

Action: Mobile and stationary monitoring at or near sensitive receptors including schools, childcare centers and homes**Background & Objective**

The East Los Angeles, Boyle Heights, West Commerce (ELABHWC) community steering committee (CSC) identified children's exposure to harmful air pollutants as a major air quality priority, with specific focus on childcare centers, community centers, and public housing developments. Another major air pollution priority in this community is diesel emissions caused by neighborhood and freeway truck traffic and railyards. The CSC also expressed concern about emissions from metal processing facilities, general industrial sources, and auto body shops. CSC members identified schools and other places where children spend a lot of time (e.g., childcare centers, libraries, and community centers) as places where the South Coast AQMD should direct its efforts to reduce exposure to harmful air pollutants.

Method

As part of the AB 617 program, South Coast AQMD performs extensive mobile and stationary air monitoring to address the major air quality priorities selected by the CSC and to identify and characterize air pollution hotspots within the ELABHWC community. During these monitoring activities the locations of nearby sensitive receptors were considered to evaluate if and to what extent they are impacted by nearby emission sources. If persistent elevated air pollution levels in close proximity to schools and other sensitive receptors are found, the South Coast AQMD will evaluate short-term stationary air monitoring options to provide a more in-depth assessment of air quality conditions at those locations.

Mobile monitoring is conducted using a mobile platform capable of measuring a wide range of particulate and gaseous pollutants, including particulate matter (PM), black carbon (BC), ultrafine particles (UFP), and nitrogen dioxide (NO₂). Figure 1 shows the routes traversed by this mobile platform (as of July 2020), with respect to the location of the schools and day care centers (shown as yellow circles) within ELABHWC.

South Coast AQMD also conducted mobile measurements for air toxic metals and VOCs during a proof-of-concept project in collaboration with Aerodyne Research LLC. This resulted in South Coast AQMD to develop two mobile laboratories, one for monitoring VOCs and certain odorous compounds and one for detecting multi-metals, so that these types of measurements can be conducted in-house. These mobile platforms are currently under development and will be ready for deployment in the first half of 2021.

Results

- As of July 2020, a total of 6 days of mobile measurements for BC, UFP and NO₂ have been carried out to study the spatial gradient of traffic-related air pollutants in the ELABHWC community

- Mobile monitoring results indicate elevated concentrations of NO₂, UFP, and BC on major freeways and roadways (Attachment A). Therefore, schools, daycares, or any other sensitive receptors that are located close to major freeways and roadways may experience higher levels of traffic-related air pollutants
- NO₂, UFP, and BC concentrations were found to be generally lower in residential communities as compared to those measured in and around freeways and roadways (Attachment A)

Next steps

- Continue mobile monitoring with a focus on areas near sensitive receptors and where higher levels of air pollutants have already been measured
- Continue mobile measurements to cover all identified sensitive receptors
- In areas with persistent elevated air pollution levels (e.g., schools), consider performing short-term stationary air monitoring to provide air quality information at those locations for short-term assessments
- Continue to assess mobile measurements data/results to support implementation of exposure reduction strategies in sensitive receptor areas

