COMMUNITY AIR MONITORING PLAN

Shafter AB 617 Community

San Joaquin Valley Air Pollution Control District

March 28, 2022

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I. AB 617 AND COMMUNITY AIR MONITORING

Assembly Bill (AB) 617, signed into law in July 2017, has resulted in a statewide effort to reduce air pollution and improve public health in communities that experience disproportionate burdens from exposure to air pollutants statewide through new community-focused and community-driven actions. AB 617 provides mechanisms and resources to implement community-specific air quality monitoring networks, develop and implement emission reduction programs; improve availability of data and other technical information; and invest substantial funding in the community through voluntary incentive funding measures. Importantly, the development of the community monitoring plan and the implementation of emission reduction measures are guided by advice and knowledge of local community members, through their input and involvement on Steering Committees for each AB 617-selected community.

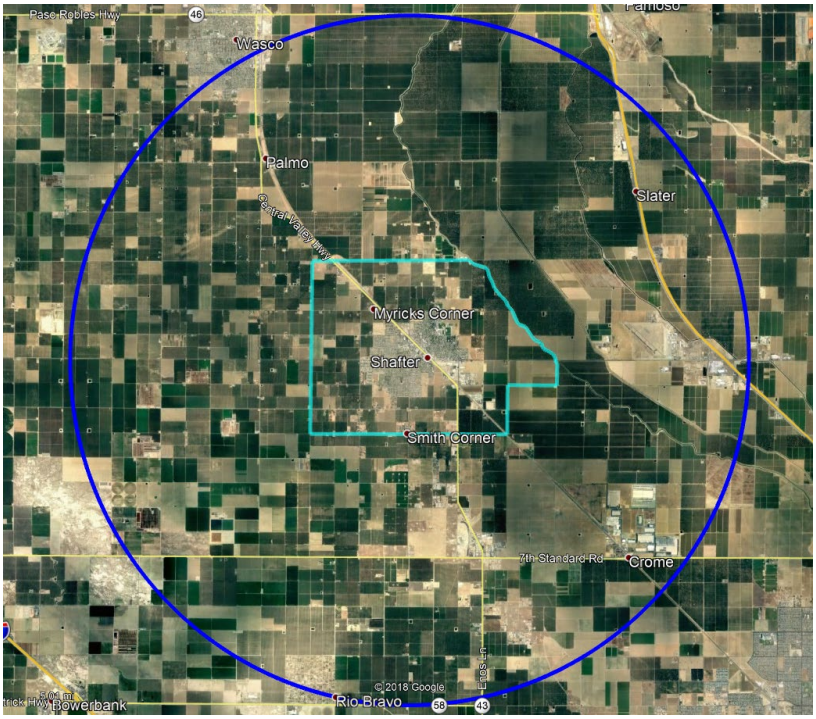
Throughout the course of AB 617, the Shafter Community Steering Committee has worked with the San Joaquin Valley Air Pollution Control District (District) to provide input into this AB 617 community air monitoring plan (CAMP), outlining how the District will implement monitoring within the community.

II. COMMUNITY IDENTIFICATION

The District worked closely with the California Air Resources Board (CARB), residents, advocates, and stakeholders within the San Joaquin Valley (Valley) to identify and select communities for the first year of AB 617 implementation. The District's initial community identification and prioritization analysis for the first year of AB 617 implementation was based on extensive air quality analysis, numerous health indicators from the state's CalEnviroScreen model, and various other socioeconomic indicators. Shafter, a rural populated community in northern Kern County, was selected as a first year community by the California Air Resources Board in September of 2018.

Shafter, as defined by the boundary in Figure 1, has a current estimated population of over 19,000, and is influenced by rural sources of emissions, including the agricultural and oil and gas production industries. In addition, major roadways in the community include Highway 43 and the Lerdo Highway, both crossing directly through Shafter and contributing to mobile source emissions in the area. Locomotive emissions also influence the community as railroad tracks run parallel to Highway 43. Local area-wide sources such as gas stations, commercial cooking, and consumer products also contribute to the community's cumulative emissions exposure. The Shafter Steering Committee collectively recommended that the District look beyond the geographic boundary at sources out to a 7 mile radius from the center of the City of Shafter for potential impacts to community, as depicted in Figure 1.

Figure 1 Shafter Community Boundary (Light Blue) and 7 Mile Radius (Dark Blue Circle)



Geographically this community is bounded by Merced Avenue to the north, the Calloway canal and Cherry Ave. to the east, Orange Street to the south, and Scaroni Avenue to the west. This area does not encompass the entire boundaries of the City of Shafter but the core, along with the small community of Smith Corner to the south, as well as the nearby rural areas surrounding the area. The City of Shafter includes a number of businesses, schools, and residential areas.

The Shafter community is impacted across a number of health indicators, as summarized in the CalEnviroScreen tool. The Shafter community includes high average percentiles among its census tracts within many indicators, with many averages exceeding the 70th percentile for the state. Specifically, the average Overall CES Score for this community exceeds the 86th percentile for the state, while the average Cardiovascular Disease score exceeds the 85th percentile for the state. The Shafter community also includes census tracts that rank very high among all tracts across the state, specifically some that rank above the 90th percentile. Notably, this community includes tracts that rank above the 90th percentile for Poverty and Unemployment, with Unemployment ranking above the 98th percentile. This community includes census tracts with health indicators that exceed the 80th percentile in a number of the listed categories, indicating that this community includes areas impacted by environmental challenges.

III. SHAFTER COMMUNITY STEERING COMMITTEE

On October 30, 2018, the District held a kick-off meeting for the Shafter community to discuss the opportunity for public participation, community engagement, and steering committee formation. Following the kickoff meeting, the District formed the initial Shafter Steering Committee (Steering Committee) by soliciting involvement from residents, businesses, environmental justice advocates and policy makers from the community interested in helping the District understand the specific needs of the community and develop effective clean air strategies to address their concerns.

The Community Steering Committee is comprised of a number of members representing residents, environmental justice advocates, businesses within the community, and local government officials.

Regular monthly community steering committee meetings were held with the members, which included many discussions that assisted in the development of the Shafter CAMP. These meetings focused on a variety of topics, including:

- Goals of AB 617 and opportunities available to residents and businesses through various incentives programs
- The Steering Committee Charter, a document outlining the roles, responsibilities, and expectations of the Steering Committee and its membership.
- Community boundary and the permitted sources within this boundary
- Air monitoring resources and potential locations
- DPR-led discussion on pesticide regulation, monitoring, and notifications
- Finalized initial community air monitoring locations, reviewed inventory development updates, and began discussing the Community Emissions Reduction Program outline
- Continued statewide and District-wide efforts to control various sources of pollution
- World café style meet and greet to deep dive into sources of concern and understand draft strategy concepts
- Committee exercises to further develop Community Emission Reduction Program strategy concepts

In effort to keep the community monitoring planning efforts transparent, the District has developed a website informing committee members and the public of community monitoring initiatives. This website also has information about all local AB617 initiatives, agendas and documents for upcoming Steering Committee meetings, community monitoring and emission reduction plans, and a portal to real-time air quality data collected by the District's community air monitoring program. The webpage, which will be continuously updated as more information becomes available, can be accessed at http://community.valleyair.org/

Any questions about the following community-specific air monitoring plan can be addressed to:

