Air quality

May 2025

Minnesota Air Monitoring Minimum Requirements and 2025 Monitor Classifications

2026 Minnesota Air Monitoring Network Plan

MINNESOTA POLLUTION CONTROL AGENCY

Federal Regulation

40 CFR § 58.10 Annual monitoring network plan and periodic network assessment.
(a)(1) Beginning July 1, 2007, the state, or where applicable local, agency shall submit to the Regional Administrator an annual monitoring network plan which shall provide for the documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations that can include FRM, FEM, and ARM monitors that are part of SLAMS, NCore, CSN, PAMS, and SPM stations. The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require additional information in support of this statement. The annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA and the submitted plan shall include and address, as appropriate, any received comments.

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Introduction

The U.S. Environmental Protection Agency (EPA) establishes the minimum number of monitoring sites required to meet national ambient monitoring objectives. The minimum monitoring requirements are codified in Appendix D of 40 CFR Part 58. Minimum monitoring requirements are specific to each individual pollutant (e.g. ozone, $PM_{2.5}$) or objective-based monitoring network (e.g. NCore, PAMs). Minimum monitoring requirements typically rely on population and/or air pollution emissions data. Minnesota currently meets all minimum air monitoring requirements. This document provides a detailed description of these requirements. It also provides tables that describe each monitor's scale, objective, method, and collocation, where required.

1. $PM_{2.5}$

$PM_{2.5}$ monitoring requirements

The minimum monitoring requirements for $PM_{2.5}$ are established in Appendix D of 40 CFR Part 58, section 4.7.1(a) (Table 1). In addition to these population-based requirements, $PM_{2.5}$ monitoring is required at NCore and near-road air monitoring sites, as established in section 3(b) and section 4.7.1(b)(2) of Appendix D, respectively. NCore site also fulfills the continuous $PM_{2.5}$ and $PM_{2.5}$ chemical speciation network (CSN) site requirements, as established in section 4.7.2 and section 4.7.4 of the appendix, respectively. Each state is also required to operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor for regional transport, as established in section 4.7.3 of the appendix.

Minnesota currently meets all $PM_{2.5}$ monitoring requirements (Table 2), based on current monitoring objectives and methods (Table 3 and Table 4).

If a $PM_{2.5}$ FRM monitoring site were lost due to circumstances beyond the MPCA's control, a replacement site would be established if the lost site exceeded the NAAQS or if it is the "design value site" for a particular metropolitan statistical area (MSA). In this case, all possible efforts would be made to find a new site that is physically close to the lost site and has a similar scale and monitoring objective. However, if the "design value site" for that MSA were still operational, the MPCA would not establish a replacement site because the "design value site" would be used to determine compliance with the $PM_{2.5}$ NAAQS.

Table 1. National minimum monitoring requirements for $PM_{2.5}$

MSA Population [1,2]	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 - <500,0005	1	0

[1] Minimum monitoring requirement applies to the Metropolitan statistical area (MSA).
[2] Population based on latest available census figures.
[3] The $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS) levels and forms are defined in 40 CFR Part 50.
[4] These minimum monitoring requirements apply in the absence of a design value.
[5] Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population

Table 2. Minnesota monitoring requirements for $PM_{2.5}$ as compared to national standards

Metropolitan Area	Counties included	2024 Population Estimate	Maximum 2024 Annual DV as % of NAAQS (9 µg/m³)	Maximum 2024 Daily DV as % of NAAQS (35 µg/m³)	Minimum Requirement	2025 Sites with FRM or FEM monitor
Minneapolis-St. Paul-Bloomington, MN-WI[1]	16 county area including the Twin Cities[1]	3,757,952	93%	77%	3	13
Duluth, MN-WI	Carlton (MN), St. Louis (MN), Douglas (WI)	281,815	63%	57%	0	4
Fargo, ND-MN	Clay (MN), Cass (ND)	267,793	91%	74%	1	1 (ND)
Rochester, MN	Dodge (MN), Olmsted (MN), Wabasha (MN)	230,742	88%	66%	1	1
St. Cloud, MN	Benton (MN), Stearns (MN)	205,878	82%	63%	0	1
La Crosse-Onalaska, WI-MN	Houston (MN), La Crosse (WI)	170,763	87%	74%	1	1 (WI)
Mankato-North Mankato, MN	Blue Earth (MN), Nicollet (MN)	105,193	94%	60%	1	1
Grand Forks, ND-MN	Polk (MN), Grand Forks (ND)	104,184	Unmonitored		0	0
NCore (Blaine)		Not a population-based requirement			1	1
Near-road Minneapolis		Not a population-based requirement			1	1
Near-road Lakeville		Not a population-based requirement			1	1
Regional background (Ely)		Not a population-based requirement			1	1
Regional transport (Marshall)		Not a population-based requirement			1	1

[1] Counties include: Anoka (MN), Carver (MN), Chisago (MN), Dakota (MN), Hennepin (MN), Isanti (MN), Le Sueur (MN), Mille Lacs (MN), Ramsey (MN), Scott (MN), Sherburne (MN), Sibley (MN), Washington (MN), Wright (MN), Pierce (WI), St. Croix (WI)

