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MEMORANDUM

To: Elizabeth Burdick
Town of Ledyard

From: Scott R. Noel
Michael McCarter

Date: November 10, 2024

Subject: Peer Review of Noise and Air Quality Analyses for Gales Ferry Intermodal Facility

Reference: HMMH Project No. 24-0268A

Harris Miller Miller & Hanson Inc. (HMMH) has completed our peer review of the noise, air quality, and toxicology analyses performed for the proposed Gales Ferry Intermodal Facility on Route 12 in Ledyard, Connecticut. HMMH reviewed the following materials, which were provided to the Town of Ledyard (Town):



- “Cashman Gales Ferry Intermodal, LLC Industrial Regrading Sound Study” – Report prepared by RSG and dated September 2024 (RSG Study; Section 1 below).
- “Gales Ferry Project Vibration Impact Analysis” – Report prepared by Sauls Seismic and dated October 1, 2024 (Sauls Seismic Study; Section 2 below).
- “Analysis of Rock Blasting Adjacent to WCPA Water Main and Eversource Transmission Line Supports at the Gales Ferry Industrial Site” – Report prepared by Aimone-Martin Associates, LLC and dated September 11, 2024 (Aimon-Martin Associates Study; Section 2 below).
- “Air Emissions Modeling Results, Gales Ferry Intermodal” – Report prepared by Verdantas and dated September 30, 2024 (Verdantas Study; Section 3 below).
- “Planning and Zoning Hearing 10-24-24” – Letter from Mr. Phil Fiore, dated October 24, 2024 (Fiore Letter; Section 4 below)

HMMH conducted a site visit to the property and surrounding communities on September 5, 2024, during which we reviewed the areas on the project site where materials would be removed and the processes that would be used for the excavation and removal. We also toured the surrounding residential communities in the Town of Ledyard to review land uses, proximity, and terrain in the area.

1. RSG Study

HMMH has found the RSG Study to be comprehensively and largely conservatively prepared, addressing all pertinent state noise regulations. The ambient background noise monitoring program was conducted adequately, including 9 to 14 days of continuous noise monitoring at four sites along the project’s property line in different directions. The noise prediction model and the modeling approach were sufficiently detailed; they appear to account for all significant noise sources in the different phases of the excavation project and the sound propagation paths to the surrounding homes that could be potentially impacted by noise.

However, the report states that no residential properties would exceed the Connecticut state noise limit of 61 A-weighted decibels (dBA), and Figure 17, representing Phase 5 of the project, shows the 61 dBA noise contour on the residential parcel with condominiums on Pheasant Run across Route 12 from the project’s active area. The contour also comes very close to the adjacent parcels off

Thames View Pentway. Predicted noise levels are very near the noise limit and in close proximity to the residential areas leave no margin for error in the modeling or variability in the noise emissions of the equipment actually used on site. Therefore, HMMH suggests that additional noise mitigation be included to prevent these potential exceedances of the Connecticut noise limits. We suggest that noise predictions in residential areas should be no more than 56 dBA to ensure compliance.

Additionally, the report confusingly labels the noise monitoring locations with different names in different places. On Figure 2, they are labeled North, South, East, and West. But in the text and tables, they are labeled Entrance, House, River and Woods. Those names should replace the directional names shown in Figure 2.

Audibility of the Excavation in Residential Areas

The existing noise monitoring locations were conducted at the Gales Ferry property lines and not in the affected residential communities. The East/Entrance location is located very close to Route 12 and therefore captured higher sound levels than Thames View Pentway homes, most of which are set farther back from Route 12. The Pheasant Run Condominiums are best represented by the South/Woods location, which showed a daytime average L90 value of 44 dBA. The North/House and South/Woods sites are likely to best represent the background sound levels for most of the Thames View Pentway homes, with daytime average L90 values of 44 and 47 dBA.

When project sound levels exceed 5 dBA above the background L90, the noise will be clearly audible. When project sound levels exceed 10 dBA above the background, they will be very audible and are likely to be considered intrusive by many residents. The Pheasant Run Condominium community is at an elevation more than 130 feet above the developed part of the project site, so the area will have clear sound paths from the operation to the homes during much of the excavation process. Many of the homes on Thames View Pentway are also elevated and will also have clear sound paths to the much of the excavation operations.

