

**Albuquerque Environmental Health Department (EHD)**  
**Air Quality Division (AQD)**  
**Ambient Air Monitoring Section**  
**2010 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 2010. 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 NAAQS<sup>1</sup>. Future NCore<sup>2</sup> implications are also discussed under each section. Requirements for Lead and Roadside NOx are also discussed.

This document represents the commitment of the AQD to effectively protect the health of the citizens of Albuquerque-Bernalillo County<sup>3</sup> 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. No significant reductions were made in 2009 but some 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 857,903 (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

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<sup>1</sup> National Ambient Air Quality Standard

<sup>2</sup> The National Core Monitoring Network

<sup>3</sup> Excluding Native American and Pueblo Lands within the County.

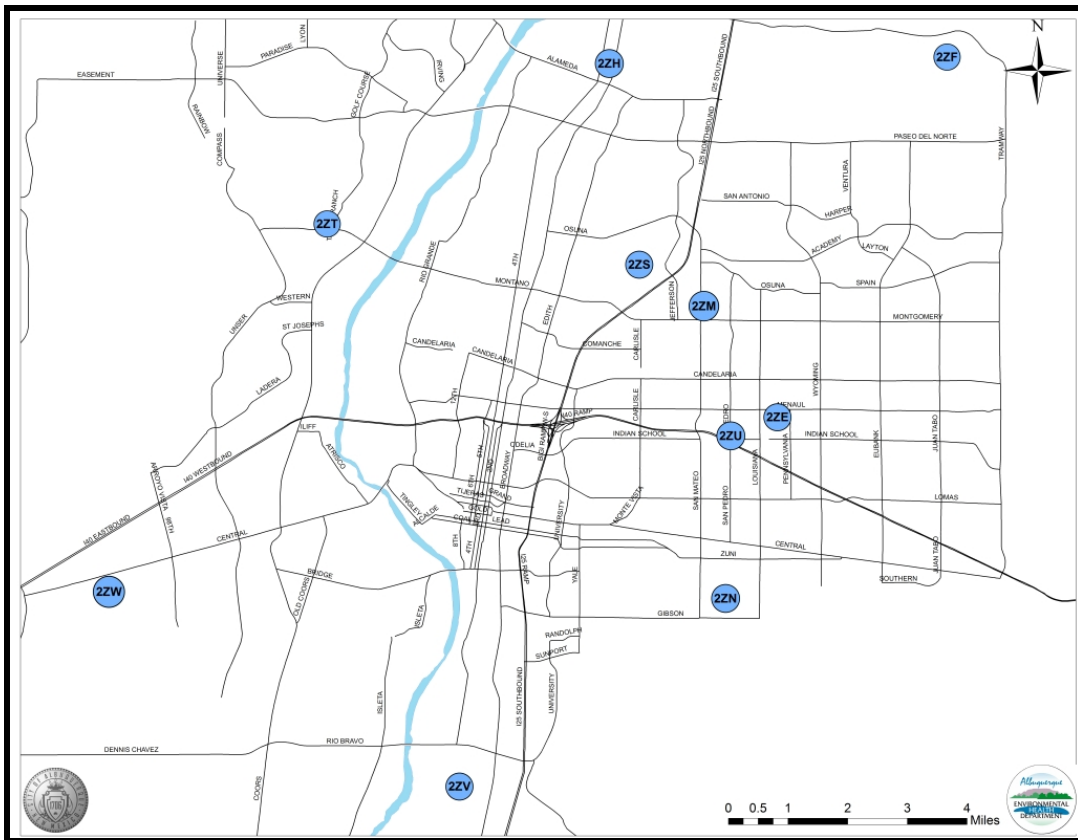
Valley, and 2ZF - Double Eagle) are in Bernalillo County. All other sites are within the city limits of Albuquerque. Site designation corresponds to Table 1, Column 2, which lists the ambient air monitoring sites and the monitoring equipment operated at each site.

