AB 617 COMMUNITY AIR MONITORING PLAN (CAMP) FOR THE EASTERN COACHELLA VALLEY COMMUNITY

South Coast Air Quality Management District

November 2020

Version 1

CONTENTS

FIGURES

TABLES

1 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 form and 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 Emissions Reduction Plan (CERP) and a Community Air Monitoring Plan (CAMP). South Coast AQMD staff will work with CARB and other stakeholders to implement the CERP and CAMP to reduce local air pollution emissions and benefit public health.

The main purpose of this CAMP is to outline the air monitoring that will be conducted to address the community's top priority air quality issues and support effective implementation of the CERP. This could include augmenting ongoing and/or upcoming community-led and agency-led air monitoring programs and conducting new monitoring activities in various geographical areas within our jurisdiction to enhance our understanding of air pollution impacts in Environmental Justice (EJ) communities. A variety of air monitoring approaches will be used, and the objectives, tools, and stakeholders involved will differ from community to community and/or from air quality priority to priority.

This document only discusses the CAMP for the Eastern Coachella Valley (ECV) community.

2 Community Air Monitoring Plan Objectives

This plan has been developed for the ECV community through close collaboration between the CSC and South Coast AQMD staff. It outlines the objectives and strategies for monitoring air pollution in ECV based on the air quality priorities identified by the CSC in support of the effective implementation of the CERP.

This CAMP is a flexible document that identifies specific air monitoring objectives and strategies for ECV which can be 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. Comments on the plan are welcome, and South Coast AQMD staff appreciates all the input provided by the CSC and members of the public. South Coast AQMD staff will work with the CSC to determine if and when these updates and modifications should be made.

Community air monitoring in ECV is designed to enhance our understanding of air pollution emissions from the sources of interest, potential impacts in nearby communities, and typical levels of the pollutants of interest in the community. The monitoring strategies shall meet one or more of the following basic requirements depending on the monitoring purpose:

- Provide air pollution data to the community in a timely manner;
- Support compliance and planning activities for emission source or community emissions reduction strategies. Data from monitors of various types can be used in the development of strategies and rule development. At monitoring locations near major air pollution sources, source-

oriented monitoring data can provide insight into whether an industrial source may be contributing to increased air pollution levels near the facility;

- Support air pollution and health research studies. Air pollution data can be used to supplement data collected by health researchers, atmospheric scientists, and for monitoring methods development;
- Look at air pollution levels at the community level to provide information on and guidance for further action, if necessary; and
- Provide information on when a monitoring study can be considered complete so that resources can be reallocated to a different project.

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 most CERP measures over time. The air monitoring activities proposed here will complement and enhance existing South Coast AQMD and community-led programs. Overall, this CAMP has been developed to generate data to satisfy the recommendations provided in CARB's "Community Air Protection Blueprint" [1] and support a variety of actions, including:

- Identifying sources, categories of emissions, and emission types contributing to air pollution burdens within the community to support the implementation of the CERP;
- Refining air quality information at the community level to assess progress towards improved air quality and measure the effectiveness of the CERP;
- Providing real-time air quality data to inform community members of current conditions within the community and support exposure reduction strategies by informing community's 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.

3 Purposes of Community Air Monitoring

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 implementation of effective emissions reduction strategies (through the CERP) designed to improve local air quality.

The purposes of air monitoring 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 ECV, and compare air pollution levels measured in previous health studies, well-known health benchmarks and 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. Specific purposes of air monitoring are described below.

[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

Baseline Monitoring is used to assess the effectiveness of the strategies implemented through the CERP specific measures and metrics to track air quality and exposure progress over time. AB 617 requires that the CERP results in tangible emissions and exposure reductions, which, in part, can be demonstrated based on monitoring or other data. Therefore, while the CERP and CAMP are separate documents, 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.

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 using ambient air in the community. 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.

Continuation of these measurements will provide valuable data for the overall assessment of baseline conditions to evaluate the regional air toxics contribution in ECV under the AB 617 program and the effectiveness of various CERP measures, and to provide information on air toxics trends over the course of the AB 617 Program. South Coast AQMD staff will conduct monitoring surveys in the community and will work with the CSC to identify a representative location within the community boundaries for these measurements.

Concentration Mapping refers to air monitoring procedures designed for measuring the concentration of target air pollutants along the driving route in the survey area. The main applications of concentration mapping include, but are not limited to, finding hotspots of air pollution, assessing the community exposure levels near known emission sources, and/or quantifying the relative contribution of source emissions to local air quality. For these applications, the survey area should include sufficient spatial range to illustrate changes in pollutants' concentrations.

For concentration mapping applications, the measured pollutants levels and their spatial variability may vary substantially depending on the time of the measurements (e.g. morning rush hour vs. late afternoon) and meteorology (e.g. atmospheric boundary layer height and wind speed/direction during different times of the day and seasons). In addition, if the emissions from the potential sources are episodic in nature, they may not be detected during a single drive-by survey even under favorable wind conditions. Therefore, in order to produce stable and representative air pollution maps, repeated monitoring passes during different times of the day under a variety of meteorological conditions are required. Moreover, to correct for temporal biases that result from the slowly varying background concentrations over the course of a day, background data from fixed monitors may be used to develop a time-of-day adjustment factor.

Source Identification refers to air monitoring procedures designed for identifying the location(s) of previously unknown or specific sources of emissions (e.g. fugitive dust from an industrial source, leaks from oil/gas production and drilling activities), determining the contribution of different potential emission sources to the measured ambient levels, and informing subsequent air monitoring or enforcement actions.

Source Characterization refers to air monitoring procedures focus on improving our understanding of the location, variability and composition of known or previously unidentified emission sources, either by direct measurements using in-situ monitors on mobile platforms or through the acquisition of secondary data/information (e.g. infrared camera video, canister grab samples, etc.) while tracking the pollution plume to possibly locate the potential source, or during follow-up investigations. It should be noted that mobile platforms can also be used to conduct stationary measurements at appropriate locations (e.g., downwind of the emission source) for short or long periods of time (e.g., minutes to a few hours, as appropriate) to better characterize the emissions from the identified sources.

Compliance and Health-Based Information refers to air monitoring data that can be used to support regulatory and enforcement actions and/or provide the basis for comparing against air pollution standards and known health thresholds. To achieve the data quality that is needed to support these actions, air monitoring methods and equipment that are capable of producing data of appropriate quality shall be selected.

Community Engagement and Educational monitoring is primarily achieved by working with community members to deploy sensors for measuring certain particle and gaseous pollutants. Sensors have the potential to provide meaningful local air quality data as part of a coordinated, well-designed community-led air monitoring. They can be used alone or within a network to engage and educate citizen scientists and community members in different aspects of the air monitoring process.

Emissions Estimation is the approach used to estimate source emission rates usually from a remote vantage point. In this approach, the emission rates are estimated using gas column measurements by remote sensing instruments (onboard Mobile Platform #2 discussed later in the CAMP) combined with wind data integrated across plume transects at various locations. For emissions estimation applications, the basic premise is usually to characterize the source by encircling or "boxing" the source (i.e. moving the mobile platform upwind and downwind of the source during multiple passes).

4 Existing and Ongoing Monitoring Programs in the ECV Community

South Coast AQMD has been conducting air quality measurements and other activities in the ECV community and below is information regarding recent and existing projects, and programs at South Coast AQMD that focus on air monitoring for a variety of sources within the ECV area. The monitoring data collected from these initiatives will be used to complement the information that will be gathered during AB 617 and will greatly enhance our understanding of the impact that natural and anthropogenic emissions have on air quality in this community. This CAMP is 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 this community.

4.1 Regulatory Monitoring Stations

The South Coast AQMD operates more than 40 permanent air monitoring stations in the Basin; two of which (Mecca and Indio sites) are located in ECV (see Figure 4.1). Other agencies and groups are also collecting air quality data in this community at four additional monitoring sites, namely: 29 Palms, Torres-Martinez Tribal, Salton Sea Near-Shore and Salton Sea Park (see Figure 4.1 for exact locations). 29 Palms was established by a partnership between Twenty-Nine Palms Band of Mission Indians and the Cabazon Band of Mission Indians in the ECV community through an AB 617 Community Air Grant awarded by CARB to the tribes.[2] One monitoring station has been established by Torres-Martinez Desert Cahuilla Indians.

[2] Twenty-Nine Palms Tribal EPA, Air Quality: https://www.29palmstribe.org/epa-air-quality

The Salton Sea Park and Salton Sea Near-Shore monitoring stations are operated by the Imperial Irrigation District. However, South Coast AQMD operates an H_2S monitor at the Near-Shore site. The location of these stations is shown in figure 4.1.

