# Design
# NOISE STUDY REPORT

**WIDENING SAWGRASS EXPRESSWAY (SR 869)**
**FROM NORTH OF ATLANTIC BOULEVARD TO NORTH OF SAMPLE ROAD (MP 9 TO 12)**
**Broward County, Florida**

**Financial Project ID No.: 435461-1**

Prepared for:

**Florida's Turnpike Enterprise**

**December 2022**

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Prepared for:


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Prepared by:

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**December 2022**

# *EXECUTIVE SUMMARY*

The Florida Department of Transportation, Florida's Turnpike Enterprise (FTE) is proposing improvements to State Road (SR) 869 (Sawgrass Expressway) from North of Atlantic Boulevard (Blvd.) to North of Sample Road (Rd.) in Broward County, Florida. The proposed improvements include reconstruction, widening, and milling and resurfacing to modify the existing six-lane typical section (three lanes per direction) to incorporate two new lanes constructed within the existing median, for a total of ten-lanes. This preliminary Traffic Noise Evaluation includes a traffic noise analysis for noise sensitive sites along the Preferred Alternative which includes ten general use lanes.

This Design phase noise study includes a traffic noise analysis for residential and special land use areas (i.e., non-residential) along the Preferred Alternative. The traffic noise study is completed in accordance with Title 23, Code of Federal Regulations, Part 772 (23 CFR 772*), Procedures for Abatement of Highway Traffic Noise and Construction Noise* following methodology and procedures established by the FDOT in the *PD&E Manual*, Part 2, Chapter 18. The purpose of this noise study is to identify noise sensitive sites that would be impacted by the Preferred Alternative, evaluate abatement measures at impacted noise sensitive sites and determine where noise abatement (i.e., noise barriers) needs to be included in the Design plans.

Traffic noise levels were predicted at 78 receptor points representing 168 residences and three special land uses. For Design Year (2045) conditions, traffic noise levels are predicted to approach, meet, or exceed the Noise Abatement Criteria (NAC) at two special land uses (SLUs). These impacted special land uses were further evaluated to determine the feasibility and cost reasonableness of providing noise barriers to reduce traffic noise. One existing noise barrier is found in the corridor and no residential impacts were identified as a result, so no residential areas were assessed for noise abatement.

The noise barrier evaluation found that a noise barrier is reasonable and feasible at one SLU, the Coral Springs Regional Park. The barrier engineering review found no issues with the construction of the noise barrier. Therefore, this noise barrier is suggested to be included in the Design Plans and is shown in **Appendix C** Aerial Sheet 6.

Noise barriers were found to not be reasonable at one special land use (Sawgrass Springs Middle School) because there are not enough person-hours of use to warrant the construction of a noise barrier.

# *TABLE OF CONTENTS*


| Section | Title | Page |
|---|---|---|
| EXECUTIVE SUMMARY | | i |
| TABLE OF CONTENTS | | ii |
| LIST OF TABLES | | iii |
| LIST OF FIGURES | | iii |
| ACRONYMS | | iv |
| SECTION 1 | INTRODUCTION | 1-1 |
| 1.1 | Project Description | 1-1 |
| 1.2 | Summary of PD&E Results and Commitments | 1-2 |
| 1.2.1 | Date of Public Knowledge | 1-2 |
| SECTION 2 | METHODOLOGY | 2-1 |
| 2.1 | Noise Metrics | 2-1 |
| 2.2 | Traffic Data | 2-1 |
| 2.3 | Noise Abatement Criteria | 2-1 |
| 2.4 | Noise Abatement Measures | 2-4 |
| 2.4.1 | Special Land Uses | 2-5 |
| 2.5 | Existing Noise Barriers | 2-5 |
| SECTION 3 | TRAFFIC NOISE ANALYSIS | 3-1 |
| 3.1 | Predicted Noise Levels and Abatement Analysis | 3-1 |
| 3.1.1 | Noise Sensitive Sites | 3-1 |
| 3.1.1.1 | Vizcaya and Eagle Trace Communities | 3-1 |
| 3.1.1.2 | Coral Glades High School | 3-2 |
| 3.1.1.3 | Coral Springs Regional Park | 3-2 |
| 3.1.1.4 | Sawgrass Springs Middle School | 3-4 |
| 3.1.1.5 | Wyndham Lakes (Formerly Bay Pointe and Pelican Isle) | 3-6 |
| SECTION 4 | CONCLUSION | 4-1 |
| SECTION 5 | CONSTRUCTION NOISE AND VIBRATION | 5-1 |

SECTION 6 COMMUNITY COORDINATION ..... 6-1
SECTION 7 REFERENCES ..... 7-1

# *APPENDICES*

Appendix A Traffic Data
Appendix B Noise Measurement Field Sheets
Appendix C Predicted Noise Levels
Appendix D Project Aerials
Appendix E TNM Modeling Files (Provided in Project Files)

# *LIST OF TABLES*

**Table** **Title** **Page**

Table 1 FHWA Noise Abatement Criteria ..... 2-3
Table 2 Typical Noise Levels ..... 2-4
Table 3 Noise Barrier Analysis – Coral Springs Regional Park ..... 3-3
Table 4 Noise Barrier Analysis – Sawgrass Middle School ..... 3-5

# *LIST OF FIGURES*

**Table** **Title** **Page**

Figure 1 Project Location Map ..... 1-3

# *ACRONYMS*

| | |
|---|---|
| CFR | Code of Federal Regulations |
| CBD | Central Business District |
| CNE | Common Noise Environment |
| dB | Decibels |
| dB(A) | A-weighted decibels |
| FDOT | Florida Department of Transportation |
| FHWA | Federal Highway Administration |
| Ft | Feet |
| FTE | Florida's Turnpike Enterprise |
| LOS | Level of Service |
| MP | Mile Post |
| NAC | Noise Abatement Criteria |
| NEPA | National Environmental Policy Act |
| PD&E | Project Development and Environment |
| ROW | Right-of-way |
| SR | State Road |
| TIP | Transportation Improvement Program |
| TNM | Traffic Noise Model |

# SECTION 1
# *INTRODUCTION*

The Florida Department of Transportation, Florida's Turnpike Enterprise (FTE) is proposing improvements to State Road (SR) 869 (Sawgrass Expressway) from North of Atlantic Boulevard (Blvd.) to North of Sample Road (Rd.) in Broward County, Florida. This preliminary Traffic Noise Evaluation includes a traffic noise analysis for residential areas and three special land uses (SLUs; i.e., non-residential areas) along the Preferred Alternative which includes ten general use lanes.

This Traffic Noise Evaluation is completed in accordance with Title 23, Code of Federal Regulations, Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise* following methodology and procedures established by the FDOT in the Project Development and Environment (*PD&E) Manual*, Part 2, Chapter 18 (*Highway Traffic Noise*). The purpose of this traffic noise study is to identify noise sensitive sites that would be impacted by the proposed project, evaluate abatement measures at impacted noise sensitive sites and determine where noise abatement (i.e., noise barriers) needs to be included in the design plans.

Traffic noise levels were predicted at 78 receptor points representing 168 residences and three special land uses. For Design Year (2045) conditions, traffic noise levels are predicted to approach, meet, or exceed the Noise Abatement Criteria (NAC) at two Special Land Uses (SLUs). These impacted special land uses were further evaluated to determine the feasibility and cost reasonableness of providing noise barriers to reduce traffic noise. One existing noise barrier is found in the corridor and no residential impacts were identified as a result, so no residential areas were assessed for noise abatement.

## *1.1 Project Description*

The Sawgrass Expressway is an existing tolled, limited access facility functionally classified as a Divided Urban Principal Arterial Expressway with design and posted speeds of 70 MPH and 65 MPH, respectively. The Sawgrass Expressway is part of Florida's Strategic Intermodal System (SIS) and the National Highway System (NHS). In addition, the Sawgrass Expressway is designated as an evacuation route providing connectivity to other evacuation routes such as I-75, I-95 (SR 9), and Florida's Turnpike Mainline (SR 91).

FTE is proposing improvements to the Sawgrass Expressway (SR 869) at the Sample Road Interchange, in Broward County, Florida (**Figure 1**). The proposed improvements include reconstruction, widening, and milling and resurfacing to modify the existing six-lane typical section (three lanes per direction) to incorporate two new lanes constructed within the existing median, for a total of ten-lanes. A double face median barrier will separate the northbound (NB) and southbound (SB) lanes. Only six (6) lanes will be striped for use until the adjacent segments of the Sawgrass Expressway (SR 869) are constructed. In addition to the new lanes, operational improvements include the addition of capacity-type improvements (i.e. new auxiliary lanes) and interchange improvements such as widening of the Sawgrass (SR 869) bridges over Sample Road and the construction of a Diverging Diamond Interchange (DDI) at Sample Road.

Land use in the area generally includes residential and commercial areas on the east side, and vacant wetlands on the west side of Sawgrass Expressway.

## *1.2 Summary of PD&E Results and Commitments*

In April 2017, a PD&E Study was completed to evaluate noise sensitive areas and to determine if noise abatement is feasible and reasonable for the proposed widening of the Sawgrass Expressway (435763-1: Widening Sawgrass Expressway from South of Sunrise Blvd. to South of US 441). The PD&E study evaluated a widening from the existing six lanes to ten lanes.

Based on the PD&E study, traffic noise impacts exist along the current project's corridor (435461-1 Sawgrass Expressway from north of Atlantic Blvd. to north of Sample Rd.) at two SLUs. The noise barrier evaluation found that a noise barrier was potentially reasonable and feasible at Coral Springs Regional Park. Additionally, a substantial increase was not predicted to occur at any noise sensitive site.

### *1.2.1 Date of Public Knowledge*

The Date of Public Knowledge (DPK) is the approval date of the environmental document. The DPK for this project remains the approval date of the SEIR, as there have been no changes in capacity in Design since the approved 2017 PD&E. The SEIR for FPID 435763-1-22-01 (PD&E to Widen Sawgrass from South of Sunrise to South of US 441) was signed July 28, 2017, which would constitute the DPK.

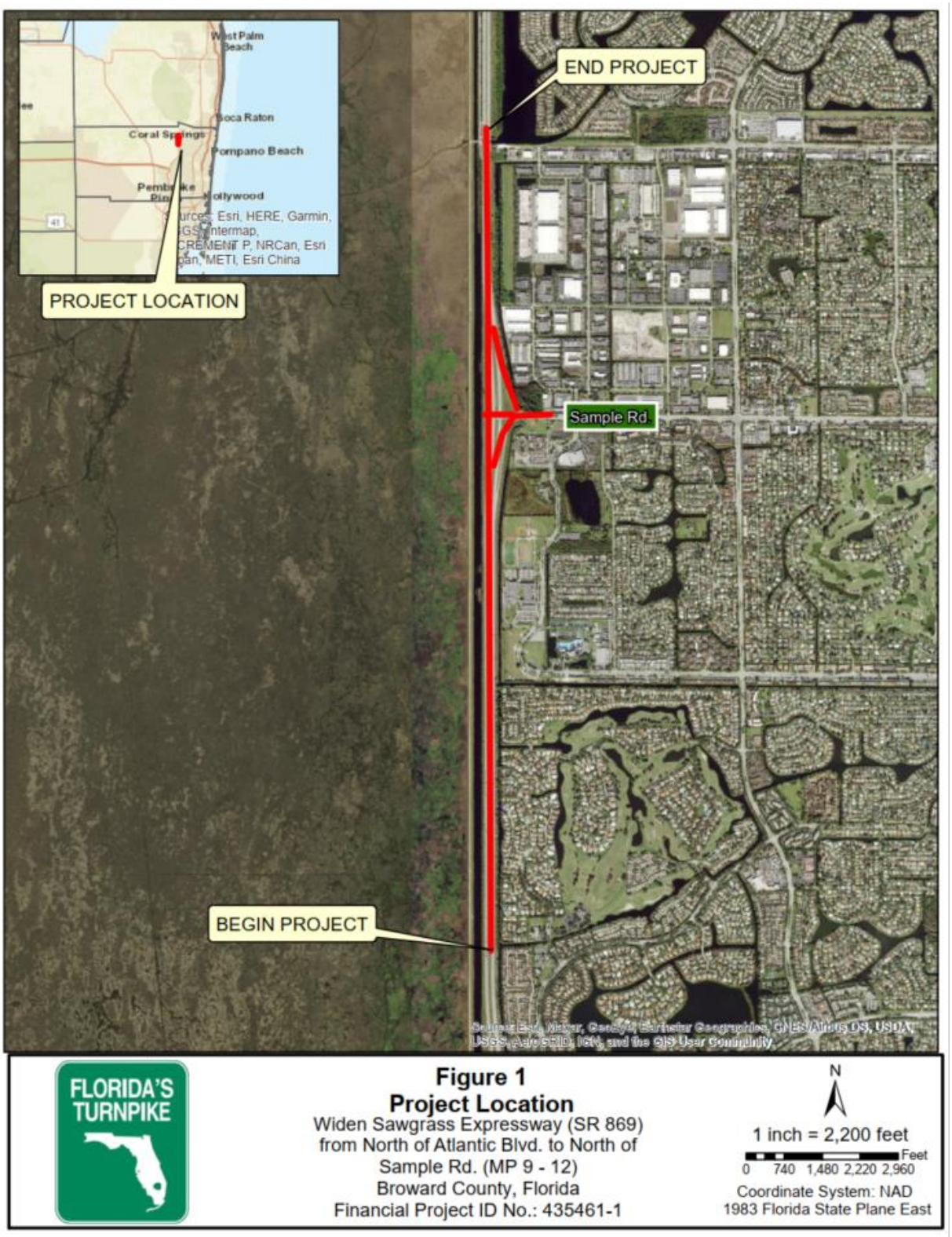



**Figure 1 Project Location Map**

# SECTION 2
# *METHODOLOGY*

The Traffic Noise Evaluation documented in this report is performed in accordance with the Code of Federal Regulations Title 23 Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise* using methodology established in the FDOT *PD&E Manual*, Part 2, Chapter 18 (*Highway Traffic Noise*) (FDOT, July 2020). Predicted traffic noise levels were produced using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM), version 2.5.