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 2009 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/	continuous	Population Exposure	Neighborhood	No	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.
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	Chemluminescence	continuous	Population Exposure	Neighborhood	Yes	Abq.
				PM10	SLAMS	81102-1	Gravimetric	Daily 1/6	Population Exposure	Neighborhood	Yes	Abq.
				PM10-2.5	SLAMS		Dichotomous	continuous	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.
				Carbon Speciation	Special Purpose		Multiple	Daily 1,6; 1/3 after 1/1/11	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.
35-001-0032	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	No	Abq.

**Table 1B Proposed 2010 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
35-001-1012	2ZF Double Eagle Elementary 8901 Lowel NE	-106.508	35.1852	O3	SLAMS	44201-1	UV photo-metric.	continuous	Highest Concentration	Urban	Yes	Abq.
				PM2.5	Special Purpose	88502-3	TEOM/FDMS	continuous	Population Exposure	Neighborhood	No	Abq.
35-001-1013	2ZH North Valley 9819a Second Street NW	-106.614	35.19324	O3	SLAMS	44201-1	UV photo-metric.	continuous	Population Exposure	Neighborhood	Yes	Abq.
				PM10	SLAMS	81102-3	TEOM	continuous	Population Exposure	Neighborhood	Yes	Abq.
				PM10 collocated	SLAMS	81102-2	Gravimetric	Daily 1/6	Highest Concentration	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.
35-001-0023-NCORE	2ZM Del Norte 4700a San Mateo NE	-106.586	35.13426	O3	SLAMS	44201-1	UV photo-metric.	continuous	Population Exposure	Neighborhood	Yes	Abq.
				HS CO	SLAMS	42101-1	Non-dispersive IR	continuous	Population Exposure	Neighborhood	Yes	Abq.
				HS NO2, NOx, NOy	SLAMS	42602-1	Chemluminescence	continuous	Population Exposure	Neighborhood	Yes	Abq.
				HS SO2	SLAMS	42401-1	UV Fluorescence	continuous	Population Exposure	Neighborhood	Yes	Abq.
				PM10	SLAMS	81102-1	Gravimetric	Daily 1/6	Population Exposure	Neighborhood	Yes	Abq.
				PM10-2.5	SLAMS	81102 88101	Dichotomous	continuous	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, 1/3 after 1/1/11	Special Study	NA	NA	Abq.
				Carbon Speciation	Special Purpose		(multiple)	Daily 1,6; 1/3 after 1/1/11	Special Study	NA	NA	Abq.

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	Neighborhood	Yes	Abq.
				PM2.5	SLAMS	88101-1	Sequential	Daily 1/3	Population Exposure	Neighborhood	Yes	Abq.
35-001-0026	2ZS Singer 3700 Singer NE	-106.605	35.1443	PM10	SLAMS	81102-3	TEOM	continuous	Highest Concentration	Middle/ Source-specific	No	Abq.
				PM10	SLAMS	81102-1	Gravimetric	Daily 1/1	Highest Concentration	Middle/ Source-specific	No	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	Neighborhood	Yes	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	SLAMS	81102-3	TEOM	continuous	Population Exposure	Neighborhood	Yes	Abq.
				PM2.5	Special Purpose	88502-3	TEOM/ FDMS	continuous	Population Exposure	Neighborhood	No	Abq.
				TSP Lead 2 col.	SLAMS		TSP/ ICPMS	Daily 1/6	Population Exposure	Regional	Yes	Abq.
35-001-0032	2ZW Westside 11850 Sunset Gardens SW	-106.761	35.0641	O3	Special Purpose	44201-1	UV photo-metric.	continuous	Special Study	Neighborhood	Yes	Abq.
				PM10	*Special Purpose	88101-3	TEOM	continuous	Special Study	Neighborhood	No	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.

Note that Table 2 proposes to change the designation of Site 2ZS (AIRS 35-001-0026) from Neighborhood to Middle Scale. Two large industrial sources adjacent to the monitoring site strongly impact the PM10 data. However, neither the sources or the data represent the area (neighborhood) as a whole. Microscale is too small because the sources are more than 100-meters from the monitors; hence On the other hand people working or living near the major stationary sources may experience particulate pollution, particularly on windy days.

The appropriate designation is therefore Middle scale. Since 2ZS is currently the SLAMS collocate site for PM10, the collocate will have to be move to another location. We are tentatively proposing to move one R&P 2025 FRM to 2ZH.

