219 Meyersdale to Old Salisbury Rd

Preliminary Engineering Noise Report

October 2024 (Amended Project Description - April 2025)

US 6219, Section 050
Transportation Improvement Project
Meyersdale, PA to Old Salisbury Road, MD

pennsylvania DEPARTMENT OF TRANSPORTATION

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

AMENDED 2025 PROJECT DESCRIPTION REVISIONS

Based on the design change from the Draft Environmental Impact Statement (2024) to the Final Environmental Impact Statement (2025) at the northern end of the project area, the description of the Common Segment Improvements has been updated and included below.

It has been confirmed that these updates fall within the current study area discussed in this report.

All impact information for this subject Appendix is discussed in Chapter 3 of the Final Environmental Impact Statement.

2 DETAILED ALTERNATIVES

2.3 Common Segment Improvements

The northern three miles in Pennsylvania all follow the same alignment, starting from the existing Meyersdale interchange. In addition to the three miles being on the same alignment, other improvements described below are being proposed. These improvements include upgrades to portions of Mason-Dixon Highway, an extension of Mountain Road from its northern terminus to Fike Hollow Road on the east side of U.S. 219, in addition a cul-de-sac of Hunsrick Road, and cul-de-sacs on the bisected Clark Road are proposed. These improvements are intended to ensure that local traffic has continued access. These improvements are included with all alternatives being considered, other than the No Build Alternative. The scope of these proposed improvements is outlined below and depicted in **amended Figure 1**. The numbers below correspond to the number on the figure, illustrating the location of the improvement. Stormwater management facilities, which would result in the need for additional right-of-way and environmental impacts have also been incorporated into the design, as shown on **amended Figure 1**.

2.3.1 Mountain Road

As a result of the Hunsrick Road Bridge removal, a new roadway would be constructed: the Mountain Road Extension. This new roadway would connect existing Mountain Road (T-824) with Fike Hollow Road (T-363) and would parallel the new U.S. 219 alternative along the eastern side. This new connector roadway would provide access from Mountain Road to U.S. Business Route 219 (SR 2047) near the Meyersdale Interchange. The proposed typical section for the Mountain Road Extension includes two 9-foot travel lanes and 2-foot outside shoulders. The design speed is anticipated to be 25 miles per hour.

Prior to the opening of the Meyersdale Bypass, Mason-Dixon Highway carried U.S. 219. After the Meyersdale Bypass opened, PennDOT transferred ownership and maintenance of Mason-Dixon Highway to Summit Township. Following completion of a new U.S. 219

alternative proposed under this study, ownership of Mason-Dixon Highway is to be transferred back to PennDOT as part of re-routed traffic patterns in the area.

2.3.2 Clark Road

Clark Road (T-353) extends west from Mountain Road (T-824) to existing U.S. 219. Due to topographical and geometric constraints, providing a grade separated crossing of a new U.S. 219 alternative proposed under this study was not practical. It was determined Clark Road should be bisected where it crosses a new alternative of U.S. 219 proposed under this study. A cul-de-sac would be placed at each end of the roadway where it intersects the U.S. 219 right-of-way. The eastern side of Clark Road would maintain access to U.S. Business 219 near the Meyersdale interchange via Mountain Road, the Mountain Road Extension, and Fike Hollow Road.

2.3.3 Hunsrick Road Extension

Improvements made to tie a new U.S. 219 alternative into existing U.S. 219 require the removal of the existing Hunsrick Road Bridge (SR 2102). Due to geometric and intersection sight distance constraints at the intersection of Hunsrick Road (T -355) and Mason-Dixon Highway (T-355), it was determined that the Hunsrick Road Bridge would not be replaced and Hunsrick Road would terminate on the east side of U.S. 219.

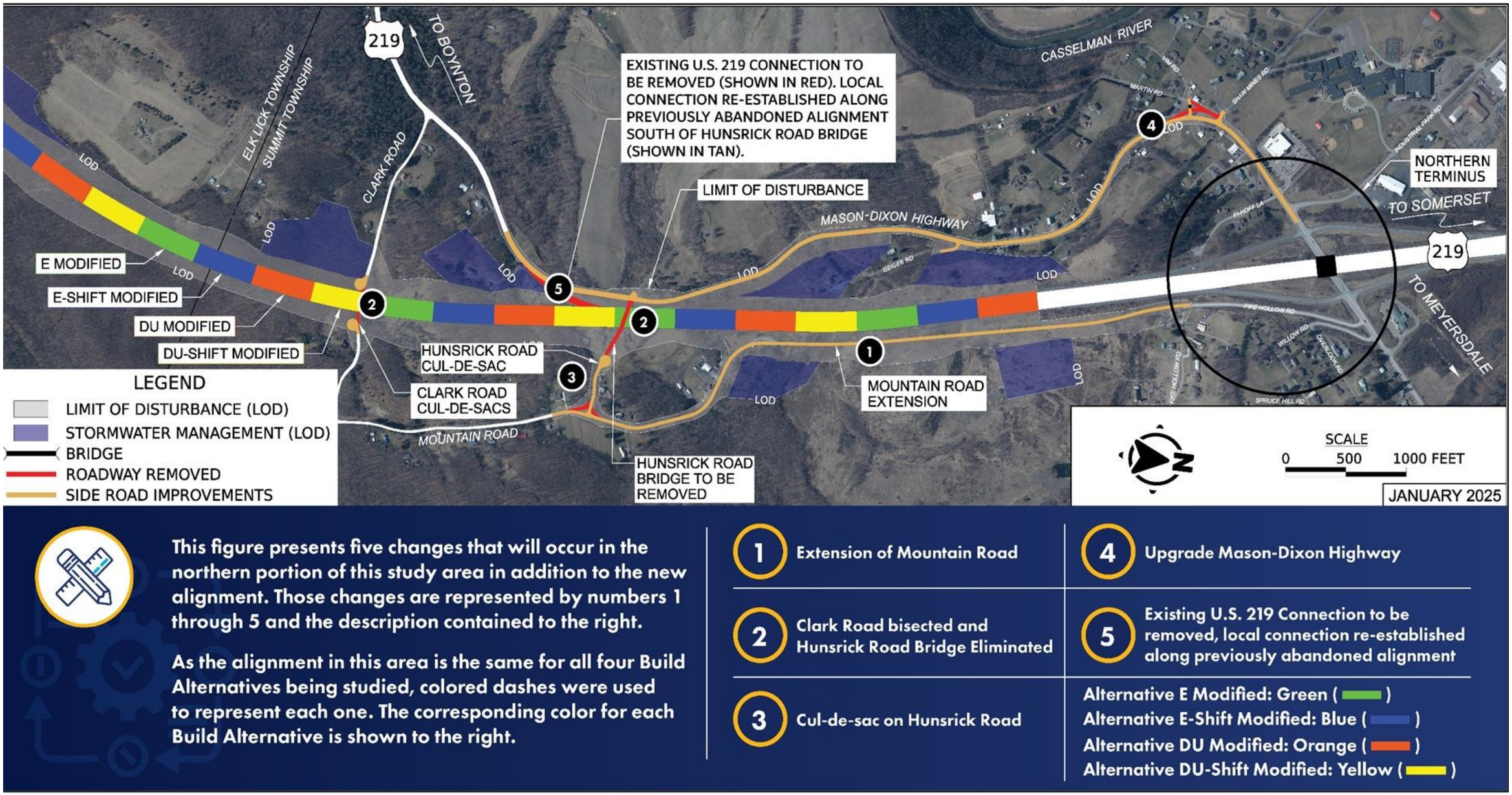
Hunsrick Road currently extends northwest from the intersection with Mountain Road to the Hunsrick Road Bridge. With the removal of the Hunsrick Road Bridge and proposed improvements associated with the Mountain Road Extension, a cul-de-sac would be placed at the northern end of Hunsrick Road. The intersection of Mountain Road with Hunsrick Road would be realigned and maintained. Access to property along Chipmonk Lane would be maintained from Mason-Dixon Highway.

2.3.4 Mason-Dixon Highway

The Mason-Dixon Highway (T-355) would be improved between Hunsrick Road and the U.S. 219 Meyersdale Interchange in accordance with PennDOT's Resurfacing, Restoration, and Rehabilitation (3R) design criteria, using a design speed transition from 55 mph to 35 mph. The upgrades are roughly 1.3-miles in length, starting near Hunsrick Road and ending at the U.S. 219 Meyersdale Interchange.

2.3.5 Existing U.S. 219 Connection to be Removed

Existing U.S. 219 would be severed, and a local connection would be re-established immediately south of the existing Hunsrick Road bridge along the previously abandoned roadway alignment. This new roadway would become Business U.S. 219.



Amended Figure 1: Additional Improvements in Northern Portion of Study Area

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1.0 EXECUTIVE SUMMARY

The Pennsylvania Department of Transportation (PennDOT) and the Maryland State Highway Administration (SHA) in cooperation with the Federal Highway Administration (FHWA) are preparing a Draft Environmental Impact Statement for the US 6219, Section 050 Transportation Improvement Project. This project includes the proposed construction of an 8.0 mile *(6 miles in Pennsylvania and 2 miles in Maryland)* four-lane limited access facility on new alignment from the end of the Meyersdale Bypass in Somerset County, Pennsylvania to the newly constructed portion of US 219 in Garrett County, Maryland. The study area extends approximately eight miles from the southern end of the Meyersdale Bypass in Somerset County, Pennsylvania south to US 40 in Garrett County, Maryland.

The project area encompasses the Borough of Salisbury and portions of Elk Lick and Summit Townships in Somerset County, Pennsylvania, and northeastern Garrett County, Maryland. The project area is mostly rural, with scattered residential and commercial properties, and substantial forested and agricultural areas.

A detailed noise analysis was conducted for the No-Build Alternative and the four Build Alternatives. The four Build Alternatives include:

- Alternative DU Modified
- Alternative DU-Shift Modified
- Alternative E Modified
- Alternative E-Shift Modified

This report addresses the potential for noise impacts based on the noise analysis performed during the Environmental Clearance Phase of this project. Traffic noise impact analysis and abatement measures were evaluated according to the methodology and procedures set forth by FHWA in Highway Traffic Noise: Analysis and Abatement Guidance (FHWA-HEP-10-025, December 2011);PennDOT in the Project Level Highway Traffic Noise Handbook, Publication No. 24 (December 2013), the SHA Highway Noise Abatement Planning and Engineering Guidelines (April, 2020), and the Maryland Department of Transportation (MDOT) Noise Policy (2020).

For analysis purposes, 20 Noise Sensitive Areas (NSAs) were identified along or near the limit-of-disturbance (LOD) of the four Build Alternatives. Sixteen NSAs (6a through 19) were identified in Pennsylvania and five NSAs (1 through 5) were identified in Maryland. Within the 20 NSAs, existing noise levels were monitored or predicted at 99 noise-sensitive receptor locations (34 monitored and modeled sites and 65 modeled-only sites) or areas where frequent human outdoor activity occurs to identify ambient acoustical conditions. Of the 99 noise-sensitive receptor locations, 69 are located in Pennsylvania and 30 are in Maryland.

Based on the evaluation of existing and future noise levels and the noise abatement criteria (NAC), project-related noise impacts were identified within 6 of the 20 NSAs (4 in

Pennsylvania and 2 in Maryland). Therefore, abatement consideration is warranted for NSAs 1, 4, 12, 13, 14 and 18 (NSA 4 noise impacts were only from Alternatives DU Modified and E Modified). No project-related noise impacts were identified for NSAs 2, 3, 5, 6a, 6b, 7, 8, 9, 10, 11,13, 14, 15, 16, 17 and 19. NSAs where no impacts were identified do not warrant abatement consideration; therefore, no further analysis was performed for those NSAs.

Since noise impacts have been identified, this study included an evaluation of noise abatement. For preliminary analysis purposes noise barriers were considered to be the only feasible form of noise mitigation, but earth noise berms will be considered where feasible during the Final Design noise study. Noise barriers were found to be not feasible at NSAs 1 and 18 due to driveway and roadway access. Noise barriers were found to be feasible for NSAs 4, 12, 13 and 14 but not reasonable due to the square footage per benefitted receptor value being greater than what is permitted by the reasonableness criteria set forth by PennDOT and SHA. Therefore, no barriers are recommended for any of the impacted NSAs. **Table 1** presents a summary of the preliminary noise barriers analyzed for NSAs 4,12, 13 and 14.

This report outlines the preliminary results of the detailed noise monitoring and analysis performed as part of the Environmental Clearance Phase of the project and was completed based upon preliminary engineering information on the Build Alternatives under study in the environmental document is available. It provides recommendations on the extent of noise abatement required to meet FHWA, PennDOT, and SHA noise guidelines and the procedures to be taken to meet these requirements, in accordance with the National Environmental Policy Act (NEPA). Additional noise analyses using more detailed engineering data will be conducted during the final design stage of the project and documented in the Final Design Noise Analysis Report. The Final Design Noise Analysis will refine the noise modeling effort and verify abatement warrants, feasibility, and reasonableness. This effort will also include coordination with the affected public to define the desires of the benefited communities.

Table 1 - Summary of Preliminary Noise Barrier Systems

NSA	Modified Build Alternatives	Number of Impacted Receptors[1]	Total Number of Benefited Receptors[2]	Preliminary Barrier Length (FT)	Height above Ground from TNM (FT)	Square Footage of Preliminary Barrier (SF)	SF/BR[3] (FT^2 per Benefited Receptor)	Feasible? / Reasonable?
NSA 4 (MD)	DU & E	3	3	1,004	16-21 (Avg. 19.16)	18,850	6,283	Yes / No
NSA 12 (PA)	DU, DU-Shift, E & E-Shift	1	1	825	27'-30' (avg. 28.73')	23,699	23,699	Yes / No
NSA 13 (PA)[4]	DU, DU-Shift, E & E-Shift	1	1	600	30	18,000	18,000	Yes / No
NSA 14 (PA)[4]	DU, DU-Shift, E & E-Shift	2	2	830	1-14 (avg. 13)	10,790	5,810	Yes / No

1. An impacted receptor is an individual receptor unit that has a future design year noise level that approaches or exceeds the NAC and/or that experiences a substantial noise level increase of 10 dB(A) or more above existing noise levels.
2. A benefited receptor is an impacted or non-impacted receptor receiving a 5 dB(A) or greater insertion loss.
3. PennDOT maximum SF/BR = 2,000 and SHA maximum SF/BR = 2,700.
4. Based on preliminary engineering a retaining wall would be required to construct and maintain the preliminary noise barriers for NSAs 13 and 14. The square foot cost does not consider the retaining wall square footage and associated costs.

2.0 INTRODUCTION

2.1 Project Overview

The Pennsylvania Department of Transportation (PennDOT) and the Maryland Department of Transportation State Highway Administration (SHA) in cooperation with the Federal Highway Administration (FHWA) are preparing a Draft Environmental Impact Statement for the US 6219, Section 050 Transportation Improvement Project. This project includes the proposed construction of an 8.0 mile *(6 miles in Pennsylvania and 2 miles in Maryland)* four-lane limited access facility on new alignment from the end of the Meyersdale Bypass in Somerset County, Pennsylvania to the newly constructed portion of US 219 in Garrett County, Maryland. The study area extends approximately eight miles from the southern end of the Meyersdale Bypass in Somerset County, Pennsylvania south to US 40 in Garrett County, Maryland.

The intent of this project is to complete Corridor N of the Appalachian Development Highway System (ADHS) through improvements to the section of US 219 between the terminus of the four-lane highway section south of Meyersdale, Pennsylvania and the north end of the newly constructed I-68/US 219 Interchange in Garrett County, Maryland. The project will supplement the interstate system by providing an improved facility between I-68 and the Pennsylvania Turnpike (I-76), connecting the project area portion of Appalachia to the interstate system, and improving mobility for motorists and freight along US 219. The project will enhance access between existing populations and destinations and markets in the region, potentially generating economic opportunity in previously isolated areas.

The proposed project is needed for three identifiable reasons:

- Existing US 219 does not provide efficient mobility for trucks and freight.
- There are numerous roadway and geometric deficiencies present along the existing US 219 alignment.
- The existing roadway infrastructure is a limiting factor in economic development opportunities in the Appalachian Region.

2.2 Project Alternatives

The proposed project alternatives include a No Build Alternative and four Build Alternatives (DU Modified, DU-Shift Modified, E Modified, E-Shift Modified). **Figure 1** shows the location of the four Build Alternatives. Each of the four Build Alternatives are being evaluated with a consistent roadway layout, also known as a typical section (see **Figure 2**). The typical section for each Build Alternative provides a four-lane divided limited access highway with 12-foot-wide travel lanes, 8-foot- wide inside shoulders and 10-foot-wide outside shoulders. The width of the median between the inside edges of northbound and southbound travel lanes is between 36 and 60 feet. Most of the median within Pennsylvania would be 60 feet wide and would transition down to 36 feet wide in

Maryland to match the current roadway typical section. A description of each alternative follows.

No-Build Alternative

The No-Build Alternative is retained throughout the alternative development process to serve as a baseline for comparison with the Build Alternatives. The No Build Alternative involves taking no action, except routine maintenance along US 219. The existing two-lane roadway between Meyersdale, Pennsylvania and Garrett County, Maryland would remain. No new alternatives or additional roadway would be constructed.

Build Alternative – DU Modified

The Alternative DU Modified alignment was developed by combining suggestions from the US Fish and Wildlife Service (USFWS) with an alternative identified during previous 2001 NEPA efforts. USFWS suggested an alternative to avoid the mountain slope/ridge in Pennsylvania and reduce potential impacts to terrestrial wildlife.

Build Alternative – DU-Shift Modified

Alternative DU-Shift Modified resulted from combining Alternative DU Modified with Alternative E-Shift Modified to move the alternative further away from residences along Old Salisbury Road. Alternative DU-Shift Modified mimics the alternative of Alternative DU Modified from Meyersdale until south of the Mason-Dixon Line, where the alternative is shifted eastward and away from Old Salisbury Road.

Build Alternative – E Modified

The Alternative E Modified alignment was suggested during previous 2001 NEPA efforts to avoid farmland in Pennsylvania and avoid residential areas along existing US 219. Alternative E Modified starts at the southern end of the Meyersdale Bypass and proceeds in a southerly direction along the face of Meadow Mountain. At the Pennsylvania/Maryland border, Alternative E Modified would extend in a southwesterly direction, east of the existing US 219.

Build Alternative – E-Shift Modified

The alignment for Alternative E-Shift Modified was suggested by residents along Old Salisbury Road during previous 2001 NEPA efforts and involves moving Alternative E Modified further away from the residences on Old Salisbury Road. Alternative E-Shift Modified follows Alternative E Modified, with the exception of a small shift in Maryland, slightly eastward, away from the homes along Old Salisbury Road. Alternative E Modified does not directly impact the homes along Old Salisbury Road; however, residents requested an evaluation of a slightly eastward shift to move the alternative further from their homes. The trade-off is that Alternative E-Shift Modified bisects a farm field that is only slightly impacted by Alternative E Modified. This shifted section is the same as the shifted section of Alternative DU-Shift Modified.

Common Segment Improvements

Comment segment improvements include Mountain Road to Fike Hollow Road on the east side of US 219, cul-de-sac of Mountain Road, and cul-de-sac of Clark Road. Stormwater management facilities, which would result in the need for additional right-of-way and environmental impacts have also been incorporated into the design. These improvements are intended to ensure that local traffic has continued access. These improvements are included with all alternatives being considered, other than the No-Build alternative.

This report presents the preliminary results of the detailed noise monitoring and analysis performed as part of the Environmental Clearance Phase of the project. The traffic noise analysis was conducted to determine if project-related noise impacts will occur and determine whether noise abatement for affected areas in the form of noise barriers would be warranted, feasible, and reasonable, based upon FHWA, PennDOT and SHA criteria.

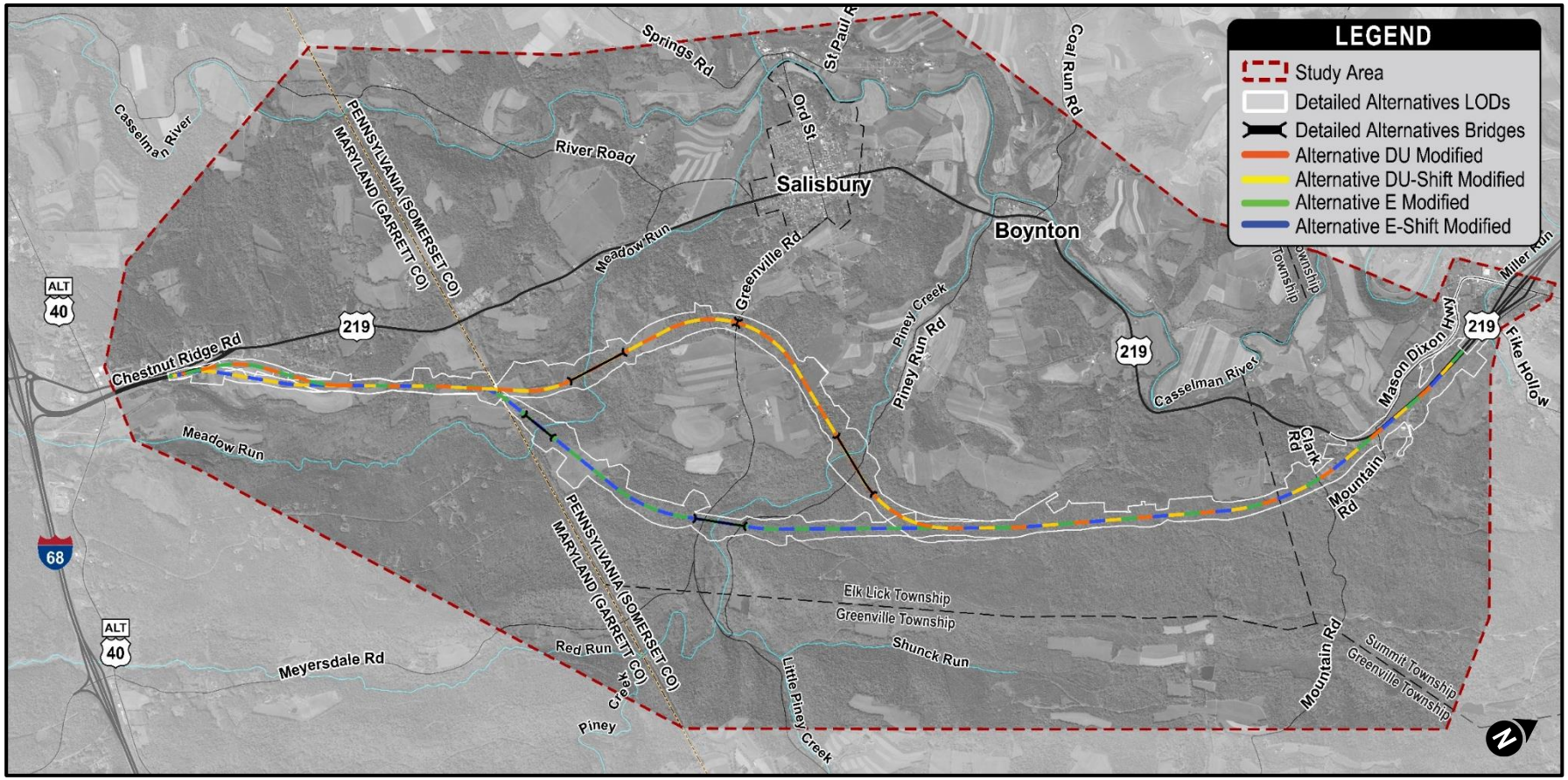
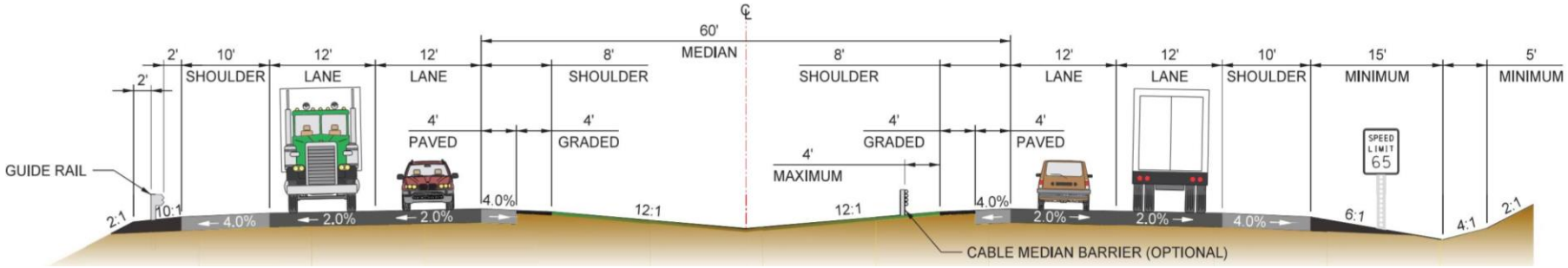


Figure 1 - Project Build Alternatives

US 219 TYPICAL SECTION WITH **60' MEDIAN**



US 219 TYPICAL SECTION WITH **36' MEDIAN**

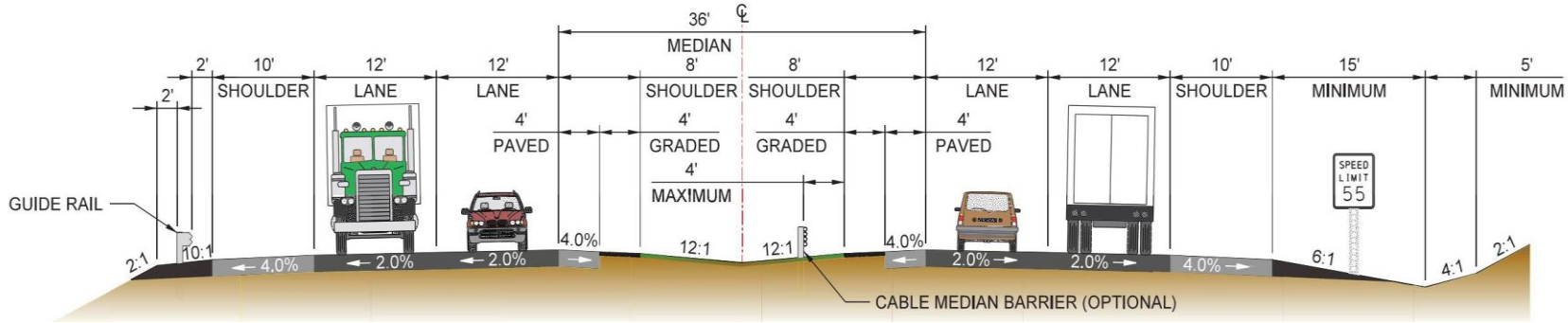


Figure 2 - Proposed Typical Sections

3.0 METHODOLGY

Traffic noise impact analysis and abatement measures were evaluated in accordance with the following:

- PennDOT Project Level Highway Traffic Noise Handbook Publication No. 24 (2019)
- MDOT Noise Policy (2020)
- SHA Highway Noise Abatement Planning and Engineering Guidelines (2020)

All three documents provide procedures and guidance for the evaluation of highway traffic noise impacts and criteria for consideration of noise abatement measures during the Environmental Clearance Phase in accordance with NEPA.

Federal regulations require the evaluation of highway traffic noise impacts and consideration of abatement when certain highway improvements are being proposed. The US 6219, Section 050 Transportation Improvement Project is classified as Type I Project, because it proposes the construction of a highway on new location as defined in FHWA's Title 23 Code of Federal Regulations, Part 772 (23 CFR 772). The purpose of the Type I noise analysis is to predict loudest-hour build traffic noise levels, and to determine where noise barriers are warranted, feasible, and reasonable within the project area, based upon FHWA, PennDOT and SHA criteria.

The methods and results of this traffic noise analysis are summarized in the following sections and involved the following procedures:

- Identification of NSAs and noise sensitive receptor sites
- Field measurement of noise levels and noise model validation
- Prediction of existing and future noise levels
- Assessment of future traffic noise impacts
- Consideration of noise abatement measures

All prediction modeling was performed using FHWA's Traffic Noise Model v2.5 (FHWA TNM®), hereafter referred to as simply "TNM." The TNM seeks to simulate the noise environment by considering variable inputs for traffic (including autos, medium trucks, heavy trucks, buses, and motorcycles), variable inputs of traffic speed for each vehicle type, variable inputs for roadway design (including roadway width, horizontal and vertical alignment), variable inputs for terrain lines and propagation features (such as building rows, ground zones, and tree zones), and inclusion of traffic control measures including stop lights and stop signs.

3.1 Highway Noise Fundamentals

Noise is defined as unwanted or undesirable sound. A discussion on Highway Noise Fundamentals is included because it helps define many of the terms and criteria utilized in this report. The extent to which individuals are affected by noise sources is controlled by several factors, including:

- Duration and frequency of sound
- Distance between the sound source and the receiver
- Intervening natural or man-made barriers or structures
- Ambient environment

Sound and noise are two fundamental terms used to assess the impact of highway noise. Sound is created when an object moves, causing vibrations in the air. These vibrations travel in waves, like ripples on water, and can be heard when they reach a person's ears. Noise, on the other hand, is unwanted sound as defined by the FHWA. It is the unpleasant, unwanted sound that is generated on streets and highways. The level of highway traffic noise depends primarily on the following three factors:

- Volume of the traffic
- Speed of the traffic
- Number of trucks in the flow of traffic

Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. Any condition, such as a steep grade, that causes heavy laboring of motor vehicle engines can also increase traffic noise levels. Vehicle noise is a combination of the noises produced by the engine, exhaust, and tires. The FHWA has established the following vehicle categories to use in traffic noise analyses:

- Automobiles - vehicles with two axles and four tires
- Medium trucks - all cargo vehicles with two axles and six tires
- Heavy trucks - all cargo vehicles with three or more axles
- Buses - all vehicles designed to carry more than nine passengers
- Motorcycles - all vehicles with two or three tires and an open-air driver/passenger compartment

Heavy trucks typically produce more noise than medium trucks traveling at the same speed. Medium trucks, in turn, typically generate more noise than automobiles.

When considering highway traffic noise impacts, it is important to understand that noise levels are also affected by distance from the noise source, terrain between the noise source and receptor, and vegetation and other natural or manmade obstacles between the noise source and receptor.

The decibel (dB) is the basic unit of sound measurement. Decibels are units that represent relative acoustic energy intensities. Because the range of energy found throughout the spectrum of normal hearing is so wide, the numbers necessary to define these levels must represent huge variations of energy. To compensate for this wide range of numbers, a base 10 logarithmic scale is used to make the numbers more understandable.

Because decibels are logarithmic units, sound levels cannot be added by ordinary arithmetic means. The following general relationships provide a basic understanding of sound generation and propagation:

- 3 dB(A) (increase or decrease) - minimum change most humans typically perceive

- 5 dB(A) (increase or decrease) - clearly noticeable change to almost everyone
- 10 dB(A) (increase or decrease) - perceived as twice as loud (or half as loud)
- Speed - a 10 mph increase in the vehicle mix speed generally increases noise levels by 3 dB(A)
- Traffic Volumes - noise levels generally increase by 3 dB(A) when traffic volumes double

Table 2 provides examples of common outdoor noise levels, their respective noise level decibels, and correlating indoor noise level examples.

Table 2 - Common Outdoor and Indoor Noise Levels

Common Outdoor Noise Example	Noise Level (decibels)	Common Indoor Noise Example
	110	Rock Band
Jet Flyover at 1,000 feet	100	Inside Subway Train
Gas Lawn Mower at 3 feet		
Diesel Truck at 50 feet	90	Food Blender at 3 feet
Noisy Urban Daytime	80	Garbage Disposal at 3 feet, Shouting at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher, Next Room
Quiet Urban Nighttime	40	Small Theater, Large Conference Room (background)
Quiet Suburban Nighttime		Library
	30	
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast and Recording Studio
	10	Threshold of Hearing
	0	

Adapted from Guide on Evaluation and Attenuation of Traffic Noise. AASHTO. 1974

Noise level information is presented in terms of the hourly equivalent sound level (Leq(h) or Leq). The Leq (preferred measurement descriptor, used by FHWA) is the value of the steady sound level that would contain the same amount of sound energy as the actual time-varying sound evaluated during the same one-hour period and accounts for noise

fluctuations. This is the descriptor that will be used in presenting the collected existing noise measurements. The concept of the Leq is illustrated in **Figure 3**.

Consistent with PennDOT's and SHA's noise policies, the unit of measure for the Leq is the "A-weighted" equivalent sound level in decibels [dB(A)]. A sound level represents the level of the rapid air pressure fluctuations caused by sources, such as traffic, which are heard as noise. Because the human ear does not respond to all frequencies equally, the method commonly used to quantify environmental noise is to apply an adjustment, or weighting, to define the relative loudness of different frequencies. The A-weighted scale refers to the filtering of the different frequencies of the sound to correspond to the way the human ear responds to these frequencies.

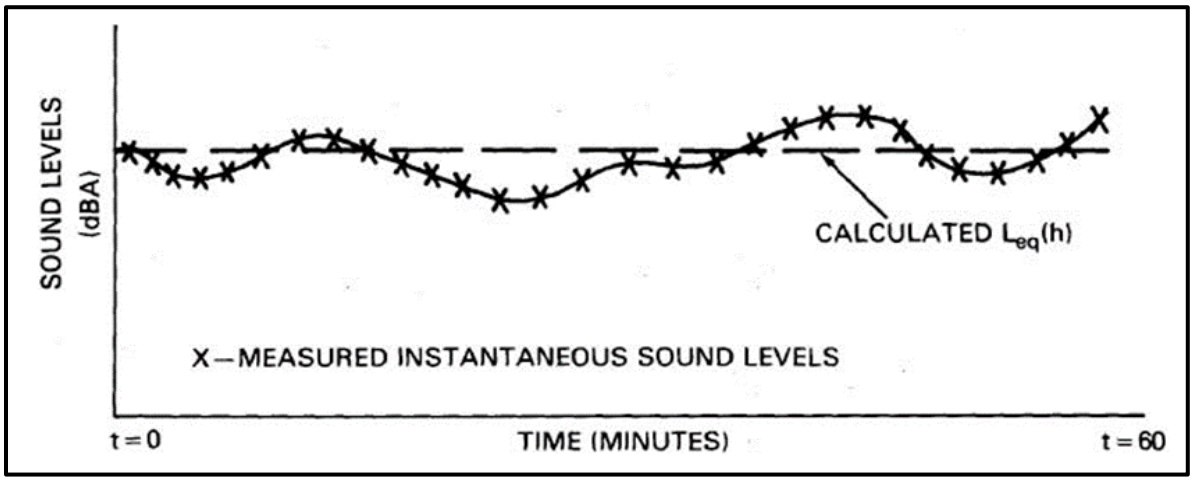


Figure 3 - Sound Level Versus Time

Source: http://www.fhwa.dot.gov/environment/noise/construction_noise/special_report/hcn02.cfm

3.2 Federal Noise Abatement Criteria

FHWA identifies noise abatement criteria (NAC) for different land use activity categories in Title 23 CFR Part 772 and requires that States define impact criteria that are at least 1 dB(A) less than the NAC, based upon the identified type of activity or land use. **Table 3** shows PennDOT's and SHA's noise impact levels, which are based on the NAC. Both PennDOT's and SHA's levels are set 1 dB(A) less than the FHWA NAC.

Based on field reconnaissance and desktop mapping the identified active land uses along the proposed project alternatives consist of mostly residential properties and places of worship which are considered Land Use Category B and C. The industrial, agricultural, and undeveloped fields along the project alternatives are considered Land Use Category F and G.

Per FHWA, a receptor in Category B and C is considered to be "impacted" when the traffic noise levels approach or exceed 67 dB(A), or when the predicted noise levels are substantially higher than the existing ambient noise levels. In defining the term

“approaches,” both PennDOT and SHA have adopted 66 dB(A) as the impact threshold for Category B and C, and both use a 10 dB(A) increase over existing noise levels to define a substantial increase even if the absolute level falls below the activity groups NAC. According to FHWA, new alignment projects are more likely to create impacts based on a "substantial increase" over existing noise levels, especially if there is no existing highway noise source.

Per FHWA/PennDOT/SHA noise guidance, this project qualifies as a Type I highway traffic noise project. A Type I Project is any project that meets one of the following criteria.

1. The construction of a highway on a new location.
2. The physical alteration of an existing highway where there is either:
    i. Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition and the future build condition.
    ii. 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.
3. 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.
4. The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane.
5. The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange.
6. Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane.
7. The addition of a new or substantial alteration of a weigh station, rest stop, rideshare lot, or toll plaza.

Per the criteria listed above this project meets Criteria 1.

Table 3 - Noise Abatement Criteria (NAC) Hourly A-Weighted Sound Level – Decibels [dB(A)]

Activity Category	Activity Criteria[1] Leq(h)[2]	PennDOT Approach Criteria	SHA Approach Criteria	Evaluation Location	Description of Activity Category
A	57	56	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	66	Exterior	Residential
C[3]	67	66	66	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare 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[3]	52	51	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[3/4]	72	71	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

1. The Leq(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.
2. The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.
3. Includes undeveloped lands permitted for this activity category (PennDOT)
4. Includes undeveloped lands permitted for this activity category (SHA)

4.0 EXISTING HIGHWAY TRAFFIC NOISE ENVIRONMENT

This section identifies the Noise Study Areas (NSA) along the four build alternatives, discusses the noise measurements that were collected for the study, and documents the validation results of the noise prediction modeling.

4.1 Noise Study Area Descriptions

Noise Study Areas (NSAs) were identified as areas potentially exposed to highway noise sources near the limit-of-disturbance (LOD) of the four Build Alternatives (DU Modified, DU-Shift Modified, E, E-Shift Modified). Common areas and land uses were grouped into NSAs to assist in evaluating mitigation, organizing reports, and facilitating impact discussions. NSAs can be residential and non-residential. Residential NSAs include single-family residences, single-family attached residences (townhouses) and multi-family residences (condominiums and apartments). Non-residential NSAs included recreation areas, playgrounds, active sports areas, parks, schools, places of worship, motels, hotels, libraries, and hospitals located along the proposed alignments.

During preliminary analysis, 20 NSAs were identified along the LOD of the four Build Alternatives. Sixteen NSAs (6 through 19) were identified in Pennsylvania with one (NSA 18) containing a place of worship. Five NSAs (1 through 5) were identified in Maryland with one (NSA 2) containing a place of worship. The NSAs are shown in **Figure 4**. More detailed mapping for each NSA is also shown in **Appendix A** (Sheets 1 through 14).

A description of each NSA is listed below.

NSA 1 - is in Maryland at the southern end of the four Build Alternatives and along the southbound side of Chestnut Ridge Road. This NSA includes 12 single-family residential homes, one commercial property (no exterior areas of frequent human use) and one trucking property fronting Chestnut Ridge Road. The NSA is bounded by a forest to the west and north and the Grantsville Plaza shopping center to the south. NSA 1 is classified as land use Categories B and F.

NSA 2 - is in Maryland and adjacent to the southbound side of the four Build Alternatives. This NSA consists of a place of worship with an exterior area of frequent human use (playground) and one single-family house. The NSA is bounded by all four Build Alternatives to the east, Chestnut Ridge Road to the west, and Old Salisbury Road to the north. NSA 2 is classified as land use Category B and C.

NSA 3 - is in Maryland and along the southbound side of existing US 219. This NSA includes six single-family residential homes fronting existing US 219. The NSA is bounded by a forested area to the west and existing US 219 to the east. NSA 3 is classified as land use Category B.

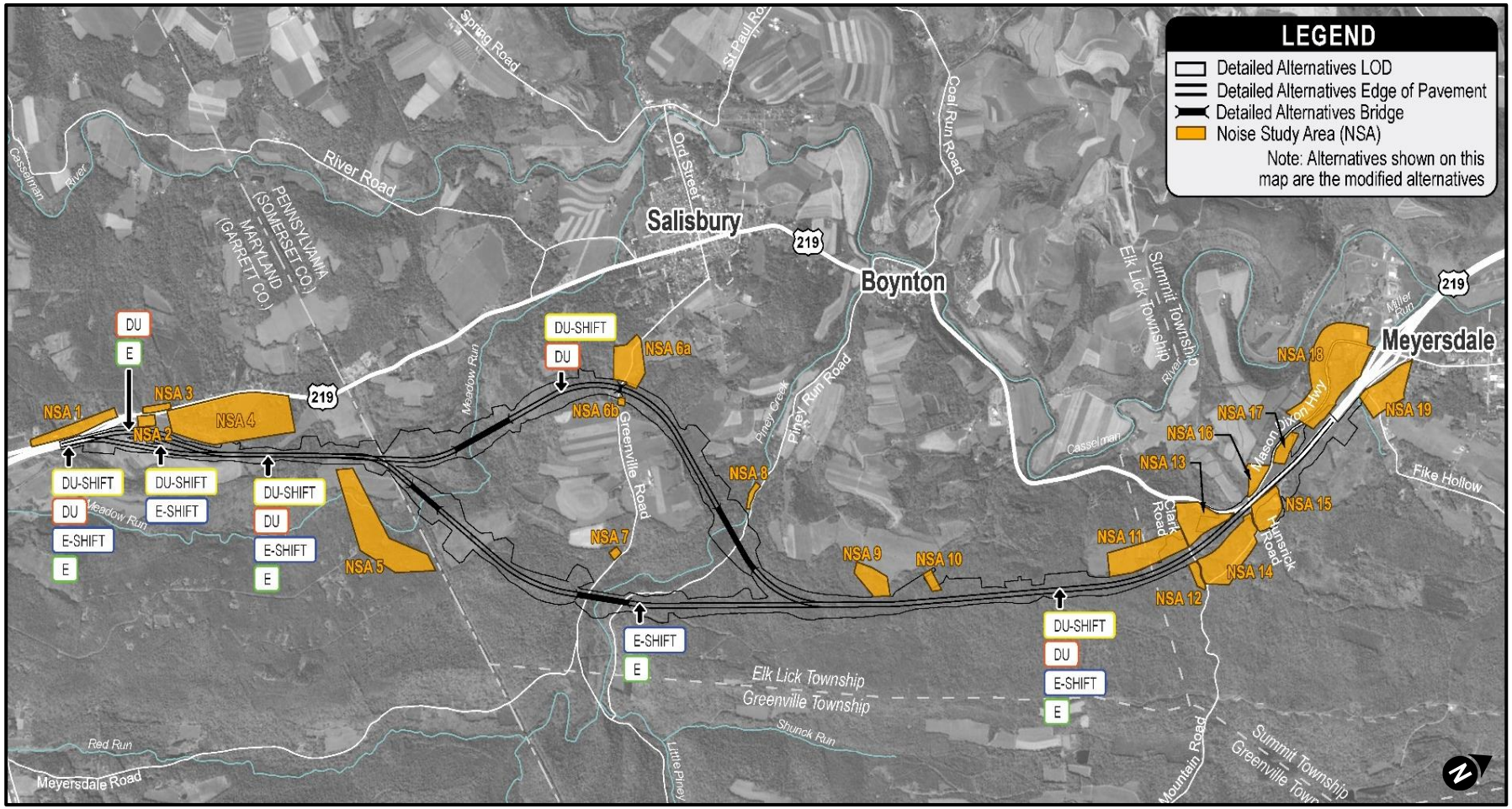


Figure 4 - Noise Study Area Locations

NSA 4 - is in Maryland and adjacent to the southbound side of the four Build Alternatives. This NSA includes 28 single-family residential homes along existing US 219 and Old Salisbury Road, an agricultural field and forested areas. The NSA is bounded by the LOD for all four Build Alternatives to the east, existing US 219 to the west, and a forested/agricultural area to the north. NSA 4 contains Category B and F land uses.

NSA 5 – is in Maryland and adjacent to the northbound side of the four project alternatives. This NSA includes five single-family residential homes, an agricultural field and is mostly forested. The NSA is bounded by four Build Alternatives to the west, Alternatives E Modified and E-Shift Modified to the north and forested areas to the east, north and south. NSA 5 is classified as land use Category B and F.

NSA 6a - is in Pennsylvania and adjacent to the southbound side of Alternatives DU Modified and DU-Shift Modified. This NSA includes three single-family residential homes along eastbound Greenville Road and one along westbound Greenville Road. The NSA is bounded by Alternatives DU Modified and DU-Shift Modified and an agricultural field to the east and forested areas to the west, north, and south. NSA 6a is classified as land use Category B.

NSA 6b - is in Pennsylvania and adjacent to the northbound side of Alternatives DU Modified and DU-Shift Modified. This NSA includes one single-family residential home along westbound Greenville Road. The NSA is bounded by Alternatives DU Modified and DU-Shift Modified to the west and an agricultural field to the east. NSA 6b is classified as land use Category B.

NSA 7 - is in Pennsylvania and adjacent to the southbound side of Alternatives E Modified and E-Shift Modified. This NSA includes one single-family residential home along eastbound Greenville Road. The NSA is bounded by Alternatives E Modified and E-Shift Modified to the east and forested areas to the west, north and south. NSA 7 is classified as land use Category B.

NSA 8 - is in Pennsylvania and adjacent to the southbound side of Alternatives DU Modified and DU-Shift Modified. This NSA includes seven single-family residential homes along Piney Run Road. The NSA is bounded by Alternatives DU Modified and DU-Shift Modified to the south, Piney Creek and forested areas to the west, and additional forested areas to the north and east. NSA 8 is classified as land use Category B.

NSA 9 - is in Pennsylvania and adjacent to the southbound side of the four Build Alternatives. This NSA includes two single-family residential homes. The NSA is bounded by all four Build Alternatives to the east, open field to the west, and forested area to the north and south. NSA 9 is classified as land use Category B.

NSA 10 - is in Pennsylvania and adjacent to the southbound side of the four Build Alternatives. This NSA includes one single-family residential home. The NSA is bounded by all four Build Alternatives to the east, open field to the west, and forested area to the north and south. NSA 10 is classified as land use Category B.

NSA 11 - is in Pennsylvania and adjacent to the southbound side of the four Build Alternatives. This NSA includes four single-family residential homes. The NSA is bounded by all four Build Alternatives to the east, forested areas and open fields to the west and south, and Clark Road to the north. NSA 11 is classified as land use Category B.

NSA 12 - is in Pennsylvania and adjacent to the northbound side of the four Build Alternatives. This NSA includes two single-family residential homes along Clark Road. The nearest residence is located approximately 90 feet from the LOD of the four Build Alternatives. The NSA is bounded by the LOD for the four Build Alternatives to the west, forested areas east and south, and Clark Road to the north. NSA 12 is classified as land use Category B.

NSA 13 - is in Pennsylvania and adjacent to the southbound side of the four Build Alternatives. This NSA includes one commercial property (no exterior areas of frequent human use) and six single-family residential homes along Clark Road and Mason Dixon Highway. The NSA is bounded by the four Build Alternatives to the east, US 219 to the west, and Clark Road to the south. NSA 13 is classified as land use Category B and E.

NSA 14 - is in Pennsylvania and adjacent to the northbound side of the four Build Alternatives. This NSA includes ten single-family residential homes along Mountain Road. The NSA is bounded by the four Build Alternatives to the west, Hunsrick Road to the north, Clark Road to the south and a forested area to the east. NSA 14 is classified as land use Category B.

NSA 15 - is in Pennsylvania and adjacent to the northbound side of the four Build Alternatives. This NSA includes five single-family residential homes and one agricultural field along Mountain Road and Hunsrick Road. The NSA is bounded by the four Build Alternatives to the west, Hunsrick Road to the south and Mountain Road to the north and east. NSA 15 contains land use Categories B and F.

NSA 16 - is in Pennsylvania and adjacent to the southbound side of the four Build Alternatives. This NSA includes two single-family residential homes along Chipmonk Lane and Mason Dixon Highway. The NSA is bounded by the LOD for the four Build Alternatives to the east, Chipmonk Lane to the south and Mason Dixon Highway to the north. NSA 16 is classified as land use Category B.

NSA 17 - is in Pennsylvania and adjacent to the southbound side of the four Build Alternatives at the northern end of the project. This NSA includes two single-family residential homes along Geiger Road. The NSA is bounded by the four Build Alternatives to the east and Mason Dixon Highway to the west and south. NSA 17 is classified as land use Category B.

NSA 18 - is in Pennsylvania and the southwest quadrant of the existing US 219 at Mason Dixon Highway interchange. This NSA includes 27 single-family residential homes along Mason Dixon Highway and Fi Hoff Lane in addition to one place of worship (no exterior areas of frequent human use), three commercial properties (no exterior areas of frequent

human use) and one historic property (S.J. Miller School) that is determined to be eligible for listing in the National Register. The NSA is bounded by US 219 to the east, Mason Dixon Highway north and Casselman River to the west. NSA 18 is classified as land use Categories B, C and E.

NSA 19 - is in Pennsylvania and the southeast quadrant of the existing US 219 at Mason Dixon Highway interchange. This NSA includes 17 single-family residential homes and two commercial properties (no exterior areas of frequent human use). The NSA is bounded by US 219 to the west, Mason Dixon Highway to the north and Fike Hollow to the south. NSA 19 is classified as activity category B and E.

4.2 Monitored Highway Traffic Noise Results

For traffic noise studies, measurements of ambient noise levels are required to establish the basis of impact analysis and to provide a snapshot of the typical project area's existing noise levels. These measurements also validate the TNM model against field observed conditions. This ensures the accuracy and reliability of the modeled predicted future noise conditions for the four Build Alternatives.

All highway noise measurements were performed in accordance with the FHWA's Measurement of Highway-Related Noise (FHWA-PD-96-046 May 1996). Noise measurements were conducted using two Larson Davis Class 1 SoundAdvisor Sound Level Meters (Model 831C). Noise meters were calibrated prior to and following each measurement using a Larson-Davis Model Cal 200. Calibration certificates for each piece of equipment are presented in **Appendix F**.

Noise monitoring for this project area was conducted in May and June of 2023. A total of 34 sites were monitored within the 20 NSAs located along or near the LOD of the four Build Alternatives to identify ambient acoustical conditions. The monitoring sites are described in **Table 4** and shown on the sheets presented in **Appendix A**. These noise measurement sites were selected according to their abilities to meet the following:

- Represent noise-sensitive land uses and various categories or "clusters" of noise-sensitive receptors within each NSA
- Represent frequent outdoor human use areas
- Represent the existing noise environment
- In close proximity to the project (first-row receptors)
- Assist in noise modeling validation and in determining shielding effects (second-row receptors)

Table 4 - Monitored Receptor Location Description

NSA	Receptor Number	Address	Land Use Category	Location
Pennsylvania				
6a	PA-M6a-1	327 Greenville Road, Salisbury, PA 15558	B	Front Yard
7	PA-M7-1	629 Greenville Road, Friedens, PA 15541	B	Side Yard
8	PA-M8-1	665 Piney Run Road, Salisbury, PA 15558	B	Side Yard
9	PA-M9-1[1]	720 Blackberry Ridge, Maheim PA 17545	B	Front Yard
11	PA-M11-4	181 Clark Road, Meyersdale, PA 15552	B	Back Yard
13	PA-M12-1	7879 Mason Dixon Highway, Meyersdale, PA 15552	B	Back Yard
12	PA-M13-3	261 Clark Road Meyersdale, PA 15552	B	Back Yard
14	PA-M14-6	1421 Mountain Road, Meyersdale, PA 15552	B	Back Yard
15	PA-M15-1	162 Hunsrick Road, Meyersdale, PA 15552	B	Back Yard
	PA-M15-3	1531 Mountain Road, Meyersdale, PA 15552	B	Back Yard
16	PA-M16-1	118 Chipmonk Lane, Meyersdale, PA 15552	B	Front Yard
17	PA-M17-1	143 Geiger Road, Meyersdale, PA 1552	B	Front Yard
18	PA-M18-2	7519 Mason Dixon Highway, Meyersdale, PA 1552	B	Back Yard
	PA-M18-4	7502 Mason Dixon Highway, Meyersdale, PA 15552	B	Front Yard
	PA-M18-7	157 Schardt Road Meyersdale, PA 15552	B	Back Yard
	PA-M18-12	138 Fi Hoff Lane Meyersdale, PA 15552	B	Back Yard
19	PA-M19-1	211 Fike Hollow Road, Meyersdale, PA 15552	B	Back Yard
	PA-M19-3	230 Fike Hollow Road, Meyersdale, PA 15552	B	Front Yard
	PA-M19-6	99 Willow Road, Meyersdale, PA 15552	B	Side Yard
	PA-M19-9	207 Overlook Road, Meyersdale, PA 15552	B	Side Yard
Maryland				
1	MD-M1-1	3403/3359 Chestnut Ridge Road, Grantsville, MD 21536	B	Front Yard
	MD-M1-3	3583 Chestnut Ridge Road, Grantsville, MD 21536	B	Front Yard
	MD-M1-4	3681 Chestnut Ridge Road, Grantsville, MD 21536	B	Front Yard
	MD-M1-6	3789 Chestnut Ridge Road, Grantsville, MD 21536	B	Front Yard
2	MD-M2-1[1]	3992 Chestnut Ridge Road, Grantsville, MD 21536	B/C	Side Yard
3	MD-M3-1	4041 Chestnut Ridge Road, Grantsville, MD 21536	B	Front Yard
4	MD-M4-2	174 Old Salisbury Road, Grantsville, MD 21536	B	Back Yard
	MD-M4-5[1]	324 Old Salisbury Road, Grantsville, MD 21536	B	Back Yard
	MD-M4-7	107 Old Salisbury Road, Grantsville, MD 21536	B	Front Yard
	MD-M4-12	345 Old Salisbury Road, Grantsville, MD 21536	B	Front Yard
	MD-M4-14	4880 Chestnut Ridge Road, Grantsville, MD 21536	B	Side Yard
5	MD-M5-1[1]	4882 Chestnut Ridge Road, Grantsville, MD 21536	B	Side Yard
	MD-M5-2	2583 Westview Crossing, Grantsville, MD 21536	B	Side Yard
	MD-M5-3[1]	2728 Westview Crossing, Grantsville, MD 21536	B	Front Yard

1. 24-hour long-term noise measurement sites.

Field data corresponding to this section of the report can be found in:

- **Appendix B** – Field Noise Measurement Data Sheet
- **Appendix D** – Traffic Monitoring Sessions

Noise analysis locations throughout the study area are referred to as “Receptors.” In this preliminary study, receptors have been labeled according to the following convention:

- A receptor number with ‘M’ represents a measured and modeled location.
- A receptor number with “R” represents a modeled receptor only.

4.2.1 Long-Term (24-Hour) Noise Monitoring

Of the 34 noise-sensitive receptors selected for monitoring, five are long-term monitoring sites (24-hours). Long-term noise monitoring was conducted for one receptor site (PA-M9-1) in Pennsylvania and four receptor sites (MD-M2-1, MD-M4-5, MD-M5-1 and MD-M5-3) in Maryland. The long-term monitoring site in Pennsylvania was used to establish a baseline for receptors where traffic noise is not the dominant contributing acoustical characteristic. The four long-term monitoring sites in Maryland established the loudest-hour Leq(h) for the existing condition which is used to normalize the Leq of corresponding short-term measurements where existing noise levels are not dominated by road noise and where TNM cannot predict the existing noise levels.

4.2.2 Short-Term Noise Monitoring

The remaining 29 noise-sensitive receptors selected for monitoring are short-term monitoring sites. Short-term monitoring was conducted for 20-minute periods. Individual 1-minute intervals were recorded to filter out events not representative of the ambient noise environment or non-traffic-related events (e.g., barking dogs, aircrafts, and lawn equipment) during the monitoring session. Additionally, the noise meters were programmed to physically record individual noise events at or above 65 dB(A) Leq to clearly verify whether noise spikes are non-vehicle related.

The short-term noise measurements took place while public schools were open and during peak traffic hours (2:45 pm to 5:15 pm) both in Pennsylvania and Maryland. The peak traffic hours were determined using hourly traffic volumes collected from Streetlight Data (a private company). During each short-term noise measurement, traffic classification counts (using Jamar Tech. TDC-ULTRA Traffic Data Collectors) and vehicle speed (using a portable electronic radar gun) were collected concurrently for all roads on which traffic had a significant contribution to the measured sound level at the individual sites. Vehicles were classified as automobiles, medium and heavy trucks, buses, and motorcycles. Traffic count data along with speed for each session can be found in **Appendix D**.

In Pennsylvania, following PennDOT guidance, monitoring occurred during peak hours at 11 of the 19 short-term monitoring sites that were located along or near a road such as existing US 219 which would have a significant contribution to the measured sound level.

Peak hour monitoring was not necessary for the remaining eight short-term monitoring sites since ambient noise levels would not have a significant contribution from vehicle noise (see **Table 5**).

In Maryland, following SHA guidance, short-term noise measurement sites were monitored the same day as their corresponding long-term measurement site. **Table 6** shows the long-term monitoring sites and their corresponding short-term monitoring sites.

The monitoring results are shown in **Table 7**. As shown, measured ambient noise levels in Pennsylvania range from 40 dB(A) Leq(h) at PA-M11-4 to 60 dB(A) Leq(h) at PA-M16-1. None of the 20 receptors have existing ambient levels that approach or exceed the PennDOT noise abatement criteria (NAC), as per **Table 3**. Measured ambient noise levels in Maryland range from 40 dB(A) Leq(h) at MD-M5-3 (24-hour long-term monitoring site) to 69 dB(A) Leq(h) at MD-M3-1. One out of the 14 receptors has existing ambient levels that approach or exceed the SHA NAC, as per **Table 3**. As expected, measured noise levels were greatest at those receptors in close proximity to existing US 219, Mason Dixon Highway and Chestnut Ridge Road.

Table 5 - Pennsylvania Receptor Sites Monitored During Peak and Non-Peak Hours

NSA	Receptor Number	Land Use Category	Peak Hour Monitoring
6a	PA-M6a-1	B	No
7	PA-M7-1	B	No
8	PA-M8-1	B	No
9	PA-M9-1	B	24-Hr Site
11	PA-M11-4	B	No
12	PA-M12-1	B	No
13	PA-M13-3	B	No
14	PA-M14-6	B	No
15	PA-M15-1	B	No
	PA-M15-3	B	Yes
16	PA-M16-1	B	Yes
17	PA-M17-1	B	Yes
18	PA-M18-2	B	Yes
	PA-M18-4	B	Yes
	PA-M18-7	B	Yes
	PA-M18-12	B	Yes
19	PA-M19-1	B	Yes
	PA-M19-3	B	Yes
	PA-M19-6	B	Yes
	PA-M19-9	B	Yes

Table 6 - Maryland Long-Term Monitoring Sites and their Corresponding Short-Term Measurement Sites

Long-Term Noise Monitoring Site	Corresponding Short-Term Noise Monitoring Site
MD-M2-1	MD-M1-1 MD-M1-3 MD-M1-4 MD-M1-6 MD-M3-1 MD-M4-7
MD-M4-5	MD-M4-2 MD-M4-13 MD-M4-14
MD-M5-1	N/A
MD-M5-3	MD-M5-2

4.3 TNM Model Validation

Model validation verifies the validity of TNM model by evaluating the model's ability to reproduce the measured noise level under specific measured conditions. This comparison ensures that reported changes in noise levels between existing and future conditions are due to changes in traffic conditions and not to discrepancies between monitoring and modeled conditions.

Once noise measurements and traffic counts were analyzed and reviewed, a TNM model was developed for both Pennsylvania and Maryland. These models include all pertinent roadways, terrain and structural elements thought to be needed for adequately characterizing the study area's noise environment. Each measured noise sensitive receptor was represented in the model by a TNM Receiver. The model was then validated by testing it under the appropriate traffic conditions recorded during the corresponding traffic monitoring session. Both PennDOT and SHA recognize a difference of +/-3 decibels between the monitored and modeled levels as acceptable since this is the limit of change detectable by typical human hearing. FHWA guidance specifies that the arithmetic difference between monitored and predicted existing noise levels is a measure of the model's accuracy.

Table 8 compares the measured noise levels to the modeled noise levels from the TNM runs.

Out of the 34 monitoring sites 21 (12 in Pennsylvania and 9 in Maryland) validated within +/-3 decibels of the modeled TNM 2.5 noise levels. The validation procedure is not applicable for the remaining 14 monitoring sites since the existing noise environment is not dominated by an existing highway traffic noise source and or during monitoring there were no occurrences of vehicles driving on the adjacent roadway. Per PennDOT Pub 24 Section 2.5.3 Model Validation Limitations, FHWA TNM is not capable of accurately

Table 7 - Noise Measurement Summary

NSA	Receptor Number	Date	Interval	Duration	2023 Measured Noise Level dB(A)[1]
Pennsylvania					
6a	PA-M6a-1	5/9/2023	13:13-13:33	20-min	54
7	PA-M7-1	5/10/2023	10:15-10:35	20-min	45
8	PA-M8-1	5/10/2023	9:11-9:31	20-min	56
9	PA-M9-1	5/10/2023-5/11/2023	8:45-8:45	24-hrs	46[3]
11	PA-M11-4	5/10/2023	17:44-18:04	20-min	40
12	PA-M12-1	5/10/2023	11:16-11:36	20-min	41
13	PA-M13-3	5/9/2023	16:55-17:15	20-min	52
14	PA-M14-6	5/10/2023	11:55-12:15	20-min	44
15	PA-M15-1	5/10/2023	12:39-12:59	20-min	54
	PA-M15-3	5/9/2023	15:15-15:35	20-min	53
16	PA-M16-1	5/9/2023	15:15-15:35	20-min	60
17	PA-M17-1	5/9/2023	17:25-17:45	20-min	50
18	PA-M18-2	5/9/2023	16:40-17:00	20-min	56
	PA-M18-4	5/9/2023	16:40-17:00	20-min	52
	PA-M18-7	5/10/2023	15:10-15:20	20-min	49
	PA-M18-12	5/10/2023	15:55-16:15	20-min	54
19	PA-M19-1	5/11/2023	16:20-16:40	20-min	52
	PA-M19-3	5/11/2023	16:20-16:40	20-min	53
	PA-M19-6	5/11/2023	15:10-15:30	20-min	54
	PA-M19-9	5/11/2023	15:10-15:30	20-min	54
Maryland					
1	MD-M1-1	5/30/2023	16:30-16:50	20-min	59
	MD-M1-3	5/30/2023	17:15-17:35	20-min	61
	MD-M1-4	5/30/2023	15:50-16:10	20-min	64
	MD-M1-6	5/30/2023	17:15-17:35	20-min	59
2	MD-M2-1	5/30/2023-5/31/2023	9:00-9:00	24-hrs	51[3]
3	MD-M3-1	5/30/2023	14:50-15:10	20-min	69[2]
4	MD-M4-2	5/31/2023	15:00-15:20	20-min	42
	MD-M4-5	5/31/2023-6/1/2023	11:00-11:00	24-hrs	50[3]
	MD-M4-7	5/30/2023	14:50-15:10	20-min	55
	MD-M4-12	5/31/2023	15:00-15:20	20-min	48
	MD-M4-14	5/31/2023	16:00-16:20	20-min	40
5	MD-M5-1	6/6/2023-6/7/2023	13:45-13:45	24-hrs	54[3]
	MD-M5-2	6/7/2023	15:50-16:10	20-min	43
	MD-M5-3	6/7/2023-6/8/2023	15:25-15:25	24-hrs	45[3]

1. All Noise Levels are shown as hourly equivalent sound levels (Leq[h]) with units in A-weighted decibels (dB[A]). All noise levels are calculated to the tenth of a dB(A) and then rounded to the nearest whole number for presentation purposes.
2. Receptor where the existing ambient levels approach or exceed the NAC.
3. The 24-hour noise measurements represent the loudest hour Leq.

