Traffic Noise Analysis Report

Mykawa Road

0912-31-319 and 0912-72-564
Houston District

August 21, 2020

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by FHWA and TxDOT.

Table of Contents

The City of Pearland, in cooperation with the TxDOT Houston District, proposes to widen and reconstruct Mykawa Road from FM 518 to the Beltway 8 westbound frontage road from two to four lanes with raised medians, pedestrian accommodations, and drainage improvements. The proposed project is 2.89 miles in length. A map of the project area and other figures are included in **Attachment 1, Figure 1**.

Introduction

This analysis was accomplished in accordance with TxDOT's (FHWA-approved) Traffic Noise Policy (2019).

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

Also, because traffic sound levels are never constant due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq."

The traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise.
- Determination of existing noise levels.
- Prediction of future noise levels.
- Identification of possible noise impacts.
- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the following Noise Abatement Criteria (NAC) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur.

Table 1. FHWA Noise Abatement Criteria (NAC)

Activity Category	FHWA (dB(A) Leq)	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary 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

Activity Category	FHWA (dB(A) Leq)	Description of Land Use Activity Areas
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	--	Agricultural, 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.

A noise impact occurs when either the absolute or relative criterion is met:

Absolute criterion - The predicted noise level at a receptor approaches, equals, or exceeds the NAC. "Approach" is defined as one dB(A) below the NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.

Relative criterion - The predicted noise level substantially exceeds the existing noise level at a receptor even though the predicted noise level does not approach, equal or exceed the NAC. “Substantially exceeds” is defined as more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

Analysis

The FHWA traffic noise modeling software (TNM 2.5) was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise.

The approved traffic data used in this analysis is included in **Attachment B**.

Validation

A validation study was performed in order to ensure that traffic noise is the main source of noise and to verify that the existing model accurately predicts existing traffic noise based on current conditions. Model validation compares field-collected sound level measurements to traffic noise levels calculated in an existing condition model that used field-collected traffic parameters.

Three validation points were chosen along the project right-of-way and field measurements were collected on July 1, 2020 between 11:00 AM and 12:15 PM. The weather was warm and dry with little to no wind. Traffic flowed at a generally constant speed and was counted manually. Sound levels were recorded using a Quest Technologies SoundPro DL. A Field Validation Point Location Map, TNM 2.5 results table, field data sheet, and recorded sound level reports for each validation point are included in **Attachment C**.

Traffic counts for all Field Validation Points were recorded in 15-minute increments. These totals were then multiplied by four to get the hourly traffic rate and then divided by four and entered into each lane in the traffic model. Recorded data from the SoundPro DL was extracted using 3M© Detection Management Software and a report was generated for each validation point that shows the recorded sound levels.

Field Validation Point 1 - Traffic Counts at the corner of Mykawa Road and Cherry Street included 75 cars and four heavy trucks. Using these counts, TNM 2.5 calculated a noise level of 62.3 dB (A). The SoundPro DL recorded sound levels were 62.2 dB (A), within the +/- 3 dB (A) tolerance allowed by FHWA.

Field Validation Point 2 - Traffic Counts at this vacant parcel on the west side of Mykawa Road included 65 cars and four heavy trucks. Using these counts, TNM 2.5 calculated a noise level of 58.1 dB (A). Sound levels recorded in the field were 58.5 dB (A), within the +/- 3 dB (A) tolerance allowed by FHWA.

Field Validation Point 3 - Traffic levels on the western side of Mykawa Road at Plum Street included 88 cars and four heavy trucks. A noise level of 59.8 dB (A) was calculated in TNM 2.5, and a level of 60.4 dB (A) was recorded in the field. The 0.6 dB (A) difference is within the +/- 3dB (A) tolerance allowed by FHWA.

The difference between the measured and calculated levels for this project were within the +/- 3 dB(A) tolerance allowed by FHWA at all validation points. Therefore, the existing noise model is considered validated for this project.

Results

Existing and predicted traffic noise levels were modeled at receiver locations (**Table 2 and Attachment A, Figure 2**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

Table 2. Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R1 Residential	B	67	65	70	+5	**Yes**
R2 Residential	B	67	60	67	+7	**Yes**
R3 Residential	B	67	54	59	+5	**No**
R4 Residential	B	67	62	66	+4	**Yes**
R5 Residential	B	67	61	67	+6	**Yes**
R6 Residential	B	67	64	69	+5	**Yes**
R7 Residential	B	67	64	69	+5	**Yes**
R8 Residential	B	67	60	64	+4	**No**
R9 Residential	B	67	56	60	+4	**No**

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R10 Residential	B	67	61	63	+2	**No**
R11 Residential	B	67	61	63	+2	**No**
R12 Residential	B	67	62	64	+2	**No**
R13 Residential	B	67	64	67	+3	**Yes**
R14 Residential	B	67	59	63	+4	**No**
R15 Residential	B	67	64	70	+6	**Yes**

As indicated in **Table 2**, the proposed project would result in a traffic noise impact at one or more representative receiver locations. R3, R8 through R12, and R14 do not show an impact based on the orientation of the homes in their lots and the distance from the proposed improvements. The entrances are facing Mykawa Road with the physical receiver points behind the home. All other residences along the road have the receivers between Mykawa Road and the residential structure.

Noise abatement measures were considered for each location with predicted noise impacts.

Abatement Analysis

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. Feasibility and reasonableness considerations include constructability, the predicted acoustic reductions provided by an abatement measure, a cost allowance, and whether the adjacent receptors desire abatement. Receptors associated with an abatement measure that achieve a noise reduction of five dB(A) or greater are called benefited receptors.

In order to be "feasible," the abatement measure must benefit a minimum of two impacted receptors AND reduce the predicted noise level by at least five dB(A) at greater than 50% of first-row impacted receptors.

In order to be "reasonable," the abatement measure must also reduce the predicted noise level by at least seven dB(A) for at least one benefited receptor (noise reduction design goal) and not exceed the standard barrier cost of 1,500 square feet per benefited receptor. In addition, an abatement measure may not be reasonable if the construction costs are unreasonably high due to site constraints, as determined through an alternate barrier cost assessment.

The following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone, and the construction of noise barriers.

Traffic management – Control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per five mph reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Alteration of horizontal and/or vertical alignments – Any alteration of the existing alignment would displace existing businesses and residences, require additional right of way and not be cost effective/reasonable.