$PM_{2.5}$ Monitor Classifications

Table 3. Monitor types, scales, and objectives of MPCA and Tribal $PM_{2.5}$ monitors

AQS Monitor ID	Parameter Description	Monitor Type	Measurement Scale	Monitor Objective Type
27-003-1002-88101-1	$PM_{2.5}$ – Local Conditions	SLAMS	Urban Scale	Population Exposure
27-003-1002-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Urban Scale	Population Exposure
27-005-2013-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Urban Scale	Population Exposure
27-007-2304-88101-3	$PM_{2.5}$ – Local Conditions	TRIBAL	Neighborhood	Population Exposure
27-013-5510-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-017-7417-88101-3	$PM_{2.5}$ – Local Conditions	TRIBAL	Neighborhood	Population Exposure
27-021-3410-88101-3	$PM_{2.5}$ – Local Conditions	TRIBAL	Neighborhood	Population Exposure
27-031-7810-88101-3	$PM_{2.5}$ – Local Conditions	TRIBAL	Neighborhood	Population Exposure
27-035-3204-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Urban Scale	Population Exposure
27-037-0470-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-037-0470-88101-4	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-037-0480-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Middle Scale	Source Oriented
27-053-0910-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-053-0962-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Middle Scale	Source Oriented
27-053-0963-88101-1	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-053-0963-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-053-1904-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-053-2006-88101-1	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-053-2006-88101-2	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-075-0005-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Regional	General / Background
27-083-4210-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Urban Scale	Population Exposure/ Regional Transport
27-109-5008-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-115-3061-88101-3	$PM_{2.5}$ – Local Conditions	TRIBAL	Regional	Regional Transport
27-123-0868-88101-1	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-123-0871-88101-1	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-123-0871-88101-2	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-123-0871-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-137-7001-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-137-7550-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-137-7554-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-139-0505-88101-1	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-145-3052-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure
27-171-3201-88101-3	$PM_{2.5}$ – Local Conditions	SLAMS	Neighborhood	Population Exposure

Table 4. Methods, frequency, duration, and collocation of MPCA and Tribal $PM_{2.5}$ monitors in 2025

AQS Monitor ID	Method Code*	Sample Analysis Description	Sample Duration	Collection Frequency	Collocation Primary Monitor Indicator	Distance from Primary Monitor (m)
27-003-1002-88101-1	145	Gravimetric	24 hours	Every 3rd Day	N	1
27-003-1002-88101-3	638	Broadband spectroscopy	1 hour	Every Day	Y	0
27-005-2013-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-007-2304-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-013-5510-88101-3	638	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-017-7417-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-021-3410-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-031-7810-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-035-3204-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-037-0470-88101-3	636	Broadband spectroscopy	1 hour	Every Day	Y	0
27-037-0470-88101-4	636	Broadband spectroscopy	1 hour	Every Day	N	1.5
27-037-0480-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-053-0910-88101-3	638	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-053-0962-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-053-0963-88101-1	145	Gravimetric	24 hours	Every 3rd Day	N	1
27-053-0963-88101-3	636	Broadband spectroscopy	1 hour	Every Day	Y	0
27-053-1904-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-053-2006-88101-1	145	Gravimetric	24 hours	Every 3rd Day	Y	0
27-053-2006-88101-2	145	Gravimetric	24 hours	Every 12th Day	N	1
27-075-0005-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-083-4210-88101-3	638	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-109-5008-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-115-3061-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-123-0868-88101-1	145	Gravimetric	24 hours	Every 3rd Day	n/a	n/a
27-123-0871-88101-1	145	Gravimetric	24 hours	Every 3rd Day	N	1.5
27-123-0871-88101-2	636	Gravimetric	24 hours	Every 12th Day	n/a	n/a
27-123-0871-88101-3	636	Broadband spectroscopy	1 hour	Every Day	Y	0
27-137-7001-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-137-7550-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-137-7554-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-139-0505-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-145-3052-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-171-3201-88101-3	636	Broadband spectroscopy	1 hour	Every Day	n/a	n/a

* Method 636 uses Teledyne T640 at 5.0 LPM; method 638 uses Teledyne T640X at 16.67 LPM.

2. PM_{10}

PM_{10} monitoring requirements

The minimum monitoring requirements for PM_{10} are established in Appendix D of 40 CFR Part 58, section 4.6 (Table 5). In addition to these population-based requirements, PM_{10} monitoring is required at NCore sites as established in section 3(b) of Appendix D.

Minnesota PM_{10} monitoring requirements, listed in Table 6, are based on current monitoring objectives and methods (Table 7 and Table 8). In 2025, the MPCA changed the method at site 27-137-7001 in the Duluth, MN-WI metropolitan area to follow the PM_{10} ambient concentration more closely in the area, replacing the PM_{10} FRM sampler that collects a sample every 6th day with a continuous PM_{10} FEM monitor that reports hourly PM_{10} data.

