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Noise Impact Analysis of the Proposed Headlands Solar Energy Facility

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EXECUTIVE SUMMARY

Ranger Power is proposing the Headlands Solar Energy Facility in Conway and Cohoctah Townships, Livingston County, Michigan. The primary noise sources will be 62 inverters and a substation transformer. This study was conducted to evaluate potential noise impacts on nearby residents.

Noise criteria were reviewed at the federal, state, and local levels. Michigan Public Act 233 (PA 233) sets a statewide standard of 55 dBA (hourly average, A-weighted) at the nearest nonparticipating dwelling. The U.S. Environmental Protection Agency (EPA) recommends average exposure levels at or below DNL 55 [55 dB(A) daytime / 45 dB(A) nighttime] as generally protective of public health. Both Conway and Cohoctah Townships, however, maintain stricter local ordinances for projects under 50 MW, with property-line limits of 40 dBA daytime and 35 dBA nighttime.

Field measurements documented low existing ambient levels in Conway and Cohoctah, consistent with their rural setting. Measurements revealed average ambient daytime sound levels of 41 to 45 dB(A) which include insect and bird sounds (biogenic sounds). With biogenic sounds filtered out, average ambient daytime sound levels were 37 to 41 dB(A).

Reference measurements at an operating solar facility in Corunna Township confirmed that inverter noise is tonal, distinct, and clearly audible under favorable atmospheric conditions. The measurements showed inverter sound levels of 40 to 42 dB(A) with the inverters at an approximate distance of 1000-feet. Projected inverter sound levels at key residences in Livingston County are expected to be similar to existing average sound levels. Furthermore, the inverter sound levels are expected to exceed the existing persistent background (L_{90}) sound levels by as much as 20 dB, though remain within PA 233 and EPA thresholds.

The analysis concludes that while the Headlands Solar Facility will comply with state noise limits and EPA acceptable criteria and is not expected to create significant health risks, it will exceed Conway and Cohoctah Township's more restrictive ordinance if PA 233 is repealed. While the overall level of the inverters will not be perceived as high, some residents are likely to perceive inverter noise as intrusive, particularly due to its tonal character and having sound levels greater than background ambient conditions. This perceived intrusiveness may diminish over time as people grow accustomed to the change in soundscape.

This analysis is dependent on the use of inverters with sound level outputs comparable to the Sungrow 3600UD units or those measured in Corunna Township. The use of alternate inverters, substation equipment, or other components with higher noise emissions would invalidate these conclusions and be viewed less favorably.

Mitigation measures such as specifying quieter inverters, maintaining setbacks of 1,000 feet or more, orienting equipment away from residences, or incorporating sound barriers and enclosures are recommended to minimize community impacts and improve long-term compatibility.

1. PURPOSE & DESCRIPTION

Ranger Power is proposing to develop the Headlands Solar Energy Facility in Conway and Cohoctah Townships, Livingston County, MI. The primary noise sources from the facility are expected to be 62 Sungrow 3600UD inverters and a substation with a primary step-up transformer. It is expected that these sources will produce audible noise at nearby residential properties.

The purpose of this study is to evaluate the potential noise impacts of the proposed facility on local residents. To complete this evaluation, we conducted the following tasks:

- Reviewed the Headlands Solar Pre-Construction Noise Analysis prepared by Hankard Environmental, Inc. (Verona, Wisconsin)
- Collected baseline sound level measurements in Conway and Cohoctah Townships to document existing environmental sound conditions
- Measured noise from an existing solar energy facility at residential properties in Corunna Township, Shiawassee County, Michigan
- Projected noise levels from the proposed inverters at representative residential properties in Conway and Cohoctah Townships
- Compared the resulting noise projections to applicable criteria and baseline sound levels

2. APPLICABLE NOISE CRITERIA

Michigan Regulations (Public Act 233)

The Clean and Renewable Energy and Energy Waste Reduction Act (Public Act 233) establishes specific noise limits for solar energy facilities in Michigan. The Act requires that:

> "*The solar energy facility does not generate a maximum sound in excess of 55 average hourly decibels as modeled at the nearest outer wall of the nearest dwelling located on an adjacent nonparticipating property. Decibel modeling shall use the A-weighted scale as designed by the American National Standards Institute.*"

In addition, the Michigan Public Service Commission requires that applications under PA233 include a predictive noise study. This study must account for:

- Tonal noise penalty: +5 dB adjustment applied to tonal sources (such as inverters).
- Façade reflection factor: +6 dB adjustment to represent sound pressure doubling at building walls.

Together, these adjustments effectively increase the modeled inverter sound levels by 11 dB. As a result, actual measured sound levels of the installed solar facility would likely result in

sound levels that did not exceed 50 dB(A) at the nearest dwelling outer wall, and 44–47 dB(A) and a similar distance from the noise source away from the dwelling.

Compliance with PA233 is achieved so long as the measured sound level of solar facility related noise remains below 55 dB(A), averaged over a one-hour period, at the nearest nonparticipating residence outer wall.

Conway Township's Noise Ordinance – Solar Energy Systems

The Conway Township Solar Energy System Ordinance establishes two distinct sets of noise regulations depending on project size and the applicability of Michigan Public Act 233 of 2023 (PA 233). This approach establishes a Compatible Renewable Energy Ordinance (CREO) to comply with state law for large-scale projects while maintaining stricter local standards for smaller facilities and preserving a fallback framework if PA 233 is ever repealed.

For utility-scale projects of 50 megawatts (MW) or greater, jurisdiction lies with the Michigan Public Service Commission (MPSC) under PA 233. In these cases, Conway Township incorporates the state standard, which limits noise to 55 dBA, hourly average (A-weighted), measured at the nearest dwelling on a non-participating property. This ensures that the Township's ordinance is compatible with PA 233 and avoids preemption by state authority.

For projects under 50 MW, which remain under local zoning jurisdiction, Conway imposes more restrictive standards. Specifically, noise from a solar energy facility may not exceed the following limits at the property line:

- 40 dBA (Lmax) during daytime hours (7:00 a.m. to 9:00 p.m.)
- 35 dBA (Lmax) during nighttime hours (9:00 p.m. to 7:00 a.m.)

These limits are based on instantaneous maximum levels rather than averaged measurements and apply at property lines rather than dwellings, representing a significantly more stringent threshold than PA 233.

Cohoctah Township Ordinance

The Cohoctah Township Solar Energy System ordinance is substantially similar to the Conway Township Solar Energy System ordinance. The primary ordinance establishes instantaneous property-line limits of 40 dBA Lmax during the day (7:00 a.m.–9:00 p.m.) and 35 dBA Lmax at night (9:00 p.m.–7:00 a.m.), with provisions allowing the Township to require evergreen berms for additional mitigation.

In 2024, Cohoctah Township adopted amendments to align with Michigan Public Act 233 of 2023 (PA 233), creating their CREO. Under the amendment, beginning November 29, 2024, systems with a nameplate capacity of 50 MW or greater must comply with PA 233 standards, including a modeled noise limit of 55 dBA Leq (hourly, A-weighted) at the nearest dwelling on

an adjacent nonparticipating property. The stricter property-line limits remain applicable to systems under 50 MW or if PA 233 is repealed or not in effect.

EPA Noise Levels

To promote the reduction of noise pollution, the U.S. Environmental Protection Agency (EPA) was tasked with studying the effects of environmental noise on public health and welfare. This effort led to the publication of a foundational report titled: *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, commonly referred to as the "*Levels Document*."

The EPA's research evaluated a range of noise impacts, including: speech interference, activity disruption, annoyance, and community responses to environmental noise.

From these analyses, the EPA concluded that a Day-Night Average Sound Level (DNL) of 55 dB(A) or lower is protective for outdoor speech communication and corresponds to a level at which fewer than 10% of the population report being highly annoyed by environmental noise.

DNL (Day-Night Sound Level) is a 24-hour average sound level metric that applies a 10 dB penalty to nighttime hours (10:00 p.m. to 7:00 a.m.) to reflect increased sensitivity to noise during typical rest periods. Based on this weighting, the EPA's protective levels correspond to:

- An average daytime sound level of 55 dB(A)
- An average nighttime sound level of 45 dB(A)

It is important to note that these levels are not regulatory standards, but rather scientifically derived health-protective benchmarks. The EPA explicitly states that these values:

- Were developed without consideration of economic or technical feasibility
- Are conservative by design, intended to protect sensitive individuals
- Include an additional margin of safety to account for uncertainties in population response

While not legally binding, the *Levels Document* remains a widely accepted reference in setting community noise goals, particularly for land use planning and public health considerations. It should be noted that these levels developed by the U.S EPA were largely based on transportation-related noise sources, such as road traffic, aircraft, rail and industrial.

3. THE COMPLEXITIES OF NOISE IMPACT

At its most basic level, noise impact can be described as a change in sound level that adversely affects those exposed to it. This simple definition, however, overlooks the complexities associated with the perception of noise. While certain acoustic attributes are widely recognized as undesirable, such as high overall levels, distinct tonal elements, or impulsive sounds, noise impact often goes beyond measurable quantities.

Annoyance relates to the subjective interpretation of sound. Two sounds of equal loudness may be perceived very differently depending on multiple factors including: listener sensitivity, the context in which the noise occurs, and personal attitudes toward the source. For example, the low-frequency hum of industrial equipment may be tolerable to some but highly disruptive to others, especially in quiet residential settings.

The complexity is further compounded by non-acoustic factors, including time of day, regional expectations, and the relationship between the receiver and the noise source. A community accustomed to regular train traffic may adapt to its presence, while the same sound introduced to a new environment could generate strong opposition. In this sense, noise impact is a product of both measurable quantities and subjective experience.

From a planning and regulatory standpoint, these complexities underscore the importance of establishing noise limits as a tool for managing community impact and expectations. Absolute silence is not practical as communities rely on infrastructure, industry, and commerce, all of which generate sound to one degree or another. The objective, therefore, is not to eliminate noise but to manage it to levels that are considered reasonable, protective of public health, and compatible with surrounding land uses.

Noise limits serve as a framework for balancing progress with livability. They provide measurable criteria against which proposed developments can be evaluated, ensuring that growth and economic activity can proceed without imposing unacceptable burdens on residents. When applied consistently, noise standards also provide predictability for developers, operators, and communities, reducing conflict and clarifying expectations.

In practice, this means that a new facility or infrastructure project must be assessed not only against existing background conditions but also against the regulatory thresholds established by applicable laws, typically local ordinance. Where noise exceeds the established limits, noise controls can be introduced to achieve compliance. This approach recognizes that noise may be an inevitable product of development, and the effects should be managed to maintain a fair balance between the well-being of residents and economic growth.

By enacting Public Act 233, the State of Michigan established a clear policy in support of renewable energy infrastructure. As part of this legislation, the State determined that a noise limit of 55 dB(A) represents an acceptable threshold to protect the health and well-being of residents. However, this limit was adopted as a uniform standard and does not account for variations in pre-existing ambient sound levels. In rural communities, where background sound levels can be significantly lower than in suburban or urban environments, the introduction of renewable energy systems will likely result in a significant increase in ambient

sound levels. Many residents in Conway and Cohoctah are sensitive to this discrepancy and have voiced concerns that the current standard does not adequately reflect the quiet settings of their communities.

The purpose of this study is to evaluate the potential noise impacts of the proposed Headlands Solar Energy facility within this context. Specifically, our analysis considers not only compliance with the 55 dB(A) limit established under PA 233, but also the change in sound levels relative to existing ambient conditions. By doing so, the study provides a more comprehensive assessment of potential community impacts and the extent to which residents may be affected than has been presented to date.

4.1 AMBIENT SOUND LEVELS IN CONWAY AND COHOCTAH TOWNSHIPS

Environmental sound levels were measured at two locations: one in Conway Township and another in Cohoctah Township. Measurements were conducted in accordance with *ANSI S12.9, Part 2: Quantities and Procedures for Description and Measurement of Environmental Sound - Measurement of Long-Term, Wide-Area Sound,* and *ANSI S12.9, Part 3: Short-Term Measurements with an Observer Present*.

Measurements were performed using a calibrated Brüel & Kjær Model 2270 Environmental Noise Analyzer equipped with a Larson Davis outdoor microphone assembly, including a Model 2541 laboratory-grade, ½-inch free-field precision microphone. System calibration was verified both before and after the measurement period using a Brüel & Kjær Type 4231 Acoustic Calibrator. The measurement system exceeds the performance requirements for Type 1 (precision-grade) instrumentation as specified in *ANSI S1.4*.

The measurement system was positioned at residential properties that are likely to be impacted by noise from the proposed Headlands Solar Project. The purpose of these measurements is to establish ambient sound levels in the absence of a solar energy facility.

The measurement locations are:

- 9788 N Marsh Road, Conway Township
- 10785 Fleming Road, Cohoctah Township

A graphical presentation of these measurement positions is provided in **EXHIBITS 1 & 2**.

Sound monitoring was conducted continuously over a 48-hour period at each measurement position. At the location off N Marsh Road, measurements were conducted from August 1st through August 2nd, 2025. At the location off of Fleming Road, measurements were conducted from August 4th through August 5th, 2025.

In this time period during our measurements, noise from insects, such as crickets, cicadas, and katydids, was prevalent. As these insect sounds are seasonal, and less likely to occur at other times of the year, we analyzed the measurements without, and with a biogenic filter

(removes the influence of insect and some bird sounds). The biogenic filter we used minimizes sounds at 2000 Hz and above. As katydid and some bird sounds occur in broader frequency ranges below 2000 Hz, not all of these sounds were filtered out. The purpose of this filter is to provide a better understanding of what background sound levels are likely to be at other times of the year when insect and bird sounds are less prominent.

The results of the measurements have been presented as time history plots of the measured sound levels over the course of a 24-hour period. The sound level data descriptions provided are:

- 1-minute Leq sound levels (sound Levels averaged over a 1-minute period)
- 1-hour L_{eq} sound levels (sound Levels averaged over a 1-hour period)
- 1-hour L_{10} sound levels (the sound level exceeded 10% of the time in a 1-hour period, representing a statistically high sound level value that is due to transient events)
- 1-hour L_{90} sound levels (the sound level exceeded 90% of the time in a 1-hour period, representing a consistent background sound level in the absence of transient events)

The results of these measurements are provided in **EXHIBITS 3A through 6B**. Note that exhibits designated with an 'A' do not employ the biogenic filter, while those designated with a 'B' do employ the filter.

The atmospheric conditions during these measurements were largely calm with no significant effect to the sound level measurements. There were a few periods of elevated wind: August 1st between 10AM and 1PM, and August 5th between 3PM and 6PM. Details of the atmospheric conditions are presented in APPENDIX A.

4.2 DISCUSSION OF AMBIENT SOUND LEVEL MEASUREMENTS

A summary of the daytime ambient sound levels measured in Conway and Cohoctah townships are presented below in Table 1.

TABLE 1 – AMBIENT SOUND LEVELS IN LIVINGSTON COUNTY

Ambient Sound Levels		Daytime Average Sound Levels (7AM - 10PM)		
Measurement Location	*Dataset*	*Leq*	*L10*	*L90*
N Marsh Rd, Conway Twp	Full	45.1	46.8	36.6
N Marsh Rd, Conway Twp	Filtered*	41.3	43.4	30.1
Fleming Rd, Cohoctah Twp	Full	41.5	43.9	34.9
Fleming Rd, Cohoctah Twp	Filtered*	36.8	38.2	26.3
**Biogenic Filter Eliminating Sound at 2k Hz and Above*				

Generally, the sound levels in Livingston County are low. Given the rural nature of the areas measured, this is not surprising. The typical sources of sound found in our measurements are: birds, insects, local vehicular traffic, small aircraft, and resident related activities. The full (unfiltered) dataset sound levels provided are representative of mid to late summer seasonal conditions. The biogenic filtered dataset sound levels represent estimated sound levels at other times of the year when insect and bird sounds are less prominent. These values are likely a bit higher than actual sound levels at other times of the year due to the broader range of katydid and some bird sounds that were not filtered out.

