III.L Noise

1. Introduction and Principal Conclusions

Based upon the analysis conducted, the project does not exceed any of the threshold limits established in the Town Code. Therefore, the project has no significant projected noise impacts. The only mitigation measure required is a standard one that all gasoline and diesel construction equipment operating on-site should have properly maintained mufflers.

2. Existing Conditions

a. Noise Ordinance of the Town of Southeast

The Town of Southeast has a Noise Ordinance, *Chapter 96. Noise*. It defines the times of concern as:

- Daytime is 7 AM to 8 PM
- Night-time is 8:01 PM to 6:59 AM

Other important definitions include:

- An impulsive sound is a sound characterized by excursions of the sound pressure which exceed the ambient sound by six or more decibels (dB), but lasts two seconds or less.

- Fast response is the characteristics of a sound level meter which allows for accurate measurement of impulsive sounds such as horn blasts, firearm discharge, or vehicle pass by.

- Maximum sound levels for impulsive sound shall be measured using the fast response setting.

- Maximum continuous sound level shall be measured using the slow response setting.

- The property line of the real property where the sound is being heard is where the appropriate level of restrictions apply. In the case of an apartment, townhouse, or condominium the point of measurement is within the affected unit. *However, to be conservative, this report considered the compliance point to be the exterior of the building.*

- The day time limit at residences is a maximum sound level slow response of 65 dBA. The nighttime is 55 dBA. These are one-hour equivalent continuous sound level ($L_{eqs)}$, expressed as $L_{eq(1\ hr)}$.

- The allowable impulsive level is 75 dBA during the day, and 65 dBA at night. With 3 to 10 repetitions per hour the 65 dBA would be reduced to 64 dBA. These are measured on fast response.

Construction limitations are as follows:

- Construction cannot occur on Sundays or six holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; and Christmas Day.
- Construction activity can occur Monday through Friday from 7 AM to 8 PM, and Saturday from 9 AM to 5 PM.

b. Noise Definitions and Relationships

Noise can be defined as undesirable or unwanted sound. Even though noise is somewhat subjective, it affects the full range of human activities and must be considered in local and regional planning. Most of the sounds heard in the environment are not composed of a single frequency but a band of frequencies, each with a different intensity or level. Levels of noise are measured in units called decibels. Since the human ear cannot perceive all pitches or frequencies equally, these measurements are adjusted or weighted to correspond to human hearing. This adjusted unit is known as the A-weighted decibel, or dBA. The A-weighted sound level (dBA) is useful for gauging and comparing the subjective loudness of sounds.

It should be noted that a one decibel change in noise is the smallest change detectable by the human ear under suitable laboratory conditions. However, under normal conditions, a change in the noise level by two or three decibels is required for the average person to notice a difference. The perception of noise changes is shown in Table III.L-1. Environmental noise is considered not only with regard to level, which relates to perceived loudness of a noise, but also its character, duration, time of day, and frequency of occurrence.

Table III.L-1

Perception of Changes in Noise Levels

Change (dBA)	Average Ability to Perceive Changes in Noise Levels (Human Perception of Change)
2 - 3	Barely Perceptible
5	Readily Noticeable
10	A Doubling or Halving of the Loudness of Sound
20	A Dramatic Change
40	Difference Between a Faintly Audible Sound and a Very Loud Sound

Source: Bolt Baranek and Neuman (1973)

The standard measurement of noise is the decibel (dB), generally adjusted to the A-scale (dBA) which corresponds to the frequency response of an average human ear when listening to ordinary everyday sounds. The A-scale frequency weighting de-emphasizes the noise contribution from the lower frequency noise component and emphasizes the higher frequency noise component where the human ear is most sensitive. Most people can only detect sound level changes of 3 dB outside a controlled laboratory environment, where a 5 dB change is more readily noticeable.

A 10 dB change in sound is usually judged as a doubling (or halving) of sound. "Sound Levels and Loudness of Typical Noises of Indoor and Outdoor Environments" are presented on Table III.L-2.

