Montana Department of Environmental Quality

AIR QUALITY

2026 ANNUAL MONITORING NETWORK PLAN

May 21, 2026

DEQ MONTANA

Montana Department of Environmental Quality
Air Quality Bureau

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Introduction

The Montana Department of Environmental Quality (MTDEQ) Air Quality Bureau conducts scientific measurements of specific harmful pollutants in the ambient air across Montana. MTDEQ continuously evaluates its air measurement or "monitoring" efforts to ensure they remain valid, effective, efficient, high quality, and in-step with the changing realities of the state. On an annual basis, MTDEQ formally documents the results of those evaluations and any proposed monitoring changes that result. The document is made available for public review and comment, revised as appropriate, and then submitted to the federal Environmental Protection Agency (EPA) for approval. The document is referred to as an Annual Monitoring Network Plan (AMNP).

Each MTDEQ AMNP is developed in accordance with the requirements of Title 40 of the Code of Federal Regulations Part 58.10 (40 CFR 58.10). As an introduction to this process, it is helpful to see each AMNP as a snapshot of MTDEQ's ambient air monitoring program comprised of three time periods:

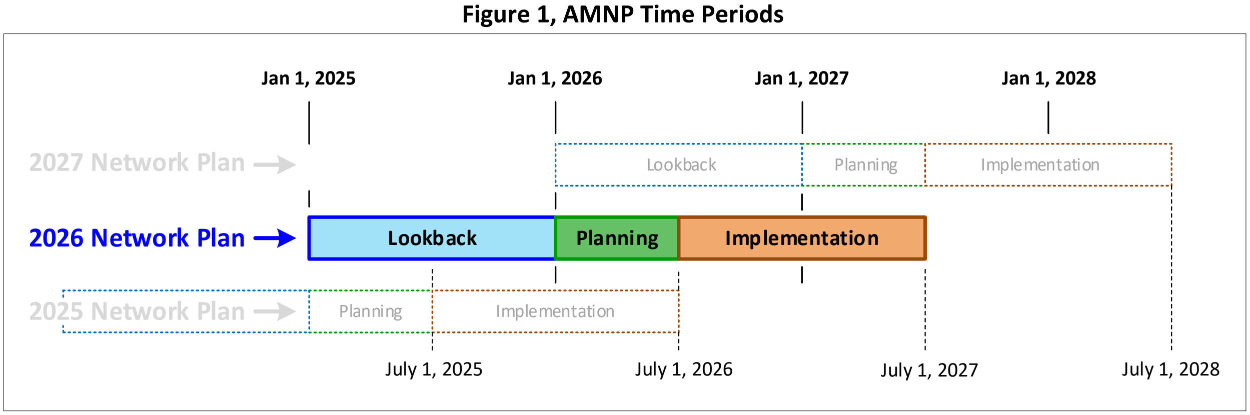
1. A one year "**lookback**" period representing the last full calendar year of monitoring network performance and results. In this case, the lookback period is calendar year 2025 (see the paragraph titled *Metrics for NAAQS Compliance* in the *Background* section below for a better understanding of this period).

2. A six month "**planning**" period in which the existing ambient air monitoring network is evaluated and documented. Assessments are made of any modified data needs, changing air pollution impacts, fulfilled monitoring objectives, new regulatory requirements, and the best application of available resources. In that light, proposals are considered on whether and how best to tailor the network. The results of the evaluation are drafted into a plan for upcoming network implementation within the overarching goals and objectives outlined in MTDEQ's most recent ambient air monitoring *5-Year Network Assessment* per 40 CFR 58.10(d). The planning period includes 30 days for public review and comment and possible resulting plan revision before it is submitted to EPA by July 1 of each year. The current planning period is January 1 through June 30, 2026.

3. A twelve month "**implementation**" period, during which, after EPA approval, MTDEQ pursues the objectives of the finalized plan. The implementation period foreseen by this document is July 1, 2026, through June 30, 2027.

Note that the three time periods represented by each year's AMNP overlap with the previous and following years, so network evaluation, planning, and implementation are always occurring. Figure 1 graphically represents these ongoing time period relationships.

Figure 1, AMNP Time Periods



This AMNP consists of five broad sections:

1. **Introduction** and **Background**.
2. **Section I, Air Monitoring Network Summary** describes the various pollutant-specific ambient air monitoring design requirements, explains how and why MTDEQ has implemented each, and summarizes the results of monitoring conducted in the previous calendar year.
3. **Section II, Proposed Changes to the Network** describes changes to the monitoring network that MTDEQ is proposing to make in the following year.
4. **Section III, Sensor Monitoring** describes MTDEQ's implementation of sensor devices across the state to supplement the monitoring network.
5. **Section IV, Appendices** provides supplemental information and data in support of specific elements outlined within the AMNP.

Background

Ambient Air and Criteria Pollutants

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 Federal Clean Air Act requires the EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants in the ambient air known as "criteria air pollutants." Criteria air pollutants are the most common air pollutants with known harmful human health effects. The six criteria pollutants are Ozone (O_3), Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Sulfur Dioxide (SO_2), Lead (Pb), and Particulate Matter (PM). PM concentrations in ambient air are currently regulated and measured in two size fractions, those with an aerodynamic diameter of 10 microns and less (PM_{10}), and those with an aerodynamic diameter of 2.5 microns and less ($PM_{2.5}$). At one Montana monitoring station, MTDEQ measures concentrations of an additional PM fraction referred to as PM_{coarse} or $PM_{10-2.5}$ which is the airborne portion of PM_{10} larger in aerometric diameter than $PM_{2.5}$.

For each criteria air pollutant, NAAQS limits are established and implemented to protect public health and the environment. Two types of federally mandated air quality standards exist. Primary standards set limits to protect *public health*, including the health of at-risk populations such as people with pre-existing heart or lung disease (e.g., asthma or COPD), children, and older adults. Secondary standards set limits to protect *public welfare*, including protection against visibility impairment and damage to animals, crops, vegetation, and buildings. Montana has, in the past, adopted similar in-state-only air quality standards known as the Montana Ambient Air Quality Standards (MAAQS). These standards have generally, but not completely, been superseded by more stringent NAAQS. Unique, Montana-specific MAAQS for fluoride in forage, hydrogen sulfide, and settleable PM remain in place.

Measuring Criteria Pollutants

To determine if the NAAQS are being met, federal rules require each state to establish a network of monitors to measure concentrations of the criteria pollutants in ambient air. The types, locations and numbers of required monitors within each state are based on population and the measured concentrations of air pollutants impacting those populations. However, air pollution impacts unique to an individual state or localities within a state may warrant the operation of monitors beyond those required by federal rule. This dynamic is true in the state of Montana, most particularly regarding the impacts of $PM_{2.5}$ as discussed in detail in Sections I.G. and III.B. of this document. As a result, MTDEQ's air monitoring network is established and operated in conformance with the federal requirements as a baseline, with other types, locations and numbers of monitors added to meet the specific needs of Montana. Increasingly, new and developing monitoring technology known as "air sensors" are proving to be of value in MTDEQ's statewide monitoring efforts.

MTDEQ's aggregated air monitoring and sensor network design and operation are conducted in conformity with three essential overall objectives as detailed in 40 CFR 58 Appendix D Section 1.1:

1. Provide air pollution data to the general public in a timely manner.
2. Support compliance with ambient air quality standards (the NAAQS) and emissions strategy development.
3. Support air pollution research studies.

The content of this AMNP reflects the pursuit of these three objectives.

Designations of Higher-Populated Areas

As introduced above, the federal rules directing monitoring network design focus significantly on human population size and density. When assessing these factors, the rules use population-based designations established by the federal Office of Management and Budget (OMB) and the United States Census Bureau summarized together as "Core Based Statistical Areas" (CSBAs). By federal definition, a CBSA is a geographic space defined by at least one *urbanized area* with surrounding adjacent territory that has a high degree of social and economic integration with the core population. A CBSA with at least one urbanized area of 50,000 or more people is termed a *Metropolitan* or *Metro* Statistical Area (MSA). A CBSA with at least one urbanized cluster of 10,000 to 50,000 people is termed a *Micropolitan* or *Micro* Statistical Area. Montana currently has five federally designated MSAs: Billings, Bozeman, Helena, Great Falls, and Missoula; and two Micropolitan Statistical Areas: Kalispell and Butte-Silver Bow (maps of these areas are included in Appendix B). These population-summarizing designations are used throughout this AMNP document.

Metrics for NAAQS Compliance

The means of assessing whether monitored ambient air pollution concentrations are within the federal NAAQS limits is reflected in a concept referred to as a "design value." A design value is a statistic that describes the air quality concentration of a criteria pollutant at a given location relative to the limits and form of the NAAQS. For example, if a NAAQS limit is in the form of a *three-year* average, then monitored *hourly* values cannot be directly compared to that standard to determine if the ambient air quality complies with the NAAQS. To make such a comparison, hourly measurements must be mathematically transformed into the same units as the NAAQS. In the example above, the hourly measured values must be assembled into a three-year average (the design value) so that a direct comparison may be made with the corresponding NAAQS limits. It is important to understand that a design value calculated in this fashion is named by the most recent of the three years in the average, so the "2025 design value" in this example represents data from 2023, 2024, and 2025. The design value calculation processes for each criteria pollutant are communicated in detail in 40 CFR Part 50. Design values are referred to throughout this AMNP document.

I. 2025 Ambient Air Monitoring Network Summary

This section summarizes the ambient air monitoring requirements for each of the criteria air pollutants and explains MTDEQ's implementation of those requirements through calendar year 2025. Proposed changes to the monitoring network are detailed in Section II.

A. O_3 Monitoring

Required O_3 Monitoring

The minimum number of ozone (O_3) monitors required in a network is defined by the federal Design Criteria found in Section 4.1 of Appendix D to 40 CFR Part 58. Table 1.A.1 summarizes those requirements.

Table 1.A.1 - 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 percent (%) 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 Metropolitan Statistical Areas (MSAs).
(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) An MSA must contain an urbanized area of 50,000 or more people.

As introduced in the *Background* Section above and described in Appendix B to this Plan, Montana had five designated MSAs through 2025. All five of the MSAs fall within the 50,000 to 350,000 population range listed in Table 1.A.1. MTDEQ monitored O_3 in three of the five MSAs throughout 2025 as listed in Table I.A.2:

Table I.A.2 – Montana DEQ 2025 O_3 MSA Monitoring Sites

Station Name	AQS Code
Billings-Lockwood	30-111-0087
Missoula	30-063-0024
NCore (Helena MSA)	30-049-0004

In addition, significant effort was invested throughout 2025 and thus far in 2026 to establish a new O_3 monitoring site in the recently designated Bozeman MSA as discussed in the 2025 MTDEQ Air Monitoring Network Plan. That site is anticipated to be operational in late 2026.

The need for O_3 monitoring in the Great Falls MSA has been reviewed annually for quite some time but determined to be of low priority based on meteorological patterns including consistently windy conditions, low measured O_3 concentrations in larger Montana MSAs, and a declining population in the Great Falls area. O_3 monitoring is not currently being conducted in the Great Falls MSA, but a sensor to conduct screening-level analysis for this pollutant is anticipated to be installed in Great Falls as discussed in Section III.

Additional O_3 Monitoring

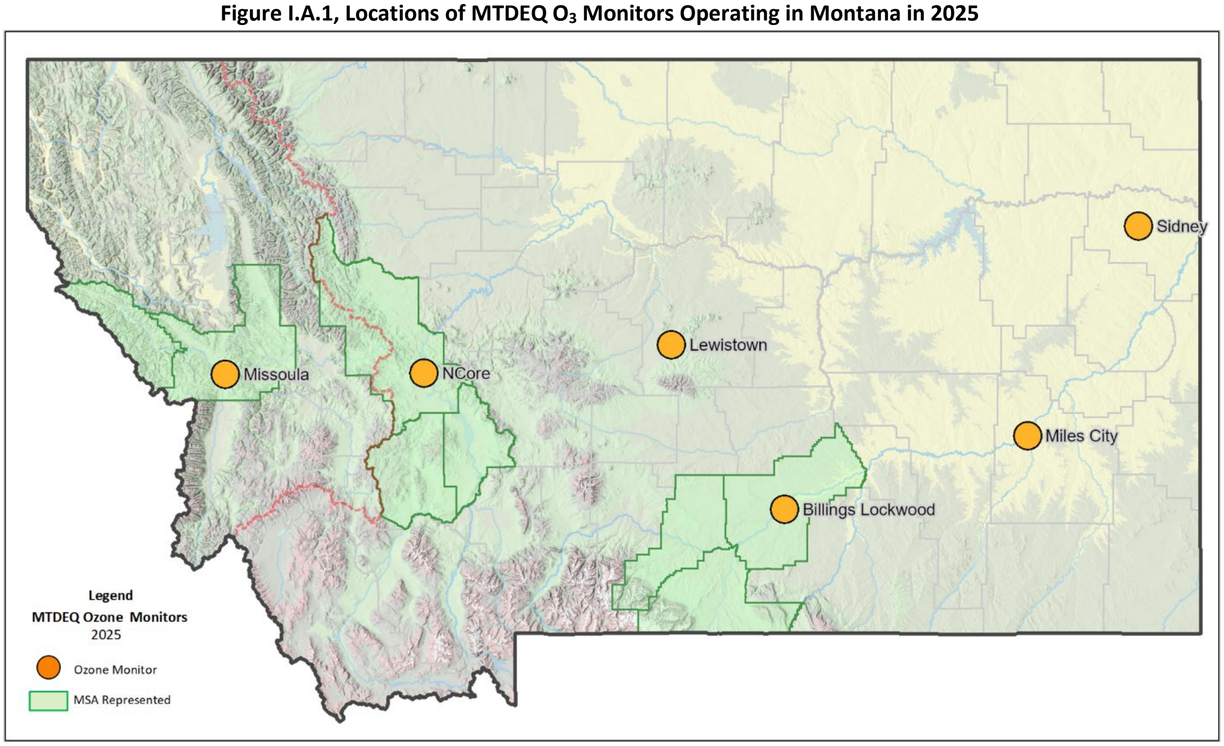
Beyond the three MSAs, MTDEQ has engaged in monitoring efforts to define and track background levels of O_3 in the eastern half of Montana to study air quality impacts from actual or anticipated industrial development and to better understand O_3 formation in the state. Going into 2025, these monitoring efforts were reduced to the three sites listed in Table I.A.3.

Table I.A.3 – Montana DEQ 2025 Additional O_3 Monitoring Sites

Station Name	AQS Code
Lewistown	30-027-0006
Miles City	30-017-0005
Sidney	30-083-0002

Figure I.A.1 displays the locations of all MTDEQ O_3 monitoring sites that operated in 2025. Appendix A provides a table listing their physical addresses and GPS locations.

Figure I.A.1, Locations of MTDEQ O_3 Monitors Operating in Montana in 2025



O_3 Monitoring Results

Table I.A.4 summarizes the 8-hour rolling average O_3 values measured at the monitoring sites operated by MTDEQ during the federally designated 2025 ozone season (April through September for Montana). Table I.A.5 summarizes the 8-hour O_3 values measured at monitoring sites operated by MTDEQ during the entire 2025 calendar year. Note that MTDEQ operates its O_3 monitors year-round rather than just during the designated ozone season in an effort to define ozone formation and behavior throughout this state.

Table I.A.4 – 8-Hour Rolling Monitored O_3 Values for the 2025 *Ozone Season* (1)

Station	Concentrations (ppm)			NAAQS Design Values (ppm) (2)		NAAQS
	Minimum	Maximum	Average	2025 (3)	2023 – 2025	
Billings-Lockwood	0.0	0.065	0.031	0.056	0.062(4)	0.070
Lewistown	0.0	0.066	0.035	0.060	0.059	
Miles City	0.0	0.066	0.031	0.056	0.057	
Missoula	0.0	0.053	0.027	0.049	0.053	
NCore	0.0	0.064	0.037	0.058	0.062	
Sidney	0.01	0.065	0.031	0.061	0.060	

(1) Ozone Monitoring Season for Montana is April through September as established under 40 CFR Part 58, Table D-3.
(2) Design Values calculated by the US EPA Air Quality System (AQS) database.
(3) The 2025 design value is the 4th-high maximum value for the year.
(4) The Billings-Lockwood monitoring station began reporting data to AQS on January 1, 2024. Therefore, a complete 3-year design value is not yet available.

Table I.A.5 – 8-Hour Rolling Monitored O_3 2025 *Annual Values*

Station	Concentrations (ppm)		
	Minimum	Maximum	Average
Billings-Lockwood	0.0	0.065	0.027
Lewistown	0.0	0.066	0.036
Miles City	0.0	0.066	0.031
Missoula	0.0	0.053	0.022
NCore	0.0	0.064	0.035
Sidney	0.0	0.066	0.033

As demonstrated in Tables I.A.4 and 5, relatively minor variability continues to be observed in the monitored ambient O_3 concentrations across the state. Missoula's measured values are slightly different (lower) than the other five stations both during the ozone season and on an annual basis, but not significantly so. The overall similarity of measured O_3 concentrations is particularly interesting given the spatial breadth, the significant topographic variability, the broad population range, and the diversity of potential industrial influences (from none to significant) in which the monitors are located. This siting diversity indicates that monitored O_3 concentrations in the ambient air across Montana represent general background levels produced principally from natural sources, stratospheric intrusion, or transported in from sources outside the state, with little anthropogenic source input from within Montana. However, increasing numbers, duration, and severity of wildfires both inside and outside state boundaries appear to be increasing measured O_3 concentrations over multi-year timeframes not represented in the data here.

