

**ATTACHMENT DR 1**  
**PILE DRIVER NOISE ANALYSIS**

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Subject        Data Request 1: Hydraulic Ram Noise  
                 Responses to Data Requests – Set 1,  
                 Blythe Solar Power Project (09-AFC-6C)

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From            Jeff Goodson, AECOM

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Date            June 12, 2013

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The purpose of this memorandum is to provide an analysis of the potential noise impacts related to the use of a hydraulic ram (pile driver) during construction, in response to the California Energy Commission (CEC) Staff Data Request 1 for the Blythe Solar Power Project (09-AFC-6C). Staff requested an isopleths map of noise levels in dB from a hydraulic ram operating near the project boundary to 50 feet beyond boundary and 100 feet beyond boundary or until the dB level drops to <60 dB or lower from the edge of the boundary (the distance to the 60 dB level is to be included).

Although the Data Request 1 indicates that the 60 dB level is of interest, we note that the current biology Conditions of Certification (COCs) BIO-8 (#8) and BIO-16 indicate that 65 dB is the sound level that is to be used for biological resources compliance purposes. Therefore, the map has been prepared which gives both the 60 and 65 dB contours.

The Desert Sunlight Solar Farm in Riverside County is a nearby PV project that is currently in construction. An investigation into the type of equipment being used at the Desert Sunlight Project identified that a Vermeer PD10 pile driver is being used to install the posts that support the PV panels. It is anticipated that the Vermeer PD10 pile driver or similar equipment will also be used for construction of the Modified Project. If necessary to enable construction to continue close (e.g., within 390 feet) to the property line and remain in compliance with COC BIO-8 (#8), other equipment or sound barriers may be utilized as needed.

The magnitude of construction noise impacts depends on the type of construction activity, the noise level generated by various pieces of construction equipment, the duration of the activity, and the distance between the activity and the noise-sensitive receivers. Maximum noise levels from construction equipment typically range from approximately 70 dBA to 90 dBA at 50 feet from the source (FTA 2006). Impact equipment such as pile driving can range from 80 to 100 dBA at 50 feet.

Information was provided by the manufacturer of the Vermeer PD10 pile driver (AECOM 2013; Vermeer 2012) that a maximum instantaneous sound level of 84 dBA<sup>2</sup> at 50 feet would be expected. The installation of the trackers and panels will require two pile drivers to drive steel support piles into the ground over the entire site. Therefore, worst-case operation noise from the pile driver would temporarily occur as close as approximately 50 feet from the property line. Based on typical installation procedures and safety requirements, the two pile drivers are anticipated to be separated on the site. A single pile driver would be operating as close as 50 feet from the property line for a short time to install a single panel stand. The pile driver would then move to set another panel stand and would continue in this fashion.

Each panel stand installation process is anticipated to last 5 minutes or less. The pile driver can produce a maximum noise level of 84 dBA  $L_{max}$  at 50 feet when the hammer is operating (Vermeer, 2012). However, based on previous experience, a pile driver does not continuously operate at full power and only operates approximately 20% of an hour.

For BSPP, when a pile driver is operating onsite nearest to the property line (approximately 50 feet away), the maximum instantaneous noise level at the property line would be as high as approximately 84 dBA. Based on the standard noise attenuation rate of -6 dBA per doubling of distance for point sources, maximum off-site instantaneous noise levels from the pile driver operating at full power would be approximately:

- 84 dBA at 50 feet (0 feet from property line)
- 78 dBA at 100 feet (50 feet from property line)
- 72 dBA at 200 feet (150 feet from property line)
- 65 dBA at 439 feet (389 feet from property line)
- 60 dBA at 800 feet (750 feet from property line)

Therefore, as shown above, an off-site instantaneous noise level of 60 dBA could be observed at a distance of approximately 800 feet from the edge of the solar layout near the property line under worst-case conditions. An isopleths map as requested in Data Request 1 showing maximum noise levels from operation of a pile driver at the property boundary is attached.

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<sup>2</sup> Based on a 105.8 dBA at the operator's ear, as specified by the Vermeer PD10 Pile Driver Operator's Manual (2012). According to Mr. Dale Siever of Vermeer Sales Southwest, the operator's ear is approximately 4 feet from the part of the pile driver where noise is emitted. Therefore, based on the standard noise attenuation rate of -6 dBA per doubling of distance for point sources, noise from the pile driver would attenuate to approximately 84 dBA at 50 feet.

**REFERENCES:**

Federal Transit Administration (FTA) 2006. Transit Noise and Vibration Impact Assessment. May 2006. Washington, D.C.

AECOM 2013. Personal communications between Sean Wazlaw and Mr. Dale Siever of Vermeer Sales Southwest on June 10, 2013 and June 11, 2013.

Vermeer 2012. Operator's Manual for the PD10 Pile Driver.