Table III.L-2

Sound Level and Loudness of Typical Noises of Indoor and Outdoor Areas

Noise Level (dBA)	Subjective Impression	Typical Sources		Relative Loudness (Human Response)
		Outdoor	Indoor	
120-130	Uncomfortably Loud	Air raid siren at 50 feet (threshold of pain)	Oxygen torch	32 times as loud
110-120	Uncomfortably Loud	Turbo-fan aircraft at take-off power at 200 feet	Riveting machine Rock band	16 times as loud
100-110	Uncomfortably Loud	Jackhammer at 3 feet		8 times as loud
90-100	Very Loud	Gas lawn mower at 3 feet Subway train at 30 feet Train whistle at crossing Wood chipper shredding trees Chain saw cutting trees at 10 ‘	Newspaper press	4 times as loud
80-90	Very Loud	Passing freight train at 30 feet Steamroller at 30 feet Leaf blower at 5 feet Power lawn mower at 5 feet	Food blender Milling machine Garbage disposal Crowd noise at sports event	2 times as loud
70-80	Moderately Loud	NJ Turnpike at 50 feet Traffic in downtown urban area	Loud stereo Vacuum cleaner Food blender	Reference loudness (70 dBA)
60-70	Moderately Loud	Residential air conditioner at 100 feet Gas lawn mower at 100 feet Waves breaking on beach at 65’	Cash register Dishwasher Theater lobby Normal speech at 3’	1/2 as loud
50-60	Quiet	Large transformers at 100 feet Traffic in suburban area	Living room with TV Classroom Business office Dehumidifier Normal speech - 10’	1/4 as loud
40-50	Quiet	Bird calls Trees rustling Water flowing in brook	Putting on clothes Using computer	1/8 as loud
30-40	Very quiet		Walking on carpet Clock ticking in next room	1/16 as loud
20-30	Very quiet		Bedroom at night	1/32 as loud
10-20	Extremely quiet		Broadcast and recording studio	
0-10	Threshold of Hearing			

Sources: Schultz (undated); Sandstone Environmental Associates, Inc. (undated); Federal Highway Administration (1980); Cowan (1994).

Leq is the preferred method to describe sound levels that vary over time, resulting in a single decibel value, which takes into account the total sound energy over the period of time of interest.

Percentile levels are also used greatly when measuring environmental noise. The L10 is the noise level exceeded for 10% of the time of the measurement duration. This is often used to give an indication of the upper limit of fluctuating noise, such as that from road traffic. Similarly an L1 is that noise that exceeded 1% of the time, and the L90 is that noise exceeded 90% of the time. The L90 is generally considered representative of the background noise. The Lmax is the maximum recorded noise level in a given period of time.

Understanding the logarithmic nature of noise will be important for understanding of noise discussions in future sections.

Distance from a point source

Noise levels from a point source, such as a lawn mower, drop 6 dB per doubling of distance. This relationship is shown in Table III.L-3.

Table III.L-3

Noise Level Drop with Distance from Source

Distance, ft	Noise Source, dBA			
25	79	76	73	70
50	73	70	67	64
100	67	64	61	58
200	61	58	55	52
400	55	52	49	46
800	49	46	43	40
1,600	43	40	37	34

Adding two noise sources together

Because of the logarithmic nature of dB, when two values are added together they increase by only 3 dB. Thus, if one lawn mower is 70 dBA, having two lawn mowers at 70 dBA would be 73 dBA, not 140 dBA. Four mowers would 76 dBA and 8 mowers would be 79 dBA.

Also, when two values are 10 dB or more apart there is no contribution from the lower strength source. Thus, 70 dBA plus 60 dBA is 70.4 dBA, which rounds to 70 dBA. This relationship is shown in further detail in Table III.L-4.

Table III.L-4

Adding Two Noise Levels Together

Difference between Two Noise Sources	Add to the Higher Value
0	3
1	2.5
2	2.1
3	1.8
4	1.5
5	1.2
6	1
7	0.8
8	0.6
9	0.5
10	0.4

b. <u>Noise Monitoring Procedures and Results</u>

The primary objective of the noise monitoring program was to document existing ambient noise levels at the residences in the general vicinity of the proposed development. Initially five sites were selected as being the closest to the proposed development. See Figure III.L-1. They are:

- #1 – Hickory Hollow Lane
- #2 - Chestnut Drive
- #3 - Twin Brook Court
- #4 - 102 Fields Corner Road (Town of Patterson)
- #5 – Applewood Circle

The following standard field procedures were observed:

- Free field microphone mounted approximately 5 feet (1.5 meters) high and at least 4 feet (1.2 meters) from any reflecting surfaces;
- Wind screen used on microphone;
- Field notes documented:
    - Calibration factors,
    - Selected instrument range,
    - Monitoring period,
    - General weather data and time of day,
    - Unusual occurrence (e.g., aircraft flyovers),
- No monitoring during periods of significant precipitation, snow or ice cover, or wet pavement;
- Calibration of sound level meters every hour;
- Batteries checked before and after each measurement period; and
- No monitoring during winds of 12 mph or more.

