BERGMANN
ARCHITECTS ENGINEERS PLANNERS

MEMO

To: Jim McIntosh, P.E.

From: Ken Avery, P.E.

Date: September 24, 2021

Re: Noise Analysis for the Li-Cycle Facility in EBP-S Land of Ridgeway Properties I, LLC Rochester NY

1.1 INTRODUCTION

In support of a SEQR action being undertaken by Li-Cycle North American Hub, Inc within the EBP-S Land of Ridgeway Properties I, LLC in Rochester, NY, Bergmann performed a site noise study to assess whether the proposed action may result in an increase in noise, above ambient conditions during construction, operations or both, and whether the proposed action may produce sound above noise levels established by local regulation or may in some manner violate local regulations (SEQR Long Form EAF, Part 1.D.2.m).

The guidelines used to assess potential noise impacts include a Second Level Noise Impact Evaluation and review of the proposed action in terms of the *Chapter 139 – Noise*, the Town of Greece noise ordinance.

A Second Level Noise Impact Evaluation is performed in accordance with the NYSDEC's *Assessing and Mitigating Noise Impacts* (February 2, 2001). *Assessing and Mitigating Noise Impacts* explains the NYSDEC's regulatory authority for undertaking noise evaluations and for imposing conditions for noise mitigation measures in the agency's approval of permits for various types of facilities pursuant to regulatory program regulations and the State Environmental Quality Review Act (SEQR). *Assessing and Mitigating Noise Impacts* provides the following guidance in connection with identifying noise impacts:

- Sound pressure increases of more than 6 dB may require a closer analysis of impact potential depending on existing Sound Pressure Levels and the character of surrounding land use and receptors. (pg. 13); and
- The addition of any noise source, in a non-industrial setting, should not raise the ambient noise level above a maximum of 65 dB(A)." (pg. 14)

Thus, the noise analyses will be performed and compared to this guidance. This assessment includes both temporary and permanent noise impacts. The noise analysis results and NYSDEC guidance will be used to perform a second level noise impact evaluation to determine if and where noise impacts to adjacent sensitive receivers are anticipated.

Chapter 139 – Noise, the Town of Greece noise ordinance, defines "excessive noise" as sound, which is annoying, causes alarm, disturbs a reasonable person of reasonable sensitivity, unreasonably causes public inconvenience, or unreasonably disturbs the quiet use and enjoyment of one's life and property. "Excessive noise" also includes incessant or repeated sounds that have the effect of disturbing the welfare, comfort, peace and quiet of the community, or any sound in excess of 85 decibels. Section 139-5 applies to construction activities and includes the following requirements that will apply to the construction phase of the proposed development. "No person shall engage in or permit any person to be engaged in construction activities which creates "excessive noise" at the property limits of the construction site between the hours of 10:00 PM of one day and 7:00 AM of the following day on any day of the week except as is permitted by a variance. If the "excessive noise" threshold is predicted to

be exceeded through this analysis or if during construction the "excessive noise" threshold is actually exceeded itis likely that the Town of Greece would impose restrictions on the construction or operations of the project, and that a variance would be required.

Direct and indirect impacts on noise may occur due to implementation of the project and may be temporary or permanent in nature. Temporary direct impacts may occur during construction of the project. Permanent direct impacts may occur from the operation of outdoor equipment associated with the completed facility, and from cars, delivery trucks and rail car operations. Indirect noise impacts sometimes occur when noise obstructions such as a dense stand of trees or buildings located between noise sources and receivers, that provide shielding, are removed. Indirect adverse impacts are not anticipated in connection with this project. Construction of new buildings may provide an indirect benefit by providing shielding between some noise sources and some sensitive noise receivers outside of the EBP-S Land of Ridgeway Properties I, LLC.

1.1.1 Environmental Setting

Noise can be described as unwanted sound that may interfere with communication or may disturb a community. Three characteristics of noise have been identified as being important to analyzing subjective community response to noise:

- Intensity
- Frequency
- The time-varying characteristics of the noise

Intensity is a measure of the magnitude or energy of the sound and is directly related to pressure level. The human ear is capable of sensing a wide range of pressure levels. Pressure levels are expressed in terms of a logarithmic scale with units called decibels (dB). As the intensity of a noise increases, it is judged to be more annoying. A 10-decibel increase in sound levels is typically judged by the listener to be twice as loud as the original sound. Conversely, a 10-decibel reduction is typically perceived as half as loud. An increase in sound levels of 3 decibels is considered to be the smallest change to the A-weighted sound level that people, without specifically listening for a change, can notice. An increase in sound levels of 5 decibels is perceptible and tolerable by humans as noted in Table B of *Assessing and Mitigating Noise Impacts* (NYSDEC, 2001) and other references, and reproduced as **Table 1** below.

Table 1 - Human Reaction to Increase in Sound Pressure Level

Increase in Sound Pressure Level (dB)	Human Reaction*
Under 5	Unnoticed to tolerable
5 – 10	Intrusive
10 – 15	Very noticeable
15 – 20	Objectionable
Over 20	Very objectionable to intolerable

Reference: Down and Stocks, 1978
*For purposes of this SEQR review, based on the above, a noise impact will be considered as an increase in noise levels of more than 5 dB.

It is necessary to use a method of measure that will account for the time-varying nature of sound when studying environmental noise. The equivalent sound pressure level (L_{eq}) is defined as the continuous steady sound level that would have the same total A-weighted sound energy as the real fluctuating sound measured over a given period

of time. As a result, the three characteristics of noise combine to form a single descriptor (L_{eq} in dB(A)) that helps to evaluate human response to noise.

To understand the existing noise environment short and long term noise measurements were obtained over a several day period between June 10 – 16, 2021. The Li-Cycle approved short (yellow pins) and long term (red pins) noise measurements are shown on **Figure 1**.

Figure 1 - Short and Long Term Measurement Locations

Short term measurements of 15 minute duration were taken using a Type I integrating sound level meter in accordance with the NYSDOT's *Field Measurement of Existing Noise Levels*. Short term noise measurements were taken during weekday hours, when no precipitation was occurring, and with dry pavement conditions. Significant existing traffic noise sources were counted and classified into autos, medium truck and heavy trucks, and other background noise sources were noted. The short term noise measurement data for 4 locations is summarized in **Table 2** and noise measurement data sheets are provided in Attachment A.

Table 2 - Short Term Noise Measurements Summary

Receptor/ Address	Land Use	Date	Start Time [1]	Dominant Traffic Noise Source(s) with Counts + Classifications	Other Noise Sources During Noise Measurement	Measured Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)	TNM Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)	Delta (dB(A))
Ridgeway Ave (ST-1)	Single Family Residential	6/16/2021	7:39 AM	Ridgeway Ave	Nature (Birds)	54.8	54.5	0.3
Ridgeway Ave (ST-6)	Single Family Residential	6/16/2021	8:00 AM	Ridgeway Ave	Nature (Birds)	50.0	52.5	2.5
LiDestri Lot (ST-3)	Industrial	6/16/2021	8:41 AM	Ridgeway Ave	Industrial Facility Operations	45.5[2]	44.0	1.5
Lee Road (ST-4)	Residential	6/16/2021	9:28 AM	Lee Road & Route 390	Nature (Birds)	51.6	54.5	2.9

[1] Noise measurements were recorded for a 15-minute duration per reading.
[2] During this reading no internal traffic was observed at or near 105 McLaughlin Road. This noise level is lower than observed during the long-term noise readings. This reading was not used for the existing background noise level.

Short term noise level measurements along Ridgeway Avenue and Lee Road were influenced by local street traffic, nature and the exiting industrial facilities within the area. These sites were used, with traffic counts and classifications to help calibrate a line source acoustical model, the Federal Highway Administration (FHWA) Transportation Noise Model 2.5 (TNM 2.5) within the project area. A TNM 2.5 model was created for these sites, using counted and classified traffic obtained during the noise measurements. The comparison between measured and calculated noise levels showed good validation of the TNM 2.5 model (New York State Department of Transportation guidance recommends that differences between measured and TNM 2.5 model predictions that are within 3 dBA of each other are considered acceptable). The validated TNM 2.5 model was used to predict proposed conditions operational and construction traffic generated noise contributions. The short term noise level measurement at the LiDestri Lot (ST-3) was minimally influenced by the local roadways and the industrial facility operations within the area. This is seen in the predicted TNM 2.5 model results being 1.5 dBA lower than the short term noise level measurement. For this site a TNM 2.5 model was created to predict proposed traffic noise conditions during both construction and operations within the Ridgeway Properties I, LLC Lots.

24-hour noise measurements were obtained at two locations around the Ridgeway Properties I, LLC property near the proposed site to measure daily weekday 24-hour fluctuations in noise levels. These are shown in **Figure 1** and included one location where the Ridgeway Avenue vehicular and truck traffic was dominant (LT-3), one location (LT-1) where rail freight deliveries or existing industrial noise activities occurred. The long term noise measurement data for the 2 locations are summarized in **Table 3** and noise measurement data sheets are provided in Attachment A.

Table 3 - Long Term Noise Measurement Data Summary

	LT-1	LT-3
	LiDestri Lot	Near Ridgeway Avenue
Hour of Day	$L_{eq\ 1\text{-}hr}$ dB(A)	$L_{eq\ 1\text{-}hr}$ dB(A)
12–1 AM	49.0	48.2
1–2 AM	48.9	45.8
2–3 AM	48.7	44.9
3–4 AM	48.6	46.6
4–5 AM	49.0	52.8
5–6 AM	51.3	55.5
6–7 AM	55.8	55.7
7–8 AM	57.4	54.3
8–9 AM	58.9	56.6
9–10 AM	47.9	54.7
10–11 AM	42.2	55.8
11 AM–12 PM	40.0	57.8
12–1 PM	37.5	67.0
1–2 PM	53.7	57.7
2–3 PM	57.8	55.9
3–4 PM	58.2	61.2
4–5 PM	57.9	61.1
5–6 PM	54.6	56.7
6–7 PM	54.0	53.3
7–8 PM	51.7	54.3
8–9 PM	52.5	53.4
9–10 PM	51.3	51.9
10–11 PM	51.1	56.1
11 PM–12 AM	49.5	51.0
Daytime (7AM – 10 PM)	**52.3**	**57.0**
Nighttime (10PM – 7AM)	**46.7**	**48.3**
24 Hour L_{dn}	**58.2**	**60.7**

Site LT-1, located within the Ridgeway Properties EBP-S land (referred to above as the "LiDestri Lot") at the southeast paved lot of 105 McLaughlin Road, showed hourly L_{eq} noise levels consistently in the 40's to upper 50's throughout the 24-hour period, except for the 12 PM to 1 PM period when noise levels were in the mid 30's. Site LT-3, located close to Ridgeway Avenue is almost entirely influence by Ridgeway Avenue traffic noise with noise hourly L_{eq} noise levels in the mid 50's to 60's from 5 AM till 6 PM and dropping off to the lower 50's and 40's between 6 PM and 5 AM. The resulting Day-Night noise levels (L_{dn}) are noted on the last line of Table 3.

The North-South runway of the Rochester-Monroe County Airport is a potential noise source, and the Federal Aviation Administration (FAA) performs noise studies that depict the noise contours from airport operations. From review of these current study and noise monitoring performed, the Ridgeway Properties EBP-S land is more than 5 miles from the 65 L_{dn} airport noise contour, indicating that airport operations have no significant influence on noise levels in the project area.

1.1.2 Potential Impacts of Proposed Action

The potential direct impacts of the proposed action may include temporary impacts from construction phase and permanent impacts from the operations of the completed facility.

