Fairbanks State Office Building Site Monitoring Report

Carbon Monoxide and Particulate Monitoring from 1972 to 2019

Alaska Department of Environmental Conservation
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Table of Contents

List of Figures

List of Tables

Acronyms

AQS	Air Quality System
BAM	Beta Attenuation Monitor
CO	Carbon monoxide
CSN	Chemical Speciation Network
DEC	Alaska Department of Environmental Conservation
EPA	U.S. Environmental Protection Agency
FEM	Federal Equivalent Method
FNSB	Fairbanks North Star Borough
FRM	Federal Reference Method
FSOB	Fairbanks State Office Building
$\mu g/m^3$	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standard
NCore	National Core Multi-Pollutant Monitoring Stations
$PM_{2.5}$	Particulate matter less than 2.5 microns
PM_{10}	Particulate matter less than 10 microns
ppm	parts per million
POC	parameter occurrence code
SCC	Sharp cut cyclone
SIP	State implementation plan
STN	Speciation Trends Network
VSCC	Very sharp cut cyclone
WINS	Well Impactor Ninety-Six

Executive Summary

The State of Alaska Department of Environmental Conservation (DEC), in an effort to protect the public health and the environment, has been mandated by the legislature to evaluate, assess, and mediate environmental issues that may affect the health and welfare of residents within the state. To further these objectives, DEC established a statewide air monitoring network. The network currently consists of sites in Juneau, Anchorage, Fairbanks, and the Matanuska-Susitna Valley (Mat-Su Valley). This report provides information about air monitoring at the Fairbanks State Office Building (FSOB) in Fairbanks, Alaska from 1972 to 2019.

Between 1972 and 2019, the Fairbanks North Star Borough (FNSB) and DEC monitored carbon monoxide (CO) and particulate matter at the FSOB monitoring site. Two sizes of particulate matter, particulate matter with an aerodynamic diameter of 10 micrometers or smaller (PM_{10}), and particulate matter with an aerodynamic diameter of 2.5 micrometers or smaller ($PM_{2.5}$) were monitored at the site. The U.S. Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards (NAAQS) for each of these pollutants.

Air quality concerns within FNSB during the years the site was open included wildfires in the summer months, solid fuel burning (wood stove use) for home heating purposes in the winter months, vehicle traffic, and nearby coal-fired power plants. Several exceedances of CO, PM_{10}, and $PM_{2.5}$ were recorded at FSOB between 1972-2019. In total, 422 days exceeded the 8-hour CO NAAQS of 9 parts per million (ppm), however no exceedances were recorded after 2000. For PM_{10}, two days, both in 1990 during a wildfire event, exceeded the 24-hour PM_{10} NAAQS of 150 $\mu g/m^3$. A total of 98 days exceeded the 24-hour $PM_{2.5}$ NAAQS of 65 $\mu g/m^3$ (NAAQS prior to 2006) or 35 $\mu g/m^3$ (NAAQS from 2006 on).

In 2019 the site was ultimately closed as PM_{10} was not a concern, CO was no longer a concern as no more exceedances occurred after 2000, and the monitoring for CO and $PM_{2.5}$ in the area was moved to other sites. CO monitoring at FSOB was discontinued in 2002 and was moved to the Army National Guard monitoring site and particulate matter monitoring for the area was moved to the A Street monitoring site in 2019. Both monitoring sites were found to be representative of the pollutant's concentrations at the FSOB site. CO monitoring has since moved from the Army National Guard site to the NCore site in Fairbanks. Continuous hourly data for NCore and A Street monitoring sites can be found on the DEC real-time air monitoring website[1].

[1] https://dec.alaska.gov/air/air-monitoring/responsibilities/database-management/alaska-air-quality-real-time-data/

Introduction

The State of Alaska Department of Environmental Conservation (DEC) is mandated by the Alaska State Legislature to "conserve, improve, and protect its natural resources and environment and control water, land, and air pollution, in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well-being" under Alaska Statue 46.03.010. The DEC Division of Air Quality operates a statewide air monitoring network with permanent monitoring sites in Juneau, Anchorage/Matanuska-Susitna Valley (Mat-Su Valley), and Fairbanks, as well as additional special purpose or temporary sites. This report provides information about air monitoring conducted at the Fairbanks State Office Building (FSOB) in Fairbanks between 1972-2019. DEC, the Fairbanks North Star Borough (FNSB), and the U.S. Environmental Protection Agency (EPA) used these data to determine compliance with the National Ambient Air Quality Standards (NAAQS) set by the EPA.