Table 5. National minimum monitoring requirements for PM_{10}

Population category	MSA[1]		
	High concentration[2]	Medium concentration[3]	Low concentration[4,5]
>1 million	6-10	4-8	2-4
500,000 – 1 million	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]Selection of urban areas and actual numbers of stations per area 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 ambient PM_{10} data show ambient concentrations exceeding the PM_{10} NAAQS by 20% or more.
[3]Medium concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding 80% of the PM_{10} NAAQS.
[4]Low concentration areas are those for which ambient PM_{10} data show ambient concentrations less than 80% of the PM_{10} NAAQS.
[5]These minimum monitoring requirements apply in the absence of a design value.

Table 6. Minnesota monitoring requirements for PM_{10} as compared to national standards

Metropolitan Area	2024 Population Estimate	Expected days greater than 120 µg/m^3 (80% of the NAAQS) based on 2022-2024 data	Minimum Requirement	2025 Sites
Minneapolis-St. Paul-Bloomington, MN-WI	3,757,952	4	4-8	7
Duluth, MN-WI	281,815	1	3-4	2
Fargo, ND-MN	267,793	Unmonitored	0	0
Rochester, MN	230,742	Unmonitored	0	0
St. Cloud, MN	205,878	Unmonitored	0	0
La Crosse-Onalaska, WI-MN	170,763	Unmonitored	0	0
Mankato-North Mankato, MN	105,193	Unmonitored	0	0
Grand Forks, ND-MN	104,184	Unmonitored	0	0
NCore (Blaine)	(Not population-based)	1	1	1

PM_{10} Monitor Classifications

Table 7. Monitor types, scales, and objectives of MPCA PM_{10} monitors in AQS

AQS Monitor ID	Parameter Description	Monitor Type	Measurement Scale	Monitor Objective Type
27-003-1002-81102-3	PM_{10} Total 0-10 µm Stp	SLAMS	Urban Scale	Population Exposure
27-053-0909-81102-3	PM_{10} Total 0-10 µm Stp	SLAMS	Middle Scale	Source Oriented
27-053-0910-81102-3	PM_{10} Total 0-10 µm Stp	SLAMS	Middle Scale	Source Oriented
27-053-0966-81102-1	PM_{10} Total 0-10 µm Stp	SLAMS	Neighborhood	Population Exposure
27-083-4210-81102-3	PM_{10} Total 0-10 µm Stp	SLAMS	Urban Scale	Population Exposure/ Regional Transport
27-123-0866-81102-1	PM_{10} Total 0-10 µm Stp	SLAMS	Middle Scale	Highest Concentration
27-123-0866-81102-2	PM_{10} Total 0-10 µm Stp	SLAMS	Middle Scale	Highest Concentration
27-123-0868-81102-3	PM_{10} Total 0-10 µm Stp	SLAMS	Neighborhood	Population Exposure
27-137-0032-81102-1	PM_{10} Total 0-10 µm Stp	SLAMS	Middle Scale	Source Oriented
27-137-0032-81102-2	PM_{10} Total 0-10 µm Stp	SLAMS	Middle Scale	Source Oriented
27-137-7001-81102-1	PM_{10} Total 0-10 µm Stp	SLAMS	Neighborhood	Population Exposure
27-053-1909-88101-3	PM_{10} Total 0-10 µm Stp	SPM	Neighborhood	Population Exposure

Table 8. Methods and collocation of MPCA PM_{10} monitors in AQS

AQS Monitor ID	Method Code	Sample Analysis Description	Sample Duration	Collection Frequency	Collocation Primary Monitor Indicator	Distance from Primary Monitor (m)
27-003-1002-81102-3	639	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-053-0909-81102-3	122	Beta Attenuation	1 hour	Every Day	n/a	n/a
27-053-0910-81102-3	122	Broadband spectroscopy ~~Beta Attenuation~~	1 hour	Every Day	n/a	n/a
27-053-0966-81102-1	063	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-083-4210-81102-3	639	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-123-0866-81102-1	063	Gravimetric	24 hours	Every 6th Day	Y	0
27-123-0866-81102-2	063	Gravimetric	24 hours	Every 12th Day	N	1.5
27-123-0868-81102-3	122	Beta Attenuation	1 hour	Every Day	n/a	n/a
27-137-0032-81102-1	063	Gravimetric	24 hours	Every 6th Day	Y	0
27-137-0032-81102-2	063	Gravimetric	24 hours	Every 6th Day	N	1.5
27-137-7001-81102-3	639	Broadband spectroscopy	1 hour	Every Day	n/a	n/a
27-053-1909-88101-3	122	Beta Attenuation	1 hour	Every Day	n/a	n/a

3. Total suspended particulates

Total Suspended Particulates (TSP) monitoring requirements

The TSP NAAQS was replaced in 1987 by the PM_{10} standard. There are currently no federal requirements to monitor TSP. Minnesota rule administered by the Minnesota Pollution Control Agency requires the monitoring of TSP and the enforcement of state TSP standards. The TSP standards are detailed in Minn.R.7009.0080.