Table 8 - TNM Validation Results

Traffic Monitoring Session	NSA	Receptor Number	2023 Measured Noise Level [dB(A)]	Validated Noise Level [dB(A)]	Monitored vs Validated	Validated? [+/- 3 dB(A)]	Notes
Pennsylvania							
PA-TMS01	6a	PA-M6a-1	54	52	-2	Yes	
PA-TMS06	7	PA-M7-1	45	45	0	Yes	
PA-TMS05	8	PA-M8-1	56	N/A	N/A	N/A	1
N/A	9a	PA-M9-1[1]	46	N/A	N/A	N/A	2,3
PA-TMS13	11	PA-M11-4	40	N/A	N/A	N/A	1
PA-TMS07	12	PA-M12-1	41	N/A	N/A	N/A	1
PA-TMS12	13	PA-M13-3	52	55	3	Yes	
PA-TMS08	14	PA-M14-6	44	N/A	N/A	N/A	1
PA-TMS09	15	PA-M15-1	54	45	-9	No	3
PA-TMS02		PA-M15-3	53	50	-3	Yes	
PA-TMS02	16	PA-M16-1	60	59	-2	Yes	
PA-TMS04	17	PA-M17-1	50	39	-11	No	3
PA-TMS03	18	PA-M18-2	56	54	-2	Yes	
PA-TMS03		PA-M18-4	52	49	-3	Yes	
PA-TMS10		PA-M18-7	49	45	-4	No	3
PA-TMS11		PA-M18-12	54	52	-2	Yes	
PA-TMS15	19	PA-M19-1	52	55	3	Yes	
PA-TMS15		PA-M19-3	53	54	1	Yes	
PA-TMS14		PA-M19-6	54	55	1	Yes	
PA-TMS14		PA-M19-9	54	51	-3	Yes	
Maryland							
MD-TMS03	1	MD-M1-1	59	61	2	Yes	
MD-TMS04		MD-M1-3	61	60	-1	Yes	
MD-TMS02		MD-M1-4	64	64	-1	Yes	
MD-TMS04		MD-M1-6	59	62	3	Yes	
MD-TMS04	2	MD-M2-1	51	50	-1	Yes	2,4
MD-TMS01	3	MD-M3-1	69	69	0	Yes	
MD-TMS05	4	MD-M4-2	42	40	-2	Yes	
N/A		MD-M4-5	50	N/A	N/A	N/A	2,3
MD-TMS01		MD-M4-7	55	53	-2	Yes	
MD-TMS05		MD-M4-12	48	39	-9	No	3
MD-TMS06		MD-M4-14	40	34	-6	No	3
N/A	5	MD-M5-1	54	N/A	N/A	N/A	2,3
N/A		MD-M5-2	43	N/A	N/A	N/A	3
N/A		MD-M5-3	45	N/A	N/A	N/A	2,3

Note: All noise levels are calculated to the tenth of a dB(A) and then rounded to the nearest whole number for presentation purposes.

1. *During monitoring there were no occurrences of vehicles driving on the adjacent roadway. Therefore, the measured noise levels will be used to determine impacts using a substantial increase impact criteria.*
2. *Long-term monitoring site (24-hours). The noise level used for the site represents the loudest hour Leq.*
3. *The validation procedure is not applicable since the existing acoustical environment is not dominated by an existing highway traffic noise source.*
4. *Validation was completed for NSA 2 by calculating the 24-hour measurement receptor's (MD-M2-1) Leq for a given period of time during the 24-hour measurement with another corresponding short-term validation site (MD-M1-3 and MD-M1-6).*

determining existing noise levels where highway traffic noise is not the dominant contributing acoustical characteristic.

Due to the location of these receivers, the existing traffic configuration is not near enough to the receivers for TNM to correctly model existing conditions. Therefore, the measured noise levels will be used as the baseline ambient noise levels for impact determination due to substantial increase.

4.4 Determining Worst-Case Existing Conditions

Following model validation, an existing worst-case noise model was developed to predict existing worst-case noise levels to 2050 Design Year noise levels. The worst-case existing noise models were then run using year 2022 existing worst-case traffic data to compare with 2050 No Build and Build Alternative traffic scenarios.

An Origin-Destination study was conducted by Stantec using StreetLight Data's Origin and Destination (O-D) metrics to identify vehicle trips originating at the southern terminus of US Route 219 and destined north of the US Route 219 Meyersdale interchange as well as to the east in the town of Meyersdale and conversely for north to south traveling vehicles. From this data, Year 2022 (Existing Worst-Case) and Year 2050 Build volumes and truck percentages were determined. This data is contained in **Appendix C**.

Peak hour volumes were developed by Stantec and were used to predict future worst-case noise levels. Both weekday AM (7:30-8:30) and PM (4:00-5:00) peak hours were modeled for all scenarios to identify the loudest noise hour. In Pennsylvania, existing Year 2022 AM peak is the loudest. In Maryland, 2022 PM peak hour is the loudest. Existing Year 2022 PM peak hour volumes will be used for comparison between No Build and Build Alternatives since the PM peak is the loudest in Design Year 2050 for both Pennsylvania and Maryland. Traffic speeds for the four Build Alternatives were modeled at the design speed (70 mph in Pennsylvania and 60 mph in Maryland) and traffic speeds for all other roads with traffic contributing to the overall predicted noise levels were modeled at the posted speeds plus 5 mph in order to represent the worst-case scenario for noise impacts.

Unless noted otherwise, the existing worst-case noise levels serve as a basis for both PennDOT and SHA "substantial increase" noise abatement criteria and are presented in **Tables 9 and Table 10** where existing 2022 noise values are compared with future 2050 Build condition predicted noise levels. These noise levels are also used as a base value to compare approaching noise levels to the NAC Impact level for each Land Use Category.

TNM predicts traffic noise levels at sensitive noise receptors taking into consideration intervening terrain and the model's reference energy mean emission levels that are based on vehicle speed and composition (autos, trucks, other). In NSAs where noise receptors are further removed from traffic noise sources (such as existing US 219), non-roadway sources such as barking dogs, birds, children playing, rolling streams, etc. dominate

existing noise levels. Consistent with FHWA guidance and PennDOT Noise Abatement Policy, monitored existing noise levels are a more accurate comparison to predicted noise levels than traffic only noise levels which result in noise levels lower than existing levels. These existing noise levels are also used as a base value to compare noise levels approaching the NAC Impact level for each Land Use Category. Upon coordination with PennDOT, this method was applied to receptors in Pennsylvania where the existing noise environment is not dominated by an existing highway traffic noise source.

Upon coordination with SHA, it was determined that the 90-percent-exceeded sound level metric (L90) is appropriate to use for the measurement of background noise to establish the existing noise levels for receptors in Maryland where the existing noise environment is not dominated by an existing highway traffic noise source. For these same receptors, an adjustment factor to future build noise levels was also applied by logarithmically adding the existing L90 noise level to the TNM future predicted levels.

5.0 FUTURE HIGHWAY TRAFFIC NOISE ANALYSIS

This section documents the future predicted noise levels resulting from the No Build Alternative and the four Build Alternatives for each of the 20 NSAs and assesses whether or not the NSA is impacted and warrants a barrier analysis. Future worst-case noise levels are predicted using TNM Version 2.5 for No Build Alternative and the four Build Alternatives 2050 conditions. A validated TNM model of existing conditions is used as a base to create the TNM runs for predicting future conditions.

As mentioned previously in **Section 3.2**, PennDOT and SHA define traffic noise impacts as noise level exceeding or approaching (approach is defined as 1 dB(A) below the NAC) the defined NAC for the corresponding Land Use Activity Category. Traffic noise impacts are also described as impacts when predicted design year build noise levels substantially increase by 10 dB(A) or more above the existing noise levels.

Tables 9 and 10 compare the modeled 2050 Build Condition worst-case noise levels to the Existing Worst-Case Conditions. Based on the modeling results two impacts from Existing Year (2022) traffic noise levels were identified in NSA 3 located in Maryland due to equaling or exceeding the NAC (66 dB(A) for residential land uses). The Existing Year noise levels can be attributed to the proximity of the noise sensitive receptors to Chestnut Ridge Road. There are only four identified impacted receptors for Design Year 2050 No Build due to predicted noise levels equaling or exceeding the NAC (66 dB(A) for residential land uses). These impacted receptors occur in NSAs 1 and 3 located in Maryland.

Thirteen Design Year 2050 Build noise level impacts were identified for Alternatives DU Modified and E Modified with eight receptors in Pennsylvania (NSAs 12, 13, 14 and 18) and five in Maryland (NSAs 1 and 4). These impacts are associated with predicted noise levels equaling or exceeding the NAC (66 dB(A) for residential land uses) or substantially exceeding existing noise levels by +10 dB(A) or more.

Nine noise impacts were identified for Alternatives DU-Shift Modified and E-Shift Modified with eight in Pennsylvania (NSAs 12, 13, 14 and 18) and one in Maryland (NSA 1). These impacts are associated with predicted noise levels equaling or exceeding the NAC (66 dB(A) for residential land uses) or substantially exceeding existing noise levels by 10 dB(A) or more.

The following provides a summary of predicted noise levels in each NSA:

NSA 1 - Seven receptors were selected representing 12 residences. Chestnut Ridge Road is the dominant noise source for these receptors due to them directly fronting the road. Ambient noise levels were monitored at four of these receptors and varied between 59 dB(A) Leq(h) at receptors MD-M1-1 and MD-M1-6 and 64 dB(A) Leq(h) at receptor MD-M1-4. Existing worst-case noise levels are predicted to range from 61 dB(A) Leq(h) at receptors MD-M1-1 and MD-M1-3 to 64 dB(A) Leq(h) at receptor MD-R1-2 and MD-R1-5. Under the No Build Alternative, DY 2050 noise levels are predicted to range from

62 to 66 dB(A) Leq(h), with one noise impact identified at MD-R1-2. Future, DY 2050 Build noise levels ranged from 63 to 66 dB(A) Leq(h) for all four build alternatives. Two predicted noise impacts are identified (MD-R1-2 and MD-R1-5) for Alternatives DU Modified and E Modified. Only one predicted noise impact is identified (MD-R1-2 for Alternatives DU-Shift Modified and E-Shift Modified.

Predicted noise impacts are identified (MD-R1-2 and MD-R1-5) for all four Build Alternatives, therefore noise abatement consideration is warranted.

NSA 2 - In NSA 2, three receptors were selected representing a place of worship which includes a playground and residential house on the property. Currently, the dominant noise source is existing US 219. The ambient noise level was monitored at one of these receptors (MD-M2-1) for 24-hours. Existing worst-case noise levels are predicted to range from 49 to 55 dB(A) Leq(h). Under the No Build Alternative, DY 2050 noise levels are predicted to range from 51 to 56 dB(A) Leq(h), with no predicted noise impacts identified. Future, DY 2050 Build noise levels ranged from 53 to 55 dB(A) Leq(h) for Alternatives DU Modified and E Modified (common alignment) and 49 to 55 dB(A) Leq(h) for Alternatives DU-Shift Modified and E-Shift Modified (common alignment), with no predicted noise impacts identified.

No predicted noise impact is identified for the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 3 - Three receptors were selected to represent a total of five residences. These residences front existing US 219 which is the dominant noise source for these receptors. A 69 dB(A) Leq(h) ambient noise level was monitored at MD-M3-1. Existing 2022 worst-case noise levels are predicted to range from 65 dB(A) Leq(h) to 68 dB(A) Leq(h). For the DY 2050 No Build Alternative, noise levels are predicted to range from 66 to 69 dB(A) Leq(h), with predicted noise impacts identified at all three receptors. Future, DY 2050 Build Alternative noise levels ranged from 62 to 65 dB(A) Leq(h) with no predicted noise impacts identified. This decrease in noise level is due, in part, to the shift of traffic volumes from existing US 219 to the new alternatives.

No predicted noise impact is identified for the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 4 - Fourteen receptors were selected to represent 17 residences. Existing US 219 is the dominant noise source for some receptors while minor roadway noise is experienced at other receptors further away from existing US 219. Ambient noise levels were monitored at five of the receptors (MD-M4-5 is a long-term monitoring site) and varied between 40 dB(A) Leq(h) at receptor MD-M4-14 and 55 dB(A) Leq(h) at receptor MD-M4-7. SHA's policy is to normalize monitored noise levels using the loudest-hour Leq(h) from a long-term monitoring site (MD-M4-5) where existing noise levels are not dominated by road noise and where TNM cannot predict the existing noise levels. This resulted in adjusted monitored noise levels at receptors MD-M4-5 and MD-M4-12 and MD-M4-14. Existing worst-case noise levels are predicted to range from 33 dB(A) Leq(h)

to 56 dB(A) Leq(h). The SHA approved L90 method was used for receptors MD-R4-4, MD-M4-5, MD-R4-6, MD-R4-10, MD-R4-11, MD-M4-12, MD-R4-13, MD-M4-14. Under the No Build Alternative, DY 2050 noise levels are predicted to range from 41 to 57 dB(A) Leq(h), with no predicted noise impacts identified. Future, DY 2050 Build noise levels ranged from 46 to 55 dB(A) Leq(h) for Alternatives DU and E Modified (common alignment) and 42 to 55 dB(A) Leq(h) for Alternatives DU-Shift Modified and E-Shift Modified (common alignment).

NSA 4 contains three impacted receptors (MD-R4-1, MD-M4-2 and MD-R4-03) having predicted traffic noise levels with substantial increases [10 dB(A)] over existing levels, therefore noise abatement consideration is warranted for Alternatives DU Modified and E Modified.

NSA 5 - Three receptors were selected and represent three residences. NSA 5's ambient conditions have little or no roadway influences on its overall noise environment. Ambient noise levels were monitored at each receptor (MD-M5-1 and MD-M5-3 long-term monitoring sites) and varied between 45 to 54 dB(A) Leq(h). SHA's policy is to normalize monitored noise levels using the loudest-hour Leq(h) from a long-term monitoring site (MD-R5-3) where existing noise levels are not dominated by road noise and where TNM cannot predict the existing noise levels. This resulted in adjusted monitored noise levels at receptor MD-M5-2. Existing 2022 worst-case noise levels are predicted to range from 19 to 27 dB(A) Leq(h). The SHA approved L90 method was used for all three receptors. 2050 No Build Alternative noise levels are predicted to range from 42 to 47 dB(A) Leq(h), with no noise impacts identified. Future, DY 2050 Build noise levels ranged from 43 to 53 dB(A) Leq(h) for Alternatives DU Modified and DU-Shift Modified (common alignment) and 46 to 54 dB(A) Leq(h) for Alternatives E Modified and E-Shift Modified (common alignment). Monitored noise levels for the three receptors represent the existing worst-case noise level due to the surrounding environment being dominated by background non-roadway sources.

No predicted noise impact is identified for the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 6a - Two receptors were selected to represent four residences. NSA 6a ambient noise levels are comprised of non-no roadway influences. A 54 dB(A) Leq(h) ambient noise level was monitored at PA-M6a-1. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the ambient level, the measured noise level of 54 dB(A) Leq(h) will be used as the baseline ambient noise level for comparative calculation at receptors PA-M6a-1 and PA-R6a-2. Under the No Build Alternative, DY 2050 noise level is predicted to be 54 dB(A) Leq(h), with no predicted noise impacts identified. Future, DY 2050 Build noise level is 54 dB(A) Leq(h) for alternatives DU Modified and DU-Shift Modified (common alignment).

No predicted noise impacts were identified for Alternatives DU Modified and DU-Shift Modified therefore noise abatement consideration is not warranted.

NSA 6b - One receptor (PA-R6b-1 was selected to represent one residence. NSA 6b ambient noise levels are comprised of non-no roadway influences. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the ambient level, the measured noise level of 54 dB(A) Leq(h) at receptor PA-M6a-1 will be used as the baseline ambient noise level for comparative calculation due to similar acoustic characteristics. Under the No Build Alternative, DY 2050 noise levels are predicted to be 54 dB(A) Leq(h), with no predicted noise impact identified. Future, DY 2050 Build noise levels are 54 dB(A) Leq(h) for alternatives DU Modified and DU-Shift Modified (common alignment).

No predicted noise impact was identified for Alternatives DU Modified and DU-Shift Modified therefore noise abatement consideration is not warranted.

NSA 7 - One receptor was selected representing one residence. This receptor is representative of ambient background conditions having little to no roadway influences on the overall noise environment. A 45 dB(A) Leq(h) ambient noise level was monitored at PA-M7-1. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the ambient level, the measured noise level of 45 dB(A) Leq(h) will be used as the baseline ambient noise level for comparative calculation. The 2050 No Build noise level is predicted to be 45 dB(A) Leq(h), with no predicted noise impact identified. The future, DY 2050 Build noise level is 50 dB(A) Leq(h) for Alternatives E Modified and E-Shift Modified (common alignment).

No predicted noise impact is identified for Alternatives E Modified and E-Shift Modified therefore noise abatement consideration is not warranted.

NSA 8 - One receptor was selected to represent seven residences. NSA 8 ambient noise levels have little to no roadway influences comprising the overall noise environment. Residences back right up to Piney Creek which contributes heavily to ambient noise levels. A 56 dB(A) Leq(h) ambient noise level was monitored at PA-M8-1. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the ambient level, the measured noise level of 56 dB(A) Leq(h) will be used as the baseline ambient noise level for comparative calculation. Under the No Build Alternative, DY 2050 noise level is predicted to be 56 dB(A) Leq(h), with no predicted noise impact identified. The DY 2050 Build noise level is 56 dB(A) Leq(h) for Alternatives DU Modified and DU-Shift Modified (common alignment).

No predicted noise impact was identified for Alternatives DU Modified and DU-Shift Modified therefore noise abatement consideration is not warranted.

NSA 9 - One receptor was selected to represent two residences. The NSA 9 noise environment is currently represented by background ambient conditions with little to no roadway influences. A 46 dB(A) Leq(h) ambient noise level was monitored at PA-M9-1 (a long-term monitoring site). Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the ambient level, the measured noise level of 46 dB(A) Leq(h) will be used as the baseline ambient noise level for

comparative calculation. Under the No Build Alternative, DY 2050 noise level is predicted to be 45.6 dB(A) Leq(h), with no predicted noise impact identified. The future, DY 2050 Build noise level is 49 dB(A) Leq(h) for the four Build Alternatives (common alignment).

No predicted noise impact is identified for the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 10 - One receptor was selected representing one residence. The current NSA 10 noise environment is representative of ambient background conditions with little or no roadway influences. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the ambient level, the measured noise level of 46 dB(A) Leq(h) at receptor PA-M9-1 will be used as the baseline ambient noise level for comparative calculation due to similar acoustic characteristics. Under the 2050 No Build Alternative, the noise level is predicted to be 46 dB(A) Leq(h), with no predicted noise impact identified. Future, DY 2050 Build noise level is 49 dB(A) Leq(h) for the four Build Alternatives (common alignment).

No predicted noise impact is identified for either of the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 11 - Four receptors were selected representing four residences. Current NSA 11 noise levels are representative of ambient conditions, with little to no roadway influences. A 40 dB(A) Leq(h) ambient noise level was monitored at PA-M11-4. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the ambient level, the measured noise level of 40 dB(A) Leq(h) at receptor PA-M11-4 will be used as the baseline ambient noise level for comparative calculation. Under the No Build Alternative, DY 2050 noise level is predicted to be 40 dB(A) Leq(h), with no predicted noise impacts identified. DY 2050 Build noise levels ranged from 43 to 48 dB(A) Leq(h) for the four Build Alternatives (common alignment).

No predicted noise impacts were identified for either of the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 12 - Two receptors were selected to represent two residences. The current NSA 12 noise environment is representative of ambient background conditions with little to no roadway influences. A 41 dB(A) Leq(h) ambient noise level was monitored at PA-M12-1. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the ambient level, the measured noise level of 41 dB(A) Leq(h) at receptor PA-M12-1 will be used as the baseline ambient noise level for comparative calculation. Under the 2050 No Build Alternative, noise levels are predicted to be 41 dB(A) Leq(h) at both receptors with no predicted noise impacts identified. DY 2050 Build noise levels ranged from 44 dB(A) Leq(h) at PA-R12-2 to 54 dB(A) Leq(h) at PA-M12-1 for all four Build Alternatives (common alignment).

NSA 12 has one impacted receptor (PA-M12-1) that has a predicted traffic noise level with a substantial increase [13 dB(A)] over the measured existing noise level, therefore noise abatement consideration is warranted for all four Build Alternatives.

NSA 13 - Six receptors were selected representing six residences. Portions of NSA 13 (PA-M13-3, PA-R13-4 and PA-R13-6) have existing US 219 as the dominant noise source while other portions (PA-R13-1, PA-R13-2 and PA-R13-5) have little roadway noise influences. A 52 dB(A) Leq(h) ambient noise level was monitored at PA-M13-3. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the corresponding ambient level, the measured noise level of 52 dB(A) Leq(h) at receptor PA-M13-3 will be used as the baseline ambient noise level for comparative calculation at receptors PA-R13-2 and PA-R13-5. The measured noise level of 40 dB(A) Leq(h) at receptor PA-M11-4 will be used as the baseline ambient noise level for comparative calculation at receptors PA-R13-2. 2022 existing worst-case noise levels are predicted to range from 40 to 57 dB(A) Leq(h). Under the 2050 No Build Alternative, noise levels are predicted to range from 43 to 59 dB(A) Leq(h), with no predicted noise impacts identified. DY 2050 Build noise levels ranged from 43 to 60 dB(A) Leq(h) for all four Build Alternatives (common alignment).

NSA 13 has one impacted receptor (PA-R13-6) that has a predicted traffic noise level with a substantial increase [10 dB(A)] over the measured existing noise level, therefore noise abatement consideration is warranted for all four Build Alternatives.

NSA 14 - Seven receptors were selected to represent ten residences. NSA 14 noise levels are representative of ambient background conditions with little to no roadway influences. A 44 dB(A) Leq(h) ambient noise level was monitored at PA-M14-6. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the corresponding ambient level, the measured noise level of 44 dB(A) Leq(h) at receptor PA-M14-6 will be used as the baseline ambient noise level for comparative calculation at all receptors in NSA 14 except for PA-R14-1 and PA-R14-7. PA-M12-1 is a better representation of PA-R14-1 therefore, the measured noise level of 41 dB(A) Leq(h) at receptor PA-M12-1 will be used as the baseline ambient noise level for comparative calculation. For receptor PA-R14-7 the 2022 existing worst-case noise level is predicted to be 48 dB(A) Leq(h). Under the 2050 No Build Alternative, noise levels are predicted to range from 41 to 50 dB(A) Leq(h), with no predicted noise impacts identified. DY 2050 Build noise levels ranged from 43 to 60 dB(A) Leq(h) for all four Build Alternatives (common alignment).

NSA 14 has one impacted receptor (PA-R14-7) that has a predicted traffic noise level with a substantial increase [12 dB(A)] over the measured existing noise level, therefore noise abatement consideration is warranted for all four Build Alternatives.

NSA 15 - Four receptors were selected to represent five residences. Portions of NSA 15 (PA-M15-3) have existing US 219 as its dominant noise source while other portions (PA-M15-1 and PA-M15-2) have little noise influence from existing US 219. Ambient noise

levels were monitored at receptors PA-M15-1 (54 dB(A) Leq[h]) and PA-M15-3 (53 dB(A) Leq[h]). Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the corresponding ambient level, the measured noise level of 54 dB(A) Leq(h) at receptor PA-M15-1 will be used as the baseline ambient noise level for comparative calculation at receptors PA-M15-1 and PA-R15-2. The 2022 existing worst-case noise level is predicted to be 50 dB(A) Leq(h) for PA-M15-3 and 53 dB(A) Leq(h) for PA-R15-4. Under the 2050 No Build Alternative, noise levels are predicted to range from 51 to 54 dB(A) Leq(h), with no predicted noise impacts identified. DY 2050 Build noise levels ranged from 54 to 58 dB(A) Leq(h) for all four Build Alternatives (common alignment).

No predicted noise impacts were identified for the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 16 - Two receptors were selected to represent two residences. Existing US 219 and Mason Dixon Highway are the dominant noise sources for NSA 16. A 60 dB(A) Leq(h) ambient noise level was monitored at PA-M16-1. The 2022 existing worst-case noise level is predicted to be 58 dB(A) Leq(h) for PA-M16-1 and 50 dB(A) Leq(h) for PA-R16-2. The 2050 No Build noise levels are predicted to be 60 dB(A) Leq(h) for PA-M16-1 and 55 dB(A) Leq(h) for PA-R16-2, with no predicted noise impacts identified. The DY 2050 Build noise levels are predicted to be 64 dB(A) Leq(h) for PA-M16-1 and 54 dB(A) Leq(h) for PA-R16-2 for all four Build Alternatives (common alignment).

No predicted noise impact is identified for the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 17 - Two receptors were selected to represent two residences. Current NSA 17 ambient noise levels are characteristic of background noise with little to no roadway influences at receptor PA-M17-1, while existing US 219 is the dominant noise source for receptor PA-R17-2. A 50 dB(A) Leq(h) ambient noise level was monitored at PA-M17-1. Since ambient (non-traffic) noise dominates the existing environment and the calculated noise levels are below the corresponding ambient level, the measured noise level of 44 dB(A) Leq(h) at receptor PA-M17-1 will be used as the baseline ambient noise level for comparative calculation for this receptor.

For receptor PA-R17-2, the 2022 existing worst-case noise level is predicted to be 52 dB(A) Leq(h). The 2050 No Build noise levels are predicted to be 50 dB(A) Leq(h) for PA-M17-1 and 54 dB(A) Leq(h) for PA-R17-2, with no predicted noise impacts identified. The DY 2050 Build noise levels are predicted to be 54 dB(A) Leq(h) for PA-M17-1 and 51 dB(A) Leq(h) for PA-R17-2 for all four Build Alternatives (common alignment).

No predicted noise impact is identified for the four Build Alternatives therefore noise abatement consideration is not warranted.

NSA 18 - 23 receptors were selected to represent 28 residences and one place of worship (PA-R18-10). Most of NSA 18 has existing US 219 and Mason Dixon Highway as

dominant noise sources. Ambient noise levels were monitored at four of these receptors and varied between 49 dB(A) Leq(h) at receptor PA-M18-7 and 56 dB(A) Leq(h) at receptor PA-M18-2. For PA-M18-7 the monitored noise level will be referenced as the 2022 existing worst-case noise level due to the surrounding noise environment being dominated by background non-roadway sources. Year 2022 existing worst-case noise levels are predicted to range from 44 to 59 dB(A) Leq(h). Year 2050 No Build noise levels are predicted to range from 41 to 60 dB(A) Leq(h), with no predicted noise impacts identified. DY 2050 Build noise levels are predicted to range from 43 to 70 dB(A) Leq(h) for all four Build Alternatives (common alignment).

Five predicted noise impacts are identified (PA-R18-1 through PA-R18-3, PA-R18-14 and PA-R18-20) for all four Build Alternatives, therefore noise abatement consideration is warranted.

NSA 19 - Twelve receptors were selected to represent 17 residences. Most of NSA 18 has existing US 219 and Mason Dixon Highway as the dominant noise sources. Ambient noise levels were monitored at four of the twelve with noise levels varying between 52 and 54 dB(A) Leq(h). 2022 existing worst-case noise levels ranged from 41 to 54 dB(A) Leq(h). No Build 2050 noise levels are predicted to range from 42 to 57 dB(A) Leq(h), with no predicted noise impacts identified. DY 2050 Build noise levels are predicted to range between 42 to 56 dB(A) Leq(h) for all four Build Alternatives (common alignment). In NSA 19, no predicted noise impacts are identified for the four Build Alternatives.

No predicted noise impact is identified for the four Build Alternatives therefore noise abatement consideration is not warranted.

Table 9 - Pennsylvania Impact Noise Level Summary

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
						2050 PM Peak Hour Predicted Noise Levels [dB(A)]					Difference from Existing to 2050 Build [dB(A)]					Noise Abatement Warranted	Notes
NSA	Receptor Number	LU Cat.	Number of Dwelling Units Represented	2023 Measured Noise Level [dB(A)]	2022 Existing PM Peak Noise Level [dB(A)]	No Build	DU Mod.	E Mod.	DU-Shift Mod.	E-Shift Mod.	No Build	DU Mod.	E Mod.	DU-Shift Mod.	E-Shift Mod.		
6a	PA-M6a-1	B	3	54	**54**	**54**	**54**	**54**	**54**	**54**	0	0	0	0	0	No	1,11
	PA-R6a-2	B	1	-	**54**	**54**	**54**	**54**	**54**	**54**	0	0	0	0	0	No	6,11
6b	PA-R6b-1	B	1	-	**54**	**54**	**54**	**54**	**54**	**54**	0	0	0	0	0	No	6,11
7	PA-M7-1	B	1	45	**45**	**45**	**45**	50	**45**	50	0	0	5	0	5	No	1,10, 11
8	PA-M8-1	B	7	56	**56**	**56**	**56**	**56**	**56**	**56**	0	0	0	0	0	No	1,11
9	PA-M9-1	B	2	46	**46**	**46**	49	49	49	49	0	3	3	3	3	No	1,10,11
10	PA-R10-1	B	1	-	**46**	**46**	49	49	49	49	0	3	3	3	3	No	2,10
11	PA-R11-1	B	1	-	**40**	**40**	45	45	45	45	0	5	5	5	5	No	3,11
	PA-R11-2	B	1	-	**40**	**40**	43	43	43	43	0	3	3	3	3	No	3,10
	PA-R11-3	B	1	-	**40**	**40**	48	48	48	48	0	8	8	8	8	No	3,11
	PA-M11-4	B	1	40	**40**	**40**	42	42	42	42	0	4	4	44	4	No	3,10,11
12	PA-M12-1	B	1	41	**41**	**41**	54	54	54	54	0	13	13	13	13	Yes	1,9,11
	PA-R12-2	B	1	-	**41**	**41**	44	44	44	44	0	3	3	3	3	No	4,10,11
13	PA-R13-1	B	1	-	**40**	43	43	43	43	43	1	2	2	2	2	No	3,10,11
	PA-R13-2	B	1	-	**52**	**52**	52	52	52	52	0	0	0	0	0	No	7,11
	PA-M13-3	B	1	52	52	53	52	52	52	52	1	0	0	0	0	No	
	PA-R13-4	B	1	-	57	59	58	58	58	58	2	1	1	1	1	No	
	PA-R13-5	B	1	-	**52**	**52**	56	56	56	56	0	4	4	4	4	No	7,10 ,11
	PA-R13-6	B	1	-	50	52	60	60	60	60	2	10	10	10	10	Yes	9
14	PA-R14-1	B	2	-	**41**	**41**	43	43	43	43	0	2	2	2	2	No	4,10,11
	PA-R14-2	B	2	-	**44**	**44**	**44**	**44**	**44**	**44**	0	0	0	0	0	No	5,11
	PA-R14-3	B	1	-	**44**	**44**	46	46	46	46	0	2	2	2	2	No	5,10,11
	PA-R14-4	B	1	-	**44**	**44**	**44**	**44**	**44**	**44**	0	0	0	0	0	No	5,11
	PA-M14-5	B	1	-	**44**	**44**	46	46	46	46	0	2	2	2	2	No	5,10,11
	PA-M14-6	B	1	44	**44**	**44**	48	48	48	48	0	4	4	4	4	No	1,10,11
	PA-R14-7	B	2		48	50	60	60	60	60	2	12	12	12	12	Yes	9
15	PA-M15-1	B	1	54	**54**	**54**	57	57	57	57	0	3	3	3	3	No	1,10,11
	PA-R15-2	B	2	-	**54**	**54**	**54**	**54**	**54**	**54**	0	0	0	0	0	No	8,11
	PA-M15-3	B	1	53	50	51	54	54	54	54	0	4	4	4	4	No	
	PA-R15-4	B	1	-	53	54	58	58	58	58	1	5	5	5	5	No	
16	PA-M16-1	B	1	60	58	60	64	64	64	64	2	6	6	6	6	No	
	PA-R16-2	B	1	-	50	55	54	54	54	54	5	4	4	4	4	No	
17	PA-M17-1	B	1	50	**50**	**50**	54	54	54	54	0	4	4	4	4	No	1,10,11
	PA-R17-2	B	1	-	52	54	51	51	51	51	2	-1	-1	-1	-1	No	
18	PA-R18-1	B	1	-	59	60	70	70	70	70	1	11	11	11	11	Yes	9
	PA-M18-2	B	2	56	57	58	67	67	67	67	1	10	10	10	10	Yes	9
	PA-R18-3	B	2	-	57	58	67	67	67	67	1	10	10	10	10	Yes	9
	PA-M18-4	B	1	52	50	51	58	58	58	58	1	8	8	8	8	No	
	PA-R18-5	B	1	-	51	53	54	54	54	54	2	3	3	3	3	No	
	PA-R18-6	B	1	-	43	44	51	51	51	51	1	8	8	8	8	No	
	PA-M18-7	B	1	49	**49**	51	51	51	51	51	2	2	2	2	2	No	1,10,11

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
						2050 PM Peak Hour Predicted Noise Levels [dB(A)]					Difference from Existing to 2050 Build [dB(A)]						
NSA	Receptor Number	LU Cat.	Number of Dwelling Units Represented	2023 Measured Noise Level [dB(A)]	2022 Existing PM Peak Noise Level [dB(A)]	No Build	DU Mod.	E Mod.	DU-Shift Mod.	E-Shift Mod.	No Build	DU Mod.	E Mod.	DU-Shift Mod.	E-Shift Mod.	Noise Abatement Warranted	Notes
19	PA-R18-8	B	3	-	44	46	46	46	46	46	2	2	2	2	2	No	
	PA-R18-9	B	2	-	50	51	55	55	55	55	1	5	5	5	5	No	
	PA-R18-10	C	1	-	48	50	50	50	50	50	2	2	2	2	2	No	
	PA-R18-11	B	1	-	47	49	48	48	48	48	2	1	1	1	1	No	
	PA-M18-12	B	2	54	49	51	50	50	50	50	2	1	1	1	1	No	
	PA-R18-13	B	1	-	52	53	54	54	54	54	1	2	2	2	2	No	
	PA-R18-14	B	1	-	57	58	67	67	67	67	1	10	10	10	10	Yes	9
	PA-R18-15	B	1	-	49	51	53	53	53	53	2	4	4	4	4	No	
	PA-R18-16	B	1	-	49	50	53	53	53	53	1	4	4	4	4	No	
	PA-R18-17	B	1	-	39	41	43	43	43	43	2	4	4	4	4	No	
	PA-R18-18	B	1	-	40	41	48	48	48	48	1	8	8	8	8	No	
	PA-R18-19	B	1	-	43	44	51	51	51	51	1	8	8	8	8	No	
	PA-R18-20	B	1	-	53	54	63	63	63	63	1	10	10	10	10	Yes	9
	PA-R18-21	B	1	-	53	54	62	62	62	62	1	9	9	9	9	No	
	PA-R18-22	C	1	-	47	49	53	53	53	53	2	6	6	6	6	No	
	PA-R18-23	B	1	-	48	49	53	53	53	53	1	5	5	5	5	No	
	PA-M19-1	B	2	52	52	53	56	56	56	56	1	4	4	4	4	No	
	PA-R19-2	B	1	-	51	53	53	53	53	53	2	2	2	2	2	No	
	PA-M19-3	B	1	53	54	57	55	55	55	55	3	1	1	1	1	No	
	PA-R19-4	B	3	-	51	54	52	52	52	52	3	1	1	1	1	No	
	PA-R19-5	B	1	-	53	54	55	55	55	55	1	2	2	2	2	No	
	PA-M19-6	B	1	54	53	55	55	55	55	55	2	2	2	2	2	No	
	PA-R19-7	B	1	-	48	49	49	49	49	49	1	1	1	1	1	No	
	PA-R19-8	B	1	-	48	50	49	49	49	49	2	1	1	1	1	No	
	PA-M19-9	B	1	54	49	51	50	50	50	50	2	1	1	1	1	No	
	PA-R19-10	B	2	-	43	45	45	45	45	45	2	2	2	2	2	No	
	PA-R19-11	B	2	-	41	42	43	42	43	42	1	2	1	2	1	No	
	PA-R19-12	B	1	-	45	47	47	47	47	47	2	2	2	2	2	No	

1. The measured noise level at this receptor will represent the existing worst-case noise level due to the surrounding environment being dominated by ambient noise sources (non-roadway sources).
2. PA-M9-1 measured noise level will be used as the existing worst-case noise level for PA-R10-1 (similar ambient condition) due to the surrounding environment being dominated by ambient noise sources (non-roadway sources).
3. PA-M11-4 measured noise level will be used as the existing worst-case noise level for PA-R11-1, PA-R11-2 and PA-R11-3 (similar ambient condition) due to the surrounding environment being dominated by ambient noise sources (non-roadway sources).
4. PA-M12-1 measured noise level will be used as the existing worst-case noise level for PA-R12-2 and PA-R14-1 (similar ambient condition) due to the surrounding environment being dominated by ambient noise sources (non-roadway sources).
5. PA-M14-5 measured noise level will be used as the existing worst-case noise level for PA-R14-2 - PA-R14-4 (similar ambient condition) due to the surrounding environment being dominated by ambient noise sources (non-roadway sources).
6. PA-M6a-1 measured noise level will be used as the existing worst-case noise level for PA-R6a-2 and PA-R6b-1 (similar ambient condition) due to the surrounding environment being dominated by ambient noise sources (non-roadway sources).
7. PA-M13-3 measured noise level will be used as the existing worst-case noise level for PA-R13-2 and PA-R13-5 (similar ambient condition) due to the surrounding environment being dominated by ambient noise sources (non-roadway sources).
8. PA-M15-1 measured noise level will be used as the existing worst-case noise level for PA-R15-2 (similar ambient condition) due to the surrounding environment being dominated by ambient noise sources (non-roadway sources).
9. Red shading ( ) represents receptors that are impacted due to predicted noise levels equaling or exceeding the Noise Abatement Criteria (66 dB(A) for residential land uses) and/or noise levels substantially exceeding existing noise levels by 10 dB(A) or more.
10. Gray shading ( ) represents receptors where logarithmic addition is applied where highway-only levels are within 3 dB(A) of ambient levels in order to account for combinatory effects.
11. **Bold numbers** represent receptors where the measured noise level is used as the baseline ambient noise level for impact determination due to substantial increase.

Table 10 - Maryland Impact Noise Level Summary

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
								2050 PM Peak Hour Predicted Noise Levels [dB(A)]					Difference from Existing to 2042 Build [dB(A)]						
NSA	Receptor Number	LU Cat.	Number of Dwelling Units Represented	2023 Measured L90 Noise Level [dB(A)]	Representative 2023 Measured L90 Noise Level [dB(A)]	2023 Maryland Adjusted Measured L90 Noise Level [dB(A)]	2022 Existing PM Peak Noise Level [dB(A)]	No Build	DU Mod.	E Mod.	DU-Shift Mod.	E-Shift Mod.	No Build	DU Mod.	E Mod.	DU-Shift Mod.	E-Shift Mod.	Noise Abatement Warranted	Note
1	MD-M1-1	B	2	-	-	-	61	62	63	63	63	63	1	2	2	2	2	No	
	MD-R1-2	B	3	-	-	-	64	66	66	66	66	66	2	2	2	2	2	Yes	6
	MD-M1-3	B	1	-	-	-	61	62	63	63	63	63	1	2	2	2	2	No	
	MD-M1-4	B	2	-	-	-	63	65	65	65	65	65	2	2	2	2	2	No	
	MD-R1-5	B	2	-	-	-	64	65	66	66	65	65	1	2	2	1	1	Yes	6
	MD-M1-6	B	1	-	-	-	63	65	65	65	65	65	2	2	2	2	2	No	
	MD-R1-7	B	1	-	-	-	63	65	65	65	65	65	2	2	2	2	2	No	
2	MD-M2-1	C	1	-	-	-	55	56	55	55	53	53	1	0	0	-2	-2	No	
	MD-R2-2	C	1	-	-	-	53	54	55	55	51	51	1	2	2	-2	-2	No	
	MD-R2-3	C	1	-	-	-	49	51	53	53	49	49	2	4	4	0	0	No	
3	MD-M3-1	B	2	-	-	-	68	69	65	65	65	65	1	-3	-3	-3	-3	Yes	
	MD-R3-2	B	2	-	-	-	65	66	62	62	62	62	1	-3	-3	-3	-3	Yes	
	MD-R3-3	B	1	-	-	-	68	69	65	65	65	65	1	-3	-3	-3	-3	Yes	
4	MD-R4-1	B	1	-	-	-	41	43	52	52	46	46	2	11	11	5	5	Yes	6
	MD-M4-2	B	1	-	-	-	40	41	51	51	45	45	1	11	11	5	5	Yes	6
	MD-R4-3	B	1	-	-	-	41	43	52	52	44	44	2	11	11	3	3	Yes	6
	MD-R4-4	B	1	-	44	-	36	45	48	48	46	46	1	3	3	1	1	No	1,3
	MD-M4-5	B	1	44	44	-	36	45	47	47	46	46	1	3	3	2	2	No	1,4
	MD-R4-6	B	1	-	44	-	36	45	48	48	46	47	1	3	3	2	2	No	1,3
	MD-M4-7	B	2	-	-	-	56	57	55	55	55	55	1	-1	-1	-1	-1	No	
	MD-R4-8	B	2	-	-	-	49	50	51	51	49	49	1	2	2	0	0	No	
	MD-R4-9	B	2	-	-	-	42	43	46	46	42	42	1	4	4	0	0	No	
	MD-R4-10	B	1	-	44	-	41	46	47	47	46	46	2	3	3	2	2	No	1,3
	MD-R4-11	B	1	-	44	-	39	46	47	47	46	46	1	2	2	2	2	No	1,3
	MD-M4-12	B	1	36	-	45	35	45	46	46	46	46	0	1	1	1	1	No	2,5
	MD-R4-13	B	1	-	44	-	37	45	47	47	46	46	1	3	3	3	3	No	1,3
	MD-M4-14	B	1	35	-	44	33	44	49	49	49	49	0	5	5	5	5	No	2,5
5	MD-M5-1	B	1	47	47	-	27	47	53	54	53	54	0	7	7	7	7	No	1,4
	MD-M5-2	B	1	39	-	44	19	44	44	46	44	46	0	0	2	0	2	No	2,5
	MD-M5-3	B	1	42	42	-	26	42	43	46	43	46	0	1	3	1	3	No	1,4

1. Since the existing ambient noise levels at this receptor are not dominated by noise from existing roadways and cannot be accurately predicted by TNM, the 2023 Measured L90 noise level was used to establish the existing noise level for impact determination using a substantial increase impact criteria.
2. Since the existing ambient noise levels at this receptor are not dominated by noise from existing roadways and cannot be accurately predicted by TNM, the 2023 Adjusted L90 noise level was used to establish the existing noise level for impact determination using a substantial increase impact criteria based on measurements made at this receptor, or a representative measurement receptor. NSA 4 adjusted receptors were adjusted using the loudest-hour Leq from the 24-hour measurement site MD-M4-5. NSA 5 adjusted receptor was adjusted using the loudest-hour Leq from the 24-hour measurement site MD-M5-3.
3. An adjustment factor to future build noise levels was applied by logarithmically adding the existing measured L90 noise level from MD-M4-5 to the TNM future predicted levels.
4. An adjustment factor to future build noise levels was applied by logarithmically adding the existing measured L90 noise level to the TNM future predicted levels.
5. An adjustment factor to future build noise levels was applied by logarithmically adding the existing measured adjusted L90 noise level to the TNM future predicted levels.

Red shading (▬) represents receptors that are impacted due to predicted noise levels equaling or exceeding the Noise Abatement Criteria (66 dB(A) for residential land uses) and/or noise levels substantially exceeding existing noise levels by 10 dB(A) or more.

6.0 HIGHWAY TRAFFIC NOISE CONSIDERATION AND ABATEMENT ALTERNATIVES

Based on the impact evaluation discussed in the preceding section, noise abatement consideration is warranted for 6 of 20 NSAs analyzed. This section of the document outlines the various preliminary abatement alternatives that were considered in an attempt to reduce noise levels at the receptors that warrant abatement considerations.

6.1 Mitigation Alternatives

State and federal guidelines suggest a range of mitigation measures that should be considered to reduce traffic noise impacts that may be incorporated into either new roadway projects or roadway improvement projects that increase traffic capacity. These mitigation measures may include:

- Construction of noise barriers, including the acquisition of property rights, either within or outside the right of way. Landscaping is not a viable noise abatement feature.
- Traffic management measures (e.g., traffic control devices and signing for prohibition of certain vehicle types and time-use restrictions for certain vehicle types).
- Alteration of horizontal and vertical alignments.
- Acquisition of real property or interests therein (predominately unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise.

For preliminary analysis purposes, noise barriers were considered to be the only feasible form of noise mitigation but earth noise berms could be considered where feasible during the Final Design noise study.

6.2 Noise Barrier Evaluation

After determining areas where mitigation is warranted for the 2050 Build conditions under the four Build Alternatives, noise barriers were evaluated to determine feasibility and reasonableness for 6 of the 20 NSAs warranting noise abatement consideration (NSAs 1, 4, 12, 13, 14 and 18). The noise barrier evaluations for NSAs 13 and 14 are located in Section 6.3.

The assessment of noise abatement feasibility, in general, focuses on whether it is physically possible to build an abatement measure (i.e., noise barrier) that achieves a minimally acceptable level of noise reduction.

6.2.1 Feasibility Criteria

PennDOT considers a noise barrier feasible if all seven questions below are answered with a “yes”.

1. Can a noise reduction of at least 5 dB(A) be achieved at the majority of the impacted receptor units (i.e., 50% or greater)?
2. Can the noise barrier be designed and physically constructed at the proposed location?
3. Can the noise barrier be constructed without causing a safety problem?
4. Can the noise barrier be constructed without restricting access to vehicular or pedestrian travel?
5. Can the noise barrier be constructed in a manner that allows for access for required maintenance and inspection operations?
6. Can the noise barrier be constructed in a manner that allows utilities to adequately function?
7. Can the noise barrier be constructed in a manner that allows drainage features to adequately function?

SHA considers three primary factors: acoustics, safety & access, and site constraints when considering if a noise barrier is feasible.

- For a receptor to be considered benefited, the receptor must receive a noise reduction of at least 5 dB(A). For abatement to be considered acoustically feasible, at least 70 percent of the impacted residences must be benefited.
- Construction of a noise barrier may not be feasible where access points would prevent effective noise reduction or where the barrier would create adverse safety conditions.
- If a site constraint is present, avoidance and minimization efforts are explored to allow for the placement of the barrier.

6.2.2 Reasonableness Criteria

If mitigation has been determined to be feasible, the reasonableness of the mitigation is analyzed. The assessment of noise abatement reasonableness, in general, focuses on whether it is practical to build an abatement measure. Barrier reasonableness considers three primary factors: viewpoints of individuals impacted by highway traffic noise, design goal, and cost reasonableness.

For noise barrier design goal, PennDOT requires barriers to achieve a 7 dB(A) noise reduction for at least 1 impacted receptor and SHA requires barriers to achieve a 7 dB(A) noise reduction for at least three or 50 percent of the impacted receptors.

For noise barrier cost reasonableness, PennDOT's threshold for Maximum Square Footage of Abatement Per Benefited Receptor (MaxSF/BR) value is 2,000 and SHA's threshold is 700-2,700 footage of barrier per benefited (equivalent) residence (SF-p-r) depending on the scope of the project (2,700 SF-p-r for this project).

PennDOT barriers are optimized to a point of diminishing returns. This means that noise benefits typically increase with increased barrier height and/or length; however, at some point, further increases in barrier height and/or length result in smaller and smaller

increases in benefit until a point of diminishing returns is reached. So, while conforming to the MaxSF/BR criteria, it is desirable to obtain the 7 dB(A) minimum exterior insertion loss for additional impacted receptor sites if justified by a "point of diminishing returns' evaluation.

6.2.3 Preliminary Noise Barrier Analysis Results

Table 1 (found in the Executive Summary) presents a summary of the preliminary noise barrier analyses. Individual discussions for each NSA warranting noise abatement consideration follow. All noise levels, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes. Noise barrier alignments were set based on the existing topography and along the cut and fill lines of the four Build Alternatives. The barrier alternatives were optimized to the extent possible to achieve minimum PennDOT and SHA barrier insertion loss goals in determining barrier reasonableness. Locations of the evaluated preliminary noise barriers analyzed are located on the maps in **Appendix A**.

NSA 1 (Located in Maryland):

Although noise abatement consideration is warranted for NSA 1 due to noise levels approaching the NAC criteria for all four Build Alternatives including the No Build, it is determined to not be feasible due to driveway and roadway access along Chestnut Ridge Road. Any noise barrier built for NSA 1 would need to be terminated at each driveway due to sight distance and safety requirements. These breaks in the noise barrier would create pathways for traffic noise from Chestnut Ridge Road to pass through, hindering the barrier's effectiveness. *For reasons of non-feasibility, abatement will not be studied for NSA 1 under all four Build Alternatives*.

NSA 4 (Located in Maryland):

Contained in NSA 4 are three impacted receptors (MD-R4-1, MD-M4-2 and MD-R4-3) that have predicted traffic noise levels with substantial increases [10 dB(A)] over existing. Mitigation appears to be feasible from a constructability standpoint. The analyzed noise barrier is located on the west side (southbound direction) of Alternatives DU Modified and E Modified (common alignment). The barrier is 12-9 feet high and 1,004 feet long running along the southbound outside shoulder when the alternatives are on fill and then runs along the top of cut when the alternatives are in cut. This transition from the top of fill to the top of cut occurs impacted receptor MD-R4-3. Alternatives DU Modified and E Modified are in cut to the east of MD-R4-3 which could explain why receptors MD-R-4, MD-M4-5 and MD-R4-6 do not experience 2050 Build predicted traffic noise impacts.

Table 11 shows the 2050 Build predicted noise levels for Alternatives DU Modified and E Modified (common alignment), with and without a barrier, the resultant insertion loss attained and the data for barrier design analyzed. The preliminary noise barrier meets SHA's acoustic feasibility criteria with 100 percent of the impacted receptors receiving at least a 5 dB(A) or greater insertion loss. Additionally, the reasonableness design goal is

also satisfied with 100 percent of the impacted receptors receiving at least a 7 dB(A) noise reduction. The barrier area from the TNM 2.5 computer program is 18,850 square feet. The barrier benefits a total of three benefited residences, yielding a value of 6,283 SF-p-r which is well above SHA's 2,700 SF-p-r threshold.

Consequently, based on available preliminary engineering at the time of the DEIS publication, the NSA 4 preliminary noise barrier is feasible but not reasonable and is not recommended for further consideration. However, the final recommendation on the inclusion of abatement measures is determined during completion of the project's final design.

Table 11 - NSA 4: Alternatives DU Modified and E Modified Noise Barrier Preliminary Analysis Summary

Receptor Number	Residences Represented	No Barrier 2050 Build Noise Level [dB(A)]	With Barrier 2050 Build Noise Level [dB(A)]	
			Leq(h)	Insertion Loss
MD-R4-1	1	53	45	7
MD-M4-2	1	52	45	7
MD-R4-3	1	52	45	7
MD-R4-4	1	45	43	2
MD-M4-5	1	44	44	0
MD-R4-6	1	45	45	0
MD-M4-7	2	55	55	1
MD-R4-8	2	51	49	2
MD-R4-9	2	46	44	2
MD-R4-10	1	44	43	1
MD-R4-11	1	43	42	0
MD-M4-12	1	41	41	0
MD-R4-13	1	43	43	0
Preliminary Barrier Height Range (feet)			12'-22' (avg. 18.75')	
Preliminary Barrier Length (feet)			1,004	
Preliminary Barrier Area (square feet)			18,850	
Total # Receptor units receiving at least 5 dB(A) insertion loss (IL)			3	
Square Footage Per Benefited Receptor			6,283	
Exterior noise levels reduced by at least 7 dB(A) for 3 benefited receptors?			Yes	
Feasible			**YES**	
Reasonable			**NO**	
Note: Impacted receptors (highlighted red) are those that warrant investigation of noise abatement.				

NSA 12 (Located in Pennsylvania):

Contained in NSA 12 is one impacted receptor (PA-M12-1) representing one residence that has a predicted traffic noise level with a substantial increase [10 dB(A)] over existing levels and mitigation appears to be feasible from a constructability standpoint. The analyzed noise barrier is located on the east side (northbound direction) of all four Build Alternatives (common alignment). The barrier is 27-30 feet high and 825 feet long running along the top of cut for the four build alternatives.

Table 12 shows the 2050 Build predicted noise levels, with and without a barrier, the resultant insertion loss attained and the data for the preliminary barrier design analyzed. The preliminary noise barrier meets PennDOT's acoustic feasibility criteria with the impacted receptor receiving at least a 5 dB(A) or greater insertion loss. Additionally, the reasonableness design goal is also satisfied with 100 percent of the impacted receptors receiving at least a 7 dB(A) noise reduction. The barrier area from the TNM computer program is 23,699 square feet and the barrier benefits one benefited residence, yielding a value of 23,699 square feet per benefited receptor which is well above PennDOT's 2,000 MaxSF/BR value of 2,000.

Consequently, based on available preliminary engineering at the time of the DEIS publication, the NSA 12 preliminary noise barrier is not feasible or reasonable and is not recommended for further consideration. However, the final recommendation on the inclusion of abatement measures is determined during completion of the project's final design.

Table 12 - NSA 12: All four Build Alternatives Noise Barrier Preliminary Analysis Summary

Receptor Number	Residences Represented	No Barrier 2050 Build Noise Level [dB(A)]	With Barrier 2050 Build Noise Level [dB(A)]	
			Leq(h)	Insertion Loss
PA-M12-01	1	54	47	7
PA-R12-02	1	44	43	1
Preliminary Barrier Height Range (feet)			27'-30' (avg. 28.73')	
Preliminary Barrier Length (feet)			825	
Preliminary Barrier Area (square feet)			23,699	
Total # Receptor units receiving at least 5 dB(A) insertion loss (IL)			1	
Square Footage Per Benefited Receptor			23,699	
Exterior noise levels reduced by at least 7 dB(A) for 1 benefited receptor?			Yes	
Feasible			**YES**	
Reasonable			**NO**	

Note: Impacted receptors (highlighted red) are those that warrant investigation of noise abatement.

NSA 18 (Located in Pennsylvania):

Although noise abatement is warranted at NSA 18 due to predicted noise levels both exceeding the NAC criteria and substantially increasing by 10 dB(A) over existing noise levels, it is determined to be not feasible due to driveway and roadway access issues along Mason Dixon Highway. Any noise barrier built for NSA 18 would have to be terminated at each driveway for sight distance and safety requirements. These breaks in the noise barrier would create pathways for traffic noise from Mason Dixon Highway to pass through, hindering the barrier's effectiveness. *For reasons of non-feasibility, abatement will not be studied for NSA 18 under all four Build Alternatives*.

6.3 Noise Assessment and Abatement Considerations for Potentially Displaced Residences

Potential displacements for the Alternatives Retained for Detailed Study have been identified based on preliminary engineering conducted to date. Further engineering will be conducted for the Selected Alternative in the next study phase to determine whether feasible and reasonable refinements can be made to avoid displacement. Future noise levels were calculated for each of these residences to both inform the DEIS studies and for reference in the next study phase. It should be noted that a Clark Road residence along the common alignment of Alternatives DU Modified, DU-Shift Modified, E Modified and E-Shift Modified (common alignment) and a residence along Greenville Road for the Alternatives DU Modified and DU-Shift Modified are unavoidable as they lie beneath the alternatives' travel lanes.

Shown in **Table 13** are the noise evaluation results for potentially displaced residences. Predicted noise levels for these residences exceeding the FHWA Noise Abatement Criteria include two NSA 14 and one NSA 13 residences situated along the common alignment.

Table 13 - Noise Level Results for Potentially Displaced Residences

Potential Displacements	Number of Dwelling Units Represented	Impact	Build Alternatives	Existing Noise Level	2050 No Build Noise Level	2050 Build Noise Level	2050 Build Noise Impact
PA-R13-5	1	The house is located within a proposed SWM Basin along the southbound side of the common alignment for all four Build Alternatives.	All Four Build Alternatives (Common Alignment)	52	52	56	No
PA-R13-6	1	The house is impacted by the proposed fill slope along the southbound lanes of the common alignment for all four Build Alternatives in addition to a proposed SWM Basin.	All Four Build Alternatives (Common Alignment)	50	52	60	Yes
PA-R14-7	2	The two houses are impacted by the proposed cut slope along the northbound side of the common alignment for all four Build Alternatives.	All Four Build Alternatives (Common Alignment)	48	50	60	Yes
PA-R15-4	1	The Hunsrick Road Extension impacts a part of this house.	All Four Build Alternatives (Common Alignment)	53	54	58	No
PA-R17-2	1	The house is located within a proposed SWM Basin along the southbound side of the common alignment for all four Build Alternatives.	All Four Build Alternatives (Common Alignment)	52	54	51	No
PA-M19-1	2 (one residence is potentially displaced)	The Hunsrick Road Extension impacts a part of this property.	All Four Build Alternatives (Common Alignment)	52	53	56	No
238 Clark Road (not modeled)	1	This house is situated directly beneath the northbound lanes of the common alignment for all four Build Alternatives.	All Four Build Alternatives (Common Alignment)	Not Modeled			
442 Greenville Road (not modeled)	1	This house is situated directly beneath the northbound lanes of Alternatives DU Modified and DU-Shift Modified.	DU Modified & DU-Shift Modified	Not Modeled			

The following describes Noise Abatement Analysis results for these NSAs.

NSA 13 (Located in Pennsylvania):

As shown in **Table 13**, one impacted receptor (PA-R13-6) representing one residence resulted in a predicted traffic noise level with a substantial increase [10 dB(A)] over existing sound levels. The proximity of the residence to the US 219 proposed bottom of fill for all four Build Alternatives (common alignment) would require a retaining wall construction to preserve the home. Potential noise barrier construction would be atop the retaining wall. The retaining wall would be constructed along the southbound outside shoulder of all four Build Alternatives. The preliminary retaining wall is estimated to be 600 feet in length with have average height of 9 feet. This results in a square foot of 5,322. The preliminary noise barrier would be a constant height of 40 feet along the entire length of the retaining wall.

Table 14 shows the 2050 Build predicted noise levels, with and without the preliminary retaining wall and noise barrier combination. The table also shows the resultant barrier insertion loss and the preliminary retaining wall and noise barrier design elements. The preliminary combination retaining wall and noise barrier system meets PennDOT's acoustic feasibility criteria with 100 percent of the impacted receptors receiving at least a 5 dB(A) or greater insertion loss. To obtain the 5 dB(A) insertion loss the noise barrier was set at a constant height of 20 feet.

The preliminary retaining wall and noise barrier combination does not meet PennDOT's reasonableness design goal of at least a 7 dB(A) insertion loss for at least one benefited receptor, even though the preliminary noise barrier was set at a constant height of 30 feet (maximum wall height per PennDOT Publication 15M, Design Manual Part 4 Structures). This height puts the barrier area from the TNM computer program at 18,000 square feet. As mentioned, the barrier benefits one benefited residence, it yields a value of 18,000 square feet per benefited receptor which is well above PennDOT's 2,000 MaxSF/BR value of 2,000. It should also be noted that this square foot cost does not consider the retaining wall square footage and associated costs.

Consequently, based on available preliminary engineering at the time of the DEIS publication, the NSA 13 preliminary noise barrier is feasible but not reasonable and is not recommended for further consideration. However, the final recommendation on the inclusion of abatement measures is determined during completion of the project's final design.

Table 14 - NSA 13: All four Build Alternatives Noise Barrier Preliminary Analysis Summary

Receptor Number	Residences Represented	No Barrier 2050 Build Noise Level [dB(A)]	With Barrier 2050 Build Noise Level [dB(A)]	
			Leq(h)	Insertion Loss
PA-R13-04	1	58	58	0
PA-R13-05	1	56	55	1
PA-R13-06	1	60	55	5
PA-R14-05	1	46	46	0
PA-M14-06	1	48	47	1
PA-R14-07	2	60	60	0
Preliminary Barrier Height Range (feet)			30’	
Preliminary Barrier Length (feet)			600	
Preliminary Barrier Area (square feet)			18,000	
Total # Receptor units receiving at least 5 dB(A) insertion loss (IL)			1	
Square Footage Per Benefited Receptor			18,000	
Exterior noise levels reduced by at least 7 dB(A) for 1 benefited receptor?			Yes	
Feasible			**YES**	
Reasonable			**NO**	

Note: 1) Impacted receptors (highlighted red) are those that warrant investigation of noise abatement. 2) The square foot cost does not consider the retaining wall square footage and associated costs.

