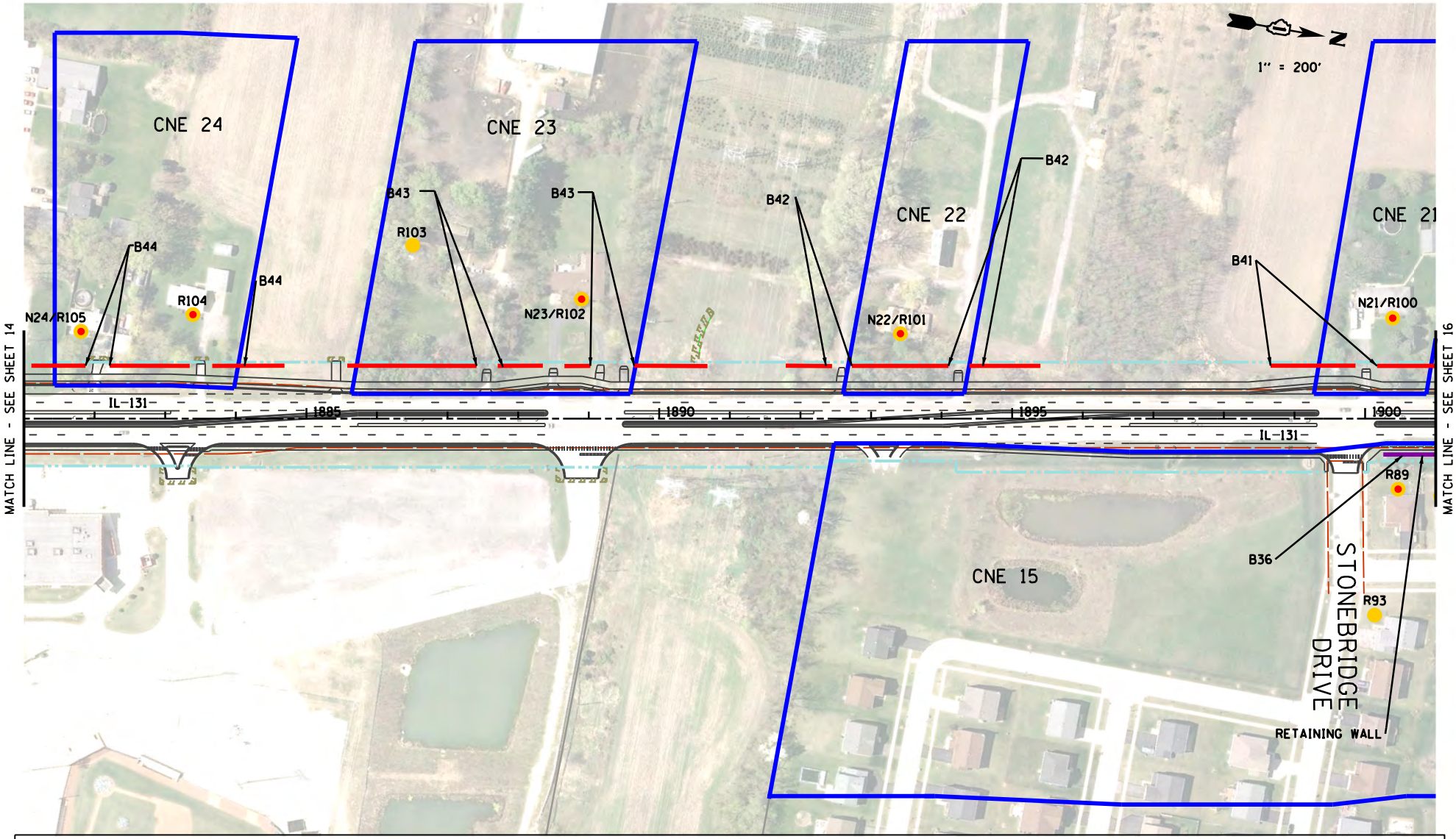

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
NOISE MONITORING, RECEPTORS AND MODEL NOISE BARRIER LOCATIONS

AUGUST 2017

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
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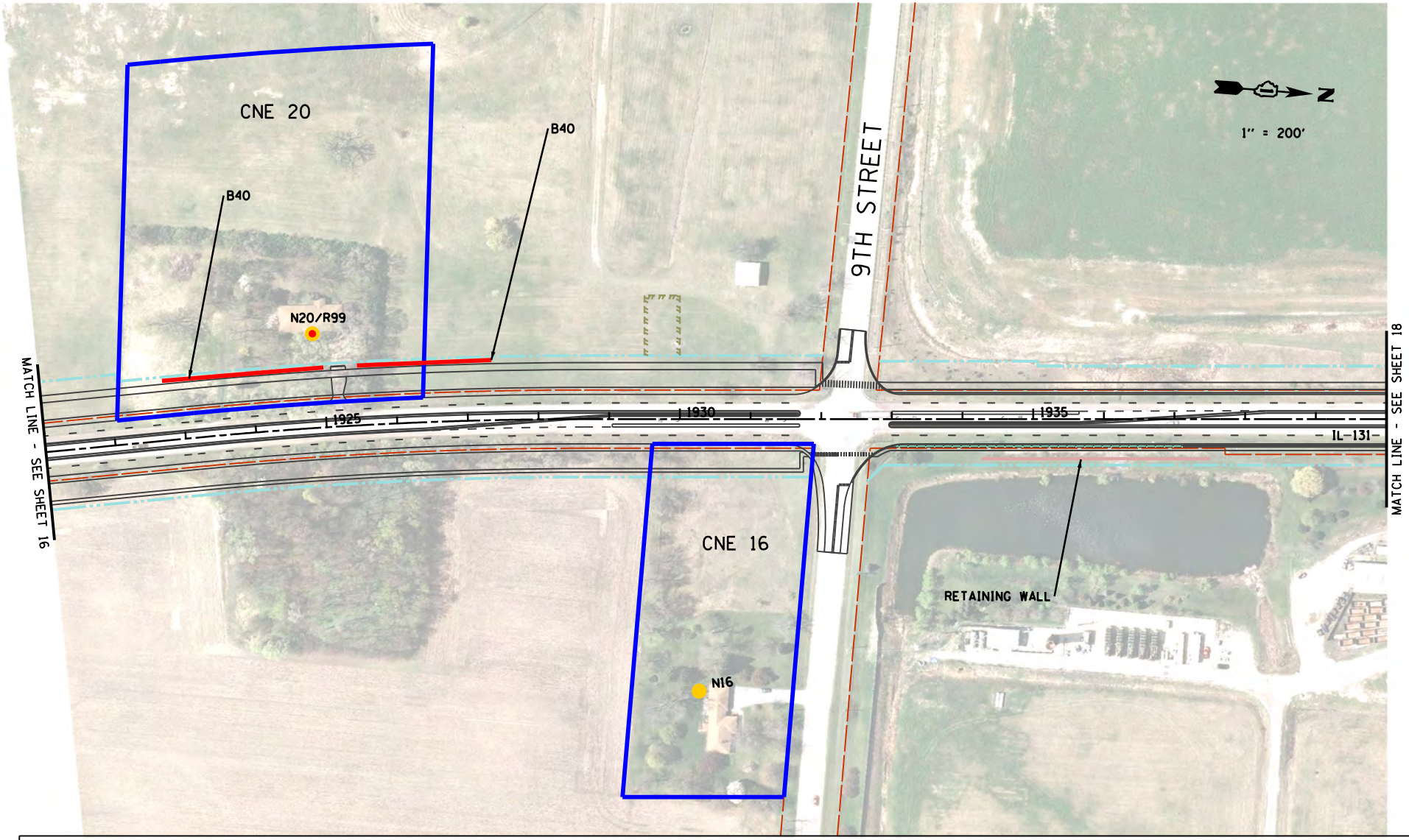

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
NOISE MONITORING, RECEPTORS AND MODEL NOISE BARRIER LOCATIONS

AUGUST 2017

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

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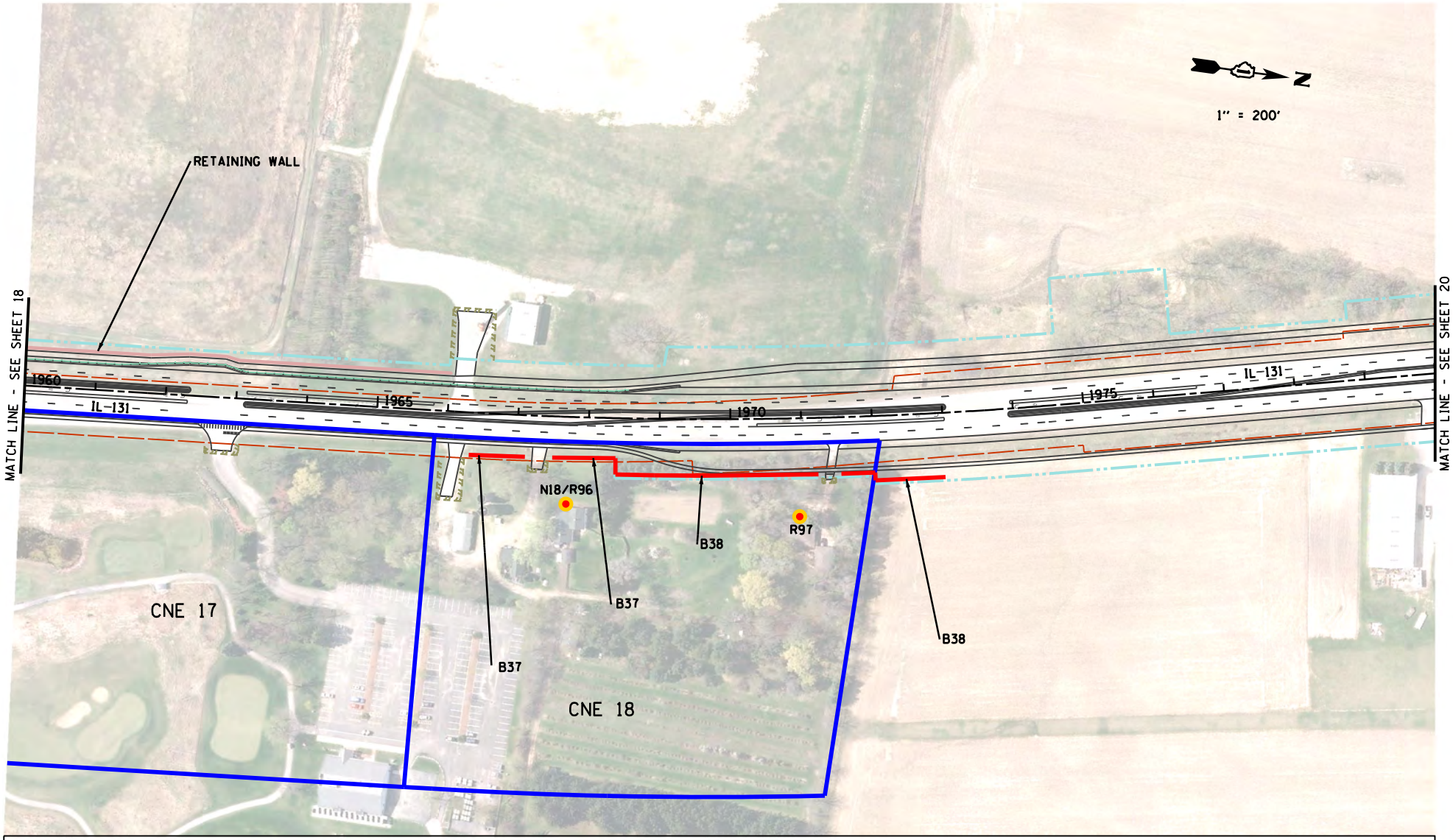