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San Joaquin Valley Air Pollution Control District
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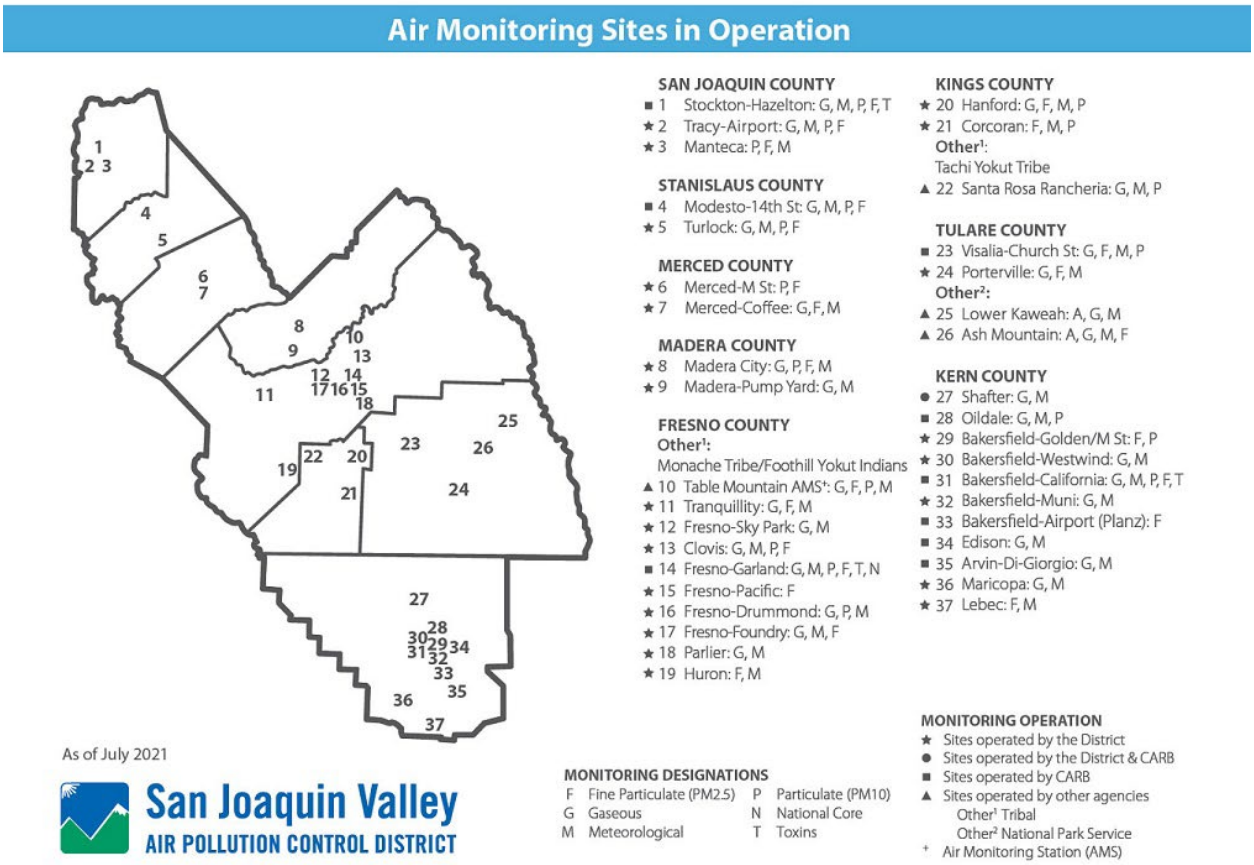
IV. PURPOSE OF AIR MONITORING IN SHAFTER

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 both support the implementation of the community emissions reduction strategies in the CERP designed to improve local air quality and can be used to develop additional strategies based on air quality data.

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 consist of a combination of real-time and laboratory measurements to provide information on the air pollution impact caused by specific emission sources identified in the community, 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 activities, and other emission and/or exposure reduction efforts. Specific objectives of community air monitoring are described in more detail below.

The District operates and maintains an expansive network of air monitoring sites throughout the eight counties of the San Joaquin Valley (Valley) intended to measure ambient air quality across the region. A total of 24 sites are currently operated directly by the District or in collaboration with the California Air Resources Board (CARB). In addition, ARB also independently operates a number of air monitoring stations in the Valley, along with additional sites operated by the National Park Service and tribal nations. In total, 37 air monitoring sites are currently in operation in the San Joaquin Valley. This current network (Figure 2) Valley measures concentrations of criteria pollutants for which the U.S. EPA has established a health-based air quality standard. In addition, the network measures a number of meteorological parameters across the Valley. Pollutants monitored include ozone, PM10 and PM2.5, nitrogen oxides, sulfur oxides, hydrocarbons, and carbon monoxide.

Figure 2 Ambient Air Monitoring Sites in the San Joaquin Valley



In addition to the regulatory air monitoring, the District has added several monitoring sites and will be deploying an additional monitors in the near future as a part of the community air monitoring plans in other AB 617 communities within the Valley. Air monitoring under AB 617 has helped to augment the District's current air monitoring program by placing a high concentration of air monitors within these community boundaries. These local monitors provide the community with a better understanding of the air quality impacts from local emissions and may assist with refocusing the strategies within the CERP, and measuring the effects of emissions reduction efforts as a result of the CERP measures. While the regulatory nature of the current air monitoring data collected in the Valley is separate from the AB 617 mandate, the District's goal of providing the public with the most accurate, precise data remains the same.

Community-Specific Monitoring Needs

Shafter is a rural community in northwest Kern County. This community also includes a variety of agricultural operations, oil and gas production, dairies, locomotives, and heavy-duty truck traffic from Highway 43 and the Lerdo Highway. In order to understand what pollutants to monitor, the District analyzed these specific sources

within the Shafter community and asked the Community Steering Committee to weigh-in on their top sources of concern.

Throughout the AB 617 process, Community Steering Committee members and public participants have participated in a variety of facilitated exercises to identify and rank their top source categories of concern. Meeting materials and exercise worksheets were also been sent to committee members and posted on the District's community page http://community.valleyair.org/ to allow additional opportunity to participate in identifying sources of concern. Some top source categories of concern in Shafter include:

Based on emissions inventory, current air monitoring data, and the top sources of concern in this community, pollutants of concern include particulate matter less than 10 micrometers in diameter (PM10),PM2.5, Black Carbon (BC), Oxides of Nitrogen (NO, NO2, NOx), Sulfur Dioxide (SO2), Hydrogen Sulfide (H2S), Carbon Monoxide (CO), Ozone, and Volatile Organic Compounds (VOCs). In addition, a variety of toxic compounds, including various pesticides, BTEX (Benzene, Ethylene, Toluene, and Xylene), toxic organics, and toxic particulate matter were also identified as pollutants of concern.

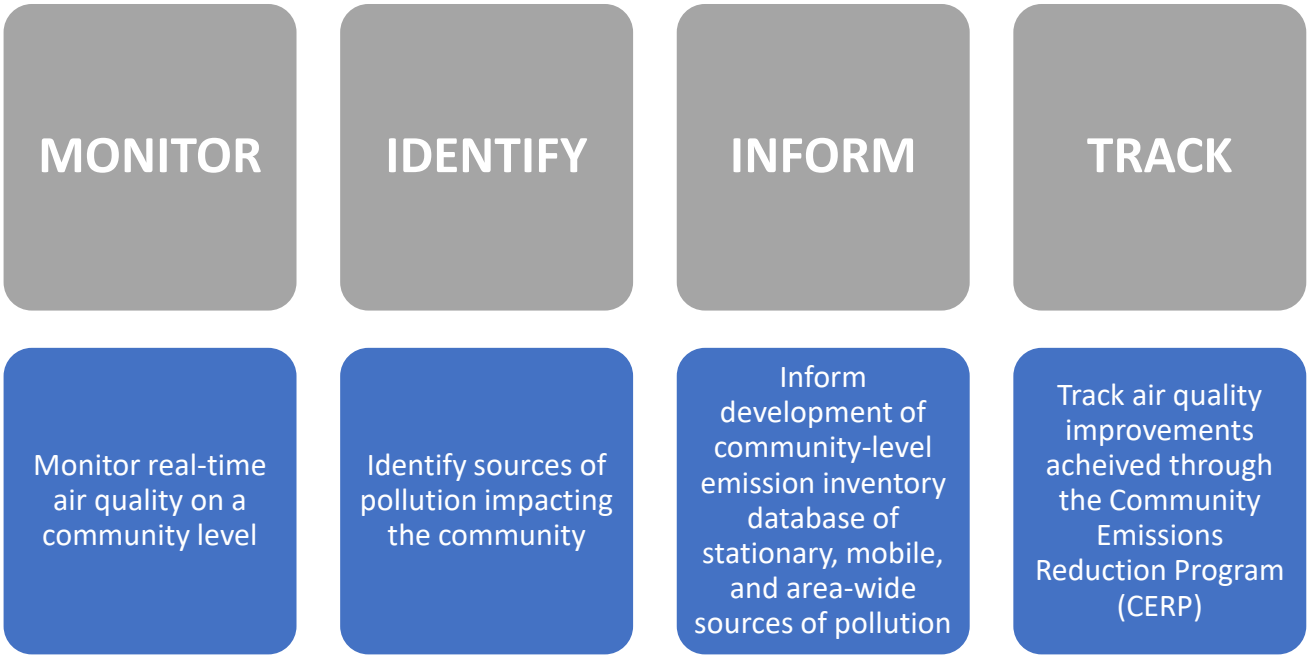
Given the size of the community, the number of pollutants of concern, and the variety of local emissions sources, the community monitoring program will operate air monitoring equipment that is scalable, portable, and provides real-time data to enable the District to constantly adapt to community concerns and quickly respond to impacts. The

community air monitoring network design for Shafter includes the use of several fixed, mobile and semi-mobile monitoring platforms, all of which are equipped to detect the community-specific pollutants of concern.

Additionally, as part of the District's current regulatory network, there is one existing air monitor station in the community boundary, where data from ozone, NO/NO2/NOx, and meteorological analyzers will be incorporated into the data collected for the community monitoring program. This existing site is located at the Department of Motor Vehicles office in downtown Shafter and has been operating since 1989. Located in central Shafter, this position is ideal for capturing ambient air quality conditions for the majority of the community population. This site is jointly operated by the District and CARB and has provided an extensive air quality dataset for the area, which has been key for assessing air quality trends in the community and this region of Kern County.