Measurements were made using a Larson Davis Model 831. It is an American National Standards Institute (ANSI) Type 1 meter. Noise monitoring was conducted late Tuesday night, February 20, into Wednesday early morning, February 21, 2018. The temperatures were in the 40s, with clear skies, and winds under 4 mph.

The results of the noise monitoring are summarized in Table III.L-5. Depending upon the receptor location, the sources of the ambient background noise varied from trucks on I-84 (0.5 to 1 mile to the east), cars on Fair Street (100' to 1,000' to the NW), flowing water in streams (several residential units are within 100' of streams), are the hum of electrical equipment.

Table III.L-5

Ambient Noise Levels on February 20 and 21, 2018

	Receptor #							
	4	**1**	**5**	**6**	**7**	**2**	**3**	**4**
Leq, dBA	43.7	46.3	47.3	41.0	39.5	42.3	36.8	43.8
Lmax, dBA	47.8	47.5	48.6	46.4	43.6	52.1	40.2	47.1
L1	47.4	47.3	48.3	45.3	42.8	50.3	39.6	46.7
L10	46.2	46.6	47.5	42.5	40.7	46.3	38.0	45.3
L90	40.4	46.1	47.2	39.1	38.3	38.5	35.8	42.0
Time Start	11:38pm	11:55pm	12:03am	12:08am	12:18am	12:27am	12:41am	12:48am
Major Noise Source	I-84 & flowing water	Flowing water	Flowing water	Distant traffic & hum of electrical equipment		Autos on Fair St.	I-84	I-84 & flowing water

Since Receptors #1 and #5 were found to be dominated entirely by the sound of flowing water, sites #6 (on the western side of Applewood Circle) and #7 (on the eastern side of Chestnut Drive) were added in order to document the nearby background noise levels without the sound of flowing of water.

As previously stated, the L_{90} is generally accepted as a good representation of background. Generally, where there was flowing water noise, the background was higher. At Receptors #1 and #5 the background ranged from 46 to 47 dBA.

However, at receptors where there was no sound of running water, the background ranged from 36 to 39 dBA. Also, when the sound of running water is the sole or dominant source the variation in noise levels, as represented by the difference between the L_{max} in the L_{90} was very low. For example, at Sites #1 and #5 the difference was only 1.4 dBA. When traffic noise was the predominant, or sole-source, the difference range was from 4 to 14 dBA.

The background noise levels from I-84 and local roads were in the high 30s dBA. Units that were adjacent to streams had background levels in the low to upper 40s depending upon their proximity to the stream. Since the monitoring was conducted at the front of the units (further away from the stream), actual values at the rear face of the units would likely be experiencing water sounds in the 50s dBA. One would expect that in the summertime with cicadas active, and air conditioners operating that background levels would be even higher.

However, to be conservative, in the future impact analysis those occasions were not considered when the background would be higher than what was monitored.

3. <u>Future Without the Proposed Project</u>

If the project is not constructed the site would remain in its current condition, and no new noise sources would be added to the site. There would be no construction equipment, no truck activity, and no HVAC equipment located on site. However, there would be continued growth of traffic on the roads in the area, due in part to development that will occur on other sites. A comparison of the future (2023) noise levels without the project as compared to the current (2017) noise levels adjacent to the roads in the area is presented in Tables III.L-6a, 6b, and 6c.