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
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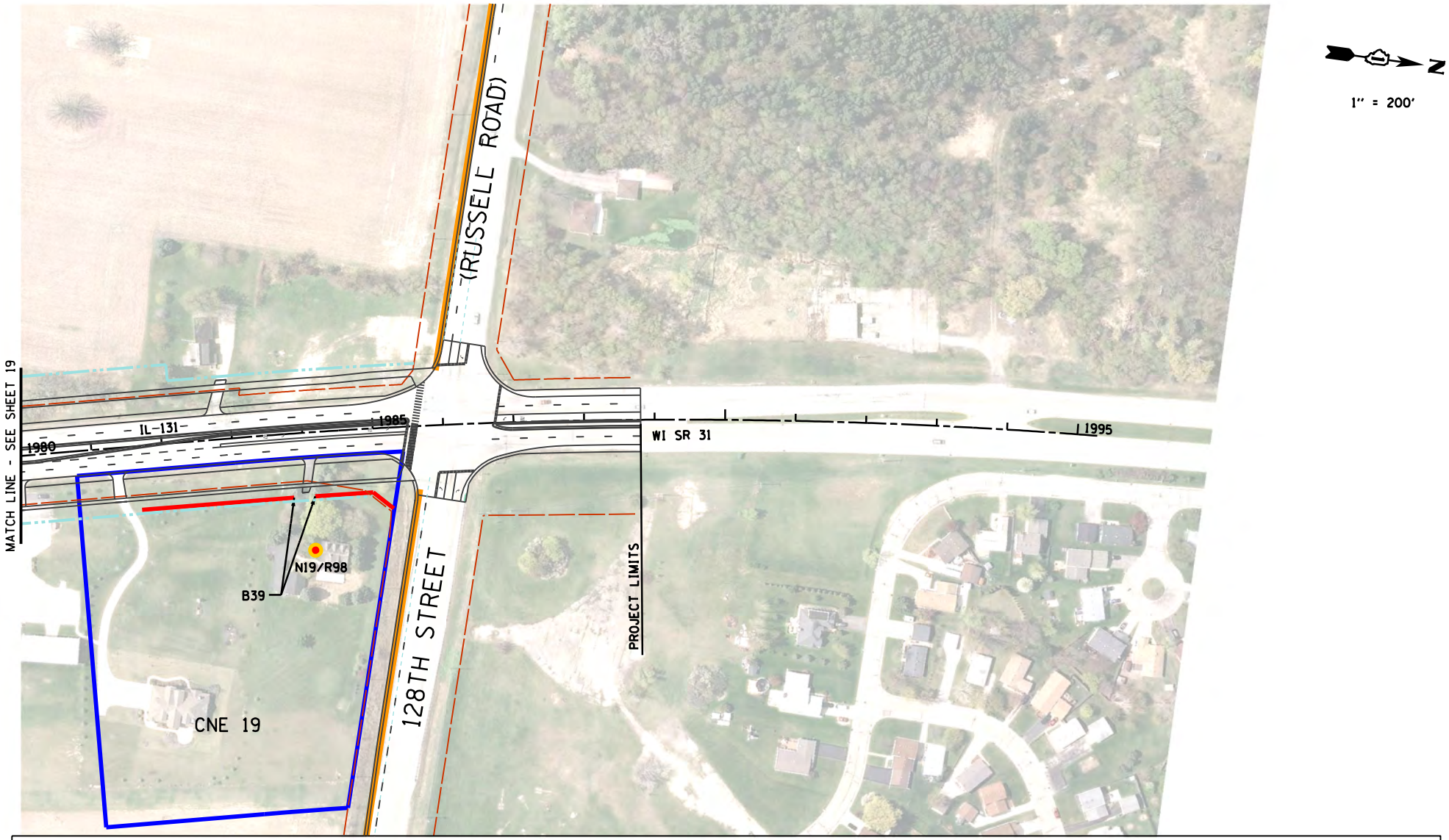

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ILLINOIS ROUTE 131 - SUNSET AVENUE TO RUSSELL ROAD

FIGURE #3
NOISE MONITORING, RECEPTORS AND MODEL NOISE BARRIER LOCATIONS

AUGUST 2017

APPENDIX B

NOISE ANALYSIS RESULTS SUMMARY

IL 131 - RUSSELL ROAD TO SUNSET AVENUE
NOISE ANALYSIS RESULTS SUMMARY

CNE	Receptor	Type	Represents	NAC dB(A)	Existing dB(A)	Predicted Year			Impacted
						Build dB(A)	No-Action dB(A)	Build Increase Over Existing dB(A)	
1	R1	Residential	1 Home	67	69	73	71	4	Yes
	R2	Residential	1 Home	67	68	72	70	4	Yes
	R3	Residential	1 Home	67	69	73	71	4	Yes
	R4	Residential	1 Home	67	65	70	67	5	Yes
	N1/R5	Residential	1 Home	67	68	72	70	4	Yes
	R6	Residential	1 Home	67	68	73	70	5	Yes
	R7	Residential	1 Home	67	69	73	72	4	Yes
	R8	Residential	1 Home	67	69	73	71	4	Yes
	R9	Residential	1 Home	67	69	73	71	4	Yes
	R10	Residential	1 Home	67	69	73	71	4	Yes
2	R11	Residential	1 Home	67	67	72	69	5	Yes
	R12	Residential	1 Home	67	68	73	70	5	Yes
	N2/R13	Residential	1 Home	67	68	72	70	4	Yes
	R14	Residential	1 Home	67	68	73	70	5	Yes
	R15	Residential	1 Home	67	66	72	69	6	Yes
3	N3	Place of Worship	1 Church	67	59	64	61	5	No
4	R16	Residential	1 Home	67	66	71	68	5	Yes
	R17	Residential	1 Home	67	66	71	68	5	Yes
	N4/R18	Residential	1 Home	67	69	74	72	5	Yes
	R19	Residential	1 Home	67	64	69	67	5	Yes
	R20	Residential	1 Home	67	67	72	69	5	Yes
	R20A	Residential	1 Home	67	66	70	68	4	Yes
	R21	Residential	1 Home	67	64	69	67	5	Yes
	R22	Residential	1 Home	67	68	73	70	5	Yes
5	N5/R23	Residential	1 Home	67	62	68	66	6	Yes
6	N6	Residential	1 Home	67	55	60	58	5	No
7	R24	Residential	1 Home	67	67	73	70	6	Yes
	R25	Residential	1 Home	67	63	69	66	6	Yes
	R26	Residential	1 Home	67	68	73	71	5	Yes
	R27	Residential	1 Home	67	62	68	66	6	Yes
	R28	Residential	1 Home	67	67	73	71	6	Yes
	R29	Residential	1 Home	67	62	69	66	7	Yes
	R30	Residential	1 Home	67	61	68	65	7	Yes
	N7/R31	Residential	1 Home	67	65	72	68	7	Yes
	R32	Residential	1 Home	67	62	70	65	8	Yes
	R33	Residential	1 Home	67	61	68	64	7	Yes
8	R34	Residential	1 Home	67	64	70	68	6	Yes
	R35	Residential	1 Home	67	63	69	66	6	Yes
	N8/R36	Residential	1 Home	67	66	73	69	7	Yes
	R37	Residential	1 Home	67	65	71	68	6	Yes
	R38	Residential	1 Home	67	65	72	68	7	Yes
	R39	Residential	1 Home	67	63	69	66	6	Yes
	R40	Residential	1 Home	67	59	65	62	6	No
	R41	Residential	1 Home	67	60	66	63	6	Yes
	R42	Residential	1 Home	67	66	71	69	5	Yes
9	N9	Active Sports Area	1 Golf Course	67	67	72	70	5	Yes
10	N10/R43	Residential	1 Home	67	61	69	65	8	Yes
11	N11/R44	Residential	1 Home	67	63	69	67	6	Yes

