STATE OF MONTANA

AIR QUALITY MONITORING NETWORK PLAN

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Montana Department of Environmental Quality
Air Resources Management Bureau

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Helena, MT 59601

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I. Introduction

The Air Quality Monitoring Network Plan (Plan) is produced by the Montana Department of Environmental Quality (Department) on an annual basis in order to meet three objectives. First, the Plan development process establishes the structure for the Department to evaluate its existing monitoring network and to tailor it based on modified data needs, changing regulatory requirements, and available resources. Second, the Plan provides opportunity for the Department to solicit, evaluate, and respond to comments and input from County Agencies, the general public, and other Department interests regarding the Department's ambient air monitoring network. Third, the Plan is developed and submitted to the Regional Office of the Federal Environmental Protection Agency (EPA Region 8) in fulfillment of the requirements contained in Title 40 of the Code of Federal Regulations Part 58.10 (40 CFR 58.10).

The Plan is intended to accurately describe the monitoring sites in the Department's network, identify their monitoring objectives, and describe any deviations in physical characteristics or operation from regulatory requirements. The Plan also describes changes the Department anticipates making to the network in the next year.

The Department monitors air quality principally by measuring concentrations of criteria air pollutants pursuant to the federal Clean Air Act. Criteria air pollutants are the most common air pollutants with known harmful human health effects, and are the pollutants for which ambient air quality standards have been set. The six criteria pollutants are: carbon monoxide (CO), sulfur dioxide (SO_2), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), and particulate matter (PM). PM includes two sizes of particles, those with an aerodynamic diameter of 10 microns and less (PM_{10}), and particles with an aerodynamic diameter of 2.5 microns and less ($PM_{2.5}$). For each criteria air pollutant, National Ambient Air Quality Standards (NAAQS) are established to protect public health and welfare. Montana has adopted similar air quality standards known as the Montana Ambient Air Quality Standards (MAAQS).

The Plan is provided in three broad sections. The section beginning on the following page describes the various pollutant-specific ambient air monitoring requirements and explains how the Department has implemented each as applicable. The next section describes changes to the monitoring network that the Department is proposing. The final section includes four appendices. Descriptions of the location information for each of the individual monitoring sites can be found in Appendix A. Appendix B provides both a detailed description of the existing monitors within the Department's network and a description of the monitors after proposed changes are implemented. Appendix C provides a one-page summary of the proposed network changes. Appendix D summarizes the current NAAQS and MAAQS.

II. Ambient Air Monitoring Requirements

The term 'ambient air' is defined in 40 CFR 50.1 as "that portion of the atmosphere, external to buildings, to which the general public has access. " The EPA requires each state to establish a network of monitors to measure concentrations of the criteria pollutants in the ambient air based upon population, regional air quality, and regulatory concerns.

The Department meets and exceeds its regulatory obligation for measuring air pollution throughout Montana. Currently, Montana has no communities with populations large enough or air quality poor enough to require more than one monitoring site for any of the criteria air pollutants, although historically, multiple monitoring sites in several large communities were sometimes operated in order to make that determination.

The following sections summarize the ambient air monitoring requirements for each of the criteria air pollutants.

A. Ozone (O_3) Requirements

The EPA-required minimum number of ozone monitors is defined in Table 1.

Table 1 - EPA Minimum O_3 Monitoring Requirements.[1]

Metropolitan Statistical Area (MSA) population[2,3]	Number of Monitors per MSA	
	Most recent 3-year design value concentrations ≥ 85% of any O_3 NAAQS[4]	Most recent 3-year design value concentrations < 85% of any O_3 NAAQS[4,5]
>10 million	4	2
4 – 10 million	3	1
350,000 – <4 million	2	1
50,000 – <350,000[6]	1	0

[1] From Table D-2 of Appendix D to 40 CFR Part 58
[2] Minimum monitoring requirements apply to the metropolitan statistical area (MSA)
[3] Population based on latest available census figures.
[4] O_3 NAAQS levels and forms are defined in 40 CFR Part 50.
[5] These minimum monitoring requirements apply in the absence of a design value.
[6] A MSA must contain an urbanized area of 50,000 or more population.

There are three Metropolitan Statistical Areas (MSAs) in Montana in the 50,000 to 350,000 person population category, Billings (Yellowstone County), Missoula (Missoula County), and Great Falls (Cascade County).

Based on historical and current monitoring data and professional knowledge of emission levels and meteorological patterns, the Department does not expect the O_3 levels in Montana to exceed the level of the current O_3 NAAQS. In the Billings area, the monitored O_3 design value during 2005-2007 was only 0.059 parts per million (ppm) or 78.7 percent of the current NAAQS. In Great Falls, historical monitoring data, meteorological patterns, and professional judgment suggest even lower values. Monitoring is currently being conducted in Missoula (30-063-0024) to define ambient levels of O_3 in that MSA. Monitoring there officially began on June 1, 2010, so calculation of a 3-year design value is not yet possible. However, measured concentrations to-date closely resemble background values monitored elsewhere in the state. The ozone season is designated as the period from June through September within the state of Montana.

In an attempt to define background levels of O_3 within Montana, monitoring is currently being conducted in Broadus (30-075-0001), Birney (30-087-0001), Sidney (30-083-0001), and at the National Core Monitoring Site (NCore, 30-049-0004). The information collected from these sites to-date indicates that O_3 is not currently a pollutant of concern in Montana. The Department is in the process of installing O_3 monitors at new sites in the communities of Malta and Lewistown in partnership with the Bureau of Land Management (BLM) in an attempt to further define background concentrations and spatial distribution of this pollutant. This effort is largely driven by the need to define and manage air quality impacts associated with the development of oil and gas resources within the state of Montana.

The monitoring directives in 40 CFR Appendix D Section 5 contain specific requirements for the operation of Photochemical Assessment Monitoring Stations (PAMS) in areas classified as serious, severe, or extreme nonattainment for O_3. Montana does not contain any O_3 nonattainment areas, and no PAMS monitoring is required of the Department.

B. Lead (Pb) Requirements

The lead monitoring rule in 40 CFR 58 Appendix D Section 4.5 requires monitoring agencies to establish air quality monitoring near industrial facilities that emit more than 0.5 tons per year (tpy) of lead into the atmosphere, and at particular specified airports. None of the listed airports are located in Montana, but one facility in the state potentially exceeds the 0.5 tpy lead emissions threshold.

Each calendar year the Department requires facilities with active Montana Air Quality Permits to report quantities of emissions of air pollutants by the end of March of the following year. For calendar year 2011, one facility within the state of Montana reported total lead emissions in excess of the 0.5 tpy threshold. The Colstrip Steam Electric Generating Facility located in Rosebud County reported total lead emissions of 1.73 tons for calendar 2011. The Department will engage in an effort to validate this reported quantity. If it meets the criteria of "scientifically justifiable methods and data" prescribed by 40 CFR 58 Appendix D Section 4.5(a), then the Department will evaluate source-oriented SLAMS monitoring at the Colstrip facility.

C. Particulate Matter (PM_{10}) Requirements

The minimum number of PM_{10} monitoring sites required by EPA is shown in Table 2.

