

September 6, 2022

Mr. Leo Leighton, *Development Associate*
US MA Development, LLC
8801 River Crossing Blvd, Suite 300
Indianapolis, IN 46240

SUBJECT: Sound Analysis
Proposed Lackey Dam Logistics Center
Sutton, Massachusetts

Dear Mr. Leighton,

We have completed a study of sound potentially produced by equipment and activities at the proposed Lackey Dam Logistics Center in Sutton, Massachusetts, a proposed warehouse with distribution facility located on and accessed from Lackey Dam Road. Figure 1 is a Google Earth image showing the site location and distances from nearest residences.

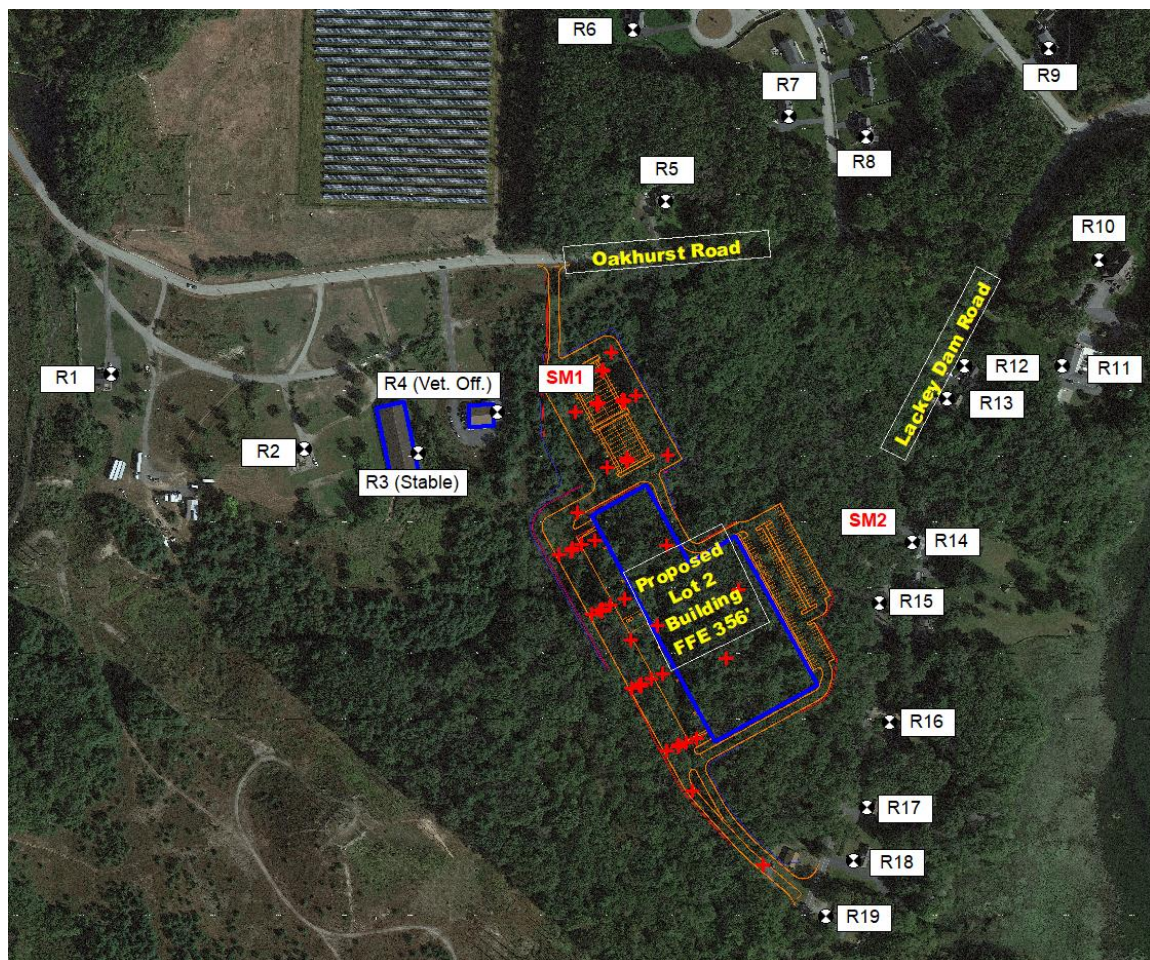


Figure 1. Aerial photo showing proposed site and nearest receptors
Proposed Lackey Dam Logistics Center, Sutton, MA

Project Description

The nearest residences to facility activity are across Lackey Dam Road from the site entry. The nearest residence on Oakhurst Road is approximately 400 feet north of the north trailer parking area. Sources of stationary sound include rooftop building ventilation equipment and a ground mounted emergency generator. Sources of mobile equipment sound would be trucks entering and leaving the property, tractors disconnecting and moving trailers, tractor back-up alarms, facility conveyors and material handling equipment operating within the building, and forklifts loading and unloading pallets within trailers.

Review of Regulations

Commonwealth of Massachusetts

The Commonwealth of Massachusetts regulation controlling noise (310 CMR 7.10: Noise) is as follows:

(1) No person owning, leasing or controlling a source of sound shall willfully, negligently, or through failure to provide necessary equipment, service, or maintenance or to take necessary precautions cause, suffer, allow, or permit unnecessary emissions from said source of sound that may cause noise.

(2) 310 CMR 7.10(1) shall pertain to, but shall not be limited to, prolonged unattended sounding of burglar alarms, construction and demolition equipment which characteristically emit sound but which may be fitted and accommodated with equipment such as enclosures to suppress sound or may be operated in a manner so as to suppress sound, suppressible and preventable industrial and commercial sources of sound, and other man-made sounds that cause noise.

(3) 310 CMR 7.10(1) shall not apply to sounds emitted during and associated with:

1. parades, public gatherings, or sporting events, for which permits have been issued provided that said parades, public gatherings, or sporting events in one city or town do not cause noise in another city or town;
2. emergency police, fire, and ambulance vehicles;
3. police, fire, and civil and national defense activities;
4. Domestic equipment such as lawn mowers and power saws between the hours of 7:00 A.M. and 9:00 P.M.

(4) 310 CMR 7.10(1) is subject to the enforcement provisions specified in 310 CMR 7.52.

