CITY OF ALBUQUERQUE

Environmental Health Department

Mary Lou Leonard, Director

July 1, 2015

Mr. Hansen
US EPA Region VI, 6 PD-Q
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Subject: 2015 5-Year Network Review

Dear Mr. Hansen:

Enclosed is one copy of the City of Albuquerque's 2015 5-Year Network Review. The attached document is therefore being submitted in compliance with 40 CFR, Part 58, Subpart B.

Please contact me if there any questions. Your support of our Ambient Air Monitoring Program is appreciated. Thank you for your time and consideration.

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Albuquerque Environmental Health Department (EHD)
Air Quality Program (AQP)

2015 5-Year Network Review

7/1/2015

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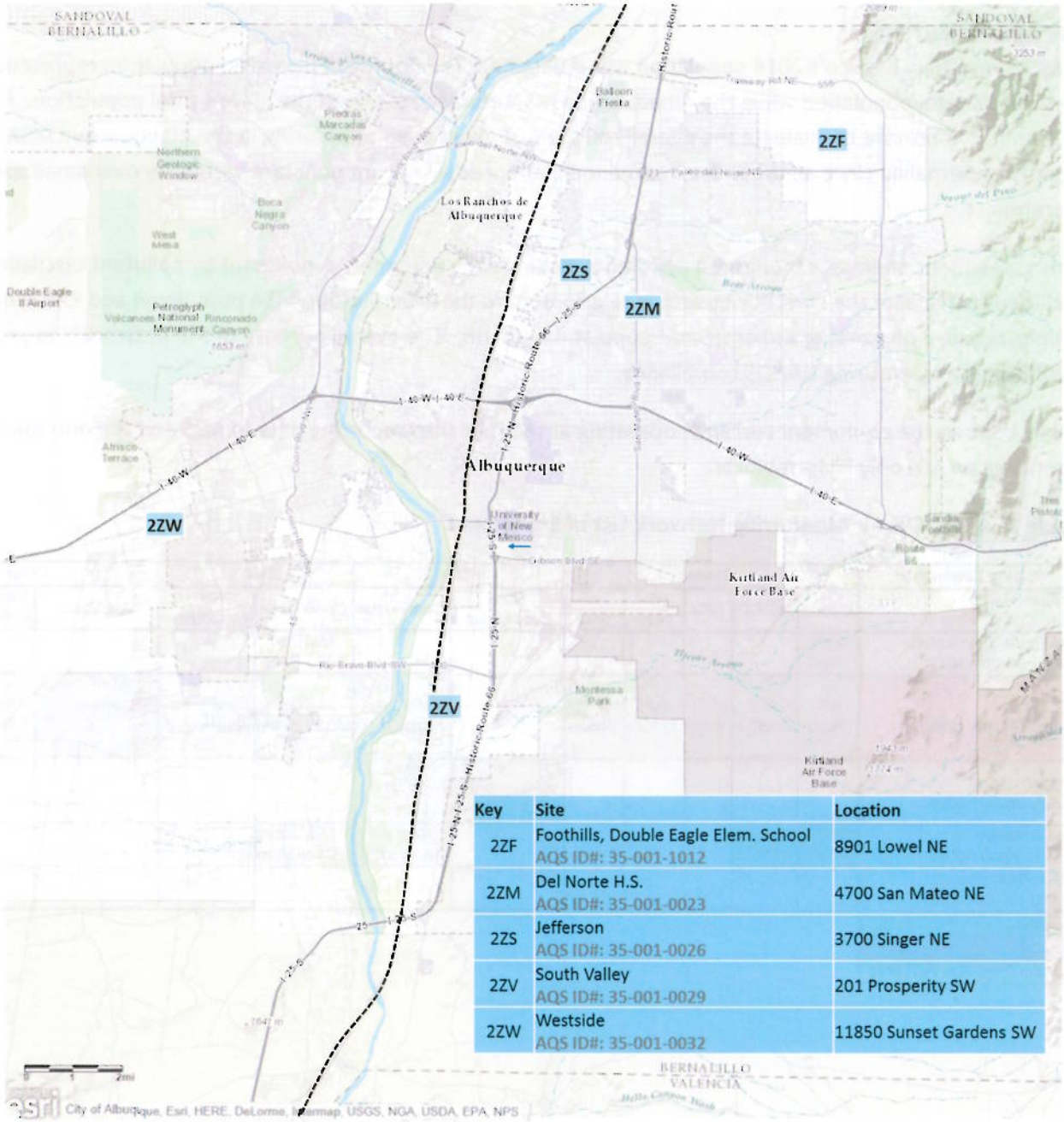
Executive Summary:

Map 1 and Table 1 reflect the current City of Albuquerque, Environmental Health Department, Air Quality Programs (AQP) monitoring network. The number of monitoring sites has remained fairly consistent over the years, though some locations and instruments have been shifted. There are no further proposals to shut down any monitors or sites within the 5 year period of this assessment. The only significant change to the network will be the addition of the Roadside NO_x monitoring station with a start date of 1/1/2017.



Key	Site	Location
2ZF	Foothills, Double Eagle Elem. School AQS ID#: 35-001-1012	8901 Lowel NE
2ZM	Del Norte H.S. AQS ID#: 35-001-0023	4700 San Mateo NE
2ZS	Jefferson AQS ID#: 35-001-0026	3700 Singer NE
2ZV	South Valley AQS ID#: 35-001-0029	201 Prosperity SW
2ZW	Westside AQS ID#: 35-001-0032	11850 Sunset Gardens SW

Map 1. AQP Air Monitoring Network

Recent History:

As of July 1, 2015, the AQP monitoring network consists of 4 monitoring sites reporting data to the EPA AQS database. Early in 2015, as a result of ongoing assessment and collaboration with EPA Region 6, the AQP closed two sites 35-001-0024 (2ZN – Southeast Heights) for ozone and $PM_{2.5}$ and 35-001-0032 (2ZW – Westside) for ozone. Site 35-001-0032 (2ZW – Westside) will continue to collect PM_{10} data, although the site does not meet siting criteria for PM_{10} and the PM_{10} data are not reported to EPA it will continue to be used for AQI purposes.

Network Purpose:

The State of New Mexico's 2014 population was 2,086,000. The County of Bernalillo population represents 32.3% of the State's total population while the Albuquerque MSA represents 43% of the State's total population. For this reason it is important to evaluate the overall roll the AQP plays in air monitoring in the Albuquerque MSA and the County of Bernalillo since an urban environment experiences significant pollutant variability over small spatial increments.

This assessment addresses monitored pollutants, pollutant by pollutant. A pollutant by pollutant discussion is included to evaluate the current network in relationship to the Albuquerque MSA population and EPA required monitors based on existing and projected population growth. The overall purpose of the network is to protect public health by ensuring NAAQS compliance.

Table 1 shows the equipment currently operating at the four sites reporting data to AQS and the one site (2ZW) operating an AQI only PM_{10} monitor.

Table 1. AQP 2015 Air Monitoring Network List of Equipment

Station Description	Gases					PM10		PM2.5		Other		
Station Name (Site Code), AIRs #	Ozone	HS-CO	NOx	HS-NOy	HS-SOx	Non-continuous	Continuous	Continuous	Non-continuous	Speciation	Nepha-lometer	Aethe-lometer
Dbl Eagle Elementary (2ZF), 35-001-1012	API T400							MetOne 1020 BAM				
Del Norte (2ZM), 35-001-0023	API T400	API T300U	API T200	API T200U	API T100U		MetOne 1020 BAM	MetOne 1020 BAM	2025 Sequential Colocated 1/3	MetOne SuperSASS & URG 3000N 1/6	Optec NGN-2	McGee AE2
Singer (2ZS), 35-001-0026						Partisol 2025	R&P TEOM 1400					
South Valley (2ZV), 35-001-0029	API 400E	API T300U					MetOne 1020 BAM	MetOne 1020 BAM				
AQD Westside (2ZW), 35-001-0031							R & P 1400					
SLAMS												
NCORE												
Special Purpose, AQI only												

Table 2 lists projected changes to the AQP monitoring network.

Table 2. Network Change Projections

Parameter	Site	Projected changes, 2015-2020
Lead (Pb)	2ZM – 35-001-0023	None
Ozone	2ZM – 35-001-0023	None
	2ZF – 35-001-1012	None
	2ZV – 35-001-0029	None
SO_2	2ZM – 35-001-0023	None
$PM_{2.5}$	2ZM – 35-001-0023	None
	2ZV – 35-001-0029	None
	2ZF – 35-001-1012	special purpose monitor, AQI only
PM_{10}	2ZM – 35-001-0023	None
	2ZS – 35-001-0026	Current R&P TEOM will be replaced with a MetOne BAM 1020 in 2016
	2ZV – 35-001-0029	None
	2ZW – 35-001-0032	special purpose monitor, AQI only
CO	2ZM – 35-001-0023	None
	2ZV – 35-001-0029	None
NO_2	2ZM – 35-001-0023	None
	Roadside NO_X	To be established by 1/1/2017
Meteorology	2ZM – 35-001-0023	None
Speciation	2ZM – 35-001-0023	None

AQP Network

AQP's ambient air quality monitoring network consists of a variety of monitoring systems including NAAQS, NCore, CSN, and Meteorology. Information about the AQP monitoring networks is provided in the following sections.

NAAQS Compliance Network Changes

The National Ambient Air Quality Standards are regularly reviewed and updated as per the Clean Air Act (CAA). Recently, there have been several substantial changes to the NAAQS. This has resulted in significant changes to the associated air monitoring requirements for the criteria pollutants. Additionally, there are proposed changes to the NAAQS and monitoring requirements that have yet to be finalized. These recent changes, currently proposed changes, and future planned reviews have resulted in, or will likely result in, additional monitoring requirement modifications to the state and local monitoring networks. The simultaneous timing of the 5-Year Network Assessment requirement and the upcoming NAAQS revisions makes it difficult to efficiently assess agency monitoring networks for the next five-years. AQP strives to meet the minimum monitoring requirements for any NAAQS and will make changes to its monitoring network based on changes in monitoring network requirements in association with revisions to the NAAQS. Below is a summary of recent and proposed NAAQS revisions and existing NAAQS requirements that may impact the AQP's ambient air quality monitoring network.

Lead (Pb) - In November 2008, EPA revised the lead NAAQS from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$. New requirements for the placement of monitors were added: (1) near lead sources (by January 1, 2010) having annual ambient air lead emissions that are expected to exceed one ton and (2) in non-source urban areas (by January 1, 2011) with populations greater than 500,000. In December 2009, EPA proposed revisions to these monitoring requirements. In

December, 2010, the EPA finalized the lead monitoring requirements which required lead monitoring near sources with lead emissions greater than 0.5 tons. Monitors near these 0.5 to 1 ton sources are to be operational one year from the date of the final rule. Additionally, the final rule adjusted the non-source monitoring requirement to be limited to NCore sites, as opposed to the 500,000 population requirement mentioned in the original November, 2008 final rule.

AQP installed one lead monitor at the Del Norte High School NCore site (2ZM - 35-001-0023). The AQP operates only one lead monitor for NCore purposes since the Albuquerque MSA does not contain any lead sources meeting the requirements in the EPA lead NAAQS or the EPA revisions to the lead NAAQS.

Ozone (O_3) - In March 2008, EPA revised the eight-hour ozone standard from 0.08 parts per million (ppm) to 0.075 ppm. In July 2009, EPA proposed to revise the ozone air quality monitoring network design requirements. Those proposed changes included raising the minimum number of monitors from 0 to 1 in urban areas with populations between 50,000 and 350,000 (regardless of the design value) and requiring states to operate three non-urban monitors. In December 2014, EPA proposed revisions to the level of the ozone standard, requesting comments on lowering the standard to a level within 0.065 to 0.070 ppm. No changes were proposed for the monitoring requirements. The final ozone NAAQS and monitoring requirements are expected to be issued by November 2015. AQP will evaluate the current ozone network with regard to the proposed revisions to the standards. At this time the current AQP ozone network meets the existing monitoring requirements.

Sulfur Dioxide (SO2) – In June 2010, EPA revised the primary SO2 standard by establishing a new one hour standard at a level of 75 parts per billion (ppb). It is also revoking the two existing primary standards of 140 ppb evaluated over 24 hours and the 30 ppb evaluated over a year. Additionally, the EPA required changes to data reporting requirements to include reporting the maximum five-minute concentration for each hour in addition to the hourly averaged concentrations.

Nitrogen Dioxide (NO2) - In January 2010, EPA set a new one-hour standard for NO_2 of 100 ppb. EPA is retaining the annual standard of 53 ppb. New monitoring requirements were established including near roadway monitors in urban areas, additional urban monitors in large urban areas, and monitors in areas with populations susceptible to NO2-related health effects. The new monitoring requirements result in one NO_2 network change for the AQP with the required near roadway monitors expected to be established and operated by 1/1/2017.

NCore Network - EPA describes the nationwide NCore network composed of approximately 70 urban and 20 rural sites as a multi-pollutant network that integrates several advanced measurement systems for particles, pollutant gases, and meteorology. Some of the missions of the NCore network are:

- Tracking long-term trends of criteria and non-criteria pollutants;
- Support for long-term health assessments that contribute to ongoing reviews of the NAAQS;
- Support to scientific studies ranging across technological, health, and atmospheric process disciplines; and
- Support to ecosystem assessments recognizing that national air quality networks benefit ecosystem assessments and, in turn, benefit from data specifically designed to address ecosystem analyses.

NCore sites are required under 40 CFR Part 58 Appendix C to be fully operational by January 1, 2011.

