

FINAL



August 2, 2007

**Idaho Department of Environmental Quality
Annual Ambient Air Quality Monitoring Network Review**

**Idaho Department of Environmental Quality
Air Quality Division
1410 North Hilton
Boise, Idaho 83706**

Introduction

The Clean Air Act passed by Congress in 1970 authorized the Environmental Protection Agency (EPA) to establish national Ambient Air Quality Standards (NAAQS) for pollutants that threaten human health and welfare. Primary standards were set accordingly to safeguard public health and create a protective margin of safety for sensitive populations such as children, the elderly, and those with medical conditions that might be aggravated by these pollutants. Secondary standards were developed as well to protect the environment in which we live such as visibility and damage to agricultural crops, vegetation, buildings, etc.

The following seven pollutants, referred to as criteria pollutants, currently have a NAAQS: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM₁₀), particulate matter with an aerodynamic diameter equal to or less than 2.5 microns (PM_{2.5}), and lead (Pb).

The primary goal of the annual network review is to determine whether the state monitoring network is achieving its monitoring objectives and to identify any needed modifications. An effective network collects adequate, representative, and useful data. The air quality data collected by the Idaho Department of Environmental Quality's (DEQ) monitoring network is used for the following purposes: determining compliance with the NAAQS, locating maximum pollutant concentrations, providing air quality index (AQI) forecasts, determination of the effects of air pollution on public health, tracking the progress of State Implementation Plans (SIPs), supporting dispersion models, reconciling emissions inventories, developing responsible and cost-effective pollution control strategies, and establishing air quality trends.

Stability in air monitoring networks is a positive attribute, as considerable lengths of time are required to establish air quality trends. Divesting in certain monitors is needed when additional data no longer adds to its interpretation. Also, the single-pollutant monitoring approach is no longer an optimal design due to recent air quality management trends, integrating the relationships of ozone, fine particulate matter, air toxics and regional haze. Providing air quality information to the public is also becoming a national monitoring priority.

This document identifies modifications to the DEQ ambient air monitoring network since the 2006 annual network review was completed and provides plans and proposals for modifications to the network for the upcoming year (Idaho SFY 2007 – July 1, 2007 through June 30, 2008).

EPA issued new regulations in October 2006 for state and local agencies regarding the annual Network Review. This document provides as many of the following new requirements possible:

- (1) The Air Quality System (AQS) site identification number.
- (2) The location, including street address and geographical coordinates.
- (3) The sampling and analysis method(s) for each measured parameter.
- (4) The operating schedules for each monitor.
- (5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
- (6) The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.

- (7) The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM_{2.5}NAAQS as described in §58.30.
- (8) The MSA, CBSA, CSA or other area represented by the monitor.

Network Changes Made since the 2006 Network Review

The following network modifications have been made since the 2006 DEQ Network Review:

1. Middleton PM_{2.5} TEOM (16-027-0007) was terminated - the Middleton PM_{2.5} analyzer was a permit condition for a proposed energy development. The developer abandoned plans and thus monitoring was no longer required.
2. Pocatello collocated (precision) PM_{2.5} FRM (16-005-0015) was terminated.
3. Pocatello primary PM_{2.5} FRM (16-005-0015) was terminated due to budgetary constraints and low measurements.
4. Inkom PM_{2.5} FRM (16-005-0018) was terminated due to budgetary constraints and low measurements.
5. McCall PM_{2.5} TEOM (16-085-0002) was terminated due to budgetary constraints; however, an agreement between DEQ and the Idaho/Montana Airshed Group will allow operation during the 2007 summer and fall months.
6. Garden Valley PM_{2.5} TEOM (16-085-0002) was terminated due to budgetary constraints; however, an agreement between DEQ and the Idaho/Montana Airshed Group will allow operation during the 2007 summer and fall months.
7. Idaho City PM_{2.5} TEOM (16-085-0002) was terminated due to budgetary constraints; however, an agreement between DEQ and the Idaho/Montana Airshed Group will allow operation during the 2007 summer and fall months.
8. Parma PM_{2.5} TEOM (16-027-0008) was terminated due to budgetary constraints.
9. Parma PM_{2.5} FRM (16-027-0008) was terminated – this monitor was scheduled for termination, despite budgetary constraints.
10. Emmett PM_{2.5} 5 TEOM (16-045-0001) was terminated due to budgetary constraints.
11. Emmett PM_{2.5} FRM (16-045-0001) was terminated – this monitor was scheduled for termination, despite budgetary constraints.
12. Preston PM_{2.5} FRM (16-041-0002) was terminated - moved to Salmon (16-059-0004).
13. Post Falls PM_{2.5} TEOM (16-055-0014) was terminated due to budgetary constraint; however, this monitor may be operated seasonally if conditions warrant.
14. Middleton O₃ analyzer (16-027-0007) was terminated - the Middleton ozone analyzer was a permit condition for a proposed energy development. The developer abandoned plans and thus monitoring was no longer required.
15. Coeur d'Alene PM₁₀ TEOM (16-055-0006) was terminated due to low measurements, moved to St. Maries (a higher priority), and converted to a PM_{2.5} TEOM (16-009-0010).
16. The addition of an ozone monitor at the St. Luke's monitoring site (16-001-0010)
17. The addition of a 10-meter surface meteorological station in Wendell (16-047-0001)
18. The addition of a 10-meter surface meteorological station at the St. Luke's site (16-001-0010) to support the objectives of the NCore (NCore is discussed below).
19. The addition of a 10-meter surface meteorological station at the Purple Sage Golf Course in Middleton (No AIRS ID available).
20. Discontinued annual operation of the North Idaho Lancaster NO_x monitor due to very low measured annual averages of NO₂ compared to the annual NAAQS. The