The regulation prohibits the use of unnecessarily noise equipment and activities. To the extent that the equipment and activities are necessary, and are silenced as recommended by manufacturers, sound levels produced would conform to 310 CMR 7.10 U. This project will include site barriers to screen mobile equipment sound from nearby residences to minimize any potential noise annoyance. Barriers are not required to comply with MassDEP Noise Policy limits. The barriers are only required to achieve recommended design goals for mobile equipment and activity sound to avoid potentially producing noise annoyance in nearby residential areas.

Massachusetts Department of Environmental Protection

The Commonwealth of Massachusetts regulation 310 CMR 7.10 U prohibits producing a condition of noise that constitutes a nuisance, but does not provide specific, measurable limits. The Massachusetts Department of Environmental Protection (MassDEP), having authority and responsibility for defining when a condition of “noise” occurs, on February 1, 1990, promulgated Noise Policy 90-001 which is as follows:

A source of sound will be considered to be violating the Department’s noise regulation (310 CMR 7.10) if the source:

- 1. Increases the broadband sound level by more than 10 dB(A) above the ambient, or*
- 2. Produces a “pure tone” condition – when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more.*

These criteria are measured both at the property line and at the nearest inhabited residence. Ambient is defined as the background A-weighted sound level that is exceeded 90% of the time measured during equipment operating hours. The ambient may also be established by other means with the consent of the Department.

The MassDEP Noise Policy applies to stationary equipment and not to sound produced by vehicles. However, the more general considerations of 310 CMR 7.10 U do apply. 310 CMR 7.10 U(1) requires precautions to avoid producing unnecessary noise. Among the precautions are barriers to be constructed along portions of the east, north, and west sides of the site to screen nearby residences from mobile equipment sound. Further detail concerning Noise Policy interpretation is provided in the MassDEP document of Appendix A to this report.

Town of Sutton, MA

For project review, the Town of Sutton Zoning Bylaw (October 16, 2017) §6 requires the Planning Board to review site plans with respect to several features including the potential to cause a nuisance. Projects must be reviewed for their “*Protection of abutting properties and Town amenities from any undue disturbance caused by excessive or unreasonable noise, smoke, vapors, fumes, dust, odors, glare stormwater runoff, etc.*”

Specific, measurable limits on sound produced by the proposed Lackey Dam Logistics Center, that can be used for engineering evaluation and acoustical design, are not provided. The MassDEP Noise Policy, applicable to sound produced by stationary sources, has been used for establishing stationary equipment sound level limits to protect abutters as required by the Sutton Zoning Bylaw. Design goals have also been developed to evaluate mobile equipment and activity sound based on existing ambient sound levels as well.

Town of Uxbridge, MA

The Town of Uxbridge Chapter 400 Zoning Bylaw (October 22, 2019) Article VI §400-20(E)(2) requires an environmental impact assessment that “...shall include a substantiated assessment of the existing and

expected post-development environmental conditions, including air and water quality, pollution of ground, water, and air, noise levels..."

Article VI §400-20(F)(3a) states that the *"...proposed development shall not cause significant environmental harm or hazard through emissions of noise..."*

Similarly, as specific, measurable limits on sound produced by the proposed Lackey Dam Logistics Center are not provided in the Uxbridge Zoning Bylaw, the MassDEP Noise Policy has been used to establish limits on stationary source sound, and design goals have been developed to evaluate mobile equipment and activity sound.

Monitoring of Existing Ambient Sound

To establish a background level for determining MassDEP limits, existing ambient sound levels were measured over a seven-day period in September 2021 at two representative locations identified as SM1 and SM2 in Figure 1.

Sound level monitoring at both locations began on September 14 and concluded on September 20, 2021. Road traffic and other activity during this interval may have been atypical due to the COVID pandemic. Sound monitoring at another location in Massachusetts before and during COVID exhibited rush hour sound levels beginning later and ending earlier in the evening. However, sound levels during quiet, early morning hours and during noisier mid-day hours were about the same as before COVID. Hence, conditions during COVID are believed to not have altered MassDEP noise policy limits as these are based on lowest existing levels during quietest nighttime hours.

The dominant sources of sound in the area were traffic on Route 146 and other area roads, and wind through trees. Insect sound, also a dominant source, was removed from measured data along the lines recommended by ANSI/ASA S12.100-2014¹. Sound measured at SM1 are typical of those at residences on and accessed from Oakhurst Road. Sound levels measured at SM2 are typical of those occurring at residences along Lackey Dam Road.

The meters used to monitor sound levels were calibrated before use and installed with windscreens. These instruments and their use conform to IEC 61672 for Class 1 precision sound measurement instrumentation. Each meter records sound level data onto a flash card that, after the completion of measurements, is removed from the unit and downloaded into a PC.

Monitors were programmed to measure several hourly fast-meter response A-weighted sound level descriptors including the 90th percentile sound level ($L_{AF90,1-hr}$), equivalent sound level ($L_{Aeq,1-hr}$), and first percentile ($L_{AF01,1-hr}$) sound level.

- The 90th percentile sound level (L_{AF90}) is the background or residual sound level in an area and is the lowest level of sound typically occurring. It is the A-weighted sound level exceeded 90% of each interval monitored and is the descriptor used in the MassDEP Noise Policy for establishing the background sound level in an area.

¹ American National Standard ANSI S12.100-2014 Methods to Define and Measure the Residual Sound in Protected Natural and Quiet Residential Areas

- The equivalent sound level (L_{Aeq}) is the energy average sound level for each hour monitored.
- The first percentile sound level (L_{AF01}) is the sound level exceeded one percent of each interval and is representative of the highest sound levels reached in each interval.

Sound monitoring levels measured in the vicinity of the proposed project site are shown in Figures 2a and 2b. As with most acoustic environments, sound levels are generally higher during the day than during the night. Weather data have been shown alongside sound monitoring data to identify any occasions when weather conditions might have influenced sound levels. These data are as obtained from the National Weather Service's (NWS) Automated Surface Observing Systems (ASOS) program for station ORH² (Worcester Airport).