IL 131 - RUSSELL ROAD TO SUNSET AVENUE
NOISE ANALYSIS RESULTS SUMMARY

CNE	Receptor	Type	Represents	NAC dB(A)	Existing dB(A)	Predicted Year			Impacted
						Build dB(A)	No-Action dB(A)	Build Increase Over Existing dB(A)	
12	R45	Residential	1 Home	67	63	72	67	9	Yes
	N12/R46	Residential	1 Home	67	62	71	67	9	Yes
	R47	Residential	1 Home	67	62	71	66	9	Yes
	R48	Residential	1 Home	67	57	65	61	8	No
	R49	Residential	1 Home	67	58	66	62	8	Yes
	R50	Residential	1 Home	67	55	63	59	8	No
	R51	Residential	1 Home	67	66	72	70	6	Yes
13	N13	School	1 School	52	35	41	39	6	No
14	R52	Residential	1 Home	67	65	71	69	6	Yes
	R53	Residential	1 Home	67	59	66	63	7	Yes
	N14/R54	Residential	1 Home	67	68	73	72	5	Yes
	R55	Residential	1 Home	67	63	69	67	6	Yes
	R56	Residential	1 Home	67	56	61	60	5	No
	R57	Residential	1 Home	67	59	63	63	4	No
	R58	Residential	1 Home	67	63	69	68	6	Yes
	R59	Residential	1 Home	67	65	70	69	5	Yes
	R60	Residential	1 Home	67	65	70	69	5	Yes
	R61	Residential	1 Home	67	65	70	69	5	Yes
	R62	Residential	1 Home	67	65	70	69	5	Yes
	R63	Residential	1 Home	67	63	69	67	6	Yes
	R64	Residential	1 Home	67	60	64	64	4	Yes
	R65	Residential	1 Home	67	58	62	62	4	Yes
	R66	Residential	1 Home	67	64	70	68	6	Yes
	R67	Residential	1 Home	67	64	70	68	6	Yes
	R68	Residential	1 Home	67	54	59	59	5	No
	R69	Residential	1 Home	67	54	58	58	4	No
	R70	Residential	1 Home	67	54	58	58	4	No
	R71	Residential	1 Home	67	56	60	60	4	No
	R72	Residential	1 Home	67	55	60	59	5	No
	R73	Residential	1 Home	67	54	59	58	5	No
	R74	Residential	1 Home	67	52	57	57	5	No
	R75	Residential	1 Home	67	51	56	56	5	No
	R76	Residential	1 Home	67	52	57	56	5	No
	R77	Residential	1 Home	67	51	56	55	5	No
	R78	Residential	1 Home	67	52	57	56	5	No
	R79	Residential	1 Home	67	50	56	54	6	No
	R80	Residential	1 Home	67	51	57	55	6	No
	R81	Residential	1 Home	67	52	58	56	6	No
	R82	Residential	1 Home	67	54	60	59	6	No
	R83	Residential	1 Home	67	49	55	53	6	No
	R84	Residential	4 Homes	67	50	56	54	6	No
	R85	Residential	1 Home	67	60	66	64	6	Yes
	R86	Residential	1 Home	67	63	70	68	7	Yes
	R87	Residential	1 Home	67	60	65	64	5	No
	R88	Residential	1 Home	67	63	69	67	6	Yes

IL 131 - RUSSELL ROAD TO SUNSET AVENUE
NOISE ANALYSIS RESULTS SUMMARY

CNE	Receptor	Type	Represents	NAC dB(A)	Existing dB(A)	Predicted Year			Impacted
						Build dB(A)	No-Action dB(A)	Build Increase Over Existing dB(A)	
15	R89	Residential	1 Home	67	68	71	72	3	Yes
	R90	Residential	1 Home	67	67	69	71	2	Yes
	R91	Residential	1 Home	67	67	70	71	3	Yes
	N15	Residential	4 Homes	67	68	72	72	4	Yes
	R92	Residential	1 Home	67	67	71	71	4	Yes
	R93	Residential	1 Home	67	58	61	62	3	No
	R94	Residential	1 Home	67	56	60	61	4	No
	R95	Residential	1 Home	67	56	60	60	4	No
16	N16	Residential	1 Home	67	54	60	58	6	No
17	N17	Active Sports Area	1 Golf Course	67	67	71	70	4	Yes
18	N18/R96	Residential	1 Home	67	67	71	71	4	Yes
	R97	Residential	1 Home	67	66	70	70	4	Yes
19	N19/R98	Residential	1 Home	67	63	68	67	5	Yes
20	N20/R99	Residential	1 Home	67	64	70	68	6	Yes
21	N21/R100	Residential	1 Home	67	63	69	67	6	Yes
22	N22/R101	Residential	1 Home	67	65	70	68	5	Yes
23	N23/R102	Residential	1 Home	67	62	68	65	6	Yes
	R103	Residential	1 Home	67	60	64	64	4	No
24	R104	Residential	1 Home	67	64	69	68	5	Yes
	N24/R105	Residential	1 Home	67	66	71	70	5	Yes
26	R106	Residential	1 Home	67	65	71	69	6	Yes
	R107	Residential	1 Home	67	64	70	68	6	Yes
	R108	Residential	1 Home	67	63	69	68	6	Yes
	R109	Residential	1 Home	67	65	71	70	6	Yes
	R110	Residential	1 Home	67	67	72	71	5	Yes
	R111	Residential	1 Home	67	65	68	69	3	Yes
	R112	Residential	1 Home	67	63	69	68	6	Yes
	R113	Residential	1 Home	67	67	72	71	5	Yes
	N26/R114	Residential	1 Home	67	67	72	71	5	Yes
	R115	Residential	1 Home	67	67	72	71	5	Yes
	R116	Residential	1 Home	67	65	71	69	6	Yes
	R117	Residential	1 Home	67	66	72	70	6	Yes
	R118	Residential	1 Home	67	61	68	65	7	Yes
	R119	Residential	1 Home	67	60	67	64	7	Yes
	R120	Residential	1 Home	67	60	67	64	7	Yes
	R121	Residential	1 Home	67	62	69	66	7	Yes
	R122	Residential	1 Home	67	63	70	67	7	Yes
	R123	Residential	1 Home	67	61	68	65	7	Yes
	R124	Residential	1 Home	67	61	68	65	7	Yes
	R125	Residential	1 Home	67	61	69	65	8	Yes
	R126	Residential	1 Home	67	66	72	70	6	Yes
	R127	Residential	1 Home	67	61	69	65	8	Yes
	R128	Residential	1 Home	67	64	71	68	7	Yes
	R129	Residential	1 Home	67	63	70	67	7	Yes
27	R130	Residential	1 Home	67	63	71	67	8	Yes
	N27/R131	Residential	1 Home	67	64	71	68	7	Yes
28	N28	Office	1 Office	72	64	68	68	4	No

IL 131 - RUSSELL ROAD TO SUNSET AVENUE
NOISE ANALYSIS RESULTS SUMMARY

CNE	Receptor	Type	Represents	NAC dB(A)	Existing dB(A)	Predicted Year			Impacted
						Build dB(A)	No-Action dB(A)	Build Increase Over Existing dB(A)	
29	R132	Residential	1 Home	67	66	70	70	4	Yes
	R133	Residential	1 Home	67	61	66	65	5	Yes
	R134	Residential	1 Home	67	68	72	72	4	Yes
	N29/R135	Residential	1 Home	67	68	73	72	5	Yes
	R136	Residential	1 Home	67	64	69	68	5	Yes
	R137	Residential	1 Home	67	65	70	68	5	Yes
30	R138	Place of Worship	1 Church	67	70	73	73	3	Yes
	R139	Place of Worship	1 Church	67	57	62	60	5	No
	N30/R140	Place of Worship	1 Church	67	62	66	65	4	Yes
31	N31/R141	Residential	1 Home	67	64	68	67	4	Yes
32	N32/R142	Residential	1 Home	67	67	73	71	6	Yes
	R143	Residential	1 Home	67	67	73	71	6	Yes
	R144	Residential	1 Home	67	64	69	67	5	Yes
	R145	Residential	1 Home	67	65	70	69	5	Yes
	R146	Residential	1 Home	67	65	70	68	5	Yes
33	N33	Park	1 Park	67	68	72	71	4	Yes
34	N34	Residential	2 Homes	67	53	58	56	5	No
35	N35/R147	Residential	1 Home	67	69	73	72	4	Yes
36	N36/R148	Place of Worship	1 Church	52	39	43	42	4	No
37	R149	Residential	1 Home	67	68	70	70	2	Yes
	N37/R150	Residential	1 Home	67	70	73	73	3	Yes
	R151	Residential	1 Home	67	68	71	70	3	Yes
38	N38/R152	Residential	1 Home	67	67	69	68	2	Yes
39	R153	Residential	1 Home	67	67	70	69	3	Yes
	N39/R154	Residential	1 Home	67	66	69	68	3	Yes
	R155	Residential	1 Home	67	61	65	63	4	No
40	N40/R156	Residential	1 Home	67	69	72	71	3	Yes
	R157	Residential	1 Home	67	67	70	69	3	Yes
41	N41	Office	1 Office	72	67	70	69	3	No
	R158	Office	1 Office	72	59	62	61	3	No
42	R159	Residential	1 Home	67	59	65	61	6	No
	N42/R160	Residential	1 Home	67	67	72	70	5	Yes
43	N43	Office	1 Office	72	66	69	68	3	No
44	R161	Residential	1 Home	72	59	64	61	5	No
	R162	Residential	1 Home	72	65	71	67	6	Yes
	R163	Residential	1 Home	67	58	62	60	4	No
	N44/R164	Residential	1 Home	67	67	71	69	4	Yes
	R165	Residential	1 Home	67	67	71	69	4	Yes
45	N45	Office	1 Office	72	73	75	74	2	Yes
46	N46/R167	Residential	1 Home	67	72	74	74	2	Yes
	R168	Residential	1 Home	67	72	74	74	2	Yes
	R169	Residential	1 Home	67	70	72	72	2	Yes