NSA 14 (Located in Pennsylvania):

As shown in **Table 13**, one impacted receptor (PA-R14-7) representing two residences resulted in a predicted traffic noise level with a substantial increase [12 dB(A)] over existing sound levels. The proximity of the two residences to the US 219 proposed top of cut for all four Build Alternatives (common alignment) would require a retaining wall construction to preserve the homes. Potential noise barrier construction would be atop or immediately behind the retaining wall. The retaining wall would be constructed along the northbound outside shoulder of all four Build Alternatives. The preliminary retaining wall is estimated to be 830 feet in length with an average height of 28 feet. This results in a 23,294 square foot retaining wall. The preliminary noise barrier would range between 11-14 feet along the entire length of the retaining wall.

Table 15 shows the 2050 Build predicted noise levels, with and without the preliminary retaining wall and noise barrier combination. The table also shows the resultant barrier insertion loss and the preliminary retaining wall and noise barrier design elements. The

preliminary combination retaining wall and noise barrier system meets PennDOT's acoustic feasibility criteria with 100 percent of the impacted receptors receiving at least a 5 dB(A) or greater insertion loss. Additionally, the reasonableness design goal is also satisfied with the impacted receptor receiving at least a 7 dB(A) insertion loss. This was achieved with a varying 11 to 14 feet noise barrier height.

The TNM computed noise barrier square footage is 10,790 square feet. As mentioned, the barrier benefits two residences resulting in 5,395 square feet per benefited receptor. This is more than double PennDOT's 2,000 maximum square footage per benefited residence criteria therefore, this noise barrier is not considered reasonable. It should also be noted that this square foot cost does not consider the retaining wall square footage and associated costs.

Consequently, based on available preliminary engineering at the time of the DEIS publication, the NSA 14 preliminary noise barrier is feasible but not reasonable and is not recommended for further consideration. However, the final recommendation on the inclusion of abatement measures is determined during completion of the project's final design.

Table 15 - NSA 14: All four Build Alternatives Noise Barrier Preliminary Analysis Summary

Receptor Number	Residences Represented	No Barrier 2050 Build Noise Level [dB(A)]	With Barrier 2050 Build Noise Level [dB(A)]	
			Leq(h)	Insertion Loss
PA-M14-06	1	48	46	2
PA-R14-07	2	60	53	7
PA-M15-01	1	57	57	0
PA-R15-02	2	54	54	0
PA-M15-03	1	54	54	0
Preliminary Barrier Height Range (feet)			11'-14' (avg. 13')	
Preliminary Barrier Length (feet)			830	
Preliminary Barrier Area (square feet)			10,790	
Total # Receptor units receiving at least 5 dB(A) insertion loss (IL)			2	
Square Footage Per Benefited Receptor			5,395	
Exterior noise levels reduced by at least 7 dB(A) for 1 benefited receptor?			Yes	
Feasible			**YES**	
Reasonable			**NO**	

Note: 1) Impacted receptors (highlighted red) are those that warrant investigation of noise abatement. 2) The square foot cost does not consider the retaining wall square footage and associated costs.

7.0 CONSTRUCTION NOISE CONSIDERATION AND MITIGATION ALTERNATIVES

Land uses that are sensitive to vehicular noise would also be sensitive to construction noise. Although highway construction is a short-term phenomenon, it can cause significant noise impacts. The extent and severity of the noise impact would depend upon the phase of construction (blasting activities) and the noise characteristics of the construction equipment in use (e.g. heavy construction equipment, equipment used to break rock and concrete pavement). Construction would have a direct impact on the receptors located close to the construction site and would have an indirect impact on receptors located near roadways where traffic flow characteristics are altered due to re-routing of vehicles from the construction area. Generally, sensitive land uses situated within a 100 to 200-foot radius of construction operations may encounter varying durations and intensities of noise impact, with potential noise levels ranging from 75 to 85 decibels, contingent upon the specific nature of the construction activity, the type of equipment employed, and the relative proximity.

To minimize the impact associated with construction noise, several mitigation measures can be implemented. The contractor shall exercise proper maintenance of construction equipment to minimize noise emissions due to inefficiently tuned engines, poorly lubricated moving parts, poor to ineffective muffling/exhaust systems, etc. Additionally, the provision of temporary noise barriers, varying the construction activity areas to redistribute noise events, restricting activity (e.g. blasting activities) to times during the day that are considered to be less noise-sensitive, public involvement and financial incentives to contractors are alternatives to decrease temporary noise impacts.

More specifically for impacts from blasting activities, it is necessary to implement appropriate measures before, during, and after the operation. This includes selecting explosives, blasting patterns, and initiation systems that optimize blast efficiency and minimize noise. Blasting Mats which are commonly used as blankets for blasting activities to control and confine debris can provide a degree of noise attenuation from the blast. These mats are typically made with layers of used tires cabled together. However, blasting mats do not mitigate vibration, which is usually more of a concern than noise. It's also important to provide advance notice and warning signs to affected communities.

If required during the final design noise analysis, a more detailed evaluation of construction noise and mitigation measures will be assessed based on the availability and specifics of the construction schedule and planned operations.

8.0 PUBLIC INVOLVEMENT

PennDOT and SHA have held two rounds of in-person public officials meetings and public plans displays accompanied by a virtual option. Before each Public Plans Display meeting, a Public Officials meeting was held to preview the same information to be presented to the public later. The Public Plans Display No. 1 (considered the scoping meeting) was held on June 23, 2022 (followed by a virtual public meeting on June 27, 2022). This meeting presented the refinement of the alignments since the PEL study. Public Plans Display No. 2 was held on November 16, 2023 (followed by a virtual public meeting on November 21, 2023). This meeting presented the refinement of the alternatives and the environmental impacts. Two public hearings, one in Pennsylvania and one in Maryland, will be held to present the preliminary engineering results, environmental analysis studies, and recommended preferred alternative as documented in the DEIS at least 15 days after the DEIS is available for public and agency review. There will be opportunities for both written and oral comments and attendees will be able to provide oral testimony either publicly or privately.

Please note that the preliminary noise barriers and their respective determinations of feasibility and reasonableness are based upon preliminary engineering information. Additional noise analyses using more detailed engineering data will be conducted during the final design stage of the project and documented in the Final Design Noise Analysis Report. The Final Design Noise Analysis will refine the noise modeling effort and verify abatement warrants, feasibility, and reasonableness. This effort will also include coordination with the affected public to define the desires of the benefited communities.

9.0 APPENDICES

Appendix A: Location Map for Noise Receptors and Preliminary Noise Barrier
Appendix B: Noise Measurement Data
Appendix C: Existing 2022 and Design Year 2050 Weekday Average Daily Traffic Data
Appendix D: Traffic Monitoring Sessions
Appendix E: PennDOT Warranted, Feasible, and Reasonable Worksheets
Appendix F: Calibration Certificates
Appendix G: List of Prepares and Reviewers

APPENDIX A

Location Map for Noise Receptors and Preliminary Noise Barrier

Notes:
1) MD-R1-2 is impacted by the No Build Alternative and all four Build Alternatives in the design year (2050).
2) MD-R1-5 is impacted by Alternatives DU Modified and E Modified in the design year (2050).

NSA 1
NSA 2
NSA 3
NSA 4
MD-M1-1
MD-M1-3
MD-M1-4
MD-M1-6
MD-M2-1
MD-M3-1
MD-M4-7
MD-R1-2
MD-R1-5
MD-R1-7
MD-R2-2
MD-R2-3
MD-R3-2
MD-R3-3
MD-R4-1
MD-R4-8
Chestnut Ridge Rd
Old Salisbury Rd
219
SB ALT DU/E MODIFIED
NB ALT DU/E MODIFIED
SB ALT DU-SHIFT/E-SHIFT MODIFIED
NB ALT DU-SHIFT/E-SHIFT MODIFIED
NSA 4: Preliminary Noise Barrier
(Build Alternatives DU Modified and E Modified)

219 Meyersdale to Old Salisbury Rd
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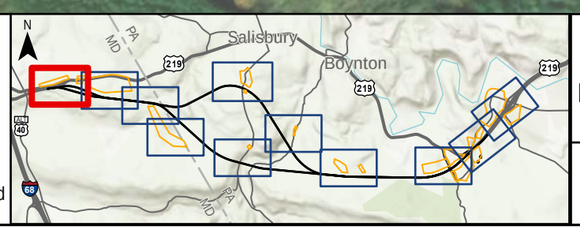
LEGEND
- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



PRELIMINARY ENGINEERING NOISE ANALYSIS REPORT
Location Map for Noise Receptors and Preliminary Noise Barrier

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Feet
0 150 300 600

Notes:
1) MD-R4-1, MD-M4-2 and MD-R4-3 are impacted by Alternatives DU Modified and E Modified in the design year (2050).

NSA 3

NSA 4

MD-R3-2

MD-R3-3

MD-M4-7

MD-R4-8

MD-R4-1

MD-M4-2

MD-R4-3

MD-R4-4

MD-M4-5

MD-R4-6

MD-R4-9

MD-R4-10

MD-R4-11

MD-M4-12

MD-R4-13

MD-M4-14

Old Salisbury Rd

219

SB ALT DU/E MODIFIED
NB ALT DU/E MODIFIED

SB ALT DU-SHIFT/E-SHIFT MODIFIED
NB ALT DU-SHIFT/E-SHIFT MODIFIED

SB ALT DU/DU-SHIFT/E/E-SHIFT MODIFIED
NB ALT DU/DU-SHIFT/E/E-SHIFT MODIFIED

NSA 4: Preliminary Noise Barrier
(Build Alternatives DU Modified and E Modified)

219 Meyersdale to Old Salisbury Rd
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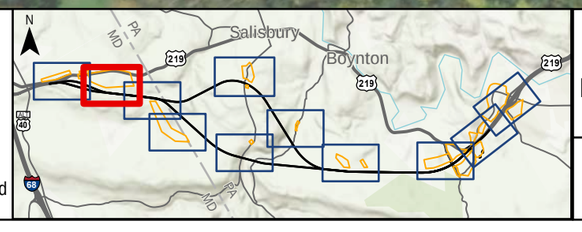
LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



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NOISE ANALYSIS REPORT
Location Map for Noise Receptors and Preliminary Noise Barrier

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Feet
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NSA 4

MD-M4-14

PENNSYLVANIA (SOMERSET CO.)
MARYLAND (GARRETT CO.)

SB ALT DU/DU-SHIFT/E/E-SHIFT MODIFIED
NB ALT DU/DU-SHIFT/E/E-SHIFT MODIFIED

SB ALT DU/DU-SHIFT MODIFIED
NB ALT DU/DU-SHIFT MODIFIED

SB ALT E/E-SHIFT MODIFIED
NB ALT E/E-SHIFT MODIFIED

MD-M5-1

NSA 5

Bridge over Meadow Run

Meadow Run

219 Meyersdale to Old Salisbury Rd
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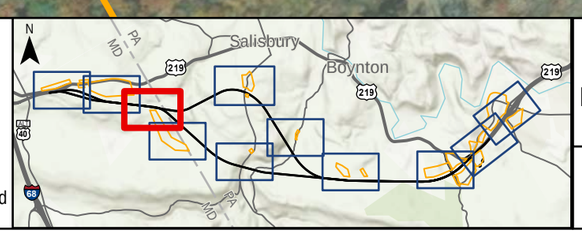
LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



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Feet
0 150 300 600

Bridge over
Meadow Run

Meadow Run

Meadow Run

PENNSYLVANIA (SOMERSET CO.)
MARYLAND (GARRETT CO.)

SB ALT E/E-SHIFT MODIFIED
NB ALT E/E-SHIFT MODIFIED

NSA 5

MD-M5-2

Beaver Pond Dr

Westview Crossing

Westview Crossing

MD-M5-3

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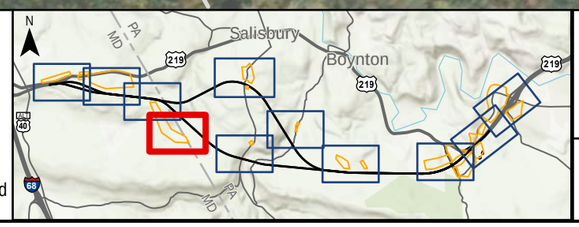
LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



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Location Map for Noise Receptors and Preliminary Noise Barrier

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Feet
0 150 300 600

NSA 7

PA-M7-1

Greenville Rd

Piney Creek

Bridge over Piney Creek, Greenville Road and Piney Run Road

Piney Run Rd

SB ALT E/E-SHIFT MODIFIED

NB ALT E/E-SHIFT MODIFIED

Greenville Rd

Piney Creek

Piney Run Rd

219 Meyersdale to Old Salisbury Rd

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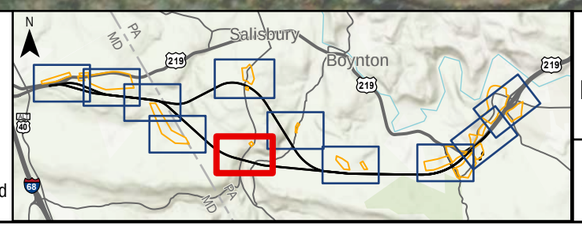
LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



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Feet
0 178 350 700

219 Meyersdale to Old Salisbury Rd

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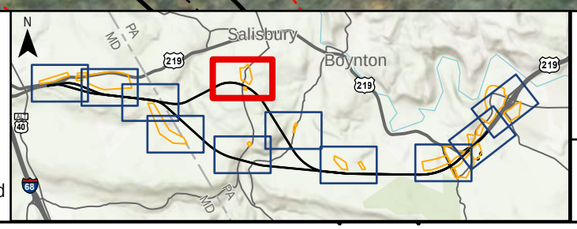
LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



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Feet
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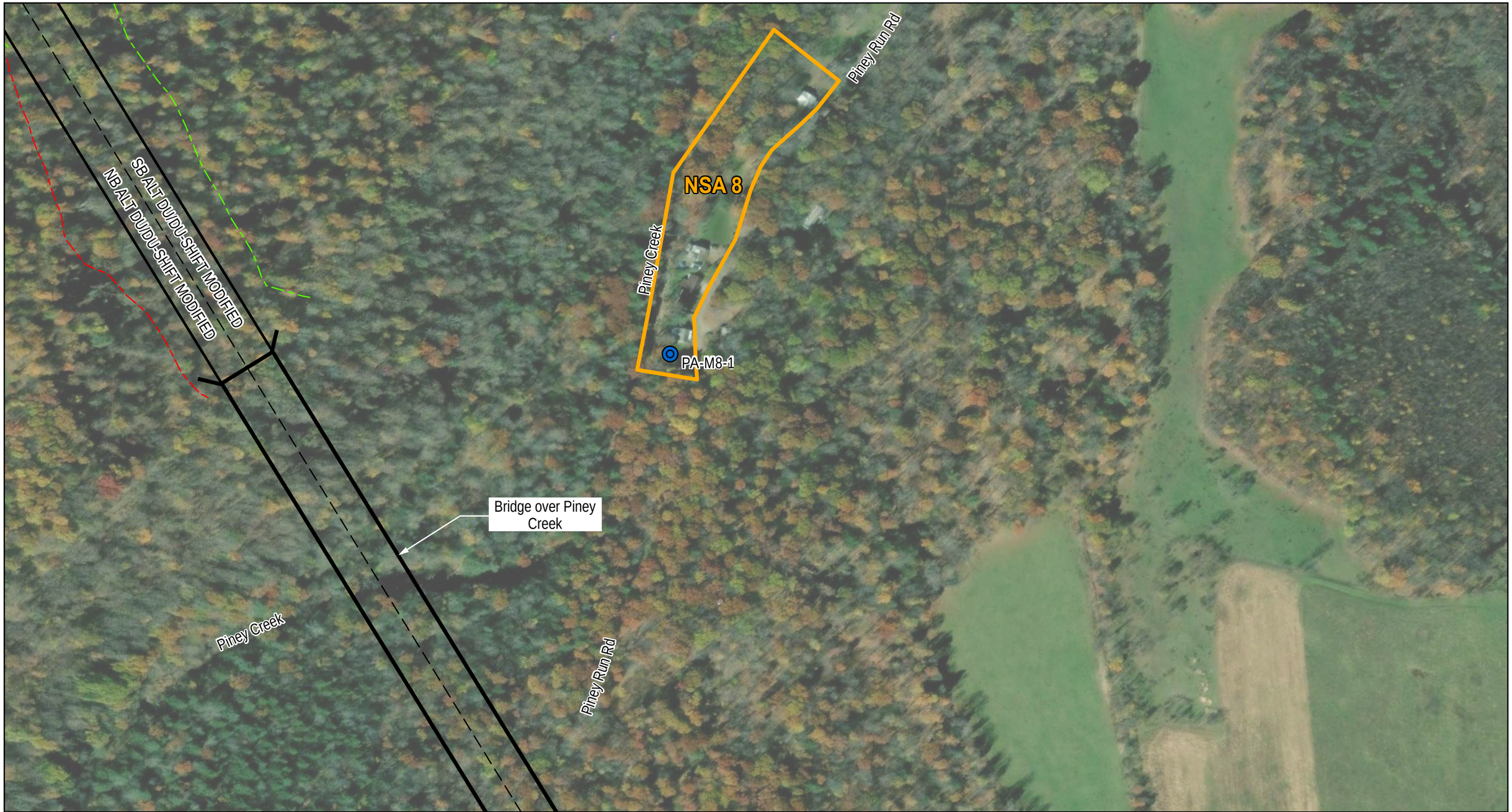

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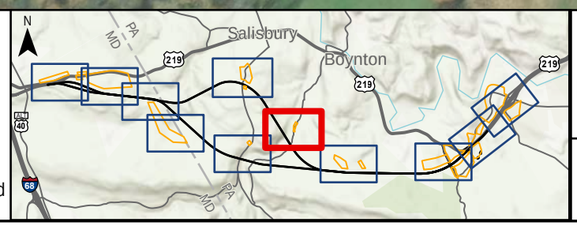
LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



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Location Map for Noise Receptors and Preliminary Noise Barrier

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Feet
0 100 200 400

NSA 9

NSA 10

PA-M9-1

PA-R10-1

SB ALT DU/DU-SHIFT/E/E-SHIFT MODIFIED

NB ALT DU/DU-SHIFT/E/E-SHIFT MODIFIED

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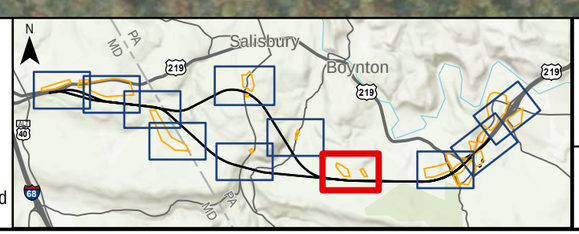
LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



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Location Map for Noise Receptors and Preliminary Noise Barrier

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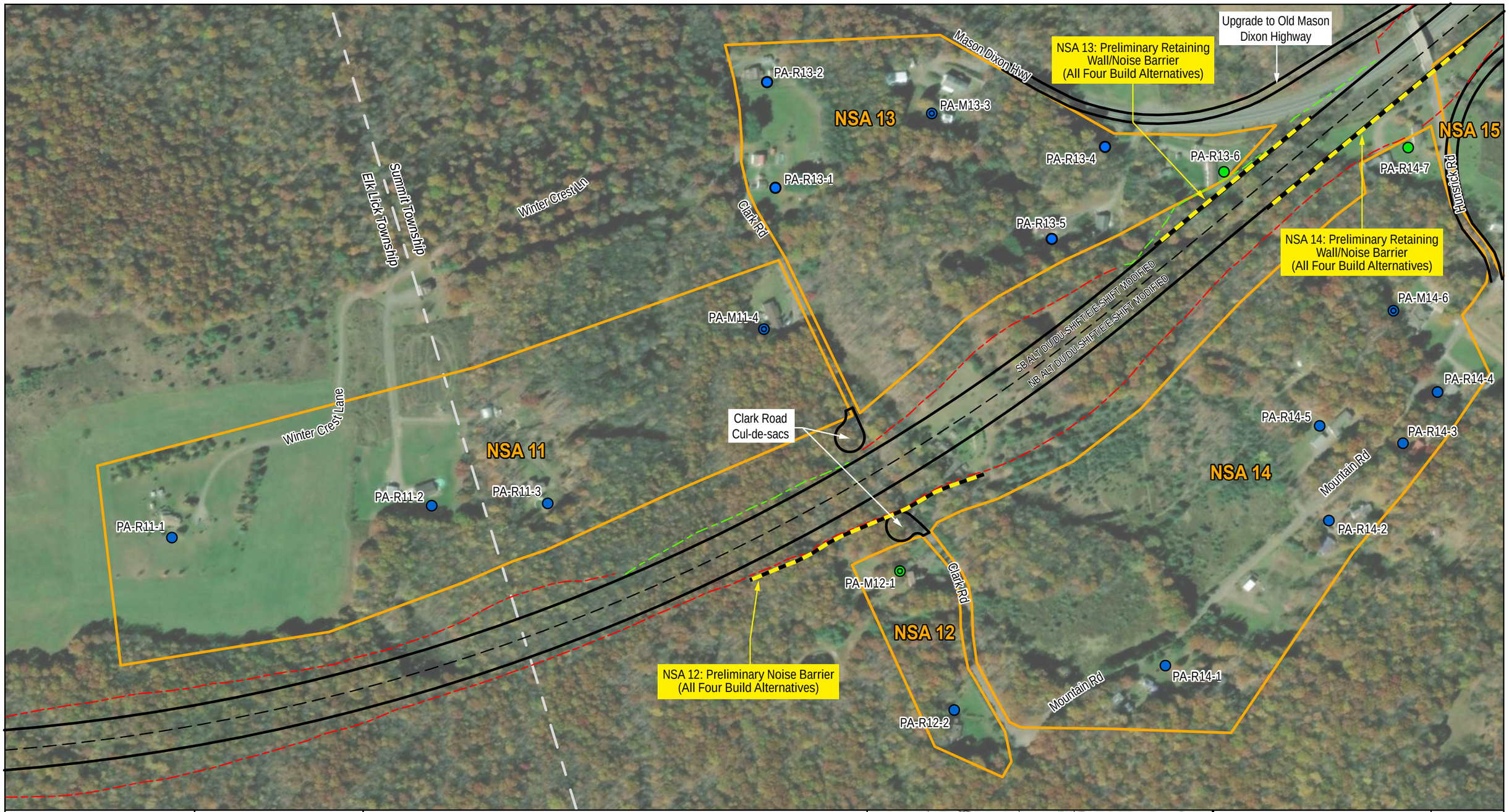
N

Feet

0 150 300 600



219 Meyersdale to Old Salisbury Rd

TRANSPORTATION IMPROVEMENT PROJECT

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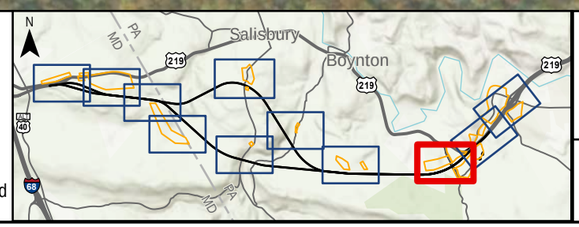
MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



PRELIMINARY ENGINEERING NOISE ANALYSIS REPORT
Location Map for Noise Receptors and Preliminary Noise Barrier

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Feet
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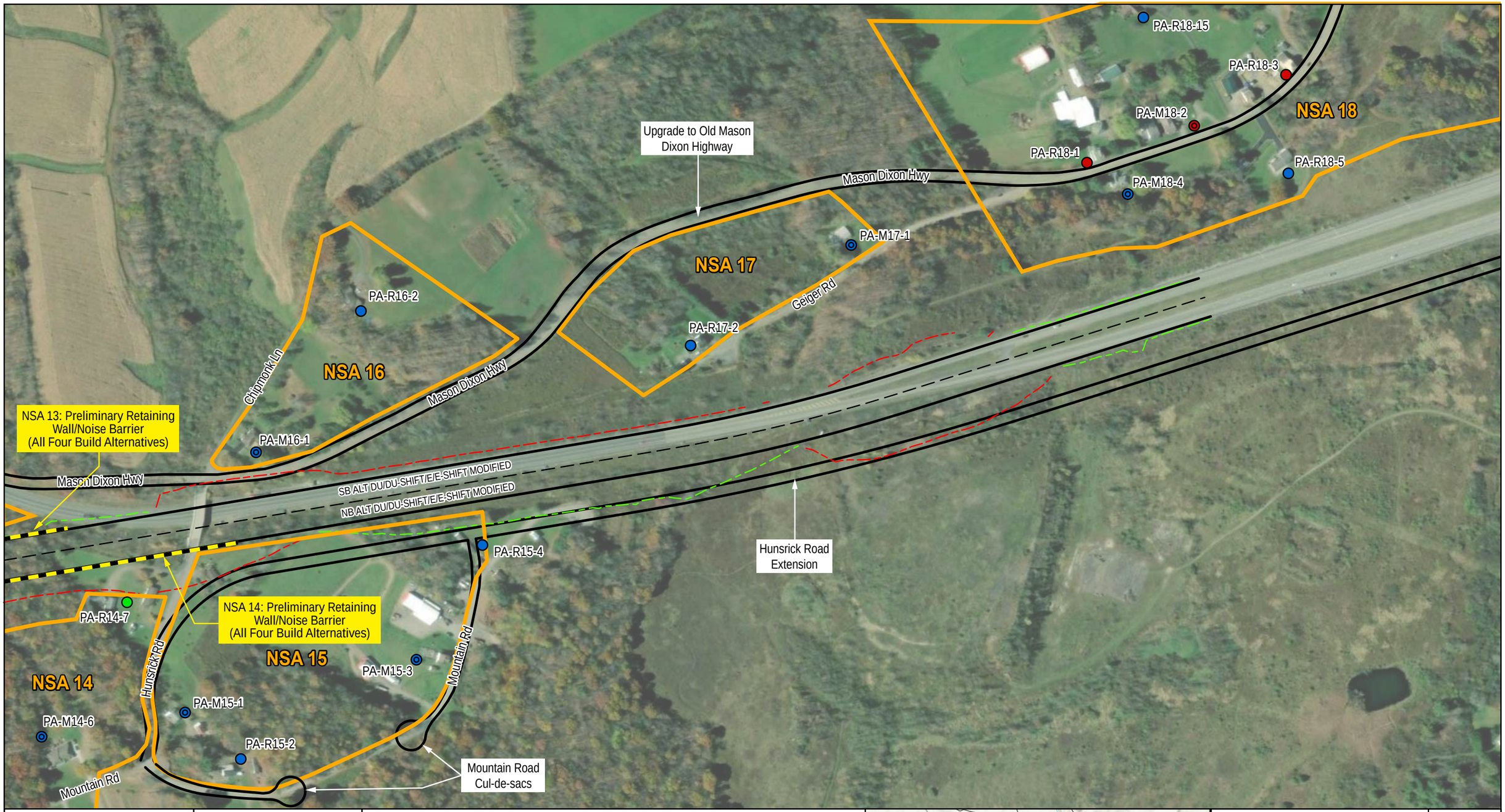


219 Meyersdale to Old Salisbury Rd

TRANSPORTATION IMPROVEMENT PROJECT

pennsylvania DEPARTMENT OF TRANSPORTATION

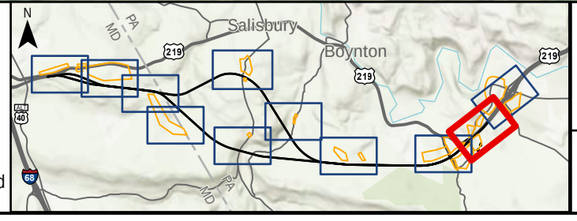
MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



PRELIMINARY ENGINEERING NOISE ANALYSIS REPORT
Location Map for Noise Receptors and Preliminary Noise Barrier

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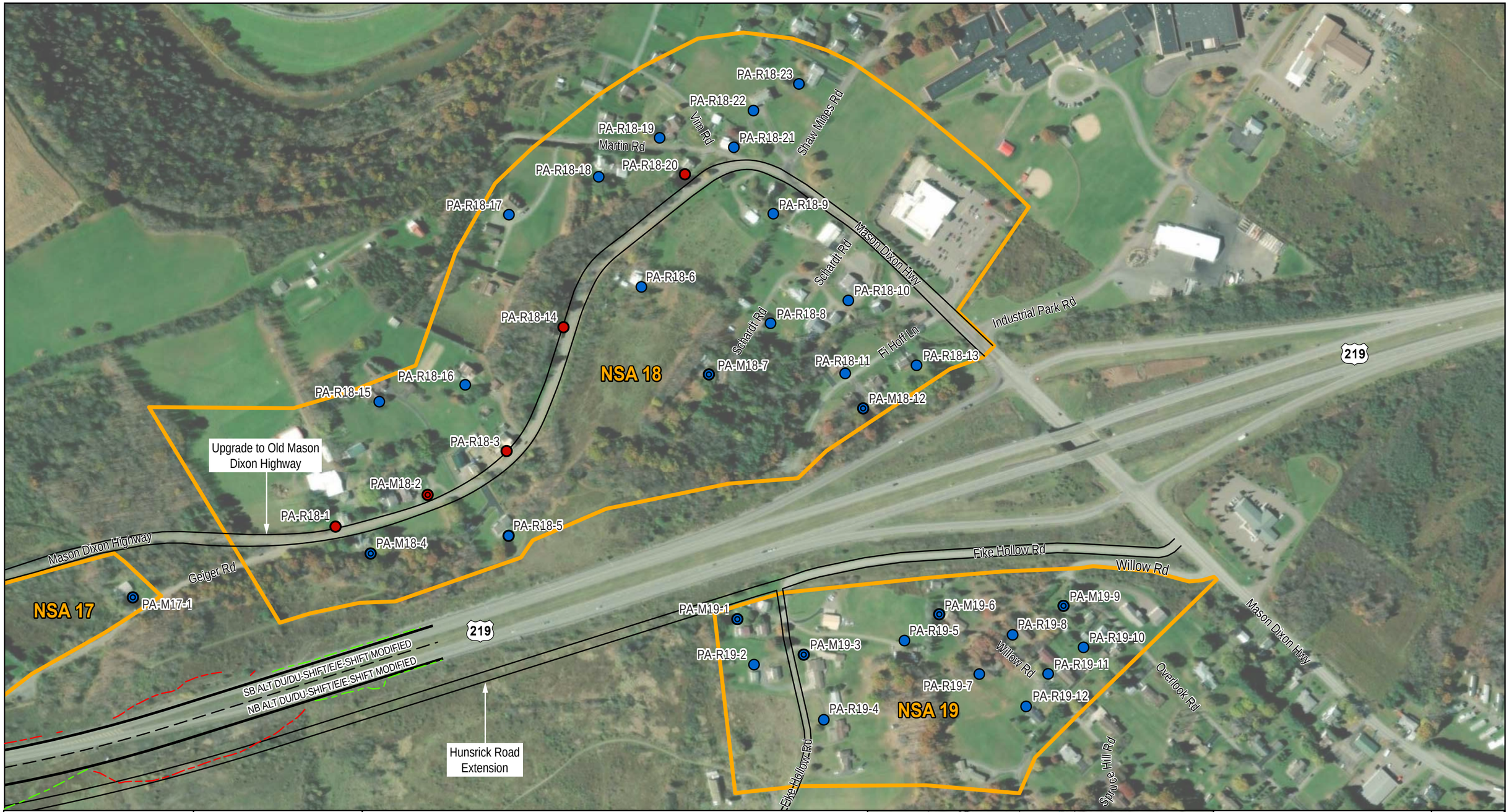
N

Feet

0 150 300 600



219 Meyersdale to Old Salisbury Rd

TRANSPORTATION IMPROVEMENT PROJECT

pennsylvania DEPARTMENT OF TRANSPORTATION

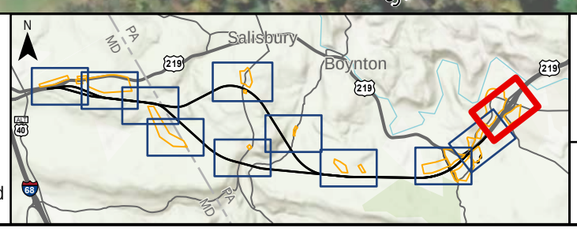
MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

LEGEND

- Noise Study Area (NSA)
- Build Alts. Edge of Shoulder
- Build Alts Bridge
- Build Alts. Mainlines Centerline
- Build Alts. Cut Line
- Build Alts. Fill Line
- Short-Term Measurement Site
- Long-Term Measurement Site
- Preliminary Noise Barrier Studied Feasible and Not Reasonable

Modeled Noise Receptors

- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited



PRELIMINARY ENGINEERING NOISE ANALYSIS REPORT
Location Map for Noise Receptors and Preliminary Noise Barrier

Appendix A
Sheet 11-11

Sept. 2024

N

Feet
0 205 410 820

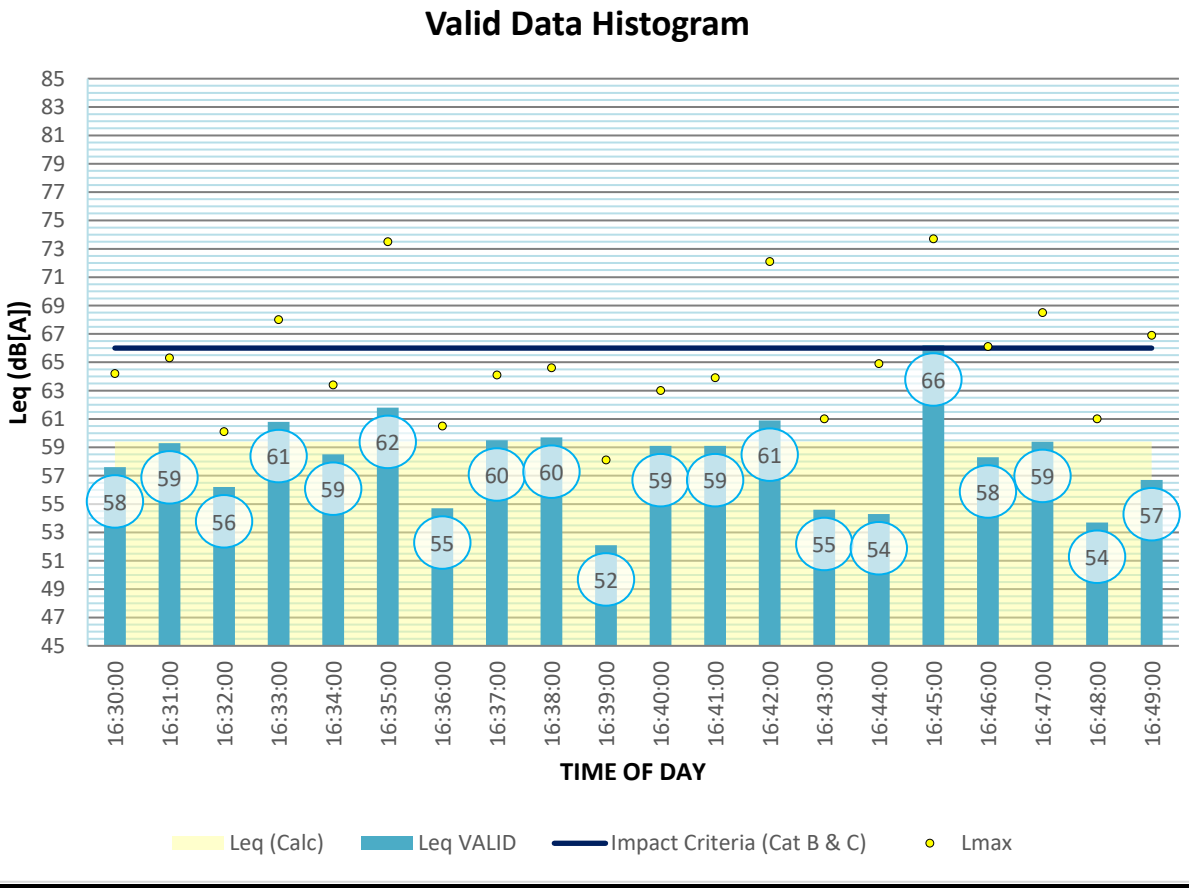
APPENDIX B

Noise Measurement Data

RECEPTOR MD-M-01 (MD-M1-1)

One 20-minute measurement was taken at this location on 2023 May 30 from 16:30 to 16:50. The 20-min Leq value was 59.4 dB(A), which rounds to 59 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-01: 20-min Leq = 59.4 dB(A) [59 dB(A)]



Receptor MD-M-01: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-01	**Site Address:** 3403 and 3359 Chestnut Ridge Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/30/2023 – 05/30/2023
Time Study Started: 16:30	**Time Study Ended:** 16:50
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.09862876, 39.69839249

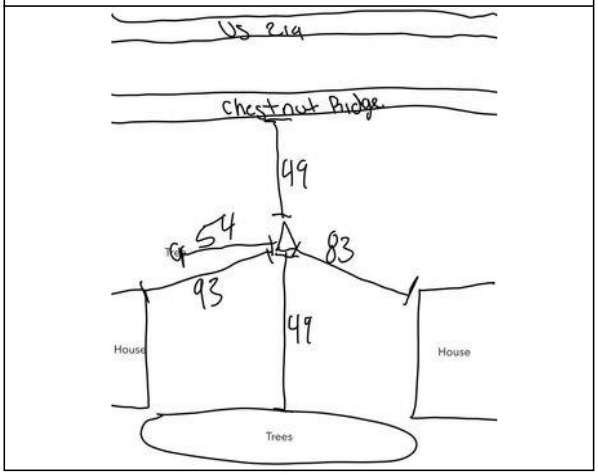
GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 82	**Relative Humidity (%): 39%**	**Sky:** Clear
Wind Speed (mph): 10 mph	**Wind Direction: ESE**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 12221
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114/113.88
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

Roadway Identification	**Roadway 1**		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

SITE PLAN VIEW SKETCH



MONITORING RESULTS	
Monitoring Leq:	59.4

MONITORING NOTES

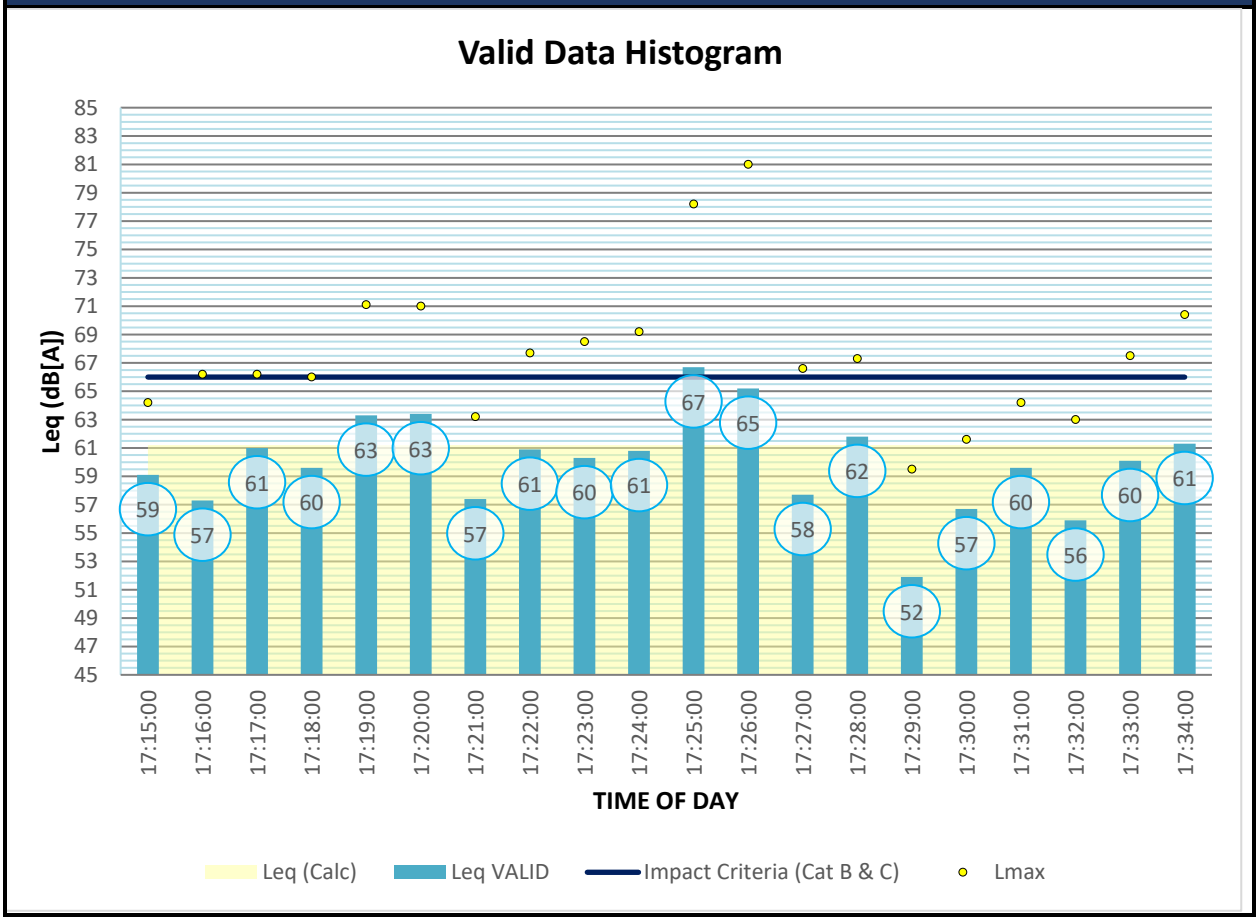
16:33 - Heavy truck drove by (sound record 2)
16:35 - Motorcycle drove by (sound record 3)
16:42 - Motorcycle drove by (sound record 4)
16:45 - Heavy Trucks drove by (sound records 5 and 6)
16:47 - Heavy Trucks drove by (sound record 7)
16:49 - Heavy truck drove by (sound record 8)

Receptor MD-M-01: Photographs

RECEPTOR MD-M-02 (MD-M1-3)

One 20-minute measurement was taken at this location on 2023 May 30 from 17:15 to 17:35. The 20-min Leq value was 61.2 dB(A), which rounds to 61 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-02: 20-min Leq = 61.2 dB(A) [61 dB(A)]



Receptor MD-M-02: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-02	**Site Address:** 3583 Chestnut Ridge Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/30/2023 – 05/30/2023
Time Study Started: 17:15	**Time Study Ended:** 17:35
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.09764522, 39.70125917

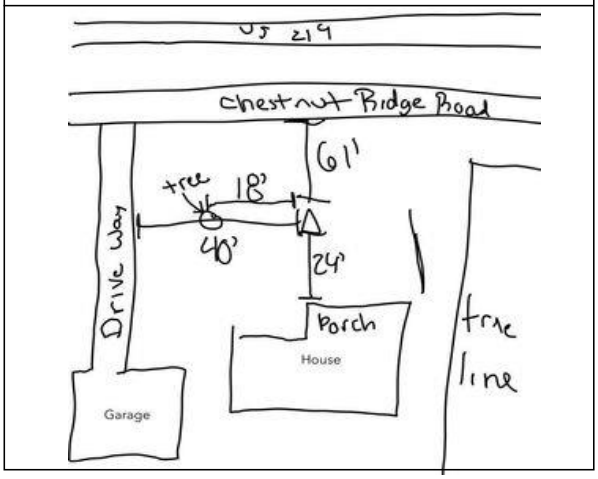
GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 82	**Relative Humidity (%): 33%**	**Sky:** Clear
Wind Speed (mph): 10 mph	**Wind Direction: ESE**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.91/114.01
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

SITE PLAN VIEW SKETCH

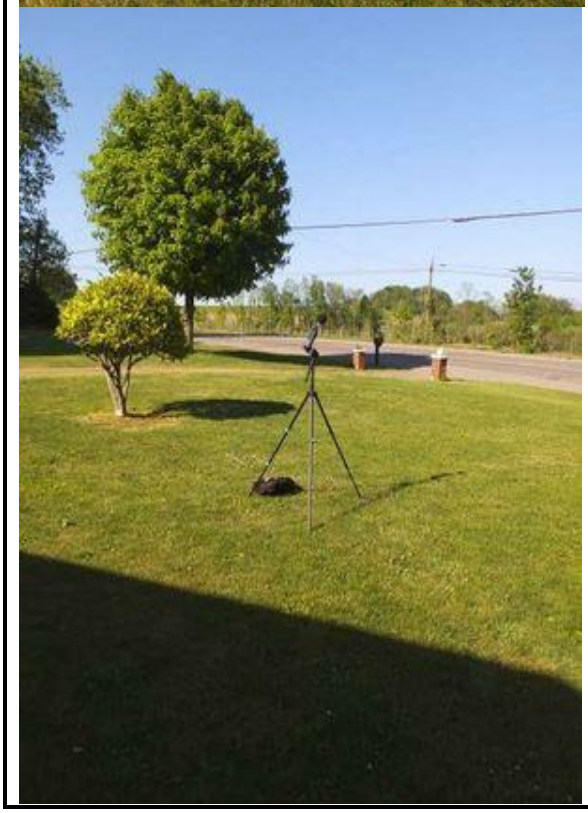


MONITORING RESULTS	
Monitoring Leq:	61.2

MONITORING NOTES

17:16 - Heavy truck drove by (sound record 1)
17:17 - Heavy truck drove by (sound record 2)
17:19 - Heavy truck drove by (sound records 4 and 5)
17:20 - Heavy truck drove by and backed up creating a beeping sound (sound record 6)
17:22 - Heavy truck backing up creating a beeping sound (sound record 7 and 8)
17:24 - Heavy truck drove by (sound record 9)
17:25 - Heavy truck drove by (sound record 12)
17:26 - Heavy truck drove by (sound record 13)
17:28 - Heavy truck drove by (sound record 16)
17:33 - Heavy truck drove by (sound record 17)
17:34 - Heavy truck drove by (sound records 18 and 19)

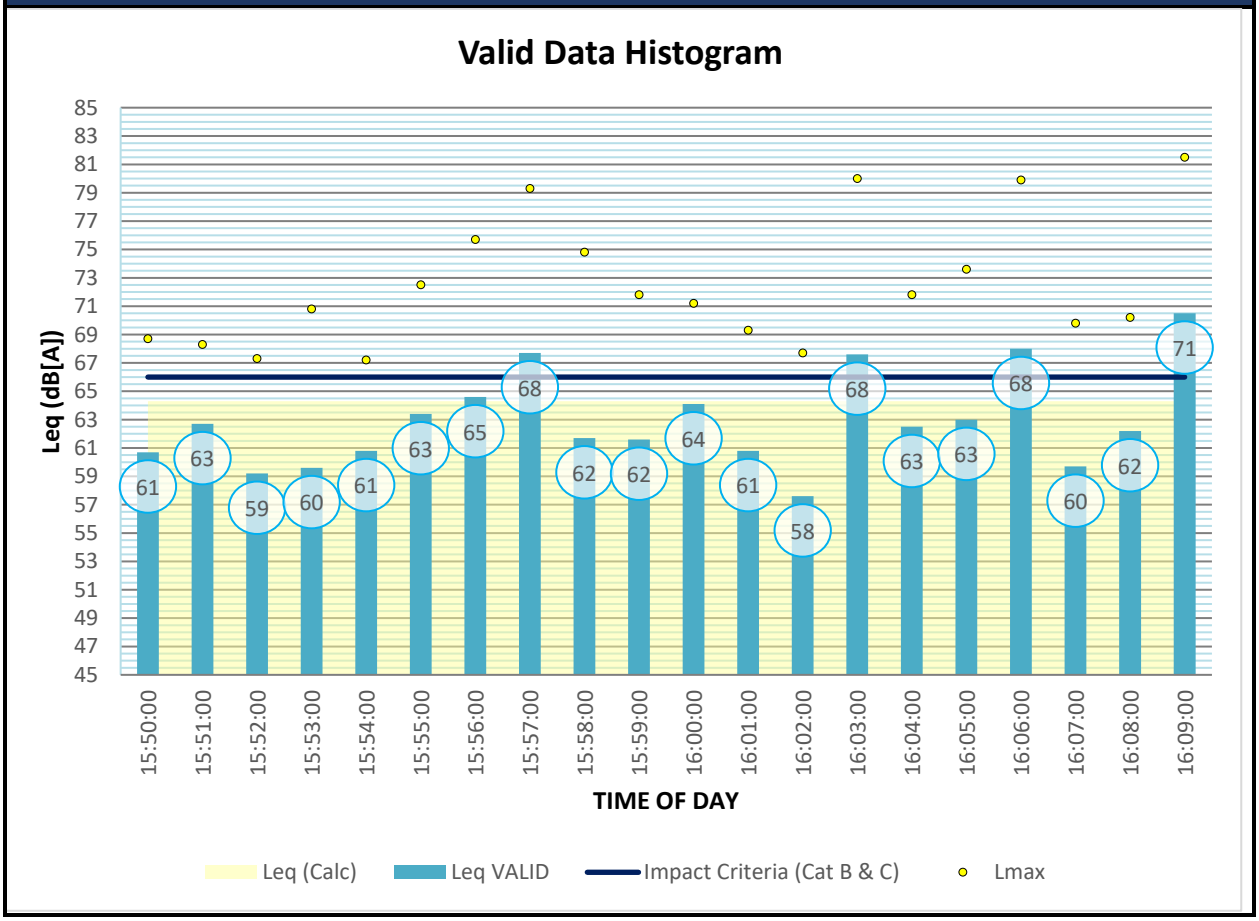
Receptor MD-M-02: Photographs



RECEPTOR MD-M-03 (MD-M1-4)

One 20-minute measurement was taken at this location on 2023 May 30 from 15:50 to 16:10. The 20-min Leq value was 64.3 dB(A), which rounds to 64 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-03: 20-min Leq = 64.3 dB(A) [64 dB(A)]



Receptor MD-M-03: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-03	**Site Address:** 3681 Chestnut Ridge Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/30/2023 – 05/30/2023
Time Study Started: 15:50	**Time Study Ended:** 16:10
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.09728026, 39.70263355

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 82	**Relative Humidity (%): 39%**	**Sky:** Clear
Wind Speed (mph): 10 mph	**Wind Direction: ESE**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.15/113.9
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

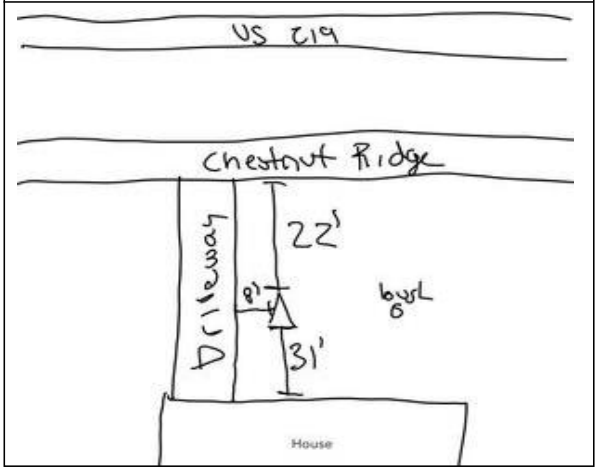
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	64.3

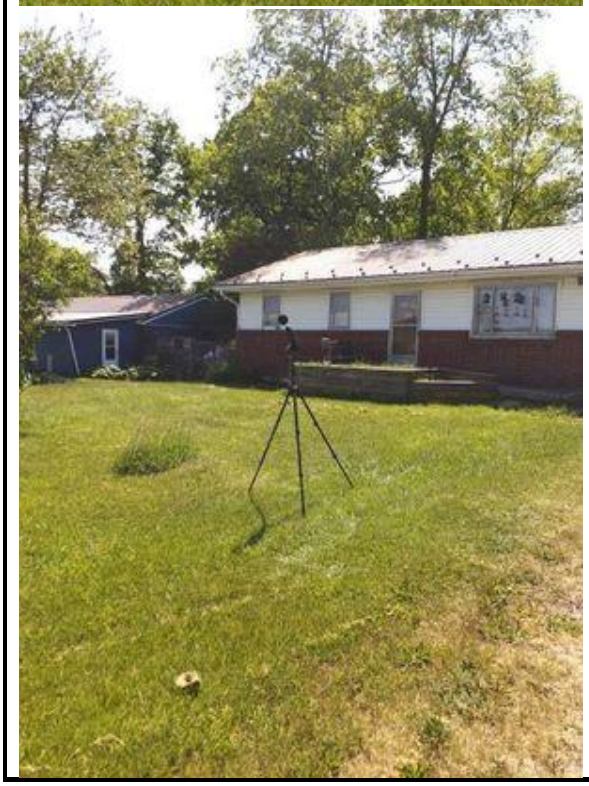
MONITORING NOTES

15:57 - Heavy truck drove by (sound record 20)
16:03 - Heavy truck drove by (sound record 30)
16:06 - Heavy truck drove by (sound records 37 and 38)
16:09 - Heavy truck drove by (sound record 44, 45 and 46)

SITE PLAN VIEW SKETCH



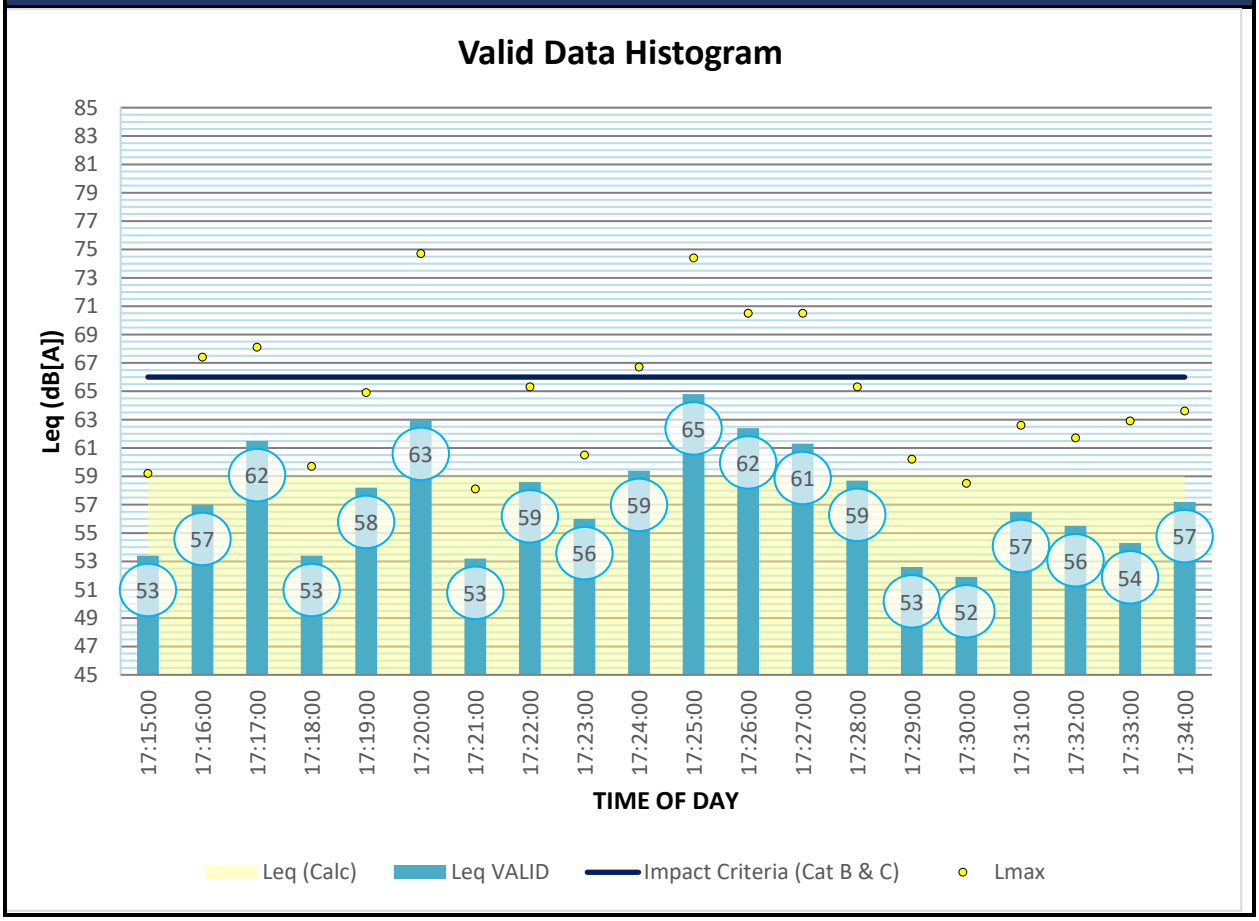
Receptor MD-M-03: Photographs



RECEPTOR MD-M-04 (MD-M1-6)

One 20-minute measurement was taken at this location on 2023 May 30 from 17:15 to 17:35. The 20-min Leq value was 59.0 dB(A), which rounds to 59 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-04: 20-min Leq = 59.0 dB(A) [59 dB(A)]



Receptor MD-M-04: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-04	**Site Address:** 3789 Chestnut Ridge Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/30/2023 – 05/30/2023
Time Study Started: 17:15	**Time Study Ended:** 17:35
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.09710808, 39.70415469

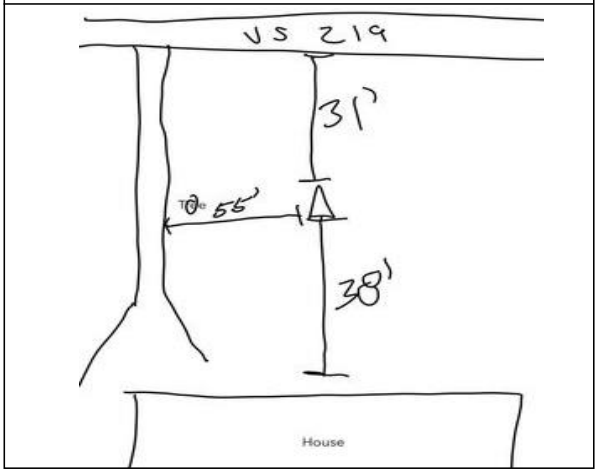
GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 82	**Relative Humidity (%): 33%**	**Sky:** Clear
Wind Speed (mph): 14 mph	**Wind Direction: SE**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 12221
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.13/113.92
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

SITE PLAN VIEW SKETCH

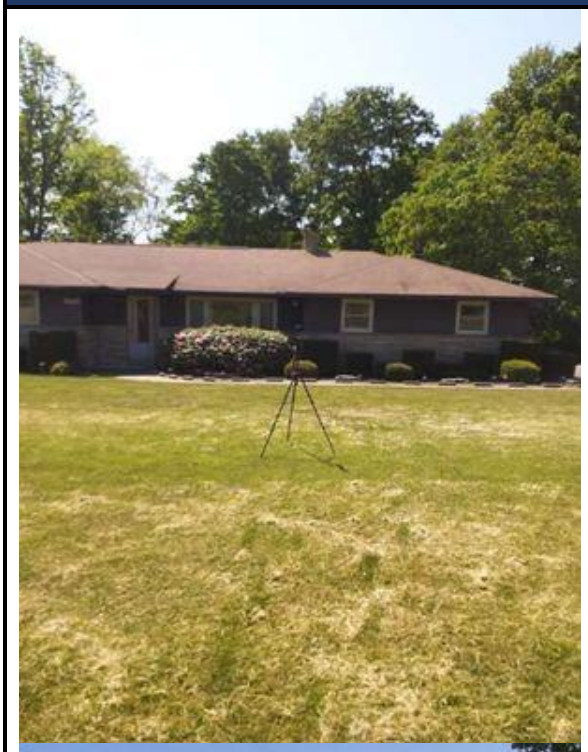


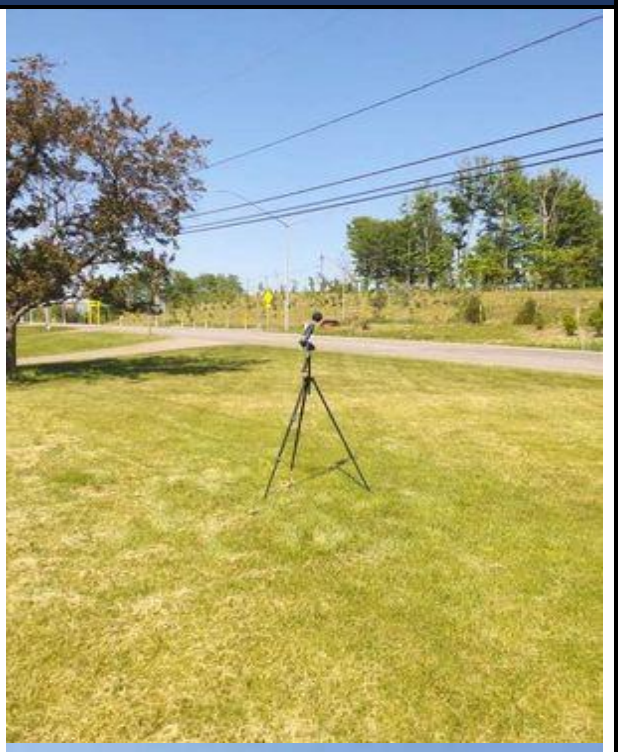
MONITORING RESULTS	
Monitoring Leq:	59.0

MONITORING NOTES

17:17 - Heavy truck drove by (sound record 2)
17:20 - Heavy truck drove by (sound record 3)
17:25 - Vehicle with loud muffler drove by (sound record 7)
17:26 - Heavy truck drove by (sound record 8)
17:27 - Heavy truck drove by (sound record 10)

