Protecting the air we share
Air Quality
CLARK COUNTY • DEPARTMENT OF AIR QUALITY
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Marci Henson Director

June 7, 2016

Alexis Strauss, Acting Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Re: Annual Network Plan

Dear Ms. Strauss:

The Clark County Department of Air Quality (DAQ) has completed the "Annual Network Plan Report" required by Title 40, Part 58 of the Code of Federal Regulations (40 CFR 58). The plan was made available for the required 30-day public inspection period between April 4 and May 4, 2016, at the DAQ front counter, through a DAQ electronic distribution list, and on the DAQ Web site (http://www.clarkcountynv.gov/depts/airquality/Pages/default.aspx).

DAQ received no public comments. However, one inquiry was made related to the availability of monitoring station maps; this inquiry was satisfied. The Clark County Board of County Commissioners approved the plan on June 7, 2016.

This report addresses the following objectives, set forth in guidance from the U.S. Environmental Protection Agency:

1. Minimum monitoring requirements
2. Site and network specifications
3. Collocation requirements
4. Quality management information (including audits and performance evaluations)
5. Completed and proposed network changes
6. Near-Road monitoring proposals
7. Special purpose monitoring.

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DAQ will continue to evaluate the monitoring network for program effectiveness in the following areas: user needs, monitor siting, appropriate scale of representation, compliance with monitoring objectives and National Ambient Air Quality Standards, air pollution control programs, and methods for informing the public about air pollution levels.

This plan is an official request for the Region 9 office to determine that the DAQ monitoring network plan meets all applicable requirements of 40 CFR 58. If you have any questions, please contact Yousaf Hameed, Air Quality Monitoring Supervisor, at (702) 455-1664.

Respectfully,

Phillip Wiker
Manager, Air Quality Monitoring

cc:
Deborah Jordan, Acting Deputy Regional Administrator, EPA Region 9 (electronic copy)
Meredith Kurpius, Manager, EPA Region 9 (electronic copy)
Jennifer Williams, EPA Region 9 (electronic copy)
Anna Mebust, EPA Region 9 (electronic copy)
Mathew Plate, EPA Region 9 (electronic copy)

Attachments:
Appendix A: DAQ Response to EPA on the 2015 Network Plan Comments – Cross Reference Guide
Appendix B: EPA Approval Documents

Annual Monitoring Network Plan Report

June 2016

Clark County Department of Air Quality
4701 W. Russell Road, Suite 200
Las Vegas, Nevada 89118

Executive Summary

This document reports the status of the Clark County air monitoring network in 2016, as required by Title 40, Part 58 of the Code of Federal Regulations (CFR). It describes network operation in 2015, changes planned for 2016–2017, and the ways in which Clark County disseminates network data to the public in a timely manner.

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ACRONYMS AND ABBREVIATIONS

AADT	annual average daily traffic
AQS	Air Quality System
CAPS	Cavity Attenuated Phase Shift
CBSA	Core-Based Statistical Area
CFR	Code of Federal Regulations
CO	carbon monoxide
DAQ	Clark County Department of Air Quality
DRR	data requirements rule
EPA	U.S. Environmental Protection Agency
FEM	federal equivalent method
FRM	federal reference method
LPM	liters per minute
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core Multi-Pollutant Monitoring Network
NO_X	oxides of nitrogen
NDEP	Nevada Division of Environmental Protection
NPAP	National Performance Audit Program
O_3	ozone
PAMS	Photochemical Assessment Monitoring Stations
Pb	lead
PEP	Performance Evaluation Program
PM	particulate matter

$PM_{2.5}$	particulate matter 2.5 micrometers in diameter or smaller
PM_{10}	particulate matter 10 micrometers in diameter or smaller
PM Coarse	particulate matter between 2.5 to 10 micrometers in diameter
POC	parameter occurrence code
PQAO	primary quality assurance organization
PWEI	Population Weighted Emissions Index
QA	quality assurance
QC	quality control
RA	Regional Administrator
SIP	State Implementation Plan
SLAMS	State/Local Air Monitoring System
SO_2	sulfur dioxide
SPM	Special Purpose Monitor
TSP	Total Suspended Particulate
TTP	through-the-probe
$\mu g/m^3$	micrograms per cubic meter

1.0 INTRODUCTION

This report serves as a review of the current Clark County Department of Air Quality (DAQ) ambient air monitoring network and as a plan for future network activities. During 2015, the following conditions existed:

1. DAQ operated monitoring instruments to measure ambient concentrations of continuous and filter-based instruments, including continuous and filter-based $PM_{2.5}$, continuous PM_{10}, ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO, NO_2, NO_x, NO_y), sulfur dioxide (SO_2), and lead (Pb) content from total suspended particulate (TSP).

2. DAQ operated under a quality controlled and quality assured system.

3. DAQ operated visibility instrumentation at the North Las Vegas Airport and M Resort.

Criteria air pollutants are a group of six common air contaminants regulated by the U.S. Environmental Protection Agency (EPA), which developed **National Ambient Air Quality Standards (NAAQS)** for these pollutants to protect public health and the environment. The six criteria pollutants are O_3, $PM_{2.5}$/PM_{10}, CO, NO_2, SO_2, and Pb. DAQ submits quarterly all criteria pollutant data, including precision and accuracy data, to the Air Quality System (AQS) database.

Currently, Clark County is designated as attainment/unclassifiable for all pollutants. Portions of Clark County are subject to maintenance plans for PM_{10}, CO, and O_3.

The Las Vegas Valley (Hydrographic Area 212) within Clark County is subject to a maintenance plan for PM_{10}. The area attained the PM_{10} standard as of December 31, 2006, and EPA issued a "Finding of Attainment" in August 2010. EPA approved the *Request for Redesignation and Maintenance Plan for PM_{10}*, submitted by DAQ in August 2012, with an effective date of November 5, 2014.

DAQ submitted a CO State Implementation Plan (SIP) in 2000. This plan describes the control measures and technologies to bring the Las Vegas Valley into compliance with the CO NAAQS. A Federal Register notice denoting EPA's determination of attainment for CO NAAQS within the Las Vegas Valley was issued in June 2005. A CO Maintenance Plan and request for redesignation to attainment were submitted to EPA in 2008 and approved on September 27, 2010. The Clark County nonattainment area was redesignated attainment effective October 21, 2004.

EPA made the determination that Clark County is in attainment with the 1997 Ozone NAAQS on March 29, 2011. On November 13, 2012, EPA published the proposed rule for Approval of the Maintenance Plan and Redesignation of Clark County for the 1997 8-Hour Ozone Standard. EPA redesignated the area to attainment effective February 7, 2013.

According to the recent data requirements rule (DRR) for the SO_2 NAAQS (dated August 10, 2015) monitoring or modeling requirements apply to sources with ≥ 2,000 tons per year of emissions. One source, Reid Gardner, exceeded the threshold in 2014. However, three SO_2 emission units were shut down at this facility at the end of 2014, and the source fell below the 2,000 tons per year threshold. SO_2 emissions for the power generating units at Reid Gardner are 487.8 tons per year. Therefore, the DRR requirements are met by DAQ.

Note that the Nevada Division of Environmental Protection (NDEP) is taking charge of the Reid Gardner source because it is under its jurisdiction for permitting, and NDEP will make decisions on how to move forward in compliance with the DRR. DAQ may provide support if needed.

Table 1. SO_2 Emissions for Reid Gardner Units 1-4

Unit	Fuel	SO_2 (tons)
Reid Gardner Unit 1 (shut down)	Coal	1,502.4
Reid Gardner Unit 2 (shut down)	Coal	265.8
Reid Gardner Unit 3 (shut down)	Coal	252.4
Reid Gardner Unit 4 (still operating)	Coal	487.8

Note: Units 1 through 3 were retired at the end of 2014.

DAQ submitted the 2014 annual data certification to EPA on May 1, 2015, and submitted the 2015 annual data certification in February 2016.

The Nevada Department of Transportation's most recent annual traffic report, dated 2014, provided traffic count information where available. For those areas where traffic count information was not available, DAQ used nearby traffic counters that measured similar traffic patterns to estimate counts. Where there were no nearby traffic counters or similar traffic patterns, Monitoring personnel's knowledge of the monitoring site's traffic pattern was used to estimate traffic counts.

Air quality data is disseminated to the public in a timely manner through the DAQ website and EPA's AirNow database. DAQ also provides customized data reports upon request.

2.0 MINIMUM MONITORING REQUIREMENTS

The tables below show that the Clark County air quality network meets or exceeds the 2015 minimum requirements of Title 40, Part 58 of the CFR (40 CFR 58). Population census information was obtained from the Clark County Department of Comprehensive Planning 2014 report, which was based on the Metropolitan Statistical Area (MSA) and the Core-Based Statistical Area (CBSA). All PM monitoring instruments are low volume instruments (flow rate of less than 200 liters per minute (LPM)). The exception is the Pb sampler, which is a high volume sampler and has a flow rate of more than 200 LPM. (See Table 2 for flow rate specifics.)

Table 2. Flow Rates for PM Monitoring Instruments

Flow Rates for Low Volume Instruments in LPM	
Met One SASS	6.7
URG	22
All other	16.67
Flow Rate for High Volume Sampler in LPM	
American Ecotech TSP	1,130 (67.8 cubic meters per hour)

Pb sampling is made using a TSP high volume instrument. For all gaseous monitoring operations at all sites, a two-point (zero/span) quality control (QC) check is conducted daily, and a three-point (zero/precision/span) QC check is conducted weekly.

2.1 Ozone

Table 3. Minimum Monitoring Requirements for Ozone

MSA	County	Population & Census Year	8-hr Design Value [ppb], Design Value Years[1]	Design Value Site (name, AQS ID[2])	Number of Required SLAMS Sites[3]	Number of Active SLAMS Sites	Number of Additional SLAMS Sites Needed
Las Vegas-Paradise (29820)	Clark, NV	2,102,238 (2014)	75, 2013-15	Joe Neal (32-003-0075), Paul Meyer (32-003-0043)	2	12	0

[1] Design Value Years = the three years for which the design value was calculated (i.e., 2013-2015).
[2] AQS (site) Identification.
[3] SLAMS stands for State/Local Air Monitoring System.

Notes: Monitors required for SIP or maintenance plan: NA.
This network meets the minimum monitoring requirement for the referenced criteria pollutant.

2.2 $PM_{2.5}$

Table 4. Minimum Monitoring Requirements for $PM_{2.5}$ (FRM and FEM)[1]

MSA	County	Population & Census Year	Annual Design Value [µg/m^3], Design Value Years[1,2]	Annual Design Value Site (name, AQS ID)	Daily Design Value [µg/m^3], Design Value Years[3]	Daily Design Value Site (name, AQS ID)	Number of Required SLAMS Sites	Number of Active SLAMS Sites[4]	Number of Additional SLAMS Sites Needed
Las Vegas-Paradise (29820)	Clark, NV	2,102,238 (2014)	10.1, 2013-15	Sunrise Acres (32-003-0561)	26, 2013-15	Sunrise Acres (32-003-0561)	2	5 + collocation	0

[1] µg/m^3 = micrograms per cubic meter.
[2] FRM stands for federal reference method, and FEM stands for federal equivalent method.
[3] Design Value Years = the three years for which the design value was calculated (i.e., 2013-2015).
[4] Meets requirements in 40 CFR 58 Appendix D 4.7.2.

Notes: Monitors required for SIP or maintenance plan: NA
This network meets the minimum monitoring requirement for the referenced criteria pollutant.

2.3 PM_{10}

Table 5. Minimum Monitoring Requirements for PM_{10}

MSA	County	Population & Census Year	Maximum Concentration in 2015 [µg/m^3]	Maximum Concentration Site (name, AQS ID)	Number of Required SLAMS Sites	Number of Active SLAMS Sites	Number of Additional SLAMS Sites Needed
Las Vegas-Paradise (29820)	Clark, NV	2,102,238 (2014)	908 908	Joe Neal (32-003-0075), Jerome Mack (32-003-0540)	6-10	10	0

Notes: Monitors required for SIP or maintenance plan: NA
This network meets the minimum monitoring requirement for the referenced criteria pollutant.

2.4 NO_2

Table 6. Minimum Monitoring Requirements for NO_2

CBSA[1]	Population & Census Year	Max AADT Counts[2] (2014)	Number of Required Near-Road Monitors	Number of Active Near-Road Monitors	Number of Additional Near-Road Monitors Needed	Number of Required Area-wide Monitors	Number of Active Area-wide Monitors	Number of Additional Area-wide Monitors Needed
Las Vegas-Paradise-Pahrump (332)	2,102,238 (2014)	267,000	2	2	0	1	2	0

[1] CBSA.
[2] AADT stands for annual average daily traffic.

Notes: Monitors required for SIP or maintenance plan: NA.
J.D. Smith and Sunrise Acres meet the requirements for area-wide monitors. Sunrise Acres also meets RA 40 requirements (EPA Regional Administrator-required monitors per 40 CFR 58, App. D, Sec. 4.3.4: 1).
Monitors required for Photochemical Assessment Monitoring Station: NA.
Two near-road NO_2 monitors to be operational in 2016.

2.5 SO_2

Table 7. Minimum Monitoring Requirements for SO_2

CBSA	County	Population & Census Year[3]	Total SO_2[1] [tons/year]	Population Weighted Emissions Index[2] [million persons-tons/year]	Number of Required Monitors	Data Requirements Rule Source(s) Using Monitoring	Number of Active Monitors	Number of Additional Monitors Needed
Las Vegas-Paradise-Pahrump (332)	Clark, NV	2,146,000 (2014)	7,179	15,406	1	0; see Table 1	1	0

[1] Using 2011 National Emissions Inventory data (most currently available; the 2015 data is expected to be lower).
[2] Calculated by multiplying CBSA population and total SO_2 and dividing product by one million.
[3] Used for Population Weighted Emissions Index (PWEI) calculation.

Notes: PWEI, Regional Administrator, and DRR requirements met.
Monitors required for SIP or maintenance plan: NA.
EPA Regional Administrator-required monitors per 40 CFR 58, App. D, Sec. 4.4.3: 0.
This network meets the minimum monitoring requirement for the referenced criteria pollutant.

2.6 CO

Table 8. Minimum Monitoring Requirements for CO

CBSA	Population & Census Year	Number of Required Near-road Monitors	Number of Active Near-road Monitors	Number of Additional Monitors Needed
Las Vegas-Paradise-Pahrump (332)	2,102,238 (2014)	0	0	0

Notes: Monitors required for SIP or maintenance plan: CO monitoring in the Las Vegas Valley is expected for ongoing demonstration of the CO Maintenance Plan.
EPA Regional Administrator-required monitors per 40 CFR 58, App. D, Sec. 4.2.2: 0.
This network meets the minimum monitoring requirement for the referenced criteria pollutant.

2.7 Pb

The source emission threshold for the ambient source-oriented Pb monitoring requirement is 0.50 tons per year. DAQ has not identified sources that might trigger this requirement, and a preliminary assessment has shown no such sources within Clark County. Therefore, DAQ does not conduct source-oriented Pb monitoring.

Table 9. Minimum Monitoring Requirements for Pb at National Core Multi-Pollutant Monitoring Network (NCore)

NCore Site (name, AQS ID)	CBSA	Population & Census Year	Number of Required Monitors	Number of Active Monitors	Number of Additional Monitors Needed
Jerome Mack Middle School (32-003-0540)	Las Vegas-Paradise-Pahrump (332)	2,102,238 (2014)	1	1	0

Notes: Monitors required for SIP or maintenance plan: NA.
This network meets the minimum monitoring requirement for the referenced criteria pollutant.

3.0 COLLOCATED MONITORS AS OF 2016

Table 10. Filter-Based $PM_{2.5}$ FRM Network

Method Code	Number of Primary Monitors, Site	Number of Required Collocated Monitors	Number of Active Collocated Monitors
EQPM-0202-145	1: Jerome Mack	1	1: Collocated at Jerome Mack

Table 11. Continuous $PM_{2.5}$ FEM Network

Method Code	Number of Primary Monitors, Site	Number of Required Collocated Monitors	Number of Active Collocated FRM Monitors	Number of Active Collocated FEM Monitors (same method designation as primary)
EQPM-0609-183	4: J.D. Smith, Green Valley, Sunrise Acres, and Jean	1	1	1: FEM is collocated with FRM at Sunrise Acres

Appendix A of 40 CFR 58 requires 15% of $PM_{2.5}$ FRM and FEM instruments in a network to be collocated. For the $PM_{2.5}$ FRM network (method EQPM-0202-145), the collocated sampler is at the Jerome Mack (NCore) site. For the $PM_{2.5}$ FEM network (method EQPM-0609-183), the collocated sampler is at the Sunrise Acres site. This collocation arrangement meets the Appendix A requirement.

J.D. Smith, Green Valley, Sunrise Acres, and Jean each have a $PM_{2.5}$ continuous FEM monitor that serves as the primary $PM_{2.5}$ monitor for the site.

As outlined 40 CFR 58 Appendix A, PQAOs (primary quality assurance organizations) with only non-source-oriented NCore Pb sites do not have PQAO minimum collocation requirements. DAQ meets the non-source-oriented NCore Pb monitoring criteria.

DAQ has no manual PM_{10} samplers in its network. DAQ has only continuous PM_{10} monitors in its network, and there are no CFR requirements for collocation of continuous PM_{10} monitors.

4.0 2015 SITE TABLES

Figure 1: Apex

The primary objective of the Apex site, located approximately 25 miles northeast of Las Vegas, is to monitor the ambient impacts of emissions from nearby processing facilities and power plants. Since the site is generally downwind from Las Vegas, it also serves as an indicator of pollutant transport flow out of the Las Vegas Valley. This site is the only Air Quality monitoring station in the Apex Valley.

Local Site Name (AQS ID)	**Apex (32-003-0022)**
GPS Coordinates (latitude, longitude)	+36.391111°, -114.907500°
Street Address	12101 Hwy 91, Nevada Las Vegas, NV 89165
Distance to roadways (m)	U.S. Highway 93:108
Traffic counts (AADT, yr)	U.S. Highway 93: 2800 (2014)
Ground cover	Native desert
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, Parameter Occurrence Code (POC)	**O_3, 1**
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Regional transport
Network affiliation	NA

Pollutant, Parameter Occurrence Code (POC)	**O_3, 1**
Monitor type(s)	SLAMS
Primary, Quality Assurance (QA) Collocated, or Other	Primary
Instrument manufacturer & model	TAPI 400 series
Method code	EQOA-0992-087
FRM/FEM/ARM/other	FEM
Collecting agency	DAQ
Analytical lab	NA
Reporting agency	DAQ
Spatial scale	Regional
Monitoring start date	01/01/1998
Current sampling frequency	Continuous, seasonal
Calculated sampling frequency	Continuous, seasonal
Sampling season	Year-round
Probe height (m)	3.9
Distance from supporting structure (m)	1.4
Distance from obstructions on roof – horizontal distance (m)	NA
Distance from obstructions on roof – vertical height (m)	NA
Distance from obstructions not on roof – horizontal distance (m)	NA
Distance from obstructions not on roof – vertical height (m)	NA
Distance from trees (m)	NA
Distance to furnace or incinerator flue (m)	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA
Distance to nearest PM instrument (m)	NA
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (s)	2.9
Will there be changes within the next 18 months? (Y/N)	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA
Frequency of flow rate verification for manual PM samplers	NA
Frequency of flow rate verification for automated PM analyzers	NA
Frequency of one-point QC check for gaseous instruments	Daily
Last annual performance evaluation for gaseous parameters	04/29/2015
Last two semiannual flow rate audits for PM monitors	NA

Meteorological measurements at the Apex site include wind speed, wind direction, and ambient temperature.

Figure 2: Boulder City.

The Boulder City site, approximately 25 miles southeast of Las Vegas, was established at the request of Boulder City government officials and residents to serve as an indicator of population exposure to pollutants, particularly O_3 and PM_{10}.

Local Site Name (AQS ID)	**Boulder City (32-003-0601)**
GPS Coordinates (latitude, longitude)	+35.978056°, -114.846389°
Street Address	1005 Industrial Rd., Boulder City, NV 89005
Distance to roadways (m)	Industrial Rd: 58; U.S. Highway 93: 96
Traffic counts (AADT, yr)	Industrial Rd: 1,400; U.S. Highway 93: 24,500 (2014)
Ground cover	Paved, native desert
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**
Parameter code	81102	44201
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**
Site type(s)	Population exposure	Population exposure, regional transport
Network affiliation	NA	NA
Monitor type(s)	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	TAPI 400 series
Method code	EQPM-1102-150	EQOA-0992-087
FRM/FEM/ARM/other	FEM	FEM
Collecting agency	DAQ	DAQ
Analytical lab	NA	NA
Reporting agency	DAQ	DAQ
Spatial scale	Neighborhood	Urban
Monitoring start date	01/01/1998	07/01/1998
Current sampling frequency	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous
Sampling season	Year-round	Year-round
Probe height (m)	4.9	4.1
Distance from supporting structure (m)	2.1	1.6
Distance from obstructions on roof – horizontal distance (m)	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA
Distance from trees (m)	NA	NA
Distance to furnace or incinerator flue (m)	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA
Distance to nearest PM instrument (m)	NA	NA
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	NA	Teflon
Residence time for reactive gases (s)	NA	2.7
Will there be changes within the next 18 months? (Y/N)	Y	Y
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA	NA
Frequency of flow rate verification for manual PM samplers	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	NA
Frequency of one-point QC check for gaseous instruments	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	05/08/2015
Last two semiannual flow rate audits for PM monitors	03/02/2015, 08/06/2015	NA

The meteorological measurement at the Boulder City site is barometric pressure.

Figure 3: Central Fire Station: Near-Road Site 2.

The Central Fire Station Near-Road site is located in the parking lot of the Central Fire Station, which is southeast of E. Bonanza Road and N. Veterans Memorial Drive. This monitoring station is the second near-road site; DAQ is deploying it in 2016, and it will initially measure NO_2.

Local Site Name (AQS ID)	**Central Fire Station (32-003-1502)**
GPS Coordinates (latitude, longitude)	+36.174365°, -115.139770°
Street Address	500 N. Casino Center Boulevard, Las Vegas, NV

Local Site Name (AQS ID)	**Central Fire Station (32-003-1502)**
Distance to roadways (m)	U.S. Highway 93: 16; N. Casino Center Boulevard 120; Bonanza Road:180
Traffic counts (AADT, yr)	U.S. Highway 93: 185,000; N. Casino Center Boulevard 3,900; Bonanza Road: 13,000 (2014)
Ground cover	Paved
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**NO_2, 2**
Parameter code	42602
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Highest concentration
Network affiliation	Near Road
Monitor type(s)	SLAMS
Primary, QA Collocated, or Other	Primary
Instrument manufacturer & model	TAPI 500 series
Method code	EQNA-0514-212
FRM/FEM/ARM/other	FEM
Collecting agency	DAQ
Analytical lab	NA
Reporting agency	DAQ
Spatial scale	Microscale
Monitoring start date	2016
Current sampling frequency	Continuous
Calculated sampling frequency	Continuous
Sampling season	Year-round
Probe height (m)	4 (est.)
Distance from supporting structure (m)	1.2 (est.)
Distance from obstructions on roof – horizontal distance (m)	NA
Distance from obstructions on roof – vertical height (m)	NA
Distance from obstructions not on roof – horizontal distance (m)	NA
Distance from obstructions not on roof – vertical height (m)	NA
Does obstruction(s) not on roof impede flow	No
Obstruction height above probe (m)	NA
Distance from trees (m)	NA
Distance to furnace or incinerator flue (m)	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA
Distance to nearest PM instrument (m)	NA
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (s)	7.5 (est.)
Will there be changes within the next 18 months? (Y/N)	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA

Pollutant, POC	**NO_2, 2**
Frequency of flow rate verification for manual PM samplers	NA
Frequency of flow rate verification for automated PM analyzers	NA
Frequency of one-point QC check for gaseous instruments	Daily
Last annual performance evaluation for gaseous parameters	2016
Last two semiannual flow rate audits for PM monitors	NA

The Central Fire Station Near-Road Site 2 was approved by EPA in 2014. Meteorological measurements at Near-Road Site 2 include wind speed, wind direction, ambient temperature, and barometric pressure.