TSP Monitor Classifications

Table 9. Monitor types, scales, and objectives of MPCA TSP monitors

AQS Monitor ID	Parameter Description	Monitor Type	Measurement Scale	Monitor Objective Type
27-003-1002-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-003-6021-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Source Oriented
27-037-0020-11101-1	Suspended particulate (TSP)	SLAMS	Middle Scale	Source Oriented
27-037-0020-11101-2	Suspended particulate (TSP)	SLAMS	Middle Scale	Source Oriented
27-037-0423-11101-2	Suspended particulate (TSP)	SLAMS	Middle Scale	Source Oriented
27-037-0465-11101-1	Suspended particulate (TSP)	SLAMS	Middle Scale	Source Oriented
27-037-0465-11101-2	Suspended particulate (TSP)	SLAMS	Middle Scale	Source Oriented
27-053-0909-11101-1	Suspended particulate (TSP)	SLAMS	Middle Scale	Source Oriented
27-053-0910-11101-1	Suspended particulate (TSP)	SLAMS	Middle Scale	Source Oriented
27-053-0962-11101-1	Suspended particulate (TSP)	SLAMS	Middle Scale	Source Oriented
27-053-0963-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-053-0966-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-053-1007-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-109-xxxx-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-053-1904-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-053-1909-11101-1	Suspended particulate (TSP)	SPM	Neighborhood	Population Exposure
27-053-xxxx-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-123-0871-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-123-0875-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-123-0890-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-123-xxxx-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-137-7001-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-137-7555-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-137-7555-11101-2	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure
27-163-xxxx-11101-1	Suspended particulate (TSP)	SLAMS	Neighborhood	Population Exposure

Table 10. Methods and collocation of MPCA TSP monitors

AQS Monitor ID	Method Code	Sample Analysis Description	Sample Duration	Collection Frequency	Collocation Primary Monitor Indicator	Distance from Primary Monitor (m)
27-003-1002-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-003-6021-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-037-0020-11101-1	091	Gravimetric	24 hours	Every 6th Day	Y	0
27-037-0020-11101-2	091	Gravimetric	24 hours	Every 6th Day	N	2.5
27-037-0423-11101-2	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-037-0465-11101-1	091	Gravimetric	24 hours	Every 6th Day	Y	0
27-037-0465-11101-2	091	Gravimetric	24 hours	Every 12th Day	N	2.5
27-053-0909-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-053-0910-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-053-0962-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-053-0963-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-053-0966-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-053-1007-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-109-xxxx-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-053-1904-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-053-1909-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-053-xxxx-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-123-0871-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-123-0875-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-123-0890-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-123-xxxx-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-137-7001-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-137-7555-11101-1	091	Gravimetric	24 hours	Every 6th Day	Y	0
27-137-7555-11101-2	091	Gravimetric	24 hours	Every 12th Day	N	3
27-163-xxxx-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a
27-163-xxxx-11101-1	091	Gravimetric	24 hours	Every 6th Day	n/a	n/a

4. Lead

Lead monitoring requirements

The minimum monitoring requirements for lead are established in Appendix D of 40 CFR Part 58, section 4.5. Lead monitoring requirements are based on annual emissions. This source-oriented network requires lead monitoring for non-airport sources which emit 0.50 tons or more lead per year (TPY) and from each airport which emits 1.0 or more TPY, based on either the most recent National Emission Inventory (NEI) or other scientifically justifiable methods and data. The EPA Regional Administrator may waive the lead monitoring requirement near lead sources if the State or, where appropriate, the local agency can demonstrate the lead source will not contribute to a maximum lead concentration in ambient air in excess of 50% of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be re-evaluated once every five years as part of the network assessment. Table 11 shows all facilities with annual Pb emissions greater than 0.5 tons per year and facilities where maximum 3-month rolling average lead concentrations are greater than 50% of the lead NAAQS.

Table 11. 2018 to 2022 annual air emission inventory lead emissions for facilities of interest

Facility Name	City	County	2019 Lead Emissions (TPY)	2020 Lead Emissions (TPY)	2021 Lead Emissions (TPY)	2022 Lead Emissions (TPY)	2023 Lead Emissions (TPY)
Federal Ammunition Co. AI ID 1843	Anoka, MN	Anoka	2.02*	2.07	2.12	2.10	0.416**
Gopher Resource LLC AI ID 1836	Eagan, MN	Dakota	0.170	0.135	0.135	0.496**	0.244**
US Steel Corp – Minntac AI ID 2476	Mountain Iron, MN	St. Louis	0.501	0.486	0.559	0.439	0.433

*Due to production and stack test emission factor

**Due to stack test emission factor update

Source-oriented monitoring

Federal Ammunition

Federal Ammunition was identified above the 0.5 tons Lead on their annually emission inventory for 2019 - 2022. The MPCA placed a lead monitoring site at Federal Ammunition, Anoka MN, to meet the requirement of Appendix D of 40 CFR Part 58, section 4.5. This requirement identifies there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year.