Table III.L-6a

Traffic Volume and Noise Passenger Car Equivalent (PCE)

Comparison of No Build 2023 to Existing 2017 (AM Peak Hour)

Location	Existing AM 2017			No-Build AM 2023			%PCE Increase	dBA Increase
	Cars	Trucks	Noise PCEs	Cars	Trucks	Noise PCEs		
US 6 west of Route 312	1,459	88	5,578	1,623	94	6,023	8%	0.3
Route 312 between US 6 & Prospect Hill Road	1,429	101	6,188	1,661	116	7,111	15%	0.6
Route 312 between Prospect Hill Road & Pugsley Road	1,532	61	4,407	1,968	71	5,325	21%	0.8
Route 312 between Pugsley Road & I-84	1,599	69	4,855	2,057	91	6,339	31%	1.2

Table III.L-6b

Traffic Volume and Noise PCE

Comparison of No Build 2023 to Existing 2017 (PM Peak Hour)

Location	Existing PM 2017			No-Build PM 2023			%PCE Increase	dBA Increase
	Cars	Trucks	Noise PCEs	Cars	Trucks	Noise PCEs		
US 6 west of Route 312	1,883	23	2,974	2,225	24	3,350	13%	0.5
Route 312 between US 6 & Prospect Hill Road	1,800	15	2,508	2,244	18	3,110	24%	0.9
Route 312 between Prospect Hill Road & Pugsley Road	1,822	18	2,669	2,494	22	3,511	32%	1.2
Route 312 between Pugsley Road & I-84	1,880	30	3,270	2,591	40	4,488	37%	1.4

Table III.L-6c

Traffic Volume and Noise PCE

Comparison of No Build 2023 to Existing 2017 (Saturday Peak Hour)

Location	Existing Sat 2017			No-Build Sat 2023			%PCE Increase	dBA Increase
	Cars	Trucks	Noise PCEs	Cars	Trucks	Noise PCEs		
US 6 west of Route 312	1,780	21	2,753	2,174	25	3,327	21%	0.8
Route 312 between US 6 & Prospect Hill Road	1,776	21	2,775	2,332	28	3,628	31%	1.2
Route 312 between Prospect Hill Road & Pugsley Road	1,807	29	3,159	2,550	47	4,748	50%	1.8
Route 312 between Pugsley Road & I-84	1,850	28	3,142	2,637	40	4,508	43%	1.6

In all locations and time periods the increase in noise levels is projected to be less than 2 dBA. An increase of that magnitude would be imperceptible to most observers.

4. Anticipated Impacts

a. Construction Equipment

Construction impacts, although temporary, can include noticeable effects from actions that are associated with construction. Construction activities could affect noise due to additional traffic and equipment noise. Determination of the significance of construction impacts and the need for mitigation is generally based on the duration and magnitude of the impacts.

In this particular project, the volume of construction traffic is less than the operational traffic so it is not necessary to analyze the noise from construction traffic (workers and delivery trucks) on the area roadways. This is because if there are no noise impacts from operational traffic (as discussed below), then there will be no noise impacts from construction traffic. Thus, the only construction noise impact that was analyzed is the operation of onsite equipment. Construction times will be compliant with the limitations stated in the Noise Ordinance.

Noise levels at a given location are dependent on the type and quantity of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels caused by construction activities will vary widely, depending on the phase of construction (i.e., superstructure, interior fit-outs, etc.) and the location of the construction activities relative to noise-sensitive receptor locations.

Typical construction equipment and usage factors and associated noise levels are summarized in Table III.L-7.

Table III.L-7

Typical Construction Equipment Noise Levels and Usage Factors

Construction Equipment	Usage Factor, %	Lmax, dBA At 50'	Leq, dBA at 50' based on usage factor
Backhoe	40	80	76
Compressor	40	75	71
Concrete Mixer Truck	40	85	81
Concrete Pump Truck	20	82	75
Dozer	40	85	81
Dump Truck	40	84	80
Excavator	40	85	81
Flat Bed Truck	40	84	80
Front End Loader	40	80	76
Generator	50	82	79
Pickup Truck	40	55	51

Notes:

1. *Usage factor is the % of the time during the day that a particular piece of equipment is operating.*
2. *Source for usage factor and Lmax is* Federal Highway Administration (FHWA) *(2006a).*
3. *Leq was generated by the noise consultant using the RCNM model (FHWA, 2006b).*

The Leqs were calculated using the inputs of the Lmax and usage factor in the Federal Highway Administration (FHWA) construction noise model, RCNM. The relationship between Lmax and Leq is summarized in Table III.L-8.

Table III.L-8

Leq as a Function of Usage Factor

Usage Factor, %	Leq is this amount lower than Lmax, dBA
1	20
2	17
4	14
6	12
12	10
20	7
40	4
50	3

The results show that as the usage factor drops, the difference between the Lmax and the Leq increases.