² <https://mesonet.agron.iastate.edu/request/download.phtml>

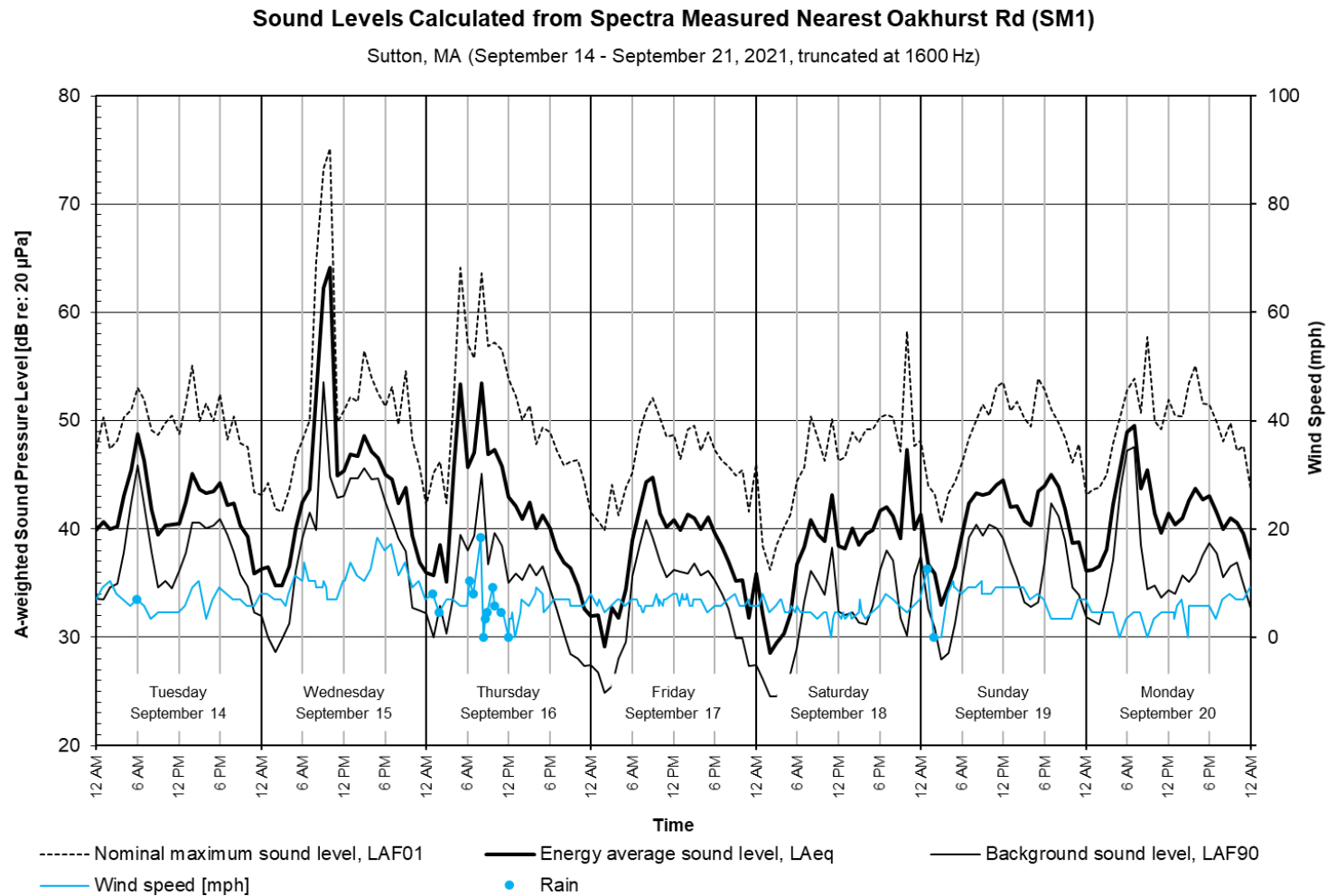


Figure 2a. Sound monitoring data measured at SM1 (insect sound removed)
Proposed Lackey Dam Logistics Center, Sutton, MA

