Brunswick Energy Transfer Station

Pre-Construction Noise Impact Assessment

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Making Sustainability Happen

Revision Record

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Executive Summary

SLR Engineering, Landscape Architecture, and Land Surveying, P.C. (SLR) has prepared a pre-construction sound study for the National Grid Brunswick Energy Transfer project (“Project”) in Brunswick, New York (Rensselaer County). SLR conducted a long-term sound monitoring survey near the site during early April in 2025. A sound propagation model was then developed to calculate expected facility sound contributions at the closest residences.

Calculated sound levels attributable to the facility exceed the existing ambient sound by more than 6 dBA during some hours of operation. Worst case increases are near 15 dBA $L_{eq(1\ hour)}$, if operation were to occur during nighttime hours.

The NYS Department of Environmental Conservation (DEC) guidance for assessing noise impacts states that increases of more than 6 dBA may require a closer analysis of impact potential. However, NYS DEC guidance does not explicitly address sound that occurs infrequently.

National Grid intends to operate the Brunswick facility when it is truly needed - typically during extremely cold days when the average temperature in the region drops to -5°F or below. These conditions are rare, according to historical weather data. The facility may also run briefly each spring before trailers are demobilized for the season. Because of this limited use, any noise from the site would be very infrequent and would have minimal impact on the area's overall sound levels throughout the year.

The potential increases shown in this report are hypothetical worst-case hourly sound levels, with no adjustment applied to account for the very infrequent operation over the span of an entire year. This is a very conservative method for assessing potential impacts, as no credit is taken for the long periods during which the facility will not emit significant sound.

This report describes the study methodology and results in greater detail.

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Acronyms and Abbreviations

dB	Decibel
dBA	A-Weighted Decibel
DIL	Dynamic Insertion Loss
G	Ground Absorption Coefficient
Hz	Hertz
IL	Insertion Loss
ISO	International Organization for Standardization
L_{90}	90th Percentile Sound Level
L_d	Daytime Average Sound Level
L_{dn}	Day-Night Average Sound Level
L_{eq}	Equivalent Continuous Sound Level
L_n	Nighttime Average Sound Level
L_p	Sound Pressure Level
L_w	Sound Power Level
ML	Measurement Location
NRC	Noise Reduction Coefficient
SLM	Sound Level Meter
SLR	SLR International Corporation
s/n	Serial Number
STC	Sound Transmission Class
TL	Transmission Loss

1.0 Introduction

SLR Engineering, Landscape Architecture, and Land Surveying, P.C. (SLR) has prepared a pre-construction sound study at the request of LaBella Associates (LaBella), for the National Grid Brunswick Energy Transfer project (the "Project") in Brunswick, New York (Rensselaer County). National Grid is proposing to build a new compressed natural gas injection station.

SLR conducted a pre-construction, baseline sound measurement survey in April 2025, to quantify existing sound levels in the vicinity of the Project site. A sound propagation model (noise model) of the future facility was then developed, and the calculated project sound levels were compared against measured baseline conditions. This report presents the results from the measurement survey and modeling.

A glossary of common acoustical terminology and metrics is included in **Appendix A**.

2.0 Sound Level Criteria

2.1 New York State DEC Guidance

Noise is an aspect of the environment under New York's State Environmental Quality Review Act [SEQRA, see 6 NYCRR 617.2(1)]. The NYS Department of Environmental Conservation (DEC) has published a guidance document for assessing noise impacts ("Assessing and Mitigating Noise Impacts" (Division of Environmental Permits, NYS DEC 2001). The guidance document states that sound level increases from 0-3 dBA should have no appreciable effect on receptors; increases from 3-6 dBA may have potential for adverse noise impact only in cases where the most sensitive of receptors are present; and increases of more than 6 dBA may require a closer analysis of impact potential depending on existing sound levels and the character of surrounding land use and receptors. An increase of 10 dBA deserves consideration of avoidance measures in most cases. The NYS DEC guidance can be useful for assessing potential community reaction to a new noise source.

No other local, county, state, or federal noise regulations were identified. The Town of Brunswick does not have a quantitative noise standard.

3.0 Pre-Construction Sound Measurement Survey

The continuous sound measurement survey was conducted by SLR staff from April 1 to 7, 2025. The goal was to quantify existing ambient sound conditions in the vicinity of the closest residences.

3.1 Measurement Locations

Two measurements locations were chosen and are summarized in **Table 4-1**. The measurement locations are shown in **Figure B-1** and **Figure B-2**. Photos of the locations are shown in **Figure B-3** and **Figure B-4**.

Table 3-1: Summary of Measurement Locations

Measurement Location	Description
ML 1	Edge of large field near closest residence (120 Wager Road). This location was used to determine the background sound level in the area.
ML 2	On the existing right-of-way, near residences on White Tail Circle. This location was used to determine average sound levels along what will be the facility access road. The sound meter was intentionally set back from Spring Avenue, to represent conditions in the rear yards.

3.2 Measurement Equipment

Sound level meter equipment used during the sound study included the following instruments:

- Brüel & Kjær® Model 2270 SLM; Type 1; s/n 3000938 (ML 1); Brüel & Kjær® Model 2250 SLM; Type 1; s/n 2704733 (ML 2)
- Larson Davis® Model CAL200 Calibrator; s/n 22646

Windscreens were used on the measurement microphones. The sound level meters were field calibrated before and after measurement intervals, showing no significant change in sensitivity over the survey period (less than 0.1 dB). All instruments have current laboratory certification which can be provided upon request. Measurements were conducted five feet above the ground.

3.3 Weather Conditions

Weather conditions during the measurement survey were monitored daily by SLR staff and with a portable weather station at the site. A summary of the weather conditions is shown in **Table** 3-2. **Figure C-1** shows a plot of measured temperatures and wind speeds during the survey period. Sound data collected during periods having high winds and/or precipitation were excluded from the analysis.

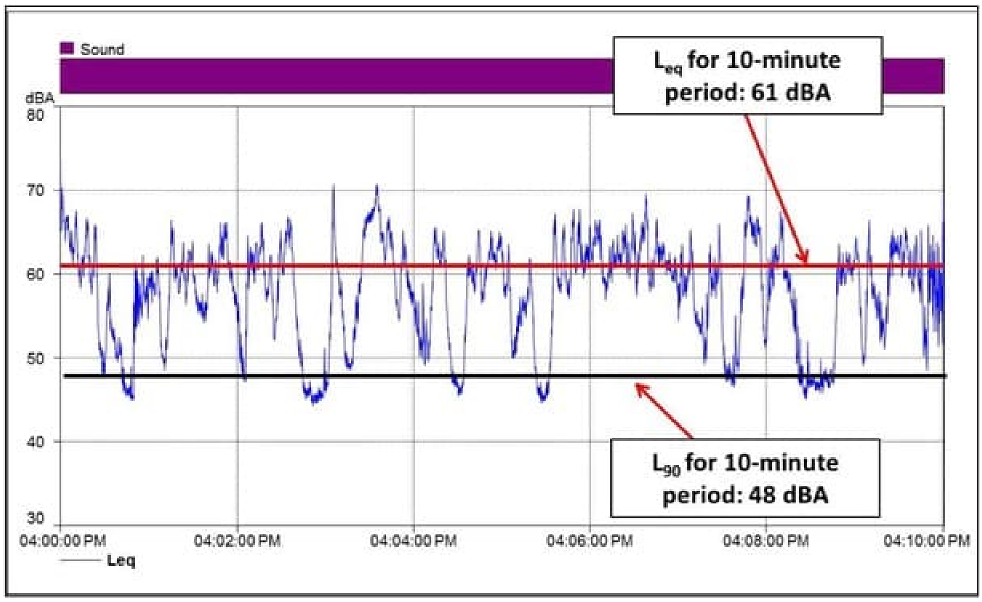
Table 3-2: Summary of Weather Conditions

Date	Observed Conditions
April 1 (Tue)	Breezy at beginning of survey (1 pm). Calmer winds into the evening/night.
April 2 (Wed)	Light winds, cold in early morning (12 am-7am). Rain after 6 pm. Rain into April 3.
April 3 (Thur)	Rain until 10 am, breezy. Warm. Light winds 12 pm to 11 pm. Cold front/wind at 11 pm.
April 4 (Fri)	Breezy until 5 pm. Lighter winds into evening.
April 5 (Sat)	Calm winds early morning. Rain by 4:30 am until 6 pm.
April 6 (Sun)	Dry until 6 am, Rain from 6 am to 11 am. Dry after 11 am.
April 7 (Mon)	Rain/snow after 2 am.

4.0 Environmental Sound Level Measurements

4.1 Sound Metrics

Sound level meters measure the fluctuating sound pressure levels and then calculate statistical metrics to describe the time-varying sounds. The equivalent continuous level, designated L_{eq}, represents the time average of the fluctuating sound pressure. L_{eq} is the steady, constant sound level that would have had the same total energy as the fluctuating sound. Percent-exceeded sound levels, such as L_{10}, L_{50}, and L_{90}, represent the sound level that is exceeded 10%, 50%, or 90% of the time during a given time interval. The L_{90} is close to the lowest sound level observed, and it is usually the sound level which is free of influence from louder, short-duration events, such as vehicular traffic. The example image below shows fluctuating sound levels over time (shown as a blue line) and illustrates the difference between L_{eq} and L_{90} for a 10-minute-duration measurement.