Gopher Resource LLC

In addition to the emissions-based lead monitoring requirements, the EPA Regional Administrator can require additional monitoring beyond the minimum monitoring requirements where the "likelihood of lead air quality violations is significant", or where the emissions density, topography, or population locations are complex and varied. The Minnesota Pollution Control Agency (MPCA) interprets the "likelihood of lead air quality violations is significant" to include locations where ambient monitoring or modeling indicate that ambient lead concentrations may be greater than 50% of the lead NAAQS. Based on monitoring conducted from 2019-2021, one ambient lead monitoring site measured maximum 3-month rolling average lead concentrations greater than 50% of the lead NAAQS (Table 12). At a minimum, the MPCA intends to continue monitoring for lead at this site for as long as the maximum 3-month rolling average lead concentration is greater than 50% of the lead NAAQS.

Table 12. Minnesota Lead monitoring sites with maximum 3-month rolling average lead concentrations greater than 50% of the NAAQS

Site Name	AQS Monitor ID	Maximum 3-month Rolling Average (2022-2024)	Percent of NAAQS
Eagan – Gopher Resources	27-037-0465-14129-1	0.14 µg/m^3	93%
Anoka – Federal Ammunition	27-003-6021-14129-1	0.46 µg/m^3	306%

US Steel Corp – Minntac

In 2009, the MPCA conducted modeling to assess ambient lead concentrations near U.S. Steel Corp – Minntac. The results of this modeling predicted that maximum ambient lead concentrations near the facility were less than 50% of the lead NAAQS. The MPCA received a lead monitoring waiver for U.S. Steel Corp-Minntac in December 2011.

The 2011 monitoring waiver was reevaluated, and results were published in the January 2017 Lead Monitoring Waiver Renewal for U.S. Steel Corp – Minntac. Results of the 2017 modeling reassessment are similar to those conducted in 2009 and 2011. Modeled ambient lead concentrations are well below the monitoring threshold of 50% of the lead NAAQS. Using a background ambient lead concentration of 0.01 µg/m^3, the total facility impact is estimated at 0.010244 µg/m^3, which is approximately 14% of the threshold to require ambient fence-line monitoring. The MPCA received approval from EPA for the 2017 lead monitoring waiver for U.S. Steel Corp-Minntac.

In 2023 the monitoring waiver was reevaluated, and results and request letter were published in Appendix C – Lead Monitoring Waiver Renewal US Steel Corp - Minntac in the 2025 Air Monitoring Network Plan for Minnesota. Results of the 2023 modeling reassessment are similar to those conducted in 2009, 2011 and 2017. Modeled ambient lead concentrations are well below the monitoring threshold of 50% of the lead NAAQS. Using a background ambient lead concentration of 0.01 µg/m^3, the total facility impact is estimated at 0.010580 µg/m^3, which is approximately 14% of the threshold to require ambient fence-line monitoring. The MPCA received approval from EPA for the 2023 lead monitoring waiver for U.S. Steel Corp-Minntac.

Lead Monitor Classifications

The MPCA will monitor lead at 25 sites in 2025. Eight lead monitoring sites are considered source-oriented: Gopher Resources Corporation in Eagan (0465), Federal Ammunition in Anoka, MN (6021), Flint Hills (0020 and 0423), North Minneapolis near a former Northern Metals Recycling location (0909 and 0910), Near Road I-94/I-35 (0962), and Bayport (0446), located between two potential sources. The remaining sites are part of the air toxics program. Scales and objectives of TSP monitors in Minnesota are listed in Table 13. Methods and collocation of TSP monitors are listed in Table 14.

Table 13. Monitor types, scales, and objectives of MPCA lead monitors in AQS

AQS Monitor ID	Parameter Description	Monitor Type	Measurement Scale	Monitor Objective Type
27-003-1002-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-003-6021-14129-1	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-037-0020-14129-1	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-037-0020-14129-2	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-037-0423-14129-2	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-037-0465-14129-1	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-037-0465-14129-2	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-053-0909-14129-1	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-053-0910-14129-1	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-053-0962-14129-1	Lead (Tsp) LC	SLAMS	Middle Scale	Source Oriented
27-053-0963-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-053-0966-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-053-1007-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-053-xxxx-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-053-1904-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-053-1909-14129-1	Lead (Tsp) LC	SPM	Neighborhood	Population Exposure
27-109-xxxx-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-123-0871-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-123-0875-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-123-0890-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-123-xxxx-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-137-7001-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-137-7555-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-137-7555-14129-2	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure
27-163-xxxx-14129-1	Lead (Tsp) LC	SLAMS	Neighborhood	Population Exposure

Table 14. Methods and collocation of MPCA lead monitors

AQS Monitor ID	Method Code*	Sample Duration	Collection Frequency	Collocation Primary Monitor Indicator	Distance from Primary Monitor (m)
27-003-1002-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-003-6021-14129-1	192	24 hours	Every 3rd Day	n/a	n/a
27-037-0020-14129-1	192	24 hours	Every 6th Day	Y	0
27-037-0020-14129-2	192	24 hours	Every 6th Day	N	2.5
27-037-0423-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-037-0465-14129-1	192	24 hours	Every 3rd Day	Y	0
27-037-0465-14129-2	192	24 hours	Every 12th Day	N	2.5
27-053-0909-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-053-0910-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-053-0962-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-053-0963-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-053-0966-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-053-1007-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-053-xxxx-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-053-1904-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-053-1909-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-109-xxxx-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-123-0871-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-123-0875-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-123-0890-14129-1	192	24 hours	Every 3rd Day	n/a	n/a
27-123-xxxx-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-137-7001-14129-1	192	24 hours	Every 6th Day	n/a	n/a
27-137-7555-14129-1	192	24 hours	Every 6th Day	Y	0
27-137-7555-14129-2	192	24 hours	Every 12th Day	N	3
27-163-xxxx-14129-1	192	24 hours	Every 6th Day	n/a	n/a

