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August 14, 2009

Mr. Brian LaValley, *Process Engineer*
Evergreen Solar, Inc.
259 Cedar Hill Street
Marlborough, MA 01752

Subject: Daytime DEC Compliance Measurements – August 8, 2009

Dear Brian,

This letter and attachments respond to Devens Enterprise Commission (DEC) request for a written report summarizing sound measurement data collected during daytime hours on August 8, 2009 at the Dunroven Farm (location R1) which is the nearest residential location to the Evergreen Solar manufacturing plant.

Table 1 lists the A-weighted (dBA) energy-equivalent (L_{eq}) and ninetieth percentile (L_{90}) sound levels measured during mid-day hours on August 8, 2009. Table 1 includes notes that identify the start and end times of each 20-minute measurement at the Dunroven Farm location, also referred to as location R1.

Table 1 also includes comments regarding listening perceptions of the staff who conducted the measurements. These measurements were conducted by Brion Koning, Cavanaugh Tocci Associates, Inc. The final of the three 20-minute measurements made was also witnessed by Ian Sheadel, Modeling Specialties, Inc. who also completed his own 20-minute measurement simultaneously and measured nearly the same L_{90} value. Neil Angus, DEC was informed by phone of the measurements both before and after they were completed. Measurements were conducted using the protocol of Appendix A. Evergreen equipment operating conditions at the time of measurement are provided in Table 2.

Figure 1 is an aerial photograph showing the Evergreen Solar building and the nearest residential neighborhood to the south. Figure 1 is annotated to show the location of the Evergreen Solar building and the Dunroven Farm R1 location where the three A-weighted L_{90} sound level measurements were made.

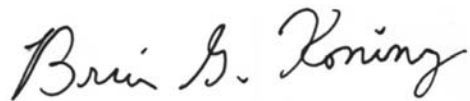
Appendix B contains graphs which present third-octave and octave band L_{90} sound level spectra and corresponding A-weighted L_{90} sound levels for each 20-minute measurement sample. Spectra presented in Appendix B have not been adjusted to eliminate any extraneous non-facility sound.

The sound levels measured during mid-day hours on August 8, 2009 by Cavanaugh Tocci Associates, Inc. (Evergreen acoustical consultant) and Modeling Specialties (DEC acoustical consultant) show conformance with the 43-dBA daytime sound level limit established by DEC for this project. In addition, measured one-third octave band spectra do not exhibit a tonal character as defined by the DEC noise criteria. Also, sound in the 31 Hz and lower octave bands in all residential areas falls below 65 dB and thus conforms to the DEC low frequency noise criterion. Evergreen Solar is continuing to actively implement noise control recommendations developed by Cavanaugh Tocci Associates, Inc. and will continue to do so through the designated September 15, 2009 compliance deadline date.

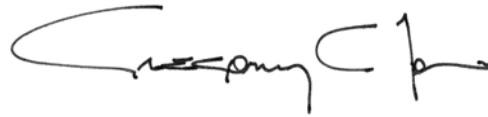
Noise control implemented as of this report date, together with continuing implementation of noise controls, will ensure that Evergreen Solar sound levels will consistently comply with the DEC acoustical criteria during daytime hours.

We trust that this report fulfills the DEC submittal requirements. We shall continue to provide consulting assistance to Evergreen Solar as new sound controls are implemented.

Sincerely,
CAVANAUGH TOCCI ASSOCIATES, INC.