Receptor MD-M-04: Photographs

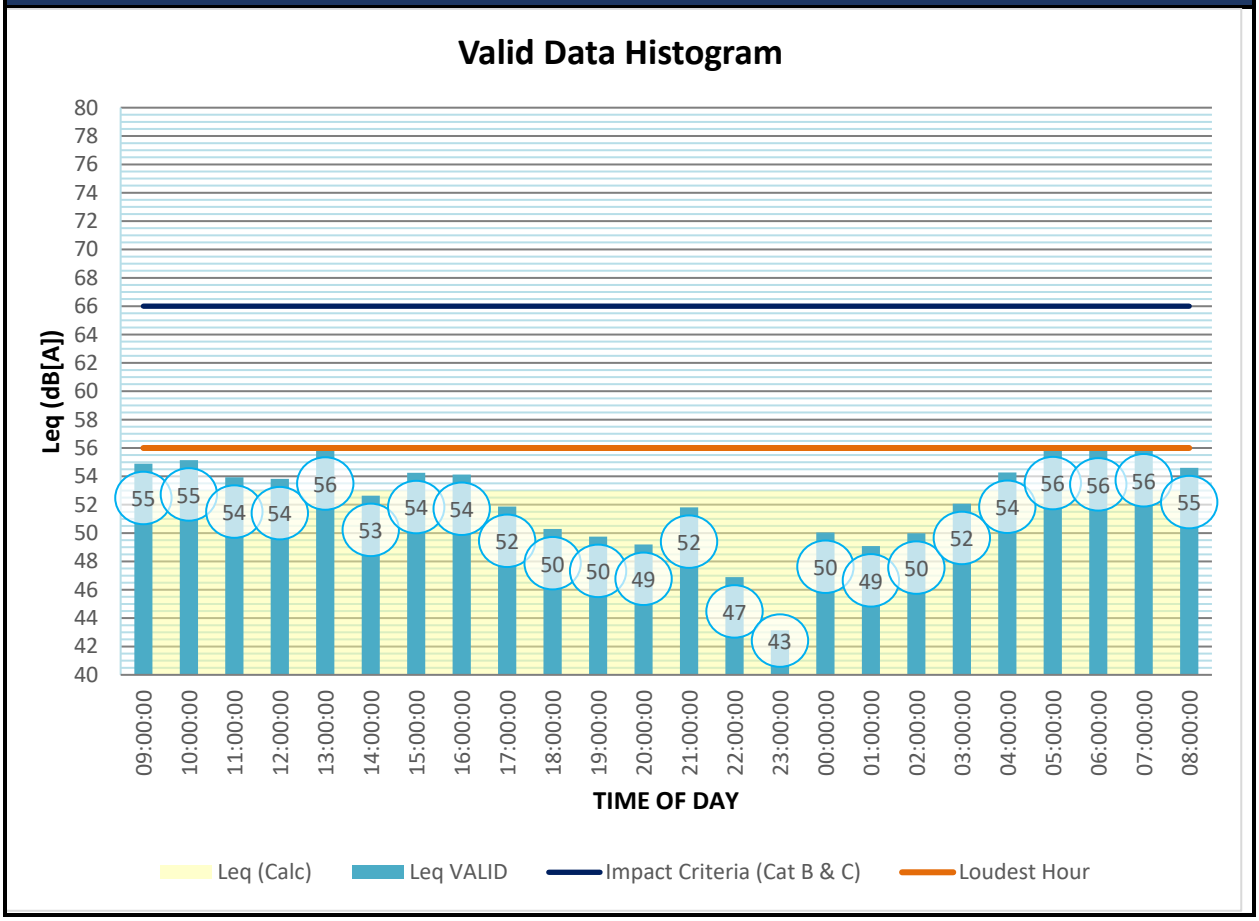




RECEPTOR MD-M-05 (MD-M2-1)

One 24-hour measurement was taken at this location on 2023 May 30-May 31 from 9:00 to 9:00. The 24-hour Leq value was 53.2 dB(A), which rounds to 53 dB(A). 10-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-05: 24-hour Leq = 53.2 dB(A) [53 dB(A)]



Receptor MD-M-05: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-05	**Site Address:** 3992 Chestnut Ridge Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/30/2023 – 05/31/2023
Time Study Started: 9:00	**Time Study Ended:** 9:00
Study Duration: 24 hours (5 min Intervals)	**GPS Location X/Y:** -79.09490421, 39.70649778

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 68	**Relative Humidity (%): 65%**	**Sky:** Clear
Wind Speed (mph): 9 mph	**Wind Direction: SE**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.06/114
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

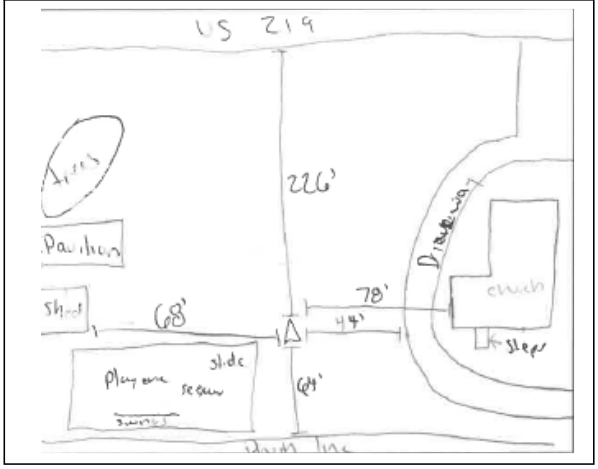
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS

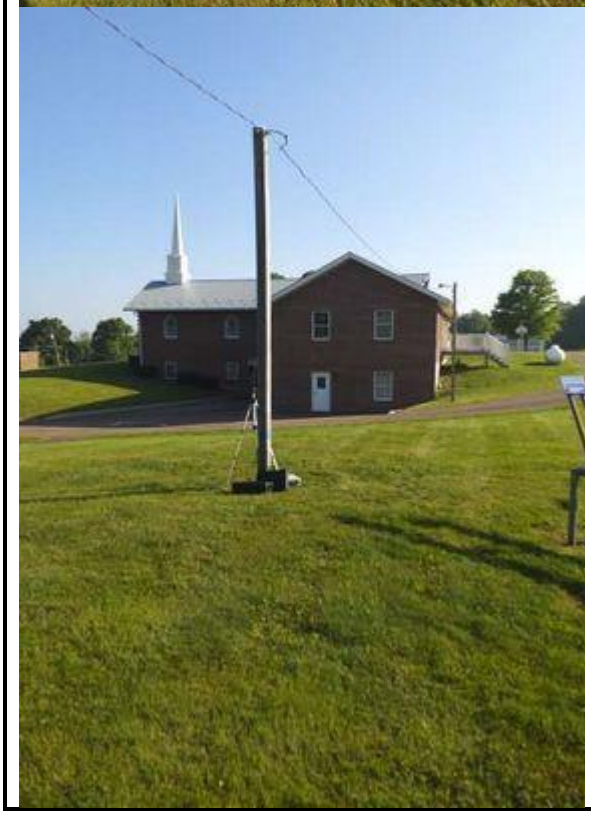
Monitoring Leq:	53.2

MONITORING NOTES

SITE PLAN VIEW SKETCH



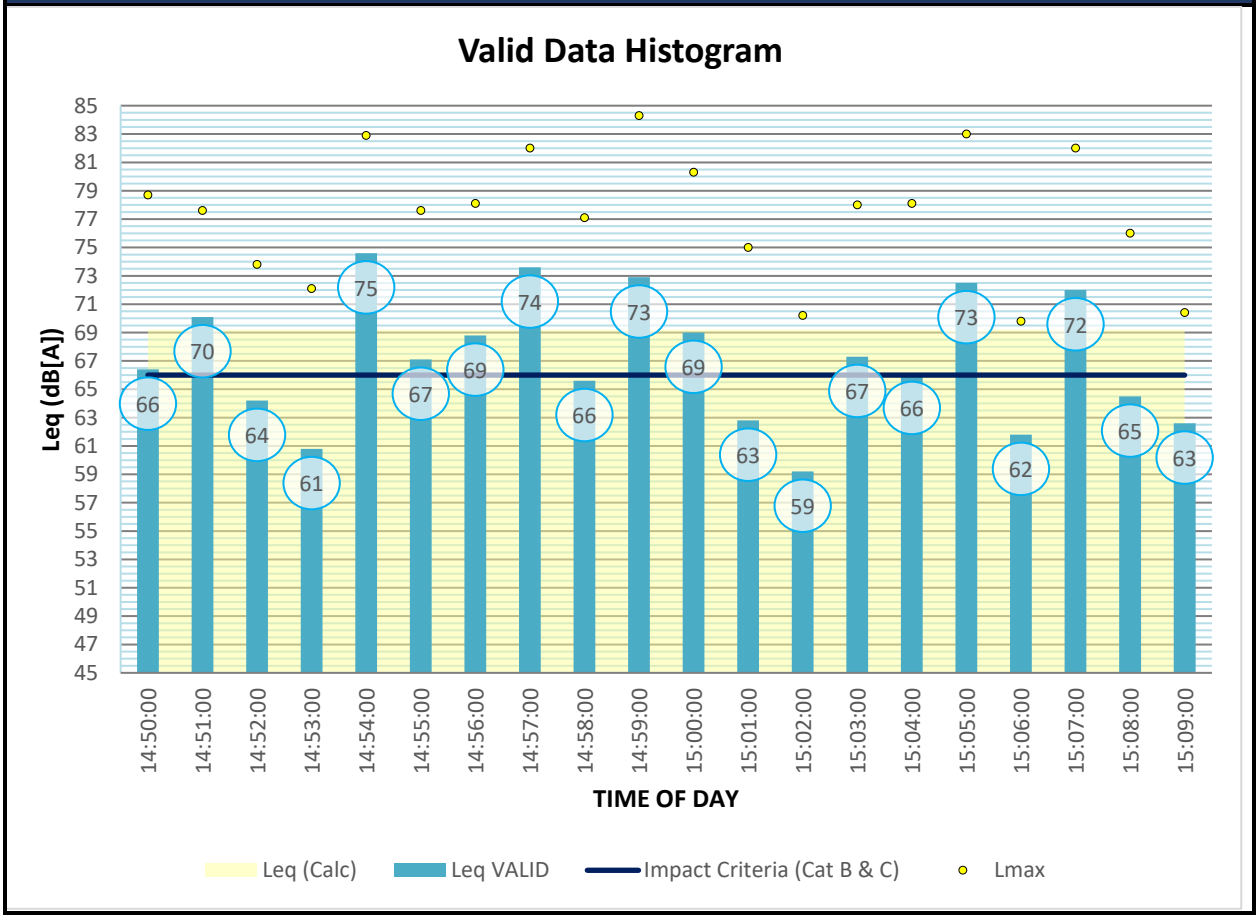
Receptor MD-M-05: Photographs



RECEPTOR MD-M-06 (MD-M3-1)

One 20-minute measurement was taken at this location on 2023 May 30 from 14:50 to 15:10. The 20-min Leq value was 69.2 dB(A), which rounds to 69 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-06: 20-min Leq = 69.2 dB(A) [69 dB(A)]



Receptor MD-M-06: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-06	**Site Address:** 4041 Chestnut Ridge Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/30/2023 – 05/30/2023
Time Study Started: 14:50	**Time Study Ended:** 15:10
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.09552604, 39.70753937

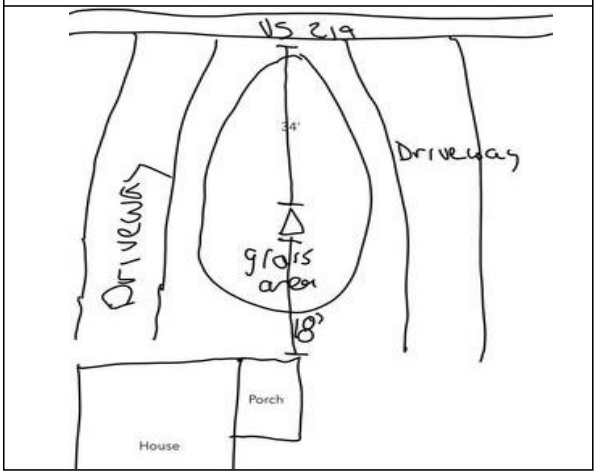
GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 82	**Relative Humidity (%): 39%**	**Sky:** Cloudy
Wind Speed (mph): 10 mph	**Wind Direction: ESE**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.79/114.24
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

SITE PLAN VIEW SKETCH



MONITORING RESULTS

Monitoring Leq:	69.2

MONITORING NOTES

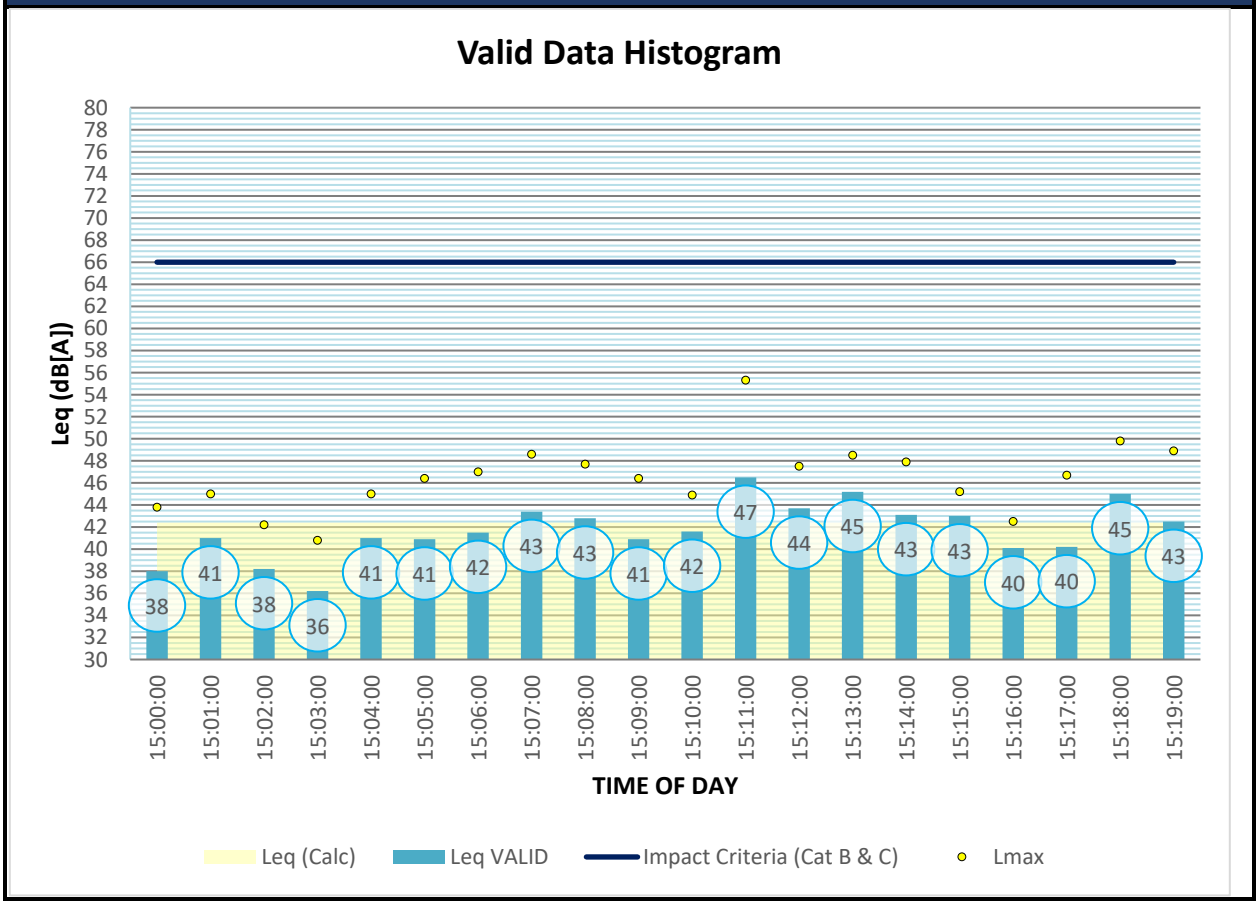
14:50 - Heavy truck drove by (sound record 3)
14:51 - Heavy truck drove by (sound record 5)
14:52 - Heavy truck drove by (sound records 9)
14:53 - Heavy truck drove by (sound record 10)
14:54 - Heavy truck drove by (sound records 13-16)
14:55 - Heavy truck drove by (sound records 17 and 18)
14:56 - Heavy truck drove by (sound records 19 and 20)
14:57 - Heavy truck drove by (sound record 21)
14:58 - Heavy truck drove by (sound record 22)
14:59 - Heavy truck drove by (sound record 23)
15:00 - Heavy truck drove by (sound record 24)
15:01 - Heavy truck drove by (sound record 26)
15:02 - Heavy truck drove by (sound records 27 and 28)
15:03 - Heavy truck drove by (sound records 29-31)
15:04 - Heavy truck drove by (sound record 32)
15:05 - Heavy truck drove by (sound records 33 and 34)
15:06 - Heavy truck drove by (sound records 35 and 36)
15:07 - Heavy truck drove by (sound records 38)
15:08 - Heavy truck drove by (sound records 40)
15:09 - Heavy truck drove by (sound records 43)

Receptor MD-M-06: Photographs

RECEPTOR MD-M-07 (MD-M4-2)

One 20-minute measurement was taken at this location on 2023 May 31 from 15:00 to 15:20. The 20-min Leq value was 42.4 dB(A), which rounds to 42 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-07: 20-min Leq = 42.4 dB(A) [42 dB(A)]



Receptor MD-M-07: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-7	**Site Address:** 174 Old Salisbury Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/31/2023 – 05/31/2023
Time Study Started: 15:00	**Time Study Ended:** 15:20
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.09218121, 39.70886514

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 81	**Relative Humidity (%): 33%**	**Sky:** Clear
Wind Speed (mph): 3 mph	**Wind Direction: VAR**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.04/114.05
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

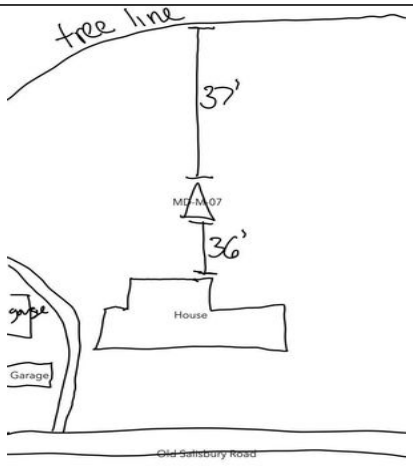
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS

Monitoring Leq:	42.4

MONITORING NOTES

SITE PLAN VIEW SKETCH

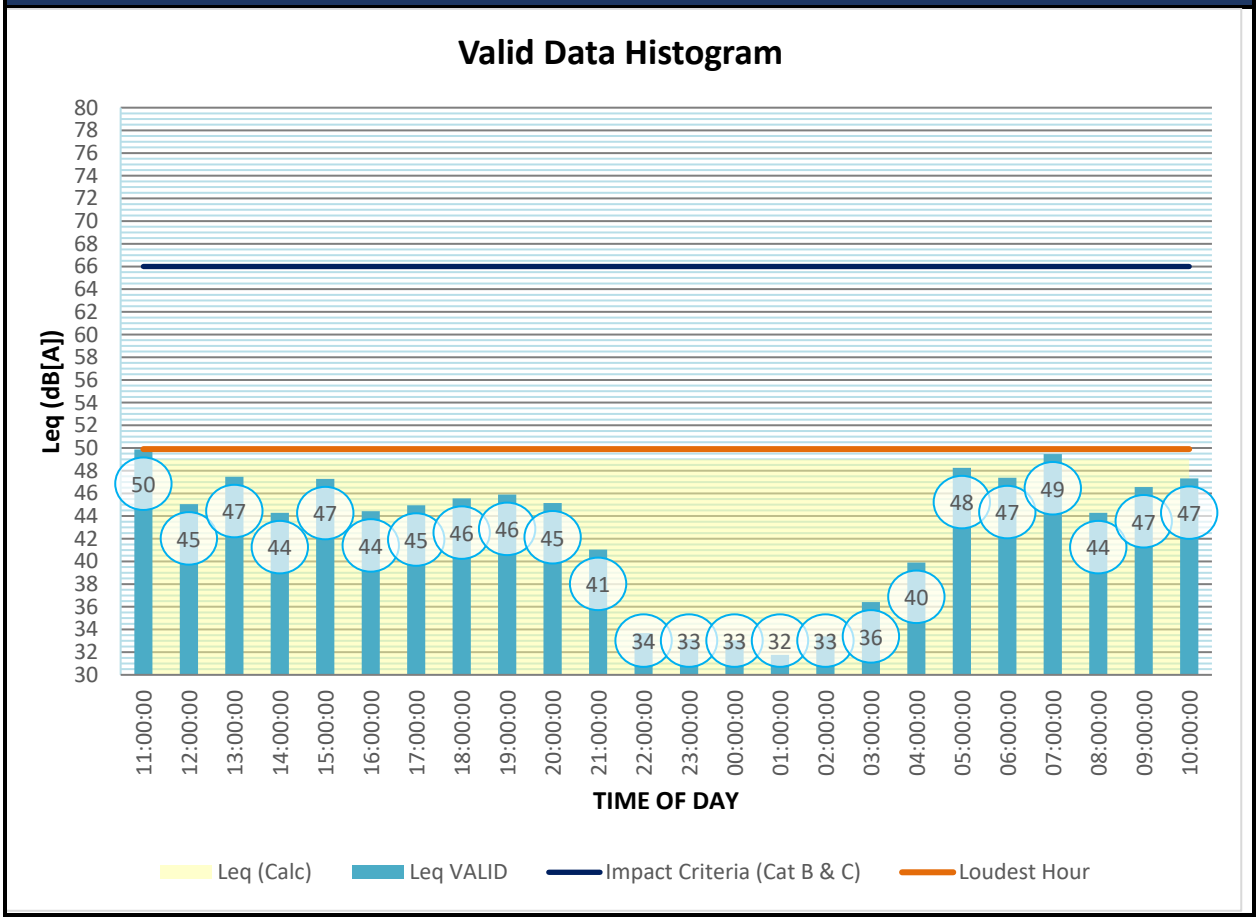


Receptor MD-M-07: Photographs

RECEPTOR MD-M-08 (MD-M4-5)

One 24-hour measurement was taken at this location on 2023 May 31-June 1 from 11:00 to 11:00. The 24-hour Leq value was 48.7 dB(A), which rounds to 49 dB(A). 10-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-08: 24-hour Leq = 48.7 dB(A) [49 dB(A)]



Receptor MD-M-08: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-08	**Site Address:** 324 Old Salisbury Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/31/2023 – 06/01/2023
Time Study Started: 11:00	**Time Study Ended:** 11:00
Study Duration: 24 hours (5 min Intervals)	**GPS Location X/Y:** -79.09020332, 39.71048927

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 73	**Relative Humidity (%): 48%**	**Sky:** Clear
Wind Speed (mph): 3 mph	**Wind Direction: VAR**	**Source:** Weather Underground

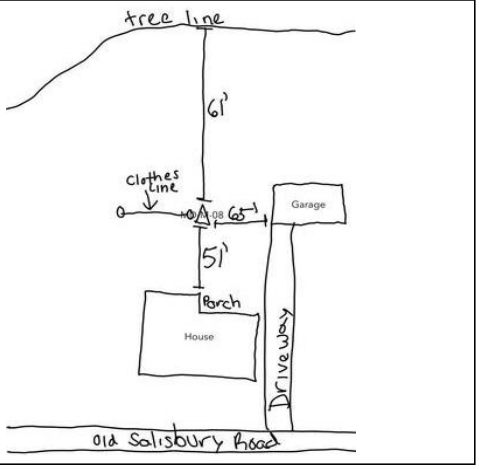
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.03/113.98
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

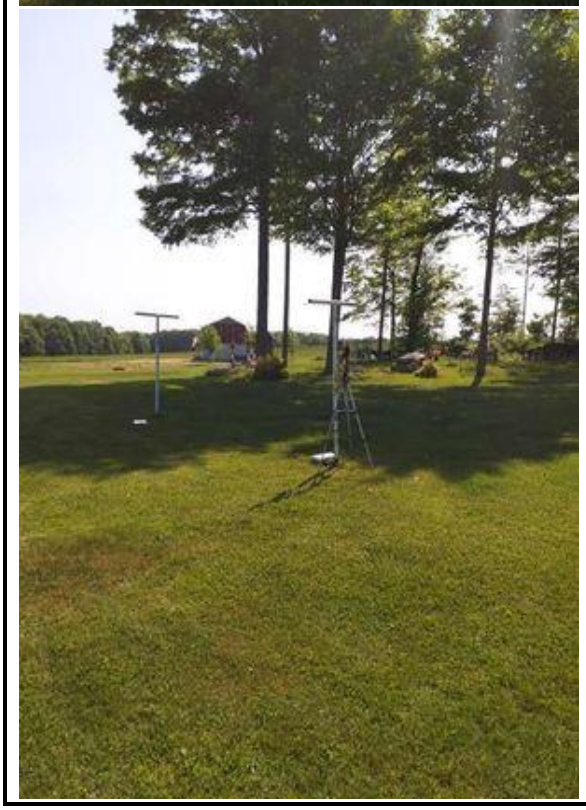
MONITORING RESULTS	
Monitoring Leq:	48.7

MONITORING NOTES

SITE PLAN VIEW SKETCH



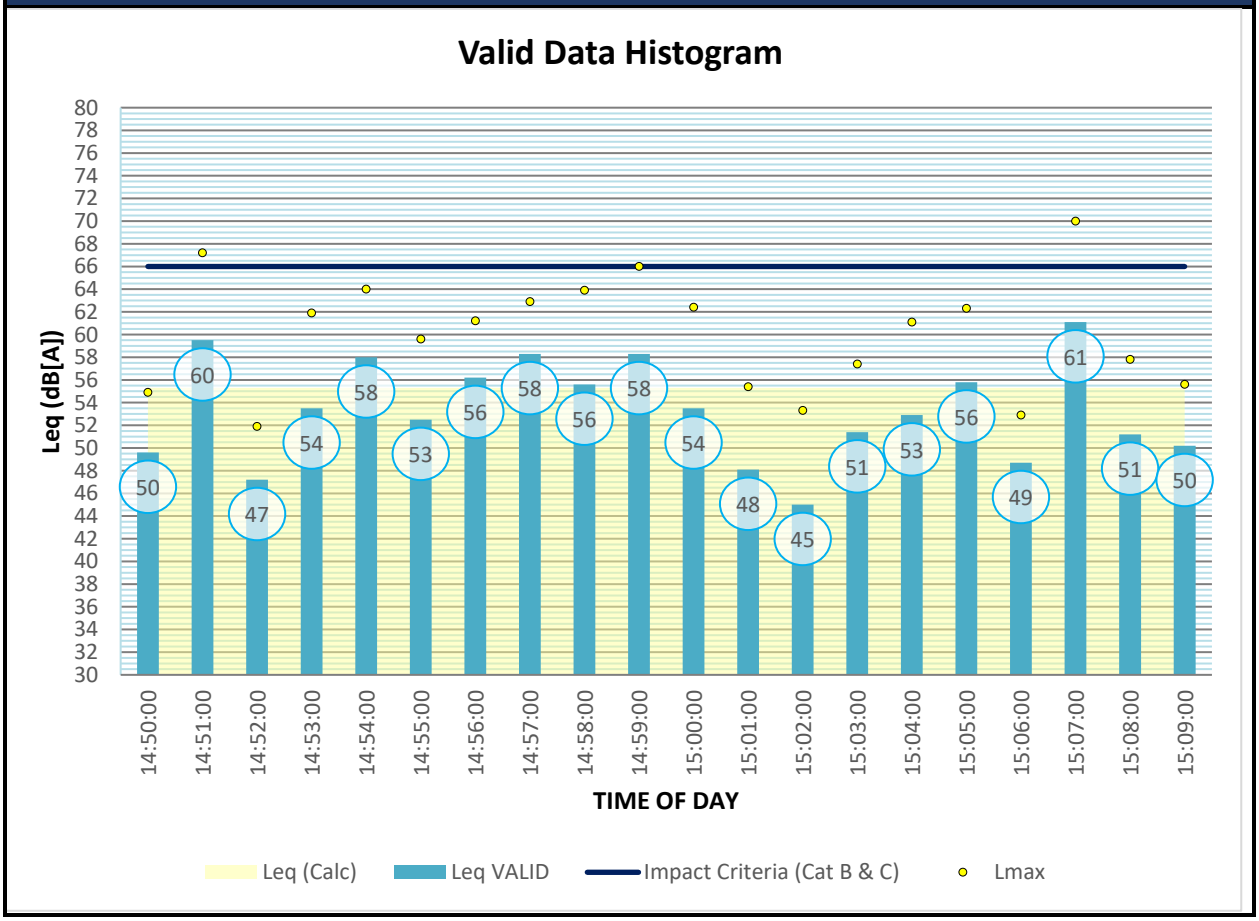
Receptor MD-M-08: Photographs



RECEPTOR MD-M-09 (MD-M4-7)

One 20-minute measurement was taken at this location on 2023 May 30 from 14:50 to 15:10. The 20-min Leq value was 55.3 dB(A), which rounds to 55 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-09: 20-min Leq = 55.3 dB(A) [55 dB(A)]



Receptor MD-M-09: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-09	**Site Address:** 107 Old Salisbury Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/30/2023 – 05/30/2023
Time Study Started: 14:50	**Time Study Ended:** 15:10
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.09382879, 39.70882741

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 80	**Relative Humidity (%): 36%**	**Sky:** Clear
Wind Speed (mph): 6 mph	**Wind Direction: VAR**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 12221
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.25/114.11
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

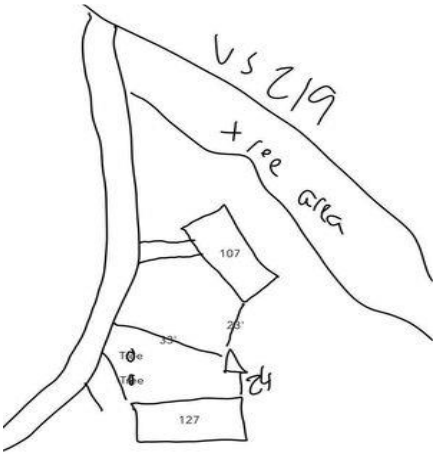
TRAFFIC COUNT DATA				
Roadway Identification	**Roadway 1**		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	55.3

MONITORING NOTES

14:51 - Heavy truck drove by (sound record 1)
14:59 - Heavy truck drove by (sound record 2)
15:07 - Car drove by meter on Old Salisbury Road (gravel packed road) (Sound Record 3)

SITE PLAN VIEW SKETCH

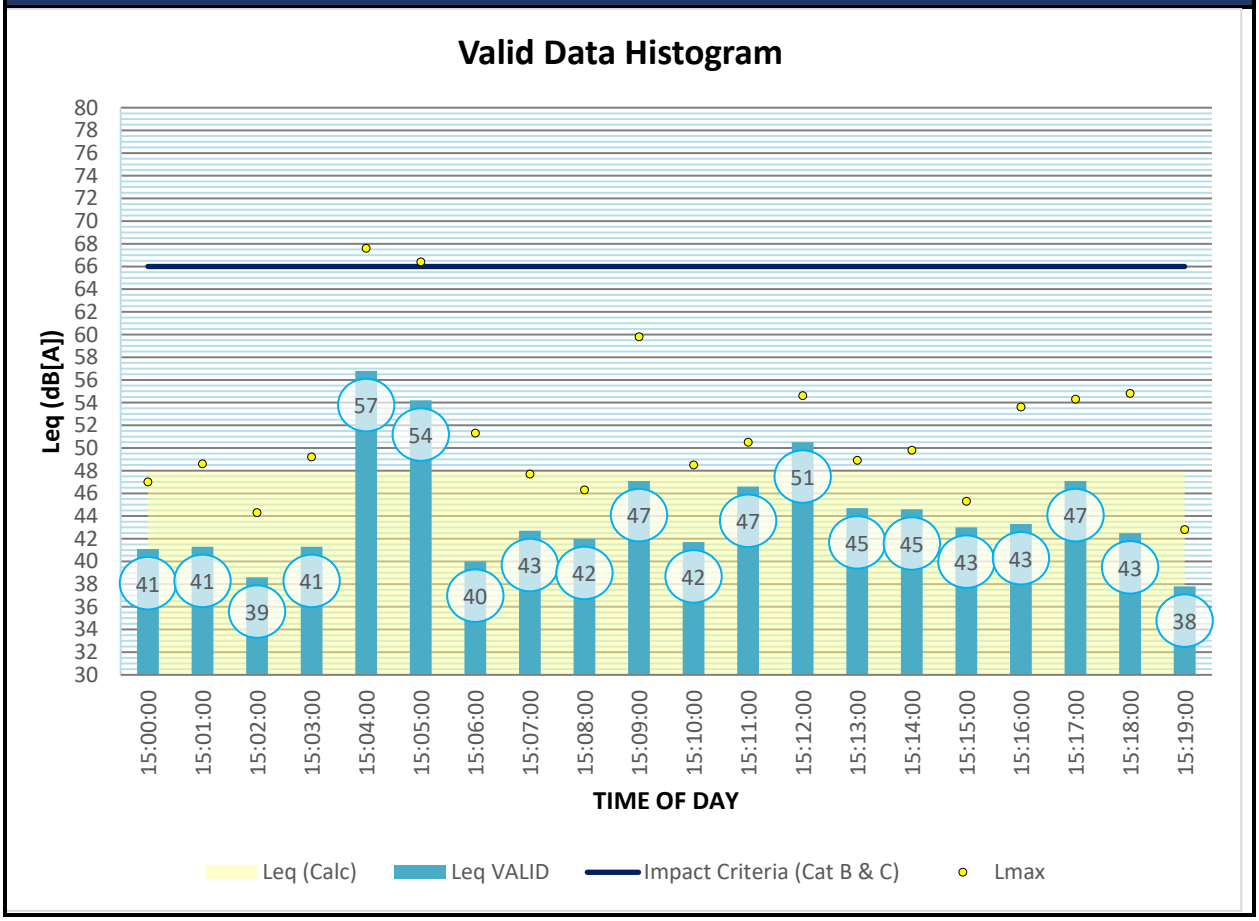


Receptor MD-M-09: Photographs

RECEPTOR MD-M-10 (MD-M4-12)

One 20-minute measurement was taken at this location on 2023 May 30 from 14:50 to 15:10. The 20-min Leq value was 47.9 dB(A), which rounds to 48 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-10: 20-min Leq = 47.9 dB(A) [48 dB(A)]



Receptor MD-M-10: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-10	**Site Address:** 345 Old Salisbury Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/31/2023 – 05/31/2023
Time Study Started: 15:00	**Time Study Ended:** 15:20
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.09013866, 39.71142272

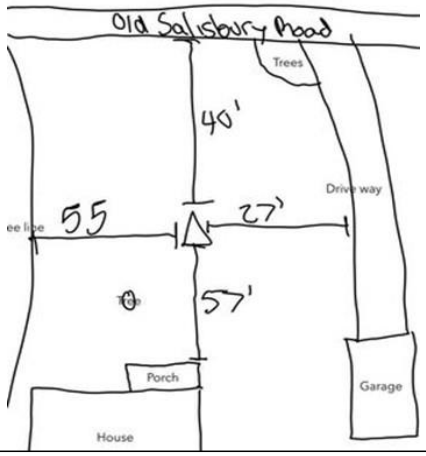
GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 81	**Relative Humidity (%): 33%**	**Sky:** Clear
Wind Speed (mph): 3 mph	**Wind Direction: VAR**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 12221
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.97/114.1
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

SITE PLAN VIEW SKETCH



MONITORING RESULTS	
Monitoring Leq:	47.9

MONITORING NOTES

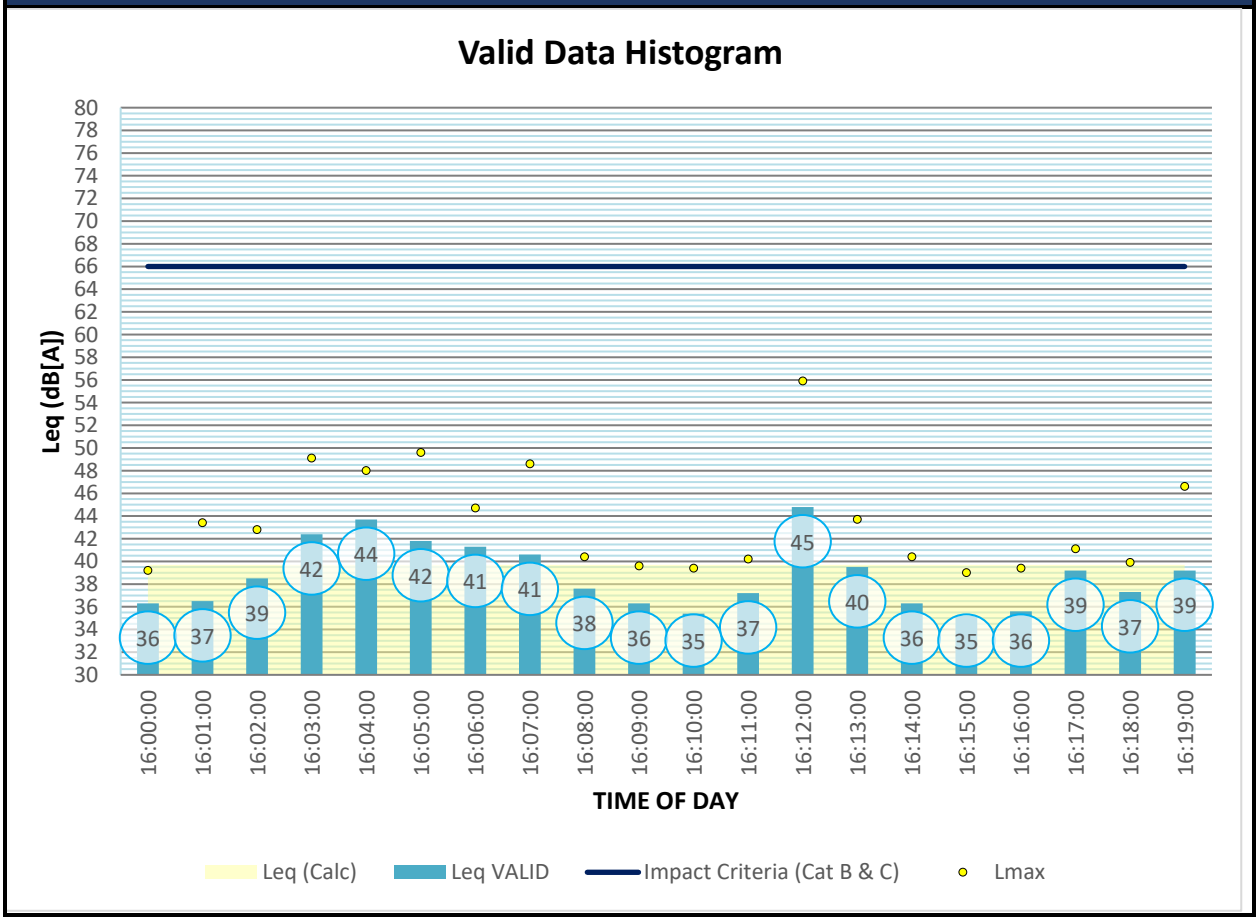
15:04 – Bird Chirping (sound record 1)

Receptor MD-M-010: Photographs

RECEPTOR MD-M-11 (MD-M4-14)

One 20-minute measurement was taken at this location on 2023 May 30 from 14:50 to 15:10. The 20-min Leq value was 39.7 dB(A), which rounds to 40 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-11: 20-min Leq = 39.7 dB(A) [40 dB(A)]



Receptor MD-M-11: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-11	**Site Address:** 4880 Chestnut Ridge Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/31/2023 – 05/31/2023
Time Study Started: 16:00	**Time Study Ended:** 16:20
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.08660112, 39.71692252

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 84	**Relative Humidity (%): 26%**	**Sky:** Clear
Wind Speed (mph): 6 mph	**Wind Direction: VAR**	**Source:** Weather Underground

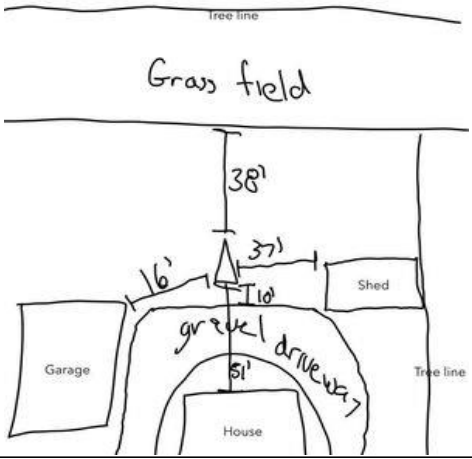
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.95/113.97
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

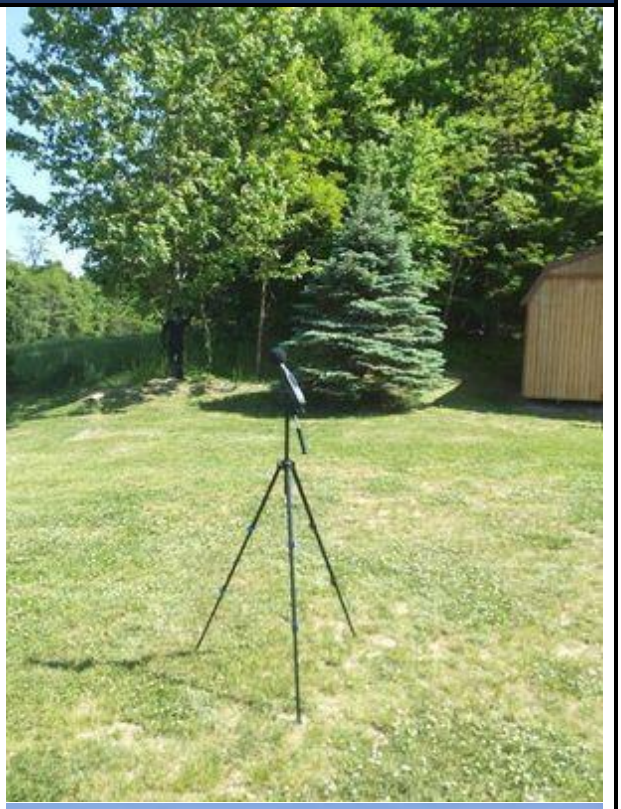
MONITORING RESULTS	
Monitoring Leq:	39.7

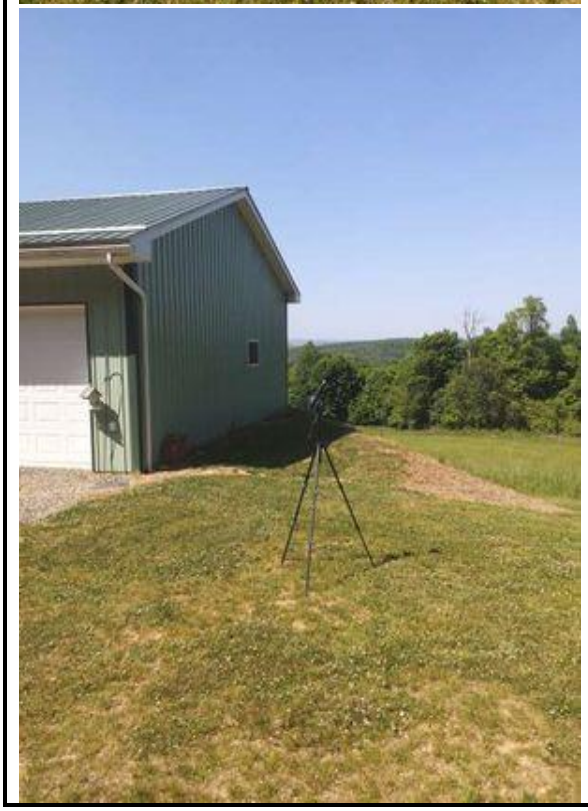
MONITORING NOTES

SITE PLAN VIEW SKETCH



Receptor MD-M-11: Photographs

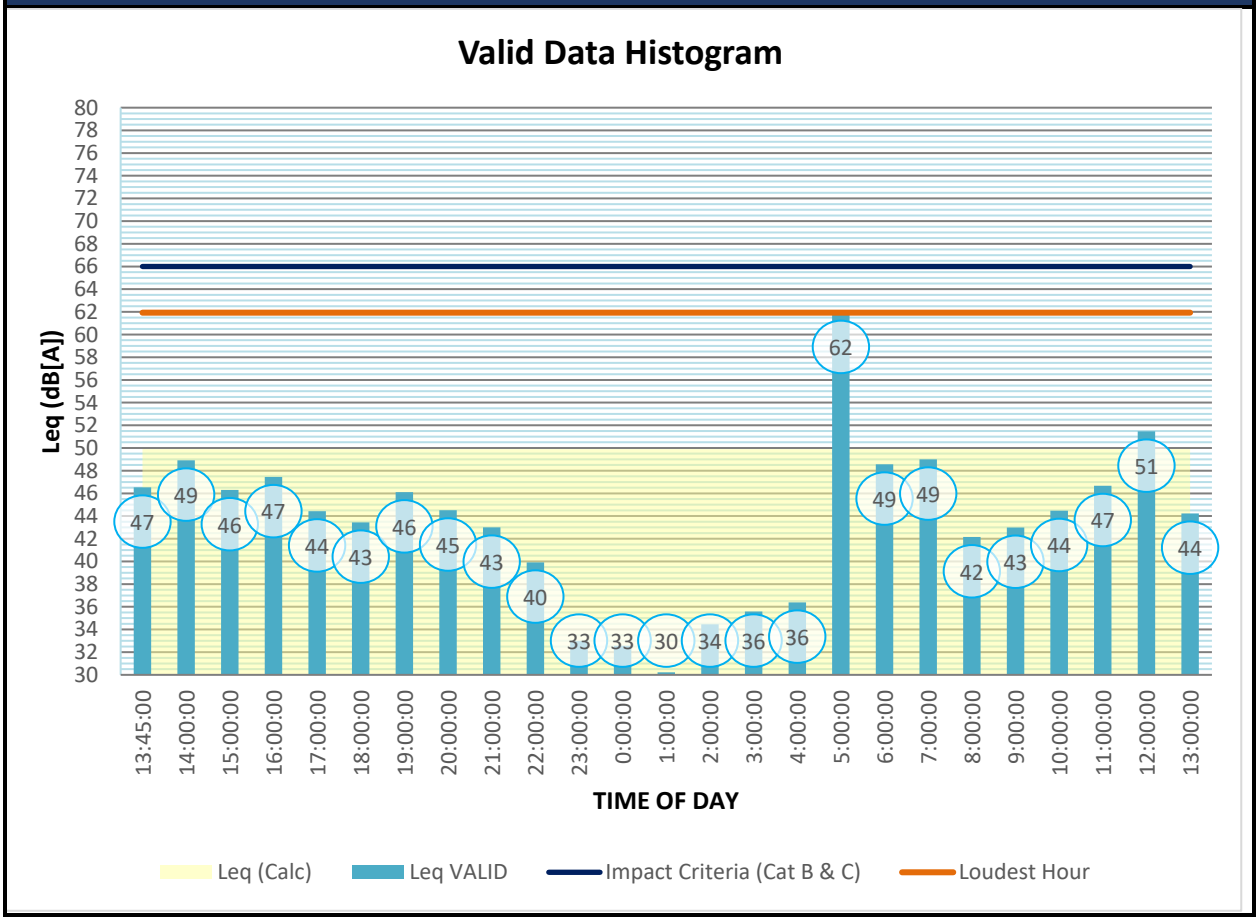




RECEPTOR MD-M-12 (MD-M5-1)

One 24-hour measurement was taken at this location on 2023 June 6-June 7 from 13:45 to 13:45. The 24-hour Leq value was 49.9 dB(A), which rounds to 50 dB(A). 10-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-12: 24-hour Leq = 49.9 dB(A) [50 dB(A)]



Receptor MD-M-12: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-12	**Site Address:** 4882 Chestnut Ridge Road, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 06/06/2023 – 06/07/2023
Time Study Started: 13:45	**Time Study Ended:** 13:45
Study Duration: 24 hours (5 min Intervals)	**GPS Location X/Y:** -79.09218121, 39.70886514

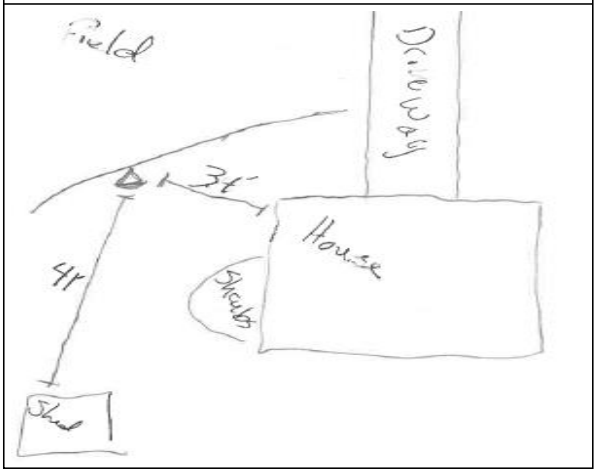
GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 73	**Relative Humidity (%): 47%**	**Sky:** Haze
Wind Speed (mph): 7 mph	**Wind Direction: VAR**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.97/113.94
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

SITE PLAN VIEW SKETCH



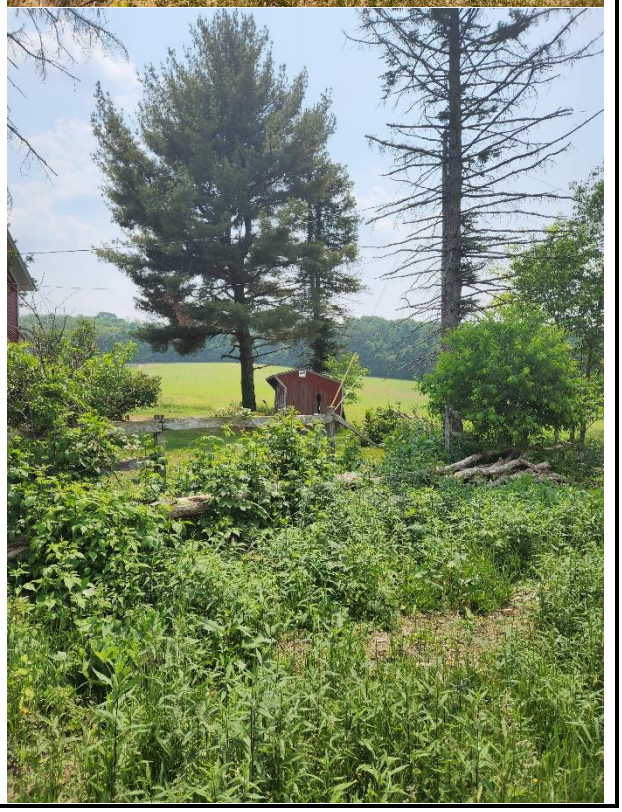
MONITORING RESULTS

Monitoring Leq:	49.9

MONITORING NOTES

05:00 - Birds chirping (sound record 1 and 2)
06:00 - Birds chirping (sound record 3)
07:00 - Loud truck and birds chirping (sound record 4)
12:00 - Either a loud tractor or truck (sound record 5)

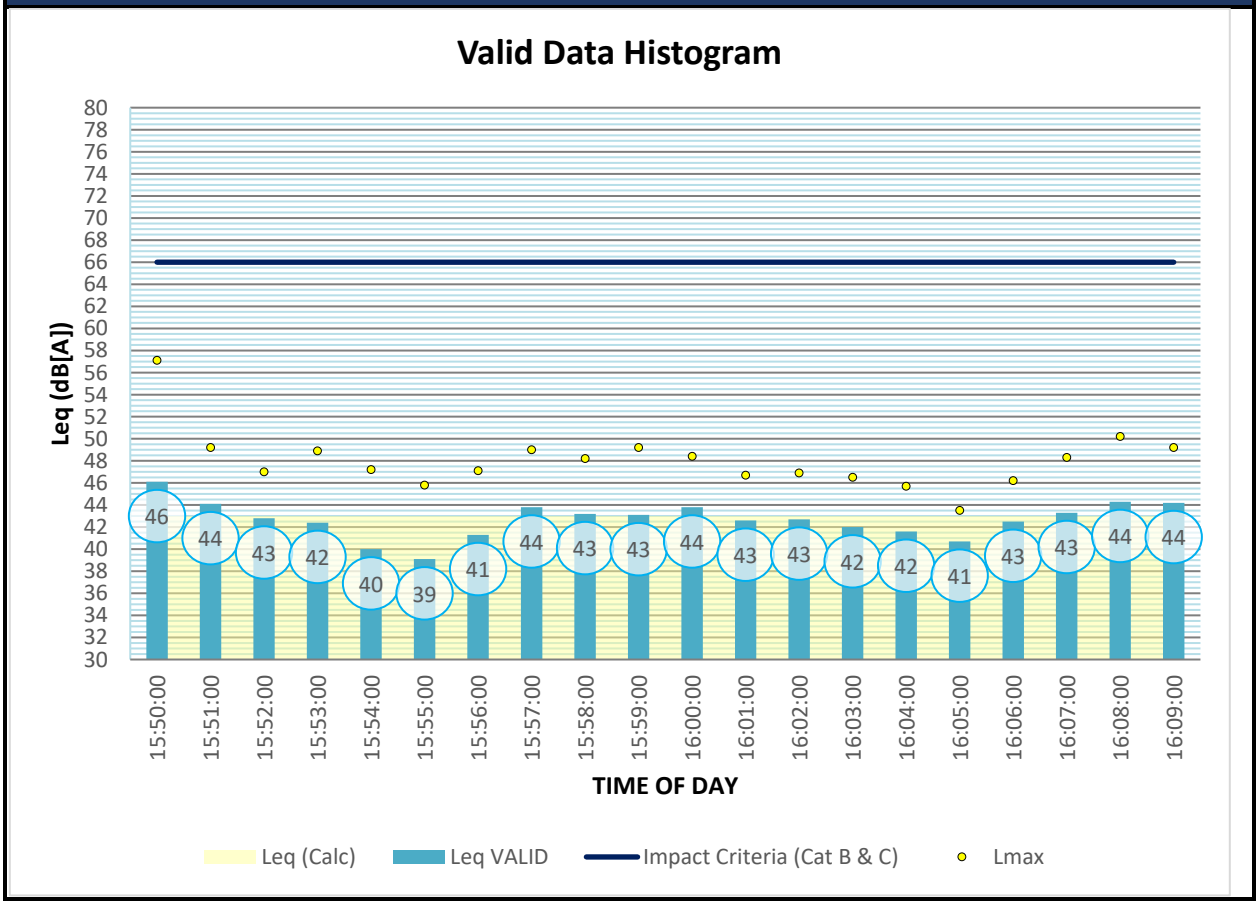
Receptor MD-M-12: Photographs



RECEPTOR MD-M-13 (MD-M5-2)

One 20-minute measurement was taken at this location on 2023 May 30 from 15:50 to 16:10. The 20-min Leq value was 43.0 dB(A), which rounds to 43 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-13: 20-min Leq = 43.0 dB(A) [43 dB(A)]



Receptor MD-M-13: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-13	**Site Address:** 2583 Westview Crossing, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 06/07/2023 – 06/07/2023
Time Study Started: 15:50	**Time Study Ended:** 16:10
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** -79.0725742°, 39.7193245°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 72	**Relative Humidity (%): 31%**	**Sky:** Smoke
Wind Speed (mph): 7 mph	**Wind Direction: NNW**	**Source:** Weather Underground

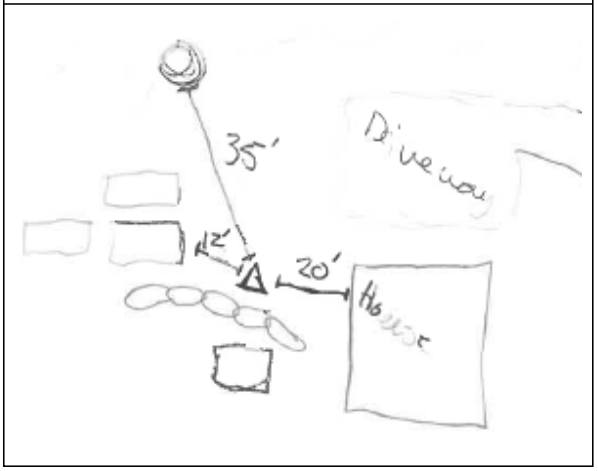
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.03/113.99
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

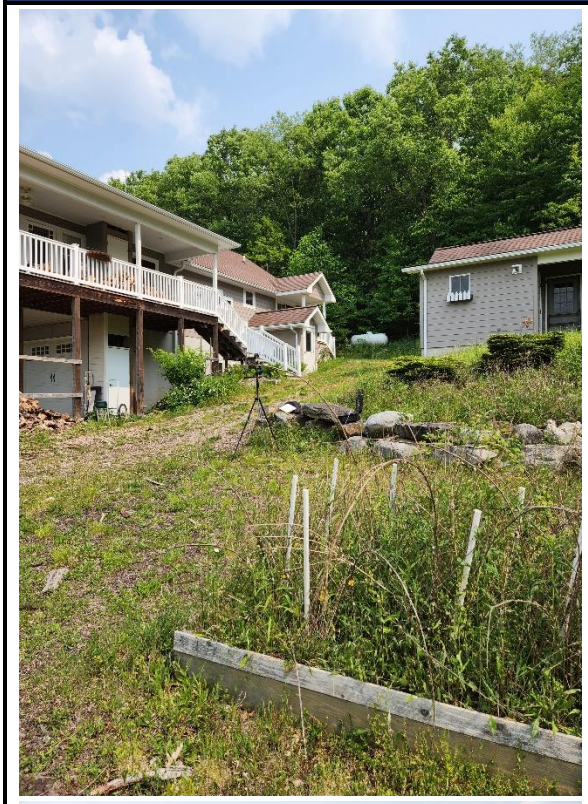
MONITORING RESULTS	
Monitoring Leq:	43.0

MONITORING NOTES

SITE PLAN VIEW SKETCH



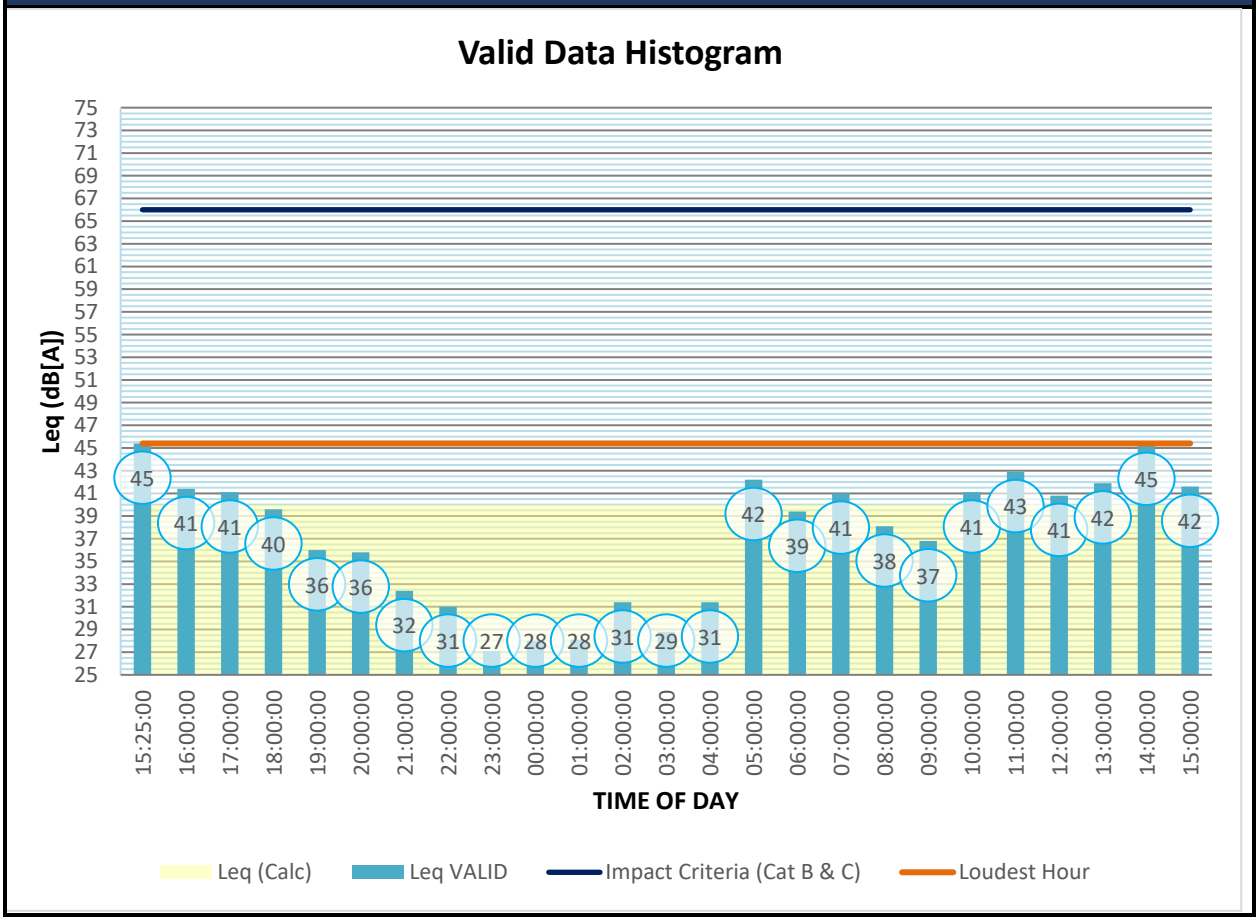
Receptor MD-M-13: Photographs



RECEPTOR MD-M-14 (MD-M5-3)

One 24-hour measurement was taken at this location on 2023 June 7-June 8 from 15:25 to 15:25. The 24-hour Leq value was 39.8 dB(A), which rounds to 40 dB(A). 10-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor MD-M-14: 24-hour Leq = 39.8 dB(A) [40 dB(A)]