V. COMMUNITY AIR MONITORING OBJECTIVES

The goal of the community air monitoring program is to use input from the community steering committee to design an air monitoring network that allows the community and the District to achieve the following objectives:



Community air monitoring in Shafter is designed to enhance the 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 to assist the community in making decisions about daily activities and school programs, and protect children during school activities;
- 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 to improve air quality. At air 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, or help support proposed funding changes in the CERP to increase its efficacy; and
- Provide information on when an air 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 District and community-led programs. Overall, this CAMP has been developed to generate data to satisfy the recommendations provided in CARB's AB 617 "Community Air Protection Blueprint" 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 programs, and protect children during school activities; and
- Providing high quality air quality information and data that can be used to support public health research at the community level.

Community Air Monitoring Design and Scope

In order to meet the defined objectives, the community air monitoring network in Shafter must be designed to measure the local impacts of a number of pollutants of concern. During the CAMP development process, the Steering Committee collectively recommended that the District look beyond the geographic boundary at sources out to a

7 mile radius from the center of the City of Shafter for potential impacts to community. With that in mind, the District has worked with the community to develop a community monitoring network that is scalable, portable, and provides real-time data to ensure that the District can constantly adapt to community concerns, capture sources that may be impacting the community within the geographic boundary, and rapidly react to unanticipated pollution impacts.

In Shafter, the community monitoring network will consist of three (3) fixed stand-alone PM2.5 monitors, one (1) semi-mobile compact multi-pollutant air monitoring system, one (1) semi-mobile air monitoring trailer, and the use of an air monitoring van to respond to community and concerns and implement specific air monitoring studies. In addition, the California Department of Pesticide Regulation (DPR) will conduct pesticide monitoring in the area. The following is a description of the pollutants to be monitored within each platform:

Air Monitoring Trailer	PM2.5, Ozone, BC, Pesticides, CO, NO/NO2/NOx, VOC, SO2, H2S, Toxics, Speciated VOCs, Meteorology
Compact Multi-pollutant air monitoring system	PM10, PM2.5, Ozone, BC, CO, NO/NO2/NOx, VOC, Meteorology
Stand-Alone PM2.5 Monitors	PM2.5
Mobile Air Monitoring Van	PM2.5, Ozone, BC, CO, NO/NO2/NOx, VOCs, SO2, Toxics, Meteorology
Potential Stand-Alone Pesticide Monitoring (DPR)	31 different compounds, including 1-3 Dichloropropene, Chlorpyrifos

PM10: PM10 is particulate matter with a diameter less than or equal to 10 microns. In Shafter, PM10 is typically directly emitted area-wide sources that h roads and harvesting operations. The size of PM is directly related to potential adverse health effects, where the smaller particles have been shown to penetrate deeper into the lungs and cause a variety of cardiovascular events.

PM2.5: Fine particulate patter (PM2.5) is directly emitted from several sources, such as mobile on-road and off-road sources, area-wide sources like residential wood burning or commercial cooking operations, and certain industrial operations. This type of directly-emitted PM2.5 is also called primary PM2.5. Secondary PM2.5 is formed in the atmosphere through reaction of gaseous precursors like NOx and ammonia, both of which can come from mobile and industrial sources in the community. PM2.5

concentrations are typically reported in micrograms per cubic meter (µg/m^3). The potential health impacts of particle pollution are linked to the size of the particles, with the smaller particles having larger impacts. Numerous studies link PM2.5 to a variety of health problems, including aggravated asthma, increased respiratory symptoms (irritation of the airways, coughing, difficulty breathing), decreased lung function in children, development of chronic bronchitis, irregular heartbeat, non-fatal heart attacks, increased respiratory and cardiovascular hospitalizations, lung cancer, and premature death. Children, older adults, and individuals with heart or lung diseases are the most likely to be affected by PM2.5.

Ozone: Ozone is formed in the atmosphere from VOC and NOx precursors in the presence of sunlight. Ozone is typically a regional pollutant, but the VOC and NOx precursors are emitted locally, which may influence local peak ozone concentrations. Modeling shows that the Valley is a NOx-limited regime, meaning that ozone formation is tied to changes in NOx concentrations, not VOCs. Ozone can cause the muscles in the airways to constrict, trapping air in the alveoli. This leads to wheezing and shortness of breath. Long-term exposure to ozone is linked to aggravation of asthma, and is likely to be one of many causes of asthma development. Long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children.

Black Carbon (BC): BC is a product of incomplete combustion of fuel from sources like diesel engines, cooking, wood burning and forest fires, and is emitted directly into the atmosphere generally as PM2.5. BC is a major component of soot from diesel truck, and is a good indicator of diesel PM from heavy duty trucks and locomotives. Health effects associated with BC are consistent with those associated with PM2.5, including respiratory and cardiovascular effects and premature death.

Carbon Monoxide (CO): CO is an odorless gaseous pollutant that is produced as a byproduct of incomplete combustion. CO is primarily emitted from mobile sources, but industrial and residential wood or fuel combustion contributes to the inventory. Breathing high concentrations of CO can cause headache, dizziness, vomiting, and nausea. Exposure to moderate and high levels of CO over long periods of time has also been linked with increased risk of heart disease.

Volatile Organic Compounds (VOCs): VOCs are a variety of organic compounds that are gaseous at standard temperature and pressure. This category includes non-methane hydrocarbons (NMHC) as well as alcohols, aldehydes and organic acids. VOCs are typically emitted from refineries and related activities, but can also originate from other industrial activities and mobile sources. The ability of organic chemicals to cause health effects varies greatly from those that are highly toxic to those with no known health effect. As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Health effects may include eye, nose and throat irritation; headaches, loss of coordination and nausea; damage to liver, kidney and central nervous system; and some are suspected or known to cause cancer in humans.

Nitrogen Oxides (NOx): NOx is emitted from mobile on-road and off-road vehicles and local stationary industrial operations. NOx is a general term for Nitrogen Oxide (NO) and Nitrogen Dioxide (NO2), highly reactive gases that contribute to the formation of secondary PM2.5 and ozone pollution. NO2 is routinely measured in the District's ambient air monitoring network. NO2 measurements also typically include measurement of NO, the other major NOx constituent. Breathing air with a high concentration of NOx can irritate airways in the human respiratory system. Such exposures over short periods can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Longer exposures to elevated concentrations of NOx may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NOx.

Sulfur Dioxide (SO2): The largest source of SO2 in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities. Smaller sources of SO2 emissions include: industrial processes such as extracting metal from ore; natural sources such as volcanoes; and locomotives, ships and other vehicles and heavy equipment that burn fuel with a high sulfur content. Short-term exposures to SO2 can harm the human respiratory system and make breathing difficult. People with asthma, particularly children, are sensitive to these effects of SO2.

Benzene: Benzene is a chemical that is a colorless or light yellow liquid at room temperature. Outdoor air contains low levels of benzene from tobacco smoke, gas stations, motor vehicle exhaust, and industrial emissions. Long-term benzene exposure causes harmful effects on the bone marrow and can cause a decrease in red blood cells, leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection. The Department of Health and Human Services has determined that benzene causes cancer in humans, and long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs.

Toluene: Toluene is added to gasoline, used to produce benzene, and used as a solvent. Exposure to toluene may occur from breathing ambient or indoor air affected by such sources. Automobile emissions are the principal source of toluene to the ambient air. Toluene may also be released to the ambient air during the production, use, and disposal of industrial and consumer products that contain toluene. Chronic inhalation exposure of humans to toluene also causes irritation of the upper respiratory tract and eyes, sore throat, dizziness, and headache.

Ethylbenzene: Ethylbenzene is mainly used in the manufacture of styrene and is also used as a solvent, as a constituent of asphalt and naphtha, and in fuels. Exposure to ethylbenzene occurs from the use of consumer products, gasoline, pesticides, solvents, carpet glues, varnishes, paints, and tobacco smoke. Short-term exposure health impacts include throat irritation and chest constriction, irritation of the eyes, and

neurological effects such as dizziness. Long-term exposure to ethylbenzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Limited information is available on the carcinogenic effects of ethylbenzene in humans.

Xylene: Xylenes are released into the atmosphere from auto exhaust, as fugitive emissions from industrial sources, and through volatilization from their use as solvents. Short term exposure results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Long-term exposure results primarily in central nervous system effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported.

Hydrogen Sulfide (H2S): Hydrogen sulfide can be emitted in the community from industrial operations such as chemical manufacturing and waste disposal. The odor of H2S is extremely strong and foul, and it can induce tearing of the eyes and symptoms related to overstimulation of the sense of smell, including headache, nausea, or vomiting.

