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CIVIL & TRAFFIC ENGINEERS / PLANNERS / SURVEYORS / GIS ANALYSTS / LANDSCAPE ARCHITECTS

Sound Study Addendum
South Windsor Stone & Landscape Supply
287 & 275 Strong Road
South Windsor, CT
DPI Project No. 2646

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Sound Study Amendment

The purpose of this sound study amendment is to update the sound measurements taken September 20, 2013. The new measurements were conducted during the afternoon of Tuesday, September 21, 2021. The objective was to determine if emitted sound from the topsoil screener in operation was in conformance with the Town of South Windsor's Noise Pollution Control Ordinance (Town ordinance).

During daytime hours, Town ordinance restricts noise above 61 decibels from industrial uses upon residential property. In the case where background noise exceeds 61 decibels, the industrial use shall not exceed the background noise levels by 5 decibels. The Town ordinance refers to The Connecticut Department of Environmental Protection's "Connecticut Regulations for the Control of Noise".

The Town ordinance also restricts impulse sounds generated from emitter's sites to no more than 100 decibels upon residential properties during daytime hours. The ordinance defines impulse noise as "a sound of short duration, usually less than one second, with an abrupt onset and rapid decay, where said sound is not repetitive".

Sound measurements were taken using a Sper Scientific sound meter, model number 850013. The instrument was calibrated per ANSI/NCSL Z540-1, and ISO/IEC 17025 standards by Sper Scientific on September 9, 2021. The certification of calibration is included as **Appendix A** of this report. All sound measurements reported herein are in decibels at the 'A' weighted scale.

Procedure:

Sound measurements were conducted at the current screener location behind Redland Brick. The weather was partly cloudy, in the low 70's, and negligible wind.

The three sound measurement locations are listed below.

- 184', 272' and 320' from the screener, replicating the distances that were used in the previous sound study conducted at the residential properties abutting South Windsor Stone & Landscape Supply at 287 Strong Road.

Sound measurements were conducted at each location for approximately 10 minutes.

Operational Sound:

During recording of the sound measurements, the operation of the screener was ongoing. The prominent sound sources generated from the site consisted of the following:

- Soil screener
- Payloader transferring topsoil from a stockpile to the soil screener
- Payloader loading a truck

Findings

The readings recorded and observed during the investigation are summarized below and are presented in full as **Appendix B**:

Location	Condition	Decibels
Site #1 184' from screener	Screener and loader in operation	56.30 (L_{90}) 53.0 (Average)
Site #2 272' from screener.	Screener and loader in operation	54.9 (L_{90}) 52.2 (Average)
Site #3 320' from screener	Screener and loader in operation	53.9 (L_{90}) 51.7 (Average)

Results demonstrate that the sound emitted from the screener operation is in conformance with the Town's ordinance.

No impulse sounds in excess of 100 decibels were measured or recorded during any of the sound measurements at any time, from any source. Further findings of impulse sounds observed at each reading location are presented below:

Site 1

- 5 impulse sounds exceeding 61 decibels were recorded over the course of the 10-minute measurement window. These sounds were related to the loading of the screener. None of the 5 impulse noises exceeded 100 decibels. All impulse sounds lasted for a duration of ~1 second.

Site 2

- No impulse sounds over 61 decibels were recorded at this location.

Site 3

- 4 impulse sounds exceeding 61 decibels were recorded over the course of the 10-minute measurement window. These sounds were related to the loading of the screener. None of the 4 impulse noises exceeded 100 decibels. All impulse sounds lasted for a duration of ~1 second.

It is our opinion that the noise emitted from the screener during operation is consistent with observations reported in our 2013 sound study. Therefore, we expect if the screener were to be relocated to the proposed location at 287 Strong Road, it would operate at similar sound levels to those reported in 2013.

Appendix A
Certification Of Calibration

CERTIFICATE OF CALIBRATION.

Sper Scientific certifies that the instrument listed above meets the specifications of the manufacture and has been calibrated in a controlled environment at 94.0 dB SPL, single point with a 1 kHz frequency using an instrument which is traceable to the U. S. National Institute of Standards and Technology.

