

Albuquerque Environmental Health Department (EHD)
Air Quality Programs (AQP)
Ambient Air Monitoring Section
2016 Annual Network Review for Ambient Air Monitoring

Under 40 CFR, Part 58, Subpart B, The City of Albuquerque Air Quality Programs (AQP) 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 and conduct a thorough Annual Network Review (ANR)

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 formal submission to EPA. (Anticipated dates are June 1 – June 30, 2016.)

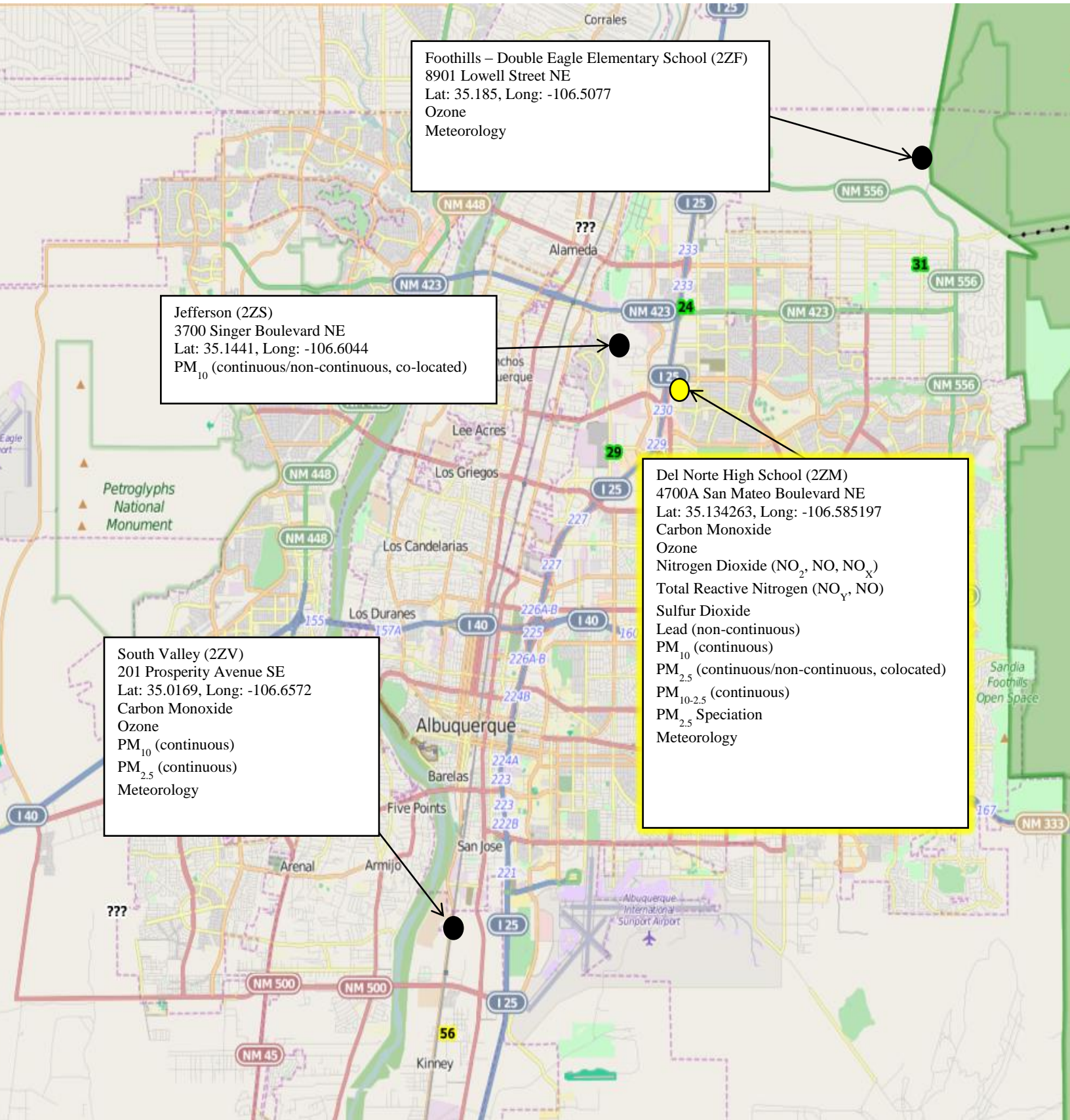
This document shows the current network configuration and proposed changes for 2015. It represents the commitment of the AQP to effectively protect the health of the citizens of Albuquerque-Bernalillo County¹ through ambient air monitoring, by using the best affordable technology, and by communicating the data collected as quickly and accurately as possible.