Additional NCore information is available from the EPA website: http://www.epa.gov/ttn/amtic/ncore/index.html

Meteorological Network

AQP collects meteorological data at its 2ZM-Del Norte High School NCore site (35-001-0023) to support the analysis of pollutant data and to provide local support for exceptional event reporting. AQP currently meets the meteorological monitoring requirements for the NCore network.

Chemical Speciation Network (CSN)

The (Chemical Speciation Network (CSN) was established to meet the regulatory requirements for monitoring speciated $PM_{2.5}$ to determine the chemical composition of these particles. The purpose of the CSN is to determine, over a period of several years, trends in concentration of selected ions, metals, carbon species, and organic compounds in $PM_{2.5}$. The program began in 1999 with Speciation Trends Network (STN) sites across the nation located primarily in or near larger Metropolitan Statistical Areas (MSAs). It has increased to 200 sites nationwide. Monitoring at 2ZM-Del Norte High School (35-001-0023) includes one URG 3000N speciation sampler and one MetOne SuperSASS speciation sampler.

AIRNow Reporting

AQP currently sends to AirNow the data listed in Table 3. AQP currently utilizes AIRNow's AQCSV file format to transfer data to AIRNow.

Table 3. List of Active Site Reporting to AirNow

Site #	Site Name	Status	Ozone	$PM_{2.5}$	CO	NO_2	PM_{10}	SO_2	NO	NO_x	NO_y	NO_2_Y	SO_4	EC	OC	BC	UV-AETH	TEMP.	WS	WD	R.Hum.	Bar. Pr.	S. Rad.	Precip.	Dewpt.	SO_2_15	H_2S	PMC
350010023	Del Norte	Active	■	■		■	■	■																				
350010026	Jefferson	Active					■																					
350010029	South Valley	Active	■	■			■																					
350010032	WESTSIDE - 9 Mile	Active																										
350011012	Tramway	Active	■	■																								

Exceptions to the Network Requirements - AQP's monitoring network currently meet the EPA's network requirements.

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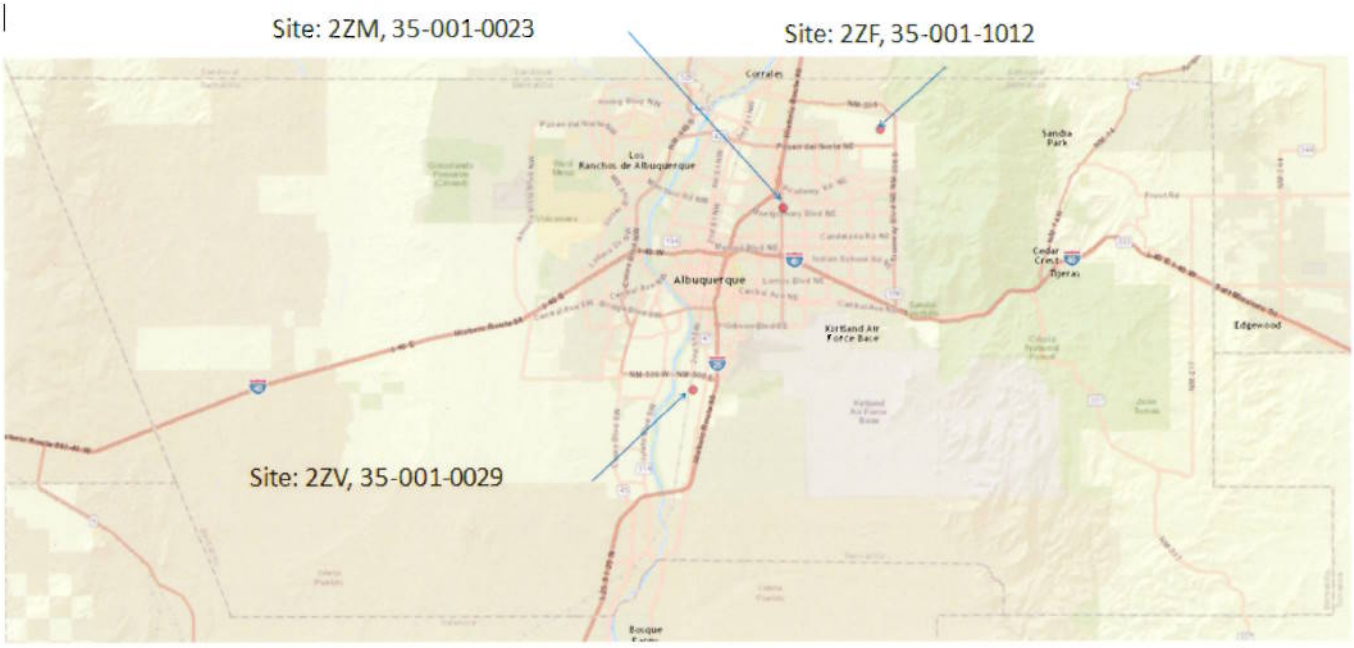
Ozone Network Analysis

Ozone Monitoring Network Requirements

AQP operates a network of three ozone monitors throughout Bernalillo County (see Map below).



Map 1a. Ozone monitoring Sites in Bernalillo County

Authority to operate these ozone monitors has been delegated to City of Albuquerque, New Mexico. The AQP ozone network meets the minimum requirements that are currently set forth in 40 CFR 58 Appendix D.

Table 1a. Minimum Number of O3 Monitors Required (40 CFR 58 Appendix D)

Population (MSA)	Most recent 3 year 8-hour Design Value ≥ 85% of NAAQS (0.075 ppm)	Most recent 3 year 8-hour Design Value <85% of NAAQS (0.075 ppm)
>10 Million	7	2
4 - 10 Million	3	1
350,000 - 4 Million	2	1
50,000 – 350,000	1	0*

* NCore sites require a minimum of one monitor; Proposed monitoring requirements would require 1 monitor for the 50,000 – 350,000 population category regardless of design value

Based on Table 1a's requirements and the network wide design values (see Table 2a. Design Values for the current AQP ozone network, 2014) the AQP O3 network meets the population requirement of two ozone monitors and the NCore requirement of one ozone monitor.

Table 2a. Design Values for the current AQP ozone network, 2014

Site	NAAQS in ppm	AQP Design Value in ppm	% of NAAQS
2ZM, Del Norte SLAMS NCore 35-001-0023	0.075	0.068	90.6
2ZF, Foothills SLAMS 35-001-1012	0.075	0.067	89.3
2ZV, South Valley 35-001-0029	0.075	0.067	89.3

The existing network is in attainment with the current ozone standard.

Table 3a. Albuquerque MSA Population Statistics

MSA	PQAO	Area Included	County Population	MSA Population	Principal City	Principal City Population
Albuquerque Metropolitan Statistical Area	City of Albuquerque AQP	Bernalillo County	675,551	904,587	Albuquerque	556,495
	State of New Mexico	Sandoval County	137,608		Rio Rancho	90,818
	State of New Mexico	Torrance County	15,611		Moriarty	1,910
	State of New Mexico	Valencia County	75,817		Belen Los Lunas	7,239 15,308

U.S. Census Bureau, http://www.census.gov/en.html

The Albuquerque MSA has experienced a very small population change over the past four years.

Table 4a. Albuquerque MSA Estimated Population Change

	Cumulative Estimates of the Components of Population Change							Annual Estimates of the Components of Population Change						
	April 1, 2010 to July 1, 2014							July 1, 2013 to July 1, 2014						
Geography	Total Population Change [1]	Natural Increase	Vital Events		Net Migration			Total Population Change [1]	Natural Increase	Vital Events		Net Migration		
			Births	Deaths	Total	International [2]	Domestic			Births	Deaths	Total	International [2]	Domestic
Albuquerque, NM Metro Area	17,512	17,517	46,560	29,043	-49	4,683	-4,732	1,242	3,560	10,774	7,214	-2,264	1,159	-3,423

U.S. Census Bureau, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Table 5a. Projected Annual Population Growth Rates New Mexico Counties 2010 to 2040

			As of July 1...			
County	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Bernalillo	1.63	1.58	1.36	1.19	1.00	0.80
Sandoval	3.02	2.70	2.42	2.16	1.91	1.71
Torrance	0.65	0.77	0.76	0.65	0.50	0.47
Valencia	1.48	1.34	1.17	1.01	0.87	0.74

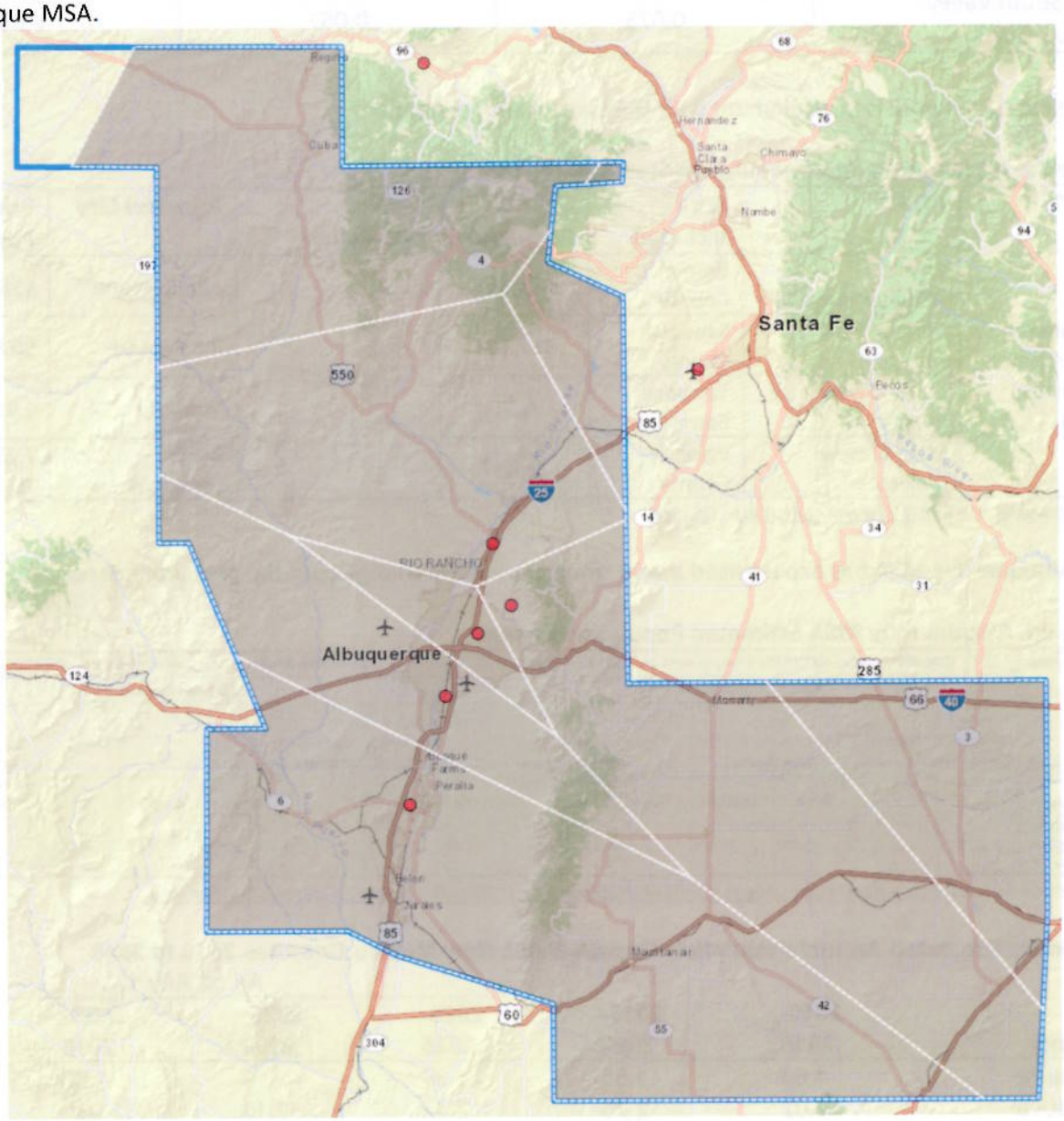
Source: ***New Mexico County Population Projections July 1, 2010 to July 1, 2040***, Geospatial and Population Studies Group, University of New Mexico. Released November 2012.

The largest population growth estimate for all Albuquerque MSA counties is 2.7%, with an average estimated population growth from 2015-2020 of 1.5%. It is assumed that population growth will not change significantly over

the next five years for the Albuquerque MSA. Based on an expected slow population growth no changes to the ozone monitoring network are expected based on the Albuquerque MSA projected population growth.

NetAssess App Network Evaluation

The AQP utilized the NetAssess App to analyze the existing ozone network for the Albuquerque MSA. Utilizing the AQP's and the State of New Mexico's ozone monitoring network the NetAssess App shows full coverage of the Albuquerque MSA.