Changes to O_3 Monitoring

The O_3 monitors in Sidney and Miles City have produced a body of data that demonstrates consistent background concentrations well below the O_3 NAAQS. Those monitors were established to evaluate ambient air quality impacts from oil well development and potential coal bed methane development, respectively, and to define regional pollutant concentrations. The monitors have fulfilled their intended investigatory purposes and there is no substantial air quality benefit to be gained by their continued operation. In the 2025 Network Plan, MTDEQ proposed and received EPA approval to discontinue O_3 monitoring at these two locations. O_3 monitoring at both locations was terminated at midnight on September 30, 2025.

As noted above, MTDEQ will continue working to establish a new O_3 monitoring site in the Bozeman MSA. That site is anticipated to be operational in late 2026.

O_3 Related PAMS Monitoring

The monitoring directives in 40 CFR Appendix D, Section 5 contain specific requirements for the operation of Photochemical Assessment Monitoring Stations (PAMS) for ozone precursor monitoring at NCore sites located in CBSAs with a population of one million or more people. In addition, the CFR requirements call for each state with O_3 nonattainment areas classified as moderate or above and states in the Ozone Transport Region to develop and implement an Enhanced Monitoring Plan (EMP) for O_3. Montana does not meet any of these criteria, therefore neither PAMS monitoring nor an EMP is required within the state, and no PAMS monitoring is conducted in the MTDEQ network.

B. CO Monitoring

Required CO Monitoring

As detailed in 40 CFR 58 Appendix D Section 4.2, the requirements for CO monitoring sites are closely related to the requirements for near-road NO_2 monitoring sites (see Section I.C. of this Plan). Table I.B.1 summarizes the number of required CO monitoring sites.

Table I.B.1 – Minimum CO Monitoring Requirements [1]

Criteria [2]	Number of Near-Road CO Monitors Required
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.
[2] CBSA populations must be based on latest available census figures.

As documented in Appendix B to this Plan, no Montana CBSAs meet the criteria listed in Table I.B.1, and no CO monitors are required in Montana on this basis.

CO Monitoring Results

MTDEQ continues to operate one trace-level CO monitor at the NCore station north of Helena to track background concentrations of this pollutant over time. Section I.H of this Plan describes NCore monitoring requirements and efforts. Table I.B.2 summarizes the CO values measured at the NCore monitoring site during 2025.

Table I.B.2 –Monitored CO Values for 2025 at NCore

Station	Concentrations (ppm)			
	Min	Max	Average	NAAQS
NCore 1-hour averages	0.043	1.353	0.112	35
NCore 8-hour averages	0.048	0.489	0.111	9

Changes to CO Monitoring

No modifications to MTDEQ's CO monitoring network are proposed for 2026.

C. NO_2 Monitoring

Required NO_2 Monitoring
The minimum number of NO_2 monitoring sites required by 40 CFR 58 Appendix D Section 4.3 is summarized in Table I.C.1.

Table I.C.1 – Minimum NO_2 Monitoring Requirements

Requirement Type	Criteria [(1)]	Minimum NO_2 Monitors Required
Near Road Monitors [(2)]	CBSA Population ≥ 1 million	1, for hourly maximum concentrations
	CBSA Population ≥ 2.5 million	1, plus the station above for a total of 2
	CBSA Population ≥ 1 million and with 1 or more roadway segments with annual average daily traffic counts (AADT) ≥250,000	2, as in the description above
Area-Wide Monitoring [(3)]	CBSA Population ≥ 1 million	1, for expected highest area concentration
Protection of Susceptible and Vulnerable Populations [(4)]	Any area inside or outside CBSAs, nation wide	As Required by EPA Regional Administrator [(4).]

(1) CBSA populations must be based on the latest available census figures.
(2) 40 CFR Part 58, Appendix D Sec 4.3.2.
(3) 40 CFR Part 58, Appendix D Sec 4.3.3.
(4) 40 CFR Part 58, Appendix D Sec 4.3.4.

As discussed in Appendix B to this Plan, no Montana communities meet any of the population criteria listed in Table I.C.1, and no additional NO_2 monitoring has been required of MTDEQ by the Regional EPA Administrator; therefore, no ambient NO_2 monitors are currently required in Montana.

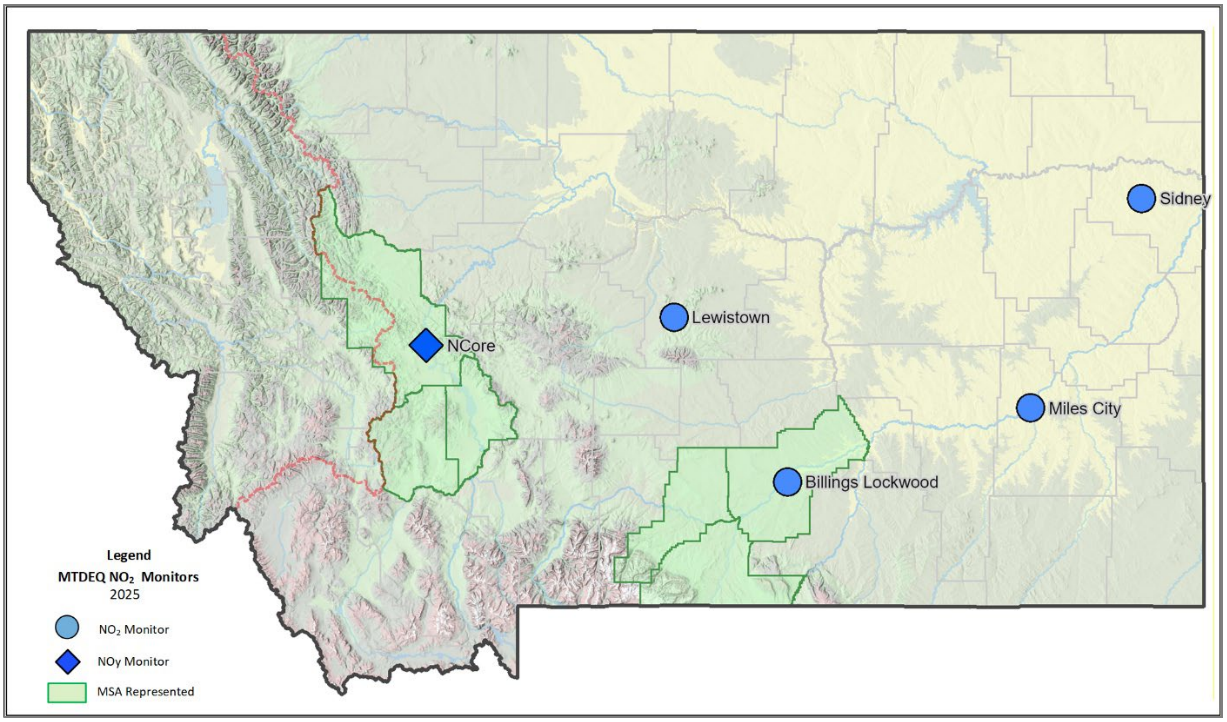
Non-Required NO_2 Monitoring
In an effort to determine NO_2 background concentrations, to evaluate potential air quality impacts associated with population growth and industrial activities, and to assess the impacts of nitrogen oxides on ambient ozone concentrations, MTDEQ conducted NO_2 monitoring through 2025 at the sites listed in Table I.C.2.

Table I.C.2 – Montana DEQ 2025 NO_2 Monitoring Sites

Station Name	AQS Code
Billings-Lockwood	30-111-0087
Lewistown	30-027-0006
Miles City	30-017-0005
Sidney	30-083-0002

Figure I.C.1 displays the locations of all MTDEQ NO_2 (and NOy) monitoring sites that operated in 2025. Appendix A provides a table listing their physical addresses and GPS locations.

Figure I.C.1, Locations of Montana DEQ NO_2 Monitors Operating in Montana in 2025



NO_2 Monitoring Results

Table I.C.3 summarizes the 1-hour NO_2 values measured at monitoring sites operated by MTDEQ during 2025.

Table I.C.3 – 1-Hour Monitored NO_2 Values for 2025

Site	Concentrations (ppb)			NAAQS Design Values [1]		NAAQS (ppb)
	Min	Max	Average	2025[2]	2023 – 2025	
Billings-Lockwood	0	70	6.4	32.0	31[3]	100 1-hour
Lewistown	0	18	0.7	11.0	11	
Miles City	0	36	2.6	23.0	24	53 Annual Mean
Sidney	0	16	1.2	9.0	11	

(1) Design Values are calculated by the USEPA AQS database.

(2) The 2025 design value is the 98th percentile value for the year.

(3) The Billings-Lockwood monitoring station began reporting data to AQS on January 1, 2024. Therefore, a complete 3-year design value is not yet available.

NOy Monitoring

Related to NO_2 monitoring, Section 4.3.6 of 40 CFR 58 Appendix D requires monitoring of NO/NO_y at NCore and PAMS monitoring sites. Per that rule, NO/NO_y monitoring "will produce conservative estimates for NO_2 that can be used to ensure tracking continued compliance with the NO_2 NAAQS;" and for providing "data on total reactive nitrogen species for understanding O_3 photochemistry." As noted in the ozone monitoring discussion above (Section I.A), PAMS monitoring is not required nor currently conducted in the MTDEQ network. However, MTDEQ is required to operate an NCore monitoring site that includes measurement of NO/NO_y. Table I.C.4 summarizes the 1-hour NO and NO_y values measured at the MTDEQ NCore station in calendar year 2025.

Table I.C.4-Hour Monitored NO and NO_y Values at NCore for 2025, in ppb.

Pollutant	Min	Max	Average
NO	0	2.4	0.06
NO_y	0	9.5	1.3

Changes to NO_2 Monitoring

As discussed in the O_3 Section above, the NO_2 monitors in Sidney and Miles City have produced a body of data that demonstrates consistent background concentrations well below the NO_2 NAAQS. Those monitors were established to evaluate ambient air quality impacts from oil well development and potential coal bed methane development, respectively, and to define regional pollutant concentrations. The monitors have fulfilled their intended investigatory purposes and there is no substantial air quality benefit to be gained by their continued operation. In the 2025 Network Plan MTDEQ proposed, and received EPA approval, to discontinue NO_2 monitoring at these two locations. NO_2 monitoring at both locations was terminated at midnight on September 30, 2025.

In its 2024 AMNP, MTDEQ proposed, and EPA approved, the addition of an NO_2 monitor at the Missoula Boyd Park monitoring station. As noted in that document, O_3 monitoring has been near-continuously conducted at the Missoula Boyd Park Site since June 1, 2010. Typically, wherever MTDEQ conducts O_3 monitoring it also operates a corresponding NO_2/NO/NO_X monitor to contribute to the understanding of O_3 formation and destruction at that location. However, this effort was never pursued in Missoula. MTDEQ intends to complete the installation of a NO_2/NO/NO_X monitor at Missoula Boyd Park as resources allow.

MTDEQ will continue working to establish a new NO_2 monitoring site in the Bozeman MSA. That site is anticipated to be operational in late 2026.

D. SO_2 Monitoring

Required SO_2 Monitoring

The minimum number of SO_2 monitoring sites required by Section 4.4 of Appendix D to 40 CFR 58 is summarized in Table I.D.1.

Table I.D.1 – Minimum SO_2 Monitoring Requirements (1)

Requirement Type	Criteria	Minimum SO_2 Monitors Required
Population Weighted Emissions Index (PWEI (2)(3))	≥1,000,000	3
	≥100,000 - <1,000,000	2
	≥5,000 - <100,000	1

(1) From Appendix D to 40 CFR Part 58, Sec. 4.4.2.
(2) CBSA populations must be based on latest available census figures.
(3) CBSA PWEI means Core Based Statistical Area Population Weighted Emissions Index in units of million person-tons per year.

The EPA criteria employed to determine the number of required SO_2 monitors is similar to other pollutants in that it is based upon population and pollutant concentration. However, SO_2 requires additional statistical formulations for analyzing those impacts. Two metrics are used in this analysis: the population and the total tons of emissions of SO_2 in a defined CBSA. The product of those factors is a metric defined as the Population Weighted Emissions Index (PWEI). The PWEI is the population in the CBSA multiplied by the annual tons of SO_2 emitted in the CBSA (using the most recent aggregated emissions data available in the National Emissions Inventory (NEI)); divided by 1,000,000. The Billings CBSA has both the highest population and the highest total SO_2 emissions of the CBSAs in the state of Montana. It is therefore the only CBSA where SO_2 monitoring could potentially be required based on these metrics. Table I.D.2 summarizes the current PWEI for the five Montana MSAs using the latest published (2020) NEI values and 2020 US Census population projected into 2025.

Table I.D.2 – SO_2 PWEI Calculation by MSA

MSA	Population (1) (a)	Reported Emissions (2) (b)	PWEI (3) (c)
Billings	194,087	4,295	833.6
Helena	97,629	400	39.1
Bozeman	130,475	102	13.3
Missoula	129,332	99	12.8
Great Falls	84,053	57	4.8

(1) Montana Department of Commerce projected population for 2025.
(2) Aggregate tons of SO_2 per 2020 National Emissions Inventory.
(3) PWEI (c) = (a) x (b) ÷ 1,000,000.

SO_2 monitoring is required within a CBSA when the calculated PWEI value is equal to or greater than 5,000 as reflected in Table I.D.1. Based on the prescribed criteria, neither Billings nor any of the other Montana CBSAs present an SO_2 PWEI that approaches or exceeds 5,000. Therefore, no CFR-based SO_2 monitoring is required in Montana.

Additional SO_2 Monitoring

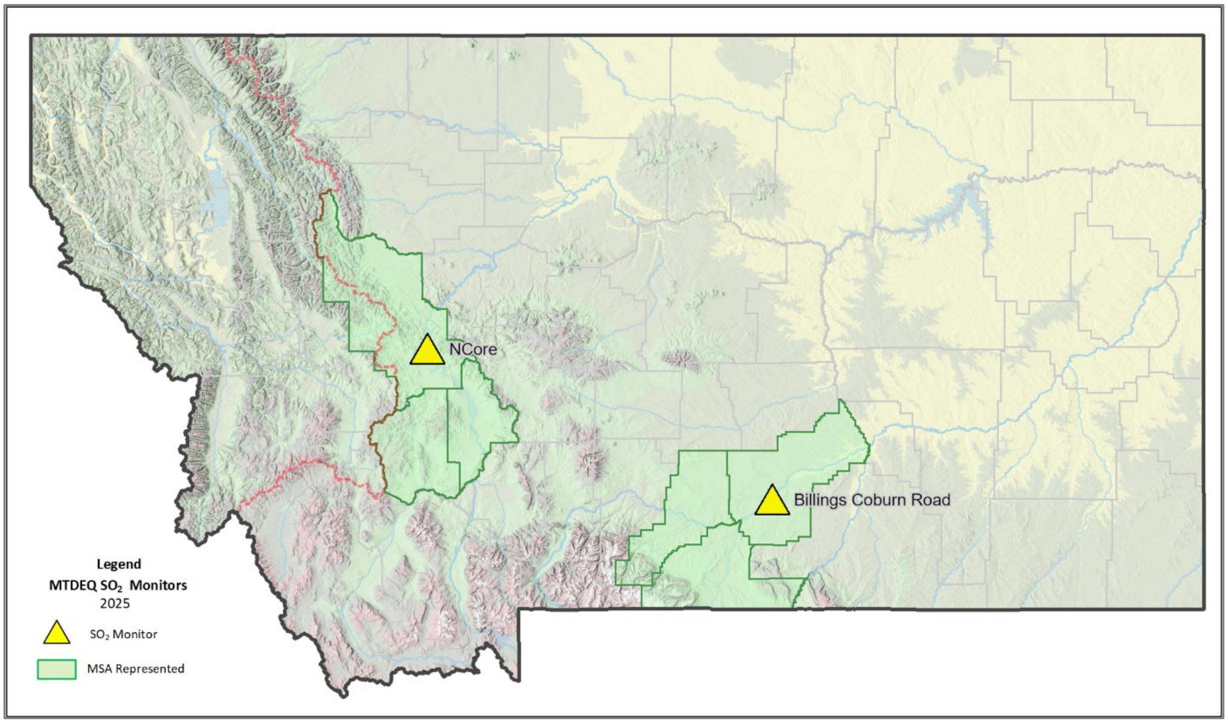
Beyond the CFR-required monitoring, MTDEQ continues to operate one long-term SO_2 monitor at the Coburn Road site in Billings (30-111-0066) as part of an approved Maintenance Plan to provide an on-going assessment of SO_2 compliance in the Billings area (81 FR 28718, *Re-designation Request and*

Associated Maintenance Plan for Billings, MT 2010 SO_2 Nonattainment Area). The Coburn Road site, located within the former Yellowstone County (partial) SO_2 Nonattainment Area, has been in continuous operation since 1981 as a State or Local Air Monitoring Station (SLAMS) site for NAAQS comparison purposes.

Additionally, MTDEQ operates one required trace-level background SO_2 monitor at the NCore station (30-049-0004). Section I.H describes NCore monitoring requirements in more detail.

Figure I.D.1 displays the locations of the MTDEQ SO_2 monitoring sites that were operated in 2025.

Figure I.D.1, Locations of MTDEQ SO_2 Monitors Operating in Montana Through 2025



SO_2 Monitoring Results

Table I.D.3 summarizes the 1-hour values measured at the SO_2 monitoring sites operated by MTDEQ during calendar year 2025.

Table I.D.3 – 1-Hour Monitored SO_2 Values for 2025

Site	Concentrations (ppb)			NAAQS Design Values (ppb) [(1)]		NAAQS
	Min	Max	Average	2025[(2)]	2023 - 2025	
Billings - Coburn Road	0.0	18.0	0.71	16.0	19	75
NCore - Sieben's Flat	0.0	8.5	0.69	6.7[(3)]	3	

[(1)] Design Values are calculated by the USEPA AQS database.
[(2)] The 2025 design value is the 99th percentile value for the year.
[(3)] The NCore site produced only 3 quarters of valid SO_2 data for 2025.

