AB 617 COMMUNITY AIR MONITORING PLAN (CAMP) FOR THE EAST LOS ANGELES, BOYLE HEIGHTS, WEST COMMERCE COMMUNITY

South Coast Air Quality Management District

April 2019

Version 1

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Background

Community air monitoring plays an important role in supporting effective actions to reduce emissions and exposure within communities that are disproportionally impacted by air pollution. Assembly Bill (AB) 617, passed by the California legislature in 2017, is a law that focuses on reducing air pollution in Environmental Justice (EJ) communities throughout the State. This law provides an opportunity for the South Coast Air Quality Management District (South Coast AQMD) to further address community air quality issues in disadvantaged areas. For each community approved by the California Air Resources Board (CARB), South Coast AQMD staff will work with a community steering committee (CSC), local stakeholders, and members of the public to assess their major air pollution concerns and propose specific action strategies. Depending on the specific needs of each community, South Coast AQMD staff will develop and implement a tailored Community Emission Reduction Plan (CERP) and a Community Air Monitoring Plan (CAMP). South Coast AQMD staff will work with CARB, state and local agencies, and other stakeholders to implement these CERPs and CAMPs to reduce local air pollution emissions and benefit public health.

The three communities within the South Coast AQMD that were designated by CARB for Year 1 AB 617 implementation are:

- Wilmington / Carson / West Long Beach
- San Bernardino / Muscoy
- East Los Angeles / Boyle Heights / West Commerce (ELABHWC)

CARB designated that each of these 3 communities have both CAMPs and CERPs developed during the first year. CAMPs must be submitted to CARB by May 1, 2019. AB 617 specifies that air monitoring within each of these three communities must commence by July 1, 2019. The main purpose of the CAMPs is to outline the air monitoring that will be conducted to address each community's top priority air quality issues and support effective implementation of the CERPs. This could include new monitoring activities, and augmenting ongoing and/or upcoming community-led and agency-led air monitoring programs. These new monitoring activities will enhance the geographical coverage of existing air monitoring activities throughout the South Coast Air Basin (Basin). Air monitoring will also enhance our understanding of pollution impacts in EJ areas. A variety of air monitoring approaches will be used and the objectives, tools, and stakeholders involved will differ from community to community.

This document only discusses the CAMP for the ELABHWC community.

Community Air Monitoring Plan Objectives

This plan was drafted by South Coast AQMD staff for the ELABHWC community based on input from the CSC and public. The process and more information about the specific air quality concerns raised during the CSC meeting process are described throughout this document. Comments on the draft CAMP are welcome, and South Coast AQMD staff appreciates all the input provided by the community.

This CAMP is a living document and specific air monitoring objectives and strategies for ELABHWC will be added, updated, and modified based on community feedback, air monitoring findings, and knowledge that will be gathered through the process of implementing AB 617 in this community. Therefore, this CAMP is expected to undergo revisions which will be resubmitted to the CSC for input.

Air monitoring in ELABHWC will enhance our understanding of sources, pollutants, receptors, and health impacts in this community. The ongoing emphasis of the AB 617 program on community-level assessment through enhanced air monitoring and new emissions reporting requirements will continue to improve our understanding of specific air pollution problems in coming years, which will support the development and implementation of effective emissions reduction strategies (through the CERP) designed to improve local air quality.

To assess the effectiveness of the strategies implemented through the CERP specific measures and metrics to track air quality and exposure progress over time must be selected and implemented. In addition to air monitoring, air quality modeling will also be used to predict air quality concentrations and/or modeled cancer and non-cancer risk. AB 617 requires that the CERP results in tangible emissions reductions, which can be demonstrated based on monitoring or other data. Therefore, while CERP and CAMP are separate documents with different submittal and implementation schedules, they work hand-in-hand to help achieve emission reductions for specific source categories, and track emissions reductions for specific air quality concerns that have been identified by the community. Some of these emissions reduction goals are achieved by working closely with the CSC and the public. Others will be accomplished through interagency collaboration (e.g. South Coast AQMD and CARB will collaborate to support community-level mobile source emissions tracking, as appropriate).

It is important to note, however, that as new air pollution emission strategies are developed and implemented, it may take several years to see significant reductions in exposure that can be measured at the community level. It may also take some time to deploy the monitoring systems necessary to measure these changes and to develop and run community-specific air quality models. These air quality and exposure metrics are, therefore, most appropriate for a final assessment at the five-year milestone mark, though interim assessments and monitoring will be done to help inform all stakeholders.

Air monitoring objectives that are specific to this CAMP include the collection of air pollution data for both short- and long-term air quality assessments. A variety of air monitoring approaches will be used for this purpose. These consists of a combination of real- (or near-real-) time and time-integrated measurements to provide information on the air pollution impact caused by specific emission sources identified in ELABHWC, and compare air pollution levels measured in previous health studies, well-known health benchmarks and long-term health reference standards. This comparison and analysis is intended to provide the basis for additional actions, including, but not limited to, additional monitoring, enforcement actions, and other emission and/or exposure reduction efforts.

This CAMP outlines the recommended monitoring methods, approaches and strategies that will be used to support actions towards a better understanding of air quality conditions, emission and exposure reduction to air pollution, and an unbiased assessment of the effectiveness of the CERP over time. The air monitoring activities proposed here will complement and also enhance existing South Coast AQMD and community-led programs. Overall, community air monitoring will generate data to satisfy the recommendations provided in CARB's "Community Air Protection Blueprint" [1] and support a variety of actions, including:

[1] CARB (2018) *Community Air Protection Blueprint*. Available at: https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/community-air-protection-blueprint.

- Identifying sources, categories of emissions, and emission types contributing to air pollution burdens within the community to support the development of a community emissions reduction program;
- Refining air quality information at the community level to track progress towards improved air quality and measure the effectiveness of the community emissions reduction program;
- Providing real-time air quality data to support public health notification systems for residents, inform their daily activities and school flag programs, and protect children during school activities; and
- Providing air quality information to support public health research at the community level.

Air Quality Concerns in the East Los Angeles, Boyle Heights, West Commerce (ELABHWC) Community

Each community has unique air quality challenges, and local community members have first-hand knowledge of necessary information, including emission sources and sensitive receptor locations. In order to ensure a collaborative process in developing and implementing a successful CAMP, it is critical to understand the specific air quality concerns in the ELABHWC community. The CSC meetings provide a forum for identifying community-specific air quality concerns and potential contributing sources of air pollution to develop consensus and a shared understanding of specific air pollution challenges. In addition to the active collaboration with the CSC, the South Coast AQMD engages in a robust public process to provide opportunity for broad engagement both during CAMP development and throughout implementation. This is achieved through periodic community meetings, workshops, South Coast AQMD Committee meetings, and South Coast AQMD Governing Board meetings.

A brief description of topics discussed during past CSC meetings and the level of CSC and community engagement is provided below:

AB 617 Kick-Off Meeting - October 16, 2018 (Los Angeles, CA)

This meeting focused on current and upcoming initiatives that are relevant to the ELABHWC community, including existing and upcoming air monitoring efforts, the CSC and South Coast AQMD roles, and clean air incentives. Assembly member Cristina Garcia, the bill's lead author, provided a historical perspective of air quality in her community, and why AB 617 can have a substantial impact in environmental justice areas. The meeting also included presentations, an open house, and a public comment period where community members and the public had the opportunity to ask questions and provide feedback. The information gathered during this meeting helped identify the specific boundaries that will be used to define the ELABHWC community for the purpose of AB 617 implementation.

Community Steering Committee Meeting #1 – November 28, 2018 (Los Angeles, CA)

During this event the discussion focused on air quality monitoring and planning activities, and the role and responsibilities of the CSC. Specific community air quality concerns in ELABHWC were identified through a mapping exercise. Committee members, as well as other meeting attendees, discussed their concerns regarding emission sources within ELABHWC and provided input to understand the community's major air quality concerns. SCAQMD and CARB staff presented information on incentive projects implemented in this community.

Community Steering Committee Meeting #2 – January 24, 2019 (Los Angeles, CA)

This discussion focused on the results of the mapping exercise conducted during the previous CSC meeting. The CSC and the public drafted a list of air quality concerns within the community (Figure 1 and Table 1) that will be the focus of future air monitoring and planning activities, and will drive the development of both the CERP and CAMP documents. The group also reached an agreement on the proposed community boundaries. Monitoring technologies that will be used for community air monitoring were discussed, along with how air monitoring can be used to achieve specific objectives and provide useful information for improving air quality.

