SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

SOUTH COAST AIR QUALITY MANGEMENT DISTRICT
ANNUAL AIR QUALITY MONITORING
NETWORK PLAN

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Introduction

An annual review of the Air Quality Monitoring Network is required by Federal Regulations as a means to identify and report needs for additions, relocations, or terminations of monitoring sites or instrumentation. This report describes the network of ambient air quality monitors in the jurisdiction of and operated by the South Coast Air Quality Management District. It includes a review of actions taken during the 2008-2009 fiscal year, and plans for action in the year ahead. This draft plan addresses the requirements for an annual network plan as listed in Title 40, Part 58, Section 10 of the Code of Federal Regulations (40 CFR 58.10). The regulations require that the report be submitted to the U.S. Environmental Protection Agency (EPA) by July 1 of each year.

The South Coast Air Quality Management District staff, along with the California Air Resources Board (CARB), conducted an extensive review of the air monitoring sites in the South Coast Air Basin (Basin) in late 1980. National (NAMS) or State and Local (SLAMS) designations, monitoring objectives, and spatial scales of representativeness were assigned to the criteria pollutants monitored by site. Since that time, EPA Region IX staff and CARB staff visited all sites to confirm compliance with applicable siting criteria and related requirements. The most recent site visits occurred in 2000 to evaluate the $PM_{2.5}$ monitoring network. Each year, South Coast Air Quality Management District staff conducts an annual review of its air monitoring network, and submits it to U.S. EPA. The review process focuses on current and future network air monitoring strategies, and all network changes are made in consultation with U.S. EPA and CARB. When re-locations are required, site reports are updated in U.S. EPA's Air Quality System (AQS) to document compliance with established siting criteria for the new locations.

Public Comments

Pursuant to Federal regulations, this draft plan is to be made available for public inspection and comments for at least 30 days prior to submission to U.S. EPA. Hard copies of this document were made available on June 1, 2009 at the South Coast Air Quality Management District Public Information Desk in Diamond Bar, CA. The document was also posted to the public South Coast Air Quality Management District website at www.aqmd.gov on June 1, 2009, with links under the South Coast Air Quality Management District home page titled "Current Programs, Events and Topics." Links to the document were also provided in the "Air Quality" area of the website. The draft document will also be made available to U.S. EPA during this period for review.

Network Design

The South Coast Air Quality Management District operates 35 permanent air monitoring sites in the South Coast Air Basin and a portion of the Salton Sea Air Basin in Coachella Valley. This area includes Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino Counties. The newest permanent site was added in 2008 at Compton to replace the Lynwood air monitoring location. Table 1 provides a list of monitoring locations, the U.S. EPA AQS site codes, and the pollutants measured at each site. Table 2 provides monitoring objective and the spatial scale for each monitor at each site.

Table 3 describes the monitoring purpose for each monitor at each site. Table 4 describes the monitoring objective, purpose, and spatial scale for continuous particulate analyzers at each site.

A new requirement of the annual network plan implemented in 2007, the monitoring purpose is the reason why a certain pollutant is being measured at a certain site. A list and description of monitoring purposes is provided below, and portions are adapted from the CARB annual network plan for 2007.

Background Level monitoring is use to determine general background levels of air pollutants as they enter the South Coast Air Basin.

High Concentration monitoring is conducted at sites to determine the highest concentration of an air pollutant in an area within the monitoring network. A monitoring network may have multiple high concentration sites (i.e., due to varying meteorology year to year).

Pollutant Transport is the movement of pollutant between air basins or areas within an air basin. Transport monitoring is use to assess and mitigate upwind areas when transported pollutant affects neighboring downwind areas. Also, transport monitoring is use to determine the extent of regional pollutant transport among populated areas and to rural areas.

Population Exposure monitoring is conducted to represent the air pollutant concentrations a populated area is exposed to.

Representative Concentration monitoring is conducted to represent the air quality concentrations for a pollutant expected to be similar throughout a geographical area. These sites do not necessarily indicate the highest concentrations in the area for a particular pollutant.

Source Impact monitoring is used to determine the impact of significant sources or source categories of air quality emissions on ambient air quality. The air pollutant sources may be stationary or mobile.

Trend Analysis monitoring is useful for comparing and analyzing air pollution concentrations over time. Usually, trend analyses show the progress or lack of progress in improving air quality for an area over a period of many years.

Site Comparison monitoring is used to assess the effect on measured pollutant levels of moving a monitoring location a short distance (usually less than two miles). Some monitoring stations become no longer usable due to development, change of lease terms, or eviction. In these cases, attempts are made to conduct concurrent monitoring at the old and new site for a period of at least one year in order to compare pollutant concentrations.

Real Time Reporting/Modeling is used to provide data to EPA's AIRNOW system which reports conditions for air pollutants on a real time basis to the general public. Data is also used to provide accurate and timely air quality forecast guidance to residents of the South Coast basin.

Multiple purposes for measuring a pollutant at a particular site are possible. There is some overlap between monitoring objectives as defined by EPA and given in Table 2, and the monitoring purposes provided in Table 3.

A brief description of the network for each criteria pollutant monitored is provided below:

OZONE

The SCAQMD operates 30 sites where ozone measurements are made as part of the Air Monitoring Network. Figure 1 in Appendix A shows the spatial distribution of these sites.

PM10

Size-selective inlet high volume samplers are operated at 22 sites to meet the requirements for PM10 FRM sampling; at 12 of the sampling sites, PM10 continuous analyzers are also operated. These real-time devices are capable of making hourly particulate concentration measurements. Figure 2 in Appendix A shows the spatial distribution of the sampling sites. Real-time monitors, for the most part, are clustered in the high concentration areas, with two located in the desert area where wind-blown crustal material has caused exceedences of the 24-hour Standard. In downwind areas of the South Coast Air Basin, a large fraction of particulate is formed in the atmosphere. PM10 reaches maximum levels during late summer through early winter months. All PM10 FRM monitors operate on a one day in six schedule with the exception of Indio and Rubidoux which operate on one day in three schedule.

NITROGEN DIOXIDE

The nitrogen dioxide (NO2) network consists of 26 sites. These sites are mostly located in areas of highest NO2 concentration. The spatial distribution of NO2 monitors is shown in Figure 3 in Appendix A. Review of 1992 through 2007 data indicates that the Federal annual average standard was not exceeded.