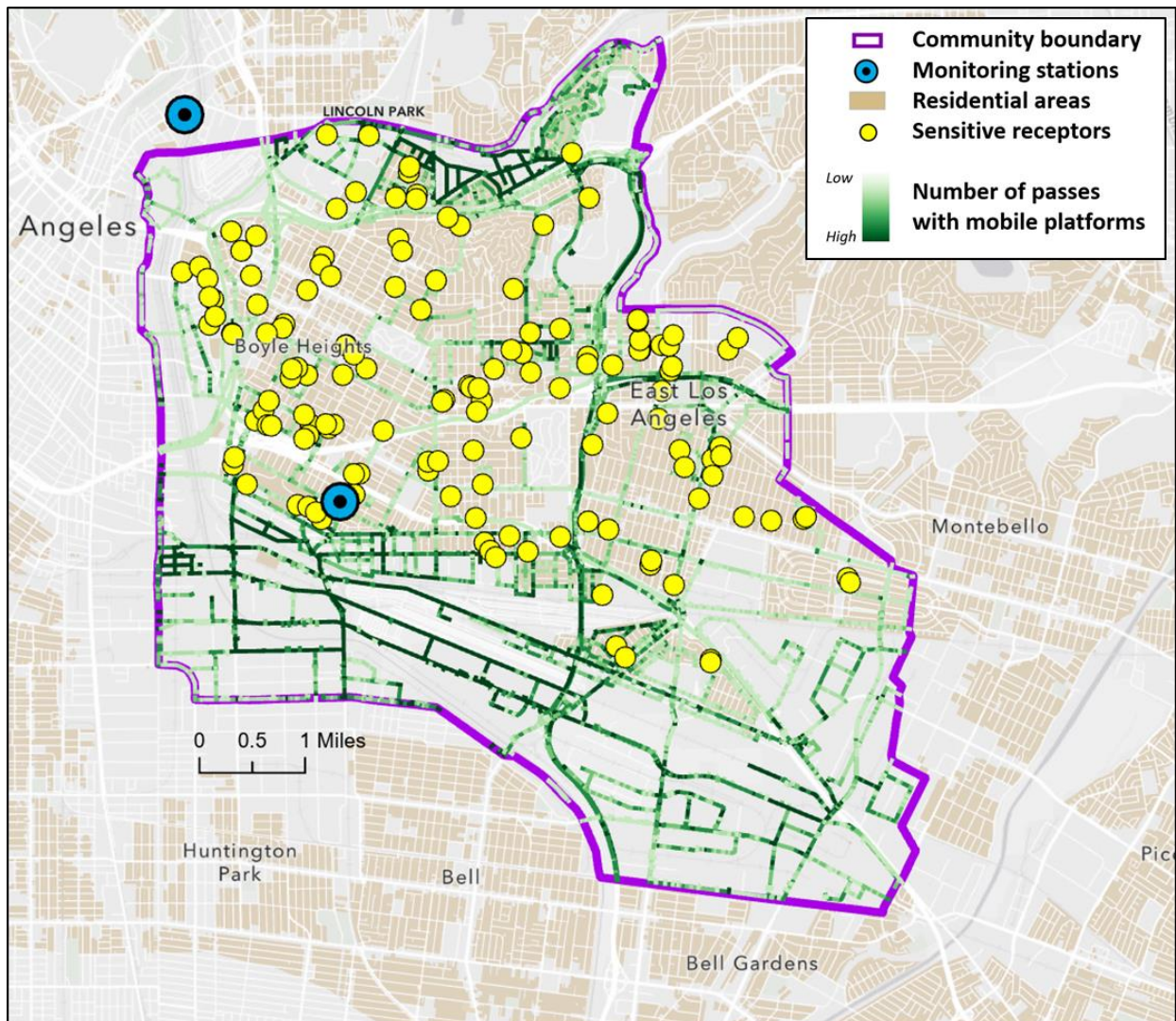


Figure 1. Map showing the routes traversed by the South Coast AQMD mobile platform with respect to the location of schools and day care centers within the ELABHWC community, as well as the location of air monitoring stations for baseline measurements

Attachment A

As of July 2020, a total of six mobile monitoring surveys have been conducted in the East Los Angeles, Boyle Heights, and West Commerce (ELABHWC) community to measure diesel emissions. Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is known as diesel particulate matter (DPM), which is a component of fine particles (PM_{2.5} – particulate matter smaller than 2.5 micrometers in diameter). There is no technique to directly measure DPM (a major contributor to health risk); therefore, indirect measurements based on surrogates for components of diesel exhaust are used, specifically black carbon (BC). DPM is typically composed of carbon particles (“soot”, also called BC) and numerous organic compounds. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds (VOC) and nitrogen oxides (NO_x). Measurements are conducted using a mobile platform capable of monitoring a wide range of particulate and gaseous pollutants, including particulate matter (PM), BC, ultrafine particles (UFP), and nitrogen dioxide (NO₂), as part of the area-wide surveys. The routes traversed by the mobile platform were defined in a way to perform monitoring near schools and other sensitive receptors.