### **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 initial declaration in 2009 did not show exceedence of the standard but the question remains open.

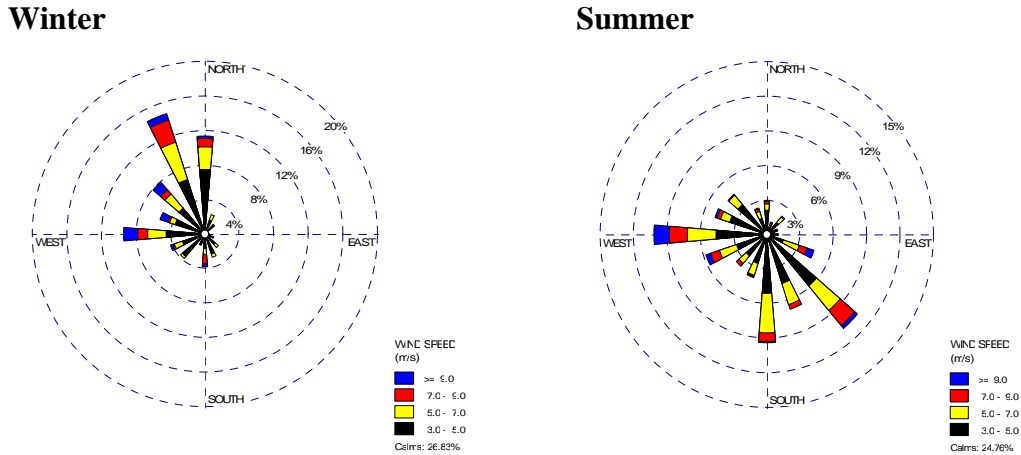
The lack of large industrial sites in Albuquerque suggests that the aforementioned mobile source traffic is the source of Ozone precursors. We also suspect that Ozone transport is producing a very elevated “floor” under the locally produced Ozone. In the past year we have seen clear evidence of ozone 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 seven current Ozone monitors, preserving locations that are producing the highest readings.

The monitor installed near the AQD building on the West side of Albuquerque (local designation 2ZW) produces high Ozone readings despite the fact that this site is far from

any potential sources (traffic) and is predominantly upwind of the city in summer months (see Figure 2). This suggests “Ozone transport.”



**Figure 2: Seasonal Wind Roses for Albuquerque**

**PM<sub>2.5</sub>**

According to Table D-5 of Appendix D to Part 58, 40 CFR two SLAMS PM<sub>2.5</sub> monitors are required in Albuquerque.

**Current** – AQD operates seven PM<sub>2.5</sub> monitoring sites in Albuquerque-Bernalillo County. (Table 2) Of ten (10) total monitors, three (3) were identified as SLAMS in 2009.

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<sub>2.5</sub>. These samplers are Federal Reference Methods (FRM) and are comparable to the NAAQS. Both sites operate on a daily 1/1 schedule and the first site (35-001-0023) has a collocated sampler that operates every sixth day (1/6).

An additional Dichotomous FEM monitor is in operation at 35-001-0023. The 1405 measures PM<sub>10</sub>, PM<sub>2.5</sub> and by subtraction – PM<sub>course</sub>. It is a FEM for all three measurements which will meet the NCore requirement at Del Norte. The data from this monitor initially appeared unreliable. On May 17, 2010, repairs and part replacements made by the Thermo factory technician appear to have resolved all problems. Because of the data issues, Table 2 does not show daily and annual mean values for 2009.

Five additional sites monitor PM<sub>2.5</sub> continuously using a 2.5 micron inlet TEOM<sup>4</sup> in series with a FDMS<sup>5</sup>. The FDMS provides separate measurements of solid and volatile PM<sub>2.5</sub>. The data from these monitors are used for the Air Quality Index (AQI) but because of anomalous behavior during high winds, are not compared to the NAAQS.