Changes to SO_2 Monitoring

No modifications to MTDEQ's SO_2 monitoring network are proposed for 2026.

E. Pb Monitoring

Required Pb Monitoring

The minimum number of Pb monitoring sites required by 40 CFR 58 Appendix D Section 4.5 is summarized in Table I.E.1.

Table I.E.1 – Minimum Pb Monitoring Requirements (1)

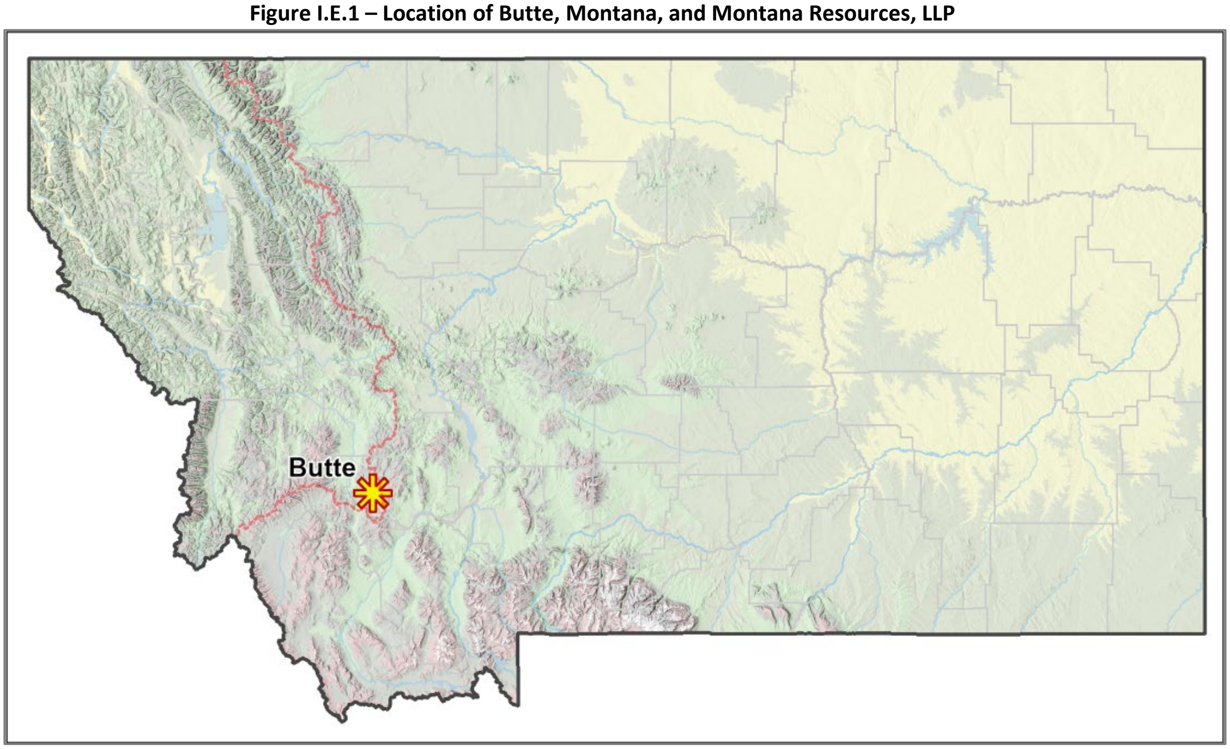
Criteria	Minimum Number of Pb Monitors Required
Non-Airport Source emitting ≥ 0.50 tons of Pb per year	1 each
Airport Source emitting ≥ 1.0 tons of Pb per year	1 each

(1) From Appendix D to 40 CFR Part 58, Sec 4.5(a). Monitoring must be “near” the Pb source.

The requirements in Section 4.5(a) of Appendix D to 40 CFR Part 58 specify that Pb emissions assessments for monitoring determination be based on either “the most recent National Emission Inventory (NEI) or other scientifically justifiable methods and data (such as improved emissions factors or site-specific data) taking into account logistics and the potential for population exposure.”

The most recent NEI (from 2020) indicates that only one non-airport source in the state of Montana reported Pb emissions in excess of the 0.50 ton/year threshold, triggering the monitoring requirement. Montana Resources, LLP, (MRL) operates an open pit copper and molybdenum mine and associated processing facilities in Butte, Montana. Figure I.E.1 displays the location of this facility.

Figure I.E.1 – Location of Butte, Montana, and Montana Resources, LLP



MRL reported estimated Pb emissions of 0.82 tons per year to the 2020 NEI. MTDEQ analysis of the MRL report revealed that those data were in error. Subsequently, on October 9, 2023, Montana Resources submitted a 37-page technical review of its Pb emissions to EPA and MTDEQ, covering the years from 2017 through 2022, which corrected their Pb emissions calculations for that time period. The corrected Pb emissions results were summarized in a table, reproduced here as Table I.E.2:

Table I.E.2 – Montana Resources, LLC, Updated Pb Emission Releases

Reporting Year	Combined Lead Emissions (Stack + Fugitive)	
	lb/yr	tons/yr
2017	134.24	0.067
2018	140.08	0.070
2019	123.17	0.062
2020	138.96	0.069
2021	140.52	0.070
2022	121.94	0.061

MTDEQ reviewed and confirmed MRL's analysis and their corrected annual Pb emission totals. In addition, MTDEQ compared the corrected emission values with the results of independent ambient Pb monitoring conducted by an independent contractor (as described in the MTDEQ 2024 Annual Monitoring Network Plan) and found the two data sets to be well-aligned. Because all the reported emissions are less than the 0.50 ton/year threshold, no Pb monitoring is required near this facility or any other non-airport facility in Montana. MTDEQ is anticipating the published results of the 2023 NEI to further assess the need for Pb monitoring in Montana.

The most recent NEI (from 2020) also indicates that no airports in Montana reported emissions more than the 1.0 tons per year of Pb threshold; thus, no airport source requires Pb monitoring in the state of Montana.

Changes to Pb Monitoring

No establishment of Pb monitors in Montana is proposed by MTDEQ for 2026.

F. PM_{10} Monitoring

Required PM_{10} Monitoring

The approximate minimum number of permanent PM_{10} monitoring sites required by Section 4.6 of Appendix D to 40 CFR 58 is shown in Table I.F.1.

Table I.F.1 - 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 State Agency."
[(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.

As discussed in Appendix B to this Plan, all designated MSAs in Montana are within the lowest population category listed in Table I.F.1. In addition, historical monitoring has consistently demonstrated measured 24-hour PM_{10} concentrations in the low concentration category listed in Table I.F.1. The present PM_{10} network, as described in Tables I.F.2 through I.F.4 and displayed in Figure I.F.1 exceeds the PM_{10} network design criteria.

In 2025 MTDEQ operated PM_{10} monitors in seven areas previously designated as nonattainment for the 24-hour PM_{10} NAAQS. This monitoring is required by EPA to demonstrate the adequacy of Montana's PM_{10} maintenance plans for those areas which have been re-designated to a NAAQS attainment status. Table I.F.2 provides a list of those sites:

Table I.F.2– Montana DEQ 2025 PM_{10} Maintenance Plan Monitoring Sites

Station Name	AQS Code
Butte	30-093-0005
Flathead Valley	30-029-0049
Kalispell	30-029-0047
Libby	30-053-0018
Missoula	30-063-0024
Thompson Falls	30-089-0007
Whitefish	30-029-0009

Additional PM_{10} Monitoring

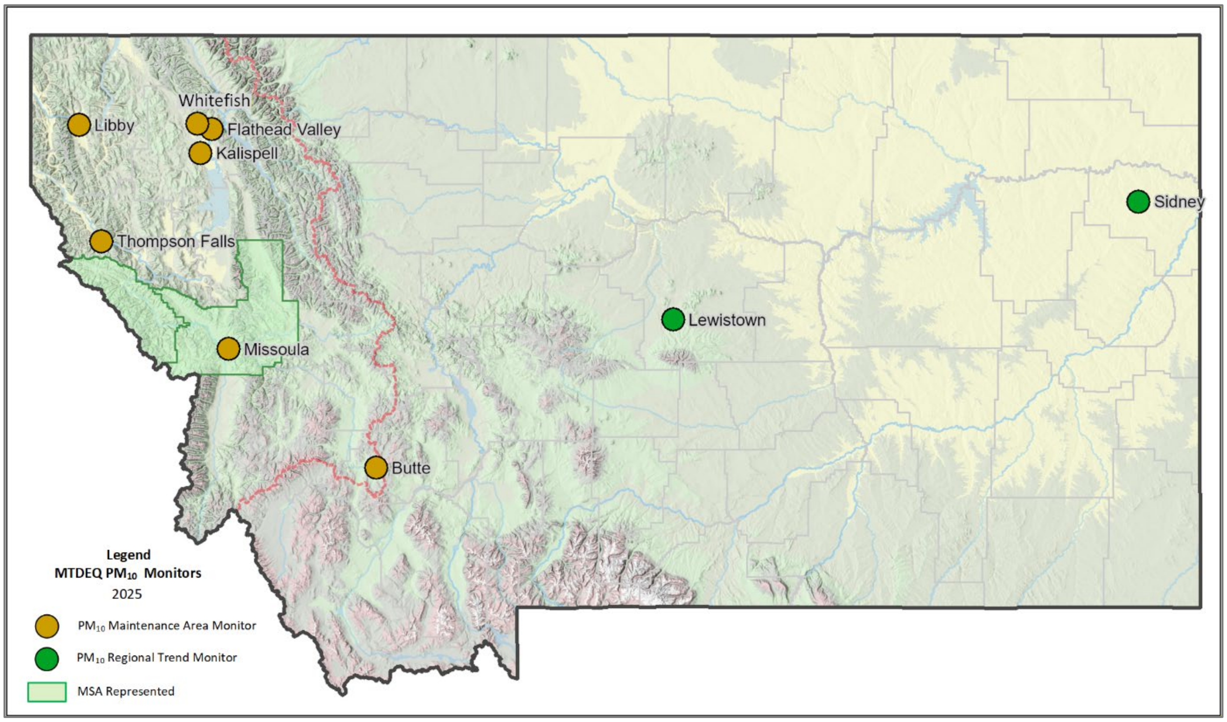
Beyond the CFR and Maintenance Plan-required monitoring, MTDEQ also operated PM_{10} monitors at two additional sites through 2025 to define and track background concentrations and spatial distribution of this pollutant within the state of Montana. These sites are listed in Table I.F.3:

Table I.F.3 – Montana DEQ 2025 Additional PM_{10} Monitoring Sites

Station Name	AQS Code
Lewistown	30-027-0006
Sidney	30-083-0002

Figure I.F.1 displays the locations of the two types of PM_{10} monitors MTDEQ operated in Montana in 2025.

Figure I.F.1, Locations of Montana DEQ PM_{10} Monitors in 2025



PM_{10} Monitoring Results

Table I.F.4 summarizes the 24-hour average values measured at all PM_{10} monitoring sites operated by MTDEQ in 2025.

Table I.F.4 – 24-Hour Average Monitored PM_{10} Values for 2025[1]

Site	Concentration (µg/m³)			NAAQS Comparison			
	Min	Max	Average	AQS Estimated Exceedances [2]		3-Year DV Est. Concentration [3]	NAAQS
				2025	3-Year		
Butte	0	59	17.5	0	0	79	150 µg/m³
Flathead Valley	0	49	11.5	0	0	62	
Kalispell	0	61	22.1	0	0	83	
Lewistown	0	47	9.4	0	0	61	
Libby [4]	0	55	15.7	0	0	59	
Missoula [4]	0	54	13.5	0	0	58	
Sidney	0	102	14.1	0	0.3	98	
Thompson Falls	0	85	24.9	0	0	80	
Whitefish	0	59	18.7	0	0	96	

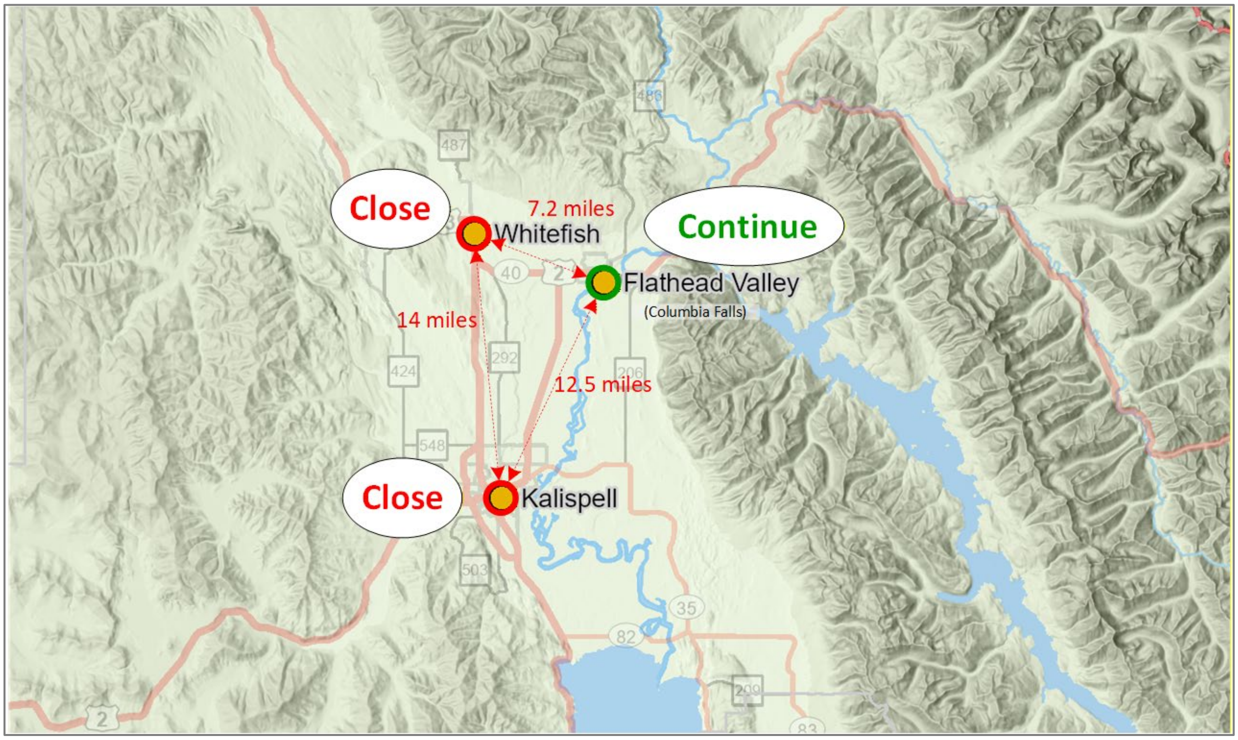
(1) Dataset includes all values (flagged exceptional events *included*).
(2) PM_{10} Design Values are in the form of numbers of estimated exceedances as calculated by the US EPA AQS database in accordance with the procedure in 40 CFR 50 Appendix K.
(3) Based on PM_{10} SIP Development Guideline-Table Look-up Method (EPA Table 6-1). See EPA-450/2-86-001.
(4) Libby and Missoula each had only 2 complete quarters of data in 2025.

Changes to PM_{10} Monitoring

The existing PM_{10} monitor in Sidney has produced a body of data that demonstrates consistent background concentrations below the PM_{10} NAAQS. This monitor was established to evaluate ambient air quality impacts from oil well development and has fulfilled its intended investigatory purpose. There is no substantial air quality benefit to be gained by its continued operation and Montana's modest monitoring resources can be better invested elsewhere. Therefore, with EPA approval, MTDEQ terminated PM_{10} monitoring at Sidney at midnight on 09/30/2025.

MTDEQ's 2025 Annual Network Plan included a proposal and request for EPA concurrence to consolidate PM_{10} monitoring in the Flathead Valley as displayed in Figure I.F.2.

Figure I.F.2, Montana DEQ PM_{10} Monitors in the Flathead Valley



The proposal is to consolidate PM_{10} monitoring in a single representative site by closing the Whitefish and Kalispell PM_{10} sites while continuing to operate the Flathead Valley (Columbia Falls) site. Four factors led to this proposal:

1. **Land use changes**. Modifications of the areas surrounding both the Kalispell and Whitefish sites have taken place that significantly modify their suitability for accurate air quality monitoring.

2. **Lack of an air quality motive**. The three sites have been operated to-date principally for administrative reasons, not because air quality conditions or public health warrant this effort.

3. **Lack of spatial variability.** The three sites are a maximum of fourteen miles apart in the same airshed which is defined by significant surrounding mountains. Operating three separate monitors in this environment is excessive and unwarranted.

4. **Reduced operating and staff resources**. Both MTDEQ and the Flathead County Health Department are operating with diminished resources. Continued operation of these sites wastes resources needed elsewhere while providing no air quality benefit.

EPA approved the closure of the Kalispell site and monitoring was ended there on 02/11/2026. The process of closing the Whitefish site is in progress. A revision of the Montana State Implementation Plan (SIP) is a required next step, and MTDEQ is working with Flathead County to that end.

No additional modifications to MTDEQ's PM_{10} monitoring network are proposed for 2026.

G. $PM_{2.5}$ Monitoring

Required $PM_{2.5}$ Monitoring

$PM_{2.5}$ monitoring may be required under three types of criteria:

1. Network Design Requirements

The minimum number of $PM_{2.5}$ monitoring sites required by 40 CFR 58 Appendix D Section 4.7 is shown in Table I.G.1.