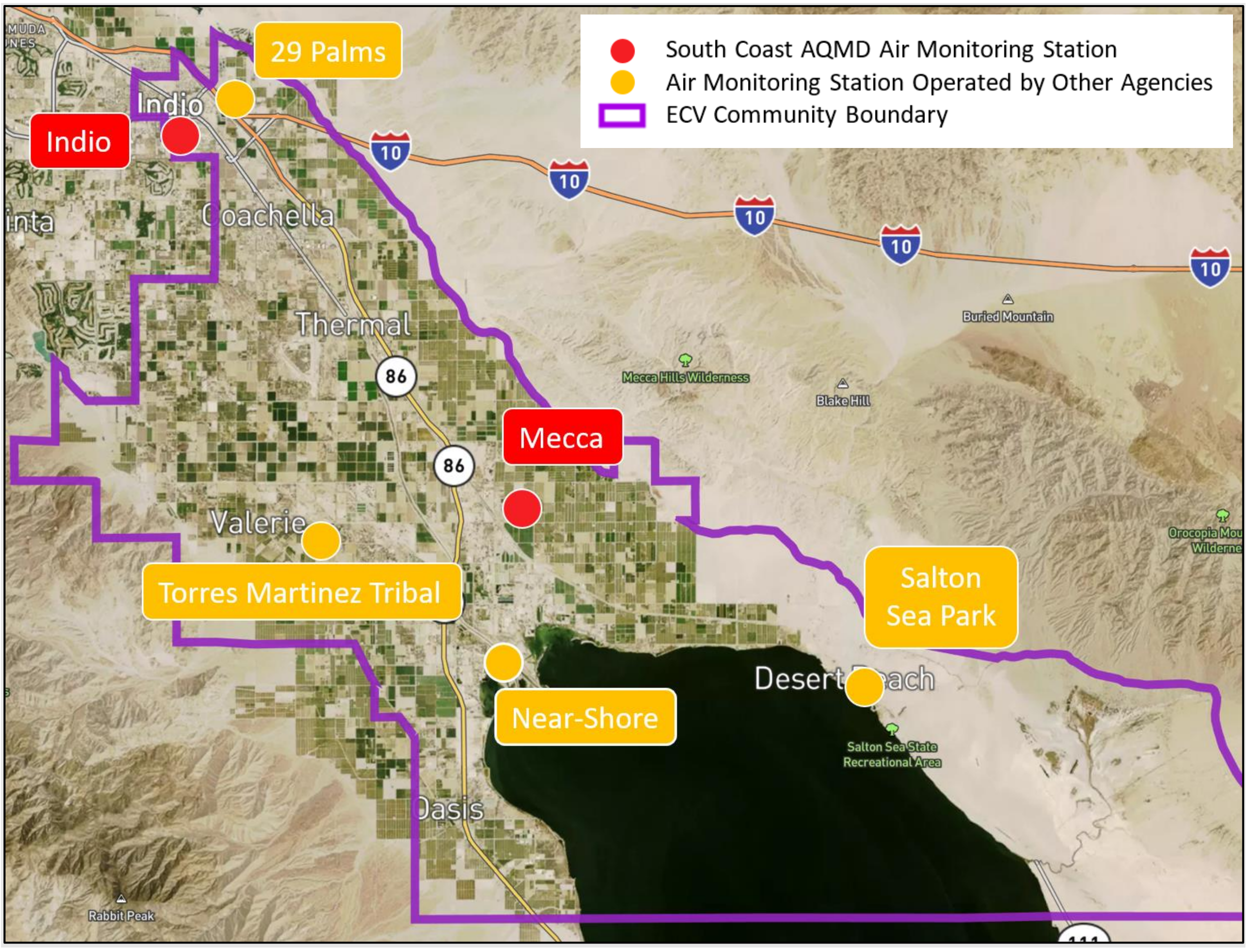

Figure 4.1- Current air monitoring stations in the ECV community

Table 4.1 shows the pollutants monitored at each site. All stations have also wind monitoring instruments. The data from Indio, Mecca, and Salton Sea Near-Shore (H_2S data) sites are already available on South Coast AQMD's AB 617 data display tool[3]. The data from the Salton Sea Park is available through CARB's data platform[4]. The data from 29 Palms is available through the Tribal Environmental Protection Agency website[5]. Data generated at the Indio, Mecca, and 29 Palms stations is also used for calculating the Air Quality Index (AQI) in EPA's AirNow system[6]. A notification system for H_2S exceedances at the Mecca and Tribal sites is available through the Salton Sea Hydrogen Sulfide Monitoring website[7].

[3] AB 617 Monitoring Website: http://xappprod.aqmd.gov/AB617CommunityAirMonitoring/Home/Index
[4] CARB Air Quality Data Query Tool: https://www.arb.ca.gov/aqmis2/aqdselect.php?tab=daily
[5] Twenty-Nine Palms Tribal EPA, Air Quality: https://www.29palmstribe.org/epa-air-quality
[6] AirNow: www.airnow.gov
[7] The Salton Sea Hydrogen Sulfide Monitoring: saltonseaodor.org

Table 4.1- Pollutants monitored at each air monitoring station in the ECV community

Station Name	Site Location	Agency	Monitored Pollutants
Indio	46990 Jackson Street Indio, CA 92201	South Coast AQMD	Ozone, PM2.5, PM10
Mecca (Saul-Martinez Elementary School)	65705 Johnson Street Mecca, CA 92254	South Coast AQMD	H2S, PM10
Torres-Martinez Tribal	66-725 Martinez Road, Thermal, CA 92274	Torres-Martinez Cahuilla Indians	PM10
Salton Sea Near Shore	Lincoln Ave. & 73rd Ave., Mecca CA 92254	Imperial Irrigation District	H_2S*, PM2.5, PM10
Salton Sea Park	100-225 State Park Rd., North Shore CA 92254	Imperial Irrigation District	PM2.5, PM10
29 Palms	33.719724, -116.189578	Twenty-Nine Palms Band of Mission Indians and Cabazon Band of Mission Indians	PM2.5, PM10

* *H_2S monitor is operated by the South Coast AQMD*

4.2 PM10 Chemical Speciation Measurements at the Mecca Community (Saul Martinez) Air Monitoring Station

South Coast AQMD has conducted chemical speciation analyses of filter samples collected in ECV with the objective of characterizing the composition of PM10, and evaluate how various sources (e.g., playa dust, wind-blown desert dust, and road dust) contribute to the measured ambient PM10 concentration in the region. On December 2015, South Coast AQMD started collecting filter samples for PM10 every 6 days at the Mecca (Saul Martinez Elementary School) air monitoring station. Filters were analyzed for elemental/metallic and ionic components. Measured ions included nitrate (NO_3^-), sulfate (SO_4^{2-}), and chloride (Cl^-) and were measured between the fourth quarter of 2015 and the third quarter of 2018. Measured elements and metals included a comprehensive list of species (e.g., As, Be, Cd, Mn, Ni, Pb, Co, Cu, Sb, Se, V, Cr, Zn, Ti, and U), and these measurements are still ongoing. Past and future data will be analyzed to tease out the contribution of PM10 sources in ECV. South Coast AQMD will explore opportunities to continue the PM10 chemical speciation measurements at the Mecca site, which will also help establish a baseline for these air contaminants as explained later in this document. South Coast AQMD staff will analyze existing chemical speciation data and work with the CSC and CARB to determine which chemical species should be sampled (e.g. selenium and other metals and sea spray indicators).

4.3 Monitoring in Response to Air Quality Incidences

South Coast AQMD responds to emergencies such as fires, toxic spills and toxic gas releases at industrial, commercial and other sources. South Coast AQMD also dispatches its Incident Response Team to events with significant regional public air quality impacts or at the request of first responding agencies. Depending on the nature of the event, South Coast AQMD staff may deploy appropriate equipment (i.e. mobile platform, grab sample containers, stationary monitors and/or ambient air samplers) after consultation with meteorologists, modelers and first responders. Some of the most recent incidence response activities in Eastern Coachella Valley include: PM2.5 measurements at Desert Mirage High

School in Thermal in response to fires in the Mecca area (in 2015, 2017, and 2019) and at Oasis Elementary School, also in Thermal, in response to concerns about smoke from agricultural frost prevention burning (2012-2013). Following odor complaints in 2010, South Coast AQMD has been conducting H_2S measurements at College of the Desert, Mecca Elementary School, Saul Martinez Elementary School, and the Indio Air Monitoring Station.

4.4 Multiple Air Toxics Exposure Study (MATES)

MATES 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. The most recently completed MATES study (MATES IV) was conducted from 2012-2013. MATES V results from 2018-2019 is currently being processed and will be available early 2021.

While MATES IV and V did not include any measurements within the ECV boundaries, MATES III included sampling of a comprehensive list of air toxic pollutants at the Indio air monitoring station from February 2005 to June 2005 within the ECV community. All air toxics levels during this study were similar or lower than those measured at one of the main MATES stations in Riverside (i.e., Rubidoux air monitoring station)[8].

5 Air Monitoring Equipment and Methods

Air monitoring is a scientific tool that provides information that can help address specific questions about pollutant concentrations in the community. To achieve the community-specific air monitoring objectives described in the CERP and CAMP, it is critical to develop a sound air monitoring approach and use appropriate monitoring methods and equipment specific for each purpose. The general monitoring approach in ECV consists of expanding the existing air monitoring network and deploying additional air monitoring equipment, including regulatory monitors and air quality sensors, to enhance the measurements' overall geographical coverage. Most of the air quality priorities in ECV, such as dust emissions from the Salton Sea and surrounding deserts and fugitive road dust, and smoke from open burning, are intermittent in nature and impact relatively large areas. Therefore, air monitoring at fixed locations provides an opportunity to capture both long-term and short-term trends, identify periods when these sources impact the community, and pinpoint the most critical locations of concern.