Population Statistics

Albuquerque/Bernalillo County, Sandoval, Valencia and Torrance make the State's largest Metropolitan Statistical Area (MSA). The US Census Bureau estimates the 2015 population of the metropolitan statistical area (MSA) which includes portions of the adjacent counties of Sandoval, Valencia, and Torrance as approximately 907,301 (43.5% of the State). <http://quickfacts.census.gov/qfd/index.html#> As the regional center for employment, advanced education, retail commerce, and medical treatment, Albuquerque experiences non-local 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. However, this traffic is less significant when compared major metropolitan areas.

The map in Figure 1 shows the physical location of all current monitoring sites currently operated by the Air Quality Programs. Two sites are within the city limits of Albuquerque (2ZM – Del Norte and 2ZS – Jefferson). Three other sites (2ZV - South Valley, 2ZW Westside, and 2ZF - Foothills) are in Bernalillo County.

¹ Excluding Native American and Pueblo Lands within the County.



Foothills – Double Eagle Elementary School (2ZF)
 8901 Lowell Street NE
 Lat: 35.185, Long: -106.5077
 Ozone
 Meteorology

Jefferson (2ZS)
 3700 Singer Boulevard NE
 Lat: 35.1441, Long: -106.6044
 PM₁₀ (continuous/non-continuous, co-located)

South Valley (2ZV)
 201 Prosperity Avenue SE
 Lat: 35.0169, Long: -106.6572
 Carbon Monoxide
 Ozone
 PM₁₀ (continuous)
 PM_{2.5} (continuous)
 Meteorology

Del Norte High School (2ZM)
 4700A San Mateo Boulevard NE
 Lat: 35.134263, Long: -106.585197
 Carbon Monoxide
 Ozone
 Nitrogen Dioxide (NO₂, NO, NO_x)
 Total Reactive Nitrogen (NO_y, NO)
 Sulfur Dioxide
 Lead (non-continuous)
 PM₁₀ (continuous)
 PM_{2.5} (continuous/non-continuous, colocated)
 PM_{10-2.5} (continuous)
 PM_{2.5} Speciation
 Meteorology

Figure 1: Albuquerque Ambient Air Quality Monitoring Network

Table 1 shows the current network configuration and lists the monitoring equipment operated at each site. 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 within 90 days following the end of each calendar quarter. <<http://www.epa.gov/ttn/airs/aqsdatamart/access.htm>>

Column 2 gives the local site designation, name, location, and “affiliation.” 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 Programs website <http://www.cabq.gov/airquality/>

Table 1 Albuquerque 2016 Ambient Air Monitoring Network

AQS Site ID#	Address/ Location	Longitude	Latitude	Pollutants Measured	Monitor Type	Sampling Method	Sampling Method	AQS Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA
35-001-0012	2ZF Foothills 8901 Lowell NE	-106.508	35.1852	O3	SLAMS	44201-1 087	UV Photometric	Ultra Violet Absorption	continuous	Highest Concentration	Neighborhood	Urban Scale	ABQ
35-001-0023	2ZM Del Norte 4700A San Mateo NE Affiliation: Ncore	-106.586	35.13426	O3	SLAMS	44201-1 087	UV Photometric	Ultra Violet Absorption	continuous	General Background	Population Exposure	Yes	ABQ
				HS CO	SLAMS	42101-1 593	Non Dispersive IR	Gas Filter Correlation Teledyne T300U	continuous	General Background	Unknown	Yes	ABQ
				NO2	SLAMS	42602-1 600	Chemiluminescence	Gas Phase Chemiluminescence	continuous	General Background	Unknown	Yes	ABQ
				NOy	SLAMS	42600 599	Chemiluminescence	Teledyne API T200U/501	continuous	General Background	Neighborhood	NA	ABQ
				HS SO2	SLAMS	42406 600	UV fluorescence	UV Fluorescence E100U	continuous	General Background	Population Exposure	Yes	ABQ
				Lead	SLAMS	14129-1 110	EQL-0710-192	Emission Spectra ICAP (ICP-OES) EPA	Daily 1/6	General Background	Population Exposure	Yes	ABQ
				PM10	SLAMS	81102 122	Beta Absorption	Beta Attenuation	continuous	General Background	Population Exposure	Yes	ABQ
				PM2.5	SLAMS	88101 170	Beta Absorption	Beta Attenuation	continuous	General Background	Population Exposure	Yes	ABQ
				PM2.5 collocated	SLAMS	88101-2 118	Gravimetric	Gravimetric	Daily 1/3	General Background	Other	Yes	ABQ
				Speciation	Special Purpose	68103	Multiple	810-MetOne SASS 811MetOne SASS Teflon 812-MetOne SASS Nylon	Daily 1/3	General Background	Mixture of Other, Population Exposure, General	NA	ABQ
				Carbon Speciation	Special Purpose	88320 88321	Multiple	826, 831, 839, 840, 841, 842 URG 300N w/Pall Quartz filter and cyclone inlet	Daily 1/3	General Background	Mixture of Other, Population Exposure, General	NA	ABQ
PM10- PM2.5	SLAMS	86101- 185	Beta Absorption	Beta Attenuation	continuous	General Background	Population Exposure	Yes	ABQ				