Buffer zone – The acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and, therefore, is not feasible.

Noise barriers – Noise barriers in the form of noise walls are the most commonly used noise abatement measures and were considered for this project.

Proposed Abatement

Noise barriers would be feasible and reasonable for the following impacted receptors, and therefore, are proposed for incorporation into the project (**Table 3 and Attachment A, Figure 3**). All barriers are proposed at a height of 14 feet to ensure uniformity along the project corridor. Though they had noise impacts, barriers were not proposed for R13 and R15 as they would only benefit one receptor.

R1 - This receiver represents six residences on the northeastern portion of the Mykawa Road/Cherry Street intersection. The backyards of these homes face Mykawa Road and all six homes have predicted noise impacts. Based on preliminary calculations a noise barrier 636 feet in length and 14 feet in height would reduce noise levels by at least 5 dB(A) for all six benefitted receptors and meet the noise reduction goal of 7 dB(A) for five of those receptors. With a total area of abatement of 8,904 square feet or 1,484 square feet per benefitted receptor the barrier would also be cost reasonable.

R2 - This receiver represents 15 residences on the western side of Mykawa Road between Cherry and Plum Streets. The backyards of these homes face Mykawa Road and six of the 15 have predicted noise impacts. Based on preliminary calculations, a noise barrier 1,095 feet in length and 14 feet in height would reduce noise levels by at least 5 dB(A) for 14 benefitted receptors and meet the noise reduction goal of 7 dB(A) for 13 of those receptors. With a total area of abatement of 15,330 square feet or approximately 1,095 square feet per benefitted receptor the barrier would also be cost reasonable.

R4 - This receiver represents three residences in the manufactured housing community across from Plum Street on the eastern side of Mykawa Road. The gathering areas of all three of these homes are unobstructed to Mykawa Road and have predicted noise impacts. Based on preliminary calculations a noise barrier 324 feet in length and 14 feet in height would reduce noise levels by at least 5 dB(A) for two of those receptors and meet the noise reduction goal of 7 dB(A) for one of those receptors. With a total area of abatement of 4,536 square feet or 2,268 square feet per benefitted receptor, the barrier would not be cost reasonable. However, averaging the total cost of all barriers and all benefited receptors allows for this barrier to be cost reasonable.

R5 - This receiver represents seven residences along the western side of Mykawa Road north of Plum Street. The gathering areas of all seven homes face Mykawa Road and have five have predicted noise impacts. Based on preliminary calculations, a noise barrier 541 feet in length and 14 feet in height would reduce noise levels by at least 5 dB(A) for all seven residences and meet the noise reduction goal of 7 dB(A) for five residences. With a total area of approximately 7,574 square feet or 1,082 per benefitted receptor, the barrier would also be cost reasonable.

R6 - This receiver represents two residences on the eastern side of Mykawa Road between North Orange Circle and South Orange Circle. The gathering areas of both residences are unobstructed to Mykawa Road and have predicted noise impacts. Based on preliminary calculations, a noise barrier 204 feet in length and 14 feet in height would reduce noise levels by at least 5 dB(A) and meet the 7 dB(A) design goal for both residences. With a total area of 2,856 square feet or 1,428 square feet per benefitted receptor, a 14 foot barrier would be cost reasonable.

R7 - This receiver represents two residences on the eastern side of Mykawa Road between North Orange Circle and West Orange Street. The gathering areas of both residences are unobstructed to

Mykawa Road and have predicted noise impacts. Based on preliminary calculations, a noise barrier 211 feet in length and 14 feet in height would reduce noise levels by at least 5 dB(A) for both residences and meet the 7 dB(A) design goal for one of those residences. With a total abatement area of 2,954 square feet or 1,477 square feet per benefitted receptor, the barrier would be cost reasonable.

Cost Averaging for All Benefitted Receptors

Based on preliminary calculations a barrier for R4 was not cost reasonable. However, cost averaging the proposed barriers throughout the corridor provides extra square footage per benefitted receptor that would allow for it to be included in the proposed abatement. The total length of proposed 14-foot barriers along Mykawa Road is 3,011 feet and it would benefit 33 receptors. The total area of 42,154 would provide 1,319 square feet per benefitted receptor. This is within the current FHWA-approved square footage limit of 1,500 square feet. Table 3 includes all proposed barriers along Mykawa Road.

Table 3. Noise Barrier Proposal (preliminary)

Barrier*	Representative Receivers	Total # Benefited	Length (feet)	Height (feet)	Total Sq. Ft.	Sq. Ft. per Benefited Receptor
1	R1	6	636	14	8,904	1,484
2	R2	14	1,095	14	15,330	1,095
3	R4	2	324	14	4,536	2,268
4	R5	7	541	14	7,574	1,082
5	R6	2	204	14	2,856	1,428
6	R7	2	211	14	2,954	1,477
All Barriers		**33**	**3,011**	**14**	**42,154**	**1,319**

*Barriers 7 and 8 were deemed not reasonable based on benefitting only one receptor.

Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier will not be made until completion of the project design, utility evaluation, and polling of all benefited and adjacent property owners and residents.

Noise Contours for Land Use Planning

To avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, that no new activities are planned or constructed along or within the following predicted (2050) noise impact contours.

Land Use	Impact Contour	Distance from Right of Way
NAC category B & C	66 dB(A)	80 feet
NAC category E	71 dB(A)	30 feet

Construction Noise

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receptors is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

Local Official Notification and Date of Public Knowledge Statement

A copy of this traffic noise analysis will be available to local officials. On the date of the environmental decision for this project (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

List of Attachments

A. Map figures

   Figure 1 - Project Location
   Figure 2 - Noise Receiver Locations
   Figure 3 - Preliminary Barrier Locations