Receptor MD-M-14: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: MD-M-14	**Site Address:** 2728 Westview Crossing, Grantsville, MD 21536
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 06/07/2023 – 06/08/2023
Time Study Started: 15:25	**Time Study Ended:** 15:25
Study Duration: 24 hours (5 min Intervals)	**GPS Location X/Y:** -79.068279°, 39.721867°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 71	**Relative Humidity (%): 39%**	**Sky:** Smoke
Wind Speed (mph): 6 mph	**Wind Direction: NW**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114/113.93
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

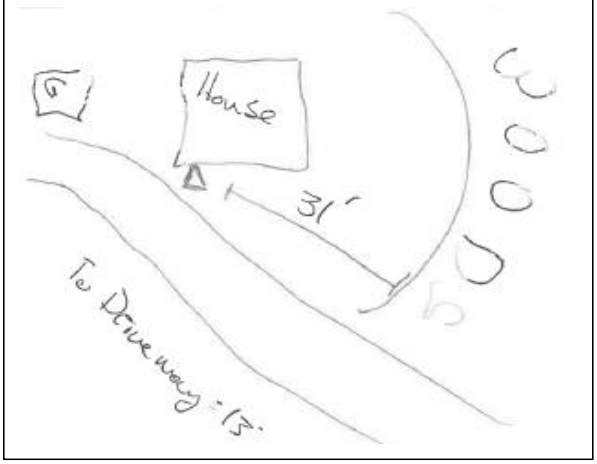
TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

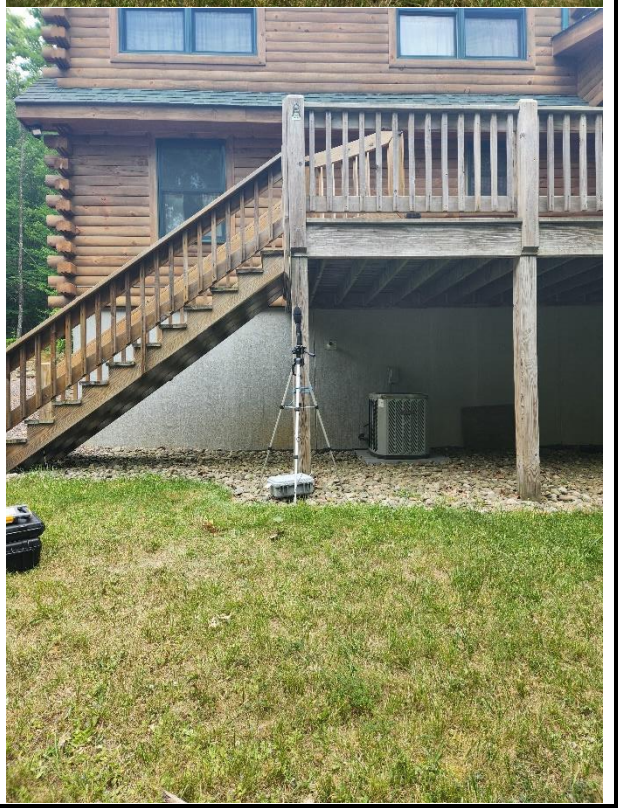
MONITORING RESULTS	
Monitoring Leq:	39.8

MONITORING NOTES

SITE PLAN VIEW SKETCH



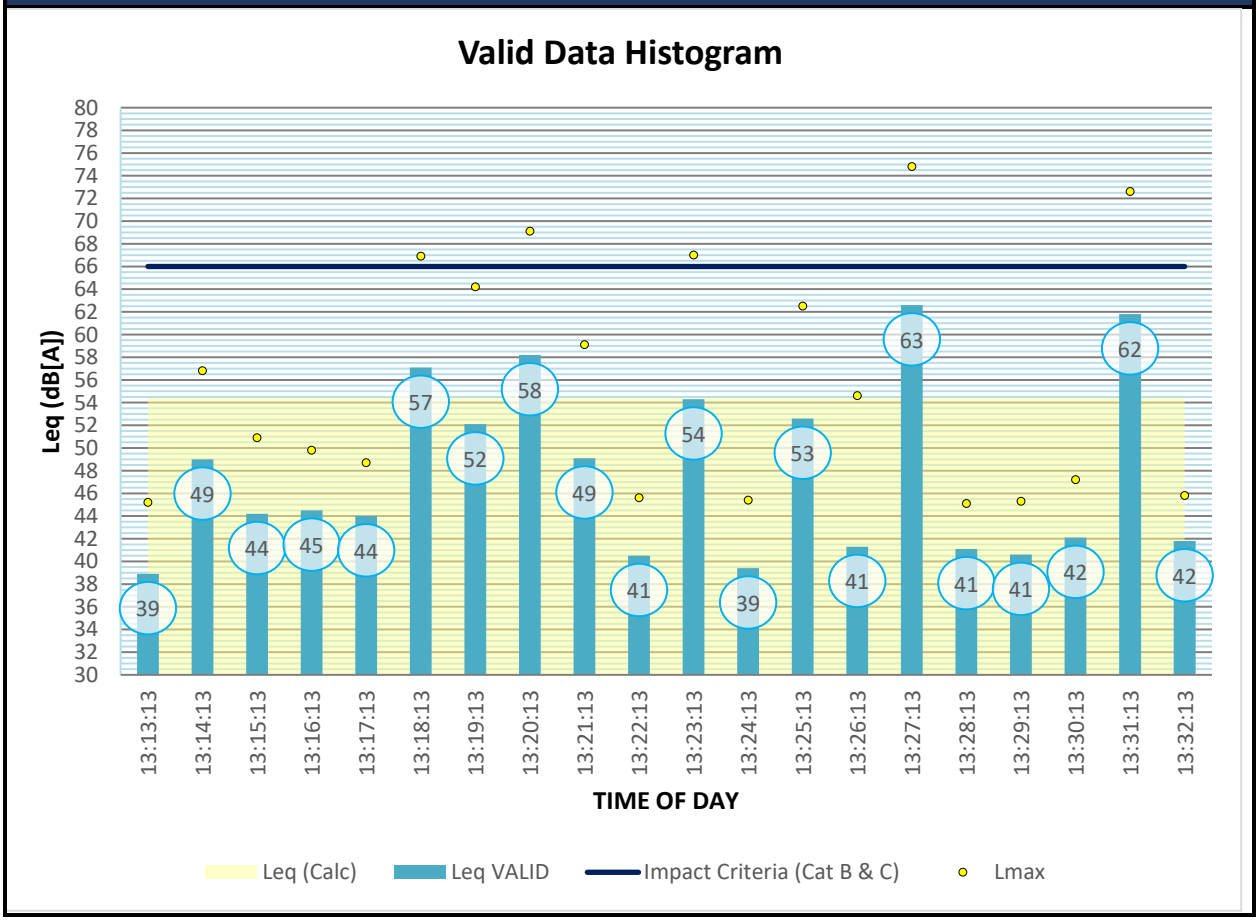
Receptor MD-M-14: Photographs



RECEPTOR PA-M-01 (PA-M6a-1)

One 20-minute measurement was taken at this location on 2023 May 9 from 13:13 to 13:33 during off peak hours. The 20-min Leq value was 54.4 dB(A), which rounds to 54 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-01: 20-min Leq = 54.4 dB(A) [54 dB(A)]



Receptor PA-M-01: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-1	**Site Address:** 327 Greenville Rd, Salisbury, PA 15558
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/09/2023
Time Study Started: 13:13:02	**Time Study Ended:** 13:33:02
Study Duration: 20 min. (1 min Intervals)	**GPS Location X/Y:** 39.743990, -79.076081

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 55	**Relative Humidity (%):** 96	**Sky:** Partly Cloudy
Wind Speed (mph): 0.2	**Wind Direction:** SSE	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.93/114
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

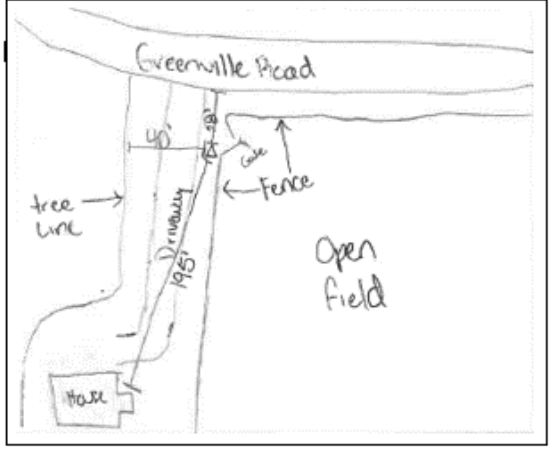
Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS

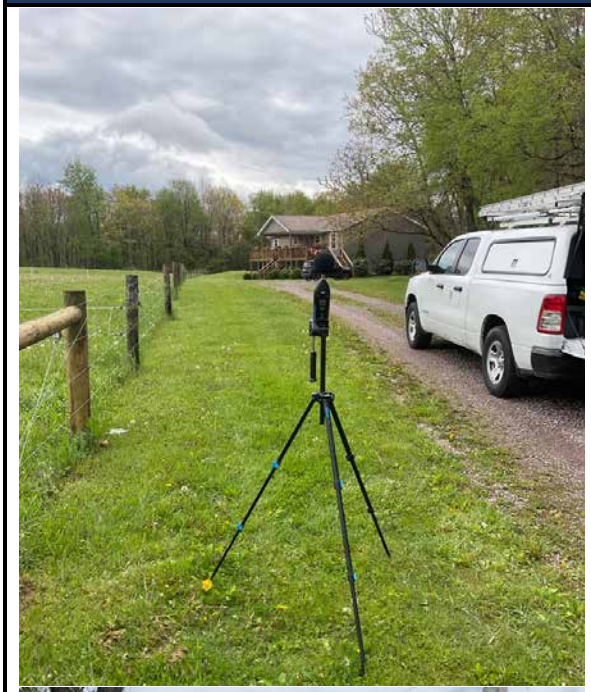
Monitoring Leq:	54.4

MONITORING NOTES

SITE PLAN VIEW SKETCH



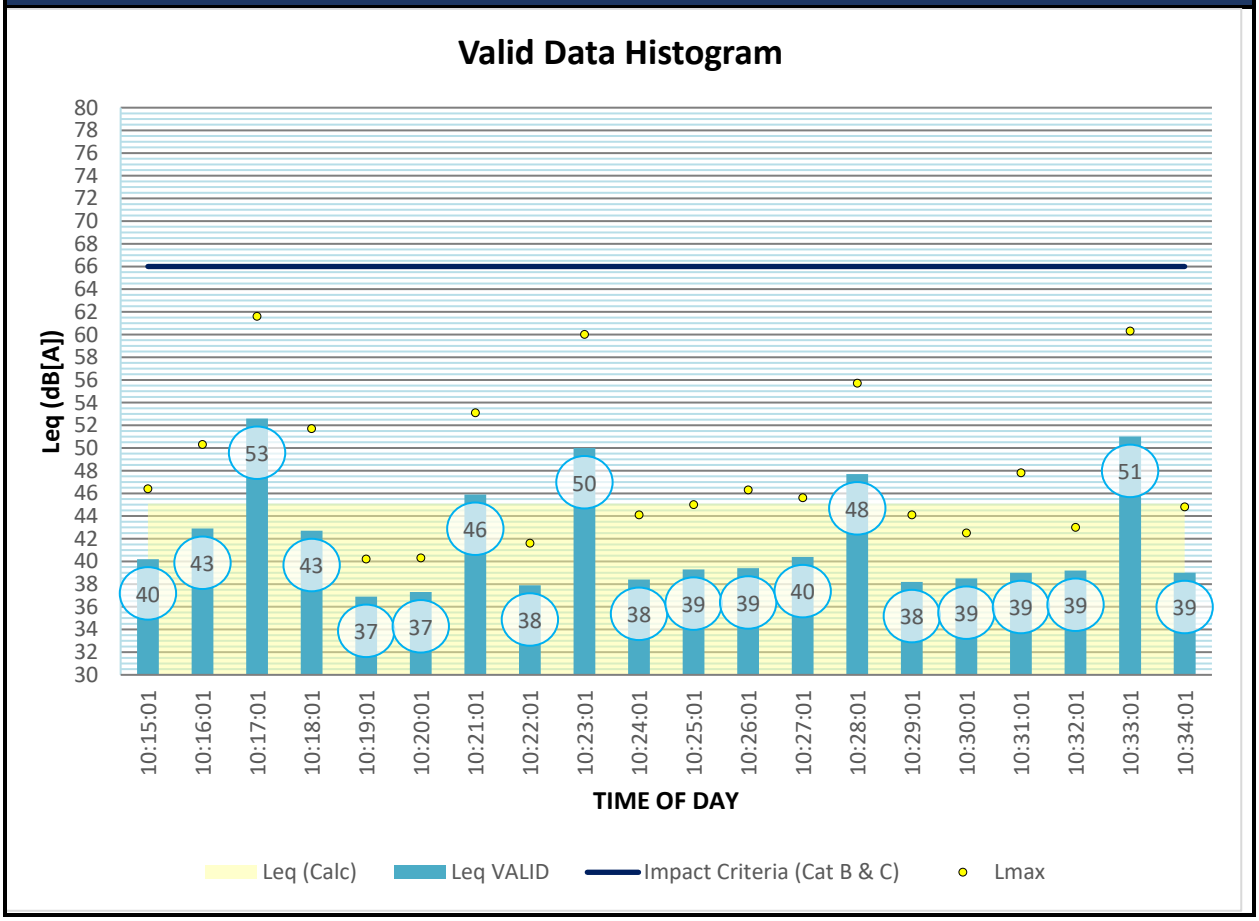
Receptor PA-M-01: Photographs



RECEPTOR PA-M-02 (PA-M7-1)

One 20-minute measurement was taken at this location on 2023 May 10 from 10:15 to 10:35 during off peak hours. The 20-min Leq value was 45.1 dB(A), which rounds to 45 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-02: 20-min Leq = 45.1 dB(A) [45 dB(A)]



Receptor PA-M-02: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.
Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-2	**Site Address:** 629 Greenville Rd, Salisbury, PA 15558
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023
Time Study Started: 10:15:01	**Time Study Ended:** 10:35:01
Study Duration: 20 min. (1 min Intervals)	**GPS Location X/Y:** 39.7355065, -79.0597146

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 56	**Relative Humidity (%):** 50	**Sky:** Clear
Wind Speed (mph): 0.2	**Wind Direction:** WNW	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.03/113.94
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

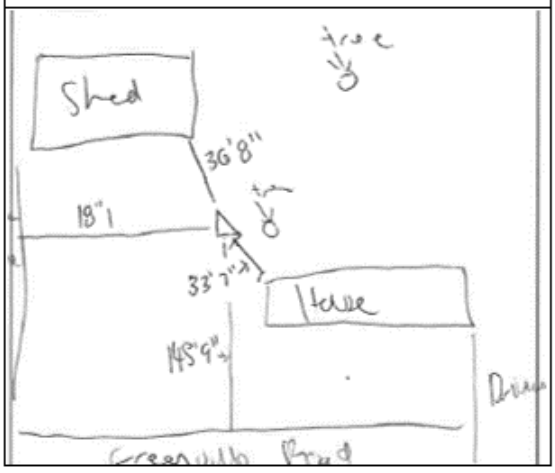
TRAFFIC COUNT DATA

Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

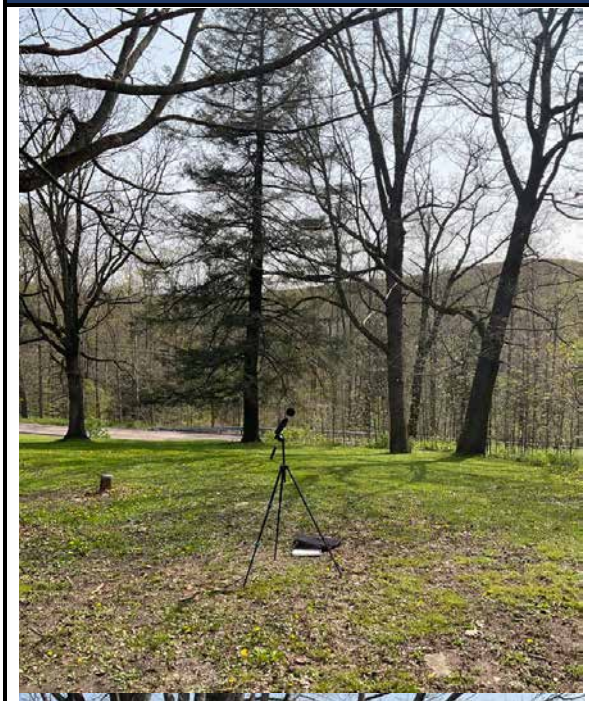
MONITORING RESULTS	
Monitoring Leq:	45.1

MONITORING NOTES

SITE PLAN VIEW SKETCH



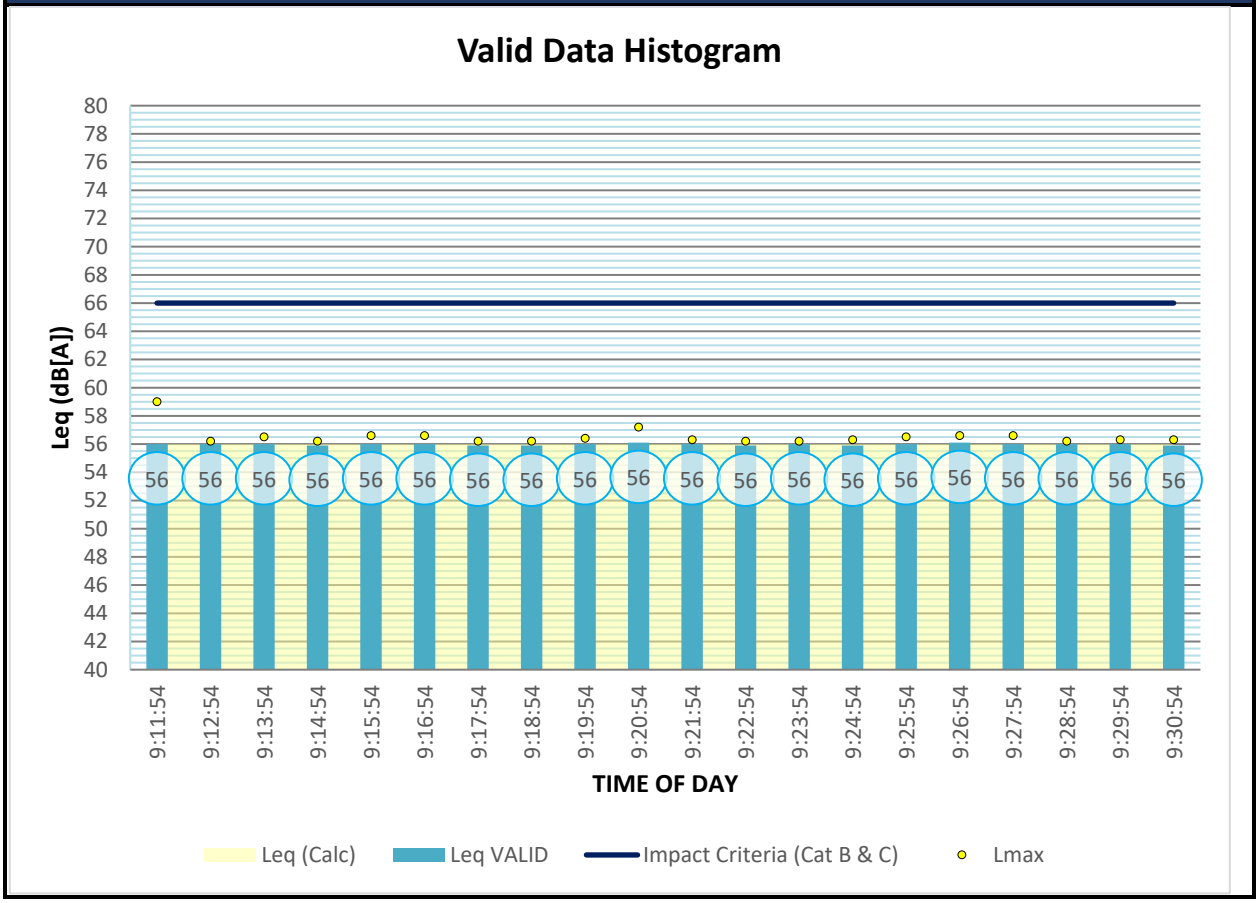
Receptor PA-M-02: Photographs



RECEPTOR PA-M-03 (PA-M8-1)

One 20-minute measurement was taken at this location on 2023 May 10 from 9:11 to 9:31 during off peak hours. The 20-min Leq value was 55.9 dB(A), which rounds to 56 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-03: 20-min Leq = 55.9 dB(A) [56 dB(A)]



Receptor PA-M-03: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-3	**Site Address:** 665 Piney Run Road, Salisbury, PA 15558
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023
Time Study Started: 9:11:54	**Time Study Ended:** 9:31:54
Study Duration: 20 min. (1 min Intervals)	**GPS Location X/Y:** 39.7467386°, -79.0567285°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 55	**Relative Humidity (%):** 54%	**Sky:** Clear
Wind Speed (mph): 6 mph	**Wind Direction:** VAR	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.94/113.98
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

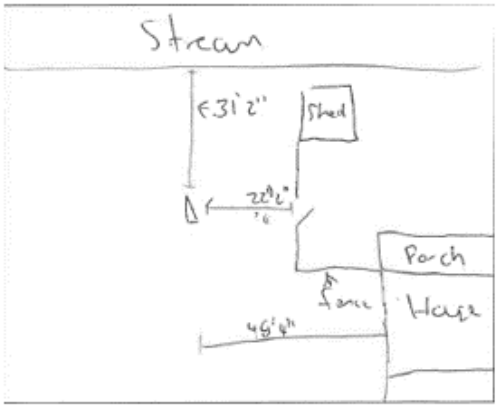
TRAFFIC COUNT DATA

Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

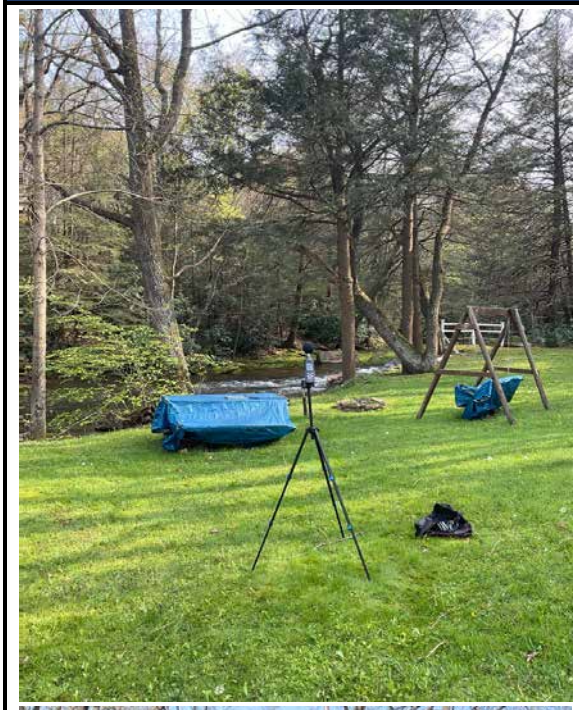
MONITORING RESULTS	
Monitoring Leq:	55.9

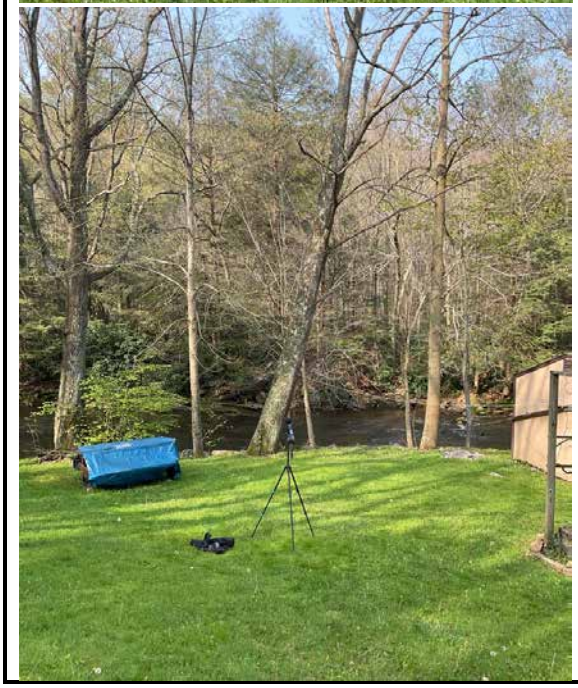
MONITORING NOTES

SITE PLAN VIEW SKETCH



Receptor PA-M-03: Photographs

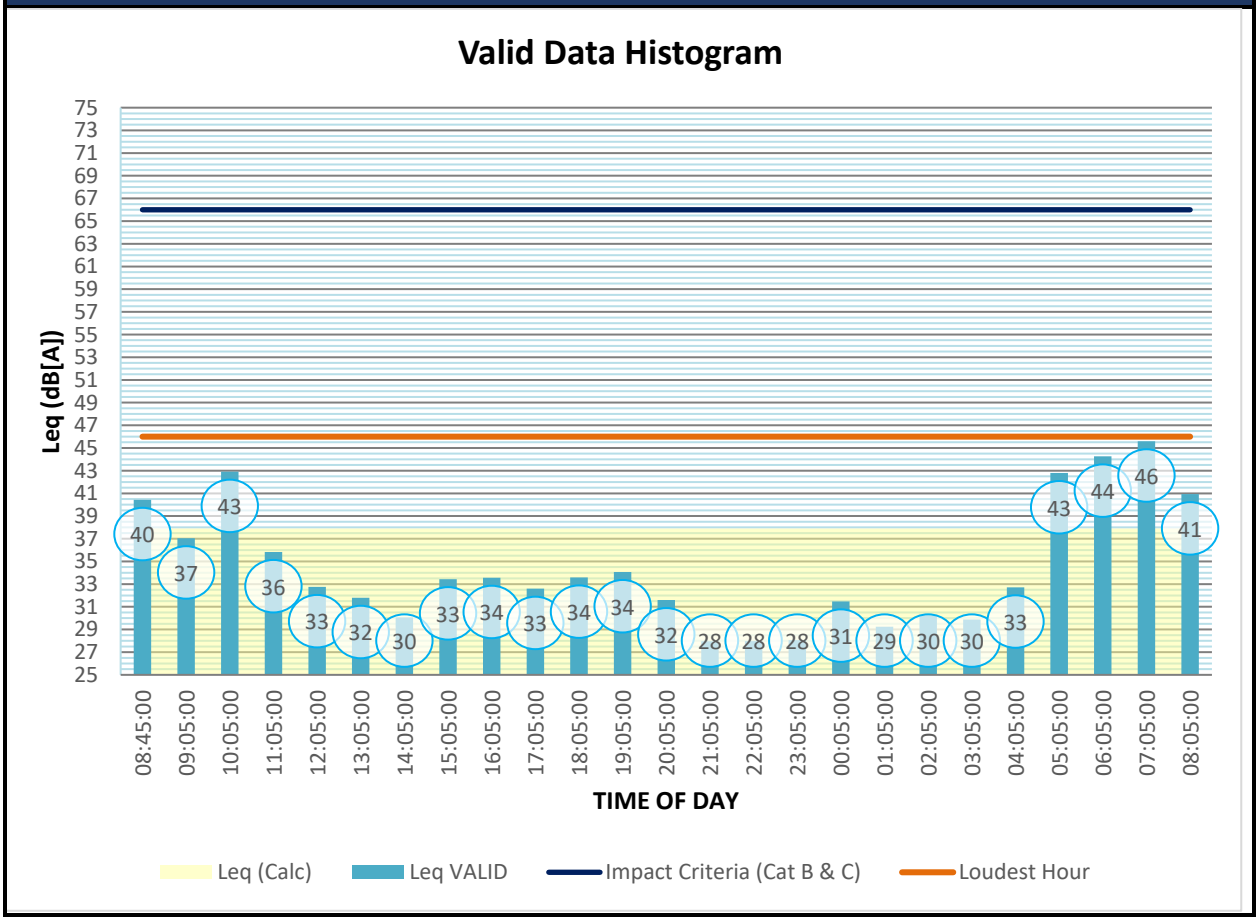




RECEPTOR PA-M-04 (PA-M9-1)

One 24-hour measurement was taken at this location on 2023 May 10-May 11 from 8:45 to 8:45. The 20-min Leq value was 37.9 dB(A), which rounds to 38 dB(A). 10-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-04: 24-hour Leq = 37.9 dB(A) [38 dB(A)]



Receptor PA-M-04: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.
Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-4	**Site Address:** 720 Blackberry Ridge, Manheim PA 17545
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023 – 05/11/2023
Time Study Started: 8:45	**Time Study Ended:** 8:45
Study Duration: 24 hours (5 min Intervals)	**GPS Location X/Y:** 39.753627°, -79.042565°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 44	**Relative Humidity (%): 65%**	**Sky:** Clear
Wind Speed (mph): 5 mph	**Wind Direction: NE**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.03/113.91
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

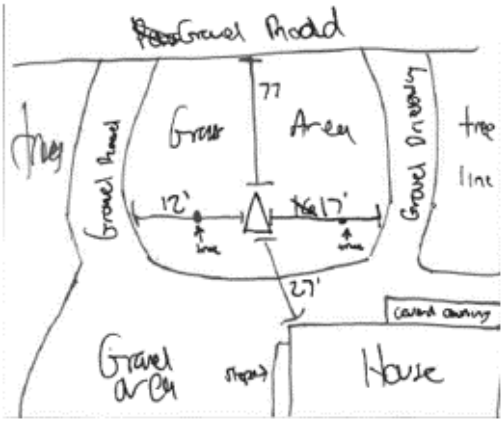
TRAFFIC COUNT DATA

Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	37.9

MONITORING NOTES

SITE PLAN VIEW SKETCH

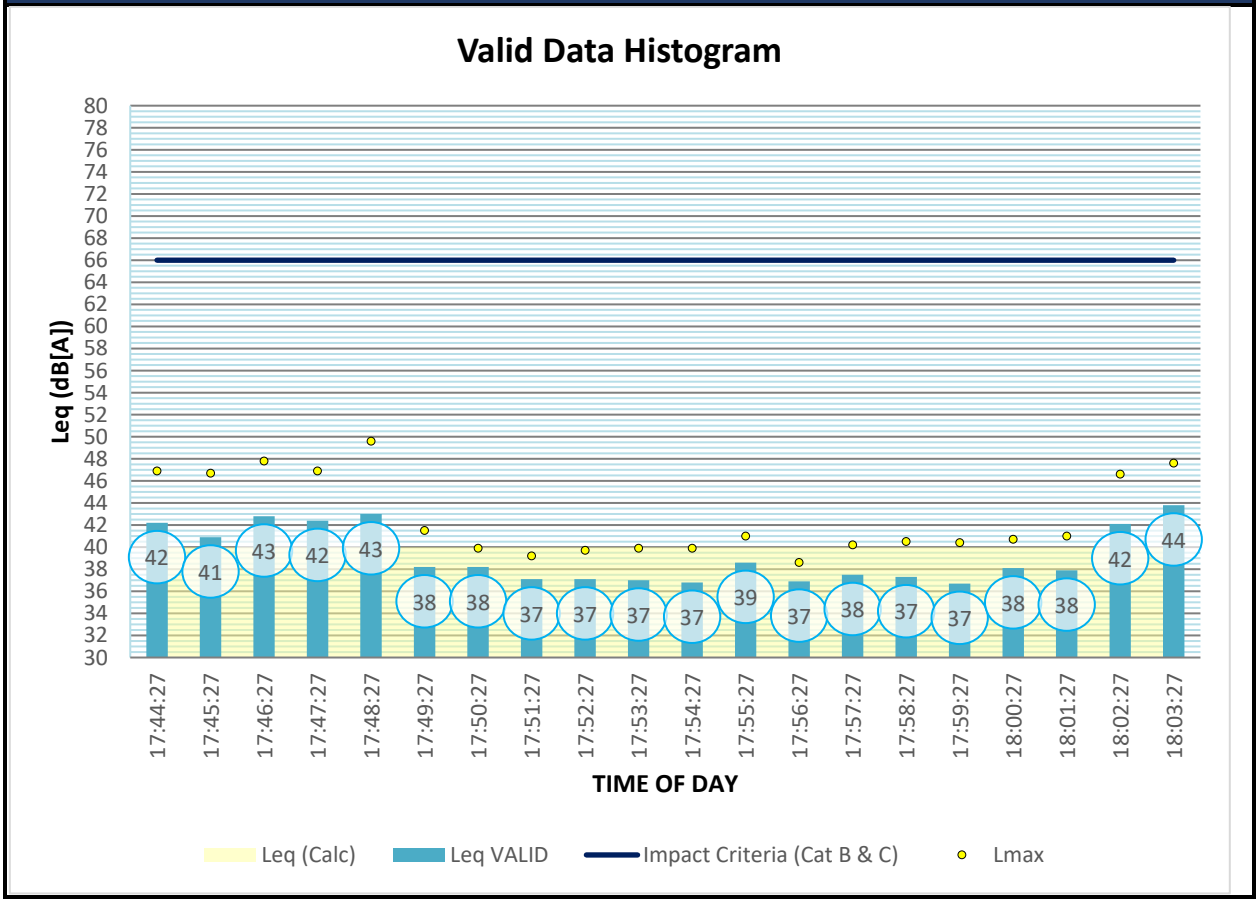


Receptor PA-M-04: Photographs

RECEPTOR PA-M-05 (PA-M11-4)

One 20-minute measurement was taken at this location on 2023 May 10 from 17:44 to 18:04 during off peak hours. The 20-min Leq value was 40.0 dB(A), which rounds to 40 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-05: 20-min Leq = 40.0 dB(A) [40 dB(A)]



Receptor PA-M-05: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-5	**Site Address:** 181 Clark Road, Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023 – 05/10/2023
Time Study Started: 17:44	**Time Study Ended:** 18:04
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.776359°, -79.032042°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 67	**Relative Humidity (%):** 30%	**Sky:** Clear
Wind Speed (mph): 7 mph	**Wind Direction:** WSW	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114/114.07
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

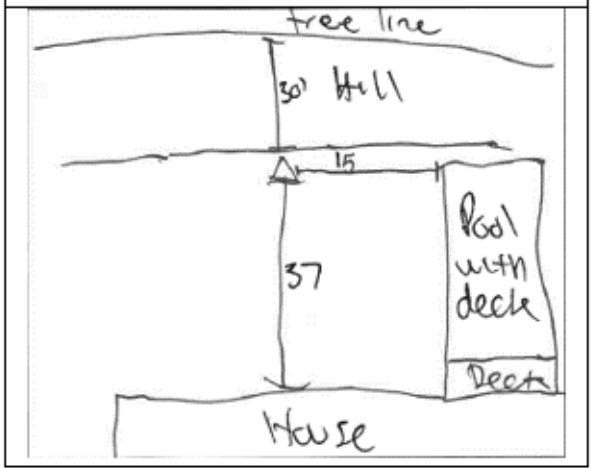
TRAFFIC COUNT DATA

Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	Volume	Speed	Volume	Speed
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	40

MONITORING NOTES

SITE PLAN VIEW SKETCH

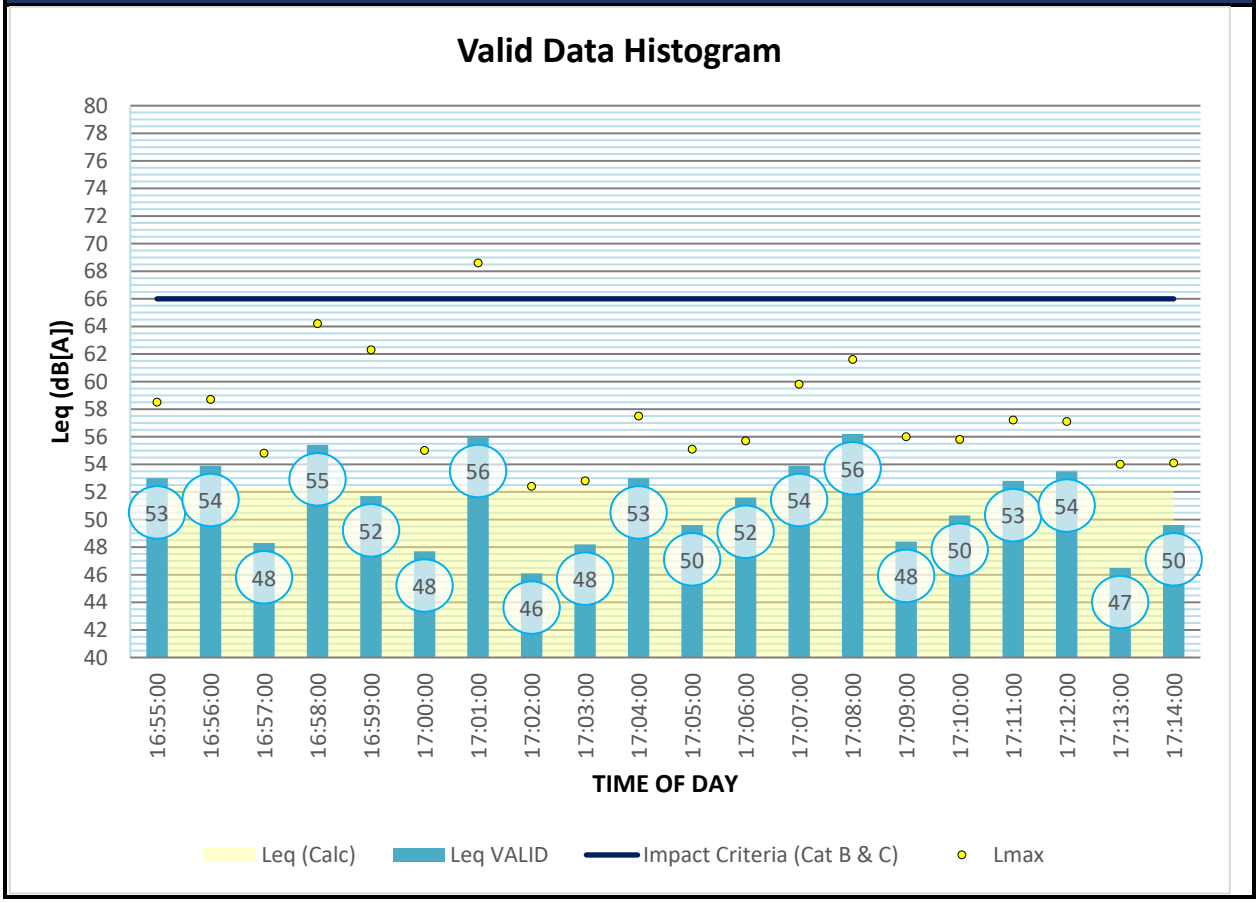


Receptor PA-M-05: Photographs

RECEPTOR PA-M-06 (PA-M13-3)

One 20-minute measurement was taken at this location on 2023 May 10 from 16:55 to 17:15 during off peak hours. The 20-min Leq value was 52.3 dB(A), which rounds to 52 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-06: 20-min Leq = 52.3 dB(A) [52 dB(A)]



Receptor PA-M-06: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-6	**Site Address:** 7879 Mason Dixon Highway, Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023
Time Study Started: 16:55	**Time Study Ended:** 17:15
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.7785777°, -79.0332627°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 44	**Relative Humidity (%): 65%**	**Sky:** Clear
Wind Speed (mph): 5 mph	**Wind Direction: NE**	**Source:** Weather Underground

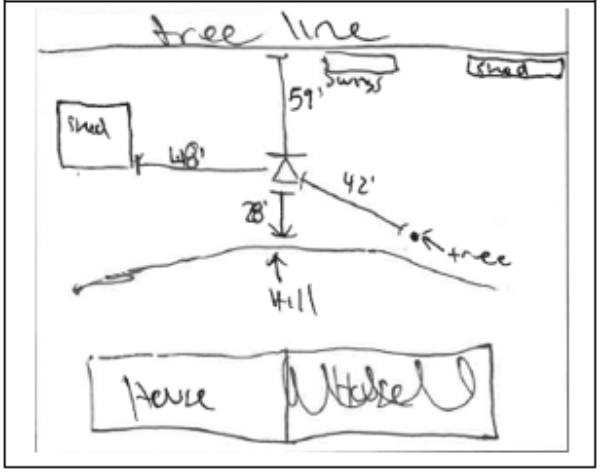
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.02/113.93
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

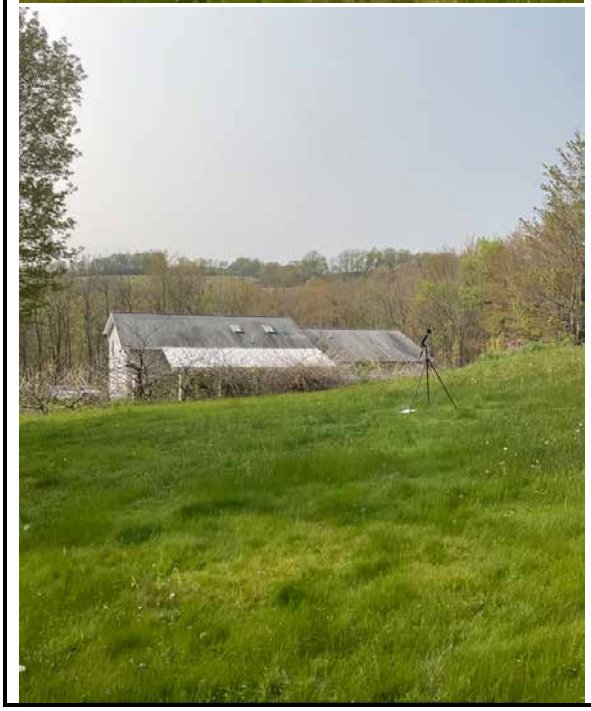
MONITORING RESULTS	
Monitoring Leq:	52.3

MONITORING NOTES

SITE PLAN VIEW SKETCH



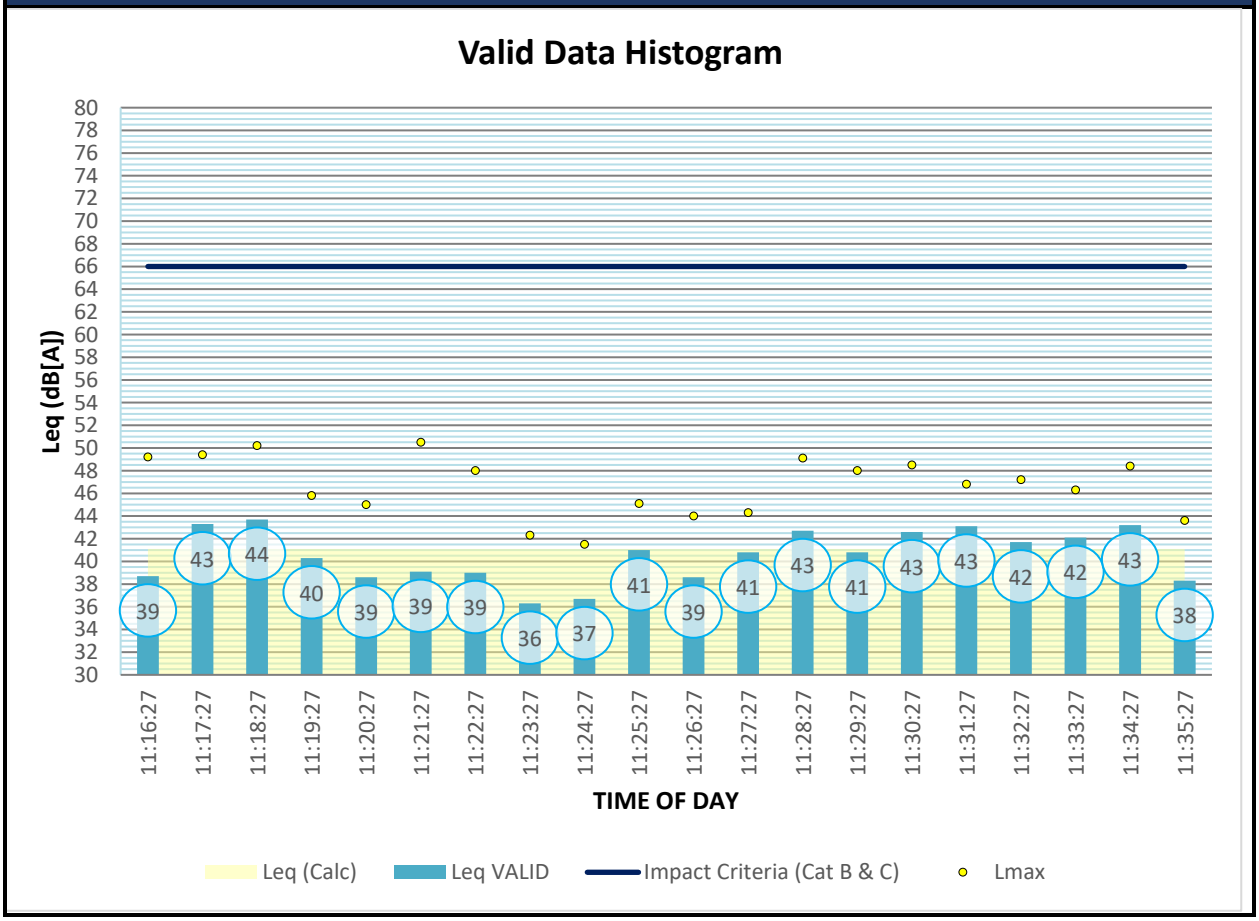
Receptor PA-M-06: Photographs



RECEPTOR PA-M-07 (PA-M12-1)

One 20-minute measurement was taken at this location on 2023 May 10 from 11:16 to 11:36 during off peak hours. The 20-min Leq value was 41.1 dB(A), which rounds to 41 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-07: 20-min Leq = 41.1 dB(A) [41 dB(A)]



Receptor PA-M-07: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-7	**Site Address:** 261 Clark Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023 – 05/10/2023
Time Study Started: 11:16	**Time Study Ended:** 11:36
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.776367°, -79.028911°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 57	**Relative Humidity (%):** 39%	**Sky:** Clear
Wind Speed (mph): 5 mph	**Wind Direction:** VAR	**Source:** Weather Underground

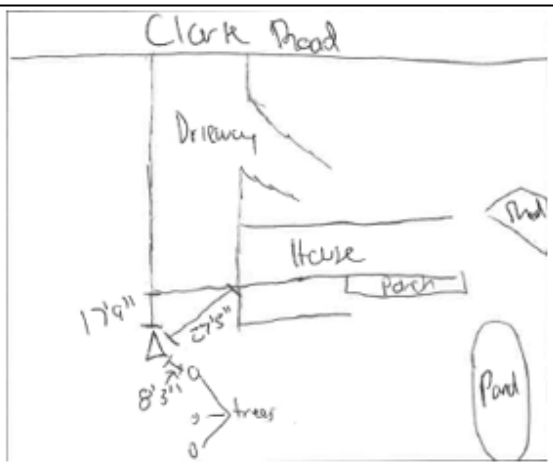
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.11/113.94
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	Volume	Speed	Volume	Speed
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	41.1

MONITORING NOTES

SITE PLAN VIEW SKETCH

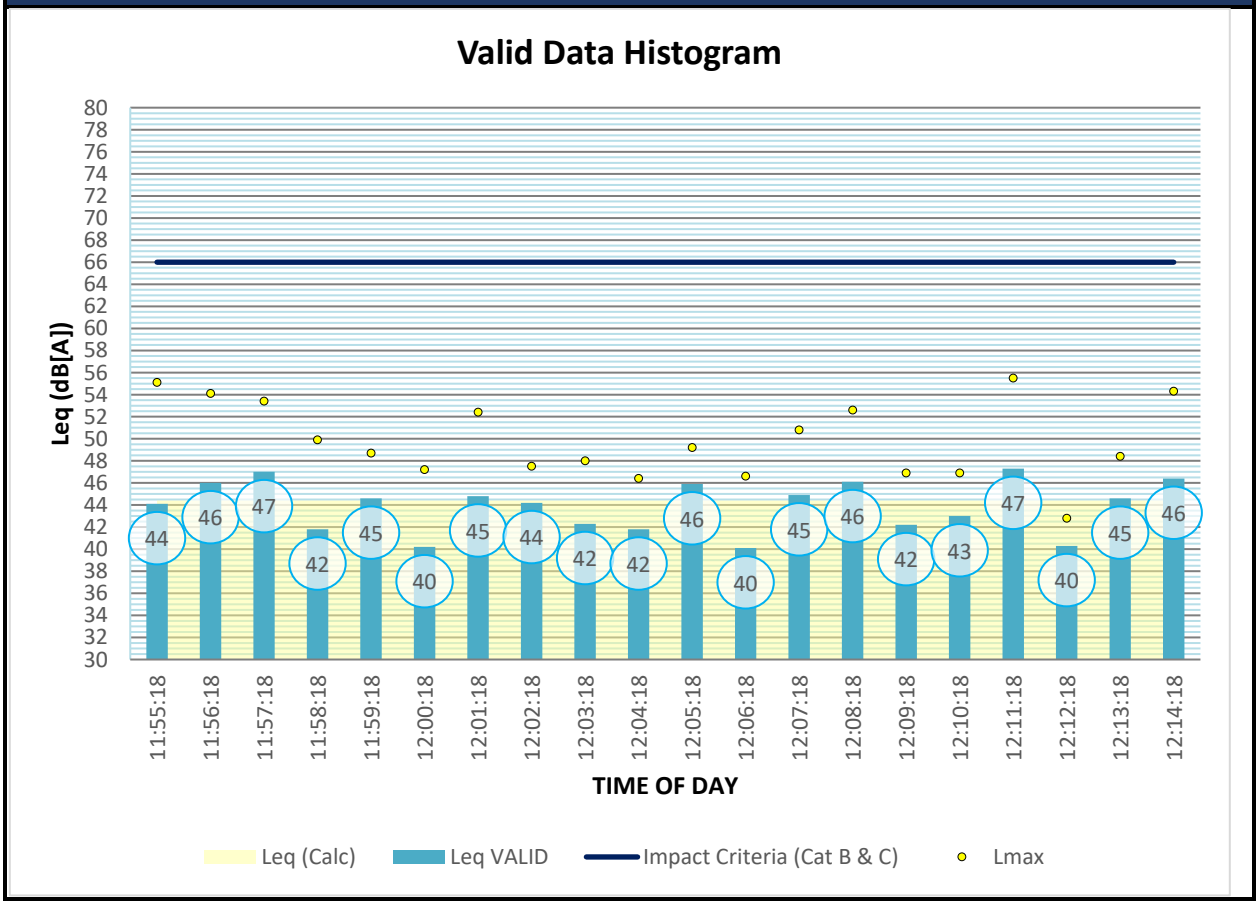


Receptor PA-M-07: Photographs

RECEPTOR PA-M-08 (PA-M14-6)

One 20-minute measurement was taken at this location on 2023 May 10 from 11:55 to 12:15 during off peak hours. The 20-min Leq value was 44.4 dB(A), which rounds to 44 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-08: 24-hour Leq = 44.4 dB(A) [44 dB(A)]



Receptor PA-M-08: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.
Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-8	**Site Address:** 1421 Mountain Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023
Time Study Started: 11:55	**Time Study Ended:** 12:15
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.781236°, -79.028798°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 58	**Relative Humidity (%):** 36%	**Sky:** Clear
Wind Speed (mph): 0	**Wind Direction:** N/A	**Source:** Weather Underground

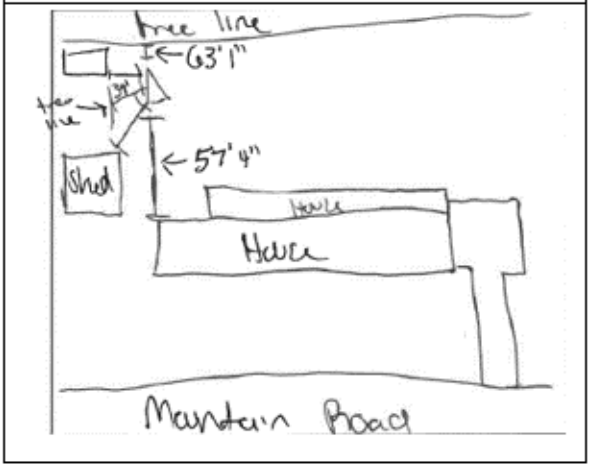
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.05/113.96
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	Volume	Speed	Volume	Speed
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	44.4

MONITORING NOTES

SITE PLAN VIEW SKETCH

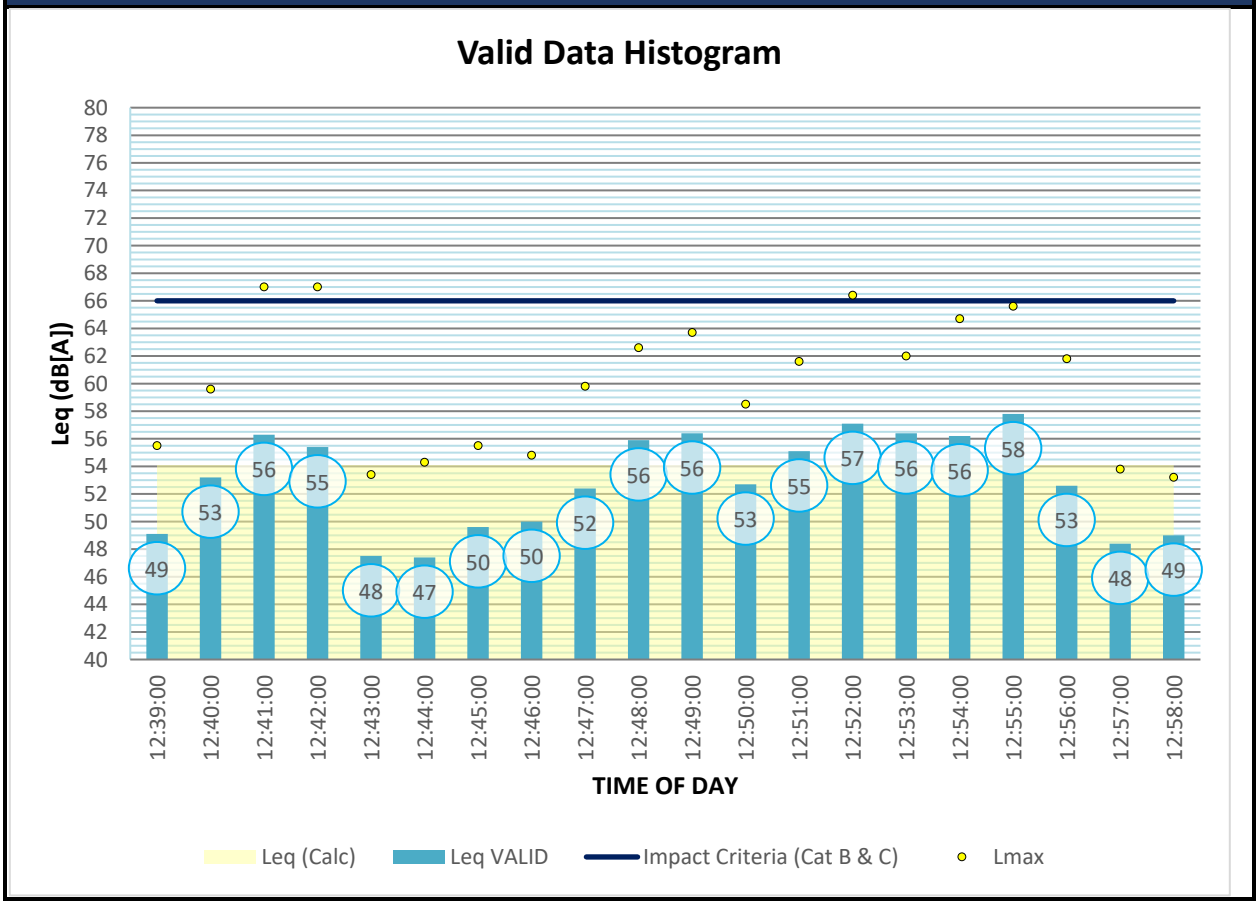


Receptor PA-M-08: Photographs

RECEPTOR PA-M-09 (PA-M15-1)

One 20-minute measurement was taken at this location on 2023 May 10 from 12:39 to 12:59 during off peak hours. The 20-min Leq value was 54.1 dB(A), which rounds to 54 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-09: 20-min Leq = 54.1 dB(A) [54 dB(A)]



Receptor PA-M-09: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.
Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-9	**Site Address:** 162 Hunsrick Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023
Time Study Started: 12:39	**Time Study Ended:** 12:59
Study Duration: 20 mins (1 min Intervals)	**GPS Location X/Y:** 39.782541°, -79.029036°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 58	**Relative Humidity (%):** 36%	**Sky:** Clear
Wind Speed (mph): 0	**Wind Direction:** N/A	**Source:** Weather Underground

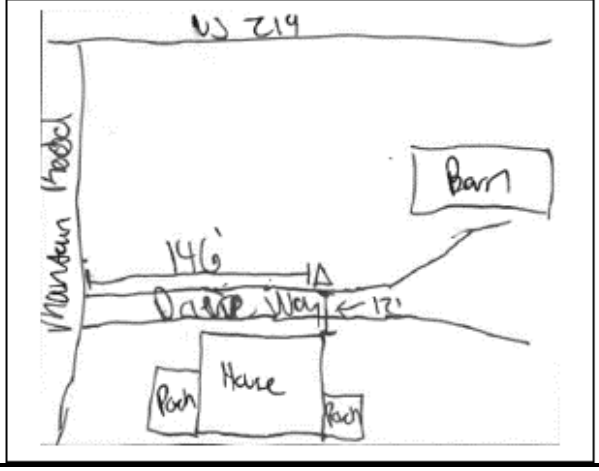
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114/114.06
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	Volume	Speed	Volume	Speed
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	54.1

MONITORING NOTES

SITE PLAN VIEW SKETCH

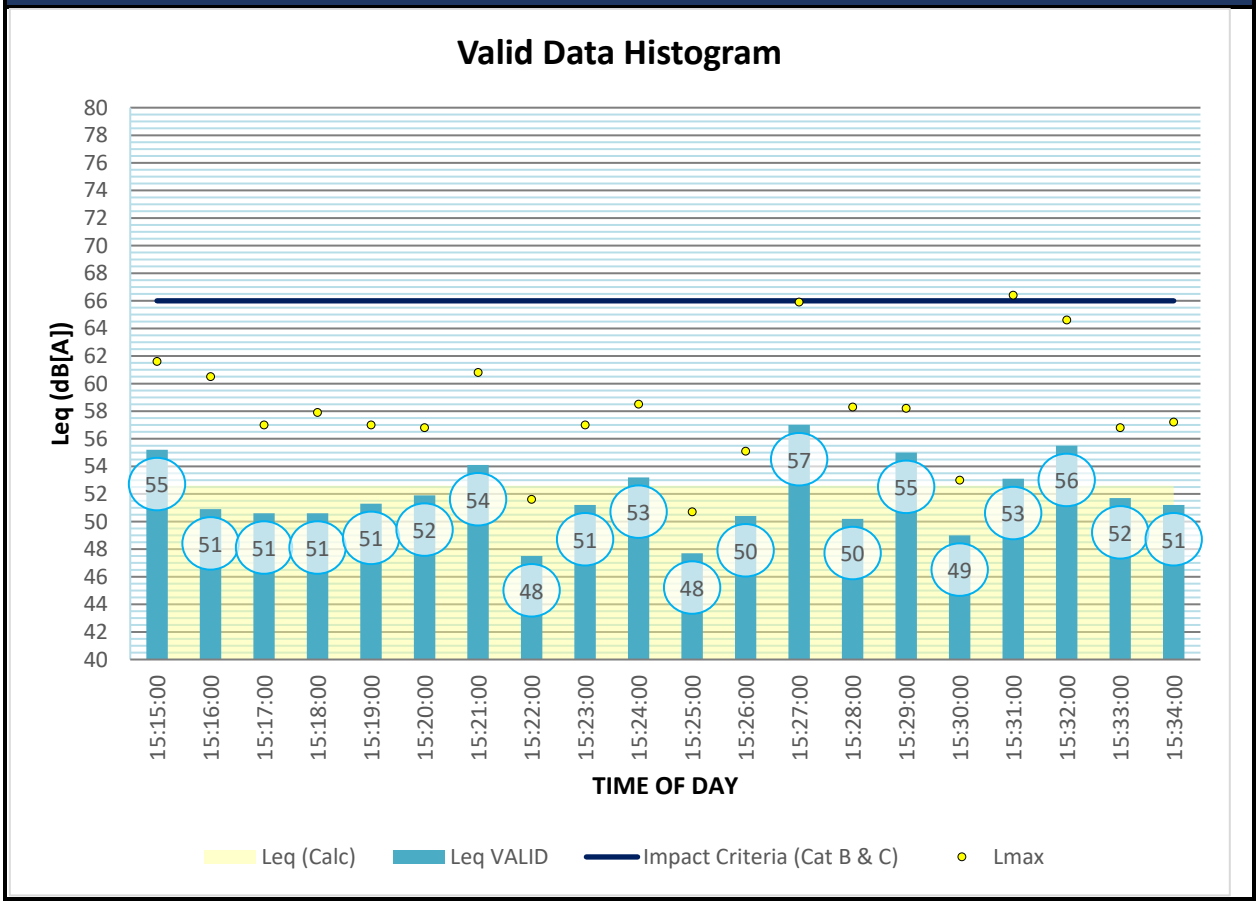


Receptor PA-M-09: Photographs

RECEPTOR PA-M-10 (PA-M15-3)

One 20-minute measurement was taken at this location on 2023 May 9 from 15:15 to 15:35 during peak hours. The 20-min Leq value was 52.6 dB(A), which rounds to 53 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-10: 20-min Leq = 52.6 dB(A) [53 dB(A)]



Receptor PA-M-10: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-10	**Site Address:** 1531 Mountain Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/09/2023
Time Study Started: 15:15	**Time Study Ended:** 15:35
Study Duration: 20 mins (1 min Intervals)	**GPS Location X/Y:** 39.784563°, -79.029676°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 67	**Relative Humidity (%):** 33%	**Sky:** Clear
Wind Speed (mph): 7 mph	**Wind Direction:** N	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.83/114.19
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