Table 2 - EPA Minimum PM_{10} Monitoring Requirements.[1]

Population category	Number of Monitors per MSA[1]		
	High concentration[2]	Medium concentration[3]	Low concentration[4,5]
>1,000,000	6–10	4–8	2–4
500,000–1,000,000	4–8	2–4	1–2
250,000–500,000	3–4	1–2	0–1
100,000–250,000	1–2	0–1	0

[1] From Table D-4 of Appendix D to 40 CFR Part 58. Selection of urban areas and actual numbers of stations per MSA within the ranges shown in this table will be jointly determined by EPA and the Department.
[2] High concentration areas are those for which data exceeds the PM_{10} NAAQS by 20 percent or more.
[3] Medium concentration areas are those for which data exceeds 80 percent of the PM_{10} NAAQS.
[4] Low concentration areas are those for which data is less than 80 percent of the PM_{10} NAAQS.
[5] The low concentration requirements are the minimum which apply in the absence of a design value.

No Montana MSAs currently meet the combination of population and PM_{10} concentration listed in Table 2 so as to mandate PM_{10} monitoring. However, the Department continues to operate PM_{10} monitors in seven areas previously designated as nonattainment for the 24-hour PM_{10} NAAQS as required by EPA and to demonstrate the adequacy of PM_{10} control plans. Those areas include Butte, Columbia Falls, Kalispell, Libby, Missoula, Thompson Falls, and Whitefish.

The Department is currently also operating PM_{10} monitors in several areas in order to define background levels of this pollutant. These areas include Broadus, Birney and Sidney. In addition, the Department is currently installing PM_{10} monitors at new sites in the communities of Malta and Lewistown in partnership with the BLM in an attempt to further define background concentrations and spatial distribution of this pollutant within the state of Montana.

D. Fine Particulate Matter ($PM_{2.5}$) Requirements

The minimum number of $PM_{2.5}$ monitoring sites required by EPA is shown in Table 3.

Table 3 – EPA Minimum $PM_{2.5}$ Monitoring Requirements.[1]

MSA population[1,2]	Number of Monitors per MSA	
	Most recent 3-year design value ≥85% of any $PM_{2.5}$NAAQS[3]	Most recent 3-year design value <85% of any $PM_{2.5}$NAAQS[3,4]
>1,000,000	3	2
500,000–1,000,000	2	1
50,000–<500,000[5]	1	0

[1] From Table D-5 of Appendix D to 40 CFR Part 58. Minimum monitoring requirements apply to MSAs.
[2] Population based on latest available census figures.
[3] $PM_{2.5}$ NAAQS levels and forms are defined in 40 CFR part 50.
[4] Minimum monitoring requirements apply in the absence of a design value.
[5] A MSA is an urbanized area with a population of 50,000 or more.

Montana possesses only three MSAs (Billings, Missoula, and Great Falls), and all three fall into the smallest population category listed in Table 3. Missoula is the only Montana MSA that has at any time demonstrated a $PM_{2.5}$ design value greater than 85 percent of the NAAQS, though it has not done so for at least the last six years. Consequently, no $PM_{2.5}$ monitors are required within Missoula or any community in Montana based on the current criteria

Because $PM_{2.5}$ is a pollutant of concern within Montana, the Department's $PM_{2.5}$ monitoring network goes well beyond the minimum requirements described in Table 3. The Department and several county air quality programs operate $PM_{2.5}$ monitors in various communities to demonstrate continuing NAAQS compliance, to provide information to Health Departments implementing $PM_{2.5}$ control strategies, and to inform the public of potential health impacts during both winter inversions and summer wildfire events. In addition, the Department is currently operating $PM_{2.5}$ monitors in several areas in order to define background levels of this pollutant. These areas include Broadus, Birney and Sidney. The Department is currently installing two additional $PM_{2.5}$ monitors at new sites in the communities of Malta and Lewistown in partnership with the BLM in an attempt to further define background concentrations and spatial distribution of this pollutant within the state of Montana.

In a separate effort, the Department also monitors $PM_{2.5}$ at a location just inside the west entrance to Yellowstone National Park. The instrument is operated in support of the National Park Service and is principally present to monitor traffic impacts to this significant Class 1 area, particularly in the wintertime.

E. Sulfur Dioxide (SO_2) Requirements

The minimum number of SO_2 monitoring sites required by EPA is shown in Table 4.

Table 4 – EPA Minimum $PM_{2.5}$ Monitoring Requirements.[1]

CBSA PWEI[2]	Minimum Number of SO_2 Monitors Required
≥1,000,000	3
<1,000,000 - ≥100,000	2
<100,000 - ≥5,000	1

[1] From Appendix D to 40 CFR Part 58, Sec 4.4.2
[2] Core Based Statistical Area Population Weighted Emissions Index

This EPA criteria used to determine the numbers of required SO_2 monitors was published on June 22, 2010, and is based on two metrics: the Core Based Statistical Area (CBSA-- a county or counties with at least one urbanized area of at least 10,000 people population), and the Population Weighted Emissions Index (PWEI—the quantity of population in the CBSA multiplied by the annual tons of SO_2 emitted, divided by 1,000,000). Billings is the only community in Montana that has the potential to require SO_2 monitoring based on these metrics. The Billings/Yellowstone County PWEI was calculated as follows:

Yellowstone County July, 2010 Census Population:	148,432
Reported 2011 SO_2 Emissions (tons per year):	7,376
PWEI = (148,432 X 7,376) / 1,000,000:	1,095

Based on the listed criteria, neither Billings nor any of the other Montana CBSAs present an SO_2 PWEI that approaches or exceeds 5,000. Consequently, no Department SO_2 monitoring is required. However, the Department continues to operate one long-term SO_2 monitor at the Coburn Road site (30-111-0066) in Billings as a State or Local Air Monitoring Station (SLAMS). While not required, this site is essential to the ongoing management of SO_2-related air quality issues in the Billings area. In addition, the Department operates one background SO_2 monitor at the Sidney site (30-083-0001), and one trace level background monitor at the NCore station (30-049-0004) as discussed later in this document.

Beyond the Department-operated monitors, ambient SO_2 is monitored by industrial sources in the communities of Great Falls and Billings. In the Great Falls area, one SO_2 monitoring site in the community of Black Eagle is operated by the Montana Refining Company (Black Eagle, 30-013-2001) as required by their air quality permit. Data from this site is not entered into the AQS database but is used by the Department's air quality compliance program. In the Billings/Laurel area there are currently three industry-operated SO_2 sites. One is operated by the Yellowstone Electric Limited Partnership (YELP) as a condition of their air quality permit (Johnson Lane, 30-111-2006), and two are operated by a consortium of local SO_2-emitting

industries (the Billings Laurel Air Quality Technical Committee or BLAQTC: Brickyard 30-111-2005, and Laurel 30-111-0016. A third site, Lockwood, 30-111-1065 failed in 2011 and was not replaced). The Department has historically performed periodic quality assurance audits of these sites and has entered their data into AQS; but suspended these efforts in 2011 due to resource constraints. Both BLAQTC and YELP operate under their own approved Quality Assurance Project Plans (QAPPs) as individual Primary Quality Assurance Organizations (PQAOs) independent of the Department. The Department believes that the data obtained from the YELP and BLAQTC monitors meet the commitments of the individual QAPPs and are therefore of regulatory quality. Currently, the Department looks principally to the Coburn Road SLAMS monitor for NAAQS compliance determination in the Billings area, but continues to examine the YELP and BLAQTC data for contrast and comparison purposes, and may use the YELP and BLAQTC data for NAAQS compliance evaluation in the future as necessary.