- monitor will run during ozone season (May through September) in 2007.
21. Discontinued 10-meter surface meteorological station at the Rathdrum site (16-055-0013) in North Idaho. The owner of the property where this was located has sold the property and requested we move the station. The station will be located at the nearby Lancaster ozone monitoring site.
 22. The addition of a PM_{2.5} TEOM and FRM at the St. Luke's site in Meridian (16-001-0010). The St. Luke's site will be DEQ's multi-pollutant NCore monitoring site and the addition of these two monitors will support the Ncore objectives..

Network Changes Proposed in this Document

The following DEQ ambient air monitoring network changes are being proposed in this 2007 Network Assessment:

1. DEQ proposes termination of the Boise Mountain View School PM₁₀ Hi-vol (16-001-0011). Monitoring data from 2004 through 2006 shows a three-year 99th percentile equal to 62 ug/m³ or 41% of the NAAQS. At the same time, the PM₁₀ TEOM at 16th and Grove in Boise (16-001-0009) shows a three-year 99th percentile of 60 ug/m³ or 40% of the NAAQS. Termination of this PM₁₀ Hi-vol would provide a cost savings while the PM₁₀ TEOM will continue to demonstrate maintenance of the PM₁₀ NAAQS.
2. Although already approved by EPA in DEQ's 2007 103-grant work plan for PM_{2.5} monitoring, DEQ proposed the addition of continuous monitoring for trace levels of carbon monoxide, sulfur dioxide and for reactive oxides of nitrogen (NO_y) at the St. Luke's monitoring location in Meridian. The St. Luke's site has been approved as the Idaho NCore site, part of a network of national multi-pollutant monitoring stations. The NCore network will add compounds of interest in addition to the criteria pollutants, particularly those compounds which contribute to the secondary formation of criteria pollutants.

I. 2007 DEQ AIR MONITORING NETWORK OVERVIEW

I.A PM₁₀ Monitoring Network

Eight PM₁₀ monitoring sites remain in operation (Table 1). These monitors support local SIPs and/or PM₁₀ maintenance plans and will continue operation through 2007. If possible, DEQ would like to terminate the Boise Hi-vol since the Boise PM₁₀ TEOM and the Boise Hi-vol both indicate three-year 99th percentiles of 41% or lower of the NAAQS. Table 1 summarizes the PM₁₀ network and NAAQS compliance for each station in 2006.

Table 1. DEQ PM₁₀ Monitoring Network / 2006 NAAQS Data

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	4 Highest 24-Hr Values in µg/m ³ (NAAQS = 150 µg/m ³)	Annual Avg. in µg/m ³ (NAAQS = 50 µg/m ³)
Sandpoint	Bonner 160170004 +48.270633/ -116.567724		Continuous	Population exposure	TEOM (SLAMS*)	68/62/52/52	23
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population exposure	TEOM (SLAMS)	52/52/47/44	19
Nampa	Canyon 160270002 +43.580310/ -116.562676		Continuous	Population exposure	TEOM (SPM)	106/96/87/83	26
Boise	Ada 160010009 +43.618889/ -116.213611	Boise City	Continuous	Population exposure	TEOM (SLAMS)	97/89/69/69	23
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	Continuous	Population exposure	TEOM (SLAMS)	47/45/44/43	14
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	1:6	Highest Concen- tration	Hi-vol (SLAMS)	56/56/45/43	21
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	1:3	Population exposure	Primary Hi-vol (SLAMS)	62/53/52/48	21
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	1:12	Precision/ Quality Assurance	Collocated Hi-vol (SLAMS)		

* SLAMS = State and Local Air Monitoring Station = designations are given to those monitors that are federally required or have long-term monitoring objectives (NAAQS compliance, trends, etc.)