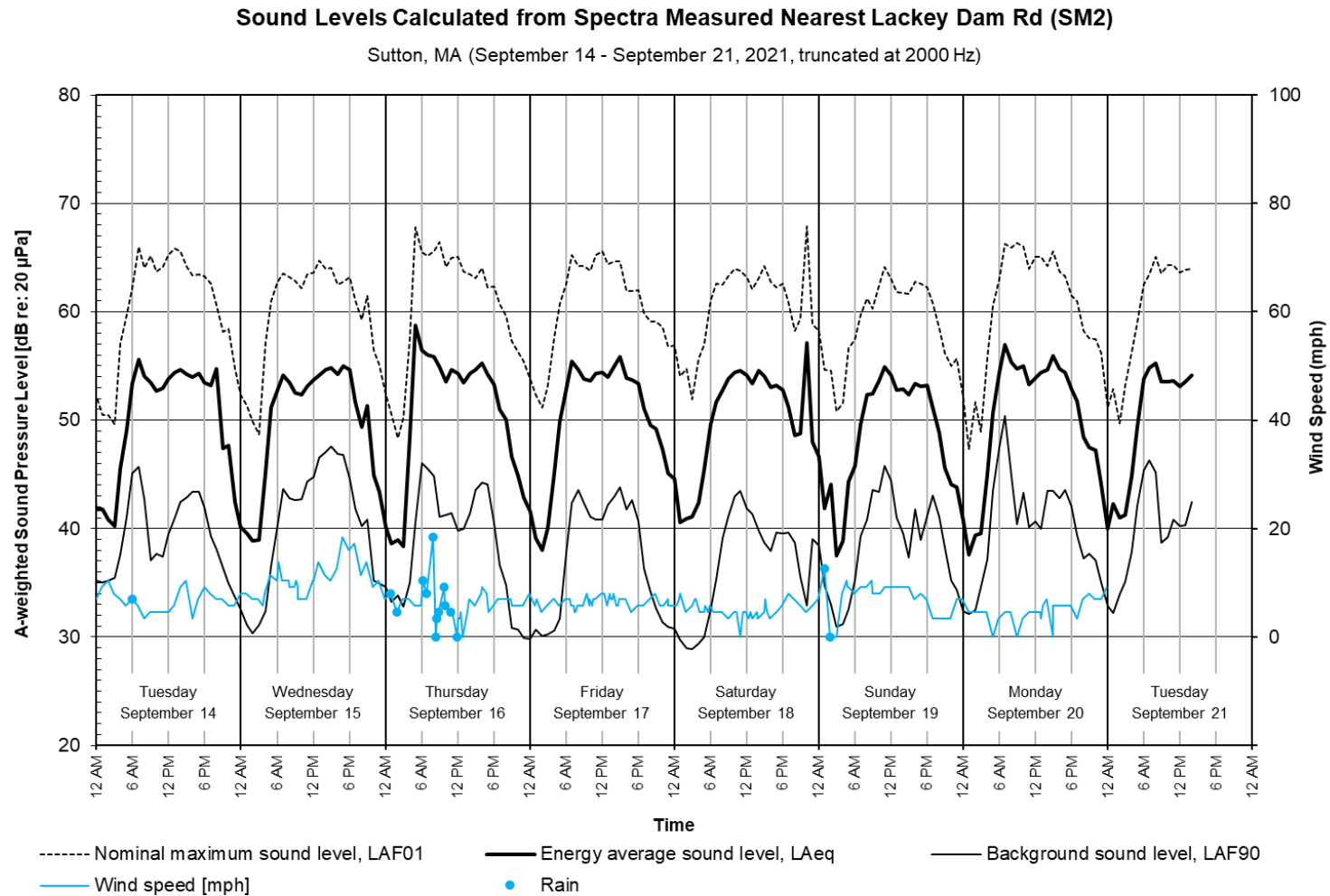


Figure 2b. Sound monitoring data measured at SM2 (insect sound removed)
Proposed Lackey Dam Logistics Center, Sutton, MA

MassDEP Limits and Recommended Design Goals

MassDEP Noise Policy Limits for Stationary Equipment Sound

Table 1 lists the lowest hourly 90th percentile A-weighted background sound levels measured at both monitoring locations.

Measurement Location	Background Sound Levels (Lowest Measured Hourly 90 th Percentile A-weighted Sound Level) ($L_{AF90,1-hr}$)		MDEP Limits for Stationary Equipment (dBA)	
	Day	Night	Day	Night
SM1 (R1-R9)	28	25	38	35
SM2 (R10-R19)	31	29	41	39

Day 7:00 AM to 10:00 PM

Night 10:00 PM to 7:00 AM

**Table 1. Lowest measured day and night A-weighted background sound levels ($L_{AF90,1-hr}$) and MassDEP Noise Policy limits on stationary equipment sound
Proposed Lackey Dam Logistics Center, Sutton, MA**

Table 1 reports the MassDEP Noise Policy limits that apply to all stationary equipment operating during day and night periods. Most project stationary equipment is for ventilation, potentially operating day and night. The ground-mounted emergency generator proposed for the west side of the building will be operated for maintenance purposes for up to 1 hour per week during weekday business hours, and continuously during areawide power outages.

Design Goals for Mobile Equipment Sound

Mobile equipment sound is not subject to the MassDEP Noise Policy limits, nonetheless mobile equipment sound must not constitute an uncontrolled noise nuisance as prohibited by 310 CMR 7.10 U. However, to minimize potential annoyance produced by the sound of mobile equipment operating on-site, design goals or objectives for mobile equipment sound levels at nearby residences have been developed and are reported in Table 2 separately for day and night and by type of sound. Generally, the goals breakdown into three categories, one for each type of sound:

- Impact and short event sounds including trailer connect/disconnects, and loading impacts, etc.
- Longer-term and continuous sounds including those produced by vehicles traveling on-site, engine high idling, and trucks accelerating. Also included would be sounding of broadband back-up alarms.
- Tonal sounds are most typically produced by tonal back-up alarms.

Measurement Location (Applicable Receptors)	Average of the Lowest 90 th Percentile Sound Levels Measured Each Day (L _{AF90,1-hr})		Recommended Design Goals for Mobile Equipment Impact/Continuous/Tonal (dBA)	
	Day	Night	Day	Night
SM1 (R1-R8)	33	29	48/43/38	44/39/34
SM2 (R9-R18)	36	31	51/46/41	46/41/36

Day 7:00 AM to 10:00 PM

Night 10:00 PM to 7:00 AM

**Table 2. Recommended voluntary design goals for mobile equipment sound
Proposed Lackey Dam Logistics Center, Sutton, MA**

In Table 2, receptors are divided into two groups, R1-R9 in the vicinity of Oakhurst Road is represented by measured sound levels at SM1, and R10-R19 along Lackey Dam Road is represented by measured sound levels at SM2.

Computer Modeling

Sound Power Levels

Modeling of facility sound was completed using Cadna/A (Datakustik GmbH, Version 2020, 32-bit). Cadna/A is a computer program that implements the sound propagation loss algorithms of ISO 9613-1 and ISO 9613-2 to estimate sound levels at community receptor locations. The Cadna model uses source sound power levels and computed sound-propagation losses associated with distance, shielding provided by intervening structures and topography, and absorption of sound by the atmosphere and porous ground surfaces in estimating sound levels at receptor locations.

The Cadna model requires sound power levels for all sources modeled. Sound power level quantifies the amount of sound energy produced by a source and is expressed in decibels referenced to 1 picowatt (pW or 10^{-12} watts).

Presently, the stationary sources considered for the design of this facility are as follows:

- Two Greenheck DGX-12H35-GH50-2400 gas-fired make-up air (MAU) rooftop units
- Two Greenheck RBE-3H42 rooftop exhaust fans
- One Caterpillar 250 kW emergency generator in a Caterpillar Level 2 enclosure. It is expected that this unit will be exercised for up to one hour each week during daytime hours. Therefore daytime-only limits will apply as discussed below.

Stationary equipment is comprised of two rooftop make-up air units, two rooftop exhaust fans, one emergency generator, and interior conveyor sound transmitted through four open bay doors. Sound power levels for rooftop units were obtained from the manufacturer for a similar project and for conditions where units operate at 100% of full capacity. Conveyor sound emissions through an open bay door were measured at a typical warehouse facility having a conveyor system and forklifts operating

indoors. Emergency generator sound power levels are for a Caterpillar 250 kW generator in a Caterpillar Level 2 enclosure.

Mobile equipment included in modeling are back-up alarms, trailer connect/disconnect impact sound, forklifts entering and existing docked trailers, trucks operating at high idle, and trucks traveling on-site. Sound power levels for mobile sources have been determined through sound measurements conducted at a facility similar to the Blackstone Logistics Center. The mobile equipment sound events discussed in this report have been selected for analysis as they are among the loudest sources expected. The stationary and mobile sound power level spectra for sources evaluated in computer modeling are listed in Table 3.