5.1 Fixed (Stationary) Monitoring

Fixed air monitoring is conducted by placing an air monitor or a suite of air monitors at strategic locations to satisfy community specific air monitoring objectives. The fixed monitoring locations are determined after evaluating a variety of site selection criteria and will depend on the ability to obtain appropriate site access permissions. Some of these criteria include but are not limited to: site suitability for air quality monitoring; proximity to emission source(s) and/or receptors; infrastructure, access and safety; and long-term availability.

[8] More information on MATES can be found at: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies.

The most common monitoring methods that are used for AB 617 community air monitoring applications using fixed monitoring can be categorized as: *Established and regulatory monitors*, *research-grade monitors*, and *sensors and sensor networks.*

5.1.1 Fixed Monitoring with Established and Regulatory Monitors

South Coast AQMD monitors and conducts laboratory analyses to satisfy the requirements of federal and state programs using established and regulatory monitoring methods. This includes collection of time-integrated samples (often followed by subsequent chemical analysis, depending on the monitoring purpose), as well as operation of continuous monitors. The selection of air monitoring method will have to satisfy both the short- and long-term objectives of monitoring. Time-integrated samples are typically collected over a 24-hour period and can help assess trends over the long-term, detect typical urban variations of the target pollutant(s), and determine potential air quality impacts at specific locations. Continuous monitoring is sometimes necessary to evaluate the immediate impact of emissions, identify sources of pollution, or provide high time-resolution data in near real-time (e.g. hourly). 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 by the CSC within the ECV community.

Well established and regulatory monitors can be installed inside air monitoring stations or in trailers to conduct measurements at strategic locations (e.g. in an easily accessible and safe area downwind of an identified air pollution source) in the community to provide the basis for comparing against air pollution standards and known health thresholds, assessing regional air quality and community impact, and tracking the progress of emission reduction strategies. The monitoring stations and trailers will also be equipped with wind measurement systems to better characterize and potentially locate the source(s) of the measured air pollutants.

When applicable, battery-operated portable monitors can be deployed near (e.g. upwind and downwind) a potential emission source to determine its contribution to the observed ambient levels. This type of monitoring can help characterize the emissions from a specific source and gather insight into the specific process(es) that are leading to those emissions.

Established and regulatory monitors can provide the basis for comparing the measured levels against known health thresholds with a high level of confidence. They can also provide actionable data for comparing the measured levels against established rules limits and requirements in support of compliance and enforcement actions. The Quality Assurance Project Plan (QAPP - Appendix A) included as part of this CAMP 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.

5.1.2 Fixed Monitoring with Research-Grade Monitors

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 continuously evaluates advanced air monitoring technologies and methods to enhance its capability for air quality investigations and expand the air monitoring and analysis toolbox. These efforts are mainly focused on the use of instrumentation for real-time or near real-time measurements of particle and gaseous pollutants with a particular focus on air toxics. This is necessary for achieving an accurate characterization of potential health impacts and for facilitating the identification and apportionment of emission sources. More established monitoring methods (e.g., those used for regulatory purposes) used for air toxic measurements are generally based on the collection of 24-hour integrated average samples, which are then analyzed in the laboratory using robust but labor-intensive analytical procedures. As a result, samples may take weeks to process and results are often delayed and not readily available. Moreover, time integrated (e.g., a single sample collected over a continuous 24-hour period) samples do not fully account for shifts in environmental conditions, such as short-term spikes in ambient concentrations of the pollutant(s) of interest. Air quality is dynamic and complex, and often exhibits large temporal and spatial variations due to changes in meteorological conditions, local topography, and source emission rates, which contribute to variations in emissions, transport and deposition of air pollutants. Advances in measurement technology continue to provide innovative, reliable and practical solutions to quantify the ambient levels of gaseous and particulate air pollutants over averaging times ranging from seconds to hours. The new generation of high-time resolution monitors can capture the temporal variability of air pollutants continuously and in real- or near real-time. However, these instruments are expensive and require specific siting and data infrastructure, as well as additional time for data validation and analysis.

Overall, research-grade monitors can be used for different purposes in AB 617 community air monitoring projects, and are usually employed when trying to measure air toxic pollutants that are more difficult to monitor or not able to be measured with more traditional air monitoring techniques and when monitoring goals and objectives require simultaneous measurements of various species.

5.2 Air Quality Sensors

With recent advancements in sensor technology, affordable devices for measuring particle and gaseous pollutants are now available for community monitoring. For the purpose of most AB 617 Community Air Monitoring projects, air quality sensors will be used as stationary monitors to characterize the spatial and temporal variability of the pollutant(s) of interest. Stationary sensors may also be used for community near-source monitoring, community education and outreach, and hotspot identification. These sensors are capable of providing real-time air quality information with spatial and temporal resolution that is often greater than what can be achieved by other, more established and more expensive monitoring technologies. Although sensors offer great potential, they can only measure a limited number and types of pollutants (criteria pollutants such as particulate matter, ozone and nitrogen dioxide, but not air toxics) and their accuracy, reliability and overall performance vary widely depending on sensor type, pollutant(s) measured, environmental conditions, calibration and maintenance procedures and other factors. Despite these limitations, sensors can be used effectively for community monitoring, provided their performance has been well characterized prior to their use, and the type of sensor used is appropriate for their intended application. 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 appropriate use and operation of this technology for measuring ambient air in their neighborhood, and to engage them in the air monitoring process that will be developed and implemented in ECV.

Public education and outreach are important to increase the public's awareness and knowledge of air quality in their communities. Air quality sensors and sensor networks are excellent tools to engage and empower local community members in the various aspects of air pollution monitoring, while gathering hyper local air quality information in the area(s) of interest. Where there is community interest to learn more about sensors, South Coast AQMD staff will conduct training workshops on the appropriate use and operation of this technology and on how to interpret sensor data for those purposes. Through its newly developed sensor library program, the South Coast AQMD will be able to provide sensors that community members can use for a limited period of time (e.g., weeks or months depending on needs) to address specific community needs and concerns, better characterize air pollution at the neighborhood level, increase community engagement and support the effective implementation of the CERP. Through this program, South Coast AQMD staff will work with the CSC to build a community-driven sensor network in ECV. South Coast AQMD staff has extensive experience working with communities in our jurisdiction and throughout the State of California in the development, operation and maintenance of sensor networks for air quality measurements.

Additional information on commercially available sensor technology can be found on South Coast AQMD's Air Quality Sensor Performance Evaluation Center (AQ-SPEC) website[9]. 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.

5.3 Mobile Platforms

Ambient levels of air pollutants can vary substantially within short distances in areas with multiple local sources of air pollution. One of the strategies employed by the South Coast AQMD to capture the spatial variability of air pollutants and identify/quantify the major emission sources in communities involves the deployment of high-time resolution instruments on mobile platforms and collect air quality data while in motion. This strategy can provide snapshots of air pollutant concentrations at a specific location and time and is ideal to survey vast areas in a relatively short period of time. The ability of the mobile measurement platforms to drive in and around a community and follow the emission plumes as they are transported through the neighborhood by wind can be critical for hotspot identification. Mobile measurements can be conducted using real-time instruments to allow for large-scale community air pollution mapping at a fraction of the cost of conventional approaches and at a higher spatial and temporal resolution. Mobile platforms are equipped with robust monitoring technologies (established and regulatory monitors and/or research-grade monitors) to provide on-site, high quality, analytical capabilities. Mobile monitoring allows for rapid deployments when the emissions of interest are not captured by the existing fixed monitoring, which helps South Coast AQMD staff to react quickly in response to emerging air quality issues. However, considering that mobile monitoring only provides instantaneous snapshots of air pollutant concentrations at a specific location and time, it may not be an effective monitoring strategy for situations in which the pollutant concentrations change rapidly over space and time (e.g., dust storms and smoke from open burning events) or when emissions are expected to be intermittent (e.g., fugitive road dust). Mobile measurements generally do not capture daily variations in pollutant concentrations; when such data is needed, fixed air monitoring is preferred to gather further information.

South Coast AQMD currently has four mobile platforms, each equipped with different instrumentation for the measurement of particulate and gaseous pollutants including air toxics. The procedures that will be taken to ensure that the mobile monitoring data that will be collected as part of AB 617 program is of the appropriate quality and meets the project requirements is outlined in the QAPP document. Below is a brief description of each mobile platform and their capabilities:

[9] Air Quality Sensor Performance Evaluation Center (AQ-SPEC): http://www.aqmd.gov/aq-spec

Mobile Platform #1: This platform is equipped with a mix of regulatory and research-grade instruments to measure the mass and number concentrations of particulate matter (PM) of various sizes, black carbon (BC), nitrogen dioxide (NO_2), and methane (Table 5.1). The time-resolution of these air monitoring instruments ranges from seconds to minutes. 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 the exposure impact of railyards, 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 the field operator 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 typically takes a few days to fully validate and process the collected information. A few pictures of this platform and the instruments configuration/set-up are shown in Figure 5.1.