5.1 SOLAR ENERGY FACILITY SOUND LEVELS

To provide a real-world basis for evaluating the expected noise from the proposed Headlands Solar Energy Facility, we conducted sound level measurements at 3496 N Byron Rd in Corunna Township, Shiawassee County, Michigan. This property is directly adjacent to the operating Assembly Solar energy facility with solar panels and inverters to the north, south and west. This location provides a representative condition that directly documents the types of sound residents in Livingston County are likely to experience in proximity to solar equipment.

It should be noted that the sound produced by inverters can vary based on the capacity, the manufacturer and the model. We are unaware of the manufacturer or the model used for the Assembly Solar Energy facility. Without better information, we are assuming that the Headlands Solar project will use inverters with similar, or lower, sound emissions to the stated Sungrow 3600UD, or those used for the Assembly Solar facility.

The measurements were performed outdoors at a central location on the residential property where sound from the adjacent solar arrays, inverters, and transformers could be heard. Details of the measurement location are provided in **EXHIBIT 7.** The surrounding land use and acoustic environment are similar to conditions expected in Conway and Cohoctah Townships.

Measurements were performed with the same sound measurement system as the ambient sound measurements. Measurements started on August 9th, 2025 at 12PM and continued until August 10th at 6:02 AM, when the measurement system unexpectedly stopped recording. The results of these measurements are provided in **EXHIBITS 8A** (unfiltered) & **8B** (filtered). An additional period of measurements was recorded on August 12, 2025 from 10:27 AM to 11:45 AM. The results of these measurements are provided in **EXHIBITS 9A** (unfiltered) & **9B** (filtered).

At the time of the measurements, atmospheric conditions were predominantly clear, with temperatures ranging from 76 to 87 degrees Fahrenheit, and wind from the south to south-southwest at 6 to 13 MPH. Under these conditions, the solar array should have been operating at a level near full capacity for this location, and sound propagation was favorable from inverters to the south of the measurement location. While our study was limited in the

length of time we studied the Assembly Solar energy facility, sound propagation conditions were favorable such that the sound levels we measured are likely near the highest sound levels expected in that location.

5.2 RESULTS OF SOLAR FACILITY MEASUREMENTS

A summary of the daytime ambient sound levels measured in Corunna Township adjacent to the solar energy facility are presented below in Table 2.

TABLE 2 – AMBIENT SOUND LEVELS NEAR A SOLAR ENERGY FACILITY

Ambient Sound Levels		Daytime Average Sound Levels (7AM - 10PM)		
Measurement Location	*Dataset*	*Leq*	*L10*	*L90*
Byron Rd, Corunna Twp	Full	44.1	47.4	38.4
Byron Rd, Corunna Twp	Filtered*	41.5	42.6	38.0
**Biogenic Filter Eliminating Sound at 2k Hz and Above*				

Audibility and Sound Character

The inverter noise was clearly audible during the measurement period. The sound has a tonal quality, with dominant tones identified in the 630 Hz and 1250 Hz one-third octave frequency bands. This falls into a range where human hearing tends to be most sensitive. The loudness of the inverter noise fluctuates with atmospheric conditions, primarily wind speed and direction. During the measurements, winds were from the south to south-southwest at speeds of 6 to 13 miles per hour. These conditions resulted in noise transmission primarily from the inverter to the south, 940 feet away.

Measurement Data and Exhibits

The presence of insect noise in the 2,500–16,000 Hz range masked portions of the measured inverter sound levels. As a result, the inverter noise is not clearly distinguishable in the unfiltered data shown in **EXHIBIT 8A**.

To address this, a biogenic filter was applied to the measurement data. As shown in **EXHIBIT 8B & 9B**, the filtered results provide a clearer representation of inverter operation. In particular, the data show a distinct reduction in sound level at 10:44 p.m. on August 9th, when the inverters shut down for the night. At that time, the biogenic-filtered sound level dropped from approximately 42 dB(A) to 30 dB(A), confirming the absence of inverter noise and demonstrating the impact potential when insect sounds are less prominent.

EXHIBIT 10A provides the spectral sound level at 3496 N Byron Road, with and without the solar energy facility inverters operating. **EXHIBIT 10B** provides a similar spectral sound comparison, though biogenic (insect) noise has been removed to simulate times of the year

when insect noise is not present. From these spectral plots, we can see that the ambient sound levels near the solar energy facility will dominate ambient sound levels in the absence of transient sound events, and in the absence of insect noise.

6. REVIEW OF THE HEADLANDS SOLAR PRE-CONSTRUCTION NOISE ANALYSIS

A pre-construction noise analysis was conducted for the Headlands Solar Project. This study was conducted by Hankard Environmental. Based on our review of this report, the prediction of the solar energy facility installation was conducted in a manner consistent with current engineering standards for noise prediction, following the standard ISO 9613, and employing the requisite assumptions from the Michigan Public Service Commission application and filing procedures.

The methods used in this prediction are conservative, favoring the protection of residents. The methodology in the environmental noise prediction standard, ISO 9613, assumes favorable sound propagation from the noise source to all receivers. Additionally, the modeling assumes the inverters and transformers are tonal and imposes a +5dB penalty to these noise sources. Sound level predictions at the facades of homes adds 6 dB for pressure doubling at sound reflective surfaces.

Based on our review of this report, and our experience with environmental noise prediction, we find that the results of this noise analysis are correctly determined to the degree presented. Furthermore, actual measured sound levels are likely to be less than those predicted by the study due to the tonal penalty applied.

7 PROJECTED INVERTER NOISE IN LIVINGSTON COUNTY

Although the measurements at the Assembly Solar facility were taken in proximity to six inverters, our observations under south to south-southwest winds (6-13 mph) indicated that the dominant sound source was the inverter located 940 feet to the south. Under these conditions, the northern inverters were completely inaudible, while the inverters to the south-southeast and southwest were only occasionally audible as the wind direction shifted.

From the solar facility sound level measurements, the hourly-averaged sound levels ranged from 37 to 42 dB(A). This range of sound levels reflects variation in the ease of sound propagation as well as the degree of contribution from multiple inverter sources. Assuming an overall average of 40 dB(A) for inverter sound level, with the dominant inverter located 940 feet away, we projected the typical free-field inverter sound levels based on geometric diverging sound propagating properties of point noise sources at various distances provided in Table 3 below.

These “ANTICIPATED TYPICAL” inverter sound levels represent sound levels from a single inverter under generally favorable sound propagating conditions. Actual sound levels may be higher with additional inverters and more favorable propagating conditions.

Based on the ambient sound level measurements conducted in Conway and Cohoctah Townships, average daytime sound levels in the absence of biogenic sounds are between 37 and 41 dB(A). The background (L_{90}) sound levels in the absence of biogenic sounds are between 26 and 30 dB(A). Inverter sounds are expected to be audible against the background sound levels, and in many cases will be similar to existing average sound levels. In some locations, where multiple inverters have influence, and/or more favorable sound propagating conditions exist, inverter sound levels may approach the sound levels predicted by the pre-construction noise analysis, though are not expected to exceed these values and are likely to occur for relatively short periods.

TABLE 3 – ANTICIPATED TYPICAL INVERTER SOUND LEVELS UNDER GENERALLY FAVORABLE PROPAGATION CONDITIONS

Distance from Inverter	*Anticipated Free-field Sound Level*
400 Feet	47 dB(A)
450 Feet	46 dB(A)
500 Feet	45 dB(A)
600 Feet	44 dB(A)
750 Feet	42 dB(A)
940 Feet	40 dB(A)
1200 Feet	38 dB(A)
1500 Feet	36 dB(A)
1900 Feet	34 dB(A)
2400 Feet	32 dB(A)
3000 Feet	30 dB(A)

Receptor 77[1] Noise Prediction

The pre-construction noise analysis identified 8051 W Mohrle Road as one of the locations expected to receive the highest inverter noise levels from the Headlands Solar Project. The predicted free-field sound level near the home is 49 dB(A), with a façade-adjusted ("pressure doubled") level of 55 dB(A). Based on Table 3 projections and the receptor's distance of approximately 400 feet from the nearest inverter, we anticipate typical measured free-field inverter sound levels of 47 dB(A) under favorable sound propagating conditions.

This is expected to exceed average ambient sound levels by 7 to 10 dB, and background sound levels by 17 to 21 dB. This indicates the inverters will be clearly audible under favorable propagating conditions. As the inverter is planned to be located to the southeast, prevailing wind conditions are likely to be predominantly unfavorable for the inverter noise transmission to this residence. Typical sound levels are likely to lower.

[1] Receptors #77 & 260 as identified in the Headlands Solar Pre-Construction Noise Analysis

Receptor 260[1] Noise Prediction

10785 Fleming Road is also predicted to receive some of the highest inverter noise levels. The pre-construction analysis estimated a free-field level of 49 dB(A) and a façade-adjusted level of 55 dB(A). This property is directly comparable to the 3496 N Byron Road site, where Assembly Solar operating measurements were conducted. Both locations are, or will be, surrounded by numerous inverters at similar distances. Based on measured Assembly Solar facility data, we anticipate typical inverter hourly average free-field sound levels between 37 and 42 dB(A) at this residence.

With baseline average daytime ambient sound levels of 37 dB(A) and background sound levels of 26 dB(A), inverter sound levels are likely to exceed average ambient sound levels by 5 dB, and the background sound levels by 16 dB. Under favorable propagating conditions, the inverter noise will be clearly audible. As multiple inverters are planned to be located to the northwest, west, and southwest, prevailing wind will tend to create favorable sound propagating conditions most of the time.

8. CONCLUSION

The measured and projected sound levels from the proposed solar energy facility fall within State of Michigan regulatory thresholds and are consistent with U.S. Environmental Protection Agency (EPA) guidance on community noise exposure. As such, inverter noise is not expected to pose a significant health concern for residents in Livingston County.

However, Conway Township's solar ordinance establishes stricter noise limits than the State or EPA standards. Our analysis indicates that inverter noise levels, particularly under favorable propagation conditions, are likely to exceed those local limits if PA 233 is repealed.

Additionally, the tonal character of inverter noise at 630 Hz and 1250 Hz makes it more distinct than broadband sounds. Our field observations confirm that inverter noise will be clearly audible under favorable propagation conditions, and its presence will be most apparent during evening hours when ambient sound levels decline, and when other biogenic sounds are less prominent.

The analysis of this study is dependent on the use of inverters with sound level outputs comparable to the Sungrow 3600UD units or those measured in Corunna Township. The use of alternate inverters, substation equipment, or other components with higher noise emissions would invalidate these conclusions and be viewed less favorably.

Perception of New Noise Sources

Because of its tonal and intermittent qualities, inverter noise will be distinct and clearly audible and is likely to be perceived as an unwelcome addition to the local soundscape. Residents near proposed inverter locations may experience the noise as intrusive, even at relatively modest sound levels. This perceptual impact poses a concern for community annoyance, though is expected to wane over time as the inverter noise becomes part of the environment.

Potential Mitigation

To help reduce the potential for community annoyance, several mitigation measures can be considered in the project planning. These include:

- Specifying lower sound producing inverters
- Establishing a minimum setback distance of 1,000 feet between inverters and residents
- Orient inverters such that cooling ventilation inlet/outlets are directed away from residences
- Incorporating engineered sound barriers to block direct sound paths
- Employing ducted silencers or acoustic enclosures to reduce tonal noise emissions at the source

Applying one or more of these measures can substantially control the level of inverter noise and the relative impact created in the community. This can improve community acceptance and long-term compatibility of the facility with surrounding residents.