APPENDIX C
NOISE ABATEMENT SUMMARY

IL 131 - RUSSELL ROAD TO SUNSET AVENUE
NOISE ABATEMENT SUMMARY

CNE	Noise Barrier	Receptor	Barrier Height (feet)	Barrier Length (feet)	Maximum Noise Reduction Potential (dB(A))	Total Cost	Estimated Build Cost per Benefitted Receptor	Allowable Cost per Benefitted Receptor	Likely to be Implemented[1]	If No, Reasons Why
1	B1	R1	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B2	**R2/R3*/R4**	**9 - 11**	**240**	**8**	**$73,890**	**$29,764[4]**	**$31,438[4]**	**Yes**	**--**
	B3	R5/R6	25	156	4	--[3]	--[3]	--[3]	No	Not Feasible
	B4	R7	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B5	R8/R9/R10	25	194	7	--[3]	--[3]	--[3]	No	Not Reasonable, Criterion 1
2	B6	R11/R12	25	143	5	--[3]	--[3]	--[3]	No	Not Feasible
	B7	R13/R14	25	100	6	--[3]	--[3]	--[3]	No	Not Feasible
	B8	R15	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
4	**B9**	**R16/R17**	**9 - 11**	**182**	**11**	**$56,730**	**$28,365**	**$31,500**	**Yes**	**--**
	B10	R18/R19	11 - 13	243	13	$90,840	$31,503[4]	$31,389[4]	No	Not Reasonable, Criterion 2
	B11	R20	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B12	R20A/R21	13 - 19	315	12	$166,140	$83,070	$31,500	No	Not Reasonable, Criterion 2
	B13	R22	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
5	B14	R23	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
7	B15	R24	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B16	R25	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B17	R26/R27	25	170	4	--[3]	--[3]	--[3]	No	Not Feasible
	B18	R28/R29	25	181	4	--[3]	--[3]	--[3]	No	Not Feasible
	B19	R30/R31/R32	25	213	5	--[3]	--[3]	--[3]	No	Not Feasible
	B20	R33	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
8	B21	R34/R35	25	175	3	--[3]	--[3]	--[3]	No	Not Feasible
	B22	R36	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B23	R37	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B24	R38/R39	25	216	4	--[3]	--[3]	--[3]	No	Not Feasible
	B25	R41/R42	25	500	6	--[3]	--[3]	--[3]	No	Not Reasonable, Criterion 1
9/10	B26	R43	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
11	B27	R44	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
12	B28	R45	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B29	R46/R47/R49	25	1018	7	--[3]	--[3]	--[3]	No	Not Reasonable, Criterion 1
	B30	R51	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible

IL 131 - RUSSELL ROAD TO SUNSET AVENUE
NOISE ABATEMENT SUMMARY

CNE	Noise Barrier	Receptor	Barrier Height (feet)	Barrier Length (feet)	Maximum Noise Reduction Potential (dB(A))	Total Cost	Estimated Build Cost per Benefitted Receptor	Allowable Cost per Benefitted Receptor	Likely to be Implemented[1]	If No, Reasons Why
14	B31	R52/R53	13 - 15	297	8	$127,680	$63,840	$31,000	No	Not Reasonable, Criterion 2
	B32	R54/R55	25	252	4	--[3]	--[3]	--[3]	No	Not Feasible
	B33	**R58/R59/R60/R61/R62/ R63/R64/R65/R66/R67**	**10 - 13**	**854**	**11**	**$293,760**	**$29,376**	**$31,400**	**Yes**	**--**
	B34	R85	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B35	R86/R88	25	507	6	--[3]	--[3]	--[3]	No	Not Reasonable, Criterion 1
15	B36	R89*/R90*/R91/ N15/R92*	7 - 15	347	8	$111,210	$34,500[4]	$31,350[4]	No	Not Reasonable, Criterion 2
18	B37	R96	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B38	R97	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
19	B39	R98	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
20	B40	R99	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
21	B41	R100	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
22	B42	R101	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
23	B43	R102	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
24	B44	R104/R105	25	292	4	--[3]	--[3]	--[3]	No	Not Feasible
26	B45	R106/R107*/R108	9 - 21	375	8	$187,860	$93,930	$31,500	No	Not Reasonable, Criterion 2
	B46	R109	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B47	R110	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B47A	R111/R112	25	253	4	--[3]	--[3]	--[3]	No	Not Feasible
	B48	R113	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B49	R114	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B50	R115/R116	25	238	7	--[3]	--[3]	--[3]	No	Not Feasible
	B51	R117	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B52	R118/R119/R120	25	553	5	--[3]	--[3]	--[3]	No	Not Reasonable, Criterion 1
	B53	R121	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B54	R122/R123/R124/R125/R12 6/R127/R128/R129	25	1253	6	--[3]	--[3]	--[3]	No	Not Reasonable, Criterion 1
27	B55	R130	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B56	R131	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
29	B57	R132/R133	25	294	7	--[3]	--[3]	--[3]	No	Not Feasible
	B58	R134/R135/R136	25	485	7	--[3]	--[3]	--[3]	No	Not Reasonable, Criterion 1
	B59	R137	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible

IL 131 - RUSSELL ROAD TO SUNSET AVENUE
NOISE ABATEMENT SUMMARY

CNE	Noise Barrier	Receptor	Barrier Height (feet)	Barrier Length (feet)	Maximum Noise Reduction Potential (dB(A))	Total Cost	Estimated Build Cost per Benefitted Receptor	Allowable Cost per Benefitted Receptor	Likely to be Implemented[1]	If No, Reasons Why
30	B60	R138	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B61	R140	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
31	B62	R141	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
32	**B63**	**R142/R143**	**7 - 9**	**217**	**8**	**$51,840**	**$25,920**	**$32,000**	**Yes**	**--**
	B64	R144/R145	25	192	2	--[3]	--[3]	--[3]	No	Not Feasible
	B65	R146	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
35	B66	R147	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
37	B67	R149/R150/R151	9 - 15	493	8	$168,810	$37,340[4]	$31,304[4]	No	Not Reasonable, Criterion 2
38	B68	R152	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
39	B69	R153/R154	25	532	5	--[3]	--[3]	--[3]	No	Not Feasible
40	B70	R156/R157	25	204	3	--[3]	--[3]	--[3]	No	Not Feasible
42	B71	R160	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
44	B72	R162	--[2]	--[2]	--[2]	--[2]	--[2]	--[2]	No	Not Feasible
	B73	R164/R165	17 - 19	261	8	$141,570	$70,785	$31,000	No	Not Reasonable, Criterion 2
46	B74	R167/R168/R169	25	284	6	--[3]	--[3]	--[3]	No	Not Feasible

Notes:

1. IDOT's noise policy states that a noise barrier is likely if it meets the following criteria for feasibility and reasonability:
   - Feasibility Criterion: The noise barrier must reduce traffic noise by at least 5 dB(A) for at least two impacted receptors.
   - Reasonableness Criterion 1: The noise barrier must reduce traffic noise by at least 8 dB(A) for at least one benefitted receptor. This is referred to as the noise reduction design goal (NRDG).
   - Reasonableness Criterion 2: The noise barrier must be cost effective.
2. Only one impacted receptor. Therefore, the feasibility criterion cannot be met, and further noise abatement analysis was not conducted.
3. Feasibility criterion and/or reasonability criterion 1 cannot be met. Therefore, cost effective analysis was not conducted.
4. Cost effective determination based on the cumulative average estimated build cost of noise abatement per benefited receptor and the cumulative average adjusted allowable cost per benefitted receptor.

* Not a benefitted receptor. Therefore, the cost effective analysis (reasonability criterion 2) does not include this receptor.

APPENDIX D
COORDINATION WITH LOCAL OFFICIALS

John Jaeckel

From: Yang, Ken K. <Ken.Yang@Illinois.gov>
Sent: Monday, November 07, 2016 9:02 AM
To: Anne M Jensen; Donald Wittmer
Cc: Alicea, Brenda; Doll, Ken F
Subject: FW: IL 131 (Green Bay Road) from Russell to Sunset
Attachments: IL 131 CPG-TAG Undeveloped Lands_08262016small.pdf; CPG-TAG-5-Summary 082916 _final.pdf

Don/Anne Marie,

For your records, below plus attachments were sent to the municipals.

Thanks,

Ken Yang, PE
201 W. Center Court
Schaumburg, IL 60196-1096
(847) 705-4710 Office
(847) 302-3140 Mobile
ken.yang@illinois.gov

From: Brown, Lori S.
Sent: Friday, November 04, 2016 12:50 PM
To: 'mamidei@villageofwadsworth.org'; 'russ.tomlin@waukeganil.gov'; 'supervisor@newporttownshipil.com'; 'jsuthard@bentontownship.com'; 'pjones724@waukegantownship.com'; 'lcpermits@lakecountyil.gov'
Cc: Yang, Ken K.
Subject: IL 131 (Green Bay Road) from Russell to Sunset

As you may be aware, the Illinois Department of Transportation (Department) is currently engaged in preliminary engineering and environments studies (Phase I) for the improvement of IL 131 (Green Bay Road) from Sunset Avenue to Russell Road in Lake County. On August 29, 2016 the 5th and final meeting of the Corridor Planning Group (CPG) and Technical Advisory Group (TAG) was held at the Zion-Benton Public Library to discuss the project status and preferred alternative. A summary of the meeting is attached for your information.

As part of the environmental studies for this proposed project, projected future traffic noise levels were evaluated for lands either currently under your jurisdiction, or land that may come under your jurisdiction, near the proposed roadway improvement. For developed lands, a traffic noise study has been completed for this project, the results of which were presented at the CPG meeting. There are two potential locations for noise walls: at the Sunset Ridge neighborhood (north of 21st Street), and at the Stonebridge neighborhood both of Stonebridge Drive. Residents who would benefit from the installation of a noise wall will be given the opportunity to vote on whether or not they want a wall. These residents will be sent a noise wall letter ballot prior to the public hearing, which is anticipated to be held in spring 2017.