Toxic Air Contaminants (Toxics): Toxics are pollutants which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. These can be metals, VOCs or particulate matter in nature. Air toxics in the community are emitted from stationary sources of pollution under the direct control and regulation of the District, from mobile sources such as cars and trucks driving through the community, and from area wide sources like road dust, residential wood burning, and consumer products. The health effects from toxic air contaminants vary greatly, depending on several factors including pollutant type, level of exposure, and length of time exposed.

Many of the pollutants mentioned above have federal National Ambient Air Quality Standards (NAAQS), which are health based exposure standards set by EPA (Table 1).

Table 1 National Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	Standard
PM2.5	24-hour, Annual	35 µg/m^3, 12 µg/m^3
Ozone	8-hour	70 ppb
CO	1-hour, 8-hour	35 ppm, 9 ppm
NO2	1-hour, Annual	100 ppb, 53 ppb
SO2	1-hour	75 ppb
H2S*	1-hour	30 ppb

*California State Standard

Further details about duration, sampling times, and types of monitoring methods are detailed in Section VIII: Monitoring Methods and Equipment.

VI. ROLES AND RESPONSIBILITIES

The District will be responsible for procuring, installing, deploying, and maintaining the air pollution monitors that have been identified in this monitoring plan, with the exception of the stand-alone pesticide monitors. The District will also continue its existing contracts with analytical laboratories, who will be responsible for conducting the VOC and PM2.5 speciation analysis of samples taken within the community air monitoring network.

Based on continued feedback and recommendations from the CSC, there may be other future monitoring needs that fall outside the District's current capabilities, requiring the District to work with other agencies or private entities to conduct monitoring or laboratory analysis.

VII. DATA QUALITY OBJECTIVES AND QUALITY CONTROL PROCEDURES

As the District moves forward with implementing the CAMP, the District will continue to define performance and acceptance criteria; develop precision, bias, accuracy, sensitivity, and data completeness needs; detail processes to follow when control limits are exceeded; and define procedures and materials to conduct community monitoring.

District staff will perform standard calibrations, flow rate checks, preventative maintenance, and needed repairs to ensure data availability and quality for all platforms and instrumentation being operated in the community air monitoring network. All instrumentation will be operated, maintained, and calibrated per manufacturer specifications and based on the District's Quality Assurance/Quality Control procedures.

VIII. MONITORING METHODS AND EQUIPMENT

The community air monitoring network design for Shafter includes the use of several fixed, mobile, and semi-mobile monitoring platforms, all of which are equipped to detect the community-specific pollutants of concern. As the District works with the Steering Committee throughout the campaign, the community monitoring network design will be reevaluated on a regular basis to determine whether changes are needed to capture other local sources of concerns with the community boundary. The District plans to move its air monitoring equipment within the community boundary as necessary to take measurements in other areas of concern. The District plans to consult with the Shafter CSC on any potential changes.

Fixed Air Monitoring

The District will operate four (4) fixed air monitoring analyzers to measure ambient PM2.5. These will be placed in their respective locations for sufficient lengths of time to

capture long-term PM2.5 pollution trends throughout the community, unless monitoring priorities change and monitor relocation is necessary.

Semi-Mobile Platforms

One (1) air monitoring trailer and one (1) compact air monitoring system will operate in Shafter as semi-mobile platforms. Each platform will be equipped with advanced air monitoring analyzers able to communicate the community-level air quality in real or near-real time. Both will be placed in secure, accessible locations. The length of time for which these semi-mobile platforms will be deployed at their locations depends on the specific air monitoring objectives for the area of interest, which could be up to two years, or until a higher priority area has been identified within the community.

Mobile Platforms

The District has acquired one (1) mobile air monitoring van that is available for use in the Shafter community. This van has the ability to measure highly resolved air pollution concentrations while driving, which is ideal for targeting unmonitored areas of concern or conducting specific air monitoring studies. The air monitoring van can also be useful for measuring pollution from on-road sources, identifying sources of community-level air pollution, and informing the District and the community of the progress towards emission reduction efforts. Additionally, the van can be parked in one location for longer periods of time to capture daily or weekly pollution from unmonitored areas within the community.

The fixed and semi-mobile platforms will provide information showing daily variations in pollutant concentrations over long periods of time and will complement the mobile air monitoring van which provides an instantaneous look at measured pollutants when and where the air monitoring occurred. The use of semi-mobile and mobile monitoring platforms as part of this community air monitoring plan will be able to capture the full picture of the community's air pollution concerns.

Table 2 Monitoring Methods and Equipment

Pollutant	Equipment	Laboratory or Real-Time	Averaging Period	Sampling Rate
Ozone	T265	Real-Time	1-hour	Continuous
NO, NO2, NOx	T200	Real-Time	1-hour	Continuous
PM2.5	BAM 1020	Real-Time	1-hour	Continuous
PM2.5	BAM 1022	Real-Time	1-hour	Continuous
Black Carbon	BC 1054	Real-Time	1-hour	Continuous

Black Carbon	2-WIN Nephelometer	Real-Time	1-hour	Continuous
Black Carbon	MA 350	Real-Time	1-hour	Continuous
Carbon Monoxide	Thermo 48i	Real-Time	1-hour	Continuous
VOC (Total)	Pyxis	Real-Time	1-hour	Continuous
VOC (BTEX)	Mocon Series 9100	Real-Time	1-hour	Continuous
VOC (BTEX)	Pyxis GC	Real-Time	1-hour	Continuous
H2S/SO2	T101	Real-Time	1-hour	Continuous
PM Speciation	Super-SASS	Laboratory	24-hour	Up to Weekly
VOC Speciation	Canister	Laboratory	24 Hour	Up to Weekly
Toxics	Ion Icon PTR-TOF-MS	Real-Time	1-hour	Continuous

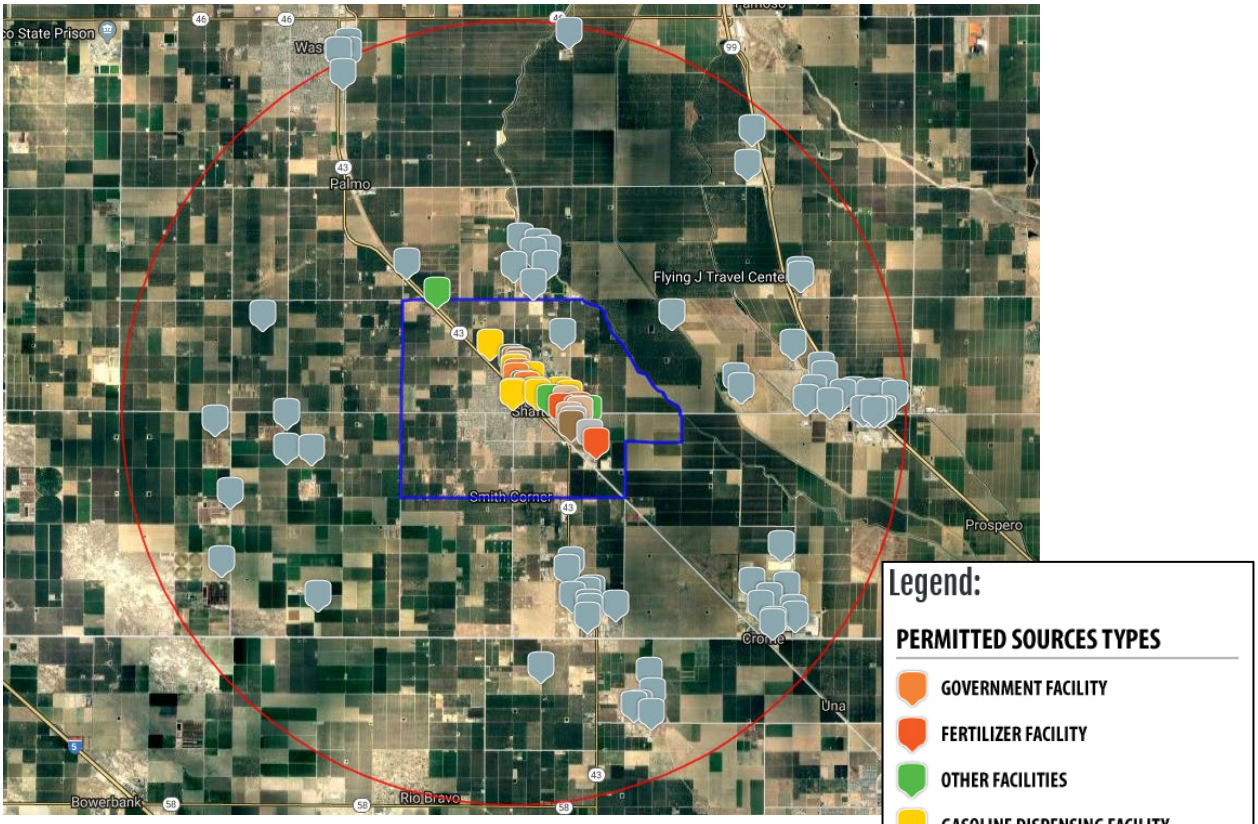
The District will follow field and lab standard operating procedures (SOPs) that will ensure proper use of the monitoring equipment.