Brion G. Koning, *Senior Consultant*



Gregory C. Tocci, *Sr. Principal Consultant*

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Figures and Tables

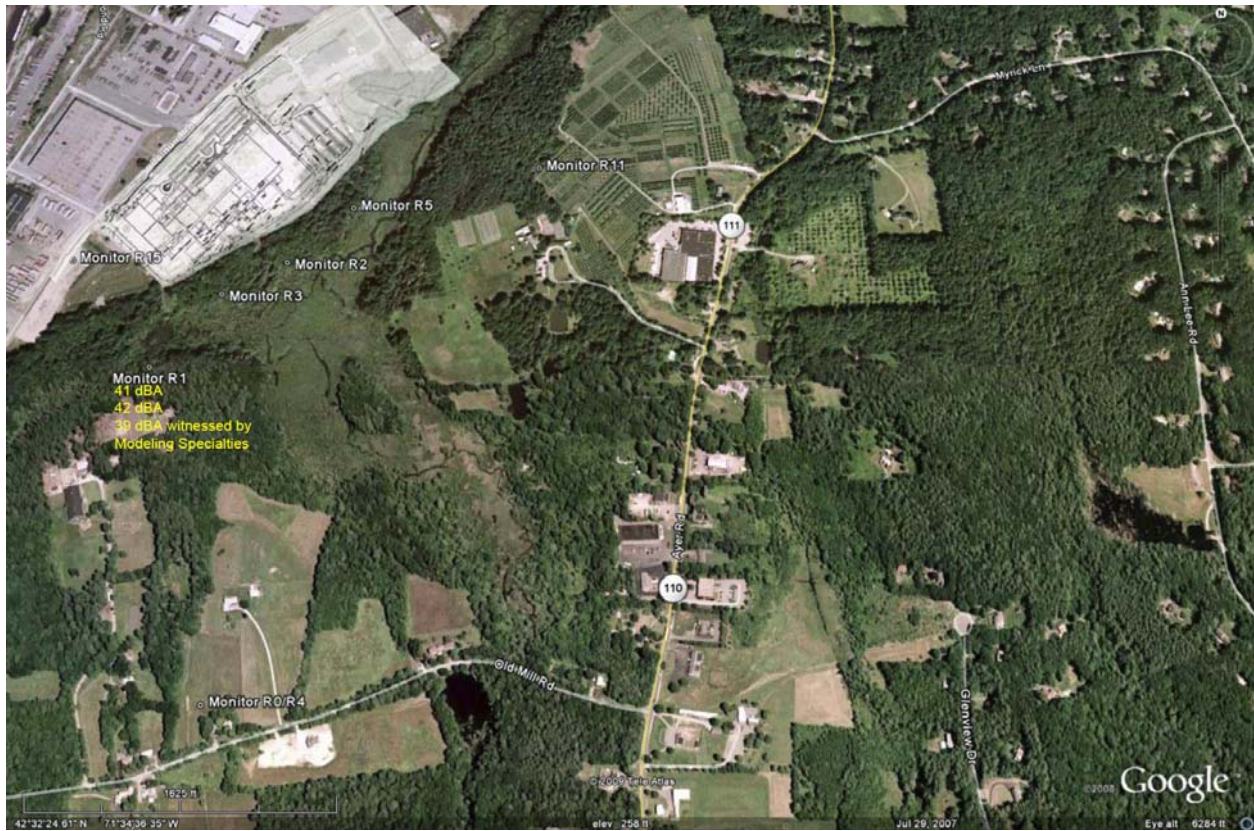


Figure 1. Aerial photo indicating A-weighted L_{90} sound levels at Dunroven Farms R1 measurement locations—August 8, 2009 Evergreen Solar, Devens, Massachusetts

Table 1. A-weighted (dBA) Sound Levels Summary - Midday, Saturday, August 8, 2009

Measurement Site Visit Time Period: 10:23 AM to 12:28 PM

Time Interval	Duration	Measurement Location	Acoustic Events/Listening Perceptions	L _{eq} (dBA)	L ₉₀ (dBA)
10:23 AM-10:43 AM	20-minutes	62 Old Mill Road Dunroven Farm at Horse Trail Overlooking Cold Spring Brook (R1)	No locomotive audible. Truck traffic on Barnum Road intermittently audible. Evergreen Solar audible in background between truck passby events on Barnum Road.	47.4	43.0
10:48 AM-11:08 AM	20-minutes	62 Old Mill Road Dunroven Farm at Horse Trail Overlooking Cold Spring Brook (R1)	No locomotive audible. Truck traffic on Barnum Road intermittently audible. Evergreen Solar audible in background between truck pass-by events on Barnum Road.	43.6	42.0
		62 Old Mill Road Dunroven Farm at Horse Trail Overlooking Cold Spring Brook (R1)	Telephoning DEC and Modeling Specialties staff and awaiting arrival of Modeling Specialties staff in order to conduct simultaneous measurements of sound levels (to confirm sound levels listed above).		
12:08 PM-12:28 PM	20-minutes	62 Old Mill Road Dunroven Farm at Horse Trail Overlooking Cold Spring Brook (R1)	No locomotive audible. No truck traffic on Barnum Road audible. Evergreen Solar audible in background. This measurement conducted simultaneously with Modeling Specialties staff.	41.9	39.0

* By convention, sound levels are typically reported in decibels as whole numbers. For this project, we have reported tenths of decibels in order to correspond with data format reported by others.