*Method 192 is Inductively Coupled Plasma-Mass Spectrometry Acid filter extract with hot nitric acid

5. Ozone

Ozone (O_3) monitoring requirements

The minimum monitoring requirements for ozone are established in Section 4.1 of Appendix D of 40 CFR Part 58, section 4.1 (Table 15). In addition to these population-based requirements, ozone monitoring is required at NCore sites as established in section 3(b) of Appendix D.

Minnesota currently meets all ozone monitoring requirements (Table 16), based on current monitoring objectives and methods (Tables 17 and 18).

Table 15. National minimum monitoring requirements for ozone

MSA Population[1,2]	Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS[3]	Most recent 3-year design value concentration <85% of any O_3 NAAQS[3,4]
>10 million	4	2
4-10 million	3	1
350,000 - <4 million	2	1
50,000 - <350,000[5]	1	0

[1]Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
[2]Population based on latest available census figures.
[3]The ozone (O_3) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
[4]These minimum monitoring requirements apply in the absence of a design value.
[5]Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Table 16. Minnesota monitoring requirements for ozone as compared to national standards

Metropolitan Area	2024 Population Estimate	Maximum 2024 8-Hour DV as % of NAAQS (70 ppb)	Minimum Requirement	2025 Sites
Minneapolis-St. Paul-Bloomington, MN-WI	3,757,952	91%	2	6
Duluth, MN-WI	281,815	83%	1	2
Fargo, ND-MN	267,793	86%	1	1 (ND)
Rochester, MN	230,742	90%	1	1
St. Cloud, MN*	205,878	Unmonitored	0	0
La Crosse-Onalaska, WI-MN	170,793	91%	1	1 (WI)
Mankato-North Mankato, MN	105,193	81%	0	1
Grand Forks, ND-MN	104,184	Unmonitored	0	0
NCore (Blaine)	Not a population-based requirement		1	1

*AQS Site 27-145-3052 may represent the St. Cloud air mass, and is within St. Cloud city limits, but its actual location in Sherburne County means that it is outside the boundary of the St. Cloud MSA. Thus, Site 3052 does not meet the monitoring requirements for the St. Cloud MSA. Sherburne County is part of the Minneapolis-St. Paul-Bloomington, MN-WI MSA.

O_3 monitor classifications

Table 17. Monitor types, scales, and objectives of MPCA and Tribal ozone monitors

AQS Monitor ID	Parameter Description	Monitor Type	Measurement Scale	Monitor Objective Type
27-003-1001-44201-1	Ozone	SLAMS	Neighborhood	Highest Concentration
27-003-1002-44201-1	Ozone	SLAMS	Neighborhood	Highest Concentration
27-005-2013-44201-1	Ozone	SLAMS	Urban Scale	Regional Transport
27-007-2305-44201-1	Ozone	TRIBAL	Urban Scale	Population Exposure
27-013-5510-44201-1	Ozone	SLAMS	Urban Scale	Population Exposure
27-017-7417-44201-1	Ozone	TRIBAL	Neighborhood	Population Exposure
27-035-3204-44201-1	Ozone	SLAMS	Urban Scale	Population Exposure
27-049-5302-44201-1	Ozone	SLAMS	Neighborhood	Population Exposure
27-053-0962-44201-1	Ozone	SLAMS	Middle Scale	Source Oriented
27-075-0005-44201-1	Ozone	SLAMS	Regional	General / Background
27-083-4210-44201-1	Ozone	SLAMS	Urban Scale	Regional Transport
27-095-3051-44201-1	Ozone	TRIBAL	Regional	General / Background
27-109-5008-44201-1	Ozone	SLAMS	Neighborhood	Population Exposure
27-137-7550-44201-1	Ozone	SLAMS	Neighborhood	Population Exposure
27-139-0505-44201-1	Ozone	SLAMS	Neighborhood	Population Exposure
27-145-3052-44201-1	Ozone	SLAMS	Neighborhood	Population Exposure
27-163-6016-44201-1	Ozone	SLAMS	Neighborhood	Highest Concentration
27-171-3201-44201-1	Ozone	SLAMS	Neighborhood	Highest Concentration