CARBON MONOXIDE

Ambient carbon monoxide (CO) monitors measure concentrations at 26 locations. Figure 4, Appendix A, shows the spatial distribution of these sites. Carbon monoxide emissions, primarily from motor vehicles, show a pattern congruent with major freeway arteries.

SULFUR DIOXIDE

Sulfur dioxide (SO2) monitors are located at 7 sites. Figure 5 in appendix A shows the spatial distribution of the sites. Most SO2 emissions come from federal transportation sources such as marine vessels. The monitors are clustered mostly in the areas where these sources are located. The federal standard has not been exceeded for nearly 30 years.

PARTICULATE LEAD

Total suspected particulate lead measurements are collected at 12 sites as part of the network. The spatial distribution of these sites is shown in Figure 6 in Appendix A. With the phasing out of lead in gasoline, ambient lead levels decreased to the point that a reduction in the network was made—reducing the number of sites from 27 to ten.

In 1990, U.S. EPA requested that the South Coast Air Quality Management District collect ambient air particulate lead samples near several large lead handling (battery recycling) facilities. Long-term source impacted monitoring began in 1991. A facility in the City of Industry exceeded the federal ambient particulate lead standard during the second quarter of Fiscal Year 1991-92. Lead monitoring at a facility in the City of Torrance ended in 1993 when measurements were consistently below the ambient standard. Sampling ended at a facility in the City of Commerce in 2006 when the business was closed. Out of the two facilities currently being monitored, the facility in the City of Vernon exceeded the old federal ambient particulate lead standard (1.5 ug/m3 quarterly) during the first quarter of 2008; the other facility was found to remain below this level. These source-related lead sites are also depicted in Figure 6. Changes to the Lead sampling network in response to the new Lead NAAQS and monitoring requirements (October 2008) are described later in this report.

PAMS Network Plan

The PAMS (Photochemical Assessment Monitoring Stations) network was initiated in June 1994 at Pico Rivera and Upland, and in 1995 at Banning and Azusa, to determine speciated hydrocarbon ozone-precursor compounds in ambient air. PAMS monitoring at Hawthorne commenced in June 1997, and the Burbank station became a PAMS site in July 1997. In May 2001, the Santa Clarita location was established as a PAMS site. In April 2004, the Hawthorne site was replaced by LAX Hastings, due to the end of a property lease. In August 2005, the Pico Rivera station moved to a new location one half mile south of the previous site, also due to the end of the property lease. Figure 7 in Appendix A shows the distribution of the PAMS network.

An automated gas chromatography flame ionization detector (GC\FID) VOC system is in operation at the Pico Rivera air monitoring station with a VOC canister and carbonyl sampling. During the intensive sampling season from July 1, until September 30, GC\FID is run continuously; twenty-four hour VOC canisters are run every 6th day, and carbonyl samples are run continuously every three hours with one additional twenty-four hour sample run every 6th day. During the non-intensive season from October 1, through June 30, twenty-four hour VOC canister samples are run every 6th day and twenty-four hour carbonyl samples are run every 6th day. Pico Rivera is a collocated site for VOC canister and carbonyl sampling.

A similar automated gas chromatography flame ionization detector GC\FID VOC system was installed at the Burbank air monitoring station in July 1997. During the intensive sampling season from July 1, until September 30, GC\FID is run continuously; twenty-four hour VOC canisters are run every 6th day, and carbonyl samples are run continuously every three hours with one additional twenty four hour sample run every 6th day. During the non-intensive season from October 1, through June 30, twenty-four hour VOC canister samples are run every 6th day and twenty four hour carbonyl samples are run every 6th day.

Manual VOC canister and carbonyl systems are in operation at Banning and Santa Clarita air monitoring stations. During the intensive season from July 1, until September 30, VOC canisters are run every three hours for a period of twenty-four hours every 3rd day and a

twenty-four hour sample is run every 6th day. Carbonyl samples are run every three hours for a period of twenty-four hours every third day and a twenty-four hour sample is run every 6th day. During the non-intensive season from October 1, through June 30, twenty-four hour VOC canister samples are run every 6th day and twenty-four hour carbonyl samples are run every 6th day.

Manual VOC canister systems are in operation at Azusa, LAX Hastings, and Azusa air monitoring stations. During the intensive season from July 1 until September 30, VOC canisters are run every three hours for a period of twenty-four hours every 3rd day and a twenty-four hour sample is run every 6th day. During the non-intensive season from October 1 though June 30, twenty-four hour VOC canister samples are run every 6th day

The first South Coast Air Quality Management District upper air monitoring station was established at Los Angeles International Airport (LAX) in 1994. Subsequent upper air stations include Ontario International Airport (ONT), installed in 1996, Moreno Valley (MOV) installed in 2001 at the Moreno Valley Municipal Water Treatment Plant in Riverside County, Irvine installed at the University of California Research and Extension Center in 2006, and Pacoima at Whiteman Airport during May 2007. The upper air stations use a combination of remote sensing and surface meteorological instrumentation, including the Vaisala (formerly Radian/URS) LAP-3000 radar wind profiler with a Radio Acoustic Sounding System (RASS), the Atmospheric Systems Corporation (formerly AeroVironment Inc.) mini Sodar acoustic wind profiler, and tower-mounted meteorological measurements of wind, pressure, temperature, relative humidity, solar radiation and ultraviolet radiation.

In FY 2009-10 South Coast AQMD plans to make adjustments to the PAMS monitoring network based on recent EPA changes to PAMS monitoring requirements in 40 CFR part 58. Details of proposed changes are included in the section titled, "Recent or Proposed Changes to Network."

PM2.5

A network of 17 Federal Reference Method (FRM) samplers was first implemented in January 1999. On December 26, 1999, a second Coachella Valley PM2.5 sampling site was established in Palm Springs. On June 20, 2003, PM2.5 sampling began at the South Long Beach site. The final addition to the PM2.5 FRM network occurred in October 2005, at the new Mira Loma site. This brings the total number of PM2.5 FRM sampling sites to 20. The sites are depicted in Figure 8, Appendix A and the actual starting date of each sampler is listed in Table 5. Collocated sampler sites are at Rubidoux, Central Los Angeles, and Indio. All sites in the Network using FRM samplers are suitable for comparison against the annual PM2.5 National Ambient Air Quality Standard (NAAQS).