Figure 4: Green Valley.

The Green Valley site in Henderson was established in response to citizen complaints about dust emissions from a gravel processing plant, and it continues to monitor PM_{10} and $PM_{2.5}$. O_3 monitoring was established in 2015.

Local Site Name (AQS ID)	**Green Valley (32-003-0298)**
GPS Coordinates (latitude, longitude)	+36.048611°, -115.052778°
Street Address	298 Arroyo Grande Blvd., Henderson, NV 89014
Distance to roadways (m)	Santiago Drive: 18; Arroyo Grande Blvd: 198; North Stephanie: 533
Traffic counts (AADT, yr)	Santiago Drive: 3,600; Arroyo Grande Blvd: 9,300; North Stephanie: 32,500 (2014)
Ground cover	Paved, gravel
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$ (continuous), 3**	**O_3, 1**
Parameter code	81102	88101	44201
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure	Population exposure, regional transport
Network affiliation	NA	NA	NA
Monitor type(s)	SLAMS	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	Thermo 5014i	TAPI 400 series
Method code	EQPM-1102-150	EQPM-0609-183	EQOA-0992-087
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA
Reporting agency	DAQ	DAQ	DAQ
Spatial scale	Middle	Middle (area-wide)	Middle
Monitoring start date	01/01/1998	10/01/2013	07/01/2015
Current sampling frequency	Continuous	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round
Probe height (m)	4.7	4.8	4.3
Distance from supporting structure (m)	2.0	2.0	1.6
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA	NA
Distance from trees (m)	9.5	9.8	8.0
Distance to furnace or incinerator flue (m)	NA	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA	NA

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$ (continuous), 3**	**O_3, 1**
Distance to nearest PM instrument (m)	1.8	1.8	NA
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	NA	NA	Teflon
Residence time for reactive gases (s)	NA	NA	2.8
Will there be changes within the next 18 months? (Y/N)	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	Y	NA
Frequency of flow rate verification for manual PM samplers	NA	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	Monthly	NA
Frequency of one-point QC check for gaseous instruments	NA	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	NA	07/01/2015
Last two semiannual flow rate audits for PM monitors	06/19/2015, 11/04/2015	06/19/2015, 11/04/2015	NA

Meteorological measurements at the Green Valley site include wind speed, wind direction, ambient temperature, and barometric pressure. After the 2014 Annual Network Plan approval, O_3 monitoring at the Green Valley site was established in 2015.

Figure 5: Indian Springs.

Monitoring at Indian Springs was approved as part of the 2015 Annual Network Plan. The O_3 monitor at Indian Springs will help identify high O_3, characterize transport, and fill a spatial gap. Further purpose for this site is provided in the 2015 5-Year Network Assessment. This location is approximately 45 miles northwest of Las Vegas and may provide high O_3 triangulation between Joe Neal and the Las Vegas Paiute Tribe. The Indian Springs site meets Appendix A and E requirements.

Local Site Name (AQS ID)	**Indian Springs (32-003-7772)**
GPS Coordinates (latitude, longitude)	+36.569333°, -115.676651°
Street Address	668 Gretta Ln., Indian Springs, NV
Distance to roadway (m)	100
Traffic count (AADT, yr)	< 1,000 (2015)
Ground cover	Native desert
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**O_3, 1**
Parameter code	44201
Basic monitoring objective(s)	Research support
Site type(s)	Regional transport
Monitor type(s)	SLAMS
Instrument manufacturer & model	TAPI 400 series
Method code	EQOA-0992-087

Pollutant, POC	**O_3, 1**
FRM/FEM/ARM/other	FEM
Collecting agency	DAQ
Analytical lab	NA
Reporting agency	DAQ
Spatial scale	Regional
Monitoring start date	05/11/2010
Current sampling frequency	NA
Calculated sampling frequency	NA
Sampling season	Year-round
Probe height (m)	5
Distance from supporting structure (m)	1.9
Distance from obstructions on roof – horizontal distance (m)	NA
Distance from obstructions on roof – vertical height (m)	NA
Distance from obstructions not on roof – horizontal distance (m)	4.1
Distance from obstructions not on roof – vertical height (m)	1.0 (building/obstruction is below probe)
Obstruction height above probe (m)	NA (probe is above obstruction)
Distance from trees (m)	NA
Distance to furnace or incinerator flue (m)	NA
Distance between collocated monitors (m)	NA
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (s)	3.0
Will there be changes within the next 18 months? (Y/N)	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA
Frequency of flow rate verification for manual PM samplers	NA
Frequency of flow rate verification for automated PM analyzers	NA
Frequency of one-point QC check for gaseous instruments	Daily
Last annual performance evaluation for gaseous parameters	7/27/2015
Last two semiannual flow rate audits for PM monitors	NA

Figure 6: J.D. Smith.

The J.D. Smith site in North Las Vegas replaced the old McDaniel and Post Office PM sites. This site monitors gaseous (NO_2, CO, and O_3) and particulate (PM_{10} and $PM_{2.5}$) pollutants using continuous methods. This site also serves as an indicator of population exposure to pollutants.

Local Site Name (AQS ID)	**J.D. Smith (32-003-2002)**
GPS Coordinates (latitude, longitude)	+36.191111°, -115.123056°
Street Address	1301B Tonopah Ave., North Las Vegas, NV 89030
Distance to roadways (m)	Tonopah Ave: 84; Bruce Street: 175; Stanley Ave: 137
Traffic counts (AADT, yr)	Tonopah Ave: 7,600; Bruce Street: 7,600; Stanley Ave: 450 (2014) (estimated)
Ground cover	Paved, grass
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**CO, 1**	**NO_2, 2**	**O_3, 1**	**$PM_{2.5}$ (continuous), 3**
Parameter code	81102	42101	42602	44201	88101

Pollutant, POC	**PM_{10}, 1**	**CO, 1**	**NO_2, 2**	**O_3, 1**	**$PM_{2.5}$ (continuous), 3**
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure	Highest concentration	Population exposure	Population exposure
Network affiliation	NA	NA	NA	NA	NA
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary	Primary	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	TAPI 300 series	TAPI 500 series	TAPI 400 series	Thermo 5014i
Method code	EQPM-1102-150	RFCA-1093-093	EQNA-0514-212	EQOA-0992-087	EQPM-0609-183
FRM/FEM/ARM/other	FEM	FRM	FEM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA	NA	NA
Reporting agency	DAQ	DAQ	DAQ	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	01/01/1998	01/10/1998	01/10/1998	01/10/1998	01/01/2013
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round	Year-round
Probe height (m)	4.6	3.6	3.6	3.6	4.7
Distance from supporting structure (m)	2.1	1.2	1.2	1.2	2.2
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA	NA	NA
Distance from obstructions not on roof – horizontal distance to the obstruction (m)	3.8	4.2	4.2	4.2	5.6
Distance from obstructions not on roof – vertical height of the obstruction (m)	5.7	5.7	5.7	5.7	5.7
Obstruction height above probe (m)	1.1	2.1	2.1	2.1	1.0
Distance from trees (m)	14.7	14.4	14.4	14.4	15.1
Distance to furnace or incinerator flue (m)	NA	NA	NA	NA	NA

Pollutant, POC	**PM_{10}, 1**	**CO, 1**	**NO_2, 2**	**O_3, 1**	**$PM_{2.5}$ (continuous), 3**
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA	NA	NA	NA
Distance to nearest PM instrument (m)	2.1	NA	NA	NA	2.1
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	NA	Teflon	Teflon	Teflon	NA
Residence time for reactive gases (s)	NA	3.8	5.7	3.5	NA
Will there be changes within the next 18 months? (Y/N)	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	N	N	N	N
Frequency of flow rate verification for manual PM samplers	NA	NA	NA	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	NA	NA	NA	Monthly
Frequency of one-point QC check for gaseous instruments	NA	Daily	Daily	Daily	NA
Last annual performance evaluation for gaseous parameters	NA	09/23/2015	11/13/2015	06/15/2015	NA
Last two semiannual flow rate audits for PM monitors	6/30/2015, 12/9/2015	NA	NA	NA	6/30/2015, 12/9/2015

Siting obstructions continue to pose measurement challenges at this site. Meteorological measurements at the J.D. Smith site include wind speed, wind direction, ambient temperature, relative humidity, and barometric pressure.

Figure 7: Jean.

The Jean site is approximately 30 miles south of Las Vegas. This site was originally set up as an upwind background site, and it still serves this purpose for PM. The primary objective for O_3 monitoring is to measure transport from Southern California.

Local Site Name (AQS ID)	**Jean (32-003-1019)**
GPS Coordinates (latitude, longitude)	+35.785556°, -115.356944°
Street Address	1965 State Route 161, Jean, NV 89019
Distance to roadways (m)	State Route 161: 1,287
Traffic counts (AADT, yr)	State Route 161: 1,500 (2014)
Ground cover	Gravel, native desert
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**	**$PM_{2.5}$ Primary (continuous), 3**
Parameter code	81102	44201	88101
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**	**$PM_{2.5}$ Primary (continuous), 3**
Site type(s)	Upwind background	Regional transport	Upwind background
Network affiliation	NA	NA	NA
Monitor type(s)	SLAMS	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	API 400 series	Thermo 5014i
Method code	EQPM-1102-150	EQOA-0992-087	EQPM-0609-183
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA
Reporting agency	DAQ	DAQ	DAQ
Spatial scale	Regional	Regional	Regional
Monitoring start date	01/01/1995	08/01/1998	04/01/2013
Current sampling frequency	Continuous	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round
Probe height (m)	4.7	3.9	4.9
Distance from supporting structure (m)	2.1	1.5	2.2
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA	NA
Distance from trees (m)	NA	NA	NA
Distance to furnace or incinerator flue (m)	NA	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA	NA
Distance to nearest PM instrument (m)	2.0	NA	2.0
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	NA	Teflon	NA
Residence time for reactive gases (s)	NA	3.0	NA
Will there be changes within the next 18 months? (Y/N)	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	N	Y
Frequency of flow rate verification for manual PM samplers	NA	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	NA	Monthly
Frequency of one-point QC check for gaseous instruments	NA	Daily	NA

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**	**$PM_{2.5}$ Primary (continuous), 3**
Last annual performance evaluation for gaseous parameters	NA	05/06/2015	NA
Last two semiannual flow rate audits for PM monitors	2/25/2015, 8/4/2015	NA	2/25/2015, 8/4/2015

Meteorological measurements at the Jean site include wind speed, wind direction, ambient temperature, and barometric pressure.

Figure 8: Jerome Mack.

The Jerome Mack site in east Las Vegas is the Clark County NCore site. Its primary objective is to monitor trace-level gaseous pollutants, PM parameters (including PM_{10}, $PM_{2.5}$, PM Coarse, and speciated PM parameters), and meteorological parameters as part of a nationwide network. In 2014, this site began operating the $PM_{2.5}$ QA collocated FRM sampler for the $PM_{2.5}$ FRM network. The SASS (parameter code 88502) and URG (parameter code 88355) are non-regulatory speciation samplers, and are operated as non-FRM/FEM.

Local Site Name (AQS ID)	**Jerome Mack (32-003-0540)**
GPS Coordinates (latitude, longitude)	+36.141944°, -115.078611°
Street Address	4250 Karen Avenue, Las Vegas, NV 89121
Distance to roadways (m)	Sahara: 244; Lamb: 351; Karen: 130
Traffic counts (AADT, yr)	Sahara: 25,000; Lamb: 27,000; Karen: 3,000 (est.) (2014)
Ground cover	Concrete, grass
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 3**	**$PM_{2.5}$ (continuous), 3**	**$PM_{10-2.5}$ (continuous), 3**	**$PM_{2.5}$ Primary (FRM), 1**	**$PM_{2.5}$ Collocated (FRM), 2**	**Speciation SASS, 5**	**Speciation URG, 5**	**O_3, 1**	**NO_Y, 1**	**Trace CO, 1**	**Trace SO_2, 1**	**Pb, 1**
Parameter code	81102	88101	86101	88101	88101	88502 Speciation, non-regulatory	88355 Speciation, non-regulatory	44201	42600	42101	42401	14129
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	Research support	NAAQS comparison	NAAQS comparison	Research support	Research support	NAAQS comparison	Research support	Research support, NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure
Network affiliation	NCore	NCore	NCore	NCore	NCore	CSN Supplemental, NCore	CSN Supplemental, NCore	NCore	NCore	NCore	NCore	NCore
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Other	Primary	Primary	QA Collocated	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Instrument manufac-turer & model	MetOne BAM 1020	MetOne BAM 1020	MetOne BAM 1020 (mathe-matical dif-ference)	Thermo 2025i	Thermo 2025i	Met One SASS	URG 3000	TAPI 400 series	TAPI 200 series	TAPI 300 series	TAPI 100 series	American Ecotech HiVol 3000
Method code	EQPM-0798-122	EQPM-0308-170	EQPM-0709-185	EQPM-0202-145	EQPM-0202-145	NA	NA	EQOA-0992-087	RFNA-1194-099	RFCA-1093-093	EQSA-0495-100	EQL-0510-191
FRM/FEM/ ARM/other	FEM	FEM	FEM	FRM Primary	FRM Collocated	Other	Other	FEM	Other	FRM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ	DAQ	DAQ	DAQ	DAQ	DAQ	DAQ	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA	Weigh	Weigh	UC Davis	UC Davis	NA	NA	NA	NA	ERG
Reporting agency	DAQ	DAQ	DAQ	DAQ	DAQ	UC Davis	UC Davis	DAQ	DAQ	DAQ	DAQ	DAQ

Pollutant, POC	**PM_{10}, 3**	**$PM_{2.5}$ (continuous), 3**	**$PM_{10-2.5}$ (continuous), 3**	**$PM_{2.5}$ Primary (FRM), 1**	**$PM_{2.5}$ Collocated (FRM), 2**	**Speciation SASS, 5**	**Speciation URG, 5**	**O_3, 1**	**NO_Y, 1**	**Trace CO, 1**	**Trace SO_2, 1**	**Pb, 1**
Spatial scale	Neighbor-hood	Neighbor-hood	Neighbor-hood	Neighbor-hood	Neighbor-hood	Neighbor-hood	Neighbor-hood	Neighbor-hood	Urban	Neighbor-hood	Neighbor-hood	Neighbor-hood
Monitoring start date	01/01/2012	01/01/2012	01/01/2012	10/01/2013	01/01/2014	05/2010	05/2010	01/01/2011	01/01/2011	01/01/2011	01/01/2011	01/01/2012
Current sampling frequency	Continuous	Continuous	Continuous	1:3	1:6	1:3	1:3	Continuous	Continuous	Continuous	Continuous	1:6
Calculated sampling frequency	Continuous	Continuous	Continuous	1:3	1:6	1:3	1:3	Continuous	Continuous	Continuous	Continuous	1:6
Sampling season	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round
Probe height (m)	5.2	5.2	5.2	3.0	3.0	3.1	3.3	4.3	7.0	4.3	4.3	2.6
Distance from sup-porting structure (m)	2.1	2.1	2.1	3.0	3.0	3.1	3.3	1.1	7.0	1.1	1.1	2.6
Distance from ob-structions on roof – horizontal distance (m)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Distance from ob-structions on roof – vertical height (m)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Pollutant, POC	**PM_{10}, 3**	**$PM_{2.5}$ (continuous), 3**	**$PM_{10-2.5}$ (continuous), 3**	**$PM_{2.5}$ Primary (FRM), 1**	**$PM_{2.5}$ Collocated (FRM), 2**	**Speciation SASS, 5**	**Speciation URG, 5**	**O_3, 1**	**NO_Y, 1**	**Trace CO, 1**	**Trace SO_2, 1**	**Pb, 1**
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	NA	5.2	3.7	7.5	5.3	NA	NA	NA	NA	7.7
Distance from obstructions not on roof – vertical obstruction height (m)	NA	NA	NA	3.1	3.1	3.0	3.0	NA	NA	NA	NA	2.2
Obstruction height above probe (m)	NA	NA	NA	0.2	0.2	0.3	0.3	NA	NA	NA	NA	1.1
Distance from trees (m)	16.7	18.7	NA	22.1	18.4	23.0	20.8	15.7	13.8	15.7	15.7	24.0
Distance to furnace or incinerator flue (m)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA	NA	3.7	3.7	NA	NA	NA	NA	NA	NA	NA
Distance to nearest PM instrument (m)	2.8	2.8	NA	2.3	2.3	2.1	2.1	NA	NA	NA	NA	2.3 High-Vol

Pollutant, POC	**PM_{10}, 3**	**$PM_{2.5}$ (continuous), 3**	**$PM_{10-2.5}$ (continuous), 3**	**$PM_{2.5}$ Primary (FRM), 1**	**$PM_{2.5}$ Collocated (FRM), 2**	**Speciation SASS, 5**	**Speciation URG, 5**	**O_3, 1**	**NO_Y, 1**	**Trace CO, 1**	**Trace SO_2, 1**	**Pb, 1**
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360	360	360	360	360
Probe material for reactive gases	NA	NA	NA	NA	NA	NA	NA	Teflon	Teflon	Teflon	Teflon	NA
Residence time for reactive gases (s)	NA	NA	NA	NA	NA	NA	NA	2.2	8.4	1.1	3.3	NA
Will there be changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	Y	N	Y	Y	N	N	N	N	N	N	N
Frequency of flow rate verification for manual PM samplers	NA	NA	NA	Monthly	Monthly	Monthly	Monthly	NA	NA	NA	NA	Monthly
Frequency of flow rate verification for automated PM analyzers	Monthly	Monthly	Monthly	NA	NA	NA	NA	NA	NA	NA	NA	NA

Pollutant, POC	**PM_{10}, 3**	**$PM_{2.5}$ (continuous), 3**	**$PM_{10-2.5}$ (continuous), 3**	**$PM_{2.5}$ Primary (FRM), 1**	**$PM_{2.5}$ Collocated (FRM), 2**	**Speciation SASS, 5**	**Speciation URG, 5**	**O_3, 1**	**NO_Y, 1**	**Trace CO, 1**	**Trace SO_2, 1**	**Pb, 1**
Frequency of one-point QC check for gaseous instruments	NA	NA	NA	NA	NA	NA	NA	Daily	Daily	Daily	Daily	NA
Last annual perfor-mance evaluation for gaseous parameters	NA	NA	NA	NA	NA	NA	NA	04/10/2015	NA	09/30/2015	10/20/2015	NA
Last two semiannual flow rate audits for PM moni-tors	03/03/2015, 04/21/2015, 08/18/2015	03/03/2015, 04/21/2015, 08/18/2015	03/03/2015, 04/21/2015, 08/18/2015	04/08/2015, 08/20/2015, 10/14/2015, 12/01/2015	04/08/2015, 08/20/2015, 10/14/2015, 12/01/2015	03/03/2015, 08/20/2015, 10/14/2015, 12/01/2015	03/09/2015, 08/20/2015, 10/14/2015, 12/01/2015	NA	NA	NA	NA	08/20/2015, 09/29/2015, 10/14/2015, 12/1/2015

The Pb sampler is the only high volume sampler in the DAQ network. Meteorological measurements at this site include wind speed, wind direction, ambient temperature, relative humidity, precipitation, and barometric pressure.

Figure 9: Joe Neal.

The primary objectives of the Joe Neal site, located in northwest Las Vegas, are to monitor O_3 and its precursors in an area of high O_3 concentrations, and to support DAQ modeling efforts. Due to topography at this location, the summertime loft brings higher O_3 and precursor levels toward this site from the east end of the Las Vegas Valley. PM_{10} monitoring was initially deployed at this site due to population growth in the northwest, and the site now also serves as a high O_3 indicator. A NO_x monitor was added in January 2008 to monitor for O_3 precursors. DAQ is proposing to add a SLAMS $PM_{2.5}$ monitor at this site to provide greater population and spatial coverage.

Local Site Name (AQS ID)	**Joe Neal (32-003-0075)**
GPS Coordinates (latitude, longitude)	+36.270556°, -115.238333°
Street Address	6651 W. Azure Way, Las Vegas, NV 89130
Distance to roadways (m)	Rebecca: 12.6; Azure: 213; Tropical: 130
Traffic counts (AADT, yr)	Rebecca: 4,000 (est.); Azure 6,000 (est.); Tropical 6,200 (2014)
Ground cover	Gravel, grass, pavement
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**	**NO_2, 2**
Parameter code	81102	88101	44201	42602
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research support, NAAQS comparison
Site type(s)	Population exposure	Population exposure	Max. ozone concentration	Population exposure
Network affiliation	NA		NA	NA
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	Thermo 5014i	TAPI 400 series	TAPI 500 series
Method code	EQPM-1102-150	EQPM-0609-183	EQOA-0992-087	EQNA-0514-212
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA	NA
Reporting agency	DAQ	DAQ	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Middle
Monitoring start date	01/01/2001	2016 (proposed)	07/01/2000	01/01/2008
Current sampling frequency	Continuous	NA	Continuous	Continuous
Calculated sampling frequency	Continuous	NA	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round
Probe height (m)	4.6	5 (anticipated)	3.8	3.8
Distance from supporting structure (m)	2.1	2.2 (anticipated)	1.4	1.4
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA	NA	NA
Distance from trees (m)	20.3	21 (est.)	22.7	22.7
Distance to furnace or incinerator flue (m)	NA	NA	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA	NA	NA
Distance to nearest PM instrument (m)	NA	NA	NA	NA
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	NA	NA	Teflon	Teflon
Residence time for reactive gases (s)	NA	NA	2.2	2.0
Will there be changes within the next 18 months? (Y/N)	N	N	N	N

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**	**NO_2, 2**
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	Y	N	N
Frequency of flow rate verification for manual PM samplers	NA	NA	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	Monthly	NA	NA
Frequency of one-point QC check for gaseous instruments	NA	NA	Daily	Daily
Last annual performance evaluation for gaseous parameters	NA	NA	07/29/2015	10/08/2015, 11/10/2015
Last two semiannual flow rate audits for PM monitors	04/17/2015, 07/23/2015, 10/16/2015, 10/21/2015	NA	NA	NA

Meteorological measurements at the Joe Neal site include wind speed, wind direction, ambient temperature, relative humidity, and barometric pressure.

Figure 10: Mesquite.

The Mesquite site monitors O_3 and is approximately 70 miles north of Las Vegas. The site sits along a transport and exit corridor connecting jurisdictional boundaries, and it serves as an indicator of population exposure of pollutants.