## *2.1 Noise Metrics*

Traffic noise levels developed for this analysis are expressed in decibels (dB) using an "A"-scale [dB(A)] weighting. This scale most closely approximates the response characteristics of the human ear to typical traffic noise levels. All reported traffic noise levels are hourly equivalent noise levels [Leq(h)]. The Leq(h) is defined as the equivalent steady-state sound level that, in an hourly period, contains the same acoustic energy as the time-varying sound level for the same hourly period. Use of these metrics is consistent with the requirements of 23 CFR 772.

## *2.2 Traffic Data*

Among other factors, traffic noise is heavily dependent on both traffic speed and traffic volume with the amount of noise generated by traffic increasing as the vehicle speed and number of vehicles increases. The traffic conditions that result in the highest noise levels for roadways are the hourly traffic volumes that represent Level of Service (LOS) C traffic conditions because they represent maximized traffic volumes that continue to travel at free flow speed.

Traffic data were reviewed to determine maximum traffic volumes that would allow traffic to flow at speeds consistent with established speed limits. Traffic data for the 2045 Build condition were provided by FTE and reviewed to identify forecasted traffic volumes that would allow vehicles to travel at speeds consistent with established speed limits. For roadway segments where the predicted hourly design year traffic volumes equaled or exceeded LOS C, LOS C hourly traffic was utilized. For roadway segments where the predicted hourly traffic demand was less than LOS C traffic volumes, the predicted hourly demand volumes were utilized. For ramp volumes, hourly traffic demand volumes were utilized. Traffic volumes and speeds used in the analysis are provided in **Appendix A**.

In addition, the total vehicle volume is divided between five classifications: cars, medium trucks, heavy trucks, buses, and motorcycles. Traffic vehicle percentages used in the analysis are provided in **Appendix A**.

## *2.3 Noise Abatement Criteria*

Noise sensitive sites are any property where frequent human use occurs and a lowered noise level would be of benefit. FHWA has established noise levels at which abatement is considered for various types of noise sensitive sites. These levels, which are used by the FTE for the purpose of evaluating traffic noise, are referred to as the Noise Abatement Criteria (NAC). As shown in **Table 1**, NAC vary by activity category (i.e., land use). Noise abatement measures are considered when predicted traffic noise levels for the design year (2045) approach, meet, or exceed the NAC. FDOT defines "approach" as within 1 dB(A) of

FHWA criteria. For perspective, **Table 2** provides typical noise levels of common indoor and outdoor activities.

For Type I projects, noise abatement measures must also be considered when a substantial increase in traffic noise will occur as a direct result of the transportation project. FDOT defines a substantial increase as 15 or more decibels above existing conditions. A substantial increase typically occurs in areas where traffic noise is a minor component of the existing noise environment but would become a major component after the project is constructed (e.g., new alignment project). Based on predictions made during the PD&E phase, substantial increases in traffic noise are not expected to occur when the number of travel lanes is increased in the future.

Common Noise Environments (CNEs) are studied separately. A CNE is a group of receptors of the same NAC that are exposed to traffic noise in a similar way. These noise exposures are due to traffic mix, volume, speed and topographic features, and typically occur between two secondary noise sources such as interchanges, intersections, and crossroads.

**Table 1**
**FHWA Noise Abatement Criteria**

| Activity Category | Activity Leq(h) | | Evaluation Location | Description of Land Use Activity Category |
|---|---|---|---|---|
| | FHWA | FDOT | | |
| A | 57 | 56 | 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 | 66 | Exterior | Residential. |
| C | 67 | 66 | Exterior | Active sports 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 | 51 | 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 | 71 | 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. |

Source: 23 CFR Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, FHWA, 2010.

**Table 2**
**Typical Noise Levels**

| Common Outdoor Activities | Noise Level dB(A) | Common Indoor Activities |
|---|---|---|
| | **---110---** | Rock Band |
| Jet Fly-over at 1000 ft | | |
| | **---100---** | |
| Gas Lawn Mower at 3 ft | | |
| | **---90---** | |
| Diesel Truck at 50 ft, at 50 mph | | Food Blender at 3 ft |
| | **---80---** | Garbage Disposal at 3 ft |
| Noise Urban Area (Daytime) | | |
| Gas Lawn Mower at 100 ft | **---70---** | Vacuum Cleaner at 10 ft |
| Commercial Area | | Normal Speech at 3 ft |
| Heavy Traffic at 300 ft | **---60---** | |
| | | Large Business Office |
| Quiet Urban Daytime | **---50---** | Dishwasher Next Room |
| | | |
| Quiet Urban Nighttime | **---40---** | Theater, Large Conference Room |
| Quiet Suburban Nighttime | | (Background) |
| | **---30---** | Library |
| Quiet Rural Nighttime | | Bedroom at Night, Concert Hall |
| | **---20---** | (Background) |
| | | |
| | **---10---** | |
| | | |
| Lowest Threshold of Human Hearing | **---0---** | Lowest Threshold of Human Hearing |

Source: California Dept. of Transportation Technical Noise Supplement, Oct. 1998, Page 18.

## *2.4 Noise Abatement Measures*

Under Type I projects, noise abatement is considered at all noise sensitive sites predicted to approach, meet, or exceed the NAC as stipulated by 23 CFR 772. Abatement measures considered during the PD&E phase included traffic management, alignment modifications, noise buffer zones through application of land use controls and noise barriers. However, noise barriers were determined to be the only viable noise abatement measure. Therefore, consistent with the results of the PD&E, noise barriers are considered at all noise sensitive sites predicted to approach, meet, or exceed the NAC for the year 2045 Build condition.

Barriers reduce noise levels by blocking the sound path between a highway and noise sensitive site. To effectively reduce traffic noise, a barrier must be relatively long, continuous (with no intermittent openings), and of sufficient height. For a noise barrier to be considered feasible and cost reasonable, the following minimum conditions should be met:

- At least two impacted receptors must be provided a noise reduction of 5 dB(A) or more to be considered feasible.
- A noise barrier must also attain the Noise Reduction Design Goal (NRDG), which states that a minimum noise reduction of 7 dB(A) for at least one benefited receptor must be achieved. Of

importance, this receptor may also have been previously identified as meeting the feasibility requirement of receiving a 5 dB(A) reduction (first bullet).

- The cost of the noise barriers should not exceed $42,000 per benefited receptor. This is the upper cost limit established by FDOT. A benefited receptor is defined as a recipient of an abatement measure that experiences at least a 5 dB(A) reduction as a result of providing a noise barrier. The current unit cost used to evaluate cost reasonableness is $30 per square foot (sq. ft.).

Within the project limits, noise barrier locations were evaluated as follows:

- Right-of-way noise barriers located outside the clear recovery zone, but within the ROW, are initially considered at heights ranging from 8 ft. to 22 ft. in 2-ft. increments. According to the *FDOT Design Manual,* noise barriers outside the clear zone shall not exceed a maximum height of 22 ft.
- If a right-of-way barrier cannot provide at least a 5 dB(A) reduction to an impacted receptor or the barrier is not feasible due to construction limitations, then a shoulder barrier is evaluated. According to the *FDOT Design Manual,* shoulder barriers within the clear zone shall not exceed 14 ft. in height when on embankment and 8 ft. in height when on structure.
- The length and height of the noise barriers are optimized based on the benefit provided to noise sensitive sites with predicted noise levels that approach, meet, or exceed the NAC.

### *2.4.1 Special Land Uses*

It should be noted that the methodology used to evaluate noise barriers for special land uses (i.e., non-residential) is different than for residential receptors. Noise barriers for special land use were evaluated following procedures documented in *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations* (FDOT 2009). This methodology accounts for the threshold of $42,000 per benefited receptor and translates it to apply to a non-residential receptor based on person-hours-of-use in the following equation:

$$\frac{\$42k}{residence} x \frac{residence}{2.46\ persons} x \frac{usage}{24\ hours} x\ (14ft. x\ 100ft.) = \$995{,}935/\text{person hour/ft}^2$$

The cost of abatement is considered reasonable if the calculated "abatement cost factor" is below the "criteria abatement cost factor" of the above equation ($995,935/person-hour/ft$^2$).

## *2.5 Existing Noise Barriers*

Of importance, one existing noise barrier is present within the project limits. An 18 ft. high and 9,598 ft. long ROW barrier along the Vizcaya and Eagle Trace Communities was constructed in 2006 and is shown in **Appendix C**.

The Federal Highway Administration's (FHWA) guidance on performing highway traffic noise abatement evaluation with existing noise barriers (FHWA-HEP-12-051) was followed where existing noise barriers are found. FHWA's guidance, FHWA-HEP-12-051, states that the existing noise barrier should be evaluated to identify if it meets the State Highway Agency's (SHA) existing highway traffic noise policy (see **Section 2.3**). If the existing noise barrier does not meet the SHA's highway traffic noise policy, a replacement noise barrier should be evaluated. However, if the noise barrier meets the SHA's highway traffic noise policy, the existing noise barrier is sufficient and a replacement noise barrier is not evaluated. Because noise barriers exist along the project corridor, the FHWA guidance FHWA-HEP-12-051 was followed.

# SECTION 3
# *TRAFFIC NOISE ANALYSIS*

## *3.1 Predicted Noise Levels and Abatement Analysis*

Within the project limits, noise sensitive land uses adjacent to the Sawgrass Expressway include residential and SLU areas. Residential communities are in Activity Category B of the NAC. SLUs evaluated were identified in NAC C and D. Noise levels were predicted at 78 receptor points in total, which represent 168 residences and three SLUs.

The location of the receptor points representing the noise sensitive sites are in accordance with the FDOT *PD&E Manual,* Part 2, Chapter 18 (*Highway Traffic Noise*). Residential receptor points are located at the edge of the building closest to the Turnpike or Atlantic Blvd.

Predicted noise levels for these sites are provided in **Appendix B**. The locations of the receptor points identified in **Appendix B** are depicted on the aerials found in **Appendix C**. The numbers identify a specific receptor point and generally increase from north to south.

For the year 2045 Build condition, and with the existing noise barriers, traffic noise levels are predicted to approach, meet, or exceed the NAC at two SLU within the project limits. These impacted receptors were further evaluated to determine the feasibility and cost reasonableness of providing noise barriers to reduce traffic noise.

### *3.1.1 Noise Sensitive Sites*

Predicted traffic noise levels are predicted to approach, meet, or exceed the NAC for 2045 Build condition at two SLUs. The discussions that follow analyze residential communities and SLUs along the east side (i.e., northbound lanes) of the Sawgrass Expressway from south to north from Atlantic Blvd. to Sample Rd. No noise sensitive sites exist to the west of the Sawgrass Expressway (i.e., along the southbound lanes).

#### *3.1.1.1 Vizcaya and Eagle Trace Communities*

Residences in the Vizcaya and Eagle Trace communities (**Appendix C**, Aerial Sheets 1 through 5) are located on the east side of the Sawgrass Expressway and north of Atlantic Blvd. An 18 ft. ROW noise barrier exists between the Turnpike and these residences. This barrier was included in the highway traffic noise model for the future build (2045) condition. Additionally, some of these residences have a balcony on the second story of the single-family residence. In these instances, both the ground floor as well as the balcony location were modeled to identify the location with the highest noise level, but the receptor pair were only counted as one residence.