Table I.G.1 – Minimum $PM_{2.5}$ Monitoring Requirements [(1)]

MSA population [(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	1	0

(1) From Table D-5 of Appendix D to 40 CFR Part 58. Minimum monitoring requirements per MSA.
(2) Population based on latest available census figures.
(3) $PM_{2.5}$ NAAQS levels and forms are defined in 40 CFR part 50.
(4) These minimum monitoring requirements apply in the absence of a design value.

As introduced in the Background section above and in Appendix B of this Plan, Montana had five federally designated MSAs through 2025. All five of the MSAs fall within the 50,000 to 500,000 population range listed in Table I.G.1. MTDEQ operates a $PM_{2.5}$ monitor in each of the MSAs. Table I.G.2 summarizes the number of operating and required monitors in each MSA as established in MTDEQ's 2025 5-Year Network Assessment.

Table I.G.2 – Summary of Montana's Rule-required $PM_{2.5}$ Monitoring Sites

MSA	Number of $PM_{2.5}$ Monitors		Criteria
	Operating	Required	
Billings	1	1	> 85% of any $PM_{2.5}$ NAAQS
Bozeman [(1)]	1	0	< 85% of any $PM_{2.5}$ NAAQS
Great Falls [(1)]	1	1 [(1)]	> 85% of Annual $PM_{2.5}$ NAAQS
Helena	2	1	> 85% of both 24-hr and Annual $PM_{2.5}$ NAAQS
Missoula	3	1	> 85% of both 24-hr and Annual $PM_{2.5}$ NAAQS

(1) Monitoring at Bozeman and Great Falls to-date has been non-FEM, information-only monitoring. New FEM monitors are being established in both of those MSAs to more accurately define $PM_{2.5}$ concentrations in these areas.

2. Additional Network Component Requirements

NCore. MTDEQ conducts required $PM_{2.5}$ monitoring at its NCore site (30-049-0004) per the requirements of 40 CFR 58 Appendix D Section 4.7.1(a).

Nonattainment/Maintenance Plans. MTDEQ operates a $PM_{2.5}$ monitor in the community of Libby (30-053-0018) as required by EPA to demonstrate the adequacy of Montana's $PM_{2.5}$ maintenance plan for this area. The maintenance plan was established as part of the re-designation of the Libby area from nonattainment to attainment for the 24-hour $PM_{2.5}$ NAAQS.

Regional Background and Transport Sites. Section 4.7.3 of 40 CFR 58 Appendix D requires each state to install and operate at least one $PM_{2.5}$ site to monitor *regional background* and at least one $PM_{2.5}$ site to monitor *regional transport*. In its 2022 Network Plan MTDEQ proposed the establishment of its NCore site (30-049-004) as a background and regional transport site for Montana. EPA concurred with this proposal in its response to that Network Plan submittal. The NCore site will continue to fulfill the regional and transport site criteria.

Chemical Speciation. Section 4.7.4 of 40 CFR 58 Appendix D requires each state to conduct $PM_{2.5}$ chemical speciation monitoring at locations designated as part of the national Speciation Trends Network (STN) and operated as part of the Chemical Speciation Network (CSN). Two sites in Montana are currently included in the CSN: MTDEQ's NCore site (30-049-0004) is a designated CSN site. $PM_{2.5}$ speciation analyzers are also operated in Butte (30-093-0005) but are not required there. Appendix D to this Plan contains a list of the chemical components for which analysis is performed on filters collected at these stations.

3. Quality Control Requirements

Collocated Monitors. Section 3.2.3 of 40 CFR 58 Appendix A requires that states operate a specific number of side-by-side ("collocated") monitor pairs for each $PM_{2.5}$ monitoring method employed in its network. Additionally, a proportion of the collocations must be with a Federal Reference Method (FRM) monitor. The collocation of $PM_{2.5}$ monitors is how monitor measurement bias and precision is determined. MTDEQ currently operates three different $PM_{2.5}$ monitoring methods in its network (see Appendix C). Therefore, three collocations are conducted, one method each at its NCore (30-049-004), Helena (30-049-0026), and Butte (30-093-0005) monitoring sites.

Continuous Analyzers. Section 4.7.2 of 40 CFR 58 Appendix D requires that at least one-half of the *required* $PM_{2.5}$ monitoring sites (per Table I.G.2, above) operate *continuous* analyzers. The continuous devices must be designated as FEM analyzers or be collocated with an FRM or FEM analyzer. Per the following paragraph, all the required (or potentially required in the case of Great Falls) monitors are continuous monitors. Therefore, MTDEQ complies with this requirement.

$PM_{2.5}$ is a significant pollutant in Montana. Impacts from summer wildfires, prescribed burning and wintertime inversions have established a strong need for continuous, near-real time $PM_{2.5}$ data for assessing and communicating public health impacts, in addition to determining NAAQS compliance. To meet this need, MTDEQ's $PM_{2.5}$ pollutant measurement network is comprised solely of continuous monitors. However, MTDEQ also operates an appropriate number of episodic, filter-based FRM $PM_{2.5}$ monitors exclusively for quality assurance (QA) collocation and validation of its continuous $PM_{2.5}$ monitoring network.

Table I.G.3 summarizes MTDEQ's *required* $PM_{2.5}$ monitoring sites:

Table I.G.3 – Summary of Montana DEQ Required $PM_{2.5}$ Monitors

SLAMS Sites	
Station Name	**AQS Code**
Billings	30-111-0087
Helena	30-049-0026
Libby	30-053-0018
NCore	30-049-0004
[Great Falls ?]	TBD

$PM_{2.5}$ Collocation Sites	
Station Name	**AQS Code**
Helena	30-049-0026
Butte	30-093-0005
NCore	30-049-0004
$PM_{2.5}$ Chemical Speciation Site*	
NCore	30-049-0004

*Speciation monitoring is also conducted at Butte (30-093-0005) but is not required there.

Additional $PM_{2.5}$ Monitoring

<u>1. FEM and FEM-Like $PM_{2.5}$ Monitoring</u>

Because $PM_{2.5}$ is a pollutant of significant concern within Montana, MTDEQ's $PM_{2.5}$ monitoring network goes well beyond the minimum requirements summarized in Tables I.G.1 and I.G.2. MTDEQ, sometimes in partnership with county air quality programs, operates $PM_{2.5}$ monitors in a number of locations statewide, typically in regional population centers. These stations are operated to communicate potential $PM_{2.5}$-related health impacts to the public, to demonstrate continuing NAAQS compliance, and to inform local health departments' $PM_{2.5}$ control strategies.

MTDEQ's $PM_{2.5}$ monitors are intentionally located, established and operated to address any or all three of the program monitoring objectives defined in the Background section of this Plan. For the additional $PM_{2.5}$ monitoring, MTDEQ employs several different methods of continuous $PM_{2.5}$ monitoring and assigns different geographical spatial scales that sites are designed to represent depending on the monitoring objectives for each site.

$PM_{2.5}$ Monitoring Methods

$PM_{2.5}$ monitors federally designated as FRM or FEM generate data suitable for determining compliance with the $PM_{2.5}$ NAAQS. $PM_{2.5}$ monitors designated as non-FEM or "FEM-like" provide reliable information comparable to FEM devices but cannot be used for NAAQS compliance purposes. The $PM_{2.5}$ monitoring data summarized in Table I.G.5 below represents this distinction between site method types (see the column titled "FEM?"). In addition, the network description table in Appendix C of this Plan indicates a notation of the monitor method classification for all $PM_{2.5}$ monitors operated by MTDEQ.

$PM_{2.5}$ Spatial Scales

MTDEQ's continuous $PM_{2.5}$ monitors are sited to represent "regional" or "neighborhood" areas (spatial scales) as established in Section 4.7.1(c) of Appendix D to 40 CFR 58. Data from $PM_{2.5}$ monitoring sites with spatial scales designated as smaller than "neighborhood" are generally not used for $PM_{2.5}$ NAAQS compliance review purposes in MTDEQ's network. Currently, the only $PM_{2.5}$ site in the Montana network of this nature is the Great Falls station (30-013-0001) which is designated a "middle" range spatial scale remaining from historical CO monitoring purposes. This designation will be eliminated with the installation of a new $PM_{2.5}$ monitor in that community and MSA.

Table I.G.4 summarizes MTDEQ's *additional* FEM and FEM-Like $PM_{2.5}$ monitoring sites:

Table I.G.4 – Montana DEQ Additional $PM_{2.5}$ Monitoring Sites in 2025

Station Name	AQS Code	Station Name	AQS Code
Billings-Lockwood	30-111-0087	Great Falls [(1)]	30-013-0001
Bozeman [(1)]	30-031-0019	Hamilton	30-081-0007
Broadus [(1)] [(3)]	30-075-0001	Havre	30-041-0002
Butte	30-093-0005	Lewistown	30-027-0006
Choteau	30-099-0005	Malta	30-071-0010
Columbia Falls	30-029-0049	Miles City [(2)]	30-017-0005
Cut Bank	30-35-0022	Seeley Lake [(1)]	30-063-0038
Dillon	30-001-0003	Sidney [(2)]	30-083-0002
Frenchtown	30-063-0037	Thompson Falls [(1)]	30-089-0007
Glendive [(1)]	30-021-0005		

[(1)] Non-FEM Monitor
[(2)] Completed monitoring and closed 09/30/2025 as proposed in the MTDEQ 2025 AMNP. Replaced with sensor.
[(3)] The Broadus monitor was closed and replaced with a sensor on 11/23/2025.

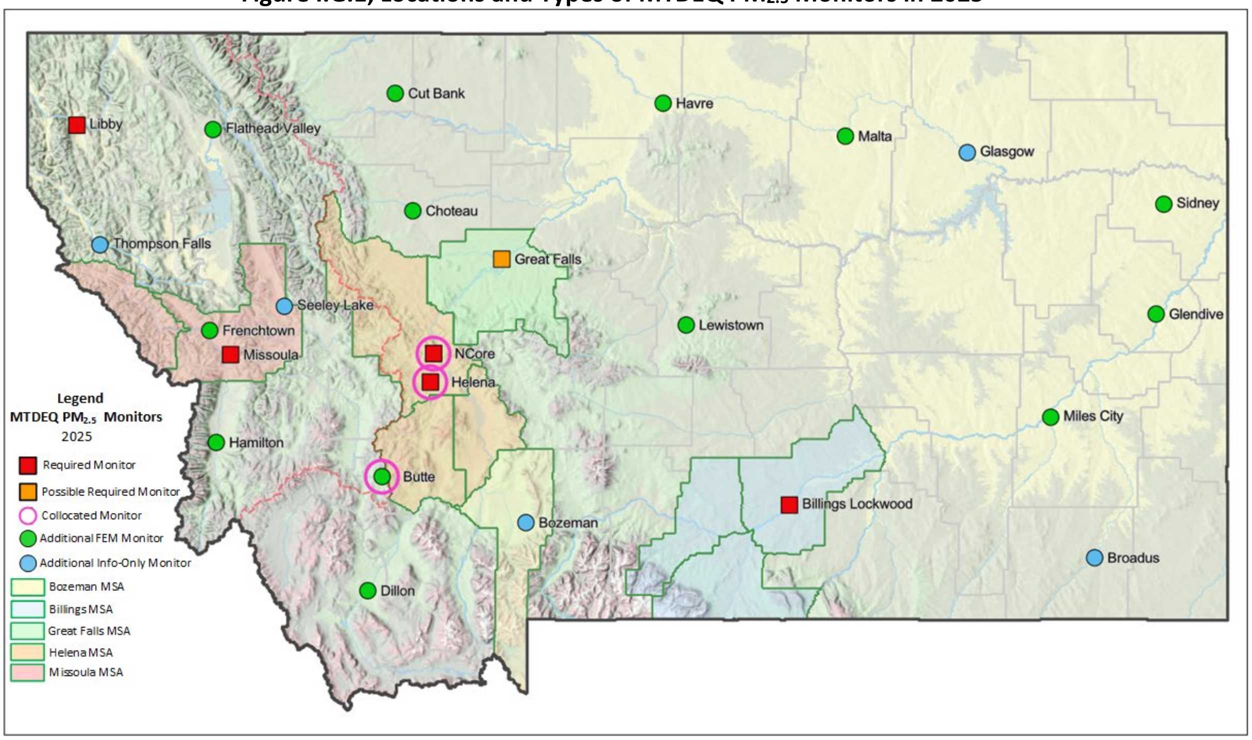
2. $PM_{2.5}$ Sensor Monitoring

MTDEQ is continuously looking for opportunities to enhance Montana's $PM_{2.5}$ monitoring network to better measure and communicate $PM_{2.5}$ impacts and trends in the state. MTDEQ is particularly focused on better communication of potential $PM_{2.5}$-related health impacts to all of Montana's citizens, not just those who live in or around an MSA. Increasingly, MTDEQ is finding that the advancing technology in low-cost sensors is an ideal way to fulfill this vision, and the agency has deployed numbers of $PM_{2.5}$ sensors across the state. Sensor monitoring is addressed in more detail in Section III of this AMNP document.

$PM_{2.5}$ Monitoring Locations

Figure I.G.1 displays the locations and types of $PM_{2.5}$ FEM and FEM-like monitors MTDEQ operated in Montana in 2025.

Figure I.G.1, Locations and Types of MTDEQ $PM_{2.5}$ Monitors in 2025



$PM_{2.5}$ Monitoring Results

Table I.G.5 summarizes the 24-hour average concentration values along with the annual and 24-hour NAAQS design values, as measured at the $PM_{2.5}$ monitoring sites operated by MTDEQ during 2025.

Table I.G.5 – Average Monitored $PM_{2.5}$ Values for 2025 [1]

		2025 24-hr Average Concentrations (µg/m3)			2023 - 2025 Design Values [2] (µg/m³)		
Site	**FEM?**	**Max**	**Average**	**98th Percentile**	**24-hour**	**Annual**	**NAAQS**
MSAs							
Billings–Lockwood [3]	Y	30.6	5.7	16.2	23	6.3	
Bozeman [5]	N [4]	26.0	4.4	16. 8	18	5.3	
Great Falls [5]	N [4]	34.7	10.0	21.0	26	**10.3**	
Helena	Y	31.4	7.2	25.9	**29**	**8.3**	
Missoula Boyd Park	Y	34.4	4.10	15.6	20	5.0	
Frenchtown	Y	33.6	6.78	19.1	24	**8.2**	
Seeley Lake	N [4]	40.4	8.58	25.9	28	**9.4**	**24-hour**
Non-MSAs							35 µg/m3
Broadus [6]	N [4]	23.0	2.76	16.2	**32**	7.1	(85% = **29.75**)
Butte	Y	33.4	5.94	21.8	26	7.2	
Choteau [7]	Y	31.2	2.99	12.6	15	4.0	
Columbia Falls	Y	36.5	7.39	24.6	**29**	**8.3**	
Cut Bank	Y	41.9	5.38	27.1	27	5.0	**Annual**
Dillon	Y	32.8	3.01	14.1	16	3.4	9.0 µg/m3
Glasgow	N [4]	83.0	6.21	61.2	**34**	4.1	(85% = **7.65**)
Glendive [7][8]	N [4]	74.8	4.78	30.7	27	7.5	
Hamilton	Y	44.3	5.75	21.7	**32**	6.9	
Havre	Y	64.3	4.15	22.4	26	5.4	
Lewistown	Y	26.8	4.52	13.1	24	4.9	
Libby [9]	Y	31.3	9.79	26.4	28	**10.7**	
Malta	Y	80.4	5.12	23.2	**33**	6.1	
Miles City [10]	Y	46.0	5.89	20.4	**29**	6.7	
NCore	Y	30.2	4.54	18.2	22	4.5	
Sidney [10]	Y	76.0	7.00	37.6	**36**	6.8	
Thompson Falls	N [4]	32.8	5.91	20.5	22	7.2	

[1] Dataset includes all valid values (exceptional events are included).

[2] Design Values for FEM instruments are calculated by EPA AQS. Design values for non-FEM instruments are calculated estimates from raw data (see footnote 4).

[3] The Billings-Lockwood site was designated as "required" by EPA in 2024 based on 2023 data. Data collected in 2024 and 2025 do not continue to indicate that a $PM_{2.5}$ monitor is required in the Billings MSA.

[4] These monitors are operated for informational purposes only and are not certified to produce NAAQS-comparison data.

[5] Monitoring at Bozeman and Great Falls to-date has been non-FEM, information-only monitoring. New FEM monitors are being established in both of those MSAs to more accurately define $PM_{2.5}$ concentrations there.

[6] The Broadus monitor was closed and replaced with a sensor on 11/23/2025.

[7] The Choteau and Glendive monitoring sites have operated for only two years. The values represent measurements conducted in 2024 through 2025 and not the full 3-year averages needed for true NAAQS design values.

[8] The Glendive site was converted to a non-FEM instrument, with EPA concurrence, in the 4th quarter of 2025.

[9] Libby collected only 2 complete quarters of data in 2025 due to equipment failures.

[10] Monitoring objectives at the Miles City and Sidney sites were completed and monitoring was closed 09/30/2025 as proposed in the MTDEQ 2025 AMNP. Both sites were replaced with a sensor.

Changes to $PM_{2.5}$ Monitoring

Changes Completed in 2025

As proposed in its 2025 AMNP and subsequently approved by EPA, MTDEQ completed the termination of FEM monitoring at Miles City (30-017-0005) and Sidney (30-083-0002) on 09/30/2025. $PM_{2.5}$

monitoring and related reporting to the public continues in these regions by means of installed sensors. Section III contains more information on these sensors.