Continuous PM2.5 Met One Beta Attenuation Monitors (BAMs) were first deployed in Fiscal Year 2001–02. Thirteen monitors are now operating in the Basin, two at Rubidoux (collocated), and one each at Anaheim, Los Angeles, South Long Beach, Burbank, Mira Loma (Van Buren), and Banning. In January 2006, two additional samplers were added at Lake Elsinore and Glendora as part of the Children's Health Study. As proposed in the

2008 network plan, FEM BAM monitors were deployed during October 2008, at the Anaheim, Burbank, Long Beach (North), Los Angeles (Main), Mira Loma (Van Buren), Rubidoux, and Long Beach (South) sites. All FEM BAMs continue to maintain the Special Purpose Monitor designation under 40 CFR 58.20 until sufficient data are collected for comparison to collocated FRMs. Non-FEM monitors that became available were moved to the Reseda and Santa Clarita sites. In the coming year South Coast Air Quality Management District will deploy additional non-FEM BAM samplers to enhance wildfire response capabilities and the Children's Health study both described in the section titled, "Proposed Modifications to Network."

PM2.5 speciation sampling is also a part of the South Coast Air Quality Management District PM2.5 program. Two Speciation Trends Network (STN) and one South Coast Air Quality Management District Met One SASS PM2.5 samplers were deployed in March 2001 at Rubidoux. One more STN and two SCAQMD SASS samplers were deployed at Central Los Angeles in 2002. In 2003, SASS PM2.5 speciation samplers were installed at Fontana and Anaheim air monitoring sites. In 2004, a sampler was installed at Long Beach as part of the MATES III project, and continues to run as part of the Port Area Monitoring Program and the 2009 Air Quality Management Plan (AQMP) Speciation Study (see below). In January 2009, two additional South Coast Air Quality Management District SASS speciation samplers were installed at Burbank and Upland air monitoring sites, also for the 2009 AQMDP Speciation Study. Analysis of the filters from the ambient network SASS samplers is being conducted at South Coast Air Quality Management District's laboratory. The STN filters are shipped to RTI for analysis. This approach has the concurrence of CARB and U.S. EPA, Region IX.

National Ambient Toxics Trends Sites (NATTS)

The National Air Toxics Trends Sites (NATTS) program was developed to fulfill the need for long-term hazardous air pollutants (HAPs) monitoring data of consistent quality nationwide. South Coast Air Quality Management District has conducted several air toxics measurement campaigns in the past which demonstrated the variety and spatial distribution of air toxics sources across the South Coast Air Basin. A single air toxics measurement site can not reflect the levels and trends of air toxics throughout the South Coast Air Basin; because of this, two NATTS sites are used to characterize the South Coast Basin's air toxics levels. The first site is a central urban core site in central Los Angeles that reflects concentrations and trends due primary to urban mobile source emissions. A second, more rural, inland site at Rubidoux captures the transport of pollutants from a variety of upwind mobile and industrial sources in the most populated areas of the air basin. NATTS monitoring began in February 2007 and continues at the Central Los Angeles and Rubidoux air monitoring sites.

Special Programs

Special monitoring programs are conducted for rule compliance purposes or to characterize the levels of toxic air contaminants and other criteria pollutants in sub-regional areas or communities in the Basin, or to support modeling and planning efforts. The following is a list of special monitoring programs that were active during the past year. Note that this is being provided for

informational purposes only. At this time, none of the Special Monitoring Programs are designated as a "Special Purpose Monitor" under 40 CFR 58.20.

Multiple Air Toxics Exposure Study (MATES-III)

MATES is the most comprehensive urban air quality study to date. In April 2004, the South Coast Air Quality Management District initiated the third round of MATES (MATES-III) to assess the ambient levels of airborne compounds linked to adverse health effects in humans. The previous study, MATES-II, was a year-long intensive sampling program. During the study, air toxics were monitored at ten fixed sites and additional short-term "micro-scale" monitoring was conducted at 14 sites using five mobile sampling platforms. Fixed sites were established to assess regional air toxics, while micro-scale sites assess source impacts on a more local level, such as an area of heavy industrial activity in close proximity to a residential area. MATES-III incorporated elements of the two prior studies to establish trend assessments with similar sampling methodologies. Enhancements to the sampling network with the latest air monitoring technologies and more frequent sampling schedules were also incorporated. Instrumentation at each site measured PM10, speciated PM2.5, VOCs, and air toxics such as heavy metals, hexavalent chromium, and carbonyls.

The 2004-05 winter season in Southern California produced record levels of rainfall in most areas of the South Coast Air Basin. As expected, this lead to lower than expected levels of airborne constituents including PM concentrations. As a result, MATES-III was extended an additional year to collect more representative air toxics data. Sampling at the fixed sites was completed in April 2006. Micro-scale sampling has been completed at the Indio, San Bernardino, Commerce, La Puente, Santa Ana, and Sun Valley sites. The final micro-scale site is located adjacent to Long Beach Airport and was completed in October 2006. A draft report for the MATES-III study was made available for public review and the final draft was published in September 2008.

Fugitive Dust Study

In support of South Coast Air Quality Management District Rule 403 - Fugitive Dust, SSI PM10 samplers are deployed on an episodic basis upwind and downwind of potential sources as required under Rule 403. Since 2003, periodic sampling has been conducted around gravel quarries and other industries which seem to be producing large volumes of dust. This sampling will continue through 2009 and 2010. A special instrument evaluation study was also initiated to assess alternative monitoring methodologies for Rule 403 compliance testing.

Hexavalent Chrome

The South Coast Air Quality Management District has an ongoing program of collecting ambient hexavalent chromium in the vicinity of several chrome plating and cement production facilities located throughout the basin. Monitoring continues at Newport Beach, Riverside, and other locations throughout the South Coast Air Quality Management District jurisdiction.

Port Area Monitoring Program

The South Coast Air Quality Management District is conducting an intensive air monitoring program in the communities adjacent to the Ports of Los Angeles and Long Beach. Monitoring consists of all gaseous criteria pollutants, air toxics compounds as measured in MATES-III, as well as continuous PM2.5 and PM2.5 speciation. Sampling began at four sites in February 2007. Two more sites began operation in June 2007 and an additional site was added during November, 2007. Sampling was completed in January 2009, and data quality assessment and analysis is ongoing. Monitoring activities are being coordinated with the two Ports' air monitoring programs as well as several CARB Research studies in the area.