Temporary Impacts of Proposed Action

Temporary noise impacts may result from deliveries of construction materials and equipment, transporting of construction workers to the site, and the various construction activities that will occur over the anticipated construction scheduled to occur sometime between September 2021 through January 2023. Construction activities are expected to operate a 24-hour 7-day a week schedule with noisy construction activities occurring during daylight hours, between 7 a.m. and 10 p.m. It is also assumed that both the Warehouse/Admin Building/Visitor Center site and the HUB site construction will occur at the same time, however, only the HUB site will have 24-hour construction activities. Since the proposed development will occur on presently unoccupied lands, there will be no building demolition associated with construction. Foundations will be a combination of drilled micro-piles and spread footings founded on bedrock. There are three major categories of noise sources for any construction operation: (1) fixed equipment or process operations; (2) mobile equipment or process operations; and (3) transport movements of products, workers, raw materials or waste. The activities may include clearing of vegetation, removal of existing asphalt, milling, roadway and railroad track building, excavation for foundations, utilities, drainage and stormwater facility, foundations, steel work, concrete operations, building enclosure. A list of some of the construction equipment that may be used in various construction activities, percent usage and reference noise levels is provided in **Table 4**.

Table 4 - Construction Equipment Reference Noise Levels

Construction Equipment	Usage (%)	Reference Noise Levels *Noise Level (dB(A))*
Material Handling		
Crane	16	81
Equipment (Earth Moving)		
Drill Rig	20	79
Excavator	40	81
Front Loader	40	79
Back Hoes	40	78
Dozers	40	82
Tractors	40	84
Dump Truck	70	77
Paver	50	77
Roller	20	80
Compactor (ground)	20	83
Stationary Equipment		
Pumps	50	81

Generators	50	81
Compressors	40	78
Impact Equipment		
Pile Drivers	20	101
Jackhammers	20	89
Rock Drills	20	81
Other		
Saw	20	80

Note: Reference noise levels at 50 feet are obtained from the FHWA Roadway Construction Noise Model

Construction noise levels will be influenced by the increased traffic on Route 390 and Ridgeway Avenue from construction workers and deliveries traveling to and from the site during daytime hours and from construction noise activities on the site. Construction related traffic generated noise levels are assumed to be from construction worker vehicles and material deliveries traveling to the site from Route 390, exiting at Ridgeway Avenue, and proceeding to McLaughlin Road. With both northern and southern sites being constructed at the same time, 400 workers are anticipated for construction activities during the peak hour and 9 heavy trucks, representing material deliveries are assumed during the peak hour. TNM 2.5 was used to validate traffic noise models for Route 390, Ridgeway Avenue and internal site roads. The noise models used traffic that was counted and classified during the short term noise measurements. For construction conditions, the additional construction workers and delivery vehicles developed from the Project's traffic study, based on information provided by Li-Cycle, were added.

To evaluate potential noise levels as a result of construction activities for the site development, an analysis using the Roadway Construction Noise Model (RCNM), developed by the FHWA, was performed for the Project. Both the Warehouse/Admin Building/Visitor Center site and the HUB site construction will occur at the same time, only the HUB site will have 24-hour construction activities. RCNM uses reference noise levels for construction equipment, utilization percentages and expected maximum sound level (Lmax) values. Hourly equivalent noise levels (Leq) at receivers are calculated using equipment Lmax values and utilization percentages from **Table 4**, and distances from the center of the construction areas to the receivers as shown in **Figure 2**. Baseline noise levels, taken from the existing condition TNM results or long term count, depending on the receiver location, are compared with the results from RCNM, the results can be seen in **Table 5** and **Table 6**.

Table 5 – Daytime Construction Noise Levels[2]

	Daytime Existing Background Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)	Daytime Construction Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)	Change
Ridgeway House 1	54.5[1]	60.4	+5.9
Ridgeway House 2	53.1[1]	70.4	+17.3
Lee Road	54.5[1]	58.3	+3.8
Ridgeway House 6	51.7[1]	65.2	+13.5
Ridgeway House X	62.3[1]	71.1	+8.8

(1) Existing background noise level from TNM results.

(2) Daytime construction consists of the Warehouse/Admin Building/Visitor Center site and the HUB site.

Table 6 – Nighttime Construction Noise Levels[3]

	Nighttime Existing Background Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)	Nighttime Construction Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)	Change
Ridgeway House 1	48.3[2]	57.3	+9.0
Ridgeway House 2	48.3[2]	51.2	+2.9
Lee Road	46.0[1]	56.1	+10.1
Ridgeway House 6	48.3[2]	58.1	+9.8
Ridgeway House X	48.3[2]	51.2	+2.9

(1) Existing background noise level from TNM results.
(2) Existing background noise level is from the Lnight Long Term noise reading at LT-3.
(3) Nighttime construction noise is generated only from the HUB site.

Depending upon the specific equipment in use, the number and locations where construction operations are occurring, and the proximity of sensitive noise receivers to the construction operations, temporary noise level increases from 3.8 dBA to 17.3 dBA for daytime conditions and 2.9 dBA to 10.1 dBA for nighttime conditions. A 3 dBA sound level increase is a noticeable change in sound level and an increase in sound levels of 5 decibels is perceptible and tolerable. The sound level increase in excess of 5 dBA are considered intrusive whereas the sound level increases in excess of 10 dBA, judged to be twice as loud as the original sound, and very noticeable. The daytime construction sound level increase at the Ridgway House 6 is considered to be very noticeable while the increase at Ridgway House 2 is considered to be objectionable, based on **Table 1**. The nighttime construction sound level increases at the Ridgeway House 6 and Lee Road are considered to be intrusive while the increase at Ridgeway House 2 is considered to be unnoticeable to tolerable. The reason that nighttime construction noise would be considered intrusive at Ridgeway House 6 and Lee Road is that the nighttime background noise level (between 10 PM and 7 AM) was documented to be approximately 48.3 dBA based on the long term noise measurements. For residences along Ridgeway Avenue, it can be assumed that they currently experience a nighttime noise level of 48.3 dBA and that to remain less than the Town of Greece's noise ordinance definition of excessive noise which "…also includes incessant or repeated sounds that have the effect of disturbing the welfare, comfort, peace and quiet of the community." a reasonable goal would be to limit the increase in nighttime noise levels to less than 5 dBA ("unnoticed to tolerable") as noted in Table 1.

Permanent Direct Impacts from Operations

Permanent direct noise impacts from operations were developed for daytime and nighttime conditions at the receivers shown in **Figure 2**.

Figure 2 - Receiver Locations

Collectively, these sites are considered to be representative and would indicate whether permanent direct noise impacts are expected from the proposed Li-Cycle facility. These sites, where both existing and future daytime and nighttime noise levels were predicted, are listed in Table 7 and Table 8. The following steps were taken to develop the existing and proposed daytime and nighttime noise levels at the receivers.

1. Existing daytime noise levels were established based on the short term noise measurements where available or in the case of LiDestri Site, based on the nearby long term noise measurements. Existing daytime noise levels are the daytime background noise levels to which the new noise sources from the proposed operations are added logarithmically to obtain Total Proposed Operations daytime noise level.

2. Existing nighttime noise levels were established from the Ln value from the long term noise readings which is the logarithmic average of the hourly nighttime noise levels between 10 PM and 7 AM. The existing nighttime noise levels are the nighttime background noise levels to which the new noise sources from the proposed operations are added logarithmically to obtain a Total Proposed Operations nighttime noise level.

3. TNM 2.5 was used to validate traffic noise models for Ridgeway Avenue and Lee Road. The noise models used traffic that was counted and classified during the short term noise measurements. For future conditions, the additional auto and heavy truck roadway traffic, associated with the proposed Li-Cycle

facility, was added to the TNM 2.5 noise model. No additional nighttime auto or heavy truck roadway traffic was assumed. All traffic is assumed to enter the proposed development by means of Route 390 to Ridgway Avenue to McLaughlin Road.

4. The proposed Li-Cycle project includes a new rail spur. The Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, September 2018, was used to predict the noise level contribution from this source. We assumed 2 trips per day, speed of 15 mph, a single diesel-electric locomotive and 26 cars on welded track. The combined hourly L_{eq} at 50 feet is 61.9 dBA. The rail spur contribution was adjusted for distance to all receivers and was included as a daytime noise source. Rail operations were assumed as not being conducted during nighttime hours.

5. Li-Cycle Equipment Operations were estimated by assigning pieces of planned outdoor equipment a maximum operating sound pressure level of 85 dBA at 3 feet. An acoustical drop off rate of 6 dB per doubling of distance over acoustically hard ground is also assumed. All the equipment is assumed to operate 24 hours per day, 7 days per week. Estimates of building shielding between each noise source / receiver combination were made based on obstructions between the noise sources and receivers. A maximum of 10 dB of acoustical shielding was allowed when the noise propagation path between equipment and receivers was completely obstructed.

Table 7 – Existing Background and Proposed Operations Daytime Noise Levels

Daytime Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)						
Receiver	Existing Background[1]	Proposed Operations				Change
		Roadway	Rail Line	Equipment	TOTAL	
Ridgeway House 1	54.5	58.3	33.2	37.1	58.3	+3.8
Ridgeway House 2	53.1	55.7	43.8	38.5	56.0	+2.9
Lee Road	54.5	54.6	31.6	36.3	54.7	+0.2
Ridgeway House 6	51.7	54.2	49.0	45.0	55.7	+4.0
Ridgeway House X	62.3	64.0	43.9	38.5	64.1	+1.8

(1) Existing background noise level from TNM results.

Table 8 – Existing Background and Proposed Operations Nighttime Noise Levels

Nighttime Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)						
Receiver	Existing Background	Proposed Operations				Change
		Roadway	Rail Line	Equipment	TOTAL	
Ridgeway House 1	48.3[2]	N/A	N/A	37.1	48.6	+0.3
Ridgeway House 2	48.3[2]	N/A	N/A	38.5	48.7	+0.4
Lee Road	46.0[1]	N/A	N/A	36.3	46.4	+0.4
Ridgeway House 6	48.3[2]	N/A	N/A	45.0	50.0	+1.7
Ridgeway House X	48.3[2]	N/A	N/A	38.5	48.7	+0.4

(1) Existing background noise level from TNM results.

(2) Existing background noise level from the Lnight Long Term noise reading.

Permanent Indirect Impacts

Indirect impacts would result from removal of any existing features that provided acoustical shielding from existing or new noise sources. For this project, no existing buildings and no existing large stands of dense vegetation would be removed that presently provide acoustical shielding. Thus, no indirect adverse impacts are anticipated. With new construction, some buildings will provide acoustical shielding of sensitive noise receivers in residential neighborhoods, which was accounted for in the noise analysis.

Cumulative Impacts

Since the original development of the former Kodak Park, which the EBP-S land of Ridgeway Properties I, LLC is a part of, industrial development, industrial economic decline, and redevelopment of industrial facilities has occurred. The perimeter of land of Ridgeway Properties I, LLC has experienced growth in residential development, where daytime noise levels in the 50's are typical. Development of Route 390 added a significant transportation noise source, and to a lesser degree gradual traffic increases along Ridge Road, Ridgeway Avenue, Lee and Latona Roads have occurred over time. The cumulative changes to noise over time are judged to be greater than the changes in noise that may result from the proposed action, therefore it is concluded that the potential for cumulative impacts would be restricted to the potential for direct and indirect impacts.

1.1.3 Potential Impact of Alternatives

There are no alternatives to the proposed action that are being considered.