Residences in the communities are represented by 58 receptor points representing 146 residences. With the existing 18 ft. ROW noise barrier, exterior traffic noise levels are predicted to range from 52.2 to 65.5 dB(A) for the Design year and do not approach, meet or exceed the NAC at any residence. Therefore, a replacement noise barrier was not evaluated for these residences, consistent with FHWA-HEP-12-051 (although the existing barrier would be retained under this project).

#### *3.1.1.2 Coral Glades High School*

The Coral Glades High School (Appendix C, Aerial Sheet 6) is a school with no exterior area of frequent human use near the Sawgrass Expressway. Therefore, the school was analyzed as an Activity Category D (interior) use and represented by one receptor (R1-2). Following FHWA procedures documented in Highway Traffic Noise: Analysis and Abatement Guidance (FHWA, December 2011), the traffic noise level for the interior of the school is determined by applying a 25 dB(A) reduction to the exterior traffic noise prediction. The 25 dB(A) reduction accounts for noise reduction from the masonry building. With a predicted interior traffic noise level of 45.6 dB(A) for the year 2045 Build condition, the traffic noise level does not approach or exceed the NAC at the school. Therefore, a noise barrier is not considered for the Coral Glades High School.

#### *3.1.1.3 Coral Springs Regional Park*

The Coral Springs Regional Park (Appendix C, Aerial Sheet 6) is an athletic complex, which consists of a track/football/soccer field with bleachers on both sides, a baseball and a softball field, two mixed use fields, and four basketball courts. The complex is represented by five receptors. Exterior traffic noise levels are predicted to range from 64.1 to 73.1 dB(A) for the Design year and approach, meet or exceed the NAC. Therefore, a noise barrier was evaluated.

A noise barrier was evaluated following procedures documented in "A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations" (FDOT 2009). An evaluation of a noise barrier at the ROW line and at the shoulder is summarized in **Table 3**.

A 22-foot high ROW mounted noise barrier would potentially benefit 100% percent of the impacted area. To not exceed the cost reasonable limit of $995,935 per person-hour of use per square foot of noise barrier, 1,664 person-hours of use need to occur within the benefited area on an average day.

The Coral Springs Regional Park is utilized by the Coral Glades High School for sports and educational classes. If 1,664 person-hours of use are needed in the benefitted area, the entire facility would need to be utilized by 1,771 person-hours of daily use. For the 2021/2022 school year, Coral Glades High School has a student population of 2,817 students.[1] With the student population, the staff, and local citizens, it is conceivable for the park to be utilized by enough people to meet the person-hours at the cost reasonable limit. Therefore, an engineering review was performed on the 22-foot high ROW mounted noise barrier.

The engineering review found no issues with constructing the noise barrier. The engineering review form can be found in **Appendix D**. Therefore, this noise barrier is suggested to be included in the Design Plans and is shown in **Appendix C** Aerial Sheet 6.

[1] https://webapp.browardschools.com/schoolenrollment/Default.aspx?id=29

## Table 3 Noise Barrier Analysis – Coral Springs Regional Park

| Barrier Location | Barrier Height (feet) | Total Barrier Length (feet)[1] | Total Cost[2] | Total Number of Receptors in Grid | Impacts | | | Benefits | | | Maximum Reduction | Required Person-Hours of Daily Use Within Benefited Area | Required Person-Hours of Daily Use Within Area Evaluated at the SLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total Number of Receptors Impacted | Total Number of Receptors Impacted and Benefited | Percentage of Impacted Area Benefited | Total Number of Receptors Benefited | Percentage of Area Evaluated Benefited | Average Reduction in Benefited Area (dB(A)) | | | |
| Shoulder | 8 | 2,848 | $683,520 | 166 | 91 | 91 | 100% | 136 | 82% | 5.6 | 7.0 | 961 | 1,173 |
| | 10 | 2,323 | $696,900 | | | 91 | 100% | 130 | 78% | 6.0 | 8.0 | 980 | 1,251 |
| | 12 | 1,834 | $660,240 | | | 91 | 100% | 125 | 75% | 6.4 | 9.1 | 929 | 1,234 |
| | 14 | 1,673 | $702,660 | | | 91 | 100% | 140 | 84% | 6.5 | 9.7 | 988 | 1,171 |
| ROW | 8 | 3,299 | $791,760 | | | 86 | 95% | 115 | 69% | 5.5 | 7.0 | 1,500 | 2,165 |
| | 10 | 2,382 | $714,600 | | | 91 | 100% | 120 | 72% | 6.0 | 8.6 | 1,005 | 1,390 |
| | 12 | 1,844 | $663,840 | | | 91 | 100% | 132 | 80% | 6.4 | 9.3 | 934 | 1,175 |
| | 14 | 1,669 | $700,980 | | | 91 | 100% | 134 | 81% | 6.6 | 9.9 | 986 | 1,221 |
| | 16 | 1,776 | $852,480 | | | 91 | 100% | 150 | 90% | 6.9 | 10.5 | 1,199 | 1,327 |
| | 18 | 1,684 | $909,360 | | | 91 | 100% | 147 | 89% | 6.9 | 10.8 | 1,200 | 1,355 |
| | 20 | 1,494 | $896,400 | | | 91 | 100% | 143 | 86% | 7.0 | 11.0 | 1,261 | 1,464 |
| | 22 | 1,793 | $1,183,380 | | | 91 | 100% | 156 | 94% | 7.6 | 11.8 | 1,664 | 1,771 |

[1] Full height is for the length indicated. If a shoulder noise barrier location is indicated, the length of vertical height tapers at the shoulder barrier's terminus (See FDOT Standard Plans) would be in addition to the length indicated.
[2] Unit cost of $30 per sq. f.t of noise barrier.

#### *3.1.1.4 Sawgrass Springs Middle School*

The Sawgrass Springs Middle School (Appendix C, Aerial Sheet 7) is a school with two exterior areas of frequent human use near the Sawgrass Expressway (an outdoor pavilion/shelter and softball fields) and is represented by two receptors. Exterior traffic noise levels are predicted to range from 66.3 to 71.7 dB(A) for the Design year and approach, meet or exceed the NAC. Therefore, a noise barrier was evaluated.

A noise barrier was evaluated following procedures documented in "A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations" (FDOT 2009). An evaluation of a noise barrier at the ROW line and the shoulder is summarized in **Table 4**.

A 14-foot high shoulder mounted noise barrier would potentially benefit only about 73 percent of the impacted area. To not exceed the cost reasonable limit of $995,935 per person-hour of use per square foot of noise barrier, 2.115 person-hours of use need to occur within the benefited area on an average day. To potentially benefit 100 percent of the impact area, a ROW noise barrier height of 16 feet or greater is needed with at least 2,092 person-hours of use occurring within the benefited area on an average day.

Sawgrass Springs Middle School has a student population of 1,182 students.[2] The minimum number of person-hours of use which need to occur within the benefited area on an average day for a noise barrier to be cost reasonable is 2,005 person-hours. Based on this, it is not conceivable for the impacted outdoor use facilities to be utilized by enough people to meet the person-hours at the cost reasonable limit. Therefore, a noise barrier is not recommended for further evaluation.

[2] https://webapp.browardschools.com/schoolenrollment/Default.aspx?id=29

## Table 4 Noise Barrier Analysis – Sawgrass Middle School

| Barrier Location | Barrier Height (feet) | Total Barrier Length (feet)[1] | Total Cost[2] | Total Number of Receptors in Grid | Impacts | | | Benefits | | | Maximum Reduction | Required Person-Hours of Daily Use Within Benefited Area | Required Person-Hours of Daily Use Within Area Evaluated at the SLU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total Number of Receptors Impacted | Total Number of Receptors Impacted and Benefited | Percentage of Impacted Area Benefited | Total Number of Receptors Benefited | Percentage of Area Evaluated Benefited | Average Reduction in Benefited Area (dB(A)) | | | |
| Shoulder | 8 | 2,752 | $660,480 | 123 | 33 | 19 | 58% | 20 | 16% | 6.8 | 9.0 | 929 | 5,713 |
| | 10 | 772 | $231,600 | | | 20 | 61% | 20 | 16% | 7.4 | 10.0 | 326 | 2,005 |
| | 12 | 3,846 | $1,384,560 | | | 21 | 64% | 32 | 26% | 7.6 | 11.5 | 1,947 | 7,484 |
| | 14 | 3,582 | $1,504,440 | | | 24 | 73% | 35 | 28% | 7.8 | 12.2 | 2,115 | 7,433 |
| ROW | 8 | 2,125 | $510,000 | | | 21 | 64% | 21 | 17% | 6.8 | 9.4 | 717 | 4,200 |
| | 10 | 727 | $218,100 | | | 21 | 64% | 21 | 17% | 7.8 | 10.5 | 500 | 2,929 |
| | 12 | 2,837 | $1,021,320 | | | 24 | 73% | 32 | 26% | 7.7 | 11.7 | 1,436 | 5,520 |
| | 14 | 3,669 | $1,540,980 | | | 28 | 85% | 39 | 32% | 7.8 | 12.5 | 2,167 | 6,834 |
| | 16 | 3,100 | $1,488,000 | | | 33 | 100% | 47 | 38% | 7.8 | 13.2 | 2,092 | 5,475 |
| | 18 | 1,683 | $908,820 | | | 33 | 100% | 42 | 34% | 8.0 | 13.4 | 1,278 | 3,743 |
| | 20 | 1,383 | $829,800 | | | 33 | 100% | 49 | 40% | 8.0 | 13.9 | 1,167 | 2,929 |
| | 22 | 1,308 | $863,280 | | | 33 | 100% | 54 | 44% | 8.1 | 14.4 | 1,214 | 2,765 |

[1] Full height is for the length indicated. If a shoulder noise barrier location is indicated, the length of vertical height tapers at the shoulder barrier's terminus (See FDOT Standard Plans) would be in addition to the length indicated.
[2] Unit cost of $30 per sq. f.t of noise barrier.

#### *3.1.1.5 Wyndham Lakes (Formerly Bay Pointe and Pelican Isle)*

The Wyndham Lakes (formerly Bay Pointe and Pelican Isle) residential community (**Appendix C**, Aerial Sheets 11 and 12) is located east of the Sawgrass Expressway and north of Wiles Road. Residences in the communities are represented by 12 receptor points representing 22 residences. With predicted exterior traffic noise levels ranging from 58.6 to 61.0 dB(A) for the year 2045 Build condition with the existing barrier, traffic noise levels do not approach or exceed the NAC at any of the residences. Therefore, a noise barrier was not evaluated for these residences.

# SECTION 4
# *CONCLUSION*

Traffic noise levels were predicted at 78 receptor points representing 168 residences and three special land uses. For Design Year (2045) conditions, traffic noise levels are predicted to approach, meet, or exceed the Noise Abatement Criteria (NAC) at two SLUs. These impacted special land uses were further evaluated to determine the feasibility and cost reasonableness of providing noise barriers to reduce traffic noise. One existing noise barrier is found in the corridor and no residential impacts were identified as a result, so no residential areas were assessed for noise abatement.

The noise barrier evaluation found that a noise barrier is reasonable and feasible at one SLU, the Coral Springs Regional Park. The barrier engineering review found no issues with the construction of the noise barrier. Therefore, this noise barrier is suggested to be included in the Design Plans and is shown in **Appendix C** Aerial Sheet 6.

# SECTION 5
# *CONSTRUCTION NOISE AND VIBRATION*

Based on the existing land use within the limits of this project, construction of the proposed roadway improvements will not have any noise or vibration impact. If noise-sensitive land uses develop adjacent to the roadway prior to construction, additional impacts could result. It is anticipated that the application of the FDOT Standard Specifications for Road and Bridge Construction will minimize or eliminate most of the potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Manager, in concert with the Florida's Turnpike Enterprise Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

# SECTION 6
# *COMMUNITY COORDINATION*

Coordination with local agencies, officials, and the general public is ongoing and the public has had the opportunity to comment on the proposed project at public meetings and other outreach efforts, including:

- A Virtual Public Information Meeting was held on October 27, 2022 and an in-person meeting was held on November 1, 2022 at the Tamarac Community Center, 8601 Commercial Boulevard in Tamarac, Florida.
    - No comments regarding traffic noise were received or recorded.

# SECTION 7
# *REFERENCES*


23 CFR Part 772, *"Procedures for Abatement of Highway Traffic Noise and Construction Noise"*, Federal Register, Vol. 75, No. 133, Tuesday, July 13, 2010; pages 39834-39839.