Source	31.5	63	125	250	500	1000	2000	4000	8000	A
Stationary Sources Subject to MassDEP Noise Policy Limits										
Conveyor	93	91	90	87	88	88	86	82	78	93
Emergency Generator*	103	105	107	101	92	86	86	83	80	97
Exhaust Fan	96	98	95	88	83	82	82	81	83	90
MAU	100	100	91	90	88	85	84	80	75	91
Mobile Sources Subject to Recommended Design Goals										
Backup Alarm Tonal	54	75	88	95	97	104	102	97	89	107
Forklift in Trailer	105	108	109	102	97	94	88	83	72	100
Trailer Disconnect	105	110	113	115	111	112	106	99	93	115
Truck High Idle	100	104	102	103	103	99	97	92	85	105
Truck Pass-by	107	104	110	109	107	105	101	98	94	110

* Daytime use only for maintenance purposes.

**Table 3. Sound power levels (dB re: 1pW) for stationary and mobile equipment sound sources used in modeling
Proposed Lackey Dam Logistics Center, Sutton, MA**

Figure 3 presents reference A-weighted sound pressure levels at 50 feet corresponding to the source sound power spectra in Table 3. Sound sources break down into three types—longer-term, tonal, and impact. Truck acceleration and pass-by sound generally fall into the longer-term sound category. Back-up alarms are the primary source of tonal sound. Trailer loading and tractor connects/disconnects often emit impact sound to the environment.

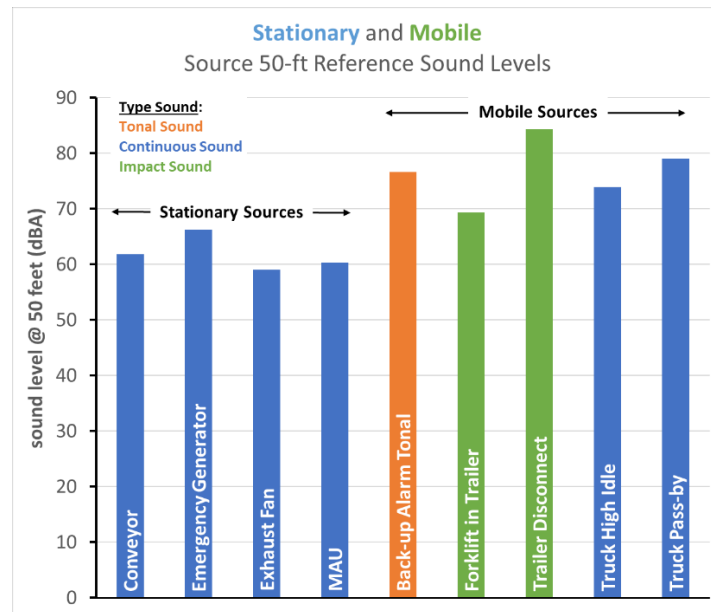


Figure 3. Mobile and stationary source reference sound pressure levels at 50 feet
Proposed Lackey Dam Logistics Center, Sutton, MA

Lackey Dam Logistics Center Source and Community Receptor Locations

The computer modeling of receptor sound levels involves locating sources, receptors, and attenuating elements such as buildings and barriers. For this analysis, the source locations within the proposed Lackey Dam Logistics Center selected for analysis are those closest to residential receptors. These were selected to develop “worst-case” understanding of the project’s possible acoustic impact. Nearest representative receptor study locations, identified as R1 through R19, are shown in Figure 4. Stationary and mobile source locations are shown in Figure 5. Mobile source group locations are identified as SL1 to SL12. A mobile source group (SL) is the location of one or more specific sources. For example, a source group may have a trailer disconnect, back-up alarm, and tractor acceleration, all occurring at about the same physical location on-site. Stationary source locations are identified as: emergency generator, make-up air units (MAU-1 and MAU-2), and exhaust fans (EF-1 and EF-2).