1.1.4 Mitigation

Temporary Construction Impacts

Since the details of contractors' operations and equipment are not well known during the design phase of a project, it is not realistically possible to accurately estimate potential noise level increases during construction, however standard construction Best Management Practices should be used such as ensuring properly maintained and muffled equipment, and that noisy construction operations are compliant with the Town of Greece noise ordinance or seek a waiver in advance of the work. Due to the "Intrusive" and "Very Noticeable" noise level increases predicted during construction operations and the 16 month duration of construction, we also recommend that LiCycle construct an 8 ft high temporary noise barrier along portions of the construction work site perimeter of both the HUB and Warehouse/Admin Building/Visitor's Center. These are shown as red lines in **Figure 3**. The specific locations and extents of the temporary noise barrier were analyzed to confirm that an eight foot high temporary noise barrier system could achieve substantial noise level reductions at the Lee Road, Ridgeway Avenue 1 and Ridgeway Avenue 6 sites and reduce the nighttime noise levels at these locations to no more than a 5 dBA increase over the existing conditions nighttime noise levels, as shown in **Table 10**. The noise barrier system will also achieve substantial noise level reductions in daytime noise levels and reduce daytime noise levels to no more than a 5 dBA increase over the existing conditions at all the receivers listed as shown in **Table 9**. The noise barrier calculations capped the noise reductions to a maximum of 15 dBA, which is considered as a practical maximum noise reduction that can be provided by a noise barrier.

Table 9 – Daytime Construction Noise Levels[2] with Temporary Noise Barrier

Receiver	Daytime Existing Background Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)	Daytime Construction Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A) with Temporary Noise Barrier	Change
Ridgeway House 1	54.5[1]	56.1	+1.7
Ridgeway House 2	53.1[1]	57.8	+4.7
Lee Road	54.5[1]	56.0	+1.5
Ridgeway House 6	51.7[1]	54.4	+2.7
Ridgeway House X	62.3[1]	63.8	+1.5

(1) Existing background noise level from TNM results.
(2) Daytime construction consists of the Warehouse/Admin Building/Visitor Center site and the HUB site.

Table 10 – Nighttime Construction Noise Levels[3] with Temporary Noise Barrier

Receiver	Nighttime Existing Background Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A)	Nighttime Construction Noise Level $L_{eq\ (1\text{-}hr)}$ dB(A) with Temporary Noise Barrier	Change
Ridgeway House 1	48.3[2]	49.2	+0.9
Ridgeway House 2	48.3[2]	49.1	+0.8
Lee Road	46.0[1]	51.0	+5.0
Ridgeway House 6	48.3[2]	49.3	+1.0
Ridgeway House X	48.3[2]	49.0	+0.7

(1) Existing background noise level from TNM results.
(2) Existing background noise level is from the Lnight Long Term noise reading at LT-3.
(3) Nighttime construction noise is generated only from the HUB site.

Li-Cycle is committed to providing a temporary noise barrier as described above and implementing a series of additional temporary noise mitigation practices, during construction. These practices should be employed to the maximum extent practicable to lessen potential temporary noise impacts to nearby noise sensitive receptors.

- Community Outreach
  - Develop a community outreach program that includes Ridgeway Avenue residences between Lee Road and Weiland Road.
  - Provide direct outreach to these residents of the overall construction program and the potential noise effects.
  - Provide means for residents to contact Li-Cycle during construction operations:
    - Email: rochester@Li-Cycle.com
    - Web Site: Li-Cycle.com/northamerican-hub/
  - Notify residents in advance of the overall construction schedule, progress of construction (including new operations and noise sources), nighttime and weekend operations.
  - Be prepared to address and respond to noise complaints, including:
    - Provide a means for residents to log complaints.

        - Evaluate noise complaints through the construction manager using noise measurements as necessary to identify construction related noise sources that contributed to the complaint.
        - Be prepared to provide temporary noise abatement measures of the type(s) listed below, as appropriate, to reduce temporary construction noise levels.
    - Comply with the Town of Greece noise ordinance (Chapter 139 – Noise) or request a waiver in advance of operations that would exceed the noise ordinance thresholds.
- Reduce noise frequency and impulse noise at the source of generation by:
    - Replacing back-up beepers on machinery with strobe lights (subject to other requirements, e.g., OSHA and MINE Safety and Health Administration, as applicable). This eliminates the most annoying impulse beeping and would be particularly helpful for nighttime construction noise mitigation.
    - Use appropriate mufflers to reduce the frequency of sound on machinery that pulses, such as diesel engines and compressed air machinery.
    - Changing equipment: using electric motors instead of compressed air driven machinery; using low speed fans in place of high-speed fans.
    - Modifying machinery to reduce noise by using plastic liners, flexible noise control covers, and dampening plates and pads on large sheet metal surfaces.
- Reduce noise duration by:
    - Limiting the number of hours of noisy operation, between 7 a.m. and 7 p.m. for weekdays and between 9 a.m. and 5 p.m. on weekends where practicable.
- Reduce noise sound pressure levels by:
    - Substituting quieter equipment
    - Using mufflers selected to match the type of equipment and air or gas flow on mechanical equipment
    - Ensuring that equipment is regularly maintained
    - Phasing operations to preserve natural barriers as long as possible.
    - Install temporary noise barrier, as noted above, along portions of each work site perimeter noted in Figure 3. An effective temporary noise barrier may be constructed of a double thickness of dense rubber material fastened to eight foot high temporary fencing.

Li-Cycle will make all reasonable attempts to comply with the requirement of the Town of Greece noise ordinance defined in *Chapter 139 – Noise*. Li-Cycle will comply with the Town of Greece noise ordinance by not conducting construction operations that are defined as "excessive noise" between the hours of 10:00 PM of one day and 7:00 AM of the following day or have any sound in excess of 85 decibels. If this cannot be achieved, Li-Cycle will seek a variance from the noise ordinance, in addition to the variance Li-Cycle is seeking to allow 24/7 construction of the Hub Lot. for their construction operations. Public notification of upcoming loud events should also be considered as a form of mitigation, although it does not physically reduce the noise or perception of the noise.

Figure 3 - Temporary Noise Barrier for Construction Noise Mitigation (Shown in Red)

Permanent Impacts from Operations

Potential noise impacts were evaluated in accordance with the NYSDEC's *Assessing and Mitigating Noise Impacts* (February 2, 2001) and results indicate that there are no sound pressure increases of more than 5 dB for permanent operations and the addition of any noise source do not raise the ambient noise level above a maximum of 65 dBA. With these two findings, there are no noise impacts and no required mitigation.

Attachment A

Calculations

Noise Calculations Summary Sheets

Noise Calculations Summary / Notes

	Backround		From TNM - Roadway[1]				Rail		Equipment		**Combined**		Difference	
	EXSITING		EXSITING		PROPOSED		PROPOSED		PROPOSED		**Operations**			
	Daytime	Evening	Daytime	Evening	Daytime	Evening[2]	Daytime	Evening	Daytime	Evening	Daytime	Evening	Daytime	Evening
Receivers	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA
ST-1 Ridgeway House1		48.3	54.5	~~36.7~~	58.3	~~36.7~~	33.2		37.1	37.1	58.3	48.6	3.8	0.3
ST-2 Ridgeway House2		48.3	53.1	~~35.6~~	55.7	~~35.6~~	43.8		38.5	38.5	56.0	48.7	2.9	0.4
ST-3 LiDestri Site	*57.4*	48.7	*44.0*	*~~30.9~~*	*58.1*	*~~30.9~~*	*35.2*		*46.8*	*46.8*	*58.4*	*50.8*	*1.0*	*2.1*
ST-4 Lee Road			54.5	46.0	54.6	46.0	31.6		36.3	36.3	54.7	46.4	0.2	0.4
ST-6 Ridgeway House6		48.3	51.7	~~34.5~~	54.2	~~34.5~~	49.0		45.0	45.0	55.7	50.0	4.0	1.7
Ridgeway Housex		48.3	62.3	~~44.7~~	64.0	~~44.7~~	43.9		38.5	38.5	64.1	48.7	1.8	0.4

1. From TNM
2. Equal to Existing Evening - No added evening volume

Air traffic is not a significant source. Distance from Greater Rochester international Airport 65dBA is 3.5 miles.

Noise Calculations Summary Sheets

Noise Calculations Summa

	Construction NOISE				Construction NOISE			
	DAYTIME			Difference	NIGHTTIME			Difference
	Roadway	Const. Equip	**Combined**		Roadway	Const. Equip	**Combined**	
	Daytime	Daytime	Daytime	Daytime			Nighttime	Daytime
Receivers	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA	Leq dBA
ST-1 Ridgeway House1	55.4	58.7	60.4	5.9	48.3	56.7	57.3	9.0
ST-2 Ridgeway House2	54.0	70.3	70.4	17.3	48.3	48.1	51.2	2.9
ST-3 LiDestri Site	*44.5*	*70.2*	*70.2*	*26.2*	*48.7*	69.3	*69.3*	20.6
ST-4 Lee Road	54.5	56.0	58.3	3.8	46.0	55.6	56.1	10.1
ST-6 Ridgeway House6	52.5	65.0	65.2	13.5	48.3	57.6	58.1	9.8
Ridgeway Housex	63.1	70.3	71.1	8.8	48.3	48.1	51.2	2.9

No additional vehiles in Const PM

HUB site only

1. From TNM
2. Equal to Existing Evening

Air traffic is not a significar

Noise Calculations Summary Sheets

Noise Calculations Summa

	Construction NOISE - With Temp Barriers							Construction NOISE - With Temp Barriers					
	NIGHTTIME						Difference	DAYTIME					Difference
	Roadway	Const. Equip	Reduction	Const. Equip with Reduction		**Combined**		Roadway	Const. Equip	Reduction	Const. Equip with Reduction	**Combined**	
						Nighttime	Daytime	Daytime	Daytime			Daytime	Daytime
Receivers	Leq dBA	Leq dBA	dBA	dBA		Leq dBA	Leq dBA	Leq dBA	Leq dBA	See of the sheet	dBA	Leq dBA	Leq dBA
ST-1 Ridgeway House1	48.3	*56.7*	*15*	41.7		49.2	0.9	55.4	58.7		48.7	56.2	1.7
ST-2 Ridgeway House2	48.3	*48.1*	*6.7*	41.4		49.1	0.8	54.0	70.3		55.5	57.8	4.7
ST-3 LiDestri Site													
ST-4 Lee Road	46.0	*55.6*	*6.2*	49.4		51.0	5.0	54.5	56.0		50.8	56.0	1.5
ST-6 Ridgeway House6	48.3	*57.6*	*15*	42.6		49.3	1.0	52.5	65.0		50.0	54.4	2.7
Ridgeway Housex	48.3	*48.1*	*7.1*	41.0		49.0	0.7	63.1	70.3		55.5	63.8	1.5

No additional vehiles in Const PM

1. From TNM HUB site only
2. Equal to Existing Evening
Air traffic is not a significar

Background Noise Level Notes

Noise Calculations Summary / Notes

	Daytime	Evening					TNM Calibration	Field	Change in Cal vs Field	Change in Ex vs Field
Background Levels	Leq dBA	Leq dBA	LDN[1]	Ln[2] night only	Daytime Source	Evening Source				
ST-1 Ridgeway House	54.5	48.3	60.7	48.3	From TNM Roadway Existing Level	From Long Term Count @ LT-2	54.5	54.8	-0.3	-0.3
ST-6 Ridgeway House	52.5	48.3			From TNM Roadway Existing Level	From Long Term Count @ LT-2	52.5	50	2.5	2.5
ST-3 LiDestri Site	57.4	48.7	58.2	46.7	From Long Term Count @ LT-1	From Long Term Count @ LT-1	44	45.5	-1.5	11.9
ST-4 Lee Road	54.5	46.0			From TNM Roadway Existing Level	From TNM Roadway Existing Level	54.5	51.6	2.9	2.9
ST-2 Ridgeway House	53.1	48.3			From TNM Roadway Existing Level	From Long Term Count @ LT-2				
Ridgeway House	62.3	48.3			From TNM Roadway Existing Level	From Long Term Count @ LT-2				

1. LDN does include penalty at nightime
2. Ln night only .does not include penatly

LT-1 (DiDestri Site) DNL = 58.2 Daytime only = 52.8 Nightime Only = 56.7
LT-2 (Rideway Site) DNL = 60.7 Daytime only = 57.0 Nightime Only = 58.3

LT-1 (DiDestri Site) Daytime @ 8-9AM = 58.9 Nightime @ 2-3A = 48.7
LT-1 (DiDestri Site) Daytime @ 7-8AM = 57.4 => using this is since roadway volumes are from ST-1 reading from 7-8AM
LT-1 (Ridgeway Site) Daytime @ 7-8AM = 54.3 Nightime @ 2-3A = 44.9

Using Long term readings for ST-3 vs short term count or TNM due to the low noise levels at the time. The TNM model doe validate but does not reflect usual daytime levels.