Worst case construction noise levels were modeled from each building to the five receptors. The worst case modeling assumed a combination of three dozers and excavators operating simultaneously at the area of construction closest to each receptor. The results of this worst-case construction noise modeling are presented in Table III.L-9.

Table III.L-9

Worst Case Construction Noise Levels by Building

Receptor #	Building #1		Building #2		Building #3		Building #4	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
1	54	50	56	52	61	57	61	57
2	51	47	52	48	56	52	58	54
3	51	47	53	49	57	53	69	65
4	51	47	54	50	56	52	65	61
5	55	51	56	52	60	56	60	56

It is noted that the Noise Ordinance limit on noise levels does not apply to construction noise. Rather, the Noise Ordinance regulates construction by placing restrictions on the time of day and day of week in which construction is permitted. The purpose of the table above is to show that even with the worst case construction noise scenario, short term noise levels are not excessive given the distance involved to the receptors.

In summary, construction of Buildings #1 and #2, which are furthest from any of the receptors, will have the least impact. Construction noise from these buildings will be audible at all of the receptors, but the noise levels will not be much different from the background on most occasions. Buildings #3 and #4, being closer to the receptors, will be more audible. However, average noise levels at Receptors #3 and #4 during construction of Building #4 would be expected to be 3 to 6 dBA lower than these worst-case values, since most of the time the equipment would be operating much further away. (As noted above, even with the worst case construction noise scenario, short term noise levels are not excessive given the distance involved to the receptors.) In all other combinations of receptors and buildings the average noise levels would be 0 to 3 dBA less, since there is not as dramatic a change in distances.

These noises will comply with the Noise Ordinance because construction will be confined to the hours and days as limited by the Noise Ordinance, and therefore will not constitute a significant impact. Additionally, the construction noise will be of relatively short duration.

b. <u>Operation – Off-site Traffic</u>

Traffic counts and traffic modeling was conducted at seven intersections as discussed in Section III.B of the DEIS. The am peak hour, pm peak hour, and Saturday peak hour were all evaluated. This was done for existing (2017), and future no-build and build (2023). There were a variety of future build scenarios that affected level of service at intersections. The noise analysis, however, focuses on volumes of traffic on links between intersections. Although technically the fairest comparison is between no-build and build, in order to form the most conservative analysis, existing to build conditions were compared.

The links that were analyzed in this section are:

- US 6 west of Route 312;
- Route 312 between US 6 and Prospect Hill Road;
- Route 312 between Prospect Hill Rd. and Pugsley Road; and
- Route 312 between Pugsley Road and I-84.

The link with high traffic on the east side of I-84 was so short (just to the I-84 entrance ramp) that it was not considered. Also not considered was US 6 east of Route 312, which had very light project traffic.

The method of analysis of these four links was to use noise passenger car equivalents (PCEs). The City of New York, has used the TNM model to calculate noise PCEs for various vehicles. Each automobile or light truck is one noise PCE, while one heavy truck is 47 noise PCEs.

The increase in noise due to increase in traffic is based on the following equation

Increase (dBA) = 10*log (Build PCE/Existing PCE)
Using these values the tables below were developed.

Table III.L-10a

Traffic Volume and Noise PCE

Comparison of Build 2023 to No Build 2023 (AM Peak Hour)

Location	No Build AM 2023			Build AM 2023			%PCE Increase	dBA Increase
	Cars	Trucks	Noise PCEs	Cars	Trucks	Noise PCEs		
US 6 west of Route 312	1,623	94	6,023	1,645	95	6,086	1%	0.04
Route 312 between US 6 & Prospect Hill Road	1,661	116	7,111	1,683	117	7,182	1%	0.04
Route 312 between Prospect Hill Road & Pugsley Road	1,968	71	5,325	1,990	72	5,390	1%	0.04
Route 312 between Pugsley Road & I-84	2,057	91	6,339	2,384	106	7,350	16%	0.6

Table III.L-10b

Traffic Volume and Noise PCE
Comparison of Build 2023 to No Build 2023 (PM Peak Hour)