Florida Department of Transportation, *"A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations"*, July 2009. 64 pages.

Florida Department of Transportation. *"Highway Traffic Noise"*, Part 2, Chapter 18. Project Development and Environment Manual, Florida Department of Transportation, Tallahassee, July 1, 2020.

Florida Department of Transportation Design Manual Volume 1, Chapter 264, *"Noise Walls and Perimeter Walls"*, January 2022

Florida Department of Transportation *"Standard Specifications for Road and Bridge Construction"*, July 2022.

Florida Department of Transportation*, "2012 FDOT Quality/Level of Service Handbook"*; Tallahassee, Florida; 2012.

Federal Highway Administration Report FHWA-HEP-10-025, *"Highway Traffic Noise: Analysis and Abatement Guidance"*, June 2010 (revised December 2010); 76 pages.

Federal Highway Administration Report FHWA-PD-96-009, *"FHWA Traffic Noise Model, Version 1.0 User's Guide"*, January 1998; 192 pages + supplements.

Federal Highway Administration Report Number FHWA-PD-96-046, *"Measurement of Highway-Related Noise"*, Cynthia S.Y. Lee and Gregg Fleming; May 1996; 206 pages.

Federal Highway Administration Report FHWA-HEP-06-015, *"FHWA Highway Construction Noise Handbook: Final Report"*. August 2006; 185 pages.

Federal Highway Administration. "*Consideration of Existing Noise Barrier in a Type I Noise Analysis FHWA-HEP-12-051."* https://www.fhwa.dot.gov/ENVIRONMENT/noise/noise_barriers/abatement/existing.cfm.

# *APPENDICES*


***Appendix A  Traffic Data***

***Appendix B  Predicted Noise Levels***

***Appendix C  Aerials***

***Appendix D  Engineering Review***

***Appendix E  TNM Files***

# *APPENDIX A*

# *TRAFFIC DATA*

**Traffic Data – Sawgrass Expressway from north of Atlantic Boulevard to north of Sample Rd. (FPID 435461-1)**
**Build (2045) Conditions**

**Sawgrass Expressway (SR 869) Mainline**

| Mainline Segment | Number of Lanes | Two-Way AADT | Two-Way LOS C AADT | Peak Hour Peak Direction | LOS C Peak Hour Peak Direction | Design Hr. % T | Design Hr. % MT | Design Hr. % HT | Design Hr. % Buses | Design Hr. % Motorcycles | Standard K-factor | D-factor | Posted Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North of Sample Road Interchange (MP 11 to MP 12) | 10 | 96,100 | 124,000 | 5,360 | 6,820 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 11.0% | 50.7% | 65 |
| North of Atlantic Boulevard Interchange (MP 8 to M 11) | 10 | 101,500 | 124,000 | 5,660 | 6,820 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 11.0% | 50.7% | 65 |
| South of Atlantic Boulevard Interchange (MP 5 to MP 8) | 12 | 124,000 | 142,200 | 8,060 | 7,820 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 11.0% | 59.1% | 65 |

**Turnpike Ramps**

| Ramp | Number of Lanes | One-Way AADT | One-Way LOS C AADT | Peak Hour Peak Direction | LOS C Peak Hour Peak Direction | Design Hr. % T | Design Hr. % MT | Design Hr. % HT | Design Hr. % Buses | Design Hr. % Motorcycles | K-factor | D-factor | Operational Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Road (MP 11)** | | | | | | | | | | | | | |
| Southbound off | 1 | 3,100 | 10,600 | 400 | 1,360 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 12.8% | 64.6% | 45 |
| Northbound on | 1 | 3,100 | 10,600 | 400 | 1,360 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 12.8% | 64.6% | 45 |
| Southbound on | 1 | 11,700 | 13,500 | 1,180 | 1,360 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 10.1% | 52.7% | 45 |
| Northbound off | 1 | 11,700 | 13,500 | 1,180 | 1,360 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 10.1% | 52.7% | 45 |
| **Atlantic Boulevard (MP 8)** | | | | | | | | | | | | | |
| Southbound off | 1 | 6,900 | 13,600 | 1,010 | 1,360 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 10.0% | 73.6% | 45 |
| Northbound on | 1 | 6,900 | 13,600 | 1,010 | 1,360 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 10.0% | 73.6% | 45 |
| Southbound on | 2 | 19,200 | 27,200 | 2,760 | 2,720 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 10.0% | 71.8% | 45 |
| Northbound off | 2 | 19,200 | 27,200 | 2,760 | 2,720 | 2.98% | 1.32% | 1.66% | 0.09% | 0.03% | 10.0% | 71.8% | 45 |

**Arterials**

| Arterial Segment | Number of Lanes | Two-Way AADT | Two-Way LOS C AADT | Peak Hour Peak Direction | LOS C Peak Hour Peak Direction | Design Hr. % T | Design Hr. % MT | Design Hr. % HT | Design Hr. % Buses | Design Hr. % Motorcycles | K-factor | D-factor | Posted Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Road** | | | | | | | | | | | | | |
| Sample Road - Between Southbound and Northbound Ramps | 6 | 29,600 | 54,700 | 1,180 | 2,190 | 1.50% | 0.57% | 0.79% | 0.10% | 0.16% | 8.0% | 50.0% | 45 |
| Sample Road - East of Northbound Ramps | 6 | 59,200 | 54,700 | 2,370 | 2,190 | 1.50% | 0.57% | 0.79% | 0.10% | 0.16% | 8.0% | 50.0% | 45 |
| **Atlantic Boulevard** | | | | | | | | | | | | | |
| Atlantic Boulevard - Between Southbound and Northbound Ramps | 6 | 44,200 | 54,700 | 2,760 | 3,010 | 1.50% | 0.57% | 0.79% | 0.10% | 0.16% | 11.0% | 56.8% | 45 |
| Atlantic Boulevard - East of Northbound Ramps to Lakeview Drive | 6 | 51,100 | 54,700 | 3,770 | 3,560 | 1.50% | 0.57% | 0.79% | 0.10% | 0.16% | 13.0% | 56.8% | 45 |
| Atlantic Boulevard - East of Lakeview Drive | 6 | 43,500 | 54,700 | 2,720 | 3,010 | 1.50% | 0.57% | 0.79% | 0.10% | 0.16% | 11.0% | 56.8% | 45 |

**Notes:**

(1) Posted speed obtained by field observation. Engineering judgement is used to estimate ramp speeds.
(2) Ramp daily and design hour volumes are provided directionally (i.e. does not incorporate return movements on the corresponding ramp). Likewise, the daily and design hour LOS C maximum service volumes are listed directionally for each ramp.
(3) Mainline and ramp LOS C maximum service volumes are from the HCS Analysis.
(4) Arterial LOS C maximum service volumes are obtained from FDOT 2020 Generalized Service Volume Tables.
(5) Mainline and ramp K and D factors were obtained from the Sawgrass Expressway (S.R. 869) Widening Project -South of Sunrise Boulevard to South of US 441/S.R.7 (MP 0 to MP 18 A/B).
(6)To account for the impact of COVID-19, the 2025 and 2045 forecasts reflect the 2020 and 2040 forecasts from the Traffic Technical Memo.
(7)The 12 lane segment includes 5 continuous lanes and an auxiliary lane in each direction. The LOS C maximum service volumes for the auxiliary lane is 1,000 vehicles per hour.

# *APPENDIX B*

# *PREDICTED NOISE LEVELS*

| Common Noise Environment | Aerial Sheet Number | Receptor ID | Activity Category | Property Type | Number of Residents Represented | 2045 Build Condition dB(A) | NAC Approached or Exceeded? |
|---|---|---|---|---|---|---|---|
| Vizcaya | 1 | R12A | B | Residential | 0 | 60.6 | NO |
| | 1 | R12B | B | Residential | 2 | 62.6 | NO |
| | 1 | R17A | B | Residential | 0 | 52.7 | NO |
| | 1 | R17B | B | Residential | 3 | 55.4 | NO |
| | 1 | R14A | B | Residential | 0 | 61.1 | NO |
| | 1 | R14B | B | Residential | 6 | 63.5 | NO |
| | 1 | R18 | B | Residential | 5 | 53.3 | NO |
| | 1 | R15A | B | Residential | 0 | 61.0 | NO |
| | 1 | R15B | B | Residential | 6 | 63.3 | NO |
| | 1 | R19 | B | Residential | 3 | 54.2 | NO |
| | 1 | R16A | B | Residential | 0 | 60.9 | NO |
| | 1 | R16B | B | Residential | 3 | 62.9 | NO |
| | 1 | R61 | B | Residential | 2 | 54.7 | NO |
| | 2 | R20A | B | Residential | 0 | 56.7 | NO |
| | 2 | R20B | B | Residential | 2 | 58.5 | NO |
| | 2 | R21A | B | Residential | 0 | 61.1 | NO |
| | 2 | R21B | B | Residential | 6 | 63.4 | NO |
| | 2 | R26 | B | Residential | 7 | 52.2 | NO |
| | 2 | R22A | B | Residential | 0 | 59.7 | NO |
| | 2 | R22B | B | Residential | 6 | 62.5 | NO |
| | 2 | R27 | B | Residential | 3 | 53.6 | NO |
| | 2 | R23A | B | Residential | 0 | 60.7 | NO |
| | 2 | R23B | B | Residential | 2 | 63.2 | NO |
| | 2 | R24A | B | Residential | 0 | 58.4 | NO |
| | 2 | R24B | B | Residential | 1 | 60.3 | NO |
| | 2 | R25A | B | Residential | 0 | 56.2 | NO |
| | 2 | R25B | B | Residential | 1 | 58.5 | NO |

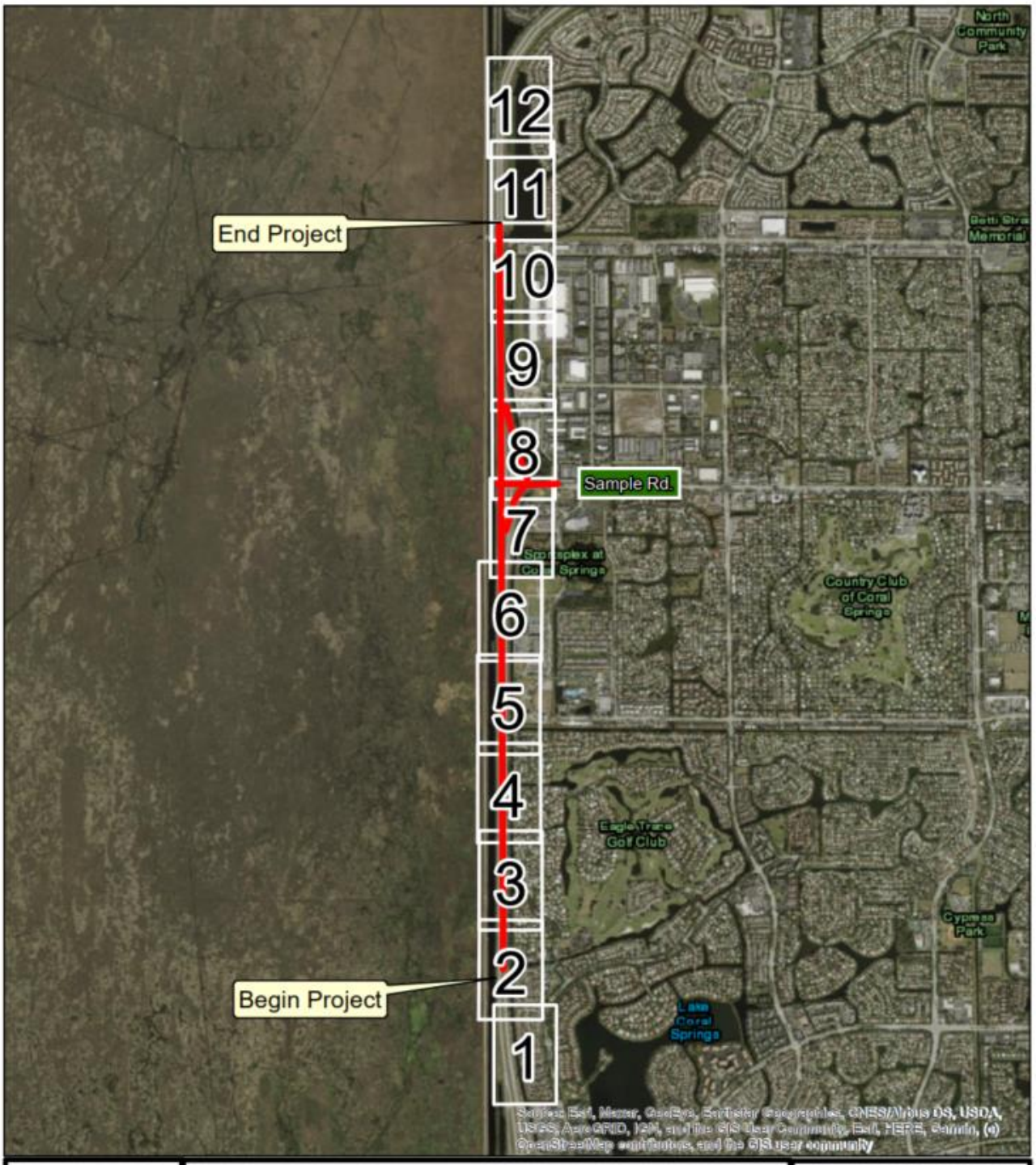
| Common Noise Environment | Aerial Sheet Number | Receptor ID | Activity Category | Property Type | Number of Residents Represented | 2045 Build Condition dB(A) | NAC Approached or Exceeded? |
|---|---|---|---|---|---|---|---|
| Eagle Trace | 2 | R28 | B | Residential | 2 | 60.4 | NO |
| | 2 | R29 | B | Residential | 4 | 58.1 | NO |
| | 2 | R30 | B | Residential | 2 | 60.4 | NO |
| | 2 | R31 | B | Residential | 1 | 59.2 | NO |
| | 3 | R32 | B | Residential | 4 | 60.5 | NO |
| | 3 | R33 | B | Residential | 3 | 57.4 | NO |
| | 3 | R35 | B | Residential | 1 | 58.2 | NO |
| | 3 | R34 | B | Residential | 5 | 60.1 | NO |
| | 3 | R36 | B | Residential | 2 | 56.6 | NO |
| | 3 | R37 | B | Residential | 4 | 60.0 | NO |
| | 3 | R40 | B | Residential | 6 | 55.4 | NO |
| | 3 | R38 | B | Residential | 2 | 60.4 | NO |
| | 3 | R41 | B | Residential | 6 | 57.4 | NO |
| | 3 | R39 | B | Residential | 3 | 61.2 | NO |
| | 4 | R42 | B | Residential | 5 | 59.0 | NO |
| | 4 | R43 | B | Residential | 3 | 61.0 | NO |
| | 4 | R45 | B | Residential | 3 | 57.5 | NO |
| | 4 | R58 | B | Residential | 2 | 61.4 | NO |
| | 4 | R44 | B | Residential | 2 | 59.0 | NO |
| | 4 | R51 | B | Residential | 1 | 59.5 | NO |
| | 4 | R46 | B | Residential | 3 | 62.0 | NO |
| | 4 | R56 | B | Residential | 7 | 57.2 | NO |
| | 4 | R47 | B | Residential | 3 | 62.2 | NO |
| | 4 | R52 | B | Residential | 2 | 60.8 | NO |
| | 4 | R48 | B | Residential | 3 | 62.5 | NO |