EXHIBIT 1

AERIAL IMAGE OF THE MEASUREMENT LOCATION AT 9788 N MARSH ROAD, CONWAY TOWNSHIP, MI

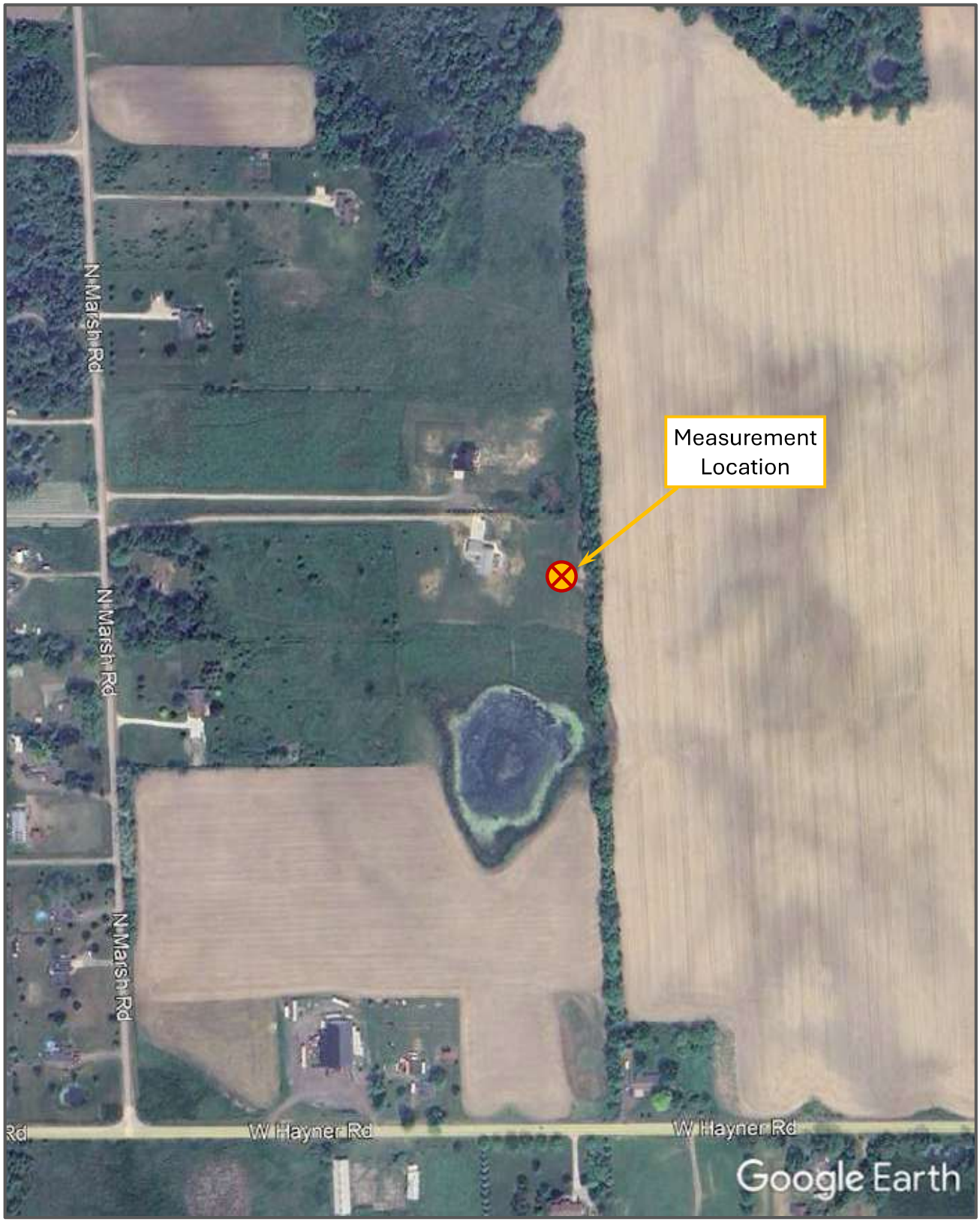


EXHIBIT 2

AERIAL IMAGE OF THE MEASUREMENT LOCATION AT 10785 FLEMING ROAD, COHOCTAH TOWNSHIP, MI

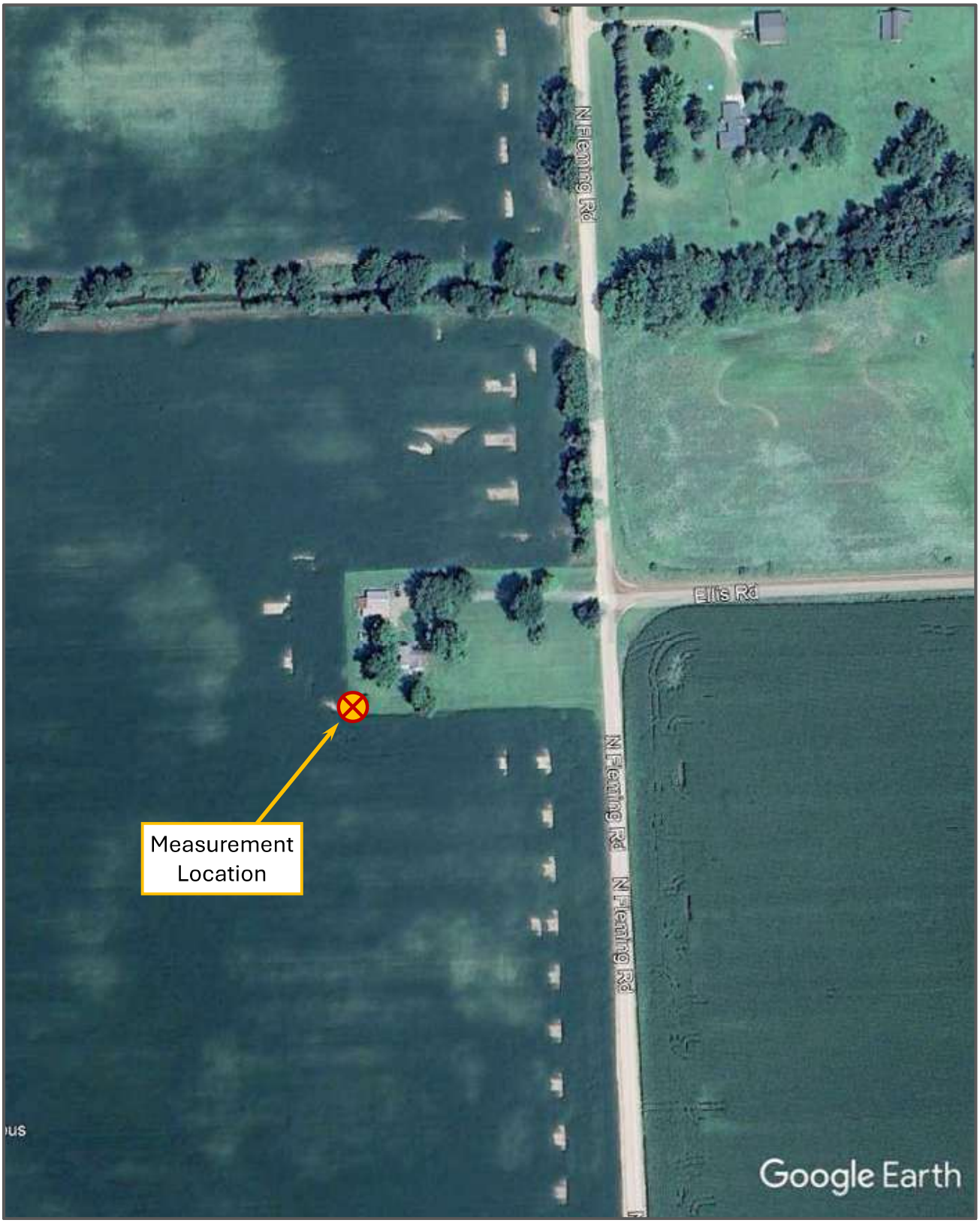


EXHIBIT 7

AERIAL IMAGE OF THE MEASUREMENT LOCATION AT 3496 N BYRON ROAD, CORUNNA, MI – MEASURING INVERTER SOUND LEVELS

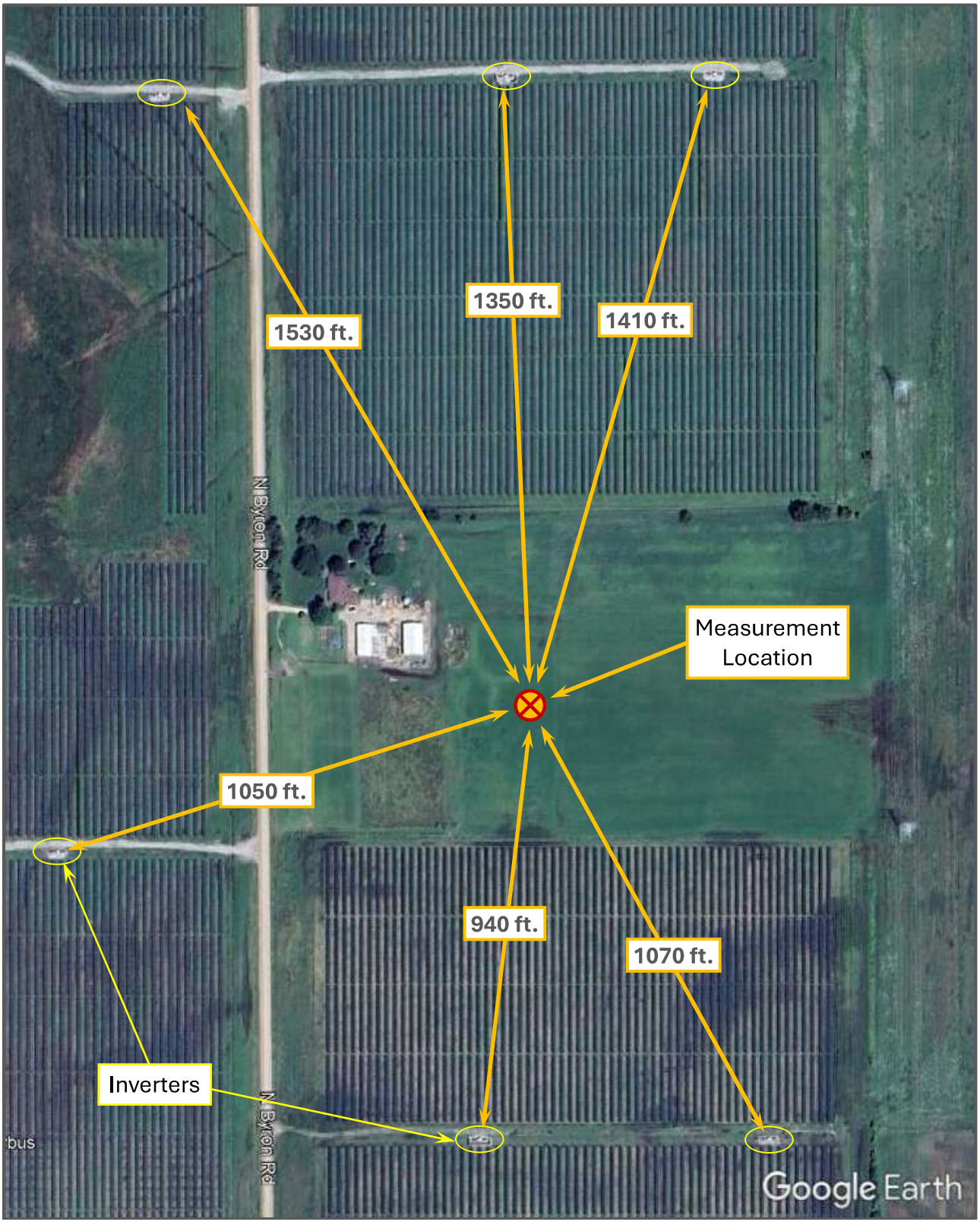


EXHIBIT 3A

Ambient Sound Levels at 9788 N Marsh Road

Measured at a Position 1460-ft North of W Hayner Road, and 1240-ft East of N Marsh Road

Study Conducted For: Conway & Cohoctah Townships

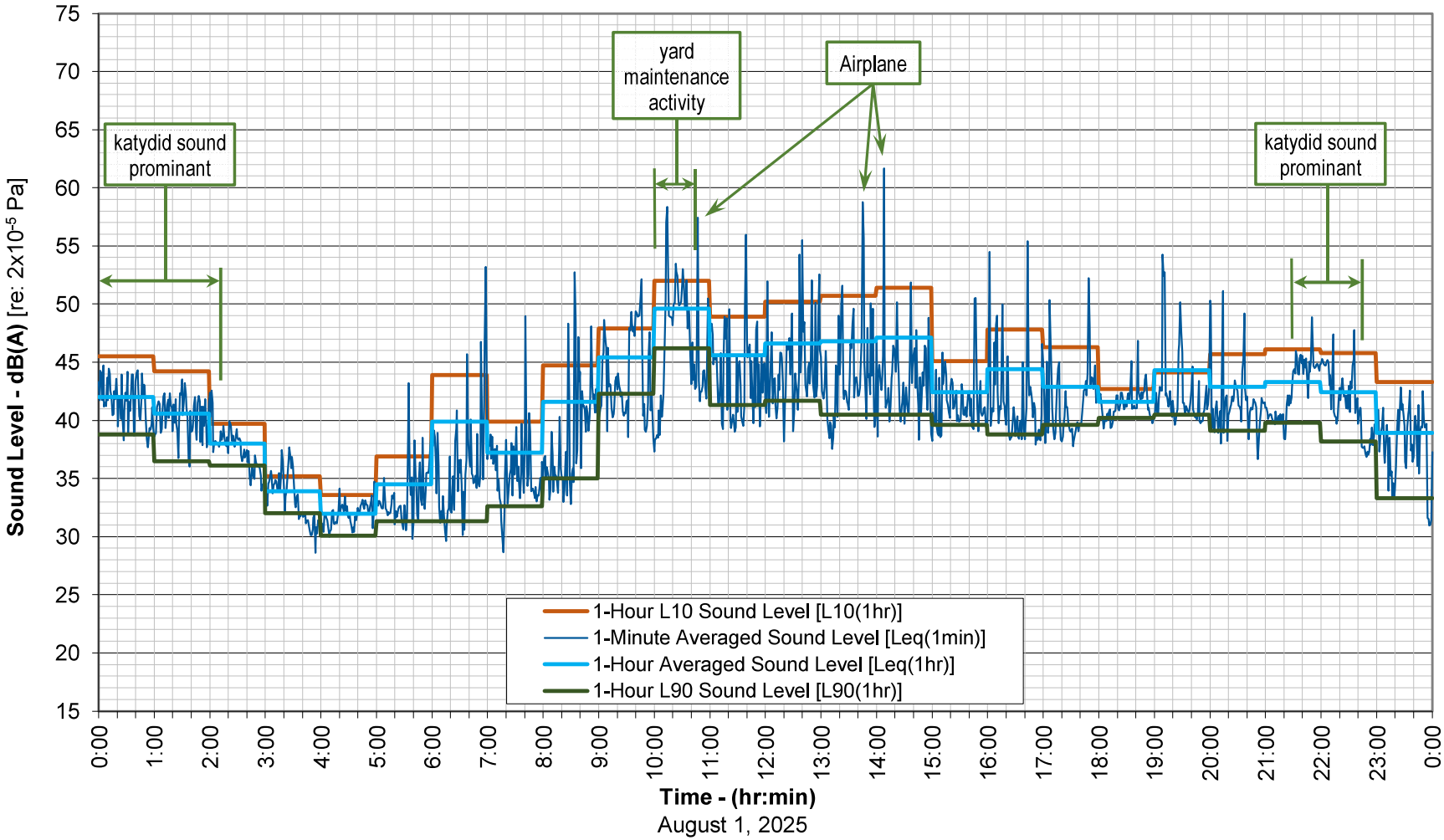


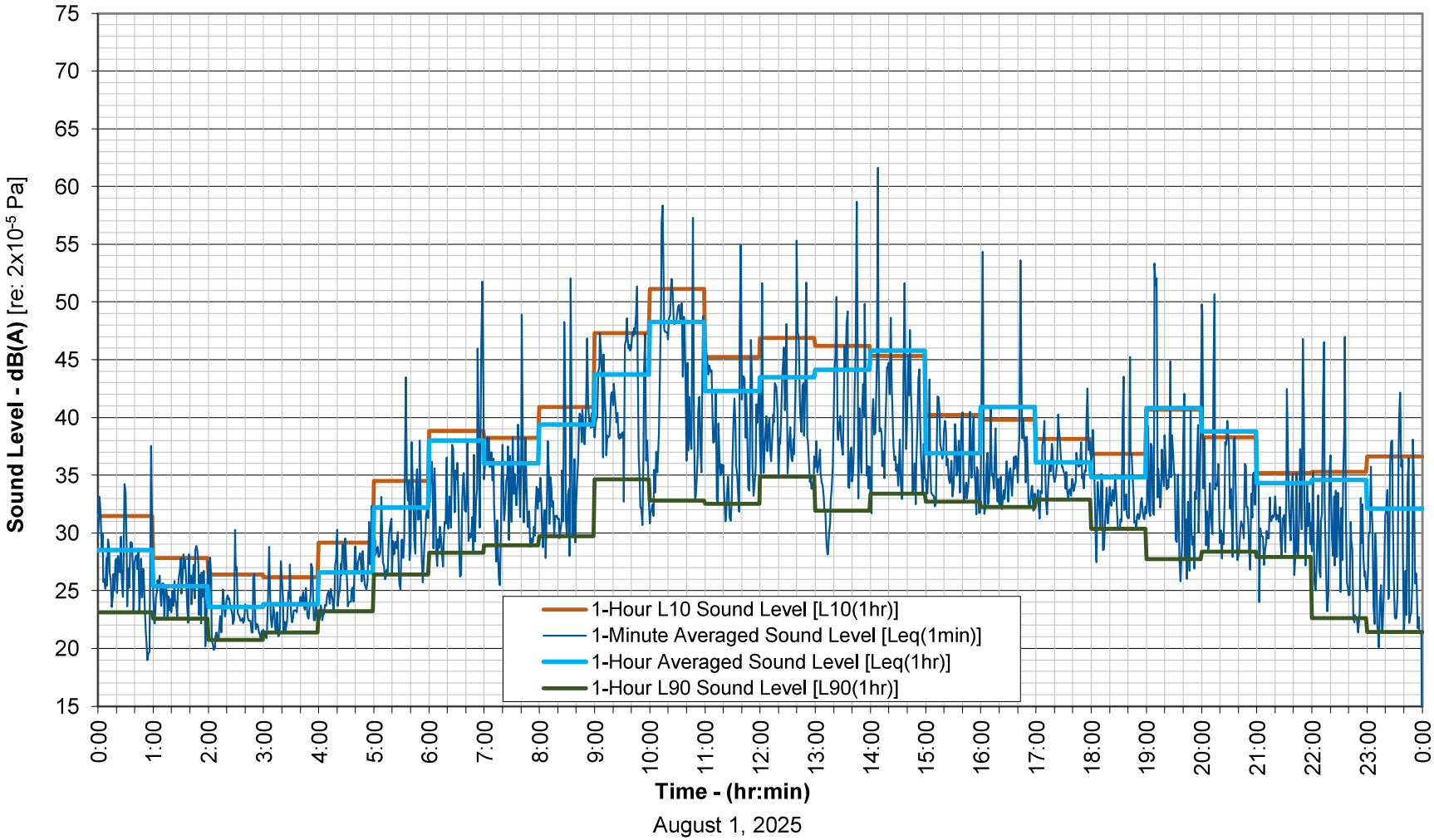
EXHIBIT 3B

Ambient Sound Levels at 9788 N Marsh Road

With Biogenic Filtering (removing sound at 2000 Hz and above)

Measured at a Position 1460-ft North of W Hayner Road, and 1240-ft East of N Marsh Road

