

Albuquerque Environmental Health Department (EHD)
Air Quality Division (AQD)
Ambient Air Monitoring Section
2009 Annual Network Review for Ambient Air Monitoring

Under 40 CFR, Part 58, Subpart B, The City of Albuquerque Air Quality Division (AQD) is required to submit an annual monitoring network review to the Environmental Protection Agency (EPA) regional office in Dallas, Texas. Our objective, when preparing the report, is to optimally apply limited resources to best protect public health.

The network plan describes the framework of the local air quality surveillance system, presents monitoring results over the past three years, provides comparisons to national standards, and discusses future plans. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA.

The following document represents the current network plan and proposed changes to the AQD Air monitoring network for 2009. These proposed changes incorporate new rules requirements from CFR 40 parts 53 & 58 that were published October 17, 2006 and became effective December 18, 2006, as well as the new Ozone NAAQS¹. Future NCore² implications are also discussed under each section.

This document represents the commitment of the AQD to effectively protect the health of the citizens of Albuquerque-Bernalillo County³ through ambient air monitoring, by using the best affordable technology, and by communicating the data collected as quickly and accurately as possible. We will continue to meet our minimum requirements for each criteria pollutant. Network reductions commensurate with funding shortfalls were made last year with Region VI approval. No significant reductions are proposed this year. Monitoring changes will be discussed in each pollutant section and then summarized in tables at the end of this document.

Population Statistics

Albuquerque/Bernalillo County, including Rio Rancho and Los Lunas is the State's largest Metropolitan Statistical Area (MSA). According to 2006 U.S. Census Bureau estimates the population of the metropolitan statistical area (MSA) which includes the adjacent counties of Sandoval, Valencia, and Tarrant is approximately 816,811 (41% of the State) and is rapidly growing. As the regional center for employment, advanced education, retail commerce, and medical treatment, Albuquerque experiences extensive commuter traffic. The junction of major Interstate 25 (north/south) and Interstate 40 (east/west), adds significant heavy transport traffic between the port of Los Angeles and the East Coast, and between Denver, El Paso, and the US-Mexico Border.

The map in Figure 1 shows the physical location of all current monitoring sites currently operated by the Air Quality Division. Three sites (2ZH - North Valley, 2ZV - South

¹ National Ambient Air Quality Standard

² The National Core Monitoring Network

³ Excluding Native American and Pueblo Lands within the County.

Valley, and 2ZF - Double Eagle) are in Bernalillo County. All other sites are within the city limits of Albuquerque. Site designation corresponds to Table 1, Column 2, which lists the ambient air monitoring sites and the monitoring equipment operated at each site.

Table 1, Column 1 is the “AQS Site ID#,” a unique identification number assigned to each monitoring site in the network. The AQS (Air Quality System) is a national air monitoring database maintained by the EPA. Data collected from monitoring sites are input into the AQS database and made available to the public within 90 days following the end of each calendar quarter as required in the new monitoring regulations.

<<http://www.epa.gov/ttn/airs/aqsdatamart/access.htm>>

Column 2 gives the local site designation, name, and location. Site Longitude and latitude are in columns 3 and 4. Columns 5 through 9 list the monitors at each site and their associated parameters. Site photographs accompany the hard-copy version of this report on CD. During the public review period monitoring site photographs can be downloaded from the City of Albuquerque – Air Quality Division website <http://www.cabq.gov/airquality/>

Table 1, shows proposed changes to the monitoring configuration. Table 1B indicates the network configuration if proposed changes are approved.