Table 2. DEQ PM₁₀ Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
Sandpoint	1601 Ontario St. Sandpoint ,ID 83864	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet
Pinehurst	106 Church St. Pinehurst, ID 83850	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet

Site	Address	Method Code
Nampa	Northwest Nazarene University	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet
Boise	16 Front, Boise, ID 83702	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet
Pocatello	Corner Garrett & Gould, Pocatello, ID 83204	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet
Boise	16 Front, Boise, ID 83702	063 - Graseby Anderson/GMW Model 1200 High-Volume Air Sampler, Gravimetric
Pocatello	Corner Garrett & Gould, Pocatello, ID 83204	063 - Graseby Anderson/GMW Model 1200 High-Volume Air Sampler, Gravimetric
Pocatello	Corner Garrett & Gould, Pocatello, ID 83204	063 - Graseby Anderson/GMW Model 1200 High-Volume Air Sampler, Gravimetric

I.B Carbon Monoxide Network

Monitoring for CO in the Treasure Valley began in 1977. Violations of the health-based standard for CO occurred every winter from 1977 until 1986. As a result of these high levels of CO, northern Ada County was designated a CO nonattainment area by EPA. To address northern Ada County's nonattainment classification, DEQ developed a CO air quality improvement plan that included a commitment to continue monitoring CO levels (Table 2 below summarizes DEQ's CO monitoring network) and assurances that existing measures to control carbon monoxide emissions, such as the vehicle emissions testing program in Ada County, will remain in effect. The plan also includes contingency measures that will be enacted if levels reach specified conditions.

The Northern Ada County CO Limited Maintenance plan was approved by EPA in December 2002, reclassifying the area as attainment. No exceedances of CO NAAQS have occurred since 1991.

Table 3. DEQ CO Monitoring Network / NAAQS Data

						NAAQS 1-Hr = 35 ppm		
						1 st /2 nd High		
Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequ- ency	Monitor Objective	Monitor Desig- nation	2004	2005	2006
East- man	Ada 160010014 +43.616379/ -116.203817	MSA: Boise City	Contin- uous	Population Exposure	SLAMS	4.1/ 3.9	5.3/ 4.6	4.8/ 3.5
						NAAQS 8-Hr = 9 ppm		
						1 st /2 nd High		
Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequ- ency	Monitor Objective	Monitor Desig- nation	2004	2005	2006
East- man	Ada 160010014 +43.616379/ -116.203817	MSA: Boise City	Contin- uous	Population Exposure	SLAMS	2.6/ 2.4	2.5/ 2.2	2.1/ 2.1

Table 4. DEQ CO Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
Eastman	166 N. 9 th , Boise, ID 83702	054 - TECO, instrumental, non- dispersive infrared

I.C Sulfur Dioxide Network

Two SO₂ monitors currently operate in Idaho (Table 3). The Pocatello STP SLAMS monitor is a maximum concentration site, to assess impacts of local industrial emissions. The 5-mile Soda Springs SPM monitor is also a maximum concentration site for assessing industrial impacts from a nearby source. DEQ intends to continue operating these two SO₂ monitors through 2008.

Table 5. DEQ SO₂ Monitoring Network / NAAQS Data

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequ- ency	Monitor Objective	Monitor Desig- nation	NAAQS 24-Hr = 0.14 ppm		
						2004	2005	2006
						1 st High/2 nd High		
STP	Bannock 160050004 +42.916389/ -112.515833	UAR Poca- tello	Contin- uous	Highest Concen- tration	SLAMS	0.053/ 0.048	0.026/ 0.023	.027/ 0.024

5-Mile Soda Springs	Caribou 160290031 +42.695278/ -111.593889		Continu- ous	Source Oriented	SPM*	0.194/0 .163	0.047/ 0.043	.033/.024
						NAAQS 3-Hr = 0.50 ppm (secondary std)		
						2004	2005	2006
						1 st High/2 nd High		
STP	Bannock 160050004 +42.916389/ -112.515833	UAR Poca- tello	Continu- ous	Highest Concen- tration	SLAMS	0.023/0 .021	0.066/ 0.059	.064/.061
5-Mile Soda Springs	Caribou 160290031 +42.695278/ -111.593889		Continu- ous	Source Oriented	SPM	0.077/0 .067	0.116/ 0.106	.107/.090

* SPM = Special Purpose Monitor = designations given to monitors intended for short-term investigations or discretionary State monitoring programs (hot-spots, smoke management, etc.) SPM monitors are often re-designated SLAMS if the data reveal the need for long-term monitoring.

Table 6. DEQ SO₂ Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
STP	Batiste Chubbuck Rd, Pocatello, ID 83204	100 - Teledyne Advanced Pollution Instrumentation, Model 100A
5-Mile Soda Springs	5-Mile Rd., Soda Springs, ID 83276	060 - Thermo Environmental Inst. 43A, pulsed fluorescence

I.D Ozone Network

DEQ is currently operating three ozone-monitoring stations in the Treasure Valley O₃ network (Table 4). The Whitney Elementary School site in Boise is the required maximum population-density monitor.