Table 1 – Continued

35-001-0026	2ZS Jefferson 3700 Singer NE	-106.605	35.1443	PM10	SLAMS	88102-1 127	Gravimetric	Gravimetric	Daily 1/1	Significant Source	Middle	Yes	ABQ
				PM10	SLAMS	88102-2 122	Beta Absorption	Beta Attenuation	continuous	Significant Source	Middle	Yes	ABQ
35-001-0029	2ZV South Valley 201 Prosperity SW	-106.657	35.01708	O3	SLAMS	44201-1 087	UV Photometric	Ultra Violet Absorption	continuous	General Background	Neighborhood	Yes	ABQ
				HS CO	SLAMS	42101-1 593	Non Dispersive IR	Gas Filter Correlation Teledyne	continuous	Highest Concentration	Neighborhood	Yes	ABQ
				PM10	SLAMS	81102-3 122	Beta Absorption	Beta Attenuation	continuous	General Background	Neighborhood	Yes	ABQ
				PM2.5	SLAMS	88101 170	Beta Absorption	Beta Attenuation	continuous	General Background	Neighborhood	Yes	ABQ

Summary of changes

The City of Albuquerque’s Air Quality Programs does not propose any changes for 2016.

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 AQP exceeds the minimum requirements with three (3) ozone monitors, all categorized as SLAMS.

Table 2: Ozone Design Value by site, part per million (ppm)

	2013	2014	2015	
Site Name AQS #	4th highest 8-hr avg.	4th highest 8-hr avg.	4th highest 8-hr avg.	3 -year design value
Del Norte 0023	0.070	0.064	0.065	0.066
Tramway 1012	0.065	0.061	0.067	0.064
South Valley 0029	0.067	0.064	0.068	0.066

Table 3: Ozone Designation by MSA, parts per million (ppm)

Site	2013 4 th Highest 8- hr (ppm)	2014 4 th Highest 8- hr (ppm)	2015 4 th Highest 8- hr (ppm)	3 year Design Value part per million (ppm)	2015 Federal Standard part per million (ppm)	% of the 2015 Federal Standard
Del Norte 0023	.070	.064	.065	.066	.070	94.2

Future – No further changes are being considered at this time.

PM_{2.5}

According to Table D-5 of Appendix D to Part 58, 40 CFR two SLAMS PM_{2.5} sites (3 monitors) are required in Albuquerque.

Current – AQP operates four PM_{2.5} monitoring sites in Albuquerque-Bernalillo County with three (3) total monitors, all of which are identified as SLAMS.

The 2ZM site (35-001-0023) operates a continuous Met One BAM 1020 as the Primary sampler and a Partisol 2025 sequential sampler with 2.5 micron inlet cutoff to record 24-hour averages PM_{2.5} on a 1/3 schedule as a co-located sampler.

The site 2ZF (AIRS 35-001-1012) operates a Met One BAM 1020 and is classified for AQI purposes only.

Table 4: PM_{2.5} Design Value, microgram per cubic meter (ug/m³)

Site Name AQS #	Sampling Schedule	24- hour design value	Annual Design Value	Design Value (% Daily NAAQS)	Design Value (% Annual NAAQS)	Collocated with continuous PM _{2.5}
Del Norte 0023	Continuous	15	6.2	42.9%	51.9%	Yes
South Valley 0029	Continuous	18	7.5	51.4%	62.5%	No

Future – No further changes are being considered at this time.

PM₁₀

PM data is used by the AQP to accurately portray PM in neighborhoods, to enforce our local dust control regulation, and to issue high wind advisory and health alerts. High PM values are the most common cause of AQI warning days in Albuquerque.

Current – We currently operate at four sites with a total of 5 monitors. At this time, three of the sites and four monitors are NAAQS comparable.

The 2ZM NCore site (AQS 35-001-0023) operates a continuous FEM that produces data used for both PM₁₀ and PM_{10-2.5}.