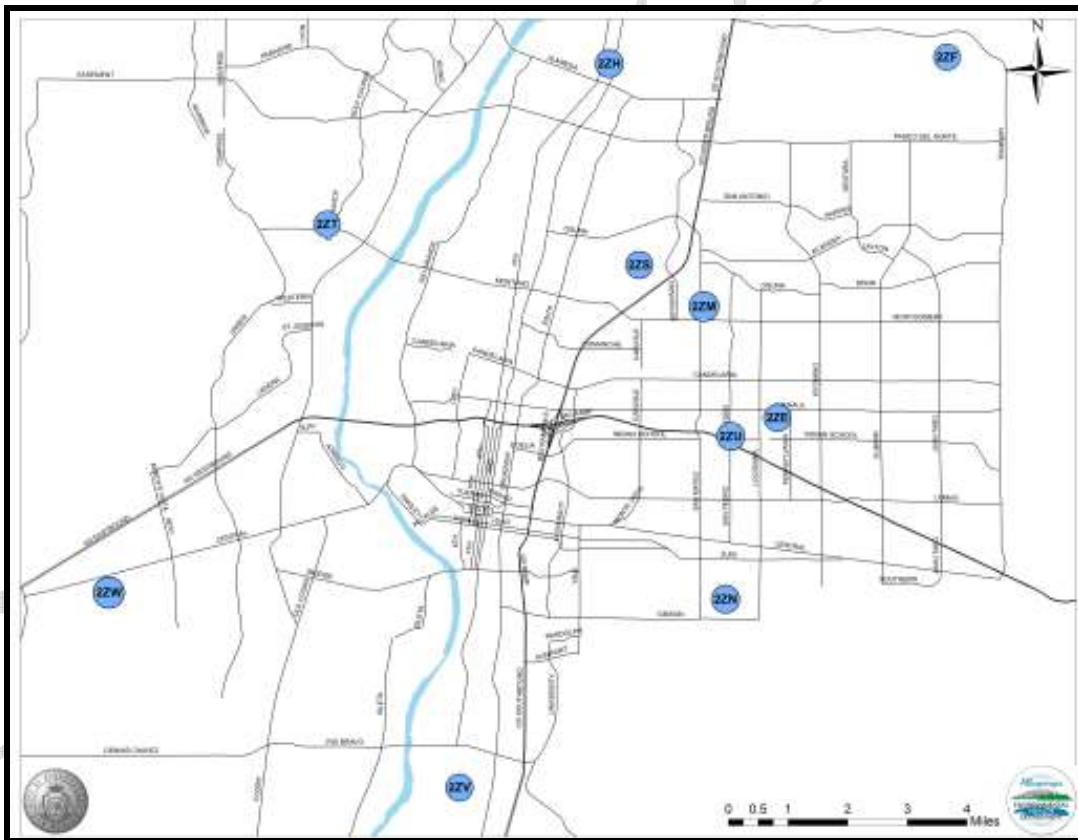


Figure 1: Albuquerque Ambient Air Quality Monitoring Network

Table 1 Albuquerque 2008 Ambient Air Monitoring Network

AQS Site ID#	Address/ Location	Longitude	Latitude	Pollutants Measured	Monitor Type	Sampling Method	Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA
35-001-0019	2ZE Uptown-Zuni 2421 Mesilla Ave. NE	-106.564	35.10728	CO	SLAMS	42101-1	IR (Non-dispersive)	continuous seasonal	Population Exposure	Neighborhood	Yes	Abq.
				PM2.5	Special Purpose	88502-3	TEOM/FDMS	continuous	Population Exposure	Neighborhood	No	Abq.
35-001-1012	2ZF Double Eagle Elementary 8901 Lowel NE	-106.508	35.1852	O3	SLAMS	44201-1	UV photometric.	continuous	Highest Concentration	Urban	Yes	Abq.
				PM2.5	Special Purpose	88502-3	TEOM/FDMS	continuous	Population Exposure	Neighborhood	Yes	Abq.
35-001-1013	2ZH North Valley 9819a Second Street NW	-106.614	35.19324	O3	SLAMS	44201-1	UV photometric.	continuous	Population Exposure	Neighborhood	Yes	Abq.
				PM10	SLAMS	81102-3	TEOM	continuous	Population Exposure	Neighborhood	Yes	Abq.
				PM2.5	Special Purpose	88502-3	TEOM/FDMS	continuous	Population Exposure	Neighborhood	No	Abq.
				CO	SLAMS	42101-1	IR (Non-dispersive)	continuous seasonal	Population Exposure	Neighborhood	Yes	Abq.
				Visibility	Special Purpose	63101	011	continuous	Special Study	NA	NA	Abq.
				Total Carbon	Special Purpose	88313	866	continuous	Special Study	NA	NA	Abq.
35-001-0023-NCORE	2ZM Del Norte 4700a San Mateo NE	-106.586	35.13426	O3	SLAMS	44201-1	UV photometric.	continuous	Population Exposure	Neighborhood	Yes	Abq.
				CO	SLAMS	42101-1	Non-dispersive IR	continuous	Population Exposure	Neighborhood	Yes	Abq.
				NO2	SLAMS	42602-1	Chemiluminescence	continuous	Population Exposure	Neighborhood	Yes	Abq.
				PM10	SLAMS	81102-1	Gravimetric	Daily 1/6	Population Exposure	Neighborhood	Yes	Abq.
				PM2.5	SLAMS	88101-1	Sequential	Daily 1/3	Population Exposure	Neighborhood	Yes	Abq.
				PM2.5 collocated	SLAMS	88101-2	Sequential	Daily 1/6	Population Exposure	Neighborhood/urban	Yes	Abq.
				Speciation	Special Purpose	68103	(multiple)	Daily 1/6	Special Study	NA	NA	Abq.

Table 1 - Continued

AQS Site ID #	Address/ Location	Longitude	Latitude	Pollutants Measured	Monitor Type	Sampling Method	Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA
35-001-0024	2ZN SE Heights 6000 Anderson Avenue SE	-106.579	35.0631	O3	SLAMS	44201-1	UV photo-metric.	continuous	Population Exposure	Neighbor hood	Yes	Abq.
				PM2.5	SLAMS	88101-1	Sequen-tial	Daily 1/3	Population Exposure	Neighbor hood	Yes	Abq.
35-001-0026	2ZS Singer 3700 Singer NE	-106.605	35.1443	PM10	SLAMS	81102-3	TEOM	continuous	Highest Concentration	Neighbor hood/ Source-specific	Yes	Abq.
				PM10	SLAMS	81102-1	Gravi-metric	Daily 1/1	Highest Concentration	Neighbor hood/ Source-specific	Yes	Abq.
				PM10 collocated	SLAMS	81102-2	Gravi-metric	Daily 1/6	Highest Concentration	Neighbor hood/ Source-specific	Yes	Abq.
35-001-0027	2ZT Taylor Ranch 5100 Montano Blvd NW	-106.697	35.1539	O3	SLAMS	44201-1	UV photo-metric.	continuous	Population Exposure	Neighbor hood	Yes	Abq.
				PM2.5	Special Purpose	88502-3	TEOM/ FDMS	continuous	Population Exposure	Neighbor hood	No	Abq.
35-001-0028	2ZU San Pedro 2200 San Pedro NE	-106.577	35.10263	CO	SLAMS	42101-1	Non-dispersive IR	continuous	Highest Concentration	Microscale	Yes	Abq.
35-001-0029	2ZV South Valley 201 Prosperity SW	-106.657	35.01708	O3	SLAMS	44201-1	UV photo-metric.	continuous	Population Exposure	Regional Scale	Yes	Abq.
				CO	SLAMS	42101-1	Non-dispersive IR	continuous seasonal	Population Exposure	Regional Scale	Yes	Abq.
				PM10	*Special Purpose	81102-3	TEOM	continuous	Other	Other	No	Abq.
				PM2.5	*Special Purpose	88502-3	TEOM/ FDMS	continuous	Other	Other	No	Abq.
TBD	2ZW Westside 11850 Sunset Gardens SW	-106.761	35.0641	O3	TBD	44201-1	UV photo-metric.	continuous	Special Study	Neighbor hood	Yes	Abq.
				PM10	TBD	88101-3	TEOM	continuous	Special Study	Neighbor hood	Yes	Abq.

* Special Purpose designation will continue until PM siting criteria are met.

Table 1B Proposed 2009 Changes to the Albuquerque Ambient Air Monitoring Network

AQS Site ID#	Address/ Location	Longitude	Latitude	Pollutants Measured	Monitor Type	Sampling Method	Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA
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35-001-0023-NCORE	2ZM Del Norte 4700a San Mateo NE	-106.586	35.13426	O3	SLAMS	44201-1	UV photometric.	continuous	Population Exposure	Neighborhood	Yes	Abq.
				CO	SLAMS	42101-1	Non-dispersive IR	continuous	Population Exposure	Neighborhood	Yes	Abq.
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Table 1B - Continued

AQS Site ID #	Address/ Location	Longitude	Latitude	Pollutants Measured	Monitor Type	Sampling Method	Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA
35-001-0024	2ZN SE Heights 6000 Anderson Avenue SE	-106.579	35.0631	O3	SLAMS	44201-1	UV photo-metric.	continuous	Population Exposure	Neighbor hood	Yes	Abq.
				PM2.5	SLAMS	88101-1	Sequen-tial	Daily 1/3	Population Exposure	Neighbor hood	Yes	Abq.
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				PM10	SLAMS	81102-1	Gravi-metric	Daily 1/1	Highest Concentration	Neighbor hood/ Source-specific	Yes	Abq.
				PM10 collocated	SLAMS	81102-2	Gravi-metric	Daily 1/6	Highest Concentration	Neighbor hood/ Source-specific	Yes	Abq.
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				PM10	*Special Purpose	88101-3	TEOM	continuous	Special Study	Neighbor hood	Yes	Abq.