Background

The FSOB monitoring site was established in 1972 at 675 Seventh Avenue in Fairbanks, Alaska within the FNSB. The site was operated by FNSB staff until July 2016 when the DEC took over the management of the monitoring site.

The site was established to monitor carbon monoxide (CO) in the downtown area of Fairbanks as a microscale, population-oriented CO site. CO monitoring continued until 2002 at the FSOB site until monitoring for the area was moved to the Army National Guard Headquarters monitoring site. In 1985, monitoring for particulate matter less than 10 micrometers (PM_{10}) began at the site and was monitored until 2000 but was discontinued due to the low concentrations observed and greater concern over particulate matter 2.5 micrometers or smaller ($PM_{2.5}$) in the FNSB. In 1999, $PM_{2.5}$ monitoring was added to the site. $PM_{2.5}$ monitoring continued until the site was closed in 2019. $PM_{2.5}$ monitoring at the site included daily and continuous (hourly) measurements and speciation measurements, the results of speciation measurements are not discussed in this report. The site has two separate EPA site numbers as the CO sampler and the particulate matter samplers were on opposite sides of the FSOB (Table 1). The CO sampler operated under site number 02-090-0013 and the particulate matter samplers under 02-090-0010.

Table 1 Summary of pollutants monitored at the Fairbanks State Office Building.

Pollutant	Start Year	End Year	Parameter Code	Site Number
CO	1972	2002	42101	02-090-0013
PM_{10}	1985	2000	81102	02-090-0010
$PM_{2.5}$	1999	2019	88101	02-090-0010

Ultimately the site was closed to consolidate $PM_{2.5}$ monitoring efforts in the FNSB. DEC requested to close all operations at the FSOB in a May 15, 2019 letter to EPA requesting that monitoring at the FSOB be moved to the A Street (02-090-0040) site. EPA approved the request in a letter dated June 26, 2019. In the letter EPA concludes that closing the FSOB would not impact implementation of the NAAQS, but requested the FSOB site operate until the end of 2019 while the A Street site was established.

Site Description

The FSOB monitoring site was established in 1972 at 675 7th Avenue in Fairbanks (Figure 1), Alaska within the FNSB. The FSOB site was in an urban and commercial area of Fairbanks located between 7th Avenue and 8th Avenue to the north and south and Barnette Street to the west and Cushman Street to the east. The CO sensor was on the east side of the building (Figure 2) and the particulate matter sensors were on the west side of the building (Figure 3).

Over the time that the site was operating (1972-2019) the population of the Fairbanks North Star Borough was at the lowest 47,700 residents (1972 and 1973) and at the greatest was 101,046 residents in 2013 (Figure 4)[2]. Over that time period, the average population size was 79,657 residents and the median population size was 82,912 residents.

The climate in Fairbanks is known for its extreme winter and summer temperatures with temperatures typically dropping to a minimum of -50˚F in the winter and a summer maximum of 90˚F. During the winter months, strong inversions in the FNSB can trap pollution in the area.

[2] U.S. Census Bureau, Resident Population in Fairbanks North Star Borough, AK [AKFAIR0POP], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/AKFAIR0POP, January 16, 2025.