| Common Noise Environment | Aerial Sheet Number | Receptor ID | Activity Category | Property Type | Number of Residents Represented | 2045 Build Condition dB(A) | NAC Approached or Exceeded? |
|---|---|---|---|---|---|---|---|
| | 4 | R53 | B | Residential | 2 | 61.3 | NO |
| | 5 | R55 | B | Residential | 2 | 60.1 | NO |
| | 5 | R49 | B | Residential | 2 | 63.4 | NO |
| | 5 | R54 | B | Residential | 1 | 63.6 | NO |
| | 5 | R57 | B | Residential | 1 | 63.0 | NO |
| | 5 | R50 | B | Residential | 1 | 65.5 | NO |
| Coral Glades High School | 6 | R1-2 | D | School (interior) | 0 | 45.6 | NO |
| Coral Springs Regional Park | 6 | R4-1 | C | Park | 0 | 64.1 | NO |
| | 6 | R6 | C | Park | 0 | 65.5 | NO |
| | 6 | R2-1 | C | Park | 0 | 73.1 | YES |
| | 6 | R5 | C | Park | 0 | 64.4 | NO |
| | 6 | R3-1 | C | Park | 0 | 70.3 | YES |
| Sawgrass Springs Middle School | 7 | R2-2 | C | School (exterior) | 0 | 66.3 | YES |
| | 7 | R4-2 | C | School (exterior) | 0 | 71.7 | YES |
| Wyndham Lakes (formerly Pelican Isle) | 11 | R5A-2 | B | Residential | 0 | 60.7 | NO |
| | 11 | R5B-2 | B | Residential | 3 | 61.0 | NO |
| | 11 | R6A-2 | B | Residential | 0 | 59.8 | NO |
| | 11 | R6B-2 | B | Residential | 6 | 59.5 | NO |
| | 11 | R7A-2 | B | Residential | 0 | 59.3 | NO |
| | 11 | R7B-2 | B | Residential | 3 | 58.7 | NO |
| | 11 | R8 | B | Residential | 3 | 58.6 | NO |
| | 11 | R9A-2 | B | Residential | 0 | 59.3 | NO |
| | 11 | R9B-2 | B | Residential | 2 | 59.5 | NO |
| | 11 | R10 | B | Residential | 4 | 59.6 | NO |
| | 12 | R11A | B | Residential | 0 | 59.2 | NO |

| Common Noise Environment | Aerial Sheet Number | Receptor ID | Activity Category | Property Type | Number of Residents Represented | 2045 Build Condition dB(A) | NAC Approached or Exceeded? |
|---|---|---|---|---|---|---|---|
| | 12 | R11B | B | Residential | 1 | 59.9 | NO |

# *APPENDIX C*

# *AERIALS*




FLORIDA'S TURNPIKE

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

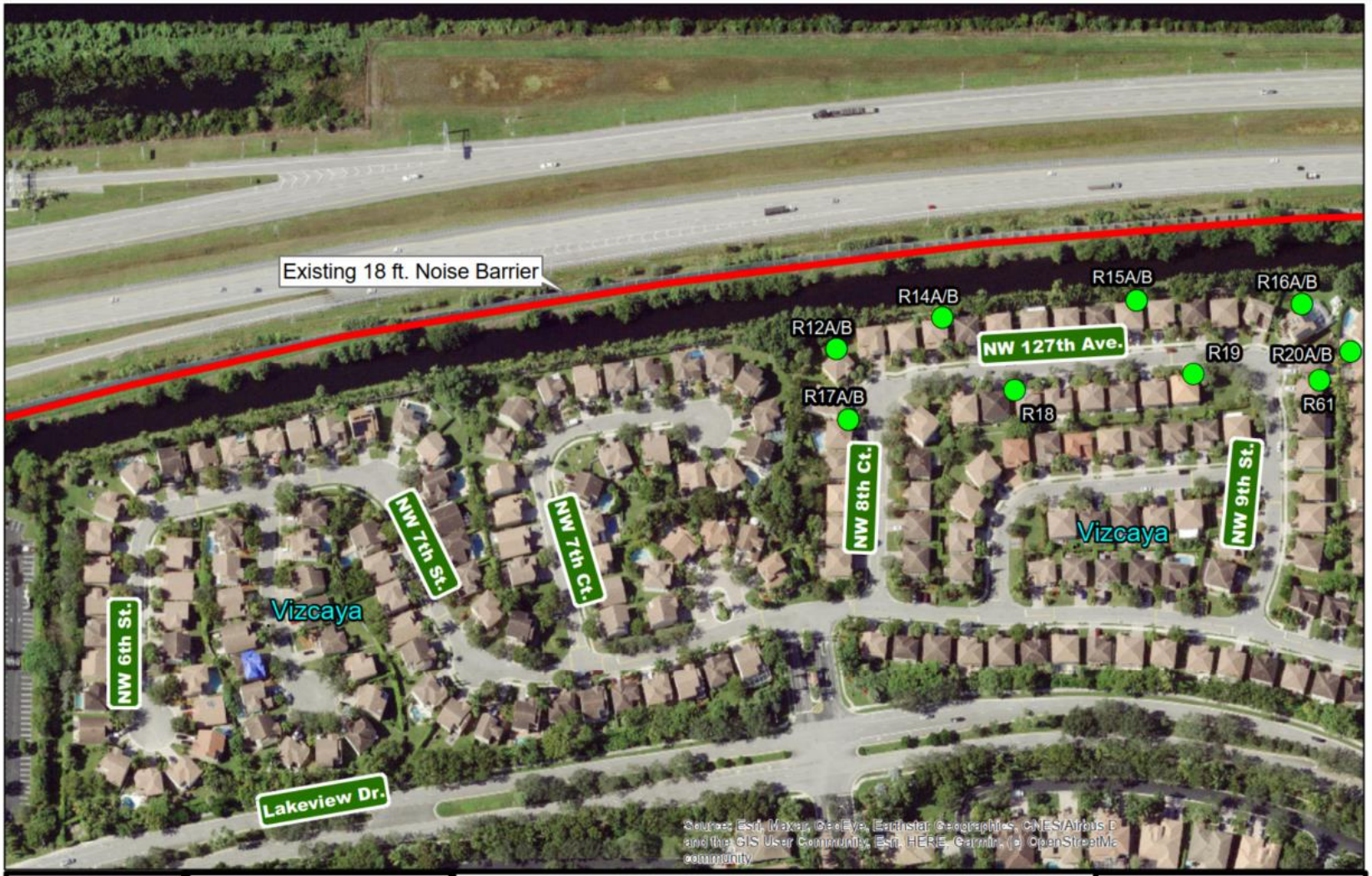
**Key Sheet**

N

1 in = 2,662 feet

0 0.15 0.3 0.45 0.6 Miles

Coordinate System: NAD 1983 Florida State Plane East




FLORIDA'S TURNPIKE

**Legend**

**Noise Sensitive Sites**

- Not Impacted
- Impacted

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

**Sheet 1**

N

1 in = 200 feet

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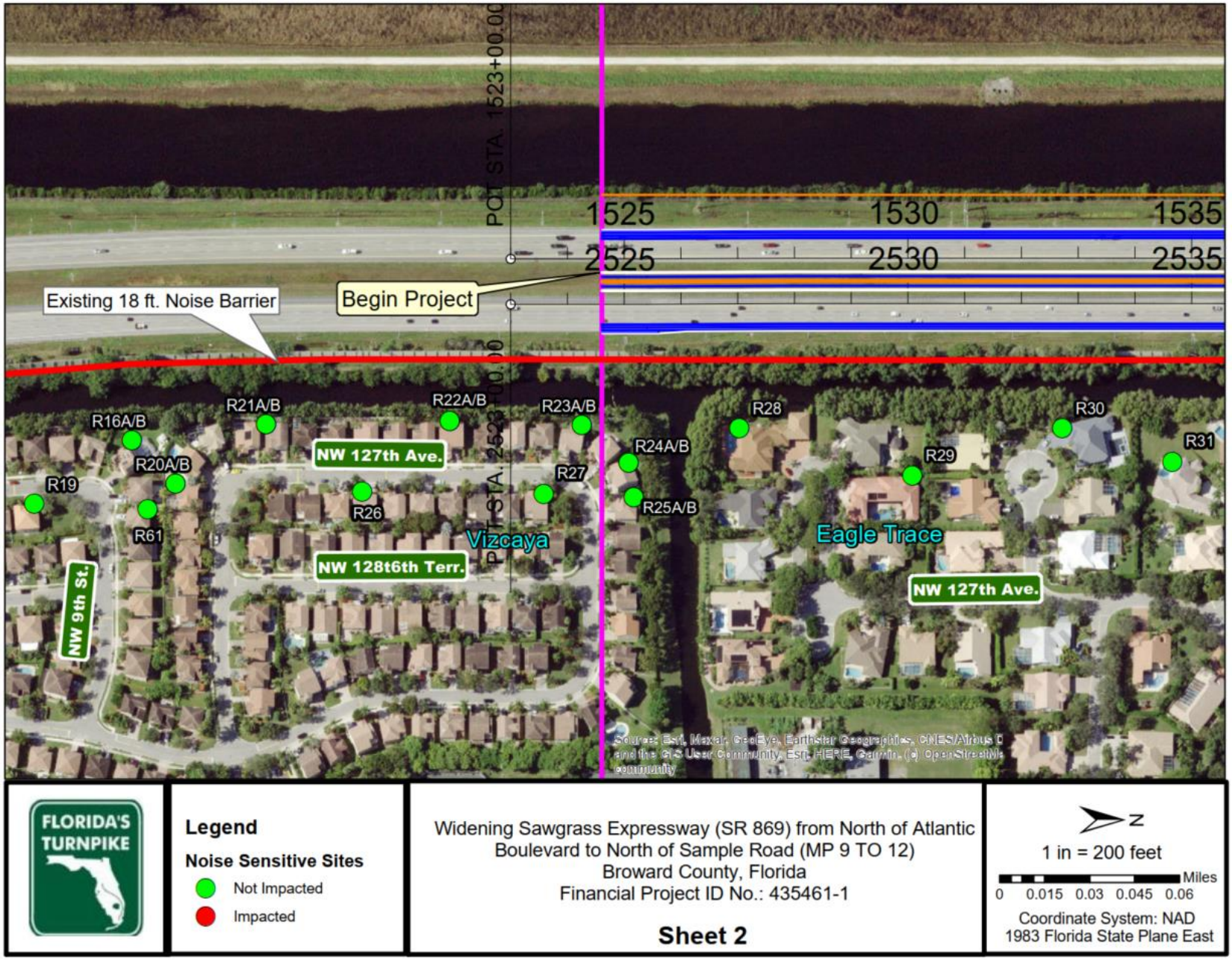
Coordinate System: NAD 1983 Florida State Plane East