Have Field Readings at

By: MRH

Date: 6/16/2021

BERGMANN ARCHITECTS ENGINEERS PLANNERS

Project # : 14803

Name: Li-Cycle at Kodak

Noise Measurement Data Sheet

Site Name/Address: ST-1 Ridgeway @ Mclaughlin

MEASUREMENT 1

Temperature: 56° F

Wind Velocity: 8 mph with gusts

Pavement Condition: Dry

Prec. / Rel. Humidity: 63%

Time Begin: 7:39 AM Peak / Off-Peak

	L_{eq}	L_{max}	Noise Sources
@ 5 minutes	55.9	69.2	Road / Brds
@ 10 minutes	54.7	69.2	
@ 15 minutes	54.8	69.2	
@ 20 minutes			
@ 25 minutes			
Final	L_{eq}	L_{max}	
	54.8		

Time End: 7:54 AM

Calibration Check: yes @ 113.9

Reset: yes

Traffic Speeds	Main-Line	Other
	Speed Limit	

Comments: Speed Limit

MEASUREMENT 2

Temperature:

Wind Velocity:

Pavement Condition:

Prec. / Rel. Humidity:

Time Begin: Peak / Off-Peak

	L_{eq}	L_{max}	Noise Sources
@ 5 minutes			
@ 10 minutes			
@ 15 minutes			
@ 20 minutes			
@ 25 minutes			
Final	L_{eq}	L_{max}	
	0		

Time End:

Calibration Check:

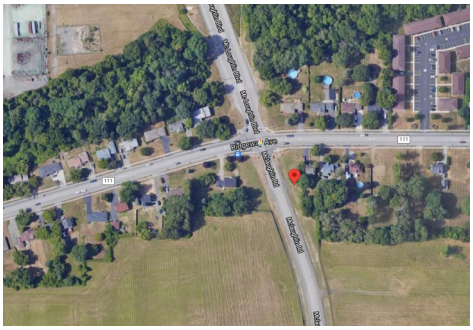
Reset:

Traffic Speeds	Main-Line	Other

Comments:

Sketch / Aerial:

43°11'36.8"N,77°40'10.9"W



43.193556, -77.669694

Local Street Traffic Counts:

Measurement 1 - Eastbound

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	52	5	1	0	0
10 min.	75	3	0	4	2
15 min.	35	1	0	1	0

Measurement 2 - Westbound

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	35	7	0	3	0
10 min.	44	2	1	0	0
15 min.	52	2	2	0	0

Notes / Observations:

By: MRH

Date: 6/16/2021

BERGMANN
ARCHITECTS ENGINEERS PLANNERS

Project # : 14803

Name: Li-Cycle at Kodak

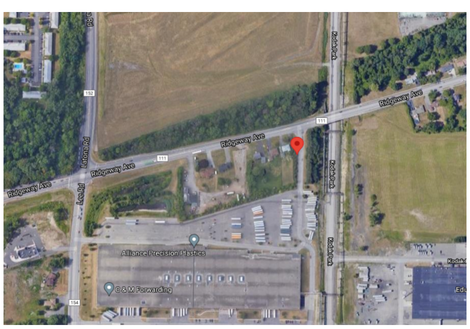
Noise Measurement Data Sheet

Site Name/Address: ST-6 Ridgeway @ RR

MEASUREMENT 1				MEASUREMENT 2			
Temperature:	57° F			**Temperature:**			
Wind Velocity:	8 mph with gusts			**Wind Velocity:**			
Pavement Condition:	Dry			**Pavement Condition:**			
Prec. / Rel. Humidity:	60%			**Prec. / Rel. Humidity:**			
	Time Begin:	8:00 AM	Peak / Off-Peak		**Time Begin:**		Peak / Off-Peak
	L_{eq}	L_{max}	Noise Sources		L_{eq}	L_{max}	Noise Sources
@ 5 minutes	46.8	60.9		**@ 5 minutes**			
@ 10 minutes	49.1	61.1		**@ 10 minutes**			
@ 15 minutes	50.0	61.1		**@ 15 minutes**			
@ 20 minutes				**@ 20 minutes**			
@ 25 minutes				**@ 25 minutes**			
Final	L_{eq}	L_{max}		**Final**	L_{eq}	L_{max}	
	50.0				**0**		
	Time End:	8:15 AM			Time End:		
	Calibration Check:				Calibration Check:		
	Reset:	yes			Reset:		
Traffic Speeds	Main-Line	Other		Traffic Speeds	Main-Line	Other	
	Speed Limit						
Comments:	@ 7:00 Police car in div			Comments:			

Sketch / Aerial:

43°11'32.3"N,77°40'32.4"W



43.192306, -77.675667

Local Street Traffic Counts:

Measurement 1 - Eastbound

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	40	4	2	1	1
10 min.	49	6	1	0	0
15 min.	50	3	1	1	1

Measurement 2 - Westbound

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	42	5	0	0	0
10 min.	43	4	1	1	0
15 min.	44	6	2	0	0

Notes / Observations:

By: MRH

Date: 6/16/2021

BERGMANN ARCHITECTS ENGINEERS PLANNERS

Project # : 14803

Name: Li-Cycle at Kodak

Noise Measurement Data Sheet

Site Name/Address: ST-3 Lidestri Site @ LT-1

MEASUREMENT 1

Temperature: 58° F

Wind Velocity: 10 mph with gusts

Pavement Condition: Dry

Prec. / Rel. Humidity: 55%

Time Begin: 8:41 AM Peak / Off-Peak

	L_{eq}	L_{max}	Noise Sources
@ 5 minutes	45.7	64.4	Nature / Wind
@ 10 minutes	46.3	67.3	
@ 15 minutes	45.5	67.3	
@ 20 minutes			
@ 25 minutes			
Final	L_{eq}	L_{max}	
	45.5		

Time End: 8:56 AM

Calibration Check:

Reset: yes

Traffic Speeds	Main-Line	Other

Comments: Quiet reflects Ltcount

MEASUREMENT 2

Temperature:

Wind Velocity:

Pavement Condition:

Prec. / Rel. Humidity:

Time Begin: Peak / Off-Peak

	L_{eq}	L_{max}	Noise Sources
@ 5 minutes			
@ 10 minutes			
@ 15 minutes			
@ 20 minutes			
@ 25 minutes			
Final	L_{eq}	L_{max}	
	0		

Time End:

Calibration Check:

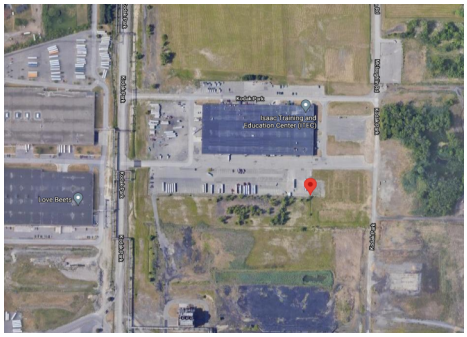
Reset:

Traffic Speeds	Main-Line	Other

Comments:

Sketch / Aerial:

43°11'20.3"N,77°40'15.1"W



43.188972, -77.670861

Local Street Traffic Counts:

Measurement 1

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	0	0	1	0	0
10 min.	0	0	0	0	0
15 min.	0	0	0	0	0

Measurement 2

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	0	0	0	0	0
10 min.	0	0	0	0	0
15 min.	0	0	0	0	0

Notes / Observations:

By: MRH

Date: 6/16/2021

BERGMANN ARCHITECTS ENGINEERS PLANNERS

Project # : 14803

Name: Li-Cycle at Kodak

Noise Measurement Data Sheet

Site Name/Address: ST-4 Lee Rd @ LiDestri Entrance 3

MEASUREMENT 1

Temperature: 60° F

Wind Velocity: 10 mph with gusts

Pavement Condition: Dry

Prec. / Rel. Humidity: 54%

Time Begin: 9:28 AM Peak / Off-Peak

	L_{eq}	L_{max}	Noise Sources
@ 5 minutes	53.8	65.5	Lee Rd, 390, Nature
@ 10 minutes	52.3	65.5	
@ 15 minutes	51.6	65.5	
@ 20 minutes			
@ 25 minutes			
Final	L_{eq}	L_{max}	
	51.6		

Time End: 8:43 AM

Calibration Check:

Reset: yes

Traffic Speeds	Main-Line	Other

Comments:

MEASUREMENT 2

Temperature:

Wind Velocity:

Pavement Condition:

Prec. / Rel. Humidity:

Time Begin: Peak / Off-Peak

	L_{eq}	L_{max}	Noise Sources
@ 5 minutes			
@ 10 minutes			
@ 15 minutes			
@ 20 minutes			
@ 25 minutes			
Final	L_{eq}	L_{max}	
	0		

Time End:

Calibration Check:

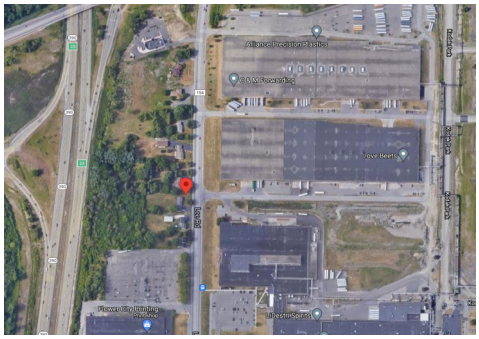
Reset:

Traffic Speeds	Main-Line	Other

Comments:

Sketch / Aerial:

43°11'20.3"N,77°40'15.1"W



43.188972, -77.670861

Local Street Traffic Counts:

Measurement 1 - 390 NB

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	111	5	5	0	1
10 min.	127	9	3	0	0
15 min.	140	7	1	2	0

Measurement 2 - 390 SB

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	200	9	4	0	0
10 min.	200	8	3	0	2
15 min.	230	19	3	2	1

Measurement 3 - Lee Rd @ LiDestri Entrance 3

	Autos	Med. Truck	Hvy. Truck	Bus	Moto
5 min.	0	0	0	0	0
10 min.	0	0	0	0	0
15 min.	0	0	0	0	0

Notes / Observations:

Quiet unless vhicle, hum from 390, no wind, kids behind house not change meter in last 5 min.