Location	No Build PM 2023			Build PM 2023			%PCE Increase	dBA Increase
	Cars	Trucks	Noise PCEs	Cars	Trucks	Noise PCEs		
US 6 west of Route 312	2,225	24	3,350	2,244	24	3,380	1%	0.04
Route 312 between US 6 & Prospect Hill Road	2,244	18	3,110	2,259	19	3,131	1%	0.04
Route 312 between Prospect Hill Road & Pugsley Road	2,494	22	3,511	2,510	22	3,534	1%	0.04
Route 312 between Pugsley Road & I-84	2,591	40	4,488	2,932	47	5,147	15%	0.6

Table III.L-10c

Traffic Volume and Noise PCE

Comparison of Build 2023 to No Build 2023 (Saturday Peak Hour)

Location	No Build Sat 2023			Build Sat 2023			%PCE Increase	dBA Increase
	Cars	Trucks	Noise PCEs	Cars	Trucks	Noise PCEs		
US 6 west of Route 312	2,174	25	3,327	2,174	25	3,327	0%	0.0
Route 312 between US 6 & Prospect Hill Road	2,332	28	3,638	2,332	28	3,638	0%	0.0
Route 312 between Prospect Hill Road & Pugsley Road	2,550	47	4,748	2,550	47	4,748	0%	0.0
Route 312 between Pugsley Road & I-84	2,637	40	4,508	2,668	40	4,554	1%	0.04

Since all noise increases are less than 1 dBA, it is concluded that there would be no significant adverse noise impacts along the roadway corridors.

c. Operation – On-site Trucks

Using Institute of Transportation Engineers (ITE) trip generation rates for this type of facility it is estimated that there would be 510 truck trips per day. Using traffic counts from JMC and the FHWA for comparable facilities, 24-hour truck distribution figures were calculated using the following hourly truck trip distribution.

Time Period	Hours	Trucks/Hr.	Truck Total
7-10am	3	12.7	38
10am to 3pm	5	50	250
3 to 6pm	3	11.3	34
6 to 8pm	2	28	56
8pm to 7am	11	12	132
TOTAL	**24**	**21.3**	**510**

The 12 trips per hour at night are the same as the average of the hourly trips during the am and pm peak hour, and therefore represent a worst-case scenario. That would translate to 3 trips per hour per building.

All the buildings have been oriented such that the loading docks face the interior of the site. The assumption was made that each truck trip at night would expose the truck (the remaining activity would be completely shielded by the building) for approximately two minutes. A usage factor of 4% (2.4 minutes) was used for the analysis. Regarding trucks operating at low speeds on an asphalt surface, other developed warehouse sites have historically been monitored by the noise consultant and show an Lmax that ranges from 69 to 75 dBA. To be conservative, the Lmax of 75 dBA has been utilized for this analysis. Because of the 4% usage factor each truck with a Lmax of 75 would have a Leq contribution of 61 dBA (as per Table III.L-8). Utilizing that 61dBA per truck trip, the table below was developed.

Table III.L-11

Cumulative Noise Levels (Leq, dBA) with 3 or 6 Trucks/ Hour per Building

Recep -tor #	Building #1 – Leq, dBA		Building #2 Leq, dBA		Building #3 Leq, dBA		Building #4 Leq, dBA		TOTAL Leq, dBA	
	3 trucks / hour	6 trucks / hour	3 trucks / hour	6 trucks / hour	3 trucks / hour	6 trucks / hour	3 trucks / hour	6 trucks / hour	3 trucks / hour	6 trucks / hour
1	30	33	32	35	37	40	37	40	41	44
2	27	30	28	31	32	35	34	37	36	39
3	27	30	29	32	33	36	45	48	45	48
4	27	30	30	33	32	35	41	44	42	45
5	31	34	32	35	36	39	36	39	40	43

These data show that the operation of the trucks complies with the Noise Ordinance.

d. Operation – On-site HVAC

Since there are no specified mechanical equipment for the four buildings, the noise consultant used actual monitoring data from other similar facilities. In addition, it was assumed that all the mechanical equipment would be placed on the roof, as a worst case assumption. Since it is not known whether any of the buildings would be used for cold storage or as a standard warehouse, both scenarios were modeled. Cold storage has greater HVAC requirements, since large areas of the building would be cooled for refrigeration, and/or freezer space.

The noise levels associated with the mechanical equipment on top of the buildings are presented in Table III.L-12.