Figure A-1 shows the duration and time window for the area-wide mobile measurements performed within the ELABHWC community. More detailed information on mobile data screening and analysis can be found in the progress report on “Truck Traffic” and “Railyards”. As shown in this figure, mobile monitoring was performed in different times of day during the six survey days. The starting time of the mobile monitoring surveys varied between 7:30 and 11:30 am PST (Pacific Standard Time), whereas the ending time ranged from 11:30 am to 4 pm PST.

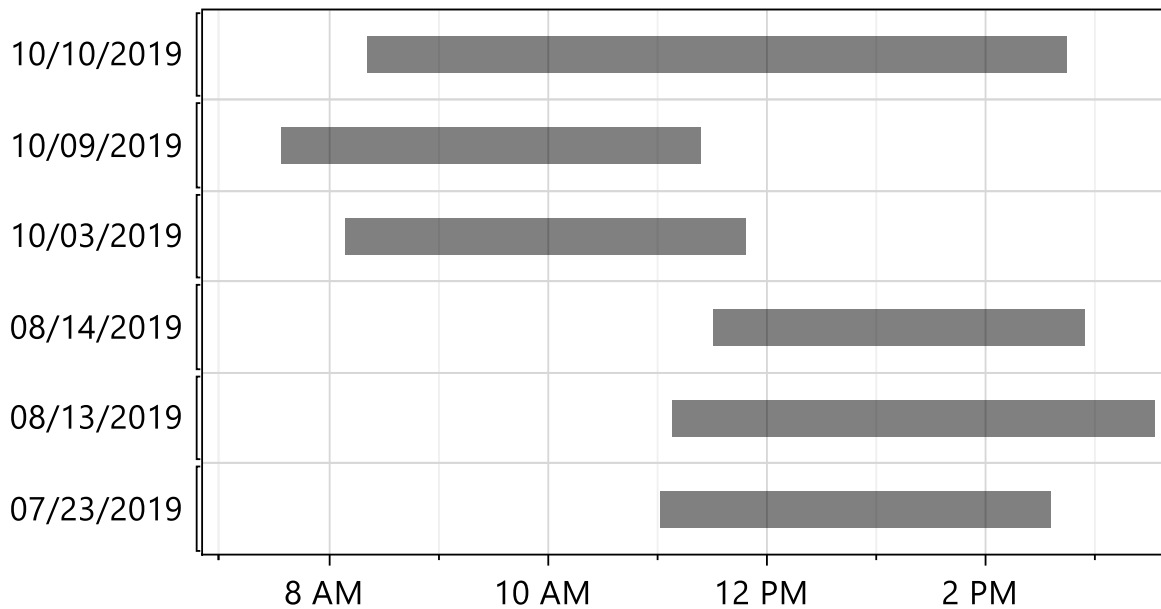


Figure A-1. Duration and time window for the area-wide mobile measurements performed within the ELABHWC community. The time windows only include hours of active mobile measurements within the community, excluding the commute time between the South Coast AQMD Headquarters and the ELABHWC community

As shown in Figure A-2, A-3, and A-4, the mobile monitoring results indicated elevated levels of BC, UFP, and NO₂ on freeways, including transects of the I-710, I-5, and 60, as well as major roadways, including Bandini Blvd., Washington Blvd., Santa Fe Ave., and Soto St. These results indicate that the sensitive receptors that are located near major freeways or roadways are more susceptible to higher levels of traffic-related air pollutant compared to those that are farther away. It can also be observed from these maps that the concentrations of traffic-related air pollutants were generally lower in residential communities as compared to those measured in and around freeways and major roadways within the ELABHWC community.