B. Traffic data

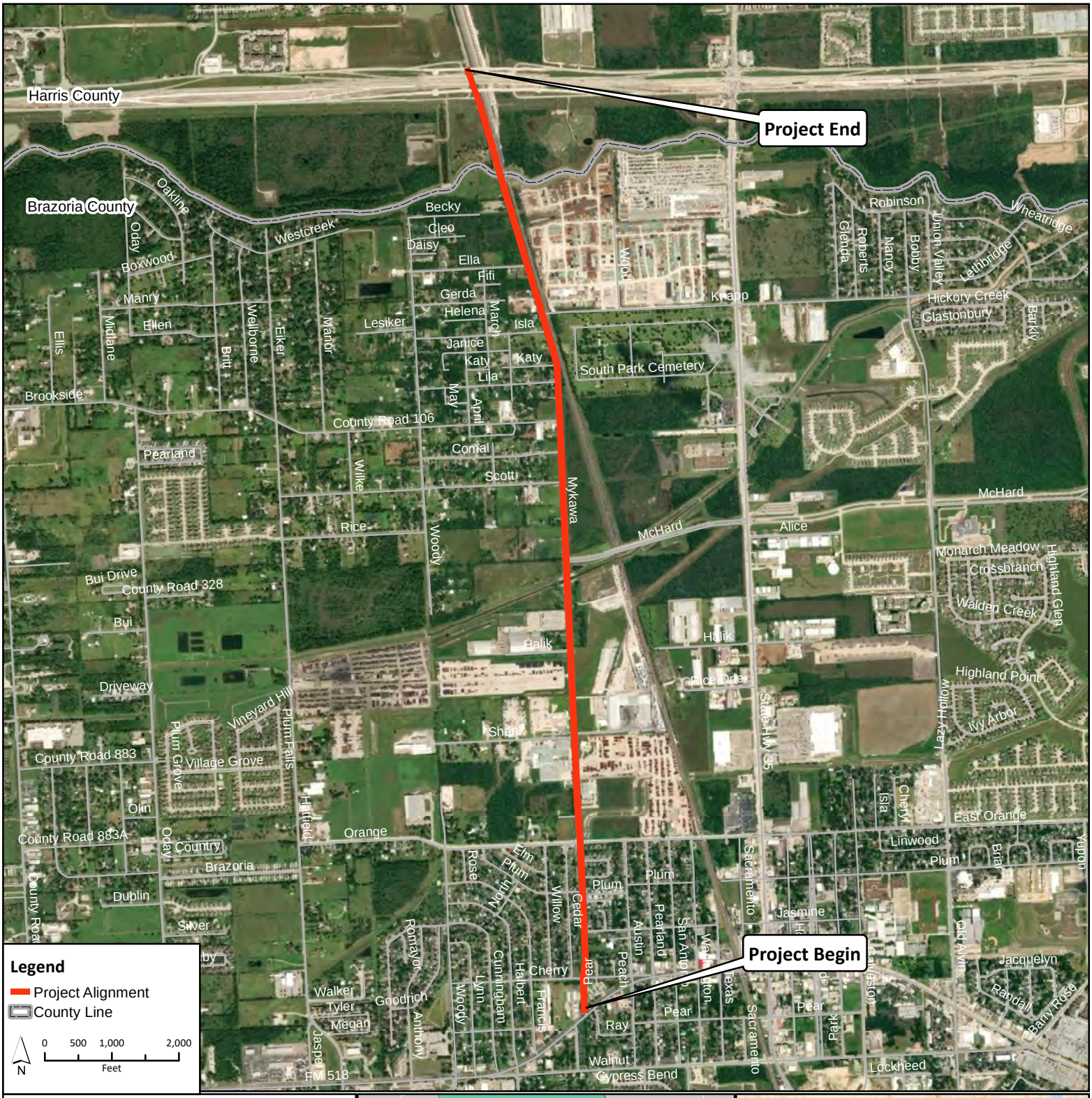
C. Existing model validation study

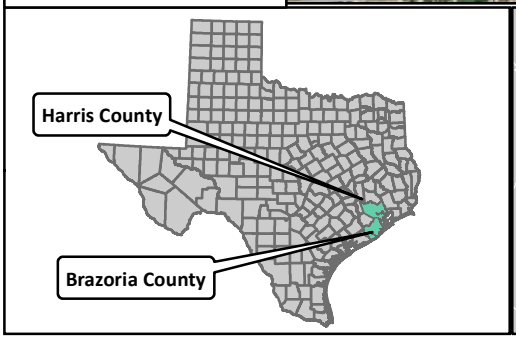
ATTACHMENT A

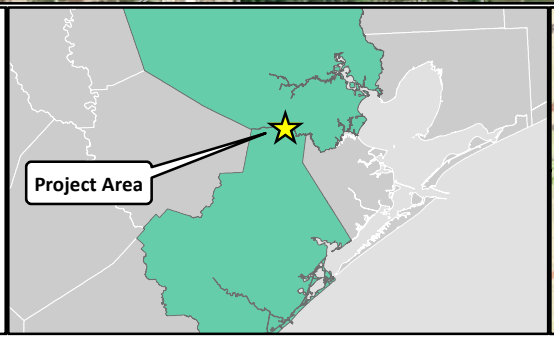
MAP FIGURES

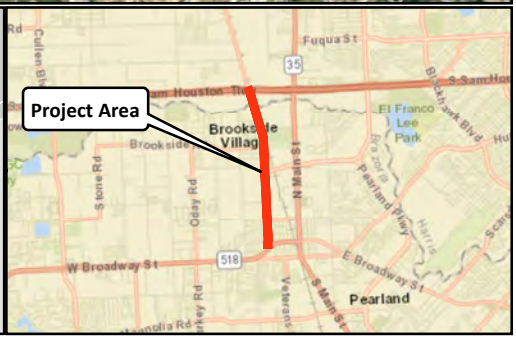
FIGURE 1

PROJECT LOCATION