The study area includes undeveloped or agriculture land that is zoned for uses other than agriculture, or land that is planned for future development in a comprehensive land use plan. Attached for your information is an exhibit showing the predicted design year (2040) build traffic noise levels for these undeveloped lands identified along the corridor. We recommend that you carefully consider the future predicted noise levels to avoid potential issues of public concern over incompatible noise levels.

Phase I requirements, including the public hearing and approval of the Environmental Assessment, are expected to be completed in 2017. Funding for land acquisition is included in the Department's FY 2017-2022 Proposed Highway Improvement Program. At this time, funding for detailed construction plans (Phase II) and construction (Phase III) is not included in the program, but will be included in our priorities for future funding consideration among similar improvement needs throughout the region.

Feel free to contact me if you have any questions about the attached material.

Lori Brown, P.E.
Senior Consultant Studies Engineer
Illinois Department of Transportation
Bureau of Programming
201 W. Center Court
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The fifth combined Corridor Planning Group (CPG) and Technical Advisory Group (TAG) meeting for the IL Rte. 131 (Green Bay Road) project was held on Monday, August 29, 2016 from 1:00 pm to 3:00 pm. The meeting was held at the Zion-Benton Public Library (2400 Gabriel Avenue in Zion, Illinois), which is approximately 2 miles east of the project's corridor.

This meeting was conducted as part of IDOT's Context Sensitive Solutions (CSS) process. The purpose of the meeting was to provide an update on the project status, review the accomplishments of the previous CPG/TAG meeting and public meeting, review the refined alternatives presented previously, present the Preferred Alternative, review the environmental impacts and mitigation measures, and discuss the next steps.

Invitees to the fifth CPG/TAG Meeting included those that were invited to the first four CPG/TAG meetings or signed up since the fourth CPG/TAG meeting. Fourteen members attended the meeting that included municipal and county officials, representatives of public agencies, property owners, and citizens. The stakeholders were contacted by e-mail and telephone to request their participation. In attendance were representatives from IDOT and HNTB along with the following:

Sonalito Bronson, City of Zion
Scott Drabicki, Village of Gurnee
Skip Goss, Waukegan National Airport
Amy Hanson, Federal Aviation Administration
John Hucker, Village of Beach Park
Ron Hudson, Hanson Professional Services
Emily Kerry, Lake Co DOT
Jon Kindseth, Village of Beach Park
Nicholas Leach, Village of Gurnee
Steve McLaughlin, Hanson Professional Services
Jerry Nellessen, Village of Beach Park
Sarah Shadria, Office of State Senator Melinda Bush
Michael Templeton, Resident, Wadsworth
Gary Wilson, Federal Aviation Administration

The format of the meeting included a 50 minute PowerPoint presentation, which reviewed what has been heard through the public meetings, an overview of the two refined alternatives, a list of what was considered, the Preferred Alternative, local cost participation, land acquisition, project development, noise analysis/noise wall, and the upcoming project schedule.

Questions asked during the presentation:

1. In planning for the preferred alternatives were current municipal codes taken into consideration for landscape design/maintenance? (City of Zion)

   During Phase II, the Department's Bureau of Maintenance, Landscaping Section will work with the local municipalities regarding the landscape design.

2. Have you been working with the FAA environmental department to accommodate the type of plantings that need to be around the airport portion of the project? There could be a conflict in terms of local codes – for example, local codes might designate one type of tree, but a different type may be needed near the airport. (FAA).

HNTB/IDOT has been coordinating with the airport and Hanson Professionals on the requirements for the plantings near the airport. However, the project team will follow up with FAA to verify requirements and include it as a commitment in the Environmental Assessment and the Combined Design Report for Phase II.

3. What is the timing of the benefitted receptor solicitation? When will the residents be allowed to vote by mail for the noise wall? Will the determination of residents being in favor or against the noise wall be made soon, regardless of when the project is built? (Village of Beach Park).

   Benefitted receptors will receive the solicitation letter prior to the Public Hearing, so residents will be able to ask questions about the noise wall at the Public Hearing. Our current procedure is to perform the voting process during the preliminary engineering and environmental studies stage. Given the project is not included in the current multi-year program, there will likely be a considerable time lapse until construction. As such, IDOT is considering a second vote in the future to capture new benefitted receptors.

4. Are the votes for the noise wall sent out to residents in both English and Spanish? (Melinda Bush's office).

   The municipalities believe no other languages need to be considered for the project publications.

   The Hispanic population was identified as a larger minority group within the project corridor. The project team will and has accommodated the Hispanic population by publishing the project website in Spanish along with the project's publications. Project information was also sent to Hispanic third parties. A Spanish translator attended the public meetings and will be attending the Public Hearing as well.

5. What do you propose specifically for the mitigation of the wetland impacts? How far will the wetland mitigation be from the airport? We want to make sure our MOU for wildlife concerns coordinates – mitigation must be at least five miles from the airport. (FAA)

   IDOT typically purchases credits for mitigating impacted wetland to a wetland bank site. The location of the wetland bank site will be determined during final design (Phase II). The project team has been coordinating with the airport and Hanson Professionals and is aware of the wildlife concerns near the airport. Hanson Professionals stated the airport may be constructing their own wetland bank site and this could be an opportunity for IDOT to share the wetland bank site for mitigation.

Once the presentation was complete, the floor was opened for a general question and answer session.

Questions asked after the presentation:

1. What provisions are being incorporated to assure that there will not be a dead end at the proposed bridge under the runway and taxiway for pedestrians and bicyclists? It looks like there will be a few mile gap? (Village of Beach Park).

   The bridge will have the pedestrian/bicyclist facilities on the west side of IL 131 to minimize the length of the proposed bridges and so it can be on the same side as the Waukegan Sports Park. The project can potentially be constructed in different phases as well and not be constructed at the same time.

2. Where exactly are the 3 acres of wetlands delineated? We already have some issues with flooding and we want to assure this project doesn't cause more flooding issues. (Village of Beach Park)

   The total wetlands identified in the project corridor are approximately 41 acres. The proposed improvements will impact over 3 acres of wetlands. The impacts to wetlands were minimized by constructing curb and gutter, retaining walls and other elements. However, some of the wetlands impacted are in the ditch within the existing roadway right-of-way due to the widening of the road.

3. Does the project take into account other developments that are currently in the planning phase for the Green Bay Road corridor – specifically corridor access for commercial developments? (Village of Beach Park)

   The project team received the plans from Village of Beach Park for the two recent commercial redevelopments along IL 131 that are currently in permitting. The project team reviewed the plans and found no major conflicts with the proposed improvements.

4. What about property within a municipality that is zoned commercial (not residential)? We don't want to provide any misinformation about access along the intersections for this corridor. (Village of Beach Park)

   The project team will work with the Village of Beach Park and will provide an updated plan set with the proposed improvements. The project team will provide this plan set in the next couple weeks.

5. For the Waukegan Sports Complex, can you confirm the ingress/egress of the Preferred Alternative? (Village of Beach Park)

   The project team has been working with Waukegan Park District on the proposed improvements at the Waukegan Sports Complex. The Waukegan Park District has agreed to donate 0.99 acres of the 1.06 acres of the permanent land needed for the roadway improvements. The additional land is for the proposed retaining wall and the roadway shifting back to the existing alignment from the offset alignment at the airport. A dedicated left turn lane to the sports complex and a right in / right out driveway on IL 131 north of their existing driveway are being proposed.

6. In regard to existing water/storm sewer/drainage systems that might exist currently in the right of way – what is IDOT's position on re-locating systems that are already there? (Village of Beach Park)

   Impacted utilities from the proposed improvements that are within existing IDOT ROW will need to be relocated by the municipality at their cost. Any utilities outside the existing ROW that will be impacted by proposed ROW needed would be relocated by IDOT at their cost IDOT prefers not to have utilities located under the roadway pavement. A Letter of Intent will be sent to municipalities outlining the cost responsibilities for local utilities and other items.

7. Along those same lines, in terms of existing in the right of way, how do we know where to put these utilities in correctly the first time to assure that we don't have to move them for when this project finally goes? What answer do we provide the developers? (Village of Beach Park)

   The project team will provide the municipalities with updated plans and will continue to work with the municipalities as the project progresses.

8. How does IDOT plan to compensate residents and/or businesses who may need to be relocated? Is there an opportunity that a business might be relocated out of their location and within a mile of their original location? (Lake Co DOT)

   IDOT Land Acquisition will be working with the residents and communities on relocations. IDOT prefers residents to be relocated as close to their current residence as possible. The two potential businesses may be able to be relocated on the same property. IDOT will have representatives from their Bureau of Land Acquisition at the Public Hearing to answer any questions.

9. What happens if the State continues to not pass a budget or doesn't pass a transportation budget next year? When and how will this project be included? (Melinda Bush's office)

   Even though the project is currently not included in the IDOT's Transportation Program for FY 2017-2022, the project could be included in the program the following year.

10. In terms of relocating Green Bay Road, are you expecting the airport to share the cost of the tunnel under the airport? (FAA)

    The improvements to accommodate the airport, which includes the offset and depressed roadway and the two bridges, will be a 50/50 cost share between the Waukegan Airport and IDOT.

11. Point of clarification, is Phase II funded? Is IDOT targeting federal funds just for construction and land acquisition? Is there anything that the County and/or the local communities can do to help communicate that we are very much in favor of funding and moving this project forward? Do you envision this as one large project, or letting it as a multiphase job? (Lake Co DOT)

    Phase II design engineering and construction are currently not funded. Advocates of the project should speak with their legislator to assist with getting this project in IDOT's multi-year program. The entire project is 7.3 miles long and could potentially be constructed in three different contracts, but ideally all contracts will be built at the same time.