<sup>4</sup> Tapered Element Oscillating Microbalance

<sup>5</sup> Filter Dynamic Measurement System

In the 2010 PM<sub>2.5</sub> workplan, the AQD proposed to reduce the number of continuous sites to two (2) in order to procure NCore equipment and remain within budget limitations. The Region accepted the plan. We will discontinue the continuous monitors at sites 2ZE (AIRS 35-0010-0019) and 2ZT (AIRS 35-001-0027).

We had initially intended to discontinue 2ZF (AIRS 35-001-1012) as well, but since it is the highest Ozone site, decided to operate it for one additional year in the hope that funding will revive to the point where it can be sustained. An FDMS from one of the discontinued monitors will be coupled with the TEOM at 2ZF.

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.

**Future** – Site 35-001-0029 houses continuous PM<sub>10</sub> and PM<sub>2.5</sub> monitors, but did not formerly meet siting criteria for PM monitoring. In 2008, siting criteria were achieved with multiple stabilization activities. (See <http://www.gpoaccess.gov/cfr/index.html>) In 2009 the AQD proposed and the Region approved a designation as Neighborhood/population exposure; however the PM<sub>2.5</sub> TEOM still will not be compared to the NAAQS.

In 2008 EPA Region VI approved a change the operating schedule of the Partisol 2025 sequential samplers from every day to every third day. In the first half of the year we experienced recurring problems programming the samplers for 1/3 which resulted in lost samples, and makeup runs. We concluded that returning to 1/1 would reduce manhours and the overall cost. EPA concurred and we resumed the daily schedule.

**Table 2: AQD PM<sub>2.5</sub> Monitoring Sites**

Site Name AQ5 #	Current Sampling schedule	Proposed Sampling Schedule	2007 Daily 98 <sup>th</sup> %	2008 Daily 98 <sup>th</sup> %	2009 Daily 98 <sup>th</sup> %	Design Value (% Daily NAAQS)	2007 Annual Arithmetic Mean	2008 Annual Arithmetic Mean	2009 Annual Arithmetic Mean	Design Value (% Annual NAAQS)	Co-located with continuous PM2.5 Sampler Yes or No
Del Norte 0023	1/1	1/3	18.4	14.1	13.1	43.4%	6.7	6	5.3	40.0%	Yes
Del Norte 0023 co- locate	1/6	1/6	12.9	12.9	12	36.0%	6.2	6	5.2	38.7%	Yes
Del Norte 0023 R&P 1405	Continuous/ hourly	Continuous/ hourly	Not availa ble	Not availa ble	Not availa ble		Not available	Not available	Not available		
SE Heights 0024	1/1	1/3	18	14.3	16.6	46.6%	6.5	5.9	5.2	39.1%	No
Uptown Zuni 0019	Continuous/ Hourly	Continuous/ Hourly	30	20.8	32.9		8.6	7.4	8.8		
* Double Eagle 1012	Continuous/ Hourly	Continuous/ Hourly				NC				NC	
North Valley 1013	Continuous/ Hourly	Continuous/ Hourly	40.2	33.9	27.7	NC	11.9	10.8	7.6	NC	
Taylor Ranch 0027	Continuous/ Hourly	Continuous/ Hourly	22.2	15.9	17.4	NC	6.8	5.5	5.9	NC	
South Valley 0029	Continuous/ Hourly	Continuous/ Hourly	43.9	29.2	28	NC	11.2	10.1	8.8	NC	

\* does not meet siting criteria for PM

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

## PM<sub>10</sub>

Table 3 calculates the design values for each PM<sub>10</sub> monitor in the Albuquerque Network that has sufficient historical data. (Reference PM<sub>10</sub> SIP Development Guideline, US EPA-450/2-86-001, June 1987) Using the highest single monitor design value, the Network Design value is 114.7 ug/m<sup>3</sup> which is 76.4% 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. PM<sub>10</sub> Design Values**

### 2ZM Del Norte

35-001-0023	1	2007	59	38	35	35	34
35-001-0023	1	2008	56	43	33	32	31
35-001-0023	1	2009	57	107	35	33	28
<b>Total</b>			<b>172</b>	<b>62.7</b>	34.3	33.3	31.0

