

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION



Amendments to:

State Air Quality Control Plan

Vol. II: III.D.7.5

PM_{2.5} Network & Monitoring Program

Adopted

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Jason W. Brune, Commissioner

7.5. PM_{2.5} Network and Monitoring Program

Air quality monitoring data are used to evaluate trends and determine compliance with the NAAQS. It is also important to monitor and compare ambient air quality concentrations to modeled emission projections to determine if the projections are reasonable and credible. Section 110(a)(2)(B) of the CAA (42 U.S.C. 7410(a)(2)(b)) requires that each implementation plan submitted to EPA provide for the establishment and operation of “appropriate devices, methods, systems, and procedures necessary to monitor, compile, and analyze data on ambient air quality.” Details of the DEC PM_{2.5} Network and Monitoring Program can be found in Appendix III.D.7.5.

DEC operates and manages three monitoring sites located within the Fairbanks North Star Borough PM_{2.5} Nonattainment Area: two SLAMS sites for PM_{2.5}, and one combined multi-pollutant NCore and Chemical Speciation Network (CSN) site. The original violating monitoring site at the State Office Building located at 675 Seventh Avenue was shut down in 2019. Figure 7.5-1 is a map showing the entire Fairbanks and North Pole area. The red dots indicate the locations of the monitoring sites. The locations of the monitoring network are described in table 7.5-1.

Table 7.5-1 PM_{2.5} Sites in the Fairbanks North Star Borough

<u>Site Name</u>	<u>Location</u>	<u>AQS ID</u>	<u>Designation</u>	<u>Install Date</u>	<u>Scale</u>
NCore	Fairbanks	02-090-0034	NCore	Oct, 2009	neighborhood
			CSN	Jan, 2015	neighborhood
A Street	Fairbanks	02-090-0040	SLAMS	July 2019	neighborhood
Hurst Road, *Previously North Pole Fire	North Pole	02-090-0035	SLAMS	Mar, 2012	neighborhood

The NCore site is located at 809 Pioneer Road, approximately 35 meters north of the Chena River near the Fairbanks North Star Borough building and within one mile of numerous road systems. DEC chose this site for multi-pollutant monitoring because Fairbanks is dealing with the most significant air quality impacts in the state. PM_{2.5} monitoring equipment at the site includes FRM, continuous, and chemical speciation monitors. The FRM monitors run daily to collect PM_{2.5} data for comparison to the NAAQS. The continuous monitors collect hourly data which provides ‘real-time’ information to the public on DEC’s website and is used when issuing Alerts; the continuous monitor is not configured as a Federal Equivalent Method (FEM) and is not used for determining regulatory compliance. Chemical speciation monitors provide data for use in multiple types of studies. The NCore site also contains gaseous and meteorological instruments.

Table 7.5-2 NCore PM_{2.5} Monitors

<u>Pollutant</u>	<u>Parameter- POC</u>	<u>Instrument</u>	<u>Method Designation</u>	<u>Sampling Schedule</u>	<u>Designation</u>
PM _{2.5}	88101-1	Partisol 2025i	FRM	Daily Sampling	NCore
PM _{2.5}	88101-2	Partisol 2000i	FRM	1 in 3	NCore
PM _{2.5}	88501-3	Met-One BAM 1020X	non-FEM	Hourly	NCore
PM _{2.5} Speciation	Multiple Chemical Species	Met-One Super SASS	N/A	1 in 3	CSN
PM _{2.5} Speciation	Multiple Chemical Species	URG 3000N	N/A	1 in 3	CSN

The A Street site is a new Fairbanks maximum-impact site located on the eastern edge of the Nordale Elementary School grounds along A Street between Eureka Avenue and Dunbar Avenue in eastern Fairbanks. The site is equipped with FRM and continuous PM_{2.5} monitors. The continuous PM_{2.5} monitor provides ‘real-time’ information to the public and is used for issuing Alerts but is not configured as an FEM and is not used for determining regulatory compliance with the NAAQS. During the winter of 2018/19 measurements from this site were compared to the State Office Building site on 675 Seventh Avenue, which was the original violating monitor for the nonattainment area. As it was shown that this site consistently recorded higher PM_{2.5} concentrations, the decision was made to make the A Street site the new SLAMS site and to shut down the State Office Building site. Wood smoke from wintertime home heating is considered the major pollution source.

Table 7.5-3 A Street PM_{2.5} Monitors

<u>Pollutant</u>	<u>Parameter- POC</u>	<u>Instrument</u>	<u>Method Designation</u>	<u>Sampling Schedule</u>	<u>Designation</u>
PM _{2.5}	88101-1	Partisol 2025i	FRM	Daily Sampling	SLAMS
PM _{2.5}	88501-3	Met-One BAM 1020X	non-FEM	Hourly	NCore

The Hurst Road site, formerly named North Pole Fire Station, is located on the west side of North Pole Volunteer Fire Station #3 at 3288 Hurst Road in the middle of a residential area. This site is equipped with FRM and continuous PM_{2.5} monitors. As with the NCore and A Street sites, the continuous PM_{2.5} monitor provides ‘real-time’ information to the public and is used for issuing

Alerts, but is not configured as an FEM and is not used for determining regulatory compliance with the NAAQS. Wood smoke from wintertime home heating is considered the major pollution source. During the summer months, the main source is wildland fire smoke.

Table 7.5-4 Hurst Road PM_{2.5} Monitors

<u>Pollutant</u>	<u>Parameter- POC</u>	<u>Instrument</u>	<u>Method Designation</u>	<u>Sampling Schedule</u>	<u>Designation</u>
PM _{2.5}	88101-1	Partisol 2025i	FRM	Daily Sampling	SLAMS
PM _{2.5}	88101-2	Partisol 2025i	FRM	1 in 6	SLAMS
PM _{2.5}	88501-3	MetOne BAM 1020X	non-FEM	Hourly	SPM

The monitoring network is operated 24 hours each day. Two types of PM_{2.5} monitors are installed in Fairbanks area, Met-One Beta Attenuation Monitors (BAM 1020) which provide information in real time for evaluating current conditions and determining the air quality index and Thermo Fisher Scientific Inc. Partisol 2025i and 2000i samplers which collect daily 24-hour samples at each site for comparison to the PM_{2.5} NAAQS. Filters used in the Partisol samplers are sent to the DEC gravimetric laboratory for analysis. PM_{2.5} monitoring is conducted following requirements established in federal regulations, EPA guidance, and instrument manufacturer recommendations.



Figure 7.5-1 Map of the Fairbanks and North Pole Area. Yellow dots indicate the locations of the monitoring sites.