Though the instantaneous sound level over the 10-minute period fluctuated from 45 to 70 dBA (traffic, etc.), the resulting energy-average level was 61 dBA (L_{eq}). The background sound level in the absence of fluctuations was 48 dBA (L_{90}).

4.1.1 L_{90} – Use to Assess Steady or Constant Sounds

The L_{90} is representative of ambient conditions without short-term variations in the sound level (due to aircraft, barking dogs, transient sounds, etc.), so the L_{90} is often referred to as the background sound level. The L_{90} would be an appropriate descriptor for a relatively steady, constant type of sound, such as that emitted by processing equipment (gas decompression skids).

4.1.2 L_{eq} to Assess Transient or Brief Sounds

The equivalent continuous level (L_{eq}) is often used to quantify relatively brief, transient sounds. The L_{eq} would be appropriate for quantifying or assessing sound due to trucks entering or existing the facility, since these events will be of brief duration and not constant.

Ambient sounds present at the measurement locations are summarized in **Table 4-1**.

Table 4-1: Summary of Measurement Durations and Observations

Measurement Location (ML)	Measurement Duration HH:MM	Source Observations During Measurements
ML 1	142:00	Birds, distant vehicles, spring peeper frogs
ML 2	142:00	Birds, vehicles on Spring Ave, spring peeper frogs (more noticeable)

4.2 Sound Survey Results

The pre-construction sound measurement survey results are summarized in **Table 4-2**. Sound levels were measured using the slow meter response and A-weighting (dBA). Data were collected in 1/3-octave bands and recorded in 10-second and 15-minute sampling periods. The measured A-Weighted sound levels for daytime and nighttime periods are shown. Daytime is considered the period from 7:00 a.m. to 10:00 p.m., and nighttime is from 10:00 p.m. to 7:00 a.m.

Table 4-2: Measured A-Weighted Sound Levels

Measurement Location (ML)	Daytime		Nighttime	
	L_{eq}	L_{90}	L_{eq}	L_{90}
ML 1	44.0	33.6	36.7	26.1
ML 2	51.7	36.7	49.7	36.3

Levels at ML 1 ranged from 26.1 to 33.6 dBA (L_{90}) and 36.7 to 44.0 dBA (L_{eq}). Levels at ML 2 ranged from 36.3 to 36.7 dBA (L_{90}) and 49.7 to 51.7 dBA (L_{eq}).

Measured L_{eq} values at ML 2 were higher, due to the location's closer proximity to Spring Avenue and due to the presence of spring "peeper frog" activity. L_{90} values at ML 2 were also higher, due frog activity. This frog activity is discussed in more detail within **Section 4.3**.

Level vs. time graphs from each measurement location are included in **Appendix D**.

4.3 Seasonally Corrected Sound Level (ANS Weighting)

The measurement survey occurred during early April. After the first night of the survey (April 1 into April 2) there was a considerable amount of "Spring Peeper" frog noise present. This sound was audible to SLR staff during a daytime visit to the site on Friday, April 4. Playback of audio collected by the sound meters also detected frog sound during daytime and nighttime periods. The frog sound had the effect of increasing the measured L_{90} levels, versus if there had been no frog activity.

The facility will operate primarily during the cold weather season, when insect and frog sound will be minimal. To estimate the ambient sound during other seasons of the year when insect activity is minimal, the measured L_{eq} and L_{90} sound levels were filtered to remove all sound above the 1,250-hertz one-third octave (1/3-octave) band. This is a methodology found in ANSI S12.9 Part 3 [1], which is used when measuring sound in rural areas. The method removes the high-frequency contribution from "biogenic sound" (birds, insects, etc.), which typically occurs above the 1,250-hertz 1/3-octave band. The yields the "**A**-weighted, **N**oi**S**e-compensated" level, or the "ANS-weighted" level.

Figure B-5 and **Figure B-6** present graphical examples of how the ANS correction is applied. The solid black bars represent the measured L_{90} sound level in each 1/3-octave band (ML 2, Nighttime). The red bars (1,600-hertz and above) show elevated sound levels, due to peeper frog activity. Sound levels in those bands are removed from the calculation (**Figure B-6**). The sound data in the remained 1/3-octave bands then have A-weighting applied. The overall result is that the measured sound level of 33 dBA (almost all due to frogs) is decreased to 23 dBA (non-frog, wintertime condition).

The results of the ANS-Weighted sound data are presented in **Table 4-3**.

Table 4-3: Measured Sound Levels with Seasonal (ANS) Correction

Measurement Location (ML)	Daytime		Nighttime	
	L_{eq}	L_{90}	L_{eq}	L_{90}
ML 1	42.9	30.2	35.1	21.8
ML 2	44.4	31.3	38.7	23.0

The ANS methodology may be a conservative approach to estimating Wintertime sound levels, in that it eliminates all sound above the 1,250-hertz 1/3-octave band. Actual Wintertime levels may be slightly higher than those shown in **Table 4-3**.

5.0 Sound Propagation Modeling

5.1 Sound Model Development

A three-dimensional computer sound propagation model (noise model) was developed to analyze the sound contributions from the proposed facility. The model was developed using CadnaA, version 2025 (Build 205.5501), a commercial noise modeling package from DataKustik GmbH. The software considers spreading losses, ground and atmospheric effects, shielding from barriers and buildings, reflections from surfaces and other sound propagation properties. The software is based on published engineering standards. The ISO 9613-2 standard was used for air absorption and other sound propagation calculations.

To be conservative, foliage was not included in the model. The terrain within the immediate project site was modeled based on site grading contours. At more distant locations, the model used United States Geological Survey (USGS) topographical data at a resolution of 10 by 10 meters. A temperature of 20 degrees Celsius and 70 percent relative humidity were used for the atmospheric absorption calculations. The ground at the proposed facility was modeled as mostly

[1] "Methods to Define and Measure the Residual Sound in Protected Natural and Quiet Residential Areas". ANSI/ASA S3/SC1.100-2014, ANSI S12.9 Part 3 Modification

reflective, with an absorption coefficient of G = 0.1, while all other ground was modeled as partially absorptive, with an absorption coefficient of G = 0.5, which would be representative of a mix of soft and hard ground. The number of reflections was set to 2 for the model. This means that two reflections from buildings and obstacles were allowed for individual sound propagation rays during sound propagation calculations.

Winds can also affect measured sound levels by up to 10 dB, so wind was modeled as a light downwind condition in all directions, which favors the transmission of sound from the facility to the receptors.

Ambient non-facility noise is not included in the model-calculated results, and therefore the results show the sound contribution from the Project only. Later in this report, results tables show the calculated Project sound level against the measured existing sound levels.

5.2 Receptor Locations

The receptor locations used in the modeling are presented in **Figure B-7**. The receptor locations are summarized in **Table 5-1**.

Table 5-1: Model Receptor Locations

Receptor	Parcel Address
R1 A	203 MENEMSHA LN - North
R1 B	203 MENEMSHA LN - Closer to Project Property Line
R1 C	203 MENEMSHA LN - Closer to Project Property Line and Skid Equipment
R2	120 WAGER RD (Closest House)
R3	25 WHITE TAIL CIR
R4	21 WHITE TAIL CIR
R5	19 WHITE TAIL CIR
R6	1276 SPRING AVE (Project Site Entry)
R7	113 WAGER RD
R8	9 MILLER RD
R9	23 LILLY LN
R10 A	211 MENEMSHA LN – Property Line with Project
R10 B	211 MENEMSHA LN - Rear Yard
R11	207 MENEMSHA LN

5.3 Data and Assumptions

5.3.1 Stationary Equipment

The equipment was arranged in the noise model as per the latest available plot plan. The decompression skids were assumed to be the primary source of steady, constant sound. The skids were modeled as rectangular boxes, like the skid shown in **Figure** B-8.

Table 5-2 shows the sound power levels used as input to the model for the proposed equipment. Octave band sound levels from SLR's database of past measurements of a gas control skid were used in the model. For the modeled skids (approx. 8 feet tall, 40 feet long), the sound power levels shown in **Table 5-2** correspond to a measured sound pressure level of

64 dBA at 1 meter. Achieving these levels may require coordination with the skid manufacturer (increased cladding thickness, etc.).

Table 5-2: Sound Power Level (L_w) for Decompression Skid

Source	Linear L_w at Octave Center Frequency, Hz									Total
	31.5	63	125	250	500	1k	2k	4k	8k	dBA
Sound Power Levels, L_w										
Gas Decompression Skid (per skid) – Walls and Roof of Container, External Piping	82	82	78	73	70	76	83	77	69	86

5.3.2 Transient Noise: Truck Activity and Backup Alarms

Truck sound levels were also modeled. Inputs to the model include three-dimensional descriptions of the access road alignments and hourly truck volumes.

Table 5-3 shows the sound power levels used as input to the model for a slow-speed heavy truck. One-third octave band sound levels were taken from the Federal Highway Administrations Traffic Noise Model manual (FHWA TNM® Version 3.0).

Table 5-3: Sound Power Level (L_w) for Heavy Truck as Low Speed

Source	Linear L_w (dB) at 1/3-Octave Band Center Frequency, Hz									dBA
Heavy Truck, 10-20 mph, L_w	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**	106
	79	82	85	85	85	86	88	89	90	
	200	**250**	**315**	**400**	**500**	**630**	**800**	**1000**	**1250**	
	92	92	93	94	96	98	99	99	95	
	1600	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	
	93	91	89	87	84	82	80	78	77	

The modeling inputs included estimated truck volumes on the site that were provided to SLR, as shown in **Table 5-4**.