2009 Air Quality Management Plan Speciation Study (AQMP)

Every three years, or as required by federal regulation, the South Coast AQMD prepares an Air Quality Management Plan (AQMP) outlining planned measures to bring the South Coast into attainment with federal and state ambient air quality standards. Once complete, the AQMP is submitted to the California Air Resources Board (CARB) for inclusion in the state implementation plan (SIP). The next plan is scheduled for completion in late 2010 and will address the 24-hour $PM_{2.5}$ NAAQS. In support of the 2010 AQMP analysis and modeling efforts, an enhanced speciation network was deployed for calendar year 2009. $PM_{2.5}$ SASS samplers were installed at Burbank and Upland on January 1st, 2009. The Long Beach (North) SASS sampler originally installed in 2004 as part of the MATES-III program and then the Port Area Monitoring Program continues to run in support of the AQMP. During calendar year 2009, the South Coast AQMD $PM_{2.5}$ SASS network (seven sites) continues to collect samples on a 1-in-3 day basis.

Recent or Proposed Modifications to Network

Temecula AMS

During October 2007, Southern California experienced some of the most severe wildfires in recent history. To measure particulate matter for comparison to NAAQS, South Coast AQMD has used twenty-four hour FRM filter-based PM measurements. However, providing public information based on real-time hourly data is more appropriate for fire events. Currently South Coast Air Quality Management District does not have a location to represent the Temecula Valley. During FY 2009-10, South Coast Air Quality Management District proposes the establishment of a location in the Temecula Valley to monitor PM2.5 on a continuous basis.

Crestline

South Coast AQMD has been operating the Crestline station since 1973. The deteriorating state of the shelter along with compromises made to the siting criteria due to obstructions has made it a candidate for relocation. As part of regular air monitoring station improvements a new station shelter as been ordered to replace the existing trailer. South Coast proposes relocation of the site to a location which more adequately represents the area. Concurrent monitoring will take place for data comparison prior to any permanent move to a new site.

Lynwood

South Coast Air Quality Management District has been operating the Lynwood station since 1973. The deteriorating state of the leased building has made it necessary to relocate the station to nearby Compton, a former MATES-III site, located two miles from current site. Concurrent CO monitoring began at the new site in May 2005. A comparison between the two sites found data trends to be comparable. On October 30th, 2008 the Lynwood station permanently closed and on November 5th 2008, the Compton site began monitoring as a permanent network site.

Mira Loma

South Coast Air Quality Management District has been operating the Mira Loma (Jurupa) station as part of the Children's Health Study. The deteriorating state of the leased trailer along with the compromises made to the siting criteria because of school expansion makes it a candidate for relocation to a more representative site. Concurrent monitoring began at the Mira Loma (Van Buren) station in November, 2005. Comparisons between the two sites found data trends to be comparable. Closure of the Mira Loma (Jurupa) is planned during FY 2009-10.

Long Beach (South)

South Coast Air Quality Management District has been operating the Long Beach (South) station as part of the ambient air monitoring network. Recent construction of the buildings adjacent to our air monitoring equipment compromises the siting criteria. Monitoring began at the Long Beach (Anaheim St.) site as part of the Port Area Monitoring Project during 2007. If comparison of concurrent data between the two locations demonstrates some comparability, or if the Anaheim St. site shows consistently higher levels of PM, the Long Beach (South) site may be relocated to Anaheim St. in FY 2009-10.

PM2.5 Monitoring Network

As part of the actions to enhance continuous data collection capability for wild fire events as well as health studies, South Coast AQMD began the process of adding of seven continuous $PM_{2.5}$ Beta Attenuation monitors (BAM) in October of 2008. The seven new BAMs are Met One BAM 1020 Federal Equivalency Method (FEM) approved monitors. FEM Monitors were installed at Anaheim, Burbank, Long Beach, Los Angeles, Mira Loma (Van Buren), Rubidoux, and South Long Beach. Relocated Non-FEM BAM monitors were installed at Reseda and Santa Clarita. Additional relocated samplers are to be installed during 2009 at the Crestline, Riverside Magnolia, Temecula, and Upland sites. Rubidoux will have a non-FEM BAM 1020 collocated with a FEM BAM 1020. FEM BAMS are designated as Special Purpose Monitors (SPM) for a period of two years to assess comparability to FRM samples.

South Coast AQMD also completed minor changes to the current FRM monitoring schedule to enhance FEM BAM comparisons. On April, 16th, 2009 the Burbank and Mira Loma (Van Buren) FRM samplers changed to daily sampling from the current 1-in-3 day schedule and the Azusa location changed from every day sampling to 1-in-3 day sampling. Federal minimum monitoring requirements for $PM_{2.5}$ are still being met and/or exceeded.

In 2009, South Coast Air Quality Management District began enhanced speciated $PM_{2.5}$ sampling in support if the AQMP (see Special Studies above). Met One speciation samplers (SASS) began 1-in-3 day operation on January 1st 2009 for a period of one year at the Burbank, Long Beach (North) and Upland sites. Existing speciation sites at Central Los Angeles, Rubidoux, Fontana, and Anaheim increased sampling frequently from 1-in-6 day to 1-in-3 day for calendar year 2009.

NCore

NCore monitoring rules require that South Coast Air Quality Management District make NCore stations operational by January 1st, 2011. To meet this goal, South Coast Air Quality Management District has purchased trace level analyzers for CO, NOy and SO2. NCore stations will be located at Rubidoux and Central Los Angeles, which are both existing STN and NATTS sites. See Appendix C for the complete NCore network plan.

PAMS

On October 17th, 2006, EPA issued final amendments to PAMS monitoring requirements in 40 CFR part 58. The changes were to implement the recommendations of the PAMS workgroup. Changes reflected site type and monitoring objectives defined as:

Type 1 – Upwind and background characterization site. Type 1 sites are intended to characterize upwind, background and transported ozone and its precursor concentrations entering the area. Type 1 sites are located in the predominant morning upwind direction from the local area of maximum precursor emissions and at a distance sufficient to obtain urban scale measurements.
Type 2 – Maximum ozone precursor emissions impact sites. Type 2 sites are intended to monitor the magnitude and type of precursor emissions in the area where maximum precursor emissions representative of the metropolitan statistical area (MSA) are expected to impact. Type 2 sites are located immediately downwind of the area of maximum precursor emissions. They are typically placed near the downwind boundary of the central business district or primary area of precursor emissions mix to obtain neighborhood-scale measurements. If additional Type 2 monitoring is required, Type 2A sites are placed in the second most predominant morning wind direction.
Type 3 – Maximum ozone concentration sites. Type 3 sites are intended to monitor maximum ozone concentrations occurring downwind from the area of maximum precursor emissions. Typically, these sites are located 10 to 30 miles from the fringe of the urban area.
Type 4 – Extreme downwind monitoring sites. Type 4 sites are intended to characterize the extreme downwind transported ozone and its precursor concentrations exiting the area. Type 4 sites are located in the predominant afternoon downwind direction from the local area of maximum precursor emissions at a distance sufficient to obtain urban-scale measurements.