The 2ZS Jefferson site (AQS 35-001-0026) has one PM₁₀ FRM (Primary- Partisol 2025) with a sampling frequency of 1/1, and a BAM FEM continuous monitor at 2ZS (35-001-0029) (Co-located), which are NAAQS comparable. The POC 2 FRM located at 2ZS Jefferson site was shut down effective May 1, 2015.

The status of the PM₁₀ monitor at 2ZV (AQS 35-001-0029) was upgraded to SLAMS starting 1/1/2011 after site remediation and has 4-years of valid data.

Table 5 calculates the design concentrations for each comparable PM₁₀ site 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 Concentration is 110.7ug/m³ which is 73.78% of the NAAQS. Based on population, 40CFR, Part 58, Table D-4 of Appendix D specifies two-to-four sites as the minimum requirement for low concentration MSA.

Table 5. PM₁₀ Design Concentrations, ug/m³

2ZM Del Norte	POC	year	# of Observations	Maximum Values				
				1st	2nd	3rd	4th	5th
35-001-0023	1	2013	356	104	92	88	85	75
35-001-0023	1	2014	344	118	106	95	90	82
35-001-0023	1	2015	359	44	43	40	40	40
			1059	88.7	80.3	74.3	71.7	65.7
			4th high					
2ZS Singer	year	# of Observations	Maximum Values					
			1st	2nd	3rd	4th	5th	
35-001-0026	1	2013	353	114	98	94	93	87
35-001-0026	1	2014	342	127	123	115	115	115
35-001-0026	1	2015	356	61	56	55	53	52
			1051	100.7	92.3	88.0	87.0	84.7
			4th high					
2ZV South Valley	year	# of Observations	Maximum Values					
			1st	2nd	3rd	4th	5th	
35-001-0029	3	2013	335	142	120	117	110	109
35-001-0029	3	2014	333	145	143	111	109	107
35-001-0029	3	2015	355	145	106	104	96	93
			1023	144.0	123.0	110.7	105.0	103.0
			3rd high					
						Design Value	110.7 ug/m ³	
						PM-10 24hr STD	150 ug/m ³	
						% Annual NAAQS	73.78%	
						Data excludes exceptional event flags		
						Based on the SIP development document if the data is used for modeling the 5th high value should be used.		

Table 6 calculates the design values for each comparable PM₁₀ sites in the Albuquerque Network with sufficient historical data based on the AMP 480 report.

Table 6. PM₁₀ Design Value, ug/m³

PM ₁₀ 24 Hour Design Value based on the AMP480 report	Site	COA-2015 24 Hour Design Value	NAAQS	Is the average # of exceedance values >1
		2ZM	0	≥1
	2ZS	0	≥1	No
	2ZV*	0.3	≥1	No

(*) Annual values not meeting completeness criteria

Future

No changes are planned in the coming year.

Sulfur Dioxide (SO2)

Current – AQP operates an SO2 monitor at site 2ZM (AQS 35-001-0023), the NCore location. Table 5 shows that thus far the SO2 monitor is measuring only trace levels, less than 10% of the NAAQS.

Table 7: SO2 Design Value, part per billion (ppb)

2ZM Del Norte	year	99th percentile
35-001-0023	2013	4
35-001-0023	2014	6
35-001-0023	2015	5
Design Value		5.0

Future –No changes are planned in the coming year.

SO2 Data requirement Rule- Per the EPA Fact Sheet “Final Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO2) Primary National Air Quality Standards (NAAQS):

“This final rule establishes that, at a minimum, air agencies must characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO2. An air agency may avoid the requirement for air quality characterization near a source by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO2”

Bernalillo County does not have any sources that are over the 2,000 tpy minimum therefore no characterization is necessary. The City of Albuquerque Environmental Health Department will continue to follow this issue and adjust our plans as further information becomes available from the EPA.

Oxides of Nitrogen

Current – The AQP monitors NO, NO₂, NO_x, and NO_y² at 2ZM (AQS 35-001-0023), the NCore location. Table 6 shows that NO₂ levels are low. (Annual 98th percentile 1-hour values averaged over 3 years = 43.6 ppb compared to a standard of 100.)

