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30 April 2025

Mr. Ryan Curley
Town of Berlin Manager
240 Kensington Road
Berlin, CT 06037

RE: Bright Feeds Noise Compliance
Verification Testing Report

Dear Ryan,

SH Acoustics (SHA) is pleased to provide the findings of our verification testing of the Bright Feeds operations located at 76 Fuller Way in Berlin, CT following both remedial efforts to attenuate the previously identified low-frequency noise from their exterior exhaust system as well as the installation of a new Regenerative Thermal Oxidizer (RTO). Based on our inspection and acoustic measurements, we have determined that Bright Feeds will be operating in compliance with both daytime and nighttime regulations found within the Berlin noise ordinance, and that the previous low frequency noise emissions from the exhaust system are no longer present.

SH Acoustics was first informed, and then witnessed the implementation of the following acoustic measures to reduce the output noise level and tonal frequencies to neighboring properties:

Existing Exhaust Fan:

- Replaced bearings and couplings on exhaust fan
- Rebalanced main exhaust fan
- Added acoustic jacket (lagging)
    - 4” Mineral wool & MLV wrapping
    - Rubber gasketing for de-coupling

RTO Stack:

- Incorporated silencers and rubber gaskets on all inlets/ outlets
- Included custom acoustic jacket (lagging)

This report contains a summary of our analysis and information on the relevant noise regulations, sound pressure levels of the equipment and more.

Town of Berlin Noise Ordinance

The exact limits of the noise ordinance depend on the class of the zone that the noise emitter and receiver are in. In this case, Bright Feeds would fall in Class C Zone (Industrial) and the neighboring properties would fall in Class A Zone (Residential). Since the operation of Bright Feeds has changed to fall within Daytime code hours,

Bright Feeds would not be required to meet the Nighttime Noise Regulations, as section 7-61 (Definitions) defines daytime as the hours between 7:00AM and 9:00PM.

Section 7-63 dictates: *No Person shall emit or cause to be emitted sound beyond the boundaries of his/her/its premises exceeding the levels stated in the table below and applicable to adjacent residential (Zone A), commercial measured on a receptor's premises:*

	Receptor			
	Class C	Class B	Class A (Day)	Class A (Night)
Class C Emitter to	70 dB(A)	66 dB(A)	61 dB(A)	51 dB(A)

Figure 2 – Berlin Municipal Code Book – Noise Ordinance, Class C Zone to Class A Zone

Berlin's Noise Ordinance is written in terms of A-weighted decibels (dBA). The A-weighted decibel is a common standard metric used to characterize noise. It weighs more heavily to frequencies in the middle of the human hearing range to replicate how the human ear perceived noise across the frequency spectrum. As stated in our initial findings report, dBA underestimates the decibel exposure by 20 to 30 decibels.

Testing Procedures

The live ambient and frequency dependent measurements were recorded by an Apple iPad Air running the RTA (Real Time Analyzer), FFT (Fast Fourier Transform), and SPL Graph modules of the Studio Six Digital AudioTools software, and an Earthworks QC2020 omnidirectional microphone with exterior rated windscreen. The system has been laboratory certified to be accurate according to a Type 1 classification and was calibrated before and after measurements using an IEC942 Class I NC9 Calibrator. All measurements were taken at 5' above grade. Using this set up, we took measurements at six different locations, including Bright Feeds, Juniper Lane, Worthington Ridge, Massirio Drive, Christian Lane, and Fairview Drive.

On Site Observations

We began our evaluation at each measurement location by visually and aurally inspecting the site. From this inspection, we identified the following:

- Outside by the exhaust fan, standard conversation was maintained without raising one's voice, unlike before the remediation was completed.
- These efforts are implemented at the Main Exhaust Fan and are consistent with the RTO Stack.

- There is active and consistent traffic, construction, lawn care activities, and road noise in all surrounding areas.

Measurement and Analysis

Noise Ordinance Testing

Noise compliance in the Town of Berlin is dependent on the receiving noise level to the closest residential property line in A-weighted decibels (dBA). The following broadband data shows the overall noise levels on each of the previously noted properties.

The pre-attenuation noise level measurements are those from when initial testing was conducted on January 30 and March 11, 2025, before remediation efforts. With consistent traffic noise and other industrial/manufacturing plants in operation, the daytime ambient levels are higher in all locations.