**Devens Compliance Measurements
Noise Generating Equipment Running Speeds on August 8, 2009 at
approximately 12:15 PM**

<u>Equipment</u>	<u>Total Number</u>	<u>Run</u>	<u>Running Speed</u>
SDX Fan	4	2	#1-106%, #2-100%
Cooling Tower			
Condenser water pumps	9	9	Ph 1-80%, Ph 2-77%
Discharge Fans*	9	9	Ph 1-25%, Ph 2-25%
NOX Scrubber			
NOX Fan	4	4	#1-53%, #2-25%
NOX Pump	4	2	100%
Acid Scrubber			
ASX Fans	4	2	#1-87%, #2-70%
ASX Discharge	2	2	Fan dependent
VOC Scrubbers			
Process Fans	3	3	#1-62%, #2-62%, #3-62%
Combustion Blower	3	3	100%
Discharge Stack	3	3	Fan Dependent
Laminator Exhaust	4	4	100%
Boilers	4	2	100%

* Phase 1 was only running 4 of 5 cooling towers

Table 2. Systems operating conditions during measurements mid-day August 8, 2009

Appendix A

Measurement Protocol

Daytime Measurement Protocol

Evergreen Solar, Devens, MA
August 8, 2009

Purpose. To determine compliance with the 43-dBA ongoing daytime limit on sound produced by equipment and operations of Evergreen Solar, as such limit was established by the Devens Enterprise Commission.

Instrumentation. ANSI S1.4 type 1 precision sound measurement instrumentation used in conformance with manufacturer recommended methods. Microphone to be outfitted with a windscreen. The instrument is to be calibrated before commencing and after the conclusion of sound measurements. Instrument to be tripod mounted.

Descriptor measured. The L_{90} (20-minute) slow response A-weighted sound level and un-weighted one-third octave sound level spectrum (12.5 – 12,500 Hz).

Measurement time period. Saturday or Sunday between 10:00 AM and 4:00 PM.

Weather conditions. No precipitation. Wind gusts less than 5 mph. No audible foliage sound. No fog, haze or temperature inversions.

Measurement location. Just north of the riding trail behind the Dunroven Farm at the point closest to Evergreen Solar's facility (the location known as "R1") and at several other locations on properties neighboring the Evergreen Solar facility.

Field notes. Keep a written record of conditions during all sound measurements.

Procedures.

- Survey the Evergreen Solar property to ensure that doors are closed and that unusual events are not occurring such as emergency service or construction.
- Contact the control room to ascertain that the facility is operating at normal capacity.
- Survey the area around the facility and residential areas to identify any sources of sound other than the Evergreen Solar facility. Measure sound levels produced by these other sources in order to estimate sound power and directivity to the extent possible.
- At the conclusion of the measurements, confirm with the control room that no changes in facility operation occurred during sound measurements.