*Siting criteria are not good for PM SLAMS. Other than monitoring in conjunction with Ozone, purpose is to establish neighborhood baseline prior to development.

Ground Level Ozone (O3)

Based on population, Table D-2 of Appendix D to Part 58, 40 CFR specifies a minimum of two (2) SLAMS (State and Local Air Monitoring Stations) ozone monitors.

Current – Currently the AQD exceeds the minimum requirements with six (6) ozone monitors, all categorized as SLAMS.

The MSA experiences high levels of Ozone during the summer and with the newly lowered NAAQS, non-attainment is a serious consideration. Our first declaration in 2009 did not show exceedence of the standard but in 2010 the question is open.

The lack of large industrial sites in Albuquerque suggests that the aforementioned mobile source traffic is the source of Ozone precursors. We also suspect that Ozone transport is producing a very elevated “floor” under the locally produced Ozone. In the past year we have seen clear evidence of ozone transport. Our high elevation above sea level means thinner air. Ozone chemistry may vary with lower atmospheric pressure. Extremely low-humidity creates clear skies that filter out very little UV from sunlight. Elevations within the city vary from 4900 feet to over 6500 feet, and the highest ozone levels tend to occur at our higher monitoring sites. This could result from elevation related affects or from terrain (air mass trapped against the Sandia Mountain). Insufficient NOx to support Ozone breakdown/titration at night is also possible in some localized areas.

Future – Unfortunately, all of the ideas in the previous paragraph are conjecture. To produce effective reduction strategies (should non-attainment occur), AQD needs solid data that characterizes the problem. As a non-industrial city, our findings about “transport” could also be significant to other parts of the region. The AQD would very much like to acquire equipment to monitor VOCs at various locations, times of day, weather conditions, and seasons. More NOx monitors would also be useful.

The AQD proposes to maintain the six current Ozone monitors, preserving locations that are producing the highest readings. A seventh site designated last year as special purpose, has produced high concentrations and is now proposed as a permanent site. The siting evaluation has been submitted to Region VI.

The monitor installed on a trial basis near the AQD building on the West side of Albuquerque (local designation 2ZW) indeed did produce high Ozone readings and its location has been made a permanent part of our network. Though this site is far from any potential sources (traffic) and is predominantly upwind of the city in summer months (see Figure 2), in trial runs the maximum Ozone levels at this site higher were larger than our previous high-site. Because this suggests “Ozone transport” we intend to continue operation of the ozone monitor at a far west location permanently.

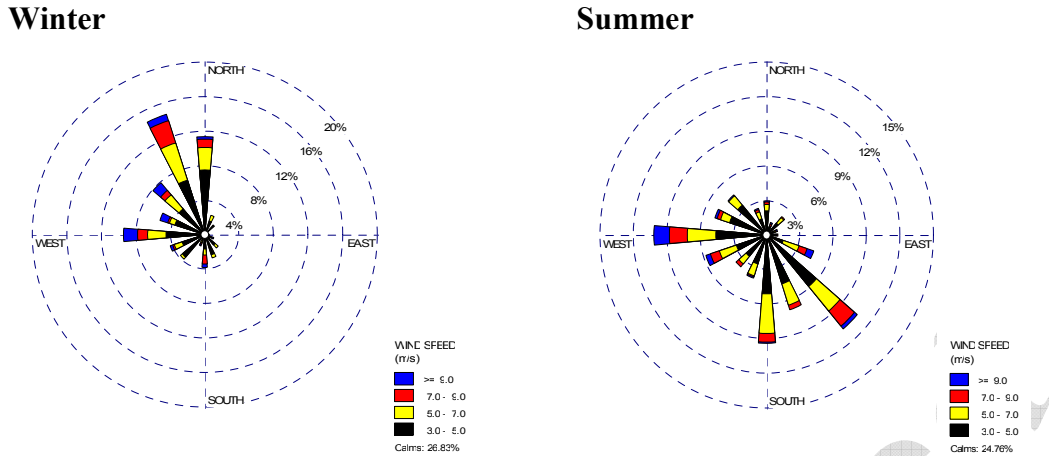


Figure 2: Seasonal Wind Roses for Albuquerque

PM_{2.5}

According to Table D-5 of Appendix D to Part 58, 40 CFR two SLAMS PM_{2.5} monitors are required in Albuquerque.

Current – AQD operates seven PM_{2.5} monitoring sites in Albuquerque-Bernalillo County. (Table 2) Of nine (9) total monitors, three (3) were identified as SLAMS in 2008.

Two sites (35-001-0023 and 35-001-0024) operate Partisol 2025 sequential samplers with 2.5 micron inlet cutoff to record 24-hour averages PM_{2.5}. These samplers are Federal Reference Methods (FRM) and are comparable to the NAAQS. Both sites operate on a 1/3 schedule and the first site (35-001-0023) has a collocated sampler that operates every sixth day (1/6).

An additional Dichotomous FEM monitor was added at 35-001-0023 mid-year after the 2008 Network Review. The 1405 measures PM₁₀, PM_{2.5} and by subtraction – PM_{course}. It is a FEM for all three measurements which will meet the NCore requirement at Del Norte.

Five additional sites monitor PM_{2.5} continuously using a 2.5 micron inlet TEOM⁴ in series with a FDMS⁵. The FDMS provides separate measurements of solid and volatile PM_{2.5} which helps in understanding the sources of Ozone precursors. Because the TEOM is not a Federal Equivalent Method (FEM) for PM_{2.5}, the data from these monitors are used for the Air Quality Index (AQI) but are not comparable to the NAAQS.

The continuous monitors in Table 2 are used for daily Air Quality Index (AQI) reporting. The monitors at these locations report hourly averages that are sent to EPA's AIRNOW web page for real-time Air Quality particulate mapping.