Study Conducted For: Conway & Cohoctah Townships



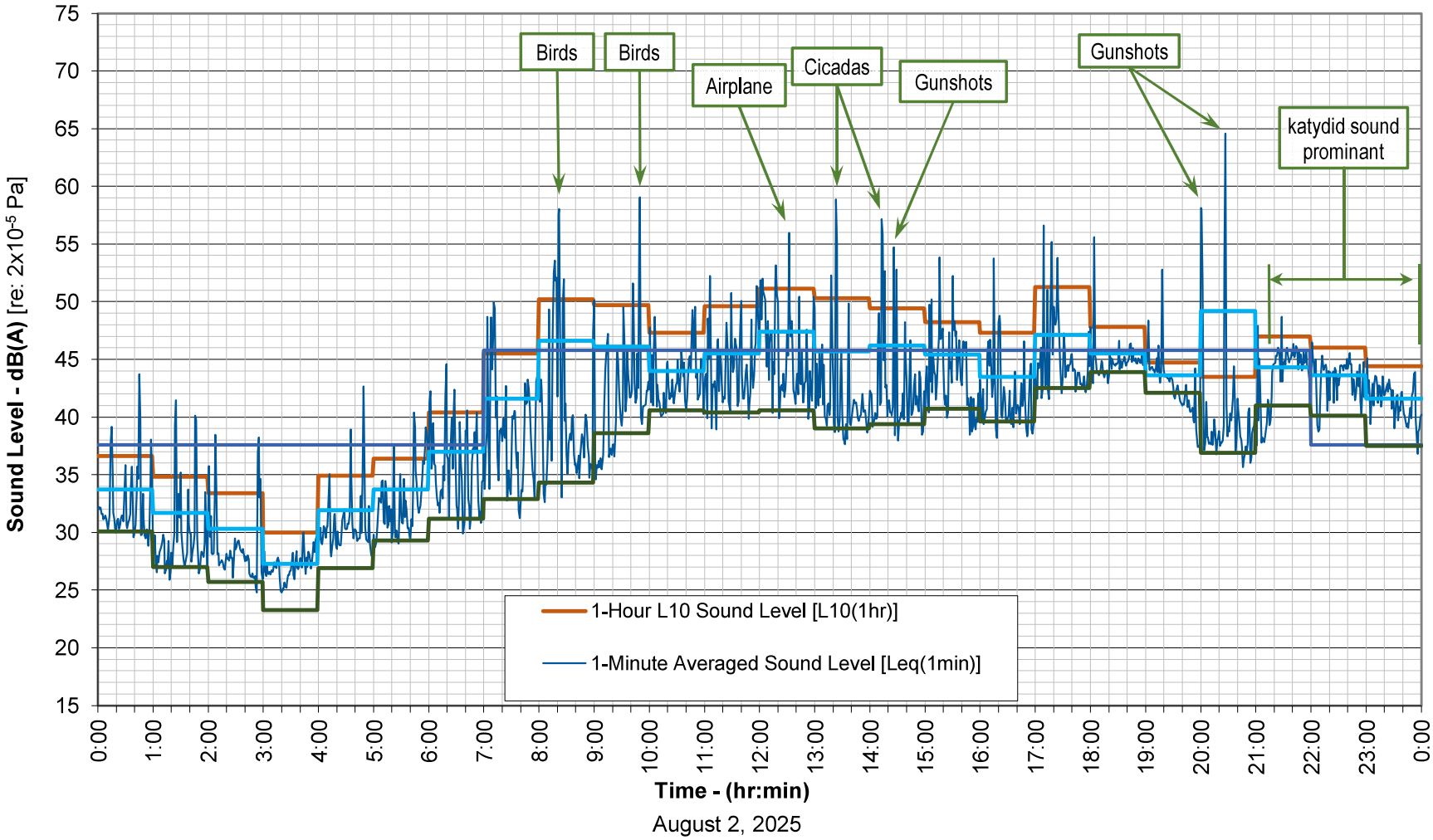
August 1, 2025

EXHIBIT 4A

Ambient Sound Levels at 9788 N Marsh Road

Measured at a Position 1460-ft North of W Hayner Road, and 1240-ft East of N Marsh Road

Study Conducted For: Conway & Cohoctah Townships



August 2, 2025

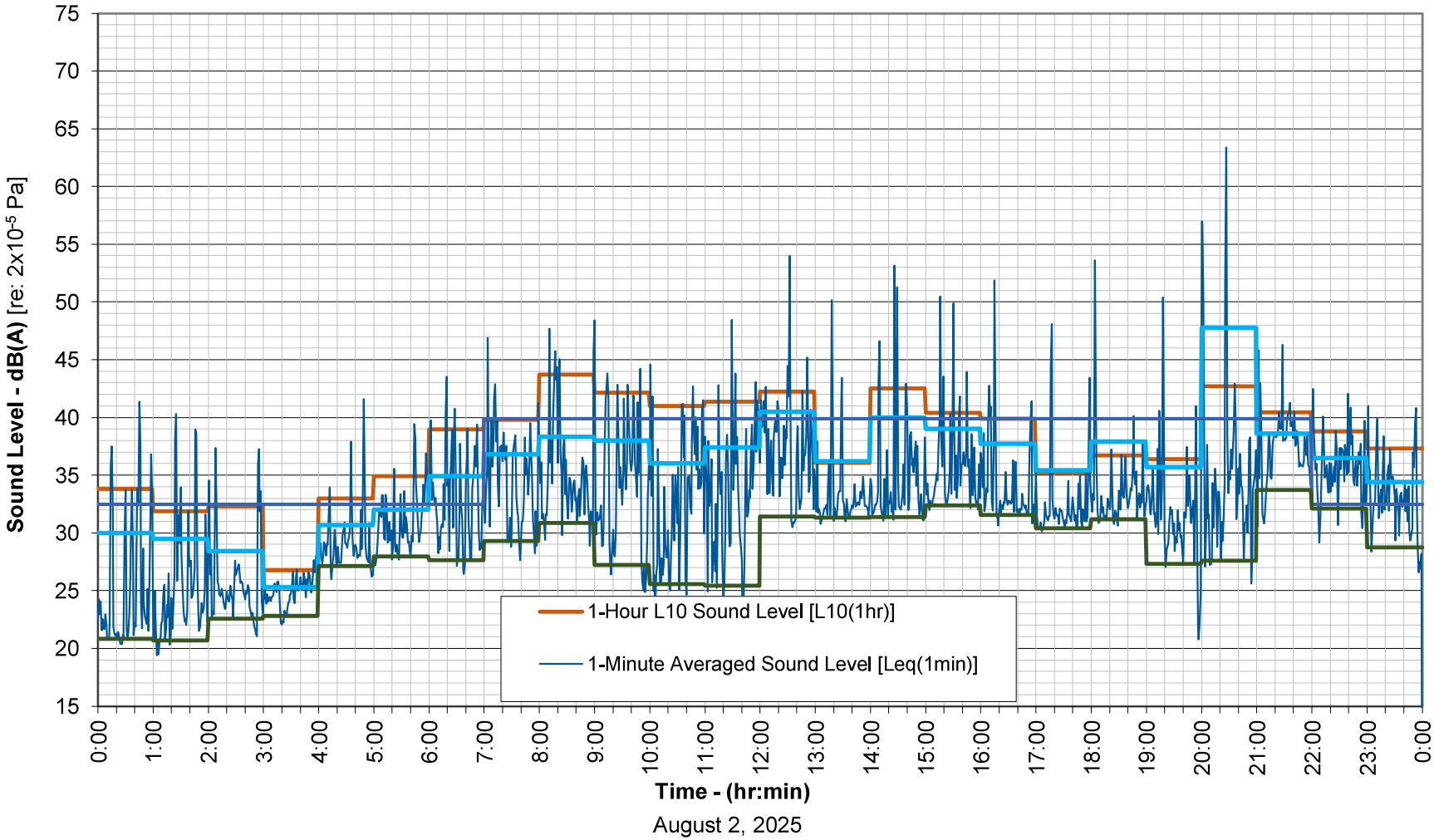
EXHIBIT 4B

Ambient Sound Levels at 9788 N Marsh Road

With Biogenic Filtering (removing sound at 2000 Hz and above)

Measured at a Position 1460-ft North of W Hayner Road, and 1240-ft East of N Marsh Road

Study Conducted For: Conway & Cohoctah Townships



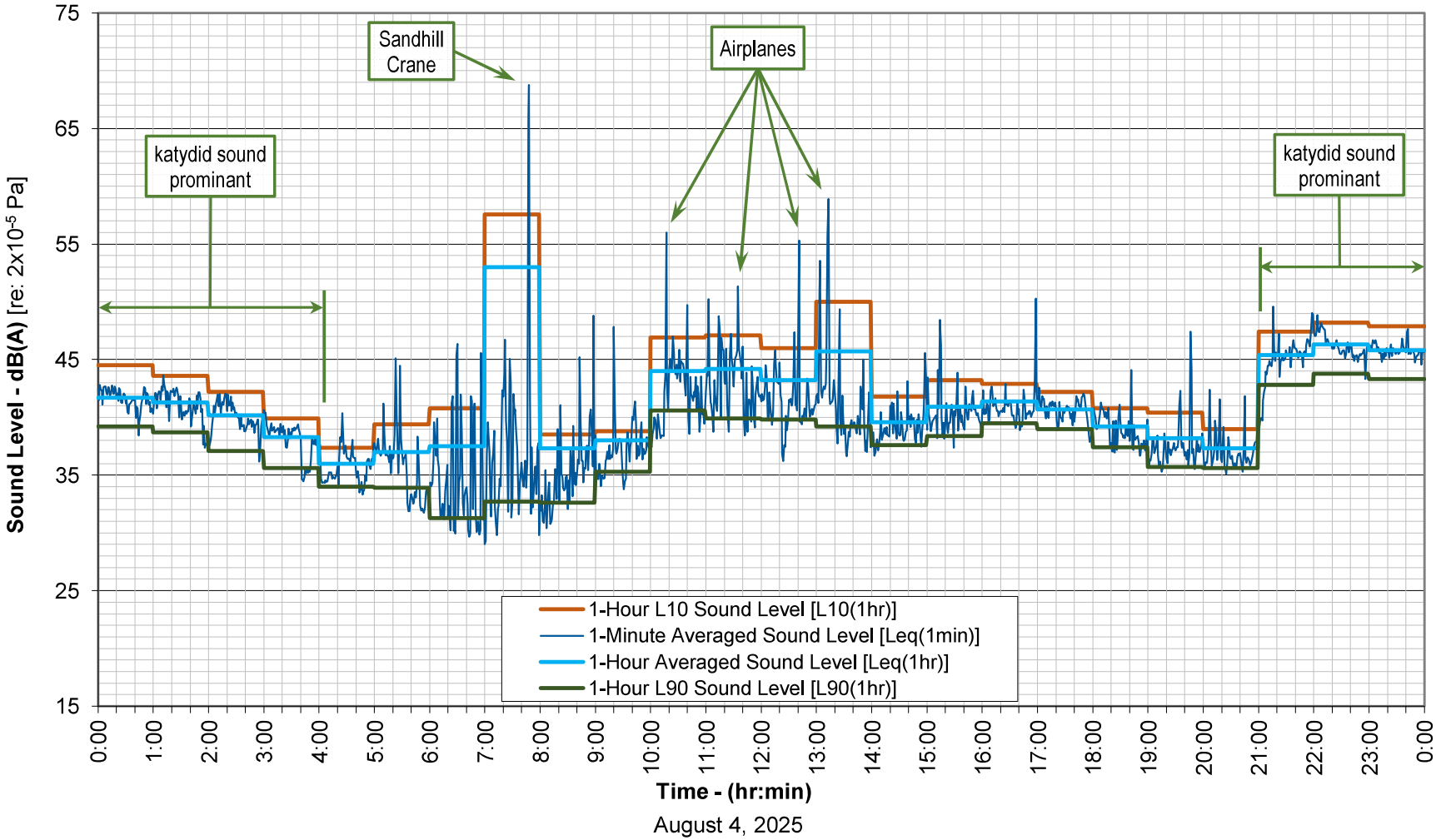
August 2, 2025

EXHIBIT 5A

Ambient Sound Levels at 10785 Fleming Road

Measured at a Position 1450-ft South of Stoner Road, and 380-ft West of Fleming Road

Study Conducted For: Conway & Cohoctah Townships

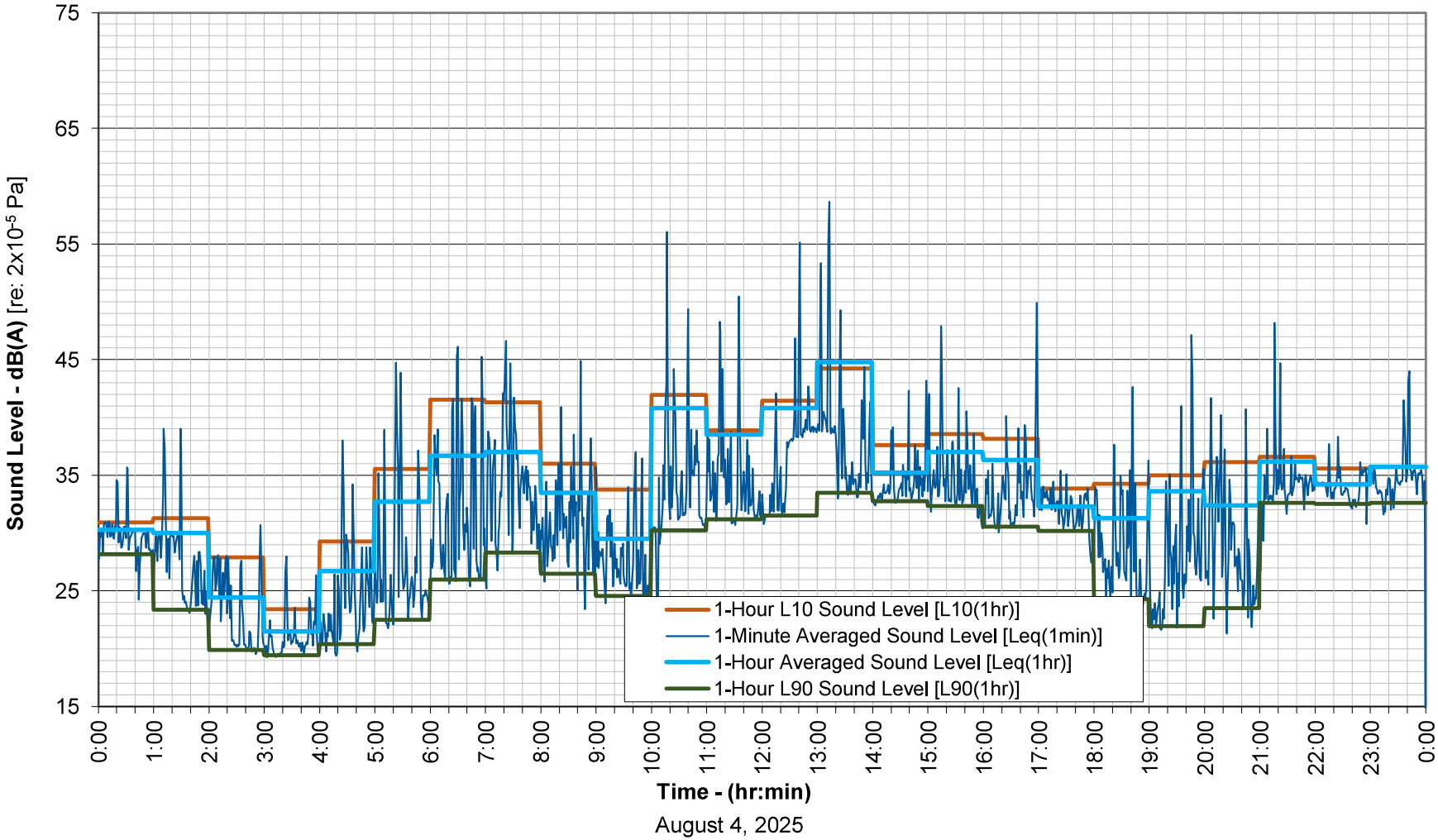


August 4, 2025

EXHIBIT 5B

Ambient Sound Levels at 10785 Fleming Road
With Biogenic Filtering (removing sound at 2000 Hz and above)
Measured at a Position 1450-ft South of Stoner Road, and 380-ft West of Fleming Road