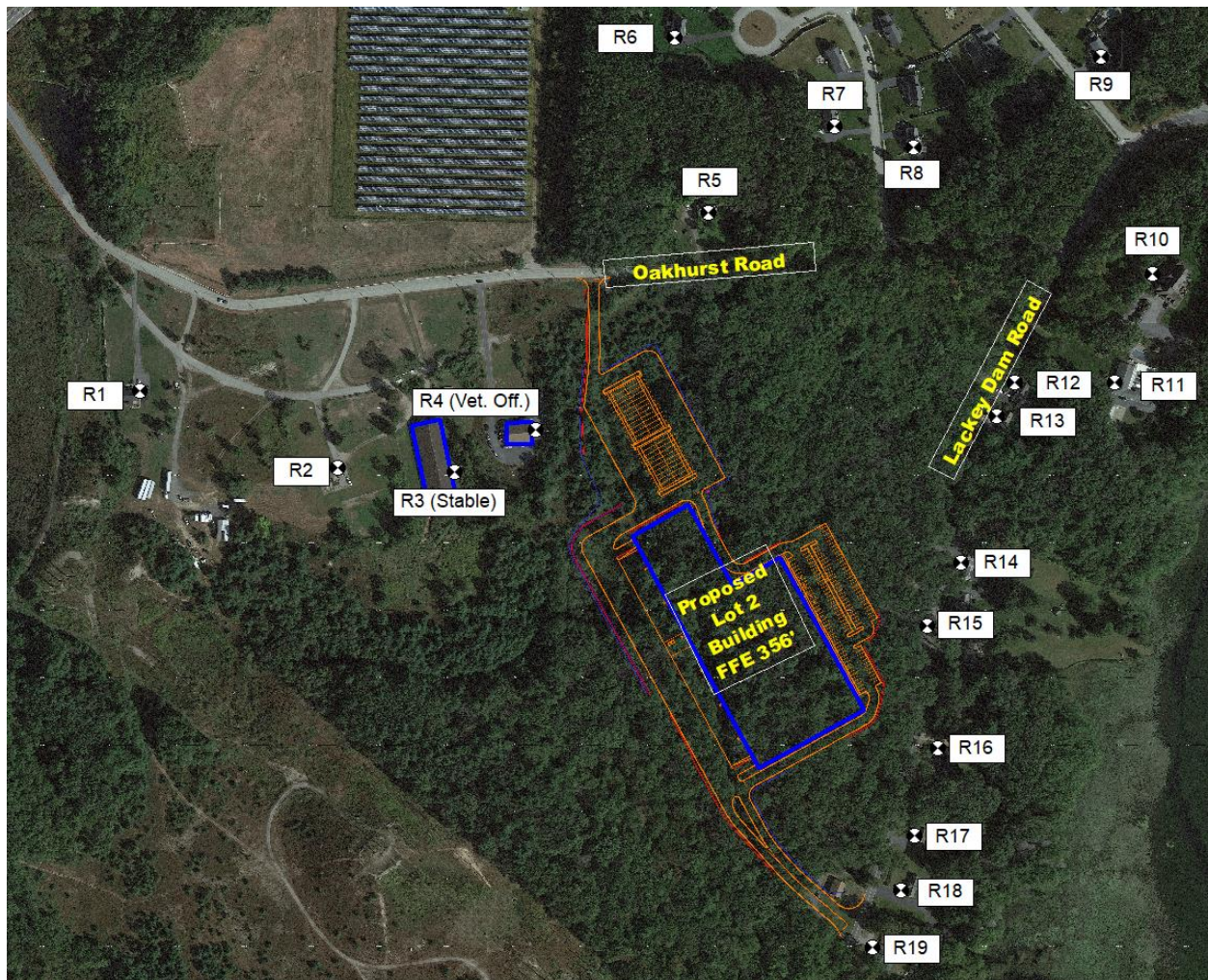


Figure 4. Receptor study locations R1-R19 used in computer modeling
Proposed Lackey Dam Logistics Center, Sutton, MA



Figure 5. Stationary (MAU-1 & -2, EX-1 & -2, Em. Gen.) and mobile (SL1-SL12) sound source locations used in computer modeling
Proposed Lackey Dam Logistics Center, Sutton, MA

Additional Computer Model Parameters

Stationary sources at Lackey Dam Logistics Center are modeled at a height of 3 feet above the roof. The primary mobile sources of sound are trucks and trailers moving on-site, trailers connecting and disconnecting, and trailers being loaded. The elevation above grade of source sound-emitting components varies; a typical truck source elevation of 8 feet has been used in this study.

As sound propagates through the environment, it encounters boundaries which reflect or absorb some fraction of incident sound. In modeling, it has been assumed that buildings, sound barrier walls, and the facility pavement are all acoustically reflective, except where specifically noted. Two orders of reflection have been included in computer modeling to account for sound scattered by sound reflective surfaces.

Based on aerial images, and in accordance with the ISO 9613-2 standard, the site has been modeled as having a Ground Attenuation Coefficient (G) of 0 (sound reflective surface) over paved areas, and ground conditions outside of the site have been modeled as having a G of 1.0 (sound absorptive surface). Area topography was obtained from the USGS National Elevation Dataset (NED), 1/3 arc-second resolution, and facility grading plans.

Residential receptors nearest to the project site include one- and two-story structures. A receptor elevation of 7 feet above grade has been used in estimating sound levels transmitted to single-story receptors, and an elevation of 17 feet has been used for two-story receptors.

Source Sound Levels—No Controls

Table 4 presents estimated source sound levels at study locations R1-R19. Included in the table are MassDEP limits on stationary source sound and Cavanaugh Tocci recommended voluntary design goals that apply to mobile source sound. Levels that exceed the associated limit or design goal are highlighted in **red**. From Table 4, sound levels emitted by stationary equipment comply with the MassDEP noise policy limits without site sound controls. Many of the mobile source sound levels will exceed the recommended design goals at receptor locations. To reduce incidents when mobile source sound exceeds recommended design goals, barriers to screen sound have been investigated.

Source	MassDEP Limit/ Residential. Design Goal ¹	R1	R2	R3**	R4**	R5	R6	R7	R8	R9
Stationary Sources Subject to MassDEP Noise Policy Limits										
Conveyor	35	18	25	33	29	17	13	10	8	4
Emergency Generator*	38	25	29	36	34	18	16	14	13	11
Exhaust Fan	35	23	27	30	26	24	19	24	24	21
MAU	35	22	27	31	31	29	23	28	27	24
Mobile Sources Subject to Recommended Design Goals										
Backup Alarm Tonal	35	33	39	45	49	54	36	48	47	42
Forklift in Trailer	45	29	34	41	36	36	29	33	28	22
Trailer Disconnect	45	43	48	54	58	61	45	55	54	49
Truck High Idle	40	33	38	44	48	50	34	44	43	38
Truck Pass-by	40	38	43	50	53	56	40	49	48	44

Source	MassDEP Limit/ Design Goal ¹	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19
Stationary Sources Subject to MassDEP Noise Policy Limits											
Conveyor	39	4	3	5	6	8	11	16	19	24	34
Emergency Generator*	41	11	12	13	14	16	17	18	20	23	31
Exhaust Fan	39	24	27	27	28	32	34	29	23	23	23
MAU	39	26	28	29	29	31	31	27	28	28	28
Mobile Sources Subject to Recommended Design Goals											
Backup Alarm Tonal	40	43	44	47	46	46	50	39	47	47	46
Forklift in Trailer	50	19	17	19	19	19	22	30	39	41	41
Trailer Disconnect	50	50	52	53	53	52	53	48	58	56	57
Truck High Idle	45	40	41	43	43	42	43	37	48	46	47
Truck Pass-by	45	45	46	48	48	47	51	52	58	61	63

Red entries exceed our recommended design goal.

* Daytime use only for maintenance purposes.

**Not residential

¹ The MassDEP noise policy limits in Table 1 on sound are applicable to stationary sources only. Cavanaugh Tocci recommended design goals for mobile equipment sound to minimize community annoyance are provided in Table 2 and discussed in the accompany report section.

Table 4. Estimated maximum sound levels (dBA) at study locations R1-R19: No sound controls
Proposed Lackey Dam Logistics Center, Sutton, MA

Noise controls

Figure 6 shows an arrangement of six barrier sections that reduce mobile sound transmitted to nearby receptors. Barrier sections have a total length of 1,992 feet.