12. If smaller municipalities cannot pay their portion (i.e. to move utilities or maintain landscape) can IDOT fund their portion as a loan and then pay the state back? (Melinda Bush's office)

    As noted above, the municipalities will be sent a Letter of Intent outlining their cost participation responsibilities. This will allow the agencies sufficient time to budget for items such as bicycle/pedestrian accommodations or relocating local utilities. If a local municipality chooses not to maintain landscaped median, IDOT will plant low maintenance grass in the median. Typically, these medians would be mowed two to three times per year.

13. At some point, will IDOT provide an outline of what each of the municipal share will be so that financial planning can begin? The concept of looking for local financial share at this point is impossible. Can there be some information given as to how we could plan for the project and development in the corridor? (City of Zion)

    A Letter of Intent sent to each municipality will outline the local cost participation. With the project currently not included in IDOT's multi-year transportation program, this will provide municipalities

additional time to plan for funding.

As a follow-up, the City of Zion asked about projected traffic volumes that could help with their development plans in the corridor. Current and projected average daily traffic was evaluated. The current average daily traffic shows IL 131 operating at capacity as a two lane roadway. When IL 131 was evaluated as a four lane roadway, traffic increases significantly. IL 131 as a four lane roadway will provide additional capacity for more traffic to use it which will then provide relief from other north-south arterials near the project area. Drivers will start using IL 131 instead of other routes like US 41. The project team can provide this information to the municipalities that will help support the need for the project.

14. Who is the best contact person for follow up questions, comments and other ideas? (Melinda Bush's office)

    Lori Brown is IDOT's Project Manager for IL 131 project. However, questions can also be directed to Kimberly Murphy, IDOT's Project Supervisor.

15. Is there a way that the project website homepage could be translated into Spanish? (Melinda Bush's office)

    The project website has a Spanish translation. It is in the process of being updated.

After the presentation and the open question and answer session, the project team met with each municipality in attendance individually to specifically discuss how the noise analysis affects each community for undeveloped lands.

The next step of the project is to hold a Public Hearing in early 2017 at Beach Park Middle School to obtain input from the general public on the Preferred Alternative.

Post Meeting Notation

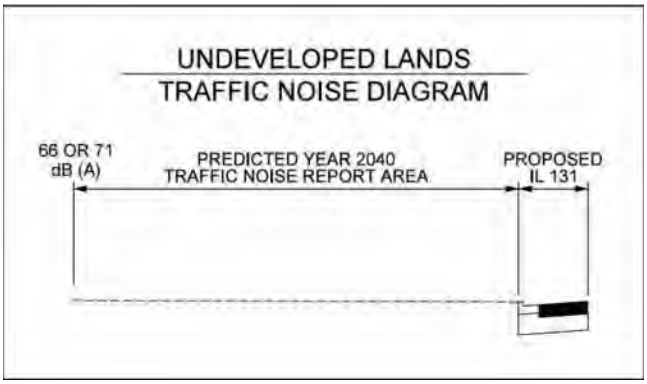
After the meeting it was noted that IDOT will send Lake County, Newport Township, Waukegan Township, Zion Township, the City of Waukegan and the Village of Wadsworth follow up emails regarding information on the undeveloped lands.

IL 131 (Green Bay Road)
Russell Road to Sunset Avenue
Lake County

Traffic Noise Considerations - Undeveloped Lands

Community Advisory Group Meeting #5
August 29, 2016

As part of the preliminary engineering and environmental study (Phase I) for this proposed project, projected future traffic noise levels were evaluated for lands (either currently under your jurisdiction or land that may come under your jurisdiction) near the proposed roadway improvement. For your information, this study area includes undeveloped or agriculture land that is zoned for uses other than agriculture, or land that is planned for future development in a comprehensive land use plan. For developed lands, a traffic noise study has been completed for this project and will be included in the Environmental Assessment which will be presented at the public hearing and transmitted to you upon completion of the Phase I study.



Attached for your information is an exhibit showing the predicted design year (2040) build traffic noise levels for these undeveloped lands identified along the project corridor, as well as a table with the noise abatement criteria (NAC) for different land uses. The exhibit is shaded according to the future land use activity and includes the predicted distances where year 2040 traffic noise will approach NAC for Activity Categories B, C and E. Development within this distance would be considered a traffic noise impact and abatement would need to be considered. We hope this information will be useful to you in planning and permitting future development in your area. Although noise abatement is not warranted, we recommend that you carefully consider the future predicted noise levels to avoid potential issues of public concern over incompatible noise levels.

To help with your future planning and discernment regarding permitting decisions, we encourage you to obtain the Federal Highway Administration (FHWA) publication titled *Entering the Quiet Zone: Noise Compatible Land Use Planning* from their website at http://www.fhwa.dot.gov/environment/noise/noise_compatible_planning/federal_approach/land_use/quitezon.pdf.

For additional information regarding traffic noise, regulations and policy, noise analyses or noise abatement, visit the Department's website at http://www.idot.illinois.gov/transportation-system/environment/index under the Community tab.

Project team members are available today to answer your questions relating to traffic noise. If you have any questions or concerns after the meeting, please contact Lori Brown, Illinois Department of Transportation Project Manager at:

(847) 705-4477 or
Lori.S.Brown@illinois.gov

Copies to: City of Zion, Village of Wadsworth, Village of Beach Park, City of Waukegan, Newport Township, Benton Township, Waukegan Township, Lake County

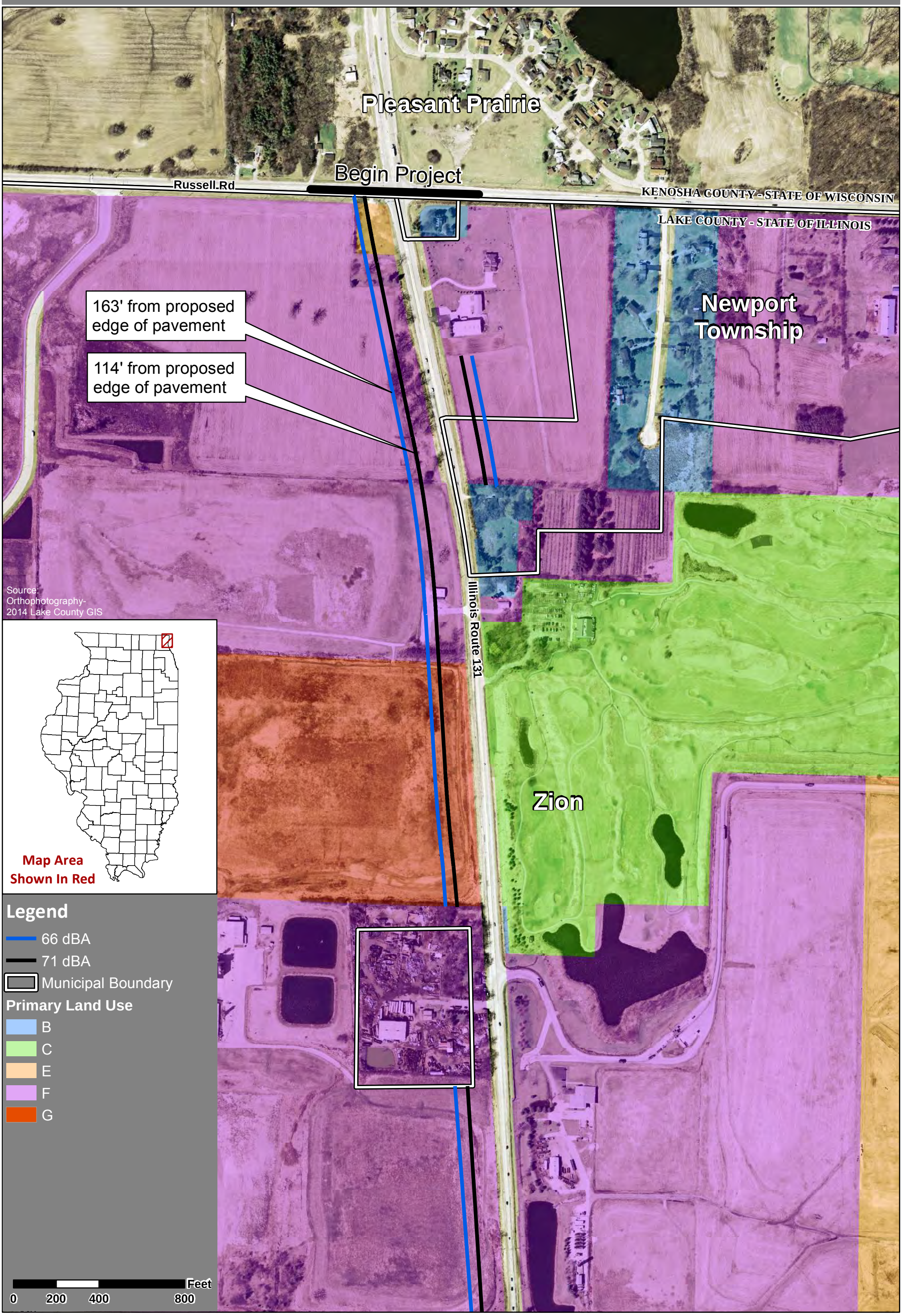
TABLE 1
NOISE ABATEMENT CRITERIA (NAC) - HOURLY A-WEIGHTED SOUND LEVEL

Activity Category	dB(A) $L_{eq}(h)$	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.
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 structures, radio studios, 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 structures, 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.