Long Term Noise Count Data

Site	Date	Time		Leq Meas.	Day/Night	Sum of Sound energy	Ldn	
LT-1 (Behind 105 McLaughlin)								
	6/14/2021	8-9 AM	0900	58.90	Day	776247.1		
		9-10 AM	1000	47.90	Day	837906.6		
		10-11 AM	1100	42.20	Day	854502.5		
		11AM-12PM	1200	40.00	Day	864502.5		
		12-1 PM	1300	37.50	Day	870125.9		Rain
		1-2 PM	1400	53.70	Day	1104548.8		Rain
		2-3 PM	1500	57.80	Day	1707108.4		
		3-4 PM	1600	58.20	Day	2367801.8		
		4-5 PM	1700	57.90	Day	2984396.8		
		5-6 PM	1800	54.60	Day	3272800.0		
		6-7 PM	1900	54.00	Day	3523988.6		Rain
		7-8 PM	2000	51.70	Day	3671899.4		Rain
		8-9 PM	2100	52.50	Day	3849727.4		
		9-10 PM	2200	51.30	Day	3984623.7		
		10-11 PM	2300	51.10	Night*	5272873.2		
		11PM-12AM	2400	49.50	Night*	6164124.2		
	6/15/2021	12-1 AM	0100	49.00	Night*	6958452.4		
		1-2 AM	0200	48.90	Night*	7734699.5		
		2-3 AM	0300	48.70	Night*	8476009.8		Rain
		3-4 AM	0400	48.60	Night*	9200445.7		Rain
		4-5 AM	0500	49.00	Night*	9994774.0		Rain
		5-6 AM	0600	51.30	Night*	11343736.8		Rain
		6-7 AM	0700	55.80	Night*	15145630.8		Rain
		7-8 AM	0800	57.40	Day	15695171.7	**58.2**	

LT-2 (Behind 1435 Ridgeway Ave)								
	6/10/2021	8-9 AM	0930	56.60	Day	457088.2		
		9-10 AM	1030	54.70	Day	752209.1		
		10-11 AM	1130	55.80	Day	1132398.5		
		11AM-12PM	1230	57.80	Day	1734958.1		
		12-1 PM	1330	67.00	Day	6746830.4		
		1-2 PM	1430	57.70	Day	7335674.1		
		2-3 PM	1530	55.90	Day	7724719.2		
		3-4 PM	1630	61.20	Day	9042976.0		
		4-5 PM	1730	61.10	Day	10331225.5		
		5-6 PM	1830	56.70	Day	10798960.7		
		6-7 PM	1930	53.30	Day	11012756.9		
		7-8 PM	2030	54.30	Day	11281910.4		
		8-9 PM	2130	53.40	Day	11500686.5		
		9-10 PM	2230	51.90	Day	11655568.2		
		10-11 PM	2330	56.10	Night*	15729371.0		
		11PM-12AM	2430	51.00	Night*	16988296.4		
	6/15/2021	12-1 AM	0130	48.20	Night*	17648989.8		
		1-2 AM	0230	45.80	Night*	18029179.2		
		2-3 AM	0330	44.90	Night*	18338208.8		
		3-4 AM	0430	46.60	Night*	18795296.9		
		4-5 AM	0530	52.80	Night*	20700757.7		
		5-6 AM	0630	55.50	Night*	24248891.6		
		6-7 AM	0730	55.70	Night*	27964243.8		
		7-8 AM	0830	54.30	Day	28233397.3	**60.7**	

***** 10-dBA penalties are added to these nightime values when used to calculate Ldn

Day '=+G7+10^(**E8**/10)
Night = 10PM-7AM
Night '=+G8+10^((**E9+10**)/10)

Long Term Count Readings

Long Term Noise Count Data

Site	Date	Time		Leq Meas.	Day/Night	Sum of Sound energy	Ldn
LT-1 (Behind 105 McLaughlin)							
		7-8 AM	0800	57.40	Day	549540.9	
	6/14/2021	8-9 AM	0900	58.90	Day	1325788.0	
		9-10 AM	1000	47.90	Day	1387447.5	
		10-11 AM	1100	42.20	Day	1404043.4	
		11AM-12PM	1200	40.00	Day	1414043.4	
		12-1 PM	1300	37.50	Day	1419666.8	
		1-2 PM	1400	53.70	Day	1654089.7	
		2-3 PM	1500	57.80	Day	2256649.2	
		3-4 PM	1600	58.20	Day	2917342.7	
		4-5 PM	1700	57.90	Day	3533937.7	
		5-6 PM	1800	54.60	Day	3822340.8	
		6-7 PM	1900	54.00	Day	4073529.5	
		7-8 PM	2000	51.70	Day	4221440.3	
		8-9 PM	2100	52.50	Day	4399268.3	
		9-10 PM	2200	51.30	Day	4534164.6	**52.8**
		10-11 PM	2300	51.10	Night*	128825.0	
		11PM-12AM	2400	49.50	Night*	217950.0	
	6/15/2021	12-1 AM	0100	49.00	Night*	297382.9	
		1-2 AM	0200	48.90	Night*	375007.6	
		2-3 AM	0300	48.70	Night*	449138.6	
		3-4 AM	0400	48.60	Night*	521582.2	
		4-5 AM	0500	49.00	Night*	601015.0	
		5-6 AM	0600	51.30	Night*	735911.3	
		6-7 AM	0700	55.80	Night*	1116100.7	**46.7**

Doesn not take into account penatlty

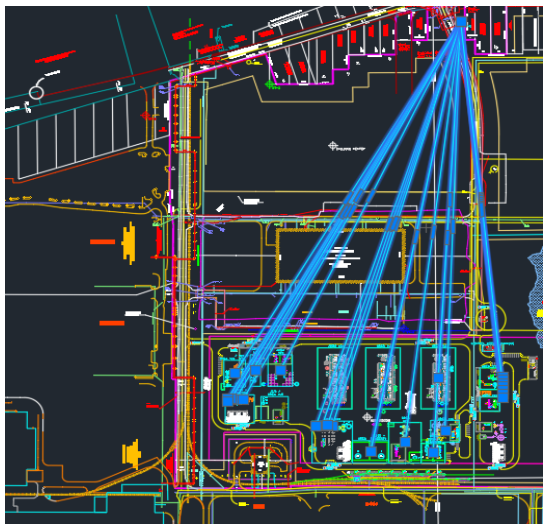
LT-2 (Behind 1435 Ridgeway Ave)							
		7-8 AM	0830	54.30	Day	269153.5	
	6/10/2021	8-9 AM	0930	56.60	Day	726241.7	
		9-10 AM	1030	54.70	Day	1021362.6	
		10-11 AM	1130	55.80	Day	1401552.0	
		11AM-12PM	1230	57.80	Day	2004111.6	
		12-1 PM	1330	67.00	Day	7015983.9	
		1-2 PM	1430	57.70	Day	7604827.6	
		2-3 PM	1530	55.90	Day	7993872.7	
		3-4 PM	1630	61.20	Day	9312129.5	
		4-5 PM	1730	61.10	Day	10600379.0	
		5-6 PM	1830	56.70	Day	11068114.1	
		6-7 PM	1930	53.30	Day	11281910.4	
		7-8 PM	2030	54.30	Day	11551063.8	
		8-9 PM	2130	53.40	Day	11769840.0	
		9-10 PM	2230	51.90	Day	11924721.7	**57.0**
		10-11 PM	2330	56.10	Night*	407380.3	
		11PM-12AM	2430	51.00	Night*	533272.8	
	6/15/2021	12-1 AM	0130	48.20	Night*	599342.2	
		1-2 AM	0230	45.80	Night*	637361.1	
		2-3 AM	0330	44.90	Night*	668264.1	
		3-4 AM	0430	46.60	Night*	713972.9	
		4-5 AM	0530	52.80	Night*	904518.9	
		5-6 AM	0630	55.50	Night*	1259332.3	
		6-7 AM	0730	55.70	Night*	1630867.6	**48.3**

Doesn not take into account penatlty

HUB Point Source Calculations

Receiver - ST-1

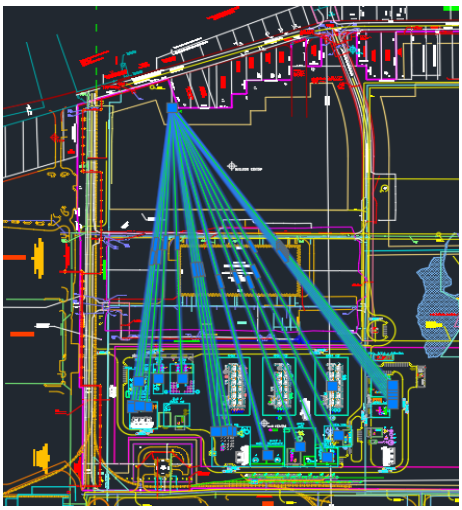
Area	Noise Source	Disctance Away	Is it Shielded	By what	Leq from RCNM	Measurement point from all stations
120	A	1981	Y	CR		
120	B	1999	Y	CR		
120	C	2017	Y	CR		
120	D	2034	Y	CR		Measured to individual equipment
210	E	2056	Y	CR		
210	F	2077	Y	CR		
210	G	2095	Y	CR		
310	H	2270	Y	410		
310	I	2270	Y	410		Measured to center of Area 310
310	J	2270	Y	410		
410	K	1979	Y	410		Measured to center of Area 410
420	L	2350	N			Measured to center of Area 420
520	M	2136	Y	520		
520	N	2136	Y	520		
520	O	2136	Y	520		
520	P	2136	Y	520		
520	Q	2136	Y	520		
520	R	2136	Y	520		
520	S	2136	Y	520		Measured to center of Area 520
520	T	2136	Y	520	33.4 dBA	
520	U	2136	Y	520		
520	V	2136	Y	520		
520	W	2136	Y	520		
520	X	2136	Y	520		
520	Y	2136	Y	520		
620	Z	2193	Y	620		
620	AA	2193	Y	620		
620	BB	2193	Y	620		
620	CC	2193	Y	620		
620	DD	2193	Y	620		
620	EE	2193	Y	620		
620	FF	2193	Y	620		Measured to center of Area 620
620	GG	2193	Y	620		
620	HH	2193	Y	620		
620	II	2193	Y	620		
620	JJ	2193	Y	620		
620	KK	2193	Y	620		
620	LL	2193	Y	620		
805	MM	2335	Y	610		
805	NN	2338	Y	610	31.8 dBA	Measured to individual equipment
805	OO	2351	Y	610		
810	PP	2361	Y	610		
910	QQ	2258	Y	620		
920	RR	2258	Y	620		
920	SS	2258	Y	620		Measured to center of Area 910 / 920 / 930
930	TT	2258	Y	620		
930	UU	2258	Y	620		
2010	VV	2369	Y	510		Measured to center of Area 2100S
2010	WW	2386	Y	510		
2020	XX	2393	Y	510		
2020	YY	2413	Y	510		
2020	ZZ	2399	Y	510		
2110	AAA	2427	Y	410		
2110	BBB	2427	Y	410		
2120	CCC	2396	Y	410		
2140	DDD	2396	Y	410		Measured to center of Area 2100A
2140	EEE	2396	Y	410		
2140	FFF	2396	Y	410		
2140	GGG	2396	Y	410		
2150	HHH	2396	Y	410	31.1 dBA	
2150	III	2396	Y	410		
2160	JJJ	2396	Y	410	21 dBA	
					COMBINED **37.09 dBA**	