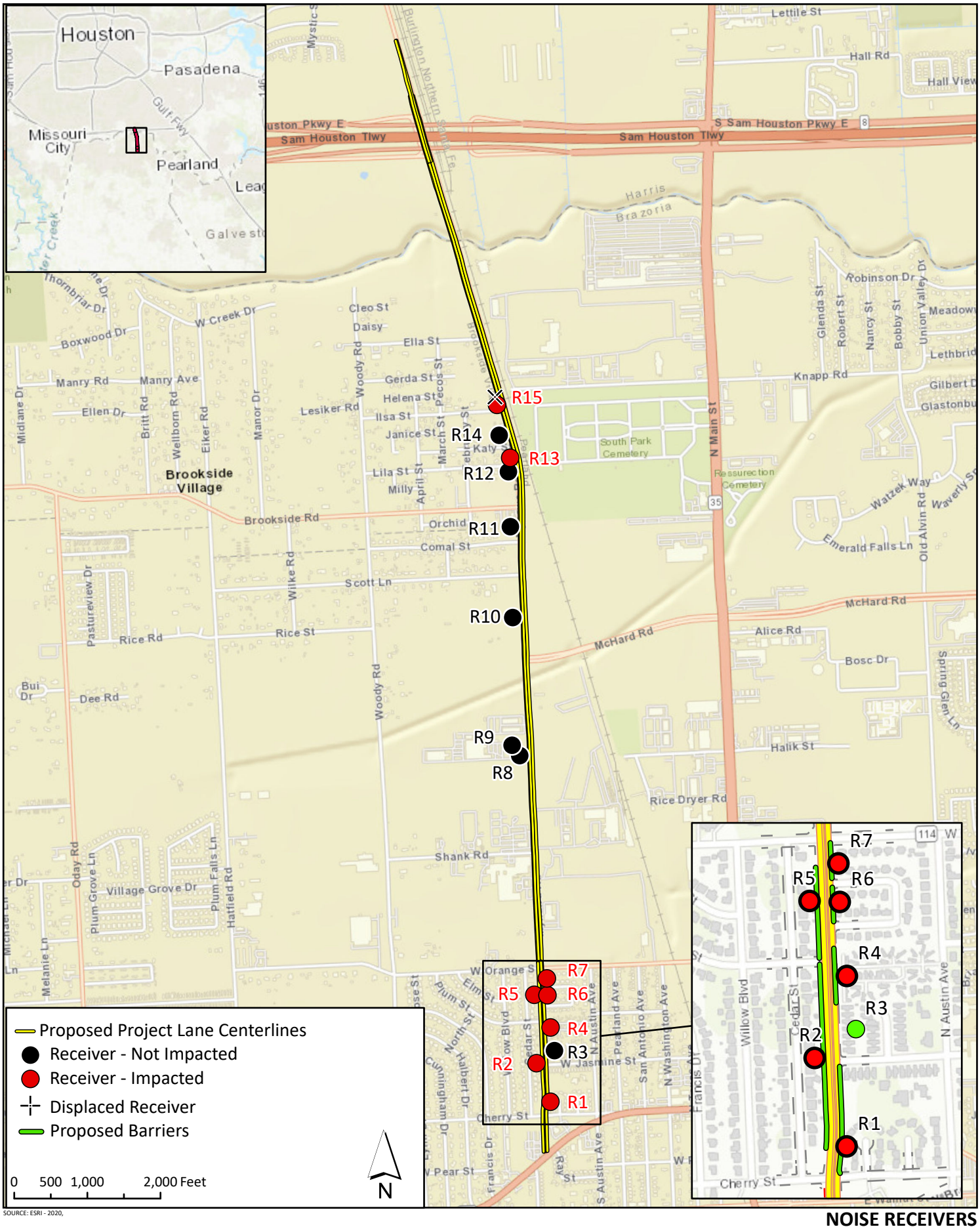


PROJECT LOCATION

Mykawa Road
Brazoria and Harris County, Texas
CSJ No. 0912-31-319 and 0912-72-564

FIGURE 2

NOISE RECIEVERS



SOURCE: ESRI - 2020,

NOISE RECEIVERS

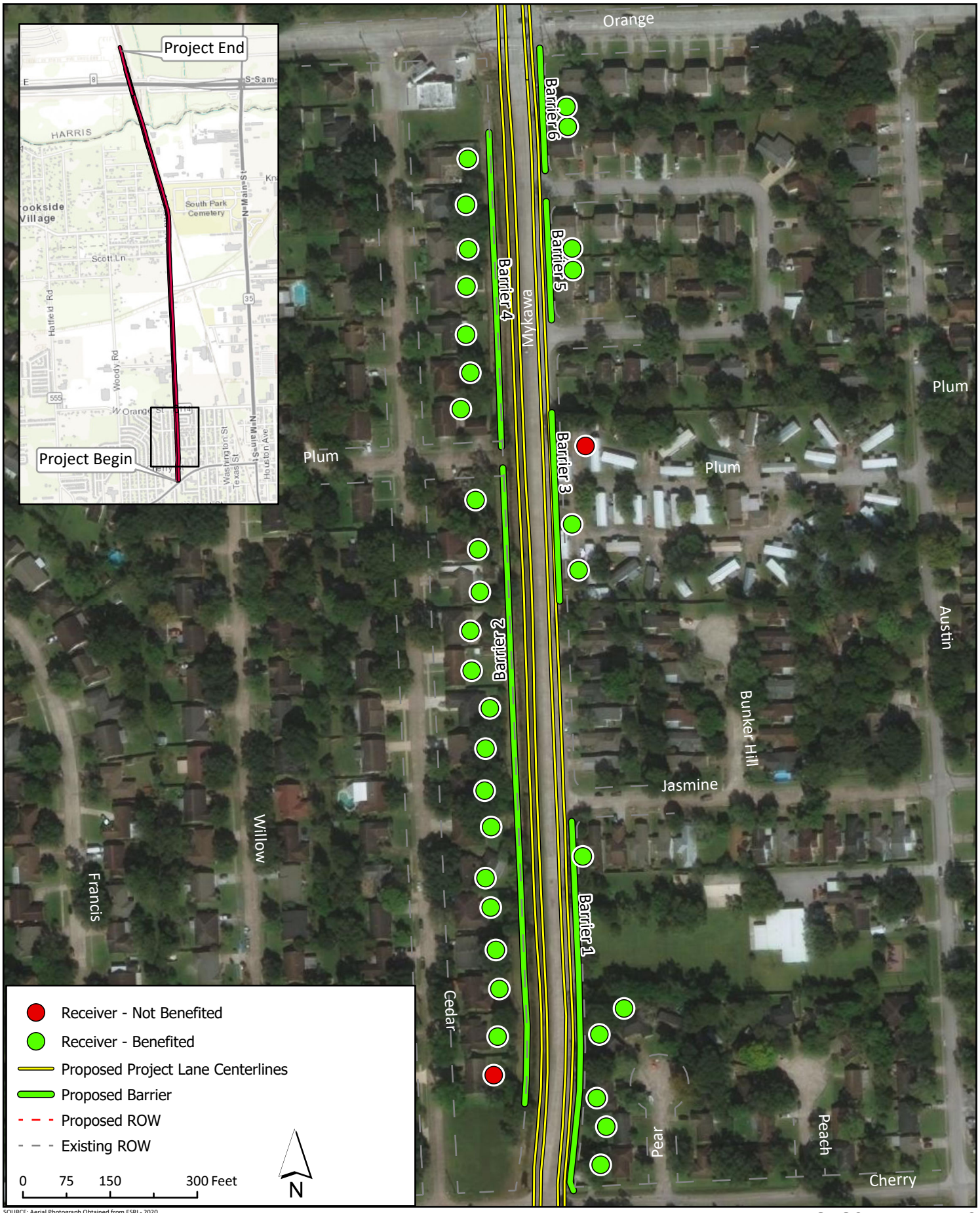
Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