Local Site Name (AQS ID)	**Mesquite (32-003-0023)**
GPS Coordinates (latitude, longitude)	+36.807778°, -114.061389°
Street Address	465 E. Old Mill Rd., Mesquite, NV 89027
Distance to roadways (m)	7.8
Traffic counts (AADT, yr)	<1,000 (est.), 2015
Ground cover	Pavement, gravel
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**O_3, 1**
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Population exposure
Network affiliation	NA
Monitor type(s)	SLAMS

Pollutant, POC	**O_3, 1**
Primary, QA Collocated, or Other	Primary
Instrument manufacturer & model	API 400 series
Method code	EQOA-0992-087
FRM/FEM/ARM/other	FEM
Collecting agency	DAQ
Analytical lab	NA
Reporting agency	DAQ
Spatial scale	Middle
Monitoring start date	10/01/2001
Current sampling frequency	Continuous
Calculated sampling frequency	Continuous
Sampling season	Year-round
Probe height (m)	3.6
Distance from supporting structure (m)	1.2
Distance from obstructions on roof – horizontal distance (m)	NA
Distance from obstructions on roof – vertical height (m)	NA
Distance from obstructions not on roof – horizontal distance (m)	NA
Distance from obstructions not on roof – vertical height (m)	NA
Distance from trees (m)	3.2[1]
Distance to furnace or incinerator flue (m)	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA
Distance to nearest PM instrument (m)	NA
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (s)	2.0
Will there be changes within the next 18 months? (Y/N)	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N
Frequency of flow rate verification for manual PM samplers	NA
Frequency of flow rate verification for automated PM analyzers	NA
Frequency of one-point QC check for gaseous instruments	Daily
Last annual performance evaluation for gaseous parameters	05/05/2015
Last two semiannual flow rate audits for PM monitors	NA

[1] Tree is 1.5 meters above inlet.

Meteorological measurements at the Mesquite site include wind speed, wind direction, and ambient temperature.

Because the O_3 monitor at Mesquite does not meet distance-to-roadway siting requirements, DAQ is investigating an alternate location in Mesquite where O_3 and PM_{10} can be effectively monitored. DAQ will continue to conduct SLAMS O_3 monitoring at the site until a suitable replacement monitoring location is established. DAQ's interest in this continued monitoring is based on the negligible traffic

count, historical NAAQS monitoring data, fulfilling the objective of population exposure, and the monitor being the only NAAQS O_3 monitor in the Virgin Valley airshed (Hydrographic Area 222).

Figure 11: Palo Verde.

The primary objective of the Palo Verde site in west Las Vegas is to monitor O_3, but it also monitors PM_{10}. Due to topography at this location, the summertime loft brings higher O_3 and precursor levels toward this site from the east end of the Las Vegas Valley. DAQ is proposing to add a SLAMS $PM_{2.5}$ monitor at this site to provide greater population and spatial coverage.

Local Site Name (AQS ID)	**Palo Verde (32-003-0073)**
GPS Coordinates (latitude, longitude)	+36.173333°, -115.332778°
Street Address	333 Pavilion Center Dr., Las Vegas, NV 89144
Distance to roadways (m)	Pavilion Center Dr.: 14.7; Greenmoor Lane: 15.0
Traffic counts (AADT, yr)	Pavilion Center Dr.: 7,000 (est.); Greenmoor Lane: 4,000 (est.) (2015)
Ground cover	Paved
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**
Parameter code	81102	88101	44201
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**
Site type(s)	Population exposure	Population exposure	Population exposure
Network affiliation	NA	NA	NA
Monitor type(s)	SLAMS	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	Thermo 5014i	API 400 series
Method code	EQPM-1102-150	EQPM-0609-183	EQOA-0992-087
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA
Reporting agency	DAQ	DAQ	DAQ
Spatial scale	Middle	Neighborhood	Neighborhood
Monitoring start date	07/01/1998	2016 (proposed)	07/01/1998
Current sampling frequency	Continuous	NA	Continuous
Calculated sampling frequency	Continuous	NA	Continuous
Sampling season	Year-round	Year-round	Year-round
Probe height (m)	4.8	5 (anticipated)	3.7
Distance from supporting structure (m)	2.3	2.2 (anticipated)	1.4
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA	NA
Distance from trees (m)	3.8	4.0 (est.)	1.2
Distance to furnace or incinerator flue (m)	NA	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA	NA
Distance to nearest PM instrument (m)	NA	NA	NA
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	NA	NA	Teflon
Residence time for reactive gases (s)	NA	NA	2.8
Will there be changes within the next 18 months? (Y/N)	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	Y	N
Frequency of flow rate verification for manual PM samplers	NA	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	Monthly	NA
Frequency of one-point QC check for gaseous instruments	NA	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	NA	03/04/2015

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**
Last two semiannual flow rate audits for PM monitors	03/04/2015, 08/19/2015	NA	NA

Meteorological measurements at the Palo Verde site include wind speed, wind direction, ambient temperature, and barometric pressure.

Figure 12: Paul Meyer.

The primary objective of the Paul Meyer site in southwest Las Vegas is to monitor O_3, but it also monitors PM_{10}. Due to topography at this location, the summertime loft brings higher O_3 and precursor levels toward this site from the east end of the Las Vegas Valley.

Local Site Name (AQS ID)	**Paul Meyer (32-003-0043)**
GPS Coordinates (latitude, longitude)	+36.106389°, -115.253333°
Street Address	4525 New Forest Dr., Las Vegas, NV 89147
Distance to roadways (m)	New Forest Dr.: 102; South Tenaya Way: 160
Traffic counts (AADT, yr)	New Forest Dr.: 3,500 (est.); South Tenaya Way: 3,700 (2014)
Ground cover	Concrete, grass
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**
Parameter code	81102	44201
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure
Network affiliation	NA	NA
Monitor type(s)	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	API 400 series
Method code	EQPM-1102-150	EQOA-0992-087
FRM/FEM/ARM/other	FEM	FEM
Collecting agency	DAQ	DAQ
Analytical lab	NA	NA
Reporting agency	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood
Monitoring start date	01/01/1998	07/01/1998
Current sampling frequency	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous
Sampling season	Year-round	Year-round
Probe height (m)	4.8	4.3
Distance from supporting structure (m)	2.3	1.4
Distance from obstructions on roof – horizontal distance (m)	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA
Distance from trees (m)	15.3	15.1
Distance to furnace or incinerator flue (m)	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA
Distance to nearest PM instrument (m)	NA	NA
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	NA	Teflon
Residence time for reactive gases (s)	NA	2.5
Will there be changes within the next 18 months? (Y/N)	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	N
Frequency of flow rate verification for manual PM samplers	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	NA
Frequency of one-point QC check for gaseous instruments	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	08/12/2015
Last two semiannual flow rate audits for PM monitors	04/17/2015, 5/11/2015, 10/15/2015	NA

Meteorological measurements at the Paul Meyer site include wind speed, wind direction, ambient temperature, and barometric pressure.

Figure 13: Sunrise Acres.

Monitoring at the Sunrise Acres site near the center of the Las Vegas Valley began as part of a CO study in the 1990s. All monitoring activities at the former East Charleston site were transferred here to Sunrise Acres when the former lease was terminated. The primary objective of the Sunrise Acres site is to monitor CO, NO_2 (meeting the Regional Administrator (RA) 40 requirement), and PM. The site monitors PM_{10} and $PM_{2.5}$ using both filter-based and continuous methodologies. The $PM_{2.5}$ FEM is the primary monitor at this site, and it is collocated with a $PM_{2.5}$ FRM.

Local Site Name (AQS ID)	**Sunrise Acres (32-003-0561)**
GPS Coordinates (latitude, longitude)	+36.163889°, -115.113889°
Street Address	2501 Sunrise Ave., Las Vegas, NV 89101
Distance to roadways (m)	Sunrise Ave: 128; Eastern Ave: 160
Traffic counts (AADT, yr)	Sunrise Ave: 4,000 (est.); Eastern Ave: 32,000 (2014)
Ground cover	Paved
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**CO, 1**	**$PM_{2.5}$ Collocated FRM, 1**	**$PM_{2.5}$ Primary FEM (continuous), 3**	**NO_2, 2**
Parameter code	81102	42101	88101	88101	42602
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Highest concentration	Highest concentration	Highest concentration	Population exposure
Network affiliation	NA	NA	NA	NA	NA
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary	QA Collocated	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	API 300 series	Thermo 2025i	Thermo 5014i	TAPI 500 series
Method code	EQPM-1102-150	RFCA-1093-093	EQPM-0202-145	EQPM-0609-183	EQNA-0514-212
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ	DAQ	DAQ
Analytical lab	NA	NA	Weigh	NA	NA
Reporting agency	DAQ	DAQ	DAQ	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	04/17/2004	10/01/1996	07/01/2012	10/01/2012	01/01/2013
Current sampling frequency	Continuous	Continuous	1:3	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	1:3	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round	Year-round
Probe height (m)	4.6	3.6	3.0	4.8	3.6
Distance from supporting structure (m)	2.1	1.2	2.1	2.2	1.2
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	2.1	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA	0.5	NA	NA
Distance from trees (m)	NA	NA	NA	NA	NA
Distance to furnace or incinerator flue (m)	NA	NA	NA	NA	NA

Pollutant, POC	**PM_{10}, 1**	**CO, 1**	**$PM_{2.5}$ Collocated FRM, 1**	**$PM_{2.5}$ Primary FEM (continuous), 3**	**NO_2, 2**
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA	Distance between $PM_{2.5}$ FRM and $PM_{2.5}$ FEM is 4.0	Distance between $PM_{2.5}$ FRM and $PM_{2.5}$ FEM is 4.0	NA
Distance to nearest PM instrument (m)	Distance to $PM_{2.5}$ FEM monitor 2.4	NA	4.0	Distance to PM_{10} FEM monitor 2.4	NA
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	NA	Teflon	NA	NA	Teflon
Residence time for reactive gases (s)	NA	2.5	NA	NA	3.9
Will there be changes within the next 18 months? (Y/N)	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	N	Y	Y	N
Frequency of flow rate verification for manual PM samplers	NA	NA	Monthly	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	NA	NA	Monthly	NA
Frequency of one-point QC check for gaseous instruments	NA	Daily	NA	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	09/22/2015	NA	NA	10/05/2015, 11/12/2015
Last two semiannual flow rate audits for PM monitors	07/23/2015, 12/23/2015	NA	06/15/2015, 08/24/2015, 10/14/2015, 12/01/2015	07/23/2015, 12/23/2015	NA

DAQ is conducting NO_2 monitoring to meet RA 40 requirements outlined in 40 CFR 58, App. D, Sec. 4.3.4. Meteorological measurements at the Sunrise Acres site include wind speed, wind direction, ambient temperature, and barometric pressure.

Figure 14: Rancho and Teddy: Near-Road Site 1.

The Near-Road Site 1 monitoring station was approved by EPA in 2014 and began operation in 2015. The site is at the southeast side of the intersection of South Rancho Drive and Teddy Drive in Las Vegas. This is the first near-road monitoring site that DAQ deployed. DAQ will establish near-road CO and $PM_{2.5}$ monitors by January 1, 2017.

Local Site Name (AQS ID)	**Rancho and Teddy (32-003-1501)**
GPS Coordinates (latitude, longitude)	+36.139822°, -115.175565°
Street Address	2755 S. Rancho Drive, Las Vegas, NV
Distance to roadways (m)	Interstate 15: 13; South Rancho Drive: 8; Teddy Drive: 31
Traffic counts (AADT, yr)	Interstate 15: 260,000; South Rancho Drive: 15,000 (est.); Teddy Drive: 10,000 (est.) (2014)
Ground cover	Gravel
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**NO_2, 2**
Parameter code	42602
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Highest concentration
Network affiliation	Near Road
Monitor type(s)	SLAMS
Primary, QA Collocated, or Other	Primary
Instrument manufacturer & model	TAPI 500 series
Method code	EQNA-0514-212
FRM/FEM/ARM/other	FEM
Collecting agency	DAQ
Analytical lab	NA
Reporting agency	DAQ
Spatial scale	Microscale
Monitoring start date	08/01/2015
Current sampling frequency	Continuous
Calculated sampling frequency	Continuous
Sampling season	Year-round
Probe height (m)	4.2
Distance from supporting structure (m)	1.2
Distance from obstructions on roof – horizontal distance (m)	NA
Distance from obstructions on roof – vertical height (m)	NA
Distance from obstructions not on roof – horizontal distance (m)	NA
Distance from obstructions not on roof – vertical height (m)	NA
Distance from trees (m)	23
Distance to furnace or incinerator flue (m)	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA
Distance to nearest PM instrument (m)	NA
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (s)	2.6
Will there be changes within the next 18 months? (Y/N)	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA
Frequency of flow rate verification for manual PM samplers	NA
Frequency of flow rate verification for automated PM analyzers	NA
Frequency of one-point QC check for gaseous instruments	Daily
Last annual performance evaluation for gaseous parameters	10/06/2015, 11/13/2015
Last two semiannual flow rate audits for PM monitors	NA

Meteorological measurements at Near-Road Site 1 include wind speed, wind direction, ambient temperature, and barometric pressure.

Figure 15: Walter Johnson.

The primary objective of the Walter Johnson site, located on the west side of Las Vegas, is to monitor O_3 and PM_{10}. Due to topography at this location, the summertime loft brings high O_3 and precursor levels toward this site from the east end of the Las Vegas Valley. The PM_{10} monitor provides spatial representation and neighborhood scale monitoring.

Local Site Name (AQS ID)	**Walter Johnson (32-003-0071)**
GPS Coordinates (latitude, longitude)	+36.169722°, -115.263056°
Street Address	7701 Ducharme Ave., Las Vegas, NV 89145
Distance to roadways (m)	Villa Monterey Drive: 13.0; Ducharme Avenue: 46; South Buffalo Drive: 270
Traffic counts (AADT, yr)	Villa Monterey Drive: 3,000 (est.); Ducharme Avenue: 5,000 (est.); South Buffalo Drive: 28,500 (2014)
Ground cover	Concrete/asphalt, grass
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**O_3, 1**	**PM_{10}, 1**
Parameter code	44201	81102
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure
Network affiliation	NA	NA
Monitor type(s)	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary
Instrument manufacturer & model	API 400 series	Thermo 5014i
Method code	EQOA-0992-087	EQPM-1102-150
FRM/FEM/ARM/other	FEM	FEM
Collecting agency	DAQ	DAQ
Analytical lab	NA	NA
Reporting agency	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood
Monitoring start date	08/01/1998	06/01/2015
Current sampling frequency	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous
Sampling season	Year-round	Year-round
Probe height (m)	4.3	4.7
Distance from supporting structure (m)	1.5	2.0
Distance from obstructions on roof – horizontal distance (m)	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA
Distance from trees (m)	15.2	12.3
Distance to furnace or incinerator flue (m)	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA
Distance to nearest PM instrument (m)	NA	NA
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	Teflon	NA
Residence time for reactive gases (s)	3.0	NA
Will there be changes within the next 18 months? (Y/N)	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	N	N
Frequency of flow rate verification for manual PM samplers	NA	NA
Frequency of flow rate verification for automated PM analyzers	NA	Monthly

Pollutant, POC	**O_3, 1**	**PM_{10}, 1**
Frequency of one-point QC check for gaseous instruments	Daily	NA
Last annual performance evaluation for gaseous parameters	06/10/2015	NA
Last two semiannual flow rate audits for PM monitors	NA	06/16/2015, 12/02/2015

Meteorological measurements at the Walter Johnson site include wind speed, wind direction, ambient temperature, and barometric pressure.

5.0 MAPS OF CRITERIA POLLUTANT MONITORING STATIONS IN 2015

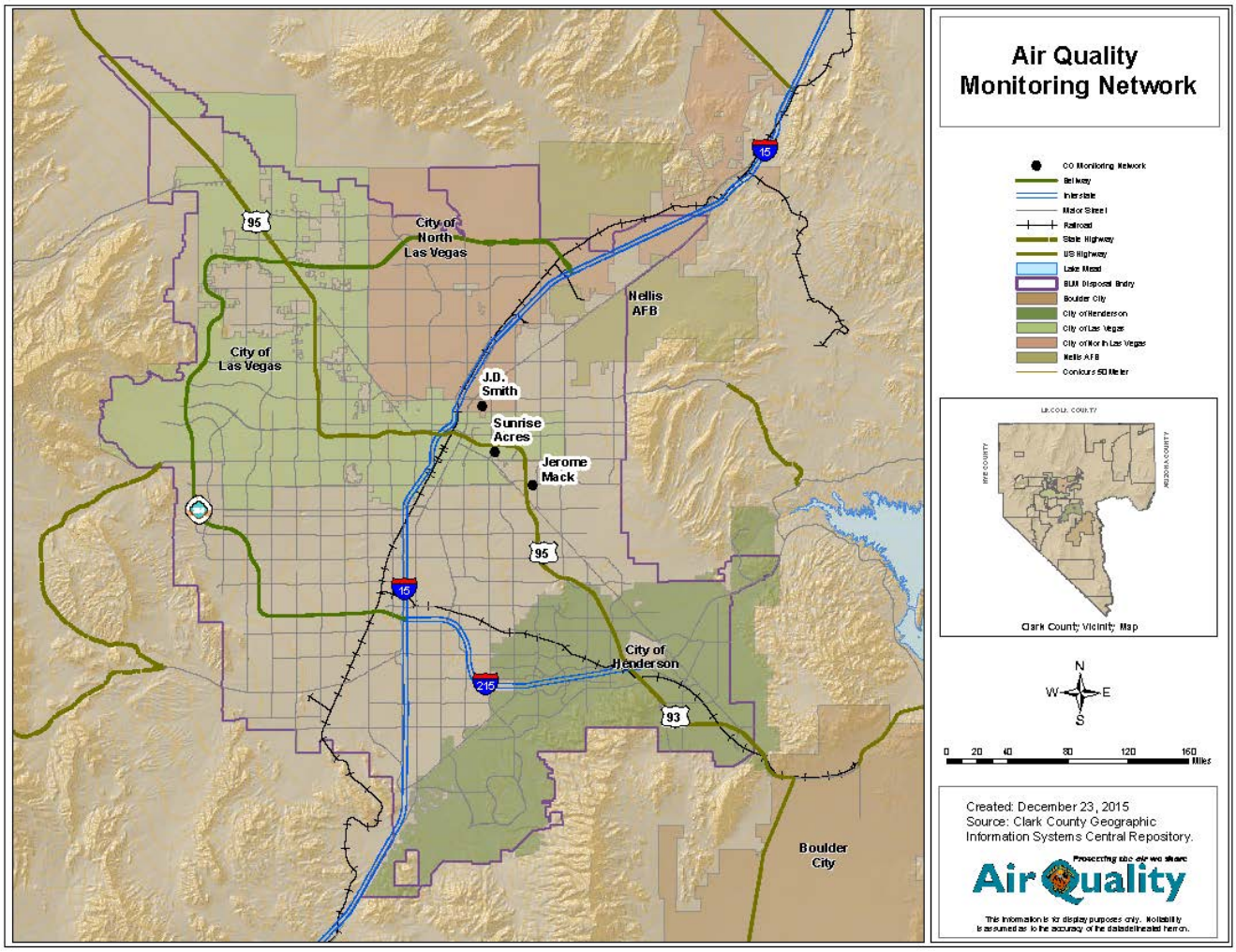

Figure 16: CO Monitors.

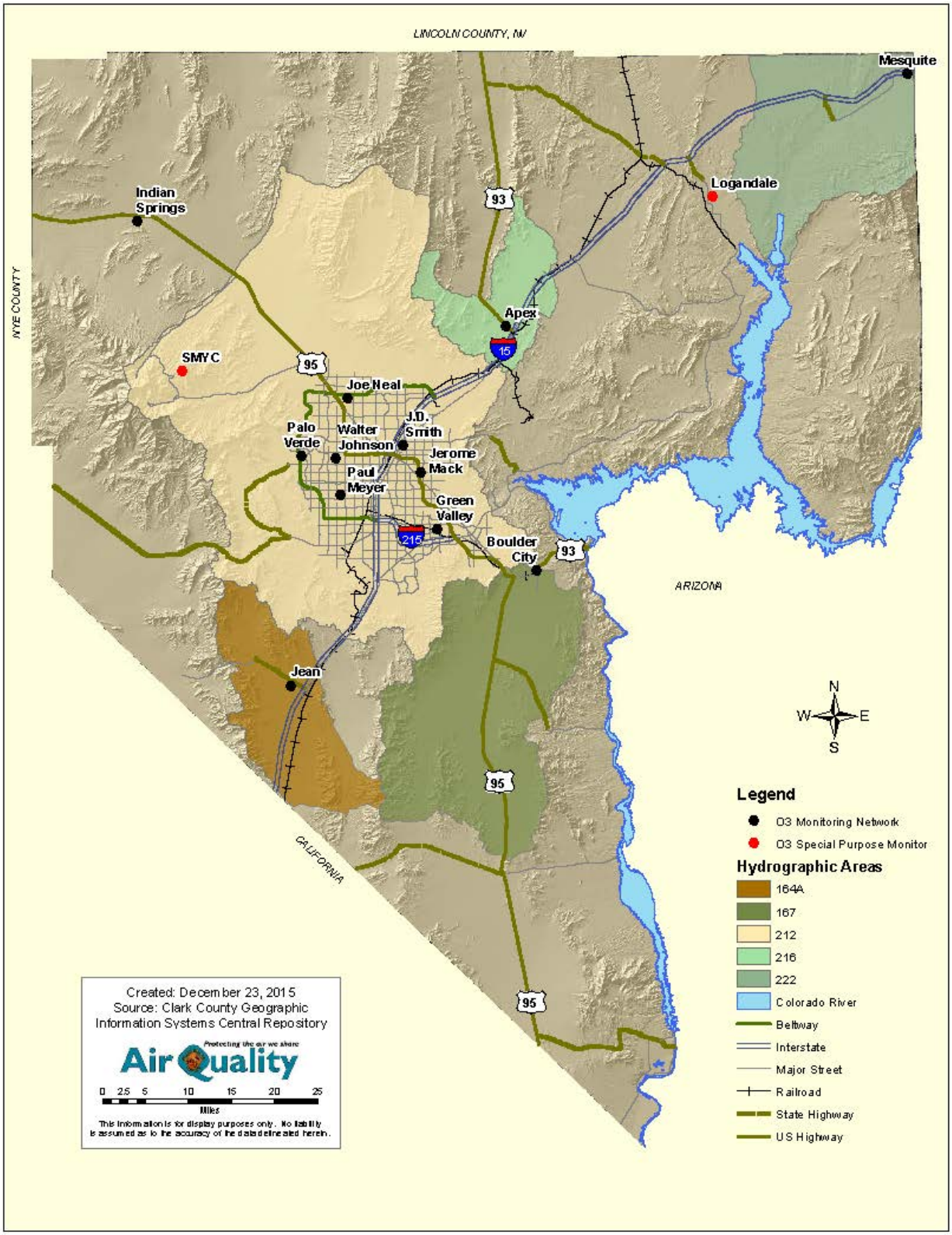

Figure 17: O_3 Monitors.