EPA final amendments to PAMS monitoring requirements proposed a reduction in the number of required PAMS sites as follows:

- Only one Type 2 site would be required per area regardless of population.

- Type 4 sites would no longer be required.
- Only one Type 1 or one Type 3 site would be required per area.
- Speciated VOC measurements would only be required at Type 2 sites and one other site (either Type 1 or Type 3) per PAMS area.
- Carbonyl sampling would only be required in areas classified as serious or above for the 8-hour O3 standard.
- Conventional NO2/NOx monitors would only be required at Type 2 sites.
- High sensitivity NOy monitors would be required at one site per PAMS area (either Type 1 or Type 3).
- High sensitivity CO monitor would be required at one Type 2 sites per PAMS area.

EPA also suggested that where possible, NCore multipollutant stations should be collocated, with other multipollutant air monitoring stations including PAMS, National Air Toxic Trends Station sites (NATTS), and the PM2.5 Speciation Trends Network sites (STN). Collocation allows use of the same monitoring platform and equipment to meet the objectives of multiple programs.

In September 2008, a report from the EPA PAMS network assessment project was issued whose objectives were to assess how well the current PAMS network was meeting its monitoring objectives, to determine which sites are most useful for meeting these objectives, to identify potentially redundant, ineffective, or unnecessary sites, and to assess other enhanced ozone monitoring activities that may prove useful. South Coast PAMS network site specific observations include:

- Burbank – highest concentrations in country; reclassify as a type 2 site.
- Santa Clarita – high ozone, VOC, and NOx concentrations; consistent with Type 2 site characteristics.
- Banning – lowest concentrations in South Coast Air Basin among type 2 sites; data more consistent with Type 3 or 4 site when entire LA basin is considered; consider reclassifying site.
- Azusa – high VOC and NOx concentrations, low ozone concentrations; site now more closely resembles a Type 2 site and evaluate its usefulness.
- Upland – no longer consistent with Type 4 site characteristics; consider classifying as Type 3.
- LAX Hastings – high absolute concentrations, low relative to other sites; characteristic of a Type 1 site under typical wind conditions.
- Pico Rivera – very high NO_x concentrations; consistent with type 2 site characteristics.

To address regulatory changes, site specific observations from the PAMS network assessment project, and potential synergies between programs, South Coast proposes the following changes to the current PAMS monitoring network:

- Burbank to be reclassified from Type 2/1 to Type 2. This proposed change addresses the PAMS network assessment project observation that Burbank has the

highest concentrations for ozone in the country and that it should be reclassified as a Type 2 site.

- Santa Clarita to be reclassified as Type 3 from Type 2. Although the PAMS network assessment project observed that Santa is consistent with Type 2 site, data is more consistent with a Type 3 maximum ozone concentration site than a Type 2 ozone precursor site.
- Banning to be relocated to Los Angeles (Main). The PAMS network assessment project observed that Banning was the lowest of all the Type 2 sites and should be reclassified to a Type 3 or 4 site. Considering regulatory changes, and EPA desire to have multipollutant stations collocated among PAMS, NATTS, NCore, and STN programs, South Coast proposes relocation of the Banning PAMS site to the Los Angeles (Main) site as a Type 2 site. This satisfies the EPA recommendation for use of the same monitoring platform and equipment to meet the objectives of multiple programs.
- Azusa to be reclassified from Type 3 to Type 2. This proposed change addresses the PAMS network assessment project observation that Azusa has high VOC, and NO_x concentrations, while also having low ozone concentrations. The site now more closely resembles a Type 2 ozone precursor site.
- Upland to be relocated to Rubidoux site. The PAMS network assessment project observed that Upland was no longer consistent with a Type 4 site and recommended reclassification to Type 3. Considering regulatory changes and EPA desire to have multipollutant stations collocated among PAMS, NATTS, NCore, and STN programs; South Coast proposes relocation of the Upland PAMS site further inland to the Rubidoux site as a more appropriate Type 3 location.
- LAX Hastings and Pico Rivera are to remain unchanged.

The proposed PAMS network changes, monitoring objectives and requirements are summarized in TABLE 6.

Lead Monitoring Network

On October 15th, 2008 EPA issued the final rule for Lead National Ambient Air Quality Standards (NAAQS). The rule lowered the level and form of the NAAQS for ambient Lead, and requires state monitoring network plans to be submitted to EPA by July 1st, 2009 as part of the annual network plan. Implementation of newly-required source oriented monitors must occur by January 1st, 2011. South Coast AQMD currently operates a particulate lead network which consists of 10 non-source-oriented monitors and 4 source specific locations (at three sources). The spatial distribution of these sites is shown in Figure 6 in Appendix A; please see Appendix D for the complete Lead Network Plan.

Air Monitoring Station Improvements

As part of the actions to enhance quality of data collected; SCAQMD will replace existing deteriorated shelters at the Crestline, Indio, La Habra, Pasadena, Redlands, Rubidoux, San Bernardino, and West Los Angeles sites. The new shelters will be installed at the same locations as the existing structures.

Minimum Monitoring Requirements

The SCAQMD jurisdictional boundary encompasses two Metropolitan Statistical Areas (MSA) as defined by the U.S. Office of Management and Budget and the U.S. Census Bureau. The Los Angeles-Long Beach-Santa Ana MSA (Code 31100) had a population of 12,365,627 based on the year 2000 U.S. Census. The Riverside-San Bernardino-Ontario MSA (Code 40140) had a population of 3,254,821 in 2000. The minimum number of monitors for each pollutant is based on MSA population as described in 40 CFR 58 Appendix D. The SCAQMD network exceeds the minimum monitoring requirements for all criteria pollutants. Details are provided below.