Map 2a. Albuquerque MSA coverage for ozone monitoring

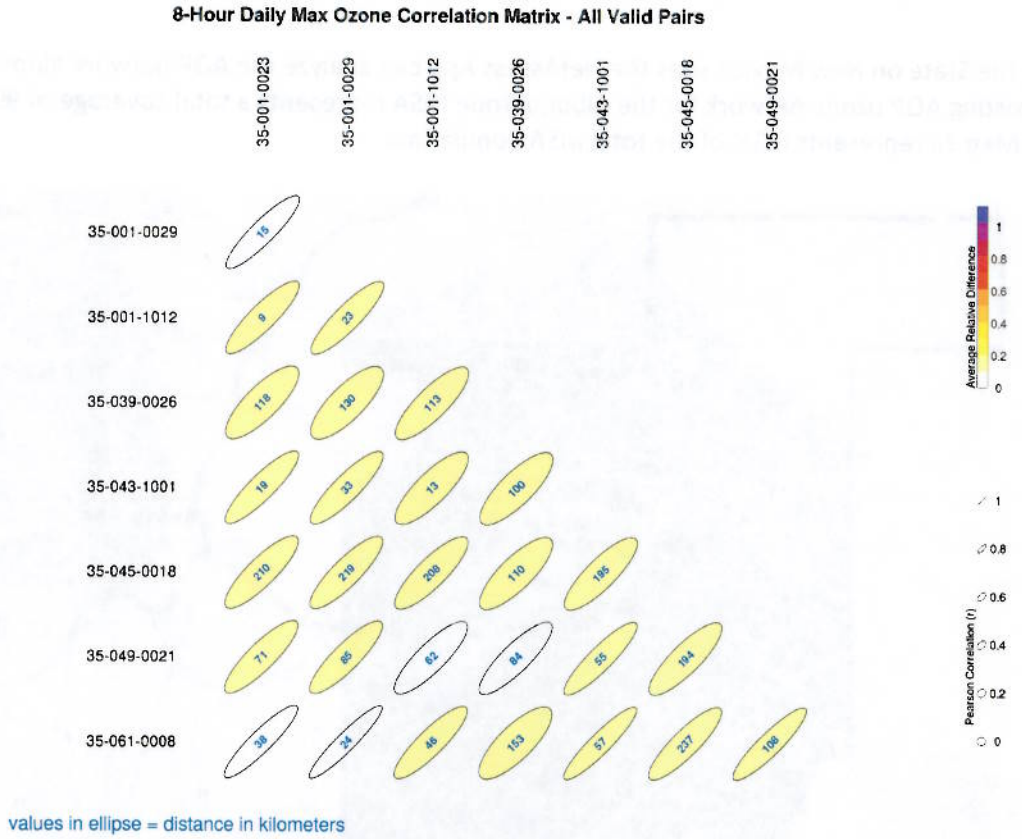


Chart 1a. Albuquerque MSA ozone coverage Pearson correlations

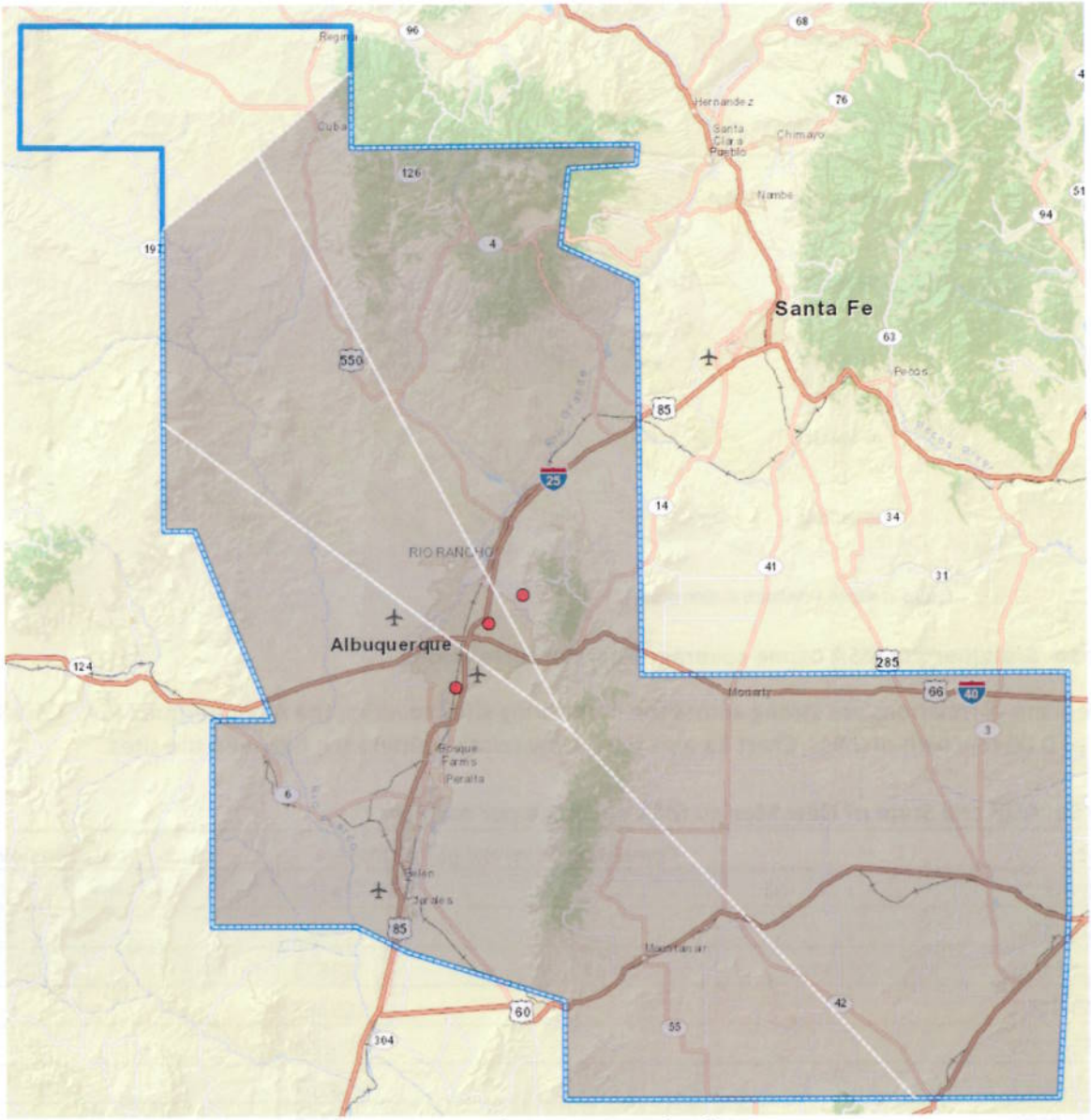
The Pearson correlations are strong across the monitoring sites covering the Albuquerque MSA. Correlations run for a low of 0.80 to a high of 0.91. Chart 1a also shows low relative difference between the sites.

Table 5a. AQP and State of New Mexico MSA coverage per monitor

Ozone	Population Coverage per NetAssess	% Population Coverage
35-001-0023	374622	42.2%
35-001-0029	199825	22.5%
35-001-1012	115633	13.0%
35-043-1001	109385	12.3%
35-061-0008	79058	8.9%
35-049-0021	3157	0.4%
35-039-0026	5397	0.6%
MSA Population per NetAssess	887077	
Total population covered	887077	100.0%
% Population not covered		0.0%
AQP Sites		
State of NM Sites		

In combination with AQP and State of New Mexico monitors the Albuquerque MSA Population coverage is 100%. The AQP coverage represents 77.8% of the total population coverage.

Removing the State on New Mexico sites the NetAssess App can analyze the AQP network alone. The analysis shows that the existing AQP ozone network for the Albuquerque MSA represents a total coverage of 99.7%. The area not shaded in Map 3a represents 0.3% of the total MSA population.



Map 3a. AQP only sites, Albuquerque MSA coverage for ozone monitoring

Table 6a. AQP Only MSA coverage per monitor

Ozone - AQP Sites only	Population coverage per NetAssess	% Population Coverage
35-001-0023	438278	49.4%
35-001-0029	278883	31.4%
35-001-1012	167248	18.9%
MSA Population per NetAssess	887077	
Total population covered	884409	99.7%
% Population not covered	2668	0.3%

Based on the existing network requirements, the results of the population analysis and the NetAssess App evaluation there are no proposed or expected changes for the ozone network over the next five years.

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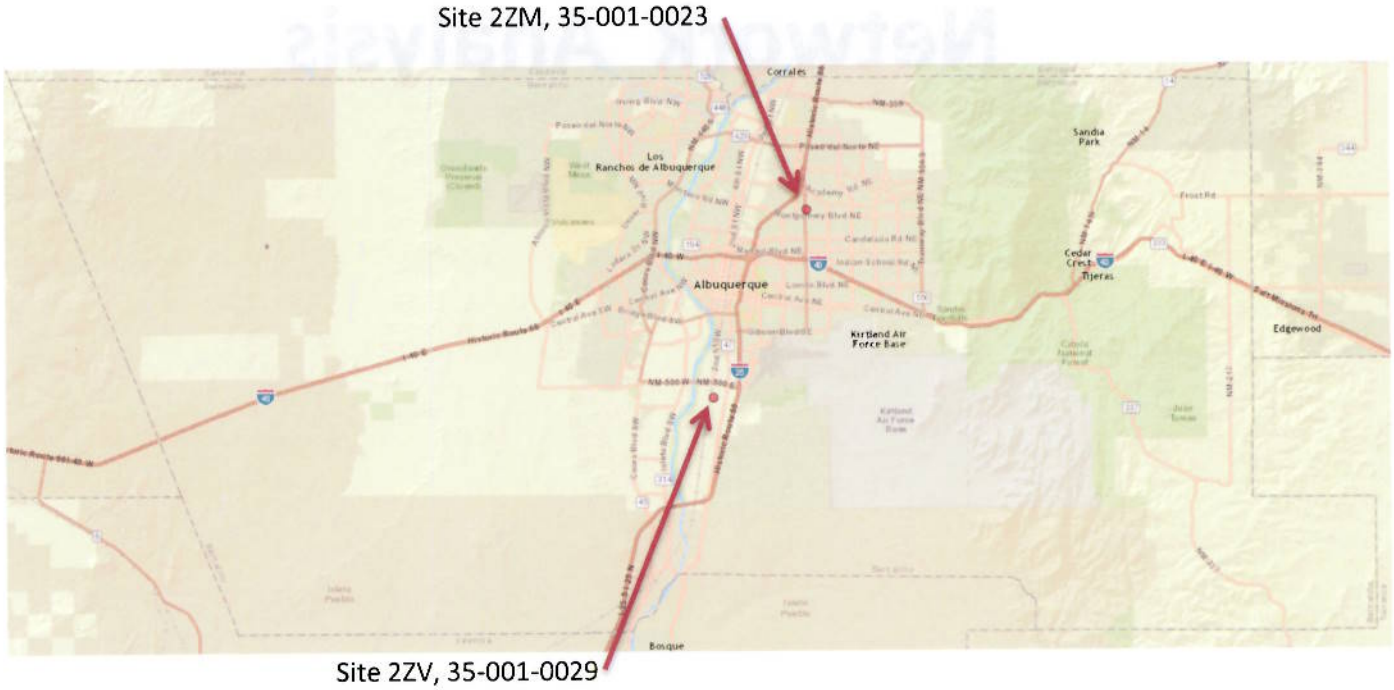
Carbon Monoxide Network Analysis

Carbon Monoxide Monitoring Network Requirements

AQP operates a network of two carbon monoxide monitors throughout Bernalillo County (see Map below). The two sites are the only CO monitors operating in the State of New Mexico.



Map 1b. Carbon Monoxide monitoring Sites in Bernalillo County

Authority to operate these CO monitors has been delegated to City of Albuquerque, New Mexico. The AQP CO network meets the minimum requirements that are currently set forth in 40 CFR 58 Appendix D.

The AQP CO network meets the NCore requirement of one CO monitor at the NCore site (35-001-0023, 2ZM – Del Norte). In addition a second site is maintained at the 2ZV - South Valley site (35-001-0029) for CO maintenance purposes.

Table 1b. Design Values for the current AQP CO network, 2014

Site	8-Hour NAAQS in ppm	AQP Design Value in ppm	% of NAAQS
2ZM, Del Norte SLAMS NCore 35-001-0023	9.0	1.3	14.4%
2ZV, South Valley 35-001-0029	9.0	1.3	14.4%

The existing network is in attainment with the current CO standard.

Table 2b. Albuquerque MSA Population Statistics

MSA	PQAO	Area Included	County Population	MSA Population	Principal City	Principal City Population
Albuquerque Metropolitan Statistical Area	City of Albuquerque AQP	Bernalillo County	675,551	904,587	Albuquerque	556,495
	State of New Mexico	Sandoval County	137,608		Rio Rancho	90,818
	State of New Mexico	Torrance County	15,611		Moriarty	1,910
	State of New Mexico	Valencia County	75,817		Belen Los Lunas	7,239 15,308

U.S. Census Bureau, http://www.census.gov/en.html

The Albuquerque MSA has experienced a very small population change over the past four years.