⁴ Tapered Element Oscillating Microbalance

⁵ Filter Dynamic Measurement System

Future – Site 35-001-0029 houses continuous PM₁₀ and PM_{2.5} monitors, but did not formerly meet siting criteria for PM monitoring. In the past year, paving of a large commercial lot adjacent to the monitoring site removed a large hurdle, putting siting criteria within reach. (See <http://www.gpoaccess.gov/cfr/index.html>) Bernalillo County has completed an area upgrade and changes to property use and the AQD now proposes to designate both monitors as Neighborhood/population exposure. The PM₁₀ TEOM is a FEM and will be comparable to the NAAQS but the PM_{2.5} TEOM is not an FEM and will still not be comparable.

In 2008 EPA Region VI approved a change the operating schedule of the Partisol 2025 sequential samplers from every day to every third day. We are currently operating and propose to continue operating on that schedule.

Draft/Proposed

Table 2: AQD PM_{2.5} Monitoring Sites

Site Name AQS #	Current Sampling schedule	Proposed Sampling Schedule	2006 Daily 98 th %	2007 Daily 98 th %	2008 Daily 98 th %	Design Value (% Daily NAAQS)	2006 Annual Arithmetic Mean	2007 Annual Arithmetic Mean	2008 Annual Arithmetic Mean	Design Value (% Annual NAAQS)	Co-located with continuous PM2.5 Sample Yes or Nor
Del Norte 0023	1/1	1/3	18.2	18.4	14.1	48.3%	7.7	6.7	6.0	44.7%	No
Del Norte 0023 co- locate	1/6	1/6	13.1	12.9	12.9	36.9%	7.0	6.2	6.0	42.0%	Yes
SE Heights 0024	1/1	1/3	14.1	18	14.3	44%	6.5	6.5	6.0	41.3%	No
Uptown-Zuni 0019	Continuous /Hourly	Continuous /Hourly	18	30	20.8	NC	7.8	8.5	7.4	NC	
Double Eagle 1012	Continuous /Hourly	Continuous /Hourly				NC				NC	
North Valley 1013	Continuous /Hourly	Continuous /Hourly	26	40.2	33.9	NC	9.6	11.9	10.8	NC	
Taylor Ranch 0027	Continuous /Hourly	Continuous /Hourly	20	22.2	15.9	NC	7.6	6.8	5.5	NC	
South Valley 0029	Continuous /Hourly	Continuous /Hourly	27	43.9	29.2	NC	9.7	11.2	10.1	NC	

NC = Not Comparable but the data is used for the Air Quality Index

PM₁₀

Table 3 calculates the design values for each PM₁₀ monitor in the Albuquerque Network that has sufficient historical data. (Reference PM₁₀ SIP Development Guideline, US EPA-450/2-86-001, June 1987) Using the highest single monitor design value, the Network Design value is 133 ug/m³ which is 88.7% of the NAAQS or in the medium range. Based on population, 40CFR, Part 58, Table D-4 of Appendix D specifies two-to-four sites as the minimum requirement for medium concentration MSAs.

Table 3. PM₁₀ Design Values

Site	AIRS #	POC	Year	# of 24 hr			
				Observations	1st Max	2nd Max	3rd Max
2ZM Del Norte							
35-001-0023	1	2006	58	39	39	38	34
35-001-0023	1	2007	59	38	35	35	34
35-001-0023	1	2008	56	43	33	32	31
Total			173				
2ZS Singer							
35-001-0026	1	2006	335	152	149	133	130
35-001-0026	1	2007	323	147	131	114	112
35-001-0026	1	2008	342	163	132	123	114
Subtotal			1000				
35-001-0026	2	2006	57	113	104	103	99
35-001-0026	2	2007	50	140	97	86	84
35-001-0026	2	2008	54	99	99	98	92
Subtotal			161				
35-001-0026	3	2006	353	132	131	125	124
35-001-0026	3	2007	353	194	130	124	111
35-001-0026	3	2008	360	169	131	110	100
Subtotal			1066				
Total			2227				
2ZH North Valley							
35-001-1013	3	2006	350	137	108	106	101
35-001-1013	3	2007	306	95	89	86	85
35-001-1013	3	2008	361	153	98	88	82
Total			1017				

Current – The AQD currently exceeds the requirement by monitoring PM₁₀ at five sites listed in Table 4. Four sites have continuous monitors (TEOMs) and two sites use FRM filter-based monitors to measure 24-hour averages. One of the filter-based sites has a collocated sampler.

An additional Dichotomous FEM monitor was added at 35-001-0023 mid-year after the 2008 Network Review. The 1405 measures PM₁₀, PM_{2.5} and by subtraction – PM_{course}. It is a FEM for all three measurements which will meet the NCore requirement at Del Norte.

Because of terrain, extremely dry climate, and unusual weather patterns, Albuquerque frequently has very different wind conditions in various parts of the city. Westerly winds

are the assumed weather pattern but that is only true during certain seasons of the year. (refer back to Figure 2) East canyon winds accelerate down-slope on the Sandia Mountain at speeds up to 65 miles per hour, blasting the NE quadrant of the city before slowing and dispersing. The valley experiences North-South flow with a diurnal pattern. The west side of the city has very fine soils and large tracts of native vegetation are being removed for development. These factors can produce higher PM levels with any wind direction, but particularly in the winter months with winds from the North and West quadrant.

In previous years, most of our AQI days result from high PM₁₀ values. PM₁₀ data is used to report the AQI, to accurately portray PM in neighborhoods, to enforce our dust control regulation, and to issue high wind advisory or health alerts to protect the population. (For sensitive populations, extremely high hourly values are a threat, even if the 24 hour standard is not exceeded.)

Future

The continuous monitor at AIRs 35-001-0029 has been designated as a Special Purpose Monitor due to poor siting criteria and local source emissions. With the recently completed site-upgrades, the Division proposes to change the designation to SLAMS/Neighborhood/population exposure

Table 4. Proposed PM₁₀ Monitoring Configuration

PM10 Sites	Current Sampling Schedule	2006 Design Value	2007 Design Value	2008 Design Value	3 year avg.	2006-8 Design Value %of NAAQS	Proposed Sampling Schedule
North Valley 1013	Continuous	106	86	88	93.3	62.2%	Continuous
Del Norte 0023	1/6	39	38	43	40	26.6%	1/6
Singer - 0026	1/6	133	114	123	123.3	82.2%	1/6
Singer - 0026 collocate	1/6	113	140	99	117.3	78.2%	1/6
Singer 0026	Continuous	124	111	110	115	76.6%	Continuous
*South Valley 0029	Continuous	-	-	-	NA	*NC	Continuous
West Side	Continuous	No data	No data	Partial year	NA	NC	Continuous

*Site 35-001-0029 did not previously meet siting criteria for PM₁₀ but the data was used for the Air Quality Index. Three full years of valid for NAAQS comparison will not exist until the 2012 review
 NC = Not Comparable

Sulfur Dioxide (SO₂), Nitrogen Oxides (NO₂, NO_y), and Carbon Monoxide (CO)

Under 40 CFR part 58, appendix D4, there are no minimum requirements for the number of SO₂, NO₂, or CO sites, however, discontinuation of existing sites must be approved by the EPA Regional Administrator.