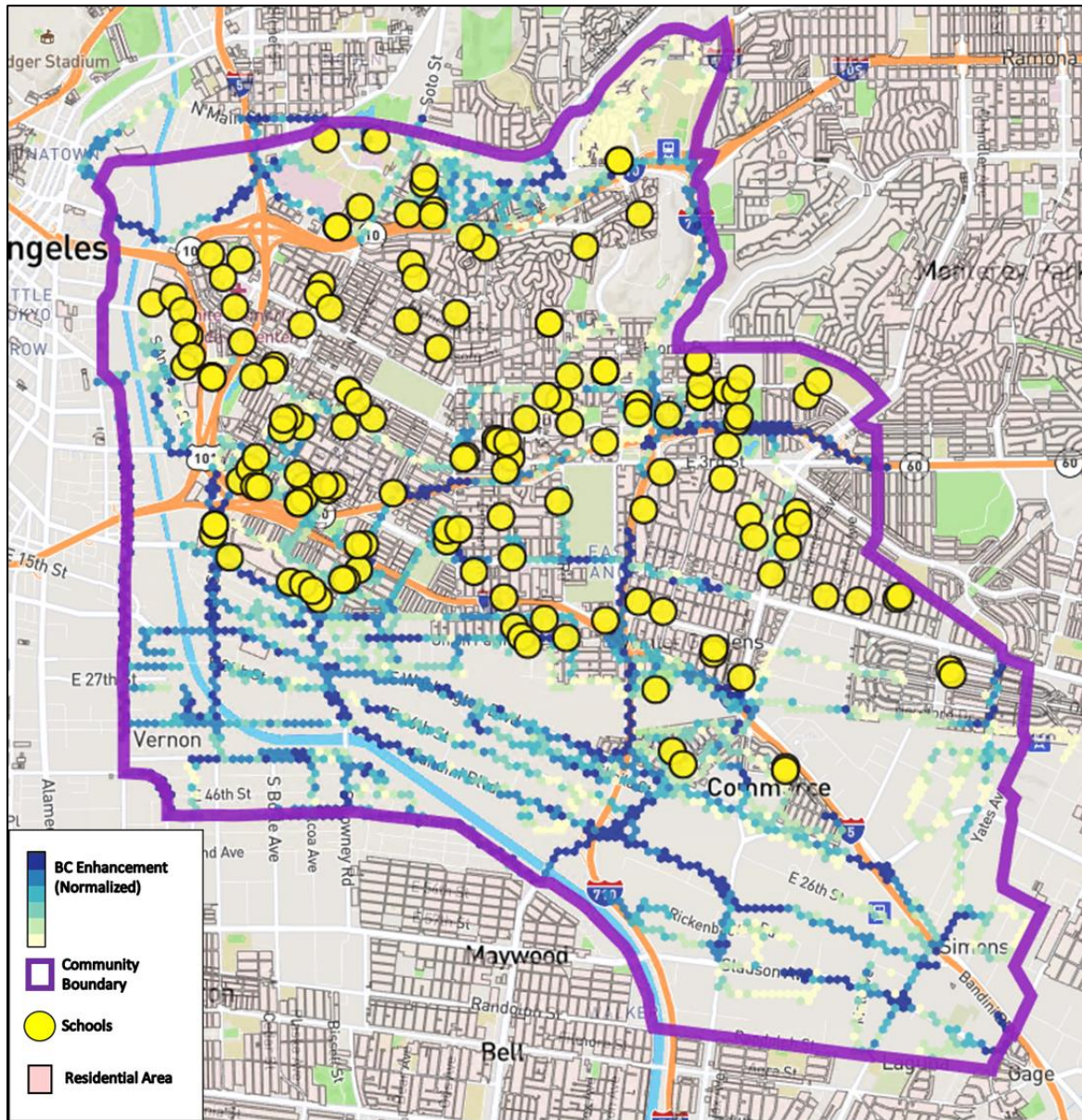


Figure A-2. Aggregated map showing the spatial pattern of BC concentrations and the location of schools (including day cares) within the ELABHWC community, as measured by the mobile monitoring platform on 07/23/2019, 08/13/2019, 08/14/2019, 10/03/2019, 10/09/2019, and 10/10/2019