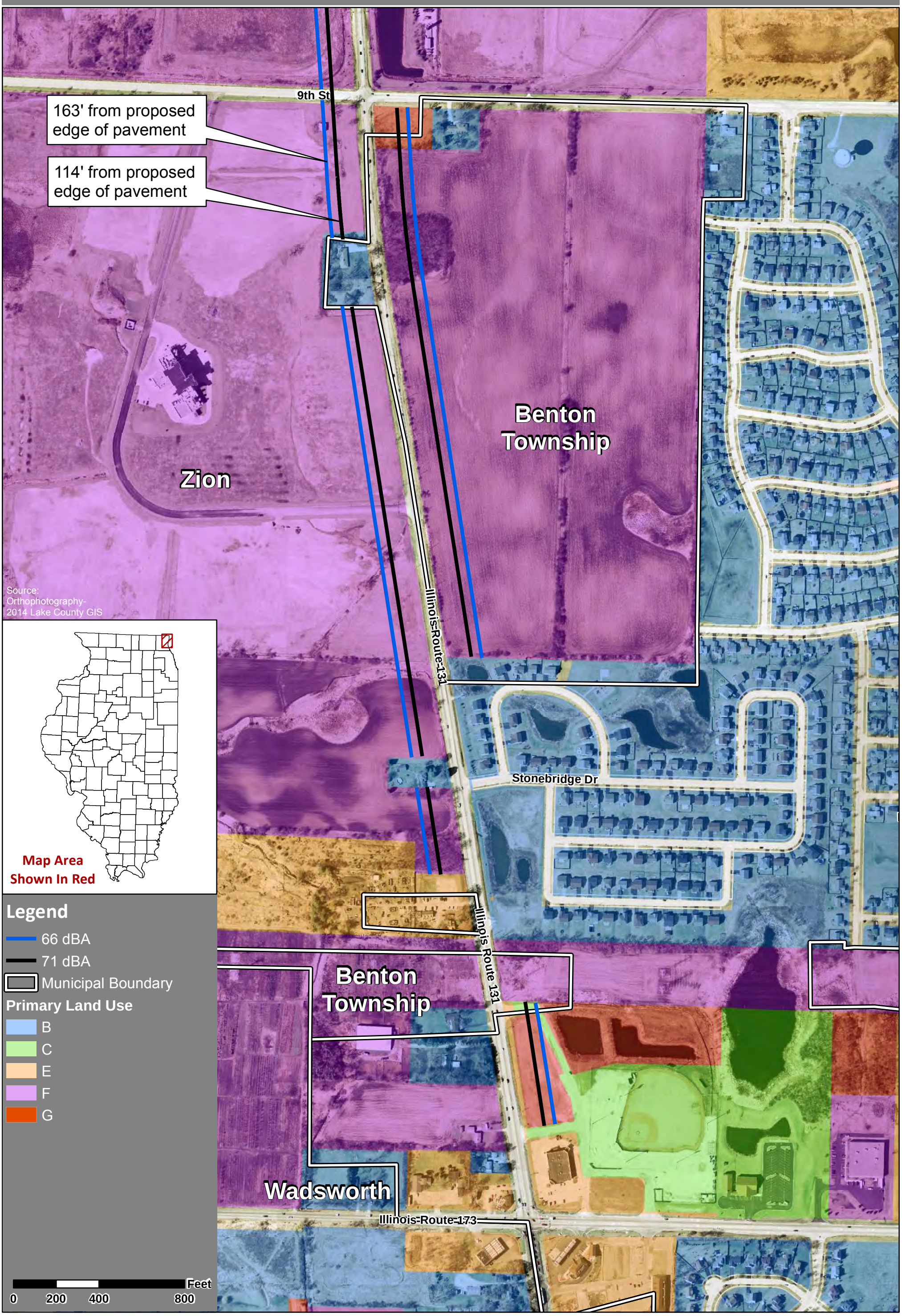
*** Includes undeveloped lands permitted for this Activity Category.*

Consideration of traffic noise abatement is required when predicted traffic noise levels "approach" the NAC, with "approach" defined as 1 dB(A) less than the NAC.