A saturation study done in 2004 indicated the highest O₃ concentrations were recorded near the ITD site (initiated in 2006) and that the “maximum-concentration, downwind” site originally located in Elmore County needed to remain inside the Treasure Valley where Boise sits. ITD was selected as this "maximum-concentration" site.

DEQ has been notified that the Whitney Elementary School site will have to be moved by 2008 due to construction. In advance, DEQ has established an O₃ monitor at the St. Luke's site in Meridian, near the hospital at I-84 and Eagle Road. This is a neighborhood to urban scale site,

and DEQ expects the data will show this site to be a suitable replacement to the Whitney Elementary School site.

A fourth DEQ O₃ analyzer operates at the Lancaster site in the Rathdrum Prairie located in the panhandle region of northern Idaho. This site is approximately 30 miles east of the city of Spokane and EPA AIRNOW maps frequently show Idaho's panhandle in the “moderate” air quality category based on O₃ monitoring data collected in Spokane.

Table 7. DEQ O₃ Monitoring Network / NAAQS Data

				NAAQS = 0.08 ppm daily 8-hour max	Max Daily 8-Hr Avg, 4 th Highest $\mu\text{g}/\text{m}^3$			
Site	County AIRS ID Lat/Lon	UAR/MSA/CMSA	Sample Frequency	Monitor Objective	Monitor Designation	2004	2005	2006
Boise Whitney	Ada 160010030 +43.589464/ -116.223462	MSA Boise City	Contin- uous	Population Exposure	SLAMS	0.074	0.075	0.082
Lancaster	Kootenai 160550003 +47.788908/ -116.804539		Contin- uous	Population Exposure	SPM		0.066	0.068
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Contin- uous	Population Exposure	Proposed NCore			
Boise ITD	Ada 160010019 +43.634585/ -116.233919	MSA Boise City	Contin- uous	Population Exposure/Maximum Concentration	SPM			0.074

Table 8. DEQ O₃ Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
Boise Whitney	Whitney Elementary School, Boise, ID 83705	087 - Teledyne Advanced Pollution Inst., Model 400A
Lancaster	N. of Lancaster Rd. Hayden, ID 83666	087 - Teledyne Advanced Pollution Inst., Model 400E
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	087 - Teledyne Advanced Pollution Inst., Model 400E
Boise ITD	311 W. State St. Boise, ID 83703	087 - Teledyne Advanced Pollution Inst., Model 400E

I.E Nitrogen Dioxide (NO₂) Network

DEQ monitors for nitrogen oxides, including nitrogen oxide, nitrogen dioxide, and total NO_x at the Lancaster site located in the Rathdrum Prairie along with the ozone monitoring (Table 5). Continuous monitoring began in early 2005 and was discontinued in late 2006. Measurements compared to the annual NAAQS were extremely low. This special purpose monitor will instead run during O₃ season only -- May 1- September 30.

Table 9. DEQ NO₂ Monitoring Network / NAAQS Data Assessment

				NAAQS = 0.053 ppm Annual Arithmetic Mean		Annual Arithmetic Mean		
Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Freq- uency	Monitor Objective	Monitor Desig- nation	2004	2005	2006
Lancaster	Kootenai 160550003 +47.788908/ -116.804539		Contin- uous	Population Exposure	SPM - O ₃		0.007	0.006

Table 10. DEQ NO₂ Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
Lancaster	N. of Lancaster Rd. Hayden, ID 83666	082 - Advanced Instrumentation, Model 200, Instrumental Chemiluminescence

I.F PM_{2.5} Network

DEQ monitors PM_{2.5} year-round at the twenty (20) sites listed in Table 6. PM_{2.5} TEOMs support DEQ's air quality forecasting and smoke management programs, while the FRM's provide NAAQS compliance data. Federal Reference Monitors are operated in Franklin, Salmon, Nampa, Boise, St. Maries and Pinehurst. These sites comprise DEQ's "core" PM_{2.5} NAAQS compliance network and thus these sites shall all be designated as SLAMS.

Table 11. 2006 DEQ PM_{2.5} Monitoring Stations

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Type	Monitor Designation
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:3	Population Exposure	Speciation (STN)	SLAMS/ NCore
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:6	Population Exposure	Manual FRM	SLAMS/ NCore
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	TEOM	SLAMS/ NCore
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	1:3	Population Exposure	Sequential FRM	SLAMS
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	Continuous	Population Exposure	TEOM	SPM - AQI
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	Continuous	Population Exposure	TEOM	SPM – AQI
St. Maries	Benewah 160090010 +47.316667/ -116.570280		1:3	Population Exposure	Sequential FRM	SLAMS
St. Maries	Benewah 160090010 +47.316667/ -116.570280		Continuous	Population Exposure	TEOM	SPM – AQI
Sandpoint	Bonner 160170005 +48.267500/ -116.572222		Continuous	Population Exposure	TEOM	SPM – AQI
Idaho Falls	Bonneville 160190013 +43.518267/ -112.020708	Idaho Falls	Continuous	Population Exposure	TEOM	SPM – AQI
Nampa	Canyon 160270004 +43.562401/ -116.563232		1:1	Population Exposure	Primary Sequential FRM	SLAMS
Nampa	Canyon 160270004 +43.562401/ -116.563232		1:12	Population Exposure	Precision Sequential FRM	SLAMS