Table III.L-12

Projected Noise Levels at Each Receptor by Both Individual Buildings and All Four Buildings in Total (dBA)

Receptor #	Building #1 – Leq, dBA		Building #2 Leq, dBA		Building #3 Leq, dBA		Building #4 Leq, dBA		TOTAL Leq, dBA	
	Cold Storage	Warehouse	Cold Storage	Warehouse	Cold Storage	Warehouse	Cold Storage	Warehouse	Cold Storage	Warehouse
1	44	41	43	40	50	47	50	47	54	49
2	44	41	43	40	50	47	50	47	54	49
3	40	37	40	37	47	43	56	51	56	52
4	41	38	42	38	45	42	51	48	53	49
5	45	41	43	40	50	46	49	45	53	48

Notes:
1. *The Total columns represent either all Cold Storage or all Warehouse.*
2. *Because the warehouse rooftops will be far above the receptors, and the mechanical equipment placed toward the center of the building, there will be no direct line of sight from the equipment to the receptors. Thus, a 5 dBA barrier reduction was included.*

Cold storage in Building #4 was identified as a potential noise impact at Receptor #3,

Table III.L-13 summarizes the total results if Building #4 is a standard warehouse and Buildings #1, #2, and #3 are cold storage.

Table III.L-13

Projected Leqs With Buildings #1, #2, and #3 Cold Storage

Receptor #	Total Leq, dBA Buildings #1, #2, & #3 (Cold Storage) & Building #4 (Warehouse)
1	50
2	50
3	52
4	50
5	50

Under this scenario,, with Building #4 being a standard Warehouse, Buildings #1, #2 and #3 could be developed as cold storage and the site would remain compliant with the Noise Ordinance.

e. Summary

Noise from construction of Buildings #1 and #2 will be audible at all of the receptors, but the noise levels will not be much different from the background on most occasions. However, Buildings #3 and especially #4, being far closer to the receptors will be more audible. However, these noises will be confined to the hours and days as limited by the Noise Ordinance, will be of relatively short duration, and will not constitute a significant impact and will conform to the Noise Ordinance.

A comparison of noise PCEs from existing (2017) to future build (2023) along the four roadway corridors to experience increased traffic. Since all noise increases are 2 dBA, or less, it is clear that there are no noise impacts along the roadway corridors. Had the comparison been made to no build (as is typically done), it is likely that the increases would have been 1 dBA or less.

With respect to night-time operations on site, any noise from trucking operations and rooftop HVAC equipment are additive, and the sum of the two noise sources will be below 55 dBA Leq(1 hr), in conformance with the Noise Ordinance.

It was conservatively estimated 12 truck trips per hour during the sensitive nighttime hours when the noise limit is a Leq (1 hr) of 55 dBA. Modeling of 3 trips/hour (12 trips/hour total) at all buildings resulted in noise levels 10 dBA below the limit required by the Noise Ordinance. And, an ultra worst case, 6 trips/hour at each building (24 trips/hour total) resulted in noise levels 7 dBA below the limit required by the Noise Ordinance. These levels are below the limit of the Noise Ordinance and thus there will be no significant noise impacts from the rooftop mechanical equipment.

Noise levels were projected from rooftop mechanical equipment under two scenarios: (1) cold storage; and (2) standard warehouse. The analysis demonstrated that Buildings #1, #2, and #3 could be developed as either warehouse or cold storage. Building #4, because of its proximity to Receptors #3 and #4, would require additional mitigation, as discussed below, in order to be developed as cold storage.

5. Mitigation Measures

a. Construction

All gasoline and diesel powered construction vehicles and equipment will be outfitted with properly maintained mufflers.

The days and hours of construction will comply with the limitations specified in the Noise Ordinance.

b. Operation

All rooftop mechanical equipment will be located in conformance with the Town Code. The Code states that within the OB-3 zone, rooftop mechanical equipment is permitted provided it does not exceed 10 percent of the roof area and is appropriately set back from the edge of the roof at least one foot for each one foot that the structure exceeds the maximum height. As a result of this placement, noise will be muffled by the presence of the intervening roof from the equipment to the receptors.

If Building #4 were to be developed as a cold storage facility a noise study would be necessary to design potential additional mitigation measures such as sound walls for the rooftop mechanical equipment.

