

Washoe County Health District  
Air Quality Management Division  
2014 Ambient Air Monitoring Network Plan

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## Acronyms and Abbreviations

AADT	Annual Average Daily Traffic Count
AQI	Air Quality Index
AQMD	Washoe County Health District - Air Quality Management Division
AQS	Air Quality System
ARM	Approved Regional Method
ATR	Automatic Traffic Recorder
BAM	Beta Attenuation Monitor
CARB	California Air Resources Board
CBSA	Core-Based Statistical Area
cc/min	Cubic centimeter per minute
CFR	Code of Federal Regulations
CMSA	Consolidated Metropolitan Statistical Area
CO	Carbon Monoxide
CSA	Combined Statistical Area
DMV	Department of Motor Vehicles
EBAM	Met One Environmental Beta Attenuation Monitor
EI	Emissions Inventory
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GFC	Gas Filter Correlation
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core multipollutant monitoring station
NDOT	Nevada Department of Transportation
NO	Nitric Oxide
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
NO <sub>y</sub>	Reactive Oxides of Nitrogen
O <sub>3</sub>	Ozone
PM <sub>2.5</sub>	Particulate Matter less than or equal to 2.5 microns in aerodynamic diameter
PM <sub>10</sub>	Particulate Matter less than or equal to 10 microns in aerodynamic diameter
PM <sub>coarse</sub>	PM <sub>10</sub> minus PM <sub>2.5</sub>
ppb	parts per billion
ppm	parts per million
PWEI	Population Weighted Emissions Index
RTI	Research Triangle Institute
SASS	Speciation Air Sampling System
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Station
SO <sub>2</sub>	Sulfur Dioxide
SPM	Special Purpose Monitoring
SR	State Route
STN	Speciation Trends Network
TAPI	Teledyne Advanced Pollution Instrumentation, Inc.

# Introduction

## **Purpose**

The U.S. Environmental Protection Agency (EPA) finalized amendments to the ambient air monitoring regulations on October 17, 2006.<sup>1</sup> The amendments revise the technical requirements for certain types of ambient air monitoring sites, add provisions for monitoring of PM<sub>coarse</sub>, and reduce certain monitoring requirements for criteria pollutants. Monitoring agencies are required to submit annual monitoring network plans, conduct network assessments every five years, perform quality assurance activities, and in certain instances, have NCore sites established by January 1, 2011.

This plan was prepared and submitted as part of the fulfillment to these new regulations. It represents the Washoe County Health District - Air Quality Management Division's (AQMD) ambient air monitoring program activities completed in 2013 and proposed network modifications for 2014-2015.

## **Public Inspection Process**

This monitoring network plan was available for public inspection from June 1 to June 30, 2014 at the AQMD website ([www.OurCleanAir.com](http://www.OurCleanAir.com)). A hardcopy of the plan was also available at the AQMD office.

## **Agency Contacts**

For information or questions regarding the 2014 Ambient Air Monitoring Network Plan, please contact the following individuals of the AQMD.

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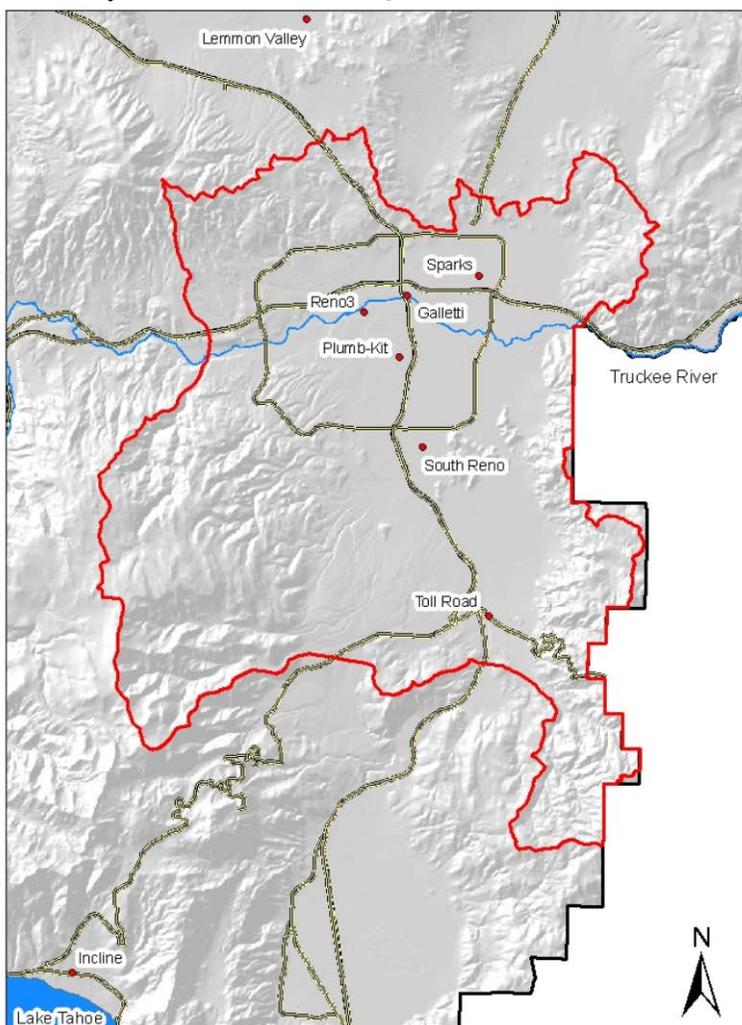
<sup>1</sup> 71 FR 61236-61328.

# Overview of Washoe County Health District Network Operation

## Network Design

The AQMD operated eight (8) ambient air monitoring sites in 2013 (Figure 1). The red boundary delineates Hydrographic Area 87 (HA 87) as defined by the State of Nevada Division of Water Resources and is currently designated as “serious” non-attainment for the 24-hour PM<sub>10</sub> NAAQS.<sup>2,3</sup> Washoe County is classified as “attainment” or “unclassifiable/attainment” for all other pollutants and averaging times. Table 1 lists the parameters monitored in 2013 sorted by network type and site.

Figure 1  
Washoe County Health District - AQMD Ambient Air Monitoring Sites



<sup>2</sup> 40 CFR 81.329.

<sup>3</sup> In July 2009, the AQMD submitted a SIP revision to EPA requesting redesignation of HA 87 to an attainment/maintenance area for the 24-hour PM<sub>10</sub> NAAQS. On April 19, 2011, EPA published a final rule (76 FR 21807) finding that 1) the Truckee Meadows failed to attain the NAAQS by the applicable date and 2) the Truckee Meadows is currently attaining the NAAQS based on recent monitoring data (2007-2009). The rule does not change the “Serious” non-attainment designation.

Table 1  
Ambient Air Monitoring Sites and Parameters Monitored

Network Type Site	O <sub>3</sub>	CO	Trace CO	Trace NO	NO <sub>2</sub>	NO <sub>x</sub>	Trace NO <sub>y</sub>	Trace SO <sub>2</sub>	PM <sub>10</sub> (manual)	PM <sub>10</sub> (continuous)	PM <sub>2.5</sub> (manual)	PM <sub>2.5</sub> (continuous)	PM <sub>coarse</sub> (manual)	PM <sub>coarse</sub> (continuous)	PM <sub>2.5</sub> Speciation	Meteorology
SLAMS																
Galletti		✓								✓		✓		✓		
Incline	✓															
Lemmon Valley	✓	✓														
Plumb-Kit										✓						
South Reno	✓	✓								✓						
Sparks	✓	✓								✓		✓				
Toll	✓	✓								✓						
NCore <sup>4</sup>																
Reno3	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Speciation Trends																
Reno3															✓	

Notes: Meteorology for the NCore network includes ambient temperature, wind speed, wind direction, and relative humidity. The PM<sub>10</sub> manual method monitor at NCore is for PM<sub>coarse</sub> calculation only and is not submitted to AQS for data to be used in comparison to the NAAQS.

<sup>4</sup> NCore monitoring began December 2010.

**Minimum Monitoring Requirements**

The AQMD’s ambient air monitoring network meets the minimum monitoring requirements for all criteria pollutants pursuant to 40 CFR 58, Appendix D. The AQMD does not monitor for Lead due to there being no sources over 0.5 tons per year and a core-based statistical area (CBSA) population less than 500,000. Tables 2 through 8 provide pollutant specific monitoring requirements. Additional pollutant specific data may be found in the “[Washoe County, Nevada, Air Quality Trends Report, 2004-2013](#)”. The 2013 population data are from the Nevada State Demographer’s Office.<sup>5</sup>

Table 2  
Minimum Monitoring Requirements for O<sub>3</sub>

MSA	County	Population	8-hour Design Value (2011-2013)		Number of Monitors		
			ppm	Site (ID)	Minimum Required	Active	Needed
Reno-Sparks	Washoe	431,600	0.068	South Reno (0020) Sparks (1005)	2	6	0

Monitors required for SIP or Maintenance Plan: 2

Title 40 CFR 58, Appendix D, 4.1 requires O<sub>3</sub> monitoring in MSAs with populations above 350,000 people. Monitors are also required in MSAs with lower populations if measured O<sub>3</sub> values within that MSA are within 85% of the NAAQS.

Table 3  
Minimum Monitoring Requirements for FEM PM<sub>2.5</sub>

MSA	County	Population	Design Value (2011-2013)				Number of Monitors		
			Annual (µg/m <sup>3</sup> )	Annual Site (ID)	Daily (µg/m <sup>3</sup> )	Daily Site (ID)	Minimum Required	Active	Needed
Reno-Sparks	Washoe	431,600	7.4	Reno3 (0016)	25	Reno3 (0016)	1	3	0

Monitors required for: SIP or Maintenance Plan: 0; NCore: 1

Table 4  
Minimum Monitoring Requirements for FRM PM<sub>2.5</sub>

MSA	County	Population	Design Value (2011-2013)				Number of Monitors		
			Annual (µg/m <sup>3</sup> )	Annual Site (ID)	Daily (µg/m <sup>3</sup> )	Daily Site (ID)	Minimum Required	Active	Needed
Reno-Sparks	Washoe	431,600	7.4	Reno3 (0016)	24	Reno3 (0016)	1	1	0

Monitors required for: SIP or Maintenance Plan: 0; NCore: 1

<sup>5</sup> <http://nvdemography.org/wp-content/uploads/2013/03/March-2013-Population-Projections.pdf> .

Title 40 CFR 58, Appendix D, 4.7 requires PM<sub>2.5</sub> monitoring in MSAs with populations above 500,000 people and in MSAs with lower populations if measured PM<sub>2.5</sub> values for an MSA are within 85% of the NAAQS. Title 40 CFR 58, Appendix A, 3.2.5 requires 15 percent (at least 1) of the monitors be collocated. The first collocated monitor must be a designated FRM monitor. AQMD meets this requirement by having the Primary PM<sub>2.5</sub> FEM monitor at the Reno 3 monitoring station collocated with a PM<sub>2.5</sub> FRM sampler.

Table 5  
Minimum Monitoring Requirements for PM<sub>10</sub>

MSA	County	Population	Maximum Concentration (2013)		Number of Monitors		
			µg/m <sup>3</sup>	Site (ID)	Minimum Required	Active	Needed
Reno-Sparks	Washoe	431,600	144	Toll (0025)	4	6	0

Monitors required for SIP or Maintenance Plan: 4

Title 40 CFR 58, Appendix D, 4.6 specifies PM<sub>10</sub> monitoring requirements in MSAs based on population and design values. Title 40 CFR 58, Appendix A, 3.3.1 requires 15 percent (at least 1) of the manual method samplers be collocated. Being that AQMD only runs one manual method sampler for the calculation of PM<sub>10-2.5</sub> at the Reno 3 NCore station, and all of the Primary PM<sub>10</sub> monitors are continuous methods, there is no collocation requirement.

Table 6  
Minimum Monitoring Requirements for NO<sub>2</sub>

CBSA	Counties	Population	Design Value (2011-2013)		Number of Monitors		
			Annual (ppb)	1-hour (ppb)	Minimum Required	Active	Needed
Reno, NV	Washoe Storey Total	431,600 4,243 435,843	16	56	1	1	0

Monitors required for: SIP or Maintenance Plan: 0; NCore: 1

Title 40 CFR 58, Appendix D, 4.3.2 requires one near-road NO<sub>2</sub> monitoring station in each CBSA with populations over 500,000 people. Likewise, Title 40 CFR 58, Appendix D, 4.3.3 requires one area-wide NO<sub>2</sub> monitoring station in each CBSA with populations over 1,000,000 people. Based on the 2013 population data from the Nevada State Demographer's Office, the Reno, NV CBSA does not require a near-road or area-wide NO<sub>2</sub> monitoring station.

Table 7  
Minimum Monitoring Requirements for CO

CBSA	Counties	Population	Design Value (2012-2013)		Number of Monitors		
			1-hour (ppm)	8-hour (ppm)	Minimum Required	Active	Needed
Reno, NV	Washoe Storey Total	431,600 4,243 435,843	3.2	2.6	2	6	0

Monitors required for: SIP or Maintenance Plan: 2; NCore: 1

Title 40 CFR 58, Appendix D, 3.0 requires high sensitivity CO monitors at NCore sites. Title 40 CFR 58, Appendix D, 4.2 requires one CO monitor to operate collocated with one required near-road NO<sub>2</sub> monitor in CBSAs having populations over 1,000,000 people. Based on the 2013 population data from the Nevada State Demographer's Office, the Reno, NV CBSA does not require a CO monitor collocated with a near-road NO<sub>2</sub> monitor.

Table 8  
Minimum Monitoring Requirements for SO<sub>2</sub>

CBSA	Counties	Population	Total SO <sub>2</sub> (tons/year)	PWEI (Million persons-tons/year)	Number of Monitors		
					Minimum Required	Active	Needed
Reno, NV	Washoe Storey Total	431,600 4,243 435,843	863.1	376.2	1	1	0

Monitors required for NCore: 1

Title 40 CFR 58, Appendix D, 4.4.2 requires an SO<sub>2</sub> monitoring network based on a calculated population weighted emissions index (PWEI). This index is calculated by multiplying the population of a CBSA with the emissions inventory (EI) data for counties within that CBSA. The calculated value is then divided by one million in order to obtain the PWEI value. PWEI monitoring requirements are as follows: 1) one monitor in CBSAs with a PWEI value greater than 5,000, 2) two monitors in CBSAs with a PWEI value greater than 100,000, and 3) three monitors in CBSAs with a PWEI value greater than 1,000,000. As shown in Table 8, AQMD used 2013 population data from the Nevada State Demographer's Office and 2011 National Emissions Inventory data to determine that no additional SO<sub>2</sub> monitoring is required.

## **Network Modifications Completed in 2013**

The following modifications to the ambient air monitoring network were completed in 2013.

### **SLAMS:**

#### PM<sub>10</sub> (Galletti)

- Replaced existing Hi-Volume PM<sub>10</sub> sampler with a new Met One BAM 1020 FEM PM<sub>10</sub> monitor. This monitor is configured as a coarse pair with the Met One BAM 1020 FEM PM<sub>2.5</sub> monitor listed below for continuous PM<sub>10-2.5</sub> measurement. Continuous PM<sub>10</sub> and PM<sub>10-2.5</sub> data for record began submission to AQS in January 2013.

#### PM<sub>10</sub> (Sparks)

- Took the designated and collocated Hi-Volume PM<sub>10</sub> samplers offline. They were replaced by a Met One BAM 1020 FEM PM<sub>10</sub> monitor in 2011. Since the final Galletti Hi-Volume PM<sub>10</sub> sampler was replaced, the PM<sub>10</sub> network only consists of continuous monitors, which do not have a collocation requirement.

#### PM<sub>2.5</sub> (Galletti)

- Installed a new Met One BAM 1020 FEM PM<sub>2.5</sub> monitor. This monitor is configured as a coarse pair with the Met One BAM 1020 FEM PM<sub>10</sub> monitor listed above for continuous PM<sub>10-2.5</sub> measurement. Continuous PM<sub>2.5</sub> and PM<sub>10-2.5</sub> data for record began submission to AQS in January 2013.

#### Meteorology (Galletti, Plumb-Kit, South Reno, Sparks, Toll)

- Replaced the existing Met One 014A wind speed and 024A wind direction sensors with Met One 50.5H sonic anemometers. Will begin submitting data for record to AQS in January 2014.

### **NCore:**

#### Meteorology (Reno 3)

- The Vaisala WXT520 weather station (wind speed, wind direction, ambient temperature, relative humidity, barometric pressure, and precipitation) was replaced with a Met One 50.5H sonic anemometer to measure wind speed and direction, a YSI Series 700 probe for ambient temperature, and Met One 083E sensor for relative humidity. Barometric pressure and relative humidity are no longer measured.

### **Speciation Trends:**

- No modifications completed.

## **Additional Modifications Completed in 2013**

The following additional modifications were completed in 2013.

### **SLAMS:**

#### CO, O<sub>3</sub> (Toll)

- Replaced the Environics 6103 Ozone Transfer Standard/Multi-gas Calibrator with a Teledyne-API T700 Dynamic Dilution Calibrator.

NCore:

- No modifications completed.

Speciation Trends and Special Purpose Monitor Networks:

Special Purpose PM<sub>2.5</sub>

- A Met One Environmental Beta Attenuation Monitor (EBAM) was added to the network for special purpose and exceptional event monitoring of episodes such as wild fires. The EBAM has been mounted to a trailer for ease of towing and deployment and is stored when not in use.

**Network Modifications Proposed for 2014-2015**

The following modifications to the ambient air monitoring network are proposed for 2014-2015.

SLAMS:

All pollutants and meteorology (Galletti)

- Relocate entire Galletti monitoring site. The reason for relocating this site is to move the shelter away from trees that are less than 10 meters from the monitoring probe and inlets.

CO (South Reno)

- Take existing CO analyzer offline and discontinue monitoring for CO at South Reno monitoring station. A formal letter stating this proposal will be submitted prior to follow the 40 CFR 58.14 criteria.

O<sub>3</sub> (Lemmon Valley, South Reno, Sparks)

- Replace existing TAPI 400E O<sub>3</sub> analyzers with new TAPI T400 analyzers as part of AQMD's ten-year replacement program.

NCore:

Meteorology (Reno3)

- Install a new Met One 595 solar radiation sensor.

**Additional Modifications Proposed for 2014-2015**

The following additional modifications are proposed for 2014-2015.

SLAMS:

CO, O<sub>3</sub> (South Reno, Sparks)

- Replace the Environics 6103 Ozone Transfer Standard/Multi-gas Calibrator with a Teledyne-API T700 Dynamic Dilution Calibrator.

PM<sub>10</sub>, PM<sub>2.5</sub>, PM<sub>10-2.5</sub> (Galletti, Sparks)

- Begin "direct polling" of data from the Met One BAM 1020 FEM continuous PM monitors. This will allow additional diagnostic data to be viewed from the office increasing efficiency while decreasing time spent troubleshooting. The existing analog concentration connections to a station data logger will be retained as a redundant data system.

NCore:

Trace CO, O<sub>3</sub>, NO, NO<sub>2</sub>, NO<sub>x</sub>, Trace NO, NO<sub>y</sub> (Reno 3)

- Replace the Environics 6103 Ozone Transfer Standard/Multi-gas Calibrator with a Teledyne-API T700U Dynamic Dilution Calibrator.

PM<sub>10</sub>, PM<sub>2.5</sub>, PM<sub>10-2.5</sub> (Reno 3)

- Begin “direct polling” of data from the Met One BAM 1020 FEM continuous PM monitors. This will allow additional diagnostic data to be viewed from the office increasing efficiency while decreasing time spent troubleshooting. The existing analog concentration connections to a station data logger will be retained as a redundant data system.

Speciation Trends Network:

PM<sub>2.5</sub> Speciation (Reno 3)

- Replace the existing Met One Speciated Air Sampling System (SASS) with new Super SASS and upgrade the existing URG 3000N for sequential sampling capabilities.

Other:

- Replace existing TAPI 400E Primary Ozone Standard with new TAPI T400 Primary Ozone Standard as part of AQMD’s ten-year replacement program.

**Modifications to PM<sub>2.5</sub> Monitoring Network Proposed for 2014-2015**

SLAMS:

Sparks

- Replace the existing Met One BAM 1020 FEM PM<sub>2.5</sub> monitor with a new Met One BAM 1020 FEM PM<sub>2.5</sub> monitor. This monitor will be configured with the existing Met One BAM 1020 FEM PM<sub>10</sub> monitor for continuous PM<sub>10-2.5</sub> measurement.

NCore:

Reno 3

- Take the existing collocated BGI PQ200 FRM PM<sub>2.5</sub> manual method sampler offline. This is currently a duplicate measurement. With the Met One BAM 1020 FEM PM<sub>2.5</sub> monitor as the primary monitor, collocation requirements are being met with the BGI PQ200 FRM PM<sub>2.5</sub> sampler that is part of the BGI PQ200 coarse pair.

**Data Submission Requirements**

Precision and Accuracy Reports for 2013 were submitted to AQS for the:

- 1<sup>st</sup> quarter in June 2013,
- 2<sup>nd</sup> quarter in September 2013,
- 3<sup>rd</sup> quarter in November 2013, and
- 4<sup>th</sup> quarter in March 2014.

Annual Data Certification for all data for 2013 was submitted to EPA on April 30, 2014.

## Overview of Tribal Network Operations

### Network Design

Two tribes operate ambient air monitoring networks within the geographic boundaries of Washoe County - The Reno-Sparks Indian Colony (RSIC) and Pyramid Lake Paiute Tribe (PLPT). Table 9 summarizes the tribal sites and parameters monitored in 2013. Figure 2 shows the location of tribal lands for the Reno-Sparks Indian Colony and Figure 3 is a map showing the locations of the Pyramid Lake Paiute Tribes' monitoring sites. For additional detailed site information about the RSIC and PLPT monitoring networks including annual network plans, refer to the following contact information.

Reno Sparks Indian Colony  
 Elizabeth Acevedo  
 Environmental Specialist II  
 Environmental Program of the  
 Planning Department  
 1937 Prosperity Street  
 Reno, NV 89502  
 (775)785-1363, ext. 5409  
[eacevedo@rsic.org](mailto:eacevedo@rsic.org)  
[www.rsic.org](http://www.rsic.org)

Pyramid Lake Paiute Tribe  
 Elizabeth Sala  
 Air Quality Specialist  
 Environmental Department  
 P.O. Box 256  
 Nixon, NV 89424  
 (775) 574-0101  
[esala@plpt.nsn.us](mailto:esala@plpt.nsn.us)  
<http://plpt.nsn.us/environmental/air.htm>

Table 9  
 Tribal Ambient Air Monitoring Sites and Parameters Monitored

Network Site Site ID	O <sub>3</sub>	CO	NO <sub>2</sub>	NO <sub>x</sub>	PM <sub>10</sub> (manual)	PM <sub>10</sub> (continuous)	PM <sub>2.5</sub> (manual)	PM <sub>2.5</sub> (continuous)	PM <sub>coarse</sub> (manual)	PM <sub>coarse</sub> (continuous)	Meteorology
RSIC											
Hungry Valley TT 653 2010						✓					
PLPT											
WADSAQ T-561-1026						✓		✓			✓

Figure 2  
Reno-Sparks Indian Colony

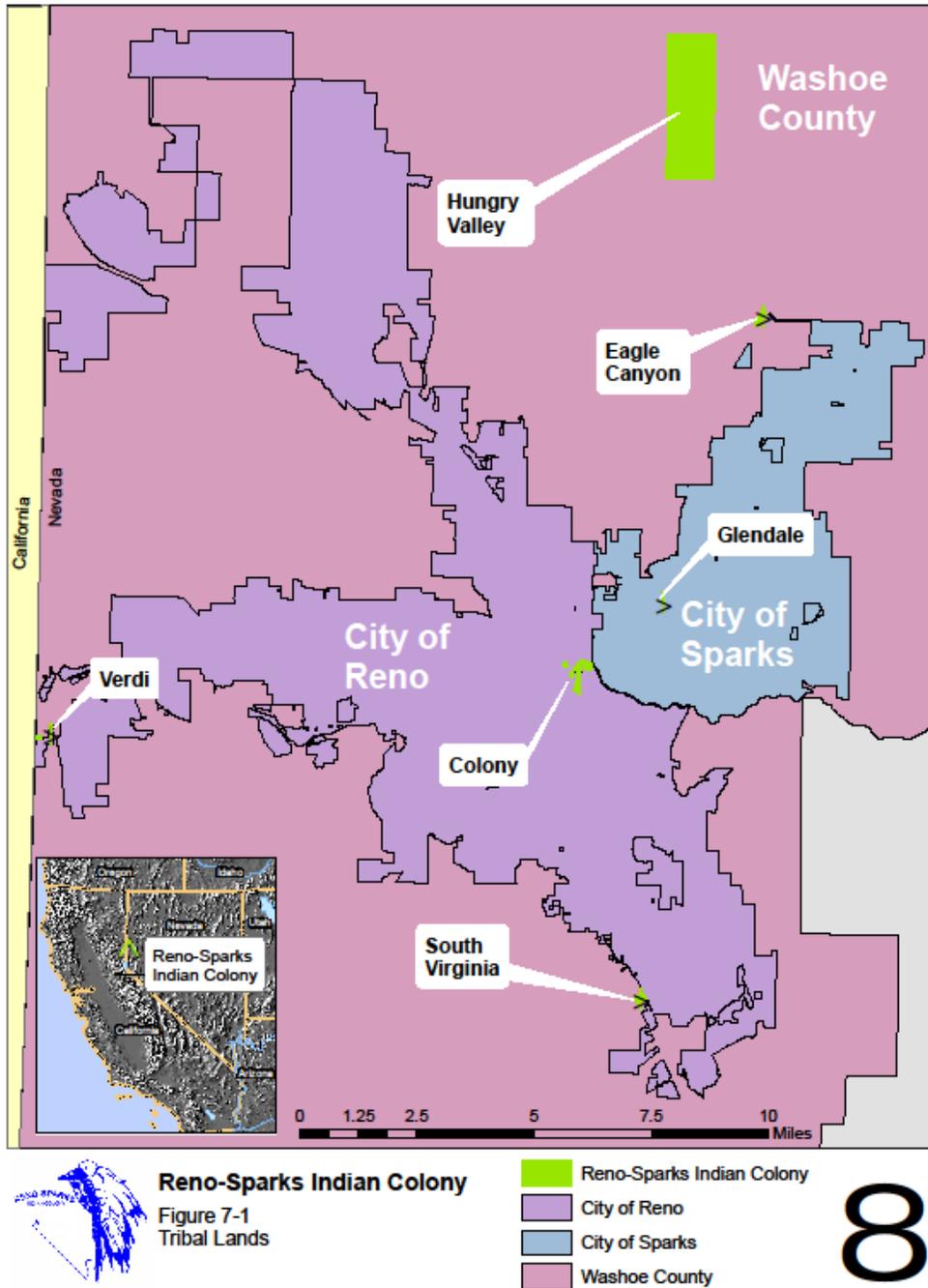


Figure 3  
Pyramid Lake Paiute Tribe



Map 1 - Location of Pyramid Lake Paiute Tribe Air Quality Monitoring Site.  $PM_{2.5}$  at Wadsworth is awaiting approval to start operation. Both sites have meteorological monitoring.

# Washoe County Health District Detailed Site Information

## Galletti

The Galletti site is located southeast of the Interstate 80 - US Highway 395/Interstate 580 interchange in a commercial/industrial area. The Galletti site is heavily impacted by on-road vehicle emissions from interstate highways.

<b>Site Name:</b>	Galletti
<b>AQS ID:</b>	32-031-0022
<b>Geographical coordinates:</b>	CO: 39° 31.920'N, 119° 47.099'W
<b>Location:</b>	CO: South end of NDOT equipment yard.
<b>Street address:</b>	305 Galletti Way Reno, NV 89512
<b>County:</b>	Washoe
<b>Distance to road:</b>	15 meters to Kietzke Lane; 117 meters to IR 580
<b>Traffic count:</b>	14,633 AADT (2010-2012) (NDOT ATR 0312210 - Kietzke Lane, 0.15 miles south of Galletti Way) 145,333 AADT (2010-2012) (NDOT ATR 0310461 - IR580 (US 395), 'Exit 67' 0.2 miles north of Glendale Ave.)
<b>Groundcover:</b>	Paved
<b>Representative area:</b>	Reno-Sparks MSA

Figure 4  
Galletti Monitoring Station



Figure 5  
Galletti Monitoring Site Vicinity Map

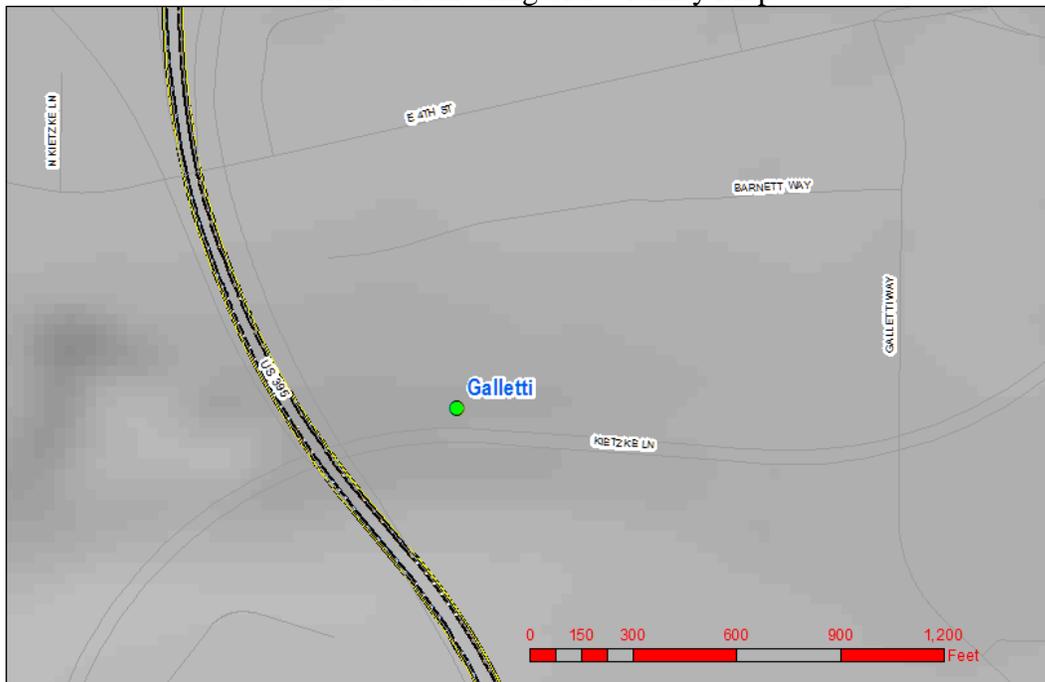
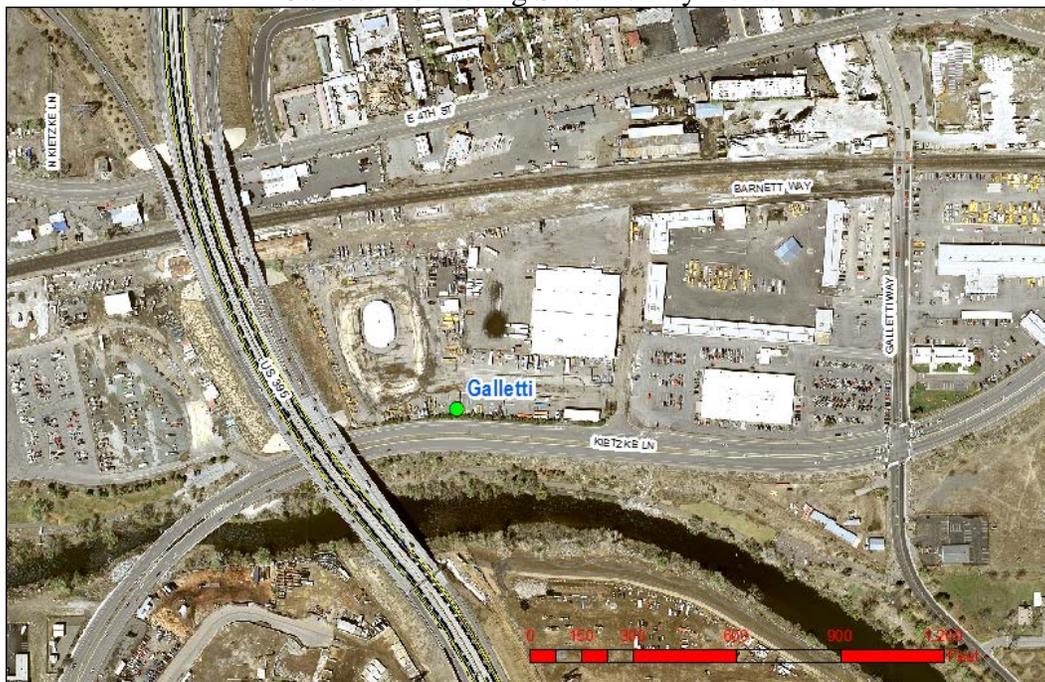


Figure 6  
Galletti Monitoring Site Vicinity Aerial



**Galletti (continued)**

	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10-2.5</sub></b>	<b>CO</b>
<b>Site type</b>	Highest Concentration	Highest Concentration	Highest Concentration	Highest Concentration
<b>Monitor type</b>	SLAMS	SLAMS	SLAMS	SLAMS
<b>Spatial scale</b>	Middle	Middle	Middle	Middle
<b>Sampling method</b>	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020	TAPI 300E
<b>Analysis method</b>	Beta Attenuation	Beta Attenuation	Beta Attenuation	GFC
<b>Method code</b>	122	170	185	093
<b>Parameter code</b>	81102 & 85101	88101	86101	42101
<b>Parameter occurrence code</b>	6	1	1	1
<b>Start date</b>	August 1988	January 2013	January 2013	August 1988
<b>Operation schedule</b>	Continuous	Continuous	Continuous	Continuous
<b>Sampling season</b>	All year	All year	All year	All year
<b>Monitoring objective(s)</b>	NAAQS comparison	NAAQS comparison	Research Support	NAAQS comparison
<b>Probe height</b>	4.0 meters	4.0 meters	4.0 meters	4.0 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a	n/a
<b>Distance:</b>				
<b>from obstructions not on roof</b>	None	None	None	None
<b>from obstructions on roof</b>	n/a	n/a	n/a	n/a
<b>from trees</b>	8.2 meters*	8.2 meters*	8.2 meters*	8.2 meters*
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a	n/a
<b>from supporting structure</b>	1.2 meters	1.2 meters	1.2 meters	1.2 meters
<b>Flow rate</b>	16.7 l/min	16.7 l/min	16.7 l/min	720-880 cc/min
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	n/a	n/a	n/a	Teflon
<b>Residence time</b>	n/a	n/a	n/a	13 seconds
<b>Proposed modifications within the next 18 months?</b>	See page 8	See page 8	See page 8	See page 8
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	Yes	n/a	n/a
<b>Frequency of:</b>				
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	Bi-weekly verifications and quarterly audits	Bi-weekly verifications and quarterly audits	Bi-weekly verifications and quarterly audits	n/a
<b>one-point QC check (gaseous)</b>	n/a	n/a	n/a	Bi-weekly (3 point)
<b>Last:</b>				
<b>annual performance evaluation (gaseous)</b>	n/a	n/a	n/a	03-12-13 06-25-13 08-21-13 12-11-13
<b>two semi-annual flow rate audits (PM)</b>	03-25-13 06-25-13 09-19-13 11-08-13	03-25-13 06-25-13 09-19-13 11-08-13	03-25-13 06-25-13 09-19-13 11-08-13	n/a

\* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

## Incline

This site is located in a Washoe County office building at 855 Alder Avenue and is outside HA 87. It is located in a residential/commercial neighborhood. The AQMD had monitored PM<sub>10</sub> (1993-2002) and CO (1993-2002) and currently monitors for O<sub>3</sub>. This site was temporarily closed from December 2005 to May 2008 for remodeling. By multi-agency cooperative agreement, the California Air Resources Board (CARB) monitored PM<sub>2.5</sub> (1999-2002) and NO<sub>2</sub> (1999-2002). Since May 2008, this site only monitors for O<sub>3</sub>.

<b>Site Name:</b>	Incline
<b>AQS ID:</b>	32-031-2002
<b>Geographical coordinates:</b>	39° 15.025'N, 119° 57.404'W
<b>Location:</b>	Inside northeast corner of Washoe County office building.
<b>Street address:</b>	855 Alder Avenue Incline Village, NV 89451
<b>County:</b>	Washoe
<b>Distance to road:</b>	57 meters to Tahoe Boulevard
<b>Traffic count:</b>	12,000 AADT (2010-2012) (NDOT ATR 0310379 – SR28, North Shore Rd (Tahoe Blvd), 450ft south of Village Blvd.)
<b>Groundcover:</b>	Paved / Vegetated
<b>Representative area:</b>	Reno-Sparks MSA

Figure 7  
Incline Monitoring Station

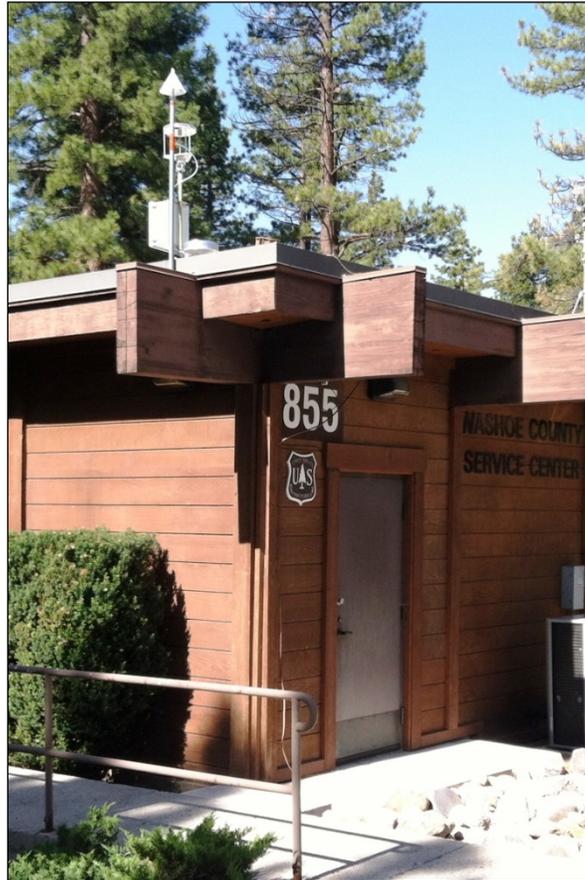


Figure 8  
Incline Monitoring Site Vicinity Map

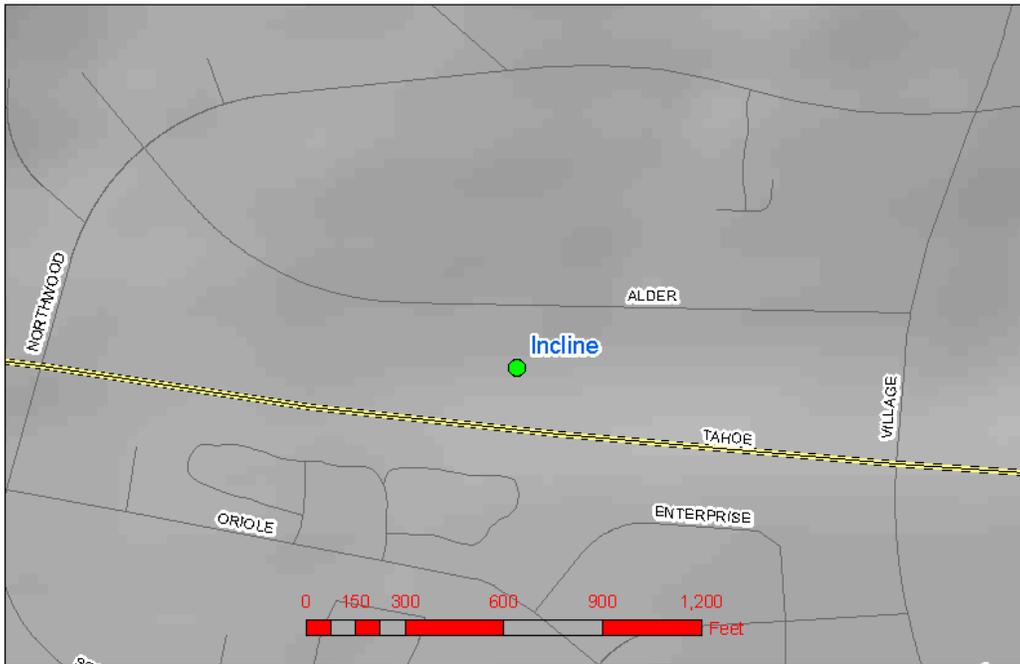
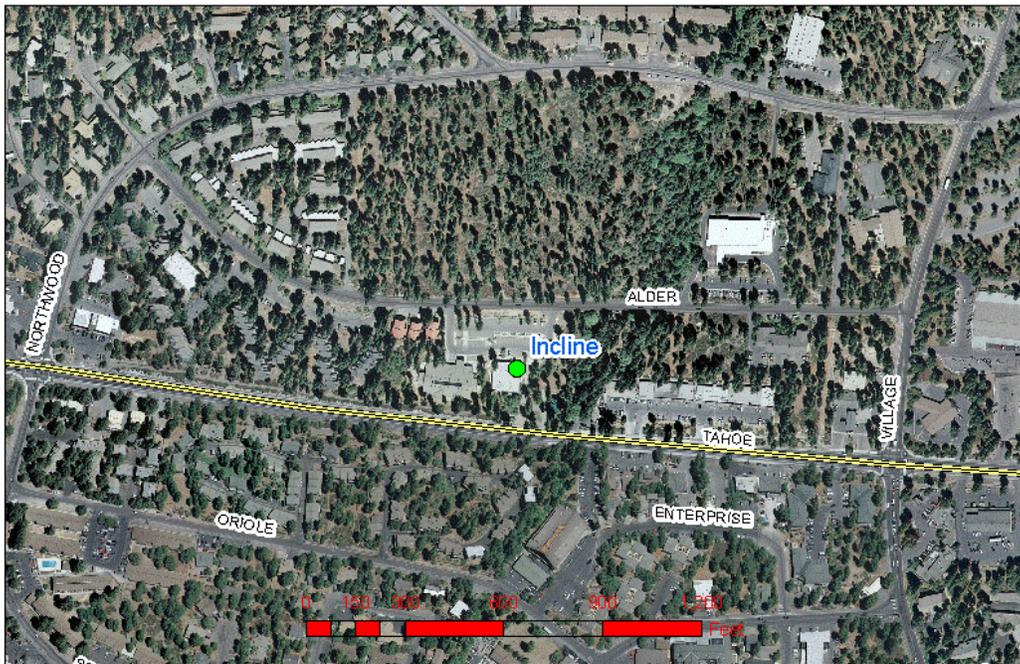


Figure 9  
Incline Monitoring Site Vicinity Aerial



**Incline (continued)**

	<b>O<sub>3</sub></b>
Site type	Population Exposure
Monitor type	SLAMS
Spatial scale	Neighborhood
Sampling method	TAPI 400E
Analysis method	UV Photometry
Method code	087
Parameter code	44201
Parameter occurrence code	1
Start date	June 1993
Operation schedule	Continuous
Sampling season	All year
Monitoring objective(s)	NAAQS comparison
Probe height	4.6 meters
Height of obstruction not on roof	n/a
Distance:	
from obstructions not on roof	None
from supporting structure	1.1 meters
from obstructions on roof	n/a
from trees	5.2 meters*
to furnace or incinerator flue	12.2 meters
between collocated monitors	n/a
Flow rate	720-880 cc/min
Unrestricted airflow	360 degrees
Probe material	Teflon
Residence time	14 seconds
Proposed modifications within the next 18 months?	None
Is the monitor suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	n/a
Frequency of:	
flow rate verification for manual samplers audit (PM)	n/a
flow rate verification for automated analyzers audit (PM)	n/a
one-point QC check (gaseous)	Bi-weekly (3 point)
Last:	
annual performance evaluation (gaseous)	03-12-13 06-25-13 08-23-13 12-11-13
two semi-annual flow rate audits (PM)	n/a

\* At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

## Lemmon Valley

Located at the Boys and Girls Club at 325 Patrician Drive, this site is outside HA 87. It is in a transitional area among residences, parks, and open fields.

<b>Site name:</b>	Lemmon Valley
<b>AQS ID:</b>	32-031-2009
<b>Geographical coordinates:</b>	39° 38.716'N, 119° 50.401'W
<b>Location:</b>	Inside northwest corner of Boys and Girls Club.
<b>Street address:</b>	325 W. Patrician Drive Reno, NV 89506
<b>County:</b>	Washoe
<b>Distance to road:</b>	59 meters to Patrician Drive.
<b>Traffic count:</b>	953 AADT (2010-2012) (NDOT ATR 0310926 - Patrician Drive, 150 feet west of Lemmon Drive)
<b>Groundcover:</b>	Paved / Vegetated
<b>Representative area:</b>	Reno-Sparks MSA

Figure 10  
Lemmon Valley Monitoring Station



Figure 11  
Lemmon Valley Monitoring Site Vicinity Map

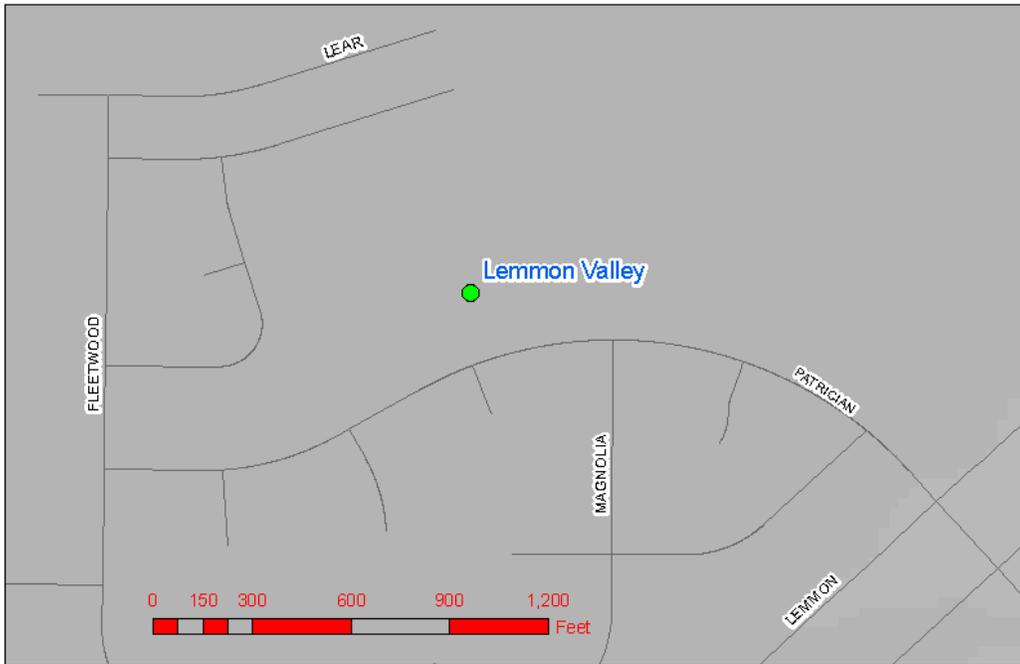


Figure 12  
Lemmon Valley Monitoring Site Vicinity Aerial



**Lemmon Valley (continued)**

	<b>CO</b>	<b>O<sub>3</sub></b>
<b>Site type</b>	Population Exposure	Population Exposure
<b>Monitor type</b>	SLAMS	SLAMS
<b>Spatial scale</b>	Urban	Urban
<b>Sampling method</b>	TAPI 300EU	TAPI 400E
<b>Analysis method</b>	GFC	UV Photometry
<b>Method code</b>	093	087
<b>Parameter code</b>	42101	44201
<b>Parameter occurrence code</b>	1	1
<b>Start date</b>	January 1987	January 1987
<b>Operation schedule</b>	Continuous	Continuous
<b>Sampling season</b>	All year	All year
<b>Monitoring objective(s)</b>	NAAQS comparison	NAAQS comparison
<b>Probe height</b>	5.5 meters	5.5 meters
<b>Height of obstruction not on roof</b>	n/a	n/a
<b>Distance:</b>		
<b>from obstructions not on roof</b>	None	None
<b>from supporting structure</b>	2.0 meters	2.0 meters
<b>from obstructions on roof</b>	n/a	n/a
<b>from trees</b>	21 meters	21 meters
<b>to furnace or incinerator flue</b>	9.1 meters	9.1 meters
<b>between collocated monitors</b>	n/a	n/a
<b>Flow rate</b>	1440-2160 cc/min	720-880 cc/min
<b>Unrestricted airflow</b>	360 degrees	360 degrees
<b>Probe material</b>	Teflon	Teflon
<b>Residence time</b>	9 seconds	9 seconds
<b>Proposed modifications within the next 18 months?</b>	None	See page 8
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	n/a
<b>Frequency of:</b>		
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	n/a	n/a
<b>one-point QC check (gaseous)</b>	Bi-weekly (3 point)	Bi-weekly (3 point)
<b>Last:</b>		
<b>annual performance evaluation (gaseous)</b>	03-11-13 06-20-13 08-20-13 12-05-13	03-11-13 06-20-13 08-20-13 12-05-13
<b>two semi-annual flow rate audits (PM)</b>	n/a	n/a

## Plumb-Kit

The Plumb-Kit site is located on the northeast corner of Plumb Lane and Kietzke Lane. The site is surrounded by both residential and commercial properties as well as a school.

<b>Site name:</b>	Plumb-Kit
<b>AQS ID:</b>	32-031-0030
<b>Geographical coordinates:</b>	39° 30.381'N, 119° 47.314'W
<b>Location:</b>	Northeast corner of Plumb and Kietzke Lanes.
<b>Street address:</b>	891 East Plumb Lane Reno, NV 89502
<b>County:</b>	Washoe
<b>Distance to road:</b>	36 meters to Kietzke Lane, 44 meters to Plumb Lane and 12 meters to Kietzke/Plumb Lane Intersection
<b>Traffic count:</b>	22,333 AADT (2009-2011) (NDOT ATR 0310191 - Kietzke Lane, 0.3 mi S of Plumb Lane. 27,333 AADT (2009-2011) (NDOT ATR 0310192 - East Plumb Lane, 590 feet east of Kietzke Lane)
<b>Groundcover:</b>	Gravel
<b>Representative area:</b>	Reno-Sparks MSA

Figure 13  
Plumb-Kit Monitoring Station



Figure 14  
Plumb-Kit Monitoring Site Vicinity Map

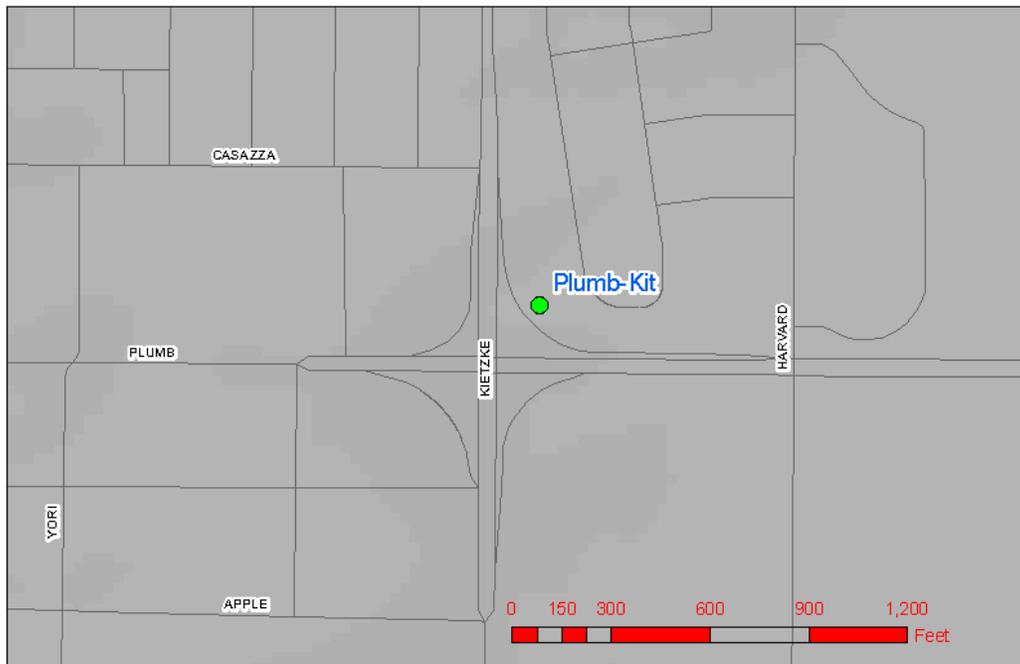


Figure 15  
Plumb-Kit Monitoring Site Vicinity Aerial



**Plumb-Kit (continued)**

	<b>PM<sub>10</sub></b>
Site type	Population Exposure
Monitor type	SLAMS
Spatial scale	Neighborhood
Sampling method	Met One BAM 1020
Analysis method	Beta Attenuation
Method code	122
Parameter code	81102
Parameter occurrence code	2
Start date	January 2006
Operation schedule	Continuous
Sampling season	All year
Monitoring objective(s)	NAAQS comparison
Probe height	4.3 meters
Height of obstruction not on roof	n/a
Distance:	
from obstructions not on roof	None
from supporting structure	1.5 meters
from obstructions on roof	n/a
from trees	12.2 meters*
to furnace or incinerator flue	n/a
between collocated monitors	n/a
Flow rate	16.7 l/min
Unrestricted airflow	360 degrees
Probe material	n/a
Residence time	n/a
Proposed modifications within the next 18 months?	None
Is the monitor suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	n/a
Frequency of:	
flow rate verification for manual samplers audit (PM)	n/a
flow rate verification for automated analyzers audit (PM)	Bi-weekly verifications and quarterly audits
one-point QC check (gaseous)	n/a
Last:	
annual performance evaluation (gaseous)	n/a
two semi-annual flow rate audits (PM)	03-21-13 06-20-13 09-24-13 12-11-13

\* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

### Reno 3

This downtown site began operation in January 2002 to replace the Reno site. Both a residential neighborhood and a commercial growth area surround this site. In December 2010, this site became an NCore site.

<b>Site name:</b>	Reno 3
<b>AQS ID:</b>	32-031-0016
<b>Geographical coordinates:</b>	39° 31.505'N, 119° 48.463'W
<b>Location:</b>	Southwest corner of City of Reno parking lot.
<b>Street address:</b>	301A State Street Reno, NV 89501
<b>County:</b>	Washoe
<b>Distance to road:</b>	38 meters to Mill Street, 13.1 meters to State Street, and 6.7 meters to River Rock.
<b>Traffic count:</b>	4,700 AADT (2011-2013) (NDOT ATR 0310862 – Mill Street, 100 feet west of Holcomb Avenue) 200-300 Approximate AADT on River Rock (Debra Goodwin of RTC and Steve Bunnell of the City of Reno Public Works)
<b>Groundcover:</b>	Paved
<b>Representative area:</b>	Reno-Sparks MSA

Figure 16  
Reno 3 Monitoring Station

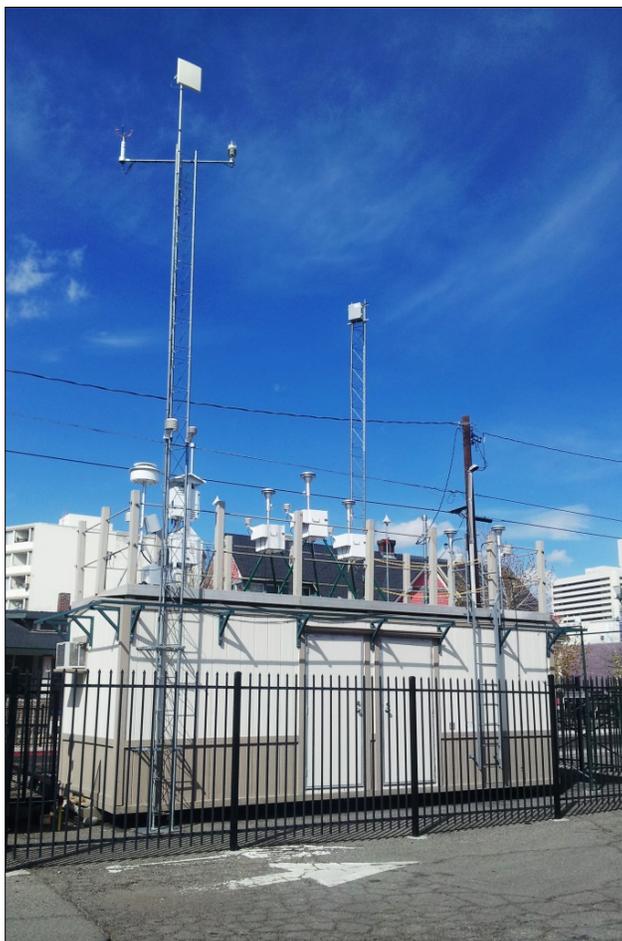
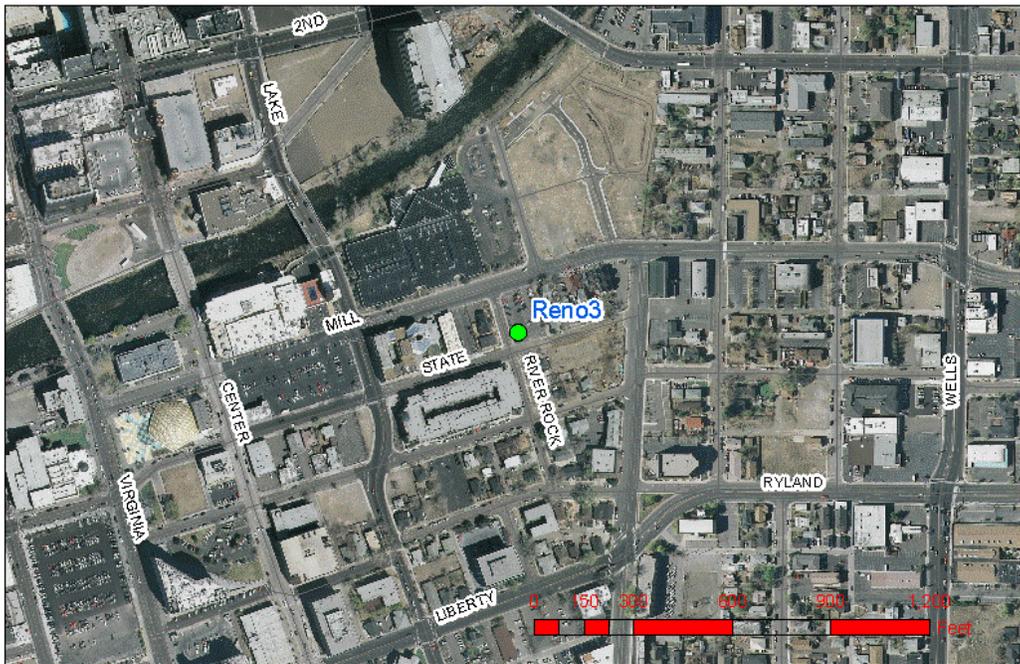


Figure 17  
Reno 3 Monitoring Site Vicinity Map



Figure 18  
Reno 3 Monitoring Site Vicinity Aerial



**Reno 3 (continued)**

	<b>FEM PM<sub>10</sub> (Primary)</b>	<b>FEM PM<sub>2.5</sub> (Primary)</b>	<b>FEM PM<sub>10-2.5</sub> (Primary)</b>	<b>PM<sub>2.5</sub> Speciation</b>
<b>Site type</b>	Population Exposure	Population Exposure	Population Exposure	Population Exposure
<b>Monitor type</b>	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)	Trends Speciation
<b>Spatial scale</b>	Neighborhood	Neighborhood	Neighborhood	Neighborhood
<b>Sampling method</b>	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020 Coarse Pair	Met One SASS; URG 3000N
<b>Analysis method</b>	Beta Attenuation	Beta Attenuation	Subtraction	RTI lab
<b>Method code</b>	122	170	185	SASS: 810 URG: 870
<b>Parameter code</b>	81102 & 85101	88101	86101	88502
<b>Parameter occurrence code</b>	2	3	2	1
<b>Start date</b>	December 2010	December 2010	December 2010	November 2001
<b>Operation schedule</b>	Continuous	Continuous	Continuous	1:3
<b>Sampling season</b>	All year	All year	All year	All year
<b>Monitoring objective(s)</b>	NAAQS comparison	NAAQS comparison	Research Support	Research Support
<b>Probe height</b>	4.4 meters	4.6 meters	4.5 meters	SASS: 4.8 meters URG: 5.0 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a	n/a
<b>Distance:</b>				
<b>from obstructions not on roof</b>	None	None	None	None
<b>from supporting structure</b>	1.5 meters	1.6 meters	1.6 meters	SASS: 1.8 meters URG: 2.1 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a	n/a
<b>from trees</b>	20 meters	20 meters	20 meters	20 meters
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a	n/a
<b>Flow rate</b>	16.7 l/min	16.7 l/min	16.7 l/min	SASS: 6.7 l/min URG: 22.0 l/min
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	n/a	n/a	n/a	n/a
<b>Residence time</b>	n/a	n/a	n/a	n/a
<b>Proposed modifications within the next 18 months?</b>	None	None	None	See page 9
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	Yes	n/a	Yes
<b>Frequency of:</b>				
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a	Monthly verifications and quarterly audits
<b>flow rate verification for automated analyzers audit (PM)</b>	Bi-weekly verifications and quarterly audits	Bi-weekly verifications and quarterly audits	Bi-weekly verifications and quarterly audits	n/a
<b>one-point QC check (gaseous)</b>	n/a	n/a	n/a	n/a
<b>Last:</b>				
<b>annual performance evaluation (gaseous)</b>	n/a	n/a	n/a	n/a
<b>two semi-annual flow rate audits (PM)</b>	03-25-13 06-19-13 09-26-13 12-17-13	03-25-13 06-19-13 09-26-13 12-17-13	03-25-13 06-19-13 09-26-13 12-17-13	03-19-13 06-26-13 09-20-13 12-31-13

**Reno 3 (continued)**

	<b>FRM PM<sub>10</sub></b>	<b>FRM PM<sub>2.5</sub> (Collocated)</b>	<b>FRM PM<sub>2.5</sub> (Duplicate)</b>	<b>FRM PM<sub>10-2.5</sub> (Collocated)</b>
<b>Site type</b>	Population Exposure	Population Exposure	Population Exposure	Population Exposure
<b>Monitor type</b>	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)
<b>Spatial scale</b>	Neighborhood	Neighborhood	Neighborhood	Neighborhood
<b>Sampling method</b>	BGI PQ200	BGI PQ200	BGI PQ200	BGI PQ200 coarse pair
<b>Analysis method</b>	AQMD lab	AQMD lab	AQMD lab	Subtraction
<b>Method code</b>	125	142	142	173
<b>Parameter code</b>	81102 & 85101	88101	88101	86101
<b>Parameter occurrence code</b>	1	1	2	1
<b>Start date</b>	April 1988	January 1999	January 1999	March 2009
<b>Operation schedule</b>	1:3	1:3	1:3	1:3
<b>Sampling season</b>	All year	All year	All year	All year
<b>Monitoring objective(s)</b>	Research Support	NAAQS comparison	NAAQS comparison	Research Support
<b>Probe height</b>	5.0 meters	5.0 meters	5.0 meters	5.0 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a	n/a
<b>Distance:</b>				
<b>from obstructions not on roof</b>	None	None	None	None
<b>from supporting structure</b>	2.0 meters	2.0 meters	2.0 meters	2.0 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a	n/a
<b>from trees</b>	19.0 meters*	20 meters	19.0 meters*	19.0 meters*
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	1.1 meters	1.1 meters	n/a
<b>Flow rate</b>	16.7 l/min	16.7 l/min	16.7 l/min	16.7 l/min
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	n/a	n/a	n/a	n/a
<b>Residence time</b>	n/a	n/a	n/a	n/a
<b>Proposed modifications within the next 18 months?</b>	None	None	See page 9	None
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	Yes	Yes	n/a
<b>Frequency of:</b>				
<b>flow rate verification for manual samplers audit (PM)</b>	Monthly verifications and quarterly audits			
<b>flow rate verification for automated analyzers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>one-point QC check (gaseous)</b>	n/a	n/a	n/a	n/a
<b>Last:</b>				
<b>annual performance evaluation (gaseous)</b>	n/a	n/a	n/a	n/a
<b>two semi-annual flow rate audits (PM)</b>	03-27-13 06-19-13 09-26-13 12-17-13	03-27-13 06-19-13 09-26-13 12-17-13	03-27-13 06-19-13 09-26-13 12-17-13	03-27-13 06-19-13 09-26-13 12-17-13

\* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

**Reno 3 (continued)**

	<b>Trace CO</b>	<b>O<sub>3</sub></b>	<b>NO<sub>2</sub></b>	<b>Trace NO<sub>x</sub></b>
<b>Site type</b>	Population Exposure	Population Exposure	Population Exposure	Population Exposure
<b>Monitor type</b>	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)
<b>Spatial scale</b>	Neighborhood	Neighborhood	Neighborhood	Neighborhood
<b>Sampling method</b>	TAPI 300EU	TAPI 400E	TAPI 200EU	TAPI 200EU with 501
<b>Analysis method</b>	GFC	UV Photometry	Chemiluminescent	Chemiluminescent
<b>Method code</b>	593	087	099	599
<b>Parameter code</b>	42101	44201	42602	42612
<b>Parameter occurrence code</b>	1	1	1	1
<b>Start date</b>	December 2010	January 1983	November 2001	December 2010
<b>Operation schedule</b>	Continuous	Continuous	Continuous	Continuous
<b>Sampling season</b>	All year	All year	All year	All year
<b>Monitoring objective(s)</b>	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research Support
<b>Probe height</b>	4.9 meters	4.9 meters	4.8 meters	10 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a	n/a
<b>Distance:</b>				
<b>from obstructions not on roof</b>	None	None	None	None
<b>from supporting structure</b>	1.9 meters	1.9 meters	1.8 meters	10.0 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a	n/a
<b>from trees</b>	17.4 meters*	17.4 meters	17.4 meters*	17.4 meters*
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a	n/a
<b>Flow rate</b>	1440-2160 cc/min	720-880 cc/min	900-1100 cc/min	900-1100 cc/min
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	Teflon	Teflon	Teflon	Teflon
<b>Residence time</b>	6 seconds	6 seconds	12 seconds	8 seconds
<b>Proposed modifications within the next 18 months?</b>	See page 9	See page 9	See page 9	See page 9
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	n/s	n/a	n/a
<b>Frequency of:</b>				
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>one-point QC check (gaseous)</b>	Weekly	Weekly	Weekly (4 point w/ GPT)	Weekly (4 point w/ GPT)
<b>Last:</b>				
<b>annual performance evaluation (gaseous)</b>	03-15-13 06-26-13 08-27-13 12-12-13	03-15-13 06-26-13 08-27-13 12-12-13	03-21-13 06-28-13 08-28-13 12-16-13	03-20-13 06-27-13 08-28-13 12-13-13
<b>two semi-annual flow rate audits (PM)</b>	n/a	n/a	n/a	n/a

\* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

**Reno 3 (continued)**

	<b>Trace SO<sub>2</sub></b>	<b>Wind Speed</b>	<b>Wind Direction</b>	<b>Ambient Temperature</b>
<b>Site type</b>	Population Exposure	Population Exposure	Population Exposure	Population Exposure
<b>Monitor type</b>	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)
<b>Spatial scale</b>	Neighborhood	Neighborhood	Neighborhood	Neighborhood
<b>Sampling method</b>	TAPI 100EU	Vaisala WXT520	Vaisala WXT520	Vaisala WXT520
<b>Analysis method</b>	UV Fluorescence	Instrumental	Instrumental	Electronic Average
<b>Method code</b>	600	020	020	040
<b>Parameter code</b>	42401	61101	61102	62101
<b>Parameter occurrence code</b>	1	1	1	1
<b>Start date</b>	December 2010	April 2012	April 2012	January 2012
<b>Operation schedule</b>	Continuous	Continuous	Continuous	Continuous
<b>Sampling season</b>	All year	All year	All year	All year
<b>Monitoring objective(s)</b>	NAAQS comparison	Research, Public Information	Research, Public Information	Research, Public Information
<b>Probe height</b>	4.9 meters	10.0 meters	10.0 meters	10.0 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a	n/a
<b>Distance:</b>				
<b>from obstructions not on roof</b>	None	n/a	n/a	n/a
<b>from supporting structure</b>	1.9 meters	10.0 meters	10.0 meters	10.0 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a	n/a
<b>from trees</b>	17.4 meters*	20 meters	20 meters	20 meters
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a	n/a
<b>Flow rate</b>	585-715 cc/min	n/a	n/a	n/a
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	Teflon	n/a	n/a	n/a
<b>Residence time</b>	6 seconds	n/a	n/a	n/a
<b>Proposed modifications within the next 18 months?</b>	See page 9	See page 7	See page 7	See page 7
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	n/a	n/a	n/a
<b>Frequency of:</b>				
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>one-point QC check (gaseous)</b>	Weekly	n/a	n/a	n/a
<b>Last:</b>				
<b>annual performance evaluation (gaseous &amp; meteorological)</b>	03-15-13 06-26-13 08-27-13 12-12-13	02-22-13 taken out of service and replaced	02-22-13 taken out of service and replaced	02-22-13 taken out of service and replaced
<b>two semi-annual flow rate audits (PM)</b>	n/a	n/a	n/a	n/a

\* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

**Reno 3 (continued)**

	<b>Relative Humidity</b>	<b>Barometric Pressure</b>	<b>Precipitation</b>
<b>Site type</b>	Population Exposure	Population Exposure	Population Exposure
<b>Monitor type</b>	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)
<b>Spatial scale</b>	Neighborhood	Neighborhood	Neighborhood
<b>Sampling method</b>	Vaisala WXT520	Vaisala WXT520	Vaisala WXT520
<b>Analysis method</b>	Instrument Average	Barometric Sensor	Impact Sensor
<b>Method code</b>	011	014	n/a
<b>Parameter code</b>	62201	64101	65102
<b>Parameter occurrence code</b>	1	1	1
<b>Start date</b>	January 2012	January 2012	January 2012
<b>Operation schedule</b>	Continuous	Continuous	Continuous
<b>Sampling season</b>	All year	All year	All year
<b>Monitoring objective(s)</b>	Research, Public Information	Research, Public Information	Research, Public Information
<b>Probe height</b>	10.0 meters	10.0 meters	10.0 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a
<b>Distance:</b>			
<b>from obstructions not on roof</b>	None	None	None
<b>from supporting structure</b>	10.0 meters	10.0 meters	10.0 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a
<b>from trees</b>	20 meters	20 meters	20 meters
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a
<b>Flow rate</b>	n/a	n/a	n/a
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	n/a	n/a	n/a
<b>Residence time</b>	n/a	n/a	n/a
<b>Proposed modifications within the next 18 months?</b>	See page 7	See page 7	See page 7
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	n/a	n/a
<b>Frequency of:</b>			
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	n/a	n/a	n/a
<b>one-point QC check (gaseous)</b>	n/a	n/a	n/a
<b>Last:</b>			
<b>annual performance evaluation (gaseous &amp; meteorological)</b>	02-22-13 taken out of service and replaced	02-22-13 taken out of service and replaced	02-22-13 taken out of service and replaced
<b>two semi-annual flow rate audits (PM)</b>	n/a	n/a	n/a

**Reno 3 (continued)**

	<b>Wind Speed</b>	<b>Wind Direction</b>	<b>Ambient Temperature</b>	<b>Relative Humidity</b>
<b>Site type</b>	Population Exposure	Population Exposure	Population Exposure	Population Exposure
<b>Monitor type</b>	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)	SLAMS (NCore)
<b>Spatial scale</b>	Neighborhood	Neighborhood	Neighborhood	Neighborhood
<b>Sampling method</b>	Met One 50.5H	Met One 50.5H	YSI Series 700	Met One 083E
<b>Analysis method</b>	Sonic Anemometer	Sonic Anemometer	Electronic Average	Met One 083D
<b>Method code</b>	061	061	014	61
<b>Parameter code</b>	61102	61101	64101	62201
<b>Parameter occurrence code</b>	1	1	1	1
<b>Start date</b>	February 22, 2013	February 22, 2013	February 22, 2013	February 22, 2013
<b>Operation schedule</b>	Continuous	Continuous	Continuous	Continuous
<b>Sampling season</b>	All year	All year	All year	All year
<b>Monitoring objective(s)</b>	Research, Public Information	Research, Public Information	Research, Public Information	Research, Public Information
<b>Probe height</b>	10.0 meters	10.0 meters	5.0 meters	5.0 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a	n/a
<b>Distance:</b>				
<b>from obstructions not on roof</b>	None	None	None	None
<b>from supporting structure</b>	10.0 meters	10.0 meters	5.0 meters	5.0 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a	n/a
<b>from trees</b>	20 meters	20 meters	20 meters	20 meters
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a	n/a
<b>Flow rate</b>	n/a	n/a	n/a	n/a
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	n/a	n/a	n/a	n/a
<b>Residence time</b>	n/a	n/a	n/a	n/a
<b>Proposed modifications within the next 18 months?</b>	None	None	None	None
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	n/a	n/a	n/a
<b>Frequency of:</b>				
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>one-point QC check (gaseous)</b>	n/a	n/a	n/a	n/a
<b>Last:</b>				
<b>annual performance evaluation (gaseous &amp; meteorological)</b>	02-22-13 (installed) 09-27-13 (replaced) 12-16-13	02-22-13 (installed) 09-27-13 (replaced) 12-16-13	03-27-13 06-26-13 09-26-13 12-16-13	03-27-13 06-26-13 09-26-13 12-16-13
<b>two semi-annual flow rate audits (PM)</b>	n/a	n/a	n/a	n/a

## South Reno

Located on the NV Energy property at 4110 DeLucchi Lane, this site is in a transitional environment between open fields and office buildings.

<b>Site name:</b>	South Reno
<b>AQS ID:</b>	32-031-0020
<b>Geographical coordinates:</b>	39° 28.153'N, 119° 46.521'W
<b>Location:</b>	Northeast corner of NV Energy campus.
<b>Street address:</b>	4110 DeLucchi Lane Reno, NV 89502
<b>County:</b>	Washoe
<b>Distance to road:</b>	37 meters to DeLucchi Lane.
<b>Traffic count:</b>	5,400 AADT (2010-2012) (NDOT ATR 0310690 - Neil Road, 515 feet north of DeLucchi Lane)
<b>Groundcover:</b>	Gravel / Dirt / Vegetated
<b>Representative area:</b>	Reno-Sparks MSA

Figure 19  
South Reno Monitoring Station



Figure 20  
South Reno Monitoring Site Vicinity Map

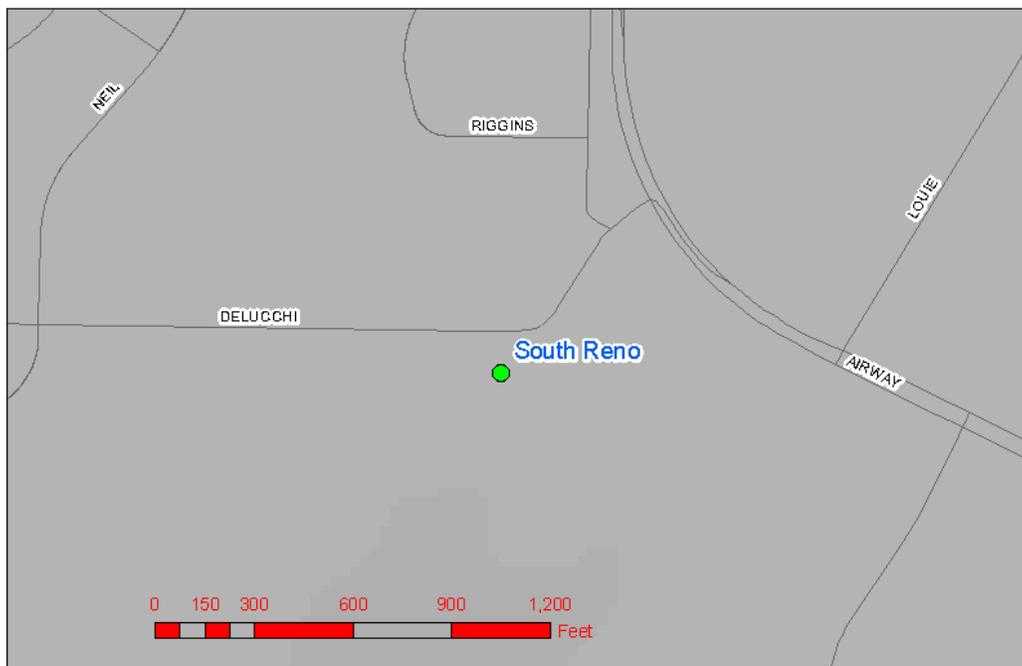
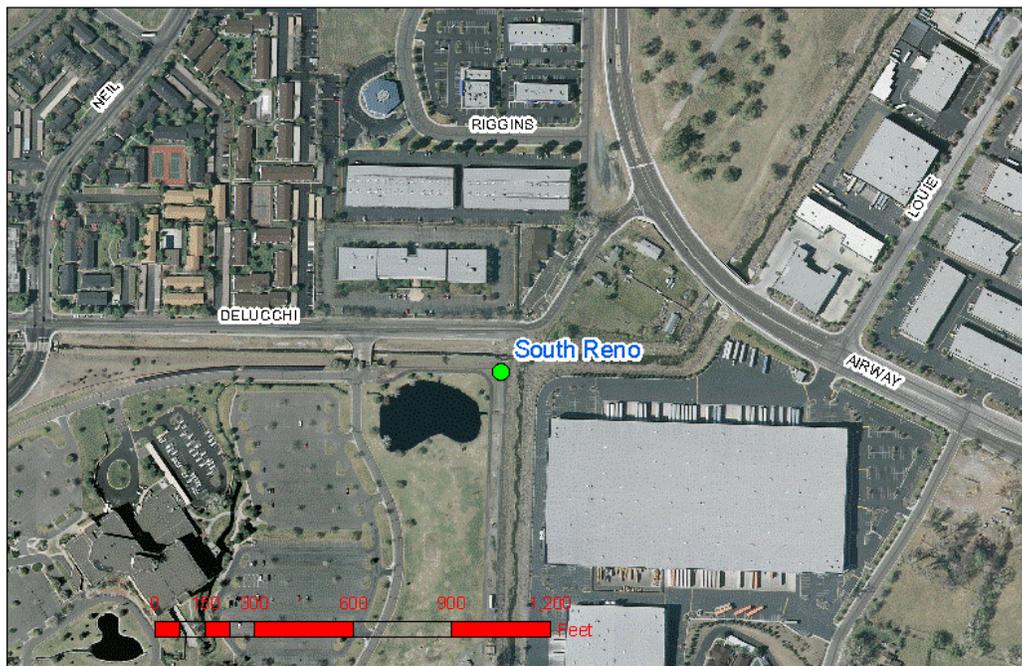


Figure 21  
South Reno Monitoring Site Vicinity Aerial



**South Reno (continued)**

	<b>PM<sub>10</sub></b>	<b>CO</b>	<b>O<sub>3</sub></b>
<b>Site type</b>	Population Exposure	Population Exposure	Population Exposure
<b>Monitor type</b>	SLAMS	SLAMS	SLAMS
<b>Spatial scale</b>	Neighborhood	Neighborhood	Neighborhood
<b>Sampling method</b>	Met One BAM 1020	TAPI 300EU	TAPI 400E
<b>Analysis method</b>	Beta Attenuation	GFC	UV Photometry
<b>Method code</b>	122	093	087
<b>Parameter code</b>	81102	42101	44201
<b>Parameter occurrence code</b>	2	1	1
<b>Start date</b>	January 1988	January 1988	January 1988
<b>Operation schedule</b>	Continuous	Continuous	Continuous
<b>Sampling season</b>	All year	All year	All year
<b>Monitoring objective(s)</b>	NAAQS comparison	NAAQS comparison	NAAQS comparison
<b>Probe height</b>	4.3 meters	4.0 meters	4.0 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a
<b>Distance:</b>			
<b>from obstructions not on roof</b>	None	None	None
<b>from supporting structure</b>	1.5 meters	1.2 meters	1.2 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a
<b>from trees</b>	20 meters	29 meters	29 meters
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a
<b>Flow rate</b>	16.7 l/min	1440-2160 cc/min	720-880 cc/min
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	n/a	Teflon	Teflon
<b>Residence time</b>	n/a	9 seconds	9 seconds
<b>Proposed modifications within the next 18 months?</b>	None	See page 8	See page 8
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	n/a	n/a
<b>Frequency of:</b>			
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	Bi-weekly verifications and quarterly audits	n/a	n/a
<b>one-point QC check (gaseous)</b>	n/a	Bi-weekly (3 point)	Bi-weekly (3 point)
<b>Last:</b>			
<b>annual performance evaluation (gaseous)</b>	n/a	03-13-13 06-24-13 08-22-13 12-06-13	03-13-13 06-24-13 08-22-13 12-06-13
<b>two semi-annual flow rate audits (PM)</b>	03-21-13 06-20-13 09-24-13 12-11-13	n/a	n/a

## Sparks

The Sparks site is located on US Postal Service property at 750 Fourth Street. The site is surrounded by commercial property, a residential neighborhood and is adjacent to Dilworth Middle School. In 2007 the Sparks site was moved approximately 55 meters north of its previous location, due to tree growth affecting siting criteria.

<b>Site name:</b>	Sparks
<b>AQS ID:</b>	32-031-1005
<b>Geographical coordinates:</b>	39° 32.455'N, 119° 44.806'W
<b>Location:</b>	East end of US Postal Service back parking lot.
<b>Street address:</b>	750 4 <sup>th</sup> Street Sparks, NV 89431
<b>County:</b>	Washoe
<b>Distance to road:</b>	50 meters to Prater Way and 103 meters to 4 <sup>th</sup> Street.
<b>Traffic count:</b>	14,167 AADT (2010-2012) (NDOT ATR 0310497 - Prater Way, 100 feet east of Pyramid Way)
<b>Groundcover:</b>	Paved / Vegetated / Decomposed Granite
<b>Representative area:</b>	Reno-Sparks MSA

Figure 22  
Sparks Monitoring Station

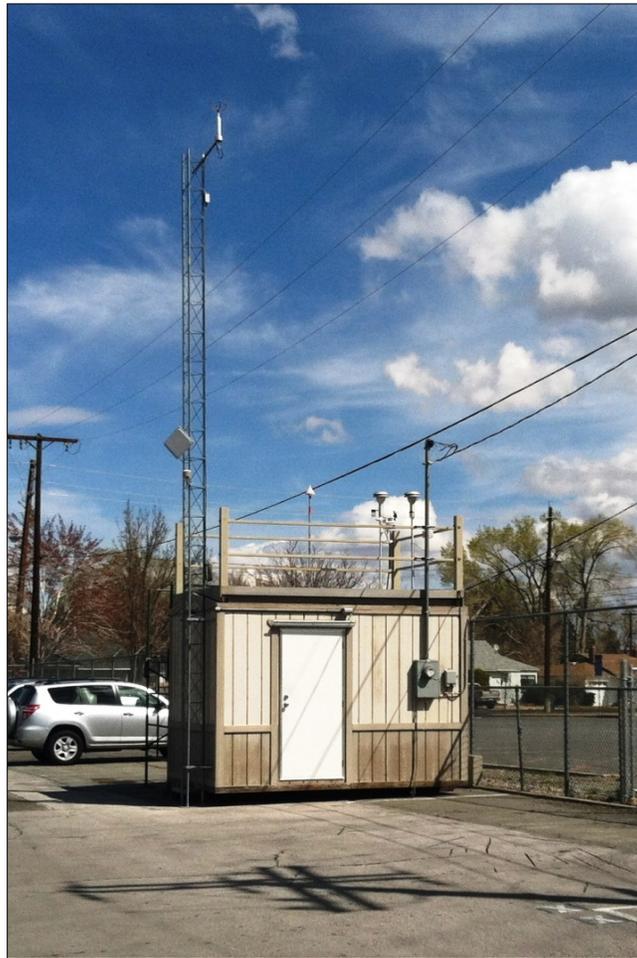


Figure 23  
Sparks Monitoring Site Vicinity Map



Figure 24  
Sparks Monitoring Site Vicinity Aerial



**Sparks (continued)**

	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO</b>	<b>O<sub>3</sub></b>
<b>Site type</b>	Population Exposure	Highest Concentration	Highest Concentration	Highest Concentration
<b>Monitor type</b>	SLAMS	SLAMS	SLAMS	SLAMS
<b>Spatial scale</b>	Neighborhood	Neighborhood	Neighborhood	Neighborhood
<b>Sampling method</b>	Met One BAM 1020	Met One BAM 1020	TAPI 300EU	TAPI 400E
<b>Analysis method</b>	Beta Attenuation	Beta Attenuation	GFC	UV Photometry
<b>Method code</b>	122	170	093	087
<b>Parameter code</b>	81102	88101	42101	44201
<b>Start date</b>	April 1988	January 2012	January 1980	January 1979
<b>Parameter occurrence code</b>	1	1	1	1
<b>Operation schedule</b>	Continuous	Continuous	Continuous	Continuous
<b>Sampling season</b>	All year	All year	All year	All year
<b>Monitoring objective(s)</b>	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison
<b>Probe height</b>	4.5 meters	4.3 meters	4.6 meters	4.6 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a	n/a
<b>Distance:</b>				
<b>from obstructions not on roof</b>	None	None	None	None
<b>from supporting structure</b>	1.4 meters	1.5 meters	1.7 meters	1.7 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a	n/a
<b>from trees</b>	26 meters	26 meters	26 meters	26 meters
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a	n/a
<b>Flow rate</b>	16.7 l/min	16.7 l/min	1440-2160 cc/min	720-880 cc/min
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	n/a	n/a	Teflon	Teflon
<b>Residence time</b>	n/a	n/a	9 seconds	9 seconds
<b>Proposed modifications within the next 18 months?</b>	See page 8	See pages 8 & 9	See page 8	See page 8
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	Yes	n/a	n/a
<b>Frequency of:</b>				
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	Bi-weekly and quarterly audits	Bi-weekly and quarterly audits	n/a	n/a
<b>one-point QC check (gaseous)</b>	n/a	n/a	Bi-weekly (3 point)	Bi-weekly (3 point)
<b>Last:</b>				
<b>annual performance evaluation (gaseous)</b>	n/a	n/a	03-11-13 06-20-13 08-21-13 12-05-13	03-11-13 06-20-13 08-21-13 12-05-13
<b>two semi-annual flow rate audits (PM)</b>	03-25-13 06-25-13 09-19-13 11-08-13	03-25-13 06-25-13 09-19-13 11-08-13	n/a	n/a

## Toll

The Toll Road site is located at 684A State Route 341 (Geiger Grade), one-half mile east of US Highway 395. The site is near the edge of a residential neighborhood and adjacent to an area that may become commercially developed. Due to the distance from the probe to the nearest roadway, this is a middle scale site for CO.

<b>Site name:</b>	Toll
<b>AQS ID:</b>	32-031-0025
<b>Geographical coordinates:</b>	39° 23.990'N, 119° 44.376'W
<b>Location:</b>	North end of Washoe County School District parking lot.
<b>Street address:</b>	684A State Route 341 Reno, NV 89521
<b>County:</b>	Washoe
<b>Distance to road:</b>	21 meters to SR341 (Geiger Grade Road).
<b>Traffic count:</b>	15,000 AADT (2010-2012) (NDOT ATR 0310137 - SR 341, 0.4 miles east of US 395)
<b>Groundcover:</b>	Paved parking lot / Dirt
<b>Representative area:</b>	Reno-Sparks MSA

Figure 25  
Toll Monitoring Station



Figure 26  
Toll Monitoring Site Vicinity Map

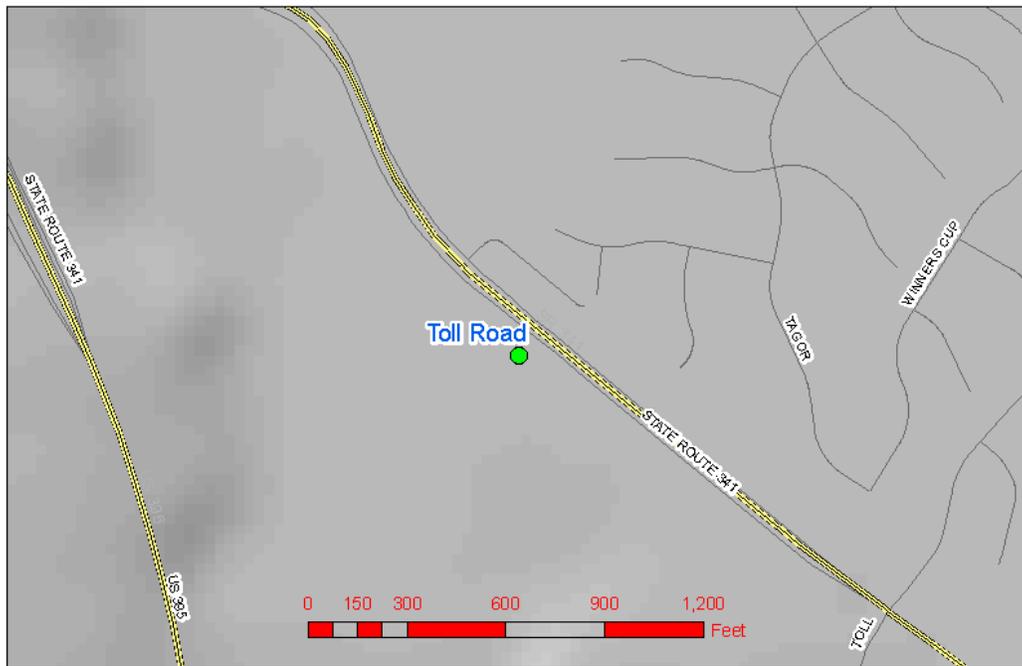


Figure 27  
Toll Monitoring Site Vicinity Aerial



**Toll (continued)**

	<b>PM<sub>10</sub></b>	<b>CO</b>	<b>O<sub>3</sub></b>
<b>Site type</b>	Population Exposure	Source Oriented	Population Exposure
<b>Monitor type</b>	SLAMS	SLAMS	SLAMS
<b>Spatial scale</b>	Neighborhood	Middle	Neighborhood
<b>Sampling method</b>	Met One BAM 1020	API 300	TAPI 400E
<b>Analysis method</b>	Beta Attenuation	GFC	UV Photometry
<b>Method code</b>	122	093	087
<b>Parameter code</b>	81102	42101	44201
<b>Parameter occurrence code</b>	22	1	1
<b>Start date</b>	March 1996	March 1996	March 1996
<b>Operation schedule</b>	Continuous	Continuous	Continuous
<b>Sampling season</b>	All year	All year	All year
<b>Monitoring objective(s)</b>	NAAQS comparison	NAAQS comparison	NAAQS comparison
<b>Probe height</b>	4.4 meters	4.0 meters	4.0 meters
<b>Height of obstruction not on roof</b>	n/a	n/a	n/a
<b>Distance:</b>			
<b>from obstructions not on roof</b>	None	None	None
<b>from supporting structure</b>	1.5 meters	1.2 meters	1.2 meters
<b>from obstructions on roof</b>	n/a	n/a	n/a
<b>from trees</b>	26 meters	12.5 meters*	12.5 meters*
<b>to furnace or incinerator flue</b>	n/a	n/a	n/a
<b>between collocated monitors</b>	n/a	n/a	n/a
<b>Flow rate</b>	16.7 l/min	720-880 cc/min	720-880 cc/min
<b>Unrestricted airflow</b>	360 degrees	360 degrees	360 degrees
<b>Probe material</b>	n/a	Teflon	Teflon
<b>Residence time</b>	n/a	8 seconds	8 seconds
<b>Proposed modifications within the next 18 months?</b>	None	None	None
<b>Is the monitor suitable for comparison against the annual PM<sub>2.5</sub> NAAQS?</b>	n/a	n/a	n/a
<b>Frequency of:</b>			
<b>flow rate verification for manual samplers audit (PM)</b>	n/a	n/a	n/a
<b>flow rate verification for automated analyzers audit (PM)</b>	Bi-weekly and quarterly audits	n/a	n/a
<b>one-point QC check (gaseous)</b>	n/a	Bi-weekly (3 point)	Bi-weekly (3 point)
<b>Last:</b>			
<b>annual performance evaluation (gaseous)</b>	n/a	03-13-13 06-24-13 08-22-13 12-06-13	03-13-13 06-24-13 08-22-13 12-06-13
<b>two semi-annual flow rate audits (PM)</b>	03-21-13 06-20-13 09-24-13 12-11-13	n/a	n/a

\* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.