Table 5.1 - Air Quality Monitors Installed Inside Mobile Platform #1 and Measured Pollutants

Monitor	Measured Pollutant
Teledyne (T640)	PM_{10} & $PM_{2.5}$ Mass
GRIMM (EDM 164)	PM1, PM2.5, PM10, TSP, Number Size Distribution (0.25-35 µm)
Teledyne (T500U)	NO_2
Aerosol Devices Inc. (MAGIC CPC)	Particle Number
Droplet Measurement Technologies (Photoacoustic Extinctiometer (PAX))	Black Carbon
Li-830	CO2
Li-7700	CH4

Figure 5.1 - Pictures of Mobile Platform #1

Mobile Platform #2: This platform is equipped with multiple research-grade monitors including advanced remote optical sensing (ORS) monitors that are capable of measuring the ambient concentration (and in some cases the emission rate) of 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 5.2) 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 measurements is often deployed in conjunction with this vehicle for more accurate estimations of emission rates 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, leak detection and follow up, concentration mapping, and assessment 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 fully validate and process the collected information. Pictures of this platform and of its instrument configuration/set-up are shown in Figure 5.2.

Table 5.2 – Air Quality Monitors Installed Inside Mobile Platform #2 and Measured Pollutants

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)

Figure 5.2 - Picture of Mobile Platform #2

Mobile Platform #3: This platform is equipped with a state-of-the-art Proton-Transfer-Reaction–Time-of-Flight Mass Spectrometer (PTR-ToF-MS) capable of simultaneous real-time monitoring of hundreds of volatile organic compounds (VOCs) such as aromatics (e.g., BTEX), oxygenates (e.g., acetaldehyde and acetone), sulfur species (e.g., methanethiol and mercaptans), and many others, present in ambient air. This is a fast-response instrument with a time-resolution of 1 second, which has high sensitivity to low concentrations of a wide range of VOCs (limit of detection (LOD) typically 1-100 pptv). The high sensitivity and broad suite of analyte detection of this mobile platform will allow the South Coast AQMD to identify VOC hotspots and potential sources of VOCs, detect leaks, and conduct more detailed investigations of odor complaints.

Similar to the other mobile platforms, this platform is also equipped with a weather station and GPS to determine wind speed and direction, ambient temperature and relative humidity, and vehicle location and bearing. In addition, this platform is equipped with a $CH_4/CO_2/H_2O$ detector for coarse plume source identification. An onboard computer system allows for real-time data visualization to facilitate rapid detection and tracking of air pollutant plumes. Although this platform is capable of detecting signals of various air pollutants in real time, processing, validation and visualization of the data is time consuming and can take from a few days to weeks to complete.

Table 5.3 – Air Quality Monitors Installed Inside Mobile Platform #3 and Measured Pollutants

Monitor	Measurement(s)
Tofwerk PTR-ToF-MS (Vocus-S)	Variety of VOCs
LI-COR (LI-7810)	CH_4, CO_2, water vapor
AirMar (WS-220WX-RH)	Location, heading, vehicle speed, wind speed/direction, RH, temperature, pressure

Mobile Platform #4: This platform is equipped with an X-Ray Fluorescence (XRF) instrument that is capable of measuring ambient concentrations of several particulate metals (e.g., arsenic, nickel, chromium, manganese, lead, copper, etc.). The platform is also equipped with a mix of regulatory and research-grade instruments to measure the mass and number concentrations of particulate matter (PM) of various sizes, black carbon (BC), nitrogen dioxide (NO_2), and carbon dioxide (CO_2) (Table 5.4). The time-resolution of this air monitoring equipment ranges from seconds to minutes. This mobile platform can be used to identify particulate metal pollution hotspots, characterize emissions from sources of particulate metals (e.g., metal processing facilities and auto body shops), and assess the potential community impact of metal emissions. It can also be used to identify diesel PM hotspots, assess the exposure impact of railyards, transportation corridors and idling spots, and to track progress of targeted emission reduction strategies.

This platform is also equipped with an anemometer for wind measurements, a Global Positioning System (GPS), and real-time data logging capabilities. This information is used by the operator to guide the mobile measurements, as well as to position the platform such that it can best capture emissions from potential sources. Although this platform is capable of detecting the ambient concentration of multiple metals and other air pollutants in real- or near-real time, it takes a few days to weeks to fully validate and process the collected information and visualize it for public consumption. Figure 5.3 shows a few pictures of this mobile platform and the on-board instruments.

Figure 5.3 - Pictures of mobile platform #4

Table 5.4 - Air Quality Monitors Installed Inside Mobile Platform #4 and Measured Pollutants

Monitor	Measured Pollutant
Xact 625i	Particulate Metals
GRIMM (EDM 164)	PM1, PM2.5, PM10, TSP, Number Size Distribution (0.25 - 35 µm)
Teledyne (T500U)	NO_2
Aerosol Devices Inc. (MAGIC CPC)	Particle Number
Droplet Measurement Technologies (Photoacoustic Extinctiometer (PAX))	Black Carbon
Li-830	CO_2
Airmar 200WX	Wind Speed and Wind Direction

6 General Community Air Monitoring Approach

The main air monitoring approach in ECV consists of supplementing the existing air monitoring network by developing and deploying a network of air quality sensors to enhance the spatial coverage of the measurements for the duration of AB 617. Given that most of the air quality priorities in ECV such as dust emissions from the Salton Sea and surrounding deserts and fugitive road dust, as well as smoke from open burning are intermittent in nature and impact relatively large areas, comprehensive stationary monitoring provides an opportunity to capture trends, identify periods when these sources impact the community, and through advanced statistical and spatial analysis, discover the dominant geographical areas of concern.

A well-designed sensor network allows to assess the spatial gradient of the pollutants of interest within the community and evaluate potential hotspots. The sensors that will be used in ECV (Aeroqual model AQY v1.0)[10] are all capable of measuring PM2.5, PM10, NO_2 and O_3. It should be noted that the selection and deployment of appropriate sensors for the ECV community has been made in close collaboration with South Coast AQMD's AQ-SPEC, which has extensive knowledge, expertise, and experience in testing and deploying air quality sensors in communities across the State of California. AQ-SPEC has evaluated the performance of the AQY sensor for its ability to measure PM2.5, NO_2 and O_3 under ambient conditions.

While routine mobile monitoring may not be the most effective solution to address the main air quality concerns in ECV, mobile monitoring with an appropriate mobile platform may be carried out to complement stationary measurements. For instance, in a situation when air toxic or other air pollutants are emitted from an industrial facility and the emission plume is moving towards a community where no fixed monitoring is available, mobile monitoring may be conducted to better assess the impact.

Table 6.1 summarizes how different monitoring approaches can be used to achieve specific monitoring objectives.

[10] https://www.aeroqual.com/product/aqy-micro-air-quality-station

Table 6.1 - Monitoring Approaches for Satisfying Specific Monitoring Objectives

Air Monitoring Purpose	Air Monitoring Approach			
	Stationary Air Monitoring			Mobile Air Monitoring
	Established and Regulatory Monitors	Research-grade Monitors	Air Quality Sensors and Sensor Networks	Mobile Measurement Platforms
Baseline Monitoring (BM)	Established and regulatory monitors can be installed in air monitoring stations or in trailers to conduct measurements at specific locations in targeted communities to provide the basis for comparing against standards and known health thresholds, assessing regional air quality and community impact, and tracking the progress of emission reduction strategies with a high level of confidence	Research-grade monitors can be installed in air monitoring stations or in trailers to conduct measurements at specific locations in targeted communities to provide the basis for comparing against standards and known health thresholds, assessing regional air quality and community impact, and tracking the progress of emission reduction strategies	N/A	N/A
Concentration Mapping (CM)	N/A	N/A	Sensor networks can be used to characterize the spatial and temporal variability of certain particle and gaseous pollutants within a community or a wide geographical area, and to identify pollution hotspots for certain particle and gaseous pollutants	Mobile platforms can be equipped with established and regulatory monitors and/or research-grade monitors for continuous measurements of particulate and gaseous pollutants for conducting wide area and targeted surveys, pollution hotspot Identification, or concentration mapping

Air Monitoring Purpose	Air Monitoring Approach			
	Stationary Air Monitoring			Mobile Air Monitoring
	Established and Regulatory Monitors	**Research-grade Monitors**	**Air Quality Sensors and Sensor Networks**	**Mobile Measurement Platforms**
Source Identification (SI)	When applicable, fixed/stationary battery-operated portable monitors can be deployed near (e.g. upwind and downwind) of a potential emission source to determine the contribution to the observed ambient levels	N/A	Sensors can be deployed at the fenceline of a facility to better characterize the spatial and temporal variability of certain particle and gaseous pollutants and help identify potential sources of emissions	Mobile platforms are powerful tools that can "chase" air pollution plumes and conduct investigative monitoring to identify the specific source(s) of emission
Source Characterization (SC)	Established and regulatory monitors can be deployed at the fenceline or near a facility (e.g. downwind) to characterize the temporal variability of targeted pollutants and gather insight into the specific process(es) that are leading to those emissions. On site measurements of specific processes, if appropriate.	Research-grade monitors enable simultaneous real-time measurement of various pollutant groups that can be deployed near a facility (e.g. downwind) to characterize the temporal variability of targeted pollutants and gather insight into the specific process(es) that are leading to those emissions	Sensors can be deployed at the fenceline of a facility or near a facility (e.g. downwind) to better characterize the temporal variability of certain particle and gaseous pollutants and gather insight into the specific process(es) that are leading to those emissions	Mobile monitoring can help improve our understanding of the composition and variability of known emission sources and determine emission source signatures