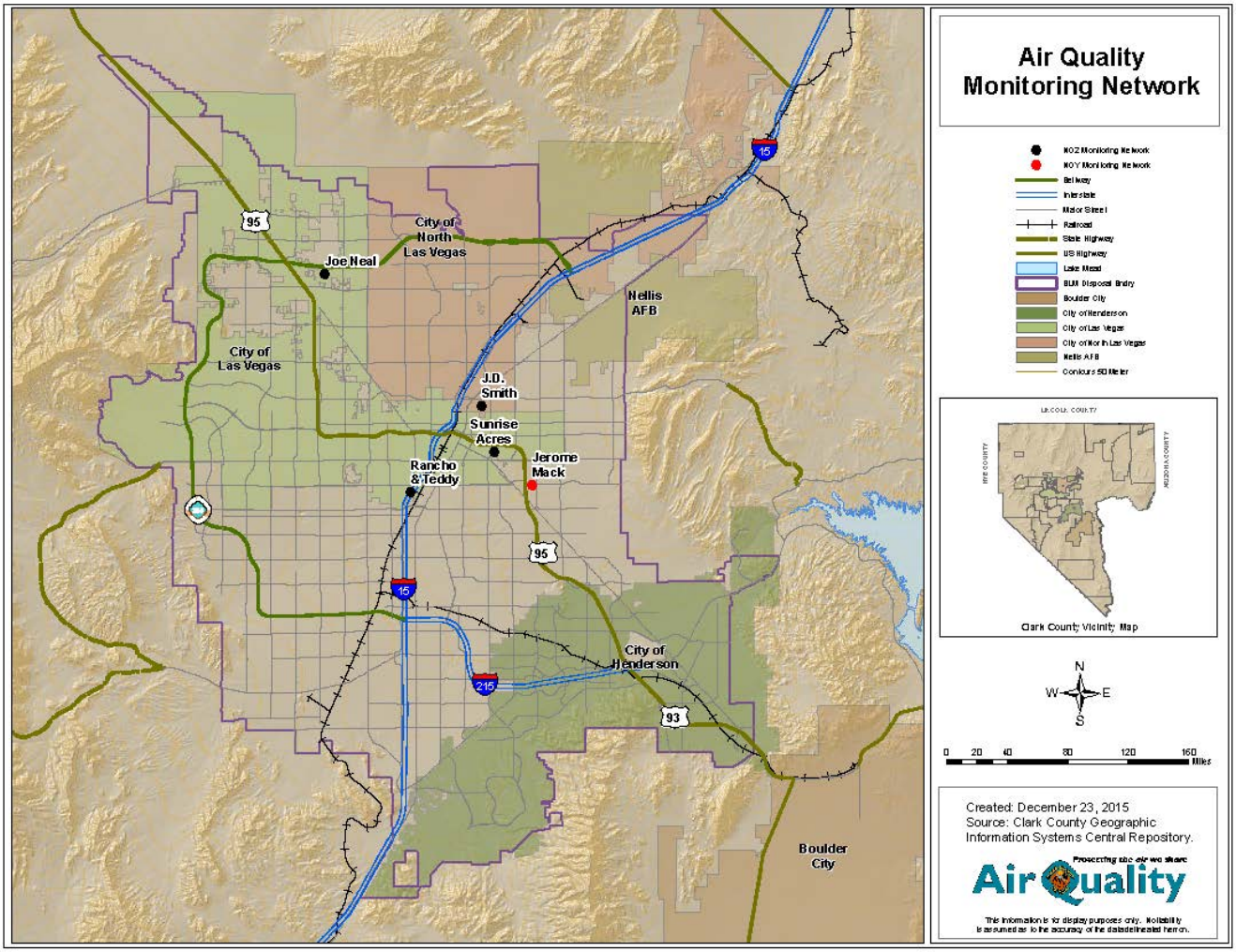

Figure 18: NO_x Monitors.

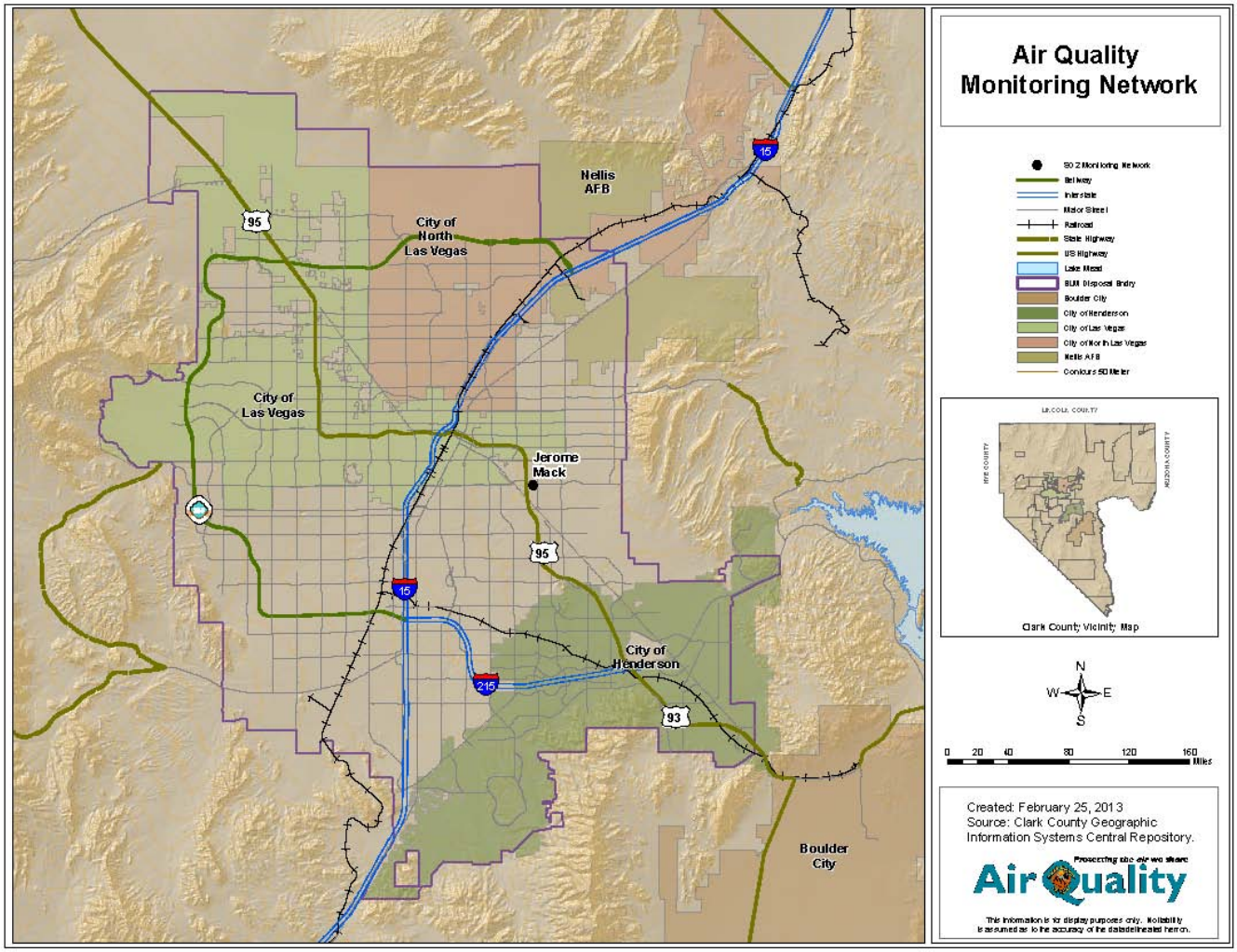

Figure 19: SO_2 Monitor.

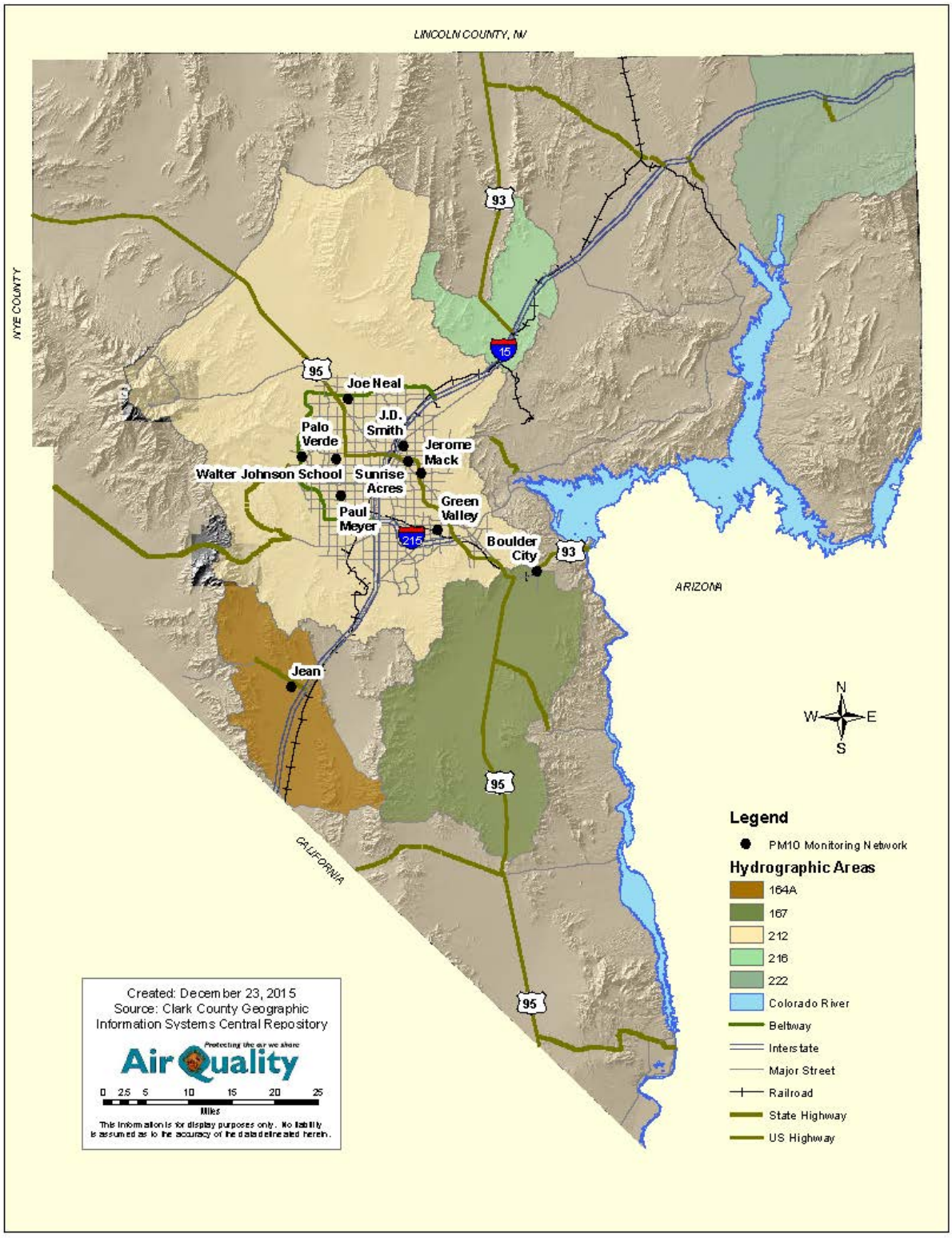

Figure 20: Continuous PM_{10} Monitors.

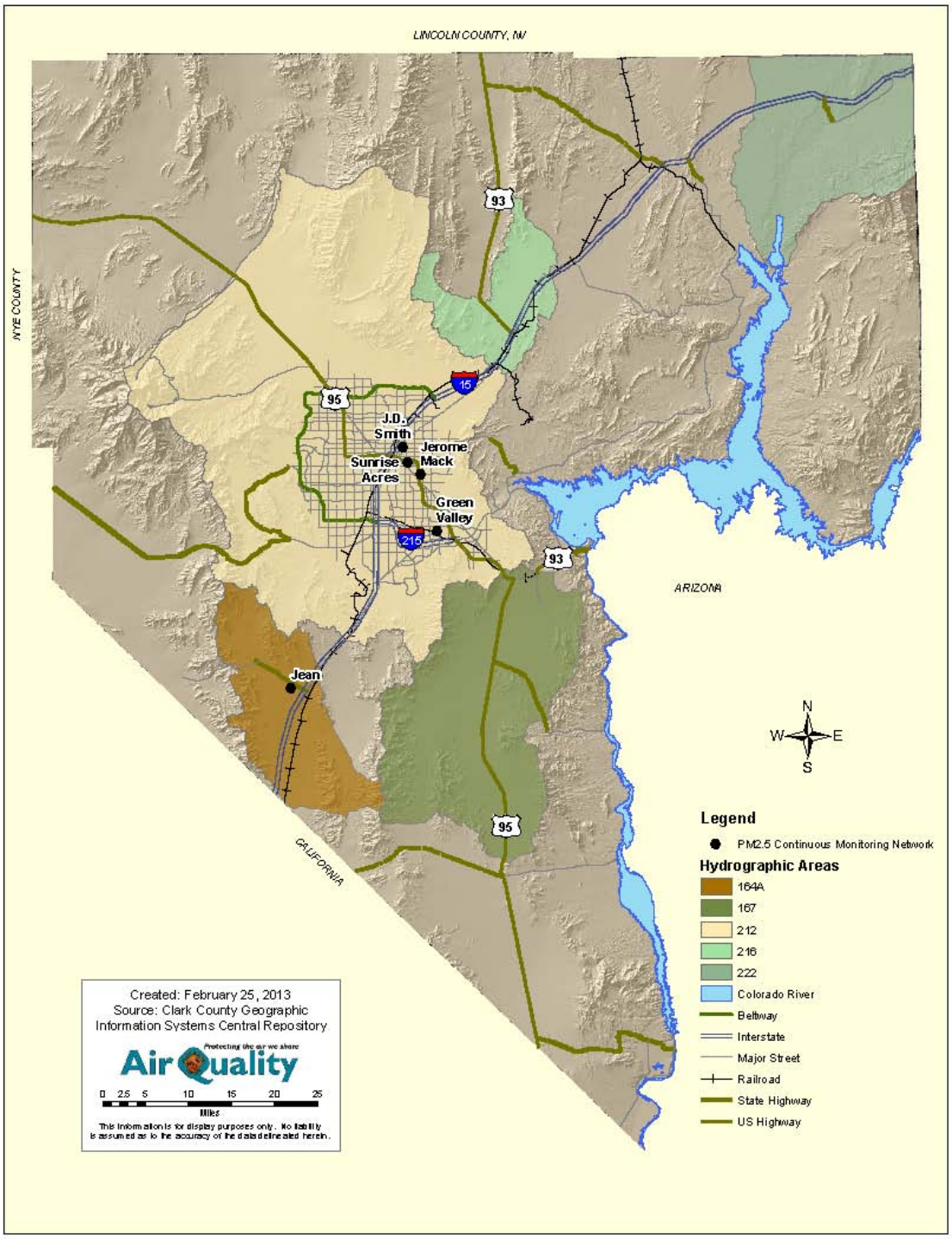

Figure 21: Continuous $PM_{2.5}$ Monitors.

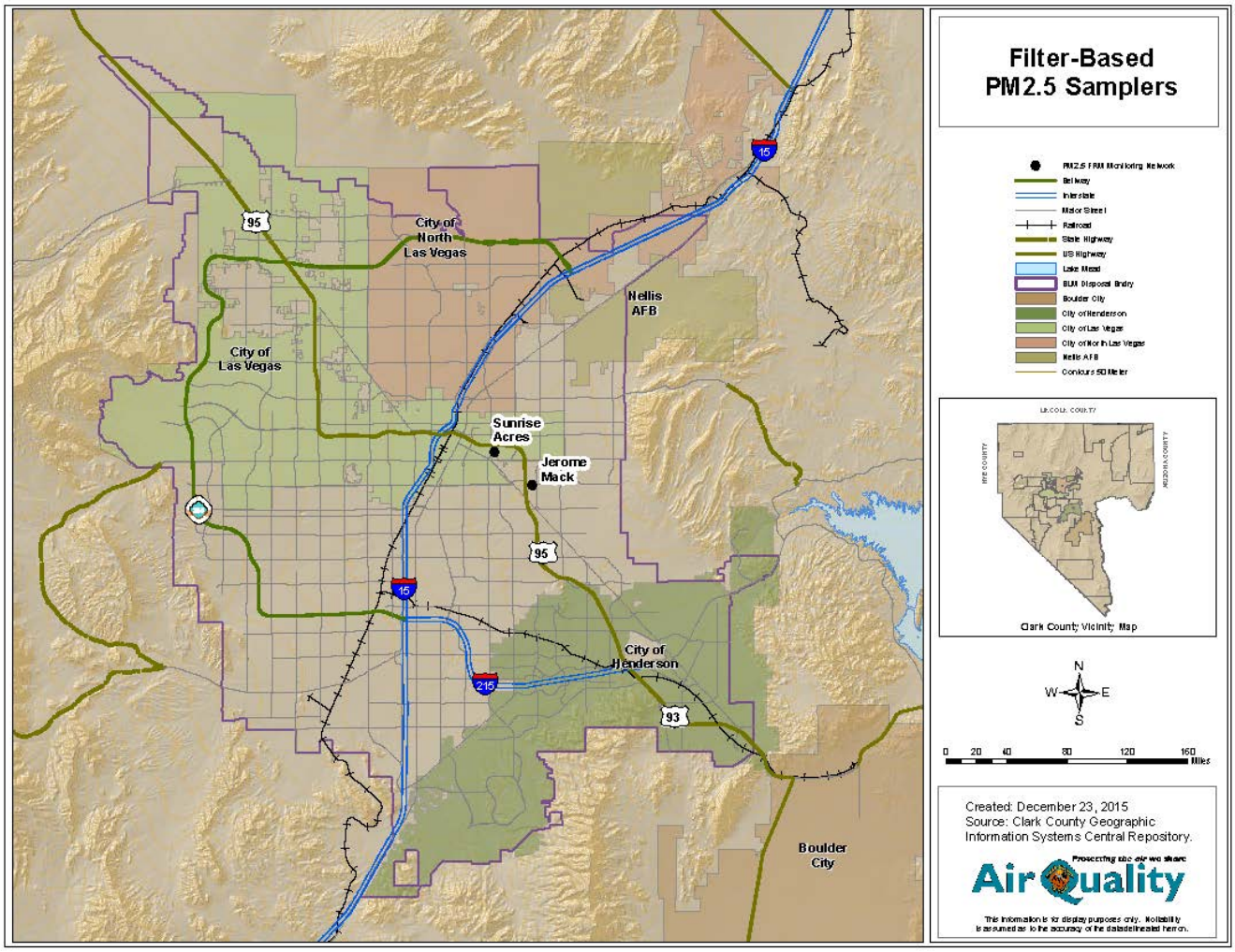

Figure 22: Filter-Based $PM_{2.5}$ FRM Samplers.

6.0 NATIONAL PERFORMANCE AUDIT PROGRAM AND PERFORMANCE EVALUATION PROGRAM

Each year EPA Region 9 contracts for the National Performance Audit Program (NPAP) Through-the-Probe (TTP) performance evaluations, which focus on gaseous criteria pollutants. DAQ received a "pass" on all 2015 NPAP/TTP performance evaluations.

Table 12. 2015 NPAP and TTP Evaluations

Monitoring Station	Pollutant	Evaluation Date
Palo Verde	O_3	04/14/2015
Paul Meyer	O_3	04/15/2015

Each year the $PM_{2.5}$ FRM sampling network undergoes a Performance Evaluation Program (PEP) audit. PEP audit results (in $\mu g/m^3$) are generated and submitted to the AQS database.

Table 13. 2015 PEP Audit Activity

Sampler Location	Pollutant	Audit Date
Jerome Mack, Sunrise Acres	$PM_{2.5}$ FRM	01/27/2015
Jean	$PM_{2.5}$ FEM (BAM)	04/15/2015
Jerome Mack	$PM_{2.5}$ FRM	07/23/2015
Jerome Mack	Pb TSP	07/23/2015
Sunrise Acres	$PM_{2.5}$ FRM	10/27/2015

7.0 NETWORK MODIFICATIONS

7.1 Completed Changes

DAQ has made the following network changes:

Table 14. Summary of Network Modifications

Action	Date	Explanation
Discontinued O_3 Special Purpose Monitors (SPMs) at Spring Mountain Youth Camp and Logandale	October 2015	Enhanced summertime O_3 monitoring completed.
Near-Road Site 1: Rancho & Teddy	July 2015	DAQ received EPA approval for Near-Road Site 1 in the 2014 network plan approval letter. DAQ began operation of this site in July 2015.
Deployed PM_{10} at Walter Johnson	June 2015	DAQ began operating PM_{10} at Walter Johnson to provide better spatial coverage for the PM_{10} network.
Deployed O_3 at Green Valley	July 2015	EPA approved the installation/operation of SLAMS O_3 monitoring at Green Valley as part of the 2014 network plan. DAQ began operating the O_3 monitor in July 2015.
Indian Springs SLAMS	April 2015	EPA approved the operation of SLAMS O_3 monitoring at Indian Springs as part of the 2015 network plan. DAQ began operating the SLAMS O_3 monitor in April 2015.
NO_2 Cavity Attenuated Phase Shift (CAPS)	2015	During 2015, DAQ migrated from using chemiluminescent (3-channel) NOx instruments to the NO_2 direct measurement CAPS instruments. The CAPS instruments were phased in network-wide during 2015.

7.2 Proposed Changes

This section, which describes anticipated and potential changes to the monitoring network over the next two years, constitutes Clark County's official request to Region 9 for approval of proposed changes.

Table 15. Proposed Site and Equipment Changes, 2016-2017

Site/Equipment Change	Date of Proposed Change	Explanation
Near-Road Site 2: Central Fire Station	2016	DAQ received EPA approval for Near-Road Site 2 in the 2014 network plan approval letter. DAQ plans to begin operation of this site in 2016.See Section 4.0 (2015 Site Tables) for detailed description.

Site/Equipment Change	Date of Proposed Change	Explanation
Deploy SLAMS O_3 and PM monitoring in the Southeast portion of the Las Vegas Valley	2017	In an effort to improve spatial coverage for O_3 and PM monitoring, DAQ proposes to deploy SLAMS monitoring at Liberty High School in the southeast part of the Las Vegas Valley. A need to fill this spatial gap was identified in the 2015 5-Year Network Assessment. Commencement of installation activities is planned for 2017.
Deploy SLAMS O_3 and PM monitoring in the Southwest portion of the Las Vegas Valley	2017	In an effort to improve spatial coverage for O_3 and PM monitoring, DAQ proposes to deploy SLAMS monitoring at Nathanial Jones Park in the southwest part of the Las Vegas Valley. A need to fill this spatial gap was identified in the 2015 5-Year Network Assessment. Commencement of installation activities is planned for 2017.
Mesquite	2017	Due to inadequate siting at the current Mesquite site, DAQ is proposing an alternate monitoring location at the Virgin Valley High School. DAQ anticipates monitoring for O_3 and CO at this new location in Mesquite. Commencement of installation activities is planned for 2017.
Redeploy O_3 SPM at Spring Mountain Youth Camp	April 2016	This site will be run as SPM, and will help characterize upper elevation O_3. More detailed discussion is contained later in this document.
Continue upper air meteorological monitoring at North Las Vegas Airport	2016	Upper air meteorological monitoring is helpful in developing exceptional event demonstration packages and for air quality studies. More detailed discussion is contained later in this document.
Deploy a second O_3 and PM monitoring site in Boulder City	2017	The current Boulder City monitoring location is in a split-flow corridor, does not have neighborhood representation, and cannot properly accommodate meteorological measurements. The new site, which is slated to be at Garrett Junior High School, can address a number of these issues and is expected to be a good indicator of population exposure. Commencement of installation activities is planned for 2017.
Deploy SLAMS criteria pollutant monitoring at Walnut Community Center/Cecile Avenue	2017	In an effort to improve spatial monitoring coverage, DAQ proposes to deploy SLAMS monitoring at Walnut Community Center/Cecile Avenue in the northeast part of the Las Vegas Valley. A need to fill spatial gaps was identified in the 2015 5-Year Network Assessment. Commencement of installation activities is planned for 2017.