POT STA. 1523+00.00
POT STA. 2523+00.00
1525
1530
1535
2525
2530
2535
Existing 18 ft. Noise Barrier
Begin Project
R16A/B
R21A/B
R22A/B
R23A/B
R20A/B
R19
R61
R26
R27
NW 127th Ave.
NW 128t6th Terr.
NW 9th St.
Vizcaya
R28
R30
R31
R24A/B
R29
R25A/B
Eagle Trace
NW 127th Ave.
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus D and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMa contributors
FLORIDA'S TURNPIKE
Legend
Noise Sensitive Sites
Not Impacted
Impacted
Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 TO 12)
Broward County, Florida
Financial Project ID No.: 435461-1
Sheet 2
N
1 in = 200 feet
Miles
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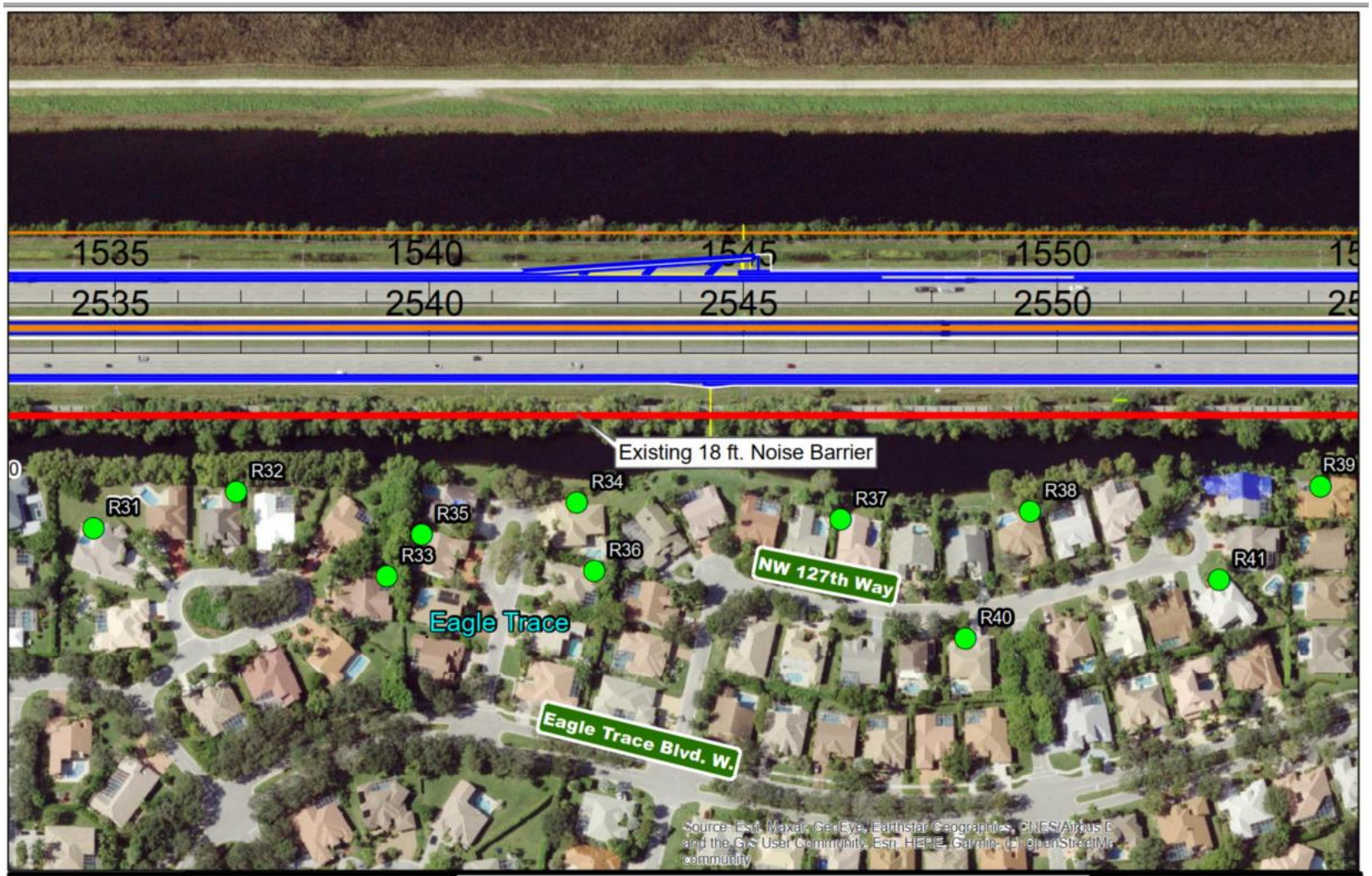
Coordinate System: NAD 1983 Florida State Plane East




FLORIDA'S TURNPIKE

**Legend**

**Noise Sensitive Sites**

- Not Impacted
- Impacted

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

**Sheet 3**

N

1 in = 200 feet

0 0.015 0.03 0.045 0.06 Miles

Coordinate System: NAD 1983 Florida State Plane East


FLORIDA'S TURNPIKE

**Legend**

**Noise Sensitive Sites**

- Not Impacted
- Impacted

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

**Sheet 4**

N

1 in = 200 feet

Miles
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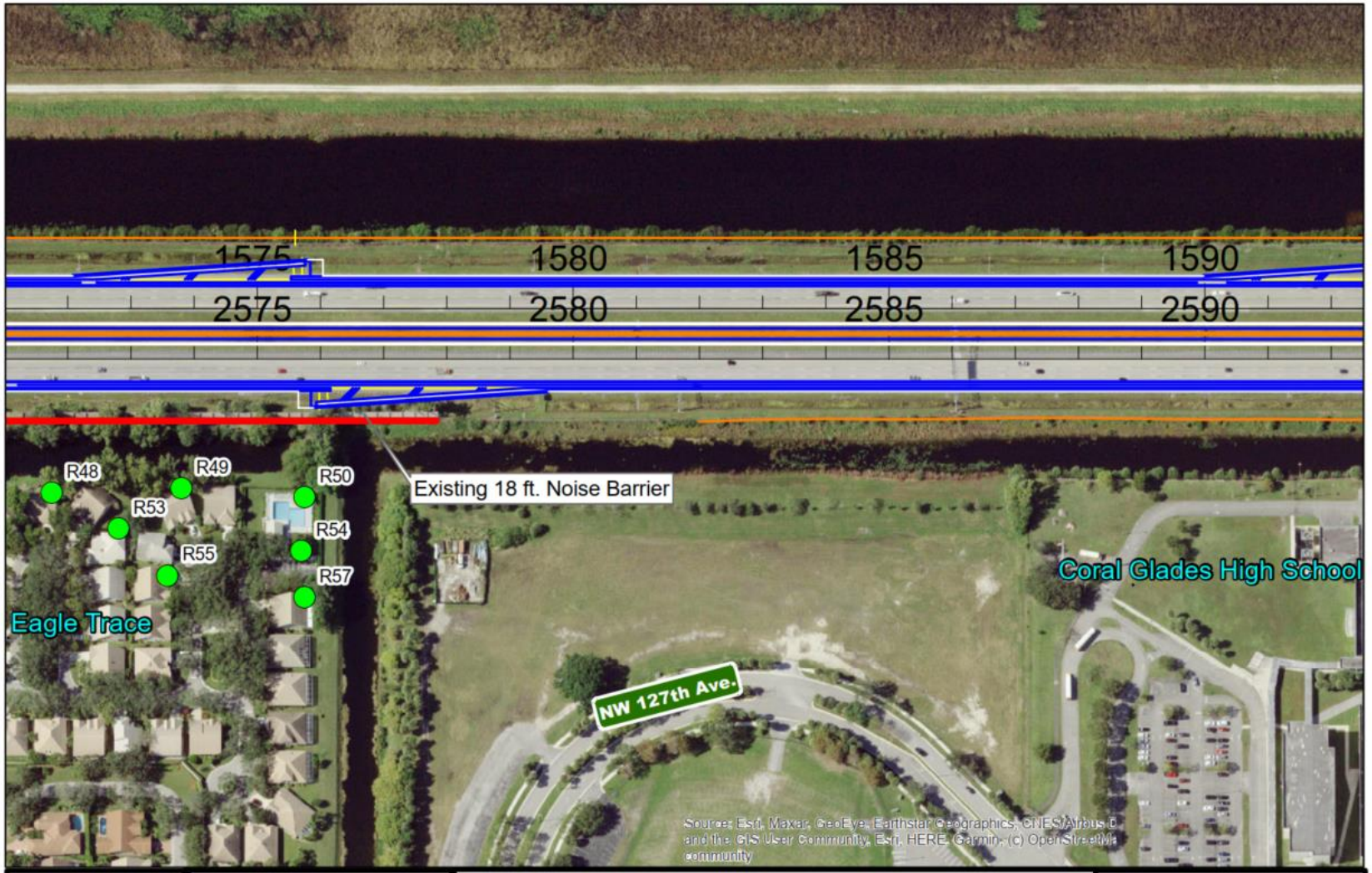
Coordinate System: NAD 1983 Florida State Plane East