F. Nitrogen Dioxide (NO_2) Requirements

The minimum number of NO_2 monitoring sites required by EPA is summarized in Table 5.

Table 5 – EPA Minimum NO_2 Monitoring Requirements[1].

Criteria	Minimum Number of Near-Road NO_2 Monitors Required[2]
CBSA Population ≥ 500,000	1
CBSA Population ≥ 2.5 million	2
CBSA Population ≥ 500,000 and Road Segments with annual average daily traffic counts ≥250,000	2

[1] From Appendix D to 40 CFR Part 58, Sec 4.3.2
[2] Sites must be located near major road segments with the highest average annual daily traffic (AADT) count and expected maximum hourly NO_2 concentrations.

EPA revised the NO_2 NAAQS and related monitoring requirements in January, 2010. Per EPA communication, the new requirements focus on measuring:

- "Peak, short-term concentrations – primarily near major roads in urban areas;
- Highest concentrations of NO_2 that occur over wider community areas; and
- Concentrations impacting susceptible and vulnerable groups."

No Montana communities meet any of the listed criteria; therefore no ambient NO_2 monitors are currently required in Montana. However, the Department currently operates three non-required NO_2 monitoring sites in an effort to determine NO_2 background concentrations and potential impacts associated with the oil and gas industry in the eastern part of the state. NO_2 is monitored at Sidney (30-083-0001), Broadus (30-075-0001), and Birney (30-087-0001). The Department is currently installing two additional NO_2 monitors at new sites in the communities of Malta and Lewistown in partnership with the BLM for a similar purpose.

In a separate effort, the Department also monitors NO_2 at a location just inside the west entrance to Yellowstone National Park. The instrument is operated in support of the National Park Service and is principally present to monitor traffic impacts to this significant Class 1 area, particularly in the wintertime.

G. Carbon Monoxide (CO) Requirements

Per 40 CFR 58 Appendix D Section 4.2.1, the EPA requirements for CO monitoring sites are closely related to the requirements for near-road NO_2 monitoring sites. Table 6 summarizes the number of required CO monitoring sites.

Table 6 – EPA Minimum CO Monitoring Requirements

Criteria	Number of Near-Road CO Monitors Required[1]
CBSA Population ≥ 1,000,000	One, collocated with an NO_2 monitor or in an alternative location approved by the EPA Regional Administrator

[1] From Appendix D to 40 CFR Part 58, Sec 4.2.1

No Montana CBSAs meet the listed criteria, and no CO monitors are required on this basis. However, in Montana, as in most other states, ambient CO concentrations are normally closely associated with motor vehicle emissions. Ambient CO concentrations increase near locations with high traffic volumes and under conditions of poor atmospheric ventilation. Historically, the Department and local county air programs have conducted CO monitoring in various larger communities in the state. Most notably, the areas around Missoula, Great Falls, and Billings have previously been designated as areas of nonattainment with the CO NAAQS. Subsequently, however, all three areas were redesignated as attainment, with Great Falls and Billings becoming established as "Limited Maintenance Plan" (LMP) areas, and Missoula as a "Maintenance Plan" (MP) area.

As part of that redesignation the Department produced required CO control strategies for all three communities, including continuous ambient CO monitoring which was performed for a number of years. As traffic patterns were improved and the general vehicle fleet became newer, monitored CO concentrations in the ambient air became extremely low in the three communities, and with EPA approval the Department reduced its CO monitoring schedule to include only the 6 months comprising the 1st and 4th quarters of each calendar year when atmospheric ventilation is at its worst. EPA requires states to develop a second LMP eight years following the approval of the first and submit it to EPA for inclusion in the State Implementation Plan (SIP). The Department's revised CO LMPs submitted in 2011 proposed the elimination of ambient CO monitoring based on the accumulation of many years of very low monitored ambient CO values. The Department is interacting with EPA to formulate the most prudent and appropriate maintenance plans for the future, including proposed alternative

monitoring strategies in the affected LMP areas. Pending the outcome of the currently proposed alternative monitoring strategies the Department intends to revise the Missoula CO Maintenance SIP and propose the same alternative strategy for the Missoula Maintenance Area. CO monitoring has been suspended in all three communities as a result.

In a separate effort, the Department continues to monitor CO at a location just inside the west entrance to Yellowstone National Park. The instrument is operated in support of the National Park Service and is principally present to monitor traffic impacts to this significant Class 1 area, particularly in the wintertime.

H. National Core Monitoring Site (NCore) Requirements

Section 3 of Appendix D to 40 CFR 58 requires that each state operate at least one NCore multipollutant monitoring site. 40 CFR 58.13(a) details that each NCore site must be established and operating no later than January 1, 2011. By definition, each NCore site must include monitoring equipment to measure $PM_{2.5}$, $PM_{10\text{-}2.5}$, speciated $PM_{2.5}$, O_3, SO_2, CO, NO_Y, lead, and basic meteorology. The majority of NCore sites across the nation are established in urban areas. In Montana, the NCore site was established as a long-term-trend background site in an area believed to be relatively pristine and un-impacted by human activities.

The Montana NCore site (Sieben's Flat, 30-049-0004) was installed in late 2010. All parameters were functional and acquiring data within the first week of January 2011 and have been operated continuously through the date of this report.

Quality assurance concerns have been a challenge in the operation of the trace-level gas analyzers at the NCore site, particularly regarding the consistency in the way these analyzers respond to zero concentrations of test gases and the appropriateness of EPA-published guidelines for the limits of acceptability on these very low-level instruments. In a related matter, the Department recently discovered issues with over-supplying volumes of calibration and test gases to the NO_Y analyzer resulting in a significant loss of data for calendar year 2011.

The monitoring directives in 40 CFR Appendix D Section 4.8 contains specific requirements for the operation of monitors for $PM_{10\text{-}2.5}$. These requirements are currently limited in application to NCore monitoring sites and are fully met in Montana's NCore site at Sieben's Flat.

I. Other Monitoring Requirement Issues

Monitors Not Meeting Siting Criteria

The Department designs its network and operates the air monitoring sites in compliance with EPA's requirements for ambient air monitoring sites (40 CFR Part 58, Appendices A, C, D and E).

Within the Department's network there are four sites that do not meet all of the Appendix E siting requirements. The Hamilton - PS#46 (30-081-0007) $PM_{2.5}$ site is located within 15 meters of paved city streets, but is operated as a neighborhood-scale site and not intended as a "traffic corridor" monitor as discussed 40 CFR 58 Appendix E Section 6.3. The roads receive extremely low traffic counts, and EPA has approved (granted a waiver) of the continued operation of this site as a neighborhood scale site in response to previous Annual Network Report documents submitted by the Department.

Three PM_{10} monitors located in eastern Montana, Sidney (30-083-0001), Broadus (30-075-0001), and Birney (3-087-0001), were established to describe background concentrations of this pollutant on a neighborhood or broader scale. Each of the three sites is located in a remote region, and of logistic necessity, near unpaved gravel roads traveled by ranching and oilfield equipment. As a result, the monitors are unduly influenced by that traffic and are not appropriately representing background PM_{10} concentrations in their intended scaled scope. However, the Department desires to continue to operate these monitors as part of a suite of instruments located at these sites. Consequently, the Department proposes to redesignate the PM_{10} monitors at Broadus and Birney as special purpose monitors (SPM) producing non-regulatory (NR) quality data. The Sidney PM_{10} monitor is already designated as producing NR data.