7.2.1 Monitoring in South Las Vegas

Figure 23: Liberty High School.

Local Site Name (AQS ID)	**Liberty High School (TBD)**
GPS Coordinates (latitude, longitude)	+35.987908°, -115.148885°
Street Address	3700 Liberty Heights Ave, Henderson, NV
Distance to roadway (m)	Liberty Heights Ave: 20 (est.); Chaperral Rd: 25 (est.); Bermuda Rd: 575 (2014)
Traffic count (AADT, yr)	Liberty Heights Ave: 1,000 (est.); Chaperral Rd: 1,000 (est.); Bermuda Rd: 5,100
Ground cover	Asphalt, gravel, and grass
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**
Parameter code	81102	88101	44201
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure	Population exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**
Instrument manufacturer & model	Thermo 5014i	Thermo 5014i	API 400 series
Method code	EQPM-1102-150	EQPM-0609-183	EQOA-0992-087
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA
Reporting agency	DAQ	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	2016 (proposed)	2016 (proposed)	2016 (proposed)
Current sampling frequency	Continuous	NA	Continuous
Calculated sampling frequency	Continuous	NA	Continuous
Sampling season	Year-round	Year-round	Year-round
Probe height (m)	5.0 (anticipated)	5 (anticipated)	4.0 (anticipated)
Distance from supporting structure (m)	2.2 (anticipated)	2.2 (anticipated)	1.2 (anticipated)
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA	NA
Distance from trees (m)	12 (est.)	12 (est.)	12 (est.)
Distance to furnace or incinerator flue (m)	NA	NA	NA
Distance between collocated monitors (m)	NA	NA	NA
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	NA	NA	Teflon
Residence time for reactive gases (s)	NA	NA	5 (est.)
Will there be changes within the next 18 months? (Y/N)	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA	Y	NA
Frequency of flow rate verification for manual PM samplers	NA	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	Monthly	NA
Frequency of one-point QC check for gaseous instruments	NA	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	NA	NA
Last two semiannual flow rate audits for PM monitors	NA	NA	NA

Figure 24: Nathanial Jones Park.

Local Site Name (AQS ID)	**Nathanial Jones (TBD)**
GPS Coordinates (latitude, longitude)	+36.006421°, -115.284015°
Street Address	8800 Sparkling Chandon Dr. Las Vegas, NV
Distance to roadway (m)	Sparkling Chandon Dr.: 55; S. Riley St: 82; W. Mountains Edge Pkwy: 138
Traffic count (AADT, yr)	Sparkling Chandon Dr.: <1,000 (est.); S. Riley St: <1,000 (est.); W. Mountains Edge Pkwy: 1,000 (2012)
Ground cover	Asphalt, gravel, and grass
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**
Parameter code	81102	88101	44201
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure	Population exposure

Pollutant, POC	**PM_{10}, 1**	**$PM_{2.5}$**	**O_3, 1**
Monitor type(s)	SLAMS	SLAMS	SLAMS
Instrument manufacturer & model	Thermo 5014i	Thermo 5014i	API 400 series
Method code	EQPM-1102-150	EQPM-0609-183	EQOA-0992-087
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA
Reporting agency	DAQ	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	2016 (proposed)	2016 (proposed)	2016 (proposed)
Current sampling frequency	Continuous	NA	Continuous
Calculated sampling frequency	Continuous	NA	Continuous
Sampling season	Year-round	Year-round	Year-round
Probe height (m)	5.0 (anticipated)	5 (anticipated)	4.0 (anticipated)
Distance from supporting structure (m)	2.2 (anticipated)	2.2 (anticipated)	1.2 (anticipated)
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA	NA
Distance from trees (m)	12 (est.)	12 (est.)	12 (est.)
Distance to furnace or incinerator flue (m)	NA	NA	NA
Distance between collocated monitors (m)	NA	NA	NA
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	NA	NA	Teflon
Residence time for reactive gases (s)	NA	NA	5 (est.)
Will there be changes within the next 18 months? (Y/N)	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA	Y	NA
Frequency of flow rate verification for manual PM samplers	NA	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	Monthly	NA
Frequency of one-point QC check for gaseous instruments	NA	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	NA	NA
Last two semiannual flow rate audits for PM monitors	NA	NA	NA

7.2.2 New Monitoring Site in Mesquite

Figure 25: Virgin Valley High School.

Local Site Name (AQS ID)	**Virgin Valley High School (TBD)**
GPS Coordinates (latitude, longitude)	+36.813766°, -114.051541°
Street Address	820 Valley View Dr., Mesquite, NV
Distance to roadway (m)	Valley View Dr.: 12; Hillside Dr.: 80; Interstate 5: 155
Traffic count (AADT, yr)	Valley View Dr.: < 2,000 (est.); Hillside Dr.: 5,500; Interstate 5: 17,000 (2014)
Ground cover	Asphalt, gravel, and grass
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**
Parameter code	81102	44201
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure, regional transport
Monitor type(s)	SLAMS	SLAMS
Instrument manufacturer & model	Thermo 5014i	API 400 series
Method code	EQPM-1102-150	EQOA-0992-087

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**
FRM/FEM/ARM/other	FEM	FEM
Collecting agency	DAQ	DAQ
Analytical lab	NA	NA
Reporting agency	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood
Monitoring start date	June 2016 (proposed)	2016 (proposed)
Current sampling frequency	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous
Sampling season	Year-round	Year-round
Probe height (m)	5.0 (anticipated)	4.0 (anticipated)
Distance from supporting structure (m)	2.2 (anticipated)	1.2 (anticipated)
Distance from obstructions on roof – horizontal distance (m)	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA
Distance from trees (m)	12 (est.)	12 (est.)
Distance to furnace or incinerator flue (m)	NA	NA
Distance between collocated monitors (m)	NA	NA
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	NA	Teflon
Residence time for reactive gases (s)	NA	5 (est.)
Will there be changes within the next 18 months? (Y/N)	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA	NA
Frequency of flow rate verification for manual PM samplers	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	NA
Frequency of one-point QC check for gaseous instruments	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	NA
Last two semiannual flow rate audits for PM monitors	NA	NA

7.2.3 O_3 Monitoring at Spring Mountain Youth Camp

The proposed Spring Mountain Youth Camp (AQS 32-003-7771) site is approximately 30 miles northwest of Las Vegas. Previously run as an upper-elevation O_3 research site, it will be redeployed in 2016 and will be operated as an SPM pursuant to 40 CFR 58.20(a). As part of the 2014 Annual Network Plan approval, EPA Region 9 acknowledged DAQ's continued operation of this site as an SPM. Due to physical limitations and restrictive conditions, DAQ cannot operate this O_3 monitor in compliance with FRM or FEM requirements, and it will designate related data as non-regulatory.

One of the main FEM requirements is to comply with testing procedures for the specific pollutant (40 CFR 53.3(b)). For O_3, the setup and startup of the test analyzer, test samplers, and reference method must be in strict accordance with the manufacturer's operation manuals. The regulation leaves no room for even minor deviations from the manual's specifications (40 CFR 53.32(d)(1)).

Many upper-elevation O_3 research sites cannot comply with FRM or FEM requirements because they require modified instrument configurations, operations outside instrument design specifications, deviations from QA and QC frequencies, and topographic constraints. With regard to the Spring Mountain Youth Camp site, restrictions include siting/flow path obstruction and instrument flow rate out of specification that cannot be corrected due to limitations of this equipment operating at such high altitude.

Due to these restrictions, DAQ cannot fully comply with 40 CFR 58.11, 58.12, Appendix A, or Appendix E, and the Spring Mountain Youth Camp site does not meet Appendix A and E requirements. DAQ intends to operate this and all future upper-elevation O_3 research instruments as SPM, non-FRM, and non-FEM.

Figure 26: Spring Mountain Youth Camp (SPM Site).

Local Site Name (AQS ID)	**Spring Mountain Youth Camp (32-003-7771)**
GPS Coordinates (latitude, longitude)	+ 36.318889 °, - 115.585278 °
Street Address	2400 Angel Peak Place
Distance to roadway (m)	30
Traffic count (AADT, yr)	300 (2015)
Ground cover	Gravel, concrete
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**O_3, 1**
Parameter code	44201
Basic monitoring objective(s)	Research support
Site type(s)	Regional transport
Monitor type(s)	Special purpose
Instrument manufacturer & model	TAPI 400 series
Method code	EQOA-0992-087
FRM/FEM/ARM/other	other
Collecting agency	DAQ
Analytical lab	NA

Pollutant, POC	**O_3, 1**
Reporting agency	DAQ
Spatial scale	Regional
Monitoring start date	05/10/2010
Current sampling frequency	NA
Calculated sampling frequency	NA
Sampling season	Year-round
Probe height (m)	6 (anticipated)
Distance from supporting structure (m)	2 (anticipated)
Distance from obstructions on roof – horizontal distance (m)	NA
Distance from obstructions on roof – vertical height (m)	NA
Distance from obstructions not on roof – horizontal distance (m)	1 estimated
Distance from obstructions not on roof – vertical height (m)	2 estimated
Distance from trees (m)	NA
Distance to furnace or incinerator flue (m)	NA
Distance between collocated monitors (m)	NA
Unrestricted airflow (degrees)	360[1]
Probe material for reactive gases	Teflon
Residence time for reactive gases (s)	3.7
Will there be changes within the next 18 months? (Y/N)	Y (O_3 installation)
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA
Frequency of flow rate verification for manual PM samplers	NA
Frequency of flow rate verification for automated PM analyzers	NA
Frequency of one-point QC check for gaseous instruments	Daily (anticipated)
Last annual performance evaluation for gaseous parameters	NA
Last two semiannual flow rate audits for PM monitors	NA

[1]Open fetch, but air flow is limited by obstructions.

7.2.4 Upper Air Meteorological Measurements at North Las Vegas Airport

DAQ will continue to perform upper air meteorological measurements at the North Las Vegas Airport to support ozone transport studies, exceptional event demonstrations, and air quality forecasting. Measurement instruments include a radar wind profiler and a microwave radiometer to measure temperature, humidity, and wind characteristics aloft. The data are routinely processed to produce hourly plots similar to typical presentations of balloon-based radiosonde profiles. Data from this site may also serve the meteorological monitoring requirements for anticipated Photochemical Assessment Monitoring Stations (PAMS) monitoring.

Figure 27: North Las Vegas Airport.

7.2.5 Boulder City (2nd Site at Garrett Junior High School)

Figure 28: Boulder City (Garrett Junior High).

Local Site Name (AQS ID)	**Garrett Junior High (TBD)**
GPS Coordinates (latitude, longitude)	+35.969848°, -114.835007°
Street Address	1200 Ave G , Boulder City, NV
Distance to roadways (m)	Adams Blvd: 50 (anticipated); Avenue G: 200 (anticipated)
Traffic counts (AADT, yr)	Adams Blvd: 4,700; Avenue G: 1,900: (2014)
Ground cover	Grass, unpaved, paved
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**
Parameter code	81102	44201
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure
Network affiliation	NA	NA
Monitor type(s)	SLAMS	SLAMS
Primary, QA Collocated, or Other	Primary	Primary
Instrument manufacturer & model	Thermo 5014i	TAPI 400 series
Method code	EQPM-1102-150	EQOA-0992-087
FRM/FEM/ARM/other	FEM	FEM
Collecting agency	DAQ	DAQ
Analytical lab	NA	NA
Reporting agency	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood
Monitoring start date	2016 (anticipated)	2016 (anticipated)
Current sampling frequency	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous
Sampling season	Year-round	Year-round
Probe height (m)	5.0 (anticipated)	4.0 (anticipated)
Distance from supporting structure (m)	2.1 (anticipated)	1.2 (anticipated)
Distance from obstructions on roof – horizontal distance (m)	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA
Distance from trees (m)	50 (anticipated)	50 (anticipated)
Distance to furnace or incinerator flue (m)	NA	NA
Distance between monitors fulfilling QA collocation requirements (m)	NA	NA
Distance to nearest PM instrument (m)	NA	NA
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	NA	Teflon
Residence time for reactive gases (s)	NA	5 (est.)
Will there be changes within the next 18 months? (Y/N)	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA	NA
Frequency of flow rate verification for manual PM samplers	NA	NA
Frequency of flow rate verification for automated PM analyzers	Monthly	NA

Pollutant, POC	**PM_{10}, 1**	**O_3, 1**
Frequency of one-point QC check for gaseous instruments	NA	Daily
Last annual performance evaluation for gaseous parameters	NA	NA
Last two semiannual flow rate audits for PM monitors	NA	NA

7.2.6 Criteria Pollutant Monitoring at Walnut Community Center/Cecile Avenue Site

Figure 29: Walnut Community Center/Cecile Avenue.

DAQ is proposing SLAMS monitoring at the Walnut Community Center/Cecile Avenue location. This location is in the northeast part of the Las Vegas Valley, and is expected to improve spatial monitoring coverage. A need to fill spatial gaps was identified in the 2015 5-Year Network Assessment.

Local Site Name (AQS ID)	**Walnut (TBD)**
GPS Coordinates (latitude, longitude)	+ 36.214582°, -115.093097°
Street Address	3750 Cecile Avenue
Distance to roadway (m)	Cecile Ave. 20 (est.), W. Walnut Rd. 120, E. Cheyenne Ave. 360
Traffic count (AADT, yr)	Cecile Ave. 1,000 (est.), W. Walnut Rd. 500, E. Cheyenne Ave. 21, 000 (2014)
Ground cover	Concrete, grass
Representative statistical area name	Las Vegas-Paradise, NV MSA

Pollutant, POC	**O_3, 1**	**CO, 1**	**NO_2, 2**	**PM_{10}**	**$PM_{2.5}$**
Parameter code	44201	42101	42602	81102	88101
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Instrument manufacturer & model	TAPI 400 series	TAPI 300 series	TAPI 500 series	Thermo 5014i	Thermo 5014i
Method code	EQOA-0992-087	RFCA-1093-093	EQNA-0514-212	EQPM-1102-150	EQPM-0609-183
FRM/FEM/ARM/other	FEM	FRM	FEM	FEM	FEM
Collecting agency	DAQ	DAQ	DAQ	DAQ	DAQ
Analytical lab	NA	NA	NA	NA	NA
Reporting agency	DAQ	DAQ	DAQ	DAQ	DAQ
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	2016 (anticipated)	2016 (anticipated)	2016 (anticipated)	2016 (anticipated)	2016 (anticipated)
Current sampling frequency	NA	NA	NA	NA	NA
Calculated sampling frequency	NA	NA	NA	NA	NA
Sampling season	Year-round	Year-round	Year-round	Year-round	Year-round
Probe height (m)	4 (anticipated)	4 (anticipated)	4 (anticipated)	5 (anticipated)	5 (anticipated)
Distance from supporting structure (m)	1.2 (anticipated)	1.2 (anticipated)	1.2 (anticipated)	2.2 (anticipated)	2.2 (anticipated)
Distance from obstructions on roof – horizontal distance (m)	NA	NA	NA	NA	NA
Distance from obstructions on roof – vertical height (m)	NA	NA	NA	NA	NA
Distance from obstructions not on roof – horizontal distance (m)	NA	NA	NA	NA	NA
Distance from obstructions not on roof – vertical height (m)	NA	NA	NA	NA	NA
Distance from trees (m)	12 (anticipated)	12 (anticipated)	12 (anticipated)	12 (anticipated)	12 (anticipated)
Distance to furnace or incinerator flue (m)	NA	NA	NA	NA	NA
Distance between collocated monitors (m)	NA	NA	NA	NA	NA
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	NA	NA
Residence time for reactive gases (s)	< 4 (anticipated)	< 4 (anticipated)	< 6 (anticipated)	NA	NA

Pollutant, POC	O_3, 1	CO, 1	NO_2, 2	PM_{10}	$PM_{2.5}$
Will there be changes within the next 18 months? (Y/N)	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N)	NA	NA	NA	NA	Y
Frequency of flow rate verification for manual PM samplers	NA	NA	NA	NA	NA
Frequency of flow rate verification for automated PM analyzers	NA	NA	NA	Monthly	Monthly
Frequency of one-point QC check for gaseous instruments	Daily	Daily	Daily	NA	NA
Last annual performance evaluation for gaseous parameters	NA	NA	NA	NA	NA
Last two semiannual flow rate audits for PM monitors	NA	NA	NA	NA	NA

7.3 Review Process for Network Modifications

The annual network plan outlines all notices of proposed changes, in compliance with 40 CFR 58.10 (a)(2). DAQ will provide time for a public review when proposing to reduce any SLAMS monitoring. DAQ will post all notices and documents for public review on its website.

7.4 O_3 Monitoring Waivers

Due to the recently revised O_3 NAAQS, EPA has revoked all existing seasonal O_3 waivers. If agencies desire an O_3 waiver approval, they must reevaluate O_3 data and resubmit waiver requests. Based on this direction, DAQ has submitted O_3 waiver requests for Apex, Mesquite, and Indian Springs sites under a separate cover.

7.5 Near-Road Monitoring

The Rancho & Teddy site (Near-Road Site 1) was approved by EPA as part of the 2014 Annual Network Plan approval, and DAQ began operations in August 2015. The Central Fire Station (Near-Road Site 2) was approved by EPA as part of the 2014 Annual Network Plan approval, and operations commence in 2016. 40 CFR 58 requires one CO monitor and one $PM_{2.5}$ monitor to be placed at a near-road site, and DAQ anticipates having these monitors operational by January 1, 2017, as required.

7.6 Special Purpose Studies

DAQ plans to contribute to the goals of the Clean Air Act and the evolving science of air quality. DAQ's objectives include research of pollutants and precursor transport, identification of stratospheric

intrusions and mixing heights, and model validation. A majority of this effort will be concentrated on the O_3 season. All upper-elevation O_3 research monitors that are part of these studies will not be part of the regulatory monitoring network.

DAQ operates visibility cameras at the North Las Vegas Airport and at the M Resort, which is located on the south end of the Las Vegas Valley. These visibility cameras assist in documenting dust and transport events in the Las Vegas Valley.

Lastly, DAQ will continue filter-based chemical speciation sampling during special events such as New Year's Eve and Fourth of July when $PM_{2.5}$ can reach exceedance levels and where impacts from fireworks can be documented. Sampling for markers of levoglucosan may also take place, and this can assist development of O_3 exceptional event demonstration packages when smoke from wildfires may be a significant factor.

7.7 Future Needs

As part of the new O_3 rule, EPA is requiring PAMS measurements to be collocated with existing NCore sites in areas with population of one million or more, irrespective of Ozone NAAQS attainment status. Clark County meets these requirements and is expecting to deploy PAMS monitoring at the Jerome Mack monitoring station. PAMS monitoring will begin by the regulatory deadline of June 1, 2019. Some of the measurements will include, but are not limited to, volatile organic compound measurements, carbonyl samples, True NO_2, solar radiation, and UV radiation. Upper air measurements from the North Las Vegas Airport will also be used to support PAMS measurements.

Through special studies, modeling, forecasting, and network assessments, DAQ has projected spatial gaps and other monitoring concerns in specific areas of Clark County. DAQ will explore the possibility of gaseous, particulate, or meteorological monitoring in unrepresented/underrepresented parts of the Las Vegas Valley, Laughlin, Primm, Coyote Springs, and Overton. Any special study sites will likely be started as SPM.

Appendix A

Crosswalk: DAQ Response to EPA on the 2015 Network Plan Comments – Cross Reference Guide

Table of Contents

Enclosure A

Item	Checklist Row	Issue	DAQ Response
Distance between QA collocated monitors	16	Not meeting requirement	Collocated $PM_{2.5}$ FRMs at Jerome Mack meet the 1-4 meter distance requirement. Collocated $PM_{2.5}$ FRM to FEM distance at Sunrise Acres has been adjusted to 4 meters.
Sampling season for O_3	53	Insufficient information to judge	DAQ has resubmitted waivers for O_3 monitoring based on the new O_3 standard.
Minimum monitoring requirement for second near-road NO_2 monitor	55	Not meeting requirement	DAQ began operating the Central Fire Station near-road site in 2016.
Distance from supporting structure	78	Insufficient information to judge	The PM_{10} monitors at the South Las Vegas sites (Liberty High School and Nathanial Jones Park) and Garret Junior High School will be greater than 2 meters from their supporting structures.
Distance from obstructions not on roof	80	Not meeting requirement and insufficient information to judge	DAQ is reassessing the JD Smith site based on Appendix E criteria. For Indian springs, this measurement (obstruction height above probe) is not applicable because probe is above obstruction.

Enclosure B

Additional Items Requiring Attention

DAQ Responses are in Blue text

[Item 9] Two near-road sites were approved by EPA as part of the 2014 ANP. Sites were required to begin operation by January 1, 2015. DAQ notes the Teddy and Rancho site started monitoring NO_2 in 2015 (page 45) and that the Central Fire Station site is anticipated to begin monitoring in 2015 (page 15). Please include exact start dates in next year's ANP.

- DAQ began operating the Teddy and Rancho site on August 1, 2015, and will begin operating the Central Fire Station site in 2016.

[Items 17 and 18] Please list flow rates in next year's ANP.

- DAQ included flow rates for all PM (low vol and high vol) instruments.

[Item 73] Please include exact start date of Teddy and Rancho and Central Fire Station sites.

- DAQ provided the start date of August 1, 2015, for the Teddy and Rancho site, and will begin operating the Central Fire Station site in 2016.

[Item 62] Please provide AQS IDs for South Las Vegas Valley and Garrett Junior High in next year's ANP.

- DAQ provided AQS IDs for all existing and planned sites. DAQ does not have AQS IDs for sites that are only proposed.

Enclosure C

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
GENERAL PLAN REQUIREMENTS						
1.	Submit plan by July 1st	58.10 (a)(1)	Yes	Yes	Plan was received June 3, 2015	Requirement satisfied.
2.	30-day public comment/ inspection period[5]	58.10 (a)(1), 58.10 (a)(2)	Yes; transmittal letter	Yes	No comments were received. Note, public inspection dates listed in the ANP on page 1 are incorrect.	Requirement satisfied.

[1] Response options: NA (Not Applicable), Yes, No, Incomplete, Incorrect. The responses "Incomplete" and "Incorrect" assume that some information has been provided.
[2] To the best of our knowledge.
[3] Assuming the information is correct.
[4] Response options: NA (Not Applicable) – [reason], Yes, No, Insufficient to Judge.
[5] The affected state or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
3.	Modifications to SLAMS network – case when we are not approving system modifications	58.10 (a)(2) 58.10 (b)(5) 58.10(e) 58.14	Yes, page 70	Insufficient Info	EPA is not approving the request to close criteria pollutant monitoring at Sunrise Acres and JD Smith and redeploy in a new location (June 2016). Please work with EPA on this request. EPA is also unable to approve the PM_{10} monitor deployment at Walter Johnson due to insufficient information on monitor type (i.e. SLAMS, SPM, etc.).	DAQ is resubmitting monitoring station close out requests using requirements outlined in 40 CFR 58.14 under separate cover. DAQ has provided complete information in Section 4 of the network plan (see table specific to Walter Johnson).