Sulfur Dioxide (SO₂)

Future – The AQD currently does not monitor SO₂. While there are large sources in the state, none are close to Albuquerque and emissions are reduced by dispersion over distance.

The designated NCore site is required to have a high-sensitivity SO₂ monitor.

Oxides of Nitrogen (NO₂, NO_y)

Current – The AQD monitors NO, NO₂ and NO_x at one site. AIRS 35-001-0023 is the proposed NCore location. In the past NO_y⁶ monitoring was conducted at a second site on an experimental basis but the activity was discontinued at the end of the project. That unit is now obsolete and would not meet current requirements.

Future –A new NO_y monitor will be purchased and installed at the NCore site, working in conjunction with the existing NO_x monitor.

With the new Ozone NAAQS, ozone levels are a pending problem. The AQD should be acquiring monitoring data to characterize NO_x sources and distribution. Significant Ozone formation occurs in summer months, and studies (by Sonoma Technology) indicate that the area is VOC limited. Suspected NO_x sources include mobile (both on and off road), the Airport, and methane combustion for residential and water heating.

⁶ NO_y are highly reactive oxides of Nitrogen, and are the most likely to be involved in the formation and breakdown of Ozone.

Carbon Monoxide (CO)

Current – The AQD currently operates five (5) CO monitors. Albuquerque/Bernalillo County was declared non-attainment for CO from 1978 – 1996. While levels have been controlled, the city remains in maintenance status. In 2006, the AQD requested permission to operate four of the monitors during winter months only (October – March), and the change was approved by EPA Region VI. The micro-site monitor (AIRS site 35-0010-0028), and the conventional CO monitor at the designated NCore site (AIRs 35-001-0023) will continue to operate year around.

The designated NCore site is required to have a high-sensitivity CO monitor.

Non-SLAMS Special Purpose Monitors

PM_{2.5} Chemical Speciation

Current – CFR Part 58 regulations require the operation of a speciation sampler at approved NCore sites. The Del Norte (AIRS 35-001-0023) site in Albuquerque is the proposed NCore site for the state of New Mexico. It operated a Partisol 2300 speciation sampler from 2002 until mid 2008 when it was replaced by a MetOne SuperSass and a URG EC/OC sampler. Speciation filters are sent to RTI, the EPA national analysis contractor in North Carolina, and data is reported to the AQS. The AQD also uses this data in local studies to correlate with data from other samplers.

Up to now, 100% funding for the speciation effort came under our CAA 103 PM_{2.5} grant. When the CAA 103 funding goes away in March of 2009, the cost is supposed to be picked up by our CAA 105 Base Grant. However, CAA 105 funding requires local match, and the Base Grants are also shrinking. Funding uncertainty creates some doubt about the future of speciation sampling.

Visibility

Current – Albuquerque-Bernalillo County does not have any Class I areas⁷. It exhibits good visibility much of the year but does experience a brown cloud in winter months, particularly during temperature inversions. For that reason, the AQD currently operates Nephelometers and Aethelometers at one site (AIRs 35-001-0023).

Community Scale Monitoring (CSM)

Current – In the past the AQD has participated previously in CSM studies, but there were none in 2005 - 2006. A CSM study began in September of 2007 was proposed to last until September of 2008. Due to problems with analysis contractors, the sampling was extended until March of 2009. Sampling was conducted at 3 locations (AIRs 35-001-0023, AIRs 35-001-1013, and 35-001-0029). Samples are analyzed for Carbonyls (Method TO-11A), Semi-volatiles (Method TO-13A), VOCs (Method TO-15), and heavy metals (by ICP-MS). Some limited vertical data was also acquired by instruments mounted on tethered balloons, to support modeling and risk assessment. (Reference the cover story in the March 2008 “Air Shed.”

http://plaza.cabq.gov/QuickPlace/aqd/PageLibrary8725707400726BEA.nsf/h_8C89627B

⁷ AQCR 152 is in the Albuquerque MSA. It may be impacted by the Albuquerque airshed, just as we were impacted by the 2000 fires.

[D2E15DE58725707400795A0A/9C5DD0742806949B872574090057FCBC/?OpenDocument](https://www.epa.gov/air-quality-criteria/air-quality-criteria-standards-for-particulate-matter).) Sampling occurred on a 1 in 6 schedule synchronized with all other instruments operating on that cycle, particularly the Speciation monitor. This allowed the maximum use of network data for analysis and comparisons. Final sample data is now arriving and analysis will occur in the coming months.

National Core Monitoring Network (NCore)

The revised NCore checklist is addressed in the Appendix, reflecting our current status towards meeting the 2010 start-up date. It shows that some progress has been made, but additional procurements are needed.

Future: – The AQD would like to become part of the national Air Toxics network so these measurement could be continued over many years. In particular, the TO13 method is the best means to track smoke from residential wood heating and forest fires and controlled burns. In response to an inquiry, Region VI personnel said they would support our request if a formal proposal was submitted.

Mercury

Future: – The AQD would also like Albuquerque-Bernalillo County to become part of the Mercury Deposition Network, due to transport issues, especially since dry-deposition Mercury monitors are now coming on-line. The state of New Mexico has significant mercury sources (coal-fired EGUs). The one existing Mercury Deposition Network monitoring site in New Mexico (further from the EGUs than Albuquerque) reports the highest mercury deposition levels in the US. The vast majority of the State's waters carry warnings for mercury content in fish, so mercury deposition must be occurring by some mechanism, and dry deposition seems more likely than wet.

Wet and dry-deposition monitors in Albuquerque-Bernalillo County would provide a second data point and clarify whether the high readings are an anomaly of minimal and infrequent precipitation. Mercury monitoring and extended Air Toxics monitoring would require increased level of EPA funding.

Albuquerque – Bernalillo County Network Changes

Table 5 shows the network before this review. Other than redesignations discussed above, no changes are proposed for the coming year.