Air Monitoring Purpose	Air Monitoring Approach			
	Stationary Air Monitoring			Mobile Air Monitoring
	Established and Regulatory Monitors	Research-grade Monitors	Air Quality Sensors and Sensor Networks	Mobile Measurement Platforms
Compliance and Health-Based Information (CHBI)	Established and regulatory monitors used for measurements conducted at specific locations (e.g. upwind and/or downwind of an emission source) can provide the basis for comparing against known health thresholds and/or rules limits and requirements with a high level of confidence	Research-grade monitors used for measurements conducted at specific locations (e.g. upwind and/or downwind of an emission source) can provide the basis for comparing against known health thresholds and/or can be used in monitoring investigations to provide information in support of compliance and enforcement activities	N/A	Mobile measurements can provide the basis for more robust monitoring, onsite measurements, and supplemental air monitoring in support of compliance and enforcement investigations
Community Engagement and Educational (CEE)	N/A	N/A	Sensors for measuring particle and gaseous pollutants are excellent education and outreach tools, and can be used alone or within a network to engage citizen scientists and community members in different aspects of the air monitoring process	N/A

Air Monitoring Purpose	Air Monitoring Approach			
	Stationary Air Monitoring			Mobile Air Monitoring
	Established and Regulatory Monitors	Research-grade Monitors	Air Quality Sensors and Sensor Networks	Mobile Measurement Platforms
Emissions Estimation (EE)	N/A	N/A	N/A	One of the mobile platforms is equipped with remote sensing instruments that can be used to estimate emission rates using gas column measurements conducted by driving the mobile platform upwind and downwind of the source during multiple passes

7 Air Quality Priorities in the Eastern Coachella Valley (ECV) 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 CERP and a CAMP, it is critical to understand the specific air quality concerns in the ECV community. The CSC meetings provide a forum for identifying community-specific air quality priorities 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 its implementation. This is achieved through periodic community meetings, workshops, South Coast AQMD Committee meetings, and South Coast AQMD Governing Board meetings. Input and feedback provided by the CSC will continue to be incorporated to improve and update the monitoring strategies throughout the implementation of this CAMP.

The South Coast AQMD staff gathered information on the main CSC air quality concerns through a series of community meetings. The following categories were selected as the highest priorities: Salton Sea, Pesticides, Open Burning and Illegal Dumping, Fugitive Road Dust, Diesel Mobile Sources, and Greenleaf Desert View Power Plant (formerly Colmac Energy, Inc.). A detailed description on each of these groups is provided in the following sections.

7.1 Salton Sea

The Salton Sea is the largest lake in California and, as its shorelines continue to recede and expose the sediments deposited at the bottom of the Sea (also referred to as the “playa”), emissions from the Salton Sea contribute to poor air quality for ECV residents. The CSC has expressed their concerns about the Salton Sea, mainly with respect to odors caused by emissions of hydrogen sulfide (H_2S) and inhalable dust / particulate matter (PM10; particles with diameters of 10 microns or smaller). Elevated levels of H_2S result from natural processes in the Salton Sea; these can lead to strong foul odors that negatively affects the quality of life of local residents and at high levels can cause acute health effects (e.g., headaches and nosebleeds). Dust emissions from the Salton Sea occur when the playa sediments get blown off by strong gusty winds and contribute to PM10 emissions in the area, further deteriorating air quality. The CSC is also concerned that the soil from the playa may contain residuals of pesticides and other pollutants from agricultural runoff (toxic elements and metals, such as selenium (Se), cadmium (Cd), and nickel (Ni)), which can pose a risk to human health. Moreover, the CSC has conveyed that additional monitoring and improvements to notification systems are needed to better understand emissions and reduce exposure from the Salton Sea.

The main monitoring strategy to address CSC concerns regarding H_2S emissions from the Salton Sea includes supplementing the existing H_2S monitoring network in ECV to provide limited expansion to its geographical coverage and real-time H_2S data at more locations, and inform the community members about the odors they smell and where they come from, including a notification system for when ambient levels exceed the State standard. Currently, H_2S monitoring is being conducted at two fixed-site monitoring stations within the ECV community boundary; at the Mecca and Salton Sea Near-Shore air monitoring stations. A notification system for H_2S exceedances at these sites is available through “The

Salton Sea Hydrogen Sulfide Monitoring" website[11]. As part of this monitoring strategy, South Coast AQMD will work with the CSC to identify opportunities to expand its air monitoring network. Continuous wind speed and wind direction data will also be collected to help better identify the location(s) for the odors. The expansion of the H_2S monitoring network will lead to covering a larger part of the ECV community and will help assess community impact and the extent to which the odors may be transported in the community and beyond.

Currently, PM10 monitoring is being conducted at six fixed monitoring stations within the ECV community boundary. Two of these sites (Mecca and Indio) are operated by the South Coast AQMD. One of these stations, 29 Palms, has been established by a partnership between Twenty-Nine Palms Band of Mission Indians and the Cabazon Band of Mission Indians in the ECV community through an AB 617 Community Air Grant awarded by CARB to the tribes.[12] One monitoring station has been stablished by Torres-Martinez Desert Cahuilla Indians. The Salton Sea Park and Salton Sea Near-Shore monitoring stations are operated by the Imperial Irrigation District. The location of these stations is shown in Figure 7.1 and the pollutants monitored at each site is presented in Table 7.1.

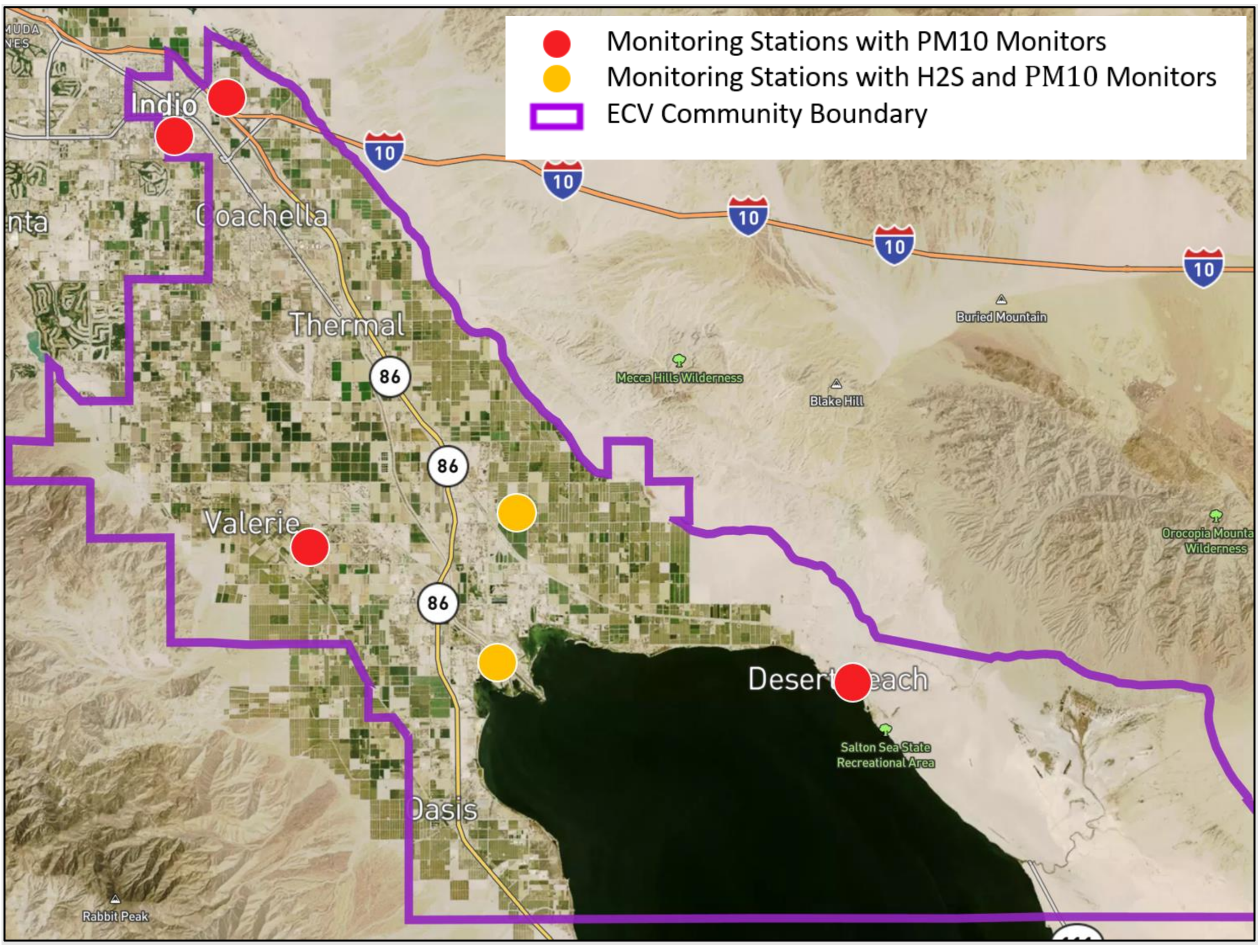

Figure 7.1 - Map of the ECV community with respect to the location of sampling sites where H_2S and PM10 monitoring is currently conducted