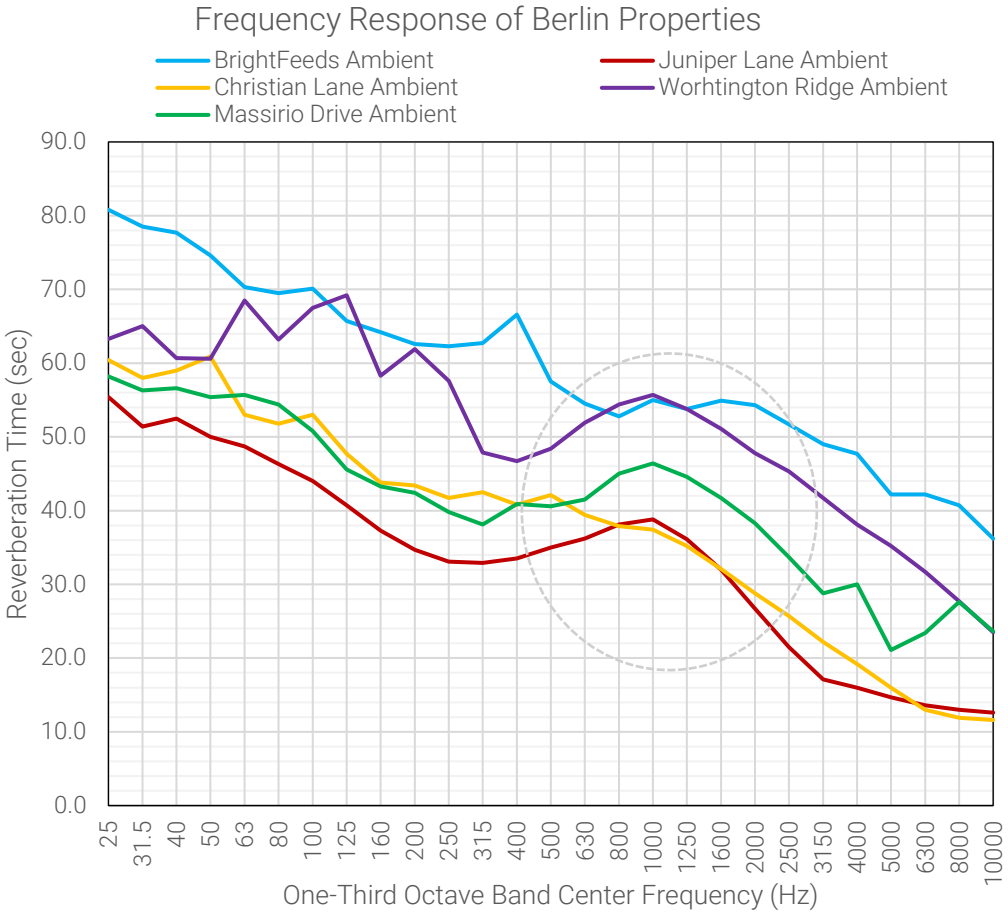
Daytime Noise Measurements (10:00am – 12:30pm)		
Measurement Location	Pre-Attenuation Noise Level (dBA)	Post-Attenuation Noise Level (dBA)
Bright Feeds Exterior Exhaust	103 dBA	85 dBA
Bright Feeds Ambient	85 dBA	68 dBA
Christian Lane	55 dBA	54 dBA
Worthington Ridge	61 dBA	64 dBA
Juniper Lane	55 dBA	51 dBA
Massirio Drive	58 dBA	51 dBA
Fairview Drive	-	44 dBA

The ambient measurement for Bright Feeds was taken on the South property line and remains compliant with the Town Noise Ordinance for Industrial-to-Industrial property adjacencies. The measurement is an average of the two locations to better understand the impact of both the Exhaust Fan and RTO. These locations can be seen in the image below. From the comparative daytime measurements, the Bright Feeds measurement levels are substantially reduced while the residential property measurements remained relatively consistent.

From the data below, we conclude that Bright Feeds is compliant with the Town of Berlin daytime and nighttime noise level (dBA) allowances at all nearby properties. As initially stated in our first report, dated February 10, 2025, each property is located within 700 feet of a major roadway (Route 5 or Route 9), and traffic noise is noticeably audible at all locations.