Processes for Moving $PM_{2.5}$ Monitors

If circumstances were to make it necessary or desirable to relocate a $PM_{2.5}$ monitor with data exceeding a NAAQS, the change would be discussed between the local county program (if one exists), and the Permitting, Planning, Compliance, Registration and Monitoring sections of the Department's Air Resources Management Bureau. The Air Monitoring Section would solicit public feedback through the public comment period of the annual Monitoring Network Plan. Simultaneously, the Department would solicit comments from the EPA Region 8 office for the proposed change. No change would be made without demonstrating that a replacement site produced comparably high values unless circumstances precluded such a comparison. Montana does not have any "community monitoring zones" and does not anticipate creating any, so the impact of relocating a site on such zones is not relevant.

$PM_{2.5}$ Spatial Scales and Monitoring Methods

The data from $PM_{2.5}$ monitoring sites with spatial scales designated as smaller than "neighborhood" is generally not used for $PM_{2.5}$ NAAQS compliance review purposes. The only $PM_{2.5}$ site in the Montana network of this nature is the instrument at the west entrance to Yellowstone National Park (30-031-0017). All other $PM_{2.5}$ monitors designated as Federal Reference Method or equivalent (FRM/FEM) generate data suitable for determining compliance with the $PM_{2.5}$ NAAQS. The Department has historically operated non-FEM $PM_{2.5}$ monitoring equipment for general information purposes, and will continue to do so. The tables in Appendix B discriminate between FRM, FEM and non-FEM $PM_{2.5}$ instrumentation operated within the Department's network.

III. Proposed Changes to the Monitoring Network

Introduction

The Department's Air Monitoring Section regards the requirement to develop and submit an Annual Network Plan to EPA as an opportunity to review the existing air monitoring network and to plan for future needs. Typically, in the process of producing this document the Department reviews air pollutant trends, known and projected emission changes, and revisions to the NAAQS and monitoring rules; then attempts to balance those realities against available resources. The changes proposed in this document reflect the results of that process.

This year the proposed changes to Montana's ambient air monitoring network are minor, and include only five items:

A. Change from FRM to FEM PM_{10} monitoring at Thompson Falls;
B. Add new monitoring stations at Malta and Lewistown;
C. Add a collocated $PM_{2.5}$ monitor at Butte;
D. Redesignate PM_{10} monitor types at Broadus and Birney; and
E. Redesignate select monitor types at Sidney.

A discussion of each of these areas follows. All the network changes proposed by the Department are summarized in a table in Appendix C.

A. Change from FRM to FEM PM_{10} monitoring at Thompson Falls

As noted in Section I.C. above the Department continues to operate PM_{10} monitors in seven areas historically designated as nonattainment for the 24-hour PM_{10} NAAQS and in several locations to determine background concentrations. At present, all PM_{10} monitoring conducted by the Department is performed via continuous Met One Beta Attenuation Monitors (BAMs), except at Thompson Falls (30-089-0007). The Thompson Falls PM_{10} monitoring site is comprised of FRM filter-based monitors operating every sixth day along with a collocated FRM operating every twelfth day. The Department prefers the BAM for the collection of particulate matter data for several reasons, particularly because the BAM provides continuous data. Continuous data is much more comprehensive and is immediately available while the filter data provides no information for five of every six days and is typically not available until weeks after the monitoring run. In addition, the BAMs are cheaper to operate and require less local operator engagement. Consequently, the Department proposes to replace the PM_{10} FRMs at Thompson Falls with a continuously-operating Met One BAM in the fall of 2012.

B. Add new monitoring stations at Malta and Lewistown

In 2011 the Department was approached by the BLM to join in a collaborative effort to perform ambient air quality monitoring in central and north-central Montana; vast areas noticeably lacking any recent monitored ambient air information. The effort is intended to benefit both of the agencies and the Montana public by providing measurements of background concentrations of select pollutants in those communities as representative of the central portion of the state. This information will be useful in the air resource management efforts of both the Department and the BLM, particularly in regard to future oil and gas development and extraction throughout Montana. In addition, the accumulated data will be useful as calibration points to the BLM as it participates in a national photochemical computer modeling effort.

The two sites will be located in the communities of Malta and Lewistown. They will be equipped with instrumentation to monitor $PM_{2.5}$, PM_{10}, NO_X, and O_3; in addition to wind speed, wind direction and ambient temperature. As such, they will essentially duplicate the monitoring stations at Broadus, Birney and Sidney which were established for similar purposes. All monitored parameters will initially be designated as SPM and NR in the AQS database. The locations of these two new stations are listed in Appendix A.

C. Add a collocated $PM_{2.5}$ monitor at Butte

The Department intends to install a different method $PM_{2.5}$ BAM in the Lewistown and Malta sites (Thermo Model 5014i, Method Code 183) instead of what is currently used across the Department's network (Met One BAM, Method Code 170). According to 40 CFR 58 Appendix A Section 3.2.5 the Department's network must collocate 15% (or at least 1 monitor) of each $PM_{2.5}$ FRM or FEM method. In addition, the first collocated monitor must be a designated FRM monitor. In order to comply with this requirement the Department intends to replace the existing Met One $PM_{2.5}$ BAM in Butte with a Thermo 5014i instrument, and then add a single BGI FRM (filter-based, Method Code 116) monitor operating on a one-day-in-six schedule.

D. Redesignate PM_{10} monitor types at Broadus and Birney

As discussed in Section I.C. and I.I. above, the Department monitors background concentrations of PM_{10} in semi-remote locations near the communities of Broadus and Birney in southeastern Montana (stations 30-075-0001 and 30-087-0001 respectively). Each of these sites is located within 60 meters of unpaved gravel roads used for ranching access. The Department's analysis of the data produced by these monitors indicates episodic increases in PM_{10} concentrations associated with use of the roads and not indicative or representative of general PM_{10} concentrations in the desired monitored area. These data are therefore not appropriate for comparison with the NAAQS. However, the Department desires to continue monitoring PM_{10} in these locations to provide qualified indications of background concentrations in these areas

and to meet a monitoring goal of providing background data to the BLM. Consequently, the Department proposes to change the monitor designation for each of these instruments within AQS to SPM and NR. The Department will continue to operate the monitors with SLAMS-level quality assurance processes.

E. Redesignate select monitor types at Sidney

As noted in Appendix B, most of the monitors at the Sidney monitoring site are currently designated as an "Industrial-Non-regulatory" type class. Per EPA direction, the Department committed in its 2011 Network Plan to redesignate those monitors as SLAMS types, but the change was never accomplished within the AQS database. With the exception of the PM_{10} monitor (for reasons discussed in the previous paragraph) the Department will make those changes as part of this current Network Review process.