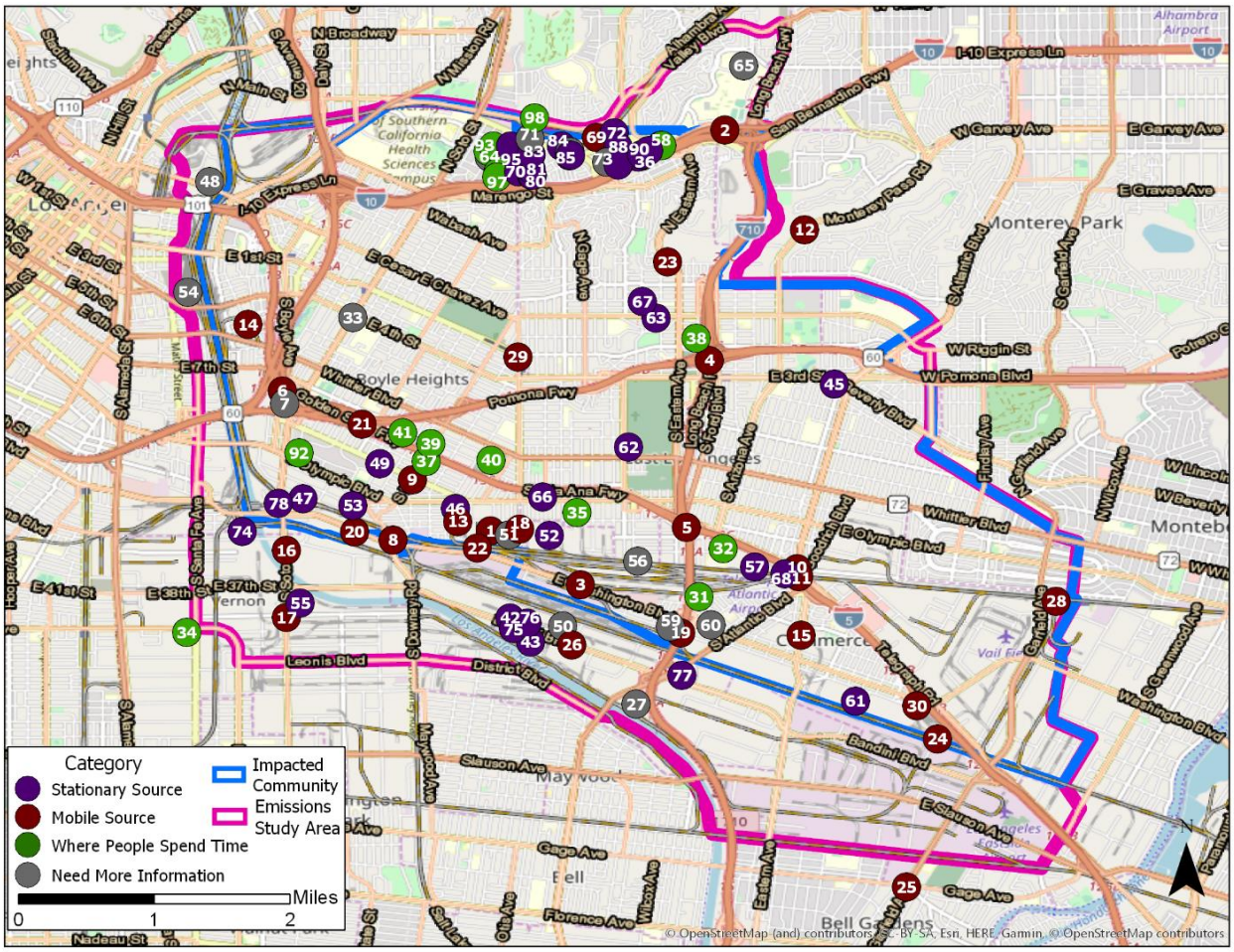

Figure 1 - Map of Air Quality Concerns within the Community

Table 1 - List of Air Quality Concerns within the Community

Label	Concern Name	Category		Label	Concern Name	Category
1	Preferred cold service business	Mobile Source		35	Eastman Avenue Elementary School	Where People Spend Time
2	Metrolink	Mobile Source		36	Daycares near Valmont Coatings	Need More Info
3	BNSF Railyard/Union Pacific	Mobile Source		37	De La Hoya Ánimo Charter High School	Where People Spend Time
4	710/60 Fwy Intersection	Mobile Source		38	Volunteers of America Humphreys Head Start	Where People Spend Time
5	710/5 Fwy Intersection	Mobile Source		39	Lorena Street Elementary School	Where People Spend Time
6	East LA Interchange	Mobile Source		40	Odd Fellows Cemetery	Where People Spend Time
7	Transfer Yard	Need More Info		41	Garcia Park	Where People Spend Time
8	Truck Route	Mobile Source		42	Exide Technologies	Stationary Source
9	Truck Route on Lorena St.	Mobile Source		43	West Coast Rendering	Stationary Source
10	Trucks	Mobile Source		44	Valmont Coatings	Stationary Source
11	Trains	Mobile Source		45	San Cris Autobody Shop	Stationary Source
12	Warehouses	Mobile Source		46	Brite Plating Co/Metal Finishing Marketers	Stationary Source
13	Trucks Idling	Mobile Source		47	Toxic Waste Recycling Plant – Mana Scrap Recycling Facility	Stationary Source
14	Trucks Idling	Mobile Source		48	Gravel Grinding	Need More Info
15	Truck Route	Mobile Source		49	Odors	Need More Info
16	Truck Route	Mobile Source		50	Dioxin and Furan Concerns	Need More Info
17	Trucks	Mobile Source		51	Refinery	Need More Info
18	Trucks	Mobile Source		52	99 Cents facility	Stationary Source
19	710 Fwy	Mobile Source		53	Textile Companies – A Plus Fabrics	Stationary Source
20	Truck Route	Mobile Source		54	Tire Shops, other industry	Need More Info
21	Freeway Interchange	Mobile Source		55	Farmer John	Stationary Source
22	Trains and Trucks Idling	Mobile Source		56	Construction of cold storage	Need More Info
23	Heavy Industry	Mobile Source		57	Adel Wiggins Group-Industry	Stationary Source
24	BNSF Intermodal Railyard	Mobile Source		58	Metal facility	Need More Info
25	Traffic	Mobile Source		59	Industrial Sources	Need More Info
26	Bandini Blvd	Mobile Source		60	Oil Production	Need More Info
27	Construction of CEMEX	Need More Info		61	Refuse of Energy Facility	Stationary Source
28	Rail Traffic	Mobile Source		62	Calvary Cemetery	Stationary Source
29	Truck Traffic	Mobile Source		63	De La Rosa Auto Services	Stationary Source
30	Truck Traffic	Mobile Source		64	Pollution around Murchison St.	Need More Info
31	Bandini Park	Where People Spend Time		65	Sulfur smell near CSULA	Need More Info
32	Bristow Park	Where People Spend Time		66	Soil remediation from closed gasoline retail	Need More info
33	New School development at old Lincoln Hospital	Need More Info		67	Soil remediation from closed gasoline retail	Need More Info
34	Vernon City Elementary School	Where People Spend Time		68	Plating Site	Stationary Source

Label	Concern Name	Category	
69	Hai's Trucking	Mobile Source	
70	JSL Foods	Stationary Source	
71	Xebec Developer/Last Mile Infill	Need More Info	
72	Polychemie	Stationary Source	
73	Republic Services	Need More Info	
74	Darling Delaware	Stationary Source	
75	Baker Commodities	Stationary Source	
76	West Coast Rendering	Stationary Source	
77	D & D Cremation Services	Stationary Source	
78	Toxic Waste Handlers	Stationary Source	
79	Accurate Plating Co	Stationary Source	
80	Cardenas Auto/Body Repair	Stationary Source	
81	B and B Towing Service	Stationary Source	
82	Southland Disposal	Stationary Source	
83	GU's Recycling	Stationary Source	
84	AMS Auto Buy	Stationary Source	
85	R G Diecutting & Foil Graphics	Stationary Source	
86	D & S Autowrecking	Need More Info	
87	New California Bumpers	Stationary Source	
88	STIC-Adhesive Products Co	Stationary Source	
89	Foote Axle & Forge	Stationary Source	
90	Valmont Coating Industries	Stationary Source	
91	Ponce's Body	Stationary Source	
92	Carmen Lomas Garza Primary Center	Where People Spend Time	
93	Murchison Street Elementary	Where People Spend Time	
94	Murchison Street Early Education Center	Where People Spend Time	
95	Ramona Gardens Housing Projects	Need More Info	
96	Ramona Head Start/State Pre-School	Where People Spend Time	
97	Boys and Girls Club	Where People Spend Time	
98	Ming Ya Buddhist Association	Where People Spend Time	
99	The Floricanto Center for the Preforming Arts	Where People Spend Time	

NOTE: These are sensitive receptor locations identified by the CSC and their definition may not necessarily be consistent with that provided by the South Coast AQMD under Rule 1470(b)(60).

Community Steering Committee Meeting #3 – February 28, 2019 (Commerce, CA)

This meeting focused on potential emission reduction strategies that could be developed to improve air quality conditions in this community, as well as South Coast AQMD inspection activities that will be conducted to guide the proposed reduction strategies. A consensus-building group activity to prioritize the air quality concerns in ELABHWC was also conducted. The highest priorities identified by the CSC and the public members were truck traffic and idling, truck activity related to warehousing, and railyard emissions. Additional high priority concerns included schools (for exposure reduction), rendering facilities, and toxic waste facilities. This information was used to prioritize the areas within ELABHWC where monitoring will be conducted using the strategies described later in this document. A detailed description of the air monitoring prioritization process can be found in one of the following sections.

Overall, these priority concerns identified by the CSC will be the building blocks of both the CERP and the CAMP that are being developed to implement AB 617 in the ELABHWC community.

Technical Advisory Group Meeting #1 – February 27, 2019 (Diamond Bar, CA)

The AB 617 Technical Advisory Group (TAG) includes three members from each of the three year one CSC groups and additional technical experts from academia, research institutes, governmental agencies, and the members of the public. The TAG was formed to create a forum where CSC members and other stakeholders could discuss more detail on source attribution, air monitoring and other technical topics related to the development of the CERPs and CAMPs.

The first TAG meeting was held at the South Coast AQMD Headquarters in Diamond Bar, California, and the topics discussed included emissions and air quality modeling tools, monitoring technologies and laboratory capabilities available for AB 617 implementation. The TAG members asked questions and provided suggestions for improving community level data, notification systems, and inter-agency collaborations to address air quality concerns in year one communities. The next Technical Advisory Group meeting will be held in the late spring of 2019.

Community Steering Committee Meeting #4 – March 28, 2019 (Los Angeles, CA)

During this meeting the group discussed Indirect Source Rules (ISR) and Best Available Retrofit Control Technology (BARCT), the proposed air monitoring approaches that will become part of the CAMP, and initial concepts for CAMP and CERP strategies to address the top three community air quality concerns in ELABHWC, namely: neighborhood truck traffic (including from/to warehouses and railyards), railyard (on-site emissions), and warehouse (on-site emissions). The ideas proposed by South Coast AQMD staff and the feedback received from the CSC and members of the public laid the foundation for the air monitoring approach and strategy that will be described in more details in the following sections of this document.