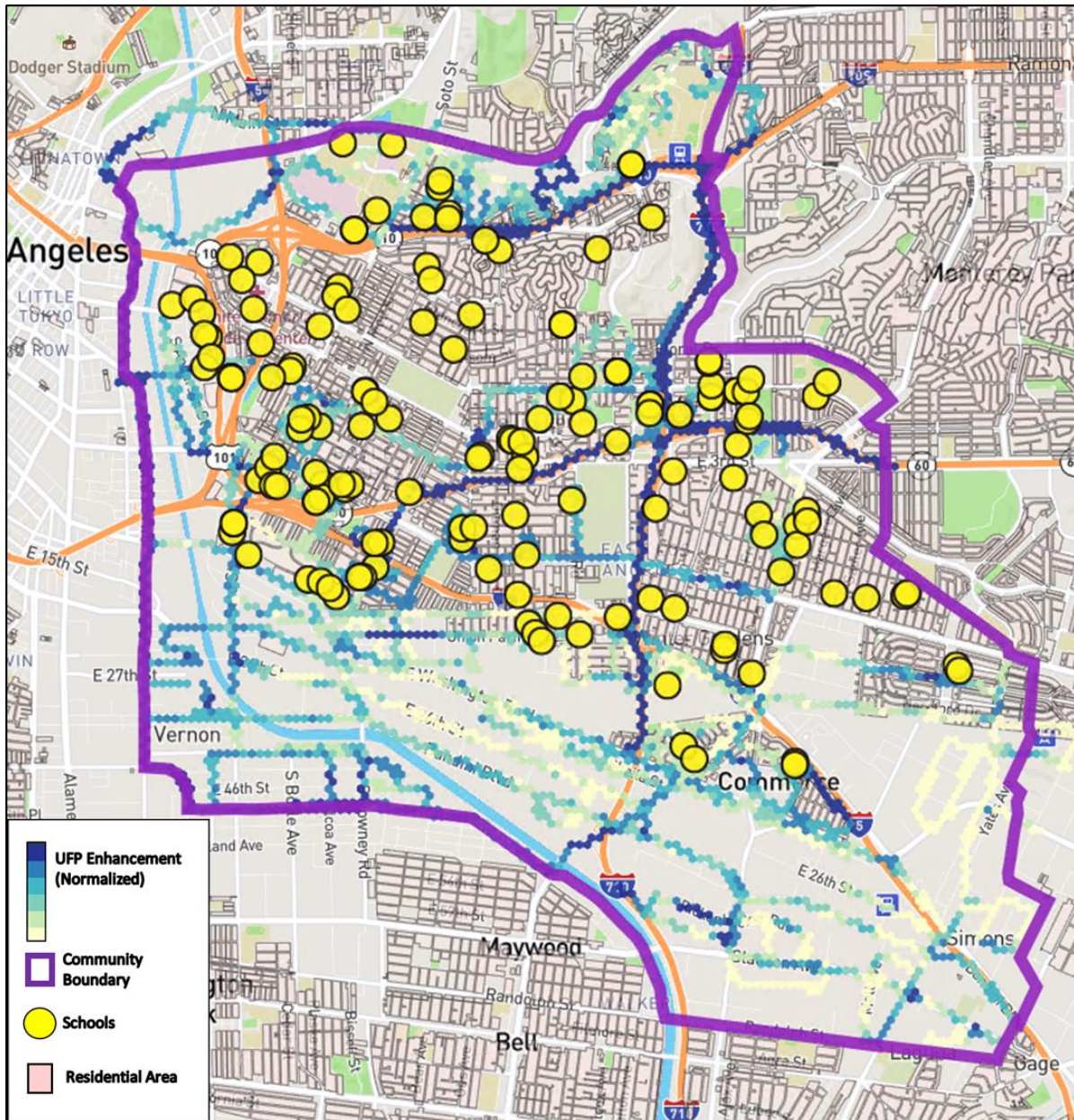


Figure A-3. Aggregated map showing the spatial pattern of UFP concentrations and the location of schools (including day cares) within the ELABHWC community, as measured by the mobile monitoring platform on 07/23/2019, 08/13/2019, 08/14/2019, 10/03/2019, 10/09/2019, and 10/10/2019