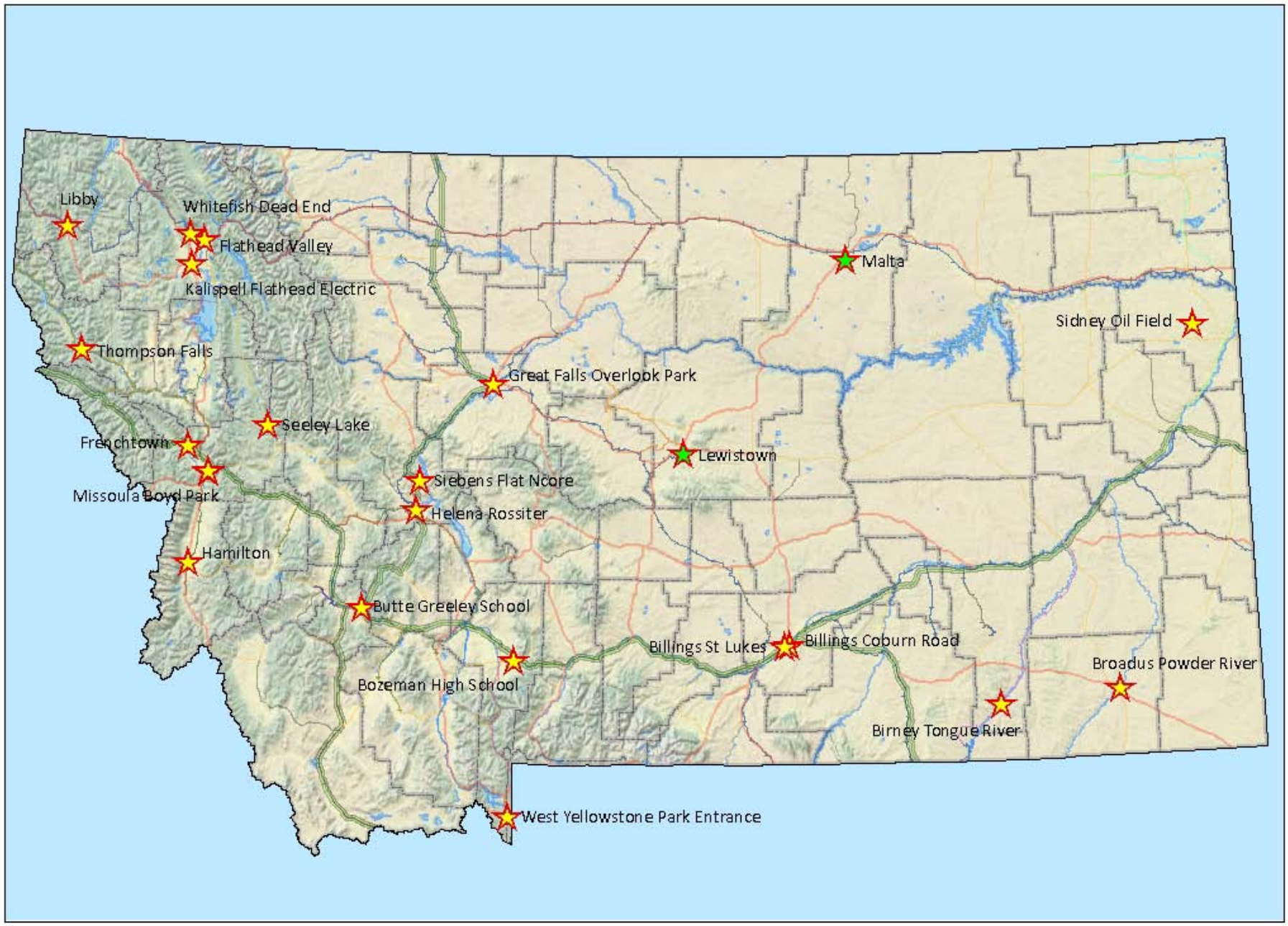
Appendix A

Monitoring Site Location Information

Montana Department of Environmental Quality

Ambient Air Monitoring Site Location Summary

AQS No.	City - Site Name	Montana Address	Longitude	Latitude	CBSA	
30-111-0066	Billings Coburn Road	Coburn Hill Rd.	-108.458785	45.786585	Metro	Billings, Yellowstone County
30-111-0085	Billings St Luke's	2nd Ave. N. and N. 32nd St.	-108.511504	45.780398	Metro	Billings, Yellowstone County
30-087-0001	Birney Tongue River	3 Miles N of Birney	-106.489715	45.366134	--	--
30-031-0019	Bozeman High School	N 15th Avenue	-111.056312	45.683764	Micro	Bozeman-Belgrade, Gallatin County
30-075-0001	Broadus Powder River	Big Powder River Road East	-105.370283	45.440295	--	--
30-093-0005	Butte Greeley School	Adams and Park	-112.501238	46.002601	Micro	Butte, Silver Bow County
30-029-0049	Flathead Valley	Talbot Road w/ of	-114.192187	48.365215	Micro	Kalispell Area, Flathead County
30-063-0037	Frenchtown Beckwith	~15316 Mullan Road	-114.224241	47.012894	Metro	Missoula, Missoula County
30-013-0001	Great Falls Overlook Park	10th Ave. S. and 2nd St. E.	-111.303170	47.494318	Metro	Great Falls, Cascade County
30-081-0007	Hamilton PS#46	Madison and 3rd St. S.	-114.158860	46.243630	--	--
30-049-0026	Helena Rossiter Pump House	1497 Sierra Rd. East	-112.013247	46.659319	Micro	Helena, Lewis and Clark County
30-029-0047	Kalispell Flathead Electric	Center St. and Woodland Ave.	-114.305410	48.200563	Micro	Kalispell Area, Flathead County
30-053-0018	Libby Courthouse Annex	418 Mineral Ave.	-115.551923	48.392120	--	--
30-027-XXXX	Lewistown	303 E. Aztec Drive, near Airport	-109.455262	47.048514	--	--
30-071-XXXX	Malta	South Oil Road	-107.862471	48.317507	--	--
30-063-0024	Missoula Boyd Park	3100 Washburn Rd.	-114.020562	46.842064	Metro	Missoula, Missoula County
30-063-0038	Seeley Lake Elem. School	School Lane	-113.476182	47.175622	--	--
30-049-0004	Sieben's Flat NCore	Unnamed County Road	-111.987151	46.850514	--	--
30-083-0001	Sidney Oil Field	Corner Cnty Roads 335 and 131	-104.486346	47.803844	--	--
30-089-0007	Thompson Falls High School	Golf and Haley	-115.324091	47.594459	--	--
30-031-0017	West Yellowstone Park Entrance	NE of West Park Entrance Gate	-111.091700	44.657385	--	--
30-029-0009	Whitefish Dead End	End of 10th St.	-114.335962	48.400520	Micro	Kalispell Area, Flathead County


Libby
Whitefish Dead End
Flathead Valley
Kalispell Flathead Electric
Thompson Falls
Seeley Lake
Frenchtown
Missoula Boyd Park
Hamilton
Great Falls Overlook Park
Siebens Flat Ncore
Helena Rossiter
Butte Greeley School
Bozeman High School
West Yellowstone Park Entrance
Malta
Sidney Oil Field
Lewistown
Billings St Lukes
Billings Coburn Road
Broadus Powder River
Birney Tongue River
0 25 50 100 Miles
Montana AQ Monitoring Sites
May, 2012