FIGURE 3

NOISE WALL ANALYSIS LOCATIONS



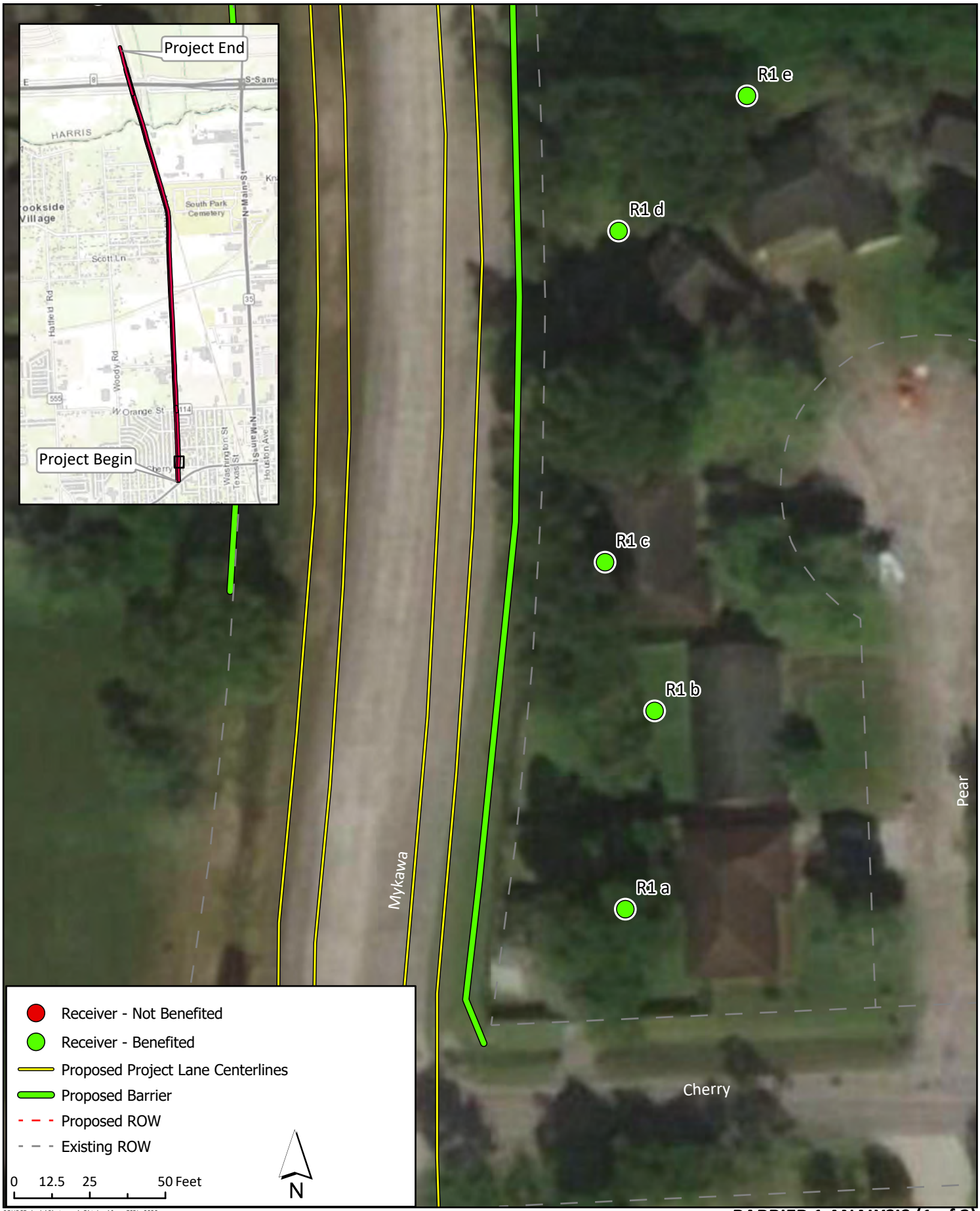
SOURCE: Aerial Photograph Obtained from ESRI - 2020,

PROPOSED BARRIERS

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564



SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 1 ANALYSIS (1 of 2)