At the time of this writing, a fifth CSC meeting in ELABHWC is planned for April 25, 2019 in Wilmington. Also, additional CSC meeting will be conducted monthly for the remainder of 2019.

Existing Monitoring Programs in the ELABHWC Community

South Coast AQMD staff has been conducting air quality measurement activities in the ELABHWC community for several years. Below is information regarding existing and upcoming rules, projects, and programs at South Coast AQMD that will focus on air monitoring from a variety of sources within the ELABHWC area. The monitoring data that will be collected from these other initiatives will be used to complement the data gathered during AB 617, and will greatly enhance our understanding of the impact industrial emissions have on air quality in this community. The CAMP will be developed based on sound scientific principles and successful practices that build from knowledge gained through the existing and upcoming community air monitoring programs described below. This approach allows for the ability to accommodate the diversity of air monitoring objectives in each community.

Regulatory Monitoring Stations

The South Coast AQMD operates more than 40 permanent air monitoring stations in the Basin. One of these permanent stations is located in central Los Angeles, right outside the established boundaries of the ELABHWC community (Figure 2). Air monitoring at this station focuses on criteria air pollutants to ensure attainment with air quality standards set by the U.S. EPA, as well as air toxic measurements for the National Air Toxics Trends Stations (NATTS)[2] and Photochemical Assessment Monitoring Stations (PAMS)[3] federal programs (see Table 2 for details). Also, the South Coast AQMD has been operating multiple samplers around Exide Technologies in Vernon for more than 11 years to measure the ambient levels of Arsenic and Lead around this facility (Figure 2; Table 2).

[2] National Air Toxics Trends Stations - https://www3.epa.gov/ttnamti1/natts.html
[3] Photochemical Assessment Monitoring Stations - https://www3.epa.gov/ttn/amtic/pamsmain.html

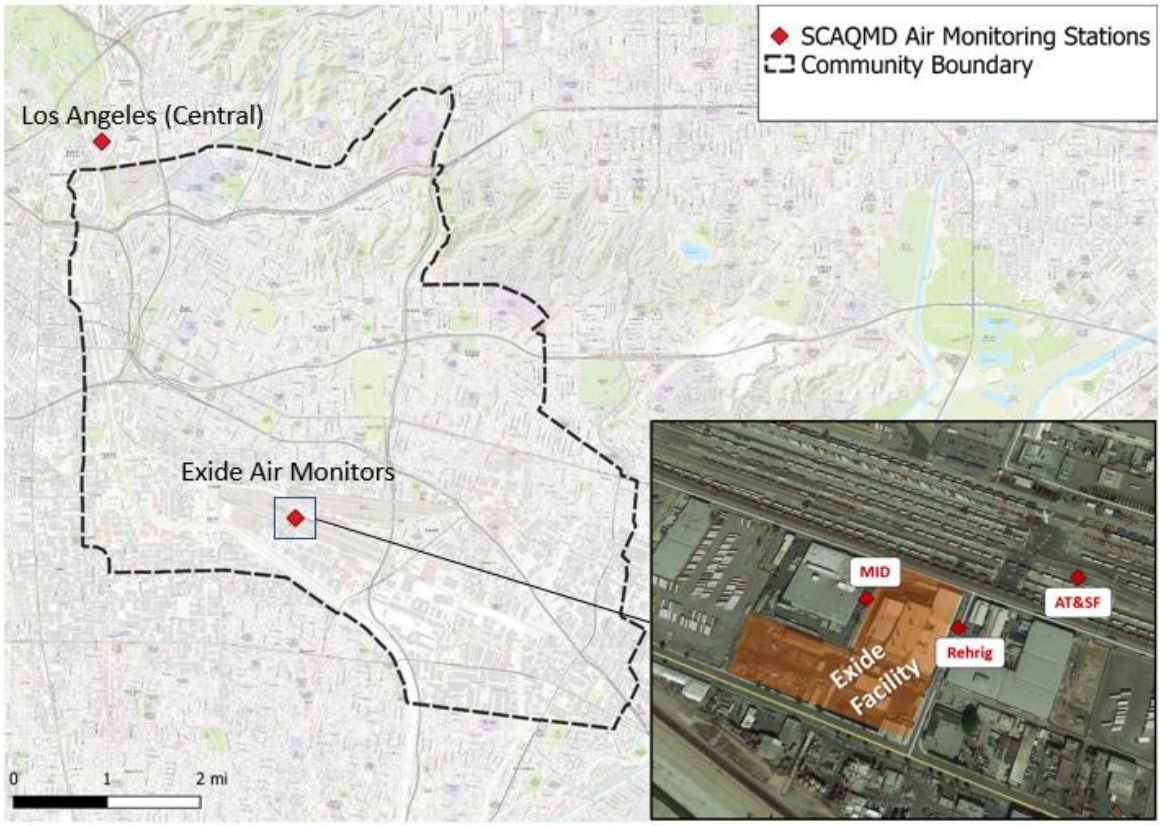

Figure 2 - Regulatory Monitoring Stations

Table 2 - Description of Monitoring Station in the ELABHWC Area

Location	Site Address	Pollutants Monitored	Start Date
Central Los Angeles	1630 North Main Street, Los Angeles CA 90012	Continuous: CO, NO_2, SO_2, O_3, PM2.5, PM10, Black Carbon, Ultrafine Particles Time-integrated: Speciated PM2.5, VOCs, TSP metals, Cr6+, Carbonyls	Jan-1979
Exide Air Monitors (three sampling locations around the facility)	4010 E. 26th Street, Vernon CA 90058	TSP Lead and Arsenic	Nov-2007

Air Monitoring Around Exide Technologies

The Exide Technologies plant in Vernon (located north of the Bell, Bell Gardens, and Cudahy community) was a secondary lead smelting facility that recovered lead from recycled batteries. When this plant was in operation, South Coast AQMD staff conducted a series of source tests measuring the emissions of lead, arsenic, and other metals from Exide's stacks following public complaints of particulate and dust fallout from the facility. In addition, until the end of 2011 ambient monitoring results showed that average lead concentrations consistently exceeded both the Federal Standard for lead and the limit established by South Coast AQMD's Rule 1420.1 - Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities (0.15 µg/m^3). However, the monitoring data show an overall decreasing trend in lead levels since the adoption of Rule 1420.1 in 2008. Lead concentrations measured at all monitoring sites around Exide have been below the Federal 0.15 µg/m^3 3-month average limit since all requirements of Rule 1420.1 became fully effective in January 2012. In 2012, an HRA found the average arsenic levels (the main risk driver for cancer risk from this facility's emissions) were consistently higher than the average arsenic levels measured during the MATES IV study. As part of AB 2588 requirements, the facility's Risk Reduction Plan was approved in March 2014 but on July 10, 2014, the Hearing Board issued an Order for Abatement requiring Exide to remain shut down, pending installation of upgrades to its air pollution control systems. On April 7, 2015, Exide notified South Coast AQMD of its intent to permanently close the facility. Based on this decision, on June 2, 2015, the Hearing Board found good cause to terminate the Order for Abatement. The facility is currently proceeding with facility closure plans, approved by the Department of Toxic Substance Control (DTSC) in 2016. The facility continues to be subject to many South Coast AQMD rules and permit conditions, including ambient monitoring. South Coast AQMD currently operates three lead and arsenic monitors at different distances from Exide Technologies facility's perimeter. In addition, Exide operates five fenceline lead monitors near the property line to comply with the monitoring requirements of Rule 1420.1. This monitoring helps capture data on emissions or transport of re-suspended particles containing lead from the Exide facility. Facility surveillance is conducted twice per week and South Coast AQMD staff conducts regular unannounced inspections.

Multiple Air Toxics Exposure Study (MATES)[4]

The MATES program is an Environmental Justice initiative that provides information on air toxics monitoring at about ten sites throughout the Basin for a one to two year period. Over 30 air pollutants are measured at each fixed station, including gaseous and particulate air toxics. These measurements allow tracking the ambient concentration of air toxics over time. MATES also includes the development of an air toxics emissions inventory, and of modeling to characterize health risks from long-term regional air toxics levels in residential and commercial areas. The most recently completed MATES study (MATES IV) was conducted from 2012-2013.

MATES V began in April 2018 and will continue until May 2019, as some of the measurement activities conducted within the boundaries of AB 617 communities will provide useful air toxic information for this program. One of the MATES V fixed monitoring stations (Central Los Angeles) is immediately to the northwest of the ELABHWC community boundary. Continuation of these measurements will provide valuable data for the overall assessment of baseline conditions to evaluate regional air toxics

[4] Multiple Air Toxics Exposure Study (MATES): http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies

contribution in ELABHWC under the AB 617 program. It will also allow assessment of the effectiveness of various CERP measures and provide information on air toxics trends over the course of the AB 617 Program. Since the Central Los Angeles monitoring station is located just outside of the community boundaries, South Coast AQMD staff will conduct surveys in the community and will work with the CSC to identify a representative location within the community boundaries for these measurements. More information on MATES can be found at: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies.

MATES V - Aerial Air Toxic Measurements

As part of MATES V, the South Coast AQMD has sponsored a project with the Aerospace Corporation (Aerospace) to conduct aerial measurements using airborne LongWave-InfraRed (LWIR) hyperspectral imaging technology. This technology (developed by Aerospace) will be used during aircraft flights for air toxics measurements over a large area that will cover part of the ELABHWC community. This represents a unique opportunity to characterize many potential (known and unknown) sources of VOCs that are otherwise very difficult and time consuming to measure. This instrumentation is capable of detecting benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds, formaldehyde and other air toxics in addition to ammonia, sulfur dioxide (SO_2), and NOx. One of the main advantages of this technology is that it can identify potential emissions sources and pollution hotspots that are otherwise difficult to discover using ground-based measurements. As part of this contract with the South Coast AQMD, Aerospace will conduct flight-based measurements in several communities of the Basin to better characterize the distribution of air toxic emissions.

