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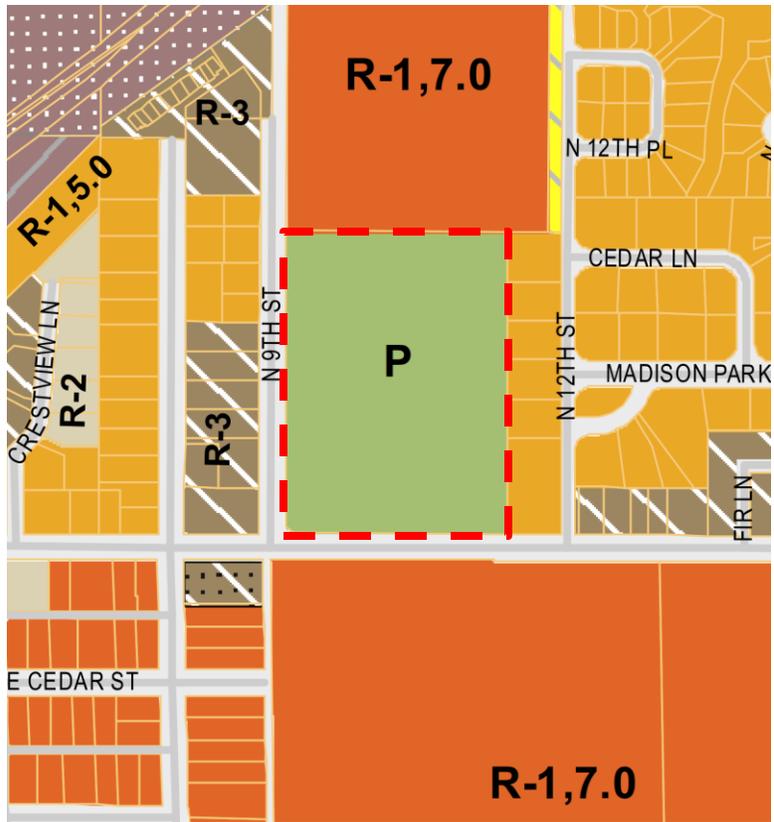
*Madison Elementary School – Environmental Noise Impact
Mount Vernon School District*

This letter presents the results of the noise emissions analysis for the proposed mechanical equipment and school activities at the future renovated Madison Elementary School with respect to Mount Vernon Municipal Code to be installed at Madison Elementary School in Mount Vernon, WA. Based on data provided by the manufacturer, noise emissions are calculated to the western, southern, and eastern property lines. The results are compared to Mount Vernon Municipal Code (MVMC) §9.28 to determine overall environmental impact and noise code compliance.

1. **Noise Code**

[MVMC §9.28](#) details environmental noise limits based on the Environmental Designation for Noise Abatement (EDNA) of the source and receiving properties. The noise limits and property designations are adopted from Washington Administrative Code (WAC) 173-60.

Based on the zoning of the project site and its adjacent properties, noise emissions from the new mechanical equipment cannot exceed 55 dBA to all property lines. The school property is zoned P – Public, and the adjacent neighboring properties are zoned R-1,5.0 and R-1,7.0 – Residential are both class EDNA A in accordance with 9.28.050.



Exterior sound level limits for the City of Mount Vernon are provided in the following table for daytime hours.

Table 1 – Maximum permissible environmental noise limits per MVMC §9.28

EDNA of Source Property	EDNA of Receiving Property		
	Class A	Class B	Class C
Class A <i>Residential</i>	55	57	60
Class B <i>Commercial</i>	57	60	65
Class C <i>Industrial</i>	60	65	70

§9.28.060(B) Deviations makes the following adjustments to the noise level limits based on time:

- a. Five dBA for a total of 15 minutes in any one-hour period; or
- b. Ten dBA for a total of five minutes in any one-hour period; or
- c. Fifteen dBA for a total of one and one-half minutes in any one-hour period.

Part of the new equipment package for Madison Elementary School is an emergency generator that will run for up to 15 minutes once a month for maintenance testing – per §9.28.060(B), it must not exceed 60 dBA during daytime hours at the adjacent residential properties. The emergency operation is exempt in accordance with 9.28.060(G)(5). Unamplified teacher, staff, and child voices are also exempt in accordance with 9.28.060(G)(10).

Regarding traffic noise, the environmental checklist correctly notes that automobile and truck traffic generates an average noise level of 50 dBA, which is within the acceptable levels for Class A EDNAs. The duration of engine noise

from vehicle traffic on the school site, the daytime contributions from Fir Street, and the distance from the pick-up to the west, east and south properties will not exceed 55 dBA to these residential properties.

2. Predicted Mechanical Equipment Noise

The noise sources that exterior mechanical equipment evaluated for compliance is outlined in Table 2. Sound data for each unit is provided by the manufacturer.

Table 2 – Madison Elementary: Exterior mechanical equipment sound power levels (dB re 1 picowatt)

MARK	LwA
KEF-1	77
KEF-2	74
EF-1	64
EF-2	67
EF-3	63
EF-4	66
EF-5	77
EF-6	66
EF-7	65
EF-8	69
EF-9	65
EF-10	64
EF-11	66
EF-12	65
EF-13	71
EF-14	61
EF-15	68
AHU-7	92
AHU-8	90

Table 3 – Madison Elementary: Generator – operational sound pressure levels at 65 feet (dB re 20 µPa)

Make & Model	dBA SPL @ 65'-0"
MTU On-site Energy 125 kW	60

Equipment noise is predicted to the nearest property lines considering attenuation by distance and site conditions. The calculation methods employed follow those described by the Air-Conditioning & Refrigeration Institute (ARI) Standard 275 and ASHRAE Applications Handbook. Calculation results are shown in the following tables 3 and 4.

Table 3 – Noise emissions from constant operation daytime mechanical equipment received at property lines

Property Line	Overall dBA SPL @ PL	Daytime Limit
West	52	55
South	48	
East	51	

Table 4 – Noise emissions from generator received at property line

Property Line	Overall dBA SPL @ PL	15-min Daytime Limit
West	57	60

3. Summary

Noise emissions from new mechanical equipment and maintenance operation of the emergency generator at Madison Elementary School are predicted to meet MVMC § 9.28 Noise Regulations and WAC 173-60. Additional noise mitigation is not necessary.

Please contact us if you have any questions or for additional information.

Sincerely,



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