In addition, MTDEQ changed the types of $PM_{2.5}$ monitors at three sites in 2025 to reduce staff demands while maintaining a data source for the public. The FEM monitors at Glendive (30-021-0005) and Glasgow (30-105-0003) were replaced with FEM-like EBAM instruments, and the EBAM at Broadus (30-075-0001) was replaced with a sensor. New $PM_{2.5}$ sensors were installed at White Sulphur Springs and Plentywood on 08/01/2025, and 10/06/2025 respectively.

Ongoing Changes

In the 2024 and 2025 AMNPs, MTDEQ initiated plans to address challenges at the existing $PM_{2.5}$ monitoring sites at Bozeman, Great Falls, and Seeley Lake:

- **Bozeman**. MTDEQ is continuing the process to install an FEM $PM_{2.5}$ monitor in the Bozeman MSA. Multiple sites for the monitoring station have been identified and proposed, but prohibitive challenges have been experienced for each. A site near Gallatin High School has been approved by EPA and is currently being pursued.

- **Great Falls**. The existing Great Falls monitoring site no longer meets siting criteria and is limited by a dilapidated and now unsuitable monitoring shelter. An alternate monitoring location in eastern Great Falls has been identified and approved by EPA. Processes are ongoing to secure the site and install an FEM $PM_{2.5}$ monitor in the new location.

- **Seeley Lake**. The 2024 and 2025 AMNPs discussed ongoing concerns that the Seeley Lake monitoring site is inappropriately impacted by nearby woodstove smoke and therefore not producing measurements reflective of air quality in the entire airshed. Research is in process to determine whether that concern is valid, and if so, to identify and propose an appropriate response. MTDEQ is working in collaboration with the Missoula County Health Department to analyze and compare data from two community-wide saturation monitoring studies and an on-going study with multiple PurpleAir sensors to determine the most appropriate location of future $PM_{2.5}$ monitoring in the Seeley Lake area.

Proposed Changes

No modifications to MTDEQ's $PM_{2.5}$ monitoring network are proposed for 2026 beyond those already in progress as described above.

H. NCore Monitoring

Section 3 of Appendix D to 40 CFR 58 requires that each state operate at least one NCore multipollutant monitoring site. By that requirement each NCore site must include monitoring equipment to measure $PM_{2.5}$, speciated $PM_{2.5}$, $PM_{10-2.5}$, O_3, SO_2, CO, NO (nitric oxide), NO_Y (a range of nitrogen oxide compounds), and meteorology. The majority of NCore sites across the nation are established in urban areas. In Montana the NCore site was established near a wilderness area as a long-term trend background site in an area believed to be relatively pristine and un-impacted by anthropogenic pollutant sources. Montana's NCore site (Sieben's Flat (a.k.a. Sleeping Giant), 30-049-0004) was established in late 2010. Data is continuously being acquired from all required monitors. Previous sections of this Plan include summaries of criteria pollutant data monitored at NCore.

In addition to criteria pollutants, the monitoring directives in 40 CFR Appendix D Section 4.8.1 contain specific requirements for the operation of monitors for $PM_{10-2.5}$ at NCore sites. This requirement is fully met at Montana's NCore site. Table I.H.1 summarizes the $PM_{10-2.5}$ data collected at the MTDEQ NCore site during 2025.

Table I.H.1 – 1-Hour Monitored $PM_{10-2.5}$ Values at NCore for 2025, in µg/m^3.

Pollutant	Min	Max	Average
$PM_{10-2.5}$	0	104	2.12

I. General Monitoring Network Design Considerations

A. Monitors Not Meeting Siting Criteria

MTDEQ designs its network and operates its air monitoring sites in compliance with EPA's national requirements for ambient air monitoring sites (40 CFR Part 58, Appendices A, C, D and E). Within MTDEQ's network there are three sites that do not meet all the siting requirements of 40 CFR Part 58, Appendix E.

First, the Hamilton $PM_{2.5}$ site (30-081-0007) is located within 15 meters of a paved city street but is operated as a neighborhood-scale site and not established as a "traffic corridor" monitor as discussed in 40 CFR 58 Appendix E Section 6.3. The road receives low traffic counts, and EPA has approved (granted a waiver) for the continued operation of this site as a neighborhood-scale site in response to previous Annual Network Plan documents submitted by MTDEQ.

Second, the Great Falls $PM_{2.5}$ site (Overlook Park, 30-013-0001) does not meet siting requirements for distance from obstructing trees. The site is also within approximately 17 meters from a busy, four lane city street. Though this dimension is acceptable for a middle scale monitor, MTDEQ does not see it as being acceptable for a monitor intended to represent the entire Great Falls area. As discussed in Sections I.G and II.B, MTDEQ is in the process of moving the Great Falls $PM_{2.5}$ monitoring site.

Third, the Whitefish PM_{10} site no longer meets siting criteria for two reasons. First, trees have grown up next to and above the monitoring shelter. Second, the surrounding neighborhood has changed radically since the monitor was sited, and is now surrounded by commercial facilities and activities, accompanied by a significant increase in vehicle traffic. The site can no longer be operated with confidence that it represents the surrounding airshed. Therefore, as discussed in Section I.F, MTDEQ is working through a process to close this site and consolidate all PM_{10} monitoring in the Flathead Valley in Columbia Falls.

B. Quality Assurance Project Plan (QAPP)

Federal rules and associated guidance establish a detailed and appropriate system of quality requirements and direction with respect to ambient monitoring; and MTDEQ operates its monitoring network within these requirements. Of note is the requirement in 40 CFR 58 Appendix A, Section 2, for each monitoring organization to develop and describe its quality system within a written QAPP. MTDEQ completed a required 5-year revision of its QAPP on June 15, 2023, and updated that document in 2024 and 2025. The document has been submitted to EPA Region 8 and posted for public access on the MTDEQ website.

II. 2026 Proposed Changes to the Monitoring Network

A. Overview

MTDEQ regards the requirement to develop and submit an Annual Monitoring Network Plan as an opportunity to review its existing air monitoring network and to plan for future needs. In the process of producing this document each year, MTDEQ reviews air pollutant trends, known and projected industrial emission changes, population changes, revisions to the NAAQS and monitoring rules, and the needs of Montana's population to receive appropriate and timely information related to ambient air quality impacts. Based on that breadth of understanding, MTDEQ attempts to balance monitoring requirements and needs against available resources. In addition to the Network Plan, MTDEQ completes periodic (every 5 years) Network Assessments in accordance with 40 CFR 58.10(d). The last Network Assessment was completed in 2025.

Depending on the immediacy of the need for programmatic changes, near-term network modifications are typically proposed in the Annual Network Plan, while longer-term or broader impact evaluation and direction of MTDEQ's air quality surveillance system is addressed within the periodic Network Assessment. MTDEQ also anticipates occasional changes to the focus and direction of Montana's air monitoring network in response to federal rulemaking and nation-wide policy direction; with resulting network modification proposals to EPA submitted within an appropriate time window.

B. Summary of Network Changes Anticipated in 2026-2027

MTDEQ is not proposing any *new* changes to its ambient air monitoring network for 2026. Changes to the ambient air monitoring network *completed* by MTDEQ in 2025 and the first two quarters of 2026 are discussed in previous sections of this document by pollutant.

Network changes *in progress* are similarly detailed by pollutant in the sections above. The following page provides a one-page summary of those projects.

MTDEQ 2026 Proposed Changes to the Air Monitoring Network

$PM_{2.5}$ Changes

1. **Bozeman** (New Site). End the existing information-only $PM_{2.5}$ monitoring at the Bozeman High School site (30-031-0019) and install and operate an FEM/SLAMS $PM_{2.5}$ monitor at a new, regionally representative site. Approved by EPA in 2024.

2. **Great Falls** (New Site). End $PM_{2.5}$ monitoring at the existing site (30-013-0001) and establish a new FEM/SLAMS site in eastern Great Falls that meets siting criteria. Approved by EPA in 2024.

3. **Seeley Lake** (30-063-0038). Continue research into the representativeness of the existing $PM_{2.5}$ monitoring site. Based on the results of the study either leave the existing site in place or propose a new site more representative of the Seeley airshed and install an FEM monitor there.

PM_{10} Changes

1. **Whitefish** (30-029-0009). End PM_{10} monitoring at this site and consolidate all PM_{10} monitoring in the Flathead Valley at the existing Columbia Falls site (30-029-0049) following EPA approval.

O_3 Changes

1. **Bozeman** (New Site). Install a new O_3 monitor. Approved by EPA in 2024.

NO_2 Changes

1. **Bozeman** (New Site). Install a new NO_2 monitor. Approved by EPA in 2024.

2. **Missoula** (30-063-0024). Complete installation and begin operation of a new NO_2 monitor. Approved by EPA in 2024.

III. Sensor Monitoring

A. Background

As introduced in the Background section of this document, MTDEQ designs, establishes and operates its statewide air monitoring network in pursuit of three essential objectives:

1. Provide air pollution data to the general public in a timely manner.

2. Support compliance with ambient air quality standards (the NAAQS) and emissions strategy development.

3. Support air pollution research studies.

New and developing monitoring technology is proving to be of increasing value in achieving these objectives, particularly with objectives 1 and 3: to provide quality air pollution data to the public, and to support research to better understand air pollution dynamics in the state of Montana. The new technology includes pollution measurement devices referred to as “air sensors” that are typically small and of low cost, enabling their use in large numbers and many locations at greatly reduced acquisition and operating costs. Of particular focus for MTDEQ’s sensor monitoring are smaller communities and regions of the state where air monitoring has not been required, so local air quality information is not currently available. Sensor measurements can produce monitoring data in those locations to provide a more comprehensive understanding and communication of Montana’s air quality and related health impacts.

The data quality of sensor devices is known to be less precise and accurate compared to regulatory-grade instrumentation. To increase data quality from $PM_{2.5}$ sensor devices, MTDEQ deploys sensor equipment as part of a three-tiered quality assurance spatial network that allows for data comparison and confirmation between nearby devices of different types and quality. The tiered approach to monitoring in the state of Montana includes the following components:

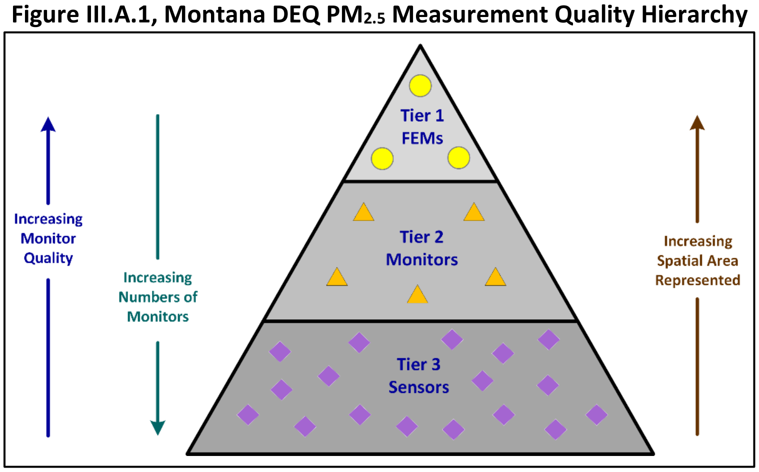
- Tier 1 – SLAMS/FEM continuous monitors,

- Tier 2 – Intermediate monitors such as EBAMs and non-FEM continuous monitors, and

- Tier 3 – Air Sensors.

Figure III.A.1 displays this relationship graphically.

Figure III.A.1, Montana DEQ $PM_{2.5}$ Measurement Quality Hierarchy



MTDEQ's air monitoring network currently employs two types of Tier 3 sensor devices:

1. PurpleAir $PM_{2.5}$ sensors (PurpleAir, Inc, USA), and

2. MODULAIR™ air quality multipollutant sensors (manufactured by QuantAQ, Inc.).

The following sections describe MTDEQ's application of these devices.

B. PurpleAir Sensor Network

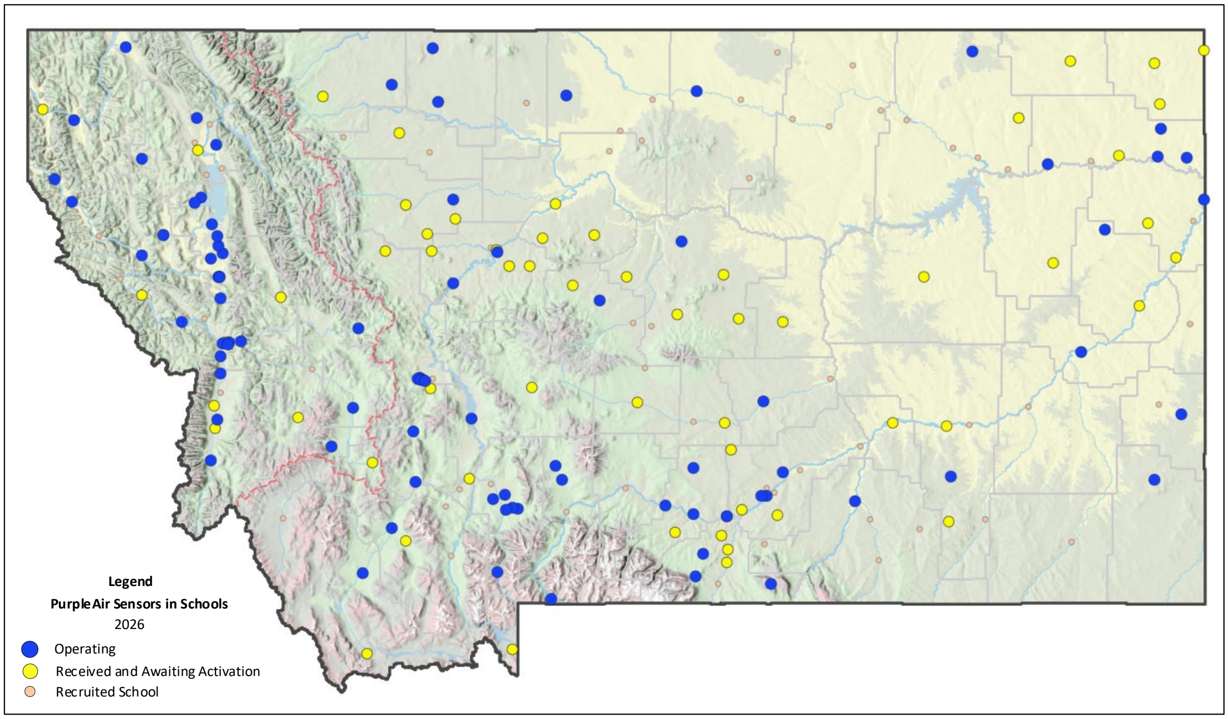
$PM_{2.5}$ continues to be the pollutant of greatest concern in Montana, and MTDEQ is committed to continuously improving its efforts to measure and communicate local $PM_{2.5}$ concentrations and related potential health impacts to all the state's citizens. Sensor technology is ideal for addressing this data need.

MTDEQ is partnering with the *Research Education on Air and Cardiovascular Health* (REACH) program at the University of Montana School of Public and Community Health Sciences (UM SPCHS) to conduct the *PurpleAirs in Schools* program. This initiative focuses on deploying community-level PurpleAir particulate matter sensors which provide public health information to help fill in spatial and community gaps between Tier 1 and 2 $PM_{2.5}$ air monitoring sites. The goal of this program is to improve access to local air quality data and facilitate better public health messaging in smaller communities that have previously had no local data available. The implementation of that goal is being pursued through the installation of two PurpleAir sensors (one indoor and one outdoor), free of charge, at every high school in the state of Montana, totaling 182 schools. Communities that do not have a high school nor local air quality information may receive PurpleAir sensors as well. Both the indoor and outdoor data are made available directly to the school. The outdoor data are also made available to the public via the MTDEQ *Today's Air* website.

A desirable co-benefit of the *PurpleAirs in Schools* program includes the cross-sector collaboration between MTDEQ and the UM SPCHS REACH program in addressing Montana's air pollution communication needs. Flowing from that collaboration are the benefits of the four core objectives of the REACH program: citizen science, science communication, student mentoring, and teacher professional development.