Air Monitoring Equipment and Methods

Field Equipment

New technological advances are transforming and revolutionizing air quality measurements. South Coast AQMD staff is actively leading research to further develop, evaluate, and implement the use of a wide array of new air quality monitoring approaches and technologies. South Coast AQMD staff has been working with communities, putting low-cost, portable air sensors into the hands of community members to investigate air quality in their neighborhoods and communities. New air measurement methods such as optical remote sensing are making it easier to track air pollution leaks from industrial facilities. Leaks and other fugitive emissions can be significant sources of pollution impacting nearby communities and can come from industry, oil production and drilling, natural gas pipelines, and paint and auto body shops. South Coast AQMD staff has also been utilizing new and improved ways of fenceline monitoring using mobile platforms with high time resolution air pollution instrumentation to quantify source emissions and local scale air pollution trends near roadways, railyards, oil and gas production, and other large area sources.

South Coast AQMD staff will use a combination of existing and new air monitoring equipment to implement the air monitoring portion of AB 617 for developing community-driven and measurement-based emission and exposure reduction strategies. This includes EPA approved methods for measuring particle and gaseous pollutants (i.e. Federal Reference Methods and Federal Equivalent Methods; or FRM and FEM, respectively), air monitoring instruments and equipment used for EPA funded national programs for air toxic measurements (i.e. National Air Toxics Trends Stations (NATTS) and Photochemical Assessment Monitoring Stations (PAMS), or other appropriate technology if FRM/FEM

equipment for measuring a particular pollutant (or set of pollutants) do not exist (e.g. optical remote sensing and other state-of-the-art instruments and methods). In essence, appropriate technology for the intended purpose will be used to monitor the pollutants of interest in ELABHWC and other AB 617 communities. Below is an in depth description of the main air monitoring equipment that will be used by South Coast AQMD staff, along with a few considerations regarding the use and application of this technology. A complete list of all available resources for field monitoring can be found in Appendix A.

Mobile Platforms

Mobile measurements can be conducted using real- or near-real-time instruments to allow for large-scale community air pollution mapping at a fraction of the cost of conventional approaches and at higher spatial and temporal resolution. This will allow community members and policy makers to better understand local exposure levels, identify potential sources of emissions and track changes over time, demonstrating effectiveness of emission and exposure reduction programs.

The ELABHWC community includes large and diverse industrial areas with a multitude of emission sources (e.g. truck traffic, railyard, industrial emissions, etc.). Areas that have such clustering of diverse sources are difficult to study and characterize using conventional air monitoring approaches (e.g. fixed site and fenceline measurements). Mobile monitoring and high resolution mapping will allow for the identification of areas of significant air pollution variability, and will enhance the fixed site measurements.

The South Coast AQMD currently has three mobile platforms, each equipped with different instrumentation for the measurement of particulate and gaseous pollutants including air toxics. Below is a brief description of each mobile platform and its capabilities:

Mobile Platform #1: This is equipped with FRM and FEM and research-grade instruments to measure the mass and number concentrations of particulate matter (PM) of various sizes, BC, CO, NO_2, O_3, and methane (Table 3). The time resolution of these air monitoring instruments range between 1 and 60 seconds. This mobile platform is a powerful tool for identifying areas most impacted by diesel PM emissions. It can also be used to identify diesel PM hotspots, estimate community exposure, estimate the exposure impact of transportation corridors and idling spots, and to track progress of targeted emission reduction strategies.

This mobile platform is also equipped with an anemometer and a Global Positioning System (GPS) to determine wind speed and direction and to map vehicle location, speed and bearing during air quality measurements. Real-time data is logged and displayed on on-board monitors, allowing staff to rapidly detect potential emission sources and follow plumes of interest. It should be noted that although this platform is capable of detecting the ambient concentration of various air pollutants in real- or near-real time, it takes a few days to validate and process the collected information and visualize it for public consumption. A few pictures of this platform and the instruments configuration/set-up are shown in Figure 3 below.

Figure 3 - Picture of Mobile Platform #1

Table 3 - Air Quality Monitors and Measured Pollutants in Mobile Platform #1

Monitor	Measured Pollutant
Teledyne (T640)	PM_{10} & $PM_{2.5}$ Mass
GRIMM (EDM 164)	PM_{10}, $PM_{2.5}$, & $PM_{1.0}$ Mass and Number
Teledyne (T300)	CO
Teledyne (T500U)	NO_2
Teledyne (430)	O_3
Aerosol Devices Inc. (MAGIC CPC)	Particle Number
Droplet Measurement Technologies (Photoacoustic Extinctiometer (PAX))	Black Carbon

Mobile Platform #2: This platform is equipped with multiple advanced remote optical sensing (ORS) monitors that are capable of measuring a wide range of gaseous pollutants including air toxics (e.g. methane, non-methane VOCs, NO_2, SO_2, NH_3, benzene, toluene, ethylbenzene and xylenes; see Table 4) with time resolutions ranging between 1 and 30 seconds. Modern ORS techniques offer unique capabilities for monitoring trace gas emissions from point and area sources in near-real time. They are especially valuable for identifying leaks from fugitive emission sources, which are often extremely challenging to spot and/or quantify. This mobile platform is also equipped with a GPS for real-time recording of the position of the vehicle and onboard monitors for real-time data analysis and visualization. A Light Detection and Ranging (LIDAR; which provides vertical wind profiles) instrument for wind profile measurements is often deployed in conjunction with this vehicle for emission rate measurements of VOCs from refineries and other industrial facilities. This state-of-the-art mobile laboratory will be utilized for accurate characterization of facility-wide emissions from industrial sources of VOC emissions on a real or near-real time basis, fenceline monitoring, leak detection and follow up, near-real-time concentration mapping, and estimation of community exposure to air toxics. Although this platform is capable of detecting the ambient concentration of various air pollutants in real- or near-real time, it takes a few days to validate and process the collected information and visualize it for the public. Pictures of this platform and the instruments configuration/set-up are shown in Figure 4.

Figure 4 - Picture of Mobile Platform #2

Table 4 - Air Quality Monitors and Measured Pollutants Used in Mobile Platform #2

Monitor	Measured Pollutant
Solar Occultation Flux (SOF)	Total Alkane, Carbon-number, Alkenes, NH_3
Sky Differential Optical Absorption Spectroscopy (SkyDOAS)	NO_2, SO_2, HCHO
Mobile Extractive Fourier Transform InfraRed (MeFTIR)	Alkane, CH_4, C_2H_4, C_3H_6, C_4H_8, NH_3, CO,CO_2, N_2O
Mobile White Cell Differential Optical Absorption Spectroscopy (MWDOAS)	Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)

Mobile Platform #3: This platform is equipped with a state-of-the-art Proton Transfer Reaction – Mass Spectrometer (PTR-MS) capable of simultaneous real-time monitoring of hundreds of VOCs such as acetone, acetaldehyde, methanol, ethanol, benzene, xylenes and many others, including some inorganic compounds, present in ambient air. This is a fast response instrument (the time resolution spans from millisecond to 1-min) which has high sensitivity to low concentration of a wide range of VOCs (limit of detection (LOD) < 1 pptv). The high sensitivity of this mobile platform will allow the South Coast AQMD to respond to odor complaints, detect leaks or other potential sources of emissions. Similar to the other two mobile platforms, real-time wind and position data will be measured and onboard computers will be used for real-time data analyses and visualization. Although this platform is capable of detecting the ambient concentration of various air pollutants in real- or near-real time, it takes a few days to validate and process the collected information and present the data visually.

Monitoring Trailers

Fixed air monitoring trailers will be placed at strategic locations to fully characterize emissions and community's exposure (e.g. downwind of an identified air pollution source) to satisfy community specific air monitoring objectives. All fixed monitoring trailers available to the South Coast AQMD will be equipped with EPA approved instruments (i.e. FRM and/or FEM) and, if not commercially available, with state-of-the-at technology that is appropriate to measure the pollutant(s) of interest and for the intended purpose. They will be also equipped with wind measurement systems to better characterize and potentially locate the source(s) of the measured air pollutants. Table 5 summarizes the capabilities of the fixed monitoring trailers available for AB 617 deployment. It should be noted that these resources will be used to satisfy the needs of all present and future AB 617 community, and availability will depend on the specific air monitoring needs and objectives at each community, which is to be determined after consulting with the CSCs. The five monitoring trailers available to the South Coast AQMD will be outfitted with air monitoring instrumentation to address the specific air quality concerns of AB 617 communities. Trailers 5 has tentatively been assigned to the ELABHWC community and their instrument configuration seems adequate to fit the specific air monitoring needs of this community. The final instrument configuration for each trailer will be determined after consultation with the CSC.