Equipment Used:

Manufacturer	Model	Serial No.	Date Due:
Brüel & Kjær	Type 4231	2169956	5/21/2022

This acoustic calibrator has been calibrated using standards with values traceable to the National Institute of Standards and Technology. The calibration of this standard was accomplished using a test system which conforms with the requirement of ANSI/NCSL Z540 -1, ISO/IEC 17025, and the guidelines of ISO 10012-1, Trace Number: CAS -445391-Q6N6HO-103, CAS-475391-Q6N6HO-404 & CAS-512601-T0X4B1-402. Reported values represent expended uncertainties expressed at approximately 95% confidence level using a coverage factor of K =2. Supporting documentation relative to traceability is on file at this office, and is available for examination upon request)

(Uncertainties of the standards: Acoustic output level - 0.12dB, Output Frequency- 100 ppm)

Acoustical Calibration Test Report

Certificate No.: 210909064379	**Model No.:** 850013C
Calibration Type: Single Point	**Serial No.:** 064379

Operating Mode	94dB Acoustical Source As Found	dB Tolerance	Pass/Fail
A-Weighting	94.0	93.0 to 95.0	PASS
C-Weighting	94.1	93.0 to 95.0	PASS

Operating Mode	Acoustical Reading After Calibration	dB Tolerance	Pass/Fail
A-Weighting	As received	93.0 to 95.0	PASS
C-Weighting	As received	93.0 to 95.0	PASS

Note: acoustical calibration uses an acoustical signal at 1000Hz, 94dB. It is normal, if the reading after calibration varies ± 0.2 dB from the Acoustical Test Report, due to the different conditions and temp.

Relative Humidity: 38%	**Calibration Date:** 9/9/2021
Temperature: 22°C	**Recommended Due Date:** 9/9/2022
Test Report Line Number: Y 4208	

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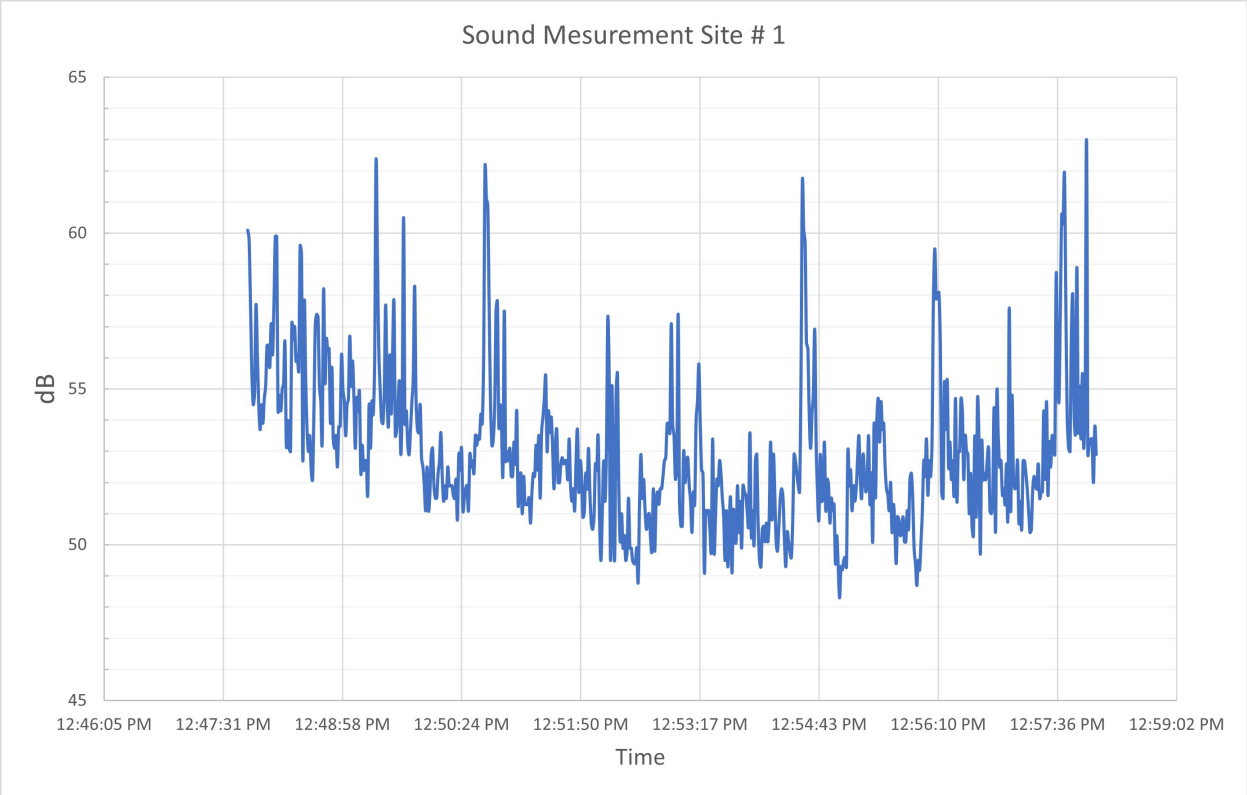
Appendix B
Sound Data