[11] https://saltonseaodor.org/
[12] Twenty-Nine Palms Tribal EPA, Air Quality: https://www.29palmstribe.org/epa-air-quality

Table 7.1 - Pollutants monitored at each station in the ECV community

Station Name	Site Location	Agency	Monitored Pollutants
Indio	46990 Jackson Street Indio, CA 92201	South Coast AQMD	Ozone, PM2.5, PM10
Mecca (Saul-Martinez Elementary School)	65705 Johnson Street Mecca, CA 92254	South Coast AQMD	H2S, PM10
Torres-Martinez Tribal	66-725 Martinez Road, Thermal, CA 92274	Torres-Martinez Cahuilla Indians	PM10
Salton Sea Near Shore	Lincoln Ave. & 73rd Ave., Mecca CA 92254	Imperial Irrigation District	H_2S*, PM2.5, PM10
Salton Sea Park	100-225 State Park Rd., North Shore CA 92254	Imperial Irrigation District	PM2.5, PM10
29 Palms	33.719724, -116.189578	Twenty-Nine Palms Band of Mission Indians	PM2.5, PM10

* *H_2S monitor is operated by the South Coast AQMD*

The monitoring strategy to address CSC concerns about dust emissions from the Salton Sea consists of supplementing the current fixed-site PM10 monitoring network, establishing a network of sensors for PM10 measurements, and baseline monitoring to look at the chemical composition of the PM10 in the ECV community.

As part of its efforts to better characterize PM10 emissions from the Salton Sea, South Coast AQMD staff will work with the CSC to identify opportunities to expand the PM10 monitoring network in ECV to provide additional air quality information in residential areas that do not currently have such measurement data. This, together with continuous wind speed and wind direction data, will help gain a better understanding of dust emissions and distinguish between windblown dust from desert areas and playa dust emissions from the Salton Sea. It can also help track the concentration trends of PM10 over the course of the AB 617 program to help assess the effectiveness of dust suppression projects. Data from this monitoring network will be provided in near real-time to inform community members of PM10 levels in ECV, and if they exceed Federal and/or State standards.

The above-mentioned monitoring network will be supplemented by a network of PM10 sensors to enhance the spatial coverage of PM10 measurements at more locations of interest. Data from these sensors will provide real-time information and improve our understanding of the variations in PM10 levels across the ECV community. This will help identify the source(s) of PM10 emissions and their origin (e.g., fugitive road dust and wind-blown desert dust) and assess for a long term monitoring strategy. Air quality sensors will be co-located with a reference PM10 monitor at one of South Coast AQMD's air monitoring stations to verify the sensors performance prior to deployment. A data calibration and correction protocol has been developed to systematically enhance the data quality of the PM10 sensors after deployment. The sensor deployment process will be carried out in close collaboration with South Coast AQMD's AQ-SPEC[13].

[13] Air Quality Sensor Performance Evaluation Center (AQ-SPEC): http://www.aqmd.gov/aq-spec

These measurements will be accompanied by baseline monitoring to better characterize the chemical composition of dust in the ECV community. Chemical composition data will be highly beneficial in characterizing the relative contributions of playa dust emissions and dust from other sources (e.g., fugitive road dust and wind-blown desert dust) to the ambient concentrations of PM10 measured in ECV. Baseline measurements will also help track the concentration trends of key indicator pollutants of Salton Sea emissions and address specific CSC concerns about the chemical composition and potential toxicity of playa dust emissions.

Lastly, South Coast AQMD staff will pursue a collaborative partnership with other organizations (e.g., University of California – Riverside) to support the ongoing study on soil chemical and microbiome composition of the Salton Sea playa dust samples.

7.2 Pesticides

Pesticides are unique among air toxic substances since they are produced specifically for their toxicity to a target pest and purposely introduced into the environment. Pesticides play a major role in agricultural production all around the world to help protecting crops from pests. Farming operations in the ECV commonly use pesticides on agricultural land. Pesticide rules mainly focus on regulating their sale, use and distribution, increasing and enforcing safety standards, assessing their toxicity, and protecting people by reducing the risk of harmful exposure.

The CSC expressed their concerns about the health impacts of pesticides used in agriculture, including exposure to farm workers, in residential areas (e.g., odor nuisance and pesticides exposure from wind drift or runoff), and in schools that are close to application sites. The CSC also emphasized their apprehension regarding the lack of information on the actual amount of pesticides being used in ECV, and the dates when pesticides are being applied. This information is critical for the public when planning to participate in outdoor activities.

Federal, State, and Local regulatory agencies are responsible for ensuring safe use of pesticides in California. At the Federal level, the U.S. Environmental Protection Agency (USEPA) approves the use of each pesticide. At the State level, the California Department of Pesticide Regulation (DPR) has legal authority to regulate and enforce rules that address the sale and use of pesticides in California. In addition, DPR monitors the levels of pesticides in the air, water and produce. The information regarding pesticides usage and the measured levels is reported periodically on DPR's public website[14].

South Coast AQMD will pursue a collaboration with California Air Resources Board (CARB) and consult with DPR and Riverside County Agricultural Commissioner (CAC) to develop a monitoring strategy to study the use of pesticides in ECV and work with scientists at public health agencies with expertise in pesticide toxicity to identify key pesticides of concern for air monitoring.

For the evaluation of existing pesticide data, South Coast AQMD staff will pursue opportunities for collaboration with CARB, and consult with DPR, Riverside CAC, and other agencies that currently have valuable information for identifying the potential impact of pesticides on this community. This analysis will be based on currently available datasets, such as annual pesticide usage, pesticide toxicity and volatility, season and method of application. This screening evaluation will identify the pesticides that are most impactful in this community and will provide valuable information for focusing subsequent air

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[14] https://www.cdpr.ca.gov/docs/pur/purmain.htm

monitoring efforts. South Coast AQMD will also reach out to the CSC, members of the public and local growers to gather feedback on the collected data and any other information that may help inform the pesticide monitoring efforts.

South Coast AQMD staff will present the results of the data evaluation to the CSC. Following this screening process, staff will work with the CSC to identify the key pesticides of concern and will consult with DPR and CARB to evaluate which sampling and analysis techniques to be used, as appropriate and if possible. Then a plan to identify sampling locations, the extent of sampling, and the equipment that will be used for monitoring levels of key pesticides of concern will be developed. Air monitoring will be conducted to determine if specific pesticides are present and at what levels. If elevated concentrations of pesticides are found in ambient air, South Coast AQMD staff will work with DPR, CARB, and the Riverside CAC to identify potential exposure reduction measures. The screening analysis and the outcome results from this monitoring plan will lay the foundation for future assessments of the impact of pesticides on the ECV community and the regulations' effectiveness.

7.3 Open Burning and Illegal Dumping

The ECV community has a large agricultural industry, including the production of grapes, dates, citrus, and other crops. With such a large agricultural industry in the area, the burning of agricultural waste is a common method of disposal. In some cases, burning may occur to prevent crops from freezing. The CSC also identified illegal dumping of various waste materials, which can subsequently catch fire, as an air quality priority. The open burning can cause smoke, impacting schools, childcare centers and homes.

The main strategy to characterize emissions from open burning in this community will center around the deployment of a network of air quality sensors to measure PM2.5 in potentially impacted areas. Due to the sporadic nature of open burning, fixed monitors are necessary to capture the spatial and temporal variability of emissions. Fixed monitoring will provide real-time air quality data to gain a better understanding of the locations, frequency, and magnitude of PM emissions from open burning, help identify the locations impacted by the smoke, and improve overall public information on PM2.5 levels in the community.

South Coast AQMD staff will work with the CSC to effectively deploy these sensors at appropriate locations. South Coast AQMD will also pursue opportunities to augment one of the existing and/or new monitoring stations with a black carbon monitor to better characterize emissions. BC is a by-product of biomass burning but can also be emitted from diesel mobile sources.

7.4 Fugitive Road Dust

The CSC identified emissions from fugitive road dust as an air quality priority in ECV. Fugitive road dust in this community is generated when vehicles travelling on paved and unpaved roads kick up loose solid materials deposited on the surface and make them airborne. The CSC has expressed concerns about dust emitted from unpaved roadways when there are windy conditions or when off-road vehicles drive on these roads. Community residents are also concerned about the potential health effects associated with exposure to high PM10 levels resulting from fugitive road dust emissions.

Currently, six air monitoring stations in the ECV community (Table 7.1) measure PM10 mass concentration. The Indio and Mecca air monitoring stations are operated by the South Coast AQMD, while the rest of the stations are operated by other agencies.

The monitoring strategy for fugitive road dust includes expanding the current South Coast AQMD's PM10 monitoring network in ECV, which will provide near real-time PM10 and wind data to inform community members about PM10 levels and if they exceed Federal and/or State standards. These measurements will help track the concentration trends of PM10 levels over time to help determine the effectiveness of emission reduction strategies.