Appendix B

Existing and Proposed Air Monitoring Network

Montana Department of Environmental Quality

EXISTING Ambient Air Quality Monitoring Network By Location

May, 2012

AQS Number	Site Name	Pollutant	Param-POC	Method Code	Note[5]	PM	Frequency	Type[6]	Spatial Scale	Monitoring Objective[1]	2012 Change
30-111-0066	Billings-Coburn Road	SO_2	42401-1	100	7		Continuous	SLAMS	Neigh.	H,S	
		SO_2 - 5 min	42406-1	100	7		Continuous	SLAMS	Neigh.	H,S	
30-111-0085	Billings-St. Luke's	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM	Micro.	P	
30-087-0001	Birney-Tongue River	NO	42601-1	074	11		Continuous	SLAMS	Neigh.	B	
		NO_2	42602-1	074	11		Continuous	SLAMS	Neigh.	B	
		NO_X	42603-1	074	11		Continuous	SLAMS	Neigh.	B	
		O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	B	
		PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	B	✓
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	B	
30-031-0019	Bozeman-High School	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM	Neigh.	P	
30-075-0001	Broadus-Powder River	NO	42601-1	074	11		Continuous	SLAMS	Neigh.	B	
		NO_2	42602-1	074	11		Continuous	SLAMS	Neigh.	B	
		NO_X	42603-1	074	11		Continuous	SLAMS	Neigh.	B	
		O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	B	
		PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	B	✓
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	B	
30-093-0005	Butte-Greeley School	PM_{10}	81102-4	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	✓
		$PM_{2.5}$ Spc'n	Various		6	FRM	1 in 6		Neigh.	H,P	
30-029-0049	Flathead Valley	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh	P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh	P	
30-063-0037	Frenchtown-Beckwith	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	P	
30-013-0001	Great Falls-Overlook Park	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM	Middle	H,P	
30-081-0007	Hamilton-Parking Spot #46	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
30-049-0026	Helena-Rossiter Pump House	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-2	116	2	FRM	1 in 6 coll[2]	QA Col		H,P	
30-029-0047	Kalispell-Flathead Electric	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
30-053-0018	Libby-Courthouse Annex	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
30-063-0024	Missoula-Boyd Park	O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	P	
		PM_{10}	81102-6	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-4	170	8	FEM	Continuous - coll[3]	QA Col		H,P	
30-063-0038	Seeley Lake-Elem. School	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM NR	Neigh.	H,P	
30-083-0001	Sidney-Oil Field	NO	42601-1	099	10		Continuous	ID NR	Neigh.	S	✓
		NO_2	42602-1	099	10		Continuous	ID NR	Neigh.	S	✓
		NO_X	42603-1	099	10		Continuous	ID NR	Neigh.	S	✓
		O_3	44201-1	047	9		Continuous	ID NR	Neigh.	S	✓
		SO_2	42401-1	100	7		Continuous	SLAMS	Neigh.	S	
		SO_2 - 5 min	42406-1	100	7		Continuous	SLAMS	Neigh.	S	
		PM_{10}	81102-1	122	4	FEM	Continuous	ID NR	Neigh.	S	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	ID NR	Neigh.	S	✓
30-049-0004	Sieben's Flat (NCore)	CO	42101-1	554	13		Continuous	NCore	Region	B	
		NO	42601-1	574	15		Continuous	NCore	Region	B	
		NOy	42600-1	574	15		Continuous	NCore	Region	B	
		O_3	44201-1	047	9		Continuous	NCore	Region	B	
		SO2	42401-1	600	14		Continuous	NCore	Region	B	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	NCore	Region	B	
		$PM_{2.5}$	88101-1	116	2	FRM	1 in 3	NCore	Region	B	
		$PM_{2.5}$ Spc'n	Various		6	FRM	1 in 3	NCore	Region	B	
		PM_{coarse}	86101-1	185	12	FEM	Continuous	NCore	Region	B	
30-089-0007	Thompson Falls-High School	PM_{10}	81102-1	125	3	FRM	1 in 6	SLAMS	Neigh.	H,P	✓
		PM_{10}	81102-2	125	3	FRM	1 in 12 coll[2]	QA Col	Neigh.	H,P	✓
30-031-0017	West Yellowstone-Park Entrance	CO	42101-1	093	1		Continuous	SPM NR	Micro	S	
		NO	42601-1	099	10		Continuous	SPM NR	Micro	S	
		NO_2	42602-1	099	10		Continuous	SPM NR	Micro	S	
		NO_X	42603-1	099	10		Continuous	SPM NR	Micro	S	
		$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM NR	Micro	S	
30-029-0009	Whitefish-Dead End	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	P	

Montana Department of Environmental Quality

PROPOSED Ambient Air Quality Monitoring Network By Location

May, 2012

AQS Number	Site Name	Pollutant	Param-POC	Method Code	Method Note[5]	Method PM	Frequency	Type[6]	Spatial Scale	Monitoring Objective[1]	2012 Change
30-111-0066	Billings-Coburn Road	SO_2	42401-1	100	7		Continuous	SLAMS	Neigh.	H,S	
		SO_2 - 5 min	42406-1	100	7		Continuous	SLAMS	Neigh.	H,S	
30-111-0085	Billings-St. Luke's	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM	Micro.	P	
30-087-0001	Birney-Tongue River	NO	42601-1	074	11		Continuous	SLAMS	Neigh.	B	
		NO_2	42602-1	074	11		Continuous	SLAMS	Neigh.	B	
		NO_X	42603-1	074	11		Continuous	SLAMS	Neigh.	B	
		O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	B	
		PM_{10}	81102-1	122	4	FEM	Continuous	SPM NR	Neigh.	B	✓
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	B	
30-031-0019	Bozeman-High School	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM	Neigh.	P	
30-075-0001	Broadus-Powder River	NO	42601-1	074	11		Continuous	SLAMS	Neigh.	B	
		NO_2	42602-1	074	11		Continuous	SLAMS	Neigh.	B	
		NO_X	42603-1	074	11		Continuous	SLAMS	Neigh.	B	
		O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	B	
		PM_{10}	81102-1	122	4	FEM	Continuous	SPM NR	Neigh.	B	✓
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	B	
30-093-0005	Butte-Greeley School	PM_{10}	81102-4	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	183	21	FEM	Continuous	SLAMS	Neigh.	H,P	✓
		$PM_{2.5}$	88101-2	116	2	FRM	1 in 6 coll[2]	QA Col	Neigh.	H,P	✓
		$PM_{2.5}$ Spc'n	Various		6	FRM	1 in 6	CSN	Neigh.	H,P	
30-029-0049	Flathead Valley	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh	P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh	P	
30-063-0037	Frenchtown-Beckwith	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	P	
30-013-0001	Great Falls-Overlook Park	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM	Middle	H,P	
30-081-0007	Hamilton-Parking Spot #46	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
30-049-0026	Helena-Rossiter Pump House	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-2	116	2	FRM	1 in 6 coll[2]	QA Col		H,P	
30-029-0047	Kalispell-Flathead Electric	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
30-053-0018	Libby-Courthouse Annex	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
30-027-XXXX	Lewistown	NO	42601-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		NO_2	42602-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		NO_X	42603-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		O_3	44201-1	047	9		Continuous	SPM NR	Neigh.	B	✓
		PM_{10}	81102-1	150	22	FEM	Continuous	SPM NR	Neigh.	B	✓
		$PM_{2.5}$	88101-3	183	21	FEM	Continuous	SPM NR	Neigh.	B	✓
30-071-XXXX	Malta	NO	42601-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		NO_2	42602-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		NO_X	42603-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		O_3	44201-1	047	9		Continuous	SPM NR	Neigh.	B	✓
		PM_{10}	81102-1	150	22	FEM	Continuous	SPM NR	Neigh.	B	✓
		$PM_{2.5}$	88101-3	183	21	FEM	Continuous	SPM NR	Neigh.	B	✓
30-063-0024	Missoula-Boyd Park	O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	P	
		PM_{10}	81102-6	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-4	170	8	FEM	Continuous - coll[3]	QA Col		H,P	

