

Appendix 3.4.4
Local Air Quality Modeling Report

MEMORANDUM

To: Kyle Peralta, City of Menlo Park

From: Michael Keinath, Sarah Manzano, Ashley Sorensen, Ramboll

Subject: Menlo Park Air Monitoring Program Continuation

As you know, at the request of Peninsula Innovation Partners (Peninsula), Ramboll US Consulting, Inc. (Ramboll) has been conducting air quality monitoring at four locations in the Belle Haven Community in Menlo Park since October 8, 2020. Initially, the monitoring was proposed for a period of three months, but it was extended and has continued to the current date. This memorandum summarizes the monitoring work that will continue in the Belle Haven Community commencing on October 26, 2021.

We propose to remove two of the monitoring stations (Child Development Center and MPK64) and keep the Kelly Park and Willow Road stations for six more months. More discussion on background and reasons for continuing monitoring at these stations is provided below.

Background

In October 2020, Ramboll started conducting air monitoring at four locations in the Belle Haven Community to better understand the community's localized air quality ("The Menlo Park Air Monitoring Program"). The Belle Haven Community is uniquely placed between the high traffic corridors of Highway 101, Bayfront Expressway and Willow Road. In depth air monitoring had not been performed in this area before and the nearest Bay Area Air Quality Management District (BAAQMD) air monitoring station is approximately 2 miles away in Redwood City. The goal of this monitoring effort was to gather data on the background air quality in the Belle Haven community for possible inclusion in the Willow Village Draft EIR and to compare that data to current and historical data from the BAAQMD Redwood City monitoring station to put the existing air quality in the neighborhood into perspective.

The Menlo Park Air Monitoring Program originally consisted of four monitoring stations each with an identical array of air monitoring equipment: Child Development Center, Kelly Park, MPK64, and Willow Road located at 410 Ivy Drive, 100 Terminal Avenue, 135 Commonwealth Drive, and 1283 Willow Road, respectively. The Menlo Park Air Monitoring Program measured continuous particulate matter less than 2.5 micrometers in diameter (PM_{2.5}) concentrations for 1 year along with filter-based PM₁₀/metals concentrations and canister-based volatile organic compound (VOC) concentrations for 6 months. The filter-based

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PM₁₀/metals samples and canister-based VOC samples were stopped on April 10, 2021 after 6 months of sampling.

The Menlo Park Air Monitoring Program utilized US Environmental Protection Agency (EPA) and California Air Resources Board (CARB) approved monitoring and sampling methodologies to gather data on the existing air quality in the Belle Haven Community. The particulate matter monitors used in this monitoring program are EPA-approved monitors that were awarded Federal Equivalency Method (FEM) or Federal Reference Method (FRM) designations.

We understand SMC Labs has also been monitoring particulate matter at various locations in Belle Haven using Clarity monitors. Clarity monitors provide estimates of particulate matter concentrations **and are available at a lower cost than the monitors used in Ramboll's monitoring program. However,** they are not approved by the EPA for regulatory compliance and do not provide the same data quality as the monitoring equipment used at the BAAQMD stations. The Menlo Park Air Monitoring Program uses equipment that matches the caliber of the BAAQMD monitoring stations, which are EPA approved, designated as FRM or FEM, and meet rigorous quality assurance and accuracy requirements. Because the program uses monitoring equipment equivalent to the equipment used by BAAQMD, the results of the program can be compared to the readings from the BAAQMD air monitoring station.

Proposed Program Modification

Ramboll is proposing to remove two of the monitoring stations, Child Development Center and MPK64, and keep the Kelly Park and Willow Road stations based on the following factors: data consistency with BAAQMD monitor, minimal difference in concentrations between stations, proximity to Willow Road, and co-location with the Clarity monitors. For reference, Figure 1 below shows the current location of the four Ramboll monitors, the nearby Clarity monitors, and the BAAQMD Redwood City monitor.

Figure 1: Ramboll, BAAQMD, and Clarity Monitor Locations



Data Consistency with BAAQMD Monitor

The data collected during the Menlo Park Air Monitoring Program will be discussed in the forthcoming Air Quality and Meteorological Monitoring Data Summary Report. These data show that the concentrations measured at the BAAQMD Redwood City monitor were, on average, higher than those in the Belle Haven Community, and followed the same trends. Based on this finding, **BAAQMD's** monitor at Redwood City is representative of PM_{2.5} concentrations in the Belle Haven Community, though the concentrations from Redwood City are likely an overestimate for the Belle Haven Community. Because the BAAQMD Redwood City monitor is representative of the Belle Haven Community, Ramboll is proposing to reduce the number of stations in the Menlo Park Air Monitoring Program.

Difference Between Belle Haven Monitors

The data collected during the Menlo Park Air Monitoring Program shows that concentrations in the Belle Haven area were similar at each of the monitoring stations and result in a similar conclusion when comparing to the BAAQMD Redwood City monitoring station. The average 24-hour concentration was 5.8, 5.6, 5.9, and 5.6 $\mu\text{g}/\text{m}^3$ at the Child Development Center, Kelly Park, MPK64, and Willow

Road, respectively, compared to a value of $6.9 \mu\text{g}/\text{m}^3$ at the BAAQMD station.¹ Because the difference between the monitors in Menlo Park is so minor compared to the differences between the BAAQMD Redwood City monitor and the Menlo Park monitors, having four stations is redundant.

Traffic on Willow Road

The Willow Road station is adjacent to Willow Road, which is a primary route to the Facebook campuses as well as a major roadway for traffic moving through the community. As more people return to work due to easing of pandemic restrictions, the traffic along Willow Road is expected to increase. Ramboll is proposing to keep the Willow Road monitoring station to make sure this potential increase in traffic is analyzed. The MPK64 station is adjacent to Highway 101, which is also a major roadway in the area. However, the Willow Road station is closer to the Belle Haven Community than the MPK64 station.

Co-Location with Clarity Monitors

Figure 1 above shows the location of the nearby Clarity monitors, the BAAQMD monitor, and **Ramboll's monitors**. As mentioned in the Background section of this memo and discussed in detail in the forthcoming Air Quality and Meteorological Monitoring Data Summary Report, Clarity monitors are low-cost sensors that are not approved by the EPA for regulatory compliance and do not provide the same data quality as the monitoring equipment used at the BAAQMD/Ramboll stations. These monitors tend to overestimate $\text{PM}_{2.5}$ concentrations during higher ambient concentrations when compared to the FEM/BAM monitors.

While the low-cost sensors are helpful to understand hyperlocal trends, the concentrations from low-cost sensors should not be used in a direct comparison to those from BAAQMD's monitor in Redwood City. Ramboll is proposing to keep the two stations that are closest to the Clarity monitors in order to allow for a comparison of the concentrations between the low-cost Clarity monitors and the FEM/FRM monitors in the Menlo Park Air Monitoring Program.

Conclusion

Based on the rationale laid out above, Ramboll is proposing to reduce the number of monitoring stations from four to two. Ramboll is proposing to remove the monitoring stations at the MPK64 and Child Development Center locations and continue to monitor $\text{PM}_{2.5}$ concentrations using the continuous monitors at the Kelly Park and Willow Road stations. The filter-based PM_{10} /metals samples and canister-based VOC samples were stopped at all stations on April 10, 2021 after 6 months of sampling.

¹ Average includes data from October 8, 2020 to September 26, 2021 for all sites except Willow Road. The average for the Willow Road station includes data from February 24, 2021 to September 26, 2021.