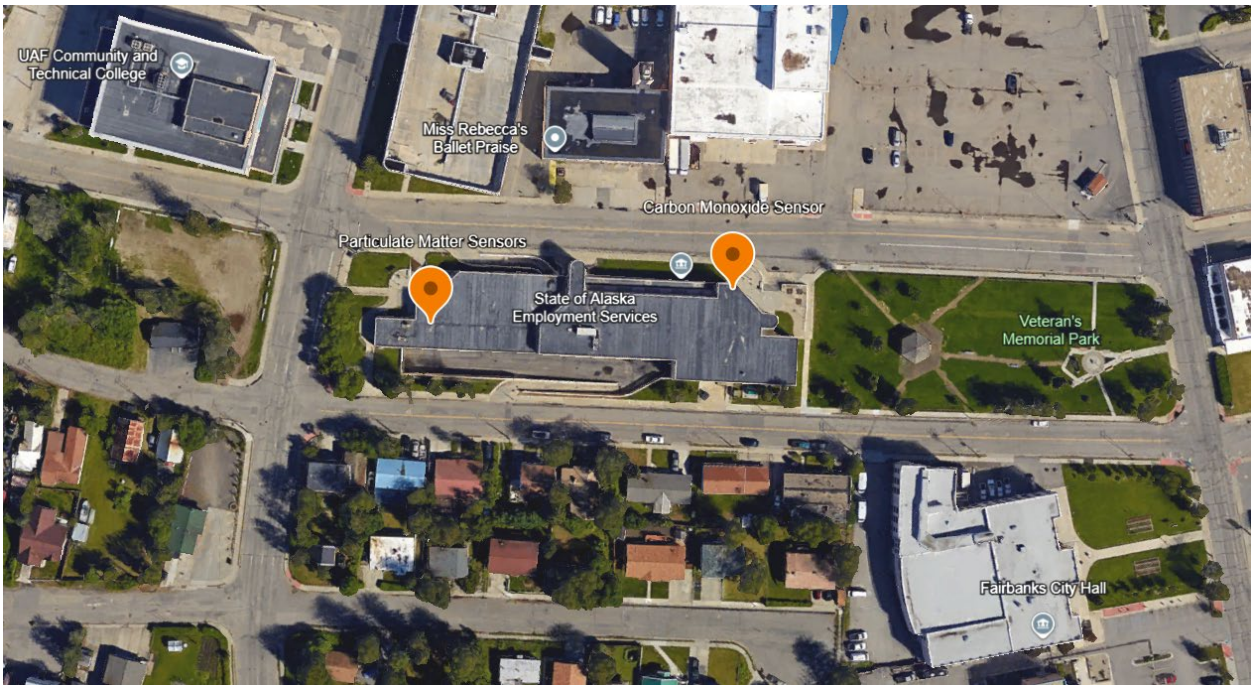

Figure 1 Satellite image from Google Earth of the FSOB site. The orange marker on the left (west) of the state office building indicates where the particulate matter sensors (site number 02-090-0010) were located, and the right (east) orange marker is where the carbon monoxide sensor (site number 02-090-0013) was located.

Figure 2 FSOB carbon monoxide inlet. The CO inlet was placed on the side of the building, photo taken from 7th Avenue looking towards the building circa 1998.

Figure 3 Particulate Matter instrumentation at the FSOB. Photo taken January 9, 2008 looking to the south.