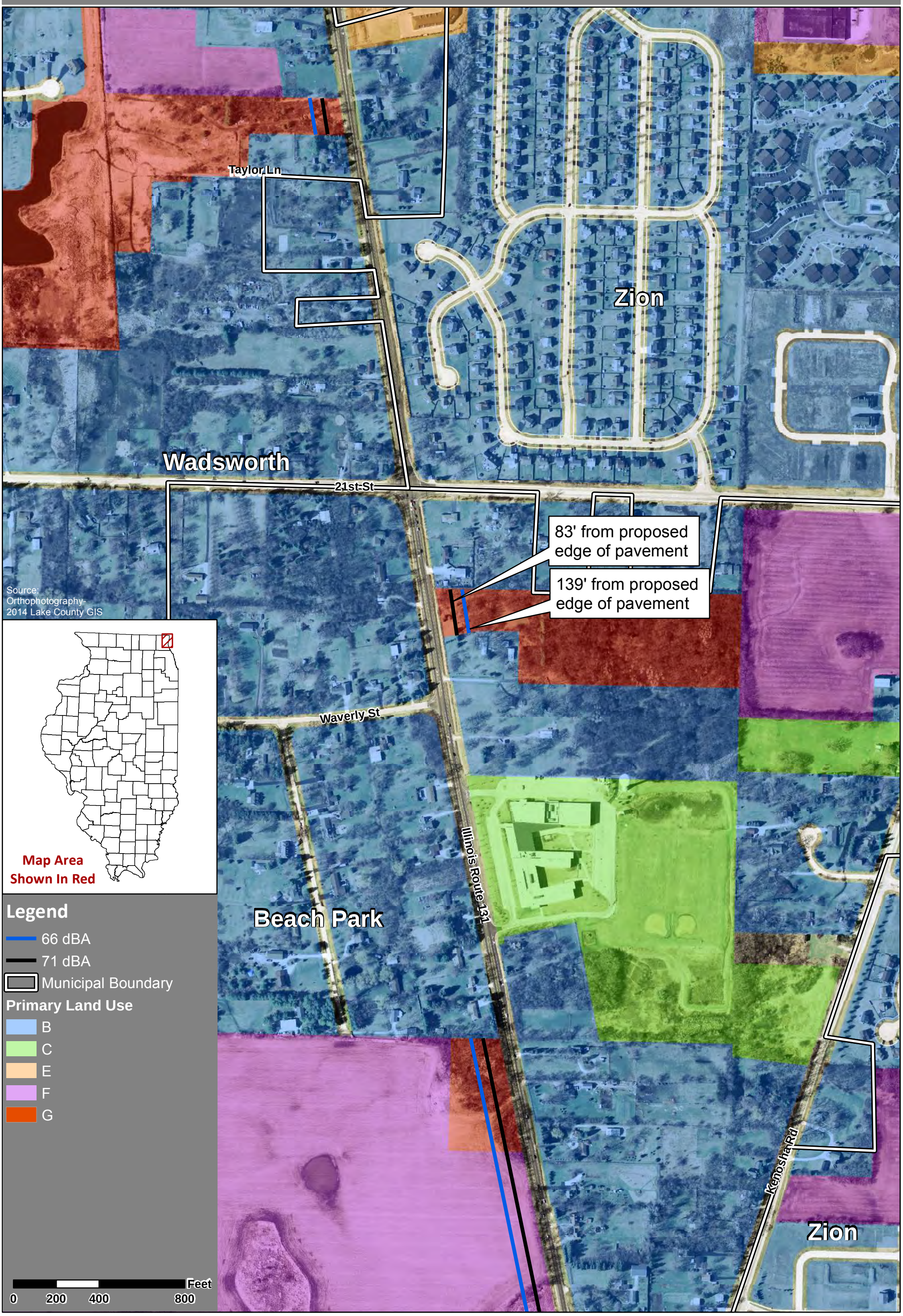
State Route 131
Undeveloped Lands



State Route 131
Undeveloped Lands



State Route 131
Undeveloped Lands



State Route 131
Undeveloped Lands

Zion

Wadsworth

28th St

29th St

Maplewood Rd

Clarendon Rd

Beach Park

Major Ave

Illinois Route 131

33rd St

Waldo Ave

83' from proposed edge of pavement

139' from proposed edge of pavement

Source:
Orthophotography-
2014 Lake County GIS

Map Area
Shown In Red

Legend

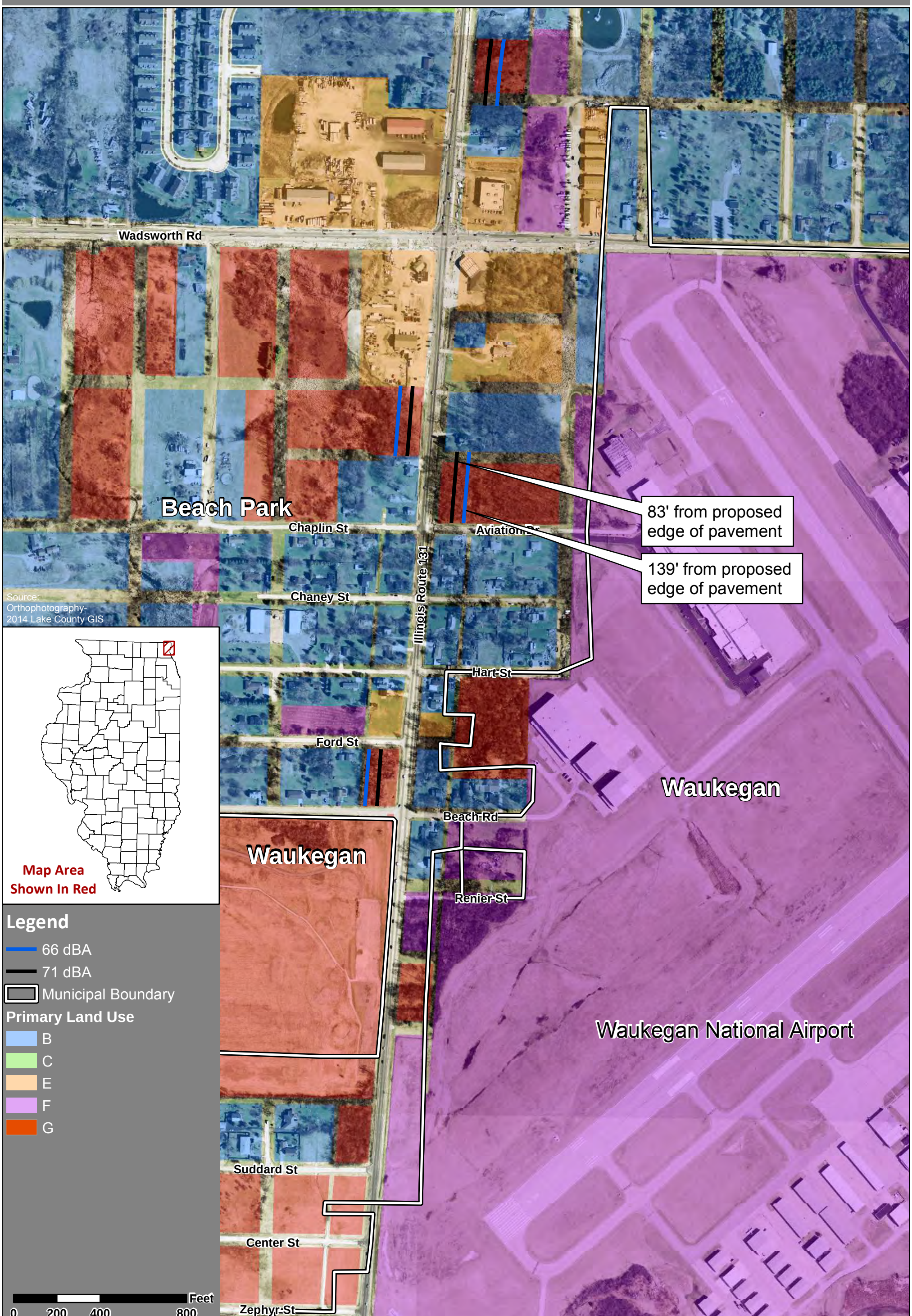
- 66 dBA
- 71 dBA
- Municipal Boundary

Primary Land Use

- B
- C
- E
- F
- G

0 200 400 800 Feet

State Route 131
Undeveloped Lands



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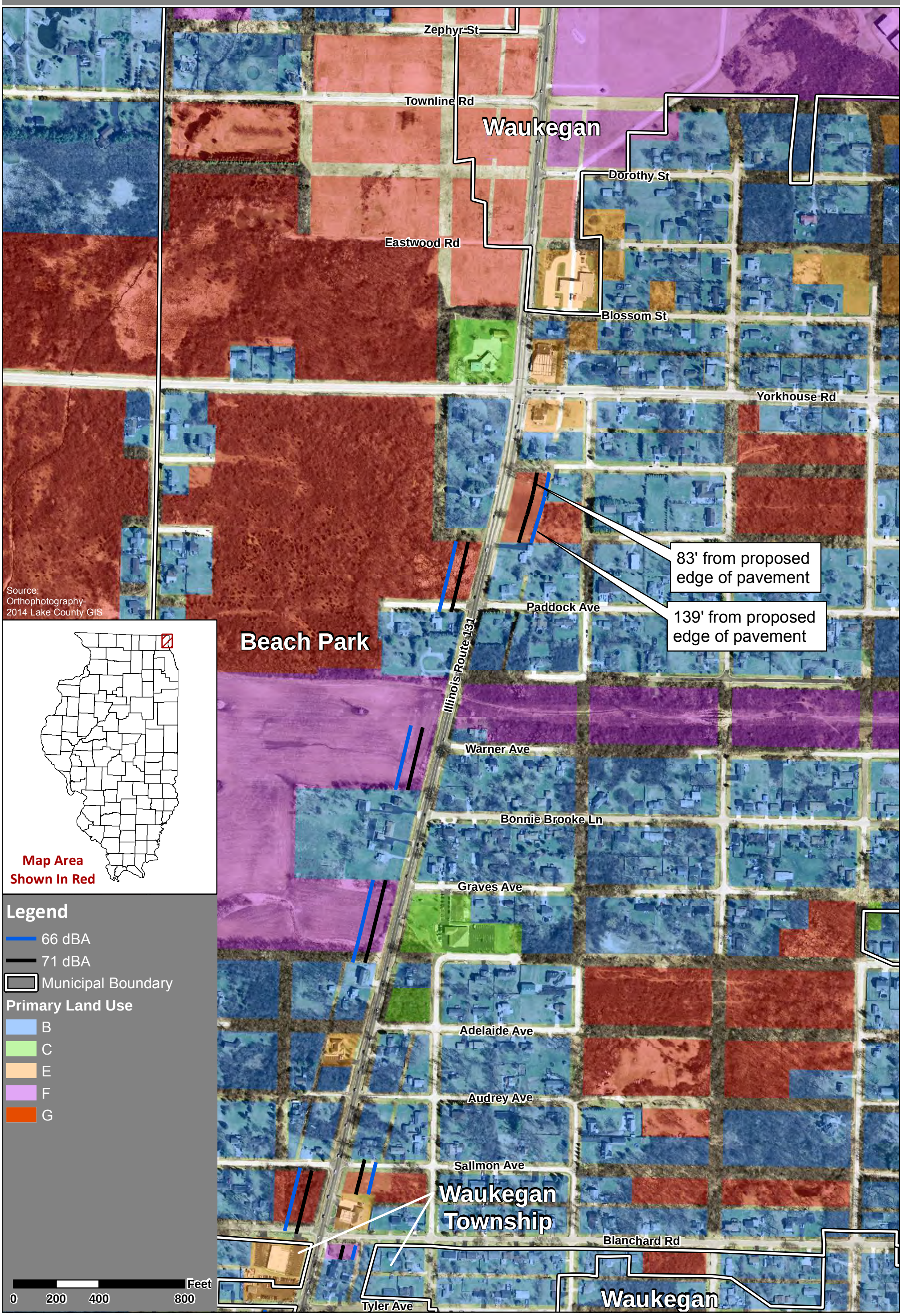
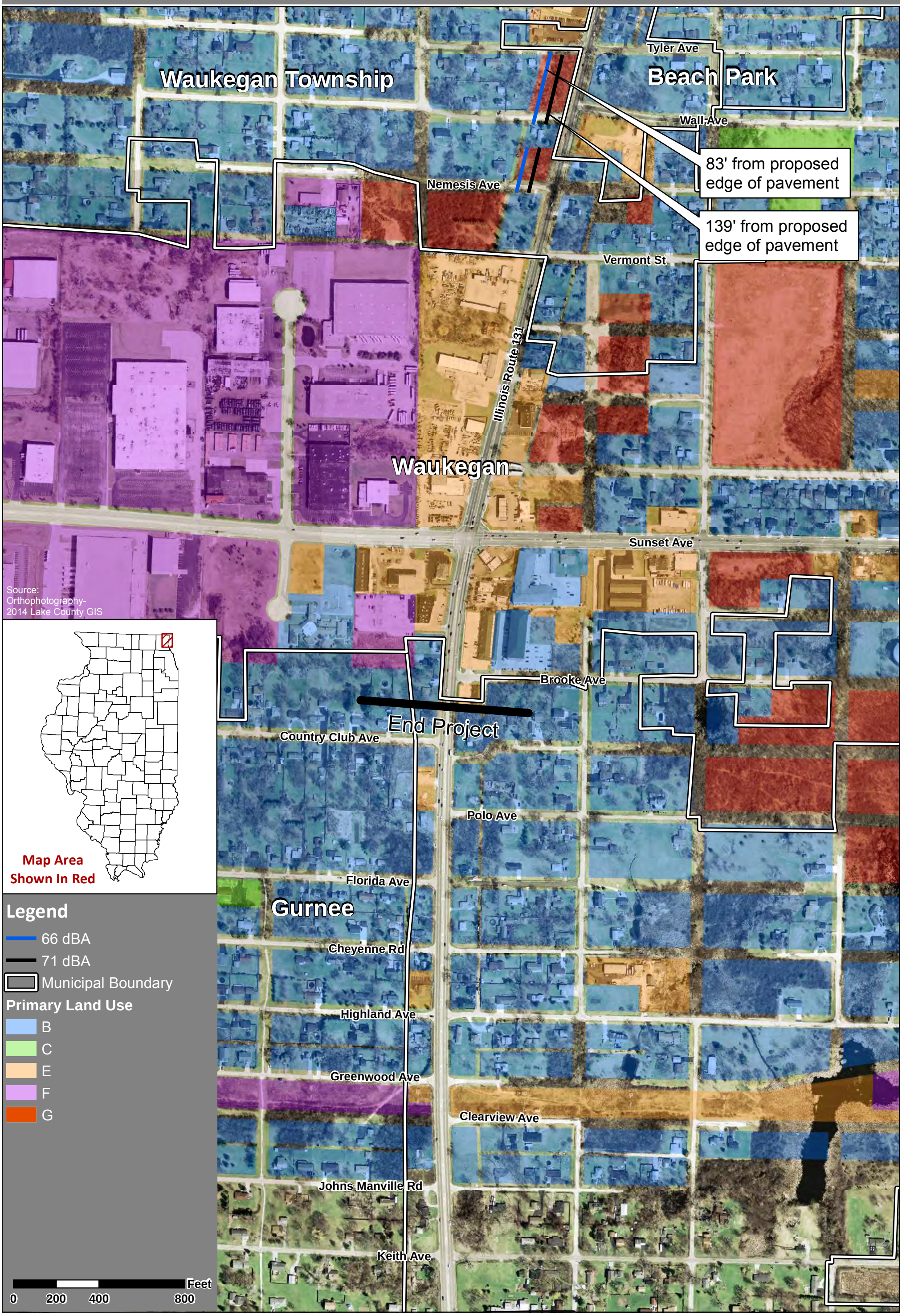
Undeveloped Lands



State Route 131
Undeveloped Lands