Study Conducted For: Conway & Cohoctah Townships



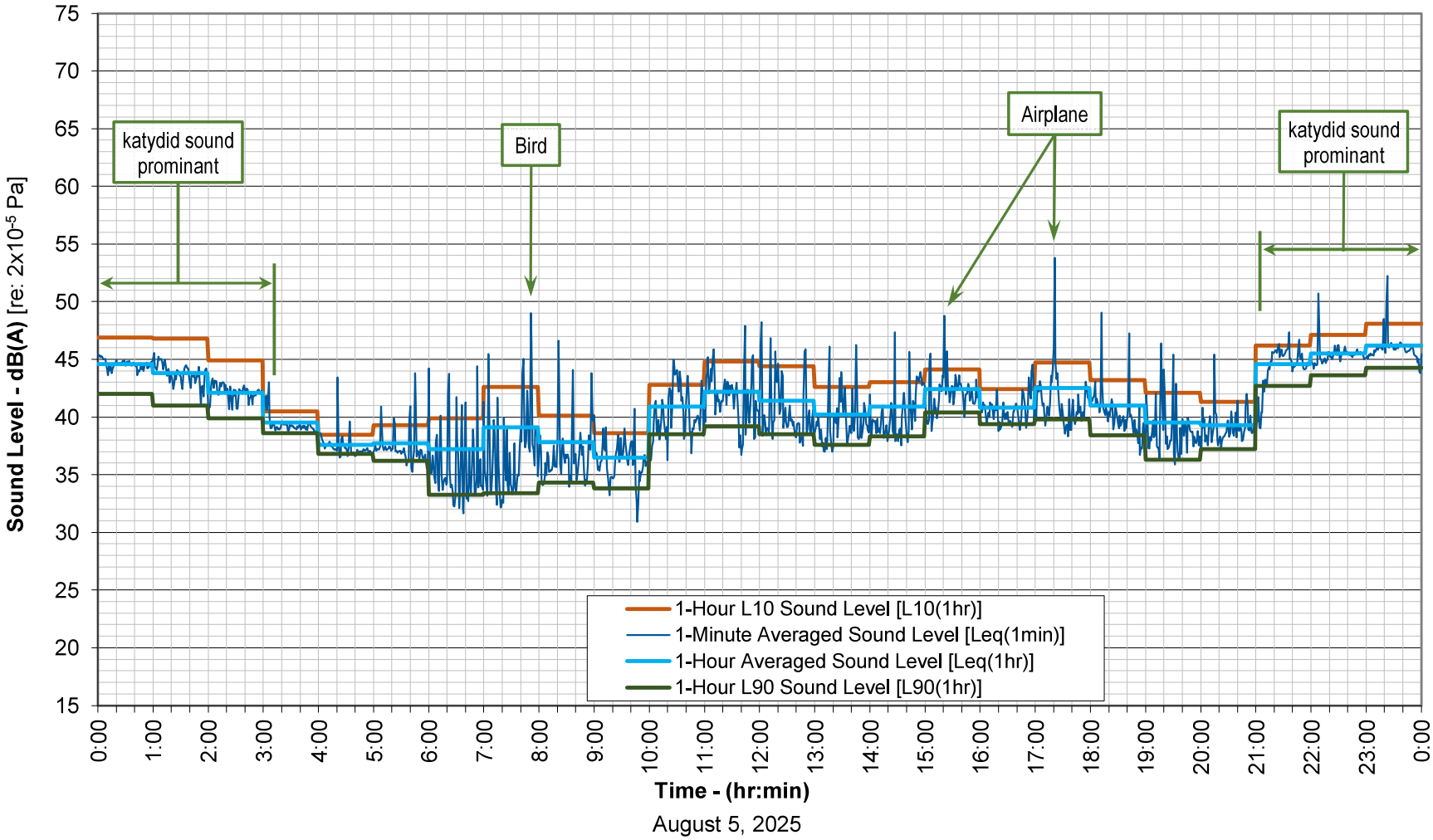
August 4, 2025

EXHIBIT 6A

Ambient Sound Levels at 10785 Fleming Road

Measured at a Position 1450-ft South of Stoner Road, and 380-ft West of Fleming Road

Study Conducted For: Conway & Cohoctah Townships

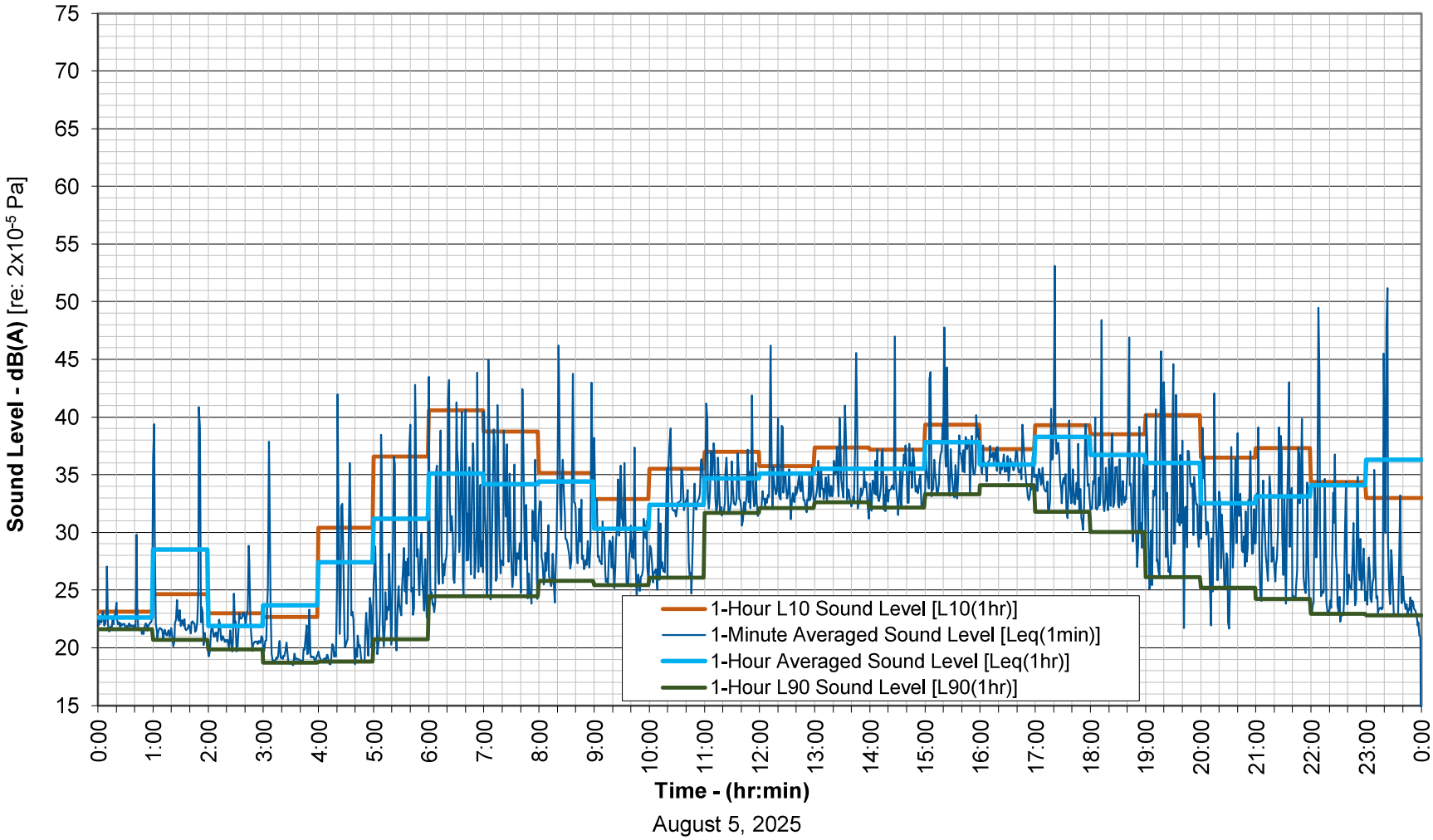


August 5, 2025

EXHIBIT 6B

Ambient Sound Levels at 10785 Fleming Road
With Biogenic Filtering (removing sound at 2000 Hz and above)
Measured at a Position 1450-ft South of Stoner Road, and 380-ft West of Fleming Road

Study Conducted For: Conway & Cohoctah Townships



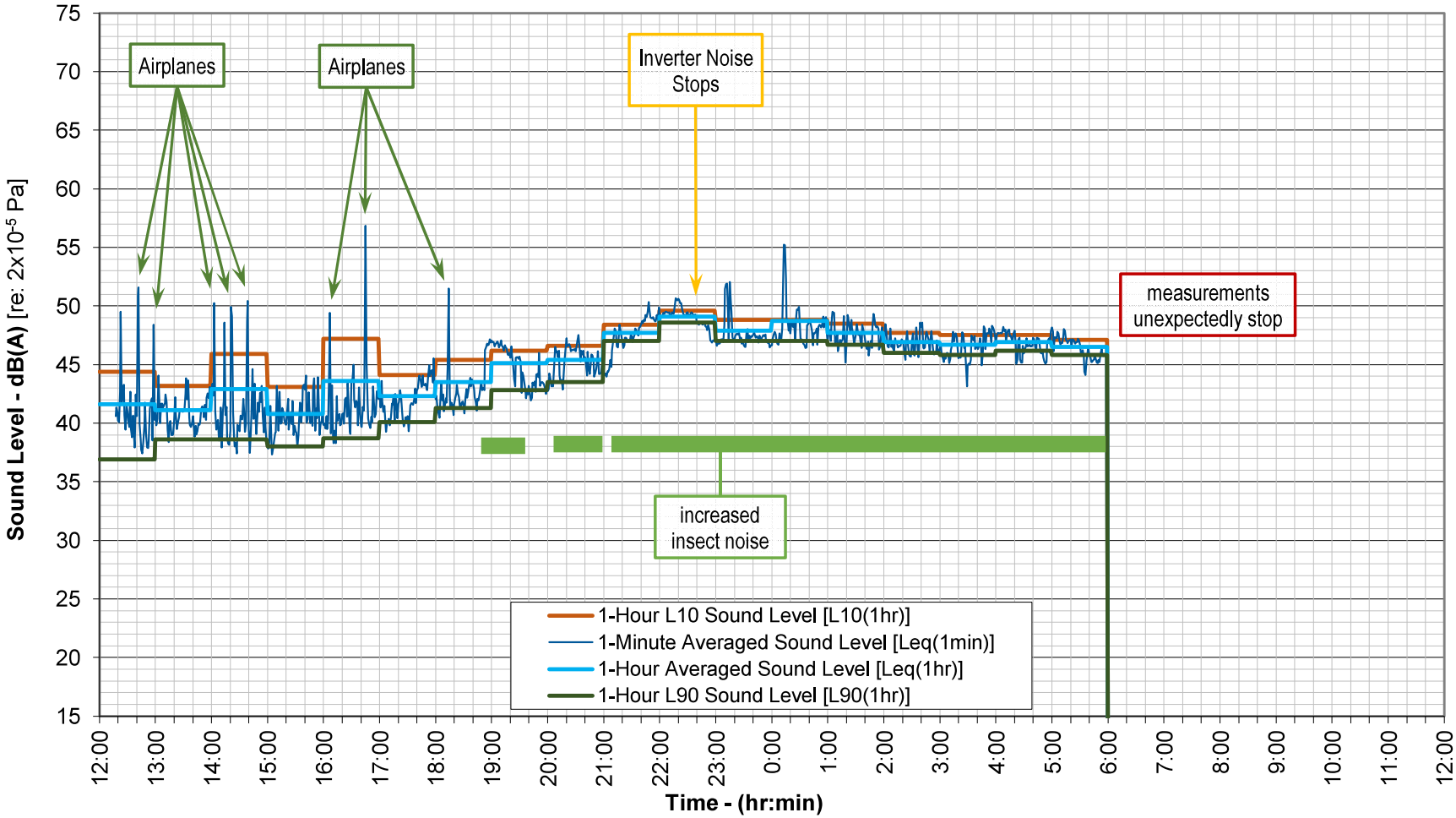
August 5, 2025

EXHIBIT 8A

Ambient Sound Levels at 3496 N Byron Rd

Measured at a Position 3010-ft South of E Juddville Road, and 560-ft East of N Byron Road

Study Conducted For: Conway & Cohoctah Townships

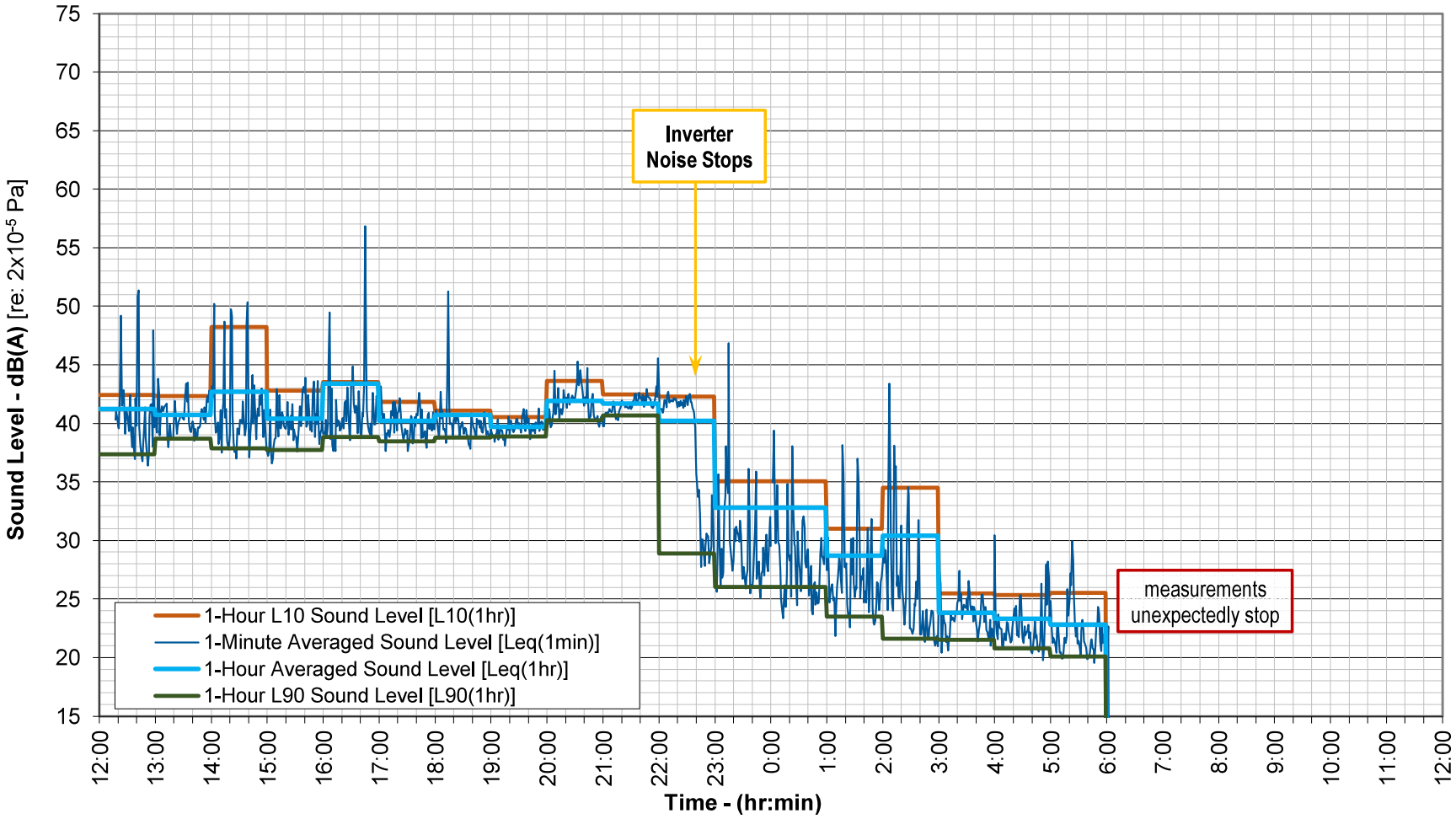


August 9 | August 10, 2025

EXHIBIT 8B

Ambient Sound Levels at 3496 N Byron Rd
With Biogenic Filtering (removing sound at 2000 Hz and above)
Measured at a Position 3010-ft South of E Juddville Road, and 560-ft East of N Byron Road