### 2ZS Singer

35-001-0026	1	2007	323	197	131	114	112
35-001-0026	1	2008	342	163	132	123	114
35-001-0026	1	2009	343	137	113	107	95
Subtotal			1008	165.7	125.3	114.7	107.0
35-001-0026	2	2007	50	140	97	86	84
35-001-0026	2	2008	54	99	99	98	92
35-001-0026	2	2009	53	105	75	72	67
Subtotal			157	114.7	90.3	85.3	81.0
35-001-0026	3	2007	352	194	130	124	111
35-001-0026	3	2008	361	169	131	110	100
35-001-0026	3	2009	360	183	119	115	94
Subtotal			1073	182.0	126.7	116.3	101.7
<b>Total</b>			<b>2238</b>	154.1	114.1	105.4	96.6

### 2ZH North Valley

35-001-1013	3	2007	308	95	89	86	85
35-001-1013	3	2008	361	153	98	88	82
35-001-1013	3	2009	269	110	183	65	62
<b>Total</b>			<b>938</b>	119.3	123.3	79.7	76.3

### 2ZV South Valley

35-001-0029	3	2007	361	310	143	135	124
35-001-0029	3	2008	358	147	135	124	122
35-001-0029	3	2009	145	91	75	62	58
<b>Total</b>			<b>864</b>	182.7	117.7	107.0	101.3

**Current** – Through this year the AQD exceeded the requirement by monitoring PM<sub>10</sub> 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, a Thermo 1405 Dichotomous monitor measures PM<sub>10</sub>, PM<sub>2.5</sub> and by subtraction – PM<sub>course</sub>. It is a FEM for all three measurements which will meet the NCore requirement at Del Norte. At the end of the calendar year the AQD will perform a data comparison between the filter-based FRM and the Dichotomous TEOM at the

NCore site. If the comparison validates the reliability and accuracy of the continuous monitor, the AQD proposes to discontinue operation of the filter-based FRM.

The AQD also operated a PM10 continuous monitor at 2ZW (AIRS 35-001-0032), however, the PM siting criteria for this site are highly questionable. The special purpose monitor is intended to characterize the background prior to anticipated development, and PM10 data will not be compared to the NAAQS. For the reasons discussed, previous year data from the dichotomous 1405 and the special purpose monitor to not appear in Table 3

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 PM<sub>10</sub> values. PM<sub>10</sub> 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 Division proposes to discontinue the operation of one monitor, and to move one monitor to a new location. The other existing monitors, will continue to operate in the configuration shown in Table 4.. Since this document proposes redesignating the 2ZS collocate site as Middle Scale, in 2010 there will be four SLAMS sites monitoring PM10. The 2ZS site will no longer be comparable to the NAAQS and the collocate monitor will be moved to another SLAMS site, tentatively 2ZH.

**Table 4. Proposed PM<sub>10</sub> Monitoring Configuration**

PM10 Sites	Current Sampling Schedule	2007 Design Value	2008 Design Value	2009 Design Value	3 year avg.	2007-9 Design Value %of NAAQS	Proposed Sampling Schedule
North Valley 1013	Continuous	86	88	65	79.7	53%	Continuous
North Valley - 1013 collocate	1/6						1/6
Del Norte 0023	1/6	38	43	107	62.7	42%	1/6
Singer - 0026	11/	114	123	107	114.7	76%	1/1
Singer 0026	Continuous	111	110	94	105	70%	Continuous

*South Valley 0029	Continuous	125-	124-	62-	103.7	*NC	Continuous
#West Side	Continuous	-	Partial year	?	NA	NC	Continuous

\*Site 35-001-0029 did not previously meet siting criteria for PM<sub>10</sub> 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  
35-001-00323 does not meet PM siting criteria for PM10

NC = Not Comparable

### **Sulfur Dioxide (SO<sub>2</sub>), Nitrogen Oxides (NO<sub>2</sub>, NO<sub>y</sub>), and Carbon Monoxide (CO)**

Under 40 CFR part 58, appendix D4, there are no minimum requirements for the number of SO<sub>2</sub>, NO<sub>2</sub>, or CO sites, however, discontinuation of existing sites must be approved by the EPA Regional Administrator.