FLORIDA'S TURNPIKE

**Legend**

**Noise Sensitive Sites**

- Not Impacted
- Impacted

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

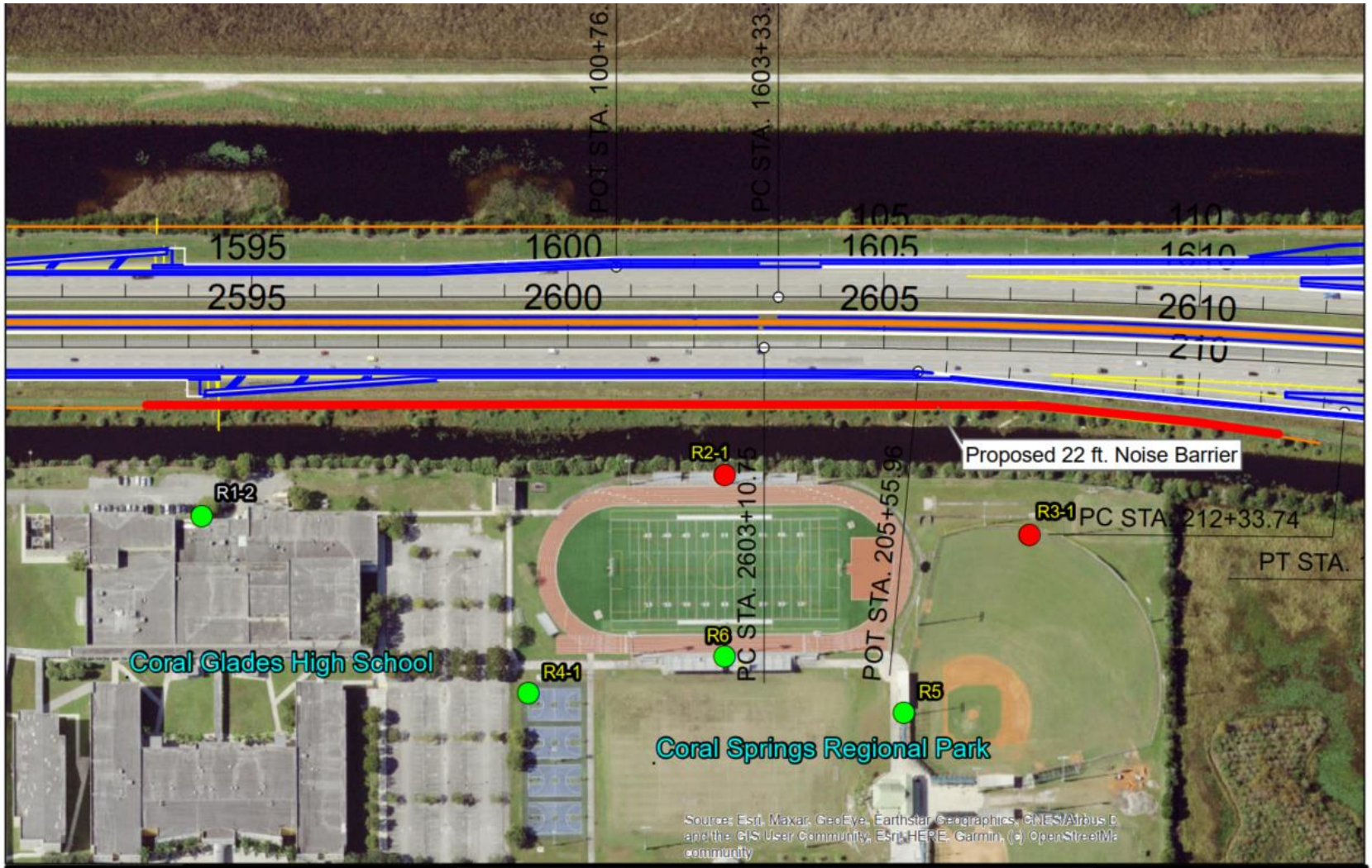
**Sheet 5**

N

1 in = 200 feet

0 0.015 0.03 0.045 0.06 Miles

Coordinate System: NAD 1983 Florida State Plane East




FLORIDA'S TURNPIKE

**Legend**

**Noise Sensitive Sites**

- Not Impacted
- Impacted

Benefited

Not Benefited

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

**Sheet 6**

N

1 in = 200 feet

Miles
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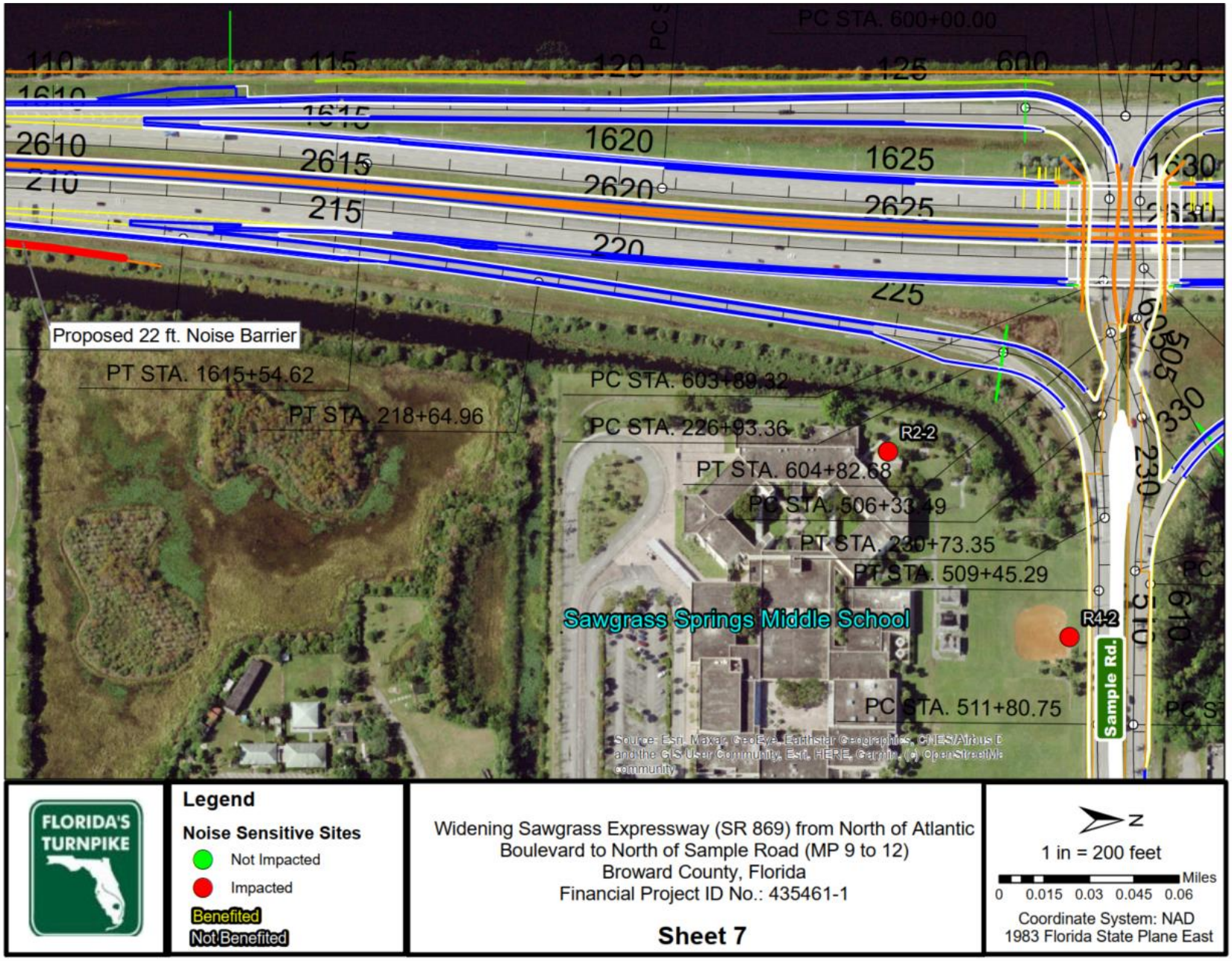
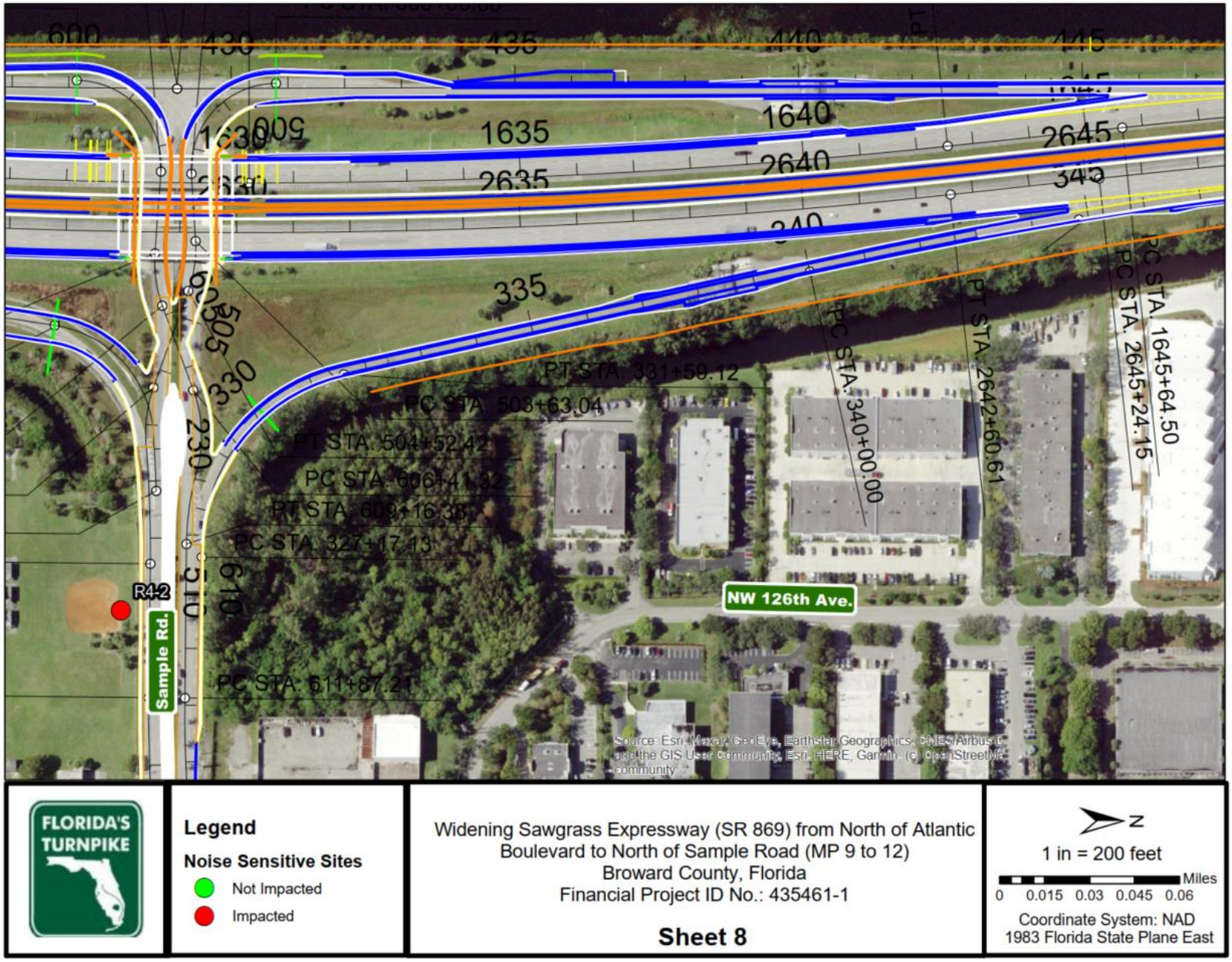
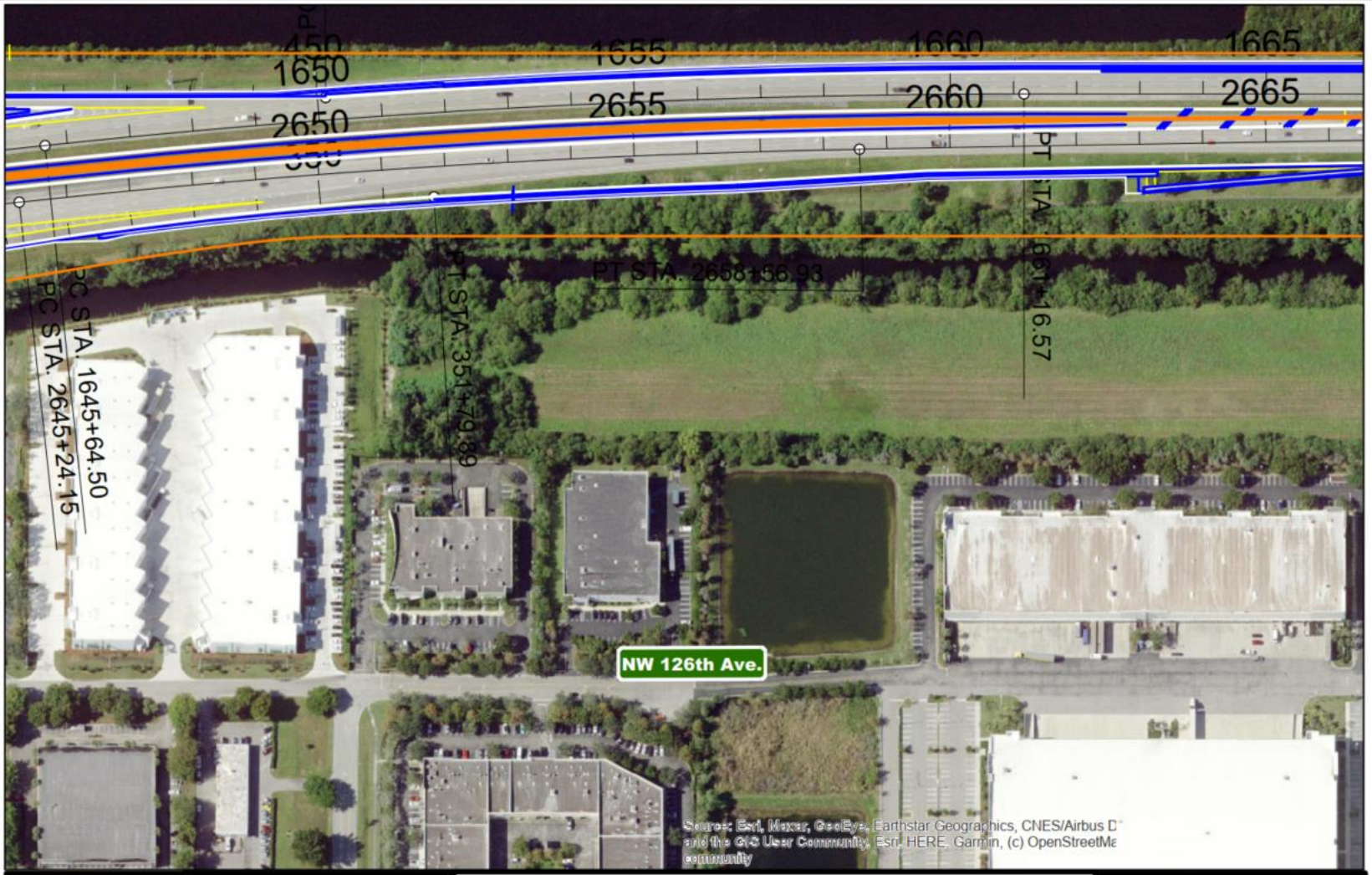
Coordinate System: NAD 1983 Florida State Plane East