Ozone

MSA	Min. # Monitors Required	# Monitors Active
31100	4	17
40140	2	13

PM2.5

MSA	Min. # Monitors Required	# Monitors Active
31100	3	12
40140	3	11

PM10

MSA	Min. # Monitors Required	# Monitors Active
31100	4-8	9
40140	6-10	16

NO2

MSA	Min. # Monitors Required	# Monitors Active
31100	0	16
40140	0	9

SO2

MSA	Min. # Monitors Required	# Monitors Active
31100	0	5
40140	0	2

CO

MSA	Min. # Monitors Required	# Monitors Active
31100	0	17
40140	0	9

Pb

MSA	Min. # Monitors Required	# Monitors Active
31100	2	7
40140	0	5

Minimum PAMS Monitoring

South Coast AQMD Monitoring Area	Min. # Monitors Sites Required	# Monitoring Sites Active
Type 1 or 3	1	3
Type 2	2	4
Type 4	0	0

TABLE 1. List of Monitoring Sites

Location	AQS No.	Pollutants Monitored	Start Date
Anaheim	060590007	CO,NO2,O3,PM10,PM2.5	08/01
Azusa	060370002	CO,NO2,O3,PM10,PM2.5,SO4	01/57
Banning Airport	060650012	NO2,O3,PM10, PM2.5	04/97
Big Bear	060718001	PM2.5	02/99
Burbank	060371002	CO,NO2,SO2,O3,PM10,PM2.5	10/61
Compton [3]	060371302	CO,NO2,O3,Pb,PM2.5	01/04
Costa Mesa	060591003	CO,NO2,SO2,O3	11/89
Crestline	060710005	O3,PM10	10/73
Fontana	060712002	CO,NO2,SO2,O3,PM10,PM2.5,SO4	08/81
Glendora	060370016	CO,NO2,O3,PM2.5,PM10	08/80
Indio	060652002	O3,PM10,PM2.5	01/83
La Habra	060595001	CO,NO2,O3	08/60
Lake Elsinore	060659001	CO,NO2,O3,PM2.5,PM10	06/87
LAX Hastings	060375005	CO,NO2,O3,PM10,Pb,SO4	04/04
Long Beach (Anaheim St.) [1]	TBD		
Long Beach (Hudson) [1]	TBD		
Long Beach (North)	060374002	CO,NO2,SO2,O3,PM10,PM2.5,Pb,SO4	10/62
Los Angeles (Main St.)	060371103	CO,NO2,SO2,O3,PM10,Pb,PM2.5,SO4	09/79
Lynwood [2]	060371301	CO,NO2,O3,Pb.PM2.5	10/73
Mira Loma (Jurupa) [4]	N/A	CO,NO2,O3,PM10	10/93
Mira Loma (Van Buren)	060658005	CO,NO2,O3,PM10,PM2.5	11/05
Mission Viejo	060592022	CO,O3,PM10,PM2.5	06/99
Norco	060650003	PM10	12/80
Ontario Fire Station	060710025	PM10,PM2.5	01/99
Palm Springs	060655001	CO,NO2,O3,PM10,PM2.5	04/71
Pasadena	060372005	CO,NO2,O3,PM2.5,SO4	04/82
Perris	060656001	O3,PM10	05/73
Pico Rivera #2	060371602	CO,NO2,O3,Pb,PM2.5,SO4,PM10	09/05
Pomona	060371701	CO,NO2,O3	06/65
Redlands	060714003	O3,PM10	09/86
Reseda	060371201	CO,NO2,O3,PM2.5	03/65
Riverside	060651003	CO,Pb,PM2.5,SO4	10/72
Rubidoux	060658001	CO,NO2,SO2,O3,PM10,Pb,PM2.5,SO4	09/72
San Bernardino	060719004	CO,NO2,O3,PM10,Pb,PM2.5	05/86
Santa Clarita	060376012	CO,NO2,O3,PM10,PM2.5	05/01
South Long Beach	060374004	PM10,Pb,PM2.5,SO4	06/03
Temecula [1]	TBD		
Upland	060711004	CO,NO2,O3,Pb,PM2.5,PM10,SO4	03/73
West Los Angeles	060370113	CO,NO2,O3,SO4	05/84

[1] Site to begin operation in Fiscal Year 2009-2010
[2] Site closed 10/30/08
[3] Site replaced Lynwood AMS 11/05/08
[4] Site to be closed in Fiscal Year 2009-2010

TABLE 2. FRM/FEM Criteria Pollutant Monitoring Objective and Spatial Scales

MONITORING OBJECTIVE
HC – High Concentrations
RC – Representative Concentrations
IM – Impact
BL – Background

SPATIAL SCALE
MI – Microscale
MS – Middle Scale
NS – Neighborhood Scale
US – Urban Scale

Location	CO	NO2	SO2	O3	PM10	PM2.5	Pb
Anaheim	NS/RC	US/RC		NS/RC	NS/RC	NS/RC	
Azusa	NS/RC	US/RC		US/HC	NS/RC	NS/RC	
Banning Airport		NS/RC		NS/RC	NS/RC		
Big Bear						NS/RC	
Burbank	NS/HC	NS/RC	NS/RC	US/HC	NS/RC	NS/RC	
Compton [3]	MS/HC	MS/RC		NS/RC		NS/RC	NS/RC
Costa Mesa	NS/RC	NS/RC	NS/RC	NS/RC			
Crestline				NS/HC	NS/RC		
Fontana	NS/RC	US/RC	NS/RC	US/RC	NS/HC	NS/RC	
Glendora	NS/RC	NS/RC		NS/HC			
Indio				NS/RC	NS/HC	NS/RC	
La Habra	NS/RC	US/RC		NS/RC			
Lake Elsinore	NS/RC	NS/RC		NS/RC			
LAX Hastings	MS/RC	MS/RC	NS/RC	MS/RC	NS/RC		NS/RC
Long Beach (Anaheim St) [1]							
Long Beach (Hudson)							
Long Beach (North) [6]	MI/HC	MS/RC	NS/HC	MS/RC	MI/RC	NS/HC	MI/RC
Los Angeles (Main St.)	NS/RC	NS/HC	NS/RC	NS/RC	NS/RC	NS/HC	NS/RC
Lynwood [2]	MS/HC	MS/RC		NS/RC		NS/RC	NS/RC
Mira Loma (Jurupa) [4]	NS/RC	NS/RC		NS/RC	NS/HC		
Mira Loma (Van Buren)	NS/RC	NS/RC		NS/RC	NS/HC	NS/RC	
Mission Viejo	NS/RC			NS/RC	NS/RC	NS/RC	
Norco					NS/RC		
Ontario Fire Station					NS/HC	NS/RC	
Palm Springs	NS/RC	NS/RC		NS/RC	NS/RC	NS/RC	
Pasadena	MS/RC	MS/HC		NS/RC		NS/RC	
Perris				NS/RC	NS/RC		
Pico Rivera #2	NS/RC	NS/HC		NS/HC		NS/RC	NS/RC
Pomona	MI/RC	MS/RC		MS/HC			
Redlands				NS/RC	NS/RC		
Reseda	NS/RC	US/RC		US/HC		NS/RC	
Riverside [5,6]	MI/HC	US/RC				NS/RC	MI/HC
Rubidoux	MS/RC	US/RC	NS/RC	US/HC	NS/HC	NS/HC	NS/RC
San Bernardino [6]	MS/RC	US/RC		NS/HC	NS/HC	NS/RC	NS/RC
Santa Clarita	NS/RC	NS/RC		US/HC	NS/RC	NS/RC	
South Long Beach					NS/HC	NS/RC	NS/HC
Temecula [1]							
Upland	NS/RC	NS/RC		NS/RC			NS/RC
West Los Angeles	NS/RC	MS/HC		MS/RC			

