



# Memo

**To:** Rebecca Grant, Kate Barbaria, IBI  
**From:** Tobin Cooley, P.E.  
**Date:** February 25, 2021 (rev.4)  
**RE:** West Linn Wilsonville new Middle School Noise

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Noise from equipment, busses, operations, and after school sports at the new middle school have been analyzed with respect to the sound transmitted to adjacent neighborhoods. We have also measured the ambient sound levels at the closest residential receivers to establish a baseline understanding of the current neighborhood sound. Generally, sound from the new school will be at or below the neighborhood ambient sound levels, with the exception of momentary vehicle travel noise from Dollar Street to the site, and some short-term playfield noises such as whistles or cheering.

## Summary of Noise Sources

The new middle school noise sources have been identified as:

1. Delivery trucks
2. School Busses
3. Garbage truck
4. Trash compactor
5. Generator
6. HVAC rooftop units
7. After school sports

## Delivery Truck Frequency

Per the District, delivery truck frequency is as follows:

- Sysco tractor-trailer delivers once per week, typically on Wednesdays during school hours
- Box truck milk delivery once per week during school hours
- Recycling once per week, and garbage truck once per 2-3 weeks
- District shuttling of dry kitchen items in a box truck typically once per week during school hours

As a result of the once-per-week deliveries, truck noise will be present for a short time on specific days. The Sysco and garbage trucks are larger vehicles, whereas the other two vehicle sources are small box trucks with significantly lower sound levels.

## Truck Sound Levels

While moving, a large tractor-trailer traveling on the property is approximately 75 dBA at a distance of 50', whereas a box truck is 62 dBA at 50'. At idle, a box truck is about 52 dBA at a distance of 50' and a large truck is 65 dBA at a distance of 50'. The calculated sound levels at the nearest neighbors are described as follows, for each delivery (note that noise is calculated only when on the school property, since vehicle noise on a public street is exempted).

**Sysco and Garbage Trucks**

The larger trucks for deliveries and garbage removal enter the site along Dollar Street, and travel to the delivery dock or garbage area, which are located behind a 12' concrete wall. The trucks will create momentary noise at the property entry up to 65 dBA at the nearest receiver property line, then as they proceed along the school driveway will produce 55 dBA at the nearest receiver during the short time it takes to travel to the dock. The truck then parks behind the concrete barrier, which results in sound levels of 42 dBA or less at the nearest residential receiver.

**Box Trucks**

The box trucks also enter the site along the new Brandon Place connector either from Willamette falls drive or Dollar Street and will travel to the kitchen delivery dock. The trucks will create momentary noise at the entry up to 58 dBA at the nearest receiver property line, then as it proceeds along the school driveway will produce 42 dBA at the nearest receiver during travel to the delivery area. The truck then parks behind the concrete barrier, which results in sound levels of 38 dBA or less at the nearest residential receiver.

**School Busses**

The school busses arrive around 8:55 AM, drop students off, and leave the site. They then arrive again at 3:15 for pickup. The busses will enter the site at the main entrance along Dollar Street, and travel to the bus area on the North side of the new school. There is a strict no idling policy, so busses will be turned off (no noise) once at the loading area. The busses will create momentary noise at the entry up to 62 dBA at the nearest receiver property line, then as they proceed along the school driveway the sound levels can be up to 59 dBA with multiple busses along the driveway.

**Trash Compaction**

The trash compactor is typically run one time per day for less than 5 minutes. Since the compactor is located behind the concrete barrier at the loading dock, noise levels are expected to be less than 40 dBA at the nearest residences.

**Generator**

The generator is for emergency power outage use only. Testing of the generator will occur once per week for approximately one hour. Since the generator is behind a tall concrete wall and the generator includes a Level 2 sound reducing outdoor enclosure and critical sound grade muffler, the sound level at the nearest residence is calculated to be 61 dBA.

**Rooftop HVAC Equipment**

Noise from the HVAC rooftop equipment is calculated to be less than 48 dBA at the nearest residences. Barriers on the roof around the equipment as well sound reduction over distance significantly reduce the sound levels.

**Playfield Sound from Sports**

Playfield sound levels vary by sport and use, with typical anticipated average game noise predicted to be 45-50 dBA at the closest residences on Dollar Street, and short-term peaks from whistles or yelling being up to 60 dBA. The schedule of use is from after school until up to 10:00 PM, and includes weekends during the day until 10:00 PM as well. We reviewed a detailed sports activity log from 2018/2019 at Rosemont Ridge MS, which indicates a total use of 1523 hours during this school year period. The

primary concentration of use was from 4:00 PM to approximately 8:00-10:00 PM for school team practices.

### **Ambient Sound Levels in the Neighborhood**

We measured the ambient sound levels along Dollar Street during typical weekday school hours. The sound levels are consistent with a typical quiet suburban neighborhood, with traffic noise along Willamette Falls Drive and neighborhood streets being the primary sources. Sound levels were in the range of 41 to 55 dBA during the measurement periods, with an average of 44 dBA.

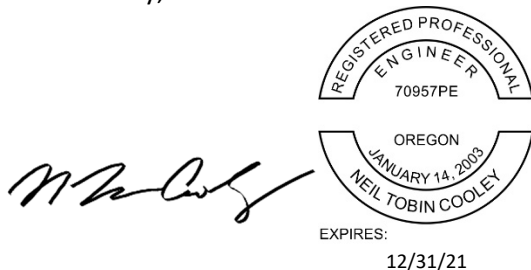
### **Discussion**

Sound from moving and idling trucks and building service operations on the north side the building, such as trash compaction, will be greatly reduced as a result of the distance of the school roadway from Dollar Street (moving vehicles) and the concrete barrier at the loading area (idling vehicles and trash compactor). The loading area concrete wall is designed to reduce sound to the homes along Dollar Street by creating an acoustical “shadow zone”.

The rooftop HVAC equipment is similarly blocked from transfer to the neighborhood via surrounding barriers. With the exception of the brief initial travel of busses and trucks on to the property at the entry points, sound levels from the new middle school operations will be below current neighborhood ambient sound levels.

For after school and weekend sports activities on the playfield, the sound levels will be variable depending on the sport/use, from below ambient sound in the neighborhood to clearly audible whistles and shouting for short periods.

Please feel free to call or email me with any questions.  
Tobin Cooley, P.E.



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