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
4.	Modifications to SLAMS network – case when we are approving system modifications per 58.14	58.10 (a)(2) 58.10 (b)(5) 58.10(e) 58.14	Yes	Yes	• Redeploy O_3 at Indian Springs as SLAMS, see Row 80 below. • New SLAMS PM_{10} monitoring at South Las Vegas, see Row 78 below. • New SLAMS O_3 and PM_{10} at Garrett Junior High, see Rows 78 below.	Requirement satisfied.
5.	Does plan include documentation (e.g., attached approval letter) for system modifications that have been approved since last ANP approval?		NA	NA	None	Requirement satisfied.
6.	Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal	58.10 (b)(5)	Yes, pages 58-59	Yes		Requirement satisfied.
7.	A plan for establishing a near-road $PM_{2.5}$ monitor (in CBSAs ≥ 2.5 million) by 1/1/2015 **(plan was due July 1, 2014)**	58.10(a)(8)(i)	Yes, page 73	Yes	DAQ anticipates having this monitor operational by January 1, 2017, as required.	Requirement satisfied.
8.	A plan for establishing a near-road CO monitor (in CBSAs ≥ 2.5 million) by 1/1/2015 **(plan was due July 1, 2014)**	58.10(a)(7) 58.13(e)(1)	Yes, page 73	Yes	DAQ anticipates having this monitor operational by January 1, 2017, as required.	Requirement satisfied.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
9.	NO_2 plan for establishment of 2nd near-road monitor by 1/1/2015 **(plan was due July 1, 2014)**	58.10 (a)(5)(iv)	Yes	Yes	Two near-road sites were approved by EPA as part of the 2014 ANP. Sites were required to begin operation by January 1, 2015. DAQ notes the Teddy and Rancho site started monitoring NO_2 in 2015 (page 45) and that the Central Fire Station site is anticipated to begin monitoring in 2015 (page 15). Please include exact start dates in next year's ANP.	Near Road sites' start dates are provided in Section 4 of the network plan (see table specific to Teddy-Rancho and Central Fire Station).
10.	Precision/Accuracy reports submitted to AQS	58.16(a); App A, 1.3 and 5.1.1	Yes, page 5	Yes		Requirement satisfied.
11.	Annual data certification submitted	58.15 App. A 1.3	Yes, page 5	Yes		Requirement satisfied.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
12.	Statement that SPMs operating an FRM/FEM/ARM that meet Appendix E also meet either Appendix A or an approved alternative. Documentation for any Appendix A approved alternative should be included.[6]	58.11 (a) (2)	Yes, Appendix A, page A-10		Indian Springs and Logandale meet Appendix A and E, Spring Mountain Youth Camp is not operating as an FEM. Please include this information in the body of next year's ANP.	Requirement satisfied.
13.	SPMs operating FRM/FEM/ARM monitors for over 24 months are listed as comparable to the NAAQS or the agency provided documentation that requirements from Appendices A, C, or E were not met.[7]	58.20(c)	NA	NA		Requirement satisfied.

[6] Alternatives to the requirements of appendix A may be approved for an SPM site as part of the approval of the annual monitoring plan, or separately.
[7] This requirement only applies to monitors that are eligible for comparison to the NAAQS per 40 CFR §§58.11(e) and 58.30.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
14.	For agencies that share monitoring responsibilities in an MSA/CSA: this agency meets full monitoring requirements or an agreement between the affected agencies and the EPA Regional Administrator is in place	App D 2(e)	NA	NA		Requirement satisfied.
GENERAL PARTICULATE MONITORING REQUIREMENTS (PM_{10}, $PM_{2.5}$, Pb-TSP, Pb-PM_{10})						
15.	Designation of a primary monitor if there is more than one monitor for a pollutant at a site.	Need to determine collocation	Yes, Section 4	Yes		Requirement satisfied.
16.	Distance between QA collocated monitors (Note: waiver request or the date of previous waiver approval must be included if the distance deviates from requirement.)	App. A 3.2.5.6 and 3.2.6.3	Yes, Section 4	No	Distance between QA collocated monitors: 3.7 m at Jerome Mack ($PM_{2.5}$ FRMs) 4.6 m at Sunrise Acres ($PM_{2.5}$ FRM and FEM) - Samplers measuring the same pollutant to fulfill QA collocation requirements should be between 1-4 m for lovol and 2-4 m for highvol instruments.	The distance between collocated monitors at Jerome Mack meets QA collocation requirements. At Sunrise Acres, the FEM to FRM distance has been adjusted to 4 meters and now meets QA collocation requirements.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
17.	For low volume PM instruments (flow rate < 200 liters/minute), all other PM instruments are > 1 m from the lovol. If no, list distance (meters) and instruments.	App E	Yes, Section 4	Yes	Please list flow rates in next year's ANP	The flow rate for low volume instruments has been indicated in the network plan; see Section 2.0.
18.	For high volume PM instruments (flow rate > 200 liters/minute), all other PM instruments are > 2m from the hivol. If no, list distance (meters) and instruments.	App E	Yes, Section 4	Yes	Please list flow rates in next year's ANP	The flow rate for the high volume sampler has been indicated in the network plan; see Section 2.0.
$PM_{2.5}$ –SPECIFIC MONITORING REQUIREMENTS						
19.	Document how states and local agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor.	58.10 (c)	Yes, pages 58-59 and 73	Yes		Requirement satisfied.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
20.	Identification of any $PM_{2.5}$ FEMs and/or ARMs not eligible to be compared to the NAAQS due to poor comparability to FRM(s) (Note 1: must include required data assessment.) (Note 2: Required SLAMS must monitor $PM_{2.5}$ with NAAQS-comparable monitor at the required sample frequency.)	58.10 (b)(13) 58.11 (e)	NA	NA	None requested	Requirement satisfied.
21.	Minimum # of monitoring **sites** for $PM_{2.5}$ [Note 1: should be supported by MSA ID, MSA population, DV, # monitoring sites, and # required monitoring sites] [Note 2: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D, 4.7.1(a) and Table D-5	Yes, page 6	Yes		Requirement satisfied.
22.	Requirements for continuous $PM_{2.5}$ monitoring (number of monitors and collocation)	App D 4.7.2	Yes, page 6	Yes		Requirement satisfied.
23.	FRM/FEM/ARM $PM_{2.5}$ QA collocation	App A 3.2.5	Yes, page 9	Yes		Requirement satisfied.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
24.	$PM_{2.5}$ Chemical Speciation requirements for official STN sites	App D 4.7.4	NA	NA		Requirement satisfied.
25.	Identification of sites suitable and sites not suitable for comparison to the annual $PM_{2.5}$ NAAQS as described in Part 58.30	58.10 (b)(7)	Yes, Section 4	Yes		Requirement satisfied.
26.	Required $PM_{2.5}$ sites represent area-wide air quality	App D 4.7.1(b)	Yes, Section 4	Yes		Requirement satisfied.
27.	For $PM_{2.5}$, within each MSA, at least one site at neighborhood or larger scale in an area of expected maximum concentration	App D 4.7.1(b)(1)	Yes, Section 4	Yes	Sunrise Acres is maximum concentration site	Requirement satisfied.
28.	Minimum monitoring requirement for near-road $PM_{2.5}$ monitor (in CBSA ≥ 2.5 million) by 1/1/2015	58.13(f)(1) App D 4.7.1(b)(2)	NA	NA	$PM_{2.5}$ near road monitoring will be required January 1, 2017	Requirement satisfied.
29.	If additional SLAMS $PM_{2.5}$ is required, there is a site in an area of poor air quality	App D 4.7.1(b)(3)	Yes, Section 4	Yes	J.D. Smith and Jerome Mack fulfill this requirement	Requirement satisfied.
30.	States must have at least one $PM_{2.5}$ regional background and one $PM_{2.5}$ regional transport site.	App D 4.7.3	Yes, Section 4	Yes	Jean is a background and transport site	Requirement satisfied.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
31.	Sampling schedule for $PM_{2.5}$ - applies to year-round and seasonal sampling schedules (note: date of waiver approval must be included if the sampling season deviates from requirement)	58.10 (b)(4) 58.12(d) App D 4.7 EPA flowchart	Yes, Section 4	Yes		Requirement satisfied.
32.	Frequency of flow rate verification for manual $PM_{2.5}$ monitors audit	App A 3.3.2	Yes, Section 4	Yes		Requirement satisfied.
33.	Frequency of flow rate verification for automated $PM_{2.5}$ monitors audit	App A 3.2.3	Yes, Section 4	Yes		Requirement satisfied.
34.	Dates of two semi-annual flow rate audits conducted in **CY2014** for $PM_{2.5}$ monitors	App A, 3.2.4 and 3.3.3	Yes, Section 4	Yes		Requirement satisfied.
PM_{10} –SPECIFIC MONITORING REQUIREMENTS						
35.	Minimum # of monitoring sites for PM_{10}	App D, 4.6 (a) and Table D-4	Yes, page 7	Yes		Requirement satisfied.
36.	Manual PM_{10} method collocation (note: continuous PM_{10} does not have this requirement)	App A 3.3.1	NA	NA	All PM_{10} monitors are continuous	Requirement satisfied.
37.	Sampling schedule for PM_{10}	58.10 (b)(4) 58.12(e) App D 4.6	Yes, Section 4	Yes	All monitors are continuous	Requirement satisfied.
38.	Frequency of flow rate verification for manual PM_{10} monitors audit	App A 3.3.2	NA	NA	All monitors are continuous	Requirement satisfied.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes	DAQ Response
39.	Frequency of flow rate verification for automated PM_{10} monitors audit	App A 3.2.3	Yes, Section 4	Yes		Requirement satisfied.
40.	Dates of two semi-annual flow rate audits conducted in **CY2014** for PM_{10} monitors	App A, 3.2.4 and 3.3.3	Yes, Section 4	Yes	The dates for semi-annual flow audits at the Boulder City and Paul Meyer are technically not within the recommended 5-7 month range, but because the audits only missed this range by 5 and 1 day respectively, EPA believes these audits to meet the requirement.	Requirement satisfied.

Pb –SPECIFIC MONITORING REQUIREMENTS						
41	Minimum # of monitors for non-NCore Pb [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D 4.5 58.13(a)	Yes, page 8	Yes	None required	Requirement satisfied.
42	Pb collocation: for non-NCore sites	App A 3.3.4.3	NA	NA		Requirement satisfied.
43	Any source-oriented Pb site for which a waiver has been granted by EPA Regional Administrator	58.10 (b)(10)	NA	NA		Requirement satisfied.
44	Any Pb monitor for which a waiver has been requested or granted by EPA Regional Administrator for use of Pb-PM_{10} in lieu of Pb-TSP	58.10 (b)(11)	NA	NA		Requirement satisfied.
45	Designation of any Pb monitors as either source-oriented or non-source-oriented	58.10 (b)(9)	Yes, pages 8, 25-30	Yes	Only NCore Pb is required	Requirement satisfied.
46	Sampling schedule for Pb	58.10 (b)(4) 58.12(b) App D 4.5	Yes, page 27	Yes	1:6	Requirement satisfied.
47	Frequency of flow rate verification for Pb monitors audit	App A 3.3.4.1	Yes, page 29	Yes	Performed monthly	Requirement satisfied.
48	Dates of two semi-annual flow rate audits conducted in **CY2014** for Pb monitors	App A 3.3.4.1	Yes, page, 30	Yes	One performed each quarter of 2014	Requirement satisfied.

GENERAL GASEOUS MONITORING REQUIREMENTS						
49	Frequency of one-point QC check (gaseous)	App. A 3.2.1	Yes, Section 4	Yes		Requirement satisfied.
50	Date of Annual Performance Evaluation (gaseous) conducted in **CY2014**	App. A 3.2.2	Yes, Section 4	Yes		Requirement satisfied.
O3 –SPECIFIC MONITORING REQUIREMENTS						
51	Minimum # of monitoring sites for O_3 [Note: should be supported by MSA ID, MSA population, DV, # monitoring sites, and # required monitoring sites][8]	App D, 4.1(a) and Table D-2	Yes, page 6	Yes		Requirement satisfied.
52	Identification of maximum concentration O_3 site(s)	App D 4.1 (b)	Yes, Section 4	Yes		Requirement satisfied.

[8] Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements. In addition, ozone monitors that do not meet traffic count/distance requirements to be neighborhood or urban scale (40 CFR 58 Appendix E, Table E-1) cannot be counted towards minimum monitoring requirements.

53	Sampling season for O_3 (Note: Waivers must be renewed annually. EPA expects agencies to submit re-evaluations of the relevant data each year with the ANP. EPA will then respond as part of the ANP response.)	58.10 (b)(4) App D, 4.1(i)	Yes, Section 4, page 35, and Appendix B; Letter from Stephen Deyo, DAQ to Jared Blumenfeld, EPA dated July 29, 2015	Insufficient Info	Appendix B includes an ozone season waiver letter from EPA dated March 8, 2012 which approves a shortened monitoring season at Apex and Mesquite sites. In last year's ANP review, EPA asked DAQ to include the information that continues to support a shortened ozone season and request renewal of the ozone season waiver. DAQ requested a renewal of this waiver on page 35 and attached the original approval letter in Appendix B. Additionally, in a letter from Stephen Deyo, DAQ to Jared Blumenfeld, EPA dated July 29, 2015, DAQ requested an ozone season waiver for the newly deployed SLAMS site at Indian Springs. EPA is unable to approve current waiver renewal requests for Apex and Mesquite. EPA notes that Indian Springs will continue to operate through the remainder of CY2015 and therefore, approval of the new waiver request for Indian Springs is not needed at this time. Please resubmit new waiver requests for these sites addressing the 2015 8-hour Ozone NAAQS.	DAQ has applied for non-summer O_3 monitoring waivers under separate cover. These waiver requests are based on the new O_3 NAAQS.

NO_2 –SPECIFIC MONITORING REQUIREMENTS						
54.	Minimum monitoring requirement for single near-road NO_2 monitor (in CBSA ≥ 1 million) by 1/1/2014	58.13(c)(3) App D 4.3.2	Yes	Yes	EPA approved the selection of the near-road site at Teddy and Rancho Drive per the site selection as part of the 2014 ANP. The site started monitoring in 2015. Please include exact date of operation commenced in next year's ANP.	Requirement satisfied.
55.	Minimum monitoring requirement for second near-road NO_2 monitor (in CBSA ≥ 2.5 million) by 1/1/2015	58.13(c)(4) App D 4.3.2	Yes	No	EPA approved the selection of the Central Fire Station near-road site as part of the 2014 ANP. This requirement, however, is not fully met until operation of monitor begins. As of June 2015, the site had not begun operation.	DAQ will begin operating the Central Fire Station near-road site in 2016.
56.	Minimum monitoring requirements for area-wide NO_2 monitor in location of expected highest NO_2 concentrations representing neighborhood or larger scale (operation required by January 1, 2013)	App D 4.3.3	Yes, page 7	Yes	One required, fulfilled by J.D. Smith and Sunrise Acres	Requirement satisfied.
57.	Minimum monitoring requirements for susceptible and vulnerable populations monitoring (aka RA40) NO_2 (operation required by January 1, 2013)	App D 4.3.4	Yes, page 7	Yes	One required, fulfilled by Sunrise Acres	Requirement satisfied.

58.	Identification of required NO_2 monitors as either near-road, area-wide, or vulnerable and susceptible population (aka RA40)	58.10 (b)(12)	Yes, page 7	Yes	Identified as Sunrise Acres	Requirement satisfied.
CO –SPECIFIC MONITORING REQUIREMENTS						
59.	Minimum monitoring requirement for near-road CO monitor (in CBSA ≥ 2.5 million) by 1/1/2015	58.13(e)(1) App D 4.2.1	NA	NA	Near-road monitoring for CO required by 1/1/2017	Requirement satisfied.
SO_2 –SPECIFIC MONITORING REQUIREMENTS						
60	Minimum monitoring requirements for SO_2 [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D 4.4	Yes, page 7	Yes		Requirement satisfied.

NCORE –SPECIFIC MONITORING REQUIREMENTS						
61	NCore site and all required parameters operational: year-round O_3, trace SO_2, trace CO, NO_y, NO, $PM_{2.5}$ mass, $PM_{2.5}$ continuous, $PM_{2.5}$ speciation, $PM_{10-2.5}$ mass, resultant wind speed at 10m, resultant wind direction at 10m, ambient temperature, relative humidity, and Pb at CBSAs ≥ 500,000.	58.10 (a)(3); Pb collocation App. A 3.3.4.3; $PM_{10-2.5}$ minimum monitoring App. D 4.8; $PM_{10-2.5}$ sampling schedule 58.10 (b)(4) 58.12(f) App D 4.8; $PM_{10-2.5}$ collocation App. A 3.3.6	Yes, pages 25-30	Yes		Requirement satisfied.
SITE OR MONITOR - SPECIFIC REQUIREMENTS (OFTEN INCLUDED IN DETAILED SITE INFORMATION TABLES)						
62	AQS site identification number for each site	58.10 (b)(1)	Yes, Section 4	Yes	Please provide AQS IDs for South Las Vegas Valley and Garrett Junior High in next year's ANP.	DAQ will provide AQS IDs for each existing and planned monitoring site. AQS IDs are not available for proposed monitoring sites.
63	Location of each site: street address and geographic coordinates	58.10 (b)(2)	Yes, Section 4	Yes		Requirement satisfied.
64	MSA, CBSA, CSA or other area represented by the monitor	58.10 (b)(8)	Yes, Section 4	Yes		Requirement satisfied.

65	Parameter occurrence code for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes, Section 4	Yes		Requirement satisfied.
66	Statement of purpose for each monitor	58.10 (a)(1)	Yes, Section 4	Yes		Requirement satisfied.
67	Basic monitoring objective for each monitor	App D 1.1 58.10 (b)(6)	Yes, Section 4	Yes		Requirement satisfied.
68	Site type for each monitor	App D 1.1.1	Yes, Section 4	Yes		Requirement satisfied.
69	Monitor type for each monitor, and Network Affiliation(s) as appropriate	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes, Section 4	Yes		Requirement satisfied.
70	Scale of representativeness for each monitor as defined in Appendix D	58.10(b)(6); App D	Yes, Section 4	Yes		Requirement satisfied.
71	Parameter code for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes, Section 4	Yes		Requirement satisfied.
72	Method code and description (e.g., manufacturer & model) for each monitor	58.10 (b)(3); App C 2.4.1.2	Yes, Section 4	Yes		Requirement satisfied.

73	Sampling start date for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes, Section 4	Incomplete	Please include exact start date of Teddy and Rancho and Central Fire Station sites.	Start dates provided for Teddy and Rancho and Central Fire Station sites (see table specific to Teddy-Rancho and Central Fire Station).
74	Distance of monitor from nearest road	App E 6	Yes	Yes	EPA notes that the following monitors were converted to middle scale: : • O_3 at Mesquite • NO_2 at Joe Neal	Requirement satisfied.
75	Traffic count of nearest road	App E	Yes, page 5 and Section 4	Yes		Requirement satisfied.
76	Groundcover	App E 3(a)	Yes, Section 4	Yes		Requirement satisfied.
77	Probe height	App E 2	Yes, Section 4	Yes		Requirement satisfied.
78	Distance from supporting structure	App E 2	Yes, Section 4	Insufficient Info	The proposed South Las Vegas and Garrett Junior High SLAMS PM_{10} sites list distance from supporting structure as 1.2 m (anticipated) and 1.5 m (anticipated), respectively. This distance should be >2 m.	The PM_{10} monitors at the south Las Vegas sites (Liberty High School and Nathanial Jones Park) and Garret Junior High School will be greater than 2 meters from their supporting structures.
79	Distance from obstructions on roof (horizontal distance to the obstruction and vertical height of the obstruction above the probe should be provided)	App E 4(b)	Yes, Section 4	Yes		Requirement satisfied.

80	Distance from obstructions not on roof (horizontal distance to the obstruction and vertical height of the obstruction above the probe should be provided)	App E 4(a)	Yes, Section 4	No, Insufficient Info	The JD Smith site does not meet App E 4(a). Please add obstruction height above probe to your description at the Indian Springs site.	DAQ is reassessing the JD Smith site based on Appendix E criteria. For Indian Springs, the obstruction height above probe measurement is not applicable because the probe is above obstruction.
81	Distance from the drip line of closest tree(s)	App E 5	Yes, Section 4	Yes		Requirement satisfied.
82	Distance to furnace or incinerator flue	App E 3(b)	Yes, Section 4	Yes		Requirement satisfied.
83	Unrestricted airflow (expressed as degrees around probe/inlet or percentage of monitoring path)	App E, 4(a) and 4(b)	Yes, Section 4	Yes		Requirement satisfied.
84	Probe material ($NO/NO_2/NO_y$, SO_2, O_3; For PAMS: VOCs, Carbonyls)	App E 9	Yes, Section 4	Yes		Requirement satisfied.
85	Residence time ($NO/NO_2/NO_y$, SO_2, O_3; For PAMS: VOCs, Carbonyls)	App E 9	Yes, Section 4	Yes		Requirement satisfied.

Public Comments on Annual Network Plan
Were comments submitted to the S/L/T agency during the public comment period?

No

If no, skip the remaining questions.
If yes:

- Were any of the comments substantive?
  - If yes, which ones?
  - Explain basis for determination if any comments were considered not substantive:
- Did the agency respond to the substantive comments?
  - If yes, was the response adequate?
- Do the substantive comments require separate EPA response (i.e., agency response wasn't adequate)?
- Are the sections of the annual network plan that received substantive comments approvable after consideration of comments?
  - If yes, provide rationale:

Appendix B

EPA Approvals

Ozone Season Waiver

Criteria Pollutant QAPP

NCore

NCore and Met QAPP Conditional

QMP Conditional

2015 Network Plan

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

FEB 29 2016

Mr. Phillip Wiker
Manager, Air Quality Monitoring
Clark County Department of Air Quality
4701 West Russell Road, Suite 200
Las Vegas, Nevada 89118

Dear Mr. Wiker:

This letter serves as an approval for your request dated February 8, 2016 for a waiver to suspend operation of three Clark County Air Quality Department (DAQ) State or local air monitoring stations (SLAMS) ozone sites (Apex – Air Quality System (AQS) ID 32-003-0022, Mesquite – AQS ID 32-003-0023, Indian Springs – AQS ID 32-003-7772) from October 1, 2015 through March 31, 2016 and October 1, 2016 through March 31, 2017. Per 40 CFR Part 58, Appendix D Section 4.1(i), monitoring agencies must have ozone season deviations approved by the U.S. Environmental Protection Agency (EPA), documented in the Annual Ambient Air Quality Monitoring Network Plan, and updated in EPA's AQS database. With this letter, EPA also re-affirms the past ozone season waiver dates (October-March) for the Apex and Mesquite monitoring sites in accordance with the March 8, 2012 EPA ozone season waiver approval letter. Please note that an updated request with updated 2016 data will be required for future ozone season waiver approvals after March 31, 2017.