The results of the noise study show that the projected activities at the site (and associated mitigation measures discussed above) will be in conformance with the Town's Noise Ordinance.

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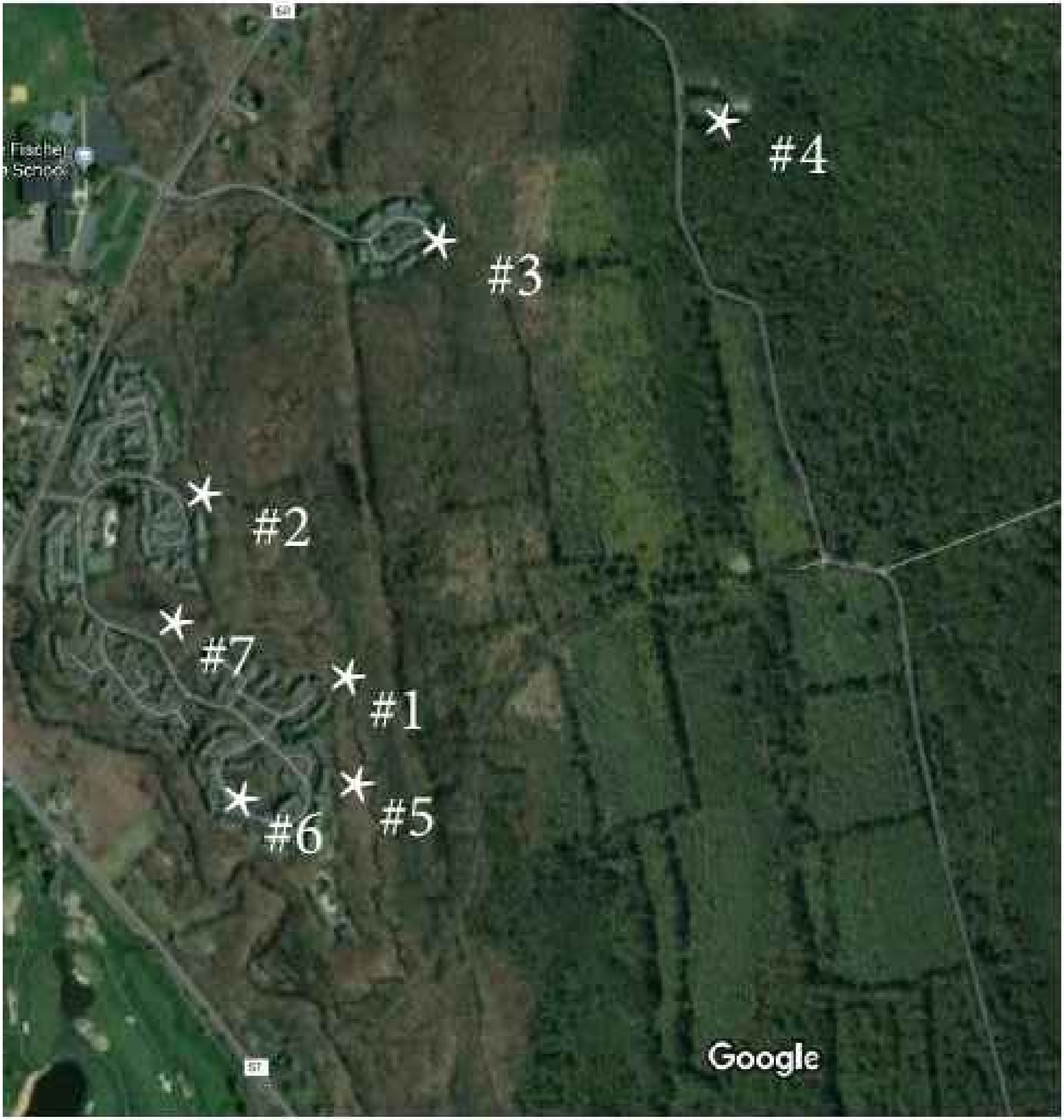

NORTHEAST INTERSTATE LOGISTICS CENTER
NY 312 & PUGSLEY ROAD TOWN OF SOUTHEAST, NEW YORK

NOISE MONITORING LOCATIONS

DATE: 06/2018 JMC PROJECT: 14012

FIGURE: III. L - 1 SCALE: N.T.S.

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