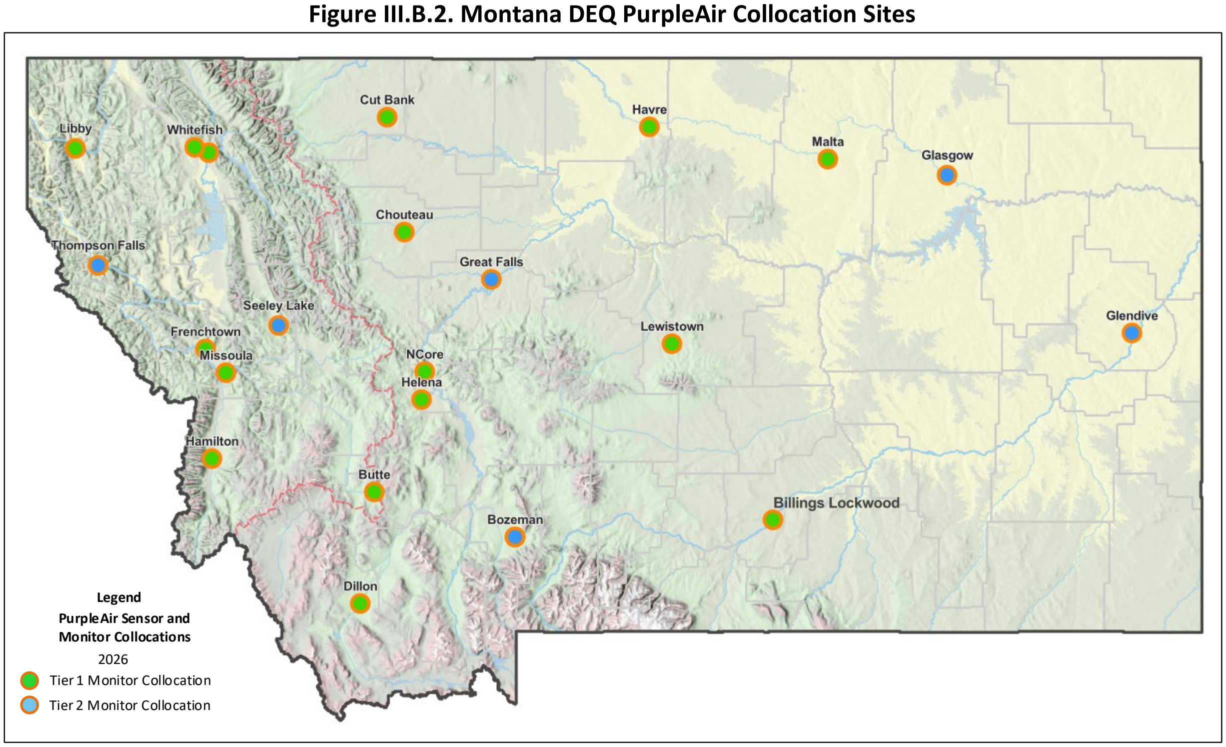
Three years into the expected five-year project period, the PurpleAirs in Schools program has deployed paired PurpleAir sensors to 144 schools. Of those 144 schools, 84 schools have installed the sensors and are reporting real-time data, while 60 schools have received the sensors and MTDEQ is assisting them in getting the sensors online. MTDEQ continues to recruit the remaining schools/communities of the original 182-school focus group to participate in this program. Figure III.B.1 shows the locations of the operational and deployed PurpleAir sensors currently in this program, as well as the schools still being recruited.

Figure III.B.1. Montana DEQ Current PurpleAir in Schools $PM_{2.5}$ Sensors



MTDEQ deploys and operates the PurpleAir sensors within the measurement quality hierarchy described in Figure III.A.1. To further ensure the quality of data reported by the PurpleAirs in Schools program, MTDEQ is currently operating collocated PurpleAir sensors at 22 of its Tier 1 and Tier 2 continuous $PM_{2.5}$ monitors to facilitate direct data comparisons. Figure III.B.2 shows the locations of these collocations.

Figure III.B.2. Montana DEQ PurpleAir Collocation Sites



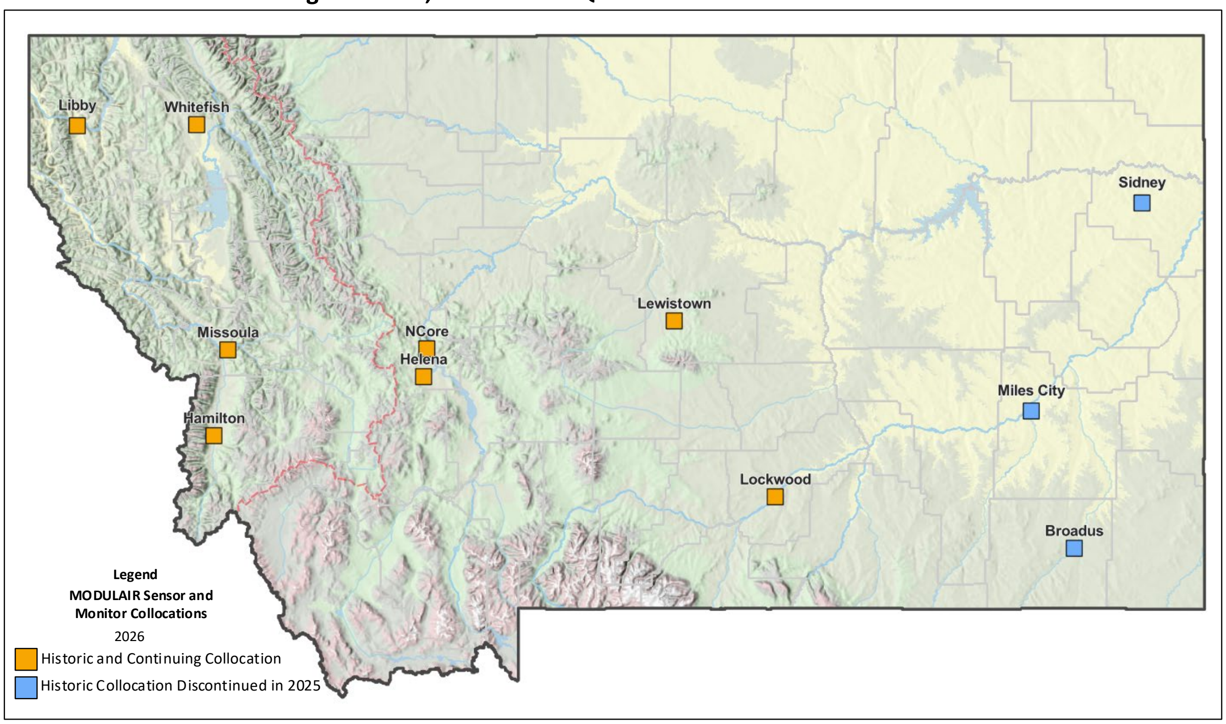
C. MODULAIR™ Sensor Network

The MODULAIR™ device is a non-regulatory air quality sensor manufactured by QuantAQ, Inc. It measures multiple sizes of particulate matter: PM_1, $PM_{2.5}$ and PM_{10}; as well as four gaseous air pollutants: CO, NO, NO_2 and O_3. This sensor is planned for deployment as an informational multipollutant monitor to improve the spatial resolution of MTDEQ's monitoring network. Testing and deployment of the MODULAIR™ sensors by MTDEQ is being conducted in three phases as described in the following.

Phase 1- Collocation

The first phase of this network development is to build a robust collocation dataset of the measured pollutant parameters by collocating MODULAIR™ units at select PM and gaseous pollutant Tier 1 measurement sites. This effort is intended to collect multiple months of data across different seasons, meteorological conditions, and locations throughout Montana. MTDEQ's MODULAIR™ collocation began in the 4th quarter of 2023. Figure III.C.1 displays the active and historic collocation sites across Montana.

Figure III.C.1, Montana DEQ MODULAIR™ Collocation Sites



Phase 2- Analysis

The second phase of this sensor network development is to perform statistical analysis and corrective modeling on the collected data. The intent is to determine the size and direction of any bias between the sensors and the collocated regulatory-grade monitors across the broadest possible range of spatial locations, environmental conditions and concentration ranges. The desired product of this analysis is to quantify and then improve the accuracy of the MODULAIR™ sensor measurements using the onboard sensor inputs from each monitored pollutant and two meteorological sensors measuring relative humidity and temperature. As such, increased confidence in MODULAIR™ device accuracy and reliability can be established before the units are more broadly deployed for real-time community and regional-level monitoring. This project is following studies and guidance developed by the EPA related to sensor collocation, performance, and accuracy.

The first round of this analysis was completed in 2025 using EPA Non-Regulatory Supplemental and Informational Monitoring (NSIM) statistical criteria for benchmarking sensor accuracy. Those criteria are as follows for 24-hour average data:

- **R^2** ≥ 0.70
- **Slope** = 1.0 ± 0.35
- **Intercept** = −5 to +5 µg/m³
- **Root Mean Square Error (RMSE)** ≤ 7 µg/m³ *or* Normalized RMSE ≤ 30%

The MODULAIR™ $PM_{2.5}$ 24-hour averaged data was benchmarked against the three Tier 1 BAM methods operated by MTDEQ, as well as a PurpleAir $PM_{2.5}$ sensor whose produced data was corrected via the EPA AirNow Fire and Smoke algorithm. The results from this opening round of analysis can be found in Table III.C.1:

Table III.C.1: MODULAIR™ $PM_{2.5}$ 24-hour Average Collocation Analysis Summary

Sensor	Compared With	Slope	Intercept	R^2	RMSE	NRMSE	Mean Absolute Error	Average Error	FEM AQI Category Match Freq
Modulair	Met One 1020, Met One 1022, Thermo 5014i	1.28	-2.51	0.89	3.66	44.36%	2.34	0.16	89.51%
	EPA Target Met?	**Yes**	**Yes**	**Yes**	**Yes**		NA	NA	NA
PurpleAir	Met One 1020, Met One 1022, Thermo 5014i	1.16	-1.57	0.92	2.46	32.64%	1.58	0.34	95.57%
	EPA Target Met?	**Yes**	**Yes**	**Yes**	**Yes**		NA	NA	NA

The uncorrected MODULAIR™ sensor met the NSIM target statistics and performed similarly to the collocated EPA-corrected PurpleAir sensor at emulating the performance of an FEM monitor. Like the PurpleAir, the MODULAIR™ demonstrated increased positive bias as concentrations climbed. Overall, the MODULAIR™ matched the hourly Air Quality Index (AQI) category produced by the FEM monitors nearly 90% of the time (compared to the EPA-corrected PurpleAir sensor, which matched the hourly FEM AQI category 95% of the time), lending weight to the use of the MODULAIR™ for producing air quality measurements for public health.

The analysis produced the following preliminary linear correction equation for further improving MODULAIR™ accuracy:

$$\textbf{Corrected Modulair } PM_{2.5} = 0.637 \times \textbf{Modulair } PM_{2.5} + 0.03 \times \textbf{Modulair RH} + 1.627$$

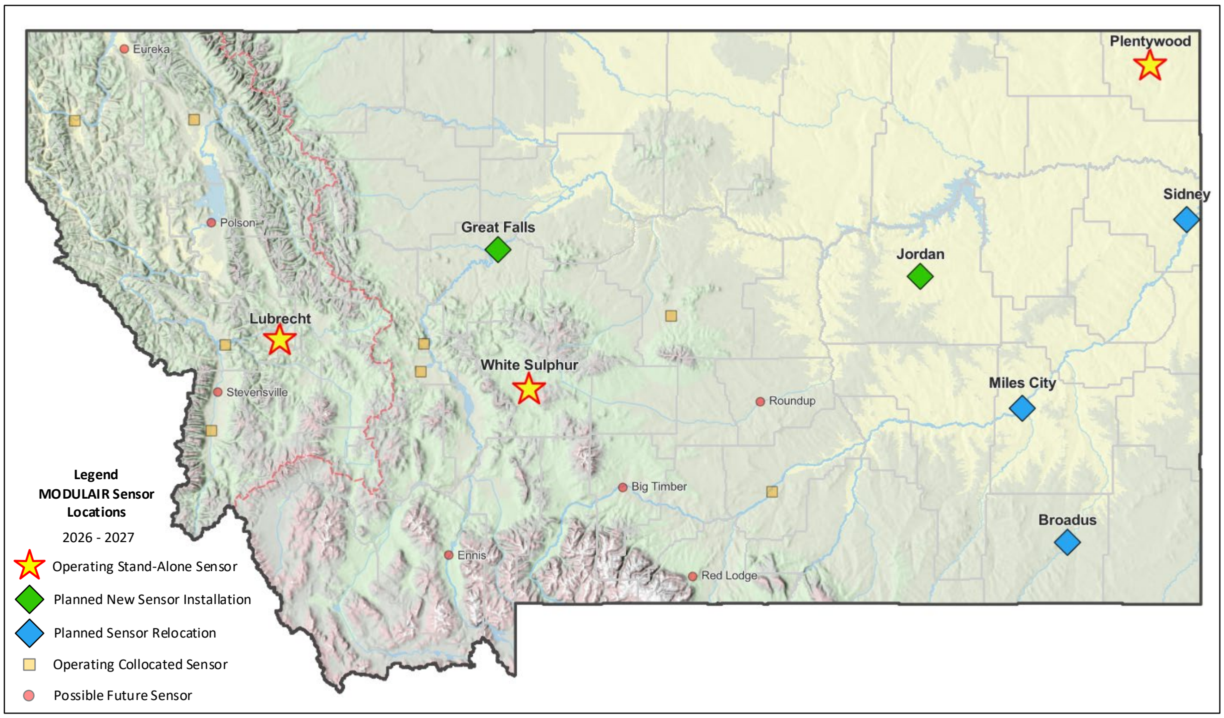
This corrective equation yielded modest improvements to $PM_{2.5}$ NSIM accuracy metrics across all three MTDEQ FEM (Tier 1) instrument types and all AQI categories. It is being tested for implementation in the MTDEQ Air Research and Monitoring Section (ARMS) database for correcting MODULAIR $PM_{2.5}$ data meant for public air quality information.

The next phase of this analysis will encompass a much larger dataset across all collocation sites and additional (gaseous) pollutants and will seek to refine the precision and accuracy metric statistics and associated correction equation coefficients. Additionally, if needed, QuantAQ, Inc. will be consulted to make unit-specific, server-side adjustments to modeling coefficients used in producing final pollutant data to further increase accuracy across sensor measurements where MTDEQ-developed global correction equations prove insufficient.

Phase 3- Deployment

The third phase of this project is to deploy MODULAIR™ sensors as stand-alone units in strategic locations to enhance the spatial representation of air pollutant monitoring across Montana. This phase began following the completion of the preliminary assessment of MODULAIR™ $PM_{2.5}$ accuracy with the establishment of three sites for Tier 3 $PM_{2.5}$ measurements at Lubrecht, White Sulphur Springs, and Plentywood. Three MODULAIR™ monitors are planned to be moved during 2026-2027 from rural locations at closed FEM sites into regional population centers in the communities of Sidney, Miles City, and Broadus. Two new MODULAIR™ sensors are planned to be installed in Great Falls and Jordan. Sensor measurements of $PM_{2.5}$, as well as screening measurements of O_3 and NO_2 will be valuable at these sites. The Great Falls installation will provide an additional $PM_{2.5}$ collocation site. Figure III.C.2 displays MTDEQ's currently deployed and planned MODULAIR™ units.

Figure III.C.2, MODULAIR™ Active and Planned Deployment Sites in Montana



D. Anticipated Changes to the Sensor Monitoring Network in 2026 – 2027

PurpleAir Sensor Network

- Assist schools that have received PurpleAir sensors but have not yet activated them.
- Continue recruitment efforts of additional schools and provide them with PurpleAir sensors.
- Modernize failing sensors with new equipment.
- Continue efforts to enhance the reporting of PurpleAir data on the MTDEQ *Today's Air* website.

MODULAIR™ Sensor Network

- Install new sensors in Jordan and Great Falls.
- Move the sensors at Sidney, Miles City, and Broadus to new, population-centered locations.
- Continue statistical analysis and correction modeling, and apply the results to collected data to increase accuracy and reliability.
- Continue efforts to enhance the reporting of MODULAIR™ data on the MTDEQ *Today's Air* website.