Table 5-4: Expected Onsite Truck Volumes

Time	Trucks In or Out
12:00 AM	0
1:00 AM	0
2:00 AM	0
3:00 AM	0
4:00 AM	1 pickup in
5:00 AM	3 pickups in
6:00 AM	0
7:00 AM	0
8:00 AM	0

Time	Trucks In or Out
9:00 AM	0
10:00 AM	8 out
11:00 AM	8 out
12:00 PM	8 in - 8 out
1:00 PM	8 in
2:00 PM	8 in
3:00 PM	0
4:00 PM	0
5:00 PM	0
6:00 PM	8 out
7:00 PM	8 out
8:00 PM	8 in - 8 out
9:00 PM	8 in
10:00 PM	8 in – 4 pickups out
11:00 PM	0

The two worst case hours regarding truck volumes are 12 p.m. and 8 p.m., which could potentially have up to 16 trucks in or out. The other worst-case hour is 10 p.m., with up to 8 trucks going into the site. The 10 p.m. hour would likely be considered the actual worst-case hour, since it is during the legal definition for nighttime (10 p.m. to 7 a.m.), when there is a lower existing ambient sound level.

Truck movement along the access road was modeled at a moving point source, which radiates sound spherically. Truck speeds were modeled at 12 mph. The truck sound source, which is typically controlled by engine sound (not tire/pavement sound) at low speeds, was modeled at a height of 6 feet above ground level. Modeling did not account for pickup trucks (F150). Compared to the large trucks, sound contributions from pickups will be negligible.

5.3.3 Backup Alarms

Some trucks entering the facility may be equipped with backup alarms. When backing into the loading dock, the alarms may emit sound for several seconds. Backup alarms are designed to emit sound at a very specific frequency (tone), usually between 1,000 hertz and 2,000 hertz. **Table 5-5** presents the backup alarm sound power level used in the model, based upon measurements of a typical alarm.

Table 5-5: Sound Power Level (L_w) for Backup Alarms

Source	Linear L_w at Octave Center Frequency, Hz									Total
	31.5	63	125	250	500	1k	2k	4k	8k	dBA
Sound Power Levels, L_w										
Backup Alarm (based on 97 dBA at 1 meter)	-	-	-	-	-	108	-	-	-	108

Alarms were modeled at a height of 5 feet above grade. For the 8 trucks per hour case, the modeling assumed that backup alarm sound could occur for up to 20 seconds per truck (8 x 20 = 160 seconds), or 2.7 minutes per hour. For the 16 trucks per hour case, the modeling assumed that backup alarm sound could occur for up 5.3 minutes per hour.

5.4 Noise Model Results

5.4.1 Stationary Sources Calculated Sound Levels

The modeling results with both decompression skids operating simultaneously are shown in **Table 5-6**. The table shows the equipment sound contribution at the closest residential locations. Because the skid sound could potentially occur continuously over several hours, this sound is compared against the existing L_{90} sound level. The measured, ANS-Weighted Daytime L_{90} values are also shown, as well as the resulting increases over the Daytime L_{90}.

Table 5-6: Stationary Modeling Results vs. Existing Daytime L_{90} (dBA)

Location	R1A	R1B	R1C	R2	R3	R4	R5	R6	R7	R8	R9	R10A	R10B	R11
Skid Contribution	32	34	39	35	16	15	11	14	35	29	28	34	29	30
Existing Daytime L_{90}	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Future: Skids + Existing L_{90}	34	36	40	36	30	30	30	30	36	33	32	36	33	33
Increase Over Existing	4	6	10	6	0	0	0	0	6	3	2	6	3	3

The results show that sound levels at some of the closest receptors (which are closest to the property boundary of the Project) are at the upper range of the NYS DEC 6-dBA increase guideline. Only one location (R1C, the closest property line to the northeast) shows an increase of 10 dBA. Other receptors show increases at or below 6 dBA. With the mitigation discussed in **Section 6.0**, steady operational sound levels decrease considerably at some locations. **Table 5-7** shows the mitigated results, limiting increases over the existing Daytime ambient to 2 dBA.

Table 5-7: Mitigated - Stationary Modeling Results vs. Existing Daytime L_{90} (dBA)

Location	R1A	R1B	R1C	R2	R3	R4	R5	R6	R7	R8	R9	R10A	R10B	R11
Skid Contribution	26	19	21	27	8	16	14	11	17	19	23	17	22	22
Existing Daytime L_{90}	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Future: Skids + Existing L_{90}	31	30	31	32	30	30	30	30	30	30	31	30	31	31
Increase Over Existing	1	0	1	2	0	0	0	0	0	0	1	0	1	1

5.4.2 Transient Sources (Trucks/Alarms) Calculated Sound Levels

The following tables shows three scenarios:

1. Eight (8) trucks/alarms per hour versus Daytime L_{eq}
2. Sixteen (16) trucks/alarms per hour versus Daytime L_{eq}
3. Eight (8) trucks/alarms per hour versus Nighttime L_{eq} (10 p.m. hour)

The Daytime scenarios also assume that the decompression skids could potentially be operating during truck activity.

5.4.2.1 Eight (8) Trucks per Hour Daytime

Table 5-8 shows the modeling results for the 8 trucks per hour scenario, which includes backup alarm sound and potential decompression skid sound. The truck/alarm sound levels shown in the table are the 1-hour L_{eq}, or the average for that hour. There could be moments during those hours when instantaneous truck or alarm sound levels significantly exceed the hourly average level [$L_{eq(1\ hour)}$] shown. The Project truck/alarm sound is compared against the measured long-term Daytime L_{eq}. Individual hours of the day may have slightly lower or higher hourly L_{eq} values than what is shown in **Table 4-3**.

Table 5-8: Eight (8) Trucks Per Hour vs. Existing Daytime L_{eq} (dBA)

Receptor	R1A	R1B	R1C	R2	R3	R4	R5	R6	R7	R8	R9	R10A	R10B	R11
Transients Sources Contribution (Trucks/Alarms), Hourly L_{eq} Contribution	43	46	50	50	37	42	42	50	49	42	42	49	42	40
Steady Sources (Skids)	32	34	39	35	16	15	11	14	35	29	28	34	29	30
Logarithmic Sum: Project Contribution	43	46	50	50	37	42	42	50	49	42	42	49	42	41
Daytime L_{eq} (Existing with ANS)	43	43	43	43	44	44	44	44	43	43	43	43	43	43
Future (Facility + Existing)	46	48	51	51	45	46	46	51	50	45	46	50	46	45
Increase	3	5	**8**	**8**	1	2	2	**7**	**7**	3	3	**7**	3	2

Table 5-8 shows potential 7 to 8-dB increases over the Daytime L_{eq} at five receptors. All of these receptors are close to either the access road and/or the decompression process area. The existing Daytime L_{eq} from Measurement Location 1 was used for receptors closest to the Project. The Daytime L_{eq} from Measurement Location 2 was used for receptors R3 through R6 (Closer to Spring Avenue).

Truck engine sound is the dominant contributor at all receptors. For example, considering the overall Project contribution of 50 dBA at R1C, the contribution from modeled truck sound is 49.4 dBA $L_{eq(1hour)}$. By comparison, the contribution from backup alarm sound is 36.8 dBA $L_{eq(1hour)}$.

5.4.2.2 Sixteen (16) Trucks per Hour Daytime

Table 5-9 shows the modeling results for the 16 trucks per hour scenario, which includes backup alarm sound and potential decompression skid sound. The truck/alarm sound levels shown in the table are once again the 1-hour Leq (average for that hour). When the number of sound events (trucks/alarms) is doubled (from 8 to 16) but the averaging period stays the same (1 hour), the average sound level for that hour will increase by approximately 3 dB (Leq).

Table 5-9: 16 Trucks Per Hour vs. Existing Daytime L_{eq} (dBA)

Receptor	R1A	R1B	R1C	R2	R3	R4	R5	R6	R7	R8	R9	R10A	R10B	R11
Transients Sources Contribution (Trucks/Alarms), Hourly L_{eq} Contribution	46	49	53	53	40	45	45	53	52	45	45	52	45	43
Steady Sources (Skids)	32	34	39	35	16	15	11	14	35	29	28	34	29	30
Logarithmic Sum: Project Contribution	46	49	53	53	40	45	45	53	52	45	45	52	45	44
Daytime L_{eq} (Existing with ANS)	43	43	43	43	44	44	44	44	43	43	43	43	43	43
Future (Facility + Existing)	48	50	53	53	46	48	48	54	52	47	47	52	47	46
Increase	5	7	10	10	1	3	3	10	10	4	4	10	4	3

Table 5-9 shows potential 7- to 10-dBA increases over the Daytime L_{eq} at six receptors.

5.4.2.3 Eight (8) Trucks per Hour Nighttime

Table 5-10 shows the modeling results for the 8 trucks per hour Nighttime scenario (10 p.m. hour), which includes backup alarm sound and potential decompression skid sound. The truck/alarm sound levels shown in the table are once again the 1-hour L_{eq} (average for that hour).