Study Conducted For: Conway & Cohoctah Townships



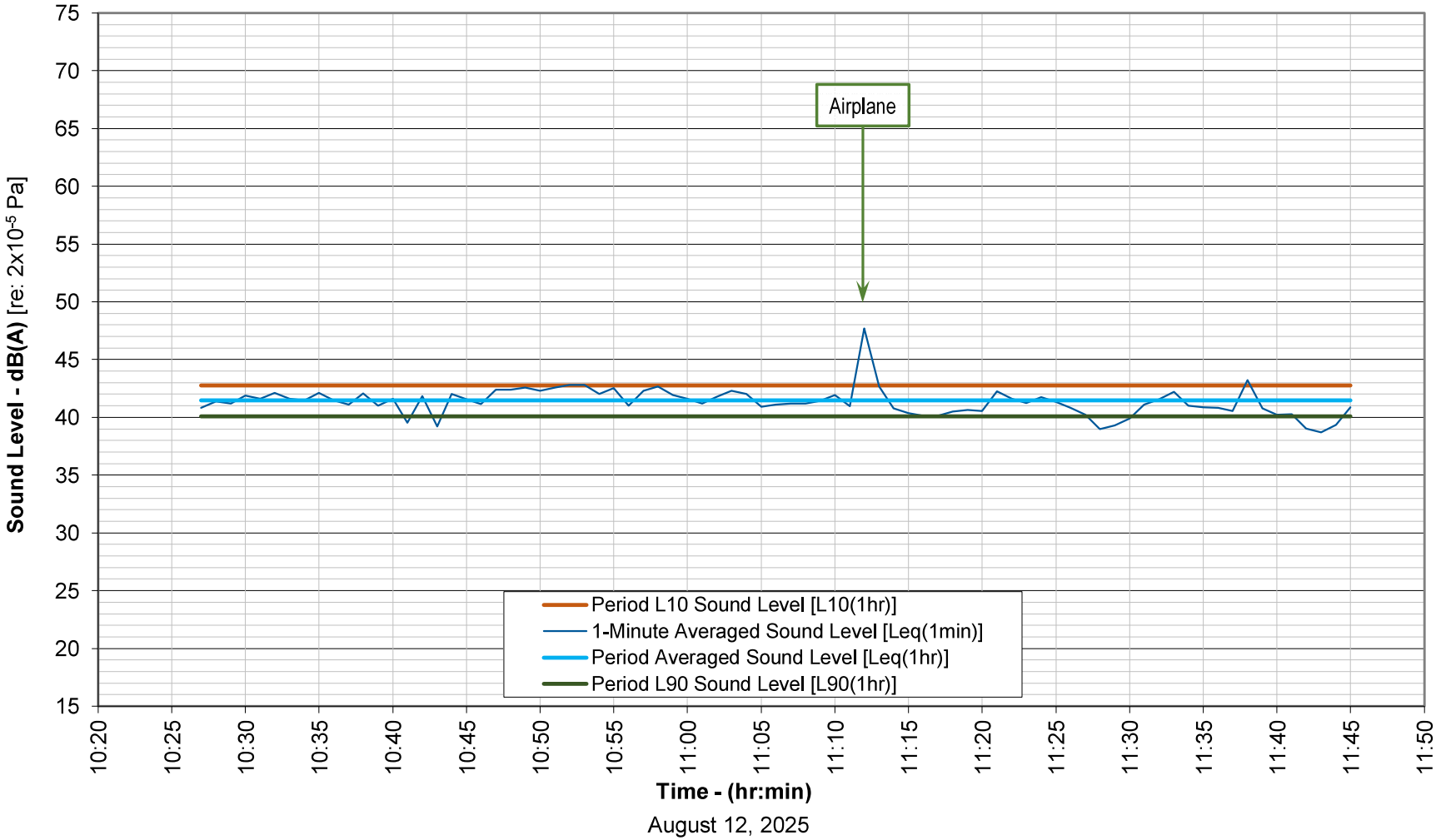
August 9 | August 10, 2025

EXHIBIT 9A

Ambient Sound Levels at 3496 N Byron Rd

Measured at a Position 3010-ft South of E Juddville Road, and 560-ft East of N Byron Road

Study Conducted For: Conway & Cohoctah Townships

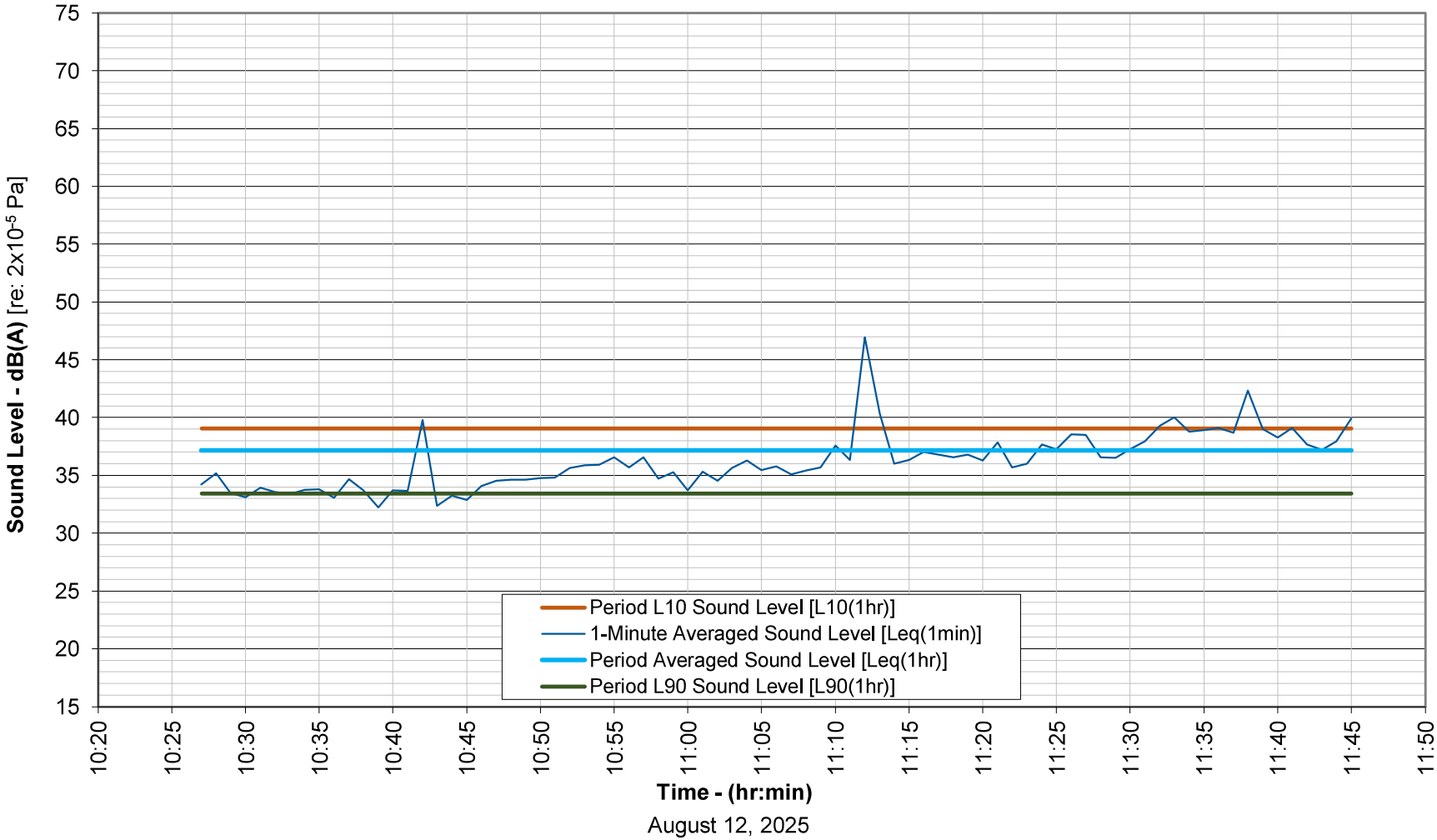


August 12, 2025

EXHIBIT 9B

Ambient Sound Levels at 3496 N Byron Rd
With Biogenic Filtering (removing sound at 2000 Hz and above)
Measured at a Position 3010-ft South of E Juddville Road, and 560-ft East of N Byron Road

Study Conducted For: Conway & Cohoctah Townships



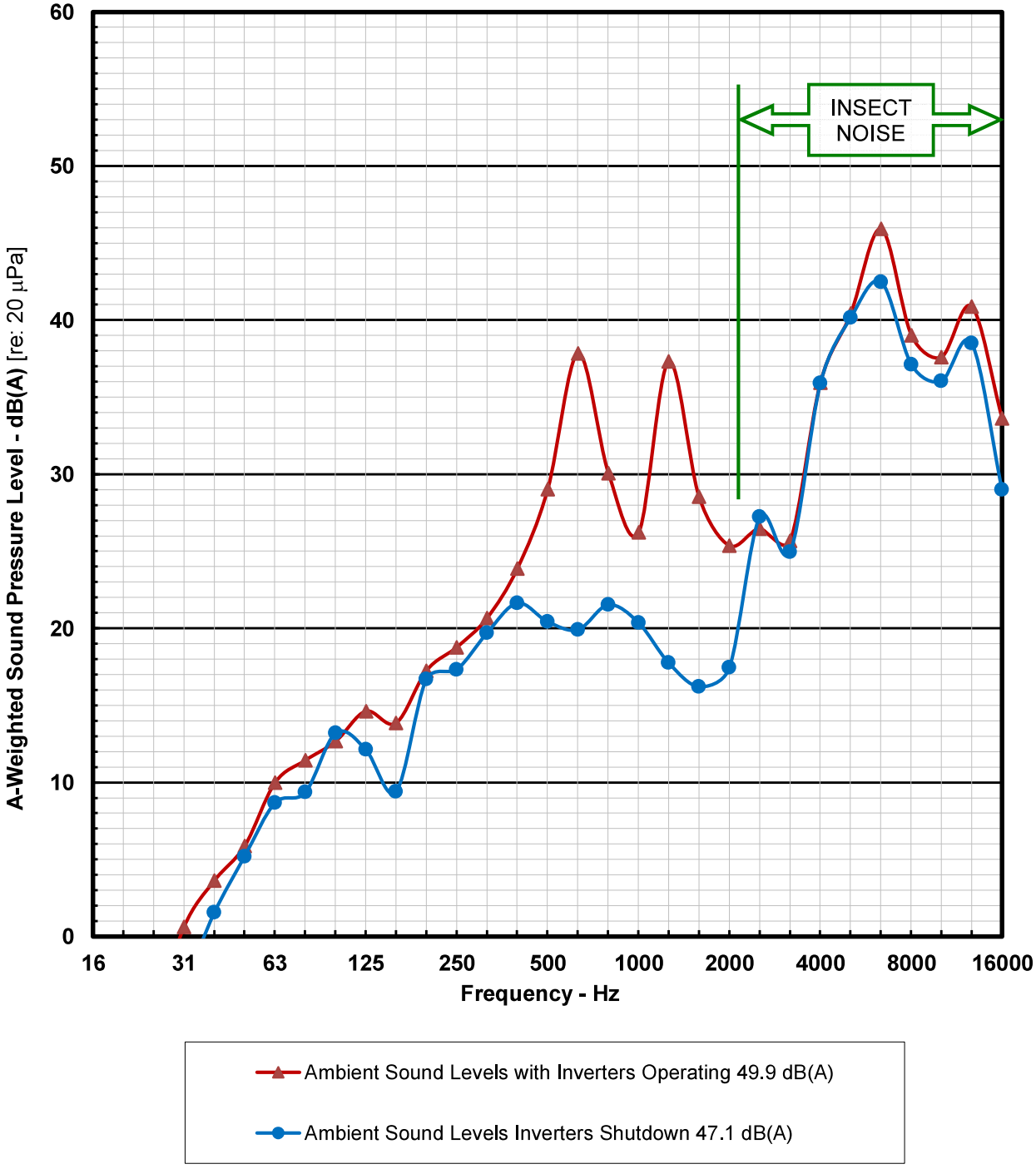
August 12, 2025

K & S ENGINEERS, LLC
Project No. 2025-029 & 030
Test Date: Aug. 9, 2025

EXHIBT 10A

ONE-THIRD OCTAVE BAND SOUND LEVELS OF SOLAR ENERGY FACILITY INVERTER NOISE IMPACT
(ONE-THIRD OCTAVE BANDS)

Study Conducted for: Conway & Cohoctah Townships



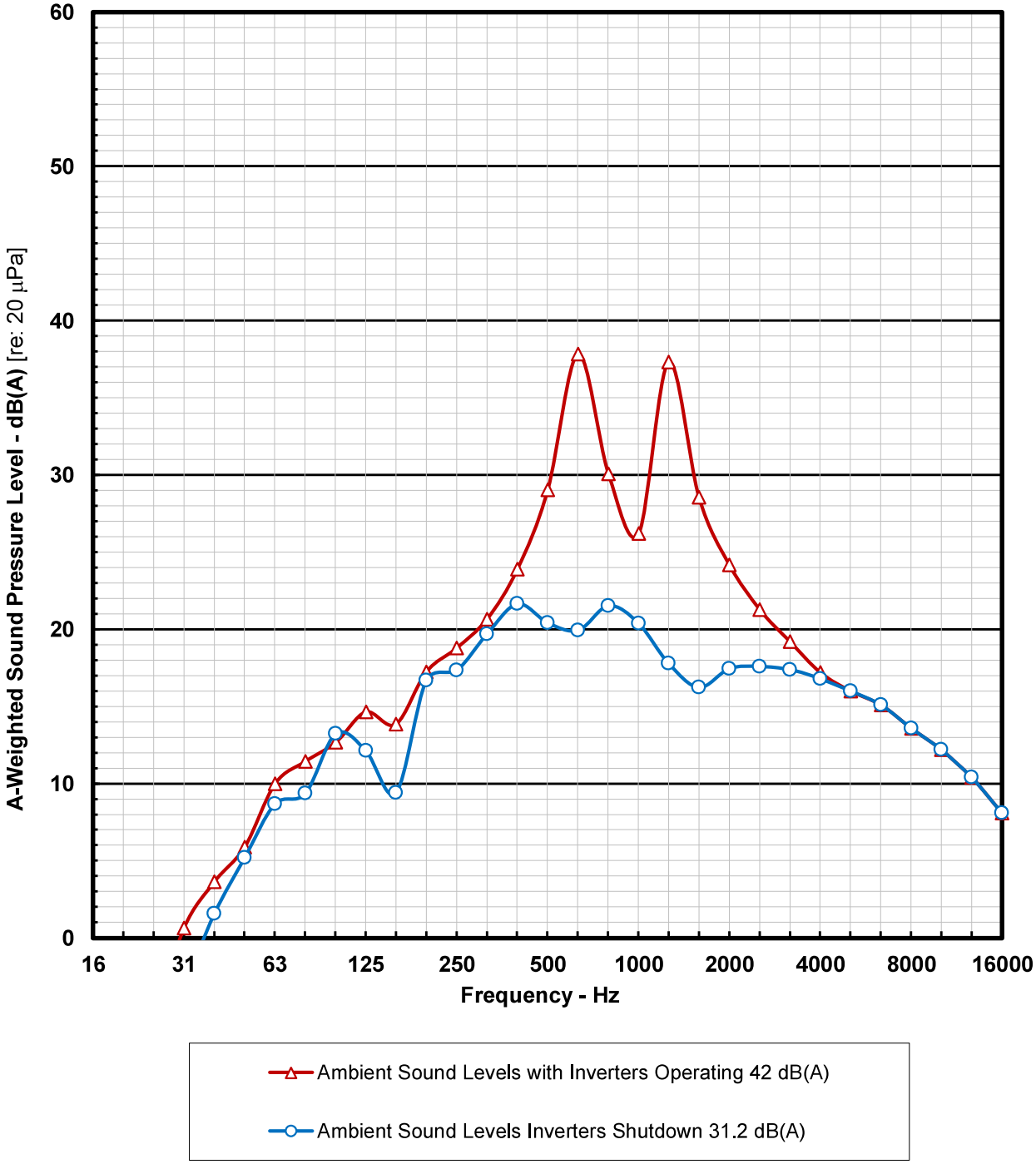
K & S ENGINEERS, LLC
Project No. 2025-029 & 030
Test Date: Aug. 9, 2025