#### **Sulfur Dioxide (SO<sub>2</sub>)**

**Future** – The AQD has not monitored SO<sub>2</sub> up to this point. 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 SO<sub>2</sub> monitor. The monitor has been purchased and will be installed in the 2<sup>nd</sup> half of 2010.

#### **Oxides of Nitrogen (NO<sub>2</sub>, NO<sub>y</sub>)**

**Current** – The AQD monitors NO, NO<sub>2</sub> and NO<sub>x</sub> at one site. AIRS 35-001-0023 is the proposed NCore location. In the past NO<sub>y</sub><sup>6</sup> 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<sub>y</sub> monitor has been purchased and will be installed at the NCore site in the 2<sup>nd</sup> half of 2010.

With the new Ozone NAAQS, ozone levels are a pending problem. The AQD should be acquiring monitoring data to characterize NO<sub>x</sub> sources and distribution. Significant Ozone formation occurs in summer months, and studies (by Sonoma Technology) indicate that the area is VOC limited. Suspected NO<sub>x</sub> sources include mobile (both on and off road), the Airport, and methane combustion for residential and water heating.

Associated with the new NO<sub>2</sub> NAAQS is a requirement to monitor NO<sub>2</sub> Roadway emissions. A new site will have to be located and built-up since none of the current sites are within 50-meters of the nearest traffic lane. The AQD has identified several potential sites but because requirements overlap and sometimes conflict, it will be difficult to find a location that is simultaneously ideal for all criteria. The candidate sites will be presented to and discussed with representatives of Region VI.

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<sup>6</sup> NO<sub>y</sub> 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. CO monitors will continue to operate year around at micro-site monitor (AIRS site 35-0010-0028), and at the designated NCore site (AIRs 35-001-0023). The conventional monitor at the latter site will be replaced by a high sensitivity monitor to comply with NCore requirements. The CO monitors at AIRS 35-001-1013 and AIRS 35-001-0029 will continue to operate seasonally. The monitor at AIRS 35-001-0019 will be discontinued.

### **Lead (Pb)**

**Current** – The AQD Currently does not monitor for lead.

**Future** – Albuquerque – Bernalillo County does not have any sources greater than ½ TPY and thus is not required to do Lead source monitoring. However, as the center of the MSA, (population 857,903), the AQD must acquire and operate population based monitors. Two TSP monitors are on order and will be installed by January 1, 2011.

The AQD is formally proposing as part of this Network Assessment, to collocate 2 TSP lead samplers at the South Valley (2ZV, 35-001 0029) site.

#### Location discussion:

In response to a question during the February 2010 NACCA conference call, the EPA spokesperson said that NCore sites were proposed with the intent of simplification. The assumption was that PM<sub>10-2.5</sub> would be measured with two discrete filters at each NCore site. The PM<sub>10</sub> filter could be simultaneously analyzed for Lead, rather than installing a separate monitor at another location.

This logic is not applicable to the Albuquerque AQD, which is measuring PM<sub>10-2.5</sub> at the NCore site with a continuous dichotomous sampler. It is our intent to monitor Lead with a TSP sampler and the monitoring requirement mandates two collocated devices.

The EPA spokesperson said approval of an alternate monitoring site was within the purview of our Region.

There is also a spacing issue at the NCore site. With all of the current and pending equipment at Del Norte (2ZM), two lead samplers would not fit on the deck with the required inlet spacing.

### **Non-SLAMS Special Purpose Monitors**

#### **PM<sub>2.5</sub> 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 operates 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.

Both samplers currently operate 1/6; however, the frequency must increase to 1/3 in January of 2011. In order for this to happen, EPA must authorize the use of multiple sample inlets and concurrent packaging/shipping of multiple filters to/from RTI.

Up to now, 100% funding for the speciation effort came under our CAA 103 PM2.5 grant. When the CAA 103 funding is terminated, 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. The increased sampling frequency required by NCore will double the filter cost. Funding uncertainty creates some doubt about the future of speciation sampling.