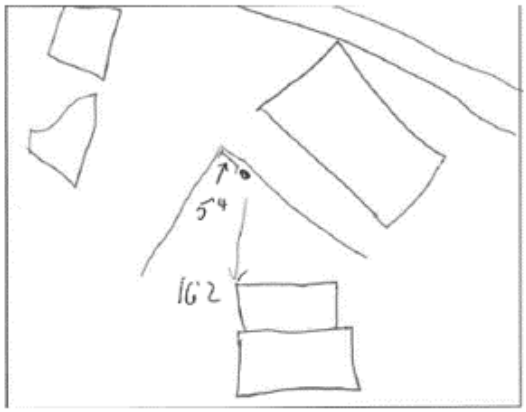
TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

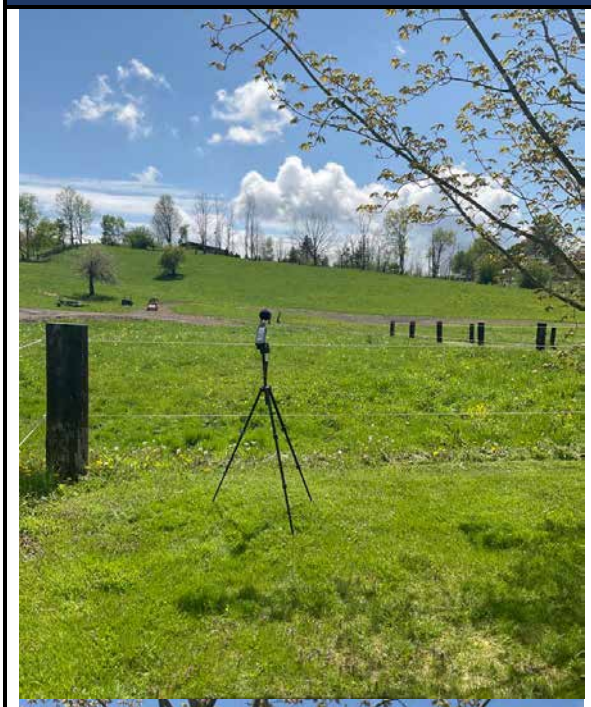
MONITORING RESULTS	
Monitoring Leq:	52.6

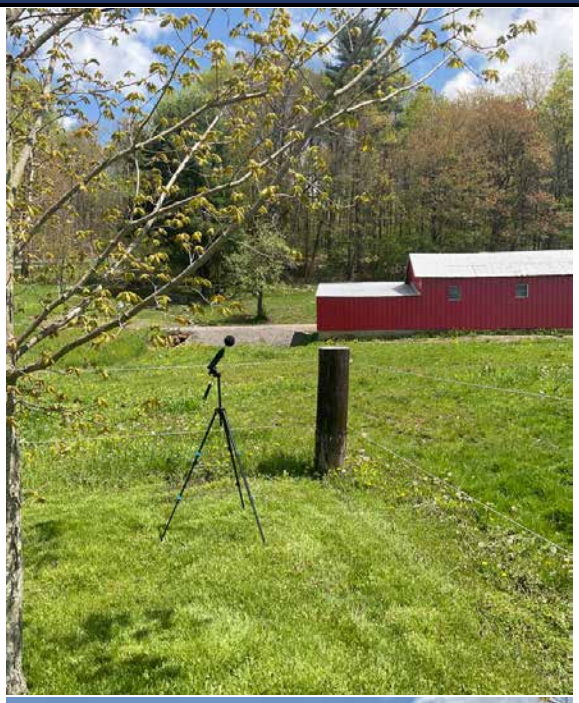
MONITORING NOTES

SITE PLAN VIEW SKETCH



Receptor PA-M-10: Photographs

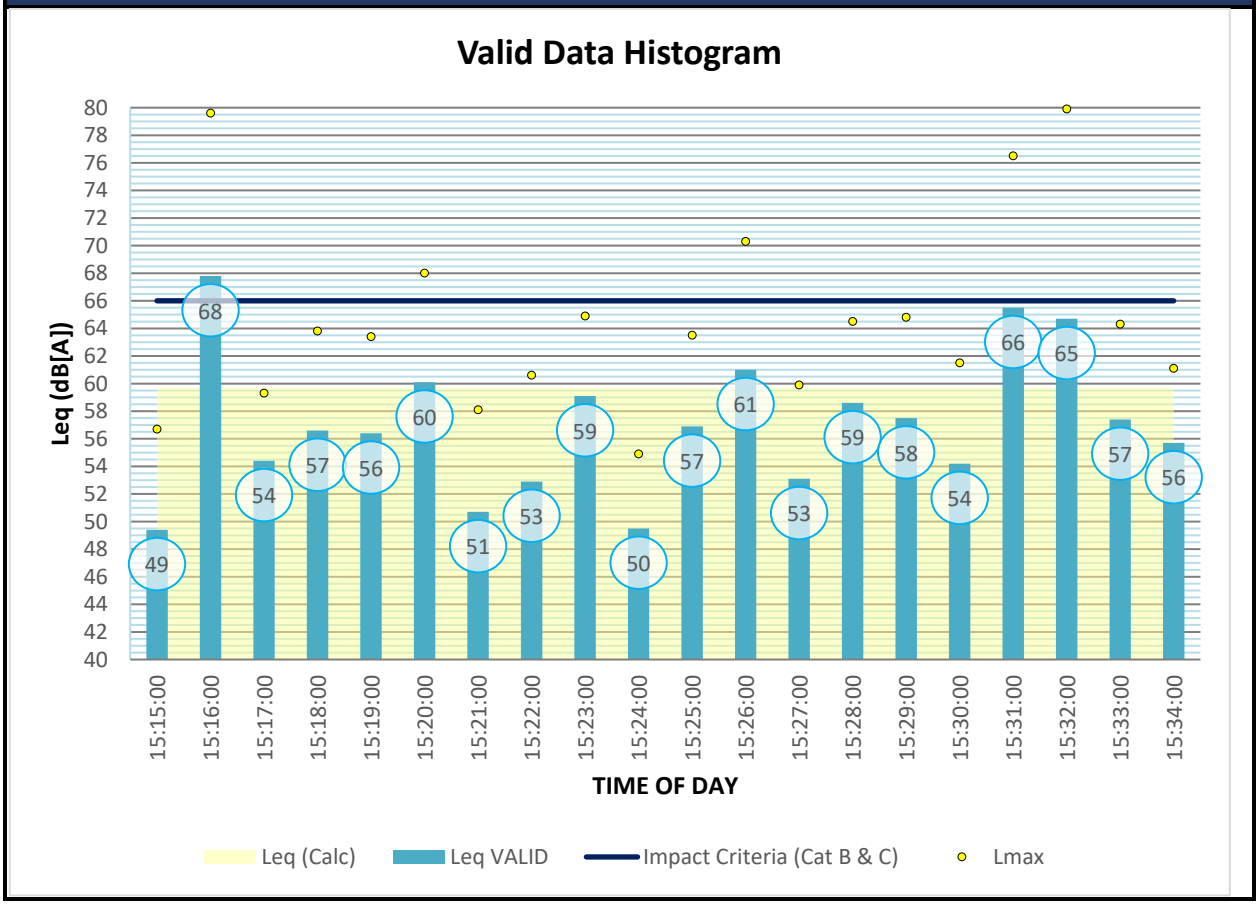




RECEPTOR PA-M-11 (PA-M16-1)

One 20-minute measurement was taken at this location on 2023 May 9 from 15:15 to 15:35 during peak hours. The 20-min Leq value was 60.31 dB(A), which rounds to 60 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-11: 20-min Leq = 60.31 dB(A) [60 dB(A)]



Receptor PA-M-11: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-11	**Site Address:** 118 Chipmonk Lane Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/09/2023
Time Study Started: 15:15	**Time Study Ended:** 15:35
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.7829312°, -79.0320698°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 67	**Relative Humidity (%):** 33%	**Sky:** Clear
Wind Speed (mph): 7 mph	**Wind Direction:** N	**Source:** Weather Underground

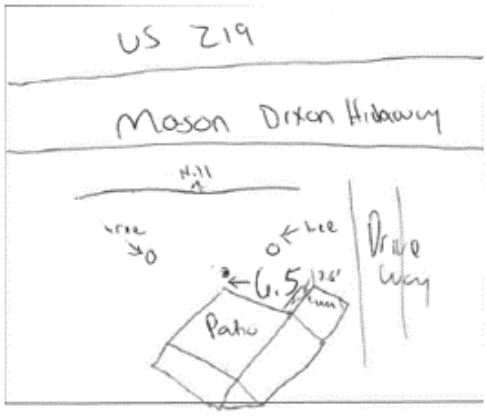
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 112.93/113.90
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

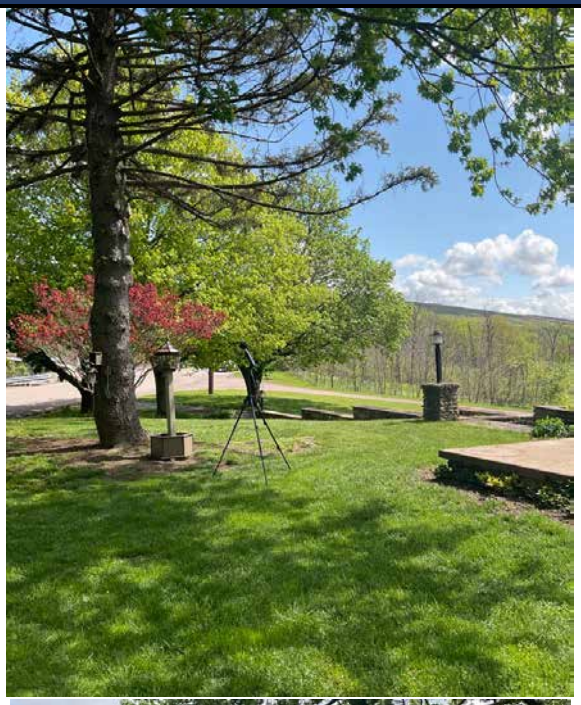
MONITORING RESULTS	
Monitoring Leq:	60.31

MONITORING NOTES

SITE PLAN VIEW SKETCH



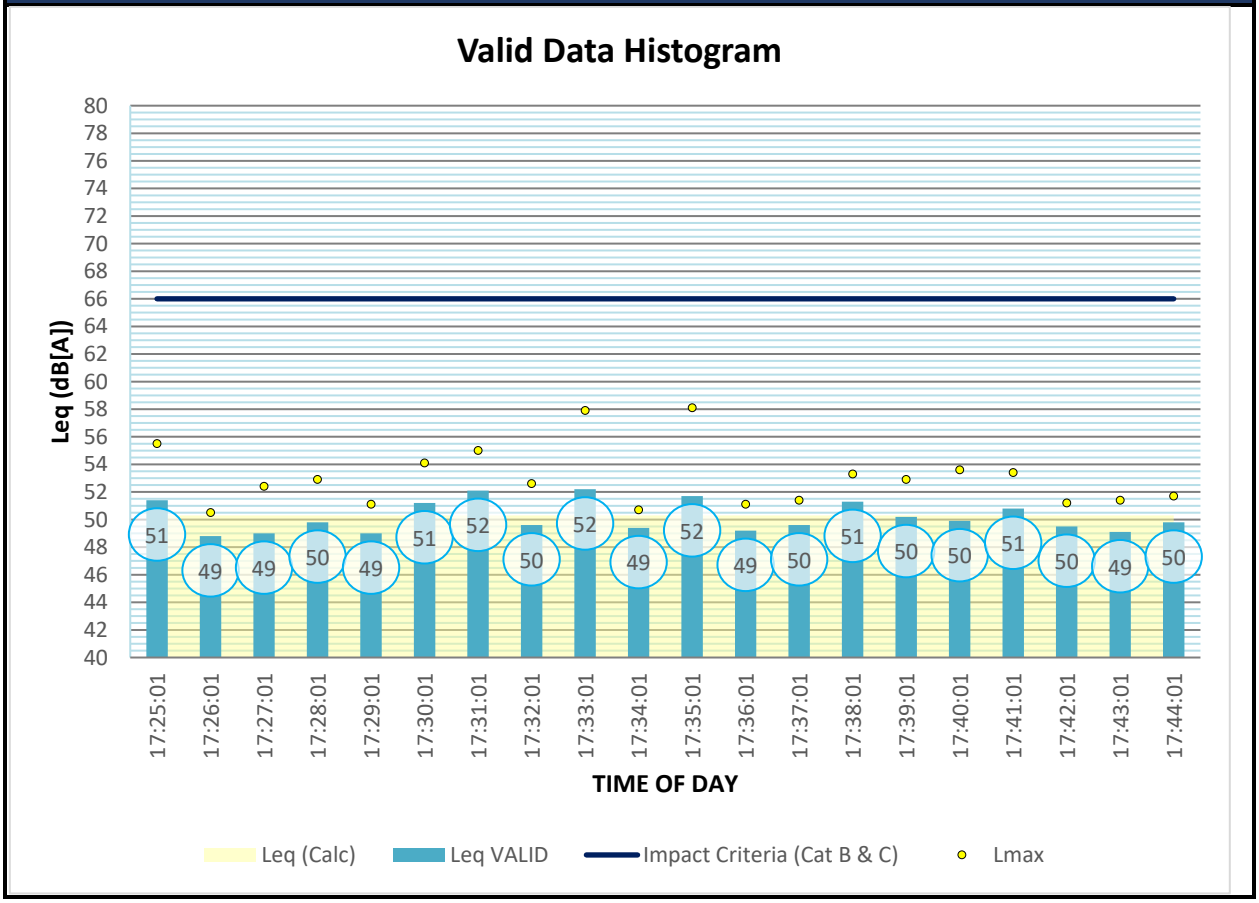
Receptor PA-M-11: Photographs



RECEPTOR PA-M-12 (PA-M17-1)

One 20-minute measurement was taken at this location on 2023 May 9 from 17:25 to 17:45 during peak hours. The 20-min Leq value was 50.3 dB(A), which rounds to 50 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-12: 20-min Leq = 50.3 dB(A) [50 dB(A)]



Receptor PA-M-12: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-12	**Site Address:** 143 Geiger Road Meyersdale, PA 1552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/09/2023 – 05/09/2023
Time Study Started: 17:25	**Time Study Ended:** 17:45
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.7883345°, -79.0344729°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 68	**Relative Humidity (%):** 36%	**Sky:** Clear
Wind Speed (mph): 12	**Wind Direction:** N	**Source:** Weather Underground

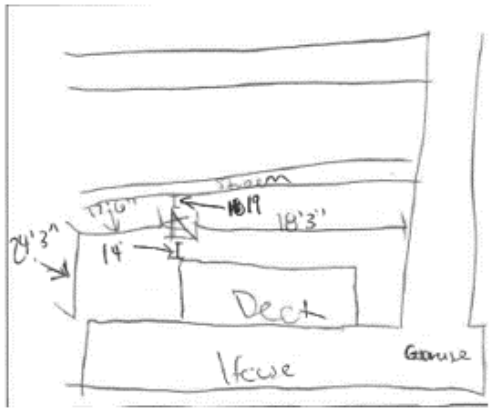
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.02/114.01
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

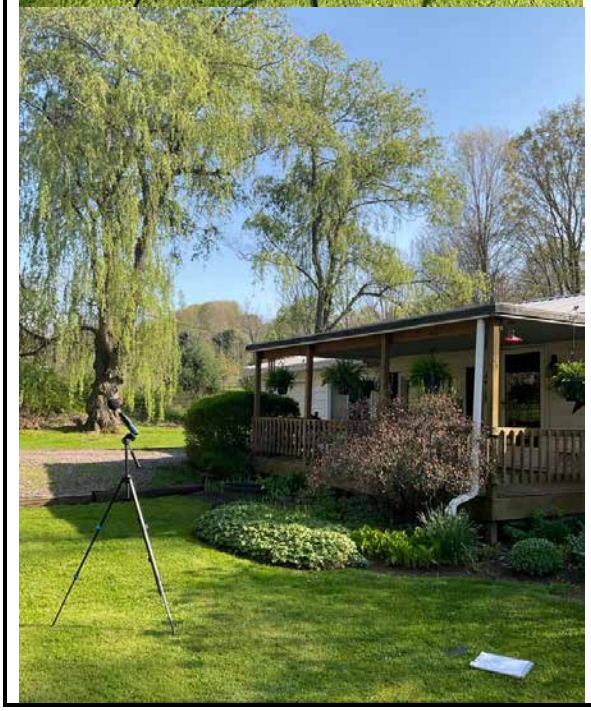
MONITORING RESULTS	
Monitoring Leq:	50.3

MONITORING NOTES

SITE PLAN VIEW SKETCH



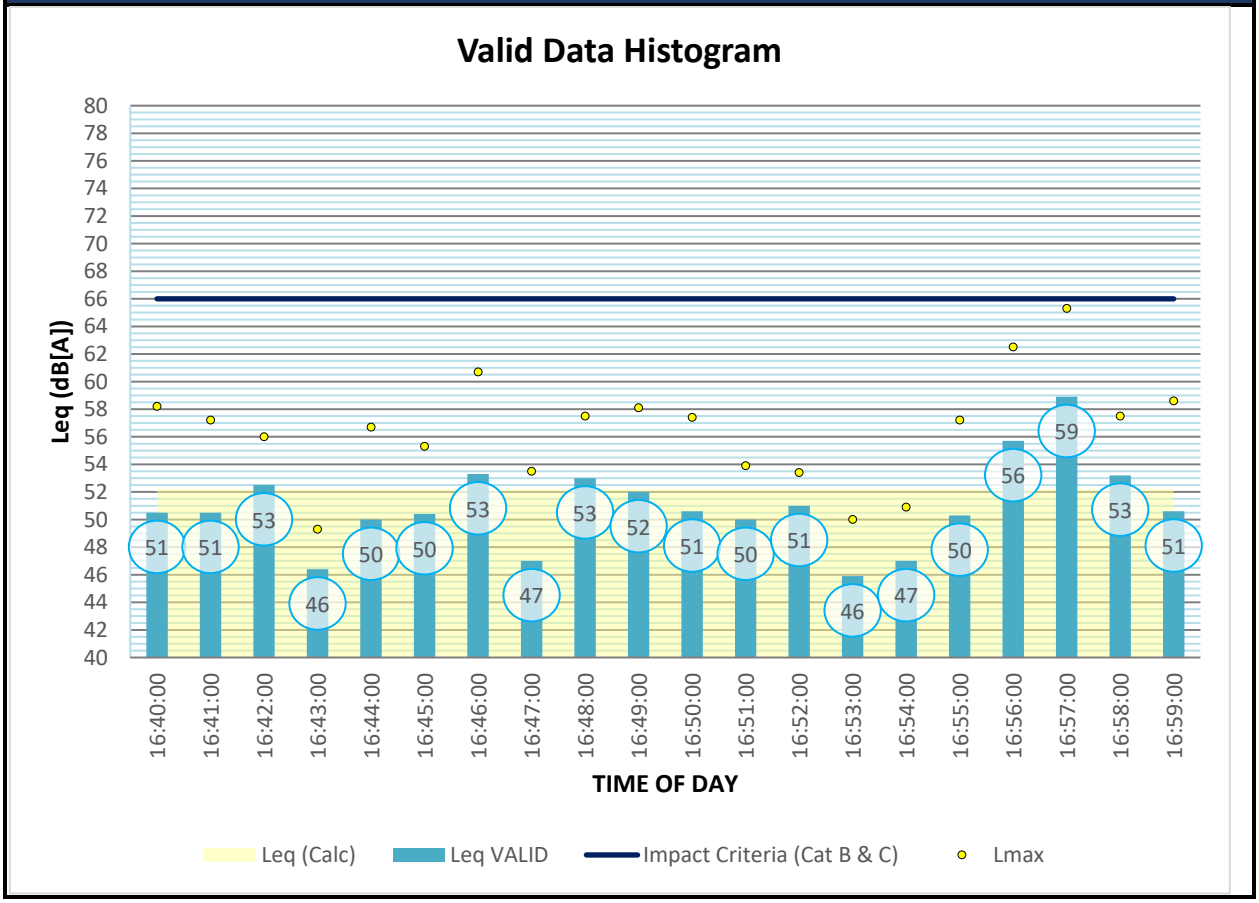
Receptor PA-M-12: Photographs



RECEPTOR PA-M-13 (PA-M18-4)

One 20-minute measurement was taken at this location on 2023 May 9 from 16:40 to 17:00 during peak hours. The 20-min Leq value was 52.2 dB(A), which rounds to 52 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-13: 20-min Leq = 52.2 dB(A) [52 dB(A)]



Receptor PA-M-13: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-13	**Site Address:** 7519 Mason Dixon Highway Meyersdale, PA 1552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/09/2023 – 05/09/2023
Time Study Started: 16:40	**Time Study Ended:** 17:00
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.7907806°, -79.0350811°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 68	**Relative Humidity (%):** 31%	**Sky:** Clear
Wind Speed (mph): 0 mph	**Wind Direction:** N/A	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.99/113.99
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

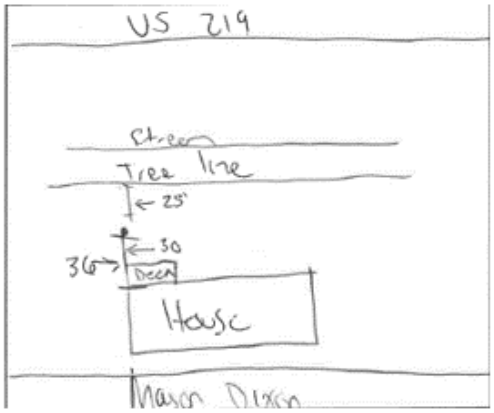
Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS

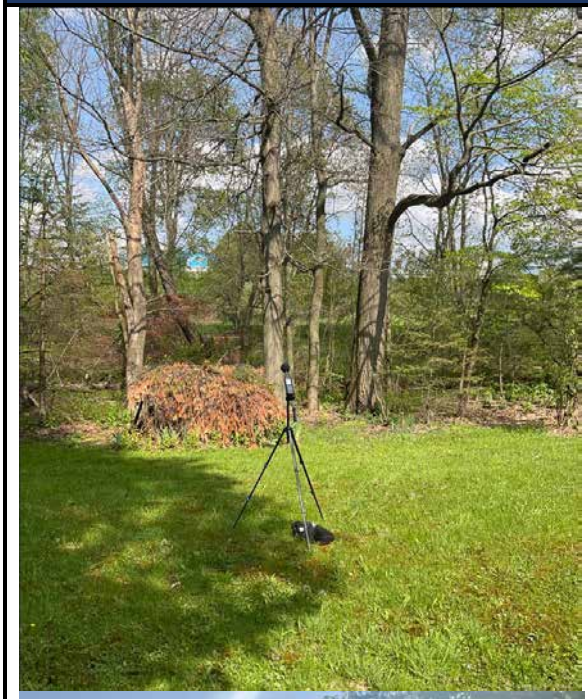
Monitoring Leq:	52.2

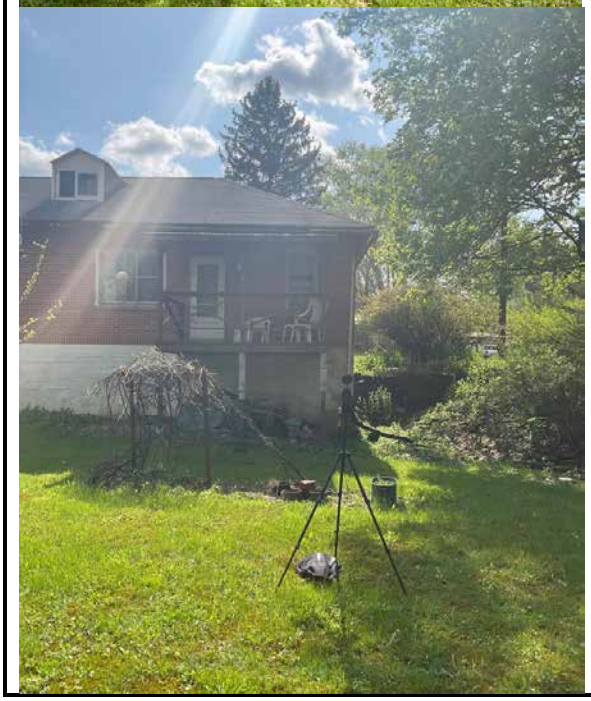
MONITORING NOTES

SITE PLAN VIEW SKETCH



Receptor PA-M-13: Photographs

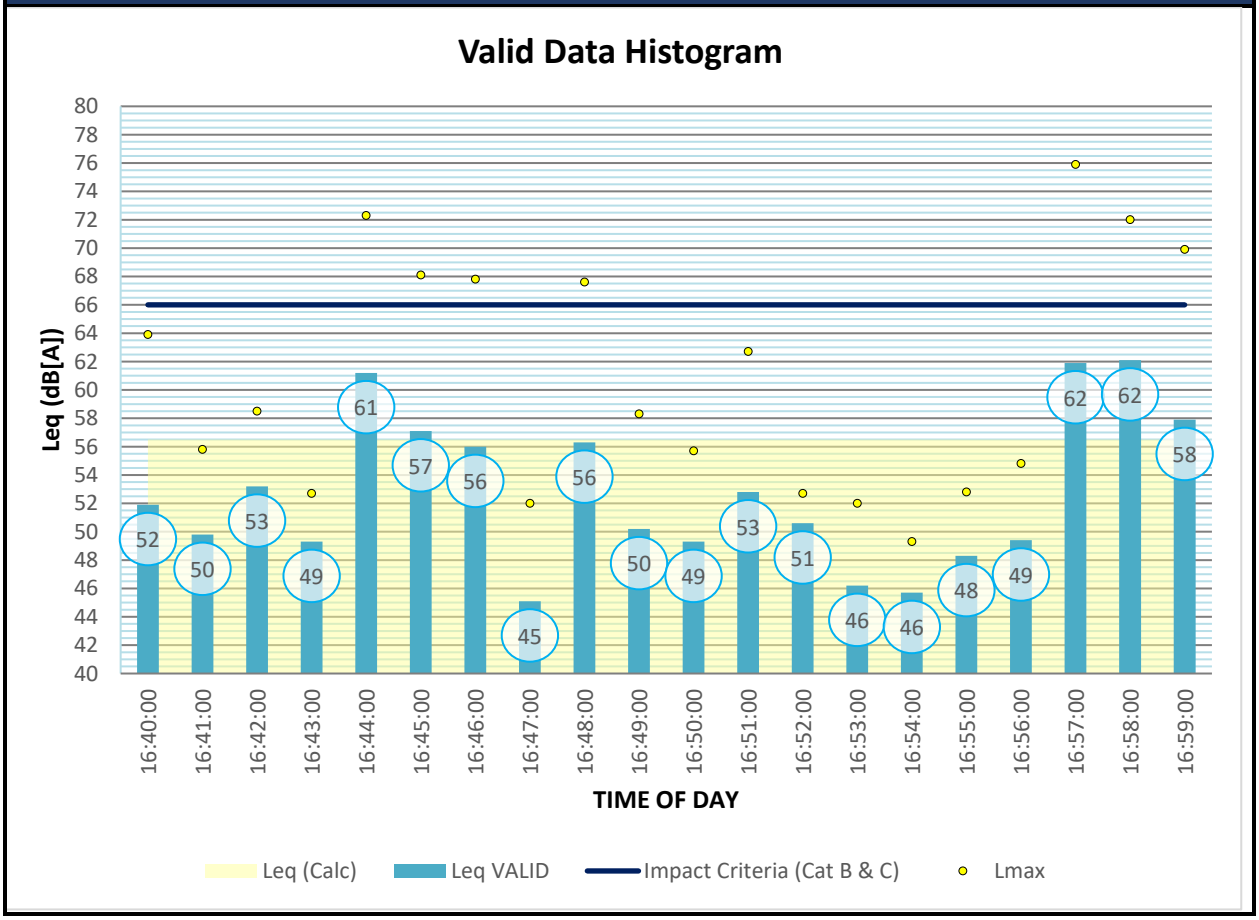




RECEPTOR PA-M-14 (PA-M18-2)

One 20-minute measurement was taken at this location on 2023 May 9 from 16:40 to 17:00 during peak hours. The 20-min Leq value was 56.2 dB(A), which rounds to 56 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-14: 20-min Leq = 56.2 dB(A) [56 dB(A)]



Receptor PA-M-14: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-14	**Site Address:** 7502 Mason Dixon Highway Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/09/2023
Time Study Started: 16:40	**Time Study Ended:** 17:00
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.7913639°, -79.0359229°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 68	**Relative Humidity (%):** 31%	**Sky:** Clear
Wind Speed (mph): 0 mph	**Wind Direction:** N	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.06/113.97
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

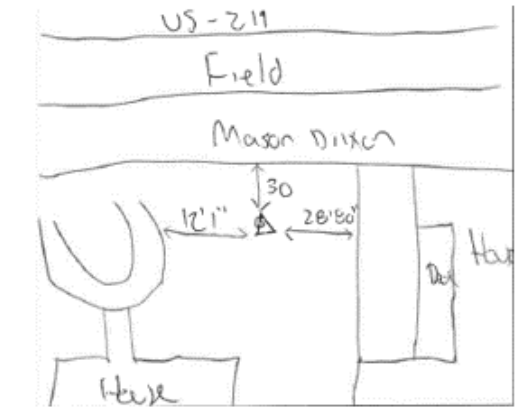
TRAFFIC COUNT DATA

Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

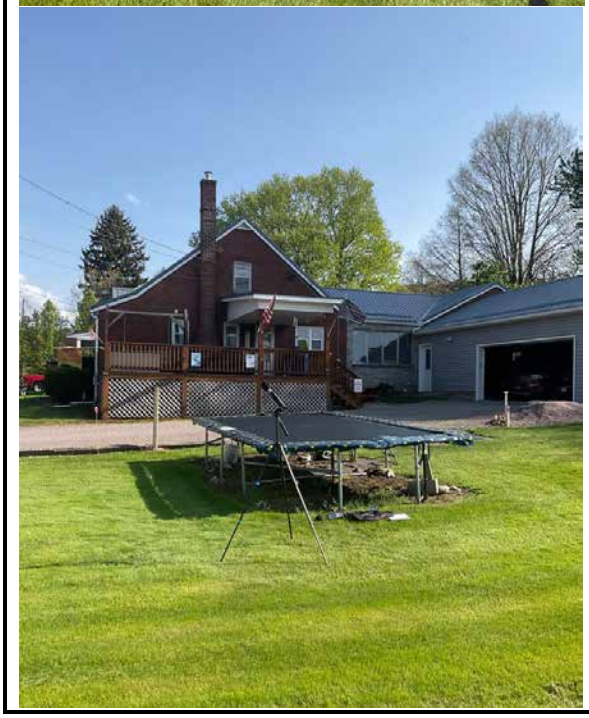
MONITORING RESULTS	
Monitoring Leq:	56.2

MONITORING NOTES

SITE PLAN VIEW SKETCH



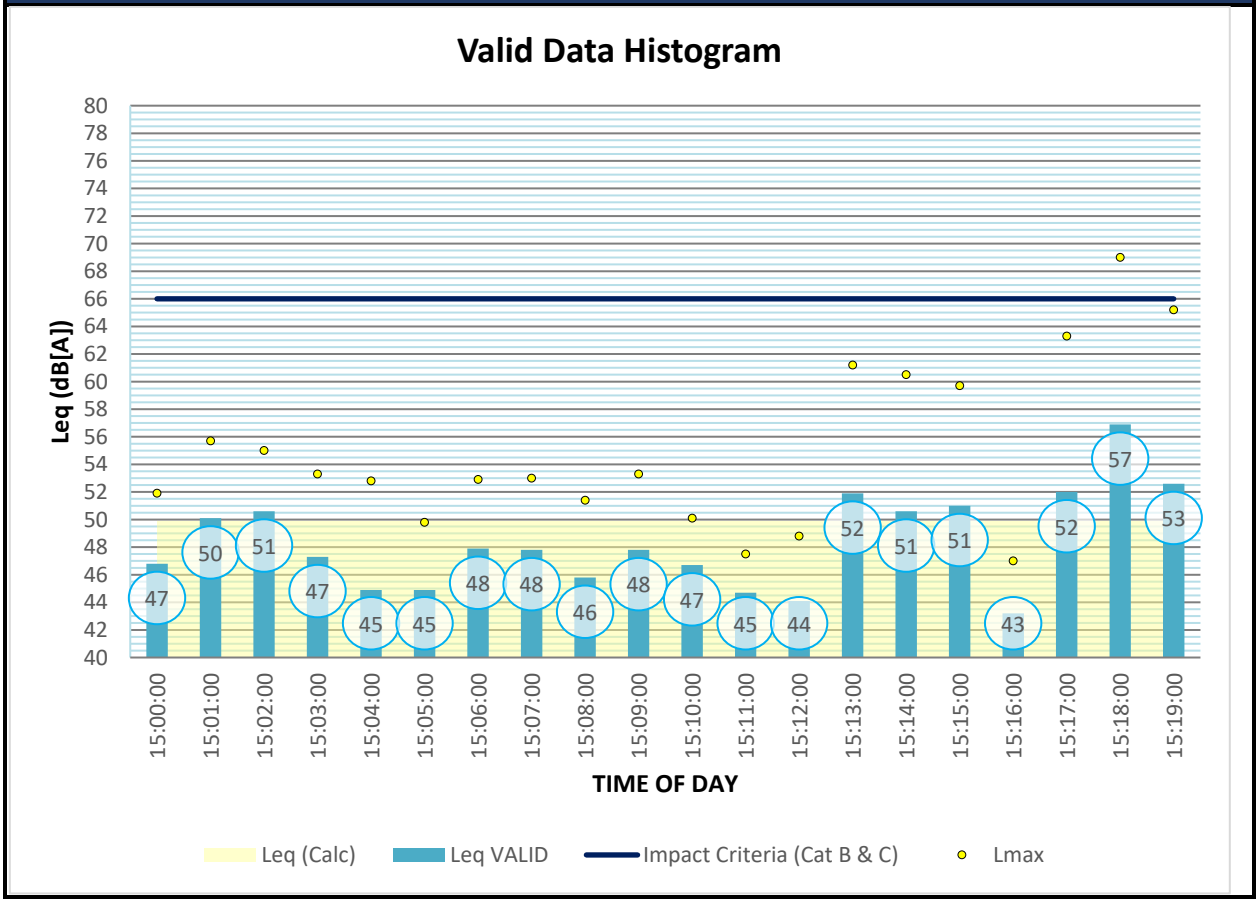
Receptor PA-M-14: Photographs



RECEPTOR PA-M-15 (PA-M18-7)

One 20-minute measurement was taken at this location on 2023 May 10 from 15:00 to 15:20 during peak hours. The 20-min Leq value was 49.9 dB(A), which rounds to 50 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-15: 20-min Leq = 49.9 dB(A) [50 dB(A)]



Receptor PA-M-15: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-15	**Site Address:** 157 Schardt Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023 – 05/10/2023
Time Study Started: 15:00	**Time Study Ended:** 15:20
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.7942198°, -79.0375323°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 65	**Relative Humidity (%):** 31%	**Sky:** Clear
Wind Speed (mph): 6 mph	**Wind Direction:** NNE	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114/114.03
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

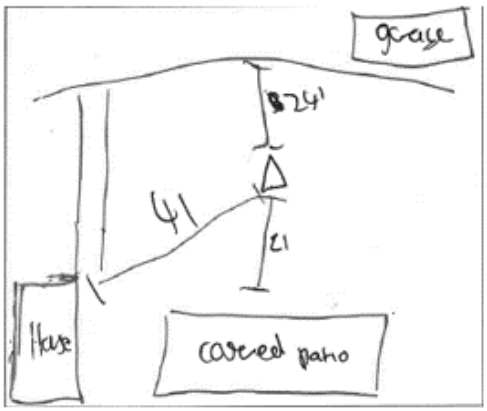
TRAFFIC COUNT DATA

Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	49.9

MONITORING NOTES

SITE PLAN VIEW SKETCH

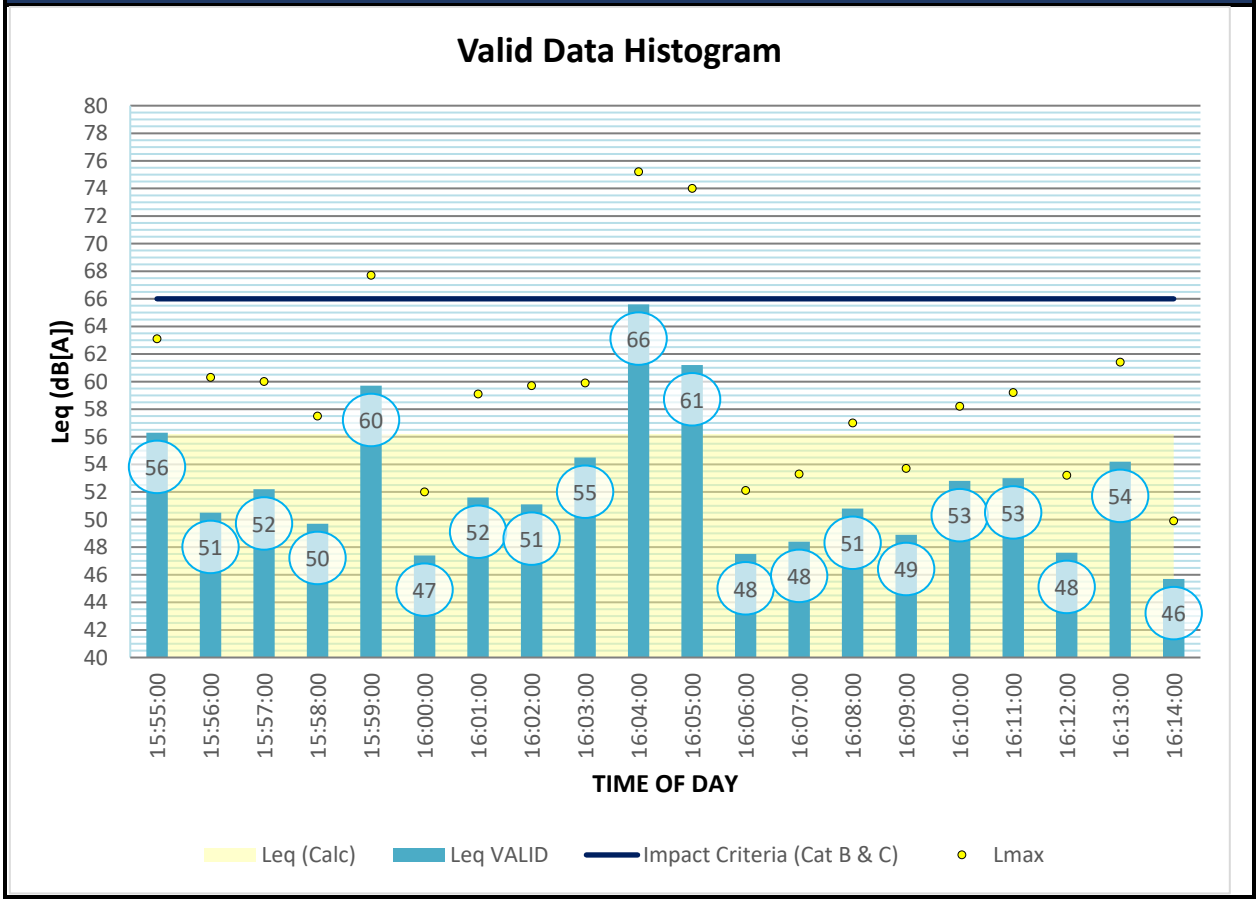


Receptor PA-M-15: Photographs

RECEPTOR PA-M-16 (PA-M18-12)

One 20-minute measurement was taken at this location on 2023 May 10 from 15:55 to 16:15 during peak hours. The 20-min Leq value was 56.2 dB(A), which rounds to 56 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-16: 20-min Leq = 56.2 dB(A) [56 dB(A)]



Receptor PA-M-16: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-16	**Site Address:** 138 Fi Hoff Lane Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/10/2023 – 05/10/2023
Time Study Started: 15:55	**Time Study Ended:** 16:15
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.7958082°, -79.0371326°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 66	**Relative Humidity (%):** 28%	**Sky:** Clear
Wind Speed (mph): 0	**Wind Direction:** N/A	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114/114.01
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

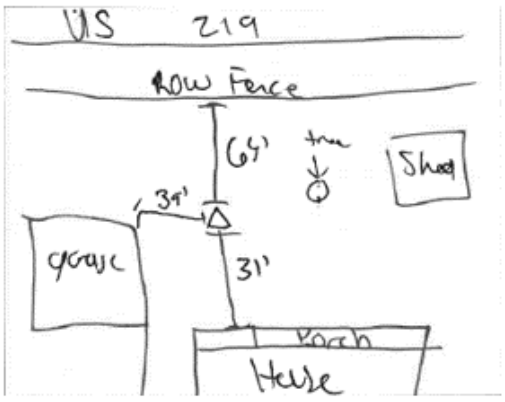
TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	56.2

MONITORING NOTES

SITE PLAN VIEW SKETCH

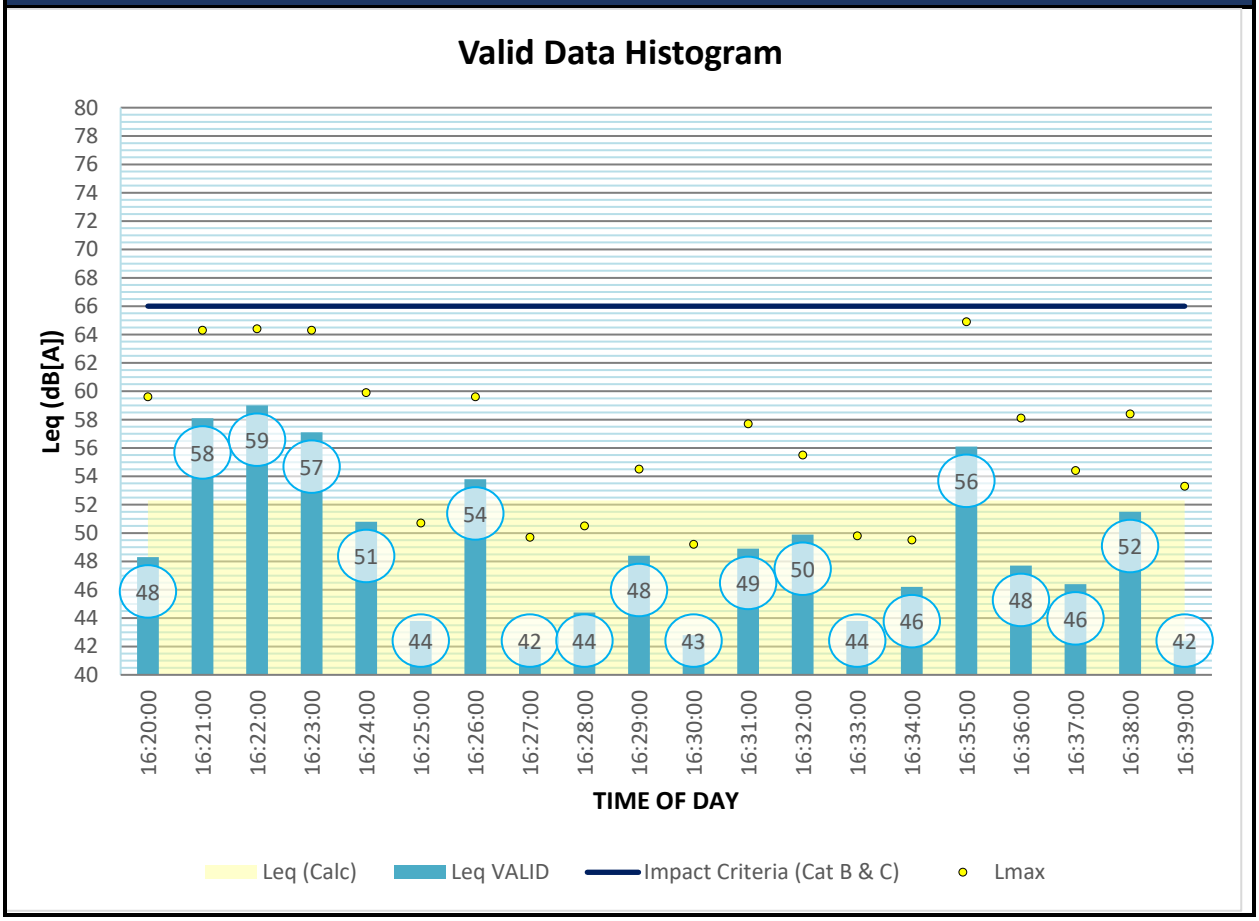


Receptor PA-M-16: Photographs

RECEPTOR PA-M-17 (PA-M19-1)

One 20-minute measurement was taken at this location on 2023 May 11 from 16:20 to 16:40 during peak hours. The 20-min Leq value was 52.3 dB(A), which rounds to 52 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-17: 20-min Leq = 52.3 dB(A) [52 dB(A)]



Receptor PA-M-17: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-17	**Site Address:** 211 Fike Hollow Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/11/2023 – 05/11/2023
Time Study Started: 16:20	**Time Study Ended:** 16:40
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.794512°, -79.034298°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 75	**Relative Humidity (%): 22%**	**Sky:** Clear
Wind Speed (mph): 6 mph	**Wind Direction: WNW**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.07/113.95
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

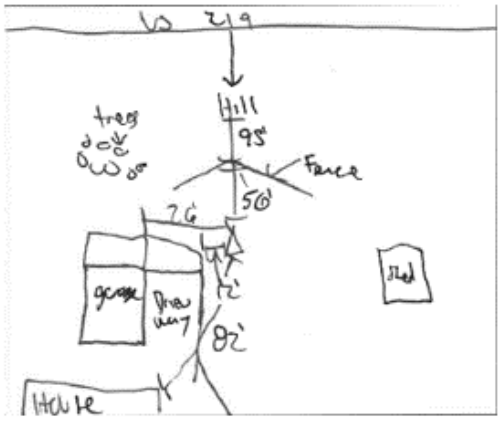
TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	52.3

MONITORING NOTES

SITE PLAN VIEW SKETCH

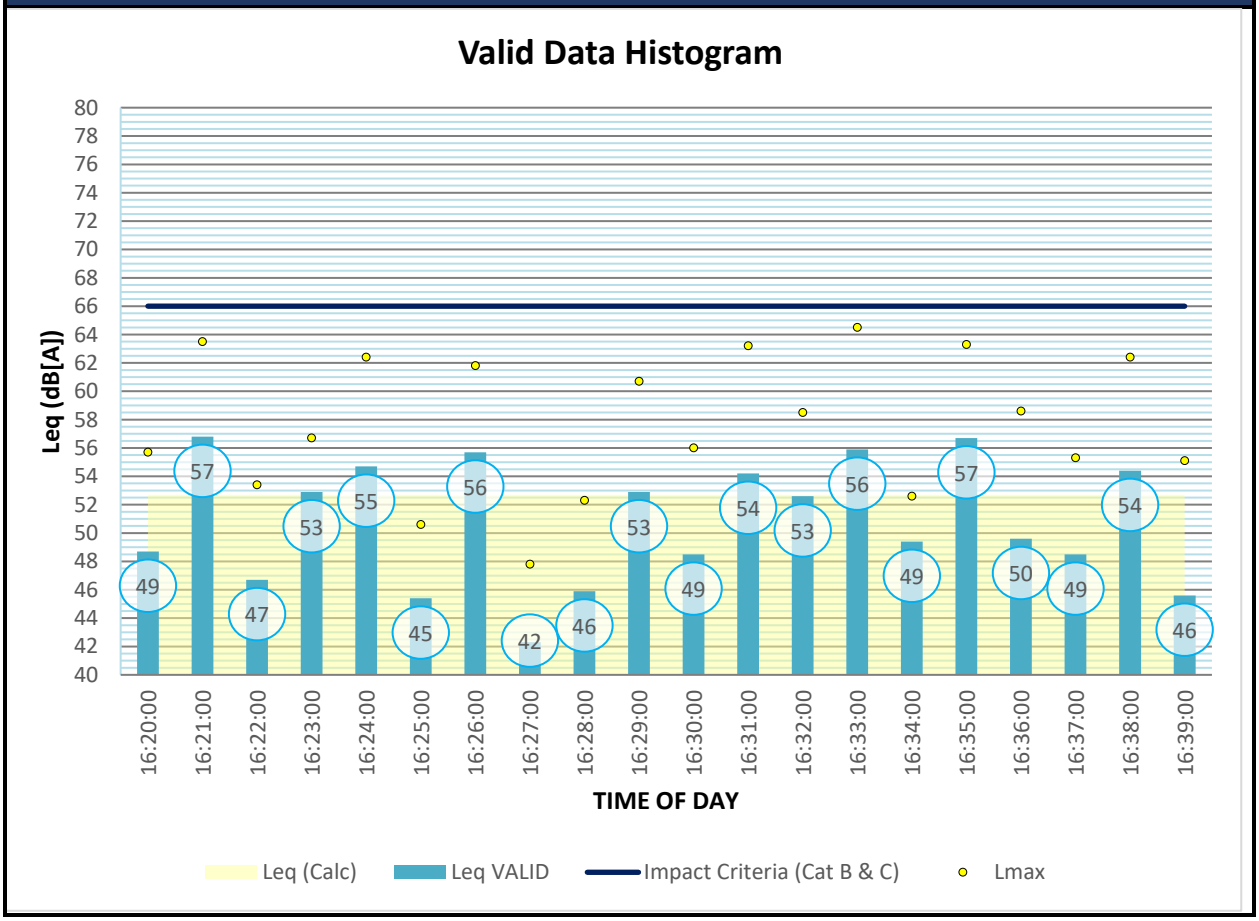


Receptor PA-M-17: Photographs

RECEPTOR PA-M-18 (PA-M19-3)

One 20-minute measurement was taken at this location on 2023 May 11 from 16:20 to 16:40 during peak hours. The 20-min Leq value was 52.7 dB(A), which rounds to 53 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-18: 20-min Leq = 52.7 dB(A) [53 dB(A)]



Receptor PA-M-18: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-18	**Site Address:** 230 Fike Hollow Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/11/2023 – 05/11/2023
Time Study Started: 16:20	**Time Study Ended:** 16:40
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.7952147°, -79.0338436°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 75	**Relative Humidity (%): 22%**	**Sky:** Clear
Wind Speed (mph): 6 mph	**Wind Direction: WNW**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.98/113.98
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA

Roadway Identification	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	52.7

MONITORING NOTES

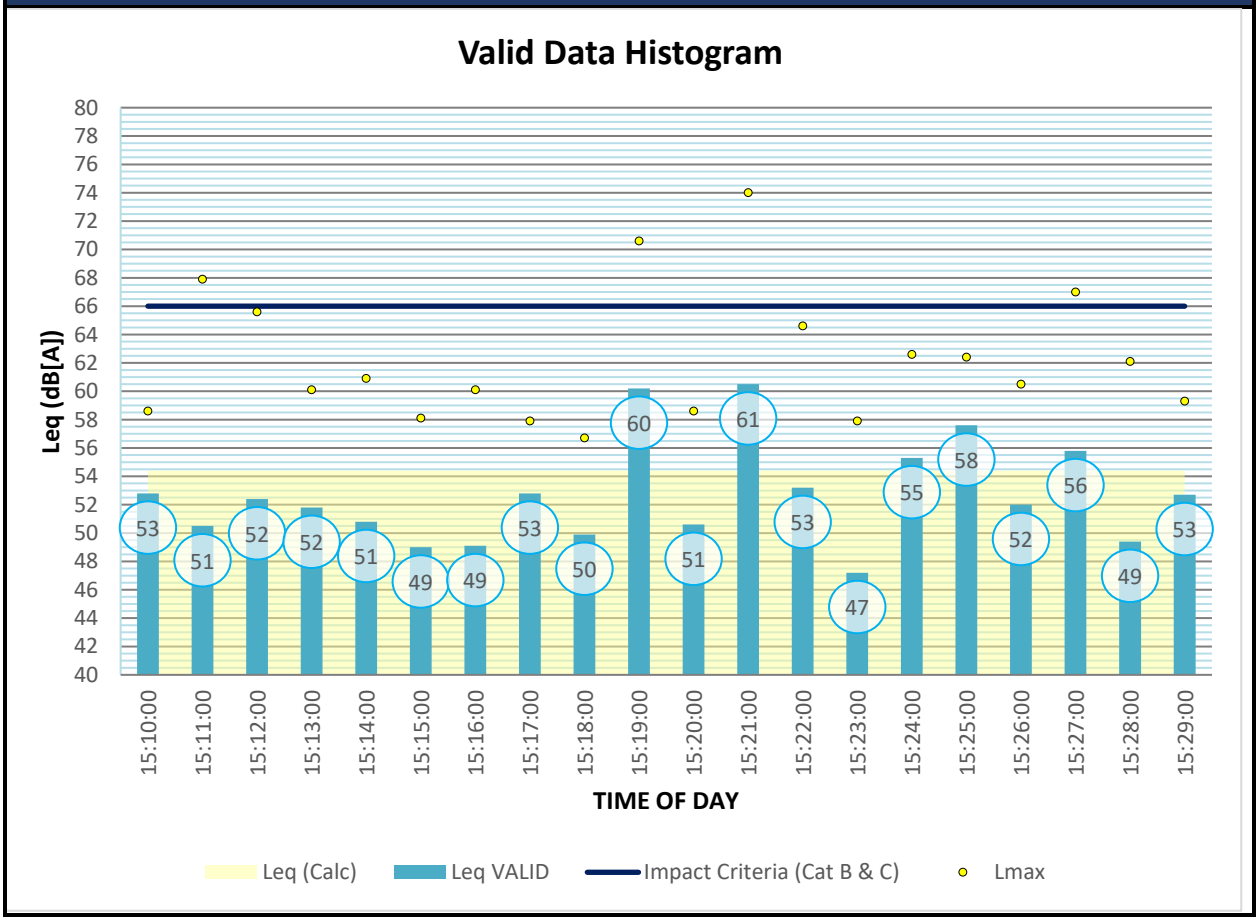
SITE PLAN VIEW SKETCH

Receptor PA-M-18: Photographs

RECEPTOR PA-M-19 (PA-M19-6)

One 20-minute measurement was taken at this location on 2023 May 11 from 15:10 to 15:30 during peak hours. The 20-min Leq value was 54.4 dB(A), which rounds to 54 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-19: 20-min Leq = 54.4 dB(A) [54 dB(A)]



Receptor PA-M-19: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.
Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-19	**Site Address:** 99 Willow Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/11/2023 – 05/11/2023
Time Study Started: 15:10	**Time Study Ended:** 15:30
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.796596°, -79.034416°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 74	**Relative Humidity (%): 27**	**Sky:** Clear
Wind Speed (mph): 5 mph	**Wind Direction: VAR**	**Source:** Weather Underground

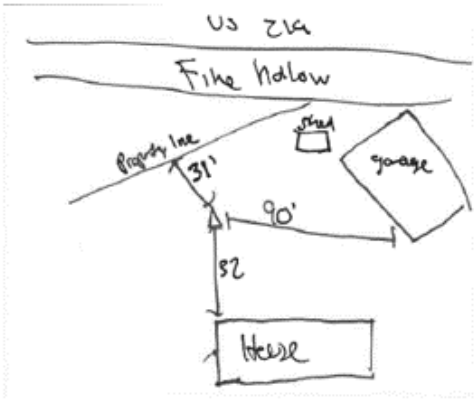
EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11371
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 113.93/114.04
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

TRAFFIC COUNT DATA				
Roadway Identification				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	54.4

MONITORING NOTES

SITE PLAN VIEW SKETCH

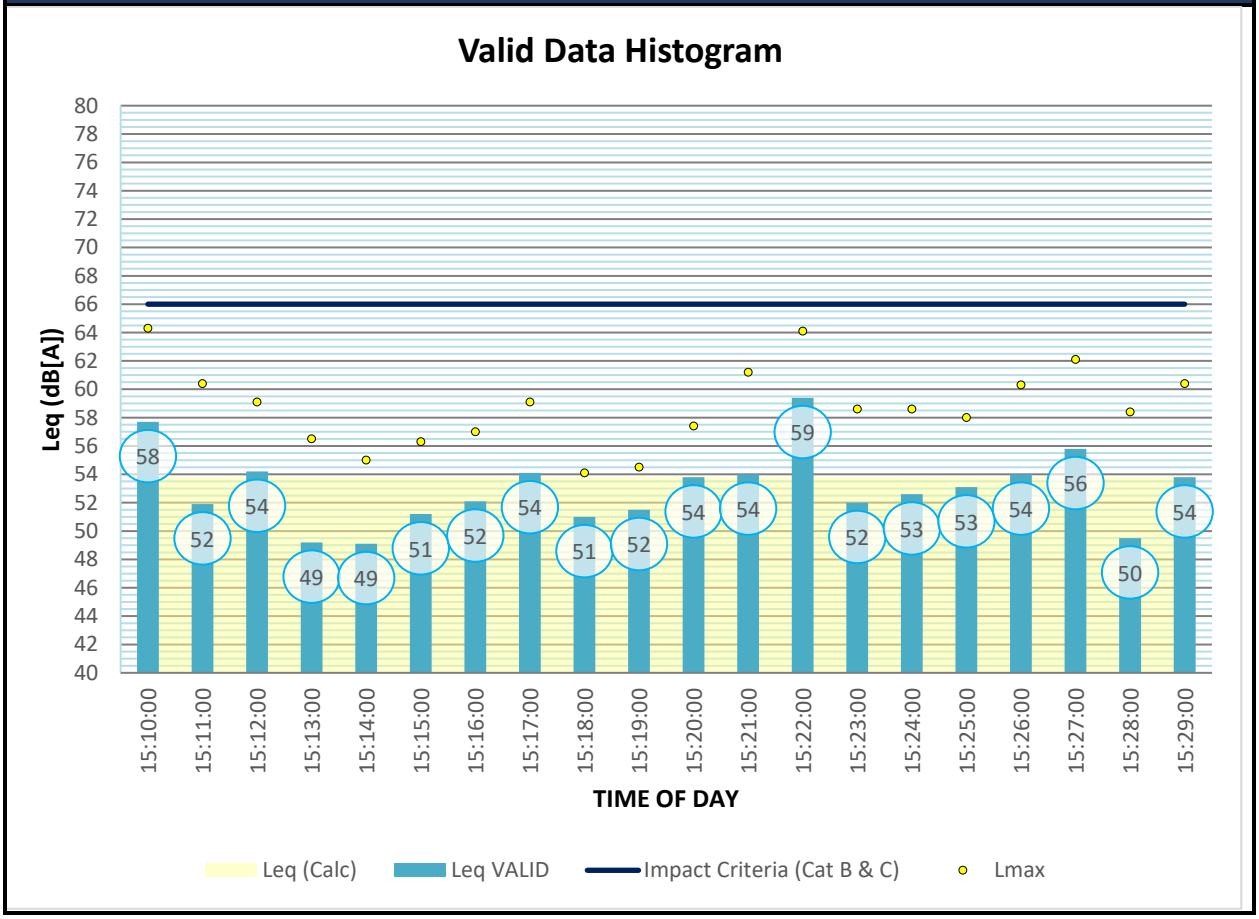


Receptor PA-M-19: Photographs

RECEPTOR PA-M-20 (PA-M19-9)

One 20-minute measurement was taken at this location on 2023 May 11 from 15:10 to 15:30 during peak hours. The 20-min Leq value was 53.8 dB(A), which rounds to 54 dB(A). 1-minute sub-intervals were collected, and a histogram of the measurement is shown in the chart below.

Valid Data Histogram - Receptor PA-M-20: 20-min Leq = 53.8 dB(A) [54 dB(A)]



Receptor PA-M-20: Noise Monitoring Sheet and Site Sketch

KCI TECHNOLOGIES, INC.