Table 5: Albuquerque-Bernalillo Co. Air Monitoring Network

Station Description				Full Met	Gases			PM10			PM2.5			Other			
AIRs Number	Site Code	Station Name	Station Address		Ozone	CO	NOx	24 Hour Hi Vol	Cont. (TEOM)	FDMS	Cont. (TEOM)	FDMS	Sequential	Speciation	Nepha-lometer	Aethe-lometer	Pollen
35-001-0019	2ZE	Uptown Zuni Park	2421 Mesilla NE	p		API 300					R & P 1400	R & P 8500					Burkhard
35-001-1012	2ZF	Double Eagle Elementary	8901 Lowel NE	X	API 400A						R & P 1400	R & P 8500					
35-001-1013	2ZH	North Valley	9819 2nd St. NW	X	API 400A	API 300			R & P 1400		R & P 1400	R & P 8500					
35-001-0023	2ZM	Del Norte	4700 San Mateo NE	X	API 400A	API 300	API 200A	GMW 1/6	*Thermo 1405 Dichotomous			2025 Col. 1/3, 1/6	MetOne Super SASS 1/6	Optec NGN-2	McGee AE2		
35-001-0024	2ZN	SE Heights	6000 Anderson SE	X	API 400A								Partisol 2025 1/3				
35-001-0026	2ZS	Singer	3700 Singer NE	X				Partisol 2025s (2-Col)	R & P 1400a								
35-001-0027	2ZT	Taylor Ranch	5100 Montano NW	X	API 400A						R & P 1400	R & P 8500					Burkhard
35-001-0028	2ZU	Uptown San Pedro	San Pedro & AMAFCA NE	p		API 300											
35-001-0029	2ZV	South Valley	201 Prosperity SE	X	API 400A	API 300			R & P 1400a		R & P 1400	R & P 8500					
35-001-0031	2ZW	AQD Westside 9 Mile Hill	11850 Sunset Gardens SW	X	API 400A				R & P 1400								

NCORE SLAMS Special Purpose
Seasonal

Summary

Any comments pertaining to this document should be sent to:

Ken Lienemann

Environmental Health Department - Air Quality Division

Ambient Air Monitoring Supervisor

11850 Sunset Gardens SW

Albuquerque, New Mexico 87121

Or email: klienemann@cabq.gov

Comments will be compiled, posted on the Air Quality website, and sent to EPA with the proposed Network Review.

After completing its review EPA will either approve the document or return comments. EPA's response and the final Network Review document will then be posted on the Air Quality Website.

Draft/Proposed

APPENDIX

NCore Plan
and Self-Assessment

Draft/Proposed

National Core (NCore) Multi-pollutant Monitoring Stations:

In October 2006 the United States Environmental Protection Agency (EPA) issued final amendments to the ambient air monitoring regulations for criteria pollutants. These amendments are codified in 40 CFR parts 53 and 58. The purpose of the amendments was to enhance ambient air quality monitoring to better serve current and future air quality needs. One of the most significant changes in the regulations was the requirement to establish National Core (NCore) multi-pollutant monitoring stations. These stations will provide data on several pollutants at lower detection limits and replace the National Air Monitoring Station (NAMS) networks that have existed for several years. The final network plan must be submitted to EPA by July 1, 2009 and the stations must be operational by January 1, 2011.

The NCore Network addresses the following monitoring objectives:

- timely reporting of data to the public through AIRNow, air quality forecasting, and other public reporting mechanisms
- support development of emission strategies through air quality model evaluation and other observational methods
- accountability of emission strategy progress through tracking long-term trends of criteria and non-criteria pollutants and their precursors
- support long-term health assessments that contribute to ongoing reviews of the National Ambient Air Quality Standards (NAAQS)
- compliance through establishing nonattainment/attainment areas by comparison with the NAAQS
- support multiple disciplines of scientific research, including; public health, atmospheric and ecological

After evaluating the existing network, historical data, census data, meteorology, and topography the Albuquerque Air Quality Division recommends the following changes to its air monitoring network to become effective January 1, 2011.

Recommended changes to Ambient Air Monitoring Network to accommodate NCore sampling strategy:

- 1) Establish an NCore multi-pollutant monitoring station in at Del Norte High School, 4700 San Mateo, NE. The location meets the objective for an NCore site and meets neighborhood scale criteria for PM_{2.5}, PM₁₀, Ozone, CO, and NO_x.
- 2) NO_y low level monitor will be added by January 1, 2011.
- 3) CO low level monitor will be added by January 1, 2011.
- 4) SO₂ low level monitor will be added by January 1, 2011
- 5) The continuous PM Dichotamous monitor already in place will receive FEM certification for PM₁₀, PM_{2.5}, and PM course, with and without FDMS.

Monitoring Objective:

Determine compliance with NAAQS; observe pollution trends for national data analysis, provide pollution levels for daily index reporting; and provide data for scientific studies.

Table 1 Monitors:

Monitor Type	Designation	Analysis Method	Frequency of Sampling
FRM Carbon Monoxide (CO)	NCore	Automated Reference Method utilizing trace level non-dispersive infrared analysis.	Continuously
FRM Nitrogen Oxide (NO _x)	NCore	Automated Reference Method utilizing chemiluminescence analysis.	Continuously
FRM Ozone (O ₃)	NCore/AQI	Automated Equivalent Method utilizing UV photometry analysis.	Continuously
FRM Sulfur Dioxide (SO ₂)	NCore	Automated Equivalent Method utilizing trace level UV fluorescence analysis	Continuously
PM ₁₀ Continuous	NCore	Tapered Element Oscillating Microbalance (TEOM)	Continuously
FRM PM _{2.5}	NCore	Manual Reference Method utilizing gravimetric analysis.	1/3 days
PM _{2.5} Continuous	NCore/AQI	Tapered Element Oscillating Microbalance (TEOM)	Continuously
PM _{coarse}	NCore	Tapered Element Oscillating Microbalance (TEOM)	Continuously
PM _{2.5} Speciation	NCore	Multi-species manual collection method utilizing thermal optical, ion chromatography,	1/6 days

Total Reactive Nitrogen (NO _y)	NCore	gravimetric, and X-ray fluorescence analyses. *Automated trace level chemiluminescence analysis.	Continuously
Meteorological	NCore	Air quality measurements approved instrumentation for wind speed, wind direction, humidity, barometric pressure, temperature, and solar radiation	Continuously

Quality Assurance Status:

All Quality Assurance procedures will be implemented in accordance with 40 CFR 58, Appendix A. The AQD’s current Quality Assurance Project Plan covers PM2.5, Ozone, NO_x, Speciation, and meteorological measurements. For the trace level instruments, the Quality Assurance Project Plan will be modified to include NCore and submitted prior to use of the trace level instruments. SOPs will be developed for each new instrument used in the project.