IV. Appendices

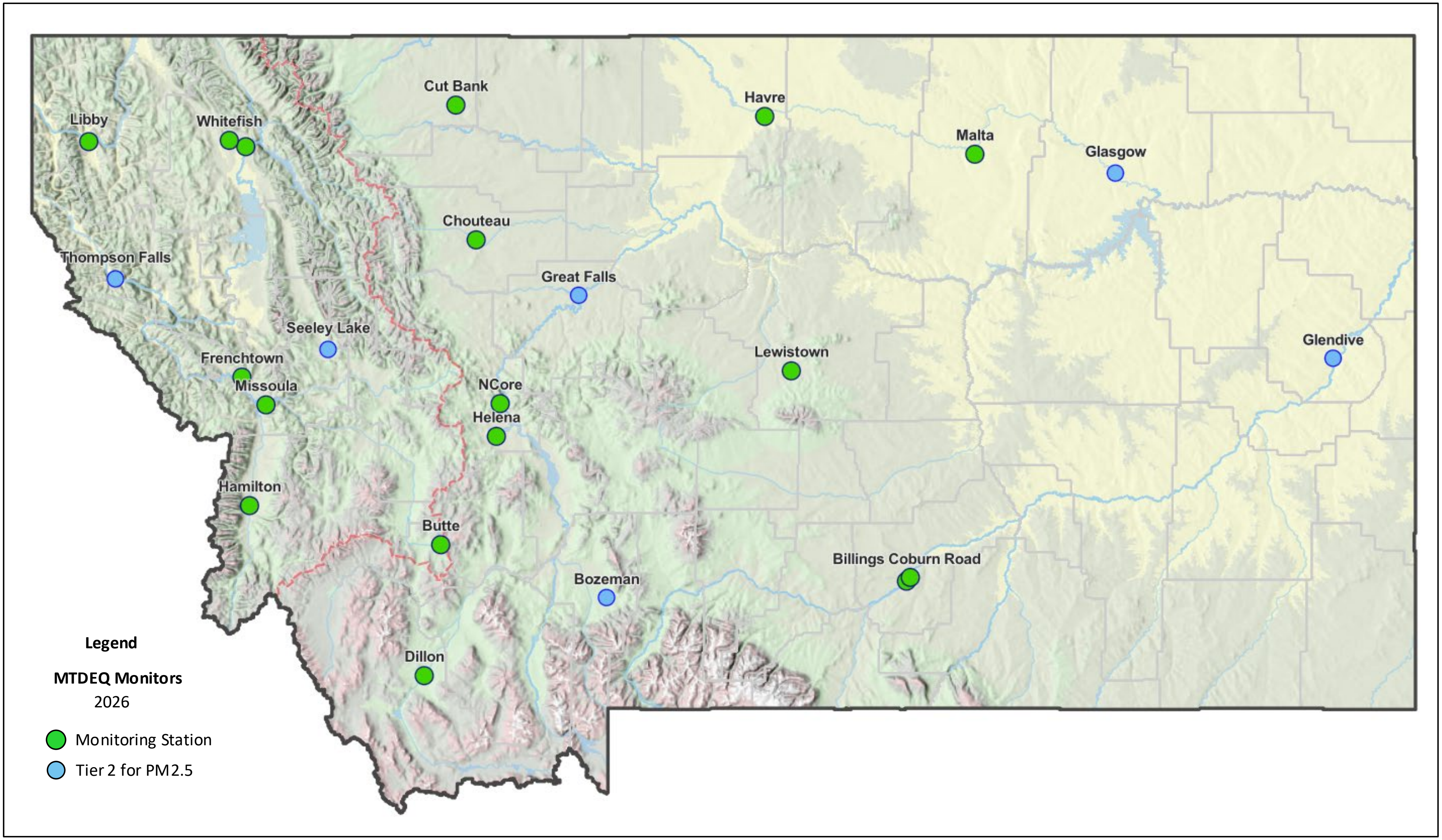
Appendix A -- Monitoring Site Locations

2026 Montana Ambient Air Monitoring Site Location Summary

AQS No.	City - Site Name	Site Extended Name	Montana Address	Longitude	Latitude	CBSA	
						Designation	Name and ID #
Monitor Network							
30-111-0066	Billings	Coburn Road	624 Coburn Rd.	-108.4588044	45.7865897	Metro	Billings, MT, 13740
30-111-0087	Billings	Lockwood	2320 Old Hardin Road	-108.4259928	45.8063151	Metro	Billings, MT, 13740
30-093-0005	Butte	Greeley School	Alley Btwn N. Park Pl. and S. Park Pl.	-112.5012714	46.0025949	Micro	Butte-Silver Bow, M T, 15580
30-099-0005	Chouteau		1098 10th St NW	-112.1936290	47.8203100	--	--
30-035-0022	Cut Bank		Cut Bank Airport, 2705 Valier Hwy	-112.3670368	48.6065497	--	--
30-001-0003	Dillon		State Hwy 91 S. and Barrett St.	-112.6425161	45.2064423	--	--
30-029-0049	Columbia Falls	Flathead Valley	610 13th St West	-114.1892634	48.3636977	Micro	Kalispell, MT, 28060
30-063-0037	Frenchtown	Beckwith	16134 Beckwith Street	-114.2242515	47.0129158	Metro	Missoula, MT, 33540
30-081-0007	Hamilton	PS#46	Madison and 3rd St. S.	-114.1588734	46.2436362	--	--
30-041-0002	Havre		Btwn 13th Street and College Rd, MSU	-109.6844957	48.5403640	--	--
30-049-0026	Helena	Rossiter Pump House	1497 Sierra Rd. East	-112.0130838	46.6587565	Metro	Helena, MT, 25740
30-027-0006	Lewistown		303 East Aztec Drive	-109.4553234	47.0485098	--	--
30-053-0018	Libby	Courthouse Annex	418 Mineral Ave.	-115.5522660	48.3916820	--	--
30-071-0010	Malta		2309 Short Oil Road	-107.8622736	48.3175183	--	--
30-063-0024	Missoula	Boyd Park	3100 Washburn Rd.	-114.0205593	46.8422960	Metro	Missoula, MT, 33540
30-049-0004	NCore	Sieben's Flat	I-15 Exit 209, then Sperry Dr.	-111.9871778	46.8505192	Metro	Helena, MT, 25740
30-029-0009	Whitefish	Dead End	End of 10th St.	-114.3359869	48.4005320	Micro	Kalispell, MT, 28060
Tier 2 Network for $PM_{2.5}$							
30-013-0001	Great Falls	Overlook Park	10th Ave. S. and 2nd St. E.	-111.3033371	47.4943336	Metro	Great Falls, MT, 24500
30-063-0038	Seeley Lake	Elementary School	School Lane	-113.4761820	47.1756297	Metro	Missoula, MT, 33540
30-089-0007	Thompson Falls	High School	Golf St and Haley Ave	-115.3237432	47.5944035	--	--
30-031-0019	Bozeman	High School	N 15th Avenue, H.S. Parking Lot	-111.0563273	45.6837732	Metro	Bozeman, MT, 14580
30-105-0003	Glasgow		54059 U.S. Hwy 2	-106.6415530	48.2118160	--	--
30-021-0005	Glendive		Corner of 8th St. and B Ave.	-104.7517160	47.1206960	--	--

These sites are displayed graphically on the following page.

2026 Montana Ambient Air Monitoring Network Site Map



Appendix B -- Montana Core Based Statistical Areas (CBSAs)

Definition of CBSA

As introduced in the Background section of this document and referenced frequently in the subsequent pollutant-specific sections, federal rules directing ambient air monitoring network design focus significantly on human population size and density. This focus is most frequently represented and applied through the concept of “Core Based Statistical Areas” or CSBAs, and while useful in many disciplines, the definition of this term in 40 CFR 58.1 is most applicable here:

> “*Core-based statistical area (CBSA)* is defined by the U.S. Office of Management and Budget as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration. Metropolitan Statistical Areas (MSAs) and micropolitan statistical areas are the two categories of CBSA (metropolitan areas have populations greater than 50,000; and Micropolitan areas have populations between 10,000 and 50,000). In the case of very large cities where two or more CBSAs are combined, these larger areas are referred to as combined statistical areas (CSAs).”

Montana currently has five federally designated MSAs:

- Billings,
- Bozeman,
- Helena,
- Great Falls, and
- Missoula.

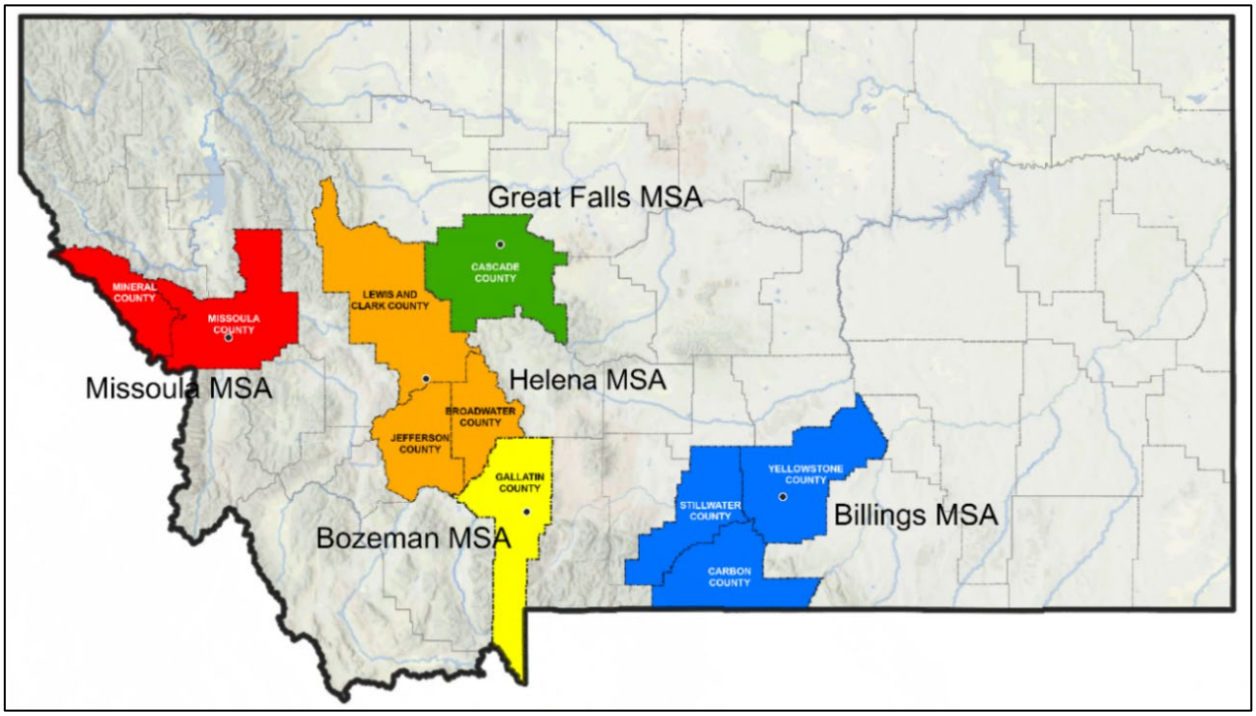
Montana currently has two Micropolitan Statistical Areas:

- Kalispell, and
- Butte-Silver Bow.

Montana does not have any CSAs.

The following maps and tables display the locations and the current and projected populations of these areas.

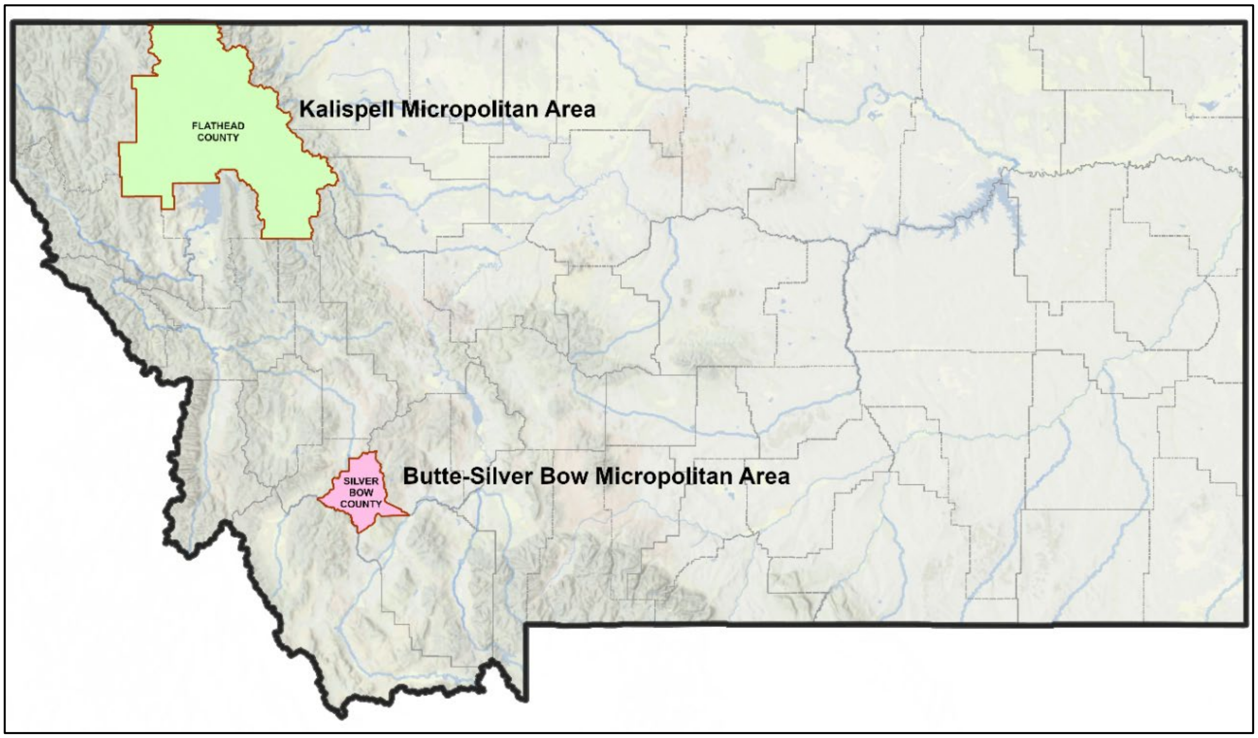
Montana Metropolitan Statistical Areas (MSAs)



Map Color Code	Name and CBSA Number	Description	Population			
			Estimate[1]	Projection[2]		
			2024	2025	2026	2027
	Billings, MT 13740	**MSA**	**192,531**	**194,087**	**195,309**	**196,277**
	Carbon County, MT	County or equivalent	11,498	11,618	11,717	11,788
	Stillwater County, MT	County or equivalent	9,450	9,461	9,453	9,433
	Yellowstone County, MT	County or equivalent	171,583	173,008	174,139	175,056
	Missoula, MT 33540	**MSA**	**127,741**	**129,332**	**130,925**	**132,508**
	Mineral County, MT	County or equivalent	5,195	5,243	5,285	5,321
	Missoula County, MT	County or equivalent	122,546	124,089	125,640	127,187
	Bozeman, MT 14580	**MSA**	**126,984**	**130,475**	**133,495**	**136,097**
	Gallatin County, MT	County or equivalent	126,984	130,475	133,495	136,097
	Helena, MT 25740	**MSA**	**96,735**	**97,629**	**98,250**	**98,929**
	Broadwater County, MT	County or equivalent	8,302	8,301	8,299	8,297
	Jefferson County, MT	County or equivalent	13,304	13,429	13,535	13,640
	Lewis and Clark County, MT	County or equivalent	75,129	75,899	76,416	76,992
	Great Falls, MT 24500	**MSA**	**84,523**	**84,053**	**83,749**	**83,535**
	Cascade County, MT	County or equivalent	84,523	84,053	83,749	83,535

[1] US Census Bureau [2] MT Dept of Commerce

Montana Micropolitan Statistical Areas



Map Color Code	Name and CBSA Number	Description	Population			
			Estimate[1]	Projection[2]		
			2024	2025	2026	2027
(green)	**Kalispell, MT 28060**	**Micropolitan Stat. Area**	**114,527**	**116,564**	**118,522**	**120,395**
	Flathead County, MT	County or equivalent	114,527	116,564	118,522	120,395
(pink)	**Butte-Silver Bow, MT 15580**	**Micropolitan Stat. Area**	**36,134**	**36,455**	**36,748**	**37,018**
	Silver Bow County, MT	County or equivalent	36,134	36,455	36,748	37,018

[1] US Census Bureau [2] MT Dept of Commerce

Appendix C -- Monitoring Network Parameter and Equipment Summary

Site Abr.	Site Name	AQS Number	Pollutant	Parameter-POC	Method			Operating Schedule[4]	Type[5]	Monitoring Objective[6]	Spatial Scale	Proposed Change ?
					Code	Note[2]	PM[3]					
CB	Billings-Coburn	30-111-0066	SO_2	42401-1	600	37		Continuous	SLAMS	H,S	Neigh.	
			SO_2 - 5 min	42406-1	600	37		Continuous	SLAMS	H,S	Neigh.	
LW	Billings-Lockwood	30-111-0087	$PM_{2.5}$	88101-3	170	3	FEM	Continuous	SLAMS	P	Neigh.	
			NO	42601-1	599	32	FRM	Continuous	SLAMS	P	Neigh.	
			NO2	42602-1	599	32	FRM	Continuous	SLAMS	P	Neigh.	
			NOX	42603-1	599	32	FRM	Continuous	SLAMS	P	Neigh.	
			O3	44201-1	087	35	FEM	Continuous	SLAMS	P	Neigh.	
BN	Butte	30-093-0005	PM_{10}	81102-4	122	2	FEM	Continuous	SLAMS	H,P	Neigh.	
			$PM_{2.5}$	88101-3	209	5	FEM	Continuous	SLAMS	H,P, QA Coll-2	Neigh.	
			$PM_{2.5}$	88101-2	116	1	FRM	1 in 6 Coll	SLAMS	H,P QA Coll	Neigh.	
			$PM_{2.5}$ Spc'n	Various		10		1 in 6	SLAMS CSN	H,P	Neigh.	
CH	Choteau	30-099-0005	$PM_{2.5}$	88101-3	209	5	FEM	Continuous	SLAMS	P	Neigh.	
CK	Cut Bank	30-035-0022	$PM_{2.5}$	88101-3	209	5	FEM	Continuous	SLAMS	P	Neigh.	
DN	Dillon	30-001-0003	$PM_{2.5}$	88101-3	209	5	FEM	Continuous	SLAMS	P	Neigh.	
FV	Flathead Valley	30-029-0049	PM_{10}	81102-1	122	2	FEM	Continuous	SLAMS	P	Neigh	
			$PM_{2.5}$	88101-3	170	3	FEM	Continuous	SLAMS	P	Neigh	
FT	Frenchtown	30-063-0037	$PM_{2.5}$	88101-3	170	3	FEM	Continuous	SLAMS	P	Neigh.	
PS	Hamilton	30-081-0007	$PM_{2.5}$	88101-3	170	3	FEM	Continuous	SLAMS	H,P	Neigh.	
HV	Havre	30-041-0002	$PM_{2.5}$	88101-1	209	5	FEM	Continuous	SLAMS	P	Neigh.	
RP	Helena	30-049-0026	$PM_{2.5}$	88101-3	183	8	FEM	Continuous	SLAMS	H,P, QA Coll-3	Neigh.	
			$PM_{2.5}$	88101-4	170	3	FEM	Continuous	SLAMS	H,P QA Cont-Coll	Neigh.	
			$PM_{2.5}$	88101-2	116	1	FRM	1 in 6 Coll	SLAMS	H,P QA Coll	Neigh.	
LT	Lewistown	30-027-0006	NO	42601-1	599	32	FRM	Continuous	SLAMS	B	Regional	
			NO_2	42602-1	599	32	FRM	Continuous	SLAMS	B	Regional	
			NO_X	42603-1	599	32	FRM	Continuous	SLAMS	B	Regional	
			O_3	44201-1	047	36	FEM	Continuous	SLAMS	B	Regional	
			PM_{10}	81102-1	150	7	FEM	Continuous	SLAMS	B	Neigh.	
			$PM_{2.5}$	88101-3	183	8	FEM	Continuous	SLAMS	B	Regional	
LB	Libby	30-053-0018	PM_{10}	81102-X	226	11	FEM	Continuous	SLAMS	P	Neigh.	
			$PM_{2.5}$	88101-X	209	5	FEM	Continuous	SLAMS	P	Neigh.	
ML	Malta	30-071-0010	$PM_{2.5}$	88101-3	183	8	FEM	Continuous	SPM	B	Regional	
MS	Missoula	30-063-0024	NO	Planned	256	31	FEM					✓
			NO_2	Planned	256	31	FEM					✓
			NO_X	Planned	256	31	FEM					✓
			O_3	44201-1	047	36	FEM	Continuous	SLAMS	P	Urban	
			PM_{10}	81102-6	122	2	FEM	Continuous	SLAMS	H,P	Neigh.	
			$PM_{2.5}$	88101-3	170	3	FEM	Continuous	SLAMS	H,P	Neigh.	
NC	NCore	30-049-0004	CO	42101-1	554	30	FRM	Continuous	SLAMS	B	Region	
			NO	42601-1	674	34		Continuous	SLAMS	B	Region	
			NOy	42600-1	674	34		Continuous	SLAMS	B	Region	
			NO_{diff}	42600-1	674	34		Continuous	SLAMS	B	Region	
			O_3	44201-1	047	36	FEM	Continuous	SLAMS	B	Region	
			SO_2	42401-1	600	37	FEM	Continuous	SLAMS	B	Region	
			SO_2 - 5 min	42406-1	600	37		Continuous	SLAMS	B	Region	
			$PM_{2.5}$	88101-3	170	3	FEM	Continuous	SLAMS	B, QA Coll-1	Region	
			$PM_{2.5}$	88101-1	116	1	FRM	1 in 6 / 3	SLAMS	B, QA Coll	Region	
			$PM_{2.5}$	88101-2	116	1	FRM	1 in 6 / 3	SLAMS	B, QA Coll	Region	
			$PM_{2.5}$ Spc'n	Various		10		1 in 3	SLAMS CSN	B	Region	
			$PM_{10\text{-}2.5}$	86101-1	185	9	FEM	Continuous	SLAMS	B	Region	
DE	Whitefish	30-029-0009	PM_{10}	81102-1	122	2	FEM	Continuous	SLAMS	P	Neigh.	✓
TF	Thompson Falls	30-089-0007	PM_{10}	81102-3	122	2	FEM	Continuous	SLAMS	P	Neigh.	