[1] Site to begin operation in Fiscal Year 2009-2010
[2] Site closed 10/30/08
[3] Site replaced Lynwood AMS 11/05/08
[4] Site to be closed Fiscal Year 2009-2010
[5] NO2 monitor installed 10/02/08 as SPM
[6] Pb to be discontinued FY 2009-2010

TABLE 3. FRM/FEM Criteria Pollutant Monitoring Purposes

MONITORING PURPOSE

BK – Background Level
HC – High Concentration
TP – Pollutant Transport
EX – Population Exposure
SO – Source Impact
RC – Representative Concentration
SPM – Special Purpose Monitoring
TR – Trend Analysis
CP – Site Comparisons

Location	CO	NO2	SO2	O3	PM10	PM2.5	Pb
Anaheim	TR	TR/RC		TR	TR	TR/EX	
Azusa	TR	TR/RC		TR	TR	TR/EX	
Banning Airport		TP/RC		TP	TP		
Big Bear						EX/SO/TP	
Burbank	TR	TR/RC	TR	TR	TR	TR/EX	
Compton [3]	TR/HC	TR/RC		TR/RC		EX/RC	EX
Costa Mesa	RC	TR/RC	TR	RC			
Crestline				HC	TP/RC		
Fontana	RC	TP/RC	TR	RC	HC	EX/TP	
Glendora	RC	TR/RC		HC			
Indio				TP	HC	TP/EX	
La Habra	RC	TR/RC		RC			
Lake Elsinore	TP/RC	TP/RC		TP/RC			
LAX Hastings	BK	BK	BK	BK	BK		BK
Long Beach (Anaheim St) [1]							
Long Beach (Hudson)							
Long Beach (North)[6]	HC	TR/RC	TR/HC	TR	TR/RC	EX/HC	EX
Los Angeles (Main St.)	SO/RC	SO/HC	TR	TR/RC	TR/RC	EX/HC	EX
Lynwood [2]	TR/HC	TR/RC		TR/RC		EX/RC	EX
Mira Loma (Jurupa) [4]	TP/RC	TP/RC		TR/RC	HC/CP		
Mira Loma (Van Buren)	CP	CP		CP	HC/CP	CP	
Mission Viejo	RC			TR/RC	TR/RC	EX/RC	
Norco					TR/RC		
Ontario Fire Station					HC	EX/RC	
Palm Springs	TP/RC	TP/RC		TP	TP/RC	EX/TP	
Pasadena	TR/RC	TR/HC		TR/RC		EX/RC	
Perris				TP	TR		
Pico Rivera #2	RC	HC		HC		EX/RC	EX
Pomona	RC	RC		HC			
Redlands				TP/RC	TP/RC		
Reseda	RC	TR/RC		HC		EX/RC	
Riverside [5,6]	HC	TR/RC				EX/RC	EX
Rubidoux	TR/RC	TR/RC	TR	TR/HC	TR/HC	EX/TR/HC	EX
San Bernardino[6]	TR/RC	TP/RC		TR/HC	TR/HC	EX/TR	EX
Santa Clarita	RC	TP/RC		TP/HC	RC	EX/RC	
South Long Beach					HC	EX/SO	EX
Temecula [1]							
Upland	RC	TR/RC		TR/RC			EX
West Los Angeles	RC	TR/HC		RC			

[1] Site to begin operation in Fiscal Year 2009-2010
[2] Site closed 10/30/08
[3] Site replaced Lynwood AMS 11/05/08
[4] Site to be closed Fiscal Year 2009-2010
[5] NO_2 installed as SPM on 10/02/08
[6] Pb to be discontinued FY 2009-2010

TABLE 4. Continuous $PM_{10}/PM_{2.5}$ Monitoring Purpose, Objective and Spatial Scales

MONITORING OBJECTIVE
HC – High Concentrations
RC – Representative Concentrations

SPATIAL SCALE
MI – Microscale
NS – Neighborhood Scale

TYPE
BAM (NON-FEM)
TEOM BAM (FEM)

MONITORING PURPOSE
SO – Source Impact
TP – Pollutant Transport
TR – Trend Analysis
RM – Real-Time Reporting/Modeling
SPM – Special Purpose Monitoring