Table 5-10: Eight (8) Trucks Per Hour vs. Existing Nighttime L_{eq} (dBA)

Receptor	R1A	R1B	R1C	R2	R3	R4	R5	R6	R7	R8	R9	R10A	R10B	R11
Transients Sources Contribution (Trucks/Alarms), Hourly Leq Contribution	43	46	50	50	37	42	42	50	49	42	42	49	42	40
Steady Sources (Skids)	32	34	39	35	16	15	11	14	35	29	28	34	29	30
Logarithmic Sum: Project Contribution	43	46	50	50	37	42	42	50	49	42	42	49	42	41

Receptor	R1A	R1B	R1C	R2	R3	R4	R5	R6	R7	R8	R9	R10A	R10B	R11
Nighttime Leq (Existing with ANS)	35	35	35	35	39	39	39	39	35	35	35	35	35	35
Future (Facility + Existing)	44	46	50	50	41	44	44	51	49	43	43	49	43	42
Increase, Δ dB	9	11	15	15	2	5	5	12	14	8	8	14	8	7

Table 5-10 shows increases over the existing Daytime L_{eq} ranging from 7 to 15 dBA $L_{eq(1\ hour)}$.

6.0 Noise Mitigation

Calculated sound levels attributable to facility operation exceed the existing ambient sound levels by more than 6 dBA at many receptors. Worst case increases are near 15 dBA $L_{eq(1\ hour)}$.

National Grid intends to operate the Brunswick facility when it is truly needed - typically during extremely cold days when the average temperature in the region drops to -5°F or below. These conditions are rare according to historical weather data. The facility may also run briefly each spring before trailers are demobilized for the season. Because of this limited use, any noise from the site would be very infrequent and would have minimal impact on the area's overall sound levels throughout the year.

It should be emphasized that the noise impacts shown in Section 5.4 would occur very infrequently in the context of the long-term, annual ambient sound level. The NYS DEC guidance document does not explicitly address such infrequent noise events. For example, the document cites mining and solid waste handling facilities, where the noise under investigation occurs over long periods of time (many months per year or even all year long). In contrast, the analysis shown in this report presents hypothetical worst-case hourly sound levels, with no adjustment to account for the very infrequent operation over the course of a year. Therefore, this is a very conservative method for assessing potential impacts, because no credit is taken for the very long periods during which no facility sound will occur.

Even given the very conservative assessment methodology, potential mitigation was evaluated to address the calculated worst-hour conditions. This report is not suggesting that the mitigation be integrated into the facility design, given the potential visual impact and engineering challenges. The mitigation and results in this section are presented primarily for informational purposes.

The model was modified to include mitigation in the form of noise barriers, which are often used to mitigate noise from mobile sources (trucks). A 40-foot-tall barrier was assumed around the entire perimeter of the main truck/decompression skid area. The total linear length is approximately 2,000 feet. Another 40-foot-tall section was modeling along the access road (ROW) near R2.

Two additional 20-foot-tall barriers were assumed along the access road (300 to 600 feet long). The potential barrier locations are shown in **Figure B-9**. The modeling assumes partially reflective barriers (i.e., they were not assumed to be sound-absorptive, acoustic noise barriers). Exact barrier heights and lengths may change as the facility design is updated.

6.1 Mitigated Case - Eight (8) Trucks per Hour Nighttime

Table 6-1 shows the Mitigated modeling results for the 8 trucks per hour Nighttime scenario, which includes backup alarm sound and potential decompression skid sound. The truck/alarm sound levels shown in the table are once again the 1-hour L_{eq} (average for that hour).

Table 6-1: Mitigated Case - Eight (8) Trucks Per Hour vs. Existing Nighttime L_{eq} (dBA)

Receptor	R1A	R1B	R1C	R2	R3	R4	R5	R6	R7	R8	R9	R10A	R10B	R11
Transients Sources Contribution (Trucks/Alarms), Hourly L_{eq} Contribution	38	32	31	42	35	41	39	39	33	34	36	32	36	37
Steady Sources (Skids)	26	19	21	27	8	16	14	11	17	19	23	17	22	22
Logarithmic Sum: Project Contribution	38	32	32	42	35	41	39	39	33	34	36	32	36	37
Nighttime L_{eq} (Existing with ANS)	35	35	35	35	39	39	39	39	35	35	35	35	35	35
Future (Facility + Existing)	40	37	37	43	40	43	42	42	37	38	38	37	39	39
Increase, Δ dB	5	2	2	**8**	1	4	3	3	2	2	3	2	4	4

With the barriers in place, modeled results show increases over existing that stay below 6 dBA at almost all receptors. Only R2 shows an increase of 8 dBA $L_{eq(1\ hour)}$. R2 sits about 50 feet above the main decompression skid area. If the 40-foot-tall section between R2 and the access road (ROW) is removed, the facility contribution there increases by about 5 dBA. In which case, the increase over existing becomes closer to 13 dBA at R2.

6.2 Mitigated Case - Sixteen (16) Trucks per Hour Daytime

Table 6-2 shows the modeling results for the mitigated 16 trucks per hour Daytime scenario, which includes backup alarm sound and potential decompression skid sound. The truck/alarm sound levels shown in the table are once again the 1-hour L_{eq} (average for that hour).

Table 6-2: Mitigated Case – Sixteen (16) Trucks Per Hour vs. Existing Daytime L_{eq} (dBA)

Receptor	R1A	R1B	R1C	R2	R3	R4	R5	R6	R7	R8	R9	R10A	R10B	R11
Transients Sources Contribution (Trucks/Alarms), Hourly L_{eq} Contribution	41	35	34	45	38	44	42	42	36	37	39	35	39	40
Steady Sources (Skids)	26	19	21	27	8	16	14	11	17	19	23	17	22	22
Logarithmic Sum: Project Contribution	41	35	34	45	38	44	42	42	36	37	39	35	39	40
Daytime L_{eq} (Existing with ANS)	43	43	43	43	44	44	44	44	43	43	43	43	43	43
Future (Facility + Existing)	45	44	43	47	45	47	46	46	44	44	44	44	44	45
Increase, Δ dB	2	1	1	4	1	3	2	2	1	1	1	1	2	2

With the barriers in place, increases over existing stay below 6 dBA ($L_{eq(1\ hour)}$) at all receptors, including R2. If the 40-foot-tall section between R2 and the access road (ROW) is removed, the facility contribution there increases by about 5 dBA. In which case, the increase over existing becomes closer to 8 dBA at R2.

7.0 Conclusion

SLR has completed a pre-construction noise impact assessment for the proposed Brunswick Energy Transfer Station. SLR developed a sound propagation model to predict the facility sound contribution at the closest residences. Modeled receptors also include areas where residential parcels abut the Project property boundaries, but where there are no actual residential dwellings.

With noise mitigation in the form of large (40-foot-tall) barriers, potential increases over the measured existing ambient sound levels range from 1 dBA to 5 dBA $L_{eq(1hour)}$ (average for that hour). Calculated increases at the closest residence (R2, 120 Wager Road) are 8 dBA $L_{eq(1hour)}$ during the worst-case 10 p.m. hour, which is legally “Nighttime.” Mitigation at R2 may be challenging due the relative elevation of the residence relative to the Project site.

8.0 Closure

This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.

Sincerely,

SLR International Corporation

Damien Bell
Senior Consultant – Acoustics & Vibration
[redacted]

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Appendix A   Glossary of Common Acoustical Terminology

Brunswick Energy Transfer Station

Pre-Construction Noise Impact Assessment

LaBella Associates

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A-weighting: a weighting scale in which sound pressure levels in individual frequency bands are adjusted to match the response for the human ear. The reference adjustment is 0 dB at 1,000 Hz. The human ear is much less responsive at low frequencies. An A-weighted sound level is the total contribution from all sound frequencies, with the appropriate weighting factors applied and is designated as dBA.

C-weighting: a weighting scale that is relatively flat from 31.5 Hz to 8,000 Hz with a roll-off higher and lower than those frequencies. The adjustment is 0 dB from 200 Hz to 1,250 Hz. A C-weighted sound level is the total contribution from all sound frequencies, with the appropriate weighting factors applied and is designated as dBC.

Hertz (Hz): the unit of measure of frequency or the speed of vibration of a sound wave. Also referred to as “cycles per second”.

Insertion Loss (IL): the decrease (in decibels, dB) in sound power level measured at the location of the receiver when a sound attenuator (e.g., muffler), barrier, or other sound reduction element is inserted in the transmission path between the source and receiver.

L_d: the daytime average sound level. The L_{eq} averaged over daytime hours. Daytime hours may be defined differently by various ordinances and regulations. The hours between 7:00 am and 10:00 pm is the interval used by the U.S. Federal Energy Regulatory Commission (FERC) and the U.S. Department of Housing and Urban Development (HUD).

L_{dn} (also DNL): the day-night average sound level, a metric used by many regulatory bodies (including FERC and HUD) as an overall representation of the sound at a measurement location. The L_{dn} is calculated by averaging the sound measured over a 24-hour period, with 10 decibels added to sound levels measured during nighttime hours.

L_{eq}: the equivalent-continuous sound level is a time-average sound level for a specified time period. It is the most commonly used form of sound level averaging. Specifically, the Leq is the level of a steady sound that has the same sound energy as a time-varying sound during a stated time period and at a stated location.