Date: September 21, 2021
Location: Sound measurement location #1 – 184' from screener at soil pit
General Condition: Operation sound – Loader and screener in operation

Weather: Partly Cloudy, 70° F, negligible wind
Atmosheric pressure = 30.36" mercury
Humidity = 62%



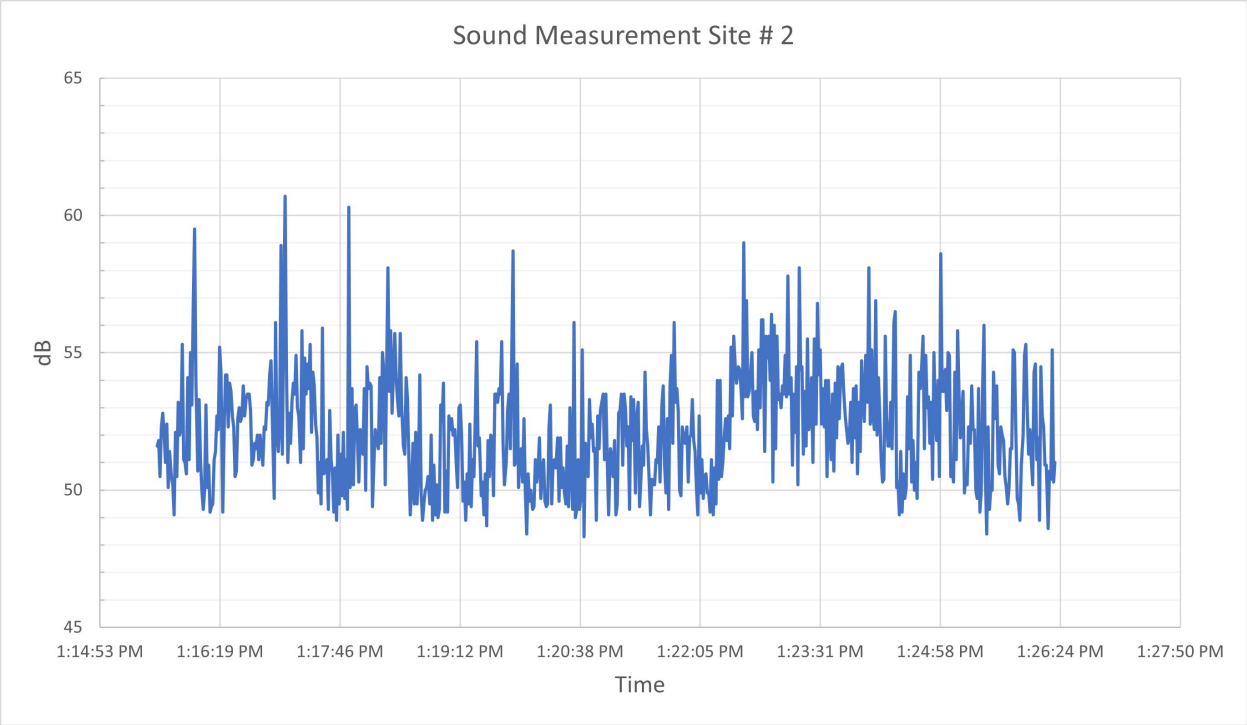
Start Time: 9/21/2021 12:47:49 PM
Sampling Rate: 1 second
Data No: 616
Avg.: 53.0 L_{90} = 56.30
Maximum: 63.0@ 12:57:57 PM 5 impulse sounds over 61 DbA
Minimum: 48.3@ 12:54:58 PM

Operator's Notes:

Time:	Event:
12:47:49	Start – screener and loader in operation
12:49:10	Loader dump into screener
12:50:15	Loader dump into screener
12:54:40	Loader approaching screener
12:54:48	Loader dump into screener
12:56:06	Loader approaching screener
12:56:20	Loader dump into screener
12:57:33	Loader approaching screener
12:57:48	Loader dump into screener

Date: September 21, 2021
Location: Sound measurement location #2 – 272’ from screener at soil pit
General Condition: Operation sound – Loader and screener in operation

Weather: Partly Cloudy, 70° F, negligible wind
Atmosheric pressure = 30.36” mercury
Humidity = 62%



Start Time: 9/21/2021 1:15.34 PM
Sampling Rate: 1 second
DataNo: 647
Avg.: 52.2
Maximum: 60.7 @ 1:17:06 PM
Minimum: 48.3 @ 1:20:41 PM