Nighttime Noise Measurements (10:30pm – 12:00am)	
Measurement Location	Post-Attenuation Noise Level (dBA)
Bright Feeds Ambient	63 dBA
Christian Lane	42 dBA
Worthington Ridge	45 dBA
Juniper Lane	42 dBA
Massirio Drive	44 dBA
Fairview Drive	37 dBA

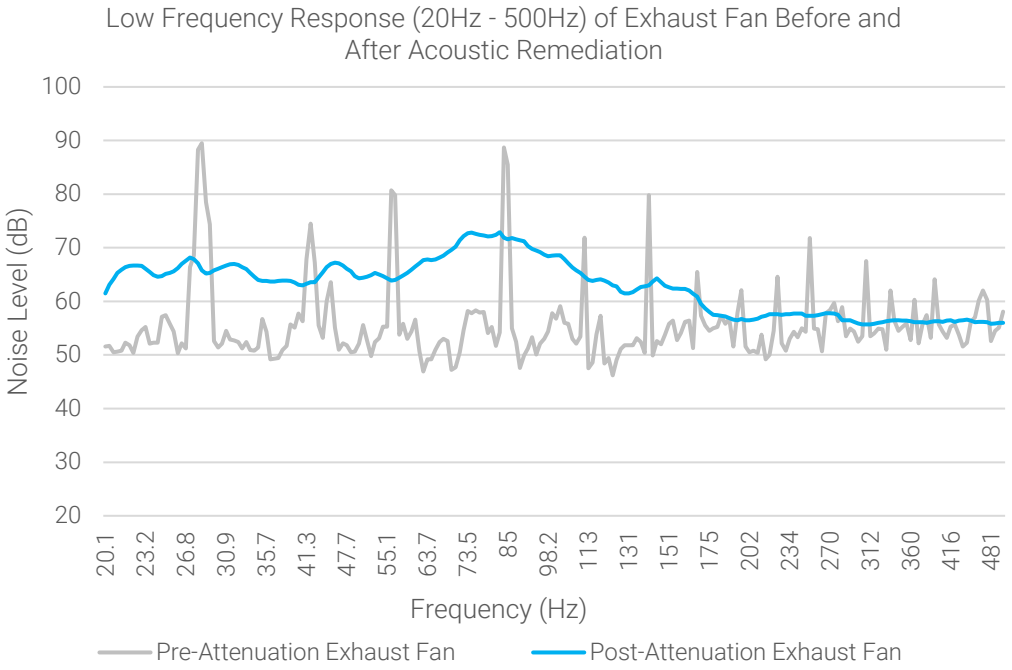
In the graph below, a defined rise in noise occurs in the frequency range between 400Hz and 3150Hz. This is where traffic noise is recorded; and, due to the raised level along these frequency bands, the overall dBA level is also elevated.



A noise reduction of 10dBA from a source is perceived as one-half as loud. A decibel difference of more than 20dBA occurred from the proximate exhaust fan measurement of 85dBA to the property line measurement of 63dBA (at night with no vehicular impact). This has led to a perceived reduction of noise to one-fourth as loud over an approximate 100-foot distance from Bright Feeds. At any of the residential properties much further away, the noise from Bright Feeds will not be heard.

Frequency Spectrum Analysis

Prior to the remedial efforts, SH Acoustics recorded a 28Hz tonal peak that was propagating to surrounding areas. While on site, we took frequency dependent measurements of both the exterior Exhaust Fan and RTO to confirm the rebalancing and treating of the Exhaust Fan removed the 28Hz peak. In the graph below, all the sharp tonal peaks that were once present have either been smoothed or removed completely. Since the previously identified problematic frequencies are no longer present, we can reasonably conclude that no tonal peaks occur in the surrounding areas originating from Bright Feeds.



Concluding Thoughts

The assessment above confirms that Bright Feeds is fully compliant with both daytime and nighttime noise level allowance within the Town Ordinance. The remediation measures implemented have proven to be highly effective, with no recurrence of the previously identified 28 Hz tonal component.

We trust that you will find the information in this report to be useful. Should you have any questions or comments, please feel free to reach out to discuss with us.

Kind regards,

Tessa Wearne
Acoustic and Audio Consultant
SH Acoustics