L_n: the nighttime average sound level. The L_{eq} averaged over nighttime hours. Nighttime hours may be defined differently by various ordinances and regulations. The hours between 10:00 pm and 7:00 am is the interval used by the U.S. Federal Energy Regulatory Commission (FERC) and the U.S. Department of Housing and Urban Development (HUD).

L_{90}: a statistical parameter (percentile) that describes the sound level that is exceeded 90 percent of the time during a stated time period. For example, for a stated hourly L_{90} of 45 dBA, the sound level at the measurement location has a 90% chance of being greater than 45 dBA and a 10% chance of being less than or equal to 45 dBA. The L_{90} is often used as the “background” or “ambient” sound level for a given measurement period. Other percentile values are defined similarly (e.g., L_{50}, L_{10}, etc.).

Sound Power Level (PWL or L_w): a logarithmic parameter that describes the power characteristics of a noise source, relative to a reference power value, expressed in decibels, dB or dBA. The sound power level should not be confused with the sound pressure level. The sound power level is a characteristic of a noise source analogous to the wattage rating of a light bulb, and it is independent of the surroundings. It is calculated from measurements of the sound pressure level. A 75-watt light bulb will look much brighter in a white, reflective room than in a black, absorptive one. A noise source rated with a sound power level if 95 dBA will produce a much higher sound pressure level (will be much louder) in a small hard box than outside in a soft grass meadow.

Sound Pressure Level (SPL or L_p): a logarithmic parameter that describes the quantity of sound relative to a reference pressure value, expressed in decibels, dB or dBA. The SPL is the quantity that is measured with a sound level meter, and it is dependent upon the surroundings of a noise source.

Sound Transmission Class (STC): a single number rating for describing sound transmission loss of a wall or partition. A rating system designed to facilitate comparison of the sound transmission characteristics of various architectural materials and constructions.

Transmission Loss (TL): the difference (in decibels) between sound power incident upon a sound reduction element (wall or muffler) to that transmitted. The less sound energy is transmitted, the higher the TL value.

Appendix B   Figures

Brunswick Energy Transfer Station

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LaBella Associates

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Figure B-1: Sound Measurement Locations

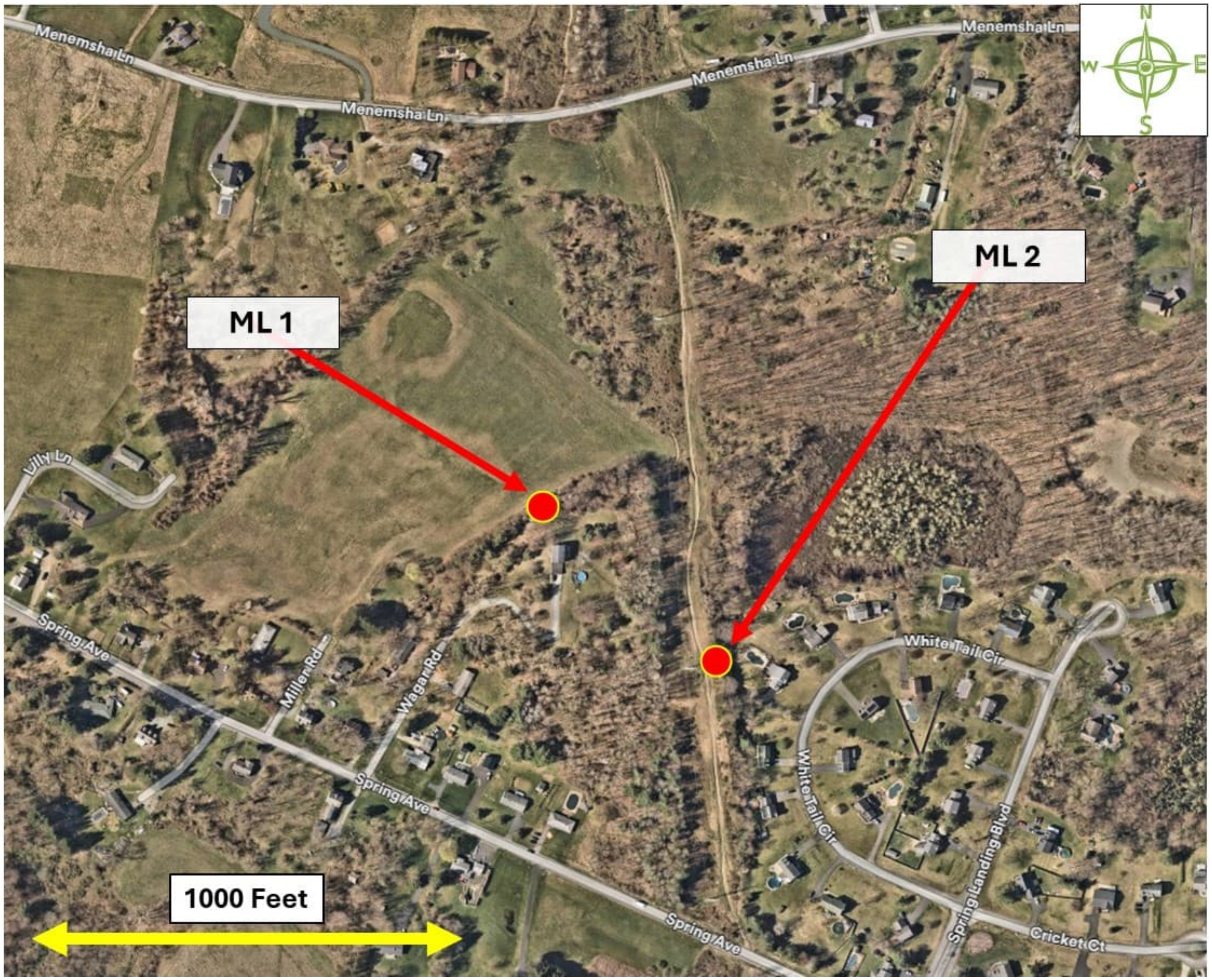


Figure B-2: Sound Measurement Locations with Site Plan Overlay

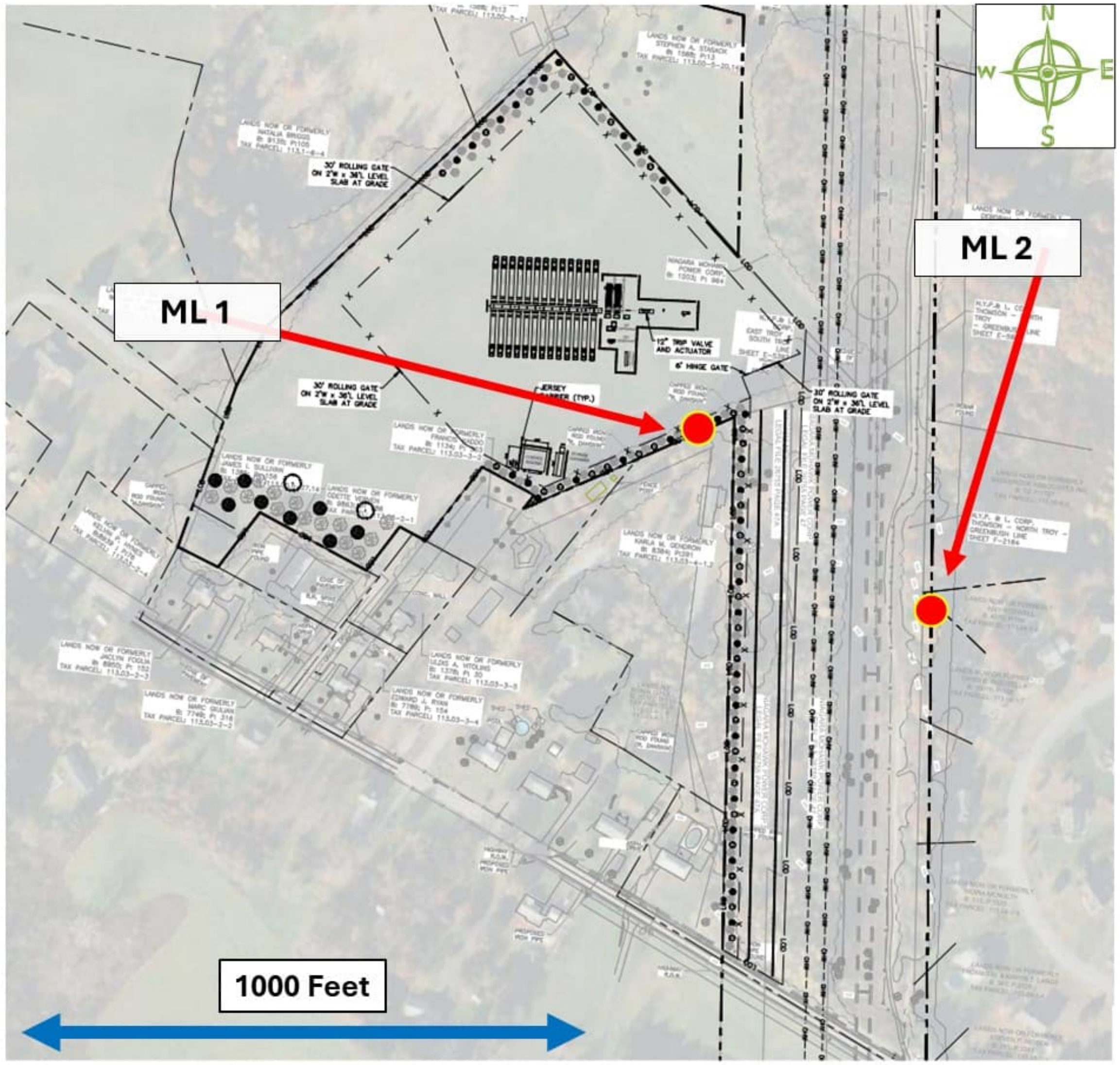


Figure B-3: ML 1 Photos

Figure B-4: ML 2 Photos

Figure B-5: ANS Seasonal Correction (1)