### **Visibility**

**Current** – Albuquerque-Bernalillo County does not have any Class I areas<sup>7</sup>. 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 a Nephelometer and an Aethelometer 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\\_8C89627BD2E15DE58725707400795A0A/9C5DD0742806949B872574090057FCBC/?OpenDocument](http://plaza.cabq.gov/QuickPlace/aqd/PageLibrary8725707400726BEA.nsf/h_8C89627BD2E15DE58725707400795A0A/9C5DD0742806949B872574090057FCBC/?OpenDocument).)

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. The project is now complete. The final report was submitted to EPA and all data has been entered into AQS.

### **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 much progress has been made. Almost all of the equipment has arrived, but installation is pending arrival of instrument racks.

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

**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.

**Table 5. Albuquerque-Bernalillo Co. 2010 Air Monitoring Network**

Station Description	Gases						PM10			PM2.5			Other			
	Ozone	CO	HS-CO	HS-NOx	HS-NOy	HS-SOx	24 Hour Hi	Cont. (TEOM)	FDMS	Cont. (TEO)	FDMS	Seque ntial	Speciati on	Nepha- lometer	Aethe- lometer	
Uptown Zuni Park (2ZE), 35-001-0019		API 300								R & P 1400	R & P 8500					
Dbl Eagle Elementary (2ZF), 35-001-1012	API 400A									R & P 1400						
North Valley (2ZH), 35-001-1013	API 400A	API 300						R & P 1400		R & P 1400	R & P 8500					
Del Norte (2ZM), 35-001-0023	API 400A	API 300	API 300 EU	API 200 EU	API 501 EU	API 100 EU	GMW 1/6	*Thermo 1405 Dichotomous			2025 Col. 1/3,	MetOne Super SASS & URG	Optec NGN-2	McGee AE2		
SE Heights (2ZN), 35-001-0024	API 400A											Partisol 2025				
Singer (2ZS), 35-001-0026							Partisol 2025s (2-Col)	R & P 1400a								
Taylor Ranch (2ZT), 35-001-0027	API 400A									R & P 1400	R & P 8500					
Uptown San Pedro (2ZU), 35-001-0028		API 300														
South Valley (2ZV), 35-001-0029	API 400A	API 300						R & P 1400a		R & P 1400	R & P 8500					
AQD Westside (2ZW), 35-001-0032	API 400A							R & P 1400								
	NCORE		SLAMS Seasonal		Special Purpose											

### Albuquerque – Bernalillo County Network after changes

Table 6 shows the network configuration for 2001, presuming that the Region accepts the proposed changes. Note that a new site for Roadway NO2 is not shown because the site is uncertain as of this submittal.

**Table 6. Albuquerque-Bernalillo Co. 2011 Air Monitoring Network**

Station Description	Gases						TSP	PM10			PM2.5			Other			
	Ozone	CO	HS-CO	HS-NOx	HS-NOy	HS-SOx		Lead	24 Hour	Cont. (TEO)	FDMS	Cont. (TEO)	FDMS	Sequential	Speciation	Nephelometer	Aethelometer
Dbl Eagle Elementary (2ZF), 35-001-1012	API 400A										R & P 1400	R & P 8500					
North Valley (2ZH), 35-001-1013	API 400A	API 300						Partisol 2025	R & P 1400		R & P 1400	R & P 8500					
Del Norte (2ZM), 35-001-0023	API 400A		API 300 EU	API 200 EU	API 501 EU	API 100 EU			*Thermo 1405 Dichotomous			2025 2 Col. 1/3, 1/6	MetOne Super SASS & URG Carbon 1/3	Optec NGN-2	McGee AE2		
SE Heights (2ZN), 35-001-0024	API 400A												Partisol 2025				
Singer (2ZS), 35-001-0026								Partisol 2025	R & P 1400a								
Taylor Ranch (2ZT), 35-001-0027	API 400A																
Uptown San Pedro (2ZU), 35-001-0028		API 300															
South Valley (2ZV), 35-001-0029	API 400A	API 300					TE-5170 2 col.		R & P 1400a		R & P 1400	R & P 8500					
AQD Westside (2ZW), 35-001-0032	API 400A								R & P 1400								
	NCORE		SLAMS Seasonal		Special Purpose												

**Summary**

Any comments pertaining to this document should be sent to:

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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.