Area of Representativeness:

40 CFR Part 58 Appendix D provides design criteria for ambient air monitoring. The monitoring objective for the NCore site is to produce data that represents a fairly large area and therefore the spatial scale of the site is important. The spatial scale defines the physical dimensions of the air parcel nearest to a monitoring site throughout which actual pollutant concentrations are reasonably similar. It is determined by the characteristics of the area surrounding the air monitoring site and the site’s distance from nearby air pollution sources such as roadways, factories, etc. In the case of urban NCore the spatial scales to be used are neighborhood and urban. Table 2 shows the area of representativeness for each pollutant for the Del Norte site.

Table 2: Spatial Scales for Each Pollutant

Pollutant	Spatial Scale	Comments
Ozone	Neighborhood Scale	
NO _x	Neighborhood Scale	
Carbon Monoxide	Neighborhood Scale	There is no Urban scale for CO
SO ₂	Neighborhood Scale	There is no Urban scale for SO ₂
PM10/PM2.5	Neighborhood Scale	

Site Description and Spacing:
CBSA: Albuquerque, New Mexico MSA
Site Name: Del Norte
AQS ID: 35-001-0023
Location: 4700 San Mateo Blvd
County: Bernalillo
Longitude: -106.5855, **Latitude:** 35.13426
Date Established: 1993
Site Approval Status: Pending





Draft



Draft/PL

A. NETWORK DESIGN

- a. Proposed NCore Station #1 NEW SITE EXISTING SITE AQS # 35 001 0023
- b. Proposed NCore Station #2 NEW SITE EXISTING SITE AQS #
- c. Proposed NCore Station #3 NEW SITE EXISTING SITE AQS #

Item	Criteria	Status	Next Steps
1	Urban or Rural	Largest MSA(s) covered by urban station.	Largest MSA in New Mexico
2	Scale of Representation	Neighborhood <u> </u> Urban <u> X </u> Regional <u> </u> Other <u> </u>	Urban Neighborhood scale or larger highly recommended.
3	Population Oriented	Yes <u> </u> No <u> </u>	Population Oriented Population oriented monitoring highly recommended.
4	Proximity to local emissions sources	No biasing local sources within 500 meters for urban stations. No biasing sources or large urban population centers within 50 km for rural stations.	No biasing local sources within 500 meters for urban stations.
5	Suitability for meteorological measurements	Distance from obstructions is 10x height of obstruction above station. See Volume IV: Meteorological Measurements Version 1.0 (Draft)	Distance from obstructions is greater than 10x height of obstruction above station.
6	Information (including site photographs) provided for AMTIC NCore web site	Photographs in 8 cardinal directions needed.	Photographs in 8 cardinal directions have been provided
7	Station Coordinates	Determined by GPS	Longitude: -106.58551 Latitude: 35.13426
8	Site visited by EPA in past 3 years	Meets applicable Appendix D and E criteria.	Site has been visited by EPA and meets applicable Appendix D and E criteria. New sites should be visited by EPA before final NCore approval is requested

	Item	Criteria	Status	Next Steps
9	Network leveraging	Collocation with other networks encouraged: STN__ Supplemental CSN__ NATTS__ CASTNET__ IMPROVE__ NADP__ PAMS__ Other__	Site is collocated with STN type sampler currently funded under PM2.5 grant.	
10	Applicable site fields updated in AQS including coordinates	Consider setting additional monitor type to "Proposed NCore" (station should also be categorized as SLAMS).	Site is currently SLAMS. Have not added Proposed NCore designation.	Set additional monitor type to "Proposed NCore"
LOGISTICAL CONSIDERATIONS				
11	Site access	Access for at least five years is suggested.	Site access is guaranteed for 5 years	
12	Power requirements and availability	200A service suggested. 240vac service typically needed for a/c. Key power outlets protected by UPS units.	125 A, 120V service. Breaker panel carefully divides circuits & isolates AC. No UPS yet	May have to upgrade electrical service
13	Telecommunications	Minimum dial-up service. Broadband service suggested for polling of 1-minute data.	786K DSL line with IP address inside of city's firewall. SLAMS instruments are currently polling 1-minute data.	
14	A/C cooling capacity	Minimum 18,000BTU a/c capacity.	2 Tons (24,000 BTU)	
15	Interior space	Sufficient for minimum of two 19" inner dimension, 6' tall instrument racks and related equipment and accessories, or equivalent shelf space.	384 ft sq of floor space. 58 linear ft of countertop.	Acquire three 19-in rotating countertop equipment racks

	Item	Criteria	Status	Next Steps
16	Exterior space (roof and accompanying platforms)	Allow for: a) 1m spacing of low-volume PM sampler inlets – up to seven* required plus PEP audit sampler. b) 1m spacing between low-volume PM sampler inlets and gas manifold cane or Teflon tubing. Facilitate usage of TTP audit vehicle or trailer.	Roof deck (19 x 30) is larger than building. 570 ft sq deck space is accessible by stairway	
17	10m tower compatibility	Required for meteorological equipment, NOy converter. Room to drop tower for calibrations and audits.	10 M telescoping tower, fully outfitted w. T2, T10, Wspd, Wdir, Patm, RH, Solar flux.	Add second tower for NOy so Met equipment does not need to be interrupted during TTP calibration.