(Continued…)

AQS Number	Site Name	Pollutant	Param-POC	Method Code	Method Note[5]	Method PM	Frequency	Type[6]	Spatial Scale	Monitoring Objective[1]	2012 Change
30-063-0024	Missoula-Boyd Park	O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	P	
		PM_{10}	81102-6	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-4	170	8	FEM	Continuous - coll[3]	QA Col		H,P	
30-063-0038	Seeley Lake-Elem. School	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM NR	Neigh.	H,P	
30-083-0001	Sidney-Oil Field	NO	42601-1	099	10		Continuous	SLAMS	Neigh.	S	✓
		NO_2	42602-1	099	10		Continuous	SLAMS	Neigh.	S	✓
		NO_X	42603-1	099	10		Continuous	SLAMS	Neigh.	S	✓
		O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	S	✓
		SO_2	42401-1	100	7		Continuous	SLAMS	Neigh.	S	
		SO_2 - 5 min	42406-1	100	7		Continuous	SLAMS	Neigh.	S	
		PM_{10}	81102-1	122	4	FEM	Continuous	ID NR	Neigh.	S	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	S	✓
30-049-0004	Sieben's Flat (NCore)	CO	42101-1	554	13		Continuous	NCore	Region	B	
		NO	42601-1	574	15		Continuous	NCore	Region	B	
		NOy	42600-1	574	15		Continuous	NCore	Region	B	
		O_3	44201-1	047	9		Continuous	NCore	Region	B	
		SO2	42401-1	600	14		Continuous	NCore	Region	B	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	NCore	Region	B	
		$PM_{2.5}$	88101-1	116	2	FRM	1 in 3	NCore	Region	B	
		$PM_{2.5}$ Spc'n	Various		6	FRM	1 in 3	NCore	Region	B	
		PM_{coarse}	86101-1	185	12	FEM	Continuous	NCore	Region	B	
30-089-0007	Thompson Falls-High Sch	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	P	✓
30-031-0017	West Yellowstone-Park Entrance	CO	42101-1	093	1		Continuous	SPM NR	Micro	S	
		NO	42601-1	099	10		Continuous	SPM NR	Micro	S	
		NO_2	42602-1	099	10		Continuous	SPM NR	Micro	S	
		NO_X	42603-1	099	10		Continuous	SPM NR	Micro	S	
		$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM NR	Micro	S	
30-029-0009	Whitefish-Dead End	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	P	

Footnotes

[1] **Monitoring Objective Descriptions:** B = Background, H = Highest Concentration, P = Population Exposure, S = Source Impact

[2] **"Coll"** = collocated sampler

[3] **"Continuous Coll"** = collocated continuous (BAM) sampler

[4] **"Contin 1st/4th Qtr"** = Analyzer operates continuously, but only during the first and fourth calendar quarters of each year.

[5] **Method Notes :**

1 Teledyne-API Model 300. Nondispersive infrared-equivalent method.
2 BGI-PQ200 with very sharp cut cyclone. Federal Reference Method.
3 BGI-PQ200 with WINS eliminator. Federal Reference Method.
4 MetOne BAM 1020. Beta attenuation monitor-equivalent method PM10.
5 MetOne BAM 1020 with PM2.5 sharp cut cyclone. Beta attenuation monitor.
6 MetOne / URG Speciation Air Sampling System.
7 Teledyne-API Model 100. Ultraviolet fluorescence-equivalent method.
8 MetOne FEM-BAM 1020 with PM2.5 very sharp cut cyclone. Beta attenuation monitor-equivalent method PM2.5.
9 Thermo Model 49i. UV absorption-equivalent method.
10 Teledyne-API Model 200EV. Chemiluminescence-Federal Reference Method.
11 Thermo Model 42i TL. Chemiluminescence-Federal Reference Method.
12 MetOne BAM1020 PM10-2.5 Measurement System. Paired beta attenuation monitors.
13 Thermo Model 48i-TLE. Enhanced Trace Level CO Analyzer
14 Teledyne-API Model 100E. Trace Level UV Fluorescence SO2 Analyzer
15 Thermo Model 42i-TLE. NO-DIF-NOy chemiluminescent specialty trace level gas analyzer
16 Climatronics Wind Mark III
17 R.M. Young Aspirated Temperature Probe and Shield
18 Climatronics Sonic Anemometer
19 MetOne Shielded Temperature Probe
20 MetOne Relative Humidity Sensor
21 Thermo Scientific FH62C14-DHS Continuous, 5014i
22 Thermo Andersen Series FH 62 C14 Beta Monitor, 5014i Beta

[6] **Type :**

SLAMS : State or Local Air Monitoring Station
SPM : Special Purpose Monitor
QA Col: Quality Assurance, Co-located Monitor
ID : Industrial Monitor
ID : Industrial Monitor
NR : Non-Regulatory Data
CSN : Chemical Speciation Network

Appendix C

Summary of Proposed Network Changes

Montana Department of Environmental Quality

Summary of Proposed Ambient Air Monitoring Network Changes

May, 2012

AQS Number	Site Name	Pollutant	Param-POC	Method Code	Method Note[5]	Method PM	Frequency	Type[6]	Spatial Scale	Monitoring Objective[1]	2012 Change
30-087-0001	Birney-Tongue River	PM_{10}	81102-1	122	4	FEM	Continuous	SPM NR	Neigh.	B	✓
30-075-0001	Broadus-Powder River	PM_{10}	81102-1	122	4	FEM	Continuous	SPM NR	Neigh.	B	✓
30-093-0005	Butte-Greeley School	$PM_{2.5}$	88101-3	183	21	FEM	Continuous	SLAMS	Neigh.	H,P	✓
		$PM_{2.5}$	88101-2	116	2	FRM	1 in 6 coll[2]	QA Col	Neigh.	H,P	✓
30-027-XXXX	Lewistown	NO	42601-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		NO_2	42602-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		NO_X	42603-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		O_3	44201-1	047	9		Continuous	SPM NR	Neigh.	B	✓
		PM_{10}	81102-1	150	22	FEM	Continuous	SPM NR	Neigh.	B	✓
		$PM_{2.5}$	88101-3	183	21	FEM	Continuous	SPM NR	Neigh.	B	✓
30-071-XXXX	Malta	NO	42601-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		NO_2	42602-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		NO_X	42603-1	074	11		Continuous	SPM NR	Neigh.	B	✓
		O_3	44201-1	047	9		Continuous	SPM NR	Neigh.	B	✓
		PM_{10}	81102-1	150	22	FEM	Continuous	SPM NR	Neigh.	B	✓
		$PM_{2.5}$	88101-3	183	21	FEM	Continuous	SPM NR	Neigh.	B	✓
30-083-0001	Sidney-Oil Field	NO	42601-1	099	10		Continuous	SLAMS	Neigh.	S	✓
		NO_2	42602-1	099	10		Continuous	SLAMS	Neigh.	S	✓
		NO_X	42603-1	099	10		Continuous	SLAMS	Neigh.	S	✓
		O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	S	✓
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	S	✓
30-089-0007	Thompson Falls-High Sch	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	P	✓

Footnotes

[1] **Monitoring Objective Descriptions:** B = Background, H = Highest Concentration, P = Population Exposure, S = Source Impact

[2] **"Coll"** = collocated sampler

[3] **"Continuous Coll"** = collocated continuous (BAM) sampler

[4] **"Contin 1st/4th Qtr"** = Analyzer operates continuously, but only during the first and fourth calendar quarters of each year.