HUB Point Source Calculations

Receiver - ST-2

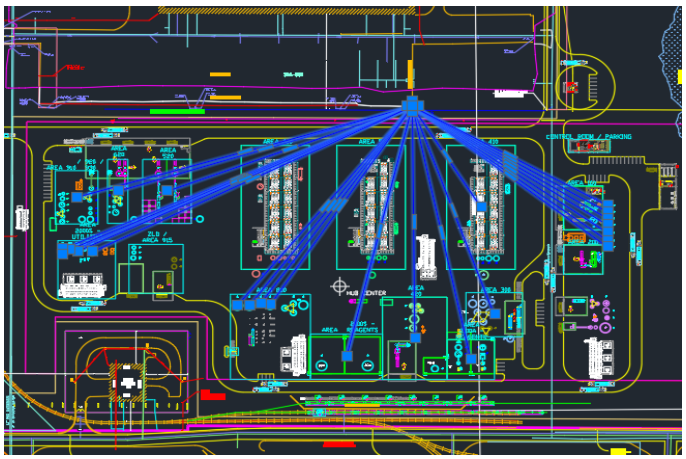
Area	Noise Source	Disctance Away	Is it Shielded	By what	Leq from RCNM
120	A	2007	Y	100	
120	B	2022	Y	100	
120	C	2036	Y	100	
120	D	2050	Y	100	
210	E	2068	Y	100	
210	F	2086	Y	100	
210	G	2100	Y	100	
310	H	2120	Y	410	
310	I	2120	Y	410	
310	J	2120	Y	410	
410	K	1842	Y	410	
420	L	2105	Y	420	
520	M	1590	Y	520	
520	N	1590	Y	520	
520	O	1590	Y	520	
520	P	1590	Y	520	
520	Q	1590	Y	520	
520	R	1590	Y	520	
520	S	1590	Y	520	
520	T	1590	Y	520	33.4 dBA
520	U	1590	Y	520	
520	V	1590	Y	520	
520	W	1590	Y	520	
520	X	1590	Y	520	
520	Y	1590	Y	520	
620	Z	1591	Y	620	
620	AA	1591	Y	620	
620	BB	1591	Y	620	
620	CC	1591	Y	620	
620	DD	1591	Y	620	
620	EE	1591	Y	620	
620	FF	1591	Y	620	
620	GG	1591	Y	620	
620	HH	1591	Y	620	
620	II	1591	Y	620	
620	JJ	1591	Y	620	
620	KK	1591	Y	620	
620	LL	1591	Y	620	
805	MM	1926	Y	610	
805	NN	1918	Y	610	34.4 dBA
805	OO	1920	Y	610	
810	PP	1916	Y	Bldg 502	
910	QQ	1615	Y	New Building	
920	RR	1615	Y	New Building	
920	SS	1615	Y	New Building	
930	TT	1615	Y	New Building	
930	UU	1615	Y	New Building	
2010	VV	1760	Y	620	
2010	WW	1762	Y	620	
2020	XX	1760	Y	New Building	
2020	YY	2104	Y	New Building	
2020	ZZ	2104	Y	New Building	
2110	AAA	2209	Y	610	
2110	BBB	2209	Y	610	
2120	CCC	2209	Y	510	
2140	DDD	2209	Y	510	
2140	EEE	2209	Y	510	
2140	FFF	2209	Y	510	
2140	GGG	2209	Y	510	
2150	HHH	2209	Y	510	33 dBA
2150	III	2209	Y	510	
2160	JJJ	2209	Y	510	21.7 dBA
				COMBINED	**38.50 dBA**



HUB Point Source Calculations

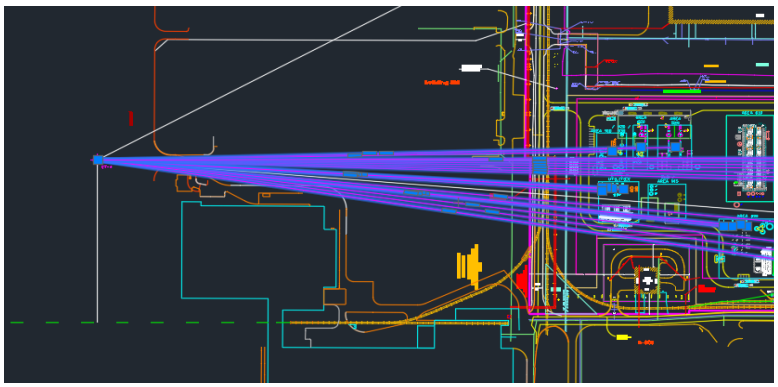
Receiver - ST-3

Area	Noise Source	Disctance Away	Is it Shielded	By what	Leq from RCNM
120	A	566	Y	100	
120	B	574	Y	100	
120	C	583	Y	100	
120	D	593	Y	100	
210	E	605	Y	100	
210	F	617	Y	100	
210	G	628	Y	100	
310	H	606	Y	410	
310	I	606	Y	410	
310	J	606	Y	410	
410	K	327	Y	410	
420	L	634	Y	420	
520	M	666	Y	610	
520	N	666	Y	610	
520	O	666	Y	610	
520	P	666	Y	610	
520	Q	666	Y	610	
520	R	666	Y	610	
520	S	666	Y	610	
520	T	666	Y	610	43.2 dBA
520	U	666	Y	610	
520	V	666	Y	610	
520	W	666	Y	610	
520	X	666	Y	610	
520	Y	666	Y	610	
620	Z	785	Y	610	
620	AA	785	Y	610	
620	BB	785	Y	610	
620	CC	785	Y	610	
620	DD	785	Y	610	
620	EE	785	Y	610	
620	FF	785	Y	610	
620	GG	785	Y	610	
620	HH	785	Y	610	
620	II	785	Y	610	
620	JJ	785	Y	610	
620	KK	785	Y	610	
620	LL	785	Y	610	
805	MM	652	Y	510	
805	NN	663	Y	510	41.3 dBA
805	OO	684	Y	510	
810	PP	703	Y	510	
910	QQ	889	Y	610	
920	RR	889	Y	610	
920	SS	889	Y	610	
930	TT	889	Y	610	
930	UU	889	Y	610	
2010	VV	906	Y	610	
2010	WW	940	Y	610	
2020	XX	957	Y	610	
2020	YY	978	Y	610	
2020	ZZ	972	Y	610	
2110	AAA	704	Y	510	
2110	BBB	704	Y	510	
2120	CCC	708	Y	410	
2140	DDD	708	Y	410	
2140	EEE	708	Y	410	
2140	FFF	708	Y	410	
2140	GGG	708	Y	410	
2150	HHH	708	Y	410	40.6 dBA
2150	III	708	Y	410	
2160	JJJ	708	Y	410	31.6 dBA
				COMBINED	**46.75 dBA**



HUB Point Source Calculations

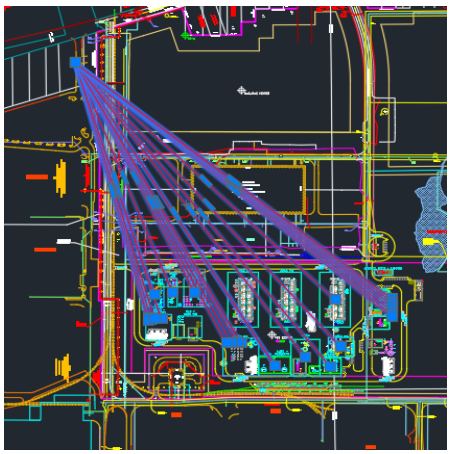
Area	Receiver - ST-4 Noise Source	Disctance Away	Is it Shielded	By what	Leq from RCNM
120	A	3227	Y	510	
120	B	3227	Y	510	
120	C	3228	Y	510	
120	D	3228	Y	510	
210	E	3228	Y	510	
210	F	3229	Y	510	
210	G	3229	Y	510	
310	H	2953	N		
310	I	2953	N		
310	J	2953	N		
410	K	2905	Y	410	
420	L	2760	Y	420	
520	M	2107	Y	620	
520	N	2107	Y	620	
520	O	2107	Y	620	
520	P	2107	Y	620	
520	Q	2107	Y	620	
520	R	2107	Y	620	
520	S	2107	Y	620	
520	T	2107	Y	620	33.5 dBA
520	U	2107	Y	620	
520	V	2107	Y	620	
520	W	2107	Y	620	
520	X	2107	Y	620	
520	Y	2107	Y	620	
620	Z	1982	N		
620	AA	1982	N		
620	BB	1982	N		
620	CC	1982	N		
620	DD	1982	N		
620	EE	1982	N		
620	FF	1982	N		
620	GG	1982	N		
620	HH	1982	N		
620	II	1982	N		
620	JJ	1982	N		
620	KK	1982	N		
620	LL	1982	N		
805	MM	2384	N		
805	NN	2359	N		41.4 dBA
805	OO	2331	N		
810	PP	2301	N		
910	QQ	1887	N		
920	RR	1887	N		
920	SS	1887	N		
930	TT	1887	N		
930	UU	1887	N		
2010	VV	1921	N		
2010	WW	1887	N		
2020	XX	1861	N		
2020	YY	1845	N		
2020	ZZ	1844	N		
2110	AAA	2595	N		
2110	BBB	2595	N		
2120	CCC	2909	N		
2140	DDD	2909	N		
2140	EEE	2909	N		
2140	FFF	2909	N		
2140	GGG	2909	N		
2150	HHH	2909	N		41.8 dBA
2150	III	2909	N		
2160	JJJ	2909	N		19.3 dBA
					COMBINED 44.95 dBA



HUB Point Source Calculations

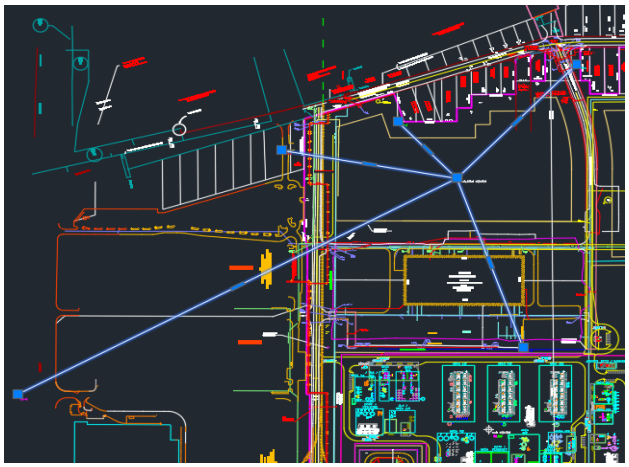
Receiver - ST-6

Area	Noise Source	Disctance Away	Is it Shielded	By what	Leq from RCNM
120	A	2315	Y	100	
120	B	2326	Y	100	
120	C	2337	Y	100	
120	D	2349	Y	100	
210	E	2363	Y	100	
210	F	2377	Y	100	
210	G	2388	Y	100	
310	H	2316	Y	510	
310	I	2316	Y	510	
310	J	2316	Y	510	
410	K	2078	Y	410	
420	L	2241	Y	610	
520	M	1571	Y	520	
520	N	1571	Y	520	
520	O	1571	Y	520	
520	P	1571	Y	520	
520	Q	1571	Y	520	
520	R	1571	Y	520	
520	S	1571	Y	520	
520	T	1571	Y	520	33 dBA
520	U	1571	Y	520	
520	V	1571	Y	520	
520	W	1571	Y	520	
520	X	1571	Y	520	
520	Y	1571	Y	520	
620	Z	1521	Y	620	
620	AA	1521	Y	620	
620	BB	1521	Y	620	
620	CC	1521	Y	620	
620	DD	1521	Y	620	
620	EE	1521	Y	620	
620	FF	1521	Y	620	
620	GG	1521	Y	620	
620	HH	1521	Y	620	
620	II	1521	Y	620	
620	JJ	1521	Y	620	
620	KK	1521	Y	620	
620	LL	1521	Y	620	
805	MM	1968	Y	520	
805	NN	1953	Y	520	34.7 dBA
805	OO	1944	Y	520	
810	PP	1930	Y	520	
910	QQ	1502	N		
920	RR	1502	N		
920	SS	1502	N		
930	TT	1502	N		
930	UU	1502	N		
2010	VV	1656	N		
2010	WW	1644	N		
2020	XX	1635	N		
2020	YY	1643	N		
2020	ZZ	1628	N		
2110	AAA	2187	Y	610	
2110	BBB	2187	Y	610	
2120	CCC	2373	Y	510	
2140	DDD	2373	Y	510	
2140	EEE	2373	Y	510	
2140	FFF	2373	Y	510	
2140	GGG	2373	Y	510	
2150	HHH	2373	Y	510	41.9 dBA
2150	III	2373	Y	510	
2160	JJJ	2373	Y	510	21.1 dBA
				COMBINED	**43.13 dBA**