Table 5 - Available Fixed Monitoring Trailers for Community Monitoring in All AB 617 Communities

Trailer	Make (Model)	Measured Pollutant	Measurement Type
Trailer 1	Magee (AE33)	BC	Continuous
	Teledyne/TSI CPC (model 651)	Particle Number	Continuous
	Teledyne (T200)	NOx	Continuous
	Teledyne (T640)	PM_{10} & $PM_{2.5}$ Mass	Continuous
	Picarro (G2204)	H_2S	Continuous
	Teledyne (T300)	CO	Continuous
Trailer 2	Picarro (G2204)	CH4 and H_2S	Continuous
	Mocon (SERIES 9000 MNME Analyzer)	Total Hydrocarbons, CH_4, NMHC	Continuous
	Tricorn Tech (MiTAP P310)	VOCs	Continuous
	Xonteck (901 Canister Samplers)	VOCs	Time Integrated
	BGI (Omni)	Speciated PM	Time Integrated
Trailer 3	Picarro (G2204)	CH_4 and H_2S	Continuous
	Mocon (SERIES 9000 MNME Analyzer)	Total Hydrocarbons, CH_4, NMHC	Continuous
	Tricorn Tech (MiTAP P310)	VOCs	Continuous
	Xonteck (901 Canister Samplers)	VOCs	Continuous
	BGI (Omni)	Speciated PM	Time Integrated
Trailer 4	Magee (AE33)	BC	Continuous
	Teledyne/TSI CPC (Model 651)	Particle number	Continuous
	Teledyne (T200)	NOx	Continuous
	Teledyne (T640)	PM_{10} & $PM_{2.5}$ Mass	Continuous
	Picarro (G2204)	H_2S	Continuous
	Teledyne (T300)	CO	Continuous
Trailer 5	Magee (AE33)	BC	Continuous
	Teledyne/TSI CPC (Model 651)	Particle Number	Continuous
	Teledyne (T200)	NOx	Continuous
	Teledyne (T640)	PM_{10} & $PM_{2.5}$ Mass	Continuous
	Cooper (Xact 625)	Particulate Metals	Continuous
	Teledyne (T300)	CO	Continuous
	Picarro (G2204)	H_2S	Continuous

Air Quality Sensors

This technology is capable of providing real- or near-real time air pollution information with spatial and temporal resolution that is often greater than what can be achieved by other, more established monitoring technologies. Although sensors offer great potential, their accuracy and reliability varies widely and are generally not on par with those of FRM and FEM instruments approved by the US EPA. Despite these limitations sensors can be used effectively for community and fenceline monitoring, provided their performance has been well characterized prior to their use, and is appropriate for their

intended application. For the purposes of this CAMP, sensors will be primarily used to complement and augment the capabilities of our fixed monitoring locations. Where there is community interest to learn more about sensors, South Coast AQMD staff can conduct training workshops to talk about the appropriate use and operation of this technology and how to interpret sensor data. The South Coast AQMD will provide sensors that community members can use to monitor air quality conditions in the ELABHWC area. The goal of this sensor deployment is to increase community engagement and improve usability and utility of sensor networks and data interface to suit the community needs and create a powerful tool to address community's air quality concerns and to support the effective implementation of the CERP by tracking its progress.

Additional information on commercially available sensor technology can be found on South Coast AQMD's Air Quality Sensor Performance Evaluation Center (AQ-SPEC) website [5]. AQ-SPEC is the most comprehensive sensor evaluation program in the Unites States and its main goal is to provide citizen scientists and other sensor users with unbiased information on sensor performance based on rigorous field and laboratory testing. As part of the AB 617 related activities AQ-SPEC staff is proposing to build a second environmental chamber to evaluate the performance of individual commercially available sensors for their appropriateness for community monitoring applications.

Additional Field Monitoring Capabilities

Particle Speciation and Metals

Aerodyne Research, Inc. will conduct a comprehensive study to locate emission sources of PM and PM species, and air toxic metals in several areas of the Basin using a suite of near-real-time, next-generation analytical equipment on board of a mobile platform (the Aerodyne Mobile Laboratory; or AML). As part of this project, Aerodyne will survey different neighborhoods within the ELABHWC community to evaluate potential exposure levels.

Truck Traffic and Other Motor-Vehicle Emissions

South Coast AQMD staff will work with Aclima Inc.[6] to augment existing and future sensor networks, and fixed monitors with mobile mapping and measurements. These mobile measurements will provide insight into hyper-local air quality in the ELABHWC community. Mapping will take place over a three month period, gathering data on CO_2, CO, NOx, O_3, PM, methane and ethane. Aclima will also test a total VOC sensing module during these mobile mapping activities. These efforts will enhance the value of the sensor network by providing a better understanding of the spatial variability in truck traffic emissions in ELABHWC; enhancing the sensor network data quality through calibration between mobile and stationary sensors; and informing future mobile surveys and targeted measurements. This is an important addition that will show how well stationary sensor measurements represent the pollution observed at all geographical areas throughout the ELABHWC community.

Laboratory Analysis

In cases where time-integrated samples are collected (e.g. to identify and quantify the presence of hexavalent chromium (Cr6+), other heavy metals or VOCs), South Coast AQMD staff will employ sampling and laboratory methods that have been used for other established air monitoring programs. Since 1994, the South Coast AQMD has implemented the U.S. EPA PAMS program to gather data on

[5] Air Quality Sensor Performance Evaluation Center (AQ-SPEC) : http://www.aqmd.gov/aq-spec
[6] Aclima Inc. https://aclima.io/

ozone precursors. In 2008 the NATTS was also implemented. Some of the same sampling instruments used in the PAMS and NATTS programs are also used in MATES, which is designed to characterize long-term regional air toxics levels in residential and commercial areas.

AB 617 monitoring also utilizes some of the sampling instruments and techniques that are used in established monitoring programs (i.e. U.S. EPA) and, therefore, many of the procedures and protocols for the AB 617 monitoring are based on the South Coast AQMD Quality Management Plan for Environmental Measurement Programs[7] (January 2009) and Quality Assurance Project Plan (QAPP) for Special Monitoring. For measurement methods not specified in these plans, the manufacturer's recommended operational and quality control procedures will be implemented. In all cases, the data quality for the measurements will be suitable for the intended purpose.

All time-integrated samples will be handled according to the laboratory practice for implementation of toxics analysis and particulate matter network programs. A more detailed description of these methods is provided in the Quality Assurance Project Plan (QAPP) document that is currently under development.

Community Air Monitoring Approach

Selecting a sound air monitoring approach and appropriate methods and equipment is crucial to the success of this CAMP because the monitoring data that will be generated needs to support the continued development of the CERP, and support effective action. Considering the ELABHWC community covers a vast geographical area characterized by a wide variety of air pollution sources, an approach that integrates the three air monitoring strategies described below seems appropriate for addressing the numerous air quality concerns identified by the CSC in an effective and comprehensive manner. The basic elements of this approach include mobile monitoring, fixed monitoring and low-cost sensors (Figure 5).

Mobile Monitoring

The South Coast AQMD has acquired mobile platforms that use advanced monitoring equipment to measure the ambient concentration of particle and gaseous pollutants in real- or near-real-time. The ability to measure highly resolved air pollution concentrations while driving makes these platforms ideal for surveying large areas in a relatively short period of time (hours to days), identify hot-spots of air pollution and sources that were previously unknown, providing valuable data for enforcement consideration, and inform emission reduction efforts. These platforms have been successfully used by the South Coast AQMD in the past to identify leaking tanks around refineries, characterize exposure in communities downwind of potential VOC sources, and for other similar applications[6]. For the purpose of AB 617 implementation in the ELABHWC community, mobile platforms will be used on a recurring basis to identify air pollution sources and track progress towards emission reduction as actions are taken to reduce known sources of air pollution of concern. The technical specifications of these platforms have been described earlier in this document. A QAPP will be included in future versions of this CAMP which outlines the procedures that will be taken to ensure that the mobile monitoring data that will be collected as part of this project is of the appropriate quality and meets the project requirements.

[7] Applied Science & Technology. (2009). Quality Management Plan for Environmental Measurement Programs. Diamond Bar, CA: South Coast Air Quality Management District.

Fixed Monitoring

Once extensive mobile monitoring has been conducted in ELABHWC, South Coast AQMD staff will provide the CSC and the public with a summary of the measurement results and inform them on which specific area, or air pollution sources, have been identified as potential concerns for the community. Once the South Coast AQMD and the CSC agree on how to prioritize these specific air quality concerns, fixed air monitoring trailers (each equipped with the most appropriate technology for the intended purpose) will be placed at strategic locations (e.g. in an easily accessible and safe area downwind of an identified air pollution source) to satisfy community specific air monitoring objectives including: characterize (qualitatively and quantitatively) the emission sources, assess potential community exposure, support and further CERP development, and help tracking progress towards emission reduction. The length of time for which these fixed monitoring trailers will be deployed depends on the specific air monitoring objectives for the area of interest but could vary between several weeks and several months, or until a higher priority area have been identified within the ELABHWC community. It should be noted that if well-known sources of air pollution are identified as high priorities for air monitoring by the CSC, the nearby location(s) will be surveyed to check the possibility of doing fixed monitoring without conducting preliminary mobile measurements prior. A QAPP will be included in future versions of this CAMP which outlines the procedures that will be taken to ensure that the fixed station data that will be collected as part of this project is of the appropriate quality and meets the project requirements..

Sensor Monitoring

With recent advancements in sensor technology, low-cost devices for measuring particle and gaseous pollutants are now available for community monitoring. The accuracy, precision and overall performance of these devices is not comparable to that of more expensive air monitoring instruments such as those that will be used in the mobile platforms and fixed monitoring trailers described earlier. However, when appropriately deployed within a network, sensors are capable of providing valuable information regarding the spatial and temporal variability of the pollutant(s) of interest. Because of their limited capabilities, these sensors cannot be used in lieu of more sophisticated EPA approved air monitoring equipment. For the purpose of this CAMP, air quality sensors will mainly be used to supplement data from fixed monitoring stations, to characterize the spatial and temporal variability of the pollutant(s) of interest, to educate the community members in the correct use and operation of this technology, and to engage them in the air monitoring process that will be developed and implemented in ELABHWC. South Coast AQMD staff has extensive experience working with communities in Southern California and throughout the State in the development, operation and maintenance of sensor networks for air quality measurements. South Coast AQMD staff is currently working with some of the CSC members and community groups and will provide sensors and support to build a community-driven sensor network in this community. For more information please visit the AQ-SPEC website[5]. A QAPP outlining the procedures that will be taken to ensure that the sensor data that will be collected as part of this project is of the highest quality and meets the project requirements is under development and will be included in future versions of this CAMP.