Table 3b. Albuquerque MSA Estimated Population Change

	Cumulative Estimates of the Components of Population Change							Annual Estimates of the Components of Population Change						
	April 1, 2010 to July 1, 2014							July 1, 2013 to July 1, 2014						
	Total Population Change [1]	Natural Increase	Vital Events		Net Migration			Total Population Change [1]	Natural Increase	Vital Events		Net Migration		
Geography			Births	Deaths	Total	International [2]	Domestic			Births	Deaths	Total	International [2]	Domestic
Albuquerque, NM Metro Area	17,512	17,517	46,560	29,043	-49	4,683	-4,732	1,242	3,560	10,774	7,214	-2,264	1,159	-3,423

U.S. Census Bureau, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Table 4b. Projected Annual Population Growth Rates New Mexico Counties 2010 to 2040

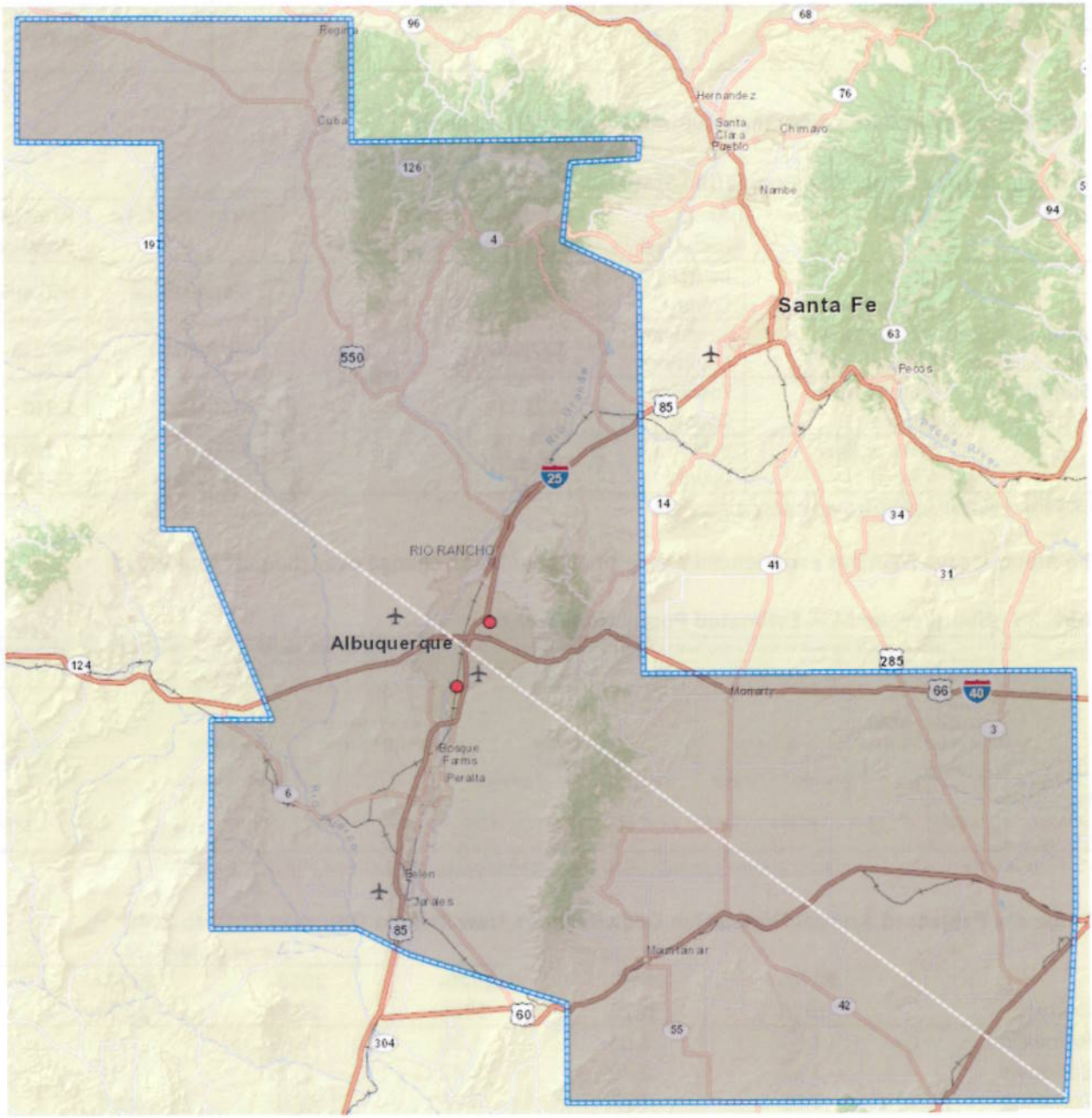
			As of July 1...			
County	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Bernalillo	1.63	1.58	1.36	1.19	1.00	0.80
Sandoval	3.02	2.70	2.42	2.16	1.91	1.71
Torrance	0.65	0.77	0.76	0.65	0.50	0.47
Valencia	1.48	1.34	1.17	1.01	0.87	0.74

Source: ***New Mexico County Population Projections July 1, 2010 to July 1, 2040***, Geospatial and Population Studies Group, University of New Mexico. Released November 2012.

The largest population growth estimate for all Albuquerque MSA counties is 2.7%, with an average estimated population growth from 2015-2020 of 1.5%. It is assumed that population growth will not change significantly over the next five years for the Albuquerque MSA. Based on an expected slow population growth no changes to the CO monitoring network are expected based on the Albuquerque MSA projected population growth.

NetAssess App Network Evaluation

The AQP utilized the NetAssess App to analyze the existing CO network for the Albuquerque MSA. Utilizing AQP's CO monitoring network the NetAssess App shows almost full coverage of the Albuquerque MSA.



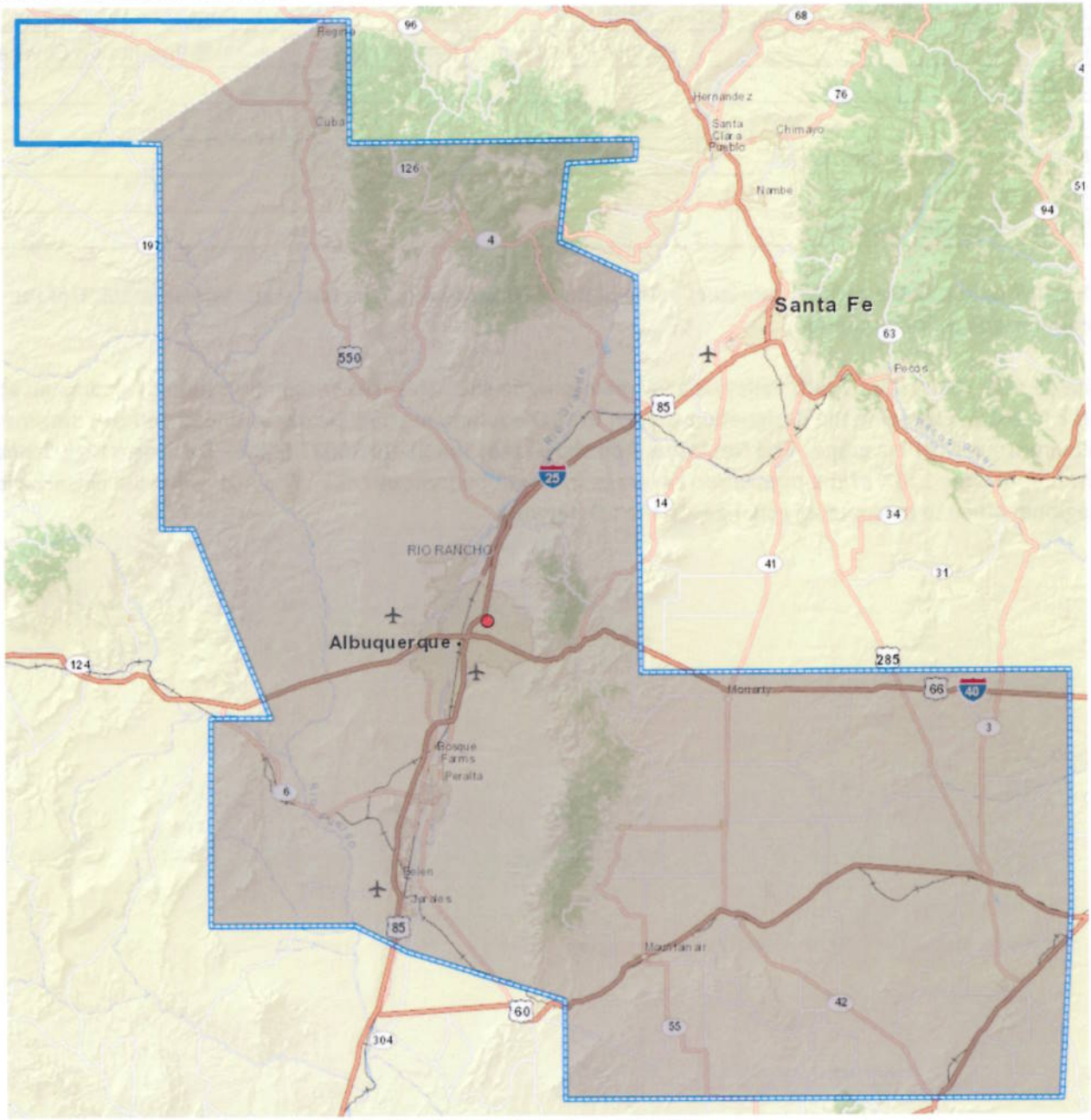
Map 2b. Albuquerque MSA coverage for CO monitoring

Table 5b. AQP Only MSA coverage per monitor

CO	Population coverage per NetAssess	% Population Coverage
35-001-0023	605900	68.3%
35-001-0029	281177	31.7%
MSA Population per NetAssess	887077	
Total population covered	887077	100.0%
% Population not covered		0.0%

The AQP operates the only CO monitors in the State of New Mexico. The two sites represent 100% of the Albuquerque MSA Population.

Site 35-001-0029 (2ZV - South Valley) is a CO maintenance site. The area designation should become an attainment area in 2016. Following the designation change the CO equipment could be discontinued without detriment to the Albuquerque MSA coverage. The NetAssess App shows that site 35-001-0023 (2ZM – Del Norte High School, NCore site) represents 100% of the population coverage for the Albuquerque MSA. The AQP will work closely with the EPA Regional office to evaluate any changes to the CO network.



Map 3b. NCore site only, Albuquerque MSA coverage for CO monitoring

No changes are planned for CO over the next five years. CO monitors will continue to operate year around at the CO Maintenance site (AQS 35-001-0029), and at the designated NCore site (AQS 35-001-0023).

Lead (Pb) Network Analysis

Lead (Pb) Monitoring Network Requirements

AQP operates one lead (Pb) sampler in Bernalillo County (see Map below). The site is the only Lead sampler operating in the State of New Mexico.

Map 1c. Lead Sampling Site in Bernalillo County

Authority to operate the Lead sampler has been delegated to City of Albuquerque, New Mexico. The AQP Lead network meets the minimum requirements that are currently set forth in 40 CFR 58 Appendix D. Since the lead sampling network was established for NCore and not for source the sampler is not collocated.

The AQP Lead network meets the NCore requirement of one Lead sampler at the NCore site (35-001-0023, 2ZM – Del Norte).

Table 1c. Design Values for the current AQP Lead network, 2014

Site	NAAQS in µg/m^3	AQP Design Value in µg/m^3	% of NAAQS
2ZM, Del Norte SLAMS NCore 35-001-0023	0.15	0.006	4%

The existing network is in attainment with the current Lead standard.

Table 2c. Albuquerque MSA Population Statistics

MSA	PQAO	Area Included	County Population	MSA Population	Principal City	Principal City Population
Albuquerque Metropolitan Statistical Area	City of Albuquerque AQP	Bernalillo County	675,551	904,587	Albuquerque	556,495
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U.S. Census Bureau, http://www.census.gov/en.html

The Albuquerque MSA has experienced a very small population change over the past four years.

Table 3c. Albuquerque MSA Estimated Population Change

Geography	Cumulative Estimates of the Components of Population Change April 1, 2010 to July 1, 2014							Annual Estimates of the Components of Population Change July 1, 2013 to July 1, 2014						
	Total Population Change [1]	Natural Increase	Vital Events		Net Migration			Total Population Change [1]	Natural Increase	Vital Events		Net Migration		
			Births	Deaths	Total	International [2]	Domestic			Births	Deaths	Total	International [2]	Domestic
Albuquerque, NM Metro Area	17,512	17,517	46,560	29,043	-49	4,683	-4,732	1,242	3,560	10,774	7,214	-2,264	1,159	-3,423

U.S. Census Bureau, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Table 4c. Projected Annual Population Growth Rates New Mexico Counties 2010 to 2040

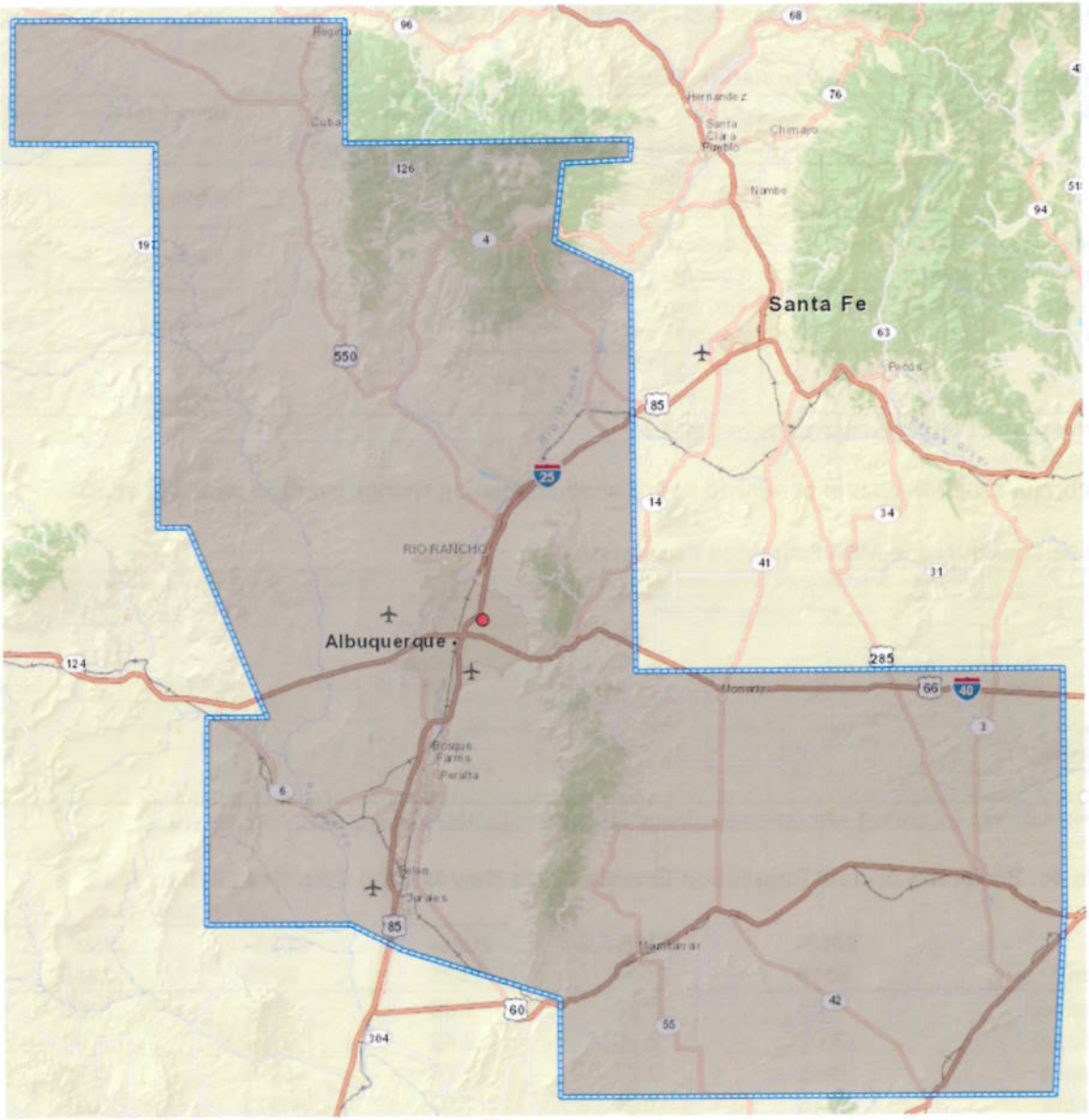
			As of July 1...			
County	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Bernalillo	1.63	1.58	1.36	1.19	1.00	0.80
Sandoval	3.02	2.70	2.42	2.16	1.91	1.71
Torrance	0.65	0.77	0.76	0.65	0.50	0.47
Valencia	1.48	1.34	1.17	1.01	0.87	0.74

Source: ***New Mexico County Population Projections July 1, 2010 to July 1, 2040***, Geospatial and Population Studies Group, University of New Mexico. Released November 2012.