IX. COMMUNITY MONITORING LOCATIONS

The first step in implementing the proposed approach is to identify the areas within the Shafter community that are most impacted by local air pollution sources and will capture areas of air quality concern. District staff and the Shafter community Steering Committee evaluated maps of stationary, area, and mobile sources of pollution to determine regions within the community boundary that were most impacted by pollution and of most concern to the community. The District and Committee also evaluated prevailing wind direction and sensitive receptor locations to ensure that monitors were placed in areas that would best represent the community impacts. Examples of some of these maps are displayed in Figure 3 through Figure 6. Based on this evaluation, the District proposed the initial community monitoring design described in Figure 7, which was supported by the Steering Committee at the April 8, 2019 Steering Committee Meeting. Figure 8 displays the fully implemented community air monitoring network in Shafter, including locations and equipment deployed at each site.

Figure 3 Stationary Sources within the (a) 7-mile Radius and (b) Community Boundary

a)



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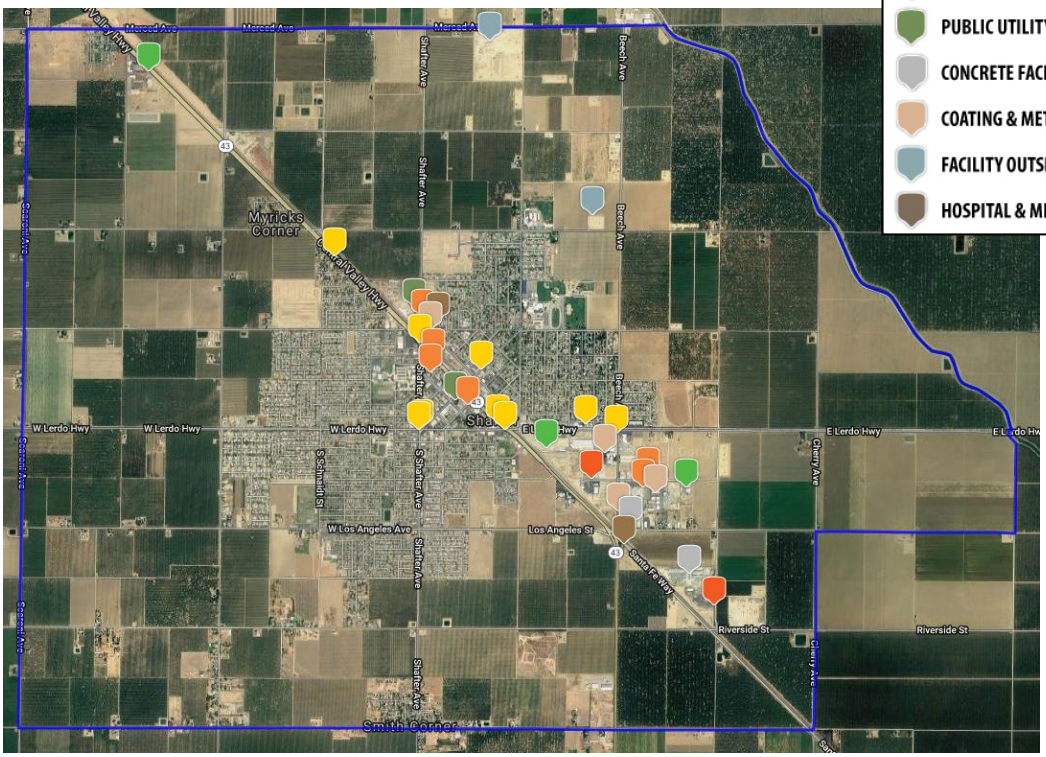
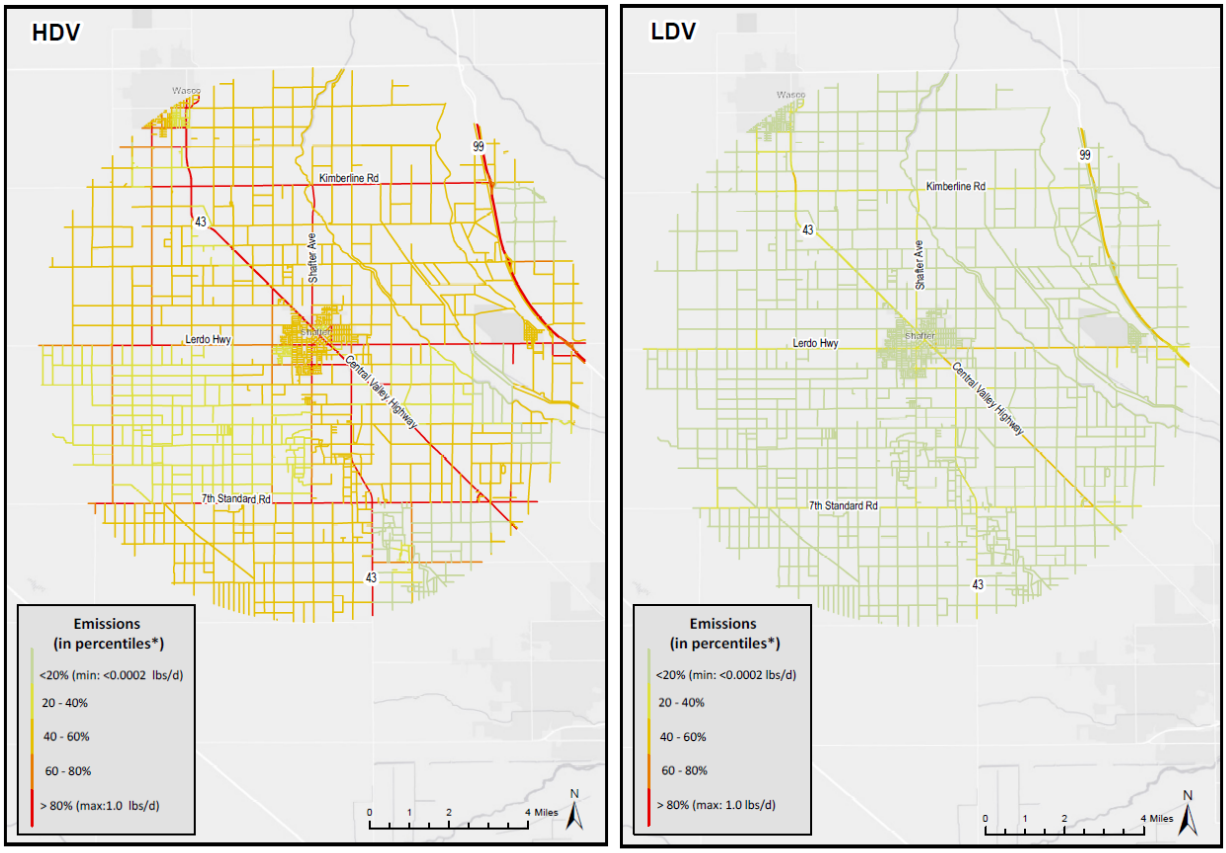
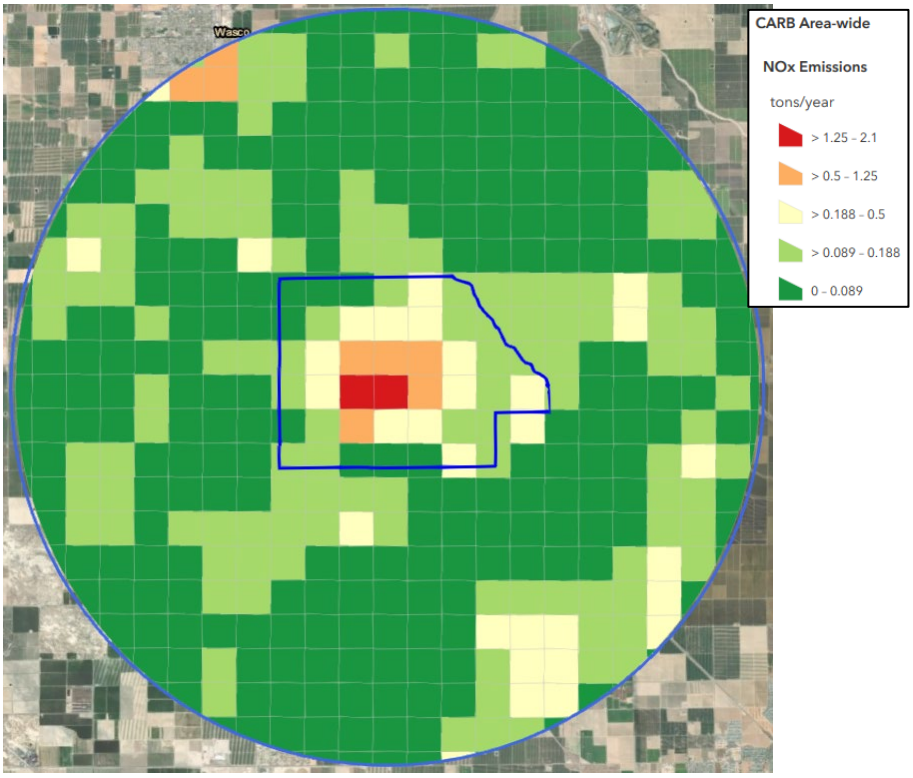