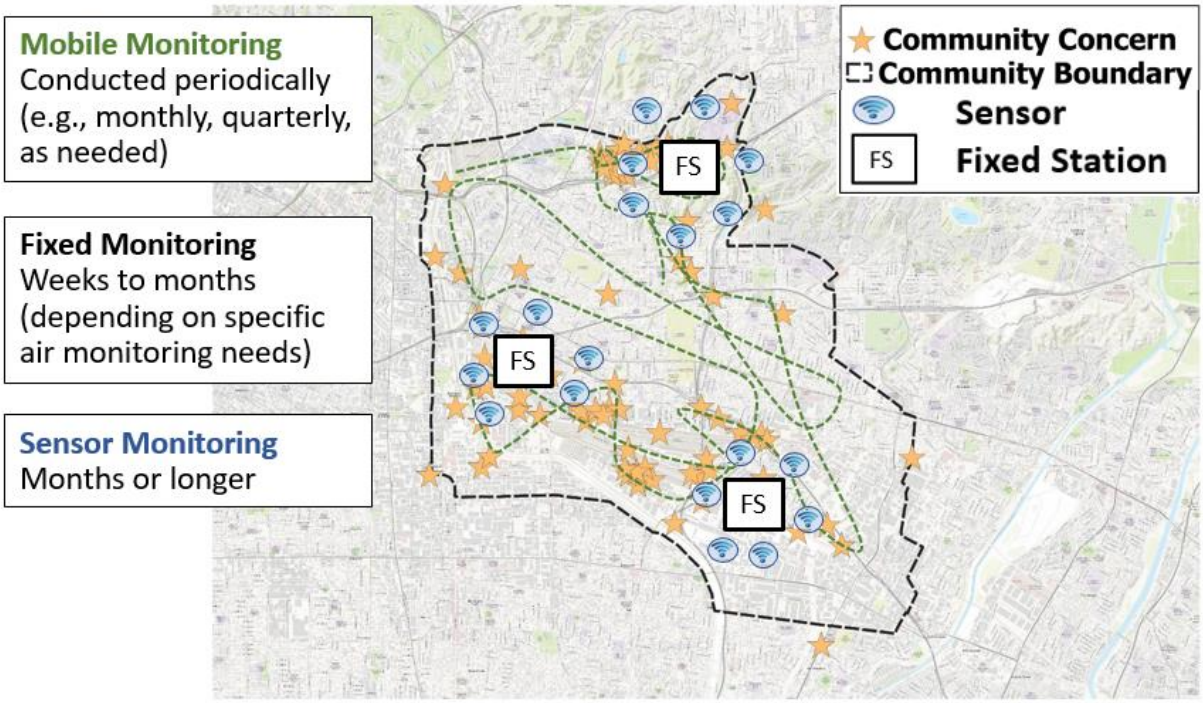

Figure 5 - Overview of the Monitoring Approach Proposed in this CAMP

NOTE: This is a conceptual diagram representing a hypothetical scenario. The actual route that will be followed by our mobile platforms (dotted line), and the exact number and locations of fixed monitoring stations and sensor networks that will be deployed in this community will be determined in consultation with the CSC.

Approach Benefits and Limitations

Performing wide area surveys using mobile monitoring equipment will allow South Coast AQMD staff to locate and quantify potential emissions of air pollutants near priority areas identified in the ELABHWC community. In instances where elevated levels of pollutants are detected, the plume will be mapped by driving away from the source. Further source identification can be performed by detecting the pollution plume(s) and triangulating from the plumes back to the source using wind direction to guide the measurements. Real-time mobile concentration measurements can also be used to estimate emission rates from railyards, trucks, and industrial facilities. While the mobile platforms are powerful tools for comprehensive source characterization and can survey a large area in a relatively short period of time, they can only provide a "snapshot" of the measured pollutants when the monitoring occurred. Therefore, mobile measurements generally do not capture daily variations in pollutant concentrations.

When emission sources are clearly identified and an initial assessment through mobile measurements is not needed, fixed monitoring will be deployed near the source(s) to commence monitoring without delays. Fixed monitoring allows for a more comprehensive characterization of air pollution trends over an extended period of time, but it only provides air quality information at the specific location. The use of both mobile and fixed monitoring will allow for these methods to effectively complement each other.

In addition, the use of low cost sensors will significantly augment the capabilities of the fixed monitoring sites by expanding the spatial distribution of the air quality measurements. Given their low cost, these sensors are becoming an attractive means for governmental agencies, local environmental groups and individuals to evaluate air quality. Because this technology is low cost and quite novel, the data quality is often not comparable with U.S. EPA-approved monitors and data must be interpreted with caution. Moreover, low cost sensors are limited in the number and types of air pollutants that can be measured reliably. Most of these devices are designed to measure criteria pollutants, although new sensors are being developed for measurements of total VOCs and BC. It should be noted that the deployment of sensor networks within the ELABHWC community will only be considered if the pollutant(s) of interest can be measured using technology with an appropriate level of performance, as characterized by South Coast AQMD's AQ-SPEC[5] or equivalent program.

Air Monitoring Prioritization Based on Community Input

The first step in implementing the proposed approach is to identify the areas within the ELABHWC community that are most impacted by local air pollution sources and include the highest number of air quality concerns. In the first CSC meeting, the CSC members and members of the public identified a number of specific air quality concerns and their locations through subsequent meetings. Specifically, the list of concerns was refined and completed through CSC meetings #2 and #3. The resulting map including all of these concerns and a more detailed description for each concern is shown in Figure 1 and is also available online[8].

During CSC meeting #3, the CSC members and members of the public grouped the air quality concerns listed in Figure 6 into nine different categories based on the relevance of their sources and high impact on the community. The following categories were selected as high priority and will be the focus of the CAMP and CERP: Neighborhood Truck Traffic (Including from/to Warehouses and Railyards), Railyard (On-site Emissions), Warehouse (On-site Emissions, Metal Processing (including Valmont Coating), Toxic Waste Facilities (Including Household Waste Facilities), Rendering Facilities, and Auto Body Shops, Schools and other sensitive receptors (ranked in this order). A more detailed description on each of these groups is available in Table 6.

[8] AB 617 Community Air Initiatives: http://www.aqmd.gov/nav/about/initiatives/environmental-justice/ab617-134/wilm

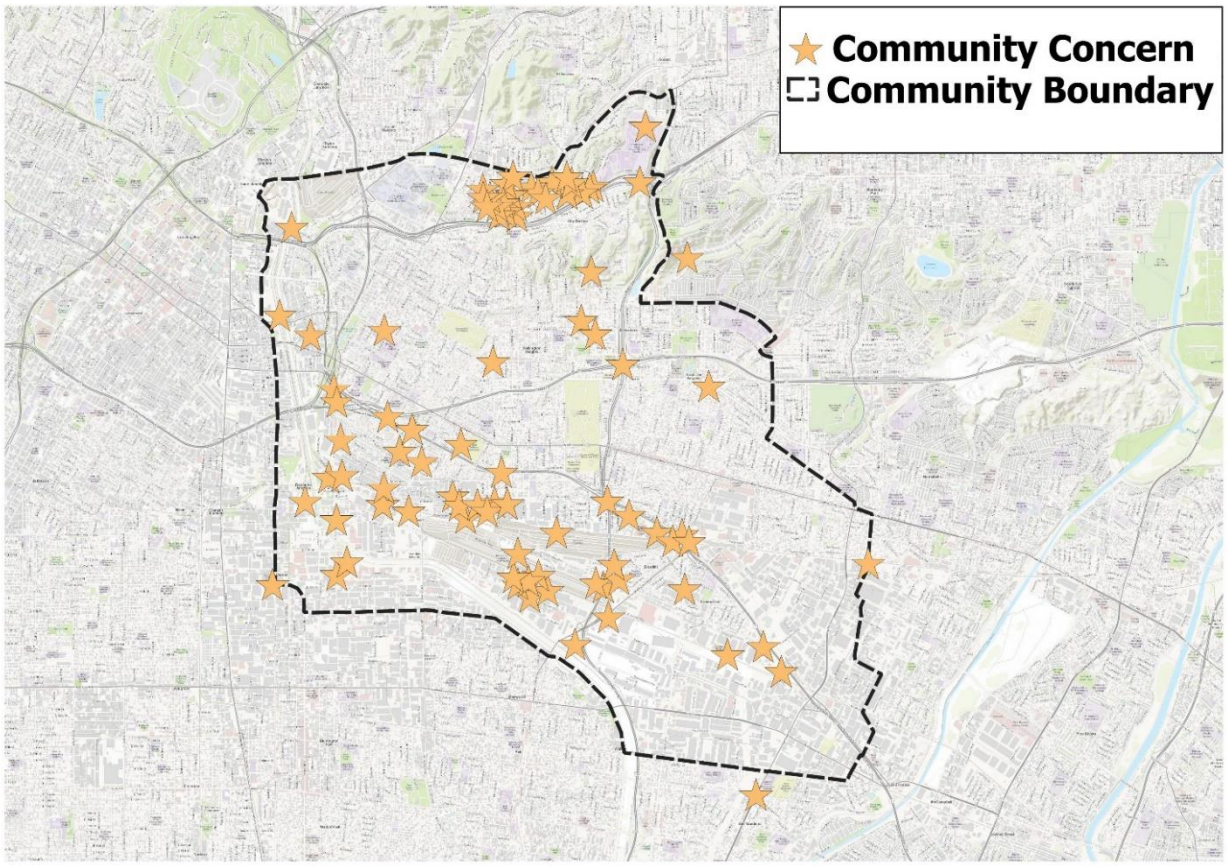

Figure 6 - CSC Air Quality Concern Locations within the Boundary of the ELABHWC Community

Table 6- Major Community Concern Categories as Established by the CSS

General Air Quality Concern	Details of Concern
1-Neighborhood Truck Traffic	- Trucks - Impact on residents
2-Rail	- Trains - Railyards
3-Warehouse and Related Truck Traffic	- New warehousing - Proximity to residents
4-Metal Processing (including Valmont Coating)	- Human exposure
5-Toxic Waste Facilities	- Human exposure - Odor
6- Rendering Facilities	- Human exposure - Odor
7- Auto Body Shops	- Human exposure
8-Schools/Hospitals/Parks/Community	- Human exposure

Initial monitoring priorities were based on the relative number of air quality concerns in each part of the community, identifying areas most impacted by each source category. Sections within the ELABHWC area were defined and prioritized based on the relative density of air quality concerns and air pollution sources within each section. It should be noted that the air monitoring methods and instruments used to address many of the community concerns are similar. For example, trucks, rails, and warehouse activities are major sources of diesel PM which require a monitoring strategy to effectively evaluate their impacts on community exposure. A detailed analysis of these areas and discussions regarding expected air pollutants to be measured and what type of technologies will be deployed is provided in Appendix B. The results of this evaluation are summarized in Figure 7. The purpose of this monitoring prioritization is to identify the locations where appropriate monitoring should commence. Note that these areas have been determined only based on the available data and community feedback. The monitoring areas and priorities can change based on the information gathered during monitoring, input from the community, and/or newly available data from different organizations.