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Type	Monitor Designation
Nampa	Canyon 160270004 +43.562401/ -116.563232		Continuous	Population Exposure	TEOM	SPM – AQI
Franklin	Franklin 160410001 +42.013333/ -111.809167		1:3	Population Exposure	Sequential FRM	SLAMS
Coeur d'Alene	Kootenai 160550006 +47.682315/ -116.765530		Continuous	Population Exposure	TEOM	SPM – AQI
Salmon	Lemhi 160590004 +45.170556/ -113.892222		1:3	Population Exposure	Sequential FRM	SLAMS
Salmon	Lemhi 160590004 +45.170556/ -113.892222		Continuous	Population Exposure	TEOM	SPM – AQI
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		1:3	Population Exposure	Sequential FRM	SLAMS
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population Exposure	TEOM	SPM
Twin Falls	Twin Falls 160830010 +42.564097/ -114.446200		Continuous	Population Exposure	TEOM	SPM
Lewiston	Nez Perce 160690012 +46.404722/ -116.968889		Continuous	Population Exposure	TEOM	SPM
Grangeville	Idaho 160490002 +45.931389/ -116.115278		Continuous	Population Exposure	TEOM	SPM
Moscow	Latah 160570005 +46.721932/ -116.959180		Continuous	Population Exposure	TEOM	SPM

Table 12. 2006 DEQ PM_{2.5} Monitoring Stations / Addresses and Method Codes

Site	Address	Method Codes
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	701 & 703 - R&P TEOM, Gravimetric Analysis, PM2.5 SCC w/ no correction factor
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	117 - R&P Model 2000 PM2.5 Manual Sampler w/WINS, Gravimetric
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	810 - MetOne SASS
Boise	3500 Cabarton Lane, Boise, ID 83704	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Boise	3500 Cabarton Lane, Boise, ID 83704	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Pocatello	Corner Garrett & Gould, Pocatello, ID 83204	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
St. Maries	Forest Service Bldg St. Maries, ID 83666	715 & 716 - TEOM Gravimetric Analysis PM2.5 VSCC w/ no correction factor
St. Maries	Forest Service Bldg St. Maries, ID 83666	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Sandpoint	1601 Ontario St. Sandpoint ,ID 83864	715 & 716 - TEOM Gravimetric Analysis PM2.5 VSCC w/ no correction factor
Idaho Falls	N Holmes & Pop Kroll Idaho Falls, ID 83401	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Nampa	Northwest Nazarene University	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Nampa	Northwest Nazarene University	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Nampa	Northwest Nazarene University	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Franklin		118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Coeur d'Alene	930 N. 15 th Coeur d'Alene, ID 83814	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Salmon	N Charles St. Salmon, ID 83467	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Salmon	N Charles St. Salmon, ID 83467	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Pinehurst	106 Church St. Pinehurst, ID 83850	761 - R&P FDMS - Gravimetric Analysis, PM2.5 VSCC (Prior to May 30, 2007: 717 & 718 - R&P TEOM - gravimetric Analysis, PM2.5 VSCC w/ correction factor)
Pinehurst	106 Church St. Pinehurst, ID 83850	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Twin Falls	1913 Addison Ave E, Twin Falls, ID 83301	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor

Site	Address	Method Codes
Lewiston	1200 29 th St Lewiston, ID 83501	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Grangeville	USFS Compound Grangeville, ID 83530	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Moscow	1025 Plant Sciences Rd Moscow, ID 83843	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor

I.G Meteorological Network

DEQ currently operates twelve 10-meter meteorological stations. The following parameters are gathered to support air quality forecasting and air quality modeling analyses: wind speed, wind direction, solar radiation, relative humidity, temperature and barometric pressure. Five sites are located in the northern Idaho cities of Pinehurst, Sandpoint, Moscow, Lewiston and Grangeville with another planned for Coeur d'Alene; two sites run in Boise; and one each in Salmon, Pocatello, Wendell, Meridian and Caldwell. Meteorological data is important for DEQ air quality forecasting as well as airshed and dispersion modeling programs.

I.H Hazardous Air Pollutants (HAPs)

DEQ initiated sampling for the urban air toxics (a subset of the 188 HAPs identified by EPA) in 2007 at the new monitoring site near St. Luke's Hospital in the Treasure Valley. This site was selected because of its proximity to major area industrial and mobile source emissions, while still representing population exposure. Compounds measured will include the volatile organic compounds (VOC), carbonyls, black carbon, and PM₁₀ metals.