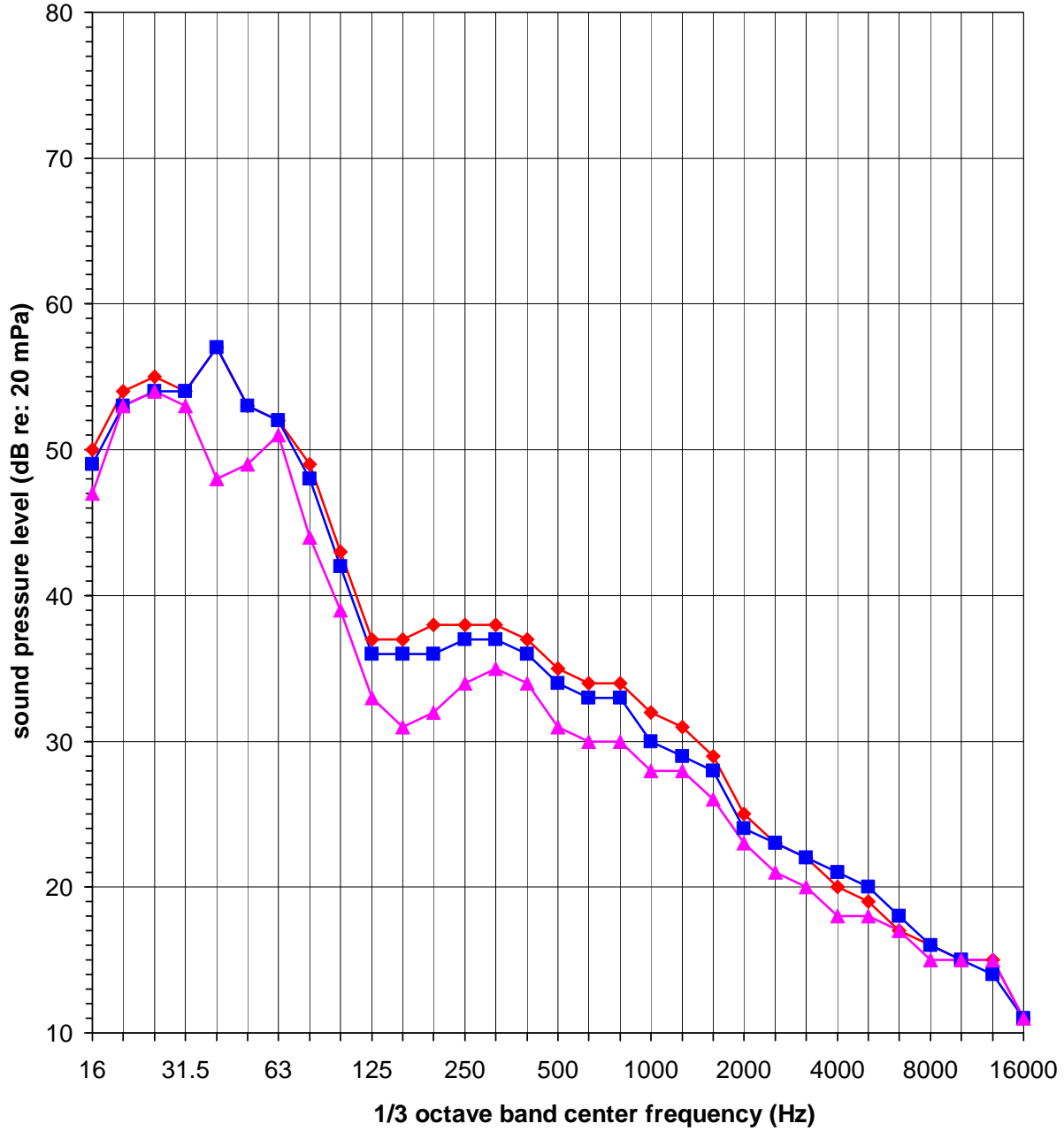
Data analysis. Download data into a PC. Use one-third octave L_{90} spectra to remove indigenous sound as appropriate. Compute the corresponding octave band spectra (16 – 8,000 Hz). Compute the corresponding A-weighted L_{90} sound level.

Appendix B

Octave and Third-Octave Spectra
Daytime, Saturday, August 8, 2009

Evergreen Solar - daytime sound pressure levels (L90)