Table 18. Methods of MPCA and Tribal ozone monitors

AQS Monitor ID	Method Code	Sample Analysis Description
27-003-1001-44201-1	087	Ultraviolet Absorption
27-003-1002-44201-1	087	Ultraviolet Absorption
27-005-2013-44201-1	087	Ultraviolet Absorption
27-007-2305-44201-1	087	Ultraviolet Absorption
27-013-5510-44201-1	087	Ultraviolet Absorption
27-017-7417-44201-1	087	Ultraviolet Absorption
27-035-3204-44201-1	087	Ultraviolet Absorption
27-049-5302-44201-1	087	Ultraviolet Absorption
27-053-0962-44201-1	087	Ultraviolet Absorption
27-075-0005-44201-1	087	Ultraviolet Absorption
27-083-4210-44201-1	087	Ultraviolet Absorption
27-095-3051-44201-1	087	Ultraviolet Absorption
27-109-5008-44201-1	087	Ultraviolet Absorption
27-137-7550-44201-1	087	Ultraviolet Absorption
27-139-0505-44201-1	087	Ultraviolet Absorption
27-145-3052-44201-1	087	Ultraviolet Absorption
27-163-6016-44201-1	087	Ultraviolet Absorption
27-171-3201-44201-1	087	Ultraviolet Absorption

6. Nitrogen dioxide

Nitrogen dioxide (NO_2) monitoring requirements

The minimum monitoring requirements for NO_2 are established in Appendix D of 40 CFR Part 58, section 4.3. There are two primary monitoring objectives for NO_2, including monitoring near roads and in neighborhoods (area-wide), as established in section 3(b) and section 4.2.1(a) of Appendix D, respectively (Table 19). In addition to these minimum requirements, the Regional Administrator may require additional monitoring in areas where NO_2 is expected to be near the level of the NAAQS. To date, the Regional Administrator has not required any additional NO_2 monitors in Minnesota.

Minnesota currently meets all NO_2 monitoring requirements (Table 20), based on current monitoring objectives (Table 21) and methods (Table 22).

Table 19. National minimum monitoring requirements for nitrogen dioxide

MSA Population	Near-Road Monitors	Area-wide Monitors
500,000	1-2[1]	0
1,000,000	1	1
2,500,000	2	1

[1]A second near-road site is required for any CBSA with a population of 500,000 or more persons that has one or more roadway segments with Annual Average Daily Traffic (AADT) greater than 250,000.

Table 20. Minnesota monitoring requirements for nitrogen dioxide

Metropolitan Area	2024 Population Estimate	Required Near-Road	2025 Near-Road	Required Area-Wide	2025 Area-Wide
Minneapolis-St. Paul-Bloomington, MN-WI	3,757,952	2	2	1	3
Duluth, MN-WI	281,815	0	0	0	1
Fargo, ND-MN	267,793	0	0	0	1 (ND)
Rochester, MN	230,742	0	0	0	0
St. Cloud, MN	205,878	0	0	0	0
La Crosse-Onalaska, WI-MN	170,763	0	0	0	0
Mankato-North Mankato, MN	105,193	0	0	0	0
Grand Forks, ND-MN	104,184	0	0	0	0

NO_2 monitor classifications

Table 21. Monitor types, scales, and objectives of MPCA nitrogen dioxide monitors in AQS

AQS Monitor ID	Parameter Description	Monitor Type	Measurement Scale	Monitor Objective Type
27-003-1002-42602-1	Nitrogen Dioxide	SLAMS	Urban Scale	General / Background
27-037-0020-42602-1	Nitrogen Dioxide	SLAMS	Middle Scale	Source Oriented
27-037-0423-42602-1	Nitrogen Dioxide	SLAMS	Middle Scale	Source Oriented
27-037-0480-42602-1	Nitrogen Dioxide	SLAMS	Middle Scale	Source Oriented
27-053-0962-42602-1	Nitrogen Dioxide	SLAMS	Middle Scale	Source Oriented / Highest Concentration
27-137-7001-42602-1	Nitrogen Dioxide	SPM	Regional Scale	General / Background

Table 22. Methods of MPCA NO_2 monitors in AQS

AQS Monitor ID	Method Code	Sample Analysis Description
27-003-1002-42602-1	099	Gas Phase Chemiluminescence
27-037-0020-42602-1	099	Gas Phase Chemiluminescence
27-037-0423-42602-1	099	Gas Phase Chemiluminescence
27-037-0480-42602-1	099	Gas Phase Chemiluminescence
27-053-0962-42602-1	099	Gas Phase Chemiluminescence
27-137-7001-42602-1	099	Gas Phase Chemiluminescence

7. Sulfur dioxide

Sulfur dioxide (SO_2) monitoring requirements

The minimum monitoring requirements for SO_2 are established in Appendix D of 40 CFR Part 58, section 4.4. The SO_2 monitoring requirement is based on the Population Weighted Emissions Index (PWEI) for all CBSAs (Table 23). The PWEI is calculated by multiplying the population of each CBSA, using the most recent census data or estimates, and the total amount of SO_2 in TPY emitted within the CBSA area, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in each CBSA. The resulting value is divided by one million, providing a PWEI value, the units of which are million person-tons per year (Table 24). In addition to these population-based requirements, SO_2 monitoring is required at NCore sites as established in section 3(b) of Appendix D.

The MPCA currently monitors SO_2 at seven locations in the state (Tables 25 and 26).