I.I National Community-oriented (NCore) Multi-pollutant Site

DEQ will establish one NCore station in Idaho, to be located in the Boise City MSA at the St. Luke's Hospital site. NCore is a national network of multi-pollutant sites which will measure not only criteria pollutants, but also the "trace gas" compounds that are precursors for ozone and PM_{2.5}. These sites are to be in full operation by 2011. DEQ has purchased the trace gas monitoring equipment and will put them in operation during 2007/2008. Compounds to be added include trace levels of carbon monoxide, sulfur dioxide and reactive oxides of nitrogen. The Ncore station data will be used to evaluate the regional air quality models used in developing emission strategies and to track trends in air pollution control measure impact on improving air quality in the Treasure Valley.

II. DEQ 2006 AIR MONITORING - POLLUTANT DESCRIPTIONS

II.A PM₁₀

Monitoring Requirements - Idaho PM₁₀ Network

Eight PM₁₀ monitoring sites are currently in operation (Table 1). These monitors support local SIPs and/or PM₁₀ maintenance plans and will continue operation through 2007. PM₁₀ monitoring site locations are selected to represent average population exposure to spatially representative PM concentrations in the middle, neighborhood, and urban scales.

DEQ is proposing to terminate the PM₁₀ Hi-vol at the Boise monitoring location. This monitor reads similarly to the PM₁₀ TEOM in Boise at 41% of the PM₁₀ NAAQS (2004-2006). Termination of this monitor will allow resources to be allocated to other priority monitoring needs.

Sources

Major sources of PM₁₀ include agricultural tilling, motor vehicles, paved and unpaved road dust, wood stoves, outdoor and agricultural burning, and wildfires.

II.B CO

Monitoring Requirements - Idaho CO Network

In December 2002, the Northern Ada County CO Limited Maintenance Plan was approved by EPA, which reclassified the area as attainment for the CO NAAQS. No exceedances of the CO NAAQS have occurred since 1991. Idaho runs one CO monitor at a middle scale (several city blocks in size ranging to several hundred meters to 0.5 km in representation). This Boise CO monitor was sited based on the maximum concentration identified through a saturation study performed in 1996. The demographics of the Treasure Valley have changed, but the urban canyon setting chosen for this site remains primarily the same.

Termination of this monitor could be justified by the data; however, the Maintenance Plan will have to be modified and approved by EPA to achieve this change.

DEQ is not planning further adjustment to this portion of the network.

Sources

Major sources of CO include on-road and nonroad vehicles, and outdoor burning.

II.C SO₂

Monitoring Requirements - Idaho SO₂ Network

The Pocatello STP SLAMS monitor is a maximum concentration site used to assess impacts of local industrial emissions. The 5-mile Soda Springs SPM monitor is also a maximum concentration site for assessing industrial impacts from a nearby source. These two monitors

operate in the neighborhood and middle scales, respectively. Both SO₂ monitoring locations in southeastern Idaho were identified as fence-line “hot spots” from conventional dispersion model applications.

DEQ is not planning further review of this portion of the network.

Sources

Major sources include large industrial facilities, indoor oil burning, and off-road vehicles and equipment.

II.D O₃

Monitoring Requirements - Idaho O₃ Network

DEQ currently operates three ozone monitors in the Treasure Valley. The original monitoring sites were chosen in accordance to EPA guidance to represent the maximum population density and the maximum-concentration downwind of the urban center. An O₃ saturation study conducted in 2004 indicated a need to relocate the maximum concentration downwind site, as maximum concentrations were identified in the Boise city limits. To better capture the downwind concentrations inside the Treasure Valley, the East of Boise location in Elmore County (Simco Road) was moved to ITD location on State Street.

Again, DEQ has been notified that the Whitney Elementary School O₃ site will have to be moved by 2008 due to construction. In advance, DEQ has established a monitor at the St. Luke's site in Meridian, near the hospital at I-84 and Eagle Road. This is a neighborhood to urban scale site and DEQ expects the data will show this site to be a suitable replacement to the Whitney Elementary School O₃ site.

With the continued growth in the Treasure Valley airshed, DEQ intends to monitor O₃ indefinitely at the neighborhood to urban scale. DEQ will evaluate the new O₃ monitoring locations and assess whether daily maximum 8-hour ozone concentrations are being captured at ITD and whether the St. Luke's data represents average population exposure. If not, DEQ will propose new locations for these monitors.

A fourth DEQ O₃ analyzer operates at the Lancaster site located in the panhandle region of northern Idaho. This site is approximately 30 miles east of the city of Spokane and EPA AIRNOW ozone maps frequently show Idaho's panhandle in the “moderate” air quality category based on O₃ monitoring data collected in Spokane. The Lancaster site runs at the urban scale of 4 to 50 km.

DEQ is not planning further assessment of this portion of the network.