South Coast AQMD will seek new opportunities and work with the CSC to create an air quality sensor network to augment the fixed monitoring network for PM10 measurements to cover a larger area in the community, prioritizing areas where the public spends a significant amount of time (e.g. schools and residential areas) and areas close to sources of fugitive dust. Data from these sensors will provide near real-time data and improve our understanding of the spatial and temporal variability in PM10 levels across ECV and assist in evaluating long term measurement strategies in the area. This information will help better distinguish where the PM10 emissions are coming from (e.g. dust emissions from the Salton Sea or wind-blown dust from surrounding deserts). Air quality sensors will also provide more opportunities for community engagement in different aspects of the air monitoring process. All sensors will be co-located at one of the air monitoring stations with reference PM10 monitors to check their performance prior to deployment. It should be noted that the sensors for PM10 measurements usually show a good performance at the lower concentration levels while their uncertainty increases significantly during regional dust events with high PM10 levels. A systematic data calibration and correction protocol has been developed and will be implemented to improve data quality for the entire sensor network. During dust events, which have regional impacts, the reference monitors can help determine the community impact.

7.5 Diesel Mobile Sources

The CSC has expressed concerns about exposure to diesel emissions from several mobile sources and locations in the ECV community including heavy-duty trucks traveling along the State highways 111 and 86, school buses, and heavy-duty agricultural equipment (e.g., tractors and harvesting equipment). Diesel truck emissions are complex and are comprised of a variety of toxic gases and particles. Pollutants associated with diesel exhaust include PM2.5, and nitrogen dioxide (NO_2). Diesel exhaust also contains the toxic air contaminant diesel particulate matter (DPM), which is a component PM2.5. DPM cannot be monitored directly but is estimated by measuring black carbon (BC or "soot").

Two existing air monitoring stations (Indio station operated by the South Coast AQMD and 29 Palms monitoring station operated by Twenty-Nine Palms Band of Mission Indians) measure PM2.5 within the community (Figure 7.1 and Table 7.1). The proposed monitoring strategy to address this priority consists of creating a sensor network that can measure PM2.5 and NO_2. South Coast AQMD staff will work with the CSC to effectively deploy these sensors at appropriate locations. This additional data will help quantify emissions from truck traffic to better understand the impact of diesel emissions in the community and to help track the effectiveness of emission reduction strategies outlined in the CERP. South Coast AQMD will also pursue opportunities to augment one of the existing or new monitoring stations with a stationary BC monitor. If necessary, short-term BC monitoring will be conducted at locations where sensor data indicate relatively high diesel emissions.

7.6 Greenleaf Desert View Power Plant

The CSC expressed their concerns regarding the Greenleaf Power Desert View Power Plant (formerly Colmac Energy, Inc.), because of visible emissions and smoke from the facility. This facility is a biomass electrical generation facility that has been operating since 1992 and is located on the Cabazon Band of

Mission Indians Reservation at 62300 Gene Welmas Dr, Mecca, CA 92254. This plant is subject to U.S. EPA regulations and uses emission control devices and measures to reduce nitrogen oxides (NOx), sulfur oxides (SOx), and PM emissions.

To address the CSC concerns, South Coast AQMD staff will evaluate currently available combustion-related emissions data to help assess how emissions from the Greenleaf power plant contribute to the overall pollution burden in ECV. Based on these findings and if additional monitoring is necessary, South Coast AQMD staff will implement an appropriate monitoring strategy that focuses on measuring relevant pollutants near the facility and close to sensitive receptors (e.g., schools).

This power plant is operating all year round and, therefore, a monitoring strategy based on fixed monitoring will be adopted. Fixed monitoring allows for a more comprehensive characterization of air pollution trends over an extended period of time, although it only provides air quality information when the monitoring locations are downwind of the source. Currently, South Coast AQMD operates one fixed monitoring site (Mecca air monitoring station) near the Greenleaf power plant; this site is located within the perimeter of Saul Martinez Elementary School and approximately one mile southeast to the power plant (Figure 7.2). An analysis of the wind direction gathered during the last three years shows that the air monitoring station in Mecca was downwind of the power plant more than 50% of the time (Figure 7.2) and, hence, this is a suitable site for exploring the impact of Greenleaf emissions on the surrounding community.

Since the general monitoring approach for ECV relies on creating an air quality sensor network, South Coast AQMD will work with the CSC to identify strategic locations for deploying these sensors to capture potential PM2.5 emissions from this facility, if appropriate, under variety of wind conditions.

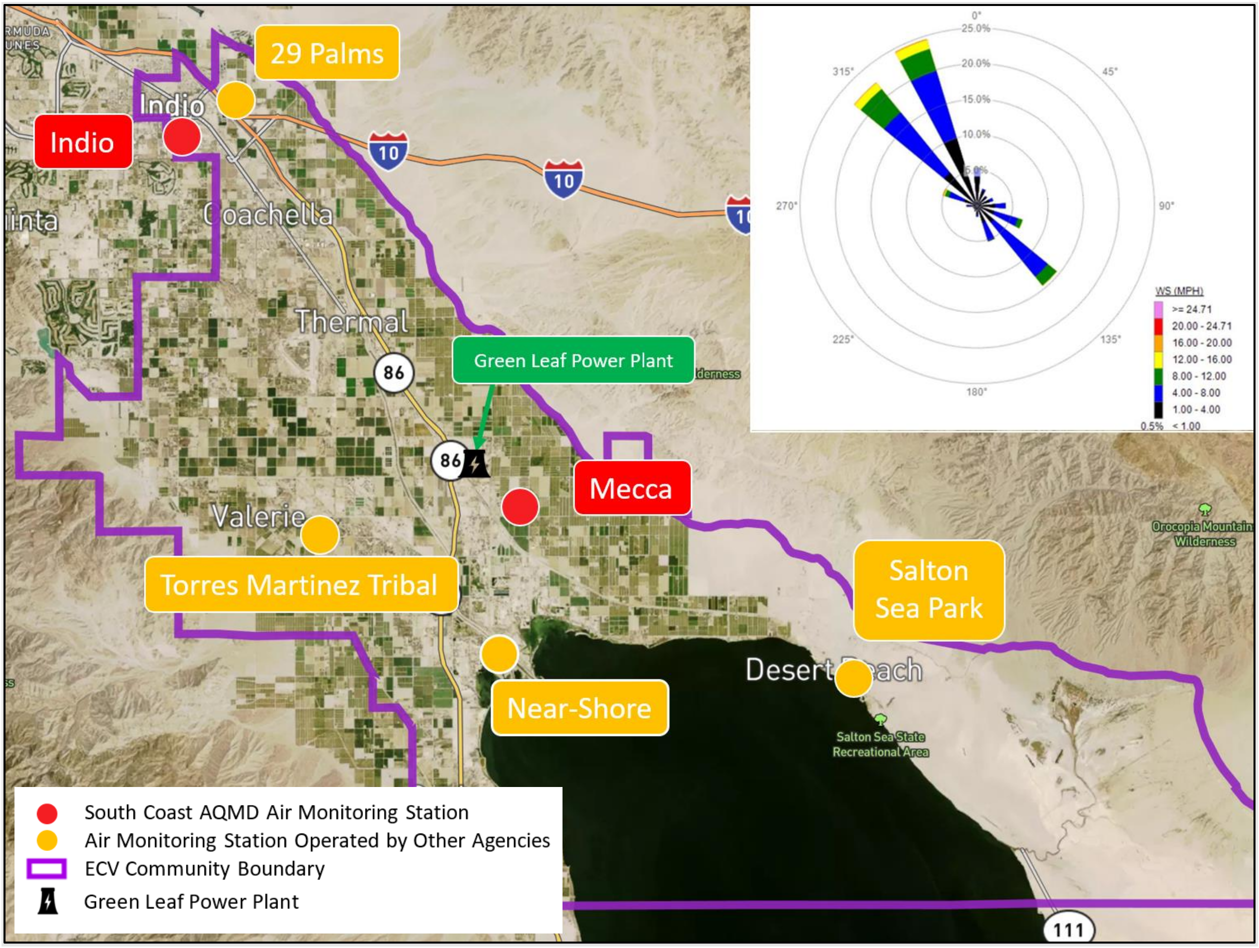

Figure 7.2 - Monitoring stations in ECV and the location of Greenleaf power plant. The wind rose shows the hourly averaged wind direction and speed at Mecca monitoring station

8 Data Reporting

As discussed in the General Community Air Monitoring Approach section above, air quality data is collected in two main modes: stationary (i.e., at a fixed-site location) and mobile (i.e., with a moving vehicle). This data is shared with the community in different ways depending on the monitoring on how it is collected, the data type, and the reporting purpose.

8.1 Fixed Monitoring

Data collected in stationary mode is categorized into continuous (near real-time) and time-integrated. Continuous, near real-time data refer to long-term measurements made at South Coast AQMD stationary monitoring sites with hourly or sub-hourly time resolution. This preliminary data is averaged every hour and becomes publicly available shortly after the measurements on the AB 617 air monitoring data display tool[15]. The online data display tool shows a map of each AB 617 community with markers for each South Coast AQMD stationary monitoring site within each community boundary (Figure 8.1). Selecting one of

[15] http://xappprod.aqmd.gov/AB617CommunityAirMonitoring/Home/Index

these station markers displays additional information about the station (site name, description, current wind speed and direction) and provides a link to the raw data. The data sidebar shows a list of pollutants measured at that site (e.g., ozone, carbon monoxide, oxides of nitrogen, particulate matter, others) and their concentrations for the previous hour as well as the previous 24-hour averages. In addition to the current concentration of pollutants, time series of pollutants are available in the sidebar and through the historical search function, where a user may display the time series of the pollutant of interest over a custom time frame. This data is also available for download on the site in spreadsheet format.