Figure 4 Mobile Source Emissions of Light Duty Vehicle (LDV) and Heavy Duty Vehicle (HDV) Source in Community Boundary and Sphere of Influence

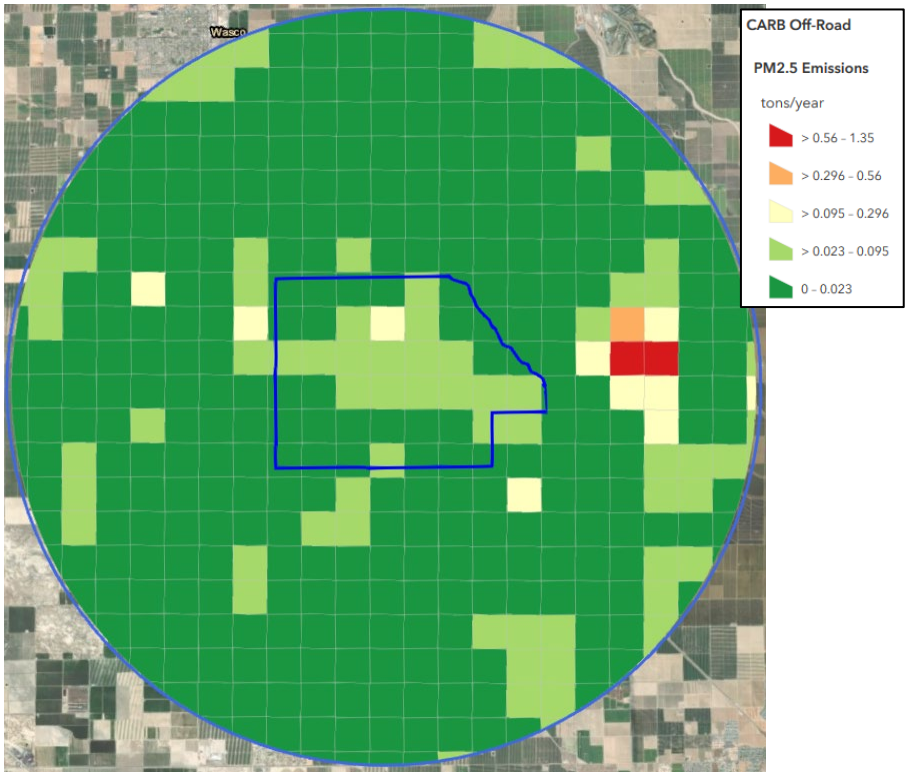


DRAFT CARB-AQPS 4/26/2019 * Percentile bins are ranked by unique emission values

Figure 5 a) Area Wide NOx Emissions; and b) Off-Road Mobile PM2.5 Emissions in Community Boundary and 7 Mile Radius



a)



b)

Figure 6 Prevailing Wind Direction

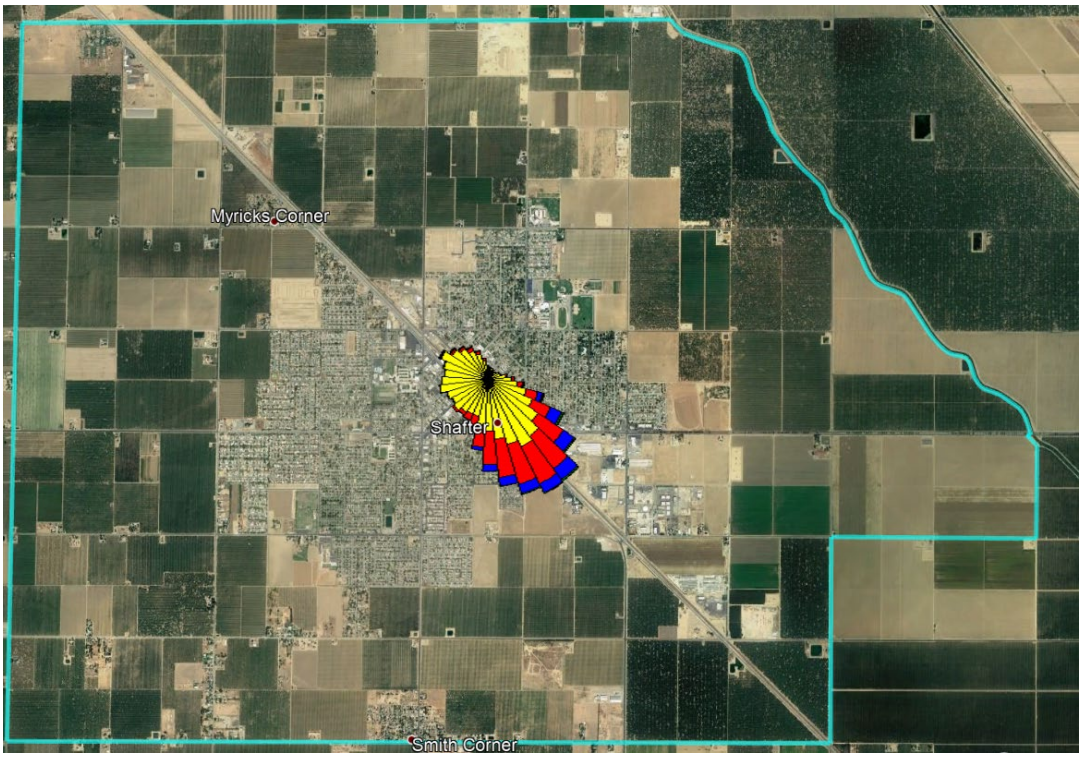
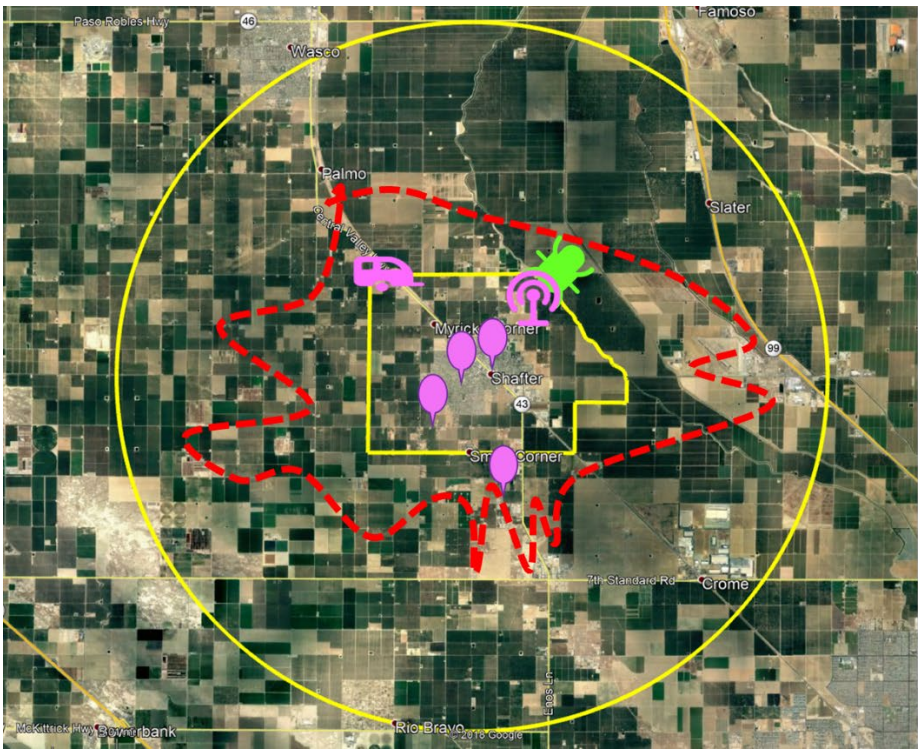