[5] **Method Notes :**

1 Teledyne-API Model 300. Nondispersive infrared-equivalent method.
2 BGI-PQ200 with very sharp cut cyclone. Federal Reference Method.
3 BGI-PQ200 with WINS eliminator. Federal Reference Method.
4 MetOne BAM 1020. Beta attenuation monitor-equivalent method PM10.
5 MetOne BAM 1020 with PM2.5 sharp cut cyclone. Beta attenuation monitor.
6 MetOne / URG Speciation Air Sampling System.
7 Teledyne-API Model 100. Ultraviolet fluorescence-equivalent method.
8 MetOne FEM-BAM 1020 with PM2.5 very sharp cut cyclone. Beta attenuation monitor-equivalent method PM2.5.
9 Thermo Model 49i. UV absorption-equivalent method.
10 Teledyne-API Model 200EV. Chemiluminescence-Federal Reference Method.
11 Thermo Model 42i TL. Chemiluminescence-Federal Reference Method.
12 MetOne BAM1020 PM10-2.5 Measurement System. Paired beta attenuation monitors.
13 Thermo Model 48i-TLE. Enhanced Trace Level CO Analyzer
14 Teledyne-API Model 100E. Trace Level UV Fluorescence SO2 Analyzer
15 Thermo Model 42i-TLE. NO-DIF-NOy chemiluminescent specialty trace level gas analyzer
16 Climatronics Wind Mark III
17 R.M. Young Aspirated Temperature Probe and Shield
18 Climatronics Sonic Anemometer
19 MetOne Shielded Temperature Probe
20 MetOne Relative Humidity Sensor
21 Thermo Scientific FH62C14-DHS Continuous, 5014i
22 Thermo Andersen Series FH 62 C14 Beta Monitor, 5014i Beta

[6] **Type :**

SLAMS : State or Local Air Monitoring Station
SPM : Special Purpose Monitor
QA Col: Quality Assurance, Co-located Monitor
ID : Industrial Monitor
ID : Industrial Monitor
NR : Non-Regulatory Data
CSN : Chemical Speciation Network

Appendix D

National and Montana Ambient Air Quality Standards

FEDERAL & STATE AIR QUALITY STANDARDS				
Pollutant	Averaging Period	Federal (NAAQS)	State (MAAQS)	NAAQS Standard Type
Carbon Monoxide (CO)	1-Hour	35 ppm [a]	23 ppm [b]	Primary
	8-Hour	9 ppm [a]	9 ppm [b]	Primary
Fluoride in Forage	Monthly	NA	50 µg/g [c]	NA
	Grazing Season	NA	35 µg/g [c]	NA
Hydrogen Sulfide (H_2S)	1-Hour	NA	0.05 ppm [b]	NA
Lead (Pb)	Quarterly	1.5 µg/m^3 [c, o]	1.5 µg/m^3 [c]	NA
	Rolling 3-Month	0.15 µg/m^3 [c]	NA	Primary & Secondary
Nitrogen Dioxide (NO_2)	1-Hour	100 ppb [d]	0.30 ppm [b]	Primary
	Annual	53 ppb [e]	0.05 ppm [f]	Primary & Secondary
Ozone (O_3)	1-Hour	0.12 ppm [g]	0.10 ppm [b]	Primary & Secondary
	8-Hour	0.075 ppm [h] (2008 std)	NA	Primary & Secondary
	8-Hour	0.08 ppm [i] (1997 std)	NA	Primary & Secondary
Particulate Matter ≤ 10 µm (PM_{10})	24-Hour	150 µg/m^3 [j]	150 µg/m^3 [j]	Primary & Secondary
	Annual	NA	50 µg/m^3 [k]	Primary & Secondary
Particulate Matter ≤ 2.5 µm ($PM_{2.5}$)	24-Hour	35 µg/m^3 [l]	NA	Primary & Secondary
	Annual	15.0 µg/m^3 [m]	NA	Primary & Secondary
Settleable PM	30-Day	NA	10 g/m^2 [c]	NA
Sulfur Dioxide (SO_2)	1-Hour	75 ppb [n]	0.50 ppm [p]	Primary
	3-Hour	0.5 ppm [a]	NA	Secondary
	24-Hour	0.14 ppm [a, q]	0.10 ppm [b]	Primary
	Annual	0.030 ppm [e,q]	0.02 ppm [f]	Primary
Visibility	Annual	NA	3 x 10^{-5}/m [f]	NA

[a] Federal violation when exceeded more than once per calendar year.

[b] State violation when exceeded more than once over any 12-consecutive months.

[c] Not to be exceeded (ever) for the averaging time period as described in either state or federal regulation. Pb is a 3-year assessment period for attainment.

[d] Federal violation when 3-year average of the 98th percentile of the daily maximum 1-hr average at each monitoring site exceeds the standard.

[e] Federal violation when the annual arithmetic mean concentration for a calendar year exceeds the standard.
[f] State violation when the arithmetic average over any four consecutive quarters exceeds the standard.
[g] Applies only to NA areas designated before the 8-hour standard was approved in July, 1997. MT has none.
[h] Federal violation when 3-year average of the annual 4th-highest daily max. 8-hour concentration exceeds standard. (effective May 27, 2008)
i To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard. EPA is in the process of reconsidering these standards (set in March 2008).
[j] State and federal violation when more than one expected exceedance per calendar year, averaged over 3-years.
[k] State violation when the 3-year average of the arithmetic means over a calendar year at each monitoring site exceed the standard.
[l] Federal violation when 3-year average of the 98th percentile 24-hour concentrations at each monitoring site exceed the standard.
[m] Federal violation when 3-year average of the annual mean at each monitoring site exceeds the standard.
[n] Federal violation when 3-year average of the 99th percentile of the daily maximum 1-hr average at each monitoring site exceeds the standard. Promulgated June 2, 2010. Expected effective date mid-August, 2010.
[o] The 1978 Pb NAAQS will remain effective until one year after designations are effective for the October 15, 2008, revised Pb NAAQS (0.15 $\mu g/m^3$), except in existing Pb nonattainment areas (East Helena, MT). In East Helena, EPA will retain the 1978 Pb NAAQS until EPA approves attainment and/or maintenance demonstrations for the revised Pb NAAQS.
[p] State violation when exceeded more than eighteen times in any 12 consecutive months.
[q] The 1971 SO_2 NAAQS will remain effective until one year after designations are effective for the June 2, 2010, revised SO_2 NAAQS (75 ppb), except in existing SO_2 nonattainment areas (Laurel and East Helena, MT). In Laurel and East Helena, EPA will retain the 1971 SO_2 NAAQS until EPA approves attainment and/or maintenance demonstrations for the revised SO_2 NAAQS.

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