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

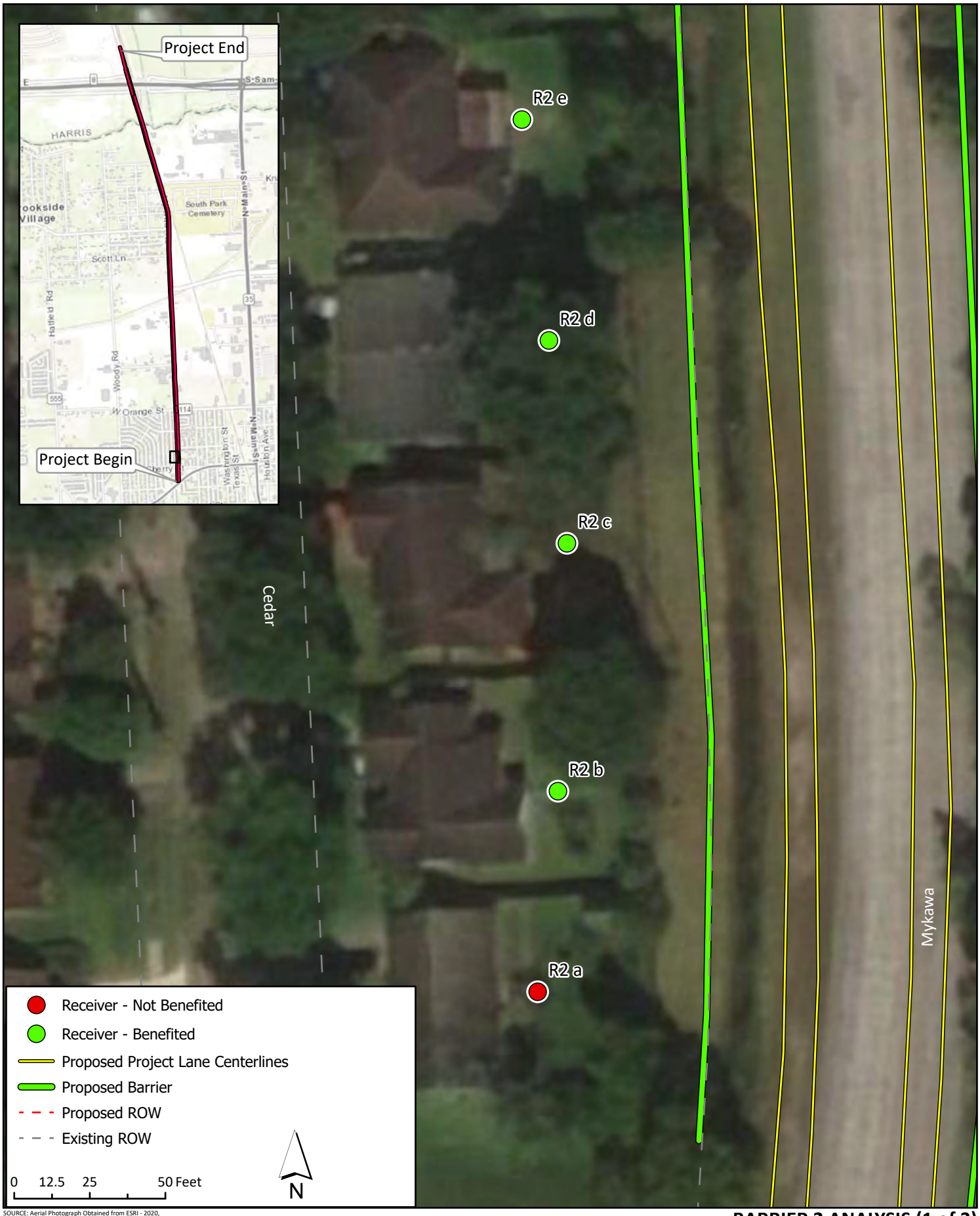
SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 1 ANALYSIS (2 of 2)

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564



SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 2 ANALYSIS (1 of 3)

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

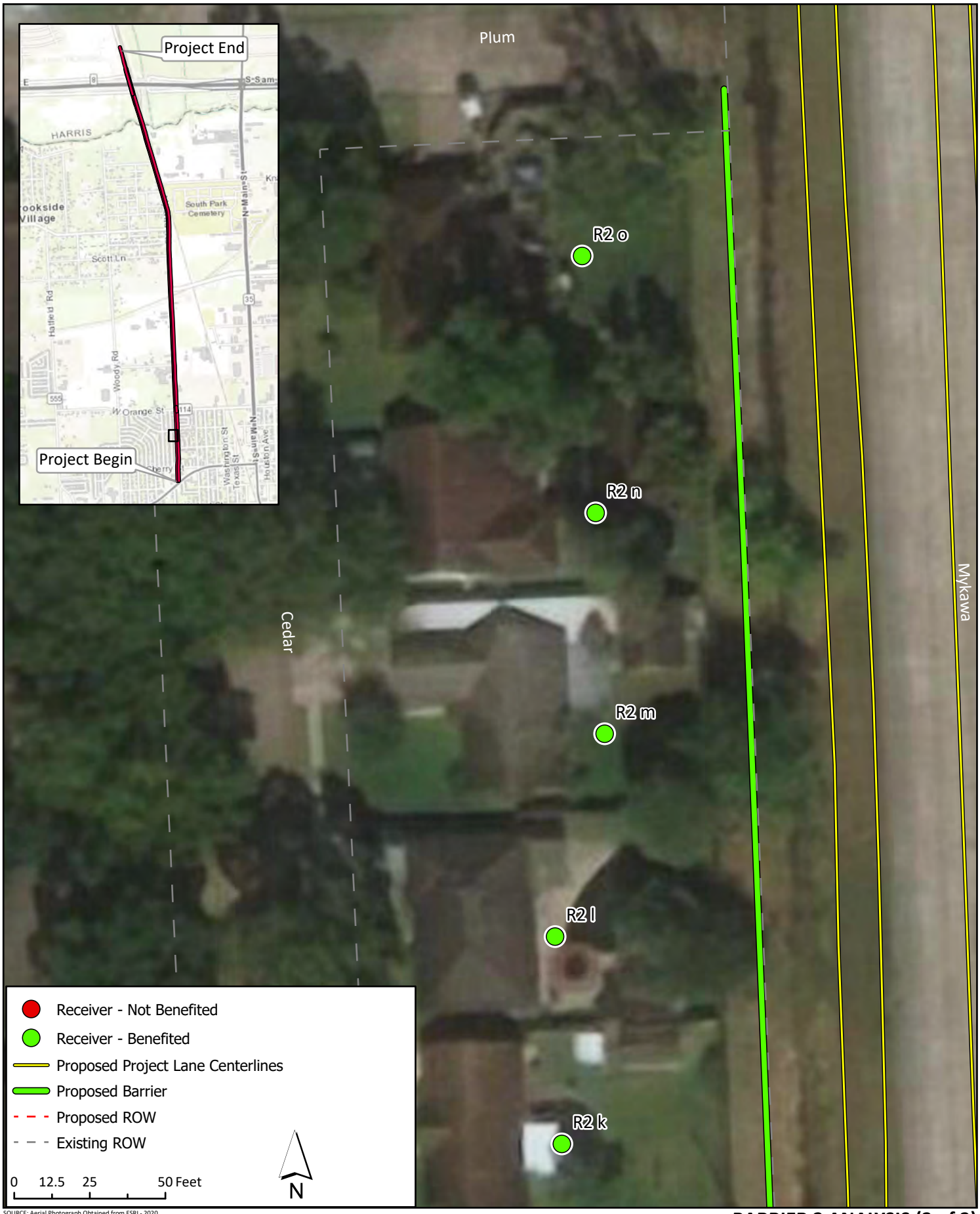
SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 2 ANALYSIS (2 of 3)

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564



SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 2 ANALYSIS (3 of 3)