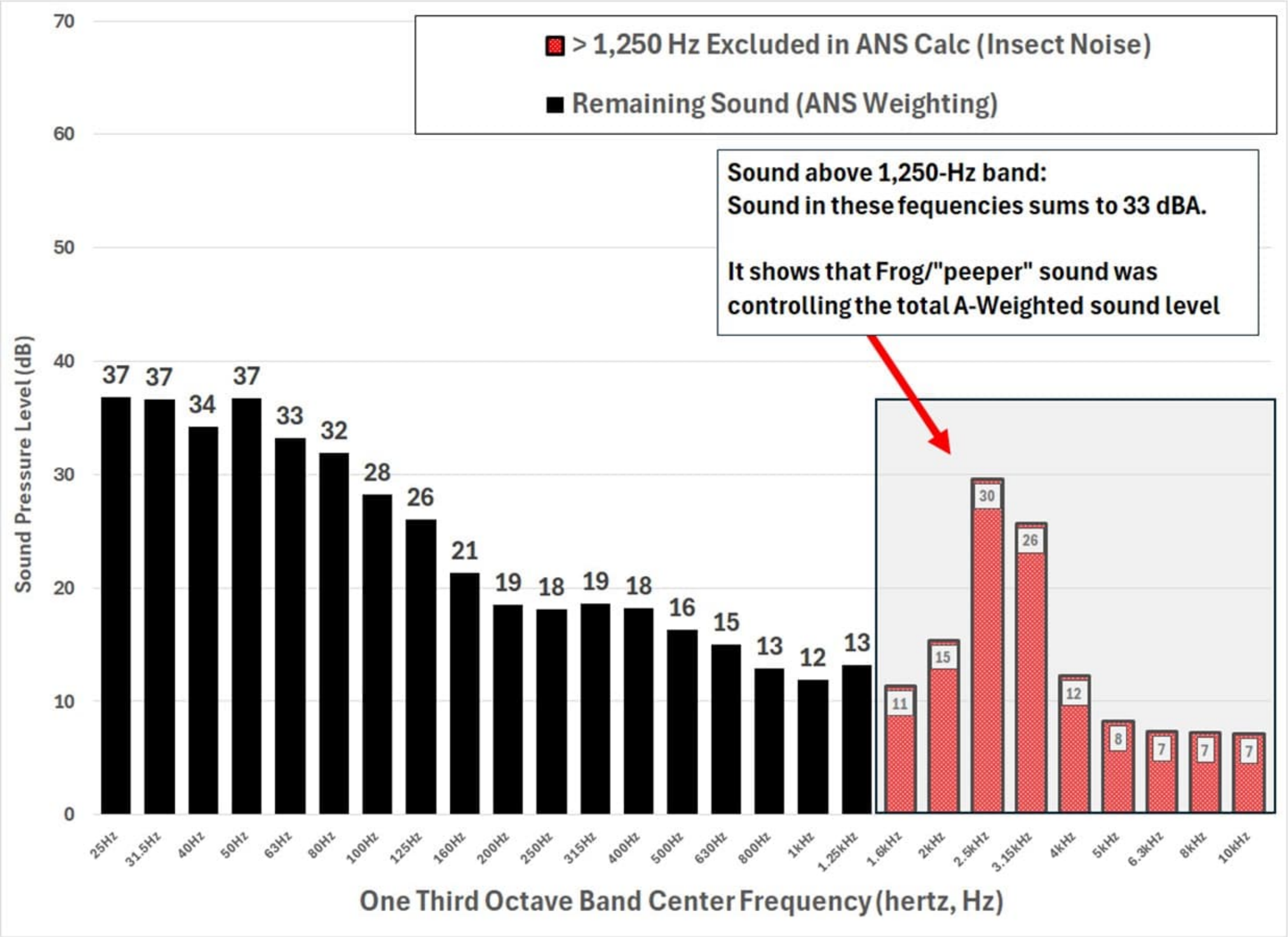


Figure B-6: ANS Seasonal Correction (2)