EXHIBT 10B

ONE-THIRD OCTAVE BAND SOUND LEVELS OF SOLAR ENERGY FACILITY INVERTER NOISE IMPACT WITH BIOGENIC SOUNDS REMOVED

(AMBIENT SOUND LEVELS SIMULATED AT 2000 HZ AND ABOVE)

Study Conducted for: Conway & Cohoctah Townships



Atmospheric Conditions at Capital Region Intl. Airport Weather Station

Friday, August 1, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	63 °F	53 °F	70 %	ENE	6 mph	0 mph	29.36 in	0.0 in	Cloudy
1:53 AM	61 °F	53 °F	75 %	NNE	5 mph	0 mph	29.37 in	0.0 in	Mostly Cloudy
2:53 AM	59 °F	53 °F	81 %	N	5 mph	0 mph	29.36 in	0.0 in	Fair
3:53 AM	58 °F	52 °F	81 %	NNW	3 mph	0 mph	29.37 in	0.0 in	Fair
4:53 AM	56 °F	52 °F	87 %	N	3 mph	0 mph	29.37 in	0.0 in	Fair
5:53 AM	56 °F	52 °F	87 %	CALM	0 mph	0 mph	29.39 in	0.0 in	Fair
6:53 AM	55 °F	52 °F	89 %	CALM	0 mph	0 mph	29.41 in	0.0 in	Fair
7:53 AM	58 °F	53 °F	84 %	N	5 mph	0 mph	29.42 in	0.0 in	Fair
8:53 AM	63 °F	54 °F	72 %	NNE	6 mph	0 mph	29.43 in	0.0 in	Fair
9:53 AM	67 °F	55 °F	66 %	NNE	8 mph	0 mph	29.43 in	0.0 in	Fair
10:53 AM	71 °F	54 °F	55 %	NE	9 mph	0 mph	29.44 in	0.0 in	Fair
11:53 AM	72 °F	51 °F	48 %	ENE	13 mph	18 mph	29.45 in	0.0 in	Fair
12:53 PM	74 °F	49 °F	41 %	NE	12 mph	0 mph	29.45 in	0.0 in	Partly Cloudy
1:53 PM	75 °F	50 °F	41 %	ENE	10 mph	0 mph	29.43 in	0.0 in	Partly Cloudy
2:53 PM	75 °F	52 °F	44 %	NNE	8 mph	0 mph	29.44 in	0.0 in	Fair
3:53 PM	74 °F	52 °F	46 %	N	6 mph	0 mph	29.44 in	0.0 in	Partly Cloudy
4:53 PM	75 °F	53 °F	46 %	N	9 mph	0 mph	29.43 in	0.0 in	Fair
5:53 PM	74 °F	51 °F	45 %	VAR	5 mph	0 mph	29.43 in	0.0 in	Partly Cloudy
6:53 PM	74 °F	51 °F	45 %	NNE	7 mph	0 mph	29.41 in	0.0 in	Partly Cloudy
7:53 PM	71 °F	50 °F	47 %	NNE	5 mph	0 mph	29.41 in	0.0 in	Fair
8:53 PM	68 °F	51 °F	55 %	NNE	3 mph	0 mph	29.42 in	0.0 in	Fair
9:53 PM	62 °F	53 °F	72 %	CALM	0 mph	0 mph	29.43 in	0.0 in	Fair
10:53 PM	60 °F	54 °F	80 %	CALM	0 mph	0 mph	29.44 in	0.0 in	Fair
11:53 PM	57 °F	53 °F	87 %	CALM	0 mph	0 mph	29.44 in	0.0 in	Fair

Atmospheric Conditions at Bishop Intl. Airport Weather Station

Friday, August 1, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	63 °F	52 °F	67 %	NNE	7 mph	0 mph	29.44 in	0.0 in	Cloudy
1:53 AM	61 °F	52 °F	72 %	NE	6 mph	0 mph	29.44 in	0.0 in	Partly Cloudy
2:53 AM	59 °F	52 °F	78 %	NNE	6 mph	0 mph	29.44 in	0.0 in	Fair
3:53 AM	58 °F	52 °F	81 %	N	5 mph	0 mph	29.45 in	0.0 in	Fair
4:53 AM	57 °F	52 °F	83 %	N	5 mph	0 mph	29.45 in	0.0 in	Fair
5:53 AM	56 °F	52 °F	87 %	N	3 mph	0 mph	29.47 in	0.0 in	Fair
6:53 AM	55 °F	52 °F	89 %	WNW	5 mph	0 mph	29.48 in	0.0 in	Fair
7:53 AM	60 °F	54 °F	80 %	N	5 mph	0 mph	29.49 in	0.0 in	Fair
8:53 AM	65 °F	55 °F	70 %	N	6 mph	0 mph	29.50 in	0.0 in	Fair
9:53 AM	70 °F	58 °F	65 %	NNE	13 mph	0 mph	29.50 in	0.0 in	Fair
10:53 AM	72 °F	54 °F	53 %	NE	12 mph	0 mph	29.51 in	0.0 in	Fair
11:53 AM	73 °F	53 °F	49 %	NNE	14 mph	21 mph	29.52 in	0.0 in	Mostly Cloudy
12:53 PM	75 °F	52 °F	44 %	ENE	9 mph	0 mph	29.52 in	0.0 in	Fair
1:53 PM	73 °F	50 °F	44 %	NE	7 mph	0 mph	29.51 in	0.0 in	Partly Cloudy
2:53 PM	77 °F	51 °F	40 %		0 mph	0 mph	29.50 in	0.0 in	Fair
3:53 PM	74 °F	51 °F	45 %	ENE	12 mph	0 mph	29.51 in	0.0 in	Mostly Cloudy
4:53 PM	77 °F	52 °F	42 %	VAR	5 mph	0 mph	29.50 in	0.0 in	Partly Cloudy
5:53 PM	76 °F	51 °F	42 %	N	9 mph	0 mph	29.50 in	0.0 in	Fair
6:53 PM	75 °F	51 °F	43 %	ENE	9 mph	0 mph	29.49 in	0.0 in	Mostly Cloudy
7:53 PM	72 °F	51 °F	48 %	NNE	6 mph	0 mph	29.49 in	0.0 in	Fair
8:53 PM	69 °F	50 °F	51 %	NNE	7 mph	0 mph	29.49 in	0.0 in	Fair
9:53 PM	63 °F	51 °F	65 %	E	5 mph	0 mph	29.51 in	0.0 in	Fair
10:53 PM	63 °F	52 °F	67 %	E	3 mph	0 mph	29.52 in	0.0 in	Fair
11:53 PM	60 °F	53 °F	78 %	CALM	0 mph	0 mph	29.52 in	0.0 in	Fair

Atmospheric Conditions at Capital Region Intl. Airport Weather Station

Saturday, August 2, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	57 °F	53 °F	87 %	CALM	0 mph	0 mph	29.44 in	0.0 in	Fair
1:53 AM	56 °F	53 °F	90 %	CALM	0 mph	0 mph	29.44 in	0.0 in	Fair
2:53 AM	55 °F	52 °F	89 %	CALM	0 mph	0 mph	29.44 in	0.0 in	Fair
3:53 AM	54 °F	52 °F	93 %	CALM	0 mph	0 mph	29.44 in	0.0 in	Fair
4:53 AM	53 °F	51 °F	93 %	CALM	0 mph	0 mph	29.45 in	0.0 in	Fair
5:53 AM	52 °F	51 °F	97 %	CALM	0 mph	0 mph	29.45 in	0.0 in	Fair
6:53 AM	52 °F	50 °F	93 %	CALM	0 mph	0 mph	29.46 in	0.0 in	Fair
7:53 AM	56 °F	53 °F	90 %	CALM	0 mph	0 mph	29.45 in	0.0 in	Fair
8:53 AM	61 °F	54 °F	78 %	CALM	0 mph	0 mph	29.46 in	0.0 in	Fair
9:53 AM	67 °F	54 °F	63 %	CALM	0 mph	0 mph	29.46 in	0.0 in	Fair
10:53 AM	71 °F	52 °F	51 %	NNW	3 mph	0 mph	29.45 in	0.0 in	Fair
11:53 AM	73 °F	50 °F	44 %	VAR	3 mph	0 mph	29.45 in	0.0 in	Fair
12:53 PM	75 °F	49 °F	40 %	N	6 mph	0 mph	29.44 in	0.0 in	Fair
1:53 PM	75 °F	47 °F	37 %	N	6 mph	0 mph	29.42 in	0.0 in	Fair
2:53 PM	76 °F	50 °F	40 %		0 mph	0 mph	29.40 in	0.0 in	Fair
3:53 PM	76 °F	49 °F	38 %	CALM	0 mph	0 mph	29.39 in	0.0 in	Fair
4:53 PM	77 °F	51 °F	40 %	NE	6 mph	0 mph	29.38 in	0.0 in	Fair
5:53 PM	76 °F	51 °F	42 %	NE	7 mph	0 mph	29.36 in	0.0 in	Fair
6:53 PM	75 °F	51 °F	43 %	ENE	6 mph	0 mph	29.34 in	0.0 in	Haze
7:53 PM	73 °F	54 °F	51 %	CALM	0 mph	0 mph	29.34 in	0.0 in	Haze
8:53 PM	68 °F	56 °F	65 %	CALM	0 mph	0 mph	29.34 in	0.0 in	Haze
9:53 PM	65 °F	56 °F	73 %	CALM	0 mph	0 mph	29.34 in	0.0 in	Fair
10:53 PM	63 °F	54 °F	72 %	CALM	0 mph	0 mph	29.33 in	0.0 in	Fair
11:53 PM	60 °F	56 °F	86 %	CALM	0 mph	0 mph	29.33 in	0.0 in	Fair

Atmospheric Conditions at Bishop Intl. Airport Weather Station

Saturday, August 2, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	57 °F	53 °F	87 %	SSE	3 mph	0 mph	29.52 in	0.0 in	Fair
1:53 AM	56 °F	53 °F	90 %	CALM	0 mph	0 mph	29.52 in	0.0 in	Fair
2:53 AM	54 °F	52 °F	93 %	CALM	0 mph	0 mph	29.51 in	0.0 in	Fair
3:53 AM	52 °F	51 °F	97 %	CALM	0 mph	0 mph	29.52 in	0.0 in	Fair
4:53 AM	53 °F	51 °F	93 %	CALM	0 mph	0 mph	29.53 in	0.0 in	Fair
5:53 AM	52 °F	51 °F	97 %	CALM	0 mph	0 mph	29.53 in	0.0 in	Fair
6:53 AM	50 °F	49 °F	96 %	CALM	0 mph	0 mph	29.53 in	0.0 in	Fair
7:53 AM	55 °F	54 °F	96 %	CALM	0 mph	0 mph	29.53 in	0.0 in	Fair
8:53 AM	60 °F	56 °F	86 %	CALM	0 mph	0 mph	29.53 in	0.0 in	Fair
9:53 AM	66 °F	58 °F	75 %	CALM	0 mph	0 mph	29.53 in	0.0 in	Fair
10:53 AM	72 °F	55 °F	55 %	CALM	0 mph	0 mph	29.53 in	0.0 in	Fair
11:53 AM	75 °F	51 °F	43 %	VAR	5 mph	0 mph	29.52 in	0.0 in	Fair
12:53 PM	76 °F	53 °F	45 %	VAR	3 mph	0 mph	29.51 in	0.0 in	Fair
1:53 PM	76 °F	51 °F	42 %	N	5 mph	0 mph	29.49 in	0.0 in	Fair
2:53 PM	77 °F	54 °F	45 %	VAR	6 mph	0 mph	29.48 in	0.0 in	Fair
3:53 PM	78 °F	54 °F	43 %	N	9 mph	0 mph	29.46 in	0.0 in	Fair
4:53 PM	77 °F	52 °F	42 %	VAR	3 mph	0 mph	29.45 in	0.0 in	Haze
5:53 PM	77 °F	54 °F	45 %	CALM	0 mph	0 mph	29.44 in	0.0 in	Fair
6:53 PM	76 °F	54 °F	46 %	NNW	3 mph	0 mph	29.42 in	0.0 in	Fair
7:53 PM	74 °F	54 °F	50 %	N	3 mph	0 mph	29.42 in	0.0 in	Fair
8:53 PM	69 °F	59 °F	70 %	CALM	0 mph	0 mph	29.42 in	0.0 in	Fair
9:53 PM	64 °F	58 °F	80 %	CALM	0 mph	0 mph	29.42 in	0.0 in	Fair
10:53 PM	61 °F	57 °F	87 %	CALM	0 mph	0 mph	29.42 in	0.0 in	Fair
11:53 PM	61 °F	57 °F	87 %	CALM	0 mph	0 mph	29.41 in	0.0 in	Fair

Atmospheric Conditions at Capital Region Intl. Airport Weather Station

Monday, August 4, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	62 °F	59 °F	90 %	CALM	0 mph	0 mph	29.25 in	0.0 in	Mostly Cloudy
1:53 AM	61 °F	58 °F	90 %	CALM	0 mph	0 mph	29.25 in	0.0 in	Fair
2:53 AM	60 °F	58 °F	93 %	CALM	0 mph	0 mph	29.25 in	0.0 in	Fair
3:53 AM	58 °F	56 °F	93 %	CALM	0 mph	0 mph	29.25 in	0.0 in	Fair
4:53 AM	58 °F	56 °F	93 %	CALM	0 mph	0 mph	29.26 in	0.0 in	Fair
5:53 AM	57 °F	56 °F	96 %	ENE	3 mph	0 mph	29.27 in	0.0 in	Mist
6:44 AM	56 °F	55 °F	97 %	CALM	0 mph	0 mph	29.27 in	0.0 in	Mist
6:53 AM	57 °F	56 °F	96 %	CALM	0 mph	0 mph	29.27 in	0.0 in	Mist
7:08 AM	57 °F	56 °F	96 %	CALM	0 mph	0 mph	29.27 in	0.0 in	Mist
7:53 AM	59 °F	57 °F	93 %	CALM	0 mph	0 mph	29.27 in	0.0 in	Mist
8:53 AM	66 °F	59 °F	78 %	CALM	0 mph	0 mph	29.29 in	0.0 in	Fair
9:53 AM	72 °F	60 °F	66 %	E	5 mph	0 mph	29.29 in	0.0 in	Haze
10:53 AM	75 °F	57 °F	53 %	NNE	6 mph	0 mph	29.29 in	0.0 in	Haze
11:53 AM	76 °F	57 °F	52 %	ENE	9 mph	0 mph	29.29 in	0.0 in	Haze
12:53 PM	78 °F	53 °F	42 %	VAR	7 mph	0 mph	29.28 in	0.0 in	Fair
1:53 PM	79 °F	54 °F	42 %	SE	6 mph	0 mph	29.28 in	0.0 in	Fair
2:53 PM	79 °F	54 °F	42 %	SE	7 mph	0 mph	29.27 in	0.0 in	Fair
3:53 PM	79 °F	55 °F	44 %	ENE	3 mph	0 mph	29.27 in	0.0 in	Mostly Cloudy
4:53 PM	79 °F	57 °F	47 %	ENE	6 mph	0 mph	29.25 in	0.0 in	Fair
5:53 PM	79 °F	59 °F	50 %	NE	8 mph	0 mph	29.25 in	0.0 in	Fair
6:53 PM	77 °F	60 °F	56 %	NE	3 mph	0 mph	29.25 in	0.0 in	Partly Cloudy
7:53 PM	76 °F	61 °F	60 %	NE	5 mph	0 mph	29.25 in	0.0 in	Partly Cloudy
8:53 PM	73 °F	61 °F	66 %	NE	3 mph	0 mph	29.26 in	0.0 in	Haze
9:53 PM	70 °F	62 °F	76 %	NE	5 mph	0 mph	29.27 in	0.0 in	Partly Cloudy
10:53 PM	69 °F	61 °F	75 %	ENE	6 mph	0 mph	29.28 in	0.0 in	Cloudy
11:53 PM	68 °F	60 °F	76 %	ENE	6 mph	0 mph	29.29 in	0.0 in	Haze