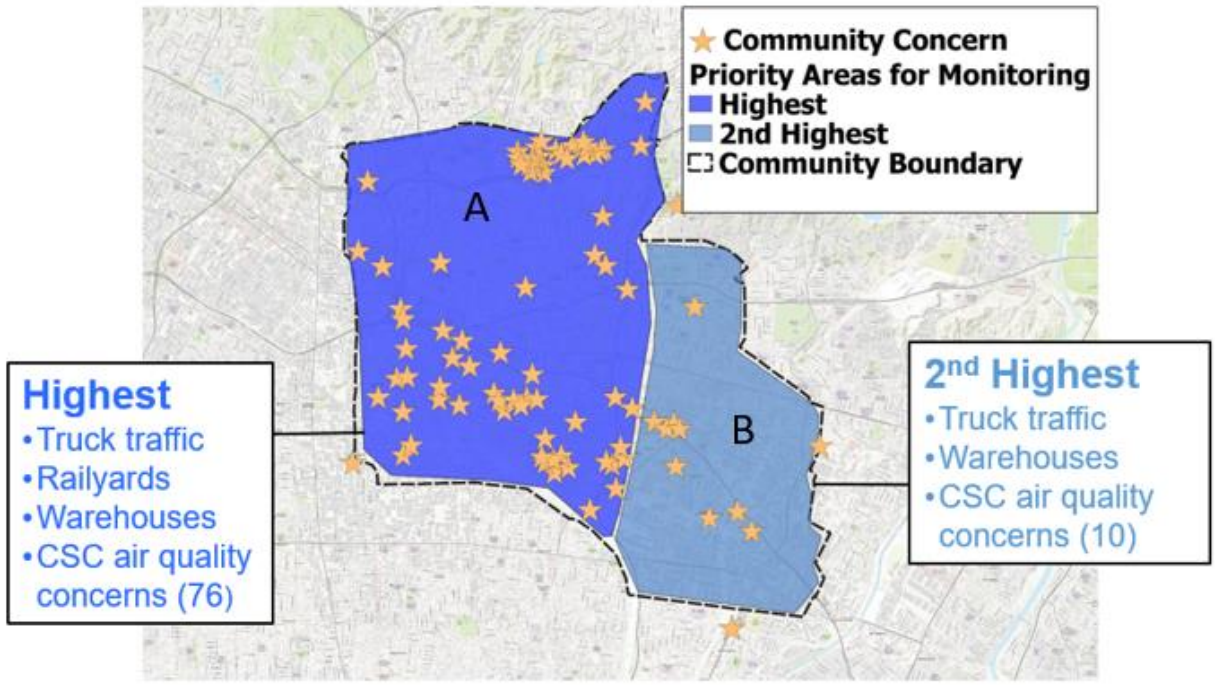

Figure 7 - Proposed Monitoring Areas Prioritized Based on the Relative Density of Air Quality Concerns in the ELABHWC Community

Table 7 shows a summary of the monitoring prioritization process. Area A (highest priority) includes all of the concern categories identified by the CSC and community members. It also has higher traffic density , three railyards, a toxic waste facility, and all of the auto body shops and rendering facilities identified by the CSC and community members, and 76 of the 86 specific air quality concerns also identified by the CSC (illustrated by the yellow stars in Figure 7). Area B (second highest priority) includes five air quality concern categories, two railyards, lower traffic density, and only 10 of the specific air quality concerns.

Table 7 - Concerns in Each Proposed Monitoring Area (Letters Correspond to the Map in Figure 7)

Area	Truck Traffic	Rail Yard	Warehouse	Metal Processing	Toxic Waste Facilities	Rendering Facilities	Auto Body Shops	Sensitive Receptor	# of Concerns
A	X	X	X	X	X	X	X	X	77
B	X	X	X	X				X	10

It should be noted that this monitoring prioritization exercise is mostly to organize the South Coast AQMD air monitoring activities and to provide necessary information in order to begin the measurements in the most impacted areas as quickly as possible. Because of the availability of multiple mobile platforms for air quality measurements, all community concerns identified in ELABHWC will be surveyed within a relatively short period of time and in the order proposed here (e.g. from Area A to Area B).

Data Validation, Analysis, Mapping, and Reporting

A comprehensive data platform for acquiring, validating, analyzing and mapping air measurement data is currently under development for AB 617. This platform will be capable of gathering data from the various air monitoring technologies that will be deployed in ELABHWC and other AB 617 communities. These include both real-time and time-integrated data from EPA approved FRM and FEM monitors, research grade instruments (e.g. FTIR, UV-DOAS, and others), and air quality sensors. Data from selected fixed stations that are part of South Coast AQMD's air monitoring network[9] (e.g. Central Los Angeles station) will also be added to the database to include information about local and regional air quality and provide a baseline for data analysis and interpretation.

The primary goal of the data platform is to share the monitoring data with the community to the extent feasible and as quickly as possible, so that it can be used to evaluate and adaptively manage the impacts of various emission reduction strategies in the community. Therefore, it is essential that the collected data must be made available and displayed online in a relevant, useful and understandable manner.

The data platform will have automated validation procedures to eliminate most of the invalid data from the air monitors so that preliminary measurement information can be provided to the community via dedicated website with minimal delay. Additional time will be needed for staff to fully validate the collected data and share this with the community in a downloadable format. The measurement data will go through rigorous review of calibration data, data processing calculations (such as conversion calculations of instrument signal to pollutant concentration), data consistency, field data sheets and logbooks, instrument performance checks, and equipment maintenance and calibration forms. All changes to the reported real-time data will be explained in subsequent documents and reports. Additional information to provide context to the collected air quality measurements will also be provided on our website. This includes an explanation of how background concentrations and/or contributions from other sources may affect the measured concentrations.

[9] 2018 Annual Air Quality Monitoring Network Plan: http://www.aqmd.gov/home/air-quality/clean-air-plans/monitoring-network-plan

The data platform being developed for AB 617 will also include data analysis and visualization tools which will be developed with input from the CSC and members of the public. This will allow users to create simple customized graphs and plots (e.g. time series of measured pollutants and wind data), display air quality information on a map, and generate other meaningful and interactive result summaries that can be shared with other users. In order to provide context to this complex data set for the public, the website will contain information regarding the species measured and the measurement techniques, discussion of levels of concern for each measured species, typical background levels, potential emissions sources that could contribute to measured concentrations, and definition of data QC flags. This will be written at a public-friendly level with clarity and thoroughness and with links provided to additional sources of information. In addition, the data website will include details of how the public can report experiences and provide comments and feedback for improvement of the website and other data dissemination tools, and the monitoring activities in general. Some examples are shown in the Figure 8).

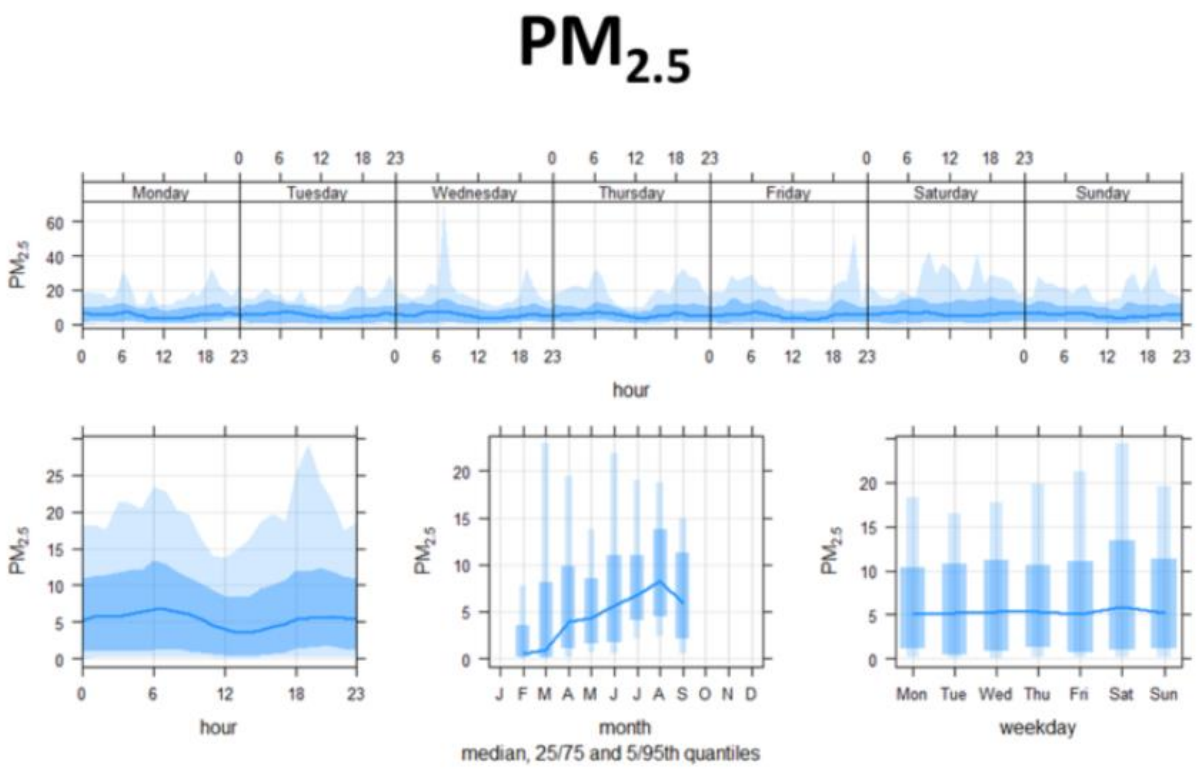

Figure 8 - Example of a Time Series Plot to Show PM2.5 Trends by Day of Week, Hour of Day, and Month of Year