PC STA. 600+00.00
Proposed 22 ft. Noise Barrier
PT STA. 1615+54.62
PT STA. 218+64.96
PC STA. 603+89.32
PC STA. 226+93.36
R2-2
PT STA. 604+82.68
PC STA. 506+33.49
PT STA. 230+73.35
PT STA. 509+45.29
Sawgrass Springs Middle School
R4-2
Sample Rd.
PC STA. 511+80.75
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus D and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap community
FLORIDA'S TURNPIKE
Legend
Noise Sensitive Sites
Not Impacted
Impacted
Benefited
Not Benefited
Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1
Sheet 7
N
1 in = 200 feet
Miles
0 0.015 0.03 0.045 0.06
Coordinate System: NAD 1983 Florida State Plane East


600
1635
2635
1640
2640
2645
335
PT STA. 331+59.12
PC STA. 503+63.04
PT STA. 504+52.42
PC STA. 606+41.32
PT STA. 609+16.38
PC STA. 327+17.13
PC STA. 611+87.21
PC STA. 340+00.00
PT STA. 2642+60.61
PC STA. 2645+24.15
PC STA. 1645+64.50
R42
Sample Rd.
NW 126th Ave.
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus D
and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap
community
FLORIDA'S TURNPIKE
Legend
Noise Sensitive Sites
Not Impacted
Impacted
Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1
Sheet 8
N
1 in = 200 feet
Miles
0 0.015 0.03 0.045 0.06
Coordinate System: NAD 1983 Florida State Plane East




FLORIDA'S TURNPIKE

**Legend**

**Noise Sensitive Sites**

- Not Impacted
- Impacted

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

**Sheet 9**

N

1 in = 200 feet

0 0.015 0.03 0.045 0.06 Miles

Coordinate System: NAD 1983 Florida State Plane East


FLORIDA'S TURNPIKE

**Legend**

**Noise Sensitive Sites**

- Not Impacted
- Impacted

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

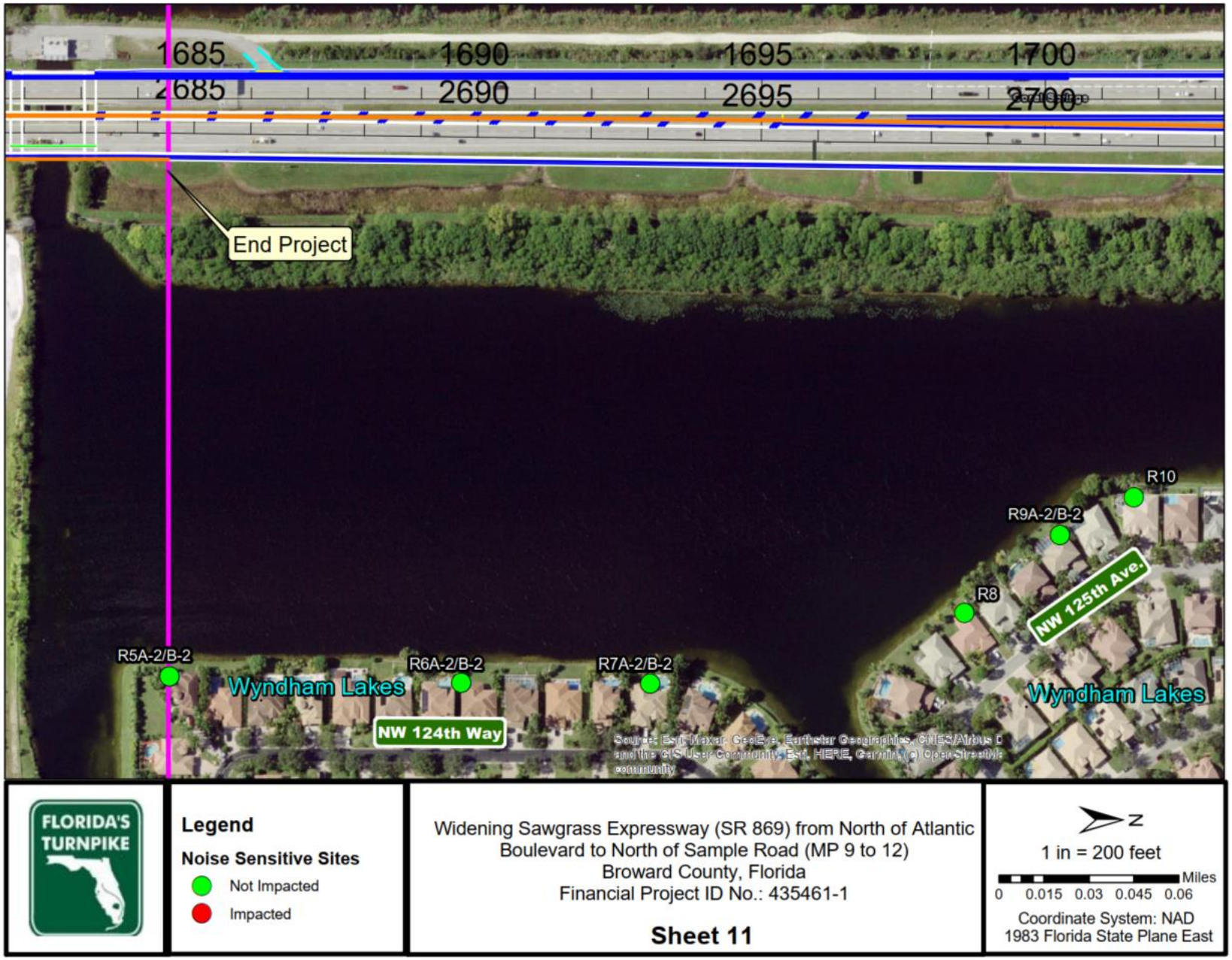
**Sheet 10**

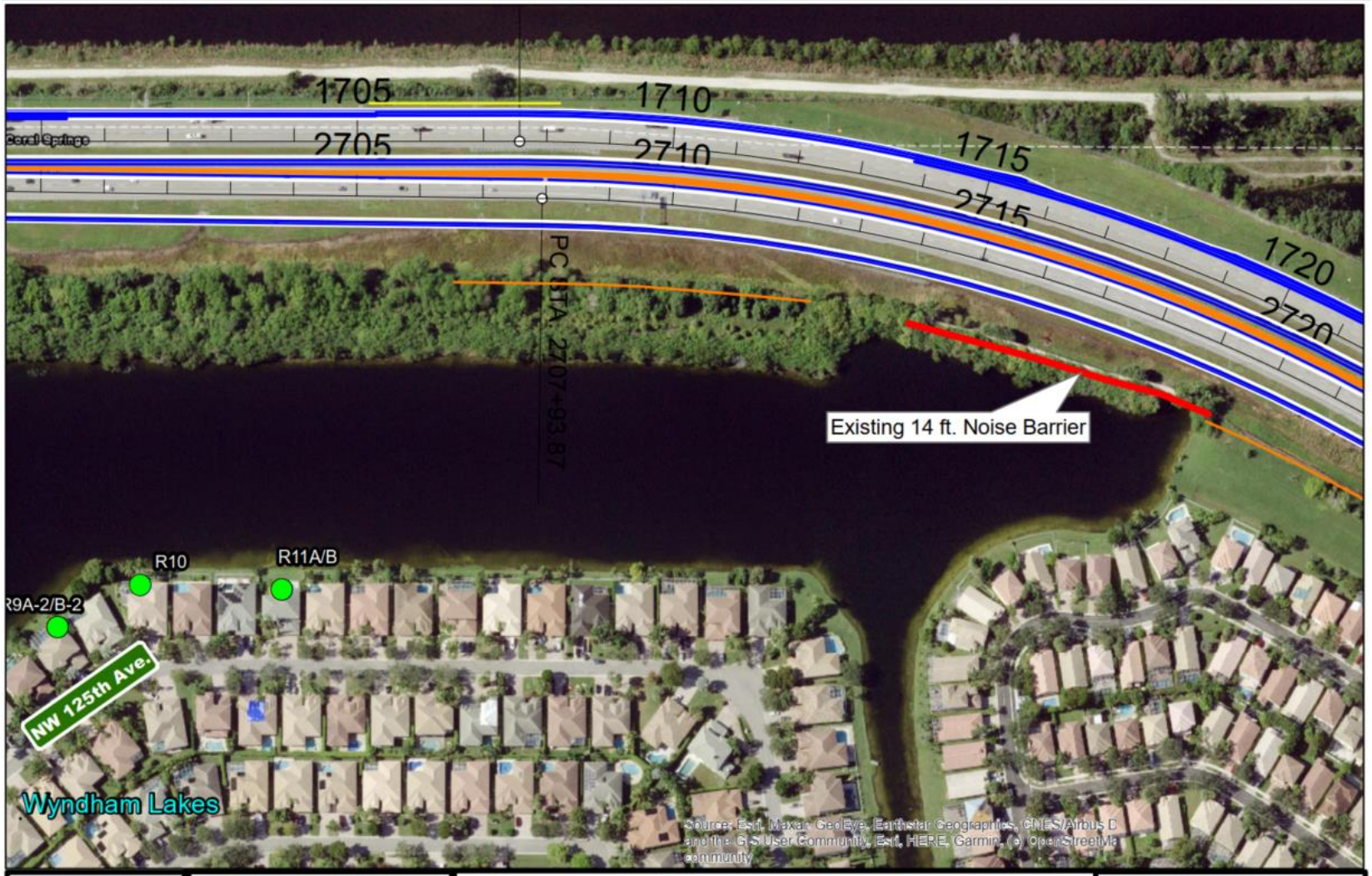
N

1 in = 200 feet

0 0.015 0.03 0.045 0.06 Miles

Coordinate System: NAD 1983 Florida State Plane East


1685
1690
1695
1700
2685
2690
2695
2700
End Project
R10
R9A-2/B-2
R8
NW 125th Ave.
R5A-2/B-2
R6A-2/B-2
R7A-2/B-2
Wyndham Lakes
NW 124th Way
Wyndham Lakes
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus D
and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMa
community
FLORIDA'S TURNPIKE
Legend
Noise Sensitive Sites
Not Impacted
Impacted
Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1
Sheet 11
N
1 in = 200 feet
Miles
0 0.015 0.03 0.045 0.06
Coordinate System: NAD 1983 Florida State Plane East




FLORIDA'S TURNPIKE

**Legend**

**Noise Sensitive Sites**

- Not Impacted
- Impacted

Widening Sawgrass Expressway (SR 869) from North of Atlantic Boulevard to North of Sample Road (MP 9 to 12)
Broward County, Florida
Financial Project ID No.: 435461-1

**Sheet 12**

N

1 in = 200 feet

0 0.015 0.03 0.045 0.06 Miles

Coordinate System: NAD 1983 Florida State Plane East

# *APPENDIX D*

## *Noise Barrier Engineering Review*

## Noise Barrier Engineering Review Form

Widening Turnpike's Sawgrass Expressway from Atlantic Blvd. to Sample Rd.

**FPID:** 435461-1

**Noise Barrier #:** Barrier #1 (Coral Springs Regional Park)_____

**Date Provided:** 8/16/22_____

**Date Reviewed:** __8/4/22_____

**Reviewed By:** _____Phillip Jacoby, PE_____

| Topic | Details |
|---|---|
| Location | ROW |
| Stationing Limits (approximate) | 2593 + 27 to 2610 + 40 |
| Length | 1,793 ft. |
| Height | 22 ft. |
| Estimated Cost | $1,183,380 |
| Design/Constructability Issues | None |
| Drainage Issues | None |
| Utility Issues | None |
| Safety Issues | None |
| Maintenance Issues | None |
| ROW Acquisition Issues | None |
| Legal Issues | None |
| Outdoor Advertising Issues | None |
| Are any of the above issues severe enough so that a noise barrier cannot be constructed at this location? If so, please explain in detail. | No |
| Barrier Aesthetics (if applicable) | None |

# *APPENDIX E*

## *TNM Files*

TNM Files provided in the Project File.