Sources

Ozone is not typically emitted directly from a pollution source. It forms in the lower atmosphere through reaction of nitrogen oxides (NO_x) and certain volatile organic compounds (VOCs) in the presence of warm temperatures and ample sunshine. NO_x sources include on-road and nonroad

vehicles and large industrial facilities. VOC sources include asphalt paving, on-road and nonroad vehicles, wood burning, and solvent use. These precursor pollutants (NO_x and VOCs) might travel great distances before forming O₃.

II.E NO₂

Monitoring Requirements - Idaho NO₂ Network

DEQ initiated monitoring for nitrogen oxides (nitrogen oxide, nitrogen dioxide and total NO_x) at the Lancaster site in northern Idaho in 2005. The site is downwind from metropolitan Spokane and the data supports source ozone assessments for this region of the state. The Lancaster NO₂ site recorded very low annual averages compared to the NAAQS during 2005 and 2006; therefore, it will run during O₃ season only -- May through September. The NO_x data (that is nitric oxides as well as NO₂) data are intended to support the ozone monitoring objectives.

DEQ is not planning further changes to this portion of the network.

Sources

NO_x sources include on-road and nonroad vehicles and large industrial facilities.

II.F PM_{2.5}

Monitoring Requirements - Idaho PM_{2.5} Network

A PM_{2.5} monitoring network review and assessment are conducted separately each year as part of the 103-grant application process. Due to reductions in this grant, DEQ has terminated PM_{2.5} monitoring at the following locations since the beginning of 2006: Middleton, Inkom, McCall, Garden Valley, Idaho City, Parma, Emmett, Preston, and Post Falls. PM_{2.5} FRM monitoring was terminated at the Parma, Emmett, Pocatello, and Preston sites.

DEQ is not planning further alterations to this portion of the network unless deemed necessary by reductions in federal funding. DEQ entered into an agreement with the Idaho/Montana Airshed Group (USFS) that will fund operation of the McCall, Garden Valley, and Idaho City TEOMs during the summer and fall months of 2007. The USFS smoke managers rely on the “real-time” data generated and published to DEQ Web page air quality maps to manage their prescribed burns.

DEQ has retained a “core network” of PM_{2.5} monitors operated by FRM in five airsheds due to the potential for exceeding the newly established 24-hour PM_{2.5} NAAQS. Pinehurst, St. Maries, Franklin, Boise and Nampa, and Salmon comprise this network. Of these five airsheds, Pinehurst (Shoshone County) and Franklin (Franklin County) are likely to be designated nonattainment areas for the 24-hour PM_{2.5} NAAQS, based on 2004-2006 data.

Sources

PM_{2.5} sources include wood and agricultural burning, wildfires, on-road and nonroad vehicles, and secondary formation through chemical reaction in the atmosphere.

II.G Met

DEQ operates twelve 10-meter meteorological stations. One station was recently removed (Rathdrum) and relocation to Coeur d'Alene (Lancaster) is proposed later in 2007. Meteorological measurements are used to support air quality forecasting and air quality modeling analyses. DEQ is adjusting the meteorological parameters collected at specific sites to ensure AERMOD modeling needs for model input are available. Further assessment of the meteorological network will be made before further modifications are made for these purposes.

II.H HAPs

DEQ initiated HAPs monitoring at a new location in early 2007. Compounds selected for monitoring include volatile organic compounds (VOC), carbonyls, PM₁₀ metals, and continuous black carbon. DEQ located the equipment at the St. Luke's site in the City of Meridian, along Interstate 84, between Nampa and Boise. This is the busiest traffic corridor in the Treasure Valley, is located near a major hospital, and is also oriented to capture emissions from major industrial sources. Data collected by this project will be used to evaluate public health risk associated with these compounds and will provide information regarding the need for future monitoring.

III. SUMMARY

Table 7 contains a complete list of DEQ 103 and 105 grant-funded monitoring stations proposed for 2007-2008. Figure 1 shows a map of DEQ's 2007 ambient air monitoring network.

The St. Luke's site in Meridian is being developed as DEQ's NCore monitoring site.

This network review does not provide for any significant modifications for the DEQ ambient air-monitoring network during 2007 and 2008. The DEQ PM monitoring network is primarily composed of middle/neighborhood/urban-scale sites, to assess population exposure to PM₁₀ and PM_{2.5}, and to support AQI forecasting and smoke management programs.

It is the goal of EPA for states, locals, and tribes to reconcile their ambient air quality monitoring networks to the objectives of the National Air Monitoring Strategy (NAMS). The NAMS will likely be retained as the guiding document for DEQ's ambient air monitoring network and the National Ambient Air Monitoring System.