References

1- CARB (2018) *Community Air Protection Blueprint*. Available at: https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/community-air-protection-blueprint
2- National Air Toxics Trends Stations - https://www3.epa.gov/ttnamti1/natts.html
3- Photochemical Assessment Monitoring Stations - https://www3.epa.gov/ttn/amtic/pamsmain.html
4- Health Studies, Air Toxic Studies: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies
5- Air Quality Sensor Performance Evaluation Center (AQ-SPEC) : http://www.aqmd.gov/aq-spec
6- Aclima Inc. https://aclima.io/
7- Applied Science & Technology. (2009). Quality Management Plan for Environmental Measurement Programs. Diamond Bar, CA: South Coast Air Quality Management District.
8- AB 617 Community Air Initiatives: http://www.aqmd.gov/nav/about/initiatives/environmental-justice/ab617-134
9- 2018 Annual Air Quality Monitoring Network Plan: http://www.aqmd.gov/home/air-quality/clean-air-plans/monitoring-network-plan

Main Air Pollutants of Interest

As discussed in the previous sections, the CSC and the public members identified several emission sources as their highest priority air quality concerns. In order to fully characterize the emissions from these sources and quantify their impacts on the ELABHWC community, it is important to measure the most relevant air pollutants. Below is a short description of the major particle and gaseous air contaminants that are emitted by the sources identified by the CSC and public members. Information from emission inventories and findings from previous air monitoring studies conducted in this community have also been taken in to account for the compilation of this list. This list is not exhaustive but will help better understand the specific monitoring methods, approaches and strategies outlined later in this CAMP.

Particulate Matter (PM)

PM is comprised of a complex mixture of solid and/or liquid materials suspended in the air. Particles have different sizes, shapes, and chemical compositions. Based on their size, PM is generally categorized in three major categories:

- **PM10 (coarse PM)**: inhalable particles, with a diameter of 10 micrometers or smaller. These relatively large particles are generally mechanically generated by crushing or grinding operations;
- **PM2.5 (fine PM)**: fine inhalable particles, with a diameter of 2.5 micrometers or smaller. These particles are emitted from several sources such as traffic and industrial emissions or can be formed in the atmosphere through reaction of gaseous precursors;
- **Ultrafine particles (UFPs)**: very fine inhalable particles, with a diameter of 0.1 micrometers or smaller. UFPs are mostly emitted from fossil fuel combustion, particularly vehicular sources, or can be formed through photochemical reactions of gaseous precursors in the atmosphere. Unlike PM2.5 and PM10, which are measured by their mass concentration, UFPs are usually measured by the number of particles in a unit of air volume (i.e. number concentration).

Particulate Metals

Metals can be emitted in trace amounts from a wide variety of anthropogenic sources such as combustion activities and facilities which conduct metal plating, forging, and heat treating. Of particular interest are nickel, copper, vanadium, lead, hexavalent chromium, and arsenic, because these species have been associated with adverse health effects in the urban environment. Measurement of metals usually involves analysis of PM filters collected over a defined time period (e.g. 24-hr) at a known sample volume. However, commercially available continuous multi-metals monitors are now available that can simultaneously measure the concentrations of several metals in hourly or sub-hourly time resolution.

Black Carbon (BC)

BC is a product of incomplete combustion of fossil fuels, biofuels, and biomass, and is emitted directly into the atmosphere in the PM2.5 size range (mostly). BC is a major component of “soot” from biomass burning, and a good indicator of diesel PM from heavy duty trucks and locomotives. Although often associated with emissions from heavy-duty diesel engines, a portion of all combustion emissions contains BC.

Nitrogen Oxides (NOx)

Both gasoline and diesel powered vehicles are the main sources of NOx emissions. However, substantial NOx emissions are also added into the atmosphere by stationary sources such as petroleum refineries and other industrial operations. NOx is a group of highly reactive gases that contribute to the formation of secondary particles, as well as tropospheric ozone. Scientific evidence links NO_2 exposures with adverse respiratory effects. NO_2 is one of the criteria pollutants, making it a compound that is routinely measured in ambient air monitoring networks. NO_2 measurements also typically include measurement of NO, the other major NOx constituent.

Volatile Organic Compounds (VOCs)

VOCs refers to a number (hundreds) of individual organic compounds which include non-methane hydrocarbons (NMHC) and oxygenated NHMC such as alcohols, aldehydes and organic acids. They are emitted by a wide variety of sources, and many hydrocarbons are associated with the use and production of fuels. VOC emissions also occur from other combustion sources, such as wood combustion, and stationary and motor vehicle fossil fuel combustion. Benzene, toluene, ethylbenzene, and xylenes (also known as BTEX compounds) are expected in the vicinity of major roadways. This group of aromatic VOCs is important because not only they pose a risk to human health, but they also play a role in formation of tropospheric ozone.

Other Pollutants and Air Toxics

In addition to the major air pollutants mentioned above there are other species that, although unlikely to be emitted in large quantities from the main source categories identified by the CSC, will also be monitored in this community if detected during our surveys. These are:

Methane

Methane is a colorless and odorless gas, and is flammable in high concentrations (i.e. between 50,000 to 150,000 ppm). Methane is considered to be biologically inert, but can cause adverse health effects when levels are high enough to displace oxygen in the air, which can pose a suffocation hazard. However, this is generally only a concern in confined spaces rather than in typical outdoor and indoor environments where oxygen is readily available. Methane is not considered an air toxic and is not on the California Toxic Air Contaminants list, or in the California Proposition 65 list, or in the U.S. EPA Hazardous Air Pollutants list. Methane is well known greenhouse gas and is primarily regulated through state and federal laws.

Sulfur Dioxide (SO_2)

Heating and burning of fossil fuels containing sulfur release sulfur into the atmosphere, which in turn forms SO_2 and other sulfur containing species. SO_2 is classified as a criteria pollutant by the U.S. EPA, can cause adverse health impacts if present in high concentrations in the ambient air, and can also cause damage to the environment.

Aldehydes

Aldehydes emitted into ambient air include, but are not limited to, formaldehyde, acetaldehyde, and acrolein which are identified as toxic air contaminants (TAC). These compounds are the products of incomplete combustion of natural gas and are both precursors of atmospheric radicals that accelerate the formation of ozone and toxic air pollutants.

Hydrogen Sulfide (H_2S)

Hydrogen sulfide is a colorless, flammable, extremely hazardous gas with a “rotten egg” smell. It can result from the breakdown of organic matter in the absence of oxygen such as in swamps and sewers, is emitted from chemical manufacturing and waste disposal, and occurs naturally in crude petroleum and natural gas.

List of Acronyms

AB 617	Assembly Bill 617
AQ-SPEC	Air Quality Sensor Performance Evaluation Center
BARCT	Best Available Retrofit Control Technology
BC	Black Carbon
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CalEPA	California Environmental Protection Agency
CAMP	Community Air Monitoring Plan
CARB	California Air Resources Board
CERP	Community Emission Reduction Plan
COS	Carbonyl Sulfide
CSC	Community Steering Committee
EJ	Environmental Justice
ELABHWC	East Los Angeles, Boyle Heights, West Commerce
FEM	Federal Equivalent Methods
FRM	Federal Reference Methods
GPS	Global Positioning System
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
HCN	Hydrogen Cyanide
HF	Hydrogen Fluoride
ISR	Indirect Source
LOD	Limit of Detection
LP-DOAS	Long Path Differential Optical Absorption Spectroscopy
LWIR	LongWave-InfraRed
MATES	Multiple Air Toxics Exposure Study
MeFTIR	Mobile Extractive Fourier Transform InfraRed
MSW	Municipal Solid Waste
NATTS	National Air Toxics Trends Stations
NH_3	Ammonia
NMOC	Non-Methane Organic Compound
NOx	Nitrogen Oxides
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OP-FTIR	Open Path Fourier Transform Infrared Spectroscopy
ORS	Remote Optical Sensing
PAMS	Photochemical Assessment Monitoring Stations
PAX	Photoacoustic Extinctiometer
PM	Particulate Matter
PM10	Coarse PM
PM2.5	Fine PM

PRDs	Pressure Relief Devices
PTR-MS	Proton Transfer Reaction – Mass Spectrometer
QAPP	Quality Assurance Project Plan
SkyDOAS	Sky Differential Optical Absorption Spectroscopy
South Coast AQMD	South Coast Air Quality Management District
TAC	Toxic Air Contaminant
TSP	Total Suspended Particles
UFP	Ultrafine Particles
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds