



Wyoming Ambient Air Monitoring Annual Network Plan 2015



Photo from Website Camera at Wamsutter Monitoring Site

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1.0 Introduction

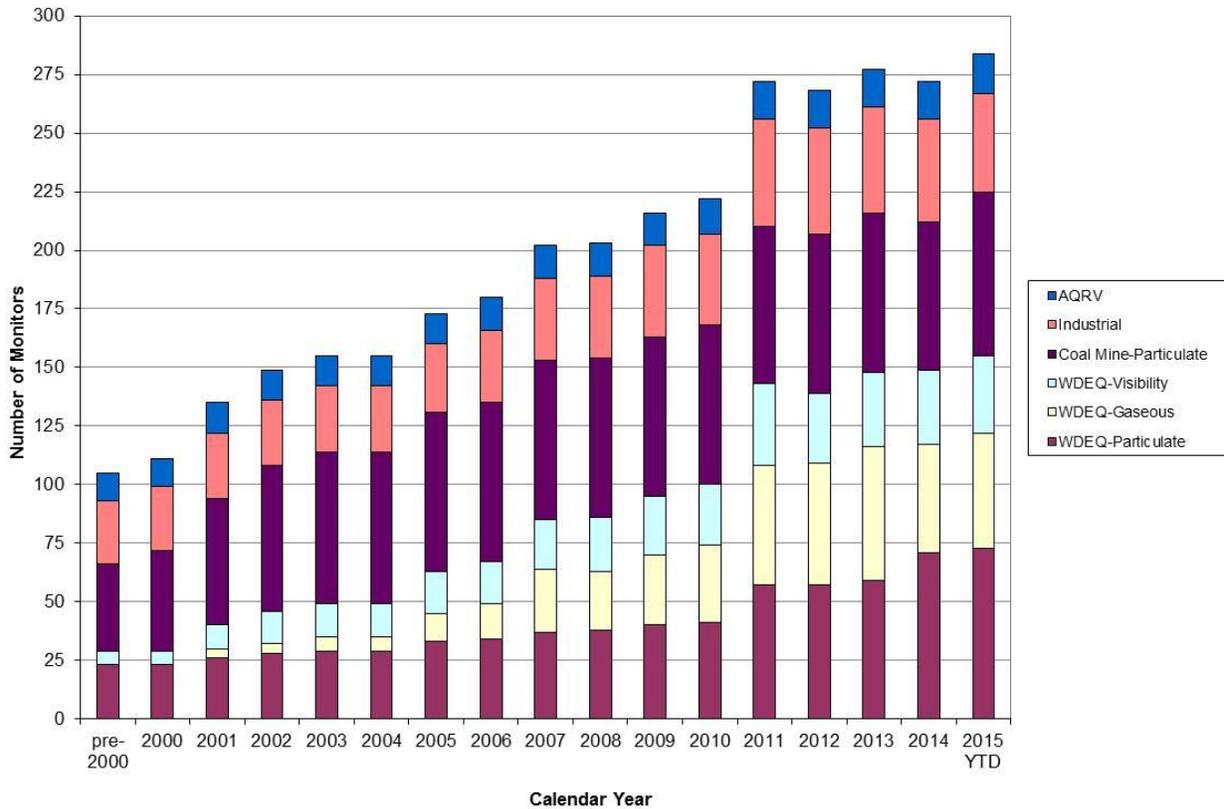
The United States Environmental Protection Agency (EPA), through the Code of Federal Regulations (CFR) and the Performance Partnership Agreement, requires the State of Wyoming Department of Environmental Quality, Air Quality Division (AQD) to complete the Wyoming Ambient Air Monitoring Annual Network Plan for the State's ambient air monitoring stations. The EPA's requirements for the annual plan are listed in 40 CFR § 58.10. The annual plan will cover a review of the ambient air monitoring stations and verify the network is meeting the requirements of 40 CFR § 58, Appendices A, C, D, and E. The Wyoming Department of Environmental Quality (WDEQ) strives to protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

1.1 The AQD Monitoring History

Since the 1970's the AQD Monitoring Program has been working actively to evaluate monitoring requirements and use available resources effectively for the State of Wyoming. The Air Quality Resource Management Program serves the AQD by looking at monitored data in conjunction with emission inventory trends and planned development to shape the AQD's air quality management policies in the future. The AQD operates State and Local Air Monitoring Stations (SLAMS) in cities and towns to monitor public health. The AQD also operates or oversees several special purpose monitoring stations (SPM) that monitors for several objectives including: to monitor public health, to investigate downwind pollutant concentrations, and to determine background pollutant readings. Further, the AQD studies the SPM data to investigate impacts from industrial sources that reside in Wyoming. Beginning in 2011, based in part on the 2010 Network Assessment, the AQD acquired a fleet of mobile monitoring trailers to examine gaseous, particulate, and meteorological parameters. The AQD also helps fund and evaluate data from Air Quality Related Value (AQRV) monitoring within Wyoming, such as visibility and acid deposition. The table below shows the location history of the mobile trailers. The following graph shows the number of monitors the AQD runs or oversees by year since 2000.

Year	Mobile Trailer #1	Mobile Trailer #2	Mobile Trailer #3
2011	Big Piney	Pavillion	Gillette
2012	Big Piney	N/A	Converse County
2013	Rock Springs	N/A	Converse County
2014	Lovell	Sinclair	Converse County
2015 YTD	Lovell	Sinclair	Converse County

N/A: The mobile trailer was not actively monitoring for a majority of the calendar year.



1.2 General Monitoring Goals and Objectives

The Wyoming AQD has the responsibility to protect, conserve, and enhance the quality of Wyoming’s air resource. The AQD helps ensure the ambient air quality in the State of Wyoming is maintained in accordance with the National Ambient Air Quality Standards (NAAQS) for the six criteria pollutants (primary and secondary). To carry out this goal, the AQD operates and maintains a network of ambient air quality monitors and requires industrial pollution sources to conduct source-specific ambient air monitoring.

The Wyoming monitoring network, as a whole, is designed to meet the following seven basic ambient air monitoring objectives:

- 1) Determine representative concentrations in areas of high population density
- 2) Determine impact on ambient air quality from significant sources
- 3) Determine general background concentration levels
- 4) Determine the extent of regional pollutant transport among populated areas and in rural and remote areas
- 5) Determine welfare-related impacts in support of secondary standards
- 6) Determine highest concentration expected to occur in the area covered by the network
- 7) Research pollutant and meteorological behaviors in areas of concern

Not every monitor will meet each one of the objectives, but the complete monitoring network will encompass all seven objectives. The map on p. 5 shows the Wyoming's SLAMS, SPM and Mobile monitoring locations operated by the AQD between May 2014 and May 2015. The map additionally shows former SLAMS, SPM, and Mobile monitoring site locations. The table below the map beginning on p. 6 provides a brief overview of the Wyoming Monitoring Network.



Overview of Wyoming Monitors

Name	County	PARAMETER										
		PM ₁₀ (manual)	PM ₁₀ (continuous)	PM _{2.5} (manual)	PM _{2.5} (continuous)	NO _x	O ₃	SO ₂	CO	Camera	Met	Other
Laramie - SLAMS	Albany Co	X		X								
Lovell – Mobile #1	Big Horn Co		X		X	X	X			X	X	Methane/NMHC*
PRB-Belle Ayr BA-4	Campbell Co				X	X						
PRB-Black Thunder BTM-36-2	Campbell Co				X							
PRB-Buckskin North	Campbell Co				X							
Campbell County	Campbell Co		X			X	X			X	X	
Gillette SLAMS	Campbell Co	X										
Thunder Basin	Campbell Co					X	X			X	X	Visibility
Wright Jr-Sr High School	Campbell Co	X										
Sinclair - Mobile #2	Carbon Co		X		X	X	X	X		X	X	Methane/NMHC*
PRB-Antelope Site 7	Converse Co				X	X						
Converse County Long-Term	Converse Co		X			X	X			X	X	Methane/NMHC*
Converse County – Mobile #3	Converse Co		X		X	X	X			X	X	Methane/NMHC*
Lander SLAMS	Fremont Co	X		X								
South Pass	Fremont Co				X	X	X			X	X	
Cheyenne SLAMS	Laramie Co	X		X								
Cheyenne NCore	Laramie Co		X	X	X	X	X	Trace	Trace	X	X	NO/NO _y , PM _{10-2.5} , Speciated PM _{2.5}
Casper SLAMS	Natrona Co	X		X								
Casper Gaseous	Natrona Co					X	X			X	X	

Overview of Wyoming Monitors (continued)

Name	County	PARAMETER										
		PM ₁₀ (manual)	PM ₁₀ (continuous)	PM _{2.5} (manual)	PM _{2.5} (continuous)	NO _x	O ₃	SO ₂	CO	Camera	Met	Other
Cody SLAMS	Park Co	X		X								
Sheridan Meadowlark SLAMS	Sheridan Co	X		X								
Sheridan Police Station SLAMS	Sheridan Co		X	X							X	
Big Piney Site #3	Sublette Co					X	X			X	X	
Boulder	Sublette Co		X			X	X			X	X	NO _y Methane/NMHC* Photolytic NO ₂
Daniel South	Sublette Co		X			X	X			X	X	
Farson	Sublette Co										X	
Juel Spring	Sublette Co					X	X			X	X	
Pinedale Gaseous	Sublette Co				X	X	X			X	X	
Hiawatha	Sweetwater Co						X			X	X	
Moxa	Sweetwater Co		X			X	X	X		X	X	
Rock Springs SLAMS	Sweetwater Co	X		X								
Wamsutter	Sweetwater Co		X			X	X			X	X	Methane/NMHC*
Jackson SLAMS	Teton Co	X		X								
Murphy Ridge	Uinta Co		X			X	X			X	X	

* Non-Methane Hydrocarbons

2.0 Air Monitoring Plan in 2015

2.1 State and Local Air Monitoring Stations (SLAMS)

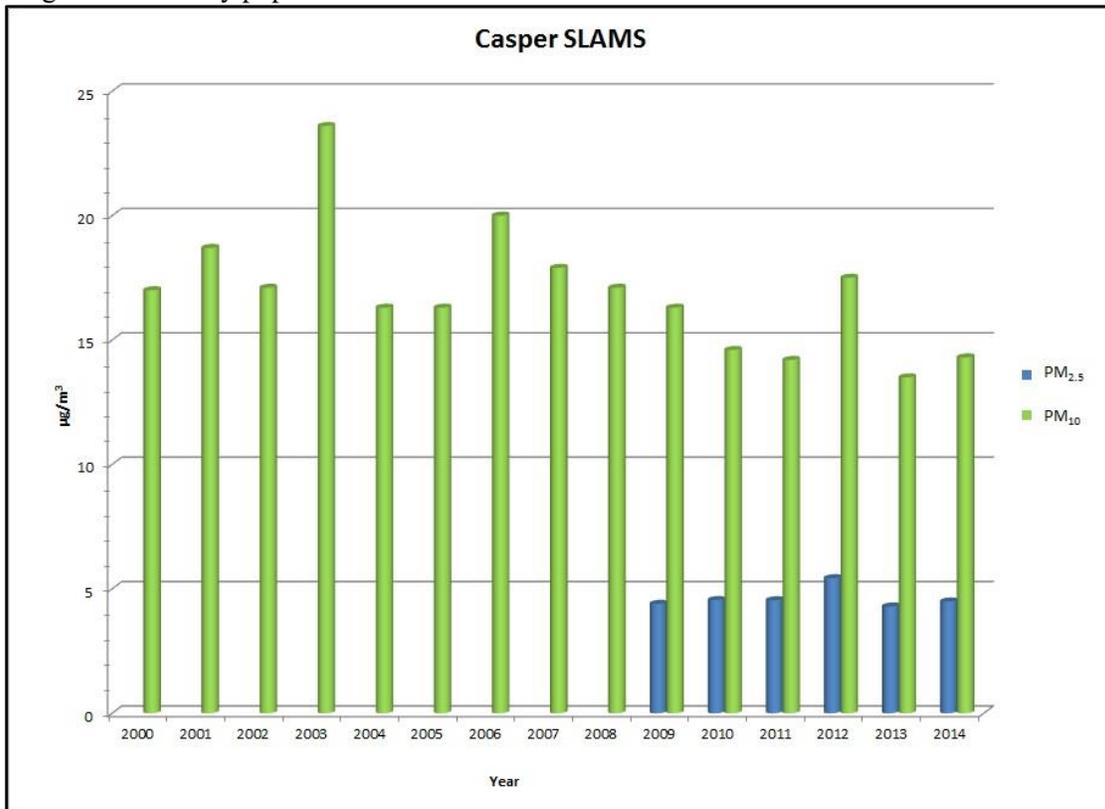
The State and Local Air Monitoring Stations (SLAMS) are used for supplying general monitoring data for criteria pollutants and determining compliance with the NAAQS. The SLAMS are long-term stations that must meet and follow specific quality assurance, monitoring methodology, sampling objectives and siting requirements. The AQD SLAMS stations have been placed in Wyoming's most populous towns with the purpose of determining compliance with NAAQS for the protection of public health. The ten stations specified as Wyoming SLAMS locations are described below:

2.1.1 Casper - SLAMS



Casper - SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Casper - SLAMS PM ₁₀ with collocation	City, County Bldg.; Center & C Streets (Casper MSA)	56-025-0001	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 3 days for the primary. 1 in 12 days for the collocate	No planned changes
Casper - SLAMS PM _{2.5}	City, County Bldg.; Center & C Streets (Casper MSA)	56-025-0001	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days	No planned changes

This station is located in downtown Casper, a city of approximately 56,000 people. Casper is the second largest city in Wyoming, located in Natrona County near the center of the State. This station is in the Casper, Wyoming Metropolitan Statistical Area (MSA). PM₁₀ sampling began at this station in 1991. A collocated PM₁₀ sampler was added in 2001 and the station hi-volume PM₁₀ samplers were replaced with low-volume partisol during 2010. The AQD added PM_{2.5} sampling at the Casper station on May 22, 2009. The AQD is interested in monitoring PM_{2.5} concentrations in Casper because it is one of Wyoming's most heavily populated areas.

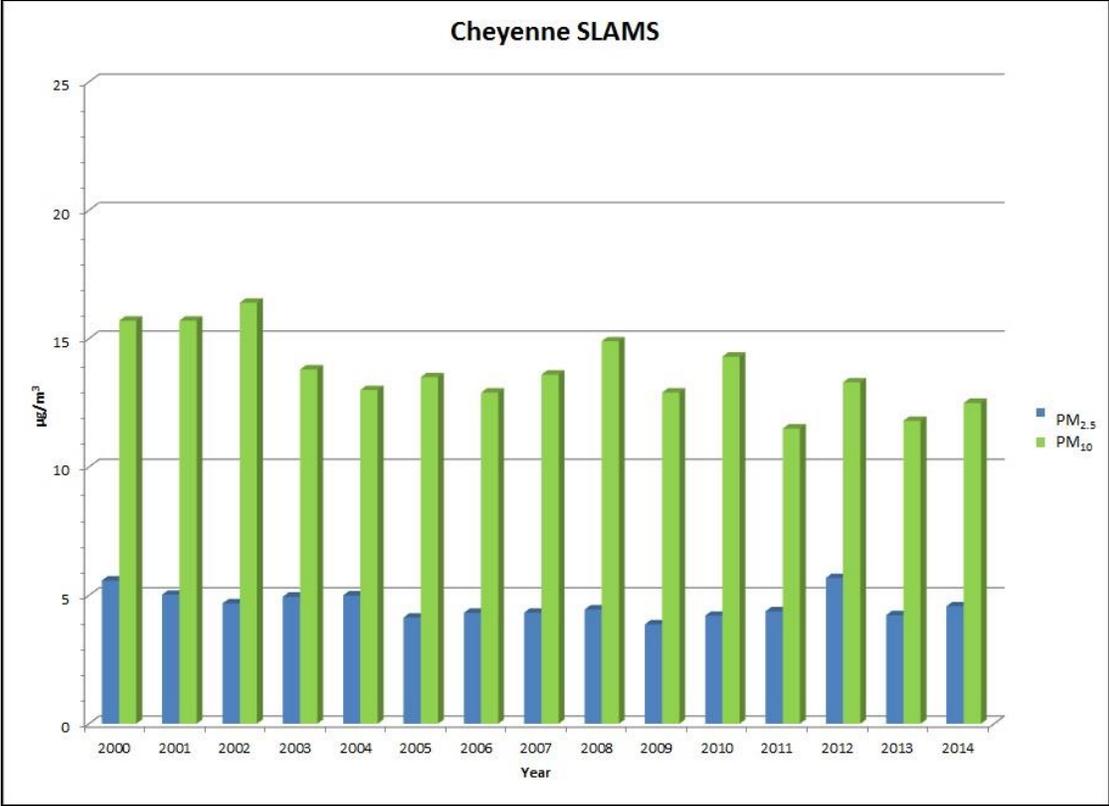


2.1.2 Cheyenne - SLAMS



Cheyenne - SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Cheyenne - SLAMS PM ₁₀ with collocation	Emerson Building 23 rd & Central Ave. (Cheyenne MSA)	56-021-0001	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 3 days for the primary. 1 in 12 days for the collocate	No planned changes
Cheyenne - SLAMS PM _{2.5} with collocation	Emerson Building 23 rd & Central Ave. (Cheyenne MSA)	56-021-0001	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days for the primary. 1 in 12 days for the collocate	No planned changes

The Cheyenne monitoring station is located in downtown Cheyenne on the roof of the Emerson Building; a State of Wyoming owned building. Cheyenne's population is approximately 62,448 people according to the 2013 U.S. Census Bureau estimate. It is the capital and largest city in Wyoming. This station is in the Cheyenne, Wyoming Metropolitan Statistical Area. The PM₁₀ sampling began at this station in 1991. A collocated PM₁₀ sampler was added in 2002. The PM_{2.5} monitors were installed in 1998. A collocated PM_{2.5} sampler was added in March 2009 to comply with 40 CFR § 58 requirements for collocation of samplers.

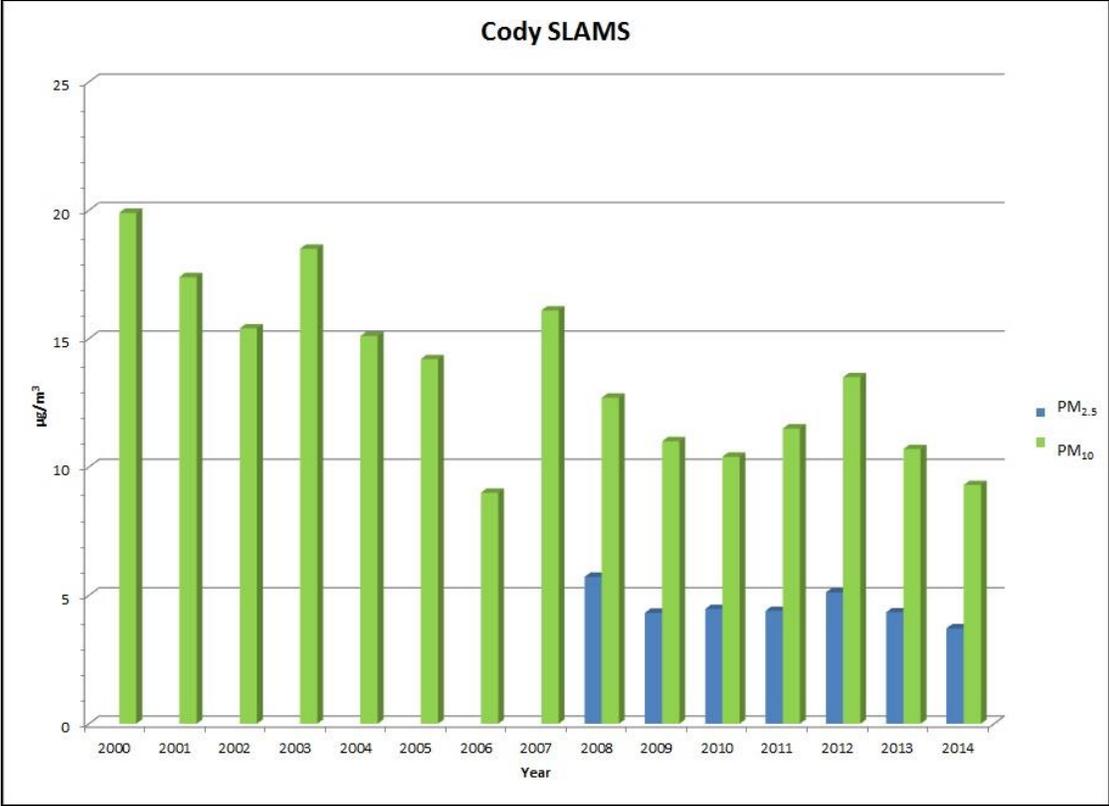


2.1.3 Cody - SLAMS



Cody- SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Cody – SLAMS PM ₁₀	Cody Jr. High School; 2901 Cougar Ave.	56-029-0001	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 3 days	No planned changes
Cody – SLAMS PM _{2.5}	Cody Jr. High School; 2901 Cougar Ave.	56-029-0001	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days	No planned changes

Cody is located in the northwest portion of the state in Park County. Its population is approximately 9,600. PM₁₀ sampling began at this station in 1988 and the PM₁₀ samplers were upgraded to more reliable low-volume samplers during 2010. Cody PM_{2.5} monitoring started in June 2008. The AQD is interested in monitoring PM_{2.5} concentrations in Cody to monitor impacts from wintertime sanding, wood smoke, summertime forest fires, and the nearby lake bed that can be exposed when available water is low.

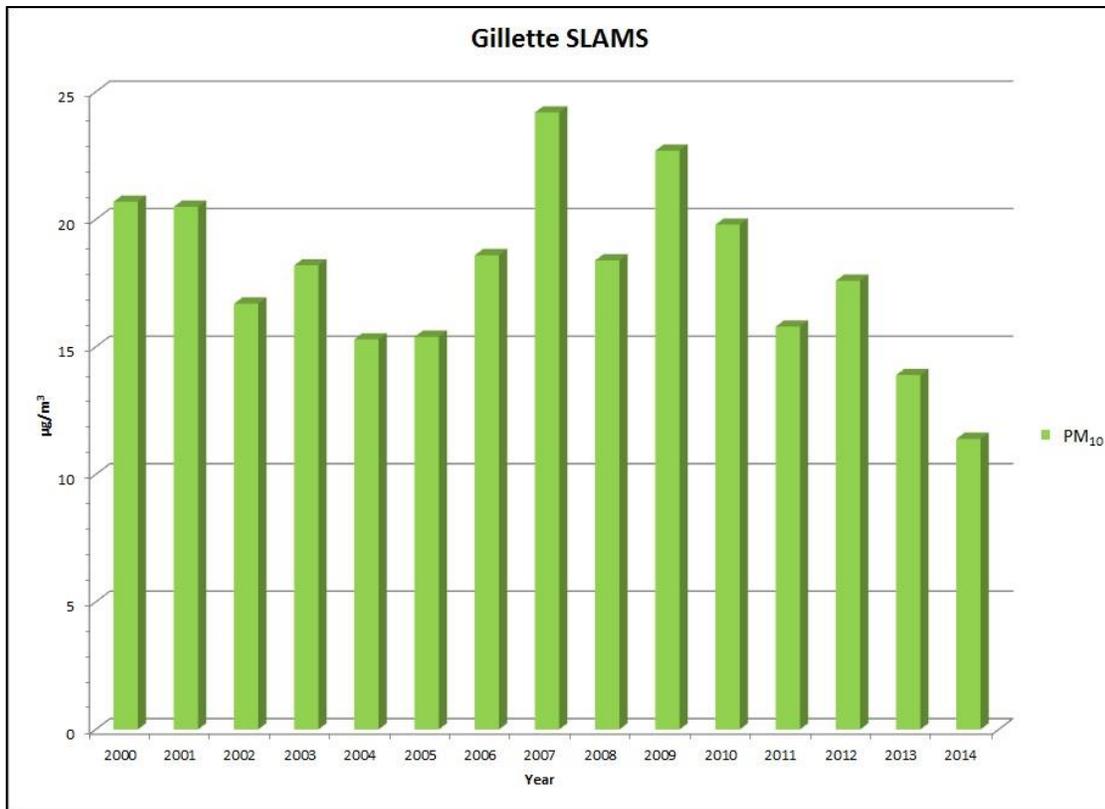


2.1.4 Gillette - SLAMS

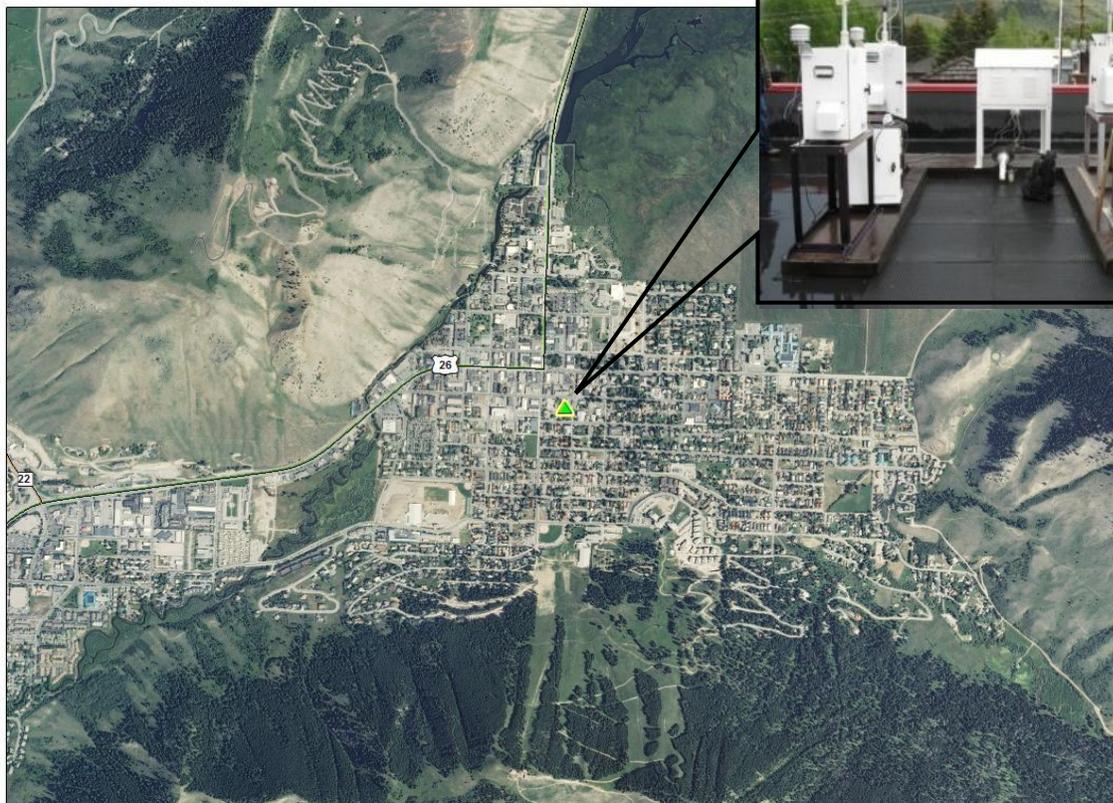


Gillette- SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Gillette - SLAMS PM ₁₀	1000 West 8 th St.	56-005-1002	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 6 days	No planned changes

Gillette is located in Campbell County Wyoming. Its population is approximately 29,400 and is considered a micropolitan statistical area. PM₁₀ sampling began at this station in 1991. The Gillette PM₁₀ sampler was upgraded to a more reliable low-volume sampler during 2010.

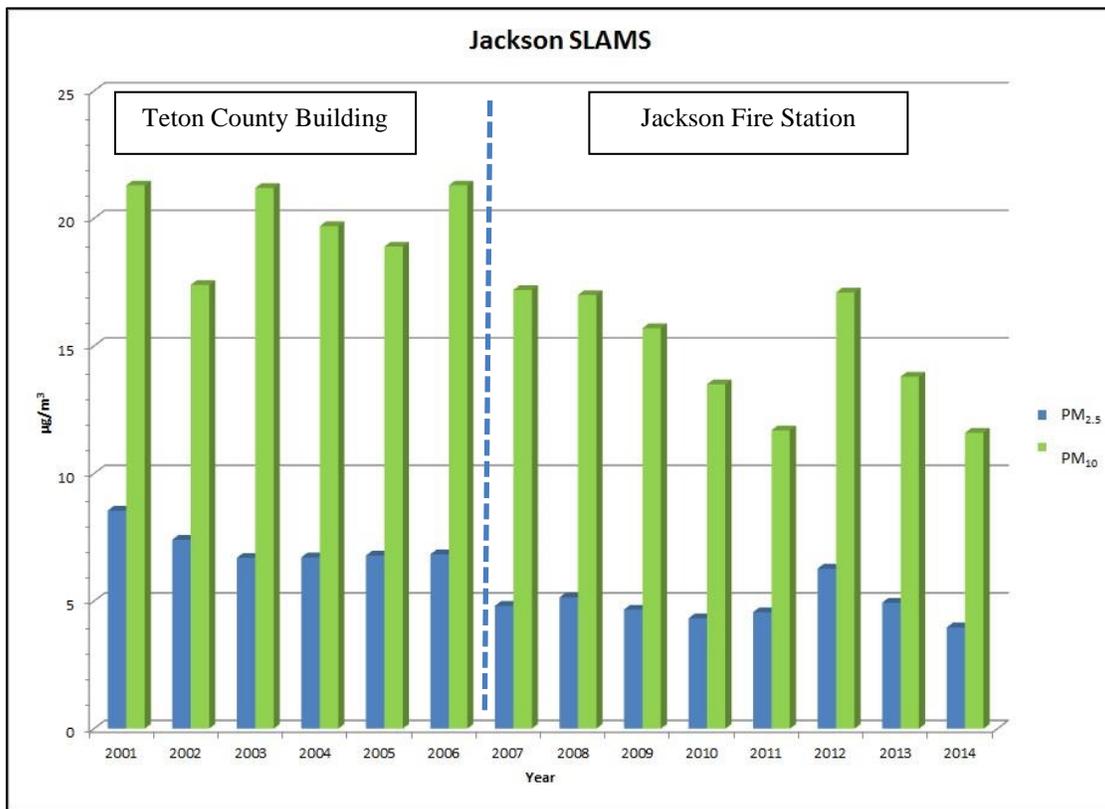


2.1.5 Jackson - SLAMS



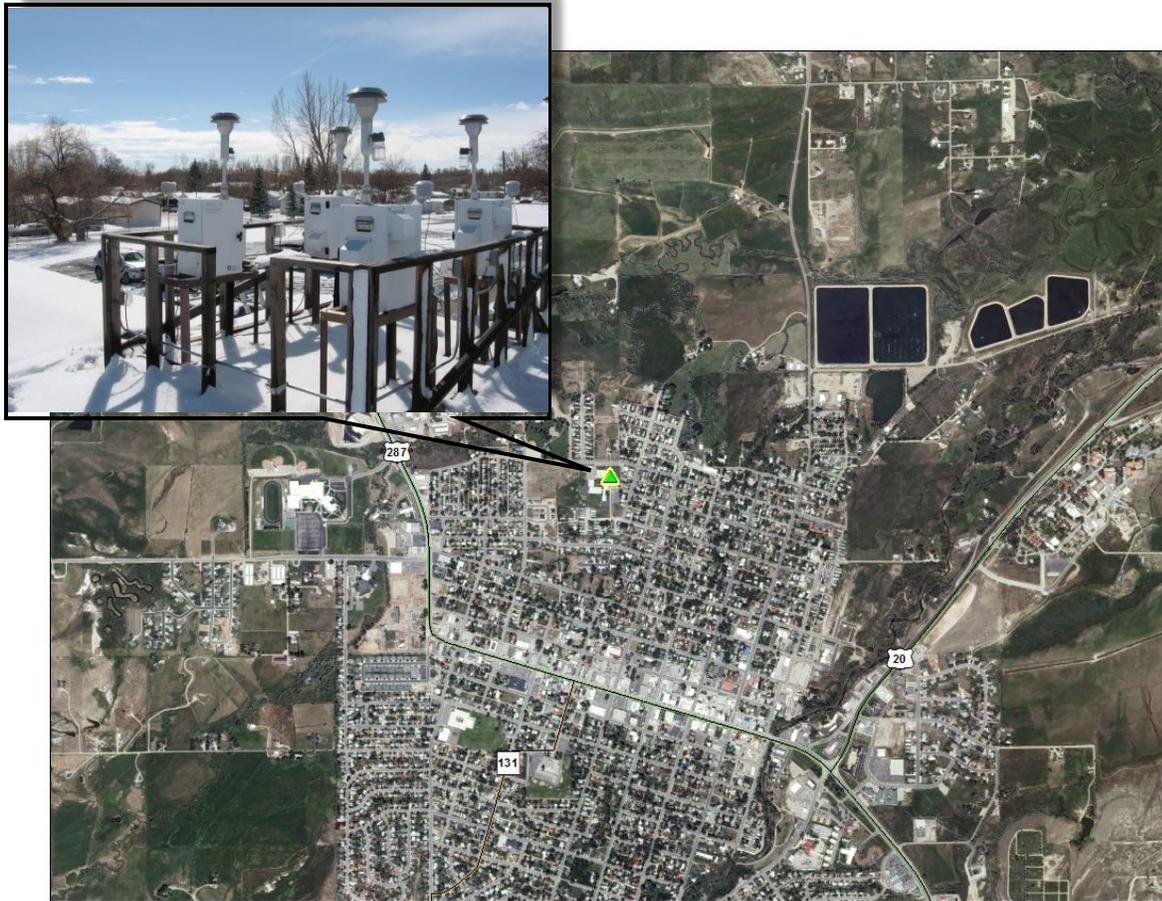
Jackson- SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Jackson – SLAMS PM ₁₀	40 E Pearl Ave.	56-039-1006	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 3 days	No planned changes
Jackson – SLAMS PM _{2.5}	40 E Pearl Ave.	56-039-1006	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days	No planned changes

Jackson is located in Teton County in northwest Wyoming. Jackson is considered a micropolitan statistical area with a population of approximately 9,700. PM₁₀ and PM_{2.5} sampling began in Jackson in 2001 at the Teton County Building Site. Sampling at the current location, Jackson Fire Station site, began in 2007.



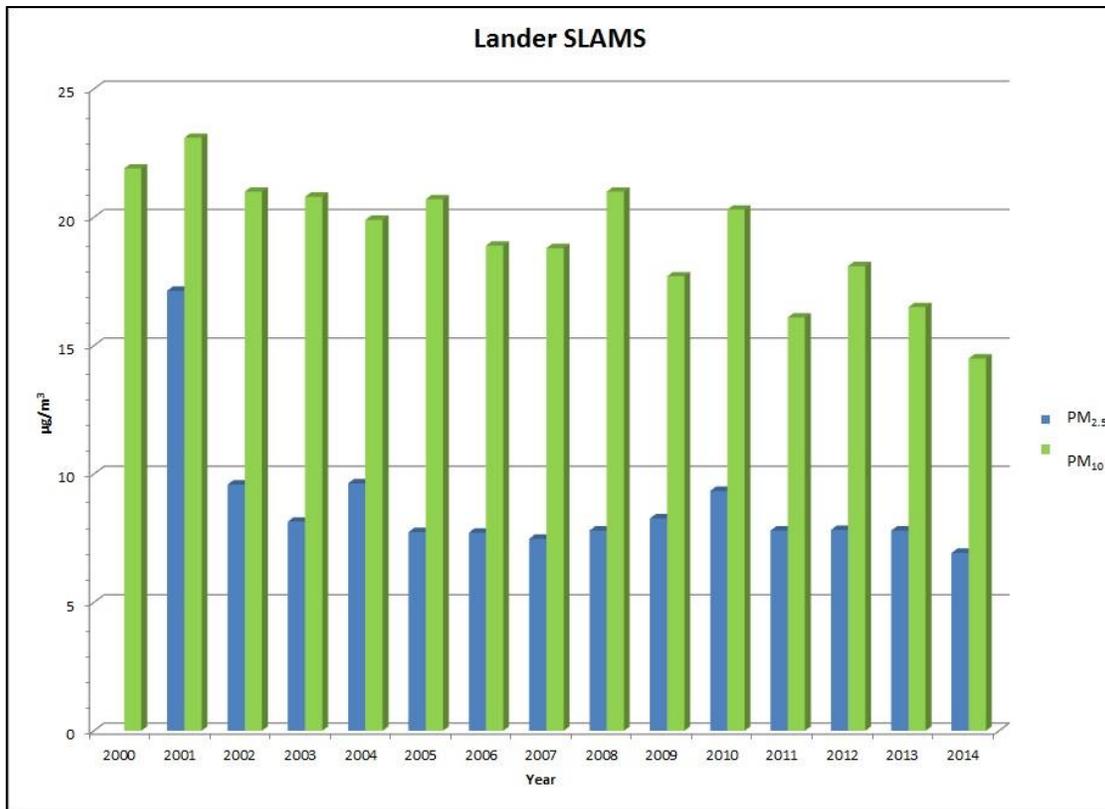
The 2007 values are weighted for the Teton County Building Site and the Jackson Fire Station Site.

2.1.6 Lander - SLAMS



Lander- SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Lander – SLAMS PM ₁₀	600 Washington	56-013-1003	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 3days	No planned changes
Lander – SLAMS PM _{2.5}	600 Washington	56-013-1003	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days	No planned changes

The Lander monitoring station is located in Fremont County and has a population of approximately 7,600. PM₁₀ sampling began at this station in 1989. The PM_{2.5} monitors were installed in 2001.

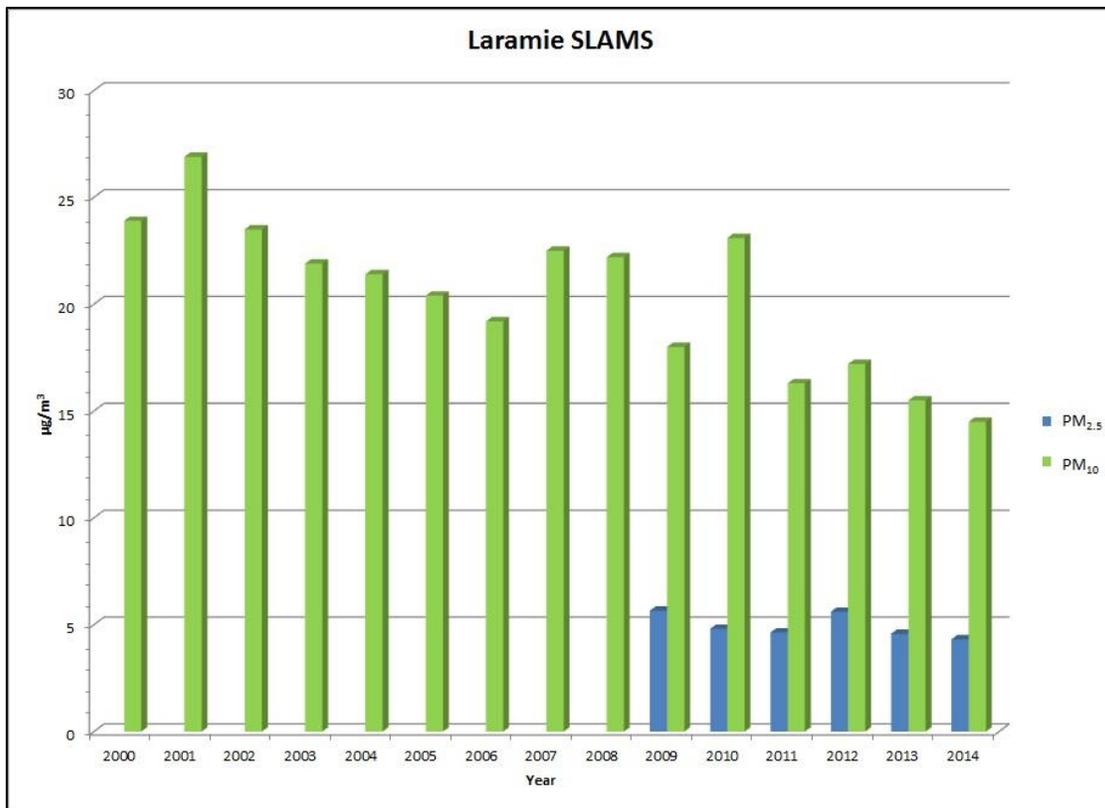


2.1.7 Laramie- SLAMS

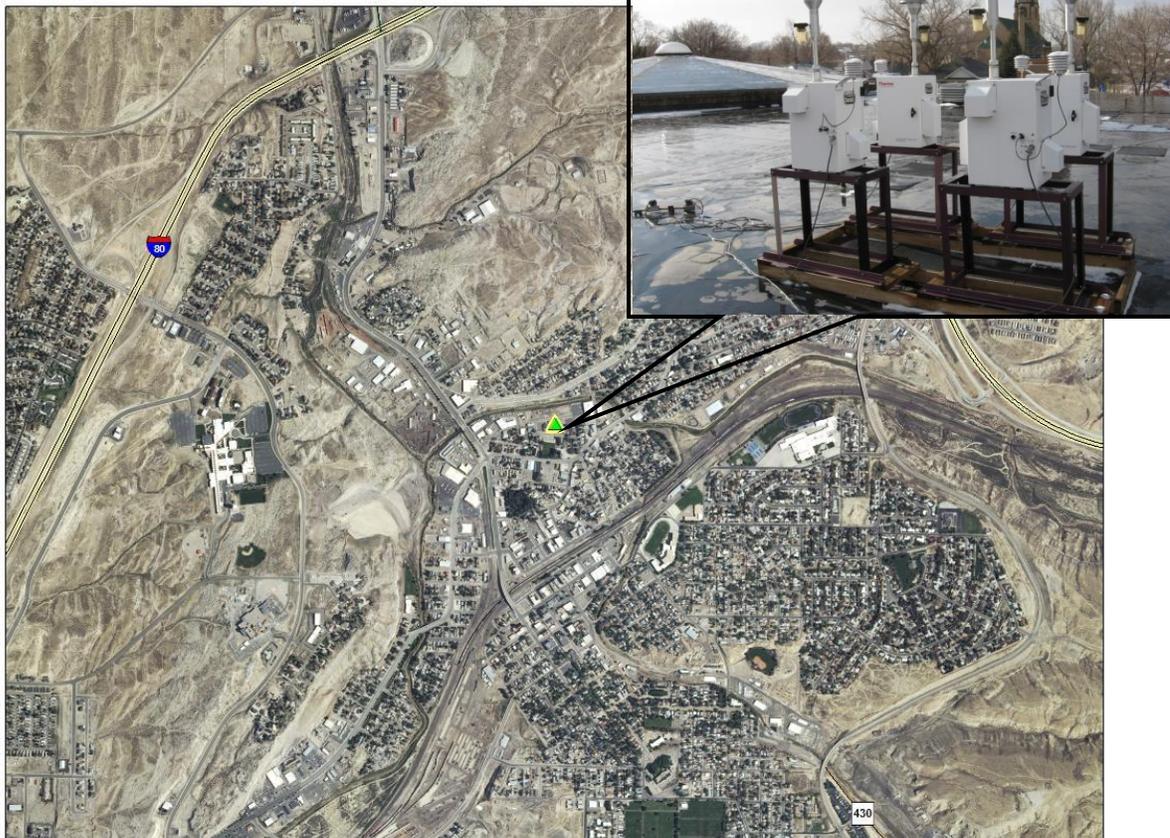


Laramie – SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Laramie – SLAMS PM ₁₀	406 Ivinson	56-001-0006	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 3 days	No planned changes
Laramie - SLAMS PM _{2.5}	406 Ivinson	56-001-0006	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days	No planned changes

Laramie is located in the southeast portion of Wyoming in Albany County. Laramie has a population of approximately 31,300 and is considered a micropolitan statistical area. PM₁₀ sampling began at this station in 1989 and the AQD upgraded the Laramie station PM₁₀ samplers to low-volume samplers during 2010. The AQD began PM_{2.5} sampling in Laramie in July 2009 to monitor impacts from wintertime sanding, wood smoke, and summertime forest fires.

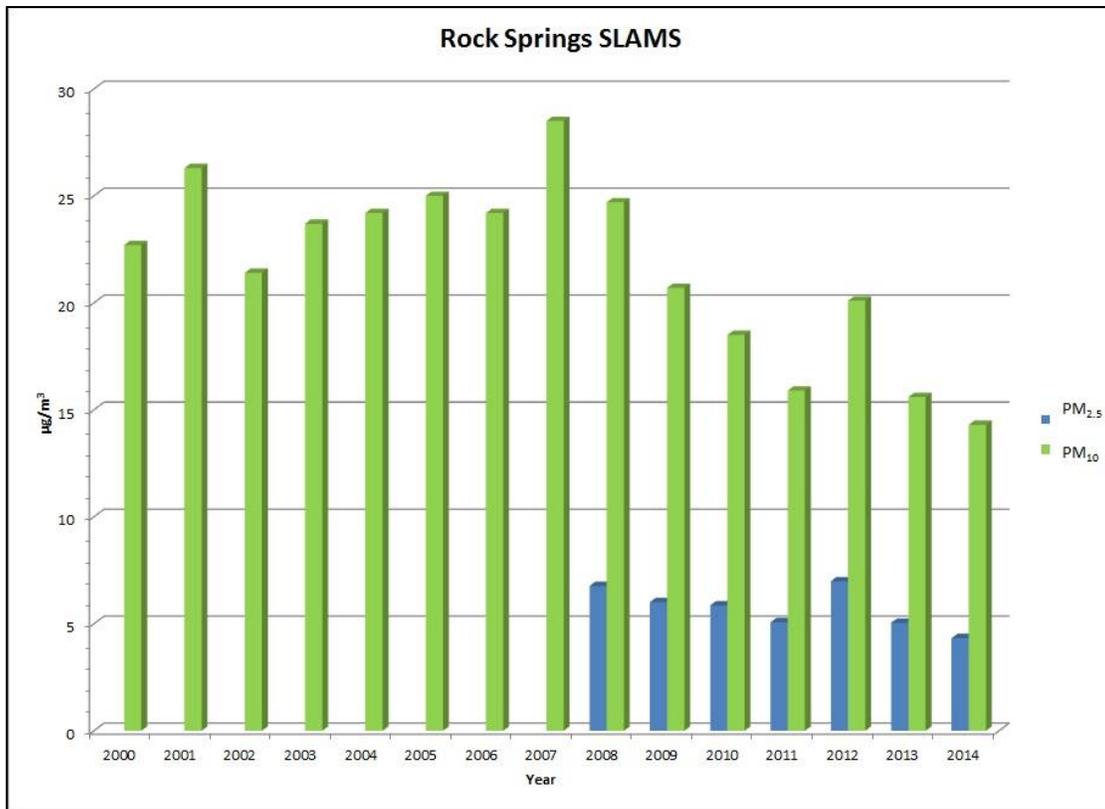


2.1.8 Rock Springs- SLAMS

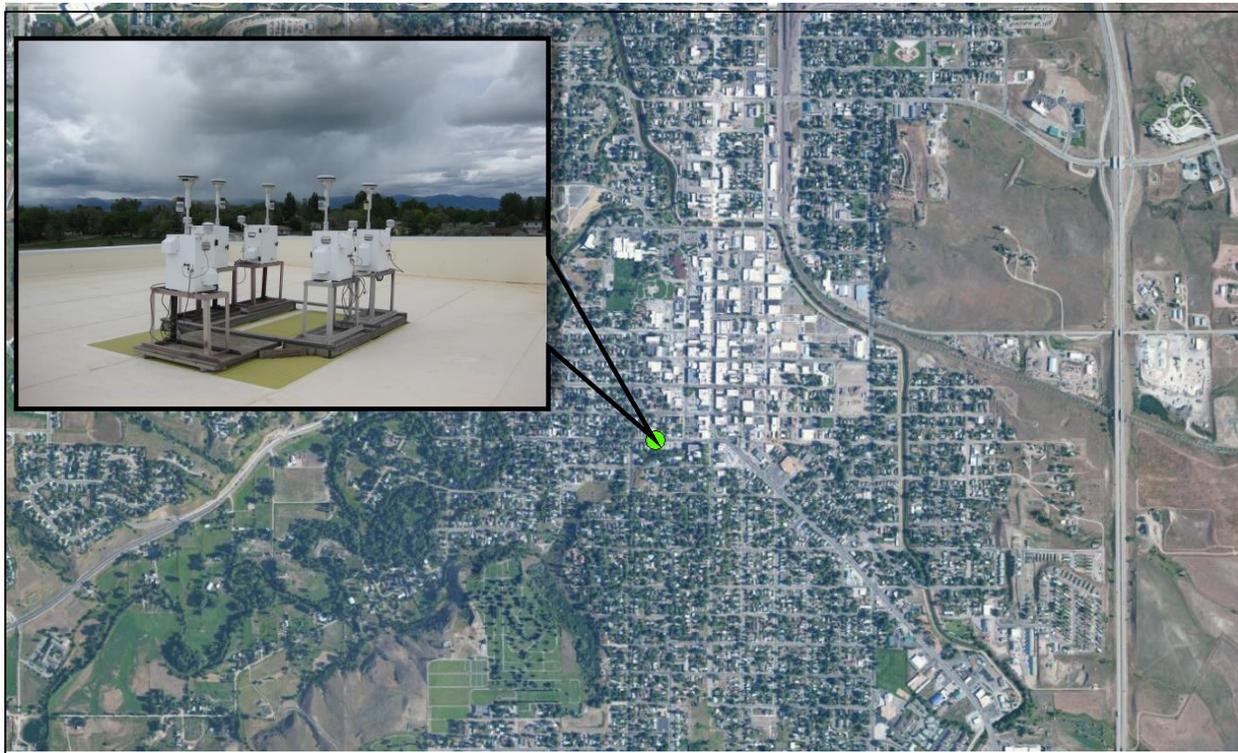


Rock Springs - SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Rock Springs – SLAMS PM ₁₀	625 Ahsay Ave.	56-037-0007	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 3 days	No planned changes
Rock Springs – SLAMS PM _{2.5}	625 Ahsay Ave.	56-037-0007	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days	No planned changes

Rock Springs is located in Sweetwater County in southwest Wyoming. Rock Springs is a micropolitan statistical area and has a population of approximately 23,200. PM₁₀ sampling began at this station in 1989. The AQD added PM_{2.5} monitoring to Rock Springs in March 2008 to monitor PM_{2.5} concentrations with population growth and energy development occurring in the area.



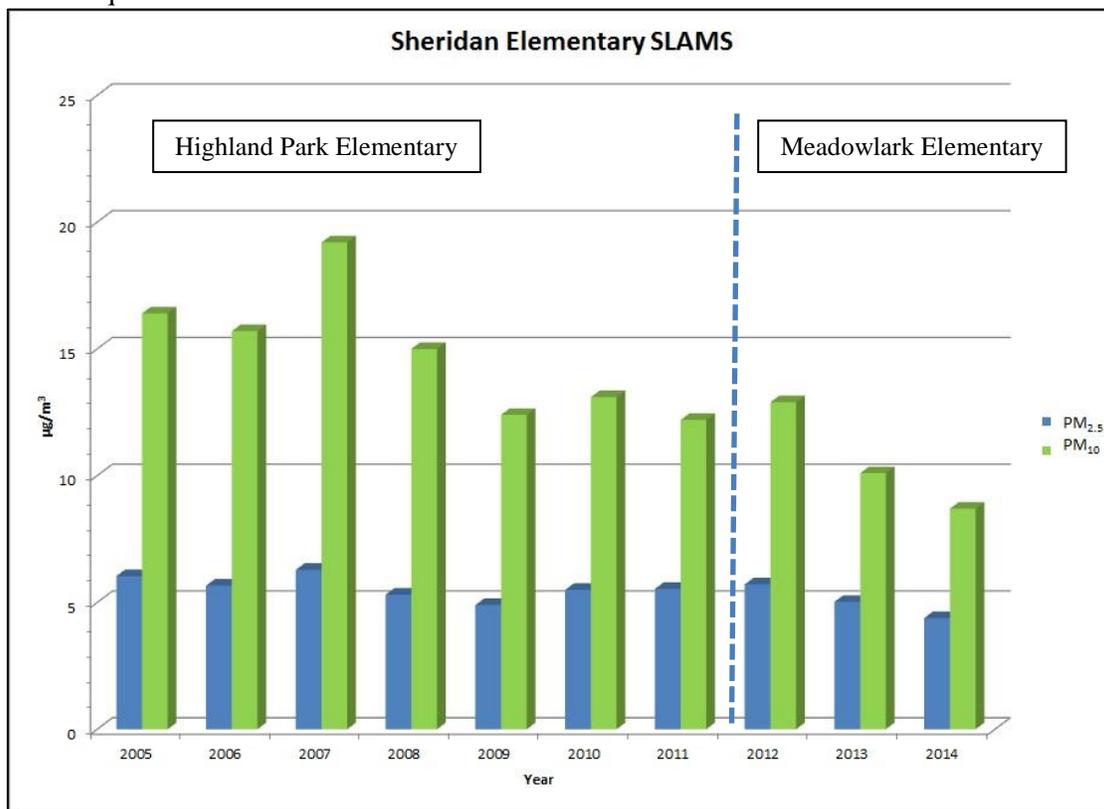
2.1.9 Sheridan-Meadowlark-SLAMs



Sheridan – Meadowlark – SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Sheridan – Meadowlark – SLAMS PM ₁₀ with collocation	Meadowlark 1410 DeSmet Ave.	56-033-1003	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 3 days for the primary. 1 in 12 days for the collocate.	No Planned Changes
Sheridan – Meadowlark - SLAMS PM _{2.5}	Meadowlark 1410 DeSmet Ave.	56-033-1003	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days	No Planned Changes

This monitoring location is one of two monitoring stations in the City of Sheridan, a micropolitan statistical area. Sheridan is located in Sheridan County and has a population of approximately 17,500. The City of Sheridan is Wyoming’s only nonattainment area for annual PM₁₀.

Since 1998, the neighborhood scale, population oriented station has moved several times. From 1998 to 2005 PM₁₀ and PM_{2.5} had been monitored at the Sheridan Middle School; from 2005 to 2012 the station was located at the Highland Park School; beginning July 2012 the station is currently located at the Meadowlark Elementary School. A collocated PM₁₀ monitor was placed at the station in 2007, to fulfill collocation requirements for the SLAMS network.



In mid-2012, the AQD relocated the SLAMS site from Highland Park Elementary School to Meadowlark Elementary School. The values in 2012 are weighted between the two sites.

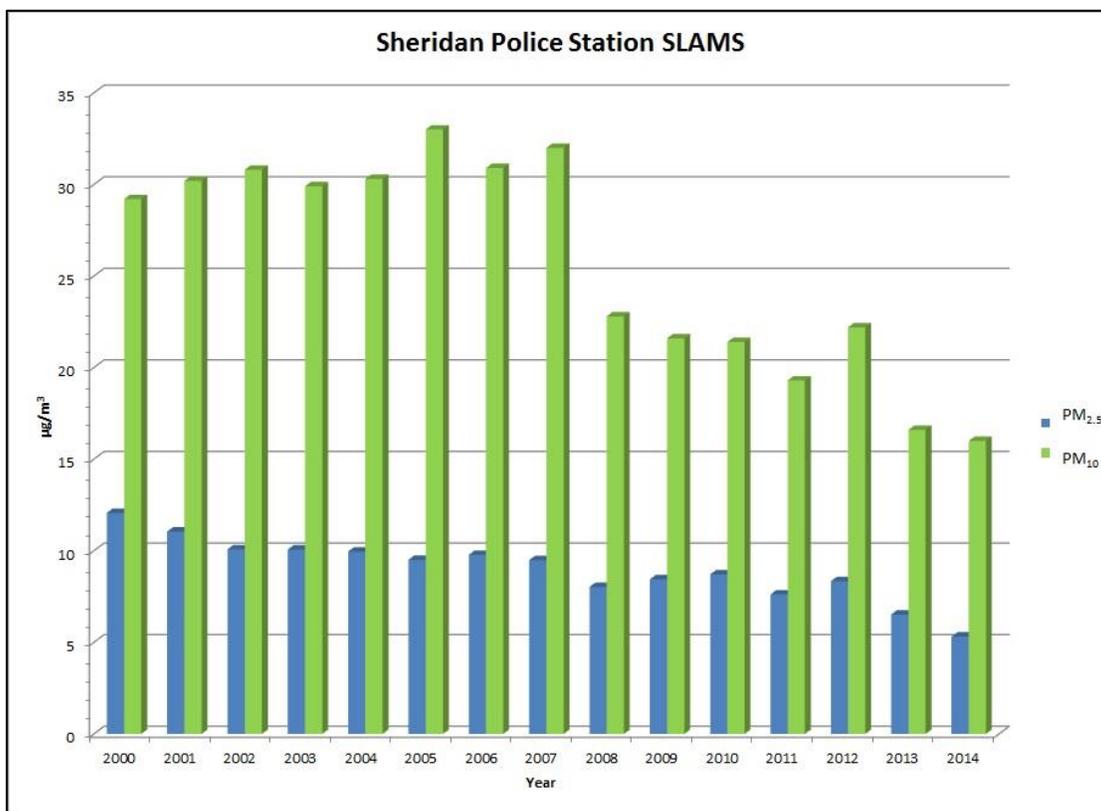
2.1.10 Sheridan – Police Station - SLAMS



Sheridan – Police Station- SLAMS Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Sample Frequency	Operational Status
Sheridan – Police Station - SLAMS PM ₁₀	45 West 12 th St.	56-033-0002	PM ₁₀	Continuous TEOM	Neighborhood	Hourly	No planned changes
Sheridan – Police Station - SLAMS PM _{2.5} with collocation	45 West 12 th St.	56-033-0002	PM _{2.5}	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days for the primary. 1 in 12 days for the collocate.	No planned changes

The Sheridan – Police Station is one of the oldest monitoring stations in Wyoming. Sheridan is considered a micropolitan statistical area. The City of Sheridan is a nonattainment area for annual PM₁₀. The objective of the Sheridan- Police Station is to monitor the highest expected concentration in the non-attainment area. Filter-based PM₁₀ sampling began at this station in 1985. A PM₁₀ continuous TEOM

sampler replaced the filter-based monitors on October 1, 2007. Additionally, meteorological instrumentation was added to the Police Station in 2008 to monitor weather conditions, giving the AQD better information to work with the community to prevent PM₁₀ exceedances. PM_{2.5} sampling started in 1998 at this station.



*Note: Vertical scale is larger than other SLAMS graphs.

2.2 Special Purpose Monitoring (SPM)

The Special Purpose Monitoring (SPM) stations are used in addition to the SLAMS stations and provide information needed by the State and local agencies to support air program activities and fulfill the objectives of the air monitoring network. The SPMs can be adjusted to accommodate changing circumstances, needs and priorities. Section 2.2 includes SPM stations operating in Wyoming as of May 2015.

The following SPM stations have a spatial (measurement) scale associated with each parameter at each station used to allow for an understanding of what the ambient air monitor represents in terms of a surrounding, relatively homogeneous parcel of air. These spatial scales are spelled out in 40 CFR § 58. A scale is assigned to each parameter at the station to indicate what the measurement scale of a particular monitor represents. The monitoring objective and spatial scale are determined when the monitoring station is sited and may be updated if the monitoring objective changes throughout the life of the monitoring station.

2.2.1 Big Piney

The Big Piney station is located four (4) miles south of the Town of Big Piney. In March 2011, the AQD placed a mobile monitoring station at this location to achieve the objective of monitoring near the Big Piney and LaBarge Gas Fields. The mobile monitoring station equipment included a digital camera, ozone analyzer, oxides of nitrogen analyzer, methane/non-methane hydrocarbons, continuous PM₁₀ beta attenuation monitor (BAM), PM_{2.5} BAM monitor and meteorological tower. After two full years of operation, the AQD performed an assessment of the data and determined that it would be beneficial to continue monitoring some parameters at the Big Piney Station location to achieve the station objective. The full analysis can be found in Appendix C. On December 10, 2013, the long-term Big Piney Station became fully operational. The station currently monitors ozone, oxides of nitrogen, meteorological parameters, and has a camera. Since the station was kept in the same location, data from this station continues to be reported under AQS ID 56-035-0700.



Big Piney Site #3							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Big Piney	4 mi. South of Big Piney, WY	56-035-0700	Ozone (O ₃)	Ultraviolet	Regional	Hourly	No planned changes
			Nitric Oxide (NO)	Chemiluminescence	Regional	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Chemiluminescence	Regional	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Chemiluminescence	Regional	Hourly	No planned changes

2.2.2 Boulder

The Boulder Station is located approximately five (5) miles southwest of Boulder, Wyoming and is used to track air quality in an area of natural gas development. The Boulder Station began monitoring in February 2005, and includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ BAM), camera system and meteorological monitoring. The TEOM was replaced with a BAM for the monitoring of PM₁₀ in February 2015 due to an unrepairable failure of the TEOM. The Boulder Station was also a hub for the AQD's 2007 - 2015 Upper Green Winter Ozone Studies. There is also long-term monitoring at the Boulder Station to further understand ozone formation in the Upper



Green River Basin Ozone Nonattainment Area. In 2015, this monitoring included photolytic NO₂, methane/non-methane hydrocarbons, speciated VOC monitoring, NO_y monitoring, UV radiometers, and upper air monitoring. Shell Exploration and Production assisted with funding for this station and has used the station, since December 2006, to monitor for ammonia. The ownership and operation of the ammonia monitoring system transferred from Shell Exploration and Production to Ultra Petroleum in 2014. After consultation with the AQD, Ultra Petroleum discontinued ammonia monitoring in May 2015.

Boulder Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Boulder	5 mi. SW of Boulder, WY	56-035-0099	Ozone (O ₃)	Ultraviolet Absorption	Neighborhood	Hourly	No planned changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Neighborhood	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Neighborhood	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Neighborhood	Hourly	No planned changes
			PM ₁₀	Beta Attenuation	Neighborhood	Hourly	Changed from TEOM to BAM in February 2015.

2.2.3 Campbell County

The Campbell County station began operation in June 2003 and is located approximately 15 miles southwest of Gillette. This station is used to track air quality in an area of heavy coal-bed methane development. This station includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ TEOM), camera system and meteorological monitoring.



Campbell County Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Campbell County	15 mi. SSW of Gillette, WY	56-005-0456	Ozone (O ₃)	Ultraviolet	Urban	Hourly	No planned changes
			Nitric Oxide (NO)	Chemiluminescence	Urban	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Chemiluminescence	Urban	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Chemiluminescence	Urban	Hourly	No planned changes
			PM ₁₀	Continuous TEOM	Urban	Hourly	No planned changes

2.2.4 Casper Gaseous

The Casper Gaseous Station began operation in March 2013. The Casper Gaseous Station is sited to monitor population-based ozone concentrations in Wyoming's second largest city. Population-based ozone monitoring in Casper was identified as a need in the 2010 Network Assessment. The Casper Gaseous Station includes ozone, NO_x, meteorological monitoring, and a camera.



Casper Gaseous Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Casper Gaseous	2800 Pheasant Dr.	56-025-0100	Ozone (O ₃)	Ultraviolet Absorption	Neighborhood/Urban	Hourly	No planned changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Neighborhood	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Neighborhood	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Neighborhood	Hourly	No planned changes

2.2.5 Converse County

The Converse County Monitoring Station is located approximately 38 miles northwest of Douglas and is used to evaluate ambient air quality in an area of regional oil and gas development. Air quality measurements at the Converse County Monitoring Station include gaseous parameters (NO_x and ozone), continuous particulate (PM₁₀ BAM), camera system, and meteorological monitoring. The Converse County Monitoring Station began operation in April 2015.



Converse County Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Converse County	16 miles West of WY Hwy 59 on Highland Loop Rd, North side of road	56-009-0010	Ozone (O ₃)	Ultraviolet Absorption	Regional	Hourly	No planned changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			PM ₁₀	Beta Attenuation	Regional	Hourly	No planned changes

2.2.6 Daniel South

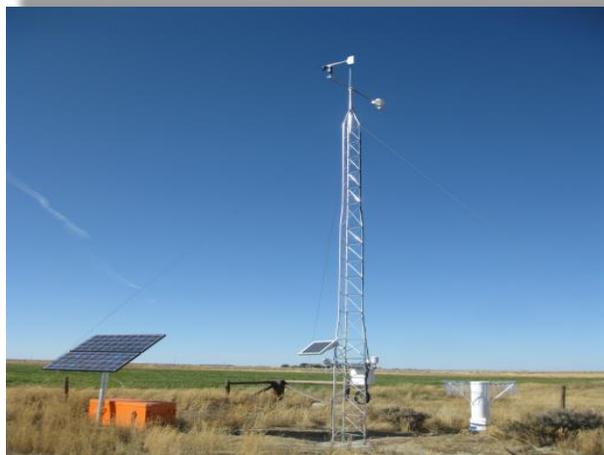
The Daniel South Station is located approximately five (5) miles south of the town of Daniel in Sublette County and is used to track air quality upwind of an area of extensive natural gas development. The Daniel South Station includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ TEOM), camera system and meteorological monitoring. The Daniel South Station began operation in July 2005.



Daniel South Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Daniel South	5 mi. S of Daniel, WY	56-035-0100	Ozone (O ₃)	Ultraviolet Absorption	Regional	Hourly	No planned changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			PM ₁₀	Continuous TEOM	Regional	Hourly	No planned changes

2.2.7 Farson

The AQD established a meteorological monitoring station in May 2011 to obtain meteorological data for the purposes of characterizing the general meteorology and air characteristics near Farson, Wyoming. This general area was targeted in the 2008 Southwest Wyoming Network Assessment and 2010 Network Assessment, as a location to help fill a gap in needed meteorological data. The data collected at this station will be used for AERMOD or other meteorological modeling and comparison with other meteorological monitoring data.



2.2.8 Hiawatha

The AQD began operation of the Hiawatha Station in May 2011. This is the AQD's first monitoring station that uses renewable energy as its primary power source. The solar/wind powered monitoring station is located 35 miles south of Rock Springs, in the Hiawatha Gas Field. This area of industrial oil and gas development was noted in the 2010 Network Assessment as an area that would benefit from ambient air quality monitoring. The Hiawatha station includes ozone, camera system, and meteorological monitoring. The Hiawatha station is also part of the Three-State Study.



Hiawatha Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Hiawatha	35 mi. S of Rock Springs, WY	56-037-0077	Ozone (O ₃)	Ultraviolet Absorption	Regional	Hourly	No planned changes

2.2.9 Juel Spring

The Juel Spring monitoring began operation in December 2009 and is located approximately 15 miles downwind (southeast) of the Jonah Gas Field. The Juel Spring Station includes gaseous (NO_x and ozone), camera system and meteorological monitoring. This station is located in conjunction with the Union Cellular Juel Spring Tower station.



Juel Spring Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Juel Spring	20 mi. NW of Farson, WY	56-035-1002	Ozone (O ₃)	Ultraviolet Absorption	Urban	Hourly	No planned changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes

2.2.10 Moxa

The Moxa station was installed in May 2010. This station is located approximately 25 miles northwest of the City of Green River. The purpose of this monitoring station is to characterize and monitor meteorology and air quality in an area of heavy energy development. This station includes NO_x, SO₂, ozone, continuous particulate (PM₁₀ BAM), camera system, and meteorological monitors.



Moxa Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Moxa	25 mi. NW of Green River, WY	56-037-0300	Ozone (O ₃)	Ultraviolet Absorption	Urban	Hourly	No planned changes
			Sulfur Dioxide (SO ₂)	Pulsed Fluorescent	Urban	Hourly & 5 minute	No planned changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes
			PM ₁₀	Beta Attenuation	Urban	Hourly	No planned changes

2.2.11 Murphy Ridge

The Murphy Ridge Station began operations during 2007. The station is located in the town of Bear River, approximately ten (10) miles north of Evanston on the Wyoming/Utah border. The purpose of this station is to monitor the air masses coming from Utah and to provide insight on these air masses. This station monitors NO_x, ozone, continuous particulate (PM₁₀ TEOM), and meteorology. The station is also equipped with a camera.



Murphy Ridge Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Murphy Ridge	Bear River, WY	56-041-0101	Ozone (O ₃)	Ultraviolet Absorption	Regional	Hourly	No planned changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			PM ₁₀	Continuous TEOM	Regional	Hourly	No planned changes

2.2.12 Pinedale

The Pinedale gaseous station began operations in January 2009. The need for population-based monitoring in this location was noted in the 2008 Southwest Wyoming Network Assessment. This station includes ozone, NO_x, a continuous PM_{2.5} Beta Attenuation Monitor (BAM), and meteorology within the town of Pinedale to monitor concentrations in this increasingly populated area. A camera system is also associated with this station on WyVisNet. However, the camera is housed in a different location with the objective of providing an overlook of the town of Pinedale.



Pinedale Gaseous Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Pinedale	West side of City Park and Pine Creek	56-035-0101	Ozone (O ₃)	Ultraviolet Absorption	Urban	Hourly	No planned changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Urban	Hourly	No planned changes
			PM _{2.5}	Beta Attenuation	Urban	Hourly	No planned changes

2.2.13 South Pass

The South Pass Station began operation in 2007. The station is located on South Pass at the southern end of the Wind River Range. The purpose of this station is to monitor air quality on the southern end of the range which sees air masses from both the Upper Green River Basin to the northwest, and from the southwestern corner of the State. The station has NO_x, ozone, continuous particulate, meteorology, and a camera. The PM₁₀ TEOM was shut down on 3/20/14 due to reliability issues, and it was replaced with a PM_{2.5} BAM that started data collection on 3/24/14. The switch to PM_{2.5} was made to assist the AQD in studying the impact of wildfires in the area.



South Pass Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
South Pass	South Pass, WY	56-013-0099	Ozone (O ₃)	Ultraviolet	Urban	Hourly	No planned changes
			Nitric Oxide (NO)	Chemiluminescence	Urban	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Chemiluminescence	Urban	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Chemiluminescence	Urban	Hourly	No planned changes
			PM _{2.5}	Beta Attenuation	Urban	Hourly	No planned changes

2.2.14 Thunder Basin

The Thunder Basin Station is located approximately 30 miles northeast of Gillette, Wyoming and is used to track visibility, meteorology, and air quality in the area. The Thunder Basin Station began operating in October 1999 and includes gaseous (NO_x and ozone), camera system and meteorological monitoring.



Thunder Basin Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Thunder Basin	30 mi. NE of Gillette, WY	56-005-0123	Ozone (O ₃)	Ultraviolet	Regional	Hourly	No planned changes
			Nitric Oxide (NO)	Chemiluminescence	Regional	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Chemiluminescence	Regional	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Chemiluminescence	Regional	Hourly	No planned changes

2.2.15 Wamsutter

The Wamsutter Station is approximately two (2) miles west of the town of Wamsutter in Sweetwater County, and is used to track meteorology and air quality within of an area of extensive natural gas development. The Wamsutter Station includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ TEOM), methane/non-methane hydrocarbons, camera system and meteorological monitoring. This station began operations on March 13, 2006.



Wamsutter Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Wamsutter	2 mi. W of Wamsutter, WY	56-037-0200	Ozone (O ₃)	Ultraviolet Absorption	Urban	Hourly	No planned changes
			Nitric Oxide (NO)	Chemiluminescence	Urban	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Chemiluminescence	Urban	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Chemiluminescence	Urban	Hourly	No planned changes
			PM ₁₀	Continuous TEOM	Urban	Hourly	No planned changes

2.2.16 Wright

The Wright monitoring station is located in Campbell County in northern Wyoming. Wright is a community located west of the southern group of the Power River Basin coal mines. The purpose of this monitor is to track population exposure to PM₁₀ in a community that is downwind of the coal mines.



Wright Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Wright Jr-Sr High School	Adjacent to Wright Junior - Senior High School	56-005-0099	PM ₁₀	Manual Filter-based Gravimetric (partisol)	Neighborhood	1 in 6 days	No planned changes

2.2.17 Powder River Basin (PRB) NO_x

The Powder River Basin NO_x network began operation in January 2001 through a cooperative agreement between the AQD and the Wyoming Mining Association. The purpose of the network is to monitor regional NO₂ concentrations in the Powder River Basin (PRB). The Belle Ayr - BA-4 Station is located near the railroad and represents a “maximum concentration” in and around the coal mines. The Antelope Station is located upwind from mining activities and is considered to be background. The AQD also receives data from the Thunder Basin Coal Company’s Station at the Tracy Ranch; this monitoring station is considered downwind of mining activity. The AQD did not list the Tracy Ranch Station below because it is funded and operated solely by the Thunder Basin Coal Company. Due to the construction of an oilfield service road less than 100 feet from the Antelope 3 Site, this site was shut down on July 1, 2013. The Antelope Station was moved to a new location, renamed the Antelope 7 Site, and became operational in February 2015.

PRB NO _x Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Antelope - Site 7	Converse County	56-009-0009	Nitric Oxide (NO)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Regional	Hourly	No planned changes
Belle Ayr - BA-4	Campbell County	56-005-0892	Nitric Oxide (NO)	Gas Phase Chemiluminescence	Micro Scale	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Micro Scale	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Micro Scale	Hourly	No planned changes

2.2.18 Powder River Basin (PRB) PM_{2.5}

The Powder River Basin PM_{2.5} Network began official operation in 1999. The purpose of the network is to characterize ambient fine particulate at and around the PRB coal mines. One monitor is located at each “group” of mines (north, middle and south) and one monitor is located away from mining activities to represent background. Due to the age of the instrumentation in the network, the AQD upgraded the instruments to continuous Thermo 1405DF TEOM monitors in 2010. In second quarter 2013, the AQD replaced the 1405DF instruments with Met One Beta Attenuation Monitors (BAMs) due to reliability issues with the 1405DF instruments. Due to the construction of an oilfield service road less than 100 feet from the Antelope 3 Site, this site was shut down on July 1, 2013. The Antelope Station was moved to a new location, renamed the Antelope 7 Site, and became operational in February 2015.

PRB PM _{2.5} Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Antelope - Site 7 (PRB-8)	Converse County	56-009-0009	PM _{2.5}	Beta Attenuation	Regional	Hourly	No planned changes
Belle Ayr - BA-4 (PRB-3)	Campbell County	56-005-0892	PM _{2.5}	Beta Attenuation	Neighborhood	Hourly	No planned changes
Black Thunder - Site 36 (PRB-5)	Campbell County	56-005-0891	PM _{2.5}	Beta Attenuation	Neighborhood	Hourly	No planned changes
Buckskin - North (PRB-1)	Campbell County	56-005-1899	PM _{2.5}	Beta Attenuation	Neighborhood	Hourly	No planned changes

2.3 Mobile Monitoring Trailers

Three (3) mobile monitoring trailers have been established and are being operated to help characterize air quality at various locations throughout the State of Wyoming. The mobile monitoring stations are self-contained monitoring shelters that may be moved to different locations in a relatively short time frame. The trailers include gaseous monitors (NO_x, O₃ and methane/non-methane hydrocarbons), continuous PM₁₀, continuous PM_{2.5}, camera system, and meteorological instrumentation. The mobile monitoring stations may be used to monitor and characterize events, trends in air quality or areas downwind of industrial development. The AQD locates and operates the mobile monitoring trailers at a location for approximately one (1) year at a time. Current locations as of May 2015 for the three (3) mobile trailers include: Mobile #1 Lovell, Mobile #2 Sinclair, and Mobile #3 Converse County. More information about the future mobile monitoring trailer locations can be found in Section 5.0 of this Network Plan.

2.3.1 Mobile #1 Lovell

The Lovell air quality mobile monitoring station began operation on July 10, 2014, and is slated to operate at this location for one (1) year. The mobile station is located within the city limits of Lovell, in a residential neighborhood. The station's objective is to characterize the population-based ozone and other air quality parameters in the Town of Lovell. A digital camera, ozone analyzer, oxides of nitrogen analyzer, methane/non-methane hydrocarbons, continuous PM₁₀ BAM, PM_{2.5} BAM monitor and meteorological equipment are located at this station.



Lovell – Mobile #1 Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Lovell	360 East 5 th Street Lovell, WY	56-003-0003	Ozone (O ₃)	Ultraviolet Absorption	Regional	Hourly	No changes planned.
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Regional	Hourly	No changes planned.
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Regional	Hourly	No changes planned.
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Regional	Hourly	No changes planned.
			PM ₁₀	Beta Attenuation	Regional	Hourly	No changes planned.
			PM _{2.5}	Beta Attenuation	Regional	Hourly	No changes planned.

2.3.2 Mobile #2 Sinclair

The Sinclair air quality mobile monitoring station began operation in December 2013. The AQD has continued operation at this location beyond the anticipated one (1) year, while the AQD works to place long-term SO₂ monitoring in the Town of Sinclair. The mobile station is located at the northwest side of town in Sinclair, in a residential neighborhood. The station's objective is to characterize the population exposure to sulfur dioxide and other air quality parameters in the Town of Sinclair, located upwind of the Sinclair refinery. A digital camera, ozone analyzer, oxides of nitrogen analyzer, sulfur dioxide, methane/non-methane hydrocarbons, continuous PM₁₀ BAM, PM_{2.5} BAM monitor and meteorology equipment are located at this station.



Sinclair – Mobile #2 Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Sinclair	510 N. 7 th St. Sinclair, WY	56-007-1000	Ozone (O ₃)	Ultraviolet Absorption	Regional	Hourly	No Planned Changes
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Regional	Hourly	No Planned Changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Regional	Hourly	No Planned Changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Regional	Hourly	No Planned Changes
			Sulfur Dioxide (SO ₂)	Pulsed Fluorescent	Regional	Hourly & 5 min.	No Planned Changes
			PM ₁₀	Beta Attenuation	Regional	Hourly	No Planned Changes
			PM _{2.5}	Beta Attenuation	Regional	Hourly	No Planned Changes

2.3.3 Mobile #3 Converse County

The AQD established a monitoring location in Converse County near Douglas, Wyoming on December 17, 2012. This station was sited due to citizen concerns about oil and gas development in an area of rural residential population. This mobile monitoring station is slated to operate until June 30, 2015. The AQD continued operation at this location beyond the anticipated one (1) year while the AQD evaluated the need for a long-term monitoring station in Converse County. The trailer includes gaseous monitors (NO_x, O₃ and methane/non-methane hydrocarbons), continuous PM₁₀, continuous PM_{2.5}, camera system, and meteorological instrumentation.



Converse County – Mobile #3 Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Converse County	369 Antelope Rd., Douglas, WY	56-009-0801	Ozone (O ₃)	Ultraviolet Absorption	Regional	Hourly	Shut down on June 30, 2015.
			Nitric Oxide (NO)	Gas Phase Chemiluminescence	Regional	Hourly	Shut down on June 30, 2015.
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Regional	Hourly	Shut down on June 30, 2015.
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Regional	Hourly	Shut down on June 30, 2015.
			PM ₁₀	Beta Attenuation	Regional	Hourly	Shut down on June 30, 2015.
			PM _{2.5}	Beta Attenuation	Regional	Hourly	Shut down on June 30, 2015.

2.4 *Cheyenne National Core (NCore) Multi Pollutant Station*

The Wyoming NCore monitoring station is located in the City of Cheyenne, North Soccer Complex Park. The NCore monitoring station was established during the summer of 2010 and became fully operational January 1, 2011. This station was incorporated as part of the National Core Monitoring Network. The NCore stations will be the basis for developing a representative report card on air quality across the nation, capable of delineating differences among geographic and climatological regions. The monitored data will be used to characterize and monitor trends in air quality, air quality standards' compliance and may be used for national health assessments, model evaluations, and comparison with other ambient air monitoring data.

Particulate monitoring is a large part of operations at the Cheyenne NCore monitoring station. Currently, this station has a MetOne BAM Coarse system (includes PM_{10} and $PM_{2.5}$ instruments). This setup provides continuous data and an economical way to monitor PM_{10} , $PM_{10-2.5}$ and $PM_{2.5}$. The primary monitor at the NCore station is the VSCC filter-based gravimetric monitor. Two (2) Thermo Partisol 2000i (FRM) were installed and began sampling on the 1-in-3 day schedule on January 1, 2014. This new setup helps fulfill the Wyoming $PM_{2.5}$ monitor network Federal Reference Monitoring (FRM) and Federal Equivalent Method (FEM) collocation requirements.



Cheyenne NCore Monitoring Site Specifications

Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Cheyenne NCore	6909 Chief Washakie Ave. Cheyenne, WY	56-021-0100	Ozone (O ₃)	Ultraviolet Absorption	Neighborhood	Hourly	No planned changes
			Trace Sulfur Dioxide (SO ₂)	Ultraviolet Fluorescence	Neighborhood	Hourly	No planned changes
			Trace Carbon Monoxide (CO)	Gas Filter Correlation Teledyne	Neighborhood	Hourly	No planned changes
			Nitric Oxide (NO)	Chemiluminescence	Neighborhood	Hourly	No planned changes
			Nitrogen Dioxide (NO ₂)	Gas Phase Chemiluminescence	Neighborhood	Hourly	No planned changes
			Oxides of Nitrogen (NO _x)	Gas Phase Chemiluminescence	Neighborhood	Hourly	No planned changes
			Reactive Oxides of Nitrogen (NO _y)	Chemiluminescence	Neighborhood	Hourly	No planned changes
			PM ₁₀	Beta Attenuation	Neighborhood	Hourly	No planned changes
			Speciated PM _{10-2.5}	Beta Attenuation	Neighborhood	Hourly	No planned changes
			PM _{2.5}	Beta Attenuation	Neighborhood	Hourly	No planned changes
			PM _{2.5} (Primary)	Manual Filter-based Gravimetric (VSCC)	Neighborhood	1 in 3 days for the primary; 1 in 12 days for the precision.	No planned changes
			Speciated PM _{2.5}	Manual Filter-based with Speciation Analyses	Neighborhood	1 in 3 days	No planned changes

2.5 Industrial Monitoring Sites

Historically, the AQD has required several industrial sources in the State to conduct ambient monitoring for criteria pollutants in and around specific facilities. The AQD's largest industrial network is at the Powder River Basin coal mines and consists of approximately 50 PM₁₀ monitoring locations. The AQD also requires extensive networks of PM₁₀ monitoring at the Trona facilities outside of Green River and coal mines in southwest Wyoming. As facilities obtain construction or modification permits from the AQD's New Source Review program, they are often required to monitor for compliance with the ambient air quality standards downwind of their facilities. The monitoring program receives these data on a quarterly basis, and checks for compliance with the NAAQS as well as confirming that the facilities are following appropriate quality assurance measures.

2.6 IMPROVE Network

The purpose of the Interagency Monitoring of Protected Visual Environments (IMPROVE) network is to establish current visibility and aerosol conditions along with characterization of broad regional trends and visibility conditions using monitoring data collected in or near Class I areas across the United States. Wyoming has five (5) IMPROVE locations which include: Yellowstone National Park, Est. 1988; Bridger Wilderness Area, Est. 1988; North Absaroka Wilderness Area, Est. 2000; Thunder Basin National Grasslands, Est. 2002; and Cloud Peak Wilderness Area, Est. 2002.

3.0 Compliance with NAAQS

The primary purpose of the AQD's SLAMS and SPM networks is to evaluate compliance with the NAAQS. The AQD's SLAMS and SPMs employ reference or equivalent method technologies and are run according to SLAMS or PSD quality assurance specifications and therefore may be compared with the NAAQS. The AQD's SLAMS and SPM networks currently operate under project-specific quality assurance plans, which are available in the Cheyenne State Office for viewing. Data from the mobile trailers are also reported in the tables in this section. While mobile trailers are operated to the EPA's specifications for comparison with the NAAQS, they often contain less than a full year of data due to their short-term deployments. Therefore, these data are generally not comparable to the design value, which is the true test of compliance with the NAAQS.

The following tables show 2012 through 2014 data and design values for each SLAMS and SPM monitor. All stations that operated in 2014 are included in the tables. All stations operated by the AQD are in compliance with the NAAQS from 2012-2014.

3.1 Particulate Matter (PM_{10})

There were twenty-three (23) stations that monitored PM_{10} in 2014. The PM_{10} SLAMS network, consisting of ten stations, has two types of monitors (Thermo Partisol 2000 or Thermo TEOM). The Thermo Partisol 2000 PM_{10} monitors, in the network, have 30% collocation. This fulfills the collocation requirements in 40 CFR 58 Appendix A. The Sheridan Police Department PM_{10} TEOM is not required to have another analyzer collocated for precision purposes according to 40 CFR 58, Appendix A. The AQD network has eight (8) stations that have continuous MetOne Bam PM_{10} monitors and four (4) stations that have continuous Thermo TEOM PM_{10} monitors.

To comply with the 24-hour PM_{10} NAAQS, a monitor must record one or less "exceedance" (24-hour concentration greater than $150 \mu\text{g}/\text{m}^3$) per year over a three-year period. The design value is the average number of exceedances per year from 2012-2014. A design value of zero (0) means the station has recorded no values above $150 \mu\text{g}/\text{m}^3$ during that three-year time frame. Wyoming also has an annual ambient air quality standard for PM_{10} . Compliance with the annual PM_{10} Wyoming Ambient Air Quality Standards (WAAQS) is determined by the three-year average of the annual mean. The three-year average of the mean must be below $50 \mu\text{g}/\text{m}^3$.

PM₁₀ Compliance with WAAQS of 50 µg/m³ Annual Arithmetic Mean (µg/m³)					
Site Name	2012	2013	2014	Average (2012-2014)[^]	In Compliance
SLAMS					
Casper	18	14	14	15	Yes
Cheyenne	13	12	12	12	Yes
Cody	14	11*	10*	12*	Yes
Gillette	18	14*	11*	14*	Yes
Jackson	17	14	13	15	Yes
Lander	18	17	14	16	Yes
Laramie	17	16	14	16	Yes
Rock Springs	20	16*	15	17*	Yes
Sheridan - Meadowlark	15*	10	10	12*	Yes
Sheridan – Police Station	22	17	16	18	Yes
SPM					
Boulder	11	8	7	9	Yes
Campbell County	16	12	11	13	Yes
Daniel South	12	7	6	8	Yes
Moxa	14	9	8	10	Yes
Murphy Ridge	12	9	9	10	Yes
South Pass	11	8	5*	8*	Yes
Wamsutter	16	12	11	13	Yes
Wright Jr-Sr High School	17*	16	14	16*	Yes
NCore					
Cheyenne NCore	14*	10	11	12*	Yes
Mobile Trailers**					
Big Piney Site #3***	12	9*	N/A	N/A	N/A
Converse County – Mobile #3	N/A	10	9	10*	N/A
Gillette Mobile	19*	N/A	N/A	N/A	N/A
Lovell – Mobile #1	N/A	N/A	21*	N/A	N/A
Pavillion Mobile	16*	N/A	N/A	N/A	N/A
Rock Springs – Mobile #1	N/A	11*	7*	N/A	N/A
Sinclair – Mobile #2	N/A	N/A	11	N/A	N/A

N/A – Site was not in operation at all for the year of study.

* - The value did not meet data completeness requirements per 40 CFR Part 50 Appendix K 2.3(a).

** - Mobile Trailers are located in one location for approximately one year.

*** - Site changed from a Mobile Trailer to a permanent location in 2013.

[^] For the three-year average incomplete data years were used per WAQSR Chapter 2 Appendix 1.

PM ₁₀ Compliance with NAAQS of 150 µg/m ³ Highest 24- Hour Average (µg/m ³)					
Site Name	2012	2013	2014	Design Value (2012-2014)	In Compliance
SLAM					
Casper	66	39	30	0	Yes
Cheyenne	50	41	33	0	Yes
Cody	45	33	29	0	Yes
Gillette	65	36	25	0	Yes
Jackson	86	63	36	0	Yes
Lander	68	51	62	0	Yes
Laramie	53	57	42	0	Yes
Rock Springs	94	43	39	0	Yes
Sheridan - Meadowlark	41*	31	20	0	Yes
Sheridan – Police Station	75	57	47	0	Yes
SPM					
Boulder	68	41	31	0	Yes
Campbell County	71	39	52	0	Yes
Daniel South	72	41	26	0	Yes
Moxa	152 ⁺	79	67	0	Yes
Murphy Ridge	53	43	39	0	Yes
South Pass	49	34	15*	0	Yes
Wamsutter	72	193	41	0.3	Yes
Wright Jr-Sr High School	76	53	56	0	Yes
NCore					
Cheyenne NCore	63	42	34	0	Yes
Mobile Trailers**					
Big Piney Site #3***	190	59	N/A	N/A	N/A
Converse County – Mobile #3	N/A	99	36	N/A	N/A
Gillette Mobile	104	N/A	N/A	N/A	N/A
Lovell – Mobile #1	N/A	N/A	45	N/A	N/A
Pavillion	118	N/A	N/A	N/A	N/A
Rock Springs	N/A	119	40*	N/A	N/A
Sinclair – Mobile #2	N/A	N/A	107	N/A	N/A

N/A – data not available

*- The value did not meet data completeness requirements per 40 CFR Part 50 Appendix K 2.3(a).

** - Mobile Trailers are located in one location for approximately one year.

⁺ - Value rounded to 150 µg/m³ per 40 CFR § 50, Appendix K.

*** - Site changed from a Mobile Trailer to a permanent location in 2013.

3.2 Particulate Matter (PM_{2.5})

There were nineteen (19) State-run monitoring stations that collected PM_{2.5} data in 2014. Within the PM_{2.5} SLAMS network, which includes Thermo Partisol 2000 PM_{2.5} monitors in Casper, Cheyenne, Cody, Jackson, Lander, Laramie, Rock Springs, Sheridan – Meadowlark, and Sheridan – Police Department, the AQD has 22.2% of the monitors collocated. This meets the 40 CFR 58 Appendix A requirement for collocation of 15%. The PRB PM_{2.5} monitors changed from Thermo 1405DF monitors to MetOne BAM 1020 monitors during 2013. The other six (6) stations are running MetOne BAM 1020 monitors with a Very Sharp Cut Cyclone (VSSC) used to monitor PM_{2.5}. All of the nineteen (19) monitors can be compared to the annual PM_{2.5} NAAQS as defined by 40 CFR § 58.30. The annual PM_{2.5} standard is attained when the three (3) year average is less than or equal to 12.0 µg/m³. Compliance with the 24-hour PM_{2.5} NAAQS is met when the 3-year average of the 98th percentile concentration is less than or equal to 35 µg/m³.

PM _{2.5} Compliance with NAAQS of 15.0 µg/m ³ Annual Arithmetic Mean (µg/m ³)					
Site Name	2012	2013	2014	Average (2012-2014)	In Compliance
SLAMS					
Casper	5.4	4.3	4.6	4.8	Yes
Cheyenne	5.7	4.2	4.1*	4.7*	Yes
Cody	5.1	4.3	3.7*	4.4*	Yes
Jackson	6.3	5.0	4.3	5.2	Yes
Lander	7.8*	7.8*	6.7	7.5*	Yes
Laramie	5.6	4.6	4.2	4.8*	Yes
Rock Springs	7.0	5.1	4.5	5.5*	Yes
Sheridan - Meadowlark	7.1*	5.0	4.9	5.5*	Yes
Sheridan – Police Station	8.3*	6.5	6.4	6.7*	Yes
SPM					
Antelope Site 3 (PRB-PM _{2.5} Network)	8.0*	2.8*	N/A	N/A	N/A
Belle Ayr BA-4 (PRB-PM _{2.5} Network)	7.9*	6.4*	5.2	6.5*	Yes
Black Thunder Mine BTM-36-2 (PRB-PM _{2.5} Network)	4.9*	4.2*	3.9	4.3*	Yes
Pinedale Gaseous	7.1	4.8	5.4	5.8	Yes
PRB-Buckskin (PRB-PM _{2.5} Network)	5.9*	4.8	5.5	5.4*	Yes
South Pass	N/A	N/A	2.6*	N/A	N/A
NCore					
Cheyenne NCore	3.8*	2.2*	3.5	3.2*	Yes
Mobile Trailers**					
Big Piney Site 3***	5.8*	4.2*	N/A	4.3	N/A
Converse County – Mobile #3	N/A	3.3	2.3	3.1*	N/A
Gillette Mobile	3.0*	N/A	N/A	N/A	N/A
Lovell – Mobile #1	N/A	N/A	7.2*	N/A	N/A
Pavillion Mobile	2.5*	N/A	N/A	N/A	N/A
Rock Springs – Mobile #1	N/A	2.0*	0.4*	N/A	N/A
Sinclair – Mobile #2	N/A	N/A	1.7	N/A	N/A

N/A – Site was not in operation at all for the year of study.

* - The value did not meet data completeness requirements per 40 CFR Part 50 Appendix N 4.1(b).

** - Mobile Trailers are located in one location for approximately one year.

***- Site changed from a Mobile Trailer to a permanent location in 2013.

PM _{2.5} Compliance with NAAQS of 35 µg/m ³ 98% 24-Hour Average (µg/m ³)					
Site Name	2012	2013	2014	Average (2012-2014)	In Compliance
SLAMS					
Casper	17	13	14	15	Yes
Cheyenne	17	11	10	13	Yes
Cody	16	15	10*	14*	Yes
Jackson	25	11	13	16	Yes
Lander	25*	29*	26	27*	Yes
Laramie	17	10	13	13	Yes
Rock Springs	27	12	10	16	Yes
Sheridan - Meadowlark	19*	14	17	17*	Yes
Sheridan – Police Station	19*	17	19	18*	Yes
SPM					
Antelope Site 3 (PRB-PM _{2.5} Network)	27	8	N/A	N/A	N/A
Belle Ayr BA-4 (PRB-PM _{2.5} Network)	55	14	10	26	Yes
Black Thunder Mine BTM-36-2 (PRB-PM _{2.5} Network)	16	14	10	13	Yes
Pinedale Gaseous	27*	13	12	17*	Yes
PRB-Buckskin (PRB-PM _{2.5} Network)	18	14	12	15	Yes
South Pass	N/A	N/A	9*	N/A	N/A
NCore					
Cheyenne NCore	14	9	12	12	Yes
Mobile Trailers**					
Big Piney Site 3***	54	9*	N/A	N/A	N/A
Converse County – Mobile #3	N/A	8	8	9*	N/A
Gillette Mobile	20	N/A	N/A	N/A	N/A
Lovell – Mobile #1	N/A	N/A	18*	N/A	N/A
Pavillion Mobile	7	N/A	N/A	N/A	N/A
Rock Springs – Mobile #1	N/A	7*	3*	N/A	N/A
Sinclair – Mobile #2	N/A	N/A	8	N/A	N/A

N/A – Site was not in operation at all for the year of study.

*- The value did not meet data completeness requirements per 40 CFR Part 50 Appendix N 4.1(b).

** - Mobile Trailers are located in one location for approximately one year.

***- Site changed from a Mobile Trailer to a permanent location in 2013.

3.3 Nitrogen Dioxide (NO₂)

There were eighteen (18) State-run monitoring stations that monitored for NO₂ for part or all of 2014. Compliance with the annual primary NO₂ NAAQS is met when the annual average concentration in the calendar year is less than or equal to 53 ppb. The primary standard 1-hour average concentration is 100 ppb. The maximum 1-hour concentration per year is listed in the second NO₂ table below. The NO₂ calculated design value is met when the three-year average of the annual 98th percentile of the daily maximum 1-hour average concentration is less than or equal to 100 ppb. This calculated three-year design value is located in the second NO₂ table below.

NO₂ Compliance with NAAQS of 53 ppb Annual Arithmetic Mean (ppb)				
Site Name	2012	2013	2014	In Compliance
Belle Ayr BA-4 (PRB- NO _x Network)	8	7	7	Yes
Big Piney Site #3***	2*	1	1	Yes
Boulder	3	2	2	Yes
Campbell County	3	3	3	Yes
Casper Gaseous	N/A	3*	4	Yes
Daniel South	0	1	1	Yes
Juel Spring	1	1	1	Yes
Moxa	2	2	2	Yes
Murphy Ridge	2	2	2	Yes
Pinedale Gaseous	3	1	1	Yes
South Pass	1	1	1	Yes
Thunder Basin	2	1	1	Yes
Wamsutter	5	4	3	Yes
NCore				
Cheyenne NCore	4	4	4*	Yes
Mobile Trailer**				
Converse County – Mobile #3	N/A	3	3	Yes
Gillette Mobile	5	N/A	N/A	Yes
Lovell – Mobile #1	N/A	N/A	5*	Yes
Pavillion	2*	N/A	N/A	Yes
Rock Springs – Mobile #1	N/A	4	2*	Yes
Sinclair – Mobile #2	N/A	N/A	6	Yes

N/A – Site was not in operation at all for the year of study.

* - The * indicates that the mean does not satisfy summary criteria.

** - Mobile Trailers are located in one location for approximately one year.

***- Site changed from a Mobile Trailer to a permanent location in 2013.

NO₂ Compliance with NAAQS of 100 ppb					
Annual 98% of Daily Maximum 1-hour average (ppb)				3-year 98% 1-hour Design Value (ppb)	
Site Name	2012	2013	2014	Design Value (2012-2014)	In Compliance
Belle Ayr BA-4 (PRB- NO _x Network)	34	35	35	35	Yes
Big Piney Site #3***	11*	10	9	10	Yes
Boulder	24	17	14	19	Yes
Campbell County	32	32	32	32	Yes
Casper Gaseous	N/A	34*	38	N/A	N/A
Daniel South	5*	4	3	4	Yes
Juel Spring	10	11	13	11	Yes
Moxa	21	22	18	20	Yes
Murphy Ridge	10	14	12	12	Yes
Pinedale	26	17	21	22	Yes
South Pass	5	5	4	5	Yes
Thunder Basin	11*	9	10	10	Yes
Wamsutter	36*	38	32	35	Yes
NCore					
Cheyenne NCore	36	37	34	36	Yes
Mobile Trailers**					
Converse County – Mobile #3	N/A	23	24	26	N/A
Gillette Mobile	32	N/A	N/A	N/A	N/A
Lovell – Mobile #1	N/A	N/A	32*	N/A	N/A
Rock Springs – Mobile #1	N/A	31	24	N/A	N/A
Sinclair – Mobile #2	N/A	N/A	37	N/A	N/A

N/A – Site was not in operation at all for the year of study.

- Annual values not meeting completeness criteria are marked with an asterisk ().

** -Mobile Trailers are located in one location for approximately one year.

***- Site changed from a Mobile Trailer to a permanent location in 2013.

3.4 Sulfur Dioxide (SO₂)

There were three (3) State-run monitoring stations that monitored for SO₂ in 2014. The NAAQS 1-hour primary standard is met when the three-year average of the annual (99th percentile) of the daily maximum 1-hour average concentrations is less than or equal to 75 ppb.

SO ₂ Compliance with NAAQS of 75 ppb					
Annual 99% 1-hour average (ppb)				3-year 99% 1-hour average (ppb)	
Site Name	2012	2013	2014	Design Value (2012-2014)	In Compliance
Moxa	16	20	16	17	Yes
NCore					
Cheyenne NCore	7	6	4	6	Yes
Mobile Trailer**					
Sinclair – Mobile #2	N/A	N/A	8	N/A	N/A

N/A – Site was not in operation at all for the year of study.

* - Annual values not meeting completeness criteria are marked with an asterisk (*).

** - Mobile trailers are located in one location for approximately one year.

3.5 Carbon Monoxide (CO)

The AQD operated one (1) trace CO monitor during 2014. In past years the State of Wyoming has operated stations that have monitored for Carbon Monoxide (CO). Most CO levels were relatively low and the benefit of monitoring at SPM locations was not justified for a long-term period. The level for the maximum 8-hour NAAQS for CO is 9 ppm. The level for the 1-hour NAAQS for CO is 35 ppm.

CO Compliance with NAAQS							
35 ppm Maximum 1-hour average concentration (ppm)				9 ppm Maximum 8-hour average concentration (ppm)			In Compliance
Site Name	2012	2013	2014	2012	2013	2014	
NCore							
Cheyenne NCore	0.79	0.51	0.53	0.5	0.3	0.3	Yes

3.6 Ozone (O₃)

The AQD operated eighteen (18) O₃ monitoring stations in Wyoming during 2014, and all of the stations were SPMs. To comply with the 8-hour ozone NAAQS, the daily maximum 8-hour ozone averages are ranked over a year. The 3-year average of the 4th highest yearly value must be less than or equal to 0.075 ppm. In July 2012, the EPA designated the Upper Green River Basin, including Sublette and portions of Lincoln and Sweetwater Counties, nonattainment for ozone. The area designated nonattainment is classified as Marginal. The remainder of the State is designated as unclassifiable/attainment.

O₃ Compliance with NAAQS of 0.075 ppm 4th Highest 8-Hour Average (ppm)					
Site Name	2012	2013	2014	Design Value (2012-2014)	In Compliance
Big Piney Site #3***	0.067	0.064	0.060	0.063	Yes
Boulder	0.070	0.061	0.060	0.063	Yes
Campbell County	0.069	0.061	0.059	0.063	Yes
Casper Gaseous	N/A	0.065*	0.061	N/A	N/A
Daniel South	0.067	0.063	0.062	0.064	Yes
Hiawatha	0.065	0.064	0.062	0.063	Yes
Juel Spring	0.066	0.064	0.062	0.064	Yes
Moxa	0.064	0.067	0.063	0.064	Yes
Murphy Ridge	0.067	0.065	0.059	0.063	Yes
Pinedale Gaseous	0.067	0.061	0.057	0.061	Yes
South Pass	0.067	0.062	0.065	0.064	Yes
Thunder Basin	0.071	0.061	0.058	0.063	Yes
Wamsutter	0.063	0.064	0.060	0.062	Yes
NCore					
Cheyenne NCore	0.068	0.069	0.065	0.067	Yes
Mobile Trailers **					
Converse County – Mobile #1	N/A	0.067	0.059	0.056*	N/A
Gillette Mobile	0.065	N/A	N/A	N/A	N/A
Lovell – Mobile #1	N/A	N/A	0.049*	N/A	N/A
Pavillion	0.051*	N/A	N/A	N/A	N/A
Rock Springs – Mobile #1	N/A	0.064	0.050*	N/A	N/A
Sinclair – Mobile #2	N/A	N/A	0.060	N/A	N/A

N/A – Site was not in operation at all for the year of study.

- Annual values not meeting completeness criteria are marked with an asterisk ().

** - Mobile Trailers are located in one location for approximately one year.

***- Site changed from a Mobile Trailer to a permanent location in 2013.

4.0 Special Studies

In addition to the AQD's extensive network of long-term monitoring, the AQD is also conducting several short-term special studies. Primarily, these studies and additional monitoring revolve around investigations of industrial source growth within the State.

4.1 *Upper Green Winter Ozone Study (UGWOS)*

In the winters of 2005 and 2006, primarily in the month of February, the AQD measured 8-hour ozone concentrations greater than 80 ppb at the Daniel South, Jonah and Boulder monitoring stations. Elevated ozone concentrations are uncommon during the winter months; however, they do not appear to be an anomaly because these conditions were recorded in both February 2005 and February 2006. After recording elevated values for two (2) years, the AQD decided to conduct a study of winter ozone formation. The purposes of the study were, originally, to better understand the formation mechanisms and collect data to form a conceptual model of the winter ozone formation. Since 2007 the objectives of the study have been modified to fill gaps in data and conceptual understanding of winter ozone formation with the ultimate intent of developing a working photochemical model for the Upper Green River Basin.

During summer 2014, the AQD critically evaluated UGWOS with respect to the current ozone reduction objective. The AQD reduced short-term winter monitoring for 2015 to VOC/aldehydes only based on this evaluation. The focus of the 2015 winter monitoring study was ongoing regulatory monitoring supplemented with six (6) locations for canister/cartridge collection with speciated VOC and aldehyde analyses in order to track changes in species with emission reductions.

Quality Assurance Plans and data from the UGWOS campaigns can be downloaded from the DEQ website. Final reports can also be downloaded at the website.

4.2 *VOC Monitoring*

The AQD continues to perform continuous methane/non-methane hydrocarbon measurements at the Boulder location in addition to pulling periodic speciated VOC canisters. The AQD is also operating methane/non-methane hydrocarbon analyzers in the mobile trailers. The AQD also installed a methane/non-methane hydrocarbon analyzer at the Wamsutter monitoring station. The AQD, in cooperation with other agencies involved in the Three-State Study, continues to collect methane/non-methane hydrocarbons at Wamsutter through 2016.

4.3 *Mobile Beta Attenuation Monitor (BAM) Deployment*

The AQD has outfitted a mobile monitoring trailer with continuous BAM PM₁₀ and PM_{2.5} monitoring devices for deployment in communities that may be impacted by smoke from wildfire activity, agricultural burning, or windblown dust. This portable system will allow the AQD to monitor near real-time PM₁₀ and PM_{2.5} concentrations, and meteorological conditions so the AQD can properly inform the public when particulate levels may cause adverse health effects.

4.3.1 Afton

The AQD deployed the mobile BAM monitoring station in the Star Valley area for initial investigation monitoring for particulate matter (PM_{2.5} and PM₁₀) concentrations and meteorological conditions based on findings from the 2010 Network Assessment. Data collection began on January 1, 2014. The station also collects local wind speed, wind direction and temperature. The station is located south of town, near the Afton-Lincoln County Airport. The AQD operated the Afton BAM Trailer for a period of one (1) year. The Afton BAM Trailer sampling concluded on March 16, 2015.

4.3.2 Worland

The AQD will deploy the mobile BAM monitoring station to monitor particulate matter in a residential area of Worland, Wyoming that may be impacted by agricultural activities. Data collection is anticipated to begin on July 1, 2015 and will continue for one year. The station will also collect data on local wind speed, wind direction and temperature and is located south of town at Newell Sargent Park.

4.4 Grand Teton

The AQD is working cooperatively with the National Park Service to fund a portion of the Grand Teton Monitoring Station near the Teton Science School, located in Grand Teton National Park. This monitoring station includes ozone, NADP wet deposition, nephelometer, camera system and meteorological instrumentation.

4.5 Three-State Study

Since 2010, the AQD has participated in a cooperative activity known as the “Three-State Study.” The Wyoming AQD cooperates with state agencies from Colorado, Utah and Federal Land Managers and the EPA to develop systems which will aid in modeling and predicting impacts from energy development. As part of this study, the Federal Government committed to partially fund the Hiawatha station in Southwest Wyoming. Hiawatha was installed during spring of 2011. More information about the Hiawatha station can be found in Section 2.2.8 of this document. The AQD also received funding to install a methane/non-methane hydrocarbon analyzer along with speciated canisters at the Wamsutter monitoring station. After collecting 2 years of speciated canister and methane/non-methane hydrocarbon data at Wamsutter, the AQD decided to discontinue the canister sampling. The methane/non-methane hydrocarbon monitoring will continue through 2016.

5.0 Future Air Monitoring Modifications

The State of Wyoming is experiencing rapid energy development, especially in the northeast and southwest quadrants of the State. Energy development is also anticipated to increase in southeast Wyoming. The AQD continues to review the need for special purpose monitoring to monitor for possible impacts from increased development or other air quality issues as they arise. This section of the Plan reviews AQD's plans for possible network modifications after May 2015. The AQD is also in the process of completing the 2015 Network Assessment. Results of the 2015 Network Assessment may show other changes appropriate for Wyoming's Network. The AQD will put the Network Assessment out for public comment and discuss other possible future network changes in that document and subsequent annual Network Plans.

5.1 Newcastle

The AQD has determined the next location for the Mobile #3 station will be Newcastle. Newcastle is a mid-sized town with just over 3,500 people that has a refinery and associated industrial monitoring located adjacent to the town's school. A land use agreement for a suitable location is being pursued at this time. The AQD anticipates start-up of the station in mid-2015.

5.2 Torrington

The AQD has determined the next location for the Mobile #1 station will be Torrington. Torrington has a population of approximately 6,500 people. A major industrial source is located within the city limits. The AQD expects the mobile monitoring station to begin operation at Torrington in the latter part of 2015.

6.0 Conclusion

There is an ongoing effort to help ensure the Wyoming Ambient Air Monitoring Network demonstrates adequate coverage across the entire State. As the State's population and industry changes, the AQD works to make sure the monitoring needs in the State of Wyoming are being met. Wyoming mineral price fluctuations and resource constraints may play a part in the availability of ambient monitoring activities deployed throughout the State.

Data collected at the AQD monitoring stations through 2014 show that all monitors are attaining NAAQS for PM₁₀, PM_{2.5}, NO₂, SO₂, O₃, and CO. The Boulder monitor and Upper Green River Basin area ozone issue will be addressed in the nonattainment process.

The AQD continually evaluates data collected at the AQD, industrial and AQRV monitors to determine if changes in policy are needed to continue to manage the air resource in the State of Wyoming.

Any comments pertaining to the Wyoming Ambient Air Monitoring Annual Network Plan should be sent to the following contact:

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Appendix A

Monitor Site Locations as of May 2015

AQS ID	Site Name	Address	Land Use Type	Location Type	Monitor Type	Meets 40 CFR § 58 Appendix A, C, D and E Requirements*	Monitor Objective	Longitude	Latitude	Site Start Date
56-025-0001	Casper	City County Bldg. – Center & C Streets	Commercial	Urban and Center City	SLAMS	X	Population Exposure	-106.325088	42.851064	10/15/1998
56-021-0001	Cheyenne	Emerson Bldg. 23 rd & Central Ave.	Residential	Urban and Center City	SLAMS	X	Population Exposure	-104.8176611	41.13686502	1/1/1979
56-029-0001	Cody	2901 Cougar Ave.	Residential	Suburban	SLAMS	X	Population Exposure	-109.0685071	44.52464211	1/1/1975
56-005-1002	Gillette	1000 West 8 th St.	Commercial	Urban and Center City	SLAMS	X	Population Exposure	-105.517022	44.288005	1/1/1978
56-039-1006	Jackson	40 E. Pearl Ave.	Commercial	Urban and Center City	SLAMS	X	Population Exposure	-110.76118	43.47808	6/8/2007
56-013-1003	Lander	600 Washington	Residential	Suburban	SLAMS	X	Highest Concentration, General/Background	-108.735562	42.84222775	1/1/1987
56-001-0006	Laramie	406 Ivinson	Commercial	Urban and Center City	SLAMS	X	Population Exposure	-105.591725	41.31158614	1/1/1968
56-037-0007	Rock Springs	625 Ahsay Ave.	Residential	Urban and Center City	SLAMS	X	Population Exposure	-109.220125	41.59259168	1/1/1983
56-033-0002	Sheridan – Police Station	45 West 12 th St.	Commercial	Urban and Center City	SLAMS	X	Highest Concentration, Population Exposure	-106.955933	44.815142	10/5/1983
56-033-1003	Sheridan – Meadowlark	1410 DeSmet Ave.	Residential	Urban and Center City	SLAMS	X	Population Exposure	-106.9643166	44.78275	7/1/2012
NOT IN AQS	Afton BAM Trailer	0.15 mi. E of Airport Rd. Afton, WY	Residential	Rural	Special Purpose	X	Population Exposure	-110.937	42.708	1/1/2014
56-009-0009	Antelope Site 7 (PRB-PM _{2.5} & NO _x Network)	Antelope Site 7	Industrial	Rural	Special Purpose	X	General/Background	-105.388566	43.42542	2/18/2015
56-005-0892	Belle Ayr BA-4 (PRB-PM _{2.5} & NO _x Network)	Belle Ayr BA-4	Industrial	Rural	Special Purpose	X	Highest Concentration, Source Oriented	-105.343164	44.097074	7/9/1991
56-035-0700	Big Piney Site #3	4 miles south of Big Piney, WY	Residential	Rural	Special Purpose	X	Source Oriented, General/Background	-110.0989	42.4864	3/30/2011
56-005-0891	Black Thunder Mine BTM-36-2 (PRB-PM _{2.5} Network)	BTM-36-2 (Black Thunder Mine)	Industrial	Rural	Special Purpose	X	General/Background	-105.2133	43.6483	1/1/1985
56-035-0099	Boulder	5 miles southwest of Boulder, WY	Desert	Rural	Special Purpose	X	Source Oriented, General/Background	-109.753	42.719	2/1/2005

AQS ID	Site Name	Address	Land Use Type	Location Type	Monitor Type	Meets 40 CFR § 58 Appendix A, C, D and E Requirements*	Monitor Objective	Longitude	Latitude	Site Start Date
56-005-1899	PRB-Buckskin (PRB-PM _{2.5} Network)	Triton Coal Gillette, WY	Industrial	Rural	Special Purpose	X	General/Background	-105.539763	44.502675	9/4/2008
56-005-0456	Campbell County	Approx. 15 Miles SSW of Gillette	Desert	Rural	Special Purpose	X	Source Oriented, General/Background	-105.529994	44.146964	7/15/2003
56-025-0100	Casper Gaseous	2800 Pheasant Dr.	Commercial	Urban And Center City	Special Purpose	X	Population Exposure	-106.36501	42.82231	3/1/2013
56-021-0100	Cheyenne – NCore	6909 Washakie Ave.	Residential	Suburban	NCore	X	National Core Monitoring Site	-104.77842	41.18235	1/1/2011
56-009-0801	Converse County – Mobile #3	369 E. Antelope	Agricultural	Rural	Special Purpose	X	Population Exposure	-105.303528	42.766972	12/17/2012
56-009-0010	Converse County Monitoring Station	16 miles W of WY Hwy 59 on Highland Loop Rd.	Industrial	Rural	Special Purpose	X	General/Background	-105.4989555	43.1010805	4/10/2015
56-035-0100	Daniel South	5 miles south of Daniel, WY	Desert	Rural	Special Purpose	X	General/Background	-110.0551	42.7907	7/1/2005
56-037-1000	Farson Met	0.7 mi NW of intersection of Hwy 191 & Hwy 28	Desert	Rural	Special Purpose Met		General/Background	-109.4541	42.1184	4/27/2011
56-037-0077	Hiawatha	Bitter Creek Rd. 43 miles SE of Rock Springs	Desert	Rural	Special Purpose	X	General/Background	-108.619	41.158	3/30/2011
56-035-1002	Juel Spring	20 miles NW of Farson, WY	Desert	Rural	Special Purpose	X	Source Oriented, General/Background	-109.5604983	42.37349916	12/11/2009
56-037-0300	Moxa	25 miles NW of Green River	Desert	Rural	Special Purpose	X	Source Oriented, General/Background	-109.788333	41.750556	5/27/2010
56-041-0101	Murphy Ridge	Bear River, WY	Agricultural	Rural	Special Purpose	X	General/Background	-111.042376	41.373	1/1/2007
56-035-0101	Pinedale Gaseous	West side of City Park & Pine Creek	Residential	Suburban	Special Purpose	X	Population Exposure	-109.87076	42.869824	1/1/2009
56-007-1000	Sinclair - Mobile #2	SW corner of CCR351 and N. 8 th St.	Residential	Suburban	Special Purpose	X	Population Exposure	-107.119184	41.783389	12/11/2013
56-013-0099	South Pass	South Pass, WY	Forest	Rural	Special Purpose	X	General/Background	-108.7200027	42.52999916	3/12/2007
56-005-0123	Thunder Basin	30 Mi N-NE of Gillette	Desert	Rural	Special Purpose	X	General/Background	-105.2903	44.6522	5/1/2001
56-037-0200	Wamsutter	2 miles west of Wamsutter	Desert	Rural	Special Purpose	X	Source Oriented, General/Background	-108.024575	41.677453	3/1/2006
56-005-0099	Wright Jr-Sr High School	Adjacent To Wright Jr-Sr High School	Residential	Rural	Special Purpose	X	General/Background, Population Exposure	-105.491492	43.756149	11/1/2002

Appendix B
2014 SLAMS Precision and Accuracy for PM₁₀

	AQS ID	POC	Site Name	Precision Checks (Number - Type)	Accuracy Audit				Flow Verification			
					1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q
PM ₁₀	56-025-0001	POC 4	Casper	29- Analytical	0	1	0	1	3	3	3	3
	56-025-0001	POC 5	Casper	NA	0	1	0	1	3	3	3	3
	56-025-0001	POC 44	Casper	NA	0	1	0	1	3	3	3	3
	56-021-0001	POC 1	Cheyenne	27 - Analytical	1	0	1	0	3	3	3	3
	56-021-0001	POC 11	Cheyenne	NA	1	0	1	0	3	3	3	3
	56-021-0001	POC 2	Cheyenne	NA	1	0	1	0	3	3	3	3
	56-021-0100	POC 3	Cheyenne NCore	NA	1	0	1	0	3	3	3	3
	56-029-0001	POC 3	Cody	NA	0	1	0	1	3	3	1	3
	56-029-0001	POC 33	Cody	NA	0	1	0	1	3	3	1	3
	56-005-1002	POC 5	Gillette	NA	0	1	0	1	3	3	3	0
	56-039-1006	POC 1	Jackson	NA	0	1	0	1	3	3	3	3
	56-039-1006	POC 11	Jackson	NA	0	1	0	1	3	3	3	3
	56-013-1003	POC 3	Lander	NA	0	1	0	1	3	3	3	3
	56-013-1003	POC 33	Lander	NA	0	1	0	1	3	3	3	3
	56-001-0006	POC 5	Laramie	NA	1	0	1	0	3	3	3	2
	56-001-0006	POC 55	Laramie	NA	1	0	1	0	3	3	3	2
	56-037-0007	POC 2	Rock Springs	NA	0	1	0	1	3	3	3	3
	56-037-0007	POC 22	Rock Springs	NA	0	1	0	1	3	3	3	3
	56-033-0002	POC 1	Sheridan PD TEOM	NA	1	0	1	0	3	3	3	3
	56-033-1003	POC 1	Sheridan Meadowlark School	28 - Analytical	0	1	0	1	3	2	3	3
56-033-1003	POC 11	Sheridan Meadowlark School	NA	0	1	0	1	3	2	3	3	
56-033-1003	POC 2	Sheridan Meadowlark School	NA	0	1	0	1	3	2	3	3	

2014 SLAMS Precision and Accuracy for PM_{2.5}

	AQS ID	POC	Site Name	Precision Checks (Number - Type)	Accuracy Audit				Flow Verification			
					1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q
PM _{2.5}	56-021-0100	POC 1	Cheyenne NCore	26 – Analytical	1	0	1	0	3	3	3	3
	56-021-0100	POC 11	Cheyenne NCore	NA	1	0	1	0	3	3	3	3
	56-021-0100	POC 2	Cheyenne NCore	NA	1	0	1	0	3	3	3	3
	56-021-0100	POC 3	Cheyenne NCore	55 – Analytical	1	0	1	0	3	3	3	3
	56-021-0001	POC 1	Cheyenne	25 - Analytical	1	0	1	0	3	3	3	3
	56-021-0001	POC 11	Cheyenne	NA	1	0	1	0	3	3	3	3
	56-021-0001	POC 2	Cheyenne	NA	1	0	1	0	3	3	3	3
	56-025-0001	POC 1	Casper	NA	0	1	0	1	3	3	3	3
	56-025-0001	POC 11	Casper	NA	0	1	0	1	3	3	3	3
	56-039-1006	POC 1	Jackson	NA	0	1	0	1	3	3	3	3
	56-039-1006	POC 11	Jackson	NA	0	1	0	1	3	3	3	3
	56-029-0001	POC 1	Cody	NA	0	1	0	1	3	3	1	3
	56-029-0001	POC 11	Cody	NA	0	1	0	1	3	3	1	3
	56-013-1003	POC 1	Lander	NA	0	1	0	1	3	3	3	3
	56-013-1003	POC 11	Lander	NA	0	1	0	1	3	3	3	3
	56-001-0006	POC 1	Laramie	NA	1	0	1	0	3	3	3	2
	56-001-0006	POC 11	Laramie	NA	1	0	1	0	3	3	3	2
	56-035-0705	POC 1	Pinedale	NA	0	1	0	1	3	3	3	3
	56-037-0007	POC 1	Rock Springs	NA	0	1	0	1	3	3	3	3
	56-037-0007	POC 11	Rock Springs	NA	0	1	0	1	3	3	3	3
56-033-0002	POC 1	Sheridan Police Dept.	27 - Analytical	0	1	0	1	3	3	3	3	
56-033-0002	POC 2	Sheridan Police Dept.	NA	0	1	0	1	3	3	3	3	
56-033-0002	POC 11	Sheridan Police Dept.	NA	0	1	0	1	3	3	3	3	
56-033-1003	POC 1	Sheridan Meadowlark School	NA	0	1	0	1	3	2	3	3	
56-033-1003	POC 11	Sheridan Meadowlark School	NA	0	1	0	1	3	2	3	3	