Location	Continuous PM10				Continuous PM2.5			
	Type	Purpose	Objective	Scale	Type	Purpose	Objective	Scale
Anaheim [1]	TEOM	RM	RC	NS	BAM/FEM	SPM	RC	NS
Banning Airport					BAM/NON-FEM	RM	RC	NS
Burbank [1]	TEOM	RM	RC	NS	BAM/FEM	SPM	RC	NS
Crestline [3]					BAM/NON-FEM	RM		
Glendora	TEOM		RC	NS	BAM/NON-FEM	RM	RC	NS
Indio [5]	BAM	RM	HC	NS				
Lake Elsinore	TEOM		RC	NS	BAM/NON-FEM	RM	RC	NS
Long Beach (Anaheim St) [4]								
Long Beach (Hudson)								
Long Beach (North) [1]	TEOM		RC	MI	BAM/FEM	SPM		
Los Angeles (Main St.) [1,5]	BAM	RM	RC	NS	BAM/FEM	SPM	HC	NS
Mira Loma (Jurupa) [6]	TEOM	RM	HC	NS			RC	NS
Mira Loma (Van Buren) [1]					BAM/FEM	SPM	RC	NS
Palm Springs [5]	BAM	RM	HC	NS				
Reseda [2]					BAM/NON-FEM			
Riverside [3]					BAM/NON-FEM	RM		
Rubidoux [1]	TEOM	RM	HC	NS	BAM/FEM	SPM	HC	NS
San Bernardino	TEOM	RM	RC	NS				
Santa Clarita [2]					BAM/NON-FEM	RM		
South Long Beach [1]					BAM/FEM	SO/RM/SPM	RC	NS
Temecula [3,4]					BAM/NON-FEM	RM		
Upland [3]	TEOM	RM	RC	NS	BAM/NON-FEM	RM		

[1] FEM BAM Samplers replaced NON-FEM Samplers during FY 2008-2009 and designated as special purpose monitors
[2] NON-FEM BAM Samplers deployed during Fiscal Year 2008-2009
[3] NON-FEM BAM Samplers to be deployed during Fiscal Year 2009-2010
[4] Site planned during Fiscal Year 2009-2010
[5] To be replaced with TEOM Fiscal Year 2009-2010
[6] To be closed Fiscal Year 2009-2010

TABLE 5. $PM_{2.5}$ FRM Monitoring Stations Assigned Site Numbers

Location	Site Code	ARB No.	AQS No.	Start Date	Schedule
Anaheim	ANAH	30178	060590007	01/03/99	Daily
Azusa [1]	AZUS	70060	060370002	01/04/99	1-in-3
Big Bear	BGBR	36001	060718001	02/08/99	1-in-6
Burbank [2]	BURK	70069	060371002	01/21/99	Daily
Compton [3]	COMP	70112	060371302	11/08	1-in-3
Fontana	FONT	36197	060712002	01/03/99	1-in-3
Indio "A"	INDI	33157	060652002	01/30/99	1-in-3
Indio "B"	INDI	33157	060652002	05/12/00	1-in-6
Long Beach (Anaheim St.)	TBD				
Long Beach (North)	LGBH	70072	060374002	01/03/99	Daily
Los Angeles "A" (Main St.)	CELA	70087	060371103	01/03/99	Daily
Los Angeles "B" (Main St.)	CELA	70087	060371103	01/06/99	1-in-6
Lynwood [4]	LYNN	70084	060371301	01/03/99	1-in-3
Mira Loma (Van Buren) [2]	MRLM	33165	060658005	11/09/05	Daily
Mission Viejo	MSVJ	30002	060592022	06/15/99	1-in-3
Ontario Fire Station	ONFS	36025	060710025	01/03/99	1-in-3
Palm Springs	PLSP	33137	060655001	12/26/99	1-in-3
Pasadena	PASA	70088	060372005	03/04/99	1-in-3
Pico Rivera #2	PICO	70185	060371602	09/12/05	1-in-3
Reseda	RESE	70074	060371201	01/24/99	1-in-3
Riverside	RIVM	33146	060651003	01/06/99	1-in-3
Rubidoux "A"	RIVR	33144	060658001	01/03/99	Daily
Rubidoux "B"	RIVR	33144	060658001	01/03/99	1-in-6
San Bernardino	SNBO	36203	060719004	01/03/99	1-in-3
South Long Beach	SLGB	70110	060374004	06/20/03	Daily

[1] Change to 1-in-3 on 04/16/09
[2] Change to daily on 04/16/09 for comparison to FEM BAM
[3] Replaced Lynwood AMS on 11/05/08
[4] Site closed 10/30/08

TABLE 6. PAMS Proposed Network

			July 1 to September 30		October 1 to June 30		
Site Type	**Date Established as PAMS**	**Site / AQS ID#**	**VOC**	**Carbonyl**	**VOC**	**Carbonyl**	**Additional Requirements**
1	04/01/2004	LAX Hastings (replaced Hawthorne)	8 x 3 hr samples every 3rd day and 1 x 24 hr sample every 6th day	No Sampling	1 x 24 hr sample every 6th day	No Sampling	
2	06/01/1995	Azusa	8 x 3 hr samples every 3rd day and 1 x 24 hour sample every 6th day	No Sampling	1 x 24 hr sample every 6th day	No Sampling	No/NOx required Trace level CO required
2	07/01/1997	Burbank	Continuous GC and 1 x 24 hr sample every 6th day	8 x 3 hr samples every day and 1 x 24 hr sample every 6th day	1 x 24 hr sample every 6th day	1 x 24 hr sample every 6th day	Trace level CO required
2	06/01/2009	Los Angeles (Main)	8 x 3 hr samples every 3rd day and 1 x 24 hour sample every 6th day	8 x 3 hr samples every 3rd day and 1 x 24 hr sample every 6th day	1 x 24 hr sample every 6th day	1 x 24 hr sample every 6th day	Trace level CO required
2	08/01/2005	Pico Rivera #2	Continuous GC and 1 x 24 hr sample every 6th day	8 x 3 hr samples every day and 1 x 24 hr sample every 6th day	1 x 24 hr sample every 6th day	1 x 24 hr sample every 6th day	Trace level CO required
3	06/09/2009	Rubidoux	8 x 3 hr samples every 3rd day and 1 x 24 hour sample every 6th day	No Sampling	1 x 24 hr sample every 6th day	No Sampling	NOy required
3	05/01/2001	Santa Clarita	8 x 3 hr samples every 3rd day and 1 x 24 hour sample every 6th day	8 x 3 hr samples 3rd day and 1 x 24 hr sample every 6th day	1 x 24 hr sample every 6th day	1 x 24 hr sample every 6th day	

MONITORING OBJECTIVES:
1 – Upwind and background characterization site
2 – Maximum ozone precursor emissions impact site
3 – Maximum ozone concentration site
4 – Extreme downwind monitoring site

MONITORING REQUIREMENTS:
One type 1 or type 3 site required per area
One type 2 site required per area
No type 4 required

REDUCED REQUIREMENTS:
Speciated VOC only required at type 2 and one other (type 1 or 3)
Carbonyl only required in areas classified as serious or above 8 hr zone
NO/NOx required only at type 2
NOy required at one site per PAMS area (type 1 or 3)