Table 8: NO₂ Design Value, ppb

2ZM Del Norte 35-001-0023

	2013	2014	2015	3 year Design Value
98th Percentile				
1-Hr Concentration (PPB)	45.4	42.0	43.4	43.6

Associated with NO₂ NAAQS is a requirement to monitor NO₂ Roadway emissions:

As stated by: “EPA’s current regulatory requirements include the establishment of an NO₂ near-road site in CBSA’s of populations between 500K and 1M by January 1, 2017. The Albuquerque CBSA falls into this population range as of the Census Bureau’s 2014 estimates. Based on the latest information and guidance provided by the EPA, we understand that this requirement is under reconsideration. In fact, the EPA has published the abstract to a proposal that would remove this NO₂ monitoring requirement (also known as Phase 3 of the near-road network) from Appendix D of 40 CFR Part 58 <http://www.reginfo.gov/public/do/eAgendaViewRule?pubId=201510&RIN=2060-AS71> . Accordingly, and with the concurrence of EPA Region 6, we have placed a hold on the planning activities for this site. It is our understanding that the EPA plans on completing the associated final rule before the January 1, 2017 deadline for Phase 3 operations. The City of Albuquerque Environmental Health Department will continue to follow this issue and adjust our plans as further information becomes available from the EPA.”

Future –No changes are planned in the coming year.

Carbon Monoxide (CO)

Current –Albuquerque/Bernalillo County remains in maintenance status for CO until 2016. The AQP currently operates two (2) CO monitors. One for NCore and the other is for CO Maintenance. Both run year around.

Table 9: CO Design Value, ppm

2ZM Del Norte 35-001-0023 1 Hour

Year	1st Max	2nd Max
2014	1.587	1.521
2015	1.795	1.704

8 Hour

Year	1st Max	2nd Max
2013	1.3	1.2
2014	1.4	1.4

2ZV South Valley 35-001-0029 1 Hour

Year	1st Max	2nd Max
2014	3.2	2.8
2015	2.5	2.4

8 Hour

Year	1st Max	2nd Max
2013	1.3	1.2
2014	1.2	1.0

The hourly high value over the past 2 years is 3.2 ppm (2ZV, 2014) which is 9.1% of the hourly NAAQS (35 ppm). The 8-hour high average is 1.4 ppm (2ZM, 2014) which is 15.5% of the 8-hour NAAQS (9 ppm). Because of the low CO concentrations, both monitors are now ‘high sensitivity.’

Future –No changes are planned in the coming year.

Lead (Pb)

Current – A TSP (Total Suspended Particulate) monitor was installed and operational by December 18, 2011 at the Del Norte site (AIRS 35-001-0023). Sufficient Lead data has been obtained since the inception of the sampler. With the design value of 6.7% non-attainment issues are not anticipated.

Table 10: Lead Design Values

2ZM Del Norte 35-001-0023

Year	ug/m3
2013	0.01
2014	0.00
2015	0.00

Design Value 6.7%

Future –No changes are planned for Lead in the coming year.

PM_{2.5} Chemical Speciation

Current – CFR Part 58 regulations require the operation of a speciation sampler at approved NCore sites. The Del Norte (AQS 35-001-0023) site in Albuquerque operates a MetOne Super Sass and a URG sampler for EC/OC (Elemental and Organic Carbon). Speciation filters are sent to UC Davis, the EPA national analysis contractor in Florida, and data is reported by the contractor to the AQS. The AQP also uses this data in local studies to correlate with data from other samplers.

Both samplers now operate on the full 1/3 schedule.

Community Scale Monitoring (CSM)

Current – The AQP has participated previously in CSM studies, but there were none in the past year.

National Core Monitoring Network (NCore)

The NCore site has been fully operational and compliant since the 2010 start-up date. Individual NCore instruments have been addressed in the appropriate sections above. The 2ZM site also has NCore compliant meteorology.

Albuquerque – Bernalillo County Network

Table 11 shows the 2016 network.

Table 11: Albuquerque-Bernalillo Co 2016 Air Monitoring Network

Station Description	Gases					TSP	PM10		PM2.5			Other	
Station Name (Site Code), AIRs #	Ozone	CO	NO ₂	NO _y	HS-SO ₂	Lead	Sequential	Continuous	Continuous	Sequential	Speciation	Nephelometer	Aethalometer
Foothills (2ZF), 35-001-1012	API T400								BAM 1020				
Del Norte HS (2ZM), 35-001-0023	API T400	API T300U	API T200U	API T100U	TE-5170			Met One BAM 1020	Met One BAM 1020	Thermo 2025 Col 1/3	MetOne Super SASS & URG Carbon 1/3	Optec NGN-2	McGee AE21
Jefferson (2ZS), 35-001-0026							Thermo 2025 1/1	Met One BAM 1020					
South Valley (2ZV), 35-001-0029	API 400E	API T300U						Met One BAM 1020	Met One BAM 1020				
	SLAMS/NCORE			SLAMS		AQI Purposes							