Figure 7 Planned Community Monitoring Locations



DPR Pesticide Monitoring

Stand-Alone PM2.5

Compact Air Monitoring System

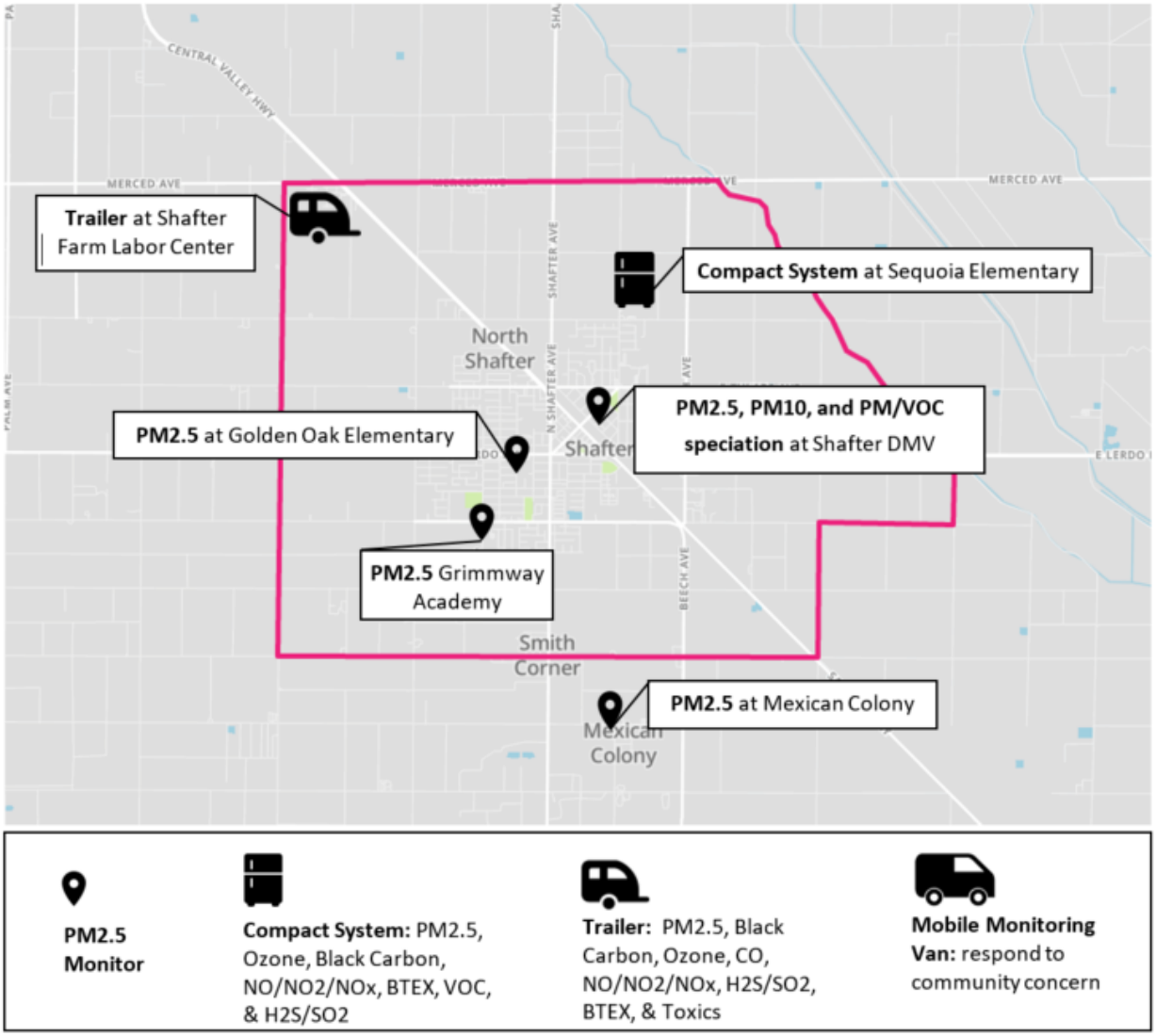
Trailer

Mobile Monitoring Van

- Drive on a regular schedule throughout entire boundary all year
- Respond to community concerns
- Recommended focus route

5

Figure 8 Deployed Shafter Community Air Monitoring Network



X. DATA MANAGEMENT

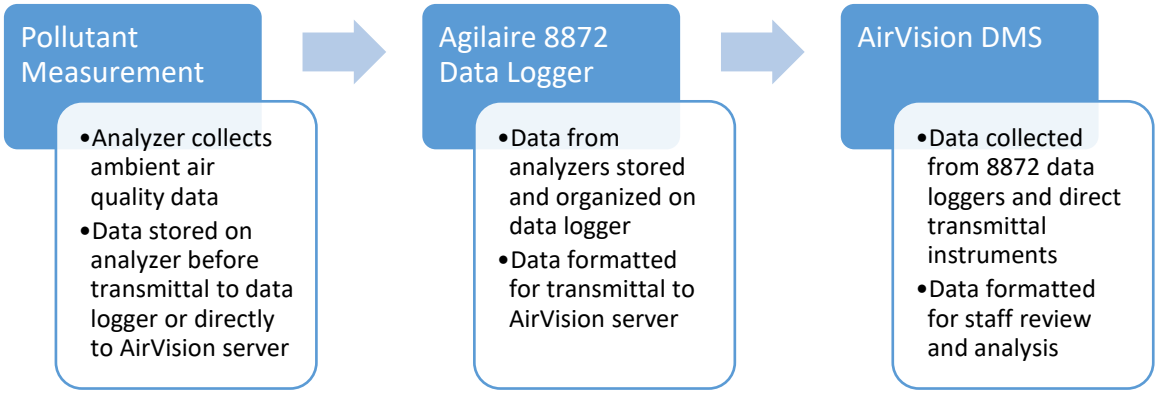
The District will be using Agilaire's AirVision software as its air quality data management system for the community air monitoring network in Shafter. AirVision's organization and overall use will be similar to how the District uses this system to manage data from its regulatory air monitoring network. In general, AirVision will be used to collect data from the community air monitoring network in real-time, where both pollutant concentration data and analyzer health data will be collected and stored. District staff will review this collected data on a regular basis to ensure that monitors deployed in the community network are operating properly, and to know if a visit to the monitor for maintenance or repair is needed.

Data Collection and Storage Process

The District's more comprehensive air monitoring platforms will use Agilaire's 8872 data loggers to collect and organize data from the analyzers integrated into their operation. These 8872 data loggers will serve as the Data Acquisition System (DAS), which will in turn transmit their data to the AirVision server at the District's office, which serves as the Data Management System (DMS). Other monitoring platforms, such as the compact monitoring systems and stand-alone PM2.5 instruments will not have the need for an 8872 data logger, but will rather transmit their data to the AirVision server directly.

The following figure displays the data collection and transmittal process for the Shafter community air monitoring network.

Figure 8 Data Collection and Transmittal Process



For analyzers operating in the community air monitoring network that use manual filter based measurements or canister samples, these field samples will need to first be sent to a laboratory for processing and analysis. Since this is a manual process, these results will not be managed through this process just described, but will be managed through a separate process described later in this air monitoring plan.

All data collected within AirVision from the air monitoring network 8872 data loggers, or through direct transmittal from specific instruments, are stored on the District's servers and backed-up regularly to ensure integrity.

Data Display and Transmittal to CARB AQ-View System

As data from the Shafter community air monitoring network are collected into the AirVision data management system, the District displays this data in real-time on the Shafter community website. This includes both a geographic representation of the data across the community, as well as a way to drill down to a particular monitoring site to view current air quality data. The following figures show the interactive Shafter air monitoring map and an example of a view of real-time data at an air monitoring site within the community.