The monitoring objectives of the NAMS are:

1. Provide timely reporting of data to the public
2. Evaluate compliance with NAAQS
3. Support long-term health studies

4. Support scientific studies
5. Support development of emission control strategies.

PM_{2.5} chemical speciation, urban air toxics (HAPs) monitoring, pollutant source apportionment, emissions inventory, spatial analysis, and airshed models will provide tools for a more refined review and assessment of the ambient air monitoring network. EPA is now requiring that air monitoring agencies conduct a more detailed assessment of their networks every five years using these tools. The first of these 5-year assessments is due in 2010. DEQ’s ultimate goal is to achieve a “mature” air monitoring network that achieves these objectives.

Table 13. 2007 Idaho DEQ Ambient Air Monitoring Network

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	Pollutant
Sandpoint	Bonner 160170004 +48.270633/ -116.567724		Continuous	Population exposure	TEOM (SLAMS)	PM ₁₀
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population exposure	TEOM (SLAMS)	PM ₁₀
Nampa	Canyon 160270002 +43.580310/ -116.562676		Continuous	Population exposure	TEOM (SPM)	PM ₁₀
Boise	Ada 160010009 +43.618889/ -116.213611	Boise City	Continuous	Population exposure	TEOM (SLAMS)	PM ₁₀
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	Continuous	Population exposure	TEOM (SLAMS)	PM ₁₀
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	1:6	Highest Concen- tration	Hi-vol (SLAMS)	PM ₁₀
Pocatello	Bannock 160050015 +42.876725 -112.460347	Pocatello	1:3	Population exposure	Primary Hi- vol(SLAMS)	PM ₁₀
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	1:12	Population exposure	Collocated Hi-vol	PM ₁₀
Eastman	Ada 160010014, +43.616379/ -116.203817	MSA Boise City	Continuous	Population Exposure	SLAMS	CO

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	Pollutant
STP	Bannock 160050004, +42.916389/ -112.515833	UAR Pocatello	Continuous	Highest Concentration	SLAMS	SO ₂
5-Mile Soda Spr	Caribou 160290031, +42.695278/ -111.593889		Continuous	Source Oriented	SPM	SO ₂
Boise Whitney	Ada 160010030, +43.589464/ -116.223462	MSA Boise City	Continuous	Population Exposure	SPM	O ₃
Lancaster	Kootenai 160550003, +47.788908/ -116.804539		Continuous	Population Exposure	SPM	O ₃
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	SPM	O ₃
Boise ITD	Ada 160010019, +43.634585/ -116.233919	MSA Boise City	Continuous	Population Exposure	SPM	O ₃
Lancaster	Kootenai 160550003, +47.788908/ -116.804539		Continuous	Population Exposure	SPM	NO _x
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:3	Population Exposure	Proposed NCore	PM _{2.5}
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:6	Population Exposure	Proposed NCore	PM _{2.5}
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	Proposed NCore	PM _{2.5}
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	1:3	Population Exposure	SLAMS	PM _{2.5}
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	Continuous	Population Exposure	SPM - AQI	PM _{2.5}

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	Pollutant
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	Continuous	Population Exposure	SPM - AQI	PM _{2.5}
St. Maries	Benewah 160090010 +47.316667/ -116.570280		1:3	Population Exposure	SPM - Correlation	PM _{2.5}
St. Maries	Benewah 160090010 +47.316667/ -116.570280		Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Sandpoint	Bonner 160170005 +48.267500/ -116.572222		Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Idaho Falls	Bonneville 160190013 +43.518267/ -112.020708	Idaho Falls	Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Nampa	Canyon 160270004 +43.562401/ -116.563232		Daily	Population Exposure	SLAMS	PM _{2.5}
Nampa	Canyon 160270004 +43.562401/ -116.563232		1:12	Population Exposure	SLAMS	PM _{2.5}
Nampa	Canyon 160270004 +43.562401/ -116.563232		Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Franklin	Franklin 160410001 +42.013333/ -111.809167		1:3	Population Exposure	SPM	PM _{2.5}
Coeur d'Alene	Kootenai 160550006 +47.682315/ -116.765530		Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Salmon	Lemhi 160590004 +45.170556 -113.892222		1:3	Population Exposure		PM _{2.5}
Salmon	Lemhi 160590004 +45.170556/ -113.892222		Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		1:3	Population Exposure	SLAMS	PM _{2.5}

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	Pollutant
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population Exposure	SPM	PM _{2.5}
Twin Falls	Twin Falls 160830010 +42.564097/ -114.446200		Continuous	Population Exposure	SPM	PM _{2.5}
Lewiston	Nez Perce 160690012 +46.404722/ -116.968889		Continuous	Population Exposure	SPM	PM _{2.5}
Grangeville	Idaho 160490002 +45.931389/ -116.115278		Continuous	Population Exposure	SPM	PM _{2.5}
Moscow	Latah 160570005 +46.721932/ -116.959180		Continuous	Population Exposure	SPM	PM _{2.5}

Figure 1. 2007 Ambient Air Monitoring Network

IDAHO DEQ

SFY 2007 Air Monitoring Network