The largest population growth estimate for all Albuquerque MSA counties is 2.7%, with an average estimated population growth from 2015-2020 of 1.5%. It is assumed that population growth will not change significantly over the next five years for the Albuquerque MSA. Based on an expected slow population growth no changes to the Lead monitoring network are expected based on the Albuquerque MSA projected population growth.

NetAssess App Network Evaluation

The AQP utilized the NetAssess App to analyze the existing Lead network for the Albuquerque MSA. Utilizing AQP's Lead monitoring network the NetAssess App shows 100% coverage of the Albuquerque MSA.



Map 2c. Albuquerque MSA coverage for Lead Sampling

Table 5c. AQP Only MSA coverage per monitor

Lead	Population coverage per NetAssess	% Population Coverage
35-001-0023	887077	100.0%
MSA Population per NetAssess	887077	
Total population covered	887077	100.0%
% Population not covered		0.0%

The AQP operates the only Lead samplers in the State of New Mexico. The single site represents 100% of the Albuquerque MSA Population.

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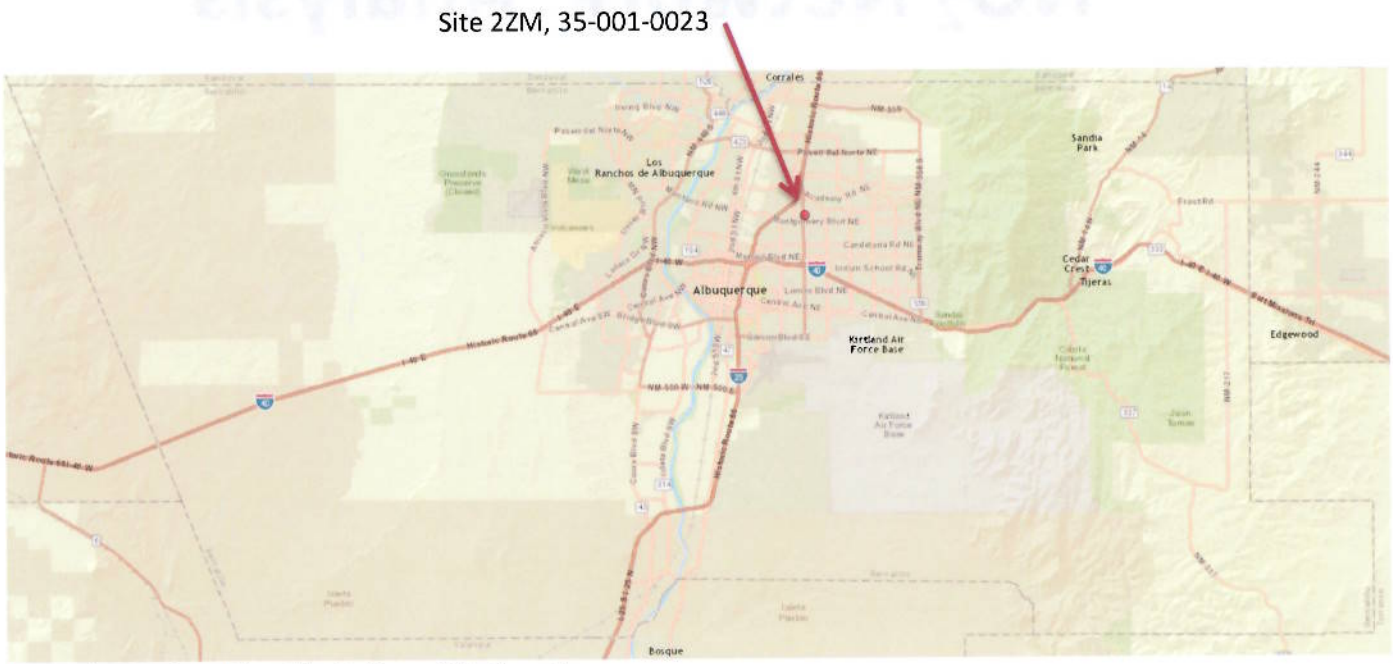
NO_2 Network Analysis

NO_2 Monitoring Network Requirements

AQP operates one NO_2 monitor in Bernalillo County (see Map below).



Map 1d. NO_2 Sampling Site in Bernalillo County

Authority to operate the NO_2 monitor has been delegated to City of Albuquerque, New Mexico. The AQP NO_2 network meets the minimum requirements that are currently set forth in 40 CFR 58 Appendix D.

Table 1d. Design Values for the current AQP NO_2 network, 2014

Site	1-Hour NAAQS in ppb	AQP Design Value in ppb	% of NAAQS
2ZM, Del Norte SLAMS NCore 35-001-0023	100	45.47	45%

The existing network is in attainment with the current NO_2 standard.

Table 2d. Albuquerque MSA Population Statistics

MSA	PQAO	Area Included	County Population	MSA Population	Principal City	Principal City Population
Albuquerque Metropolitan Statistical Area	City of Albuquerque AQP	Bernalillo County	675,551	904,587	Albuquerque	556,495
	State of New Mexico	Sandoval County	137,608		Rio Rancho	90,818
	State of New Mexico	Torrance County	15,611		Moriarty	1,910
	State of New Mexico	Valencia County	75,817		Belen Los Lunas	7,239 15,308

U.S. Census Bureau, http://www.census.gov/en.html

The Albuquerque MSA has experienced a very small population change over the past four years.

Table 3d. Albuquerque MSA Estimated Population Change

Geography	Cumulative Estimates of the Components of Population Change April 1, 2010 to July 1, 2014							Annual Estimates of the Components of Population Change July 1, 2013 to July 1, 2014						
	Total Population Change [1]	Natural Increase	Vital Events		Net Migration			Total Population Change [1]	Natural Increase	Vital Events		Net Migration		
			Births	Deaths	Total	International [2]	Domestic			Births	Deaths	Total	International [2]	Domestic
Albuquerque, NM Metro Area	17,512	17,517	46,560	29,043	-49	4,683	-4,732	1,242	3,560	10,774	7,214	-2,264	1,159	-3,423

U.S. Census Bureau, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Table 4d. Projected Annual Population Growth Rates New Mexico Counties 2010 to 2040

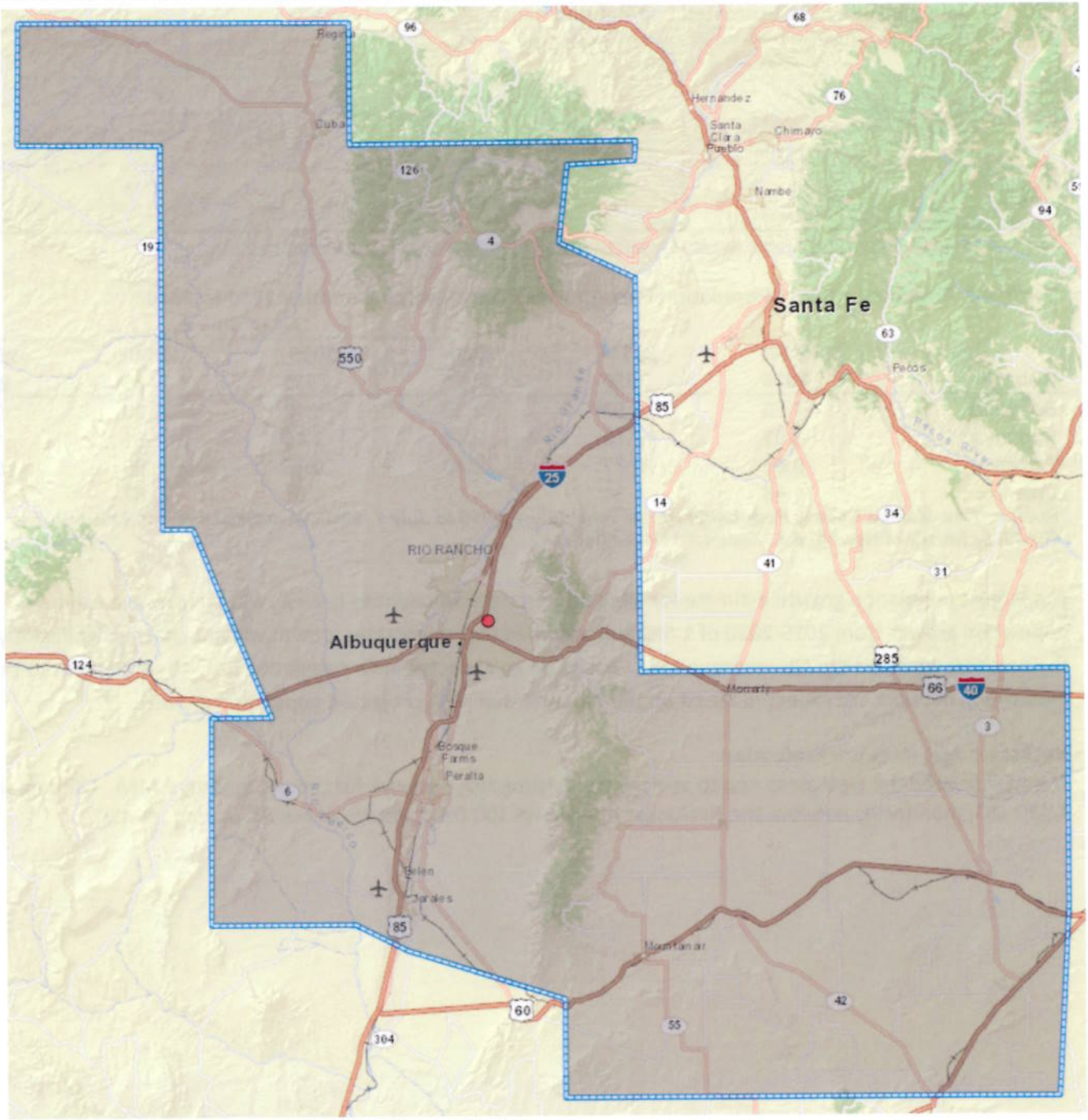
	As of July 1...					
County	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Bernalillo	1.63	1.58	1.36	1.19	1.00	0.80
Sandoval	3.02	2.70	2.42	2.16	1.91	1.71
Torrance	0.65	0.77	0.76	0.65	0.50	0.47
Valencia	1.48	1.34	1.17	1.01	0.87	0.74

Source: ***New Mexico County Population Projections July 1, 2010 to July 1, 2040***, Geospatial and Population Studies Group, University of New Mexico. Released November 2012.

The largest population growth estimate for all Albuquerque MSA counties is 2.7%, with an average estimated population growth from 2015-2020 of 1.5%. It is assumed that population growth will not change significantly over the next five years for the Albuquerque MSA. Based on an expected slow population growth no changes to the NO_2 monitoring network are expected based on the Albuquerque MSA projected population growth.

NetAssess App Network Evaluation

The AQP utilized the NetAssess App to analyze the existing NO_2 network for the Albuquerque MSA. Utilizing the AQP's NO_2 monitoring network the NetAssess App shows 100.0% coverage of the Albuquerque MSA.



Map 2d. Albuquerque MSA coverage for NO_2 monitoring

Table 5d. AQP Only MSA coverage per monitor

NO2	Population coverage per NetAssess	% Population Coverage
35-001-0023	884409	100.0%
MSA Population per NetAssess	887077	
Total population covered	887077	100.0%
% Population not covered		0.0%

Roadside NOx

Associated with the new NO_2 rule making is a requirement to monitor NO_2 Roadway emissions. Based on the areas existing population and current Annual Average Daily Traffic (AADT) counts one new roadside NO_x site will be required since none of the current sites are within the required 50-meters of the nearest traffic lane. The AQP has identified a few potential sites and participated in a national pilot program with passive sampling. The worst-case data from that study showed Albuquerque well within NAAQS annual limits and with a high statistically probability of staying below the 1-hour standard. As a result, Albuquerque is on the "build and hold" list with an anticipated start date of 1/1/2017. The AQP is on target to complete a 1/1/2017 roadside NO_x monitoring site.