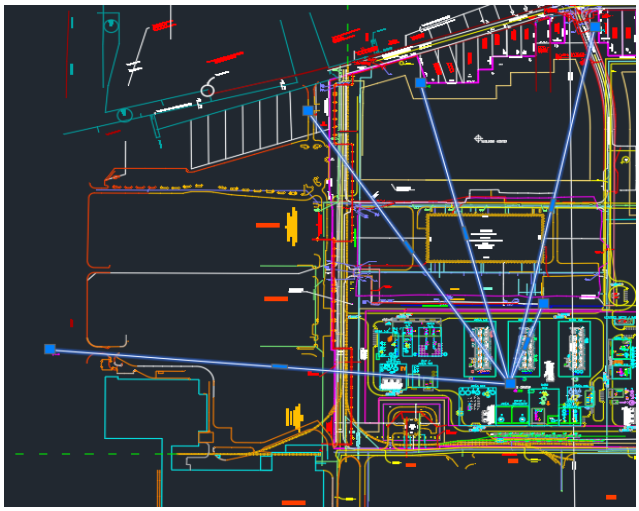


Constructon Point Source Calculations

Receiver	Distance - ft	RCNM Leq	Distance - ft	RCNM Leq	Combined
ST-1	940	54.3	2242	56.7	58.67
ST-2	467	70.3	1914	48.1	70.33
ST-3	1077	63.1	525	69.3	70.23
ST-4	2705	45.1	2555	55.6	55.97
ST-6	961	64.1	2016	57.6	64.98
	BLDG		HUB		



Bldg ^



HUB ^

Roadway Construction Noise Model (RCNM),

Report date: 05/11/2021
Case Description: Hoover House #1

**** Receptor #1 ****

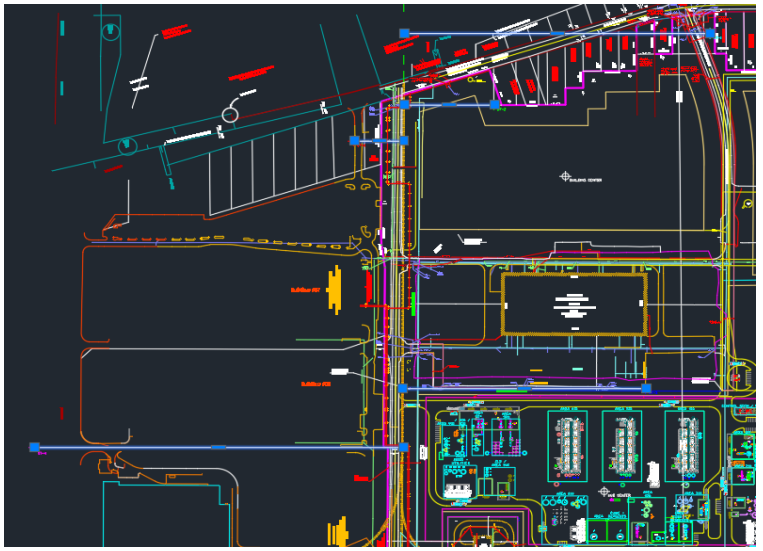
Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Hoover House #1	Residential	59.0	59.0	59.0

Description	Impact Device	Equipment Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)
Backhoe	No	40		77.6
Compactor (ground)	No	20		83.2
Crane	No	16		80.6
Dozer	No	40		81.7
Drill Rig Truck	No	20		79.1
Dump Truck	No	40		76.5
Excavator	No	40		80.7
Flat Bed Truck	No	40		74.3
Front End Loader	No	40		79.1
Generator	No	50		80.6
Jackhammer	Yes	20		88.9
Paver	No	50		77.2
Pickup Truck	No	40		75.0
Pumps	No	50		80.9
Rock Drill	No	20		81.0
Roller	No	20		80.0
Chain Saw	No	20		83.7
All Other Equipment > 5 HP	No	50	85.0	
Welder / Torch	No	40		74.0
Tractor	No	40	84.0	

Rail Line Source Calculations

Receiver	Disance to Rail from Receiver - FT	Leq at Receiver dBA
ST-1	1368	33.18
ST-2	402	43.82
ST-3	1086	35.19
ST-4	1646	31.57
ST-6	223	48.94
Ridgeway House	400	43.86

RAIL Combiend Noise Source at 50-ft 61.92 dBA



Assmptions

1. No Elevation adjustments
2. No Barrier adjustments (Ex. Rt390 acts as a barrier or Buildings)

Rail Line Source Calculations

Reference
Federal Transit Authority
Transit Noise and Vibration Impact Assessment Maunal, September 2018

Trips: Combined Reagents @ 10 Cars/day @ 5-Days a week + SSA @ 2.5 cars/day @ 7-Days a week
Trips: Combined @ 12.5 Cars/day Avergae
Trips: Combined 1 trip in each direction between 7am-7pm = SAY 2 trips per day
Speed = 15 mph
1 Locamotive V_d=2 trips / 12 hours
26 Cars per Trip
Welded at Grade
Diesel

Locomotives* $L_{eq(1hr)}$ at 50 ft	$L_{eq.Loco(1hr)} = SEL_{ref} + 10\,log(N_{Loco}) + Klog(\frac{S}{50}) + 10\,log(V) - 35.6$	**Eq. 4-1**

SEL_{ref}	92	From Table 4-9
N_{loco}	1	# of locamotives
K	-10	constant for passenger diesel
S	15	train speed mph
V	1.0	trains/hr vs 2/12 = 0.2 trains/hour

61.63 dBA at 50-ft

Rail Vehicles† $L_{eq(1hr)}$ at 50 ft	$L_{eq.RCars(1hr)} = SEL_{ref} + 10\,log(N_{Cars}) + 20\log(\frac{S}{50}) + 10\,log(V) - 35.6 + Adj_{track}$	**Eq. 4-3**

SEL_{ref}	82	From Table 4-9
N_{car}	26	# of cars per trip
S	15	train speed mph
V	1.0	trains/hr

50.09 dBA at 50-ft

Total $L_{eq(t)}$ from all sources for the hour of interest:	$L_{eq.total(1hr)} = 10\log(\sum_{all\ sources} 10^{L_{eq}/10})$	**Eq. 4-21**

$L_{d.Combo} = 10log(10^{L_{d.Loco}/10} + 10^{L_{d.RCars}/10})$

$L_{eqCombo\ (1hr)}$ 61.92 dBA at 50-ft

Rail Line Source Calculations

Locomotives* $L_{eq(1hr)}$ at 50 ft	$L_{eq.Loco(1hr)} = SEL_{ref} + 10\,log(N_{Loco}) + Klog(\frac{S}{50}) + 10\,log(V) - 35.6$	**Eq. 4-**
Rail Vehicles† $L_{eq(1hr)}$ at 50 ft	$L_{eq.RCars(1hr)} = SEL_{ref} + 10\,log(N_{Cars}) + 20\log(\frac{S}{50}) + 10\,log(V) - 35.6 + Adj_{track}$	**Eq. 4-3**

N_{Loco} – average number of locomotives per train

K = constant
-10 for passenger diesel
0 for DMUs
+10 for electric

S = train speed, mph

V = average hourly volume of train traffic, trains per hour

N_{Cars} = average number of cars per train

Adj_{track} = constant
+5 for jointed track or for a crossover within 300 ft
+4 for aerial structure with slab track (except AGT and monorail)
+3 for embedded track on grade
-5 if a noise barrier blocks the line of sight

V_d = average hourly daytime volume of train traffic, trains per hour

$= \frac{number\ of\ trains, 7\ a.m.\ to\ 10\ p.m.}{15}$

V_n = average hourly nighttime volume of train traffic, trains per hour

$= \frac{number\ of\ trains, 10\ p.m.\ to\ 7a.m.}{9}$

N_d = average hourly number of events that occur during daytime (7 a.m. to 10 p.m.)

$= \frac{number\ of\ events\ between\ 7\ a.m.\ to\ 10\ p.m.}{15}$

N_n = average hourly number of events that occur during nighttime (10 p.m. to 7 a.m.)

$= \frac{number\ of\ events\ between\ 10\ p.m.\ to\ 7\ a.m.}{9}$

* Assumes a diesel locomotive power rating at approximately 3000 hp.

Table 4-16 Computing Total Noise Exposure

Total $L_{eq(t)}$ from all sources for the hour of interest:	$L_{eq.total(1hr)} = 10\log(\sum_{all\ sources} 10^{L_{eq}/10})$	**Eq. 4-21**

$$L_{d.Combo} = 10log(10^{L_{d.Loco}/10} + 10^{L_{d.RCars}/10})$$

Rail Line Source Calculations

Table 4-9 Reference SEL's 50 ft from Track and at 50 mph, One Vehicle

Source	Type	Reference Conditions	Reference SEL (SEL_{ref}), dBA
Commuter Rail, At-Grade	*Locomotives*	Diesel-electric, 3000 hp, throttle 5	92
		Electric	90
	Diesel Multiple Unit (DMU)	Diesel-powered, 1200 hp	85
	Horns	Within ¼ mile of grade crossing	110
	Cars	Ballast, welded rail	82
Rail Transit and Streetcars at 50 mph		At-grade, ballast, welded rail	82
Rail Transit and Streetcars at 25 mph		At-grade, ballast, welded rail	76
Transit whistles / warning devices		Within 1/8 mile of grade crossing	93
AGT	*Steel Wheel*	Aerial, concrete, welded rail	80
	Rubber Tire	Aerial, concrete guideway	78
Monorail		Aerial straddle beam	82
Maglev		Aerial, open guideway	72

Traffic Volume

Site 2

Calibration - TNM Volume

	Location	Time	Count (15-min)										Count (1-hour)									
			390 NB					390 SB					390 NB					390 SB				
			A	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**
Noise Reading #1	Kodak Park Drive	8:45-9:00 AM	384	11	11	4	0	622	12	8	0	1	1536	44	44	16	0	2488	48	32	0	4
	Sannita Drive	9:17-9:32 AM	333	14	10	1	0	528	6	10	1	0	1332	56	40	4	0	2112	24	40	4	0
	Latona Rd #2	9:56-10:11 AM	325	8	2	3	0	461	9	10	1	0	1300	32	8	12	0	1844	36	40	4	0
	Latona / Weiland	10:40-10:55 AM	429	7	12	3	0	441	3	7	3	1	1716	28	48	12	0	1764	12	28	12	4
Noise Reading #2	Lee	9:28-9:45 AM	378	21	9	2	1	630	36	10	2	3	1512	84	36	8	4	2520	144	40	8	12

			Latona Rd Combined					Latona Rd Combined				
			A	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**
Noise Reading #1	Latona Rd #2	9:56-10:11 AM	520	4	12	0	0	2080	16	48	0	0
	Latona / Weiland	10:40-10:55 AM	516	32	8	0	0	2064	128	32	0	0

			Ridgeway Ave Combined					Ridgeway Ave Combined				
			A	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**
Noise Reading #1	Ridgeway Ave	11:22-11:37 AM	298	5	9	3	0	1192	20	36	12	0
Noise Reading #2	Ridgeway Ave ST-1		293	20	4	8	2	1172	80	16	32	8
Noise Reading #2	Ridgeway Ave ST-6		268	28	7	3	2	1072	112	28	12	8
Noise Reading #2	Lee Road	9:28-9:45 AM	58	5	0	0	0	232	20	0	0	0
	Lidestri Entrance	9:28-9:45 AM	3	0	0	0	0	12	0	0	0	0