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

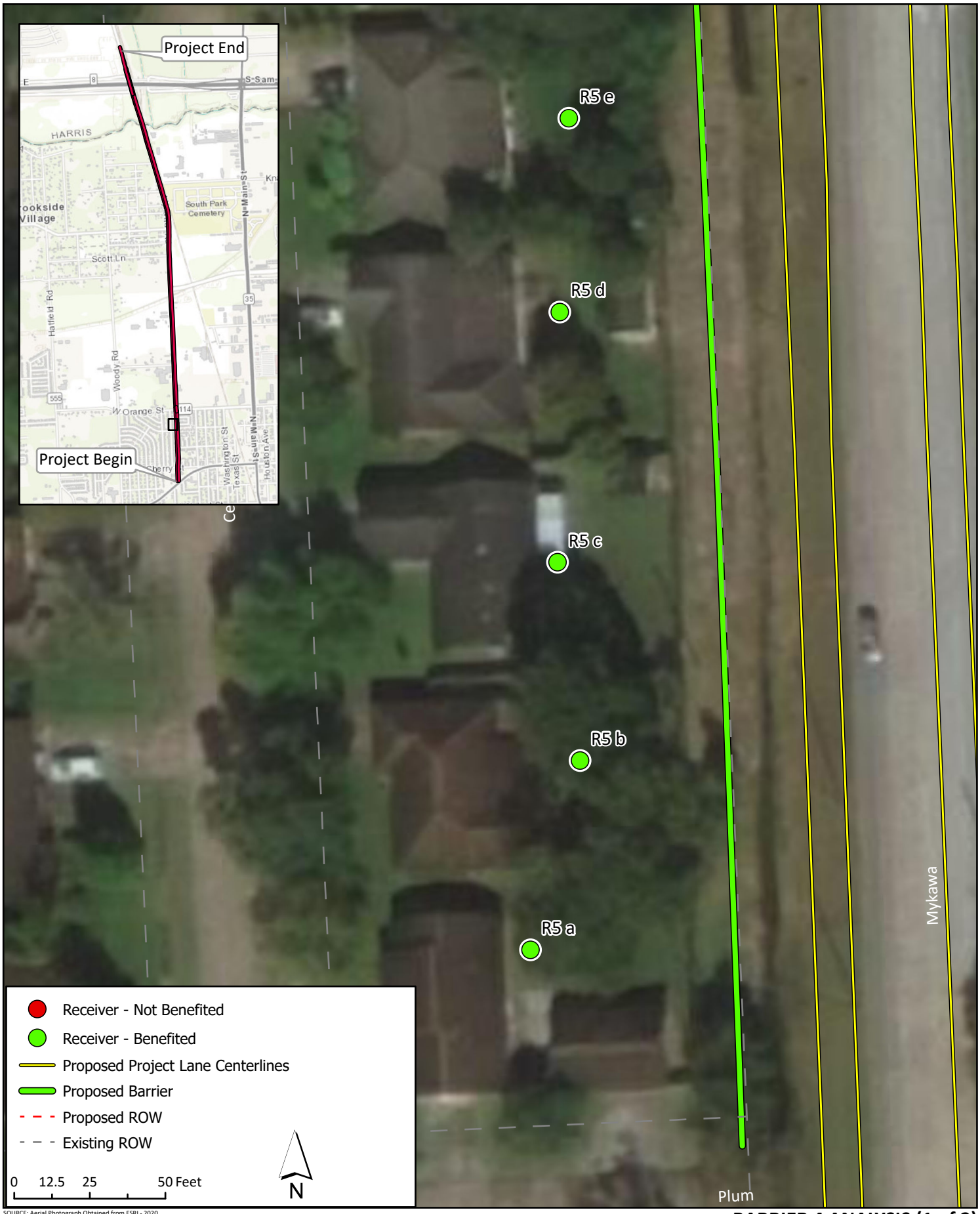
SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 3 ANALYSIS

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564



SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 4 ANALYSIS (1 of 2)

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 4 ANALYSIS (2 of 2)

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 5 ANALYSIS

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

SOURCE: Aerial Photograph Obtained from ESRI - 2020,

BARRIER 6 ANALYSIS

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

ATTACHMENT B

TRAFFIC DATA

Texas Department of Transportation

TXDOT
RECEIVED ON
JAN 24 2018
MAIL OPERATIONS HOUSTON

MEMO

January 22, 2019

To: Quincy D. Allen, P.E., District Engineer
Attention: William R. Brudnick, P.E., Director of TPD

Through: William E. Knowles, P.E.
Traffic Analysis Section Director, TPP

From: Michael L. Dutton
Planner, TPP

Subject: Traffic Data
CSJ: 0912-72-564 and 0912-31-319
Mykawa Road
From Beltway 8
To FM 518

Harris and Brazoria Counties

Attached are tabulations showing traffic analysis for highway design for the 2020 to 2040 twenty year period and the 2020 to 2050 thirty year period for the described limits of the route. Also included is a tabulation showing data for use in air and noise analysis.

Please refer to your original memorandum dated November 20, 2018.

If you have any questions or need additional information, please contact Michael L Dutton at (512) 486-5091.

Attachment

CC: Emmanuel Samson, Transportation Analyst, Houston District
Design Division

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Houston District **January 22, 2019**

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2040	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2020 to 2040) Flexible Pavement	S N	Rigid Pavement	SLAB
Mykawa Road From Beltway 8 To FM 518 Brazoria County	12,300	18,000	56 - 44	11.2	11.4	8.6	11,800	40	5,598,000	3	7,577,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	88.6	91.4
Medium Duty	3.5	2.6
Heavy Duty	7.9	6.0

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2020 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Mykawa Road From Beltway 8 To FM 518 Brazoria County	12,300	20,300	56 - 44	11.2	11.4	8.6	11,900	40	9,034,000	3	12,229,000	8"

ATTACHMENT C

EXISTING MODEL VALIDATION

SOURCE: Aerial Photograph Obtained from ESRI - 2020,

FIELD VALIDATION POINTS

Mykawa Road

Brazoria and Harris County, Texas

CSJ No. 0912-31-319 and 0912-72-564

PROJECT Mykawa Road
FIELD INVESTIGATOR Nicolas Post
DATE Wednesday, July 1, 2020

Point	Location	Time	Car	Truck
1	Mykawa + Cherry St	10:04 am	75 × 4 = 300	4 × 4 = 16
* Ambient between 58-62 db * Large truck @ 10:09 ≈ 68 db * Ended @ 10:19				
2	Vacant parcel Mykawa Rd	10:31	65 × 4 = 280	4 × 4 = 16
* Northwest of Point 1 * Ambient between 56-60 db * Ended @ 10:46 am				
3	west side of Mykawa @ Plum Street	10:58	88 × 4 = 352	4 × 4 = 16
* Ambient 58-62 db * Ended 11:13 am * Time on meter is one hour behind should be 11:58 (DST)				

Photo 1: Field Validation Point 1 at the southeast corner of Cherry Street and Mykawa Road.