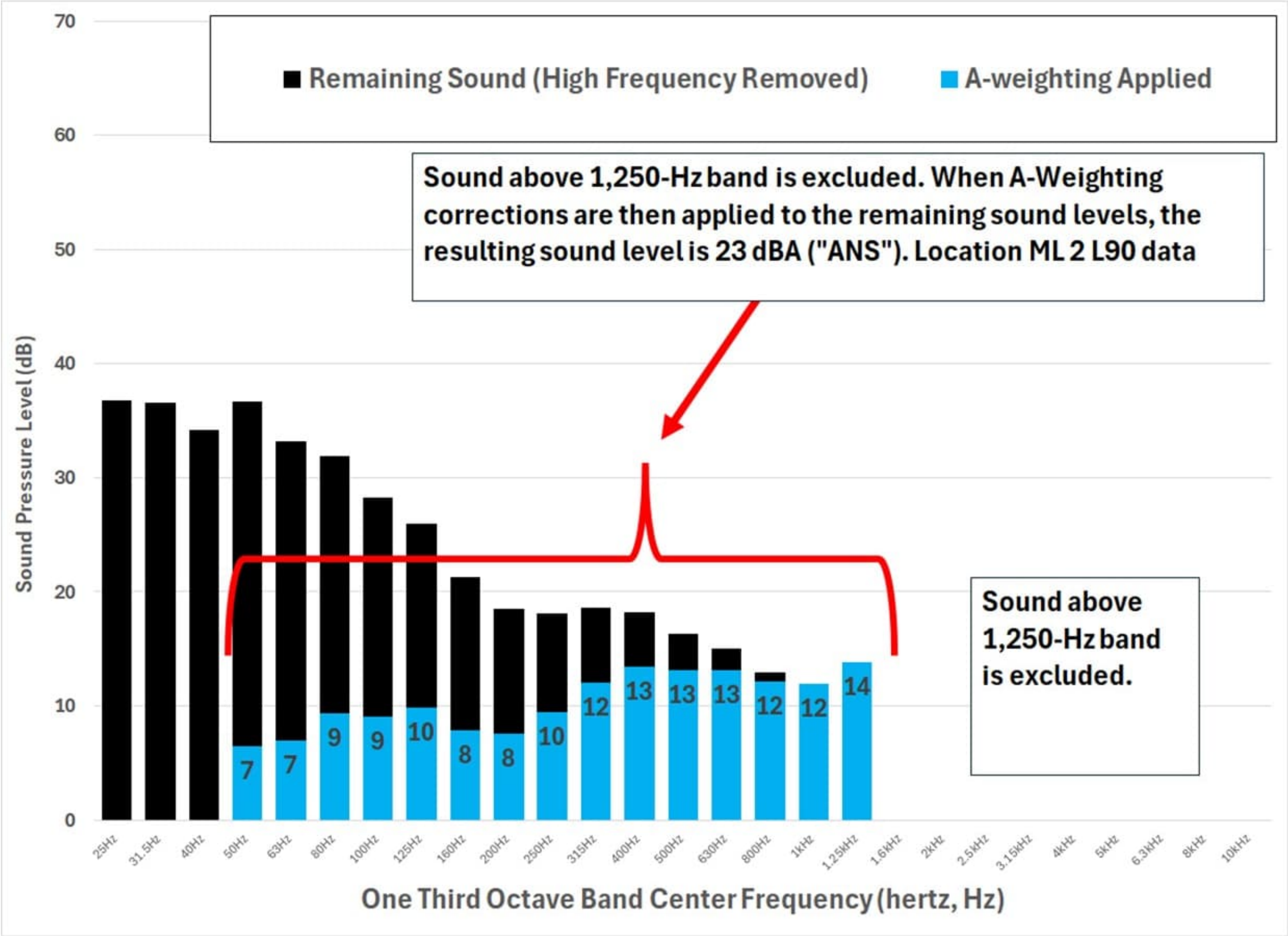


Figure B-7: Model Receptor Locations

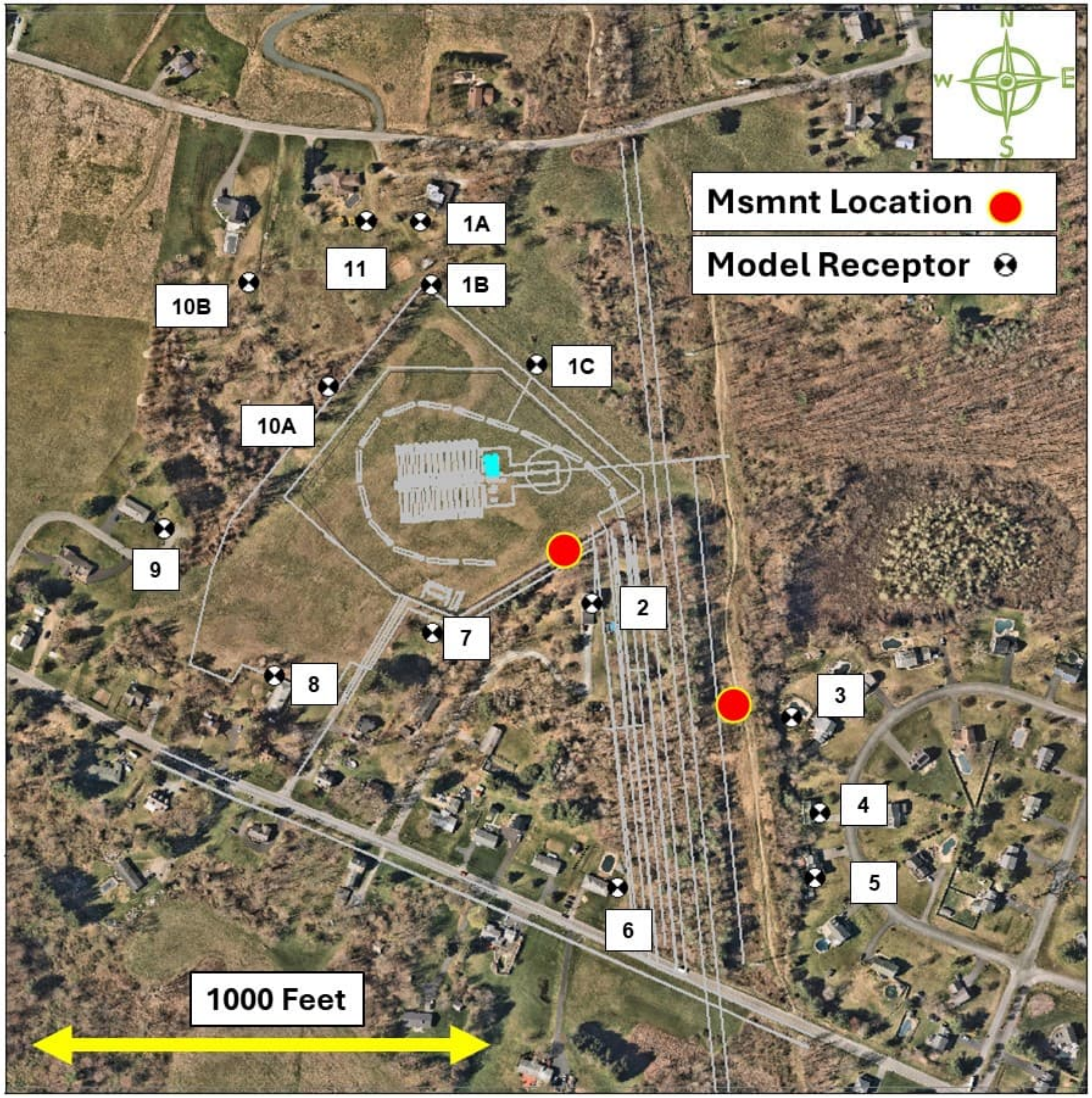
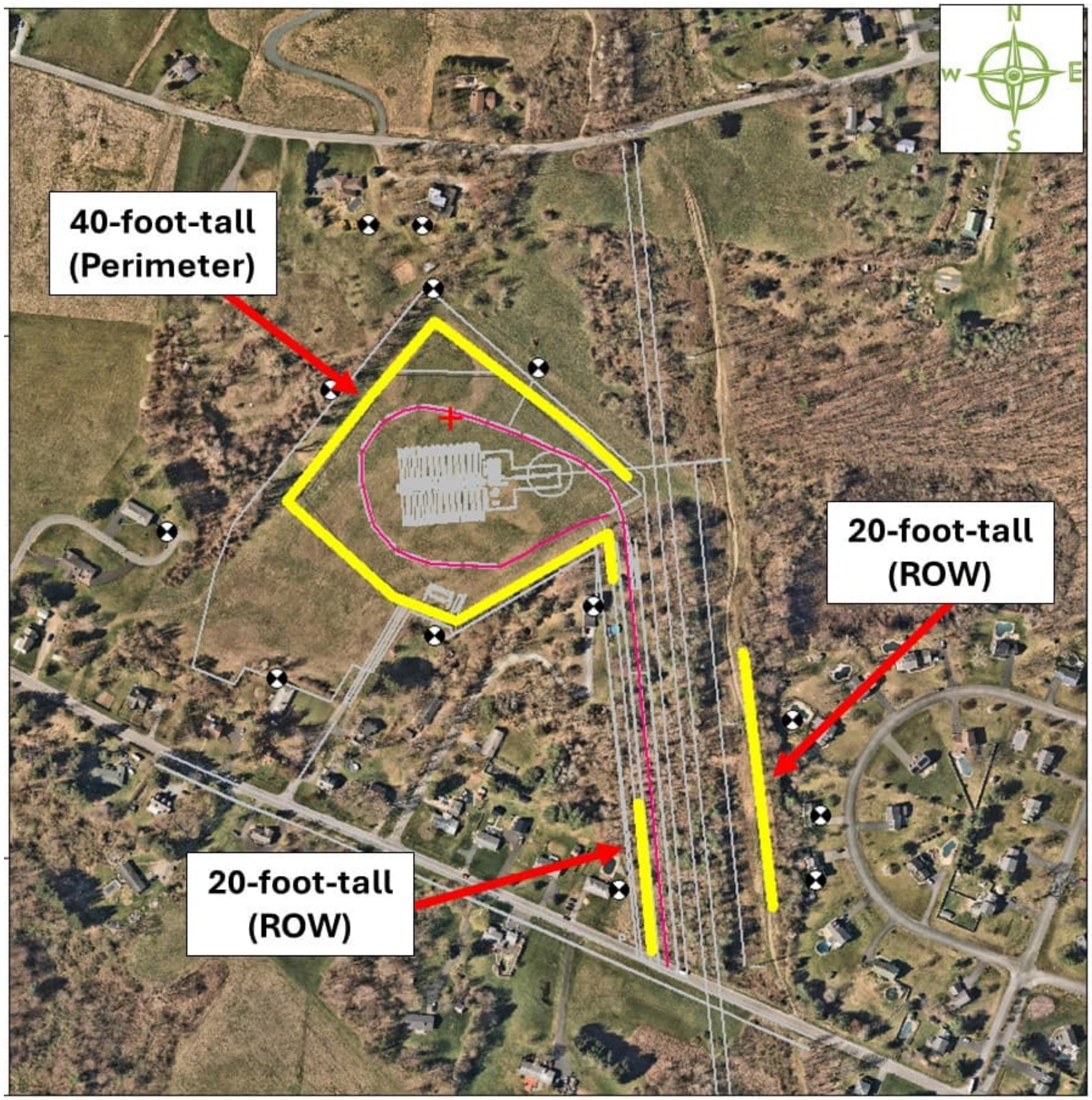


Figure B-8: Decompression Skid (Typical)

Figure B-9: Barrier Mitigation Layouts



Appendix C Weather Data

Brunswick Energy Transfer Station

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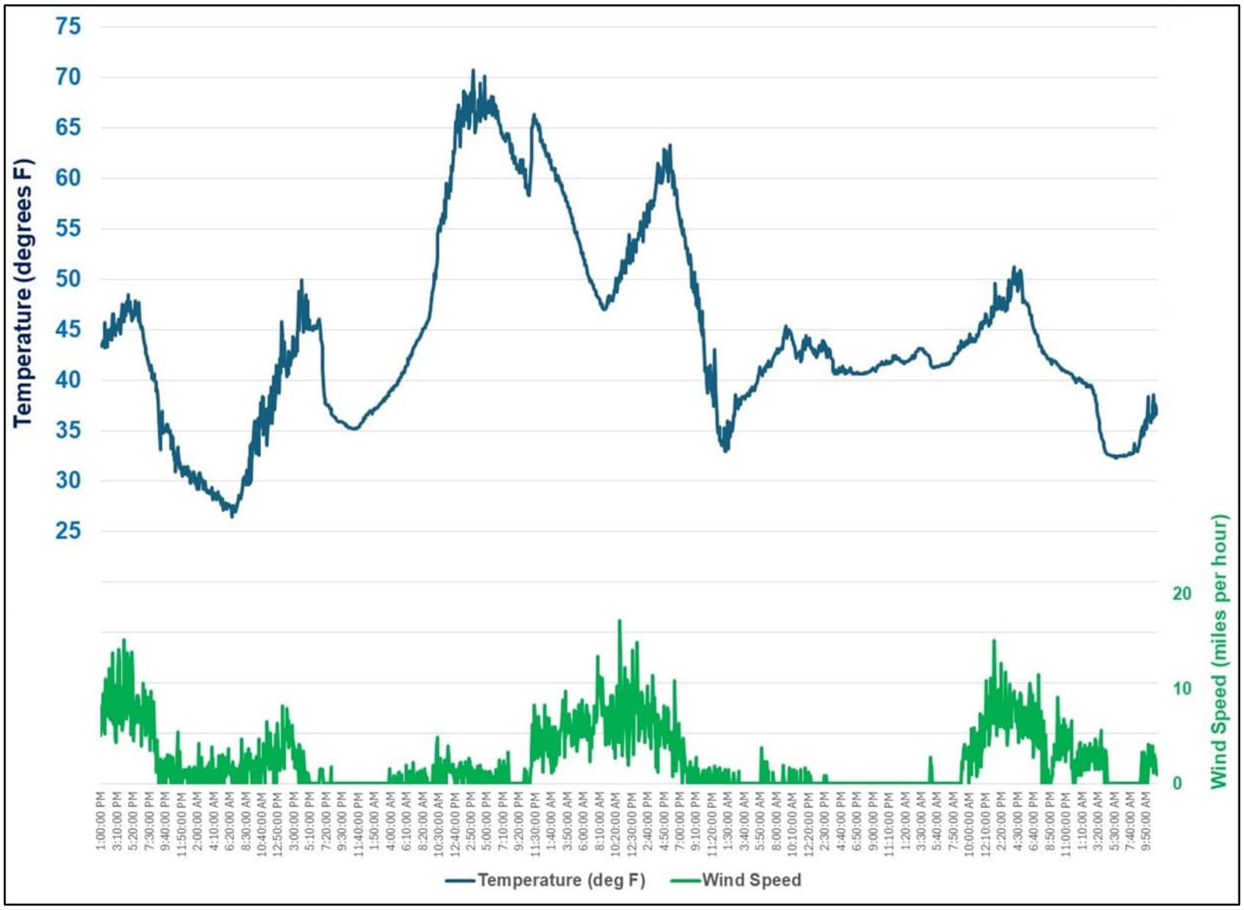
Figure C-1: Temperature and Wind Speed, April 1-7, 2025