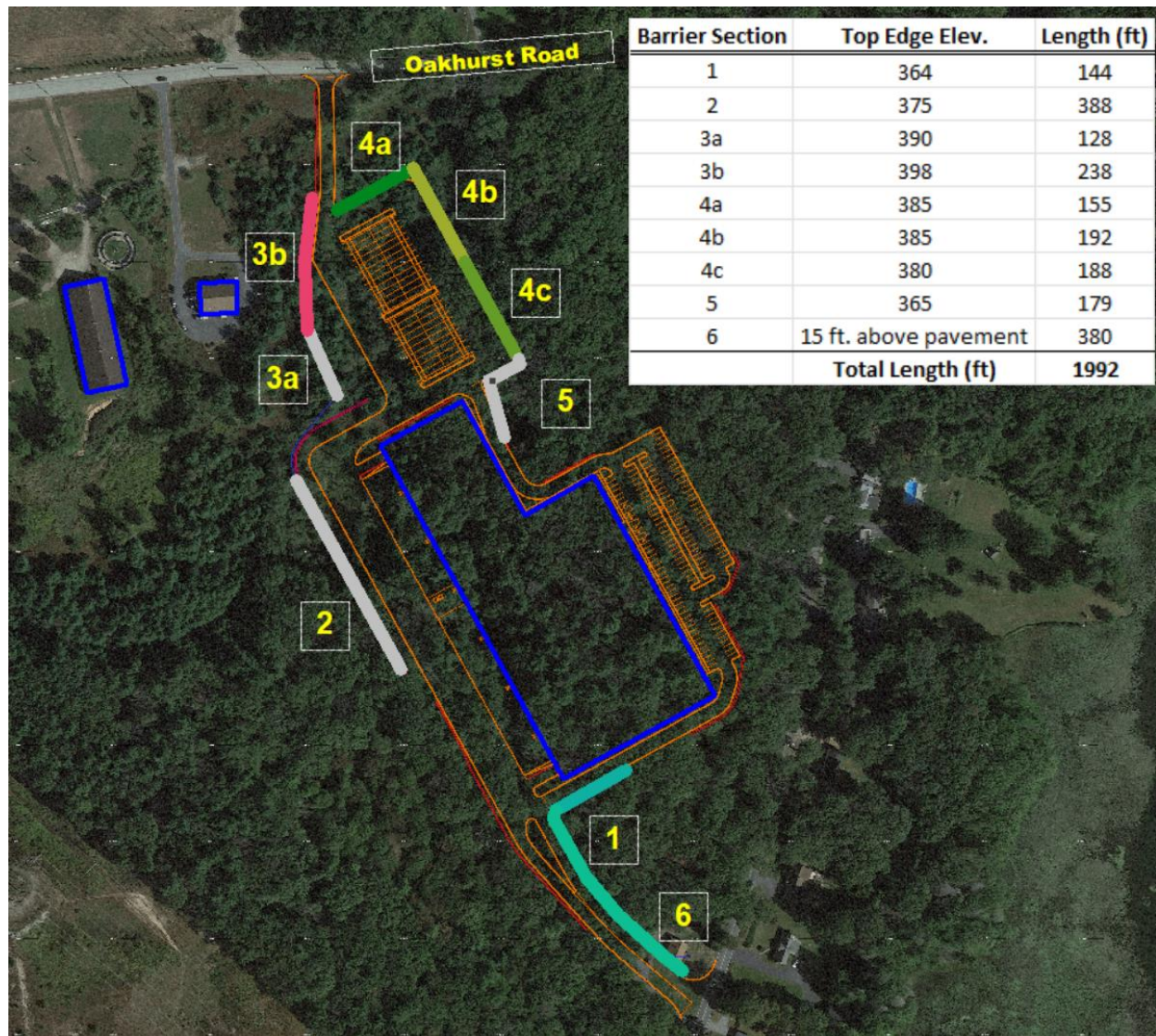


Figure 6. Sound barrier design concept Length 1,992 feet
Proposed Lackey Dam Logistics Center, Sutton, MA

Table 5 presents estimated source sound levels at study locations R1-R19 with the barriers of Figure 6 installed at the locations and having the top edge elevations shown in the figure insert table. As before, levels that exceed the associated limit or design goal are highlighted in **red**. Sound levels emitted by stationary equipment remain in compliance with MassDEP noise policy limits. Mobile source sound levels are reduced at nearly all locations, though some remain above the recommended design goals.

There is a 15-foot gap between the southern edge of barrier section 4b and norther edge of section 5, to provide access to the retention basin behind barrier section 4b and 4c.

To provide an additional benefit to reduce sound produced by vehicles exiting onto and entering the facility from Lackey Dam Road, the barrier section 6 side facing vehicles passing on the driveway should be sound absorptive with a minimum NRC rating of 0.85.

Source	MassDEP Limit/ Design Goal ¹	R1	R2	R3**	R4**	R5	R6	R7	R8	R9
Stationary Sources Subject to MassDEP Noise Policy Limits										
Conveyor	35	19	25	33	29	12	6	4	4	1
Emergency Generator*	38	23	28	35	34	18	14	15	14	12
Exhaust Fan	35	23	27	31	27	25	19	23	23	21
MAU	35	22	27	31	31	30	23	29	28	25
Mobile Sources to Achieve Recommended Design Goals										
Backup Alarm Tonal	35	31	38	45	45	41	33	37	35	32
Forklift in Trailer	45	28	35	40	36	34	27	21	18	15
Trailer Disconnect	45	41	47	54	54	51	42	47	45	42
Truck High Idle	40	31	37	44	43	41	32	37	35	32
Truck Pass-by	40	38	42	49	51	48	38	43	43	39

Source	MassDEP Limit/ Design Goal ¹	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19
Stationary Sources Subject to MassDEP Noise Policy Limits											
Conveyor	39	2	3	5	6	9	12	14	32	31	30
Emergency Generator*	41	13	14	15	15	17	19	19	21	23	31
Exhaust Fan	39	23	25	26	28	32	32	28	24	24	24
MAU	39	27	29	31	31	31	30	27	29	29	28
		2	3	5	6	9	12	14	32	31	30
Mobile Sources to Achieve Recommended Design Goals											
Backup Alarm Tonal	40	33	37	36	41	42	43	43	43	43	48
Forklift in Trailer	50	16	17	18	19	21	23	31	40	40	39
Trailer Disconnect	50	43	45	46	48	51	51	47	54	53	55
Truck High Idle	45	33	36	36	38	40	40	38	44	43	44
Truck Pass-by	45	41	43	42	44	48	47	50	51	55	64

Red entries exceed our recommended design goal.

* Daytime use only for maintenance purposes.

** Not residential

¹ The MassDEP noise policy limits in Table 1 on sound are applicable to stationary sources only. Cavanaugh Tocci recommended design goals for mobile equipment sound to minimize community annoyance are provided in Table 2 and discussed in the accompany report section.