Tier 2

TF	Thompson Falls	30-089-0007	$PM_{2.5}$	88502-3	731	4	**Non**	Continuous	NR	P	Neigh.	
OP	Great Falls	30-013-0001	$PM_{2.5}$	88502-3	731	4	**Non**	Continuous	NR	P	Middle	✓
SE	Seeley Lake	30-063-0038	$PM_{2.5}$	88502-3	731	4	**Non**	Continuous	NR	P	Neigh.	
BH	Bozeman	30-031-0019	$PM_{2.5}$	EBAM	734	6	**Non**	Continuous	EBAM	P	Regional	✓
GW	Glasgow		$PM_{2.5}$	EBAM	734	6	**Non**	Continuous	EBAM	P	Neigh.	
GL	Glendive		$PM_{2.5}$	EBAM	734	6	**Non**	Continuous	EBAM	P	Neigh.	

See notes next page…

Footnotes

[2] Note	Pollutant	Method	Parameter	Description
1	$PM_{2.5}$	116	88101	BGI-PQ200 with very sharp cut cyclone (FRM)
2	PM_{10}	122	81102	Met One BAM 1020 Beta Attenuation Monitor (PM10 FEM)
3	$PM_{2.5}$	170	88101	Met One FEM BAM 1020 Beta Attenuation Monitor with PM2.5 very sharp cut cyclone (PM2.5 FEM ***regulatory***)
4	$PM_{2.5}$	731	88502	Met One BAM 1020 Beta Attenuation Monitor with PM2.5 sharp cut cyclone (SCC) ("FEM-like," ***non-regulatory***)
5	$PM_{2.5}$	209	88101	Met One 1022 FEM BAM Beta Attenuation Monitor with PM2.5 very sharp cut cyclone (VSCC)
6	$PM_{2.5}$	734	88502	Met One E-BAM Beta Attenuation Monitor with PM2.5 SCC (***non-regulatory***)
7	PM_{10}	150	81102	Thermo Scientific 5014i Beta Attenuation Monitor for PM10 (FEM)
8	$PM_{2.5}$	183	88101	Thermo Scientific, 5014i Beta Attenuation Monitor for PM2.5 (FEM)
9	Coarse	185	86101	Met One BAM 1020 PM10-2.5 measurement system -- Paired beta attenuation monitors (FEM)
11	PM_{10}	226	81102	Met One E-BAM PLUS PM10 (FEM)
10	$PM_{2.5}$	**	**	Met One SASS and URG Speciation Air Sampling Systems. **Both have multiple Method Codes for the variety of parameters and analysis methods they represent.
30	CO	554	42101	Thermo Model 48i-TLE Enhanced Trace Level CO analyzer
31	NOx	256	42602	Teledyne API Model N500 Trace Level Cavity-Attenuated Phase-Shift (CAPS) spectroscopy NO2
32	NOx	599	42602	Teledyne API Model T200U Trace Level Chemiluminescence analyzer NO/NOx/NO2 (FRM)
33	NOx	574	42602	Thermo Model 42i TL Trace Level Chemiluminescence NO/NOx/NO2 analyzer (FRM)
34	NOy	674	42600	Thermo Model 42i-Y. NO-DIF-NOy chemiluminescent specialty Trace Level gas analyzer
35	O_3	087	44201	Teledyne API Model T400 UV Photometric O3 analyzer (FEM)
36	O^3	047	44201	Thermo Model 49i UV Photometric O3 analyzer (FEM)
37	SO_2	600	44201	Teledyne API Model T100U Trace Level Ultraviolet SO2 fluorescence (FEM)

[3] PM	Particulate Matter Monitor Type:
FRM	Federal Reference Method,
FEM	Federal Equivalent Method
Non	Public Info Only - Not FEM or FRM method (not usable for NAAQS comparisons)

[4] Operating Schedule	
Continuous	Samples continuously, reports a result at the end of each hour
1 in 6	Collects a 24-hour sample every 6 days
1 in 6 / 3	One of a pair of FRM samplers. Each collects a sample every 6 days, but the pair are staggered by three days.
1 in 6 Coll	Collects a 24-hour sample every 6 days as a collocated monitor comparison
1 in 3	Collects a 24-hour sample every 3 days

[5] Type	Monitor Site Type:
SLAMS	State or Local Air Monitoring Station
SPM	Special Purpose Monitor
SLAMS CSN	Chemical Speciation Network
SPM-NR	Special Purpose Monitor, Exists in AQS, but produces Non-Regulatory Data
NR	Nonregulatory, Public Info Only - Not FEM or FRM method (not usable for NAAQS comparisons)

[6] Monitoring Objective Descriptions	
B	Background
H	Highest Concentration
P	Population Exposure
S	Source Impact
QA Coll	FRM of a FEM / FRM Collocation
QA Coll-1	BAM 1020 for an FRM Collocation
QA Coll-2	BAM 1022 for an FRM Collocation
QA Coll-3	Thermo 5014i for an FRM Collocation
QA Cont-Coll	Continuous Thermo 5014i / Continuous BAM 1020 Collocation

Appendix D -- $PM_{2.5}$ Speciation Analytes

Param Code	Parameter Description	Filter Type	Sampler	Method Code	Unit Code	Unit Description
88401	Reconstructed Mass PM2.5 LC	All	Calculated SASS	819	105	ug/m3 (LC)
68105	Avg. Ambient Temp	Teflon & Nylon	MetOne SASS/SuperSASS	810	017	Degrees C
68108	Avg. Ambient Pressure	Teflon & Nylon	MetOne SASS/SuperSASS	810	059	Millimeters (Hg)
68112	Sample Flow Rate CV	Nylon	MetOne SASS/SuperSASS	812	107	Percent
68115	Sample Volume	Nylon	MetOne SASS/SuperSASS	812	065	Cubic meter
88203	Chloride Ion	Nylon	MetOne SASS/SuperSASS	812	105	ug/m3 (LC)
88301	Ammonium Ion	Nylon	MetOne SASS/SuperSASS	812	105	ug/m3 (LC)
88302	Sodium Ion	Nylon	MetOne SASS/SuperSASS	812	105	ug/m3 (LC)
88303	Potassium Ion	Nylon	MetOne SASS/SuperSASS	812	105	ug/m3 (LC)
88306	Total Nitrate	Nylon	MetOne SASS/SuperSASS	812	105	ug/m3 (LC)
88403	Sulfate	Nylon	MetOne SASS/SuperSASS	812	105	ug/m3 (LC)
88502	PM2.5 mass	Teflon	MetOne SASS/SuperSASS	810	105	ug/m3 (LC)
68111	Sample Flow Rate CV	Teflon	MetOne SASS/SuperSASS	810	107	Percent
68114	Sample Volume	Teflon	MetOne SASS/SuperSASS	810	065	Cubic meter
88348	Soil PM2.5 LC	Teflon	Calculated (SASS)	818	105	ug/m3 (LC)
88102	Antimony (Sb)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88103	Arsenic (As)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88104	Aluminum (Al)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88107	Barium (Ba)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88109	Bromine (Br)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88110	Cadmium (Cd)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88111	Calcium (Ca)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88112	Chromium (Cr)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88113	Cobalt (Co)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88114	Copper (Cu)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88115	Chlorine (Cl)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88117	Cerium (Ce)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88118	Cesium (Cs)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88126	Iron (Fe)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88128	Lead (Pb)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88131	Indium (In)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88132	Manganese (Mn)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88136	Nickel (Ni)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88140	Magnesium (Mg)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88152	Phosphorous (P)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88154	Selenium (Se)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88160	Tin (Sn)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88161	Titanium (Ti)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88164	Vanadium (V)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88165	Silicon (Si)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88166	Silver (Ag)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88167	Zinc (Zn)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88168	Strontium (Sr)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88169	Sulfur (S)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88176	Rubidium (Rb)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88180	Potassium (K)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88184	Sodium (Na)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
88185	Zirconium (Zr)	Teflon	MetOne SASS/SuperSASS	811	105	ug/m3 (LC)
68113	Sample Flow Rate CV	Quartz	URG 3000N	838	107	Percent
68116	Sample Volume	Quartz	URG 3000N	838	065	Cubic meter
68117	Avg. Ambient Temp	Quartz	URG 3000N	838	017	Degrees C
68118	Avg. Ambient Pressure	Quartz	URG 3000N	838	059	Millimeters (Hg)
88320	OC PM2.5 LC TOR	Quartz	URG 3000N	838	105	ug/m3 (LC)
88321	EC PM2.5 LC TOR	Quartz	URG 3000N	838	105	ug/m3 (LC)
88324	OC1 PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88325	OC2 PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88326	OC3 PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88327	OC4 PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88328	OP PM2.5 LC TOR	Quartz	URG 3000N	838	105	ug/m3 (LC)
88329	EC1 PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88330	EC2 PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88331	EC3 PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88355	OC CSN Unadj. PM2.5 LC TOT	Quartz	URG 3000N	838	105	ug/m3 (LC)
88357	EC CSN Unadj. PM2.5 LC TOT	Quartz	URG 3000N	838	105	ug/m3 (LC)
88370	OC CSN Unadj. PM2.5 LC TOR	Quartz	URG 3000N	838	105	ug/m3 (LC)
88374	OC1 CSN Unadj. PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88375	OC2 CSN Unadj. PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88376	OC3 CSN Unadj. PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88377	OC4 CSN Unadj. PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88378	OP CSN Unadj. PM2.5 LC TOR	Quartz	URG 3000N	838	105	ug/m3 (LC)
88379	OP PM2.5 LC TOT	Quartz	URG 3000N	838	105	ug/m3 (LC)
88380	EC CSN Unadj. PM2.5 LC TOR	Quartz	URG 3000N	838	105	ug/m3 (LC)
88381	EC PM2.5 LC TOT	Quartz	URG 3000N	838	105	ug/m3 (LC)
88382	OC PM2.5 LC TOT	Quartz	URG 3000N	838	105	ug/m3 (LC)
88383	EC1 CSN Unadj. PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88384	EC2 CSN Unadj. PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88385	EC3 CSN Unadj. PM2.5 LC	Quartz	URG 3000N	838	105	ug/m3 (LC)
88388	OP CSN Unadj. PM2.5 LC TOT	Quartz	URG 3000N	838	105	ug/m3 (LC)

Appendix E -- National and Montana Ambient Air Quality Standards

National Ambient Air Quality Standards					Montana Ambient Air Quality Standards *
Pollutant	**Primary/ Secondary**	**Averaging Time**	**Level**	**Form**	
CO **Carbon Monoxide**	primary	8-hour (Average Backward)	**9 ppm**	Not to be exceeded more than once per year	*9 ppm*
		1-hour	**35 ppm**		*23 ppm*
NO_X Oxides of Nitrogen with **NO_2** as the Indicator	primary	1-hour	**100 ppb** 40 CFR 50.11	98th percentile of 1-hr daily max conc., avg'd over 3 years	*0.30 ppm*
	primary and secondary	Annual	**53 ppb** (2)	Annual Mean	*0.05 ppm*
O_3 **Ozone**	primary and secondary	8-hour (Average Foreward)	**0.070 ppm** (3) 40 CFR 50.19	Annual fourth-highest daily maximum 8-hr concentration,	--
					1-hour 0.10 ppm
SO_2 **Sulfur Dioxide**	primary	1-hour	**75 ppb** (4)	99th percentile of 1-hour daily max concentrations, avg'd over 3 years	*0.50 ppm*
	secondary	3-hour	**0.5 ppm**	Not to be exceeded more than once per year	--
					24-hour 0.10 ppm
					Annual 0.02 ppm
Pb **Lead**	primary and secondary	Rolling 3 month average	**0.15 µg/m^3** (1)	Not to be exceeded	--
	primary	*Quarterly Average*	***1.5 µg/m^3*** (1)	*Remains in effect only in E. Helena N.A. Area*	*1.5 µg/m^3*
$PM_{2.5}$ **Particulate Matter**	primary	Annual	**9.0 µg/m^3** (5) 40 CFR 50.20	annual mean, averaged over 3 years	--
	secondary	Annual	**15.0 µg/m^3** 40 CFR 50.13	annual mean, averaged over 3 years	--
	primary and secondary	24-hour	**35 µg/m^3** 40 CFR 50.18	98th percentile, averaged over 3 years	--
PM_{10}	primary and secondary	24-hour	**150 µg/m^3**	Not to be exceeded more than once per year on average over 3 years	*150 µg/m^3*
					Annual 50 µg/m^3

*** MAAQS** also include: **Fluoride in forage,** monthly: 50 µg/g & grazing season: 35 µg/g; **H_2S** hourly: 0.05 ppm; **Settleable PM** 30-day avg: 10 g/m^2

(**1**) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m3 as a calendar quarter average) also remain in effect.

(**2**) The level of the annual NO2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(**3**) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(**4**) The previous SO2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO2 standards or is not meeting the requirements of a SIP call under the previous SO2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

(**5**) Changed from 12.0µg/m3 on Feb 7, 2024.

<u>Appendix F -- Annual SO_2 Data Requirements Rule Report</u>

Annual SO_2 Data Requirements Rule Report

On August 10, 2015, EPA finalized the Data Requirements Rule (DRR) for the 2010 1-hour SO_2 primary NAAQS (40 CFR 51, Subpart BB). The SO_2 DRR required that air agencies identify and characterize air quality around large sources. Talen Montana, LLC's Colstrip Steam Electric Generating Station, a coal-fired power plant located in Rosebud County, was the sole source in Montana to which this rule applied. As required in the rule for characterizing air quality for the primary 2010 SO_2 NAAQS, MTDEQ submitted the appropriate designation of attainment for Rosebud County to the EPA, as demonstrated through modeling, on December 20, 2016. On January 9, 2018, EPA classified Rosebud County as Attainment/Unclassifiable (40 CFR Part 81) for the 2010 SO_2 NAAQS.

The SO_2 DRR (40 CFR 51.1205), requires MTDEQ to submit an annual report of SO_2 emissions at Talen Montana, LLC's Colstrip Steam Electric Generating Station; an assessment of the cause of any emission increases compared with modeled emissions; and a recommendation regarding if additional modeling is needed to ensure compliance with the rule. The report may be submitted directly or included as an Appendix to the agency's Annual Network Plan document. The following information is provided to meet those requirements.

1. Summary of Emissions

Table F-1 shows a summary of the three years of actual emissions modeled for the DRR compared to 2025 actual emissions as provided by Talen Montana, LLC for each of its coal-fired emitting units.

Table F-1. Emission Summary at Colstrip Steam Electric Generating Station

Modeled Emission Sources	Modeled Actual SO_2 Emissions (tons/year)				2025 Actual SO_2 Emissions (tons/year)	Actual Emissions Compared to Modeled Average
	2012	2013	2014	Average (2012-2014)		
Unit 1	2,212.03	4,109.70	2,467.51	2,929.74	0.0	-100%
Unit 2	2,589.72	4,889.66	3,393.30	3,624.23	0.0	-100%
Unit 3	2,144.72	2,533.16	2,057.54	2,245.14	1,771.63	-21%
Unit 4	2,257.88	942.34	2,303.83	1,834.68	2,422.76	32%
Colstrip Total	**9,204.35**	**12,474.86**	**10,222.18**	**10,633.79**	**4,194.39**	**-61%**

2. Recommendation Regarding Additional Modeling

Total actual emissions from the Colstrip plant are significantly less than the modeled emissions; therefore, no further modeling is recommended to show compliance with the 1-hour SO_2 NAAQS.

Appendix G -- Public Inspection and Comments

Public Inspection and Comments

This Plan is made available for a 30-day period of public inspection and comment beginning on May 21, 2026.