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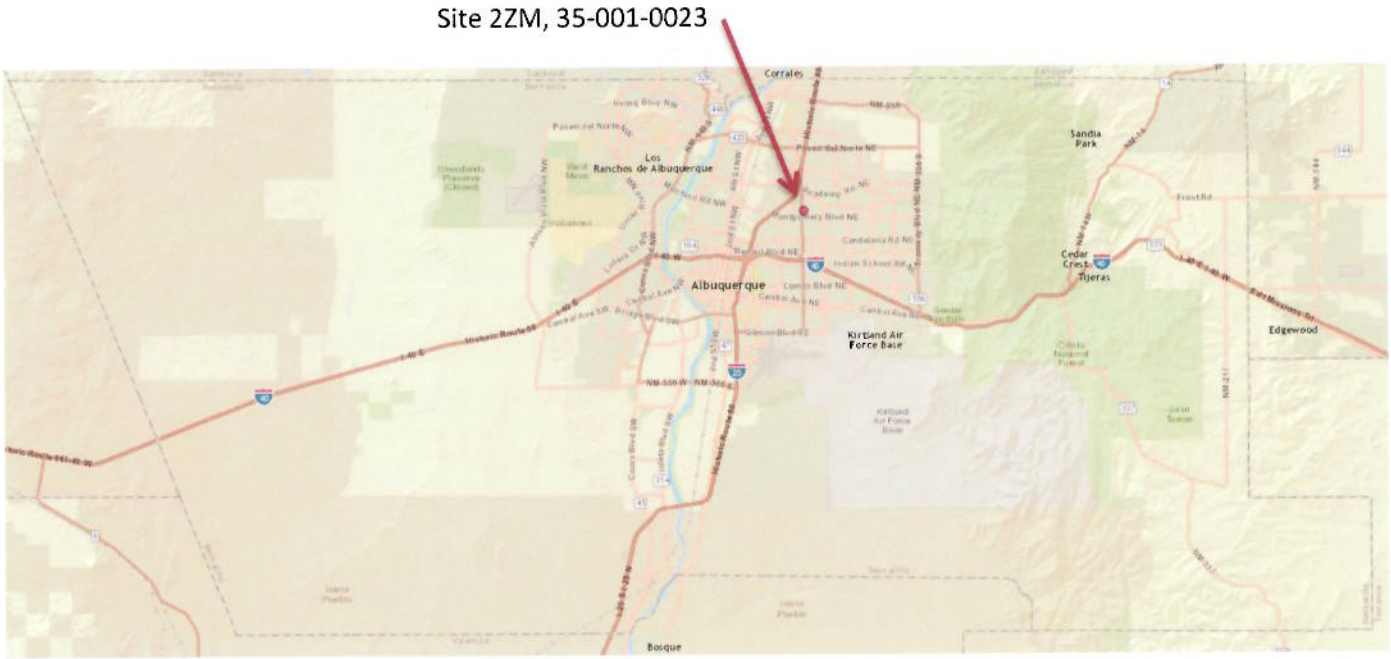
SO_2 Network Analysis

SO_2 Monitoring Network Requirements

AQP operates one SO_2 monitor throughout Bernalillo County (see Map below).



Map 1e. SO_2 monitoring Sites in Bernalillo County

Authority to operate these ozone monitors has been delegated to City of Albuquerque, New Mexico. The AQP ozone network meets the minimum requirements that are currently set forth in 40 CFR 58 Appendix D.

Table 1e. Design Values for the current AQP ozone network, 2014

Site	NAAQS in ppb	AQP Design Value in ppb	% of NAAQS
2ZM, Del Norte SLAMS NCore 35-001-0023	75	5	6.6%

The existing network is in attainment with the current ozone standard.

Table 2e. Albuquerque MSA Population Statistics

MSA	PQAO	Area Included	County Population	MSA Population	Principal City	Principal City Population
Albuquerque Metropolitan Statistical Area	City of Albuquerque AQP	Bernalillo County	675,551	904,587	Albuquerque	556,495
	State of New Mexico	Sandoval County	137,608		Rio Rancho	90,818
	State of New Mexico	Torrance County	15,611		Moriarty	1,910
	State of New Mexico	Valencia County	75,817		Belen Los Lunas	7,239 15,308

U.S. Census Bureau, http://www.census.gov/en.html

The Albuquerque MSA has experienced a very small population change over the past four years.

Table 3e. Albuquerque MSA Estimated Population Change

Geography	Cumulative Estimates of the Components of Population Change April 1, 2010 to July 1, 2014							Annual Estimates of the Components of Population Change July 1, 2013 to July 1, 2014						
	Total Population Change [1]	Natural Increase	Vital Events		Net Migration			Total Population Change [1]	Natural Increase	Vital Events		Net Migration		
			Births	Deaths	Total	International [2]	Domestic			Births	Deaths	Total	International [2]	Domestic
Albuquerque, NM Metro Area	17,512	17,517	46,560	29,043	-49	4,683	-4,732	1,242	3,560	10,774	7,214	-2,264	1,159	-3,423

U.S. Census Bureau, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Table 4e. Projected Annual Population Growth Rates New Mexico Counties 2010 to 2040

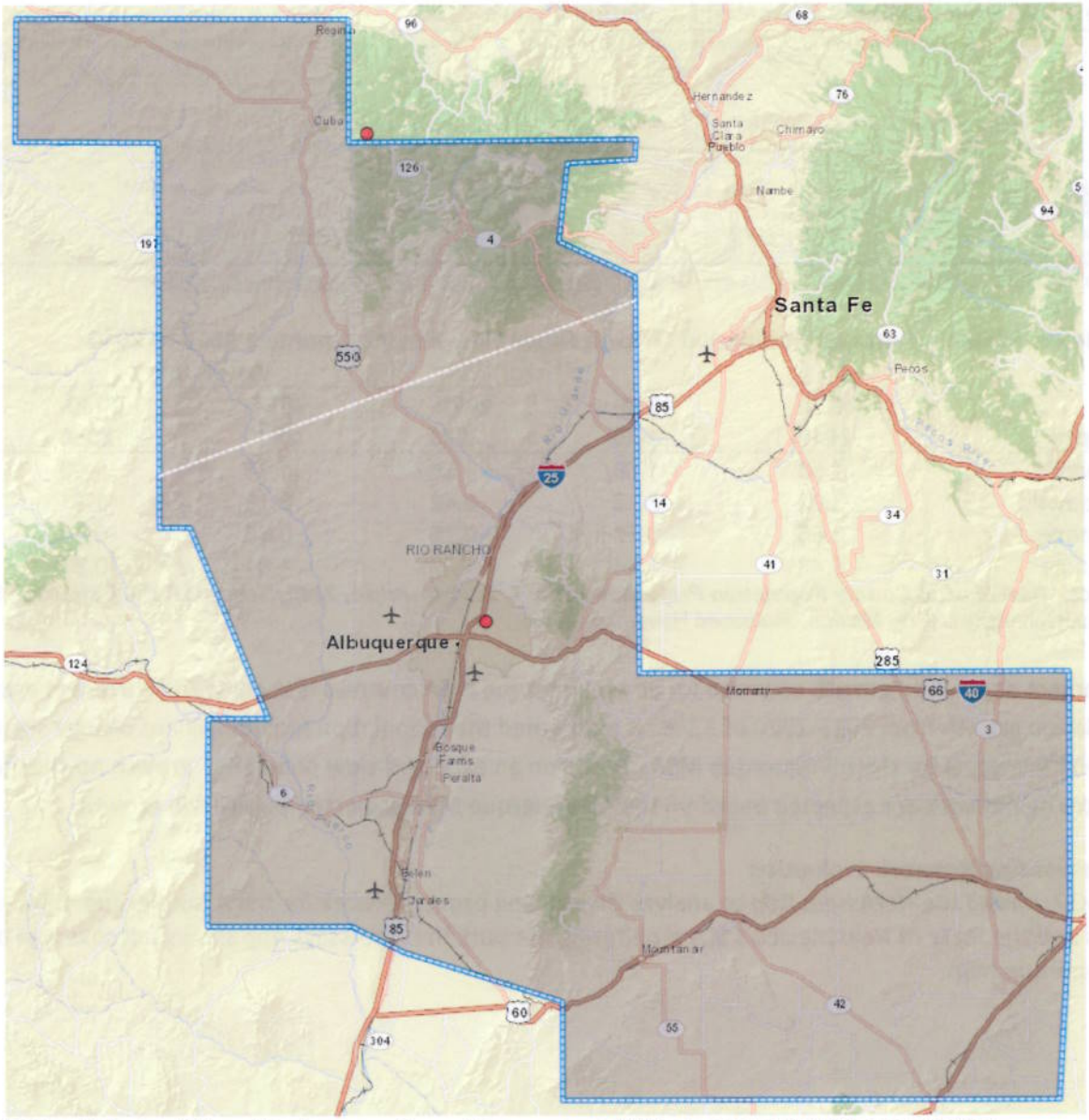
			As of July 1...			
County	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Bernalillo	1.63	1.58	1.36	1.19	1.00	0.80
Sandoval	3.02	2.70	2.42	2.16	1.91	1.71
Torrance	0.65	0.77	0.76	0.65	0.50	0.47
Valencia	1.48	1.34	1.17	1.01	0.87	0.74

Source: ***New Mexico County Population Projections July 1, 2010 to July 1, 2040***, Geospatial and Population Studies Group, University of New Mexico. Released November 2012.

The largest population growth estimate for all Albuquerque MSA counties is 2.7%, with an average estimated population growth from 2015-2020 of 1.5%. It is assumed that population growth will not change significantly over the next five years for the Albuquerque MSA. Based on an expected slow population growth no changes to the SO_2 monitoring network are expected based on the Albuquerque MSA projected population growth.

NetAssess App Network Evaluation

The AQP utilized the NetAssess App to analyze the existing ozone network for the Albuquerque MSA. Utilizing the AQP's and the State of New Mexico's SO_2 monitoring network the NetAssess App shows full coverage of the Albuquerque MSA.

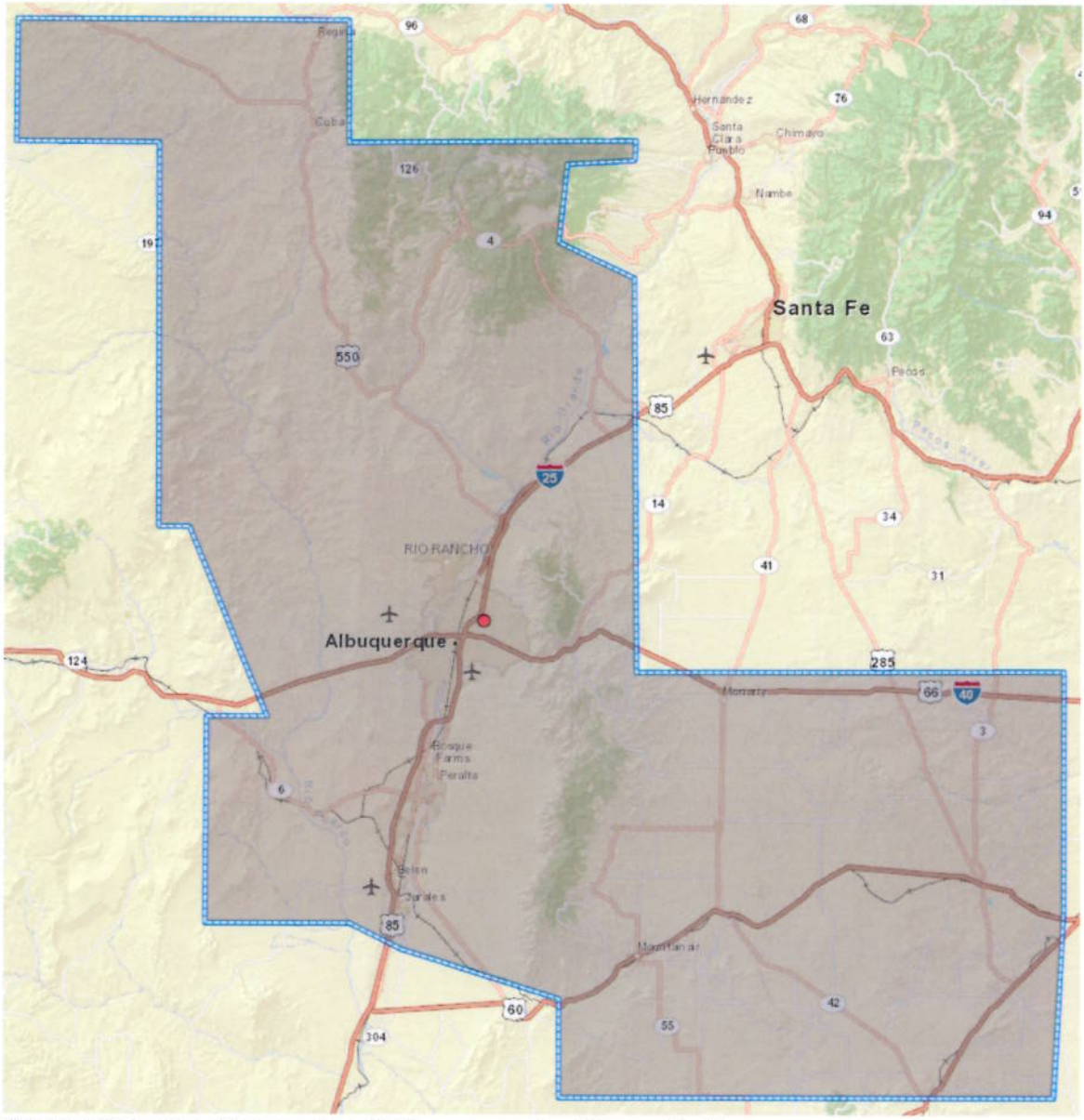


Map 2e. AQP and State of New Mexico monitors, Albuquerque MSA coverage for SO_2 monitoring

Table 5e. AQP and Other State MSA coverage per monitor

SO2, AQP and State Monitors	Population coverage per NetAssess	% Population Coverage
35-001-0023	877547	98.9%
35-039-9000	9530	1.1%
MSA Population per NetAssess	887077	
Total population covered	887077	100.0%
% Population not covered		0.0%
AQP Sites		
State of NM Sites		

The AQP utilized the NetAssess App to analyze the existing SO_2 network for the Albuquerque MSA. Utilizing the AQP's SO_2 monitoring network the NetAssess App shows 100.0% coverage of the Albuquerque MSA.