The noise contours shown during most of the phases of the excavation operation range from 50 to 60 dBA, with many of the phases showing levels in the 55 dBA range. With background levels in the mid-40s dBA, the excavation noise at many of the nearby homes will be continuously audible for most of the duration of the project and will very intrusive for considerable periods of time.

Given the extended duration of this project, HMMH strongly suggests that modifications to the project's plans be implemented to reduce the projected noise levels at the nearby homes to be no more than 5 dBA above the background L90s for the entire duration of the project. Predictions of 50 dBA or less in the communities mentioned above would largely accomplish this objective.

2. Sauls Seismic Study and Aimon-Martin Associates Study

HMMH has found the Sauls Seismic Study and the Aimon-Martin Associates Study to be comprehensively prepared including most of the applicable regulatory criteria and guidelines. We agree with the findings in the Aimon-Martin Associates study that blasting would not cause issues for the utility infrastructure, specifically the transmission line and water main.

The Sauls Seismic Study indicates that there would be no exceedances of the applicable regulatory criteria and guidelines identified in the study. HMMH agrees with this finding for general construction using heavy equipment such as compactors; however, for blast vibration we suggest that consideration be made to more conservative damage criteria, such as those provided in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (FTA 2018). These thresholds identify that structural damage may occur when vibration levels are as low



as 0.3 peak particle velocity (PPV) in inches per second for engineered concrete and masonry structures, such as the home located at 22 Anderson Drive. The report indicates that ground vibration associated with blasting would be 0.91 PPV, a level that may cause damage to these homes.

The blast design should be revisited to ensure that levels remain below the FTA structural damage guidelines. A pre-construction/pre-blasting survey must be conducted of the structures near the blasting effort to identify any damage to foundations that are not associated with the blasting effort, and a post-blast survey should be conducted to identify if any damage has occurred because of the blasting effort. Additionally, continuous vibration monitoring must be completed at these residences and the other sensitive structures located closest to blasting activities as blasting efforts move around the Gales Ferry Intermodal site. If the criteria/guidelines are exceeded, the blast operations must cease, the approach must be revised to eliminate potential exceedances, and a damage assessment must be conducted. The results of the damage assessment must be provided to the Town within 1 week so appropriate action can be taken.

Air overpressure predictions in the Sauls Seismic report indicate levels will be below the criteria limit of 133 linear decibels (dBL). We agree with this finding; however, the predicted level of 132.24 dBL is very close to exceeding the limit. The report references the Office of Surface Mining, Reclamation and Enforcement (OSM) blast criteria as described in their Blasting Guidance Manual for vibration limits; however, they do not reference the air overpressure guidelines. We assume this is because they are similar to the criteria used, for example 133 dBL at 2 Hertz (Hz). The report does not recognize that the OSM guidelines differ in that they indicate if predicted levels are within 3 dB an exceedance may occur. Since the predicted levels are within this tolerance of the criteria limit and within OSM guidelines, our finding is that the applicant must also monitor air overpressure associated with blasting activities to ensure these criteria are not exceeded. Like the blast vibration monitoring, if criteria/guidelines are exceeded, blast operations must cease and be adjusted to eliminate exceedances. Additionally, a damage assessment must be conducted and the results provided to the Town within 1 week so appropriate action can be taken.

3. Verdantas Study

HMMH found the Verdantas study to be comprehensively and largely conservatively prepared, addressing all pertinent air quality regulations. HMMH found that the Verdantas study used the correct dispersion model and representative meteorological data, and did not find any inaccuracies in the development of modeling or emission parameters. Modeling input files and the various model input parameters were not checked for accuracy as the files were not provided.

The predictions use appropriate methods such as AP-42 and use of AERMOD including the meteorological conditions and land uses. The primary and secondary National Ambient Air Quality Standards (NAAQS) are applied correctly, and the modeling results indicate that there would be no exceedance with the approach that the applicant has committed to. Nevertheless, to provide additional protection for the surrounding community, our finding is that the applicant must continuously monitor particulate matter emissions to ensure that there are no exceedances associated with the site development and aggregate production efforts. Any exceedances of the primary or secondary criteria must be provided to the Town and what action will be taken to eliminate the cause of the exceedance.