Traffic Volume

Site 2

Existing - TNM Volume - DAYTIME

	Location	Time	Count (15-min)										Count (1-hour)									
			390 NB					390 SB					390 NB					390 SB				
			A	MT	HT	B	Moto	A	MT	HT	B	Moto	A	MT	HT	B	Moto	A	MT	HT	B	Moto
	Kodak Park Drive	*8:45-9:00 AM*	*384*	*11*	*11*	*4*	*0*	*622*	*12*	*8*	*0*	*1*	*1536*	*44*	*44*	*16*	*0*	*2488*	*48*	*32*	*0*	*4*
	Sannita Drive	9:17-9:32 AM	333	14	10	1	0	528	6	10	1	0	**1332**	**56**	**40**	**4**	**0**	**2112**	**24**	**40**	**4**	**0**
	Latona Rd #2	*9:56-10:11 AM*	*325*	*8*	*2*	*3*	*0*	*461*	*9*	*10*	*1*	*0*	*1300*	*32*	*8*	*12*	*0*	*1844*	*36*	*40*	*4*	*0*
	Latona / Weiland	*10:40-10:55 AM*	*429*	*7*	*12*	*3*	*0*	*441*	*3*	*7*	*3*	*1*	*1716*	*28*	*48*	*12*	*0*	*1764*	*12*	*28*	*12*	*4*
Noise Reading #2	**Lee**	9:28-9:45 AM	378	21	9	2	1	630	36	10	2	3	**1512**	**84**	**36**	**8**	**4**	**2520**	**144**	**40**	**8**	**12**
			Latona Rd Combined										Latona Rd Combined									
			A	MT	HT	B	Moto						A	MT	HT	B	Moto					
	Latona Rd #2	9:56-10:11 AM	520	4	12	0	0						2080	16	48	0	0					
	Latona / Weiland	*10:40-10:55 AM*	*516*	*32*	*8*	*0*	*0*						*2064*	*128*	*32*	*0*	*0*					
			Ridgeway Ave Combined										Ridgeway Ave Combined									
			A	MT	HT	B	Moto						A	MT	HT	B	Moto					
	Ridgeway Ave	11:22-11:37 AM	298	5	9	3	0						1192	20	36	12	0					
Noise Reading #2	Ridgeway Ave		293	20	4	8	2						1172	80	16	32	8					
Noise Reading #2	Ridgeway Ave ST-6		268	28	7	3	2						1072	112	28	12	8					
Noise Reading #2	**Lee Road**	9:28-9:45 AM	58	5	0	0	0						232	20	0	0	0					
	Lidestri Entrance	9:28-9:45 AM	3	0	0	0	0						12	0	0	0	0					

Existing - TNM Volume - Evening

390 NB					390 SB				
A	MT	HT	B	Moto	A	MT	HT	B	Moto
123	0	5	0	0	88	0	4	0	0
Lee Rd Combined									
A	MT	HT	B	Moto					
41	0	0	0	0					
Ridgeway Ave Combined									
A	MT	HT	B	Moto					
85	0	0	0	0					

NOTES

NYSDOT Traffic Data Viewer Volume for Rt390 in this area, Count ID 430121_03032020.

Daytime

Combined Volume per time interval around the time of the field counts.

7-8AM	6276
8-9AM	5102
9-10AM	3944
10-11AM	3530

Volumes are close to what ws counted.

Nightime

(10PM-5AM) Based on Long term Count at Kodak Bend for Rt390

Time	Long Term Leq	NYSDOT Volume
10-11 PM	62.0	1339
11PM-12AM	59.5	914
12-1 AM	57.8	454
1-2 AM	57.0	241
2-3 AM	56.5	220
3-4 AM	58.7	314
4-5 AM	63.0	727

	NB	SB	
Combined	128	92	
Truck 4%	5.12	3.68	Assume Heavy Trucks
Auto	122.88	88.32	
	128	92	

Latona NYSDOT Count 2-3 AM	25	Station: 438079
Ridgeway Ave NYSDOT Count 2-3 AM	85	Station: 436245
Lee NYSDOT 2-3AM	41	Station: 433086 2019

SUMMARY -

Decided to use Field Counts for DAYTIME Existing volumes since this is what was used to validate the model.

Decided to use NYSDOT Counts for Evening, for Rt390, Lee Rd & Ridgeway Ave

Evening volume time was decided based on the lowerst Leq reading for Rt390 since the operations will make the most impact.

Evening volume for Lee and Ridgeway decided to use the same time frame as did for Rt390.

The Daytime comparision for Lee and Ridgeway field readings VS NYSDOT count

Ridgeway field was 1172 and NYSDOT for 7-8A was 986 - similar

Lee field was 232 and NYSDOT for 9-10AM was 494 - Not similar

Using one TNM model for Exiting Levels and Proposed levels.

Traffic Volume

Site 2

Proposed Operations - TNM Volume - DAYTIME

Location	Time	Count (15-min)										Count (1-hour)									
		390 NB					390 SB					390 NB					390 SB				
		A	MT	HT	B	Moto	A	MT	HT	B	Moto	A	MT	HT	B	Moto	A	MT	HT	B	Moto
Existing Used		378	21	9	2	1	630	36	10	2	3	1512	84	36	8	4	2520	144	40	8	12
PROPOSED												55		2			55		2		
												1567	**84**	**38**	**8**	**4**	**2575**	**144**	**42**	**8**	**12**

		Ridgeway Ave Combined										Ridgeway Ave Combined									
		A	MT	HT	B	Moto						A	MT	HT	B	Moto					
Ridgeway Ave		293	20	4	8	2						1172	80	16	32	8					
PROPOSED												100		4							
												1272	**80**	**20**	**32**	**8**					

Proposed Operations - TNM Volume - Evening

390 NB					390 SB				
A	MT	HT	B	Moto	A	MT	HT	B	Moto
123	0	5	0	0	88	0	4	0	0

Lee Rd Combined				
A	MT	HT	B	Moto
41	0	0	0	0

Ridgeway Ave Combined				
A	MT	HT	B	Moto
85	0	0	0	0

NOTES

SUMMARY -
Took Existing Volumes Already Assumed
Added the increase due to the new facility
Vehicles: 100vehicles/peak hour at two shift changes (7a-3p - therefor hour 630-730) assumed 30-min travel per shirt before and after
Trucks: 185 Trucks Combined per Week @ 7 days a week => 26 Truck Trips/Day @ delivery=2 directions => 25Trucks on road /Day @ 12-hours a day for delivery
Trucks Assume Heavy Truck and 4 trucks per hour

Assume the daytime volume will have the peak traffic increase.
Assume the evening volume will NOT have the peak traffic increase and only be the facility noise.

Traffic Volume

Site 2

CONSTRUCTION - TNM Volume - DAYTIME

Location	Time	Count (15-min)										Count (1-hour)									
		390 NB					390 SB					390 NB					390 SB				
		A	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**
Existing Used		378	21	9	2	1	630	36	10	2	3	**1512**	**84**	**36**	**8**	**4**	**2520**	**144**	**40**	**8**	**12**
PROPOSED												200		5			200		4		
												1712	**84**	**41**	**8**	**4**	**2720**	**144**	**44**	**8**	**12**

	Ridgeway Ave Combined					Ridgeway Ave Combined				
	A	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**
Ridgeway Ave	293	20	4	8	2	1172	80	16	32	8
PROPOSED						400		9		
						1572	**80**	**25**	**32**	**8**

CONSTRUCTION - TNM Volume - Evening

390 NB					390 SB				
A	**MT**	**HT**	**B**	**Moto**	**A**	**MT**	**HT**	**B**	**Moto**
123	0	5	0	0	88	0	4	0	0

Lee Rd Combined				
A	**MT**	**HT**	**B**	**Moto**
41	0	0	0	0

Ridgeway Ave Combined				
A	**MT**	**HT**	**B**	**Moto**
85	0	0	0	0

NOTES

SUMMARY -
Took Existing Volumes Already Assumed
Added the increase due to the new facility
Vehicles: 400vehicles/peak hour at two shifts changes assumed 30-min travel per shirt before and after shift
Trucks: 50 Truck Trips/Day @ delivery=2 directions => 100 Trucks on road /Day @ 12-hours a day for delivery
Trucks Assume Heavy Truck and 9 trucks per hour

Assume the daytime volume will have the peak traffic increase.
Assume the evening volume will NOT have the peak traffic increase and only be the facility noise.

Temporary Barrier Calculations

		HUB Site (fence around HUB site)					HUB Site (fence around Admin site - Closest)					Warehouse / Admin Site (fence around Admin Site)					
		ST-1 Ridgeway House 1**	ST-2 Ridgeway House 2	ST-4 Lee Rd	ST-6 Ridgeway House 6	Ridgeway House X	Ridgeway House 1	Ridgeway House 2	Lee Rd	Ridgeway House 6	Ridgeway House X	Ridgeway House 1	Ridgeway House 2	Lee Rd	Ridgeway House 6	Ridgeway House X	
Pt Source	x	1391455	1391455	1391455	1391455	1391455	1391455	1391455	1391455	1391455	1391455	1391282	1391282	1391282	1391282	1391282	
Coordinates	y	1162757	1162757	1162757	1162757	1162757	1162757	1162757	1162757	1162757	1162757	1164265	1164265	1164265	1164265	1164265	
	z	539	539	539	539	539	539	539	539	539	539	528	528	528	528	528	Elev of ground + 2ft
Temporary Barrier	x	1391603	1391340	1390524	1391168	1391340	1391603	1390962	1390524	1390623	1390962	1391603	1390962	1390615	1390623	1390962	
Coordinates *	y	1164605	1163190	1163013	1163187	1163190	1164605	1164606	1163013	1164382	1164606	1164605	1164606	1164038	1164382	1164606	
8-ft tall	z	533	**536**	**541**	**536**	**536**	533	**527**	**541**	**529**	**527**	533	**527**	**529**	**529**	**527**	Elev of ground + 8-ft
Receptor (SITE)	x	1391927	1390984	1388909	1390336	1390937	1391927	1390984	1388909	1390336	1390937	1391927	1390984	1388909	1390336	1390937	
Coordinates	y	1164948	1164654	1163458	1164433	1164885	1164948	1164654	1163458	1164433	1164885	1164948	1164654	1163458	1164433	1164885	
	z	526	526	530	257	526	526	526	530	257	526	526	526	530	257	526	Elev of ground + 5ft
	d	2242	1955	2641	2035	2190	2242	1955	2641	2035	2190	940	490	2507	999	710	
	A	1854	448	965	517	448	1854	1914	965	1826	1914	468	468	705	669	468	
	b	472	1507	1676	1525	1743	472	53	1676	399	280	472	53	1802	399	280	
	δ	84.5	0.1	0.0	6.1	0.1	84.5	12.0	0.0	189.5	3.5	0.1	30.8	0.0	69.5	38.2	
	f	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
	λ	4.508	4.508	4.508	4.508	4.508	4.508	4.508	4.508	4.508	4.508	4.508	4.508	4.508	4.508	4.508	
	N	37.47	0.04	0.01	2.72	0.06	37.47	5.32	0.01	84.09	1.57	0.03	13.65	0.00	30.85	16.93	
Reduction	**dB**	**21.7**	**6.7**	**6.2**	**15.5**	**7.1**	**21.7**	**17.4**	**6.2**	**23.7**	**14.6**	**6.6**	**20.4**	**#N/A**	**21.4**	**20.7**	

(*) - Coordinates refer to intersection of ground **and** noise source line of site to the receptor.
(**) - Used Warehouse / Admin Bld Fence for caclulations

Existing / Background Daytime Level	*54.5*	*53.1*	*54.5*	*51.7*	*62.3*
Existing / Background Nighttime Level	*48.3*	*48.3*	*46*	*48.3*	*48.3*
Predicted Construction ADMIN	**54.3**	**70.3**	**45.1**	**64.1**	**70.3**
Predicted Construction HUB	**56.7**	**48.1**	**55.6**	**57.6**	**48.1**
Predicted Construction Daytime Combined	**58.7**	**70.3**	**56.0**	**65.0**	**70.3**
Daytime Reduction Admin Site	**6.6**	**15.0**	**0**	**15.0**	**15.0**
Nighttime Reduction HUB Site ONLY	**15.0**	**6.7**	**6.2**	**15.0**	**7.1**
Predicted Construction ADMIN with Reduction	47.7	55.3	45.1	49.1	55.3
Predicted Construction HUB With Redutcion	41.7	41.4	49.4	42.6	41
Predicted Const. Daytime Combined With Reduction	48.7	55.5	50.8	50.0	55.5
Predicted Const. NIghttime HUB only With Reduction	41.7	41.4	49.4	42.6	41