*Notes

1. PM2.5 FRM sampler. [R&P Partisol 2025 \(2 collocated\)](#)
2. PM10c FRM sampler for PM10-2.5 mass (dichotomous sampler could substitute for #1 and #2 if future FRM/FEMs available) or PM10-2.5 continuous. [GMW Hi Vol FRM, Thermo 1405 Dichotomous PM10-2.5 continuous sampler.](#)
3. PM2.5 continuous sampler (does not have to be FEM/ARM) [The Thermo 1405 meets the requirement.](#)
4. PM2.5 speciation sampler (CSN or IMPROVE) [MetOne Super SASS is installed and operating](#)
5. URG sampler for carbon channel (PM2.5 speciation) if using CSN samplers. [URG installed and operating as of spring 2009.](#)
6. Sampler for PM10-2.5 speciation (unless dichotomous sampler or PM2.5 speciation sampler (spare channels) is used) (not a current requirement)
7. URG sampler for PM10 carbon speciation (speculative need for PM10-2.5 carbon speciation by difference) [Requirement to be defined later. Without additional equipment purchase, we see no way to meet this requirement.](#)

B. REQUIRED PARAMETER/METHODOLOGICAL EVALUATION

- d. Proposed NCore Station #1 NEW SITE EXISTING SITE AQS 35 001 0023
- e. Proposed NCore Station #2 NEW SITE EXISTING SITE AQS #
- f. Proposed NCore Station #3 NEW SITE EXISTING SITE AQS #

	Parameter	Existing Measurements		Future Measurements		Notes
		Sampling Began	Method	Date Expected	New or Relocated	
1	Ozone	1993	API 400A	CABQ Ozone levels are currently in the high range.	We propose that purchase of API 400E for high sensitivity measurements is not necessary.	Year-round operation (not seasonal)
2	Sulfur dioxide			August 2010	Purchase API 100EU	High sensitivity
3	Carbon monoxide	1993	API 300	August 2010	Purchase API 300EU	High sensitivity
4	Nitrogen oxides (NO _y)*		API 200A NO_x	August 2010	Purchase API 200 EU and 200EU/501 NOY	High sensitivity External converter mounted at 10m
5	PM2.5 mass		Partisol 2025 sequential: 1/3 and collocate 1/6			1-in-3 day FRM/FEM integrated
6	PM2.5 continuous				Thermo 1405 Dichotamous with dual FDMS	FEM or ARM preferred but not required
7	PM2.5 speciation	2001	New Met One & URG 3000N sampler installed. Currently 1-in-6.	Existing, Fall 2008		1-in-3 day (Met One & URG 3000N samplers) or IMPROVE

	Parameter	Existing Measurements		Future Measurements		Notes
		Sampling Began	Method	Date Expected	New or Relocated	
8	PM10-2.5 mass				See #6 above	Integrated samplers (FRM difference or dichot) or continuous monitor
9	PM10-2.5 speciation				New	Sampling requirements to be defined later.
10	Wind speed and direction**	1993	Climatronics 460 configuration			At 10 m
11	Ambient temperature**	1993	Climatronics 460 configuration			At 2 m & 10 m
12	Relative humidity**	1993	Climatronics 460 configuration			At 2 m
13	Optional – Vertical wind speed, solar radiation, precipitation, barometric pressure, delta-T for 2-10m.	1993	Have solar rad. Barometric Press & delta T 2-10		Can add vertical wind speed and precipitation if funding is provided.	At 2-3 m
14	Optional – Ammonia and nitric acid					Pilot project using denuders scheduled for 2008-2009.

Notes

* Although the measurement of NO_y is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of NO_y compared to the conventional measurement of NO_x, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between NO_y and NO_x measured concentrations, the Administrator may allow for waivers that permit high-sensitivity NO_x monitoring to be substituted for the required NO_y monitoring at applicable NCore sites.

** EPA recognizes that, in some cases, the physical location of the NCore site may not be suitable for representative meteorological measurements due to the site's physical surroundings. It is also possible that nearby meteorological measurements may be able to fulfill this data need. In these cases, the requirement for meteorological monitoring can be waived by the Administrator.

C. SUPPORTING EQUIPMENT EVALUATION

- a. Proposed NCore Station #1 NEW SITE EXISTING SITE AQS # 35 001 0023
- b. Proposed NCore Station #2 NEW SITE EXISTING SITE AQS #
- c. Proposed NCore Station #3 NEW SITE EXISTING SITE AQS #

	Item	Criteria	Status	Next Steps
1	Calibrator (field)	Suitable for trace-level dilutions, see Appendix A audit concentrations. Capable of automated QC checks. Internal O3 generator – photometer preferred.	Have (multiple) API-700As which do not meet NCore dilution spec. Need one (1) 700E for QC calibration.	Purchase API-700E by August 2010
2	Calibrator (lab or field)	Suitable for generation of MDL-level concentrations	Have (multiple) API-700As which do not meet NCore dilution spec. Need one (1) 700E for QC calibration.	Purchase API-700E by August 2010
3	Zero Air Source	Compliant with TAD recommendations. Ultra-pure air cylinder recommended for occasional comparison to zero air source. Capacity for 20+ LPM of dilution air.	Have API 701As (multiple) Need two (2) 701Es: one for QC trace level calibration and precision and 1 for QA Audit.	Purchase API-701Es and Ultra-pure air cylinders by August 2010.
4	Data acquisition system	Digital-capable system	Existing 8832 data logger meets current SLAMS digital requirement but channels are fully loaded	Purchase (2) additional 8832 data loggers by August 2010.
5	Gas cylinder standards	Suitable for trace-level dilutions, see Appendix A audit concentrations, EPA Protocol certifications. Special low-level standards needed for MDL concentrations (CO, SO2, NOy)	Have NOx and CO but concentrations are too high to achieve trace level calibration points. Also need calibration gases for NOy and SO2.	Purchase all new calibration gases and regulators by August 2010.
6	Meteorological calibration devices	Provide NIST traceability of required meteorological parameters.	We currently “verify” the instruments.	Please specify what would constitute “NIST traceability” e.g. wind direction

7	Sampling manifold	Per Appendix E. Residence time <20 seconds, only glass or Teflon materials, probe and monitor inlets acceptable heights.	We meet the current SLAMS manifold and inlet requirements.	Purchase (2) additional valve sets by August 2010.
8	Auditing equipment	Independent calibrator, zero air source and gas standards compatible with trace level specifications. Independent meteorological and flow standards, if not already available.	We have independent audit equipment and gases to satisfy current SLAMS standards. (See #1, #5, and #6 above), but will need new equipment for high sensitivity measurements	Purchase API-700E and new gas standards by August 2010.

D. ORGANIZATIONAL FACTORS

	Item	Criteria	Status	Next Steps
1	Training considerations	Key monitoring personnel have attended OAQPS provided monitoring workshops or equivalent training.	Lead monitoring technician attended course presented in Sacramento, Ca.	We intend to have intensive training with Teledyne API when new gas monitors are available.
2	Monitoring station documentation	NCore station(s) described in Annual Monitoring Network Plan.	Status and plans are included in the 2009 Network Review.	Update with corresponding events.
3	Section 103 funds received and obligated for equipment purchases		Working with EPA Regional contacts.	Utilize carry-over money from 2008 and additional equipment funds provided in 2009 103 and 105 grants.