Noise Measurement Field Data Sheet

Project Name: US 6219-050 Transportation Improvement Project	**Project Location:** Garret County, MD & Somerset County, PA
Receiver Number: PA-M-20	**Site Address:** 207 Overlook Road Meyersdale, PA 15552
Observer Name: Brandan Glorioso, Joe Passmore, Matt Ross	**Date:** 05/11/2023 – 05/11/2023
Time Study Started: 15:10	**Time Study Ended:** 15:30
Study Duration: 20 mins. (1 min Intervals)	**GPS Location X/Y:** 39.797885°, -79.034548°

GENERAL METEOROLOGICAL CONDITIONS		
Temperature (°F): 74	**Relative Humidity (%): 27%**	**Sky:** Clear
Wind Speed (mph): 5 mph	**Wind Direction: VAR**	**Source:** Weather Underground

EQUIPMENT DATA	
Sound Level Meter Model: Larson Davis 831C	**Sound Level Meter Serial #:** 11372
Date of Last Calibration: 03-01-2023	**Pre/Post-Calibration:** 114.1/114.06
Response Setting: Slow	**Weighting Scale:** A
Calibrator Type: Larson Davis CAL200	**Calibrator Serial #:** 18471

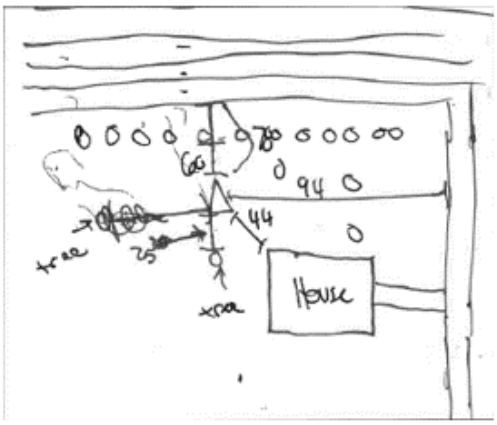
TRAFFIC COUNT DATA

Roadway Identification				
	Roadway 1		Roadway 2	
Vehicle Type	**Volume**	**Speed**	**Volume**	**Speed**
Auto				
Medium Truck				
Heavy Truck				
Motorcycle				
Bus				
Duration				

MONITORING RESULTS	
Monitoring Leq:	53.8

MONITORING NOTES

SITE PLAN VIEW SKETCH



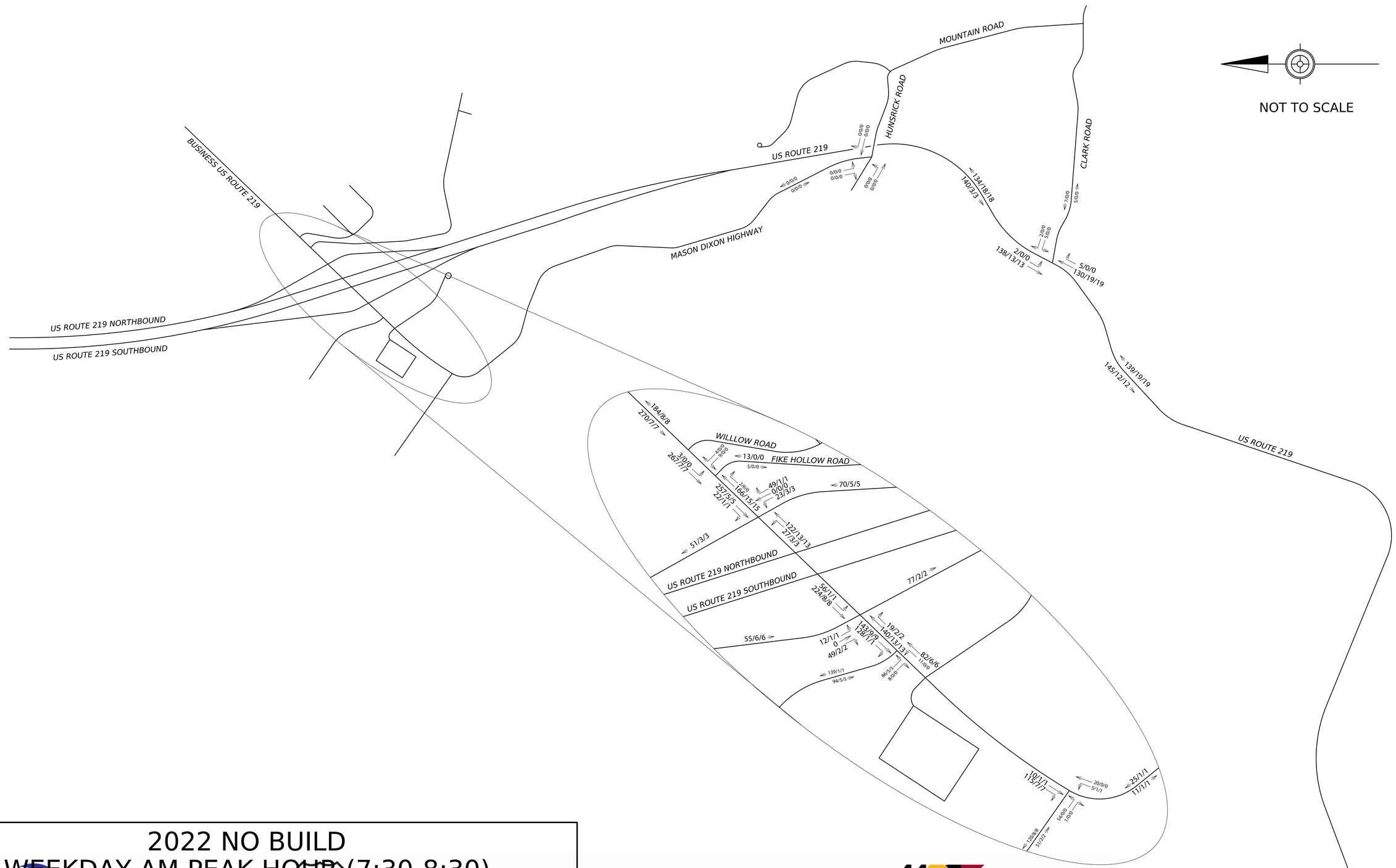
Receptor PA-M-20: Photographs

APPENDIX C

Existing 2022 and Design Year 2050 Weekday Average Daily Traffic Data

Pennsylvania Traffic Data

- Existing 2022 Traffic
- Design Year 2050 No Build and Build Traffic
- No Build and Build Truck Percentages



2022 NO BUILD
WEEKDAY AM PEAK HOUR (7:30-8:30)

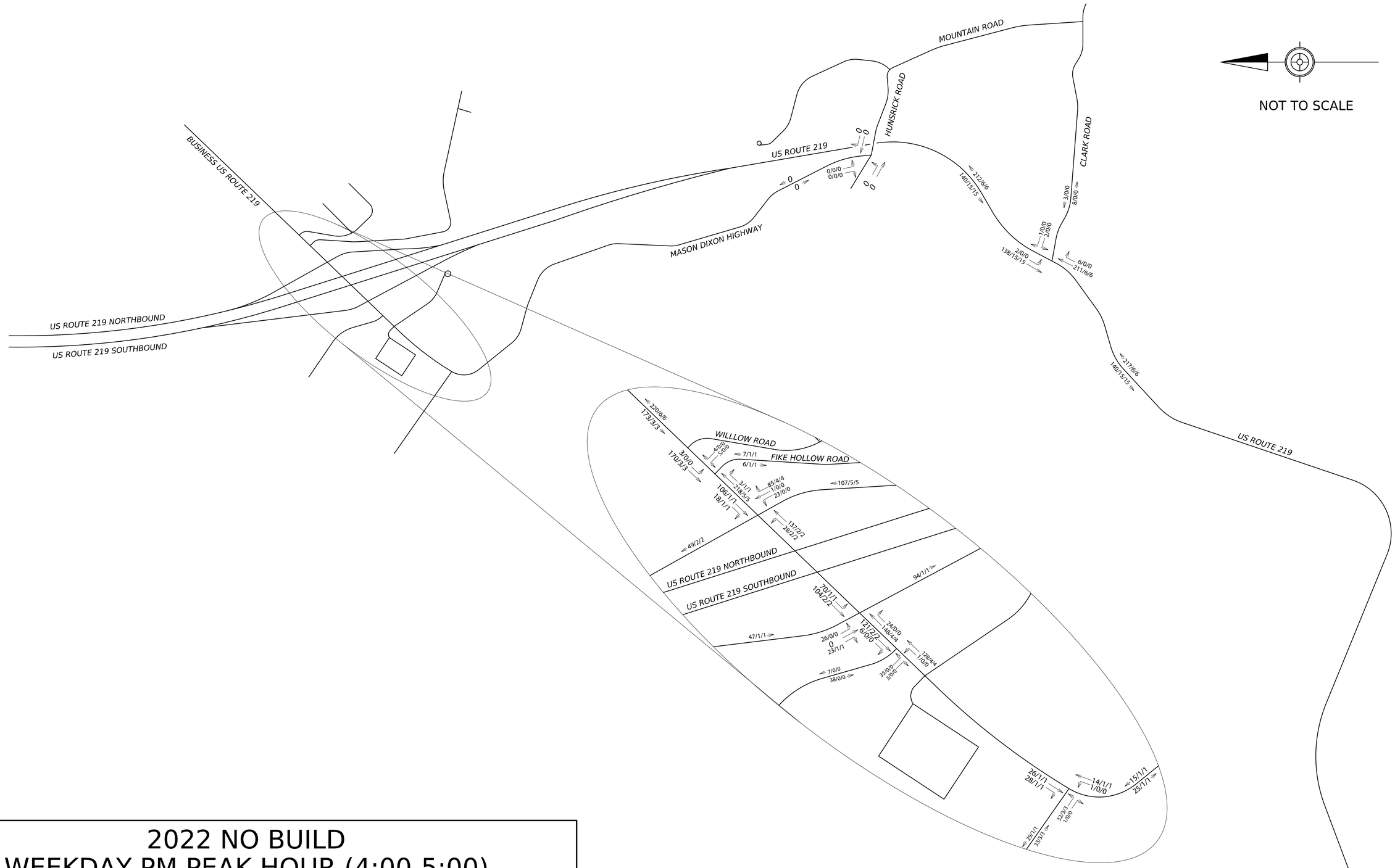
U.S. Department of Transportation
Federal Highway Administration

SHEET 1 OF 2

219 Meyersdale to Old Salisbury Rd

pennsylvania DEPARTMENT OF TRANSPORTATION

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION



2022 NO BUILD
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 1 OF 2

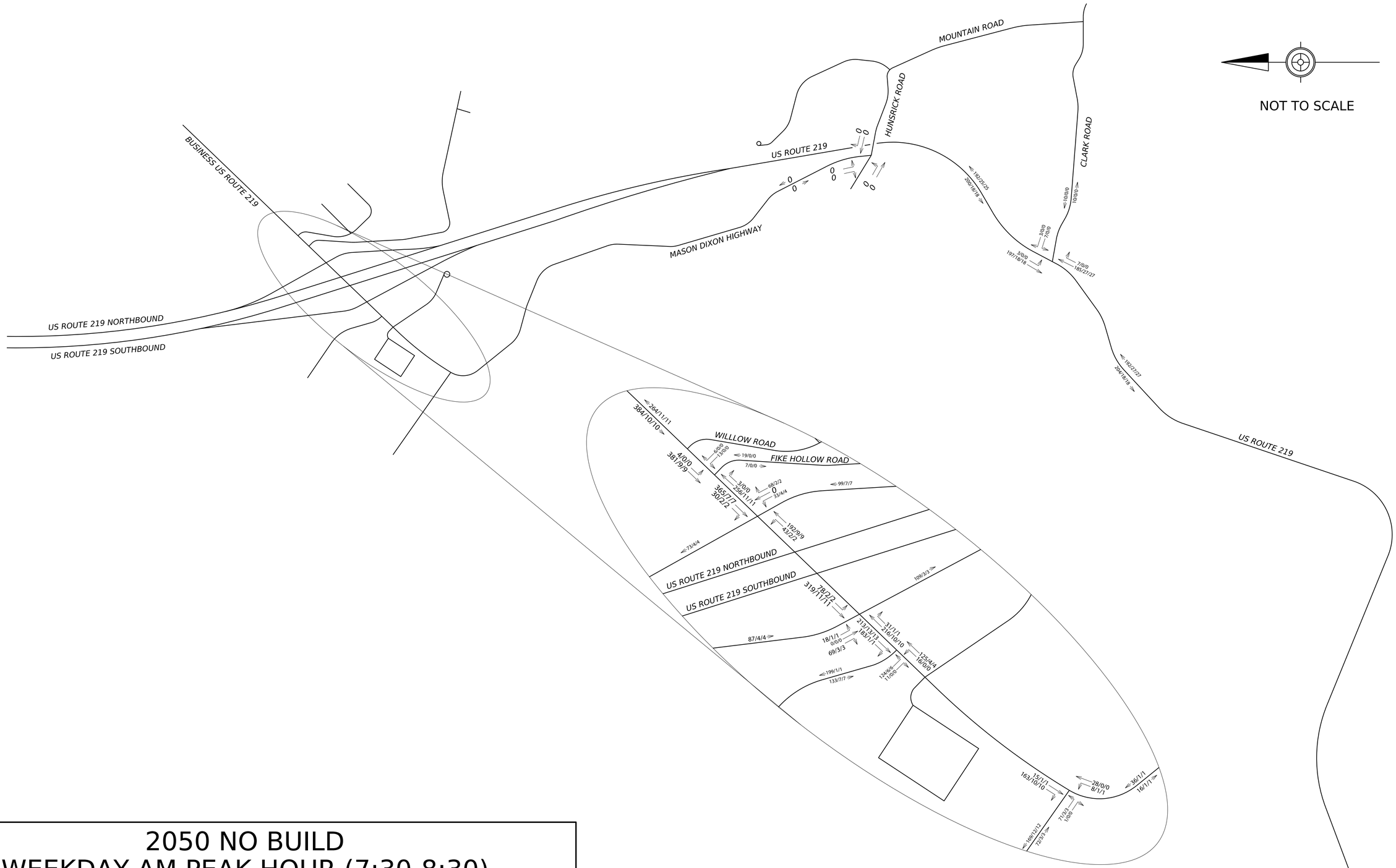
U.S. Department of Transportation
Federal Highway Administration

219 Meyersdale to Old Salisbury Rd

pennsylvania
DEPARTMENT OF TRANSPORTATION

MDOT
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

CONTINUED ON NEXT SHEET



2050 NO BUILD
WEEKDAY AM PEAK HOUR (7:30-8:30)

SHEET 1 OF 2

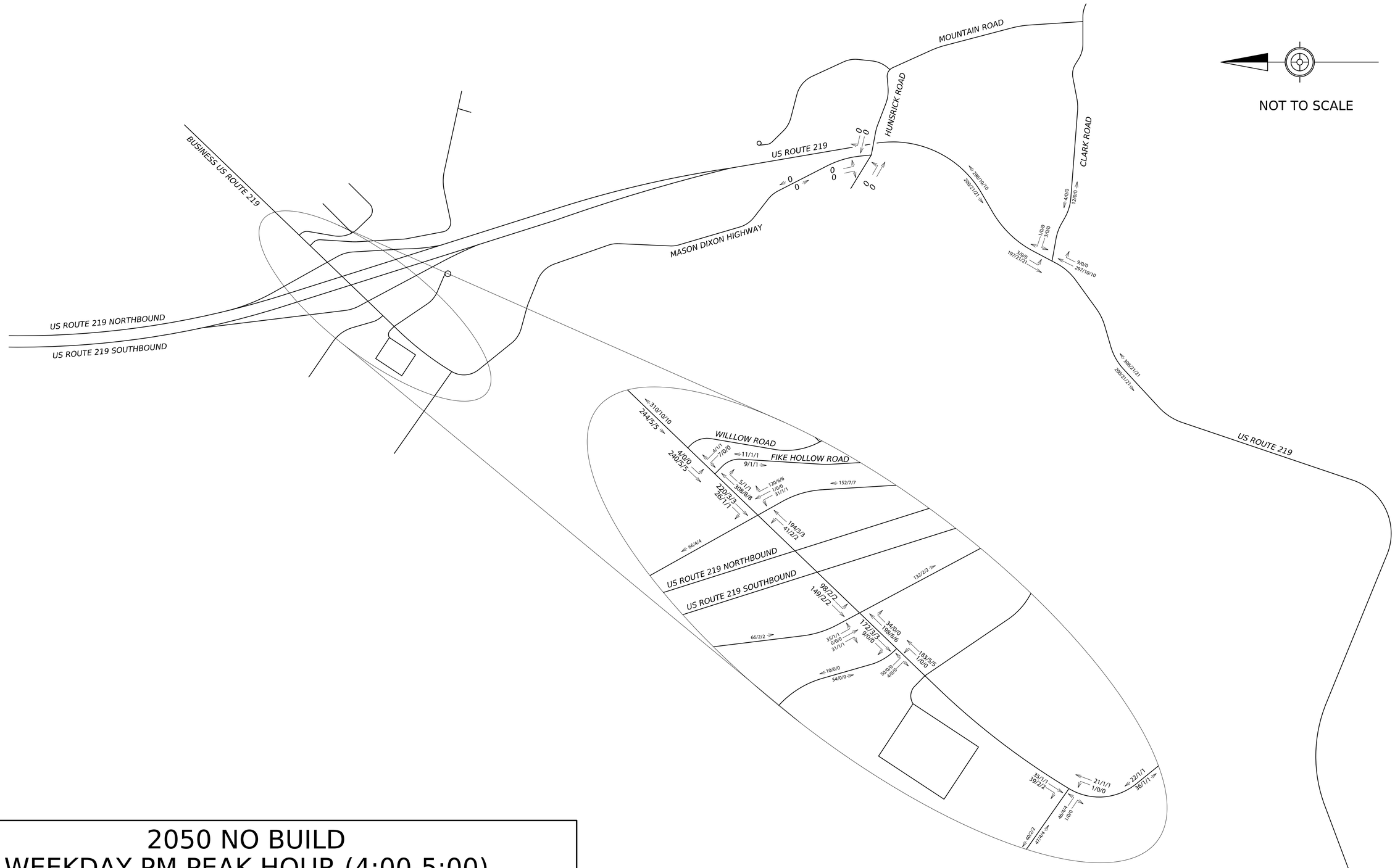
U.S. Department of Transportation
Federal Highway Administration

219 Meyersdale to Old Salisbury Rd

pennsylvania
DEPARTMENT OF TRANSPORTATION

MDOT
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

CONTINUED ON NEXT SHEET



2050 NO BUILD
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 1 OF 2

U.S. Department of Transportation
Federal Highway Administration

219 Meyersdale to Old Salisbury Rd

pennsylvania
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STATE HIGHWAY ADMINISTRATION

CONTINUED ON NEXT SHEET

2050 BUILD
WEEKDAY AM PEAK HOUR (7:30-8:30)

SHEET 1 OF 2

U.S. Department of Transportation
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CONTINUED ON NEXT SHEET

2050 BUILD
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 1 OF 2

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MDOT
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STATE HIGHWAY ADMINISTRATION

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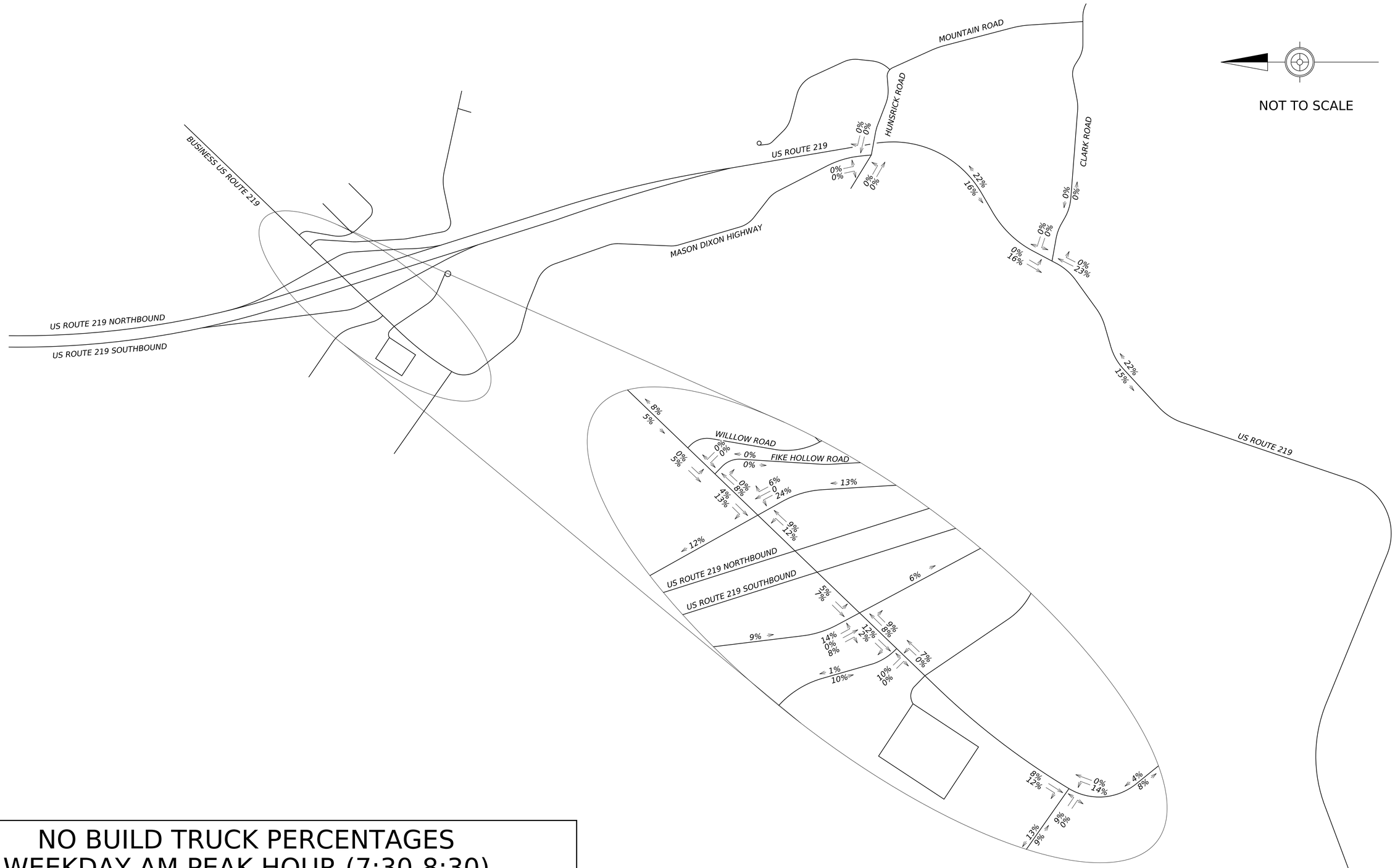

NO BUILD TRUCK PERCENTAGES
WEEKDAY AM PEAK HOUR (7:30-8:30)

SHEET 1 OF 2

U.S. Department of Transportation
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219 Meyersdale to Old Salisbury Rd

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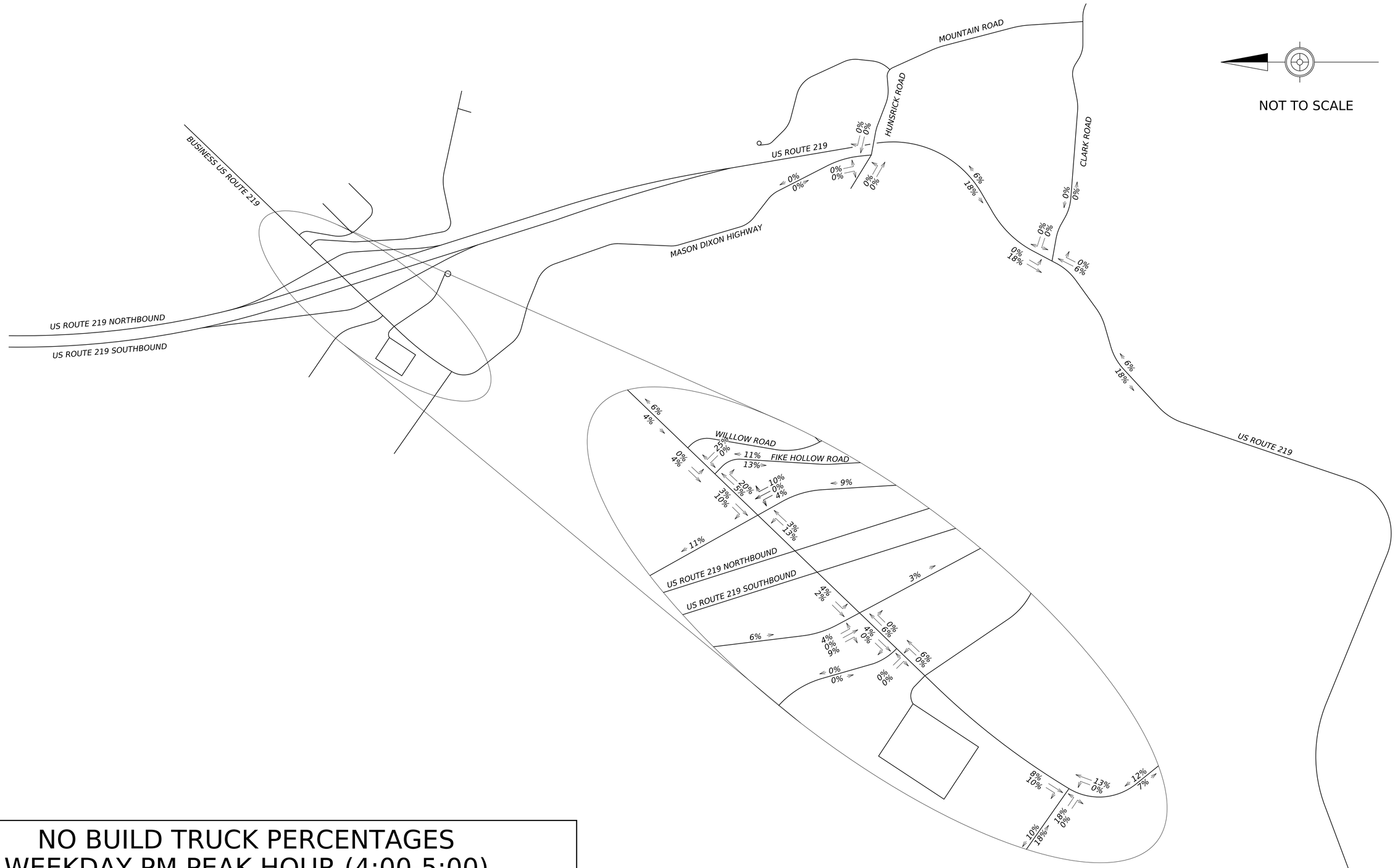
STATE HIGHWAY ADMINISTRATION

CONTINUED ON NEXT SHEET



NO BUILD TRUCK PERCENTAGES
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 1 OF 2

U.S. Department of Transportation
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219 Meyersdale to Old Salisbury Rd

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DEPARTMENT OF TRANSPORTATION

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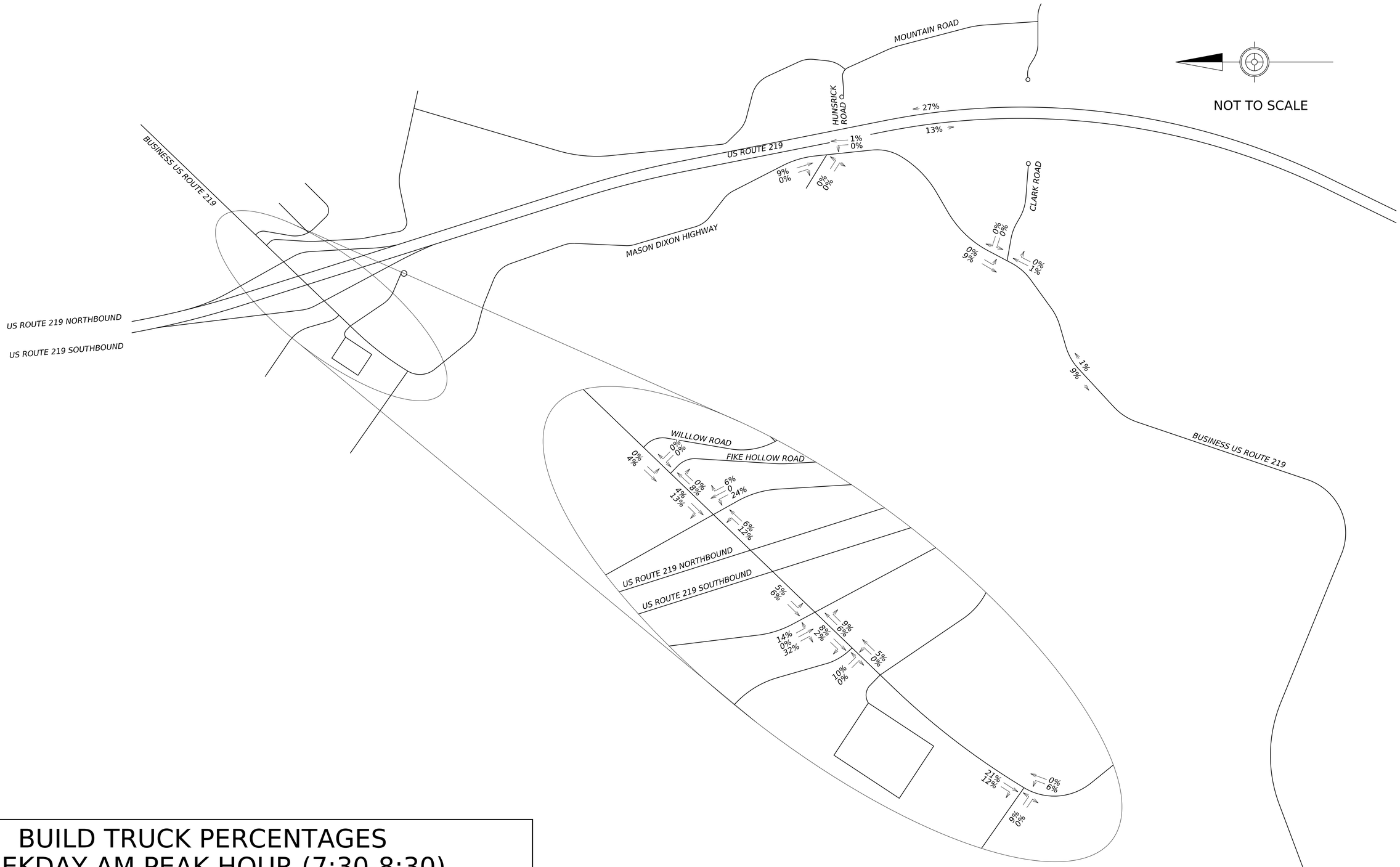
STATE HIGHWAY ADMINISTRATION

CONTINUED ON NEXT SHEET



BUILD TRUCK PERCENTAGES
WEEKDAY AM PEAK HOUR (7:30-8:30)

U.S. Department of Transportation
Federal Highway Administration

219 Meyersdale to Old Salisbury Rd

pennsylvania
DEPARTMENT OF TRANSPORTATION

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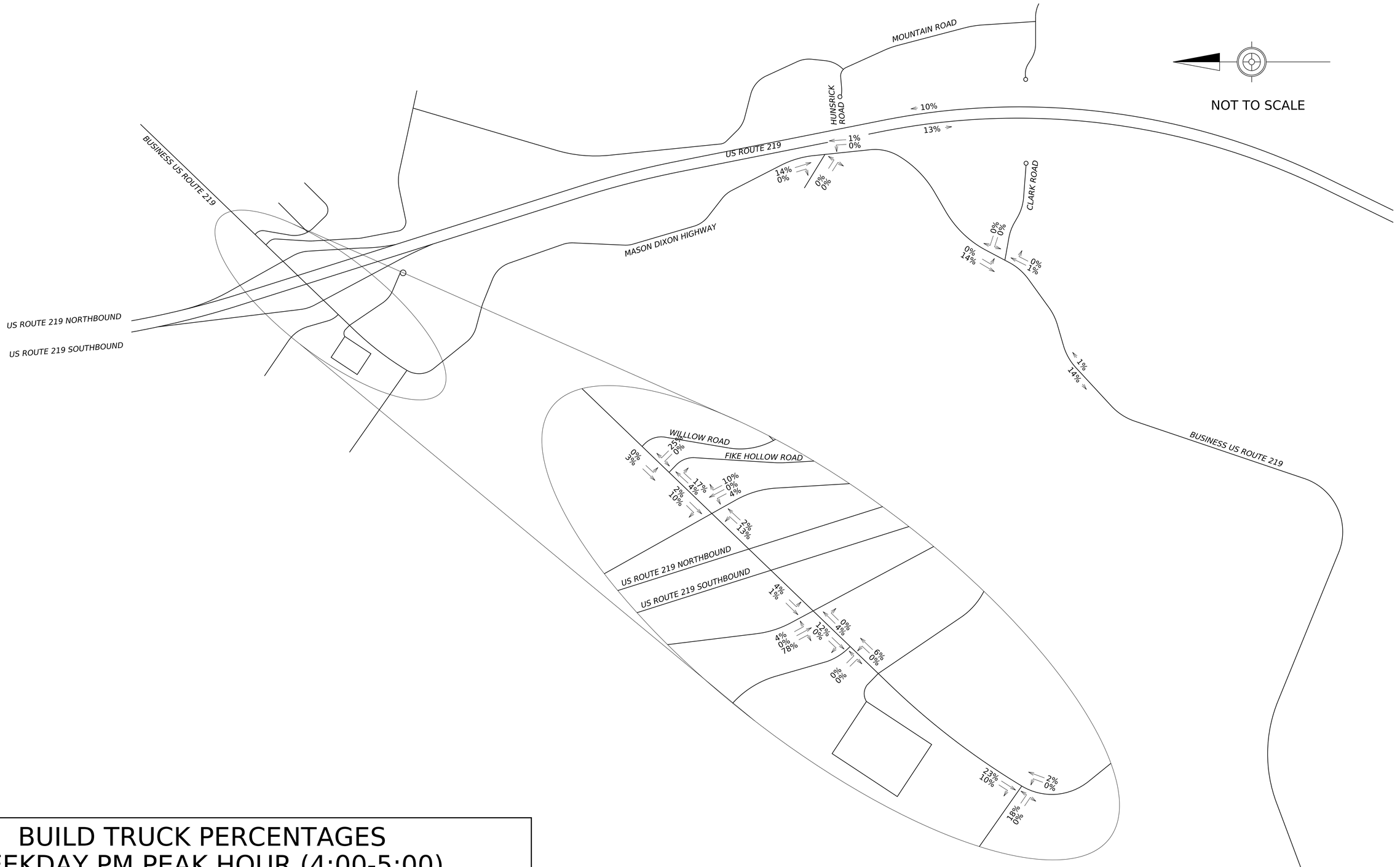
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

CONTINUED ON NEXT SHEET



BUILD TRUCK PERCENTAGES
WEEKDAY PM PEAK HOUR (4:00-5:00)

U.S. Department of Transportation
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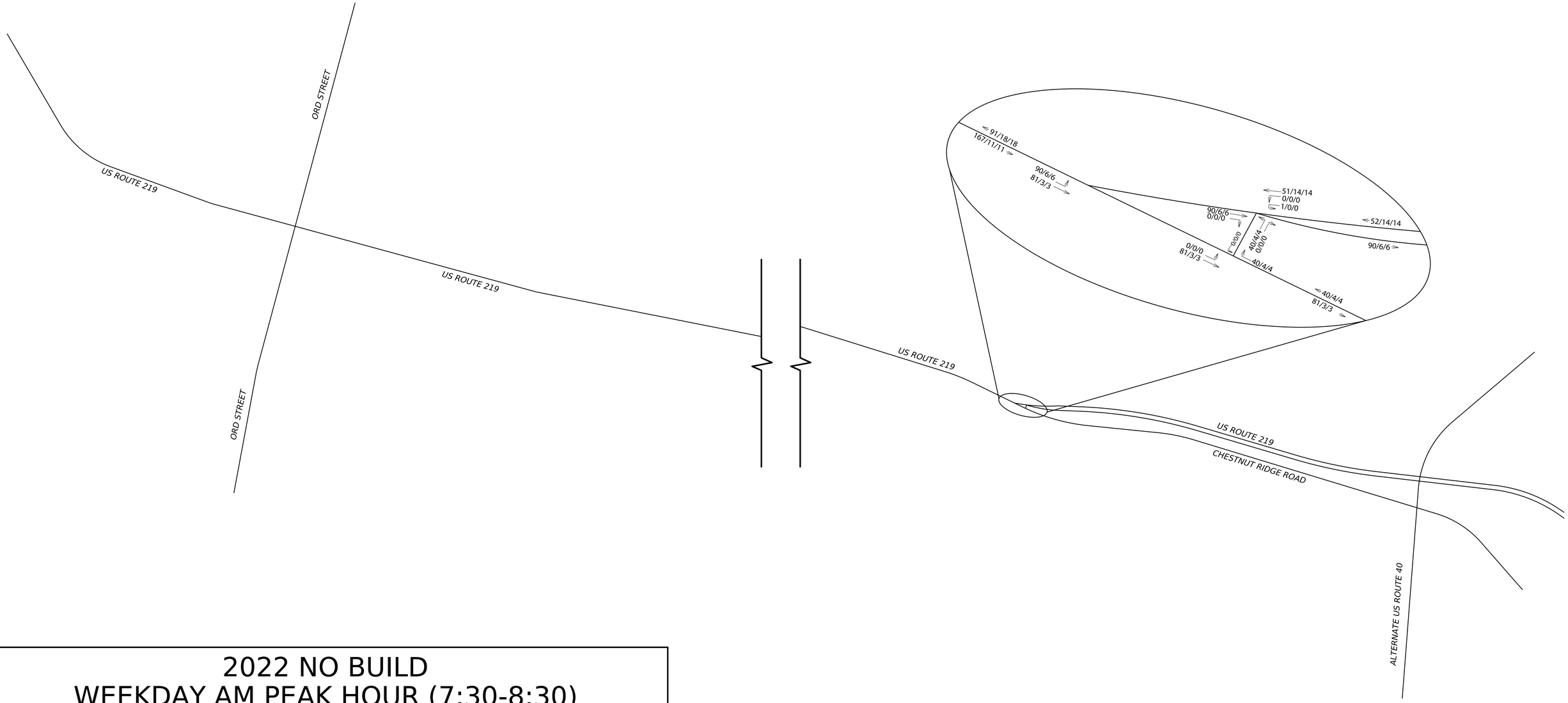
CONTINUED ON NEXT SHEET

Maryland Traffic Data

- Existing 2022 Traffic
- Design Year 2050 No Build and Build Traffic
- No Build and Build Truck Percentages

CONTINUED ON PREVIOUS SHEET

NOT TO SCALE



2022 NO BUILD
WEEKDAY AM PEAK HOUR (7:30-8:30)

SHEET 2 OF 2

U.S. Department of Transportation
Federal Highway Administration

219 Meyersdale to Old Salisbury Rd

pennsylvania
DEPARTMENT OF TRANSPORTATION

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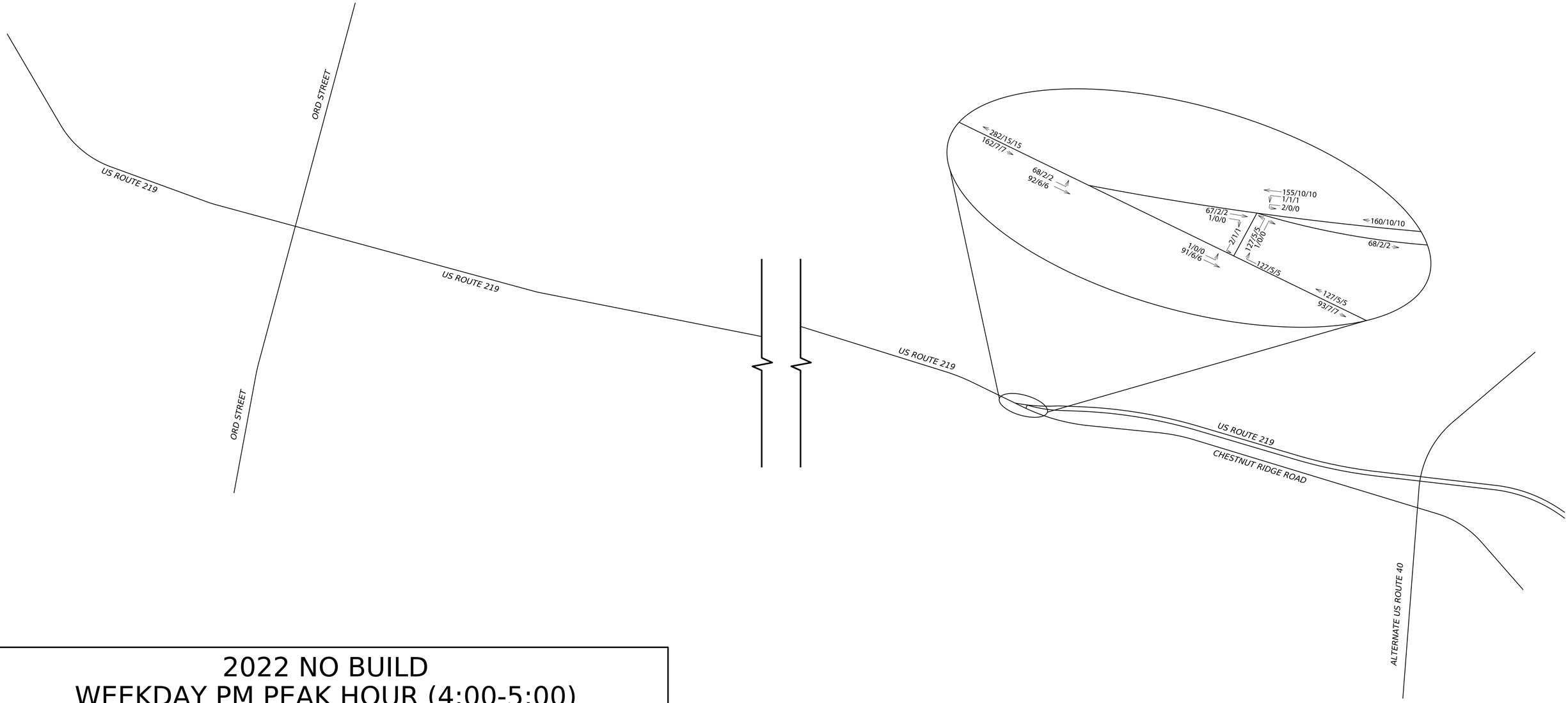
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

CONTINUED ON PREVIOUS SHEET

NOT TO SCALE



2022 NO BUILD
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 2 OF 2

U.S. Department of Transportation
Federal Highway Administration

219 Meyersdale to Old Salisbury Rd

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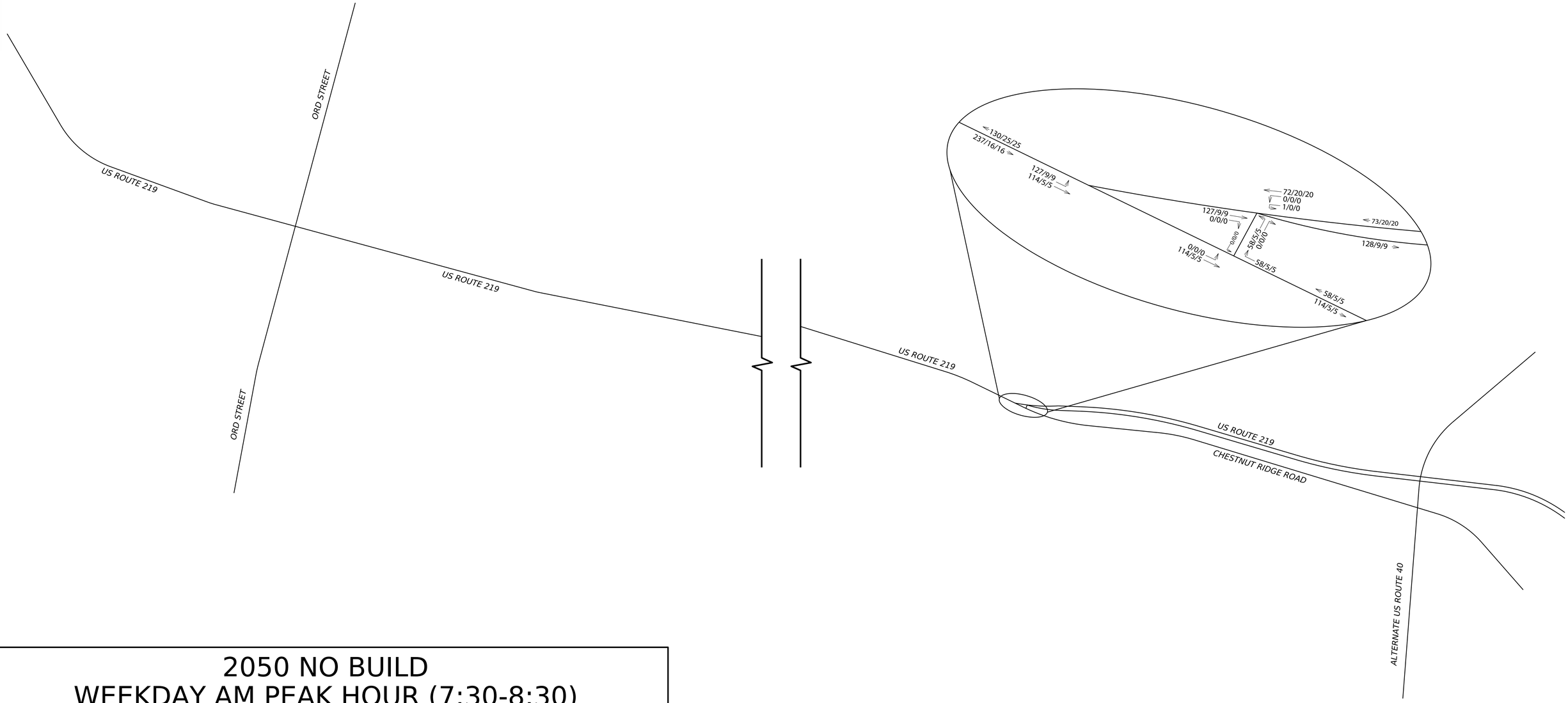
STATE HIGHWAY ADMINISTRATION

CONTINUED ON PREVIOUS SHEET

NOT TO SCALE



2050 NO BUILD
WEEKDAY AM PEAK HOUR (7:30-8:30)

SHEET 2 OF 2

U.S. Department of Transportation
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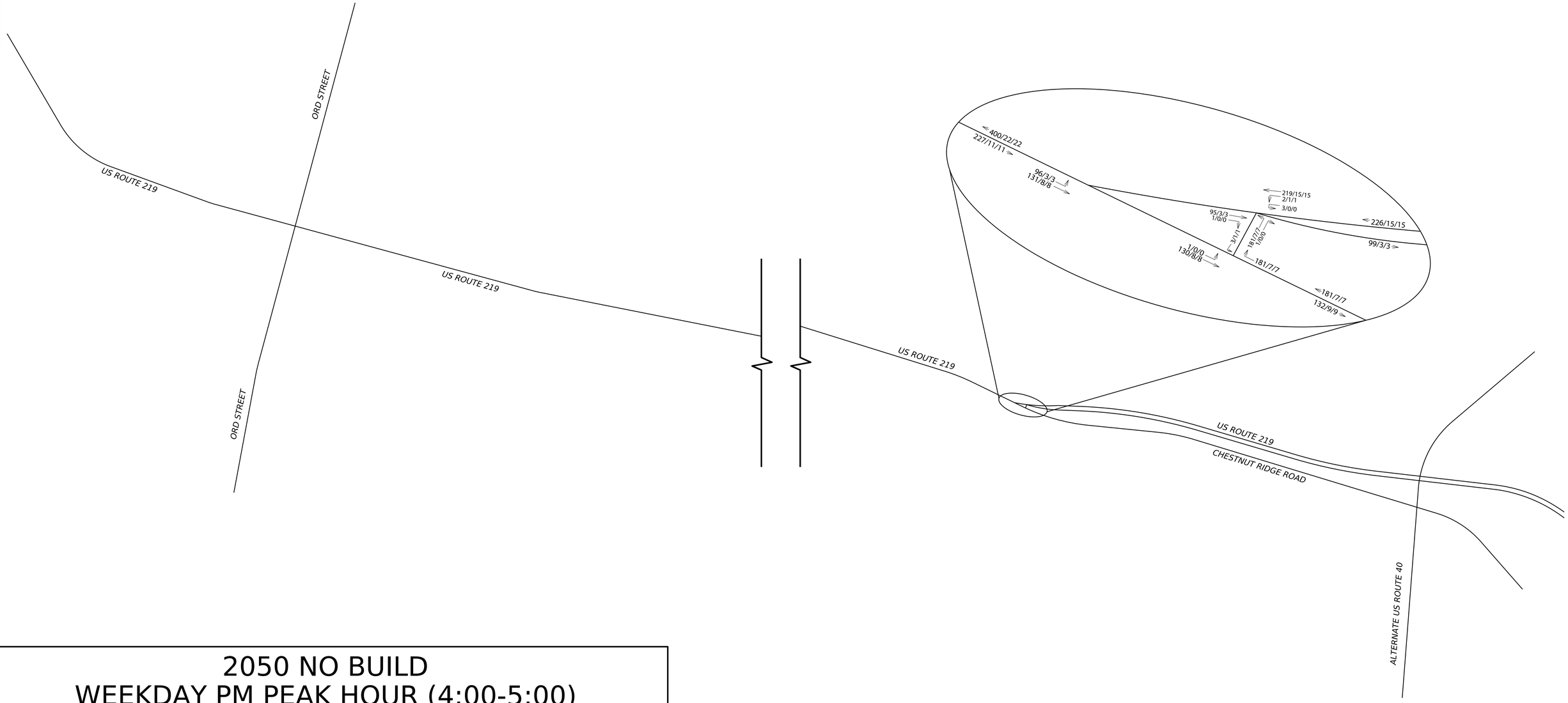
STATE HIGHWAY ADMINISTRATION

CONTINUED ON PREVIOUS SHEET

NOT TO SCALE



2050 NO BUILD
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 2 OF 2

U.S. Department of Transportation
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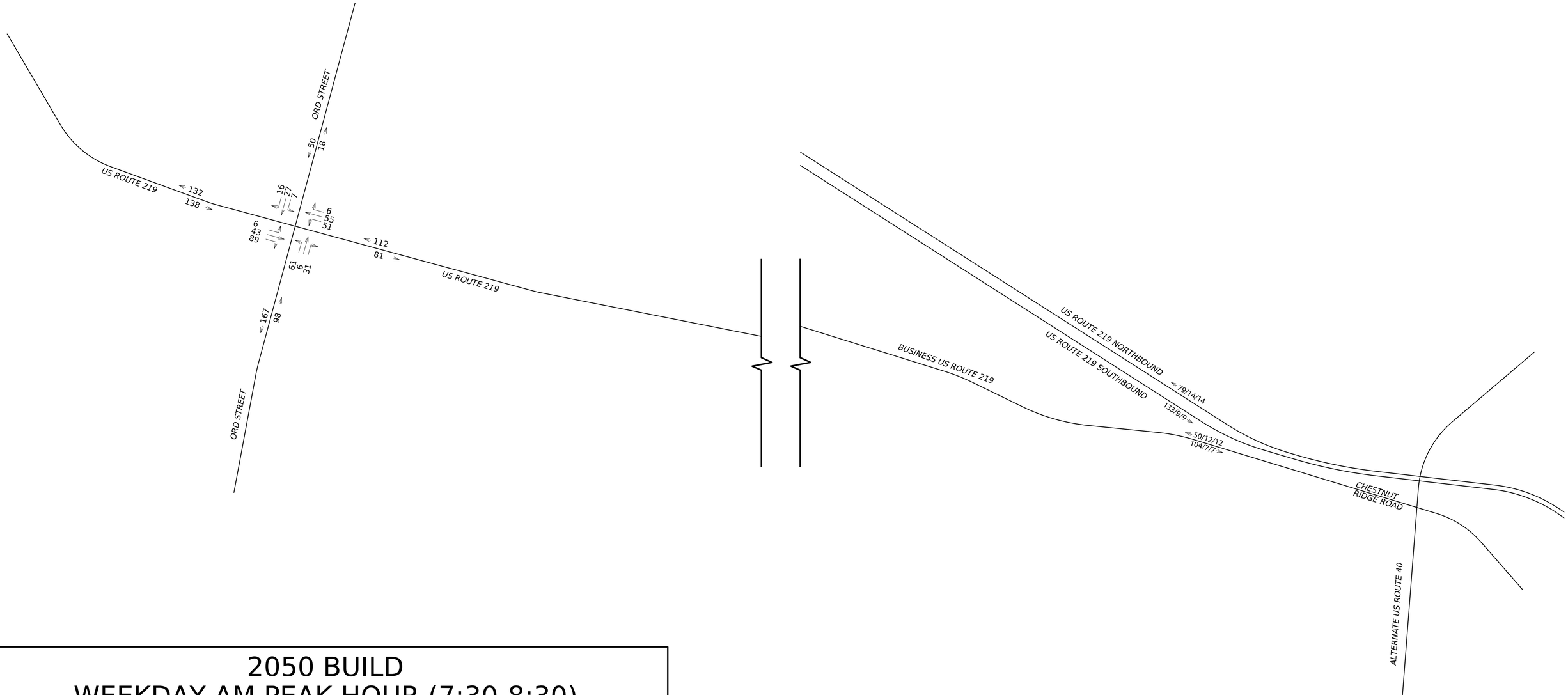
STATE HIGHWAY ADMINISTRATION

CONTINUED ON PREVIOUS SHEET

NOT TO SCALE



2050 BUILD
WEEKDAY AM PEAK HOUR (7:30-8:30)

SHEET 2 OF 2

U.S. Department of Transportation
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219 Meyersdale to Old Salisbury Rd

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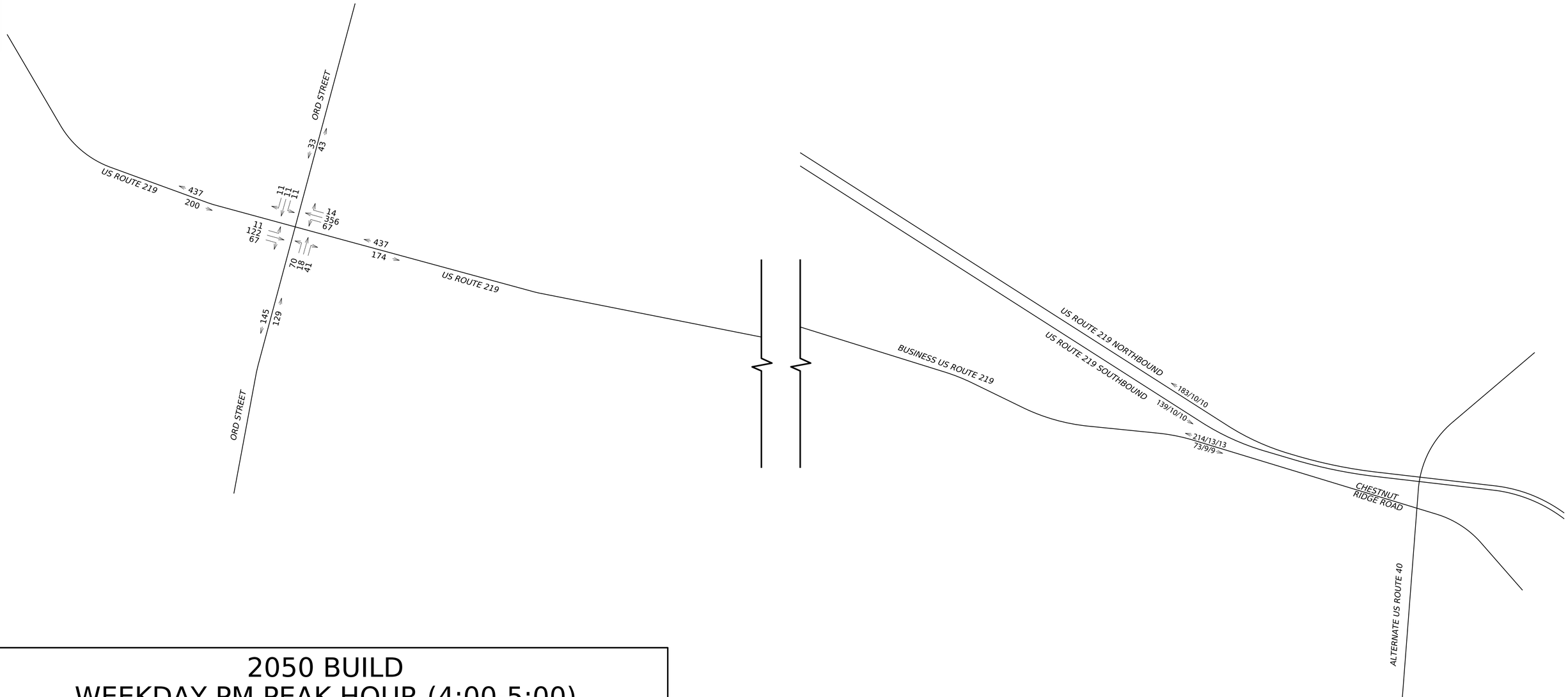
STATE HIGHWAY ADMINISTRATION

CONTINUED ON PREVIOUS SHEET

NOT TO SCALE



2050 BUILD
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 2 OF 2

U.S. Department of Transportation
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219 Meyersdale to Old Salisbury Rd

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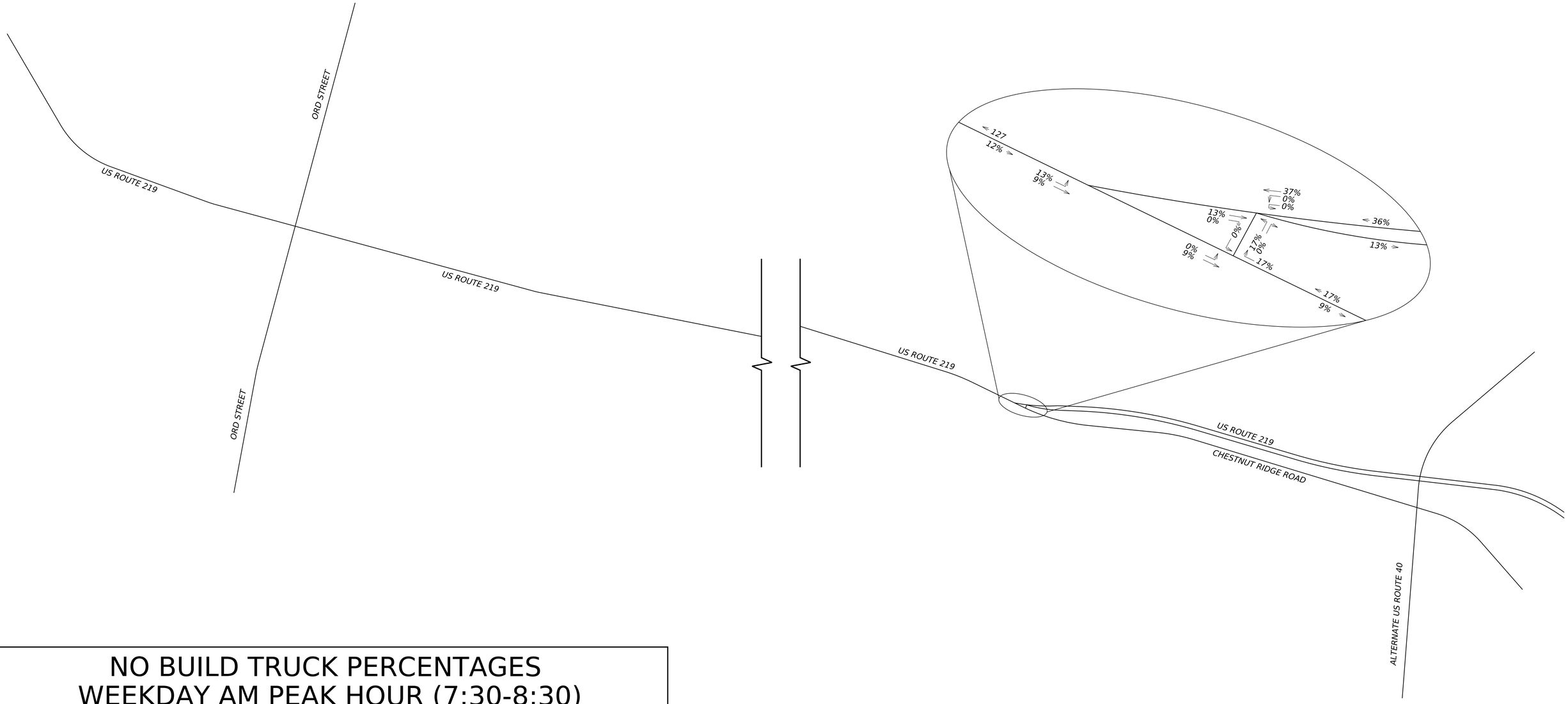
CONTINUED ON PREVIOUS SHEET

NOT TO SCALE



NO BUILD TRUCK PERCENTAGES
WEEKDAY AM PEAK HOUR (7:30-8:30)

SHEET 2 OF 2

U.S. Department of Transportation
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219 Meyersdale to Old Salisbury Rd

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STATE HIGHWAY ADMINISTRATION

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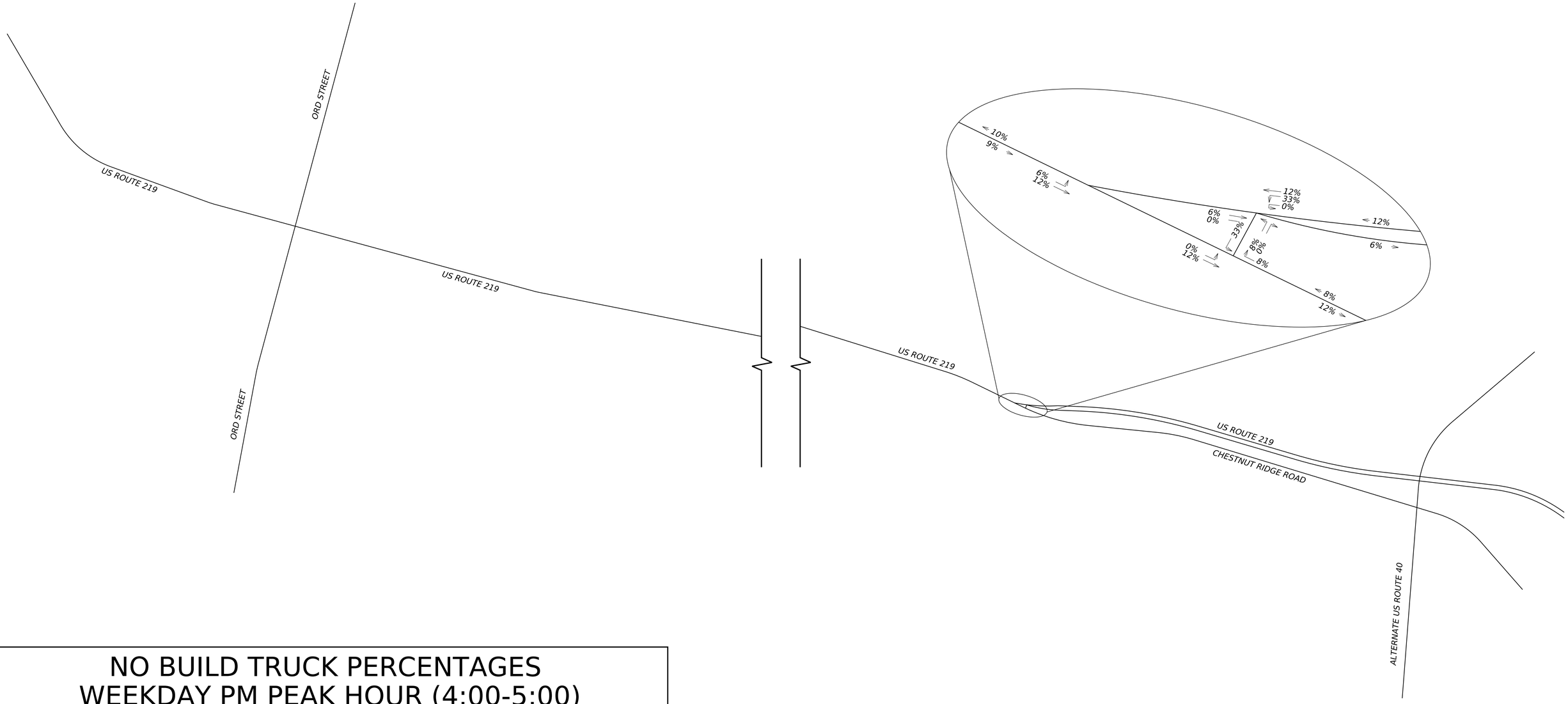
NOT TO SCALE



NO BUILD TRUCK PERCENTAGES
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 2 OF 2

U.S. Department of Transportation
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219 Meyersdale to Old Salisbury Rd

pennsylvania
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STATE HIGHWAY ADMINISTRATION

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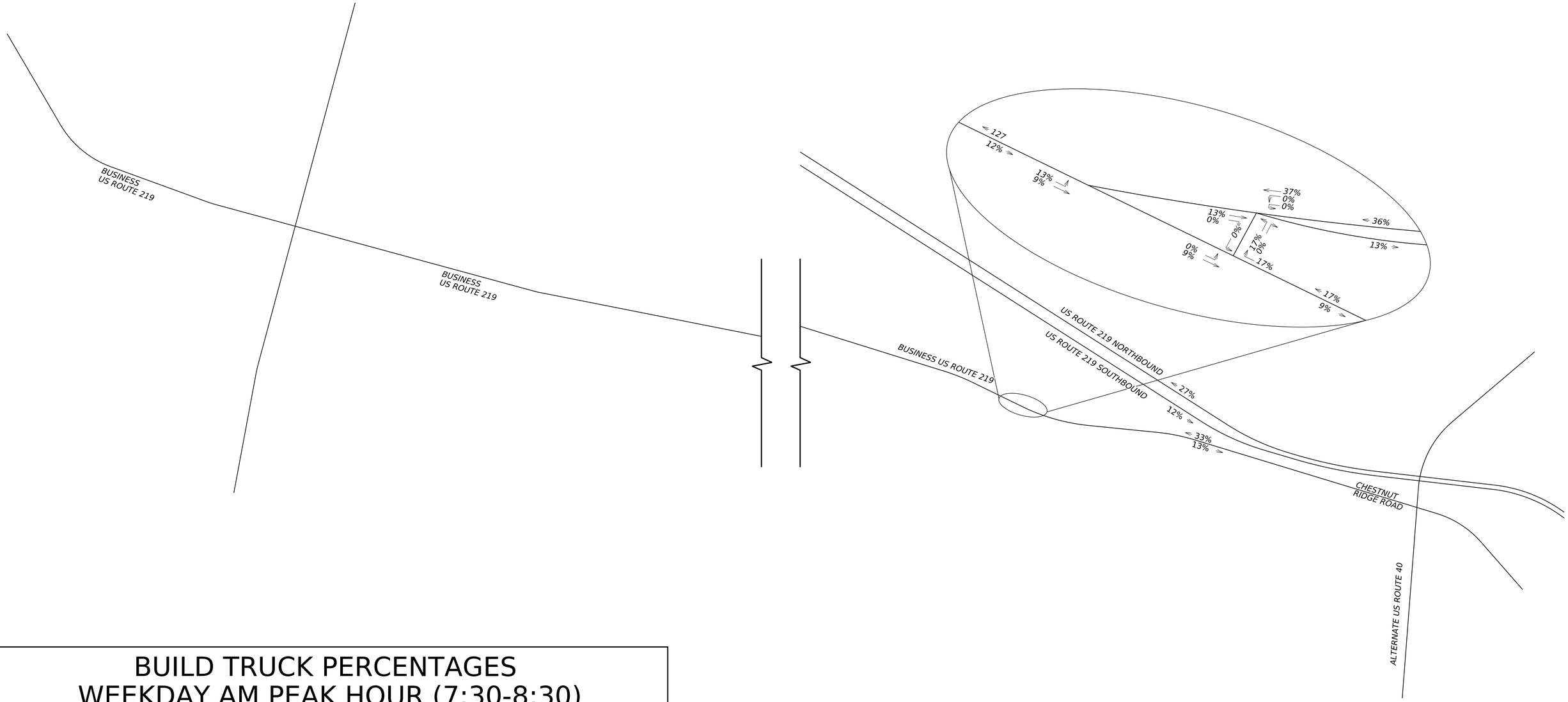

NOT TO SCALE

BUILD TRUCK PERCENTAGES
WEEKDAY AM PEAK HOUR (7:30-8:30)

SHEET 2 OF 2

U.S. Department of Transportation
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219 Meyersdale to Old Salisbury Rd

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DEPARTMENT OF TRANSPORTATION

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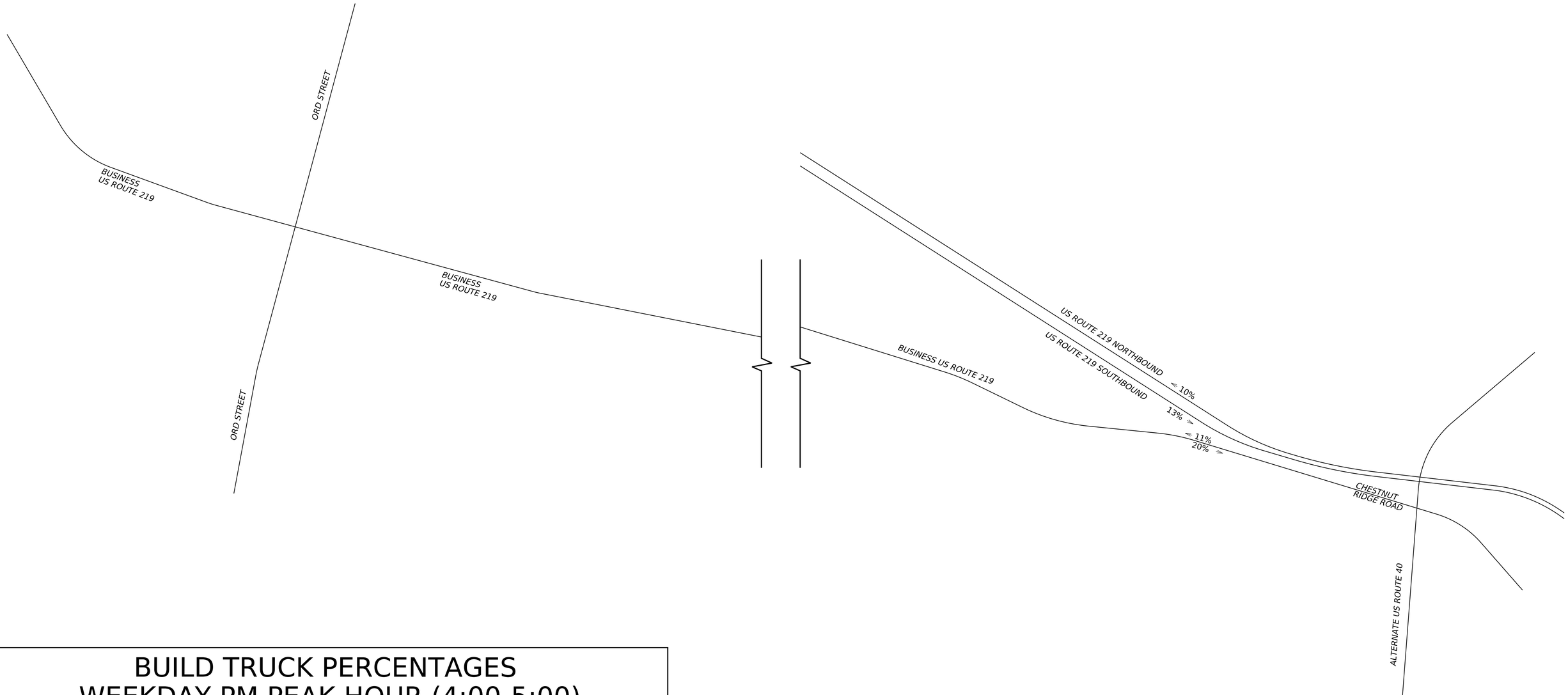
STATE HIGHWAY ADMINISTRATION

CONTINUED ON PREVIOUS SHEET

NOT TO SCALE



BUILD TRUCK PERCENTAGES
WEEKDAY PM PEAK HOUR (4:00-5:00)

SHEET 2 OF 2

U.S. Department of Transportation
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219 Meyersdale to Old Salisbury Rd

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APPENDIX D

Traffic Monitoring Sessions

This appendix documents the sessions where traffic data was collected during field monitoring for the US 6219, Section 050 Transportation Improvement Project noise analysis. This data is used to perform the TNM model validation.