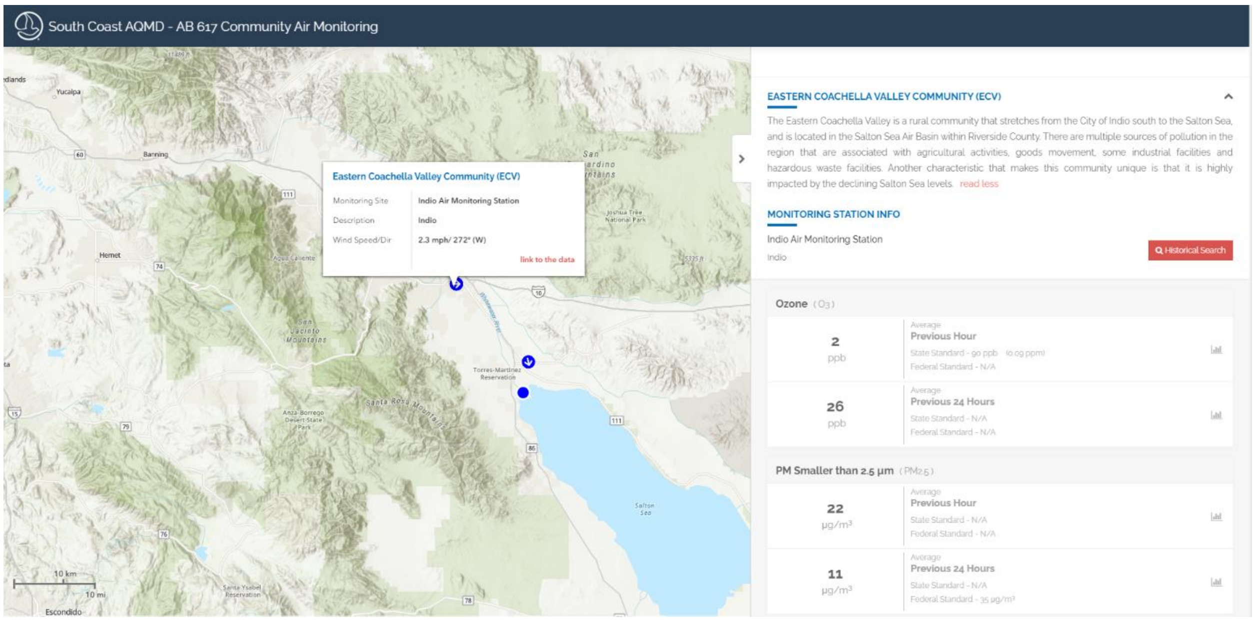

Figure 8.1 - Portal for air monitoring data display tool. Map of communities with fixed air monitoring sites is shown on the left with a list of measured pollutants and their current concentrations on the right

In comparison to near real-time data, time-integrated data collected at fixed monitoring sites is made available periodically after laboratory analysis. Some examples of time-integrated data include gas canister samples for VOC analysis and filter samples for PM mass and composition (e.g. organic carbon, metals, etc.). The longer analysis, validation and processing time for this data precludes it from being shown in continuously and in real-time manner; instead it will be shown in an interactive data dashboard (under development) that will be updated on a regular basis when laboratory data has been processed. Similar to the continuous data display tool, the time-integrated data dashboard will include a map of stationary monitoring sites where time-integrated samples are collected, options for selecting the available pollutants, and different data visualization options (e.g., time series, box plots, other). The interactive nature of the data dashboard makes it possible to share a large amount of data in an efficient and easy to understand manner and allows the users to explore the data on their own. Furthermore, this allows the South Coast AQMD to share data with the community before writing a comprehensive summary report, which typically takes longer. South Coast AQMD staff if working on solutions to display data from air quality sensors and other fixed monitoring instruments in the same data platform.

8.2 Mobile Monitoring

Similar to the stationary time-integrated data, mobile monitoring results will be available using an interactive dashboard (currently under development) when a representative number of measurements have been taken within the community and the data have been carefully validated, analyzed and processed. This interactive dashboard will provide a map of air quality data collected during multiple days of mobile monitoring that enables the users to identify hot spots and visualize air quality levels near potential areas of concern.

In addition to the above ways which data is shared, regular written updates will be provided to the community in the form of air monitoring progress updates and progress reports. These documents will be posted on the South Coast AQMD webpage dedicated to the AB 617 Community Air Monitoring program[16]. Progress updates consist of a one-page summary that provide a quick overview of the CAMP implementation for each air quality priority identified by the CSC. Moreover, each air quality priority in the update contains a link to an in-depth progress report. These progress reports, which are specific to each air quality priority, include sections describing the background and objectives of monitoring, the monitoring methods used, preliminary results, and next steps. In addition, each progress report includes one or more attachments with an in-depth description of all monitoring and data analysis methods.

As described above, separate tools and platforms are used to disseminate the air monitoring results to the community. New ways of sharing data and reports are being explored with the goal of integrating all of these tools into a single platform and to consolidate all air monitoring results for easier public access and use.

[16] http://www.aqmd.gov/nav/about/initiatives/community-efforts/environmental-justice/ab617-134/ab-617-community-air-monitoring

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- Twenty-Nine Palms Tribal EPA, Air Quality: https://www.29palmstribe.org/epa-air-quality
3- SCAQMD, AB 617 Monitoring Website: http://xappprod.aqmd.gov/AB617CommunityAirMonitoring/Home/Index
4- CARB Air Quality Data Query Tool: https://www.arb.ca.gov/aqmis2/aqdselect.php?tab=daily
5- Twenty-Nine Palms Tribal EPA, Air Quality: https://www.29palmstribe.org/epa-air-quality
6- AirNow: www.airnow.gov
7- The Salton Sea Hydrogen Sulfide Monitoring: saltonseaodor.org
8- Multiple Air Toxics Exposure Study (MATES): http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies
9- Air Quality Sensor Performance Evaluation Center (AQ-SPEC): http://www.aqmd.gov/aq-spec
10- Aeroqual: https://www.aeroqual.com/product/aqy-micro-air-quality-station
11- The Salton Sea Hydrogen Sulfide Monitoring: https://saltonseaodor.org/
12- Twenty-Nine Palms Tribal EPA, Air Quality: https://www.29palmstribe.org/epa-air-quality
13- Air Quality Sensor Performance Evaluation Center (AQ-SPEC): http://www.aqmd.gov/aq-spec
14- DPR, Pesticide Use Reporting: https://www.cdpr.ca.gov/docs/pur/purmain.htm
15- SCAQMD, AB 617 Community Air Monitoring Data Display Tool: http://xappprod.aqmd.gov/AB617CommunityAirMonitoring/Home/Index
16- SCAQMD AB 617 Community Air Monitoring Webpage: http://www.aqmd.gov/nav/about/initiatives/community-efforts/environmental-justice/ab617-134/ab-617-community-air-monitoring

List of Acronyms

AB 617	Assembly Bill 617
AQI	Air Quality Index
AQ-SPEC	Air Quality Sensor Performance Evaluation Center
Basin	South Coast Air Basin
BC	Black Carbon
BM	Baseline Monitoring
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
C_2H_4	Ethylene
C_3H_6	Propene
C_4H_8	Butene
CAC	County Agricultural Commissioner
CAMP	Community Air Monitoring Plan
CARB	California Air Resources Board
Cd	Cadmium
CEE	Community Engagement and Educational
CERP	Community Emission Reduction Plan
CH_4	Methane
CHBI	Compliance and Health-Based Information
Cl^-	Chloride
CM	Concentration Mapping
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CSC	Community Steering Committee
DPM	Diesel Particulate Matter
DPR	Department of Pesticide Regulation
ECV	Eastern Coachella Valley
EE	Emissions Estimation
EJ	Environmental Justice
EPA	Environmental Protection Agency
GPS	Global Positioning System
H_2S	Hydrogen Sulfide
HCHO	Formaldehyde
LIDAR	Light Detection and Ranging
LOD	Limit of Detection
MATES	Multiple Air Toxics Exposure Study
MeFTIR	Mobile Extractive Fourier Transform InfraRed
MWDOAS	Mobile White Cell Differential Optical Absorption Spectroscopy
N_2O	Nitrous Oxide
NH_3	Ammonia
Ni	Nickel

NO_2	Nitrogen Dioxide
NO_3^-	Nitrate
NOx	Nitrogen Oxides
O_3	Ozone
ORS	Remote Optical Sensing
PAX	Photoacoustic Extinctiometer
PM	Particulate Matter
PM10	Coarse PM
PM2.5	Fine PM
PTR-ToF-MS	Proton Transfer Reaction – Time-of-Flight – Mass Spectrometer
QAPP	Quality Assurance Project Plan
RH	Relative Humidity
SC	Source Characterization
Se	Selenium
SI	Source Identification
SkyDOAS	Sky Differential Optical Absorption Spectroscopy
SO_2	Sulfur Dioxide
SO_4^{2-}	Sulfate
SOF	Solar Occultation Flux
South Coast AQMD	South Coast Air Quality Management District
SOx	Sulfur Oxides
TSP	Total Suspended Particles
VOCs	Volatile Organic Compounds
XRF	X-Ray Fluorescence