Measured August 8, 2009

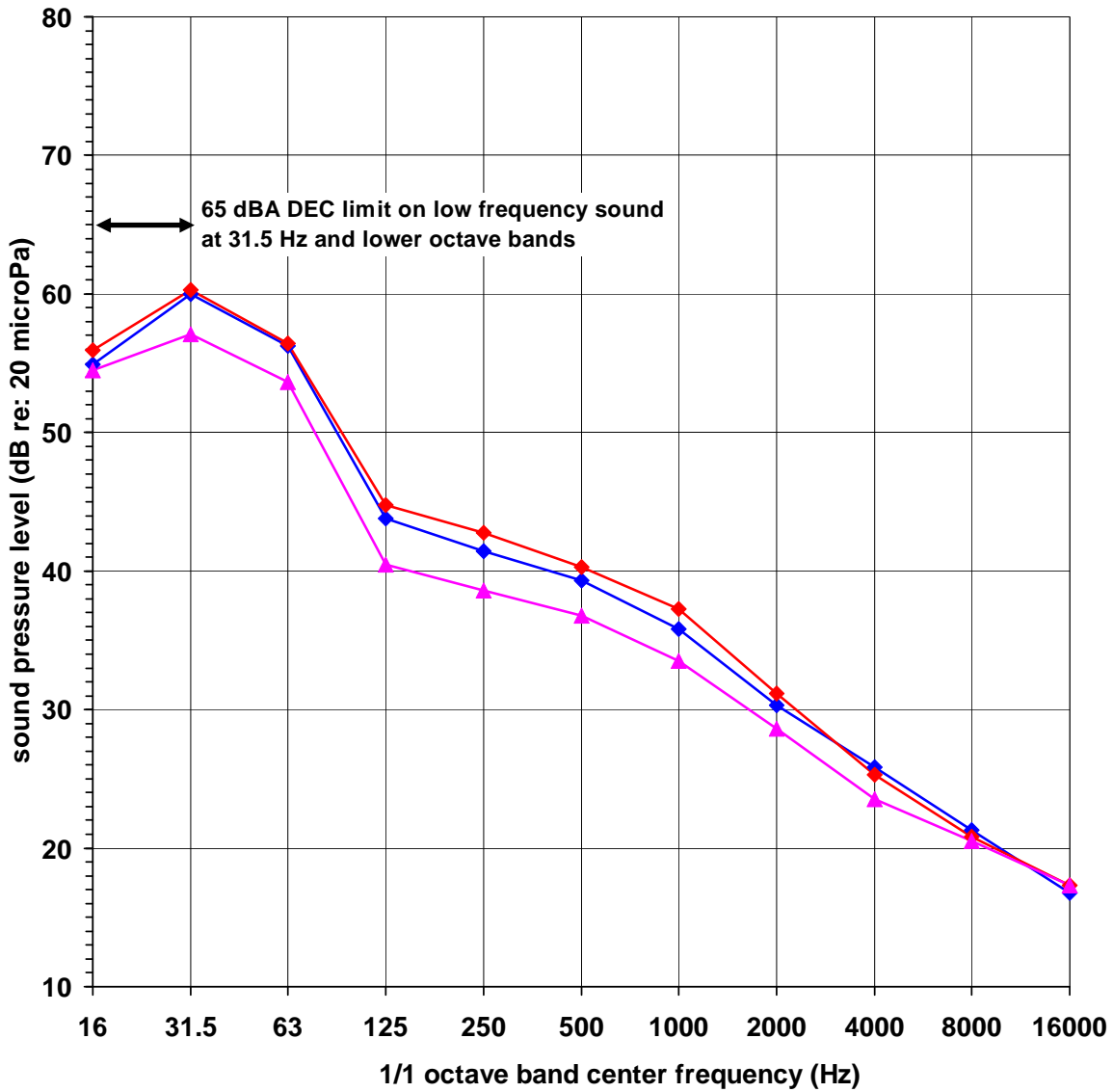


- ◆ Dunroven Farm Trail (R1) 10:23 AM-10:47 AM (42.2 dBA)
- Dunroven Farm Trail (R1) 10:48 AM-11:08 AM (41.2 dBA)
- ▲ Dunroven Farm Trail (R1) 12:08 PM-12:28 PM (Observed by Modeling Specialties) (38.8 dBA)

Figure B-1a

Evergreen Solar - daytime sound pressure levels (L90)

Measured August 8, 2009



- ◆— Dunroven Farm Trail (R1) 10:48 AM-11:08 AM (41.2 dBA)
- ◆— Dunroven Farm Trail (R1) 10:23 AM-10:47 AM (42.2 dBA)
- ◆— Dunroven Farm Trail (R1) 12:08 PM-12:28 PM (Observed by Modeling Specialties) (38.8 dBA)

Figure B-1b