

MEMORANDUM

To: **Tyson Sayles**
Ensemble Real Estate Investments

From: **Sarah Manzano**
Michael Keinath

Subject: **Traffic Health Risk Assessment Screening Analysis of 190**
West Cliff Drive Project
Santa Cruz, California

You have requested an analysis of potential air quality impacts on the residents of Clearview Court resulting from vehicle emissions in connection with the proposed mixed-use project located at 190 W. Cliff Drive, Santa Cruz, California (the "Project"). Specifically, we understand the residents of Clearview Court are concerned about an increase in vehicle emissions from vehicles visiting the site and from a drop off/Uber zone. We also understand the majority of parking is moving underground and ground level parking is being reduced as part of the Project.

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As described below, based on our analysis, vehicle emissions associated with the Project will not adversely impact the health of the residents of Clearview Court. Potential impacts are well below standard health thresholds. With respect to idling vehicles, health impacts are expected to be de minimis considering (i) fuel efficiency standards have increased, (ii) emissions from diesel vehicles (e.g., trucks and buses) are the largest contributor to health impacts from vehicular travel; however, the Project is expected to accommodate passenger vehicles which are predominantly gasoline powered, and (iii) the drop off and Uber zone is more than 200 feet away from any off-site residences, so emissions are expected to dissipate prior to reaching adjacent residential areas. Therefore, health impacts at offsite residences from idling at the drop off zone is expected to be de minimis.

ADDITIONAL DETAILS ON VEHICLE TRAVEL ANALYSIS

Bay Area Air Quality Management District (BAAQMD) developed tools to estimate health impacts from vehicular traffic by Bay Area county. Monterey Bay Air Resources Board (MBARD), which regulates air quality in Santa Cruz, does not have similar tools, so BAAQMD's tools were used to estimate health impacts. To perform a conservative analysis, we used the screening tools from the Bay Area county with the highest health impact.

We used future Project traffic volumes entering the site from the Project's Transportation Impact Assessment¹ to estimate health impacts from vehicles traveling to and from the project area. To estimate vehicle traffic on the site, we

¹ Pinnacle Traffic Engineering. 2019. Traffic Impact Analysis for 190 W Cliff Drive Mixed Use Project. February 15. Available at:
<http://www.cityofsantacruz.com/government/city-departments/planning-and-community-development/active-planning-applications-and-status/190-west-cliff>.

added all turning movements turning into and out of the site for the peak hour. Saturday peak hour was higher than the weekday peak hour, so Saturday traffic volumes were applied to the whole week. To convert peak hour traffic volumes to average daily volumes, we multiplied by a factor of 10, which is a common factor used in air quality analysis. We assumed each vehicle drove across the project site two times for each inbound and outbound trips; i.e., our analysis assumed vehicles travelled two times around the project site when entering and leaving. We performed the same estimate for the existing traffic,² which was subtracted from the project traffic to get a net increase in traffic. This traffic volume was used in BAAQMD’s Roadway Screening Analysis Calculator.³

The results of our analysis are shown in Table 1. These results are compared to the MBARD cancer risk threshold for impacts from toxic air contaminants.⁴ MBARD does not have a significance threshold for PM_{2.5} concentration, so the BAAQMD threshold was used to compare impacts from PM_{2.5} concentration. As shown in the table, project impacts are well below the thresholds even with the very conservative assumptions in our analysis.

Table 1. Conservative Estimate of Health Impacts from Vehicular Travel On-Site		
	Cancer Risk⁵ (in a million)	PM_{2.5} Concentration (µg/m³)
Project Impacts	3.06	0.049
Threshold of Significance	10	0.3

The health impacts shown in Table 1 likely overestimate the potential health impacts for the following reasons:

- To provide context, the cancer risk reported in Table 1 is representative of health impacts and average air quality conditions for vehicle travel in Solano County, CA. However, toxic air contaminant concentrations would tend to be higher in Solano County, which is inland. Wind speeds are significantly higher on the coast, which leads to lower toxic air contaminant concentrations (meaning that with the Project, air quality conditions would still be better than the conditions present for residents living in Solano County).
- We assumed residents were 10 feet from the roadway (which is the smallest distance the screening tool allows). The actual minimum distance to the roadway from Clearview Court is estimated to be around 17 feet from Google Earth and much of the traffic would be much further than 17 feet from residences.
- Since the parking garage is below ground, vehicle emissions will dissipate as they reach ground level, which will significantly reduce their concentration.

² Weekday traffic was used for existing traffic because weekday traffic was less than Saturday traffic. The smaller existing traffic was used to show a larger increase in traffic and get the most conservative assessment.

³ BAAQMD. 2015. Roadway Screening Analysis Calculator. April 16. Available at: <http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools>.

⁴ MBARD. 2018. CEQA Air Quality Guidelines. February. Available at: https://www.mbard.org/files/f665829d1/CEQA_full+%281%29.pdf.

⁵ Cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A cancer risk below 10 (per million) is considered below significance per BAAQMD CEQ thresholds.

- The Roadway Screening Analysis Calculator assumes 1 mile of vehicular travel per trip which is a default assumption. Onsite travel will be significantly less than 1 mile.
- The Roadway Screening Analysis Calculator uses a vehicle fleet mix from 2014. When the Project is built, the vehicle fleet will include more efficient and cleaner cars, which would further reduce health impacts.
- The Roadway Screening Analysis Calculator includes emissions from the county-wide average fleet, which includes heavy duty trucks and buses. Emissions from trucks and buses are greater than the passenger vehicles that will be visiting the site, so health impacts from the passenger vehicles that visit the site would be much lower.
- Our analysis assumed each vehicle would traverse the site twice upon entering and exiting, which likely overestimates the amount of travelling that would occur under normal operating conditions.
- Our analysis assumed Saturday vehicle traffic was representative of the whole week. However, our analysis showed that there is less weekday traffic.

In conclusion, our conservative analysis of potential health impacts indicates that vehicle emissions associated with the Project are well below health impact thresholds and, therefore, the residents of Clearview Court should not experience any health impacts due to vehicle emissions.