4. Fiore Letter

HMMH found the Fiore Letter to be technically accurate but focused on worker exposure and not the public exposure (ambient air impacts) that regulatory permitting requires. For example, the letter referenced workers' health and safety exposure levels, not public exposure standards known as ambient air standards.

The U.S. Environmental Protection Agency (EPA) defines ambient air as part of the atmosphere that is outside of buildings and accessible to the public. Air pollutants that impact ambient air are regulated under the Clean Air Act (CAA),¹ a comprehensive federal law that regulates air emissions from stationary and mobile sources.

The CAA has language that allows states to petition the EPA to gain authority to carry out the regulations set by the states and the EPA.² Connecticut has completed this process, and EPA has delegated authority to Connecticut, where the Department of Energy & Environmental Protection (DEEP) administers Connecticut's air quality programs. DEEP sets Connecticut Ambient Air Quality Standards (CAAQS)³ for six principal pollutants (or criteria pollutants) for the entire state under the CAA. These standards define the maximum concentration of pollutants that can be in the air without harming public health.

Many of the proposed quarry operations / processes emit substances (pollutants) that cause or are suspected of causing cancer, birth defects, or other serious harm known as Hazardous Air Pollutants (HAPs)⁴. HAPs are regulated by the National Emission Standards for Hazardous Air Pollutants (NESHAP) or Section 112 of the CAA. Criterial pollutants are compared to a mass per volume concentrations level, whereas public exposure to HAPs is based on a risk assessment that is a dose-response assessment. The process of assessing HAPs exposure is known as a risk assessment. An air quality risk assessment is required when there are concerns about the potential health risks or environmental impact of air emissions, or when there is significant public interest, as described below:

- Public comments: When there are substantial public comments on a project.
- Cumulative air pollution: When a facility's emissions may contribute to the cumulative effects of other nearby sources.
- Facility emissions: When there are concerns about the amount or types of emissions from a facility.
- High priority facilities: When a facility is ranked as a high priority under the Air Toxics "Hot Spots" Act
- Public health and environmental threat: When air toxics may pose a public health or environmental threat.

The process for conducting an air quality risk assessment typically involves identifying hazards, assessing exposure, assessing dose-response, and characterizing risk. Cancer risk is typically

¹ Summary of the Clean Air Act: Available at <https://www.epa.gov/laws-regulations/summary-clean-air-act>.

² 42 CFR: Title 42 Code of Federal Regulations 42 U.S. Code § 7410 - State implementation plans for national primary and secondary ambient air quality standards. Available at <https://www.govinfo.gov/content/pkg/CFR-2011-title42-vol5/pdf/CFR-2011-title42-vol5.pdf>

³ DEEP's Regulations for the Abatement of Air Pollution are adopted pursuant to the requirements and authority in Sections 4-168b and 22a-174 of the Connecticut General Statutes. Available at <https://portal.ct.gov/deep/air/planning/regulations/air-regulations>.

⁴ "What are Hazardous Air Pollutants?". Available at <https://www.epa.gov/haps/what-are-hazardous-air-pollutants>

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presented in "N"-in-1 million cancer risk while chronic and acute other effects are typically expressed in milligram per cubic meter (mg/m³) and compared to standards found in EPA Office of Air Quality Planning and Standards (OAQPS) tabulated dose-response assessments tables.⁵

Additionally, the Fiore Letter lacked details on available controls and control efficiency. The letter only referenced wetting and other mitigation, but in most situations, HAPs are regulated by specified controls known as Maximum Achievable Control Technology (MACTs), a set of standards set by the EPA to limit HAPs emissions.⁶



⁵ Guidelines for Developmental Toxicity Risk Assessment. 56 FR 63798-63826. Available at <http://www2.epa.gov/risk/guidelines-developmental-toxicity-risk-assessment>

⁶ Connecticut's Management of Toxic Air Pollutants Available at <https://portal.ct.gov/deep/air/planning/toxics/air-toxics-compliance-assurance>