The continuing record of data from DAQ sites shows a low probability that these sites would measure an exceedance of the 2015 8-hour Ozone National Ambient Air Quality Standard (NAAQS) during these winter months. The past five years of data show no exceedances of the 2015 8-hour Ozone NAAQS for ozone at any DAQ monitors during the months of October through March. In addition, DAQ will continue to operate ozone monitors at 9 sites throughout the waiver period. Please attach this approval letter and update the relevant monitor and site information in your next Annual Ambient Air Quality Monitoring Network Plan.

If you have any questions, please contact me at (415) 947-4534 or Jennifer Williams of my staff at (415) 972-3938. Thank you for your continued attention to detail and thorough data analyses.

Sincerely,

Meredith Kurpius
Manager, Air Quality Analysis Office

Printed on 100% Postconsumer Recycled Paper. Process Chlorine Free.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 9

75 Hawthorne Street
San Francisco, CA 94105-3901

January 12, 2015

Lewis Wallenmeyer, Director
Clark County, NV, Department of Air Quality
4701 W. Russell Road Suite 200
Las Vegas, NV 89118-2231

SUBJECT: Review of the Clark County Criteria Pollutant Quality Assurance Project Plan (EPA QA Office Document Control Number AIRP0323QV3)

Dear Mr. Wallenmeyer:

Thank you for submitting your Criteria Pollutant Quality Assurance Project Plan (QAPP) for ambient air monitoring of Particulate Matter (PM), Ozone (O_3), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), and Lead (Pb). U.S. EPA (EPA) has reviewed this revised document and is approving it for criteria pollutant monitoring. All previous concerns were addressed and their resolutions are attached. Several additional comments are included for your consideration.

This review was based on regulation and guidance provided in "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EAP QA/R-5, March 2001), "Guidance for the Data Quality Objectives Process (EPA QA/G-4, February 2006), and the QA Handbook for Air Pollution Measurement Systems, Volume II (EPA-454/b-13-003, May 2013).

If you have any questions regarding QA requirements for ambient air monitoring, please contact Mathew Plate, EPA Region 9 QA Office at (415) 972-3799.

Sincerely,

Eugenia McNaughton

Eugenia McNaughton, Ph.D.
Manager, Quality Assurance Office (MTS-3)
Management and Technical Services Division

Lewis Wallenmeyer
January 12, 2015
Clark County Criteria Pollutant QAPP

Major Concerns

1. **[General, Method Quality Objectives/Quality Control; Section A7.4, Data Quality] Details of quality control measures and criteria are not fully summarized in this QAPP and the associated standard operating procedures (SOPs). In addition to references to EPA regulation and guidance, quality control criteria should be specified. This QAPP and the associated SOPs should be stand-alone documents describing quality control measures and criteria undertaken and that can easily be referenced by the user. These documents should also substantiate that the program is following and is committed to following appropriate quality control. Clark County Department of Air Quality (DAQ) could establish most of these by including the appropriate tables, modified as needed, from the *QA Handbook for Air Pollution Measurement Systems, Volume II*, Appendix D, and referencing these in the QAPP.**

   This concern was addressed. Quality control is summarized in the templates in Appendix C. Please note that the Table of Contents was not updated and still lists Appendix C as "LEADS Data Collection Model." It is also recommended that Section D3 (Data Validation) include a reference to Appendix C.

2. **[General, Data Handling, Management, and Validation] Throughout this QAPP and associated SOPs, clear instructions are given on how quality control information and data processed by the Leading Environmental Analysis and Display System (LEADS) are handled. However, data collected outside the LEADS (i.e., manual filter data) and quality control to support data collected by the LEADS (i.e., automated PM flow/temperature/pressure checks and automated particulate and gaseous performance audit data) are not well defined in this QAPP and the associated SOPs. This plan should explain how this information is managed, validated, and associated to the related data in the LEADS pertaining to data review, data validation, and uploading into AQS.**

   This concern was addressed. Information was added to the QAPP that clarifies data management. DAQ should ensure that associated SOPs reflect non-LEADS data management when they are routinely updated.

3. **[Section C1.2, Performance Evaluations; SOP 101, SOP for Quality Assurance Field Audits and Corrective Action Requests] Section C1.2 has limited information on the type, frequency, and extent of performance audits conducted by the DAQ independent auditor. While a reference to regulatory requirements is provided, the QAPP and associated performance audit SOP should include specifics on these audits such that conformance to regulatory requirements can be confirmed. At a minimum, the QAPP should include a discussion accompanied by a table listing the audits performed, measurements collected during each audit, frequency of audits, information on the equipment used to perform audits, and the criteria for evaluating audit results. The associated SOP should include step-by-step**

performance audit procedures for each type of audit performed with specific requirements for each instrument.

This concern was addressed. Section C1.2 was expanded to include details of the performance evaluation program.

4. **[Section B7.2, Gas Analyzer Calibration; Table 12, Gas Analyzer QC Checks; Appendix F, Section 3.0, Calibration and Span Check Sequences and Calculating Pollutant Concentration Generated by the Calibration System] The low calibration levels and precision levels used are programed into the LEADS to be conducted at 18% of full scale. This translates to 9 ppm for carbon monoxide (CO) and 0.09 ppm for nitrogen dioxide (NO2) and ozone (O_3). For O_3 calibrations, this concentration is above the 8-hour NAAQS and should be lowered so that the calibration range brackets the NAAQS concentration (some Region 9 agencies have a low calibration point for O_3 around 0.050 ppm). Additionally it is recommended that these low calibration / precision point levels be lowered for each of these gaseous pollutants to be consistent with 40 CFR Part 58, Appendix A, Section 3.2.1, which states, "*The QC check gas [precision] concentration selected should be related to the routine concentrations normally measured at sites within the monitoring network in order to appropriately reflect the precision and bias at these routine concentration ranges.*"**

   This concern was addressed. DAQ lowered the low level calibration and precision concentrations. It is recommended that DAQ evaluate potential data impacts that may result if concentrations higher than EPA's decision thresholds are used. This could be done by reviewing low concentration audit data, including National Performance Audit Program (NPAP) audit results.

5. **[Section A9.2, Records Management] This section states that exposed, low-volume filters will be archived for one year or longer. However 40 CFR Part 58, Section 58.16, directs filters to be stored for a minimum of 5 years, the first 12 months in "cold storage."**

   This concern was addressed. The plan clarifies that filters are stored frozen for one year and for four years after that in a controlled environment.

Other Concerns

1. **[Section A4, Project Task Organization; Figure 1, DAQ Monitoring Division Organization Chart] The organizational structure defined in Section A4 and in Figure 1 should be updated to reflect the current organization and staffing changes. Figure 1 is not consistent with the DAQ organizational chart that is currently on the Departmental website and both of these are inconsistent with the organizational chart provided in the NCore and Meteorology QAPP submitted to EPA. If the DAQ has a project-specific organization that is different than the departmental organization this should be discussed in the QAPP.**

This concern was partially addressed. The chart provided reflects the current organization of DAQ. However, the plan states that this is subject to change. For quality management purposes, having a stable organization structure helps provide data consistency. During the next scheduled technical systems audit (TSA), EPA will evaluate DAQ's updated organizational structure to determine whether the changes have impacted data quality or consistency.

2. **[Section A6.2; Air Quality Monitoring Network] The discussion of collocated monitoring notes that there are two continuous $PM_{2.5}$ Federal Equivalent Method (FEM) monitors collocated with filter-based Federal Reference Method (FRM) monitors. However, only one of the continuous FEM monitors is designated as a primary monitor in the QAPP. This is inconsistent with EPA's $PM_{2.5}$ collocation requirements and also does not match what is presented in the Clark County 2014 Network Design Plan. It is recommended that DAQ re-evaluate $PM_{2.5}$ collocation requirements and update the QAPP and Network Design Plan accordingly.**

   This concern was addressed. The plan clarifies that FEM monitor at the Jerome Mack site is not a primary FEM and it therefore not officially collocated.

3. **[Section A7.1, Developing Data Quality Objectives] This section should introduce information inputs and boundaries that require different quality assurance approaches. Specifically, temporal boundaries should be discussed. NAAQS decisions require quarterly and annual data reporting requirements and involve evaluating up to three years of data. Real time and AQI decisions require that data have hourly reporting requirements and decisions are made on an hourly and daily basis. These different boundaries/requirements lead to the different quality assurance steps integrated into DAQ's monitoring system.**

   This concern was addressed. A reference to Section A7.2 was added to Section A7.1 and some additional information on temporal boundaries was added to Section A7.2. In addition, the QAPP and SOPs define clearly how quality is managed given the different time scales.

4. **[Section A8, Special Training/Certification] Section A8 should include training on this QAPP and relevant SOPs for DAQ staff. It is recommended that this training be tracked for each staff person and updated periodically.**

   This concern was addressed. Information on training, including training on DAQ QA plans and SOPs has been added to Section A8.

5. **[Section B9, Non-direct Measurements] This section should include a provision for evaluating data quality if an occasion arises where secondary data are used.**

   This concern was addressed. Language was added that commits the organization to further evaluation prior to using secondary data.

Lewis Wallenmeyer
January 12, 2015
Clark County Criteria Pollutant QAPP

Additional Comments

1. [Section A6.2, Air Quality Monitoring Network] Some of the language in this section is outdated, referencing a future near-road station in 2014 and the 2014 Annual Network Plan as a future document.

2. [B3.1, Federal Reference Method Filters] The filter holding time, "37 days," should read "30 days" in Section B3.1. It is correct in other parts of the QAPP and related SOPs.

3. [Table 11, MQO for QC Verification and Span Checks] This table indicates that annual multipoint checks are for temperature and pressure. Other parts of the plan indicate that multipoint flow is also conducted. Please note that 40 CFR Part 50 Appendix L, Section 9.1.1 states that for $PM_{2.5}$ "multipoint calibration and single-point verification of the sampler's flow rate measurement device must be performed periodically."

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

March 27, 2014

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Mike Sword
Engineering Manager
Clark County Department of Air Quality
4701 W. Russell Road, Suite 200
Las Vegas, Nevada 89118

Dear Mr. Sword:

This letter transmits our approval of Clark County's NCore station at the Jerome Mack site, AQS # 32-003-0540, as required by the Ambient Air Monitoring Regulations. According to these rules (see 40 CFR 58.11(c)), NCore network design and changes must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering your proposed NCore monitoring station, we worked with your Regional Office on a review of your annual monitoring network plan and an assessment of the proposed location and characteristics of the area to be monitored. Region 9 staff inspected the Jerome Mack site and location in March of 2011. Region 9 reported to us that the site meets all siting criteria. Also, the location appears to be consistent with the network design criteria for urban NCore stations. Therefore, after careful consideration of your proposal, we are pleased to approve this station as part of the NCore network.

In reviewing the reporting of data and metadata information identified in the AQS database for the Jerome Mack site, we see that your agency is successfully measuring and reporting all the required NCore parameters for this site. Additionally, we note that your agency has been successfully reporting data since the required beginning of the NCore program in January of 2011.

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Thank you for your program's efforts in developing the NCore station, establishing the site, and successfully reporting the data for all the required parameters. For questions you may contact Tim Hanley at hanley.tim@epa.gov and 919-541-4417.

Sincerely,

Richard A. Wayland
Director
Air Quality Assessment Division

cc: Matthew Lakin, EPA Region 9
Meredith Kurpius, EPA Region 9

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 9

75 Hawthorne Street
San Francisco, CA 94105-3901

October 30, 2015

Lewis Wallenmeyer, Director
Clark County, NV, Department of Air Quality
4701 W. Russell Road Suite 200
Las Vegas, NV 89118-2231

SUBJECT: Review of the Clark County Quality Assurance Project Plan for Meteorology and NCORE Air Quality Monitoring (EPA QA Office Document Control Number AIRP0324QV2)

Dear Mr. Wallenmeyer:

Thank you for submitting your Quality Assurance Project Plan (QAPP) for Meteorology and NCORE Air Quality Monitoring which addresses the following measurements: ambient air monitoring of particulate matter (including fine and coarse fractions and speciated particulate); trace sulfur dioxide (SO_2); total reactive nitrogen oxides (NOy); trace carbon monoxide (CO); lead (Pb); wind speed; wind direction; air temperature; barometric pressure; precipitation; and relative humidity. U.S. EPA (EPA) has reviewed this document and is conditionally approving it for monitoring. The Department should continue to improve, complete, and clarify their procedural instructions and documentation, and several tasks specific to NCORE monitoring should be clarified. Please respond to the outstanding issues by January 15, 2016 so that EPA may remove "conditional" from the approval.

This review was based on regulation and guidance provided in "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EAP QA/R-5, March 2001), "Guidance for the Data Quality Objectives Process (EPA QA/G-4, February 2006), and the QA Handbook for Air Pollution Measurement Systems, Volume II (EPA-454/b-13-003, May 2013).

If you have any questions regarding QA requirements for ambient air monitoring, please contact Mathew Plate, EPA Region 9 QA Office at (415) 972-3799.

Sincerely,

Eugenia McNaughton

Eugenia McNaughton, Ph.D.
Manager, Quality Assurance Office (EMD 2-2)
Scientific Services Branch
Environmental Management Division

Concerns

1. [Standard Operating Procedures (SOPs)] Clark County Department of Air Quality (DAQ) has changed how procedures are documented recently. These changes are not fully implemented or reflected in the QAPPs. SOPs have been made more generic with procedural details presented in "Guides," "Schedules," and "Trainings." The following should be completed:
    a. Include a section in the QAPP that discusses how these documents are used.
    b. Finalize the documents, and assign all documents categories, dates, and version numbers.
    c. Evaluate all procedures where documentation is needed to clarify, instruct, or document how DAQ carries out its work. Incorporate them into appropriate documents (See Concern 2 and 4).
    d. Where supporting SOPs and guides reference other documents, review the references to make sure that they are updated to avoid confusion.
    e. Consider developing a guide and/or SOP that summarizes all the SOPs, Guides, Schedules, and Trainings currently available. This document would be updated every time a new document or revision is created.

2. [General, Procedures for Trace Sulfur Dioxide(SO_2), Carbon Monoxide(CO) and Reactive Nitrogen Oxides(NOy)] This QAPP and its supporting documents do not include sufficient information about the operation of the trace level instruments used at the NCORE monitoring station. A discussion of trace calibration, quality control, and audit levels and special requirements for the NCORE network should be included in the QAPP, existing, and/or new documents. Some examples include:
    a. Quality control criteria exceptions for trace precision and audit levels.
    b. Detection limit evaluations.
    c. Evaluation of NOy converter efficiency, including testing with gases other than NO_2.
    d. Special Zero Air requirements for NCORE monitoring.
    e. Special residence time requirements for NOy.
    f. Special requirements for thermal stability of NCORE instruments (especially CO).
    g. Specific forms and/or electronic record used for performing NCORE operations.

3. [QAPP, Table 3, Precision and Bias MQO] Table 3 presents precision and bias method quality objectives (MQOs) for NCORE monitoring. These are also presented in DAQ's MQO Guide (4/23/15). Because SO_2 and CO are being monitored using Federal Equivalent Method (FEM) monitors, the national MQOs should be applied to these methods (10% instead of 15%). However exceptions to this requirement may be made at trace level concentrations.

4. [QAPP, Table 12, MQO for QC Verification Checks of Air Quality Analyzers and Samplers] Table 12 appears to be a carryover from the criteria pollutant QAPP. It should be updated to reflect NCORE pollutants and criteria. For example, this table does not address NOy and SO_2.

5. [General, Forms and Documentation] The SOPs and Guides provided include instructions for network operations. However the instructions are not always clear as to how activities are documented. There are only limited examples of the forms or electronic systems used to document activities. This information should be expanded in the supporting documentation and in operational instructions.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

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November 28, 2012

Mr. Lewis Wallenmeyer, Director
Clark County Department of Air Quality
4701 West Russell Road, Suite 200
Las Vegas, NV 89118-2231

SUBJECT: Quality Management Plan (QMP) for the Clark County Department of Air Quality, Las Vegas, Nevada (QA Program Document Control Number AIRP0279PV1)

Dear Mr. Wallenmeyer:

Thank you for submitting the Quality Management Plan for the Clark County Department of Air Quality (CCDAQ), dated September 28, 2012, as well as a Response to Comments (RTC) Letter and Quality Management Plan Review Checklist, all prepared by the Engineering Division. The QMP is a revised document prepared in response to Findings provided in EPA's April 2, 2010, Technical Systems Audit (TSA) Report. The TSA Findings contained specific comments on Clark County's QMP, which were included in the RTC and used as the basis for this review. In addition, the Quality Assurance Office and Air Division reviewed the subject document based on "EPA Requirements for Quality Management Plans," EPA R-2, December, 2001 (EPA/240/B-01/002).

The QMP addresses most of the concerns identified in the TSA QMP review and is conditionally approved by the Quality Assurance Office and the Air Quality Analysis Office. Additional information is needed regarding the subjects of Assessments, Validation, Data Certification and Data Quality Objectives (DQOs). Elements that should be expanded or strengthen are identified below. Work also should continue on the revision to the supporting Quality Assurance Project Plans/Quality Control and Assurance System (QAPPs/QCAS) documents identified in Section 1.2, Scope, which have not yet been approved by EPA.

If you have any questions concerning this memorandum, please call David Taylor of the QA Office at (415) 972-3803 or by email at Taylor.David@epa.gov.

Sincerely yours,

Eugenia McNaughton

Eugenia McNaughton, Ph.D., Manager
Quality Assurance Office

Clark County DAQ QMP1.docx

Concerns

1. [Section 1.1.2, Assessment] Information regarding assessments have been added to several parts of the plan, but there is no detailed discussion of this topic. The EPA R-2 guidance includes a section on "Assessment and Response." It is recommended that such a section be added. Section 1.7, Continuous Improvement, satisfactorily defines "Assessment" in generic terms, but the example provided in this section is limited. The QMP should provide a more comprehensive perspective on CCDAQ's assessment program. The TSA Findings stated that both Assessment and Response (including internal and EPA technical and performance assessments) were to be described. In addition, Section 6 makes reference to participation in EPA's National Performance Audit Program (NPAP) and the Particulate Matter Performance Evaluation Program (PEP), but the frequency and nature of this participation and of internal performance audits should be described in greater detail. The response program should also be discussed. Note that the technical aspects of the program, including acceptance criteria, etc., can be deferred to the QA Program Plan or QA Project Plan level. A statement should be included to this effect.

2. [Section 10.2.2] The QMP states that the Data Specialist validates data by using the validation function in LEADS to review collected data for errors flags, outliers, and statistical anomalies. He/she may also review electronic logs, instrument operation metadata, and instrument verifications and calibrations, or discuss data with the QC Technician as part of the validation process. If the Data Specialist invalidates data, all changes are logged by LEADS with comments and error codes. The QMP should discuss the role of the QA Manager in the data validation process. The QMP should also include a statement that a more detailed discussion of validation can be found in the QA Program Plan or QA Project Plans for the different pollutants, or in appropriate Standard Operating Procedures. For example, the latter documents would discuss CCDAQ's criteria with respect to the acceptance, flagging, or rejection of data.

3A. [Section 3.0, User Requirements] This section indicates that EPA is the primary data user for air monitoring data, but does not state that it is the exclusive data user. If CCDAQ will also be using the data for its own internal purposes, then the discussion of DQOs should be expanded to discuss how they will be developed or indicate where this discussion will be found (for example, in a QA Program Plan or pollutant specific QAPPs).

3B. The statement that "planning and response efforts work together to reconcile reported data and ensure that they satisfy all EPA requirements which 40 CFR 58 defines as DQOs," is confusing. The DQOs defined in 40 CFR 58 were developed as a result of a systematic planning process. The data generated through monitoring must be reconciled with these DQOs before they can be certified and entered into AQS. It is recommended that the statement be rephrased.

4. [Section 5.0, User Requirement Reconciliation (Quality Control)] This section makes reference to QAPP/QCAS that are used in planning. It is recommended that the list of QAPP/QCAS documents provided in Section 1.2 be included here.

5A. [Section 9.1, Data Certification] The discussion of data certification should be expanded to describe the review and validation steps that CCDAQ takes before data are certified.

5B. The Quality Systems Manager is not shown in either of the organization charts in Section 4.1, Organization. Is this the Engineering Division Manager? This should be clarified.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

OCT 29 2015

Mr. Phillip Wicker
Manager, Air Quality Monitoring
Clark County Department of Air Quality
4701 West Russell Road, Suite 200
Las Vegas, Nevada 89118

Dear Mr. Wicker:

Thank you for your submission of the Clark County Department of Air Quality's (DAQ's) *Annual Monitoring Network Plan Report* in June 2015. We have reviewed the submitted document based on the requirements set forth under 40 CFR 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below. With this plan approval, we also formally approve the following system modifications: SLAMS O_3 monitoring at Indian Springs (AQS ID: 32-003-7772), new SLAMS PM_{10} monitoring at South Las Vegas Valley (AQS ID: TBD), and new SLAMS O_3 and PM_{10} monitoring at Garrett Junior High (AQS ID: TBD).

Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information, as described, does not meet the requirements as specified in 40 CFR 58.10 and the associated appendices. EPA Region 9 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices. Accordingly, the first enclosure (*A. Annual Monitoring Network Plan Items where EPA is Not Taking Action*) provides a listing of specific items of your agency's annual monitoring network plan where EPA is not taking action. The second enclosure (*B. Additional Items Requiring Attention*) is a listing of additional items in the plan that EPA wishes to bring to your agency's attention.

The third enclosure (*C. Annual Monitoring Network Plan Checklist*) is the checklist EPA used to review your plan for overall items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements.

The first two enclosures highlight a subset of the more extensive list of items reviewed in the third enclosure. All comments conveyed via this letter (and enclosures) should be addressed (through corrections within the plan, additional information being included, or discussion) in next year's annual monitoring network plan.

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We also want to thank you for your timely submission of the 2015 *Five-Year Network Assessment* for the Clark County DAQ, as required under 40 CFR Part 58.10. We recognize that preparing the network assessment was a significant project and we appreciate your effort.

The recently revised ozone NAAQS, finalized on October 1, 2015, includes language that revokes all existing seasonal ozone waivers upon the effective date of the final rule.. EPA Region 9 will consider all previously approved ozone season waivers effective until December 31, 2015. In advance of the 2016 ozone monitoring season (January – December), EPA Region 9 recommends that agencies seeking new ozone waivers for the 2015 8-hour Ozone NAAQS of 0.070 ppm submit waiver requests no later than December 1, 2015.

If you have any questions regarding this letter or the enclosed comments, please feel free to contact Meredith Kurpius at (415) 947-4534 or Michael Flagg at (415) 972-3372.

Sincerely,

Gretchen Busterud
Acting Deputy Director, Air Division

Enclosures:

A. Annual Monitoring Network Plan Items where EPA is Not Taking Action
B. Additional Items Requiring Attention
C. Annual Monitoring Network Plan Checklist

cc (via email):

Lewis Wallenmeyer, DAQ
Yousaf Hameed, DAQ

A. Annual Monitoring Network Plan Items where EPA is Not Taking Action

We are not acting on the portions of annual network plans where either EPA Region 9 lacks the authority to approve specific items of the plan, or EPA has determined that a requirement is either not met or information in the plan is insufficient to judge whether the requirement has been met.