Table D.1 lists in chronological order the traffic monitoring sessions (TMS) conducted in both Pennsylvania and Maryland during this study and describes the interval time and duration of each session and the on-site weather conditions.

Table D.1: Traffic Monitoring Session Summary

Traffic Monitoring Session	Date (dd/mm/yyyy)	Interval	Duration	Temp (°F)	Relative Humidity (%)	Wind Speed (mph)	Wind Direction[1]	Conditions
Pennsylvania								
PA_TMS01	05/09/2023	1313-1333	20	55	96	0	SSE	Partly Cloudy
PA_TMS02	05/09/2023	1515-1535	20	67	33	7	N	Clear
PA_TMS03	05/09/2023	1640-1700	20	68	31	0	N	Clear
PA_TMS04	05/09/2023	1725-1745	20	68	36	12	N	Clear
PA_TMS05	05/10/2023	0911-0931	20	55	54	6	VAR	Clear
PA_TMS06	05/10/2023	1015-1035	20	56	50	0	WNW	Clear
PA_TMS07	05/10/2023	1116-1136	20	57	39	5	VAR	Clear
PA_TMS08	05/10/2023	1155-1215	20	58	36	0	N/A	Clear
PA_TMS09	05/10/2023	1239-1259	20	58	36	0	N/A	Clear
PA_TMS10	05/10/2023	1500-1520	20	65	31	6	NNE	Clear
PA_TMS11	05/10/2023	1555-1615	20	66	28	0	N/A	Clear
PA_TMS12	05/10/2023	1655-1715	20	65	44	5	NE	Clear
PA_TMS13	05/10/2023	1744-1804	20	67	30	7	WSW	Clear
PA_TMS14	05/11/2023	1510-1530	20	74	27	5	VAR	Clear
PA_TMS15	05/11/2023	1620-1640	20	75	22	6	WNW	Clear
Maryland								
MD_TMS01	05/30/2023	1450-1510	20	80	36	6	VAR	Clear
MD_TMS02	05/30/2023	1550-1610	20	82	39	10	ESE	Clear
MD_TMS03	05/30/2023	1630-1650	20	82	39	10	ESE	Clear
MD_TMS04	05/30/2023	1715-1735	20	82	33	10	ESE	Clear
MD_TMS05	05/31/2023	1500-1520	20	81	33	3	VAR	Clear
MD_TMS06	05/31/2023	1600-1620	20	84	26	6	VAR	Clear

1. Wind direction is defined as the direction the wind is blowing FROM. For example, if the Wind Direction is North, then the wind is blowing FROM the North and TO the South.

Pennsylvania Traffic Monitoring Sessions Traffic Classification Counts

Tables D.2 thru D.16 depict the volumes, speeds and vehicle mix percentages for each lane of the roadway segments counted during the traffic monitoring sessions in Pennsylvania. In each direction, lanes are numbered sequentially from the inside median to the outside shoulder.

The data is broken down according to the five vehicle classifications defined in Section 1.3 of this report. Counted traffic volumes were converted to vehicles per hour by multiplying the counts by the conversion factor. The conversion factor is defined as 60-minutes divided by the TMS duration in minutes (For example: 60/20 = 3).

Table D.2: PA Traffic Monitoring Session 01 – Volume Summary

PA TMS 01 5/9/2023 1313-1333		**Greenville Road NB**	**Greenville Road SB**
Vehicle Classification		Lane01	Lane01
Volume (vph)	Autos	3	15
	Medium Trucks	9	12
	Heavy Trucks	0	0
	Buses	0	0
	Motorcycles	0	0
Speed (mph)	Autos	30	30
	Medium Trucks	30	30
	Heavy Trucks	0	0
	Buses	0	0
	Motorcycles	0	0
Vehicle Mix %	Autos	25.00%	55.56%
	Medium Trucks	75.00%	44.44%
	Heavy Trucks	0.00%	0.00%
	Buses	0.00%	0.00%
	Motorcycles	0.00%	0.00%
Lane Distribution		100.00%	100.00%

Table D.3: PA Traffic Monitoring Session 02 – Volume Summary					
PA TMS 02 5/9/2023 1515-1535		**Mason-Dixon Highway NB**	**Mason-Dixon Highway SB**	**US 219 NB**	**US 219 SB**
Vehicle Classification		Lane01	Lane01	Lane01	Lane01
Volume (vph)	Autos	12	3	270	147
	Medium Trucks	3	0	12	9
	Heavy Trucks	0	0	15	15
	Buses	0	0	0	0
	Motorcycles	0	0	0	0
Speed (mph)	Autos	40	40	50	50
	Medium Trucks	40	0	50	50
	Heavy Trucks	0	0	50	50
	Buses	0	0	0	0
	Motorcycles	0	0	0	0
Vehicle Mix %	Autos	80.00%	100.00%	90.91%	85.96%
	Medium Trucks	20.00%	0.00%	4.04%	5.26%
	Heavy Trucks	0.00%	0.00%	5.05%	8.77%
	Buses	0.00%	0.00%	0.00%	0.00%
	Motorcycles	0.00%	0.00%	0.00%	0.00%
Lane Distribution		100.00%	100.00%	100.00%	100.00%

Table D.4: PA Traffic Monitoring Session 03 – Volume Summary							
PA TMS 03 5/9/2023 1640-1700		**Mason-Dixon Highway NB**	**Mason-Dixon Highway SB**	**US 219 NB**		**US 219 SB**	
Vehicle Classification		Lane01	Lane01	Lane01	Lane02	Lane01	Lane02
Volume (vph)	Autos	75	81	135	132	87	87
	Medium Trucks	0	0	6	6	6	3
	Heavy Trucks	3	6	15	12	6	6
	Buses	0	0	0	0	0	0
	Motorcycles	0	0	0	0	0	0
Speed (mph)	Autos	40	40	60	60	60	60
	Medium Trucks	0	0	60	60	60	60
	Heavy Trucks	40	40	60	60	60	60
	Buses	0	0	0	0	0	0
	Motorcycles	0	0	0	0	0	0
Vehicle Mix %	Autos	96.15%	93.10%	86.54%	88.00%	87.88%	90.63%
	Medium Trucks	0.00%	0.00%	3.85%	4.00%	6.06%	3.13%
	Heavy Trucks	3.85%	6.90%	9.62%	8.00%	6.06%	6.25%
	Buses	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Motorcycles	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lane Distribution		100.00%	100.00%	50.98%	49.02%	50.77%	49.23%

Table D.5: PA Traffic Monitoring Session 04 – Volume Summary			
PA TMS 04 5/9/2023 1725-1745		**US 219 NB**	**US 219 SB**
Vehicle Classification		Lane01	Lane01
Volume (vph)	Autos	156	126
	Medium Trucks	6	3
	Heavy Trucks	9	3
	Buses	0	0
	Motorcycles	0	0
Speed (mph)	Autos	57	57
	Medium Trucks	57	57
	Heavy Trucks	57	57
	Buses	0	0
	Motorcycles	0	0
Vehicle Mix %	Autos	91.23%	95.45%
	Medium Trucks	3.51%	2.27%
	Heavy Trucks	5.26%	2.27%
	Buses	0.00%	0.00%
	Motorcycles	0.00%	0.00%
Lane Distribution		100.00%	100.00%

Table D.6: PA Traffic Monitoring Session 05 – Volume Summary		
PA TMS 05 5/10/2023 0911-0931		**Piney Run Road**
Vehicle Classification		Lane01
Volume (vph)	Autos	0
	Medium Trucks	0
	Heavy Trucks	0
	Buses	0
	Motorcycles	0
Speed (mph)	Autos	0
	Medium Trucks	0
	Heavy Trucks	0
	Buses	0
	Motorcycles	0
Vehicle Mix %	Autos	0.00%
	Medium Trucks	0.00%
	Heavy Trucks	0.00%
	Buses	0.00%
	Motorcycles	0.00%
Lane Distribution		0.00%

Table D.7: PA Traffic Monitoring Session 06 – Volume Summary			
PA TMS 06 5/10/2023 1015-1035		**Greenville Road NB**	**Greenville Road SB**
Vehicle Classification		Lane01	Lane01
Volume (vph)	Autos	12	0
	Medium Trucks	0	3
	Heavy Trucks	6	0
	Buses	0	0
	Motorcycles	0	0
Speed (mph)	Autos	30	0
	Medium Trucks	0	30
	Heavy Trucks	30	0
	Buses	0	0
	Motorcycles	0	0
Vehicle Mix %	Autos	66.67%	0.00%
	Medium Trucks	0.00%	100.00%
	Heavy Trucks	33.33%	0.00%
	Buses	0.00%	0.00%
	Motorcycles	0.00%	0.00%
Lane Distribution		100.00%	100.00%

Table D.8: PA Traffic Monitoring Session 07 – Volume Summary		
PA TMS 07 5/10/2023 1116-1136		**Clark Road**
Vehicle Classification		Lane01
Volume (vph)	Autos	0
	Medium Trucks	0
	Heavy Trucks	0
	Buses	0
	Motorcycles	0
Speed (mph)	Autos	0
	Medium Trucks	0
	Heavy Trucks	0
	Buses	0
	Motorcycles	0
Vehicle Mix %	Autos	0.00%
	Medium Trucks	0.00%
	Heavy Trucks	0.00%
	Buses	0.00%
	Motorcycles	0.00%
Lane Distribution		0.00%

Table D.9: PA Traffic Monitoring Session 07 – Volume Summary		
PA TMS 08 5/10/2023 1155-1215		**Mountain Road**
Vehicle Classification		Lane01
Volume (vph)	Autos	0
	Medium Trucks	0
	Heavy Trucks	0
	Buses	0
	Motorcycles	0
Speed (mph)	Autos	0
	Medium Trucks	0
	Heavy Trucks	0
	Buses	0
	Motorcycles	0
Vehicle Mix %	Autos	0.00%
	Medium Trucks	0.00%
	Heavy Trucks	0.00%
	Buses	0.00%
	Motorcycles	0.00%
Lane Distribution		0.00%

Table D.10: PA Traffic Monitoring Session 9 – Volume Summary				
PA TMS 09 5/10/2023 1239-1259		**Hunsrick Road**	**US 219 NB**	**US 219 SB**
Vehicle Classification		Lane01	Lane01	Lane01
Volume (vph)	Autos	18	93	114
	Medium Trucks	0	3	6
	Heavy Trucks	6	12	39
	Buses	0	0	0
	Motorcycles	0	0	0
Speed (mph)	Autos	30	48	48
	Medium Trucks	0	48	48
	Heavy Trucks	30	48	48
	Buses	0	0	0
	Motorcycles	0	0	0
Vehicle Mix %	Autos	75.00%	86.11%	71.70%
	Medium Trucks	0.00%	2.78%	3.77%
	Heavy Trucks	25.00%	11.11%	24.53%
	Buses	0.00%	0.00%	0.00%
	Motorcycles	0.00%	0.00%	0.00%
Lane Distribution		100.00%	100.00%	100.00%

Table D.11: PA Traffic Monitoring Session 10 – Volume Summary					
PA TMS 10 5/10/2023 1500-1520		**US 219 NB**		**US 219 SB**	**US 219 SB On-Ramp**
Vehicle Classification		Lane01	Lane02	Lane01	Lane01
Volume (vph)	Autos	27	27	87	117
	Medium Trucks	3	3	9	3
	Heavy Trucks	3	0	15	0
	Buses	0	0	0	3
	Motorcycles	3	3	0	0
Speed (mph)	Autos	60	60	60	40
	Medium Trucks	60	60	60	40
	Heavy Trucks	60	0	60	0
	Buses	0	0	0	40
	Motorcycles	60	60	0	0
Vehicle Mix %	Autos	75.00%	81.82%	78.38%	95.12%
	Medium Trucks	8.33%	9.09%	8.11%	2.44%
	Heavy Trucks	8.33%	0.00%	13.51%	0.00%
	Buses	0.00%	0.00%	0.00%	2.44%
	Motorcycles	8.33%	9.09%	0.00%	0.00%
Lane Distribution		52.17%	47.83%	100.00%	100.00%

Table D.12: PA Traffic Monitoring Session 11 – Volume Summary							
PA TMS 11 5/10/2023 1555-1615		**Mason-Dixon Highway NB**	**Mason-Dixon Highway SB**	**US 219 NB**		**US 219 SB**	**US 219 SB On-Ramp**
Vehicle Classification		Lane01	Lane01	Lane01	Lane02	Lane01	Lane01
Volume (vph)	Autos	15	9	42	42	123	114
	Medium Trucks	0	0	12	9	6	0
	Heavy Trucks	0	0	6	3	15	9
	Buses	0	0	0	0	0	0
	Motorcycles	0	0	0	0	0	0
Speed (mph)	Autos	40	40	60	60	60	40
	Medium Trucks	0	0	60	60	60	0
	Heavy Trucks	0	0	60	60	60	40
	Buses	0	0	0	0	0	0
	Motorcycles	0	0	0	0	0	0
Vehicle Mix %	Autos	100.00%	100.00%	70.00%	77.78%	85.42%	92.68%
	Medium Trucks	0.00%	0.00%	20.00%	16.67%	4.17%	0.00%
	Heavy Trucks	0.00%	0.00%	10.00%	5.56%	10.42%	7.32%
	Buses	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Motorcycles	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lane Distribution		100.00%	100.00%	52.63%	47.37%	100.00%	100.00%

Table D.13: PA Traffic Monitoring Session 12 – Volume Summary			
PA TMS 12 5/10/2023 1655-1715		**US 219 NB**	**US 219 SB**
Vehicle Classification		Lane01	Lane01
Volume (vph)	Autos	192	156
	Medium Trucks	9	6
	Heavy Trucks	9	18
	Buses	0	0
	Motorcycles	3	0
Speed (mph)	Autos	66	66
	Medium Trucks	66	66
	Heavy Trucks	66	66
	Buses	0	0
	Motorcycles	66	0
Vehicle Mix %	Autos	90.14%	86.67%
	Medium Trucks	4.23%	3.33%
	Heavy Trucks	4.23%	10.00%
	Buses	0.00%	0.00%
	Motorcycles	1.41%	0.00%
Lane Distribution		100.00%	100.00%

Table D.14: PA Traffic Monitoring Session 13 – Volume Summary		
PA TMS 13 5/10/2023 1744-1804		**Clark Road**
Vehicle Classification		Lane01
Volume (vph)	Autos	0
	Medium Trucks	0
	Heavy Trucks	0
	Buses	0
	Motorcycles	0
Speed (mph)	Autos	0
	Medium Trucks	0
	Heavy Trucks	0
	Buses	0
	Motorcycles	0
Vehicle Mix %	Autos	0.00%
	Medium Trucks	0.00%
	Heavy Trucks	0.00%
	Buses	0.00%
	Motorcycles	0.00%
Lane Distribution		0.00%

Table D.15: PA Traffic Monitoring Session 14 – Volume Summary								
PA TMS 14 5/10/2023 1510-1530		**Mason-Dixon Highway NB**	**Mason-Dixon Highway SB**	**Fike Hollow Road**	**US 219 NB**		**US 219 NB Off-Ramp**	**US 219 SB**
Vehicle Classification		Lane01	Lane01	Lane01	Lane01	Lane02	Lane01	Lane01
Volume (vph)	Autos	297	183	15	57	54	99	117
	Medium Trucks	9	3	0	6	3	0	9
	Heavy Trucks	9	0	0	6	3	27	18
	Buses	0	0	0	0	0	0	0
	Motorcycles	9	0	0	3	0	0	0
Speed (mph)	Autos	40	40	25	60	60	50	60
	Medium Trucks	40	40	0	60	60	0	60
	Heavy Trucks	40	0	0	60	60	50	60
	Buses	0	0	0	0	0	0	0
	Motorcycles	40	0	0	60	0	0	0
Vehicle Mix %	Autos	91.67%	98.39%	100.00%	79.17%	90.00%	78.57%	81.25%
	Medium Trucks	2.78%	1.61%	0.00%	8.33%	5.00%	0.00%	6.25%
	Heavy Trucks	2.78%	0.00%	0.00%	8.33%	5.00%	21.43%	12.50%
	Buses	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Motorcycles	2.78%	0.00%	0.00%	4.17%	0.00%	0.00%	0.00%
Lane Distribution		100.00%	100.00%	100.00%	54.55%	45.45%	100.00%	100.00%

Table D.16: PA Traffic Monitoring Session 15 – Volume Summary					
PA TMS 15 5/10/2023 1620-1640		**US 219 NB**		**US 219 NB Off-Ramp**	**US 219 SB**
Vehicle Classification		Lane01	Lane02	Lane01	Lane01
Volume (vph)	Autos	72	69	129	153
	Medium Trucks	9	9	0	12
	Heavy Trucks	3	0	12	15
	Buses	0	0	0	0
	Motorcycles	3	0	0	3
Speed (mph)	Autos	60	60	50	60
	Medium Trucks	60	60	0	60
	Heavy Trucks	60	0	50	60
	Buses	0	0	0	0
	Motorcycles	60	0	0	60
Vehicle Mix %	Autos	82.76%	88.46%	91.49%	83.61%
	Medium Trucks	10.34%	11.54%	0.00%	6.56%
	Heavy Trucks	3.45%	0.00%	8.51%	8.20%
	Buses	0.00%	0.00%	0.00%	0.00%
	Motorcycles	3.45%	0.00%	0.00%	1.64%
Lane Distribution		52.73%	47.27%	100.00%	100.00%

Maryland Traffic Monitoring Sessions Traffic Classification Counts

Tables D.17 thru D.22 depict the volumes, speeds and vehicle mix percentages for each lane of the roadway segments counted during the traffic monitoring sessions in Maryland. In each direction, lanes are numbered sequentially from the inside median to the outside shoulder.

The data is broken down according to the five vehicle classifications defined in Section 1.3 of this report. Counted traffic volumes were converted to vehicles per hour by multiplying the counts by the conversion factor. The conversion factor is defined as 60-minutes divided by the TMS duration in minutes (For example: 60/20 = 3).US 219 Northbound and Southbound Traffic Classification Counts

Table D.17: MD Traffic Monitoring Session 01 – Volume Summary

MD TMS 01 5/30/2023 1450-1510		**US 219 NB**	**US 219 SB**
Vehicle Classification		Lane01	Lane01
Volume (vph)	Autos	117	171
	Medium Trucks	0	6
	Heavy Trucks	48	30
	Buses	0	0
	Motorcycles	0	0
Speed (mph)	Autos	56	56
	Medium Trucks	0	0
	Heavy Trucks	56	56
	Buses	0	0
	Motorcycles	0	0
Vehicle Mix %	Autos	70.91%	82.61%
	Medium Trucks	0.00%	2.90%
	Heavy Trucks	29.09%	14.49%
	Buses	0.00%	0.00%
	Motorcycles	0.00%	0.00%
Lane Distribution		100.00%	100.00%

Table D.18: MD Traffic Monitoring Session 02 – Volume Summary							
MD TMS 02 5/30/2023 1550-1610		**Chestnut Ridge Road NB**	**Chestnut Ridge Road SB**	**New US 219 NB**		**New US 219SB**	
Vehicle Classification		Lane01	Lane01	Lane01	Lane02	Lane01	Lane02
Volume (vph)	Autos	126	72	66	63	27	27
	Medium Trucks	0	0	0	0	3	3
	Heavy Trucks	0	12	6	6	9	9
	Buses	0	0	0	0	0	0
	Motorcycles	3	0	0	0	0	0
Speed (mph)	Autos	50	50	58	58	58	58
	Medium Trucks	0	0	0	0	58	58
	Heavy Trucks	0	50	58	58	58	58
	Buses	0	0	0	0	0	0
	Motorcycles	50	0	0	0	0	0
Vehicle Mix %	Autos	97.67%	85.71%	91.67%	91.30%	69.23%	69.23%
	Medium Trucks	0.00%	0.00%	0.00%	0.00%	7.69%	7.69%
	Heavy Trucks	0.00%	14.29%	8.33%	8.70%	23.08%	23.08%
	Buses	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Motorcycles	2.33%	0.00%	0.00%	0.00%	0.00%	0.00%
Lane Distribution		100.00%	100.00%	51.06%	48.94%	50.00%	50.00%

Table D.19: MD Traffic Monitoring Session 03 – Volume Summary							
MD TMS 03 5/30/2023 1630-1650		**Chestnut Ridge Road NB**	**Chestnut Ridge Road SB**	**New US 219 NB**		**New US 219SB**	
Vehicle Classification		Lane01	Lane01	Lane01	Lane02	Lane01	Lane02
Volume (vph)	Autos	96	99	75	75	21	18
	Medium Trucks	3	0	0	0	0	0
	Heavy Trucks	0	6	6	3	6	6
	Buses	3	0	0	0	0	0
	Motorcycles	3	3	3	3	0	0
Speed (mph)	Autos	49	49	63	63	63	63
	Medium Trucks	49	0	0	0	0	0
	Heavy Trucks	0	49	63	63	63	63
	Buses	49	0	0	0	0	0
	Motorcycles	49	49	63	63	0	0
Vehicle Mix %	Autos	91.43%	91.67%	89.29%	92.59%	77.78%	75.00%
	Medium Trucks	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%
	Heavy Trucks	0.00%	5.56%	7.14%	3.70%	22.22%	25.00%
	Buses	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%
	Motorcycles	2.86%	2.78%	3.57%	3.70%	0.00%	0.00%
Lane Distribution		100.00%	100.00%	50.91%	49.09%	52.94%	47.06%

Table D.20: MD Traffic Monitoring Session 04 – Volume Summary							
MD TMS 04 5/30/2023 1715-1735		**Chestnut Ridge Road NB**	**Chestnut Ridge Road SB**	**New US 219 NB**		**New US 219SB**	
Vehicle Classification		Lane01	Lane01	Lane01	Lane02	Lane01	Lane02
Volume (vph)	Autos	111	99	66	63	42	39
	Medium Trucks	0	0	3	0	0	0
	Heavy Trucks	6	0	3	3	0	0
	Buses	0	0	0	0	0	0
	Motorcycles	0	0	0	0	0	0
Speed (mph)	Autos	50	50	60	60	60	60
	Medium Trucks	0	0	60	0	0	0
	Heavy Trucks	50	0	60	60	0	0
	Buses	0	0	0	0	0	0
	Motorcycles	0	0	0	0	0	0
Vehicle Mix %	Autos	94.87%	100.00%	91.67%	95.45%	100.00%	100.00%
	Medium Trucks	0.00%	0.00%	4.17%	0.00%	0.00%	0.00%
	Heavy Trucks	5.13%	0.00%	4.17%	4.55%	0.00%	0.00%
	Buses	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Motorcycles	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lane Distribution		100.00%	100.00%	52.17%	47.83%	51.85%	48.15%

Table D.21: MD Traffic Monitoring Session 05 – Volume Summary			
MD TMS 05 5/31/2023 1500-1520		**US 219 NB**	**US 219 SB**
Vehicle Classification		Lane01	Lane01
Volume (vph)	Autos	162	93
	Medium Trucks	12	9
	Heavy Trucks	24	6
	Buses	0	0
	Motorcycles	12	0
Speed (mph)	Autos	53	53
	Medium Trucks	53	53
	Heavy Trucks	53	53
	Buses	0	0
	Motorcycles	53	0
Vehicle Mix %	Autos	77.14%	86.11%
	Medium Trucks	5.71%	8.33%
	Heavy Trucks	11.43%	5.56%
	Buses	0.00%	0.00%
	Motorcycles	5.71%	0.00%
Lane Distribution		100.00%	100.00%

Table D.22: MD Traffic Monitoring Session 06 – Volume Summary			
MD TMS 06 5/31/2023 1600-1620		**US 219 NB**	**US 219 SB**
Vehicle Classification		Lane01	Lane01
Volume (vph)	Autos	237	111
	Medium Trucks	0	3
	Heavy Trucks	9	30
	Buses	6	3
	Motorcycles	0	0
Speed (mph)	Autos	57	57
	Medium Trucks	0	57
	Heavy Trucks	57	57
	Buses	57	57
	Motorcycles	0	0
Vehicle Mix %	Autos	94.05%	75.51%
	Medium Trucks	0.00%	2.04%
	Heavy Trucks	3.57%	20.41%
	Buses	2.38%	2.04%
	Motorcycles	0.00%	0.00%
Lane Distribution		100.00%	100.00%

DRAFT - PRELIMINARY

Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet – Noise Wall

Date: 09/12/2024
Project Name: US 6219, Section 050 Transportation Improvement Project: Meyersdale, PA to Old Salisbury Road, MD
County: Somerset County, PA
SR, Section: Section 050
Community Name and/or NSA #: NSA 12
Noise Wall Identification (i.e., Wall 1): NSA 12

General

1. Type of project (new location, reconstruction, etc.): New Alignment

2. Total number of impacted receptor units in community
   - Category A units impacted: 0
   - Category B units impacted: 1
   - Category C units impacted: 0
   - Category D units impacted (if interior analysis required): 0
   - Category E units impacted: 0

Warranted

1. Community Documentation
   a. Date community was permitted (for new developments or developments planned for or under construction): Unkown
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2025 - TBD
   c. Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of *CE, ROD, or FONSI, as appropriate*." ☑ Yes ☐ No

2. Criteria requiring consideration of noise abatement (note N/A if category is not impacted or present or analysis not required). A "yes" answer to any of the following three questions requires the consideration of noise abatement.
   a. With the proposed project, are design year noise levels predicted to approach or exceed the NAC level(s) in Table 1? ☐ Yes ☑ No
   b. With the proposed project, is there predicted to be a substantial design year noise level increase of 10 dB(A) or more at Activity Category A, B, C, D, or E receptor(s)? ☑ Yes ☐ No

c. With the proposed project, are design year noise levels predicted to be less than existing noise levels, but still approach or exceed the NAC levels in Table 1 for the relevant Activity Category? ☐ Yes ☑ No

Feasibility – Questions 1c through 7 must all be answered "yes" for a noise barrier to be determined to be feasible.

1. Impacted receptor units
   a. Total number of impacted receptor units: 1
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 1/1 = 100%
   c. Is the percentage 50 or greater? ☑ Yes ☐ No
2. Can the noise wall be designed and physically constructed at the proposed location? ☑ Yes ☐ No
3. Can the noise wall be constructed without causing a safety problem? ☑ Yes ☐ No
4. Can the noise wall be constructed without restricting access to vehicular or pedestrian travel? ☑ Yes ☐ No
5. Can the noise wall be constructed in a manner that allows for access for required maintenance and inspection operations? ☑ Yes ☐ No
6. Can the noise wall be constructed in a manner that permits utilities to function in a normal manner? ☑ Yes ☐ No
7. Can the noise wall be constructed in a manner that permits drainage features to function in a normal manner? ☑ Yes ☐ No

Reasonableness

1. Community Desires Related to the Barrier
   a. Do at least 50 percent of the responding benefited receptor unit owner(s) and renters desire the noise wall? If yes, continue with Reasonableness questions. If no, the noise wall can be considered not to be reasonable. Proceed to "Decision" block and answer "no" to reasonableness question. As the reason for this decision, state that "The majority of the benefited receptor unit owners do not desire the noise wall." ☐ Yes ☐ No UNKNOWN - TBD

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall 23,699
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss) 1
   c. SF/BR = 2a/2b 23,699
   d. Is 2c less than or equal to the MaxSF/BR value of 2000? ☐ Yes ☑ No

3. Noise Reduction Design Goals (Activity Categories A, B, C, and E) A "yes" answer is required to Question 3a for the noise wall to be determined to be reasonable. Questions 3b through 3e represent desirable goals that need not be met for a noise wall to be determined reasonable. However, they must be addressed and should be considered in the determination of the recommended noise wall.

   a. Does the noise wall reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receptor? ☑ Yes ☐ No

   b. Does the noise wall provide an insertion loss of at least 7 dB(A) for more receptors than required under 3a.while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☐ Yes ☑ No

   c. Does the noise wall provide insertion losses of greater than 7 dB(A) while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☐ Yes ☑ No

   d. Does the noise wall reduce future exterior levels to the low-60-decibel range (60-63) for Category B and C receptors and the upper-60 dB(A) range (65-68) for Category E receptors? Note: exterior noise level is below 60 db(A) without barrier. ☑ Yes ☐ No

   e. Does the noise wall reduce design year noise levels back to existing levels? ☐ Yes ☑ No

4. Noise Reduction Design Goals (Activity Category D) A "yes" answer is required to Question 4a for the barrier to be determined to be reasonable. Question 4b represents a desirable goal that need not be met for a noise wall to be determined reasonable. However, this goal must be addressed and should be considered in the determination of the recommended noise wall.

   a. Does noise wall reduce design year interior noise levels by at least 7 dB(A) for the facility's analysis point? ☐ Yes ☐ No

   b. While conforming to the MaxSF/BR criteria and justified by a "point of diminishing returns' evaluation, does the noise wall provide an interior insertion loss above the 7 dB(A) minimum ☐ Yes ☐ No

Decision

Is the Noise Wall WARRANTED? ☑ Yes ☐ No

Is the Noise Wall FEASIBLE? ☑ Yes ☐ No

Is the Noise Wall REASONABLE? ☐ Yes ☑ No

Additional Reasons for Decision:

One receptor achieved the necessary insertion loss goal (7 dB[A]) from this design; therefore, the MaxSF/BR for Noise Barrier 1 would be 23,699 square feet per benefited receptor. This is greater than 2,000; therefore the noise wall is not reasonable.

Responsible/Qualified Individuals Making the Above Decisions

_____ Date:_____
PennDOT, Engineering District Environmental Manager

_____ Date:_____
Qualified Professional Performing the Analysis
(name, title, and company name)

TO BE SIGNED FOR FINAL REPORT

DRAFT - PRELIMINARY

Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet – Noise Wall

Date 09/12/2024
Project Name US 6219, Section 050 Transportation Improvement Project: Meyersdale, PA to Old Salisbury Road, MD
County Somerset County, PA
SR, Section Section 050
Community Name and/or NSA # NSA 13
Noise Wall Identification (i.e., Wall 1) NSA 13

General

1. Type of project (new location, reconstruction, etc.): New Alignment

2. Total number of impacted receptor units in community
   - Category A units impacted: 0
   - Category B units impacted: 1
   - Category C units impacted: 0
   - Category D units impacted (if interior analysis required): 0
   - Category E units impacted: 0

Warranted

1. Community Documentation
   a. Date community was permitted (for new developments or developments planned for or under construction): Unkown
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2025 - TBD
   c. Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of *CE, ROD, or FONSI, as appropriate*." ☑ Yes ☐ No

2. Criteria requiring consideration of noise abatement (note N/A if category is not impacted or present or analysis not required). A "yes" answer to any of the following three questions requires the consideration of noise abatement.
   a. With the proposed project, are design year noise levels predicted to approach or exceed the NAC level(s) in Table 1? ☐ Yes ☑ No
   b. With the proposed project, is there predicted to be a substantial design year noise level increase of 10 dB(A) or more at Activity Category A, B, C, D, or E receptor(s)? ☑ Yes ☐ No

c. With the proposed project, are design year noise levels predicted to be less than existing noise levels, but still approach or exceed the NAC levels in Table 1 for the relevant Activity Category? ☐ Yes ☑ No

Feasibility – Questions 1c through 7 must all be answered "yes" for a noise barrier to be determined to be feasible.

1. Impacted receptor units
   a. Total number of impacted receptor units: 1
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 1/1 = 100%
   c. Is the percentage 50 or greater? ☑ Yes ☐ No
2. Can the noise wall be designed and physically constructed at the proposed location? ☑ Yes ☐ No
3. Can the noise wall be constructed without causing a safety problem? ☑ Yes ☐ No
4. Can the noise wall be constructed without restricting access to vehicular or pedestrian travel? ☑ Yes ☐ No
5. Can the noise wall be constructed in a manner that allows for access for required maintenance and inspection operations? ☑ Yes ☐ No
6. Can the noise wall be constructed in a manner that permits utilities to function in a normal manner? ☑ Yes ☐ No
7. Can the noise wall be constructed in a manner that permits drainage features to function in a normal manner? ☑ Yes ☐ No

Reasonableness

1. Community Desires Related to the Barrier
   a. Do at least 50 percent of the responding benefited receptor unit owner(s) and renters desire the noise wall? If yes, continue with Reasonableness questions. If no, the noise wall can be considered not to be reasonable. Proceed to "Decision" block and answer "no" to reasonableness question. As the reason for this decision, state that "The majority of the benefited receptor unit owners do not desire the noise wall." ☐ Yes ☐ No UNKNOWN - TBD

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall 18,000
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss) 1
   c. SF/BR = 2a/2b 18,000
   d. Is 2c less than or equal to the MaxSF/BR value of 2000? ☐ Yes ☑ No

3. Noise Reduction Design Goals (Activity Categories A, B, C, and E) A "yes" answer is required to Question 3a for the noise wall to be determined to be reasonable. Questions 3b through 3e represent desirable goals that need not be met for a noise wall to be determined reasonable. However, they must be addressed and should be considered in the determination of the recommended noise wall.

   a. Does the noise wall reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receptor? ☐ Yes ☑ No

   b. Does the noise wall provide an insertion loss of at least 7 dB(A) for more receptors than required under 3a.while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☐ Yes ☑ No

   c. Does the noise wall provide insertion losses of greater than 7 dB(A) while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☐ Yes ☑ No

   d. Does the noise wall reduce future exterior levels to the low-60-decibel range (60-63) for Category B and C receptors and the upper-60 dB(A) range (65-68) for Category E receptors? Note: exterior noise level at below 59.8 db(A) without barrier. ☑ Yes ☐ No

   e. Does the noise wall reduce design year noise levels back to existing levels? ☐ Yes ☑ No

4. Noise Reduction Design Goals (Activity Category D) A "yes" answer is required to Question 4a for the barrier to be determined to be reasonable. Question 4b represents a desirable goal that need not be met for a noise wall to be determined reasonable. However, this goal must be addressed and should be considered in the determination of the recommended noise wall.

   a. Does noise wall reduce design year interior noise levels by at least 7 dB(A) for the facility's analysis point? ☐ Yes ☐ No

   b. While conforming to the MaxSF/BR criteria and justified by a "point of diminishing returns' evaluation, does the noise wall provide an interior insertion loss above the 7 dB(A) minimum ☐ Yes ☐ No

Decision

Is the Noise Wall WARRANTED? ☑ Yes ☐ No

Is the Noise Wall FEASIBLE? ☑ Yes ☐ No

Is the Noise Wall REASONABLE? ☐ Yes ☑ No

Additional Reasons for Decision:

The proximity of the residence to the US 219 proposed bottom of fill for all four Build Alternatives (common alignment) would require a retaining wall construction to preserve the home. Potential noise barrier construction would be atop the retaining wall. The retaining wall would be constructed along the southbound outside shoulder of all four Build Alternatives. The preliminary retaining wall is estimated to be 600 feet in length with have average height of 9 feet. This results in a square foot of 5,322. The preliminary noise barrier would be a constant height of 40 feet along the entire length of the retaining wall.

The preliminary combination retaining wall and noise barrier system meets PennDOT's acoustic feasibility criteria with 100 percent of the impacted receptors receiving at least a 5 dB(A) or greater insertion loss. To obtain the 5 dB(A) insertion loss the noise barrier was set at a constant height of 20 feet.

Though the preliminary retaining wall and noise barrier combination does not meet PennDOT's reasonableness design goal of at least a 7 dB(A) insertion loss for at least one benefited receptor, even though the preliminary noise barrier was set at constant height of 30 feet (maximum wall height per PennDOT Publication 15M, Design Manual Part 4 Structures). This height puts the barrier area from the TNM computer program at 18,000 square feet. As mentioned, the barrier benefits one benefited residence, it yields a value of 18,000 square feet per benefited receptor which is well above PennDOT's 2,000 MaxSF/BR value of 2,000. It should also be noted that this square foot cost does not consider the retaining wall square footage and associated costs.

Responsible/Qualified Individuals Making the Above Decisions

_____ Date:_____
PennDOT, Engineering District Environmental Manager

_____ Date:_____
Qualified Professional Performing the Analysis
(name, title, and company name)

TO BE SIGNED FOR FINAL REPORT

DRAFT - PRELIMINARY

Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet – Noise Wall

Date 09/12/2024
Project Name US 6219, Section 050 Transportation Improvement Project: Meyersdale, PA to Old Salisbury Road, MD
County Somerset County, PA
SR, Section Section 050
Community Name and/or NSA # NSA 14
Noise Wall Identification (i.e., Wall 1) NSA 14

General

1. Type of project (new location, reconstruction, etc.): New Alignment

2. Total number of impacted receptor units in community
   - Category A units impacted: 0
   - Category B units impacted: 2
   - Category C units impacted: 0
   - Category D units impacted (if interior analysis required): 0
   - Category E units impacted: 0

Warranted

1. Community Documentation
   a. Date community was permitted (for new developments or developments planned for or under construction): Unkown
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2025 - TBD
   c. Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of *CE, ROD, or FONSI, as appropriate*." ☑ Yes ☐ No

2. Criteria requiring consideration of noise abatement (note N/A if category is not impacted or present or analysis not required). A "yes" answer to any of the following three questions requires the consideration of noise abatement.
   a. With the proposed project, are design year noise levels predicted to approach or exceed the NAC level(s) in Table 1? ☐ Yes ☑ No
   b. With the proposed project, is there predicted to be a substantial design year noise level increase of 10 dB(A) or more at Activity Category A, B, C, D, or E receptor(s)? ☑ Yes ☐ No

c. With the proposed project, are design year noise levels predicted to be less than existing noise levels, but still approach or exceed the NAC levels in Table 1 for the relevant Activity Category? ☐ Yes ☑ No

Feasibility – Questions 1c through 7 must all be answered "yes" for a noise barrier to be determined to be feasible.

1. Impacted receptor units
   a. Total number of impacted receptor units: 2
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 2/2 = 100%
   c. Is the percentage 50 or greater? ☑ Yes ☐ No
2. Can the noise wall be designed and physically constructed at the proposed location? ☑ Yes ☐ No
3. Can the noise wall be constructed without causing a safety problem? ☑ Yes ☐ No
4. Can the noise wall be constructed without restricting access to vehicular or pedestrian travel? ☑ Yes ☐ No
5. Can the noise wall be constructed in a manner that allows for access for required maintenance and inspection operations? ☑ Yes ☐ No
6. Can the noise wall be constructed in a manner that permits utilities to function in a normal manner? ☑ Yes ☐ No
7. Can the noise wall be constructed in a manner that permits drainage features to function in a normal manner? ☑ Yes ☐ No

Reasonableness

1. Community Desires Related to the Barrier
   a. Do at least 50 percent of the responding benefited receptor unit owner(s) and renters desire the noise wall? If yes, continue with Reasonableness questions. If no, the noise wall can be considered not to be reasonable. Proceed to "Decision" block and answer "no" to reasonableness question. As the reason for this decision, state that "The majority of the benefited receptor unit owners do not desire the noise wall." ☐ Yes ☐ No UNKNOWN - TBD

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall 10,790
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss) 2
   c. SF/BR = 2a/2b 5,395
   d. Is 2c less than or equal to the MaxSF/BR value of 2000? ☐ Yes ☑ No

3. Noise Reduction Design Goals (Activity Categories A, B, C, and E) A "yes" answer is required to Question 3a for the noise wall to be determined to be reasonable. Questions 3b through 3e represent desirable goals that need not be met for a noise wall to be determined reasonable. However, they must be addressed and should be considered in the determination of the recommended noise wall.

a.	Does the noise wall reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receptor?	☑ Yes ☐ No
b.	Does the noise wall provide an insertion loss of at least 7 dB(A) for more receptors than required under 3a.while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation?	☐ Yes ☑ No
c.	Does the noise wall provide insertion losses of greater than 7 dB(A) while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation?	☐ Yes ☑ No
d.	Does the noise wall reduce future exterior levels to the low-60-decibel range (60-63) for Category B and C receptors and the upper-60 dB(A) range (65-68) for Category E receptors? Note: exterior noise level is at 59.9 db(A) without barrier.	☑ Yes ☐ No
e.	Does the noise wall reduce design year noise levels back to existing levels?	☐ Yes ☑ No

4. Noise Reduction Design Goals (Activity Category D) A "yes" answer is required to Question 4a for the barrier to be determined to be reasonable. Question 4b represents a desirable goal that need not be met for a noise wall to be determined reasonable. However, this goal must be addressed and should be considered in the determination of the recommended noise wall.

a.	Does noise wall reduce design year interior noise levels by at least 7 dB(A) for the facility's analysis point?	☐ Yes ☐ No
b.	While conforming to the MaxSF/BR criteria and justified by a "point of diminishing returns' evaluation, does the noise wall provide an interior insertion loss above the 7 dB(A) minimum	☐ Yes ☐ No

Decision

Is the Noise Wall WARRANTED? ☑ Yes ☐ No

Is the Noise Wall FEASIBLE? ☑ Yes ☐ No

Is the Noise Wall REASONABLE? ☐ Yes ☑ No

Additional Reasons for Decision:

The proximity of the two residences to the US 219 proposed top of cut for all for Build Alternatives (common alignment) would require a retaining wall construction to preserve the homes. Potential noise barrier construction would be atop or immediately behind the retaining wall. The retaining wall would be constructed along the northbound outside shoulder of all four Build Alternatives. The preliminary retaining wall is estimated to be 830 feet in length with an average height of 28 feet. This results in a 23,294 square foot retaining wall. The preliminary noise barrier would range between 11-14 feet along the entire length of the retaining wall.

The TNM computed noise barrier square footage is 10,790 square feet. As mentioned, the barrier benefits two residences resulting in 5,395 square feet per benefited receptor. This is more than double PennDOT's 2,000 maximum square footage per benefited residence criteria therefore, this noise barrier is not considered feasible. It should also be noted that this square foot cost does not consider the retaining wall square footage and associated costs.

Responsible/Qualified Individuals Making the Above Decisions

_____ Date:_____
PennDOT, Engineering District Environmental Manager

_____ Date:_____
Qualified Professional Performing the Analysis
(name, title, and company name)

TO BE SIGNED FOR FINAL REPORT

DRAFT - PRELIMINARY

Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet – Noise Wall

Date 09/12/2024
Project Name US 6219, Section 050 Transportation Improvement Project: Meyersdale, PA to Old Salisbury Road, MD
County Somerset County, PA
SR, Section Section 050
Community Name and/or NSA # NSA 18
Noise Wall Identification (i.e., Wall 1) NSA 18

General

1. Type of project (new location, reconstruction, etc.): New Alignment

2. Total number of impacted receptor units in community
   - Category A units impacted: 0
   - Category B units impacted: 7
   - Category C units impacted: 0
   - Category D units impacted (if interior analysis required): 0
   - Category E units impacted: 0

Warranted

1. Community Documentation
   a. Date community was permitted (for new developments or developments planned for or under construction): Unkown
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2025 - TBD
   c. Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of *CE, ROD, or FONSI, as appropriate*." ☑ Yes ☐ No

2. Criteria requiring consideration of noise abatement (note N/A if category is not impacted or present or analysis not required). A "yes" answer to any of the following three questions requires the consideration of noise abatement.
   a. With the proposed project, are design year noise levels predicted to approach or exceed the NAC level(s) in Table 1? ☑ Yes ☐ No
   b. With the proposed project, is there predicted to be a substantial design year noise level increase of 10 dB(A) or more at Activity Category A, B, C, D, or E receptor(s)? ☑ Yes ☐ No

c. With the proposed project, are design year noise levels predicted to be less than existing noise levels, but still approach or exceed the NAC levels in Table 1 for the relevant Activity Category? ☐ Yes ☑ No

Feasibility – Questions 1c through 7 must all be answered "yes" for a noise barrier to be determined to be feasible.

1. Impacted receptor units
   a. Total number of impacted receptor units: 7
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: N/A
   c. Is the percentage 50 or greater? ☐ Yes ☐ No
2. Can the noise wall be designed and physically constructed at the proposed location? ☐ Yes ☑ No
3. Can the noise wall be constructed without causing a safety problem? ☐ Yes ☑ No
4. Can the noise wall be constructed without restricting access to vehicular or pedestrian travel? ☐ Yes ☑ No
5. Can the noise wall be constructed in a manner that allows for access for required maintenance and inspection operations? ☑ Yes ☐ No
6. Can the noise wall be constructed in a manner that permits utilities to function in a normal manner? ☐ Yes ☑ No
7. Can the noise wall be constructed in a manner that permits drainage features to function in a normal manner? ☑ Yes ☐ No

Reasonableness

1. Community Desires Related to the Barrier
   a. Do at least 50 percent of the responding benefited receptor unit owner(s) and renters desire the noise wall? If yes, continue with Reasonableness questions. If no, the noise wall can be considered not to be reasonable. Proceed to "Decision" block and answer "no" to reasonableness question. As the reason for this decision, state that "The majority of the benefited receptor unit owners do not desire the noise wall." ☐ Yes ☐ No

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall N/A
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss) N/A
   c. SF/BR = 2a/2b N/A
   d. Is 2c less than or equal to the MaxSF/BR value of 2000? ☐ Yes ☐ No

3. Noise Reduction Design Goals (Activity Categories A, B, C, and E) A "yes" answer is required to Question 3a for the noise wall to be determined to be reasonable. Questions 3b through 3e represent desirable goals that need not be met for a noise wall to be determined reasonable. However, they must be addressed and should be considered in the determination of the recommended noise wall.

   a. Does the noise wall reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receptor? ☐ Yes ☐ No

   b. Does the noise wall provide an insertion loss of at least 7 dB(A) for more receptors than required under 3a.while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☐ Yes ☐ No

   c. Does the noise wall provide insertion losses of greater than 7 dB(A) while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☐ Yes ☐ No

   d. Does the noise wall reduce future exterior levels to the low-60-decibel range (60-63) for Category B and C receptors and the upper-60 dB(A) range (65-68) for Category E receptors? ☐ Yes ☐ No

   e. Does the noise wall reduce design year noise levels back to existing levels? ☐ Yes ☐ No

4. Noise Reduction Design Goals (Activity Category D) A "yes" answer is required to Question 4a for the barrier to be determined to be reasonable. Question 4b represents a desirable goal that need not be met for a noise wall to be determined reasonable. However, this goal must be addressed and should be considered in the determination of the recommended noise wall.

   a. Does noise wall reduce design year interior noise levels by at least 7 dB(A) for the facility's analysis point? ☐ Yes ☐ No

   b. While conforming to the MaxSF/BR criteria and justified by a "point of diminishing returns' evaluation, does the noise wall provide an interior insertion loss above the 7 dB(A) minimum ☐ Yes ☐ No

Decision

Is the Noise Wall WARRANTED? ☑ Yes ☐ No

Is the Noise Wall FEASIBLE? ☐ Yes ☑ No

Is the Noise Wall REASONABLE? ☐ Yes ☐ No

Additional Reasons for Decision:

Although noise abatement is warranted at NSA 18 due to predicted noise levels both exceeding the NAC criteria and substantially increasing by 10 dB(A) over existing noise levels, it is determined to be not feasible due to driveway and roadway access issues along Mason Dixon Highway. Any noise barrier built for NSA 18 would have to be terminated at each driveway for sight distance and safety requirements. These breaks in the noise barrier would create pathways for traffic noise from Mason Dixon Highway to pass through, hindering the barrier's effectiveness. For reasons of non-feasibility, abatement was not studied for NSA 18 under all four Build Alternatives.

Responsible/Qualified Individuals Making the Above Decisions

_____ Date:_____
PennDOT, Engineering District Environmental Manager

_____ Date:_____
Qualified Professional Performing the Analysis
(name, title, and company name)

TO BE SIGNED FOR FINAL REPORT

APPENDIX F

Calibration Certificates

Calibration Certificate

Certificate Number 2023002665
Customer:
KCI Technologies Inc

,

Model Number	831C	***Procedure Number***	D0001.8384	
Serial Number	11371	***Technician***	Jacob Cannon	
Test Results	**Pass**	***Calibration Date***	2 Mar 2023	
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	2 Mar 2024	
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.8.1R0	***Temperature***	23.62 °C	± 0.25 °C
		Humidity	49.2 %RH	± 2.0 %RH
		Static Pressure	85.95 kPa	± 0.13 kPa

Evaluation Method ***Tested with:*** ***Data reported in dB re 20 µPa.***

Larson Davis PRM831. S/N 071008
Larson Davis CAL291. S/N 0108
PCB 377B02. S/N 325641
Larson Davis CAL200. S/N 9079

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

LARSON DAVIS – A PCB DIVISION
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED CERT #3622.01

LARSON DAVIS
A PCB DIVISION

Calibration Certificate

Certificate Number 2023002659
Customer:
KCI Technologies Inc

,

Model Number	831C	***Procedure Number***	D0001.8378	
Serial Number	11371	***Technician***	Jacob Cannon	
Test Results	**Pass**	***Calibration Date***	1 Mar 2023	
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	1 Mar 2024	
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.8.1R0	***Temperature***	23.72 °C	± 0.25 °C
		Humidity	49.1 %RH	± 2.0 %RH
		Static Pressure	84.94 kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 071008 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

Calibration Certificate

Certificate Number 2023002668
Customer:
KCI Technologies Inc

,

Model Number	831C	***Procedure Number***	D0001.8384		
Serial Number	11372	***Technician***	Jacob Cannon		
Test Results	**Pass**	***Calibration Date***	2 Mar 2023		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	2 Mar 2024		
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.8.1R0	***Temperature***	23.73	°C	± 0.25 °C
		Humidity	49.2	%RH	± 2.0 %RH
		Static Pressure	85.96	kPa	± 0.13 kPa

Evaluation Method ***Tested with:*** ***Data reported in dB re 20 µPa.***

Larson Davis CAL291. S/N 0108
PCB 377B02. S/N 325639
Larson Davis PRM831. S/N 071009
Larson Davis CAL200. S/N 9079

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

LARSON DAVIS – A PCB DIVISION
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED CERT #3622.01

LARSON DAVIS
A PCB DIVISION

Calibration Certificate

Certificate Number 2023002661
Customer:
KCI Technologies Inc

,

Model Number	831C	***Procedure Number***	D0001.8378		
Serial Number	11372	***Technician***	Jacob Cannon		
Test Results	**Pass**	***Calibration Date***	1 Mar 2023		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	1 Mar 2024		
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.8.1R0	***Temperature***	23.8	°C	± 0.25 °C
		Humidity	48.6	%RH	± 2.0 %RH
		Static Pressure	84.98	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 071009 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

Calibration Certificate

Certificate Number 2023005433
Customer:
The Modal Shop
10310 AeroHub Boulevard
Cincinnati, OH 45215, United States

Model Number	831C	***Procedure Number***	D0001.8384		
Serial Number	12221	***Technician***	Jacob Cannon		
Test Results	**Pass**	***Calibration Date***	3 May 2023		
Initial Condition	As Manufactured	***Calibration Due***			
		Temperature	23.8	°C	± 0.25 °C
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.8.2R227	***Humidity***	48.2	%RH	± 2.0 %RH
		Static Pressure	85.33	kPa	± 0.13 kPa

Evaluation Method ***Tested with:*** ***Data reported in dB re 20 µPa.***

Larson Davis CAL291. S/N 0108
Larson Davis CAL200. S/N 9079
PCB 377B02. S/N 346676
Larson Davis PRM831. S/N 077407

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

LARSON DAVIS – A PCB DIVISION
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED CERT #3572.01

LARSON DAVIS
A PCB DIVISION

Calibration Certificate

Certificate Number 2023005366
Customer:
The Modal Shop
10310 AeroHub Boulevard
Cincinnati, OH 45215, United States

Model Number	831C	***Procedure Number***	D0001.8378		
Serial Number	12221	***Technician***	Jacob Cannon		
Test Results	**Pass**	***Calibration Date***	3 May 2023		
Initial Condition	As Manufactured	***Calibration Due***			
		Temperature	23.49	°C	± 0.25 °C
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.8.2R227	***Humidity***	49.9	%RH	± 2.0 %RH
		Static Pressure	85.82	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 077407 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Calibration Certificate

Certificate Number 2023002785

Customer:
KCI Technologies Inc

,

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	18471	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	6 Mar 2023		
Initial Condition	Adjusted	***Calibration Due***	6 Mar 2024		
Description	Larson Davis CAL200 Acoustic Calibrator	***Temperature***	22	°C	± 0.3 °C
		Humidity	37	%RH	± 3 %RH
		Static Pressure	101.0	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	07/07/2022	07/07/2023	001021
Larson Davis Model 2900 Real Time Analyzer	03/31/2022	03/31/2023	001051
Microphone Calibration System	02/22/2023	02/22/2024	005446
1/2" Preamplifier	08/23/2022	08/23/2023	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/08/2022	08/08/2023	006507
1/2 inch Microphone - RI - 200V	10/05/2022	10/05/2023	006510
Hart Scientific 2626-S Humidity/Temperature Sensor	11/14/2022	05/14/2024	006943
Pressure Sensor	11/02/2022	11/02/2023	007827

APPENDIX G

List of Prepares and Reviewers

List of Preparers and Reviewers

Andrew Smith
NEPA – Regional Practice Leader
40 Years
Quality Assurance/Quality Control

Darrell Sacks, CC-P, CEP, ENV SP
Senior Environmental Planner
32 Years
Quality Assurance/Quality Control

Brandan Glorioso, ENV SP
Environmental Planner
6 Years
Noise Monitoring, Noise Modeling, Report Preparation