**Table 5. Estimated maximum sound levels (dBA) at study locations R1-R19: w/sound control barriers 1-6
Proposed Lackey Dam Logistics Center, Sutton, MA**

Conclusions

US MA Development, LLC is proposing to build the Lackey Dam Logistics Center, a warehouse with distribution facility on Lackey Dam Road, Sutton, Massachusetts. Cavanaugh Tocci has monitored existing sound levels on-site and has completed computer modeling of sound potentially generated by facility stationary and mobile equipment. It has been concluded that stationary equipment sound would meet MassDEP noise policy limits without site controls based on the assumptions regarding rooftop equipment and the emergency generator that would be installed.

Mobile equipment sound levels vary over a wide range. Sound levels used for these sources have been toward the top of the range measured by Cavanaugh Tocci. For example, the reference sound level used by Cavanaugh Tocci is 3 dBA higher than that used by the Federal Highway Administration (FHWA) in its Traffic Noise Model (TNM) for evaluating highway sound. To mitigate a potential nuisance produced by mobile sound sources, the following are recommended:

- Construct a barrier in six sections along the east, north, and west trucking pavement edges of the facility and along the northeast side of the egress drive onto Lackey Dam Road. Conceptually, barrier sections would have heights ranging between 7-22 feet above nearby pavement grades and in some places up to 30 feet above nearest pavement grade elevations and would have a total length of 1,992 feet.
- Also, in so far as possible, replace tonal back-up alarms with broadband alarms that provide the same level of warning sound at the rear of vehicles, but sound which is less distinctive in the community.
- In addition, barrier sections 3a, 3b, 4a, 4b, and 4c should be sound absorptive with a minimum NRC rating of 0.85. This would further increase the barrier sound reduction in the facility northern parking lot by 2 to 9 dBA at R5, over and above that provide by non-sound absorptive barriers alone.

As required by the Town of Sutton Zoning Bylaw, sound controls will be included in the project design and construction for protection of nearby residences “...from any undue disturbance caused by excessive or unreasonable noise...” Stationary equipment sound levels will conform to MassDEP Noise Policy limits, and the sound controls implemented will prevent unnecessary mobile sound emissions as prohibited by the 310 CMR 7.10(1).

* * *

If we can provide any further information, please do not hesitate to contact us. Thank you.

Sincerely,
CAVANAUGH TOCCI



Gregory C. Tocci, Sr. Principal Consultant

Mr. Leo Leighton, US MA Development, LLC
Proposed Lackey Dam Logistics Center
Sutton, Massachusetts

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21252_Lackey Dam Logistics Center 4a



Appendix A

MassDEP Noise Pollution Policy Interpretation



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Noise Pollution Policy Interpretation

Noise is a public health concern that falls within the scope of Massachusetts Department of Environmental Protection (MassDEP) authority as a form of regulated air pollution. See the related law, regulations, and policy: [M.G.L. Chapter 111, Sections 142A-M](#), [310 CMR 7.00: Air Pollution Control](#), and [MassDEP Noise Policy](#)

Definitions (310 CMR 7.00)

- *Noise* is defined as "sound of sufficient intensity and/or duration as to cause a condition of air pollution."
- *Air pollution* means "the presence in the ambient air space of one or more air contaminants or combinations thereof in such concentrations and of such duration as to: (a) cause a nuisance; (b) be injurious, or be on the basis of current information, potentially injurious to human health or animal life, to vegetation, or to property; or (c) unreasonably interfere with the comfortable enjoyment of life and property or the conduct of business."

When Does MassDEP Evaluate Noise Impacts?

MassDEP evaluates how noise may affect people when 1) the agency reviews applications for approval under its air pollution regulations (310 CMR 7.02) for construction of facilities that will generate more than threshold amounts of pollutants such as nitrogen dioxide, sulfur dioxide, carbon monoxide, volatile organic compounds, particulate matter, and substances that are toxic in air; and 2) the agency responds to complaints from the public about noise generated by an existing source:

- When reviewing applications for pre-construction approval of new sources of air pollution, MassDEP examines the potential increase in sound levels over ambient conditions and the impacts of noise at both the source's property line and at the nearest residence or other sensitive receptor (e.g., schools, hospitals) located in the area surrounding the facility and occupied at the time of the permit review. *Please note: MassDEP requires that an air approval be obtained when a proposed facility is expected to emit more than threshold amounts of specific pollutants. If noise is the only air pollutant expected to be emitted by a facility, a pre-construction air approval is not required.*
- When MassDEP responds to a complaint about an existing source of noise, it focuses on protecting affected people at their residences and in other buildings that are occupied by sensitive receptors from nuisances and the public health effects of the noise. *Please note: An existing source of sound may or may not have needed a MassDEP air approval before it was built.*

Where Are MassDEP's Noise Criteria Applied?

The MassDEP noise pollution policy describes criteria that MassDEP uses to evaluate noise impacts at both the property line and the nearest occupied residence or other sensitive receptor. When noise is found to be a nuisance or a threat to health, MassDEP requires the source to mitigate its noise.

Noise levels that exceed the criteria at the source's property line by themselves do not necessarily result in a violation or a condition of air pollution under MassDEP regulations (see 310 CMR 7.10 U). The agency also considers the effect of noise on the nearest occupied residence and/or building housing sensitive receptors:

- In responding to complaints, MassDEP measures noise levels at the complainant's location and at other nearby locations that may be affected (e.g., residences and/or buildings with other sensitive receptors). If the noise level at a sensitive receptor's location is more than 10 dB(A) above ambient, MassDEP requires the noise source to mitigate its impact.
- A new noise source will be required to mitigate its sound emissions if they are projected to cause the broadband sound level at a residence or building housing sensitive receptors to exceed ambient background by more than 10 dB(A).
- A new noise source that would be located in an area that is not likely to be developed for residential use in the future (e.g., due to abutting wetlands or similarly undevelopable areas), or in a commercial or industrial area with no sensitive receptors may not be required to mitigate its noise impact on those areas, even if projected to cause noise levels at the facility's property line to exceed ambient background by more than 10 dB(A). However, a new noise source that would be located in an area in which housing or buildings containing other sensitive receptors could be developed in the future may be required to mitigate its noise impact in these areas.

This policy has been designed to protect affected residents and other sensitive occupants of nearby property, but not necessarily uninhabited areas in and around the source's property. Sources of noise may need to implement mitigation if residences or buildings occupied by sensitive receptors are developed where they may be affected by the source's noise.