- System modifications (e.g., site closures or moves) are subject to approval per 40 CFR 58.14(c). Information provided in the plan was insufficient for EPA to approve the system modifications listed in the plan per the applicable requirement. Therefore, we are not acting on the following items as part of this year's annual network plan (see Checklist Row 3):
    - EPA is not approving the request to relocate SLAMS monitors at Sunrise Acres and JD Smith sites to a new location.
    - EPA is also unable to approve the PM_{10} monitor deployment at Walter Johnson due to insufficient information on monitor type (i.e. SLAMS, SPM, etc.).

- EPA identified items in your agency's annual monitoring network plan where a requirement was not being met or information in the plan was insufficient to judge whether the requirement was being met based on 40 CFR 58.10 and the associated appendices. Therefore, we are not acting on the following items:

Item	Checklist Row	Issue
Distance between QA collocated monitors	16	Not meeting requirement
Sampling season for O_3	53	Insufficient information to judge
Minimum monitoring requirement for second near-road NO_2 monitor	55	Not meeting requirement
Distance from supporting structure	78	Insufficient information to judge
Distance from obstructions not on roof	80	Not meeting requirement and insufficient information to judge

Additional information for each of these items may be found for the row listed in column 2, in the third enclosure (*C. Annual Monitoring Network Plan Checklist).*

B. Additional Items Requiring Attention

- [Item 9] Two near-road sites were approved by EPA as part of the 2014 ANP. Sites were required to begin operation by January 1, 2015. DAQ notes the Teddy and Rancho site started monitoring NO_2 in 2015 (page 45) and that the Central Fire Station site is anticipated to begin monitoring in 2015 (page 15). Please include exact start dates in next year's ANP.

- [Items 17 and 18] Please list flow rates in next year's ANP.

- [Item 73] Please include exact start date of Teddy and Rancho and Central Fire Station sites.

- [Item 62] Please provide AQS IDs for South Las Vegas Valley and Garrett Junior High in next year's ANP.

C. ANNUAL MONITORING NETWORK PLAN CHECKLIST
(Updated October 1, 2015)

Year: 2015
Agency: Clark County DAQ

40 CFR 58.10(a)(1) requires that each Annual Network Plan (ANP) include information regarding the following types of monitors: SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations.

40 CFR 58.10(a)(1) further directs that, "The plan shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable." On this basis, review of the ANPs is based on the requirements listed in 58.10 along with those in Appendices A, C, D, and E.

EPA Region 9 will not take action to approve or disapprove any item for which Part 58 grants approval authority to the Administrator rather than the Regional Administrators, but we will do a check to see if the required information is included and correct. The items requiring approval by the Administrator are: PAMS, NCore, and Speciation (STN/CSN).

Please note that this checklist summarizes many of the requirements of 40 CFR Part 58, but does not substitute for those requirements, nor do its contents provide a binding determination of compliance with those requirements. The checklist is subject to revision in the future and we welcome comments on its contents and structure.

Key:

White	meets the requirement
Yellow	requirement is not met, or information is insufficient to make a determination. Action requested in next year's plan or outside the ANP process (items listed in Enclosure A).
Green	item requires attention in order to improve next year's plan (items listed in Enclosure B).

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes
GENERAL PLAN REQUIREMENTS					
1.	Submit plan by July 1st	58.10 (a)(1)	Yes	Yes	Plan was received June 3, 2015
2.	30-day public comment / inspection period[5]	58.10 (a)(1), 58.10 (a)(2)	Yes; transmittal letter	Yes	No comments were received. Note, public inspection dates listed in the ANP on page 1 are incorrect.
3.	Modifications to SLAMS network – case when we are not approving system modifications	58.10 (a)(2) 58.10 (b)(5) 58.10(e) 58.14	Yes, page 70	Insufficient Info	EPA is not approving the request to close criteria pollutant monitoring at Sunrise Acres and JD Smith and redeploy in a new location (June 2016). Please work with EPA on this request. EPA is also unable to approve the PM_{10} monitor deployment at Walter Johnson due to insufficient information on monitor type (i.e. SLAMS, SPM, etc.).
4.	Modifications to SLAMS network – case when we are approving system modifications per 58.14	58.10 (a)(2) 58.10 (b)(5) 58.10(e) 58.14	Yes	Yes	• Redeploy O_3 at Indian Springs as SLAMS, see Row 80 below. • New SLAMS PM_{10} monitoring at South Las Vegas, see Row 78 below • New SLAMS O_3 and PM_{10} at Garrett Junior High, see Rows 78 below.
5.	Does plan include documentation (e.g., attached approval letter) for system modifications that have been approved since last ANP approval?		NA	NA	None
6.	Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal	58.10 (b)(5)	Yes, pages 58-59	Yes	

[1] Response options: NA (Not Applicable), Yes, No, Incomplete, Incorrect. The responses "Incomplete" and "Incorrect" assume that some information has been provided.
[2] To the best of our knowledge.
[3] Assuming the information is correct
[4] Response options: NA (Not Applicable) – [reason], Yes, No, Insufficient to Judge.
[5] The affected state or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes
7.	A plan for establishing a near-road $PM_{2.5}$ monitor (in CBSAs ≥ 2.5 million) by 1/1/2015 **(plan was due July 1, 2014)**	58.10(a)(8)(i)	Yes, page 73	Yes	DAQ anticipates having this monitor operational by January 1, 2017, as required.
8.	A plan for establishing a near-road CO monitor (in CBSAs ≥ 2.5 million) by 1/1/2015 **(plan was due July 1, 2014)**	58.10(a)(7) 58.13(e)(1)	Yes, page 73	Yes	DAQ anticipates having this monitor operational by January 1, 2017, as required.
9.	NO_2 plan for establishment of 2nd near-road monitor by 1/1/2015 **(plan was due July 1, 2014)**	58.10 (a)(5)(iv)	Yes	Yes	Two near-road sites were approved by EPA as part of the 2014 ANP. Sites were required to begin operation by January 1, 2015. DAQ notes the Teddy and Rancho site started monitoring NO_2 in 2015 (page 45) and that the Central Fire Station site is anticipated to begin monitoring in 2015 (page 15). Please include exact start dates in next year's ANP.
10.	Precision/Accuracy reports submitted to AQS	58.16(a); App A, 1.3 and 5.1.1	Yes, page 5	Yes	
11.	Annual data certification submitted	58.15 App. A 1.3	Yes, page 5	Yes	
12.	Statement that SPMs operating an FRM/FEM/ARM that meet Appendix E also meet either Appendix A or an approved alternative. Documentation for any Appendix A approved alternative should be included.[6]	58.11 (a) (2)	Yes, Appendix A, page A-10		Indian Springs and Logandale meet Appendix A and E, Spring Mountain Youth Camp is not operating as an FEM. Please include this information in the body of next year's ANP.
13.	SPMs operating FRM/FEM/ARM monitors for over 24 months are listed as comparable to the NAAQS or the agency provided documentation that requirements from Appendices A, C, or E were not met.[7]	58.20(c)	NA	NA	

[6] Alternatives to the requirements of appendix A may be approved for an SPM site as part of the approval of the annual monitoring plan, or separately.
[7] This requirement only applies to monitors that are eligible for comparison to the NAAQS per 40 CFR §§58.11(e) and 58.30.

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes
14.	For agencies that share monitoring responsibilities in an MSA/CSA: this agency meets full monitoring requirements or an agreement between the affected agencies and the EPA Regional Administrator is in place	App D 2(e)	NA	NA	
GENERAL PARTICULATE MONITORING REQUIREMENTS (PM_{10}, $PM_{2.5}$, Pb-TSP, Pb-PM_{10})					
15.	Designation of a primary monitor if there is more than one monitor for a pollutant at a site.	Need to determine collocation	Yes, Section 4	Yes	
16.	Distance between QA collocated monitors (Note: waiver request or the date of previous waiver approval must be included if the distance deviates from requirement.)	App. A 3.2.5.6 and 3.2.6.3	Yes, Section 4	No	Distance between QA collocated monitors: 3.7m at Jerome Mack ($PM_{2.5}$ FRMs) 4.6m at Sunrise Acres ($PM_{2.5}$ FRM and FEM) - Samplers measuring the same pollutant to fulfill QA collocation requirements should be between 1-4 m for lovol and 2-4m for highvol instruments.
17.	For low volume PM instruments (flow rate < 200 liters/minute), all other PM instruments are > 1 m from the lovol. If no, list distance (meters) and instruments.	App E	Yes, Section 4	Yes	Please list flow rates in next year's ANP
18.	For high volume PM instruments (flow rate > 200 liters/minute), all other PM instruments are > 2m from the hivol. If no, list distance (meters) and instruments.	App E	Yes, Section 4	Yes	Please list flow rates in next year's ANP
$PM_{2.5}$ –SPECIFIC MONITORING REQUIREMENTS					
19.	Document how states and local agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor.	58.10 (c)	Yes, pages 58-59 and 73	Yes	

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes
20.	Identification of any $PM_{2.5}$ FEMs and/or ARMs not eligible to be compared to the NAAQS due to poor comparability to FRM(s) (Note 1: must include required data assessment.) (Note 2: Required SLAMS must monitor $PM_{2.5}$ with NAAQS-comparable monitor at the required sample frequency.)	58.10 (b)(13) 58.11 (e)	NA	NA	None requested
21.	Minimum # of monitoring **sites** for $PM_{2.5}$ [Note 1: should be supported by MSA ID, MSA population, DV, # monitoring sites, and # required monitoring sites] [Note 2: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D, 4.7.1(a) and Table D-5	Yes, page 6	Yes	
22.	Requirements for continuous $PM_{2.5}$ monitoring (number of monitors and collocation)	App D 4.7.2	Yes, page 6	Yes	
23.	FRM/FEM/ARM $PM_{2.5}$ QA collocation	App A 3.2.5	Yes, page 9	Yes	
24.	$PM_{2.5}$ Chemical Speciation requirements for official STN sites	App D 4.7.4	NA	NA	
25.	Identification of sites suitable and sites not suitable for comparison to the annual $PM_{2.5}$ NAAQS as described in Part 58.30	58.10 (b)(7)	Yes, Section 4	Yes	
26.	Required $PM_{2.5}$ sites represent area-wide air quality	App D 4.7.1(b)	Yes, Section 4	Yes	
27.	For $PM_{2.5}$, within each MSA, at least one site at neighborhood or larger scale in an area of expected maximum concentration	App D 4.7.1(b)(1)	Yes, Section 4	Yes	Sunrise Acres is maximum concentration site
28.	Minimum monitoring requirement for near-road $PM_{2.5}$ monitor (in CBSA $\geq$ 2.5 million) by 1/1/2015	58.13(f)(1) App D 4.7.1(b)(2)	NA	NA	$PM_{2.5}$ near road monitoring will be required January 1, 2017
29.	If additional SLAMS $PM_{2.5}$ is required, there is a site in an area of poor air quality	App D 4.7.1(b)(3)	Yes, Section 4	Yes	J.D. Smith and Jerome Mack fulfill this requirement
30.	States must have at least one $PM_{2.5}$ regional background and one $PM_{2.5}$ regional transport site.	App D 4.7.3	Yes, Section 4	Yes	Jean is a background and transport site

	ANP requirement	Citation within 40 CFR 58	Was the information submitted?[1] If yes, page #s. Flag if incorrect[2]?	Does the information provided[3] meet the requirement?[4]	Notes
31.	Sampling schedule for $PM_{2.5}$ - applies to year-round and seasonal sampling schedules (note: date of waiver approval must be included if the sampling season deviates from requirement)	58.10 (b)(4) 58.12(d) App D 4.7 EPA flowchart	Yes, Section 4	Yes	
32.	Frequency of flow rate verification for manual $PM_{2.5}$ monitors audit	App A 3.3.2	Yes, Section 4	Yes	
33.	Frequency of flow rate verification for automated $PM_{2.5}$ monitors audit	App A 3.2.3	Yes, Section 4	Yes	
34.	Dates of two semi-annual flow rate audits conducted in **CY2014** for $PM_{2.5}$ monitors	App A, 3.2.4 and 3.3.3	Yes, Section 4	Yes	
PM_{10} –SPECIFIC MONITORING REQUIREMENTS					
35.	Minimum # of monitoring sites for PM_{10}	App D, 4.6 (a) and Table D-4	Yes, page 7	Yes	
36.	Manual PM_{10} method collocation (note: continuous PM_{10} does not have this requirement)	App A 3.3.1	NA	NA	All PM_{10} monitors are continuous
37.	Sampling schedule for PM_{10}	58.10 (b)(4) 58.12(e) App D 4.6	Yes, Section 4	Yes	All monitors are continuous
38.	Frequency of flow rate verification for manual PM_{10} monitors audit	App A 3.3.2	NA	NA	All monitors are continuous
39.	Frequency of flow rate verification for automated PM_{10} monitors audit	App A 3.2.3	Yes, Section 4	Yes	
40.	Dates of two semi-annual flow rate audits conducted in **CY2014** for PM_{10} monitors	App A, 3.2.4 and 3.3.3	Yes, Section 4	Yes	The dates for semi-annual flow audits at the Boulder City and Paul Meyer are technically not within the recommended 5-7 month range, but because the audits only missed this range by 5 and 1 day respectively, EPA believes these audits to meet the requirement.

Pb –SPECIFIC MONITORING REQUIREMENTS					
41.	Minimum # of monitors for non-NCore Pb [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D 4.5 58.13(a)	Yes, page 8	Yes	None required
42.	Pb collocation: for non-NCore sites	App A 3.3.4.3	NA	NA	
43.	Any source-oriented Pb site for which a waiver has been granted by EPA Regional Administrator	58.10 (b)(10)	NA	NA	
44.	Any Pb monitor for which a waiver has been requested or granted by EPA Regional Administrator for use of Pb-PM_{10} in lieu of Pb-TSP	58.10 (b)(11)	NA	NA	
45.	Designation of any Pb monitors as either source-oriented or non-source-oriented	58.10 (b)(9)	Yes, pages 8, 25-30	Yes	Only NCore Pb is required
46.	Sampling schedule for Pb	58.10 (b)(4) 58.12(b) App D 4.5	Yes, page 27	Yes	1:6
47.	Frequency of flow rate verification for Pb monitors audit	App A 3.3.4.1	Yes, page 29	Yes	Performed monthly
48.	Dates of two semi-annual flow rate audits conducted in **CY2014** for Pb monitors	App A 3.3.4.1	Yes, page, 30	Yes	One performed each quarter of 2014
GENERAL GASEOUS MONITORING REQUIREMENTS					
49.	Frequency of one-point QC check (gaseous)	App. A 3.2.1	Yes, Section 4	Yes	
50.	Date of Annual Performance Evaluation (gaseous) conducted in **CY2014**	App. A 3.2.2	Yes, Section 4	Yes	
O_3 –SPECIFIC MONITORING REQUIREMENTS					
51.	Minimum # of monitoring sites for O_3 [Note: should be supported by MSA ID, MSA population, DV, # monitoring sites, and # required monitoring sites][8]	App D, 4.1(a) and Table D-2	Yes, page 6	Yes	
52.	Identification of maximum concentration O_3 site(s)	App D 4.1 (b)	Yes, Section 4	Yes	

[8] Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements. In addition, ozone monitors that do not meet traffic count/distance requirements to be neighborhood or urban scale (40 CFR 58 Appendix E, Table E-1) cannot be counted towards minimum monitoring requirements.

53.	Sampling season for O_3 (Note: Waivers must be renewed annually. EPA expects agencies to submit re-evaluations of the relevant data each year with the ANP. EPA will then respond as part of the ANP response.)	58.10 (b)(4) App D, 4.1(i)	Yes, Section 4, page 35, and Appendix B; Letter from Stephen Deyo, DAQ to Jared Blumenfeld, EPA dated July 29, 2015	Insufficient Info	Appendix B includes an ozone season waiver letter from EPA dated March 8, 2012 which approves a shortened monitoring season at Apex and Mesquite sites. In last year's ANP review, EPA asked DAQ to include the information that continues to support a shortened ozone season and request renewal of the ozone season waiver. DAQ requested a renewal of this waiver on page 35 and attached the original approval letter in Appendix B. Additionally, in a letter from Stephen Deyo, DAQ to Jared Blumenfeld, EPA dated July 29, 2015, DAQ requested an ozone season waiver for the newly deployed SLAMS site at Indian Springs. EPA is unable to approve current waiver renewal requests for Apex and Mesquite. EPA notes that Indian Springs will continue to operate through the remainder of CY2015 and therefore, approval of the new waiver request for Indian Springs is not needed at this time. Please resubmit new waiver requests for these sites addressing the 2015 8-hour Ozone NAAQS.
NO_2 –SPECIFIC MONITORING REQUIREMENTS					
54.	Minimum monitoring requirement for single near-road NO_2 monitor (in CBSA $\geq$ 1 million) by 1/1/2014	58.13(c)(3) App D 4.3.2	Yes	Yes	EPA approved the selection of the near-road site at Teddy and Rancho Drive per the site selection as part of the 2014 ANP. The site started monitoring in 2015. Please include exact date of operation commenced in next year's ANP.
55.	Minimum monitoring requirement for second near-road NO_2 monitor (in CBSA $\geq$ 2.5 million) by 1/1/2015	58.13(c)(4) App D 4.3.2	Yes	No	EPA approved the selection of the Central Fire Station near-road site as part of the 2014 ANP. This requirement, however, is not fully met until operation of monitor begins. As of June 2015, the site had not begun operation.
56.	Minimum monitoring requirements for area-wide NO_2 monitor in location of expected highest NO_2 concentrations representing neighborhood or larger scale (operation required by January 1, 2013)	App D 4.3.3	Yes, page 7	Yes	One required, fulfilled by J.D. Smith and Sunrise Acres
57.	Minimum monitoring requirements for susceptible and vulnerable populations monitoring (aka RA40) NO_2 (operation required by January 1, 2013)	App D 4.3.4	Yes, page 7	Yes	One required, fulfilled by Sunrise Acres

58.	Identification of required NO_2 monitors as either near-road, area-wide, or vulnerable and susceptible population (aka RA40)	58.10 (b)(12)	Yes, page 7	Yes	Identified as Sunrise Acres
CO –SPECIFIC MONITORING REQUIREMENTS					
59.	Minimum monitoring requirement for near-road CO monitor (in CBSA ≥ 2.5 million) by 1/1/2015	58.13(e)(1) App D 4.2.1	NA	NA	Near-road monitoring for CO required by 1/1/2017
SO_2 –SPECIFIC MONITORING REQUIREMENTS					
60.	Minimum monitoring requirements for SO_2 [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D 4.4	Yes, page 7	Yes	
NCORE –SPECIFIC MONITORING REQUIREMENTS					
61.	NCore site and all required parameters operational: year-round O_3, trace SO_2, trace CO, NO_y, NO, $PM_{2.5}$ mass, $PM_{2.5}$ continuous, $PM_{2.5}$ speciation, $PM_{10-2.5}$ mass, resultant wind speed at 10m, resultant wind direction at 10m, ambient temperature, relative humidity, and Pb at CBSAs ≥ 500,000.	58.10 (a)(3); Pb collocation App. A 3.3.4.3; $PM_{10-2.5}$ minimum monitoring App. D 4.8; $PM_{10-2.5}$ sampling schedule 58.10 (b)(4) 58.12(f) App D 4.8; $PM_{10-2.5}$ collocation App. A 3.3.6	Yes, pages 25-30	Yes	
SITE OR MONITOR - SPECIFIC REQUIREMENTS (OFTEN INCLUDED IN DETAILED SITE INFORMATION TABLES)					
62.	AQS site identification number for each site	58.10 (b)(1)	Yes, Section 4	Yes	Please provide AQS IDs for South Las Vegas Valley and Garrett Junior High in next year's ANP.
63.	Location of each site: street address and geographic coordinates	58.10 (b)(2)	Yes, Section 4	Yes	
64.	MSA, CBSA, CSA or other area represented by the monitor	58.10 (b)(8)	Yes, Section 4	Yes	

65.	Parameter occurrence code for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes, Section 4	Yes	
66.	Statement of purpose for each monitor	58.10 (a)(1)	Yes, Section 4	Yes	
67.	Basic monitoring objective for each monitor	App D 1.1 58.10 (b)(6)	Yes, Section 4	Yes	
68.	Site type for each monitor	App D 1.1.1	Yes, Section 4	Yes	
69.	Monitor type for each monitor, and Network Affiliation(s) as appropriate	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes, Section 4	Yes	
70.	Scale of representativeness for each monitor as defined in Appendix D	58.10(b)(6); App D	Yes, Section 4	Yes	
71.	Parameter code for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes, Section 4	Yes	
72.	Method code and description (e.g., manufacturer & model) for each monitor	58.10 (b)(3); App C 2.4.1.2	Yes, Section 4	Yes	
73.	Sampling start date for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes, Section 4	Incomplete	Please include exact start date of Teddy and Rancho and Central Fire Station sites.

74.	Distance of monitor from nearest road	App E 6	Yes	Yes	EPA notes that the following monitors were converted to middle scale: : • O_3 at Mesquite • NO_2 at Joe Neal
75.	Traffic count of nearest road	App E	Yes, page 5 and Section 4	Yes	
76.	Groundcover	App E 3(a)	Yes, Section 4	Yes	
77.	Probe height	App E 2	Yes, Section 4	Yes	
78.	Distance from supporting structure	App E 2	Yes, Section 4	Insufficient Info	The proposed South Las Vegas and Garrett Junior High SLAMS PM_{10} sites list distance from supporting structure as 1.2m (anticipated) and 1.5m (anticipated), respectively. This distance should be >2m.
79.	Distance from obstructions on roof (horizontal distance to the obstruction and vertical height of the obstruction above the probe should be provided)	App E 4(b)	Yes, Section 4	Yes	
80.	Distance from obstructions not on roof (horizontal distance to the obstruction and vertical height of the obstruction above the probe should be provided)	App E 4(a)	Yes, Section 4	No, Insufficient Info	The JD Smith site does not meet App E 4(a). Please add obstruction height above probe to your description at the Indian Springs site.
81.	Distance from the drip line of closest tree(s)	App E 5	Yes, Section 4	Yes	
82.	Distance to furnace or incinerator flue	App E 3(b)	Yes, Section 4	Yes	
83.	Unrestricted airflow (expressed as degrees around probe/inlet or percentage of monitoring path)	App E, 4(a) and 4(b)	Yes, Section 4	Yes	
84.	Probe material ($NO/NO_2/NO_y$, SO_2, O_3; For PAMS: VOCs, Carbonyls)	App E 9	Yes, Section 4	Yes	
85.	Residence time ($NO/NO_2/NO_y$, SO_2, O_3; For PAMS: VOCs, Carbonyls)	App E 9	Yes, Section 4	Yes	

Public Comments on Annual Network Plan
Were comments submitted to the S/L/T agency during the public comment period?

No

If no, skip the remaining questions.
If yes:

- Were any of the comments substantive?
  - If yes, which ones?
  - Explain basis for determination if any comments were considered not substantive:
- Did the agency respond to the substantive comments?
  - If yes, was the response adequate?
- Do the substantive comments require separate EPA response (i.e., agency response wasn't adequate)?
- Are the sections of the annual network plan that received substantive comments approvable after consideration of comments?
  - If yes, provide rationale: