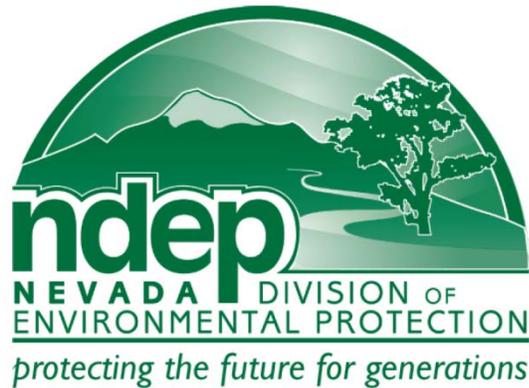


AMBIENT AIR MONITORING NETWORK PLAN

2013



STATE OF NEVADA DIVISION OF ENVIRONMENTAL PROTECTION BUREAU OF AIR QUALITY PLANNING

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Acronyms and Abbreviations

CAA:	Clean Air Act
AQS:	Air Quality System
BAQP:	Bureau of Air Quality Planning
BAM:	Beta Attenuation Monitor
CFR:	Code of Federal Regulations
CO:	Carbon Monoxide
DCNR:	Department of Conservation and Natural Resources
FEM:	Federal Equivalent Method
FRM:	Federal Reference Method
IMPROVE:	Interagency Monitoring of Protected Visual Environments
NAAQS:	National Ambient Air Quality Standard
NAC:	Nevada Administrative Code
NDEP:	Nevada Division of Environmental Protection
O ₃ :	Ozone
PM:	Particulate Matter (2.5 or 10 microns)
SLAMS:	State and Local Air Monitoring Station
SPMS:	Special Purpose Monitoring Station
USEPA:	United States Environmental Protection Agency

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Overview

The monitoring program of the Nevada Division of Environmental Protection (NDEP) operates an ambient air quality monitoring network of gaseous and particulate pollutant monitors. The monitors are located in small communities throughout rural Nevada. In the metropolitan areas of Reno and Las Vegas; the Washoe County District Health Department, Air Quality Management Division and the Clark County Department of Air Quality and Environmental Management operate and maintain their respective monitoring networks separate from NDEP and submit their Network Plan independently to the United States Environmental Protection Agency (USEPA). Also, there are several federally recognized tribes that conduct air monitoring within Nevada and submit their own Annual Network Plans to the USEPA.

NDEP regulates air quality to protect public health and the environment. Monitoring data is a crucial component of regulations used to determine compliance with the USEPA primary and secondary air quality standards. Other important uses of these monitors include: support and issuance of air quality forecasts, support of long-term health assessments, and tracking long-term air quality both to gauge effectiveness of emission control and abatement strategies and to quantify accuracy of ambient pollutant monitoring.

Goals

NDEP created an ambient air quality monitoring program to provide useful and accurate information on air quality, which is used to evaluate the success of the State's air quality programs. The Clean Air Act of 1970, and subsequent amendments, defines air quality standards for various air pollutants necessary to protect the public from injurious pollution concentrations. Air pollution concentrations that exceed the National Ambient Air Quality Standard (NAAQS) can cause a public health hazard, nuisance, annoyance, or damage to flora, fauna and personal property.

The NAAQS, published by the USEPA, can be found in 40 Code of Federal Regulations (CFR) Part 50, which defines the levels of air quality necessary to protect human health and welfare. An area is considered to be in nonattainment for a pollutant if it has violated the NAAQS for that pollutant. The CFR includes procedures for evaluating measured air quality against the NAAQS. State air quality standards can be found in Nevada Administrative Code (NAC) 445B.22097.

Background

The State of Nevada has four jurisdictions which independently manage their own air programs as designated by statute: Department of Conservation and Natural Resources (DCNR), Division of Environmental Protection (NDEP), Bureau of Air Quality Planning (BAQP); Washoe County District Health Department; Air Quality Management Division; Clark County Department of Air Quality and Environmental Management and various tribal agencies.

State agencies that conduct ambient air monitoring using State and Local Air Monitoring Stations (SLAMS) or Special Purpose Monitoring Stations (SPMS), must use Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM) that comply with federal quality assurance requirements listed in 40 CFR 58, Appendix A. In conjunction with the Network Plan, a BAQP quality assurance plan was developed to form the framework for planning, implementing, assessing and reporting work performed by the BAQP and for implementing quality assurance and quality control protocols.

The Ambient Air Monitoring Program Quality Assurance Project Plan (QAPP) was developed to address quality management as well as quality assurance. The QAPP defines the policies, procedures, specifications, standards, and documentation necessary to: 1) provide data of adequate quality to meet monitoring objectives, and 2) minimize loss of air quality data due to malfunctions or out-of-control conditions. As part of the QAPP, the Quality Management Plan (QMP) describes the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces between planning,

implementing, assessing and reporting activities involving environmental data operations. Both the QAPP and QMP will be updated during this network plan year.

Additionally, the BAQP has developed ambient monitoring guidelines in order to ensure that ambient air quality data collected, at regulated facilities in the State, are of the highest quality and conform to federal requirements for quality assurance listed under 40 CFR 58.

Ambient air quality monitoring data must be certified on an annual basis as accurate and complete. The certification process begins with the complete submittal of all SLAMS data to the federal Air Quality System (AQS) for the calendar year. Submittal of data into AQS for 2012 has been accomplished. Precision and accuracy reports and certification of that data should also be submitted within that time frame.

Network Design

With the addition of two new PM_{2.5} sites for the year 2013, there will be eleven ambient air quality monitoring stations in Nevada under the jurisdiction of NDEP. Air quality monitoring is represented by ten SLAMS and one SPM. The ozone monitoring conducted by NDEP is done on a seasonal basis from April 1st to October 31st of each year. The EPA's approval of a seasonal ozone monitoring schedule for NDEP is documented in Appendix A. There are three meteorological stations, one in Carson City, one in Pahrump and one mobile tower that is deployed at various locations within the state. These met stations are used to confirm the local meteorological data from the monitoring stations.

In addition to these four independent monitoring networks, air quality monitoring is conducted through the Interagency Monitoring of Protected Visual Environments (IMPROVE) network by the federal land management agencies. There are two IMPROVE monitoring sites in Nevada, at the Jarbidge Wilderness area and Great Basin National Park, Lehman Caves. The IMPROVE program is a cooperative measurement effort governed by a steering committee composed of representatives from Federal and regional-state organizations. The IMPROVE monitoring program was established in 1985 to aid the creation of Federal and State implementation plans for the protection of visibility in Class I

areas. In order to meet the site objectives, the IMPROVE site meets the methodologies and QA/QC procedures approved by the EPA Regional Administrator. Utilizing the criteria set for this Jarbidge site, the NDEP is able to satisfy their regional and transport monitoring requirement. According to 40 CFR Part 58 Appendix D 4.7.3, “each state shall install and operate at least one PM_{2.5} site to monitor for regional background and regional transport.” Therefore, the NDEP utilizes the Jarbidge site to meet this particular requirement.

The following table shows the locations and types of monitors operated by NDEP.

Table 1: NDEP’S Ambient Air Monitoring Network

Location	Ozone	Carbon Monoxide	PM10	PM2.5
Elko			1 (SLAMS)	
Fallon	1 (SLAMS)			
Fernley	1 (SLAMS)			
Carson City Armory	1 (SLAMS)			2 (SLAMS)
Pahrump-Church Site			1 (SLAMS)	
Pahrump-Manse Elementary			1 (SLAMS)	
Pahrump-Glen Oaks			1 (SLAMS)	
Pahrump-Linda Street			1 (SLAMS)	
Gardnerville Ranchos				1 (SPM)
Total	3		5	3

SLAMS – State and Local Air Monitoring Station

SPM – Special Purpose Monitor

Minimum Monitoring Requirements

The USEPA provides minimum site requirements for ozone and particulate matter based on metropolitan statistical area (MSA) population. The NDEP's air monitoring network meets or, in most cases, exceeds the minimum network requirements. The monitors currently required in the NDEP monitoring network by the USEPA are located in Carson City (O₃), Fallon (O₃), Fernley (O₃) and Pahrump (PM₁₀). The four PM₁₀ monitoring sites in Pahrump are required through a Memorandum of Understanding (MOU) between NDEP, USEPA, Nye County and the Town of Pahrump. Otherwise, according to 40 CFR Part 58 Appendix D: Tables D-4 and D-5; sections 4.2, 4.3.2, 4.3.3, 4.4.2 and 4.5, additional monitoring for criteria pollutants is not presently required. However, based on data obtained through special study monitoring in Carson City and Gardnerville NDEP is establishing a PM_{2.5} monitoring network. These new sites will allow the NDEP to establish credible data to ascertain what the PM_{2.5} conditions are within both areas. Within 3 years, after a valid design value is established, the NDEP will evaluate the program and determine if increased PM_{2.5} monitoring is needed within the SPM areas. The following table outlines the minimum required monitors within the NDEP ambient air monitoring network.

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Table 2: Minimum Monitoring Requirements by Pollutant

Pollutant	Minimum # of Monitors Required	# of Monitors Active	# of Monitors needed	Location	MSA/CSA	County(ies)	County Pop. (2012)	Design Values
Ozone	3	3	0	Carson City	Carson City MSA	Carson City	55,441	66 ppb (2009-2011)
				Fallon	Fallon MSA	Churchill	25,238	59 ppb (2009-2011)
				Fernley	Rural	Lyon	52,245	64 ppb (2009-2011)
Lead*	0	0	0	N/A	N/A	N/A	N/A	N/A
SO2*	0	0	0	N/A	N/A	N/A	N/A	N/A
NO2*	0	0	0	N/A	N/A	N/A	N/A	N/A
PM10	4	5	0	Elko (1)	Elko MSA	Elko	51,771	0.8 (2009-2011)
				Pahrump (4)	Pahrump MSA/Las Vegas-Paradise-Pahrump CSA	Nye	44,292	Manse = 2.5 Church = 0.0 Glen Oaks = N/A Linda Street = 0.0 (2009-2011)
PM2.5	0	2	0	Carson City	Carson City MSA	Carson City	55,441	New Site
PM2.5	0	1	0	Gardnerville	Gardnerville Ranchos MSA	Douglas	48,015	New Site
Total	7	11	0					

*Based on 40 CFR Part 58 Appendix D: Tables D-4 and D-5; sections 4.2, 4.3.2, 4.3.3, 4.4.2 and 4.5, additional monitoring for criteria pollutants is not presently required. Additionally, based on the 2008 Lead NAAQS Final Rule, 2010 SO₂ NAAQS Final Rule and the 2010 NO₂ NAAQS Final Rule, NDEP is not required to monitor for these criteria pollutants.

Changes in Monitoring Network

Over the last 12 months, as proposed in last year’s plan, two significant impacts and changes to the monitoring network are in effect. First, as of April 1st, 2013 the ozone monitor located at the Carson City Maintenance yard has been relocated to a comparable vacant lot 2.5 miles to the west. This move was necessitated by the city of Carson City re-purposing use of this location. Based on the weight of the evidence and pursuant to 40 CFR 58.14(c)(6), EPA approved the NDEP’s relocation of the SLAMS ozone monitoring at 3300 E. 5th Street to 2601 S. Carson Street in Carson City (Appendix C). Data collected from the new site will be compared to the old site to determine representativeness. Notification of the data collection as well as new site information will be created in Air Quality Systems (AQS). Second, the

NDEP decided to create a collocated PM_{2.5} SLAMS site in Carson City and a SPM site in Gardnerville. The decision to create a PM_{2.5} network was based on the tightening of the PM_{2.5} NAAQS and the population density of Carson City and Gardnerville. Although Carson City and Gardnerville do not meet the CFR requirement for siting a PM_{2.5} network, the NDEP believes it is important to be monitoring these areas to assess possible public health issues. The USEPA will be notified when data collection and submittal at the new monitoring site is commenced.

In 2011, NDEP was informed that we had to relocate our PM₁₀ monitor located at the Manse School in Pahrump due to the school closing. In February 2011, NDEP submitted a letter to the EPA requesting approval to relocate the monitor. In March of 2011, NDEP received approval to move the existing monitor to the Nye County School District building. However, the Pahrump School District found a new use for the school allowing NDEP to remain at the existing site. At this time, NDEP will continue to monitor at the Manse School. If needed, NDEP has access to the Nye County School District building for our back-up site.

For this next year, there are no expected changes. Over the next five years, through 2018, NDEP will evaluate our current network to determine if any new sites or monitors need to be added to the existing monitoring network.

Purpose of Monitors

The purpose of the Nevada Air Monitoring Network is to provide useful and accurate information on air quality, which is used to evaluate the success of the State's air quality programs. To accomplish this task, the NAAQS are used to identify the criteria pollutants: CO (Carbon Monoxide), Pb (Lead), NO₂ (Nitrogen Dioxide), O₃ (Ozone), particulate matter (PM₁₀ and PM_{2.5}), and SO₂ (Sulfur Dioxide). Measuring pollutant concentrations in outdoor air and comparing the measured concentrations to corresponding standards help to classify ambient air quality status of an area as either attainment or nonattainment. The NAAQS are broken down into primary and secondary standards. Primary standards are those established to protect public health. Secondary standards are those established to protect the public welfare from adverse pollution effects on soils, water, vegetation, man-made materials,

animals, weather, visibility, climate, property, and the economy. The scientific criteria upon which the standards are based are reviewed periodically by the USEPA, who may reestablish or change the standards according to its findings.

A pollutant measurement that is greater than the ambient air quality standard for its specific averaging time is called an exceedance. This is not necessarily a synonym for a violation; for each pollutant there are specific rules about how many exceedances are allowed in a given time period before a pattern of exceedances is considered to be a violation of the NAAQS. A violation may result in regulatory action to clean-up the area's air. Exceptions are made to allow for certain limited exceedances of the standard that may occur, for example, during an unusual weather pattern or wildfire (exceptional events). Regulatory action is typically reserved for cases where the exceedances are too large or too frequent.

Historically, ambient air quality monitoring by BAQP has looked at trends in air quality to aid in the local planning process. Traffic, wood burning stoves, and growth related activities have prompted air quality monitoring in specific areas around the State. Data from these sites has led to public education and outreach to communities identifying the potential health effects caused by air pollutants in the environment. Ordinances controlling surface area disturbances and other related activities that produce dust have also been implemented with the help of the monitoring sites.

Overview of Monitored Parameters

Carbon Monoxide (CO)

CO is a poisonous gas that, when introduced into the bloodstream, inhibits the delivery of oxygen to body tissue. The health risk is greatest for individuals with cardiovascular disease.

Ozone (O₃)

Ground-level ozone, or photochemical smog, is not emitted into the atmosphere as ozone, but rather is formed by the reactions of other pollutants. The primary pollutants entering into this reaction, VOCs and oxides of nitrogen, create ozone in the presence of sunlight. Ozone is a strong irritant of the upper respiratory system and also causes damage to crops.

Particulate Matter (PM₁₀)

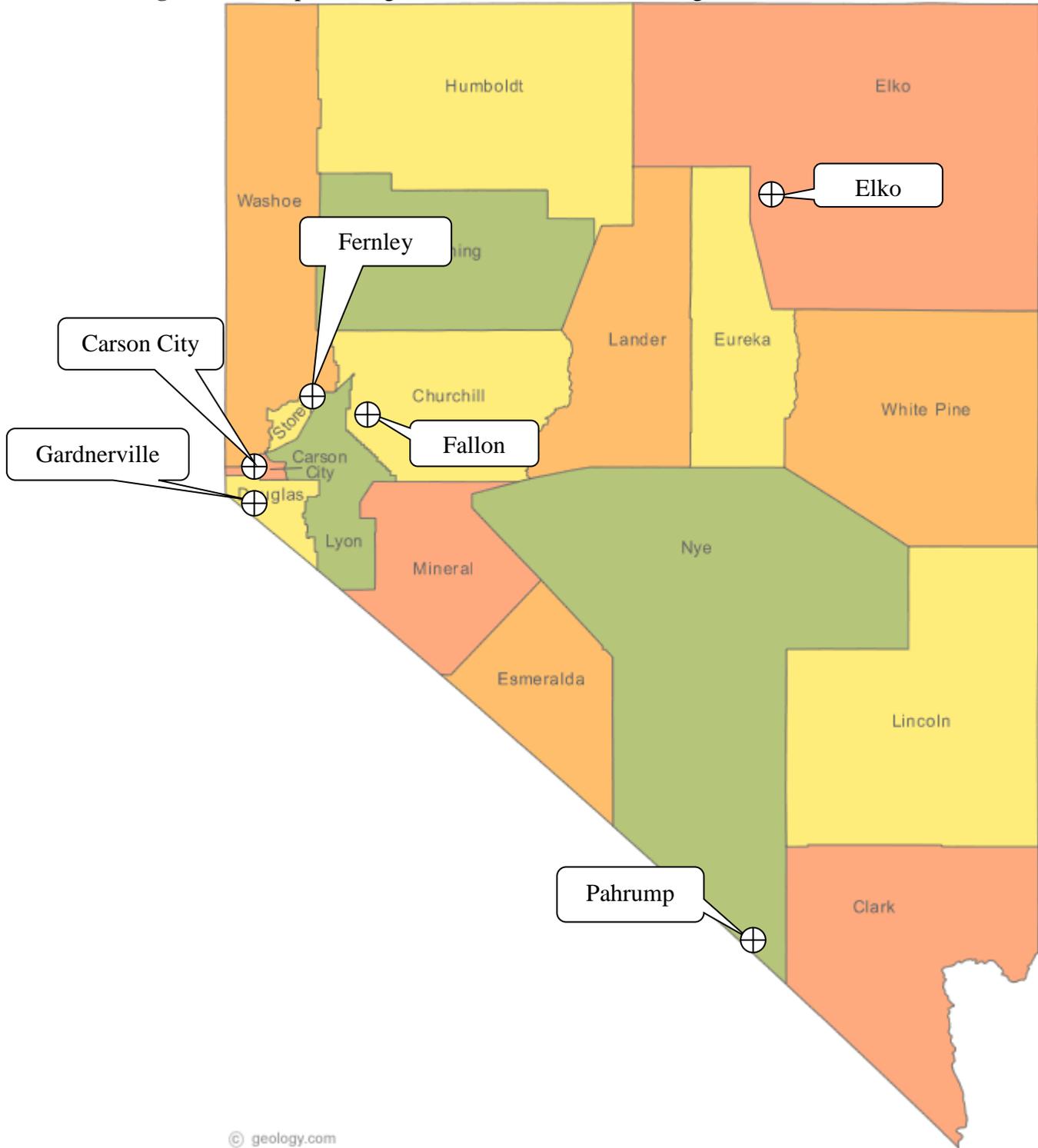
Particulate matter with an aerodynamic diameter of 10 microns or less is emitted from transportation and industrial sources. Exposure to particle pollution is linked to a variety of significant health problems ranging from aggravated asthma to premature death in people with heart and lung disease.

Fine Particulate Matter (PM_{2.5})

Fine particulate matter with a diameter of 2.5 microns or less is created primarily from industrial processes and fuel combustion. These particles are breathed deeply into the lungs. Exposure to particle pollution is linked to a variety of significant health problems ranging from aggravated asthma to premature death in people with heart and lung disease.

Site Map

Figure 1: A map showing the locations of the monitoring stations maintained in NDEP's network.



¹ Map template from:
<http://geology.com/state-map/maps/nevada-county-map.gif>

Elko: Detailed Site Information

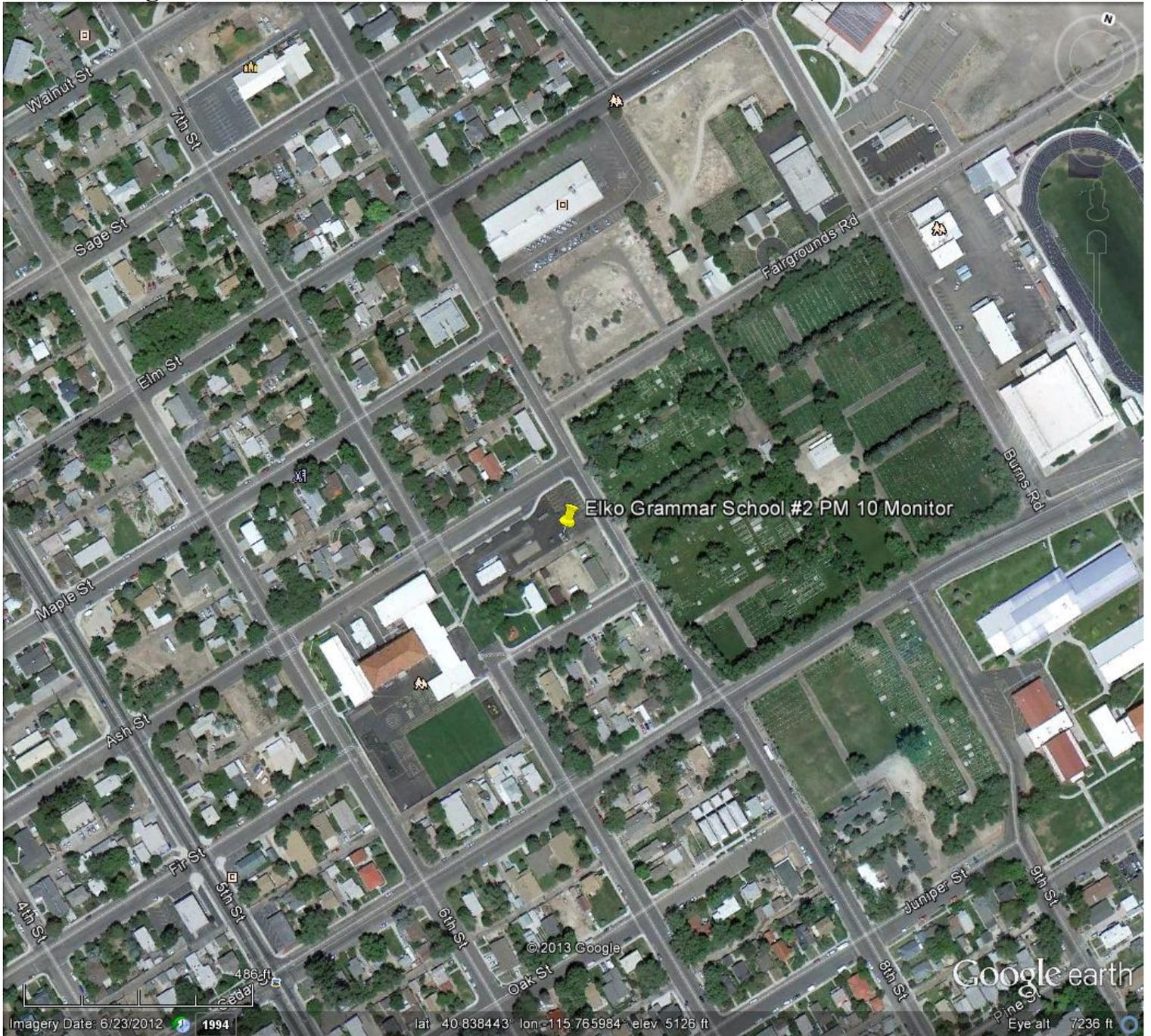
Prior to 1992 the location for this sampler was the fire station at 723 Railroad Street (ID #32-007-003) in a commercial area. In November of 1992 this continuous PM₁₀ monitoring site was relocated to the roof of the State offices at 850 Elm Street in a predominantly residential area. The monitoring objective was to determine typical concentration/population oriented. The manual sampler was replaced with a continuous (TEOM) PM₁₀ monitor in December 1998. In September 2008, the TEOM monitor was closed and a new BAM 1020 monitor was sited at the Elko Grammar School #2.

Site Name	Elko
AQS ID	32-007-0005
GIS Coordinates	Lat +40.838350 Long -115.766029
Location	Elko Grammar School #2
Address	1055 7th Street
County	Elko
Distance to Road	18 Meters
Traffic Count	1400 AADT (2009) Station #0070203
Groundcover	Asphalt
Representative Area	Elko MSA (Micropolitan Statistical Area)
Pollutant, POC	PM₁₀; 1
Parameter Code	81102
Basic monitor objective(s)	NAAQS
Site type(s)	Population exposure
Monitoring type(s)	SLAMS
Instrumental manufacturer and model	Met One BAM 1020
Method Code	122
FRM/FEM/ARM/other	FEM
Collecting Agency	NDEP
Analytical Lab	N/A
Spatial Scale	Neighborhood
Monitoring start date	09/25/2008
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	01/01-12/31
Analysis Method	EQPM-0798-122
Probe Height	2.6 Meters
Dist. fm. supporting structure	Vertical Distance =1.2 meters
Dist. fm. obstructions on roof	N/A
Dist. fm. Obstructions not on roof (meters)	N/A
Dist. fm. trees	27 Meters
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors in (meters)	N/A
Unrestricted air flow	360 degrees
Probe material	Aluminum
Residence time	N/A

Elko: Detailed Site Information (Cont.)

Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	N/A
Frequency of flow rate verification manual PM	N/A
Frequency of flow rate verification automated PM	Monthly
Frequency of one point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM	05/02/12; 09/28/12

Figure 2: Elko Grammar School #2, 1055 7th Street, Elko, NV. PM 10 Monitor



Fallon: Detailed Site Information

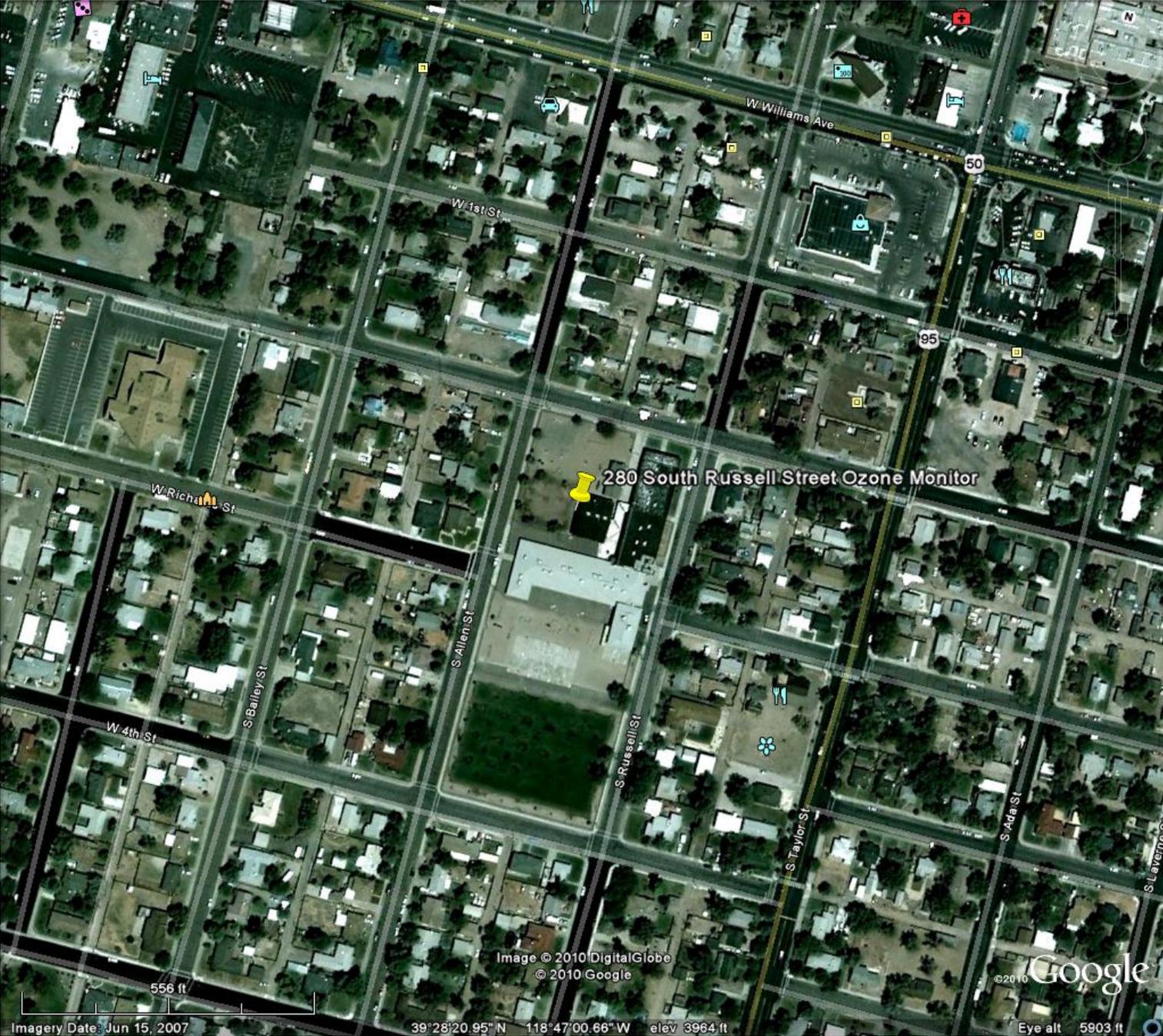
The ozone monitoring site at 280 South Russell Street is at the West End Elementary School in a residential neighborhood that may be affected by agricultural operations surrounding the City of Fallon. The monitoring objective is to determine typical concentration/population orientation. PM₁₀ sampling commenced at this site in May 1993 and was discontinued at the end of June 1998. Monitoring for ozone began in October 1999 as an ozone transport site downwind of Reno and Fernley

Site Name	Fallon
AQS ID	32-001-0002
GIS Coordinates	Lat +39.472471 Long -118.783624
Location	West End of Elementary School
Address	280 South Russell Street
County	Churchill
Distance to Road	65 Meters
Traffic Count	410 AADT (2009) Station #0010135
Groundcover	Dirt and Gravel
Representative Area	Fallon MSA (Micropolitan Statistical Area)
Pollutant, POC	Ozone, 1
Parameter Code	44201
Basic monitoring objective(s)	NAAQS
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Instrument manufacturer and model	Teledyne API Model 400E
Method Code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	NDEP
Analytical Lab	N/A
Spatial Scale	Neighborhood
Monitoring start date	10/01/1999
Current sampling frequency	Seasonal
Calculated sampling frequency	N/A
Sampling season	04/01-10/31
Analysis Method	EQOA-0992-087
Probe Height	3.2 Meters
Dist. fm. supporting structure	1 meter from wall
Dist. fm. obstructions on roof	N/A
Distance from obstruction not on roof (meters)	22 Meters
Distance fm. trees	Greater than 10 meters
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors (meters)	N/A
Unrestricted airflow	180 Degrees
Probe material	Teflon

Fallon: Detailed Site Information (Cont.)

Residence time	9.4 seconds
Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	N/A
Frequency of flow rate verification Manual PM	N/A
Frequency of flow rate verification automated PM	N/A
Frequency of one point QC check (gaseous)	Every two weeks
Last Annual Performance Evaluation (Gaseous)	09/26/2012
Last two semi-annual flow rate audits for PM	N/A

Figure 3: West End Elementary School, 280 S. Russell Street, Fallon, NV. Ozone Monitor



Fernley Intermediate School: Detailed Site Information

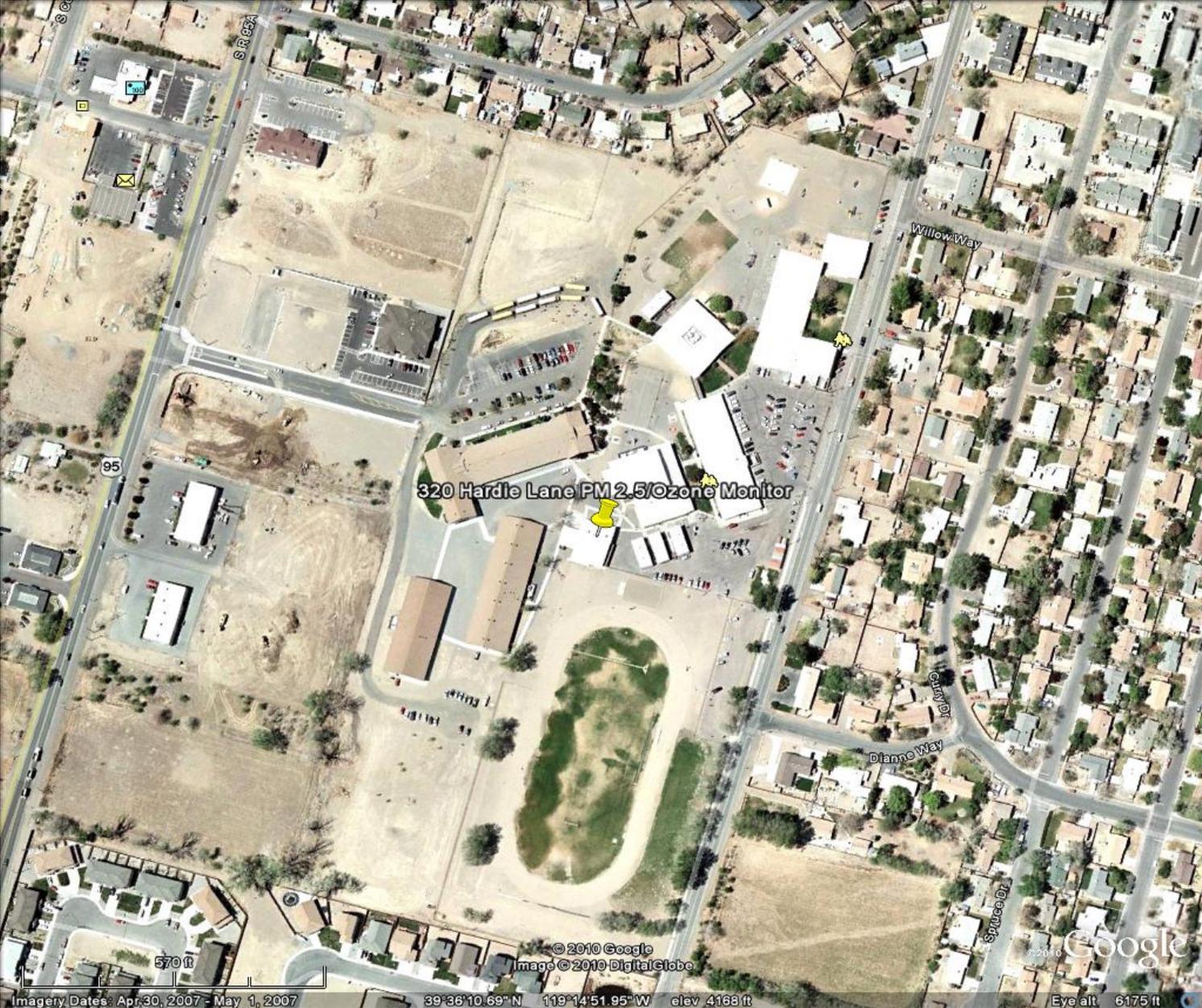
Ozone monitoring is done at the Fernley Intermediate School which is located at 320 Hardie Lane. This is an area of mainly residential and agricultural use. There has recently been a large growth of industry both upwind and downwind of this site. Monitoring for PM₁₀ at this site commenced on May 1995, to determine the agricultural and industrial source impacts and population exposure. PM₁₀ sampling was discontinued in November 1998. Ozone monitoring began at this site July 2007. However, ozone monitoring (SPMS) was previously conducted at the Fernley Volunteer Fire Department starting in October 1997 and discontinued on October 2003.

Site Name	Fernley
AQS ID	32-019-0006
GIS Coordinates	Lat +39.602787 Long -119.247741
Location	Fernley Intermediate School
Address	320 Hardie Lane
County	Lyon
Distance to Road	119 Meters
Traffic Count	1300 AADT (2009) Station # 0190119
Groundcover	Paved, cement, gravel and dirt
Representative Area	Reno-Sparks-Fernley CSA and MSA (Micropolitan Statistical Area)
Pollutant, POC	Ozone, 1
Parameter Code	44201
Basic monitor objective(s)	NAAQS
Site type(s)	Population Exposure
Monitoring type(s)	SLAMS
Instrumental manufacturer and model	Teledyne API Model 400E
Method Code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	NDEP
Analytical Lab	N/A
Spatial Scale	Neighborhood
Monitoring start date	07/06/2007
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	04/01-10/31
Analysis Method	EQOA-0992-087
Probe Height	7 meters
Dist. fm. supporting structure	Vertical Distance above 2.1 meters
Dist. fm. obstructions on roof	N/A
Dist. fm. Obstructions not on roof (meters)	N/A
Dist. fm. trees	15 Meters
Distance to furnace or incinerator flue	N/A

Fernley Intermediate School: Detailed Site Information (Cont.)

Distance between collocated monitors in (meters)	N/A
Unrestricted air flow	360 Degrees
Probe material	Teflon
Residence time	9.5 Seconds
Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	N/A
Frequency of flow rate verification manual PM	N/A
Frequency of flow rate verification automated PM	N/A
Frequency of one point QC check (gaseous)	Every two weeks
Last Annual Performance Evaluation (gaseous)	09/26/2012
Last two semi-annual flow rate audits for PM	N/A

Figure 4: Fernley Intermediate School, 320 Hardie Lane Fernley, NV Ozone Monitor



2601 S. Carson Street: Detailed Site Information

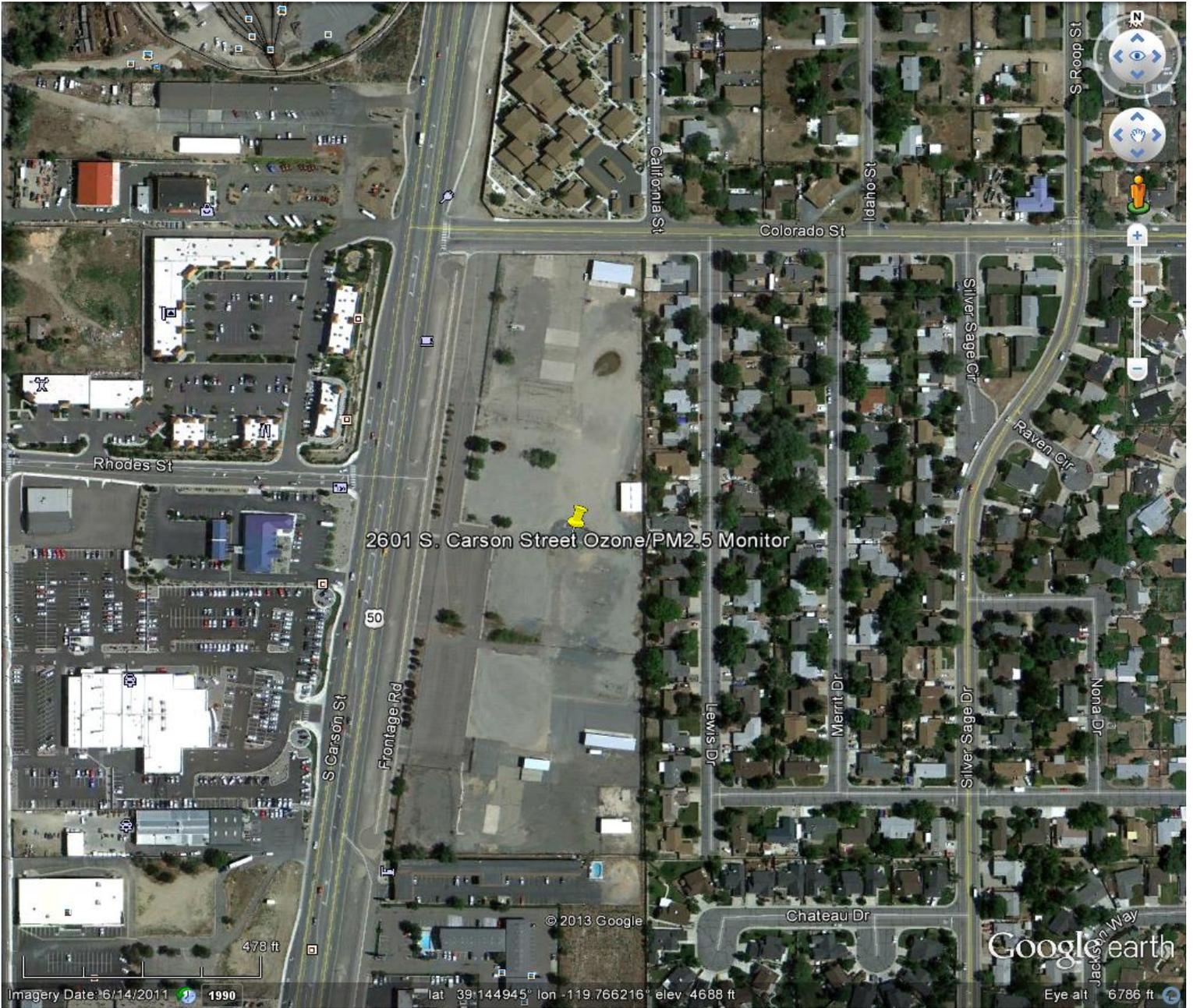
Due to the city of Carson City re-purposing use of the old monitoring location on 3300 East Fifth Street, the new SLAMS monitoring site is now adjacent to Hwy 395, a residential neighborhood and a light industrial area. The new collocated PM2.5 and Ozone monitoring site is located at 2601 S. Carson Street where the old Army National Guard site used to reside. The monitoring objective is to determine typical concentration/population exposure.

Site Name	Carson City Armory		
AQS ID	32-510-0006		
GIS Coordinates	Lat +39.1447 Long -119.7661		
Location	Carson City		
Address	2601 S. Carson Street		
County	Carson		
Distance to Road	109 Meters		
Traffic Count	44,000 AADT (2011) Station #0250148		
Groundcover	Gravel		
Representative Area	Carson City MSA (Metropolitan Statistical Area)		
Pollutant, POC	PM_{2.5}, 1	PM_{2.5}, 2	Ozone, 1
Parameter Code	88101	88101	44201
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure	Max Concentration
Monitor type(s)	SLAMS	QA COLLOCATED	SLAMS
Instrument manufacturer and model	MET ONE BAM 1020	BGI PQ200	TELEDYNE T400
Method Code	170	116	087
FRM/FEM/ARM/other	FEM	FRM	FEM
Collecting Agency	NDEP	NDEP	NDEP
Analytical Lab	N/A	Desert Research Institute	N/A
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	03/01/2013	03/01/13	04/01/13
Current sampling frequency	Continuous	1:6	Seasonal
Calculated sampling frequency	N/A	N/A	N/A
Sampling season	01/01-12/31	01/01-12/31	04/01-10/31
Analysis Method	EQPM-0308-170	RFPS-0498-116	EQOA-0992-087
Probe Height	4.9 Meters	4.9 Meters	4 Meters
Dist. fm. supporting structure	1.5 Meters	1.5 Meters	1 Meter

2601 S. Carson Street: Detailed Site Information (Cont.)

Dist. fm. obstructions on roof	N/A	N/A	N/A
Distance from obstruction not on roof (meters)	N/A	N/A	N/A
Distance fm. trees	37 Meters to West	37 Meters to the West	37 Meters to the West
Distance to furnace or incinerator flue	N/A	N/A	N/A
Distance between collocated monitors (meters)	3 Meters	3 Meters	N/A
Unrestricted airflow	360 Degrees	360 Degrees	360 Degrees
Probe material	N/A	N/A	N/A
Residence time	N/A	N/A	5.7 Seconds
Changes in the next 18 months?	No	No	No
Suitable for PM 2.5 comparison?	Yes	Yes	N/A
Frequency of flow rate verification Manual PM		Monthly	N/A
Frequency of flow rate verification automated PM	Monthly		N/A
Frequency of one point QC check (gaseous)	N/A	N/A	Every two weeks
Last Annual Performance Evaluation (Gaseous)	N/A	N/A	N/A New Site
Last two semi-annual flow rate audits for PM	N/A (New Site)	N/A (New Site)	N/A (New Site)

**Figure 5: Carson City Armory, 2601 S. Carson Street Carson City, NV
Ozone/PM2.5**



Church: Detailed Site Information

The Church Site began operation in 2004 to complement the existing three other sites in the Pahrump monitoring network. Monitoring is accomplished with a continuous beta attenuated monitor located in the southeast corner of the Catholic Church. This site represents the southern-most monitoring in Pahrump Valley. The monitoring objective of this site is a significant source of PM₁₀. The surrounding area represents residential with little commercial, some native desert with a mix of dirt and paved roads.

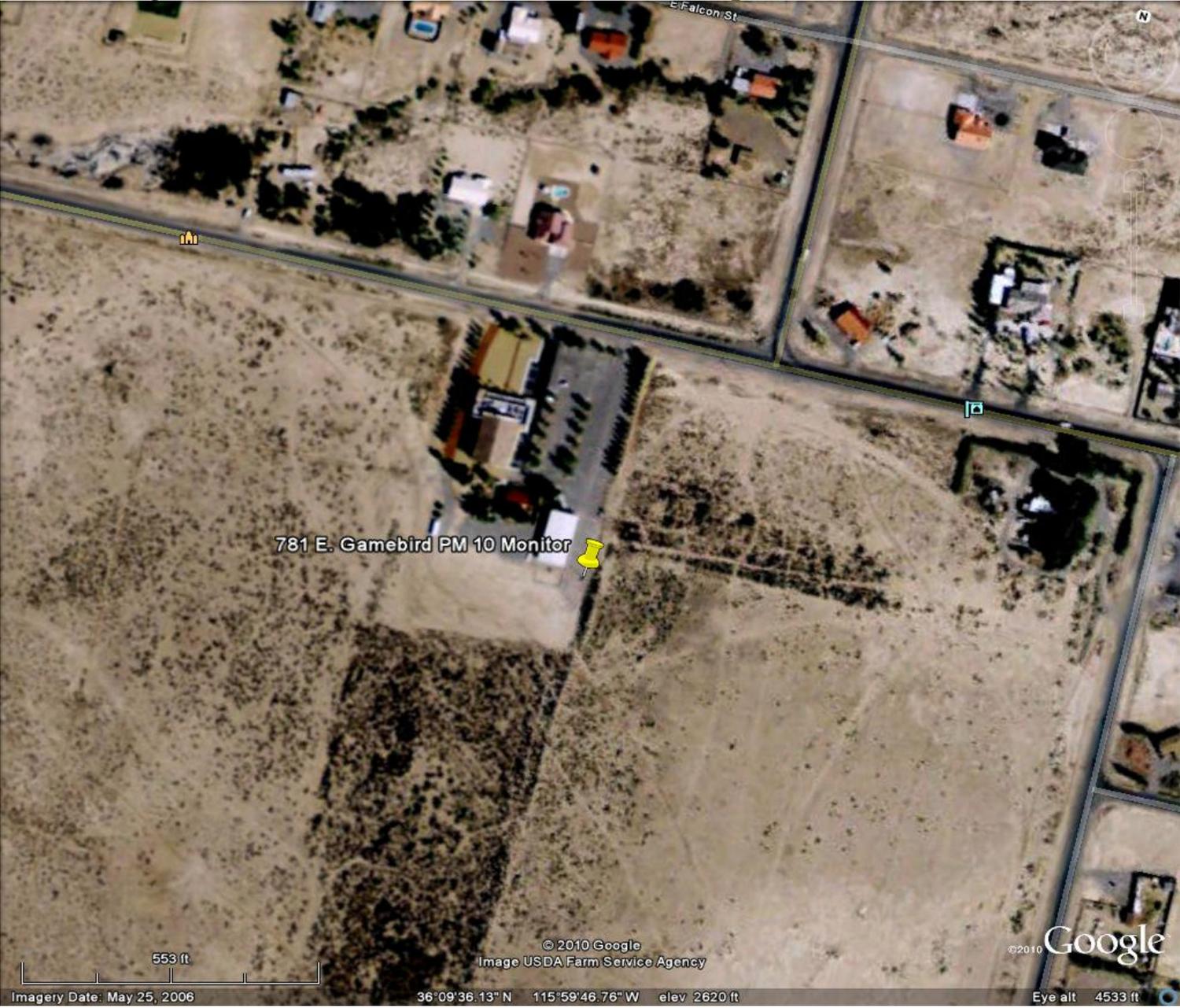
Site Name	Church
AQS ID	32-023-0013
GIS Coordinates	Lat + 36.159639 Long -115.996263
Location	Pahrump
Address	781 E. Gamebird
County	Nye
Distance to Road	100 Meters
Traffic Count	1,100 AADT (2009) Station #0230010
Groundcover	Desert
Representative Area	Pahrump Micropolitan Statistical Area (MSA); Las Vegas – Paradise – Pahrump CSA

Pollutant, POC	PM₁₀, 1
Parameter Code	81102
Basic monitor objective(s)	NAAQS
Site type(s)	Source Oriented – Dry lake bed 6 miles to the south
Monitoring type(s)	SLAMS
Instrumental manufacturer and model	Met One BAM 1020
Method Code	122
FRM/FEM/ARM/other	FEM
Collecting Agency	NDEP
Analytical Lab	N/A
Spatial Scale	Urban
Monitoring start date	02/14/2004
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	01/01-12/31
Analysis Method	EQPM-0798-122
Probe Height	4 Meters
Dist. fm. supporting structure	Vertical distance above 2 meters
Dist. fm. obstructions on roof	N/A
Dist. fm. Obstructions not on roof (meters)	14 Meters
Dist. fm. trees	50 Meters
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors in (meters)	N/A

Church: Detailed Site Information (Cont.)

Unrestricted air flow	360 Degrees
Probe material	Aluminum
Residence time	N/A
Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	N/A
Frequency of flow rate verification manual PM	N/A
Frequency of flow rate verification automated PM	Monthly
Frequency of one point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM	05/07/12, 10/22/2012

Figure 6: Church Site, 781 E. Gamebird Pahrump, NV PM 10 Monitor



Manse Elementary: Detailed Site Information

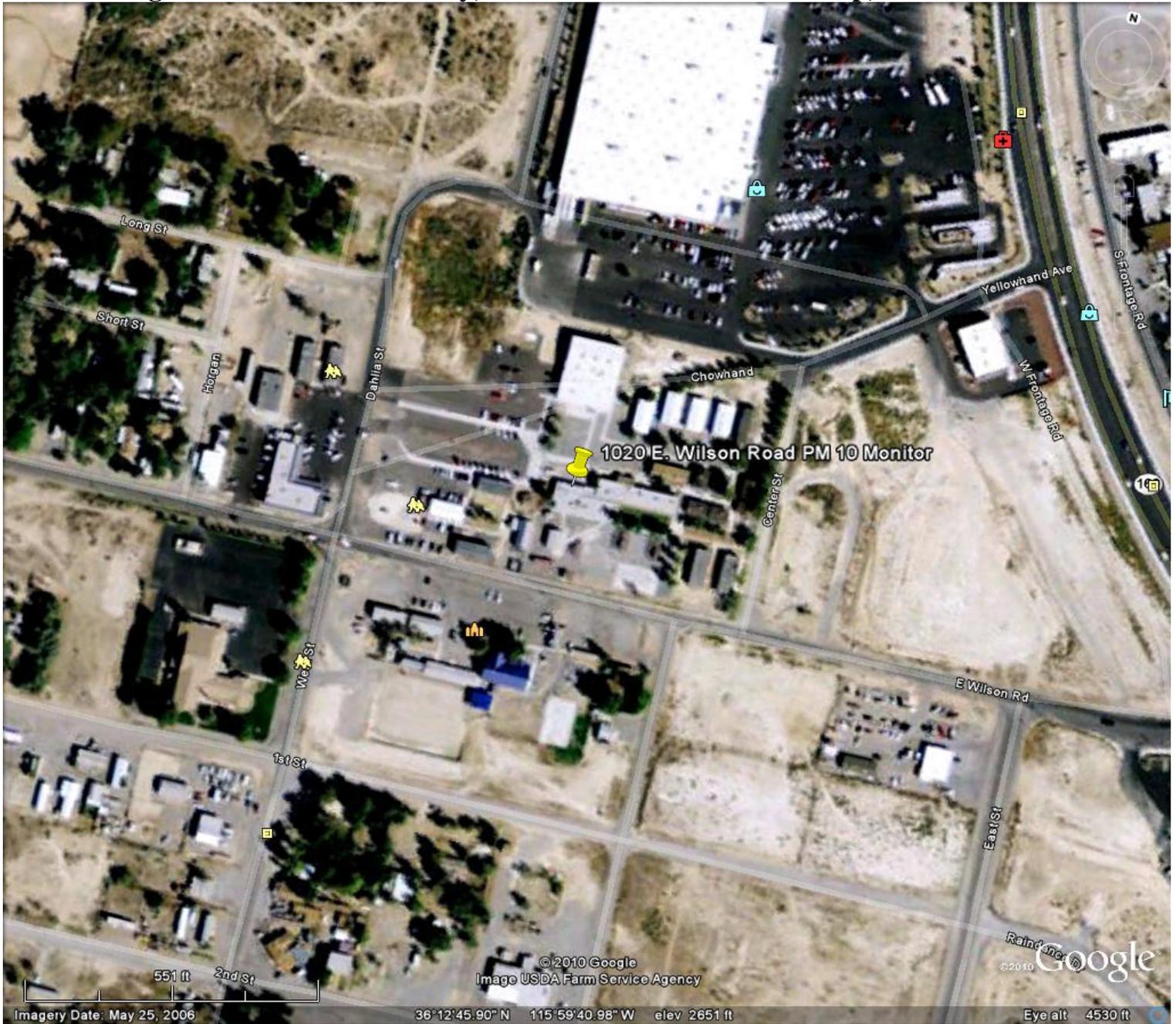
The Manse site represents the monitoring objective for highest concentrations of PM₁₀ in Pahrump. This site replaces the Community Pool site, which at the time it was operating, represented the highest concentrations of PM₁₀ in Pahrump. Located at 1020 E. Wilson Road, the Manse Elementary site is located on the roof of the school and monitors for PM₁₀ using the continuous beta attenuation monitor. The area adjacent to this site represents mostly commercial, some residential, and is adjacent to the busiest activity area of Pahrump. This site is located downwind from residential construction developments that have cleared large parcels of ground for building, as well as agricultural areas that cultivate large areas of farm-ground and raise livestock. Roads surrounding this site are both paved and dirt.

Site Name	Manse Elementary
AQS ID	32-023-0014
GIS Coordinates	Lat +36.212787 Long -115.994802
Location	Pahrump
Address	1020 E. Wilson Road
County	Nye
Distance to Road	50 Meters
Traffic Count	11,000 AADT (2006) Station #0230006
Groundcover	Gravel Schoolyard
Representative area	Pahrump Micropolitan Statistical Area (MSA); Las Vegas – Paradise – Pahrump CSA
Pollutant, POC	PM₁₀, 1
Parameter Code	81102
Basic monitor objective(s)	NAAQS
Site type(s)	Highest Concentration
Monitoring type(s)	SLAMS
Instrumental manufacturer and model	Met One BAM 1020
Method Code	122
FRM/FEM/ARM/other	FEM
Collecting Agency	NDEP
Analytical Lab	N/A
Spatial Scale	Middle
Monitoring start date	11/17/2005
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	01/01-12/31
Analysis Method	EQPM-0798-122
Probe Height	3.0 Meters
Dist. fm. supporting structure	Vertical distance above 1 meters
Dist. fm. obstructions on roof	N/A
Dist. fm. Obstructions not on roof (meters)	N/A
Dist. fm. trees	10 Meters
Distance to furnace or incinerator flue	N/A

Manse Elementary: Detailed Site Information (Cont.)

Distance between collocated monitors in (meters)	N/A
Unrestricted air flow	360 Degrees
Probe material	Aluminum
Residence time	N/A
Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	N/A
Frequency of flow rate verification manual PM	N/A
Frequency of flow rate verification automated PM	Monthly
Frequency of one point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM	05/07/2012, 10/22/2012

Figure 7: Manse Elementary, 1020 E. Wilson Road Pahrump, NV PM 10 Monitor



Glen Oaks: Detailed Site Information

The Willow Creek site was started in 2003 and was located at 1500 Red Butte on the roof of a building in which irrigation equipment for the golf course is housed. The monitoring objective of this site was to measure typical concentrations/population oriented of PM₁₀ using the beta attenuated monitor. The surrounding area adjacent to this site is fairway/golf course and residential structures. Due to closure of the golf course, the Willow Creek site was relocated to the Glen Oaks sewer treatment plant in 2009. The Glen Oaks site is a short distance away from the existing golf course site and the monitoring objective did not change.