Appendix D Level vs. Time Graphs

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Pre-Construction Noise Impact Assessment

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Figure D-1: Level vs. Time Graph for ML 1 - April 1-7, 2025

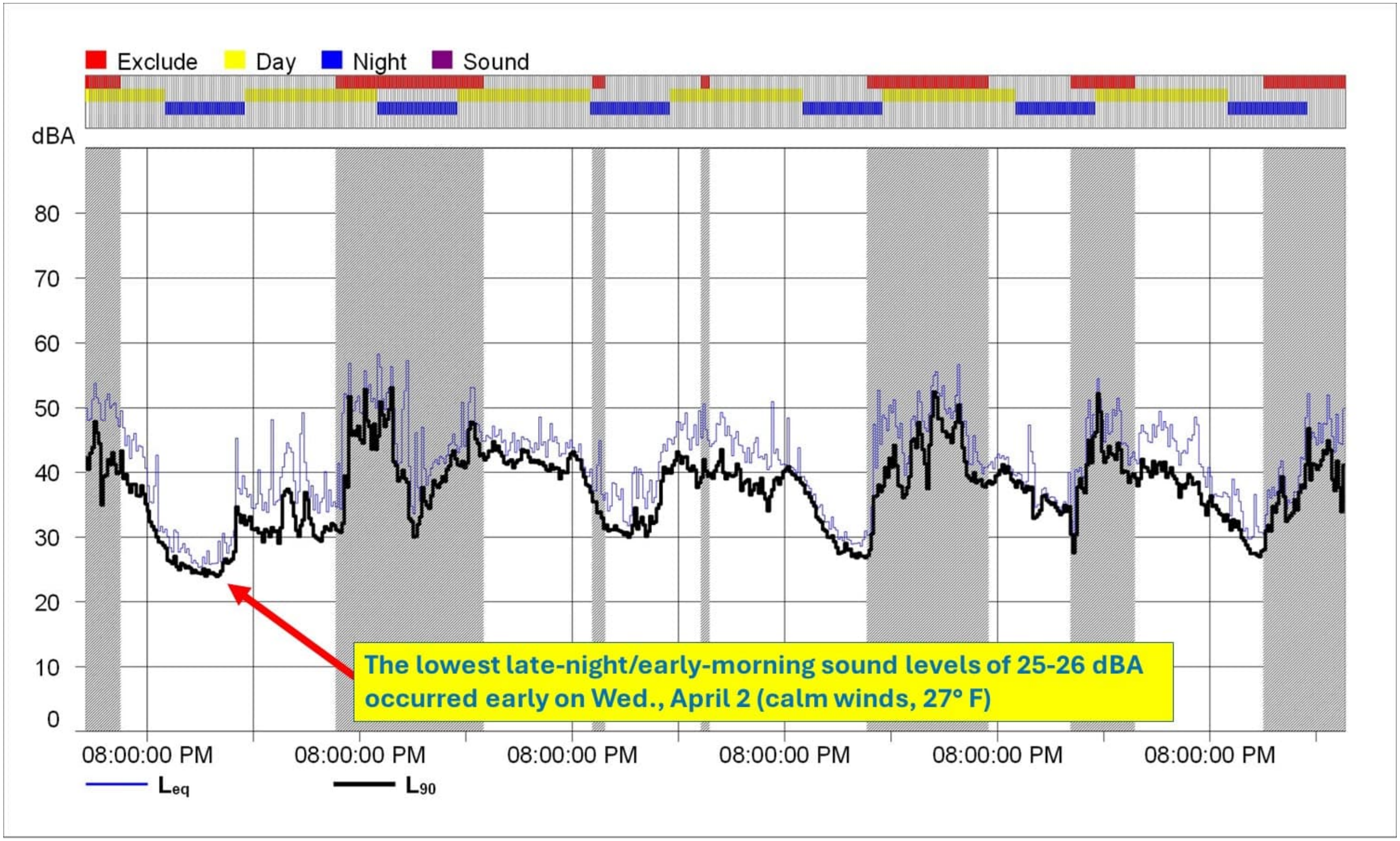
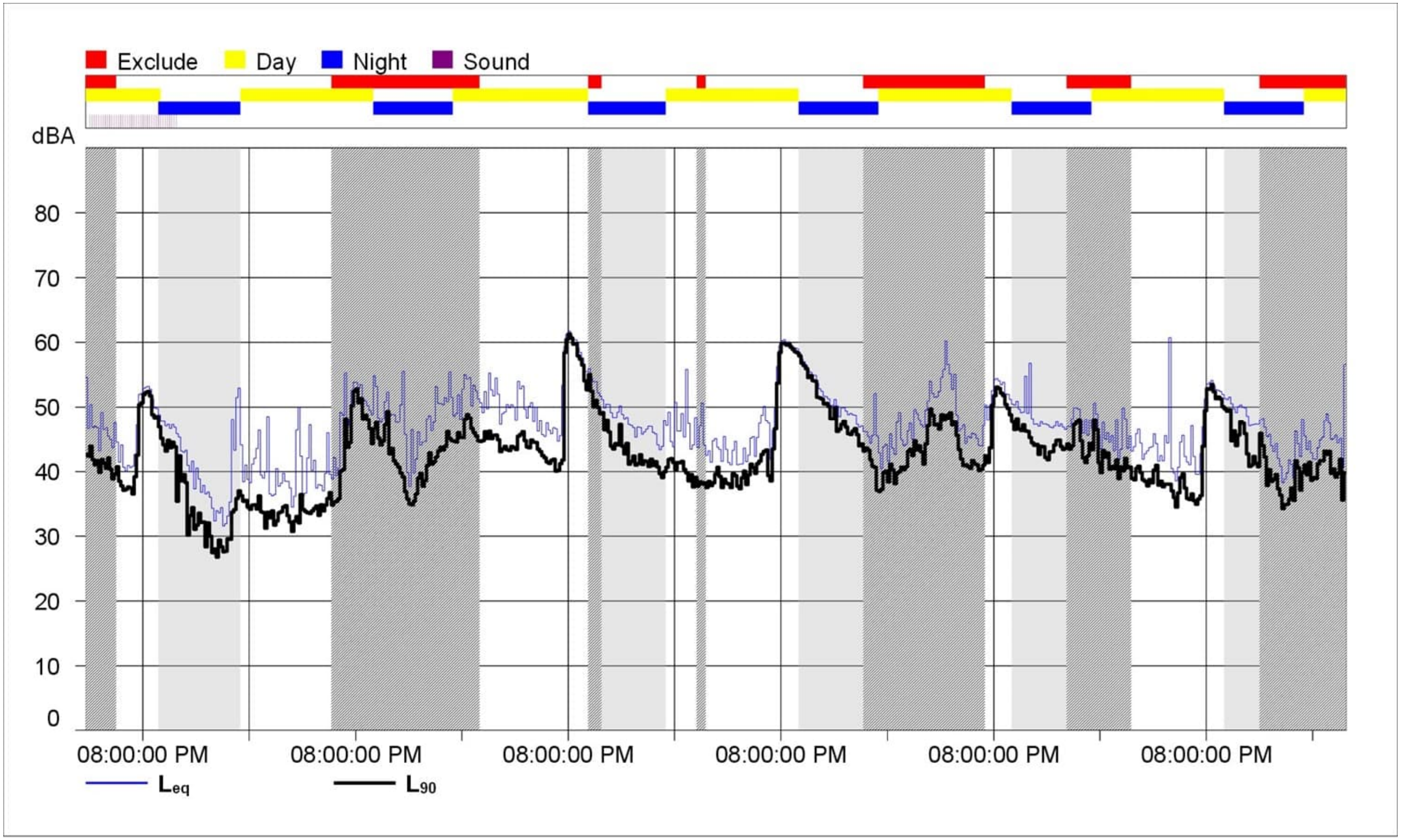


Figure D-2: Level vs. Time Graph for ML 2 - April 1-7, 2025



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