Map 3e. AQP Monitor only, Albuquerque MSA coverage for SO_2 monitoring

Table 6e. AQP Only MSA coverage per monitor

SO_2 - AQP Site only	Population coverage per NetAssess	% Population Coverage
35-001-0023	884409	100.0%
MSA Population per NetAssess	887077	
Total population covered	887077	100.0%
% Population not covered		0.0%

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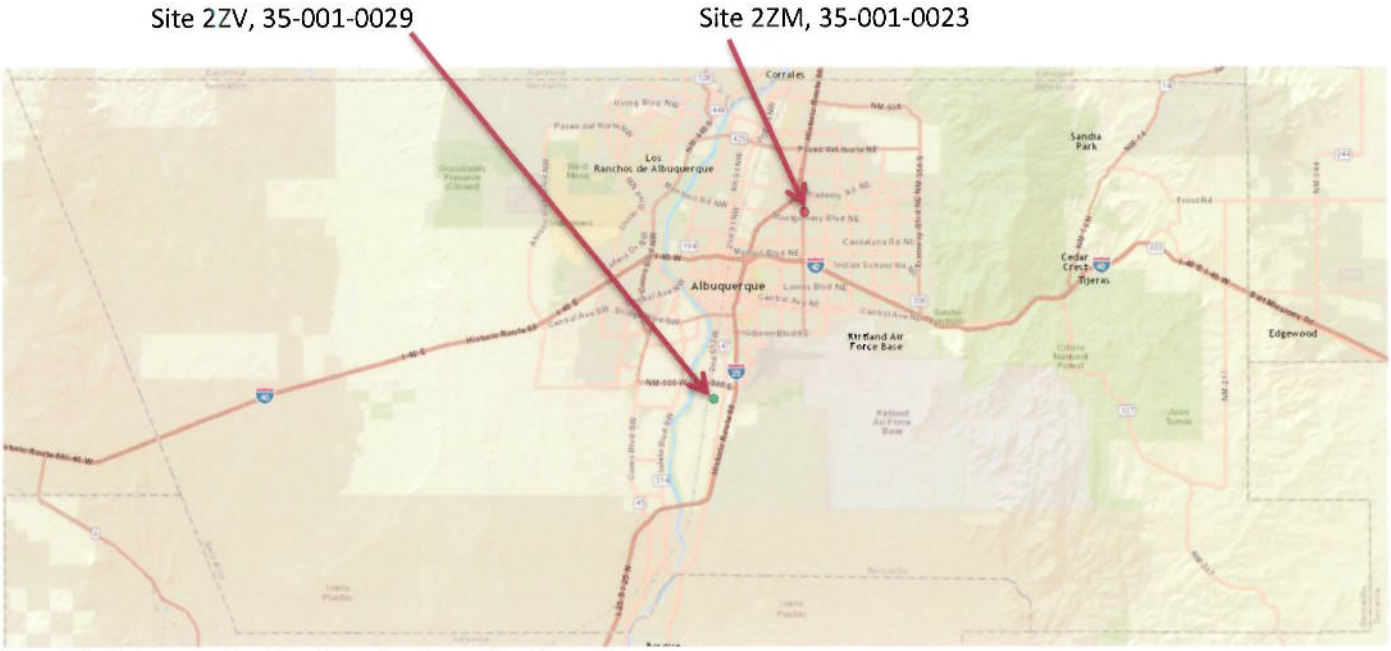
$PM_{2.5}$ Network Analysis

$PM_{2.5}$ Monitoring Network Requirements

AQP operates two FEM (Federal Equivalency Method) $PM_{2.5}$ monitors and one FRM (Federal Reference Method) sampler throughout Bernalillo County (see Map below).



Map 1f. $PM_{2.5}$ monitoring Sites in Bernalillo County

Authority to operate these ozone monitors has been delegated to City of Albuquerque, New Mexico. The AQP $PM_{2.5}$ network meets the minimum requirements that are currently set forth in 40 CFR 58 Appendix D.

Table 1f. Minimum Number of $PM_{2.5}$ Monitors Required (40 CFR 58 Appendix D)

Population (MSA)	Most recent 3 year Design Value ≥ 85% of $PM_{2.5}$ NAAQS*	Most recent 3 year Design Value <85% of $PM_{2.5}$ NAAQS*
>1,000,000	3	2
500,000 – 1,000,000	2	1
50,000 – 500,000	1	0**

* 85% of annual NAAQS (15 $\mu g/m^3$) = 12.75 $\mu g/m^3$; 85% of 24-Hour NAAQS (35 $\mu g/m^3$) = 29.75 $\mu g/m^3$

** NCore sites require a maximum of one continuous monitor and one FRM sampler

Based on Table 1f's requirements and the network wide design values (see Table 2f. Design Values for the current AQP $PM_{2.5}$ network, 2014) the AQP $PM_{2.5}$ network meets the population requirement of two $PM_{2.5}$ monitors and one collocated sampler located at the NCore site. To facilitate the NCore and colocation requirements one continuous $PM_{2.5}$ monitor and one FRM non-continuous collocated sampler are operated at the NCore site.

Table 2f. Design Values for the current AQP $PM_{2.5}$ network, 2014

Site	24-Hour Design Value ($\mu g/m^3$)	Annual Design Value ($\mu g/m^3$)	Exceeds 85% of either NAAQS	Within ±10% of either NAAQS	Current Sampling Frequency
2ZM, Del Norte SLAMS NCore, 35-001-0023	15.7	6.5	NO	NO	Continuous
2ZV, South Valley SLAMS 35-001-0029*	20.7*	10.4*	YES*	NO	Continuous

* Annual values not meeting data completeness criteria

The existing network is in attainment with the current $PM_{2.5}$ standards.

Table 3f. Albuquerque MSA Population Statistics

MSA	PQAO	Area Included	County Population	MSA Population	Principal City	Principal City Population
Albuquerque Metropolitan Statistical Area	City of Albuquerque AQP	Bernalillo County	675,551	904,587	Albuquerque	556,495
	State of New Mexico	Sandoval County	137,608		Rio Rancho	90,818
	State of New Mexico	Torrance County	15,611		Moriarty	1,910
	State of New Mexico	Valencia County	75,817		Belen Los Lunas	7,239 15,308

U.S. Census Bureau, http://www.census.gov/en.html

The Albuquerque MSA has experienced a very small population change over the past four years.

Table 4f. Albuquerque MSA Estimated Population Change

	Cumulative Estimates of the Components of Population Change							Annual Estimates of the Components of Population Change						
	April 1, 2010 to July 1, 2014							July 1, 2013 to July 1, 2014						
	Total Population Change [1]	Natural Increase	Vital Events		Net Migration			Total Population Change [1]	Natural Increase	Vital Events		Net Migration		
Geography			Births	Deaths	Total	International [2]	Domestic			Births	Deaths	Total	International [2]	Domestic
Albuquerque, NM Metro Area	17,512	17,517	46,560	29,043	-49	4,683	-4,732	1,242	3,560	10,774	7,214	-2,264	1,159	-3,423

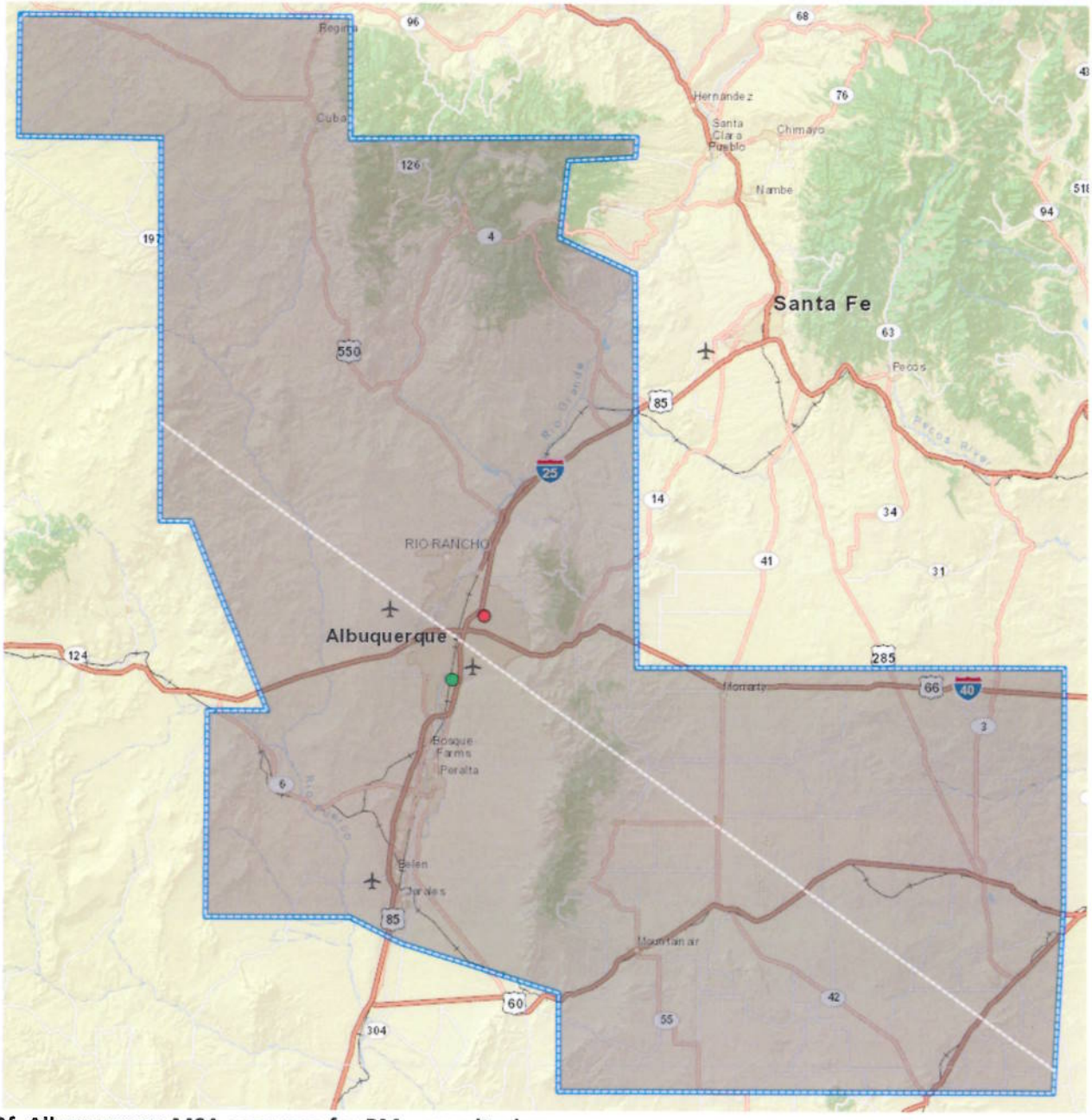
U.S. Census Bureau, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Table 5f. Projected Annual Population Growth Rates New Mexico Counties 2010 to 2040

	As of July 1...					
County	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Bernalillo	1.63	1.58	1.36	1.19	1.00	0.80
Sandoval	3.02	2.70	2.42	2.16	1.91	1.71
Torrance	0.65	0.77	0.76	0.65	0.50	0.47
Valencia	1.48	1.34	1.17	1.01	0.87	0.74

Source: ***New Mexico County Population Projections July 1, 2010 to July 1, 2040***, Geospatial and Population Studies Group, University of New Mexico. Released November 2012.

The largest population growth estimate for all Albuquerque MSA counties is 2.7%, with an average estimated population growth from 2015-2020 of 1.5%. It is assumed that population growth will not change significantly over the next five years for the Albuquerque MSA. Based on an expected slow population growth no changes to the $PM_{2.5}$ monitoring network are expected based on the Albuquerque MSA projected population growth.