Site Name	Glen Oaks
AQS ID	32-023-0015
GIS Coordinates	Lat +36.193469 Long -116.007584
Location	Pahrump
Address	145 Glen Oaks St.
County	Nye
Distance to Road	200 Meters
Traffic Count	1,100 AADT (2009) Station #0230010
Groundcover	Grass/Gravel
Representative Area	Pahrump Micropolitan Statistical Area (MSA); Las Vegas – Paradise – Pahrump CSA
Pollutant, POC	PM₁₀, 1
Parameter Code	81102
Basic monitor objective(s)	NAAQS
Site type(s)	Typ. Conc./Population Oriented
Monitoring type(s)	SLAMS
Instrumental manufacturer and model	Met One BAM 1020
Method Code	122
FRM/FEM/ARM/other	FEM
Collecting Agency	NDEP
Analytical Lab	N/A
Spatial Scale	Neighborhood
Monitoring start date	07/10/2009
Current sampling frequency	Continuous
Calculated sampling frequency	N/A
Sampling season	01/01-12/31
Analysis Method	EQPM-0798-122
Probe Height	6.0 Meters
Dist. fm. supporting structure	Vertical Distance above 3 meters
Dist. fm. obstructions on roof	N/A
Dist. fm. Obstructions not on roof (meters)	15 Meters
Dist. fm. trees	12 Meters
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors in (meters)	N/A

Glen Oaks: Detailed Site Information (Cont.)

Unrestricted air flow	360 Degrees
Probe material	Aluminum
Residence time	N/A
Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	N/A
Frequency of flow rate verification manual PM	N/A
Frequency of flow rate verification automated PM	Monthly
Frequency of one point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM	05/07/12, 10/22/2012

Figure 8: 145 Glen Oaks St., Pahrump, NV PM10 Monitor



Linda Street: Detailed Site Information

The Linda Street site was started in 2003 and is located at 8825 North Linda Street. The beta attenuated monitor is located on the roof of an old railroad box car and represents not only the northern-most site in the Pahrump monitoring network, but the most rural area. There is some residential surrounding this site, but mainly native desert vegetation with little or no surface disturbances. The monitoring objective for this site is general background levels of PM₁₀ in Pahrump.

Site Name	Linda Street
AQS ID	32-023-0011
GIS Coordinates	Lat +36.349408 Long -116.031976
Location	Pahrump
Address	8825 N. Linda
County	Nye
Distance to Road	20 Meters
Traffic Count	2,200 AADT (2008) Station #0230008
Groundcover	Desert
Representative Area	Pahrump Micropolitan Statistical Area (MSA); Las Vegas – Paradise – Pahrump CSA
Pollutant, POC	PM₁₀, 1
Parameter Code	81102
Basic monitor objective(s)	NAAQS
Site type(s)	General Background
Monitoring type(s)	SLAMS
Instrumental manufacturer and model	Met One BAM 1020
Method Code	122
FRM/FEM/ARM/other	FEM
Collecting Agency	NDEP
Analytical Lab	N/A
Spatial Scale	Regional
Monitoring start date	05/03/2003
Current sampling frequency	continuous
Calculated sampling frequency	N/A
Sampling season	01/01-12/31
Analysis Method	EQPM-0798-122
Probe Height	6.7 Meters
Dist. fm. supporting structure	Vertical Distance above 3 meters
Dist. fm. obstructions on roof	N/A
Dist. fm. obstructions not on roof (meters)	21 Meters
Dist. fm. trees	10 Meters
Distance to furnace or incinerator flue	N/A

Linda Street: Detailed Site Information (Cont.)

Distance between collocated monitors in (meters)	N/A
Unrestricted air flow	360 Degrees
Probe material	Aluminum
Residence time	N/A
Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	N/A
Frequency of flow rate verification manual PM	N/A
Frequency of flow rate verification automated PM	Monthly
Frequency of one point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM	05/07/12, 10/22/12

Figure 9: 8825 N. Linda Pahrump, NV PM 10 Monitor



Ranchos Aspen Park: Detailed Site Information

The Ranchos Aspen Park site will be a new Special Purpose Monitoring (SPM) within our network. The monitoring objective is to determine typical concentration/population exposure.

Site Name	Ranchos Aspen Park
AQS ID	32-005-0007
GIS Coordinates	Lat +38.897557 Long -119.732507
Location	Gardnerville
Address	820 Lyell Way
County	Douglas
Distance to Road	20 Meters
Traffic Count	2,200 AADT (2008) Station #0230008
Groundcover	Gravel
Representative Area	Gardnerville Ranchos MSA (Micropolitan Statistical Area)
Pollutant, POC	PM_{2.5}, 1
Parameter Code	88101
Basic monitor objective(s)	NAAQS
Site type(s)	Population exposure
Monitoring type(s)	SPM
Instrumental manufacturer and model	Met One BAM 1020
Method Code	170
FRM/FEM/ARM/other	FEM
Collecting Agency	NDEP
Analytical Lab	N/A
Spatial Scale	Neighborhood
Monitoring start date	04/01/2013
Current sampling frequency	Continuous
Calculated sampling frequency	NA
Sampling season	01/01-12/31
Analysis Method	EQPM-0308-170
Probe Height	6.7 Meters
Dist. fm. supporting structure	Vertical Distance above 3 meters
Dist. fm. obstructions on roof	N/A
Dist. fm. Obstructions not on roof (meters)	7 Meters
Dist. fm. trees	10 Meters
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors in (meters)	N/A
Unrestricted air flow	360 Degrees
Probe material	Aluminum

Ranchos Aspen Park: Detailed Site Information (Cont.)

Residence time	N/A
Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	Yes
Frequency of flow rate verification manual PM	N/A
Frequency of flow rate verification automated PM	Monthly
Frequency of one point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM	New Site

Figure 10: Ranchos Aspen Park, 820 Lyell Way Gardnerville, NV PM2.5 Monitor



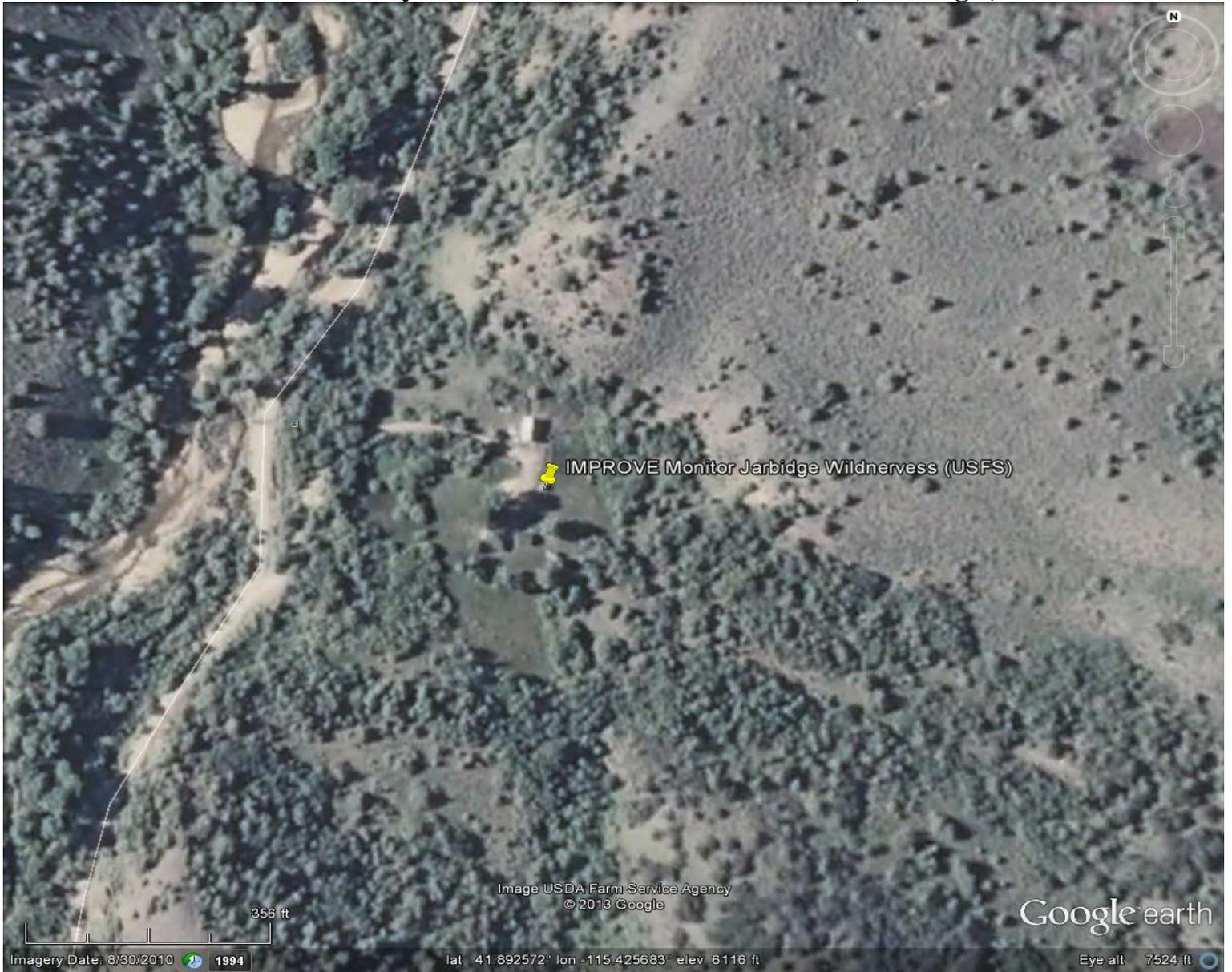
IMPROVE Station: Detailed Site Information