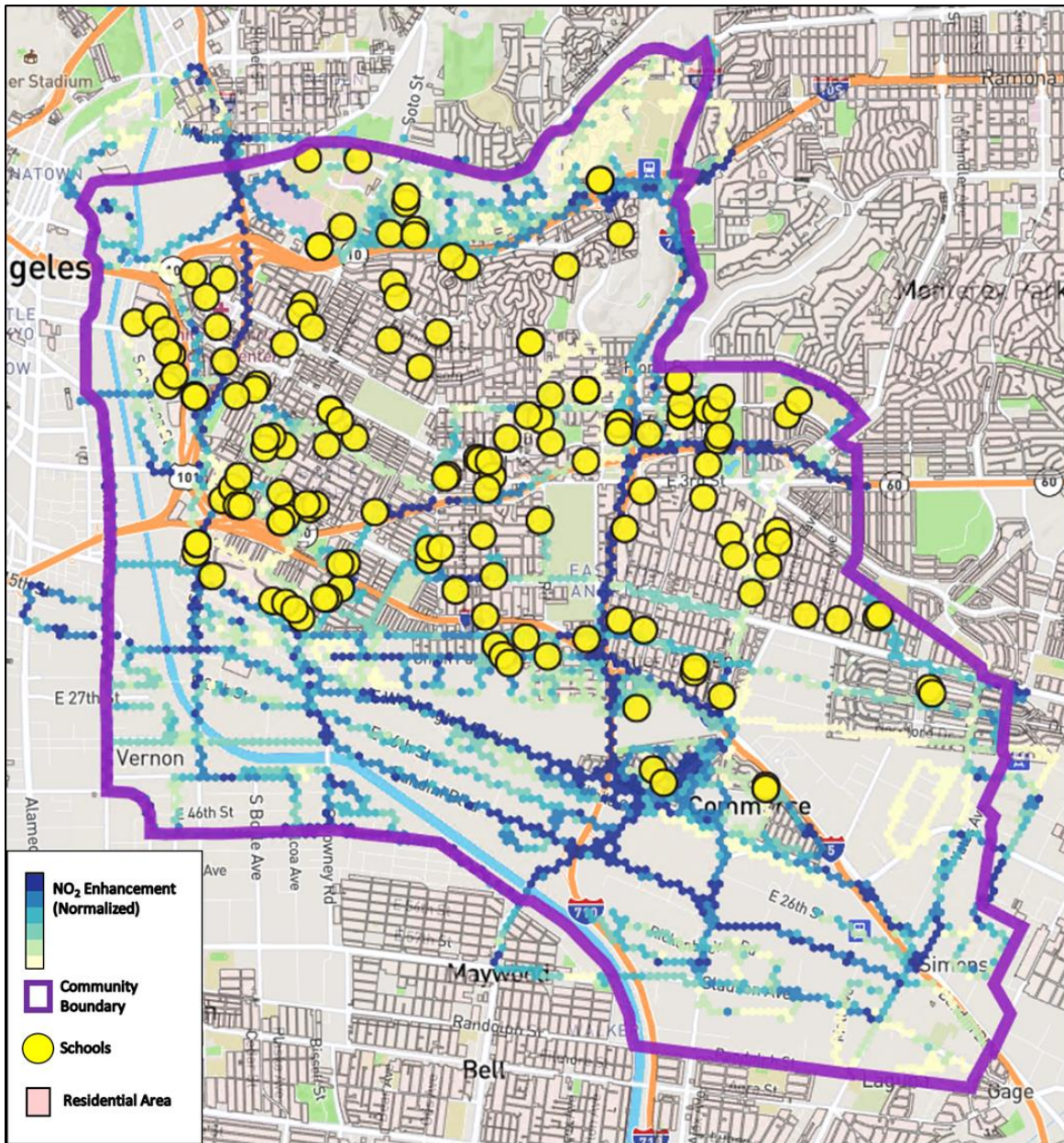


Figure A-4. Aggregated map showing the spatial pattern of NO₂ concentrations and the location of schools (including day cares) within the ELABHWC community, as measured by the mobile monitoring platform on 07/23/2019, 08/13/2019, 08/14/2019, 10/03/2019, 10/09/2019, and 10/10/2019