Atmospheric Conditions at Bishop Intl. Airport Weather Station

Monday, August 4, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	62 °F	59 °F	90 %	CALM	0 mph	0 mph	29.34 in	0.0 in	Fair
1:53 AM	61 °F	58 °F	90 %	CALM	0 mph	0 mph	29.34 in	0.0 in	Fair
2:53 AM	57 °F	56 °F	96 %	CALM	0 mph	0 mph	29.34 in	0.0 in	Haze
3:07 AM	60 °F	59 °F	96 %	CALM	0 mph	0 mph	29.34 in	0.0 in	Haze
3:53 AM	59 °F	58 °F	96 %	CALM	0 mph	0 mph	29.35 in	0.0 in	Haze
4:53 AM	56 °F	55 °F	97 %	CALM	0 mph	0 mph	29.35 in	0.0 in	Haze
5:51 AM	54 °F	54 °F	100 %	CALM	0 mph	0 mph	29.36 in	0.0 in	Haze
6:07 AM	56 °F	56 °F	100 %	S	3 mph	0 mph	29.37 in	0.0 in	Haze
6:20 AM	56 °F	55 °F	97 %	CALM	0 mph	0 mph	29.37 in	0.0 in	Haze
6:43 AM	56 °F	55 °F	97 %	CALM	0 mph	0 mph	29.37 in	0.0 in	Haze
6:49 AM	57 °F	57 °F	100 %	CALM	0 mph	0 mph	29.36 in	0.0 in	Haze
7:53 AM	60 °F	59 °F	96 %	CALM	0 mph	0 mph	29.37 in	0.0 in	Haze
8:53 AM	67 °F	62 °F	84 %	CALM	0 mph	0 mph	29.37 in	0.0 in	Haze
9:53 AM	73 °F	61 °F	66 %	ENE	5 mph	0 mph	29.38 in	0.0 in	Fair
10:53 AM	76 °F	61 °F	60 %	E	5 mph	0 mph	29.39 in	0.0 in	Haze
11:53 AM	77 °F	60 °F	56 %	CALM	0 mph	0 mph	29.39 in	0.0 in	Haze
12:53 PM	79 °F	59 °F	50 %	VAR	3 mph	0 mph	29.38 in	0.0 in	Haze
1:53 PM	80 °F	60 °F	50 %	E	8 mph	0 mph	29.37 in	0.0 in	Haze
2:53 PM	80 °F	61 °F	52 %	E	8 mph	0 mph	29.36 in	0.0 in	Haze
3:53 PM	81 °F	61 °F	50 %	ESE	9 mph	0 mph	29.35 in	0.0 in	Haze
4:53 PM	80 °F	58 °F	47 %	ESE	9 mph	0 mph	29.35 in	0.0 in	Haze
5:53 PM	80 °F	58 °F	47 %	E	7 mph	0 mph	29.35 in	0.0 in	Haze
6:53 PM	78 °F	60 °F	54 %	E	8 mph	0 mph	29.34 in	0.0 in	Fair
7:53 PM	76 °F	62 °F	62 %	ESE	7 mph	0 mph	29.35 in	0.0 in	Smoke
8:53 PM	74 °F	60 °F	62 %	E	7 mph	0 mph	29.36 in	0.0 in	Smoke
9:53 PM	72 °F	61 °F	68 %	ENE	10 mph	0 mph	29.37 in	0.0 in	Smoke
10:53 PM	70 °F	59 °F	68 %	E	9 mph	0 mph	29.39 in	0.0 in	Smoke
11:53 PM	67 °F	59 °F	76 %	E	7 mph	0 mph	29.39 in	0.0 in	Haze

Atmospheric Conditions at Capital Region Intl. Airport Weather Station

Tuesday, August 5, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	66 °F	60 °F	81 %	ENE	6 mph	0 mph	29.30 in	0.0 in	Haze
1:53 AM	65 °F	60 °F	84 %	CALM	0 mph	0 mph	29.31 in	0.0 in	Cloudy
2:53 AM	63 °F	60 °F	90 %	NNE	3 mph	0 mph	29.31 in	0.0 in	Fair
3:53 AM	62 °F	59 °F	90 %	CALM	0 mph	0 mph	29.31 in	0.0 in	Fair
4:53 AM	60 °F	58 °F	93 %	CALM	0 mph	0 mph	29.31 in	0.0 in	Fair
5:53 AM	60 °F	57 °F	90 %	NNE	3 mph	0 mph	29.32 in	0.0 in	Mostly Cloudy
6:53 AM	61 °F	58 °F	90 %	CALM	0 mph	0 mph	29.34 in	0.0 in	Mist
7:53 AM	61 °F	59 °F	93 %	NNE	3 mph	0 mph	29.35 in	0.0 in	Mist
8:53 AM	65 °F	61 °F	87 %	NNE	3 mph	0 mph	29.37 in	0.0 in	Haze
9:53 AM	69 °F	61 °F	75 %	NE	6 mph	0 mph	29.37 in	0.0 in	Fair
10:53 AM	74 °F	59 °F	59 %	NE	5 mph	0 mph	29.37 in	0.0 in	Haze
11:53 AM	77 °F	59 °F	54 %	NE	9 mph	0 mph	29.37 in	0.0 in	Haze
12:53 PM	80 °F	61 °F	52 %	ENE	9 mph	0 mph	29.36 in	0.0 in	Haze
1:53 PM	82 °F	60 °F	47 %	ENE	7 mph	0 mph	29.35 in	0.0 in	Haze
2:53 PM	81 °F	59 °F	47 %	ENE	13 mph	17 mph	29.34 in	0.0 in	Haze
3:53 PM	83 °F	59 °F	44 %	NNE	8 mph	18 mph	29.33 in	0.0 in	Haze
4:53 PM	80 °F	60 °F	50 %	NNE	8 mph	0 mph	29.32 in	0.0 in	Haze
5:53 PM	81 °F	61 °F	50 %	NE	12 mph	0 mph	29.32 in	0.0 in	Haze
6:53 PM	77 °F	64 °F	64 %	NNE	10 mph	0 mph	29.33 in	0.0 in	Haze
7:53 PM	74 °F	65 °F	73 %	N	6 mph	0 mph	29.33 in	0.0 in	Haze
8:53 PM	72 °F	64 °F	76 %	NNE	5 mph	0 mph	29.34 in	0.0 in	Haze
9:53 PM	72 °F	61 °F	68 %	NE	8 mph	0 mph	29.35 in	0.0 in	Mostly Cloudy
10:53 PM	68 °F	60 °F	76 %	NE	9 mph	0 mph	29.36 in	0.0 in	Fair
11:53 PM	68 °F	62 °F	81 %	ENE	7 mph	0 mph	29.36 in	0.0 in	Cloudy

Atmospheric Conditions at Bishop Intl. Airport Weather Station

Tuesday, August 5, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	65 °F	59 °F	81 %	E	7 mph	0 mph	29.40 in	0.0 in	Haze
1:53 AM	64 °F	59 °F	84 %	E	3 mph	0 mph	29.40 in	0.0 in	Haze
2:53 AM	63 °F	60 °F	90 %	ENE	6 mph	0 mph	29.40 in	0.0 in	Fair
3:53 AM	62 °F	60 °F	93 %	E	5 mph	0 mph	29.40 in	0.0 in	Fair
4:53 AM	60 °F	59 °F	96 %	E	5 mph	0 mph	29.41 in	0.0 in	Fair
5:53 AM	61 °F	59 °F	93 %	E	6 mph	0 mph	29.41 in	0.0 in	Fair
6:53 AM	62 °F	60 °F	93 %	NNE	5 mph	0 mph	29.43 in	0.0 in	Mist
7:53 AM	65 °F	62 °F	90 %	NNE	5 mph	0 mph	29.43 in	0.0 in	Mist
8:53 AM	69 °F	63 °F	81 %	NE	9 mph	0 mph	29.44 in	0.0 in	Fair
9:53 AM	73 °F	63 °F	71 %		0 mph	0 mph	29.44 in	0.0 in	Haze
10:53 AM	76 °F	63 °F	64 %		0 mph	0 mph	29.45 in	0.0 in	Fair
11:53 AM	78 °F	62 °F	58 %		0 mph	0 mph	29.45 in	0.0 in	Fair
12:53 PM	82 °F	64 °F	54 %		0 mph	0 mph	29.44 in	0.0 in	Fair
1:53 PM	83 °F	63 °F	51 %	NE	9 mph	0 mph	29.43 in	0.0 in	Fair
2:53 PM	83 °F	63 °F	51 %	ENE	12 mph	0 mph	29.43 in	0.0 in	Mostly Cloudy
3:53 PM	81 °F	62 °F	52 %	NE	8 mph	0 mph	29.42 in	0.0 in	Mostly Cloudy
4:53 PM	83 °F	62 °F	49 %	ENE	15 mph	22 mph	29.41 in	0.0 in	Partly Cloudy
5:53 PM	83 °F	61 °F	47 %	E	13 mph	0 mph	29.41 in	0.0 in	Mostly Cloudy
6:53 PM	80 °F	58 °F	47 %	E	10 mph	0 mph	29.41 in	0.0 in	Mostly Cloudy
7:53 PM	77 °F	59 °F	54 %	ESE	6 mph	0 mph	29.43 in	0.0 in	Cloudy
8:53 PM	75 °F	59 °F	57 %	ESE	7 mph	0 mph	29.43 in	0.0 in	Cloudy
9:53 PM	75 °F	60 °F	60 %	ENE	7 mph	0 mph	29.43 in	0.0 in	Cloudy
10:53 PM	72 °F	63 °F	73 %	E	8 mph	0 mph	29.44 in	0.0 in	Partly Cloudy
11:53 PM	67 °F	62 °F	84 %	E	3 mph	0 mph	29.44 in	0.0 in	Fair

Atmospheric Conditions at Bishop Intl. Airport Weather Station

Saturday, August 9, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	73 °F	68 °F	84 %	SSE	6 mph	0 mph	29.27 in	0.0 in	Fair
1:53 AM	74 °F	69 °F	85 %	S	6 mph	0 mph	29.27 in	0.0 in	Fair
2:53 AM	73 °F	69 °F	87 %	S	7 mph	0 mph	29.27 in	0.0 in	Fair
3:53 AM	73 °F	69 °F	87 %	S	6 mph	0 mph	29.27 in	0.0 in	Fair
4:53 AM	73 °F	69 °F	87 %	S	5 mph	0 mph	29.27 in	0.0 in	Fair
5:53 AM	73 °F	68 °F	84 %	SSW	6 mph	0 mph	29.29 in	0.0 in	Fair
6:53 AM	73 °F	68 °F	84 %	SSW	5 mph	0 mph	29.31 in	0.0 in	Fair
7:53 AM	74 °F	68 °F	82 %	SSW	6 mph	0 mph	29.29 in	0.0 in	Fair
8:53 AM	77 °F	69 °F	76 %	S	8 mph	0 mph	29.29 in	0.0 in	Fair
9:53 AM	81 °F	70 °F	69 %	S	8 mph	0 mph	29.26 in	0.0 in	Fair
10:53 AM	84 °F	71 °F	65 %	SSW	9 mph	18 mph	29.26 in	0.0 in	Fair
11:53 AM	87 °F	71 °F	59 %	SSW	12 mph	0 mph	29.26 in	0.0 in	Fair
12:53 PM	88 °F	70 °F	55 %	SSW	9 mph	0 mph	29.27 in	0.0 in	Partly Cloudy
1:53 PM	90 °F	70 °F	52 %	S	7 mph	0 mph	29.26 in	0.0 in	Fair
2:53 PM	89 °F	69 °F	52 %	SSW	8 mph	0 mph	29.27 in	0.0 in	Partly Cloudy
3:53 PM	89 °F	69 °F	52 %	SSW	13 mph	0 mph	29.26 in	0.0 in	Mostly Cloudy
4:53 PM	88 °F	69 °F	53 %	SSW	10 mph	0 mph	29.24 in	0.0 in	Fair
5:53 PM	89 °F	70 °F	53 %	SSW	8 mph	0 mph	29.23 in	0.0 in	Fair
6:53 PM	88 °F	69 °F	53 %	SSW	8 mph	0 mph	29.22 in	0.0 in	Fair
7:53 PM	85 °F	70 °F	61 %	S	8 mph	0 mph	29.23 in	0.0 in	Fair
8:53 PM	82 °F	70 °F	67 %	SSW	6 mph	0 mph	29.26 in	0.0 in	Fair
9:53 PM	76 °F	69 °F	79 %	S	7 mph	0 mph	29.27 in	0.0 in	Fair
10:53 PM	78 °F	70 °F	76 %	S	8 mph	0 mph	29.25 in	0.0 in	Fair
11:53 PM	77 °F	69 °F	76 %	S	7 mph	0 mph	29.26 in	0.0 in	Fair

Atmospheric Conditions at Bishop Intl. Airport Weather Station

Tuesday, August 12, 2025

Time	Temp.	Dew Point	Humidity	Wind Dir.	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:53 AM	72 °F	68 °F	87 %	CALM	0 mph	0 mph	29.19 in	0.0 in	Fair
1:53 AM	73 °F	69 °F	87 %	SW	5 mph	0 mph	29.19 in	0.0 in	Fair
2:53 AM	72 °F	67 °F	84 %	SW	3 mph	0 mph	29.19 in	0.0 in	Fair
3:53 AM	73 °F	69 °F	87 %	CALM	0 mph	0 mph	29.20 in	0.0 in	Fair
4:53 AM	71 °F	70 °F	96 %	S	5 mph	0 mph	29.18 in	0.0 in	Fair
5:53 AM	72 °F	70 °F	93 %	SSW	7 mph	0 mph	29.18 in	0.0 in	Fair
6:53 AM	72 °F	69 °F	91 %	WSW	5 mph	0 mph	29.18 in	0.0 in	Fair
7:53 AM	73 °F	70 °F	90 %	WSW	3 mph	0 mph	29.19 in	0.0 in	Fair
8:53 AM	78 °F	71 °F	79 %	S	7 mph	0 mph	29.18 in	0.0 in	Partly Cloudy
9:08 AM	0 °F	0 °F	0 %	SSW	6 mph	0 mph	29.17 in	0.0 in	Fair
9:53 AM	0 °F	0 °F	0 %	SSW	6 mph	0 mph	29.17 in	0.0 in	Fair
10:53 AM	0 °F	0 °F	0 %	WSW	9 mph	0 mph	29.17 in	0.0 in	Fair
11:53 AM	87 °F	71 °F	59 %	WSW	8 mph	18 mph	29.16 in	0.0 in	Mostly Cloudy
12:50 PM	79 °F	68 °F	69 %	NNW	15 mph	26 mph	29.17 in	0.0 in	Cloudy
12:53 PM	78 °F	68 °F	71 %	NNW	13 mph	24 mph	29.17 in	0.0 in	Cloudy
1:34 PM	76 °F	72 °F	87 %	NNE	8 mph	0 mph	29.15 in	0.1 in	Rain
1:53 PM	78 °F	72 °F	81 %	N	7 mph	0 mph	29.14 in	0.1 in	Thunder in the Vicinity
2:10 PM	79 °F	71 °F	77 %	NNW	7 mph	0 mph	29.14 in	0.0 in	Mostly Cloudy
2:53 PM	80 °F	72 °F	76 %	NE	5 mph	0 mph	29.12 in	0.0 in	Fair
3:53 PM	83 °F	70 °F	65 %	CALM	0 mph	0 mph	29.11 in	0.0 in	Fair
4:53 PM	85 °F	70 °F	61 %	CALM	0 mph	0 mph	29.07 in	0.0 in	Fair
5:53 PM	81 °F	68 °F	65 %	S	18 mph	28 mph	29.08 in	0.0 in	Thunder