

Resource Report 9

Question 1. Were the pile driving and dynamic compaction equipment included in the air emissions calculations?

Response:

The list of construction equipment includes cranes like those that would be used for pile driving with air hammers (or other non-diesel driven hammers) and for dynamic compaction using weights. Emissions from the crane's diesel engine would be expected to be the same for any potential use of the crane.

Question 2. Were the pile driving and dynamic compaction equipment included in the noise calculations? There was also a question about whether the maximum noise level, which I believe was quoted as 85 dBA, would need to be increased to account for 104VdB as quoted in the June data response, or a level of 101 dBA, which I believe was quoted as a standard for pile driving.

Response:

There are three different units being used in the noise section. For this project we have used VdB as the units for ground vibration velocity – VdB refers to vibration, in decibels, relative to 1 microinch per second. The dBA is a unit of sound level, and is not equivalent or comparable to VdB.

Pipeline noise was evaluated in SLR's technical memorandum 119.01324.00001C, Rev. 2, dated April 30, 2015. In that memorandum, SLR used the FHWA's Roadway Construction Noise Model (RCNM) to predict the sound levels for various distances from the pipeline corridor. Calculations were made for the closest pipeline approaches (to receptors) at distances of 250, 500, 750, and 1000 feet. For example, for the 250-foot calculations, four construction equipment vehicles were assumed to be working at 250 feet from a receptor; another four units were assumed ¼ mile "up" the pipeline (thus at a 1343-foot slant distance from the receptor); and an additional four units were assumed at ¼ mile "down" the pipeline (also 1343 feet from the receptor). The calculated contribution includes the summed contributions from all twelve equipment units. Similar geometry was used for the 500, 750, and 1000 foot calculation.

Pile driving may be used sporadically during pipeline corridor construction to install sheet piling in locations where bell holes are necessary and/or in areas where saturated soils are present. The type of equipment used for sheet pile driving may be an impact or vibratory pile driver, although

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the size of the equipment may vary from contractor to contractor along the pipeline construction corridor. The source levels in the RCNM are basically identical for both types of equipment, at 101 dBA L_{max} at 50 feet. Sheet pile driving is typically not as disturbing as pile driving columns for foundation support, as sheet pile driving takes less time to install and smaller equipment can often be used, although the RCNM standards do not differentiate between the two activities. Therefore, if a maximum sound level is assumed and the previous calculations are modified, the predicted levels would increase by 7.5 dB. Here is the results summary table with an additional column showing the effect of pile driving on the pipeline construction noise predictions.

Closest Approach of Pipeline to Receptor, feet	Estimated Construction Equipment Contribution, No Pile Driving, dBA, Leq	Estimated Construction Equipment Contribution, With Pile Driving, dBA, Leq
250	73.4	80.9
500	68.0	75.5
750	65.2	72.7
1000	63.4	70.9
Assumptions: 1. A group of four diesel or gasoline-powered vehicles every 1/4 mile along pipeline corridor. 2. Each vehicle has a usage factor of 40%, and is used in daytime hours only. 3. Each produces 85 dBA L_{max} at 50 ft, typical per Roadway Construction Noise Manual. 4. Estimated sound levels are L_{eq} average values based on usage factor. 5. For the pile driving case, a single pile driver has been added at the closest approach with a 101 dBA L_{max} at 50 ft and a 20% usage factor.		

For the construction activities at compressor stations, no pile driving or impact type activities are expected for any station with the exception of dynamic compaction at the Cadiz and Burgettstown. There is limited sound level data for dynamic compaction, and the level will depend on the mass of weight, height of drop, and drop repetition rate. However, it is likely to be quieter than standard pile driving based on the mechanism of action. Rapid dynamic compaction devices typically produce less than 84 dBA L_{max} at 50 feet (ref Dietmar), a level that is comparable to the construction equipment used in the construction noise calculation included in the RR9. This indicates that the construction noise calculations included in the RR9 effectively covers the use of dynamic compaction.

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Adam, Dietmar and Paulmichl, Ivan "Rapid Impact Compactor – An Innovative Dynamic Compaction Device for Soil Improvement", Proceedings of the Conference on Improvement of Soil Properties, Bratislava, June 5, 2007

Question 3: When will the addendum noise report for the updated HDD locations be submitted?

Response:

The addendum noise report for the updated HDD locations will be submitted at the beginning of August 2015.