Site Name	Jarbidge Wilderness IMPROVE
AQS ID	32-007-9000
GIS Coordinates	Lat +41.8926 Long -115.4261
Location	Mahoney Forest Service Station
Address	Jarbidge Wilderness
County	Elko
Distance to Road	100 Feet
Traffic Count	N/A
Groundcover	Dirt/Grass
Representative Area	Rural (Not in an urban area)
Pollutant, POC	PM_{2.5}, 1
Parameter Code	88101
Basic monitor objective(s)	Other
Site type(s)	General/Background
Monitoring type(s)	IMPROVE
Instrumental manufacturer and model	Crocker Nuclear Lab, IMPROVE Sampler Version II
Method Code	N/A
FRM/FEM/ARM/other	Other
Collecting Agency	USFS
Analytical Lab	Crocker Nuclear Lab
Spatial Scale	Regional
Monitoring start date	01/1988
Current sampling frequency	1:3 Filters Collected Weekly
Calculated sampling frequency	N/A
Sampling season	01/01-12/31
Analysis Method	N/A
Probe Height	4 Meters
Dist. fm. supporting structure	2 Meters
Dist. fm. obstructions on roof	N/A
Dist. fm. Obstructions not on roof (meters)	18 Meters
Dist. fm. trees	15 Meters
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors in (meters)	N/A
Unrestricted air flow	Yes
Probe material	Aluminum
Residence time	N/A

IMPROVE Station: Detailed Site Information (Cont.)

Changes in the next 18 months?	No
Suitable for PM 2.5 comparison?	No
Frequency of flow rate verification manual PM	Unable to Determine
Frequency of flow rate verification automated PM	N/A
Frequency of one point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM	Unable to Determine

FIGURE 11: Mahoney Forest Service IMPROVE Station, Jarbidge , NV



**Appendix A.
Ozone Seasonality Approval Letter**



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

FEBRUARY 6, 2002

Mr. Chester Sergent, Supervisor
Ambient Air Monitoring Branch
Bureau of Air Quality Planning
Division of Environmental Protection
Department of Conservation and Natural Resources
333 W. Nye Lane, Room 138
Carson City, NV 89706

Dear Mr. ^{Chester} Sergent:

I have received your letter of January 29, 2002 requesting permission to adjust the ozone monitoring season from year round to April 1 through October 31. We have reviewed the information you provided and approve your request to reduce the ozone monitoring season.

One issue that needs to be addressed is ensuring that EPA's AIRS database is updated to reflect this change in the ozone monitoring season. Failure to do so will result in AIRS showing incomplete ozone data capture rates for the Carson City, Fernley and Fallon monitoring sites. Please have your staff contact our AIRS database manager, Jim Forrest, at (415) 947-4135 to discuss the appropriate procedure for making this change. Please feel free to contact me at (415) 947-4128 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert S. Pallarino".

Robert S. Pallarino
Technical Support Office
Air Division

cc: Colleen Cripps, DCNR/DEP
Jim Forrest, US EPA

STEVE
FEB 11 11 20 2002

Appendix B.

Manse PM10 Monitor Relocation Approval



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 22 2011

Nevada
Environmental Protection

MAR 25 2011

BAPC/BAQP

RECEIVED

MAR 25 2011

ENVIRONMENTAL PROTECTION

Mr. Daren Winkelman, Supervisor
Ambient Air Quality Monitoring Program
Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City, NV 89701

RE: Response to discontinuation and relocation request of Manse Elementary SLAMS PM₁₀ monitor (AQS ID: 32-023-0014-81102-1)

Dear Mr. Winkelman:

On February 24, 2011 we received your official request for the discontinuation of the PM₁₀ monitor at Manse Elementary School (AQS ID: 32-023-0014-81102-1) and the subsequent relocation of the PM₁₀ monitor to the nearby Nye County School District office.

After a visit to the proposed relocation site and upon our review of the documentation you have provided, pursuant to 40 CFR 58.14, we approve your selection of the Nye School District building for replacement of the current Manse Elementary School site. Specifically, we have determined that your request meets the provisions under 40 CFR 58.14(c)(6), namely that logistical problems beyond NDEP's control make it impossible to continue operation at the current site and that the replacement site is a nearby location with the same scale of representation. We request that you list the official site address as 208 Dahlia Street, Pahrump, NV 89048 with GPS coordinates (in decimal degrees): 36.212989, -115.996875.

Thank you for your cooperation throughout this process and please feel free to contact Elfego Felix (415) 947-4141 from my staff or myself (415) 972-3851 with any questions or concerns in regards to this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew Lakin".

Matthew Lakin, Manager
Air Quality Analysis Office



Appendix C

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

December 11, 2012

Mr. Rob Bamford
Chief, Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 S. Stewart St., Ste 4001
Carson City Nevada 89701

Dear Mr. Bamford:

This letter is in response to the Nevada Division of Environmental Protection's (NDEP's) request for approval for the relocation of SLAMS (State/Local Air Monitoring Station) ozone monitoring at 3300 E. 5th Street (Site ID: 32-510-0002) to 2601 S. Carson Street in Carson City, NV. NDEP has also documented the proposed change to the network in the most recent *Ambient Air Monitoring Network Plan* for 2012 (Page 5). NDEP made the plan available for public inspection prior to its submittal to EPA and received no public comments on this proposed monitoring network change.

Per 40 CFR 58.14, monitoring agencies are required to obtain EPA approval for the discontinuation of SLAMS monitors. In a letter to EPA dated May 2, 2012, NDEP explained that the Carson City Public Works requested the 5th Street monitoring site be moved to a new location, and that continued operation at the site would not be possible. NDEP later followed up with additional information in support of the proposed S. Carson Street location, including verification that the new site would meet 40 CFR 58 Appendix D and E siting requirements and be located in a more densely populated area (compared to the 5th Street site) of Carson City.

In addition to the supporting information provided by NDEP for the site relocation, EPA evaluated the comparability of ozone concentrations in the nearby Carson City area, including those coming from monitors along the Carson City predominant wind direction (i.e. from the southwest towards the northeast). Monitors evaluated included:

- *Incline* (Site ID: 32-031-2002): North Tahoe region.
- *Little Norway/Echo Summit* (Site ID: 06-017-0012): South Tahoe region.
- *Long St.* (Site ID: 32-510-0004): Carson City monitor in operation until 2007.
- *5th St.* (Site ID: 32-510-0002): Current Carson City monitor in operation since 2008.
- *Fernley* (Site ID: 32-019-0006): Closest downwind monitor, northeast of Carson City.
- *Fallon* (Site ID: 32-001-0002): 2nd Closest downwind monitor, northeast of Carson City.

Specifically, EPA examined 8-hour 4th maximum ozone yearly trends for 2001-2011, along with 8-hour daily maximum ozone concentrations for 2011. EPA's analysis indicated that it is unlikely that a major shift in ozone concentrations would occur for this relatively small scale ozone site relocation within the Carson City Metropolitan Statistical Area (MSA). Furthermore, since the relocation is less than four kilometers away, the site would remain within the same neighborhood spatial scale of representation. On a larger scale, EPA's analysis showed that a gradient may be present between South Tahoe and northeast of Carson City (i.e. in the Fernley and Fallon direction). On this larger scale, higher ozone

concentrations were generally observed coming from the South Tahoe upwind direction and decreasing as they passed through Carson City and on to Fernley/Fallon. This gradient is unlikely to have major implications for the proposed small scale ozone site relocation within Carson City. Enclosed are plots of the yearly and daily trends examined during EPA's analysis, as well as a maps showing the ozone monitor locations.

Based on the weight of the evidence and pursuant to 40 CFR 58.14(c)(6), EPA approves NDEP's relocation of SLAMS ozone monitoring at 3300 E. 5th Street to 2601 S. Carson Street in Carson City, NV. Upon installation and operation of the Carson Street site, EPA recommends that NDEP evaluate whether the new site reports concentrations consistent with the previous site and take appropriate action if lower ozone concentrations are observed. An appropriate forum to report the analysis of ozone concentrations would be NDEP's next 5-year air monitoring network assessment, due in 2015.

If there are any questions regarding this letter, please feel free to contact me at (415) 972-3851 or Elfego Felix of my staff at (415) 947-4141.

Sincerely,

/s/

Matthew Lakin, Manager
Air Quality Analysis Office

Enclosures

Attachment A: Map of Larger Carson City Area Ozone monitors.

Attachment B: Map of Carson City Ozone monitors.

Attachment C: Plot of 2001-2011 Carson City Area 8-hour Ozone 4th maximum values.

Attachment D: Plot of 2011 Carson City Area Daily maximum 8-hour Ozone.

cc: Daren Winkelman, Monitoring Supervisor, NDEP-BAQP

Appendix D.

Comment Submittal Information

The proposed 2012 Ambient Air Monitoring Network Plan is posted on the NDEP website for review and comment for thirty (30) days.

Comments may be emailed to
Daren Winkelman (dwinkelman@ndep.nv.gov)
or mailed to,
Daren Winkelman
Ambient Monitoring Program
Bureau of Air Quality Planning
901 S. Stewart Street, Suite 4001
Carson City, Nevada 89701