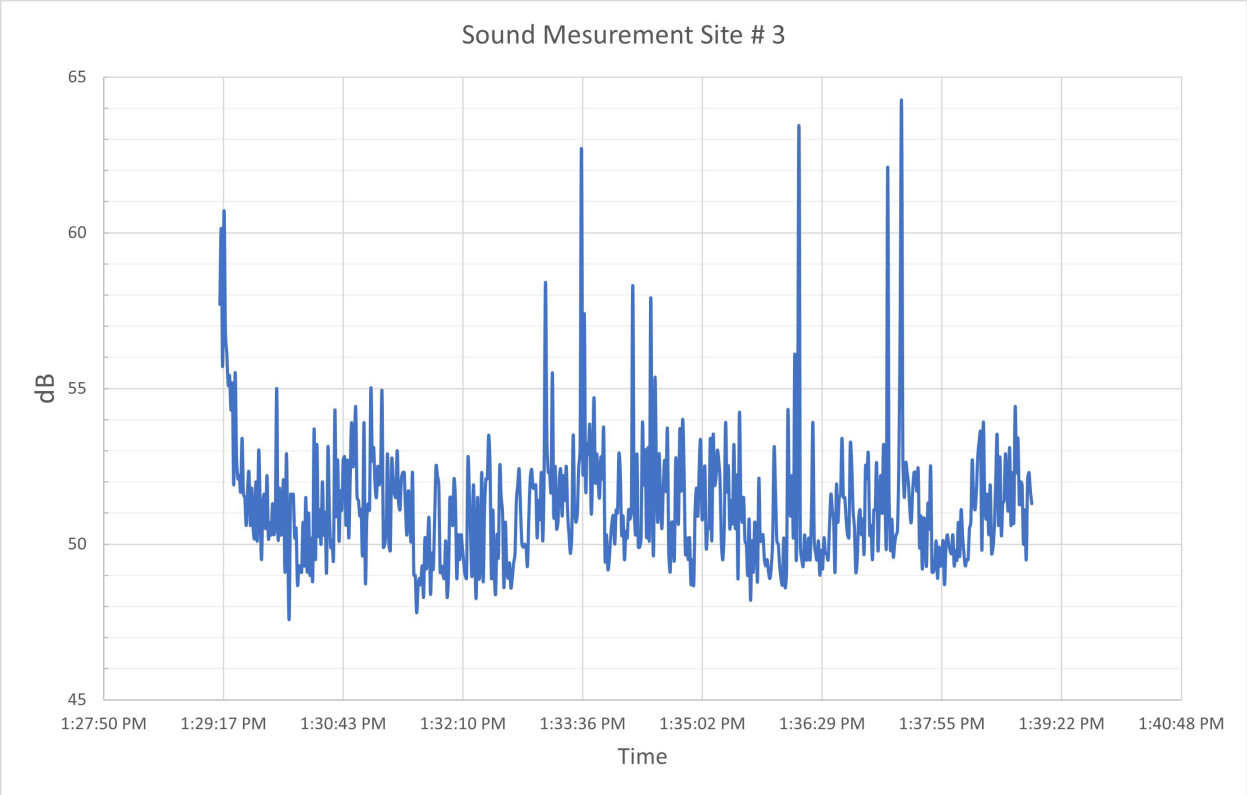
L_{90} = 54.9
No Impulse sounds over 61 Dba

Operator’s Notes:

Time:	Event:
13:15:34	Start – screener and loader in operation
13:16:00	Loader at screener
13:16:41	Loader at stockpile
13:17:15	Loader at screener
13:18:30	Loader backing up
13:19:39	Loader at screener
13:21:52	Loader at screener
13:22:00	Loader at screener
13:24:24	Bucket noise at screener
13:24:50	Loader at stockpile

Date: September 21, 2021
Location: Sound measurement location #3 – 320’ from screener at soil pit
General Condition: Operation sound – Loader and screener in operation

Weather: Partly Cloudy, 70° F, negligible wind
Atmosheric pressure = 30.36” mercury
Humidity = 62%



Start Time: 9/21/2021 1:29:14 PM
Sampling Rate: 1 second
Data No: 587
Avg.: 51.4
Maximum: 62.7 @ 1:33:35 PM
Minimum: 47.6 @ 1:30:04 PM

L_{90} = 53.2
4 impulse sounds over 61 DbA

Operator’s Notes:

Time:	Event:
13:31:09	Loader at soil stockpile
13:31:22	Loader approaching screener
13:32:48	Loader approaching screener
13:34:54	Loader loading truck
13:35:10	Loader approaching screener
13:35:51	Loader loading truck
13:36:55	Loader backing up
13:27:08	Loader loading truck
13:37:36	Loader at screener