Table 23. National minimum monitoring requirements for sulfur dioxide

PWEI for CBSA	Required Sites
≥1 million	3
100,000 to < 1 million	2
5,000 to < 100,000	1

Table 24. Minnesota monitoring requirements for sulfur dioxide as compared to national standards

Metropolitan Area	2024 Population Estimate	2020 NEI SO_2 (tons/year)	PWEI	Minimum requirement	2025 Sites
Minneapolis-St. Paul-Bloomington, MN-WI	3,757,952	1,161	4,363	0	6
Duluth, MN-WI	281,815	201	57	0	0
Fargo, ND-MN	267,793	7,136	1,911	0	1 (ND)
Rochester, MN	230,742	147	34	0	0
St. Cloud, MN	205,878	124	26	0	0
La Crosse-Onalaska, WI-MN	170,763	59	10	0	0
Mankato-North Mankato, MN	105,193	31	3	0	0
Grand Forks, ND-MN	104,184	2,665	278	0	0
NCore (Blaine)	Not a population-based requirement			1	1

SO_2 monitor classifications

Table 25. Monitor types, scales, and objectives of MPCA sulfur dioxide monitors in AQS

AQS Monitor ID	Parameter Description	Monitor Type	Measurement Scale	Monitor Objective Type
27-003-1002-42401-1	Sulfur Dioxide	SLAMS	Urban Scale	Population Exposure
27-003-1002-42401-2	Sulfur Dioxide	SLAMS	Urban Scale	Population Exposure
27-037-0020-42401-1	Sulfur Dioxide	SLAMS	Middle Scale	Source Oriented
27-037-0423-42401-1	Sulfur Dioxide	SLAMS	Middle Scale	Source Oriented
27-037-0443-42401-1	Sulfur Dioxide	SLAMS	Middle Scale	Source Oriented
27-053-0954-42401-1	Sulfur Dioxide	SLAMS	Microscale	Population Exposure
27-137-7001-42401-1	Sulfur Dioxide	SPM	Regional Scale	General / Background
27-163-0436-42401-1	Sulfur Dioxide	SLAMS	Middle Scale	Source Oriented

Table 26. Methods of MPCA sulfur dioxide monitors in AQS

AQS Monitor ID	Method Code	Sample Analysis Description
27-003-1002-42401-1	600	Ultraviolet Fluorescence API 100 EU
27-003-1002-42401-2	600	Ultraviolet Fluorescence API 100 EU
27-037-0020-42401-1	100	Ultraviolet Fluorescence
27-037-0423-42401-1	100	Ultraviolet Fluorescence
27-037-0443-42401-1	100	Ultraviolet Fluorescence
27-053-0954-42401-1	100	Ultraviolet Fluorescence
27-137-7001-42401-1	100	Ultraviolet Fluorescence
27-163-0436-42401-1	100	Ultraviolet Fluorescence

8. Carbon monoxide

Carbon Monoxide (CO) monitoring requirements

The minimum monitoring requirements for CO are established in Appendix D of 40 CFR Part 58, section 4.2. These requirements include monitoring CO at NCore sites and at two near-road air monitoring sites in Core Base Statistical Areas (CBSAs) having a population of 1,000,000 or more persons, as established in section 3(b) and section 4.2.1(a) of Appendix D, respectively. (Table 27). In addition to these minimum requirements, the Regional Administrator may require additional monitors in situations where data or other information suggests that CO concentrations may be approaching or exceeding the NAAQS. Minnesota currently meets the minimum CO monitoring requirements, according to monitoring objectives and methods (Tables 28 and 29).

Table 27. Minnesota carbon monoxide monitoring requirements

Location Requirement	Required Sites	2025 Sites
Near-road CO for CBSAs > 1 million (Minneapolis – St. Paul- Bloomington, MN-WI)	1	2
NCore (Blaine)	1	1

CO monitor classifications

Table 28. Monitor types, scales, and objectives of MPCA carbon monoxide monitors in AQS

AQS Monitor ID	Parameter Description	Monitor Type	Measurement Scale	Monitor Objective Type
27-003-1002-42101-1	Carbon Monoxide	SLAMS	Urban Scale	Population Exposure
27-037-0020-42101-1	Carbon Monoxide	SLAMS	Middle Scale	Source Oriented
27-037-0423-42101-1	Carbon Monoxide	SLAMS	Middle Scale	Source Oriented
27-037-0480-42101-1	Carbon Monoxide	SLAMS	Middle Scale	Source Oriented
27-053-0954-42101-1	Carbon Monoxide	SLAMS	Microscale	Highest Concentration
27-053-0962-42101-1	Carbon Monoxide	SLAMS	Middle Scale	Source Oriented

Table 29. Methods of MPCA carbon monoxide monitors in AQS

AQS Monitor ID	Method Code	Sample Analysis Description
27-003-1002-42101-1	593	Gas Filter Correlation Teledyne API 300 EU
27-037-0020-42101-1	093	Gas Filter Correlation CO Analyzer
27-037-0423-42101-1	093	Gas Filter Correlation CO Analyzer
27-037-0480-42101-1	093	Gas Filter Correlation CO Analyzer
27-053-0954-42101-1	093	Gas Filter Correlation CO Analyzer
27-053-0962-42101-1	093	Gas Filter Correlation CO Analyzer