Figure 9 Interactive Map of Shafter Air Monitoring Network

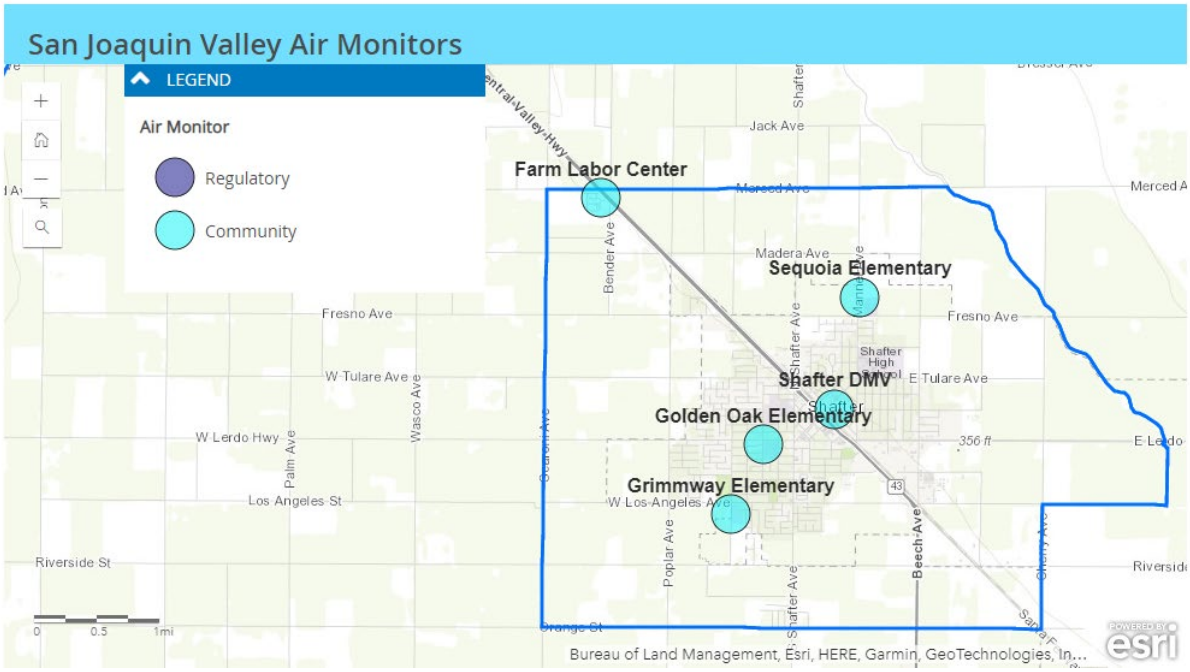
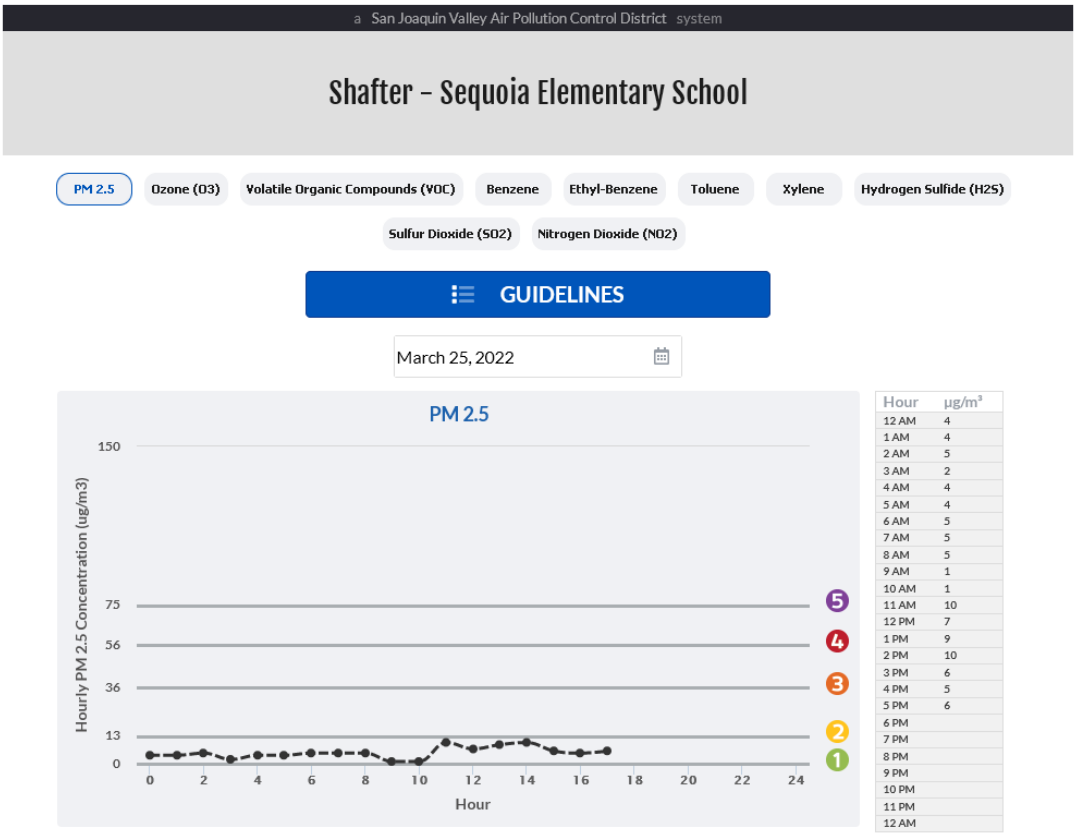


Figure 11 View of Real-time Air Monitoring Data



In addition to community air monitoring data being made available on the District's website, this data will also be pushed to CARB's statewide data portal in real-time for the public to view. This statewide data portal, called AQ-View, will allow community members and the general public to view data from the Shafter area in real-time, as well as data being collected in selected AB 617 communities across the rest of California. To transmit this data to AQ-View, it must be organized and structured in a specific manner for acceptance into the statewide data portal. The District is working with CARB and other districts to develop the standardized data format and transmittal process for AQ-View. The District will use AirVision to form the community air monitoring data in this required structure before transmitting to CARB in real-time.

CARB's community air quality data portal can be accessed here, and will continue to be developed as AB 617 implementation continues across the state: https://ww2.arb.ca.gov/es/community-air-quality-portal.

Data Review and Flagging Procedures

In general, flags are intended to assist with data review and validation to ensure accurate data is being made available to the public. Flags are applied to data when regular maintenance activities are performed, or when the equipment is malfunctioning. Flag notifications help ensure that District staff can quickly respond to equipment that may not be operating properly. During the data validation process, District staff closely review any flagged data to ensure that accurate data is provided to the public.

Specifically, the AirVision Data Management System (DMS) has a unique feature enabled called Automatic Data Validation Processor or ADVP, which runs in conjunction with the 1-hour polling task. The ADVP feature monitors data collected from each respective site and runs predetermined validation rules to ensure that erroneous data is screened before it is made available to the public. In some cases, AirVision in real-time will send station operators an email to inform them of alarm conditions that were detected from the recently polled data. If a parameter is found out of tolerance based on the set conditions in ADVP, the data will be flagged according to the conditions set.

After data has been collected from each analyzer and uploaded into the DMS, every station and parameter undergoes ADVP rule assessment. Flags are then automatically applied based on the conditions previously set. Depending on flag assignment, some data may be posted in real-time. If a flag is applied and invalidates the data, then data will not be displayed in real-time.

Even with the assistance of the ADVP capabilities in AirVision, if erroneous data still appears, District staff will investigate these values through closely reviewing the operational status of the instrument in question. This review will allow the District to make a determination of whether the data point in question should be validated and included in the final data set sent to CARB's statewide data portal.

XI. WORK PLAN FOR FIELD MEASUREMENTS

The District began the implementation of the community air monitoring plan in Shafter by July 1, 2019, and will continue to operate air monitoring in the community to meet the requirements of AB 617. While most of the community monitoring equipment will be remotely operated, the District plans to maintain and check the equipment at least monthly, and more frequently if needed. For VOC and PM2.5 speciation analysis, the District plans to collect canister and filter samples on a regular basis throughout the campaign.

XII. EVALUATING MONITORING PLAN EFFECTIVENESS

Data from the Shafter community monitoring campaign will be analyzed on an ongoing basis to ensure that data quality objectives are met and the data is able to meet all the community air monitoring objectives outlined in this community air monitoring plan. The real-time and final data will be evaluated to inform the public and allow the District and CARB to appropriately assess the local air quality in the Shafter community. District staff will regularly assess data capture status, completeness, and validity. Any error that limits the District's ability to meet the community air monitoring plan objectives will be identified and the District will take the appropriate corrective actions.

XIII. ANALYZE AND INTERPRET DATA

As air quality data is collected from the Shafter community air monitoring network, the District will conduct an extensive review and validation process to ensure the highest quality data possible. This data validation process will be subjected to multiple levels of review to maximize the quality assurance process. Interpretation and analysis of monitoring data will differ based on whether the dataset is laboratory-based or of a continuous nature.

Laboratory Data

For some VOC speciation and filter-based analyzers, the District will likely be contracting with laboratories to perform chemical analyses, as needed. District staff will post the results of the laboratory analysis on the District website after it has undergone the appropriate review process.

Continuous Data

Continuous monitoring data will be reported to the District website and the CARB AQ-View statewide data portal as preliminary data on an hourly basis. At the end of each month, the preliminary data will undergo multiple levels of review by District staff to ensure that the data is of the highest quality, and to ensure that the analyzers were operated in accordance with the vendor manuals and District protocols.

XIV. COMMUNICATING RESULTS TO SUPPORT ACTION

All collected, preliminary and final data will be summarized and shared by the District through the following platforms:

- **District's website:** hourly for continuous data, quarterly for laboratory data
- **CARB's AQ View portal:** hourly for continuous data, quarterly for laboratory data
- **CSC meetings:** Annually, or as requested by committee
- **Weekly Updates:** Weekly air quality and CAMP implementation updates
- **Annual report:** Final, quality assured data published on District website

District staff will share monitoring results with community residents upon completion of the monitoring campaign.