Map 2f. Albuquerque MSA coverage for $PM_{2.5}$ monitoring

Table 6f. AQP Only MSA coverage per monitor

PM2.5	Population coverage per NetAssess	% Population Coverage
35-001-0023	605900	68.3%
35-001-0029	281177	31.7%
MSA Population per NetAssess	887077	
Total population covered	887077	100.0%
% Population not covered		0.0%

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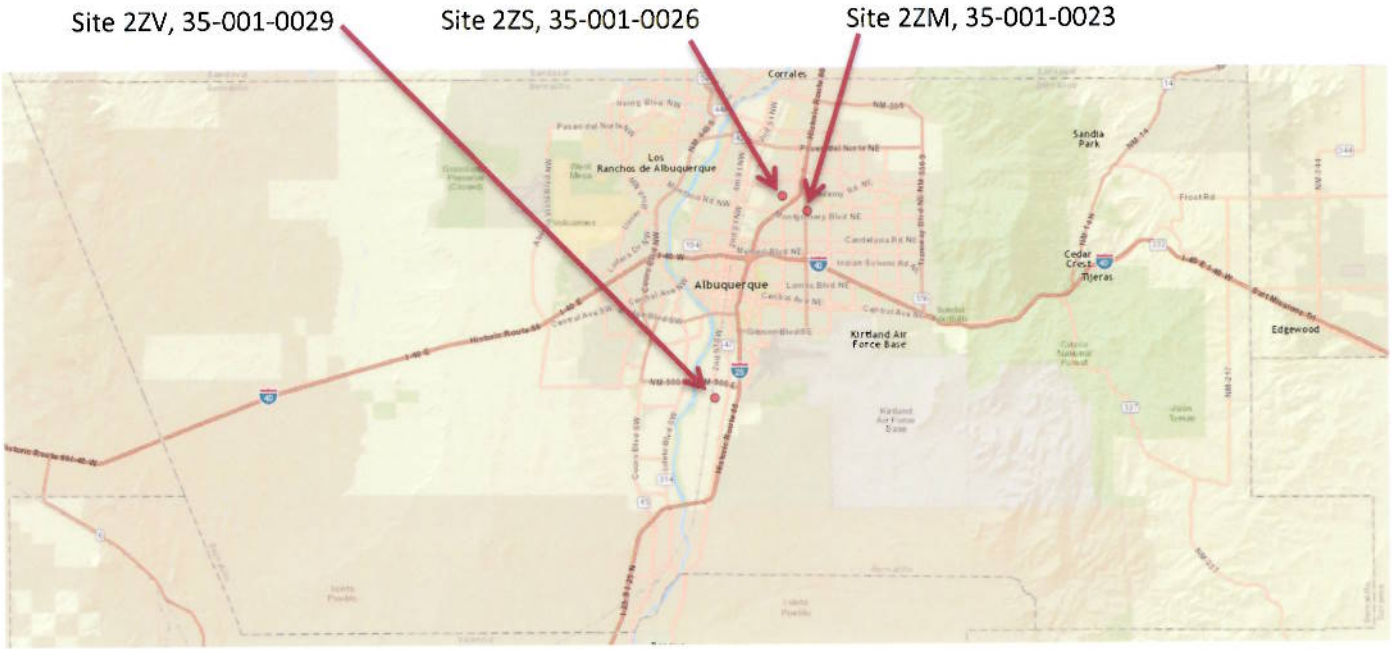
PM_{10} Network Analysis

PM_{10} Monitoring Network Requirements

AQP operates three PM_{10} monitors and one sampler throughout Bernalillo County (see Map below). Site 35-001-0032 (2ZW – Westside) will continue to collect PM_{10} data although the site does not meet siting criteria for PM_{10}. Site 2ZW is not evaluated here since the data is not SLAMS comparable and the site is not needed to comply with federal air monitoring objectives. For a location of site 2ZW please refer to the Map 1 on page 1 of this assessment.



Map 1g. PM_{10} monitoring Sites in Bernalillo County

Authority to operate these ozone monitors has been delegated to City of Albuquerque, New Mexico. The AQP PM_{10} network meets the minimum requirements that are currently set forth in 40 CFR 58 Appendix D.

Table 1g. Minimum Number of PM_{10} Monitors Required (40 CFR 58 Appendix D)

Population (MSA)	High Concentration Exceeds 24-Hour NAAQS by 20% or more (>180 $\mu g/m^3$)	High Concentration Exceeds 80% of 24-Hour NAAQS (>120 $\mu g/m^3$)	High Concentration less than 80% of 24-Hour NAAQS (<120 $\mu g/m^3$)
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	1-2
250,000 – 500,000	3-4	1-2	0-1
100,000 – 250,000	1-2	0-1	0

Based on Table 1g's requirements and the network wide design the AQP PM_{10} network meets the population requirement of three PM_{10} monitors and one collocated sampler located at the NCore site. To facilitate the NCore requirement one continuous PM_{10} monitor is operated at the NCore site.

The only scheduled change to the PM10 network is to replace site 35-001-00026 (2ZS – Jefferson) current R&P TEOM continuous PM10 monitor with a MetOne BAM 1020 midyear 2016. The equipment is currently operating at the site but is in an evaluation stage prior to inclusion to the network.

Table 2g. Design Values for the current AQP PM_{10} network, 2014

Site	3 Year Design Value µg/m³	%	Current Sampling Frequency
2ZM, Del Norte SLAMS NCore 35-001-0023	102.8	68.53%	Continuous
2ZS, Jefferson SLAMS 35-001-0026	98.4	65.60%	1 in 1 and continuous (collocated)
2ZV, South Valley SLAMS 35-001-0029*	119.3*	79.53%	Continuous

* Indicates design value calculations do not data completeness criteria

Based on Table 1g and Table 2g data requirement the AQP exceeds the requirement for PM_{10} monitoring. Even with one site close to the 80% limit the AQP operate three PM_{10} monitoring sites and if the AQP were to exceed the 80% limit the AQP will continue to meet the required number of monitoring sites as required by Table 1g.

The existing network is in attainment with the current PM_{10} standard and no changes are expected to occur over the next five years.

Table 3g. Albuquerque MSA Population Statistics

MSA	PQAO	Area Included	County Population	MSA Population	Principal City	Principal City Population
Albuquerque Metropolitan Statistical Area	City of Albuquerque AQP	Bernalillo County	675,551	904,587	Albuquerque	556,495
	State of New Mexico	Sandoval County	137,608		Rio Rancho	90,818
	State of New Mexico	Torrance County	15,611		Moriarty	1,910
	State of New Mexico	Valencia County	75,817		Belen Los Lunas	7,239 15,308

U.S. Census Bureau, http://www.census.gov/en.html

The Albuquerque MSA has experienced a very small population change over the past four years.

Table 4g. Albuquerque MSA Estimated Population Change

	Cumulative Estimates of the Components of Population Change							Annual Estimates of the Components of Population Change						
	April 1, 2010 to July 1, 2014							July 1, 2013 to July 1, 2014						
	Total Population Change [1]	Natural Increase	Vital Events		Net Migration			Total Population Change [1]	Natural Increase	Vital Events		Net Migration		
Geography			Births	Deaths	Total	International [2]	Domestic			Births	Deaths	Total	International [2]	Domestic
Albuquerque, NM Metro Area	17,512	17,517	46,560	29,043	-49	4,683	-4,732	1,242	3,560	10,774	7,214	-2,264	1,159	-3,423

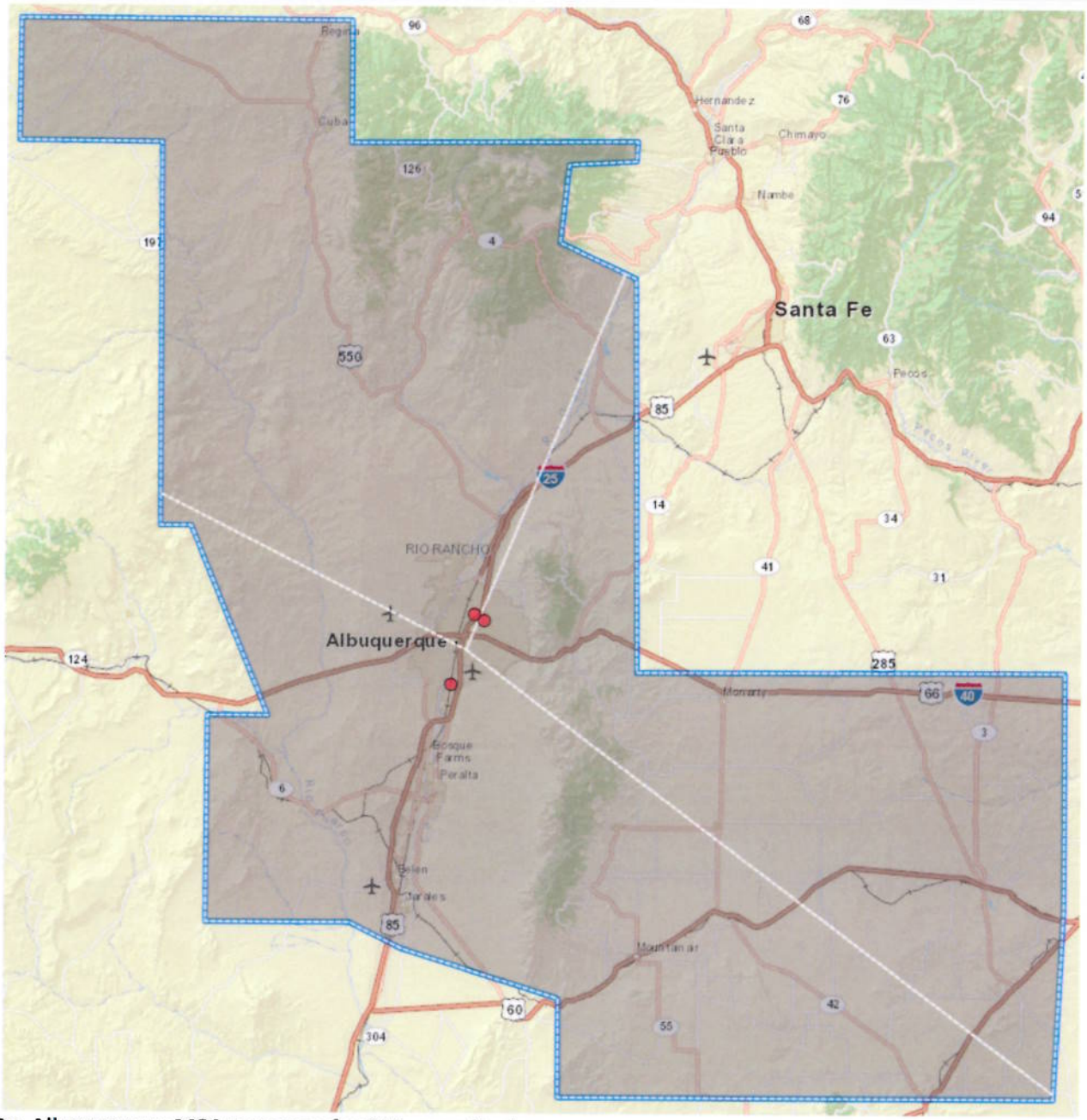
U.S. Census Bureau, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Table 5g. Projected Annual Population Growth Rates New Mexico Counties 2010 to 2040

			As of July 1...			
County	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Bernalillo	1.63	1.58	1.36	1.19	1.00	0.80
Sandoval	3.02	2.70	2.42	2.16	1.91	1.71
Torrance	0.65	0.77	0.76	0.65	0.50	0.47
Valencia	1.48	1.34	1.17	1.01	0.87	0.74

Source: ***New Mexico County Population Projections July 1, 2010 to July 1, 2040***, Geospatial and Population Studies Group, University of New Mexico. Released November 2012.

The largest population growth estimate for all Albuquerque MSA counties is 2.7%, with an average estimated population growth from 2015-2020 of 1.5%. It is assumed that population growth will not change significantly over the next five years for the Albuquerque MSA. Based on an expected slow population growth no changes to the PM_{10} monitoring network are expected based on the Albuquerque MSA projected population growth.



Map 2g. Albuquerque MSA coverage for PM_{10} monitoring

Table 6g. AQP Only MSA coverage per monitor

PM10	Population coverage per NetAssess	% Population Coverage
35-001-0023	329366	37.1%
35-001-0026	289440	32.6%
35-001-0029	268271	30.2%
MSA Population per NetAssess	887077	
Total population covered	887077	100.0%
% Population not covered		0.0%

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Conclusions

The purpose of this Five-Year Network Assessment is to:

Determine whether the network meets the monitoring objectives
A review of the AQP monitoring network and the associated monitoring requirements for each NAAQS pollutant has been presented with additional assessment utilizing the NetAssess App. Based on the review provided, the siting and operation of AQP's monitoring networks meet the requirements of 40 CFR Part 58, including its Appendices A, C, D, and E.

Determine whether new sites are needed or existing sites can be terminated
Based on the roadside NO_X requirement the only proposed new site for the AQP is the roadside NO_X due for implementation 1/1/2017.

At site 35-001-0026 (2ZS- Jefferson) The AQP will also replace the existing R&P TEOM 1400 with a MetOne BAM 1020 in 2016. The MetOne BAM 1020 is currently operating at the site and will be placed online and data submitted to AQS in 2016.

One other possible change to the network may be a result of revisions to the ozone NAAQS due November, 2015. Any changes to the AQP's network for ozone will be discussed with the Regional authority.

No sites are being considered for termination.

Determine whether new technologies are appropriate for incorporation in the ambient air monitoring network.
AQP will identify, acquire, and implement ambient air monitoring equipment that is based on new technologies that improves the efficiency and effectiveness of the AQP's monitoring network. New technologies will be analyzed and possibly acquired as they become available and as funding and AQP's resources permit.

The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance whether the network has considered high populations of susceptible populations.

The AQP's monitoring network design is based on air monitoring regulatory requirements. The monitoring network considers several monitoring objectives including monitoring for public exposure during the design review. AQP's NCore network supports air quality characterizations for susceptible populations in the Albuquerque Metro Area. AQP however, has not made any specific evaluations or systematic review of its network compared to public health data on areas of high populations with susceptible individuals. AQP is however, aware of the public's health issues and has specific programs that inform the public before and during events that may cause issue with sensitive populations. Additionally, information from the ambient air monitoring network is used to provide daily pollution forecasts so that health risk decisions can be made by schools, public health agencies, health care providers, and others.

Determine if sites are to be discontinued, what impact it may have on other data uses and nearby jurisdictions
AQP takes many considerations into account before discontinuation of existing monitors. Among these are communications with nearby jurisdictions and other data users. Prior to the discontinuation of a site or monitor, every effort is made to ensure compliance with regulatory requirements is not compromised.