Photo 2: Field Validation Point 2, north of Cherry Street on the west side if Mykawa Road.

Photo 3: Field Validation Point 3 at the northwest corner of W. Plum Street and Mykawa Road.

RKI 8-Jul-20
NGP TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Mykawa Road
RUN: Field Validation
BARRIER DESIGN: INPUT HEIGHTS
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.
ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated
			dBA	dBA	dBA	dB	dB		dBA	dB
Field Validation Point 1	1	1	0	62.3	66	62.3	10	----	62.3	0

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	1	0	0	0

RKI 8-Jul-20
NGP TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Mykawa Road
RUN: Field Validation
BARRIER DESIGN: INPUT HEIGHTS
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.
ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated
			dBA	dBA	dBA	dB	dB		dBA	dB
Field Validation Point 2	1	1	0	58.1	66	58.1	10	----	58.1	0

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	1	0	0	0
All Impacted	0	0	0	0

RKI 8-Jul-20
NGP TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Mykawa Road
RUN: Field Validation
BARRIER DESIGN: INPUT HEIGHTS
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.
ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated
			dBA	dBA	dBA	dB	dB		dBA	dB
Field Validation Point 3	1	5	0	59.8	66	59.8	10	----	59.8	0

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	5	0	0	0
All Impacted	0	0	0	0

FIELD VALIDATION POINT 1

Session Report

8/3/2020

Information Panel

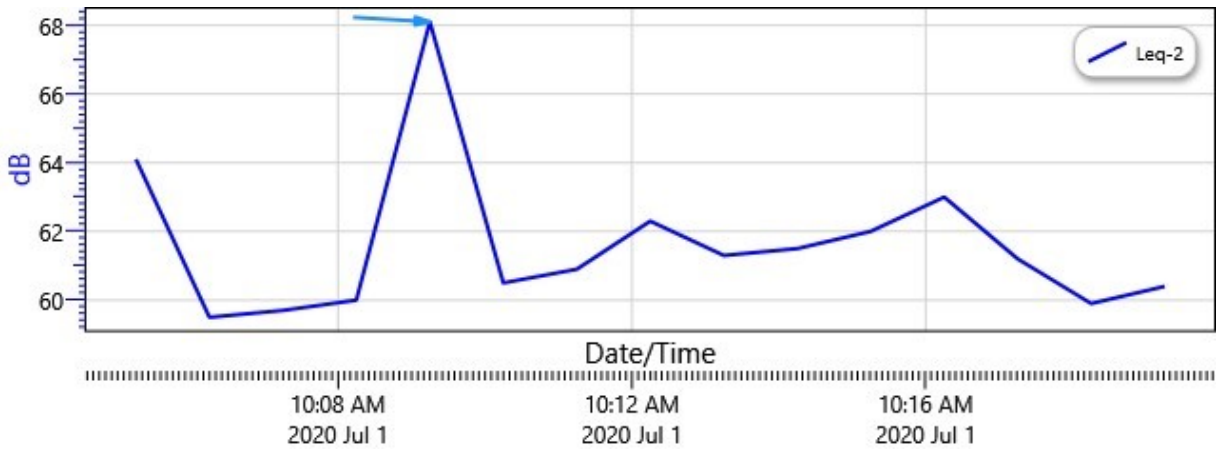
Name	S033
Start Time	7/1/2020 10:04:15 AM
Stop Time	7/1/2020 10:19:43 AM
Device Name	BIH040008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	2	62.2 dB	Lmax	2	83.1 dB
Lmin	2	52.7 dB			
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	FAST			

Logged Data Chart

Study 1: Logged Data Chart



FIELD VALIDATION POINT 2

Session Report

8/3/2020

Information Panel

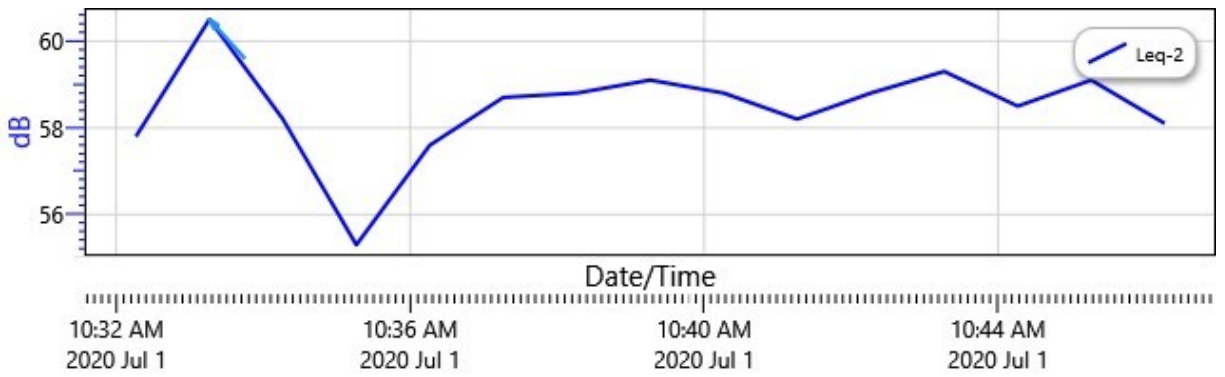
Name	S034
Start Time	7/1/2020 10:31:16 AM
Stop Time	7/1/2020 10:46:26 AM
Device Name	BIH040008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	2	58.5 dB	Lmin	2	50.8 dB
Lmax	2	73.6 dB			
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	FAST			

Logged Data Chart

S034: Logged Data Chart



FIELD VALIDATION POINT 3

Session Report

8/3/2020

Information Panel

Name	S035
Start Time	7/1/2020 10:58:38 AM
Stop Time	7/1/2020 11:13:40 AM
Device Name	BIH040008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	2	60.4 dB	Lmax	2	75.8 dB
Lmin	2	48.9 dB			
Weighting	2	A	Response	2	FAST
Exchange Rate	2	3 dB			

Logged Data Chart

S035: Logged Data Chart