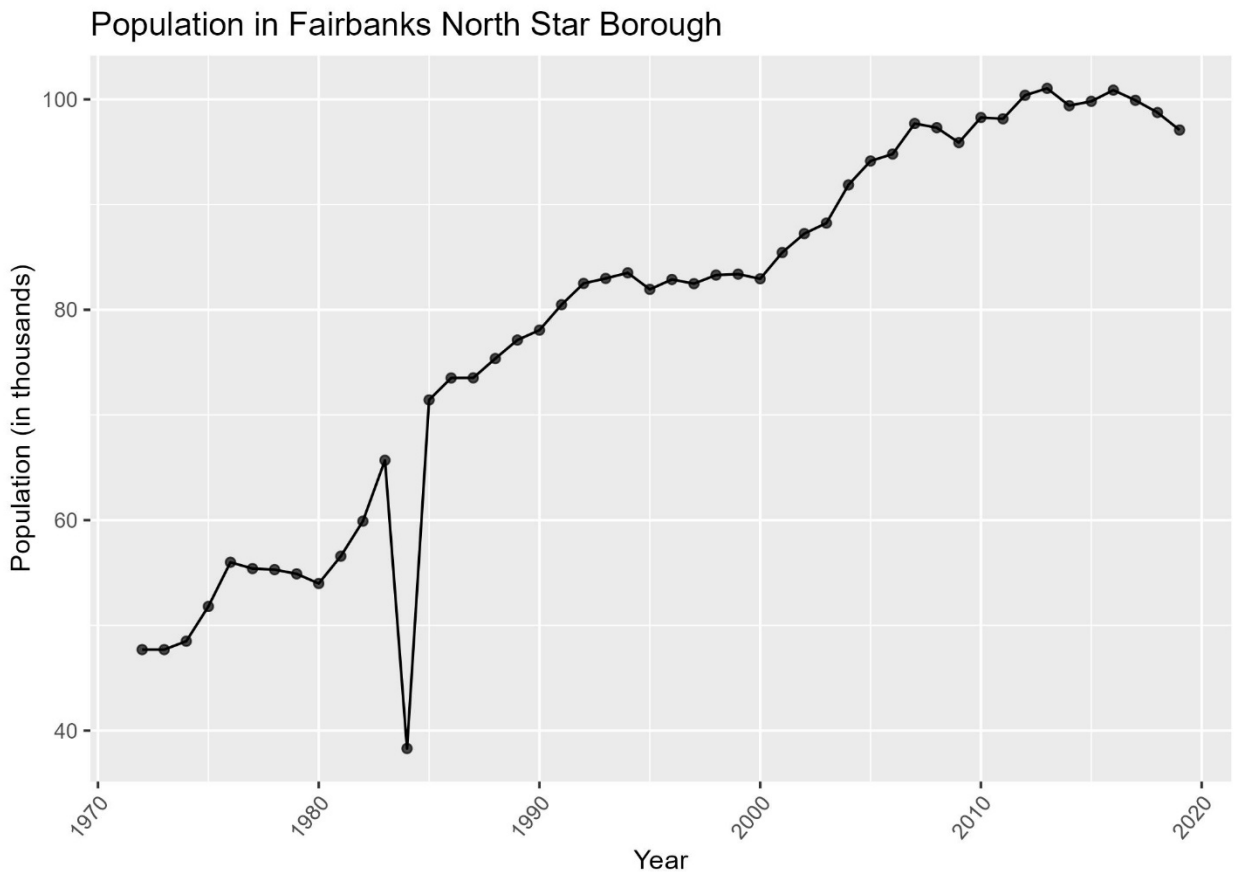

Figure 4 U.S. Census Bureau population estimates for Fairbanks North Star Borough.

Nearby Sources

The primary CO source of emissions nearby to the FSOB site was vehicle traffic. The predominant land use (within 200 meters of the site) was single family dwellings and businesses. Many of the nearby residences had chimneys and were presumed to use wood stoves for primary or supplemental heat.

The Alaska Railroad industrial area (north), Fairbanks Memorial Hospital (south) and the Aurora Energy coal fired power plant (west) were all within approximately 1.5 km (0.93 miles) of the site. Within 8 km (4.97 miles) were the coal-fired power plants operated by the University of Alaska Fairbanks (west) and Fort Wainwright Army base (east).

The Fairbanks area is also affected seasonally by wildfires which impacts $PM_{2.5}$ concentration. Another prevalent source of $PM_{2.5}$ pollution is solid fuel burning in the winter months for home heating in the FNSB.

Results

Carbon Monoxide Monitoring at the FSOB

Carbon monoxide (CO) population-level monitoring at the FSOB was intended to monitor the attainment of the CO 8-hour NAAQS of 9 ppm. Fairbanks was considered as serious non-attainment for CO from 1972 to 2004 when EPA approved the first CO maintenance plan for FNSB[3]. From 1972 to 1980 and again in 1982 CO monitoring occurred year-round. In 1981, CO was only sampled from April to December. In 1983, samples were not taken in May and July through September. From 1984 to 2001, CO sampling occurred only during the Fairbanks winter season (January, February, March, October, November, and December) each year. In 2002, samples were only taken January through March when the CO monitoring at the site was discontinued. A summary of the methods used to sample CO at FSOB can be found in Table 2.

Table 2 CO monitoring method codes, type, and instruments at the FSOB.

Years	Method Code	Method Type	Analysis Type	Instrument
1972-1987	11		Nondispersive infrared	
1988-1991	12	FRM	Nondispersive infrared	Beckman 866
1992-2002	66	FRM	Nondispersive infrared	Monitor Labs 8830

While CO was monitored at the FSOB, 422 days exceeded the CO 8-hour NAAQS of 9 ppm (Figure 5). Most of the CO exceedances occurred in the early years of monitoring at the site prior to federal regulations mandating fewer vehicle emissions in the mid-1970s and fewer emissions for off-road vehicles and equipment in the early 1990s. As the years progressed, and emission regulations became more stringent, the number of exceedances decreased. The last CO NAAQS exceedance at the site was recorded in 2000.

The reduction of CO pollution over time is also reflected in the first and second maximum 8-hour averages for each year (Table 3). In the early years of monitoring both the first and second maximum were above the CO NAAQS. After 1989, only 1995 and 1997 had second maximum CO readings above the CO NAAQS, meaning that these years only had one exceedance each. The final time the first maximum was above the NAAQS was in 2000. The CO NAAQS allows

[3] Fairbanks – Carbon Monoxide. https://dec.alaska.gov/air/anpms/communities/co-fairbanks/. April 29, 2025.

for one exceedance each year, so by 1989 most years, except 1995 and 1997, recorded concentrations below the CO NAAQS.

While CO NAAQS exceedances were no longer occurring at the FSOB when the site was closed in 2002, monitoring of CO was continued at the nearby Alaska Army National Guard headquarters (EPA site number 02-090-0023) west of downtown. As of today, CO monitoring continues in the FNSB at the NCore (EPA site number 02-090-0034) monitoring site in Fairbanks.

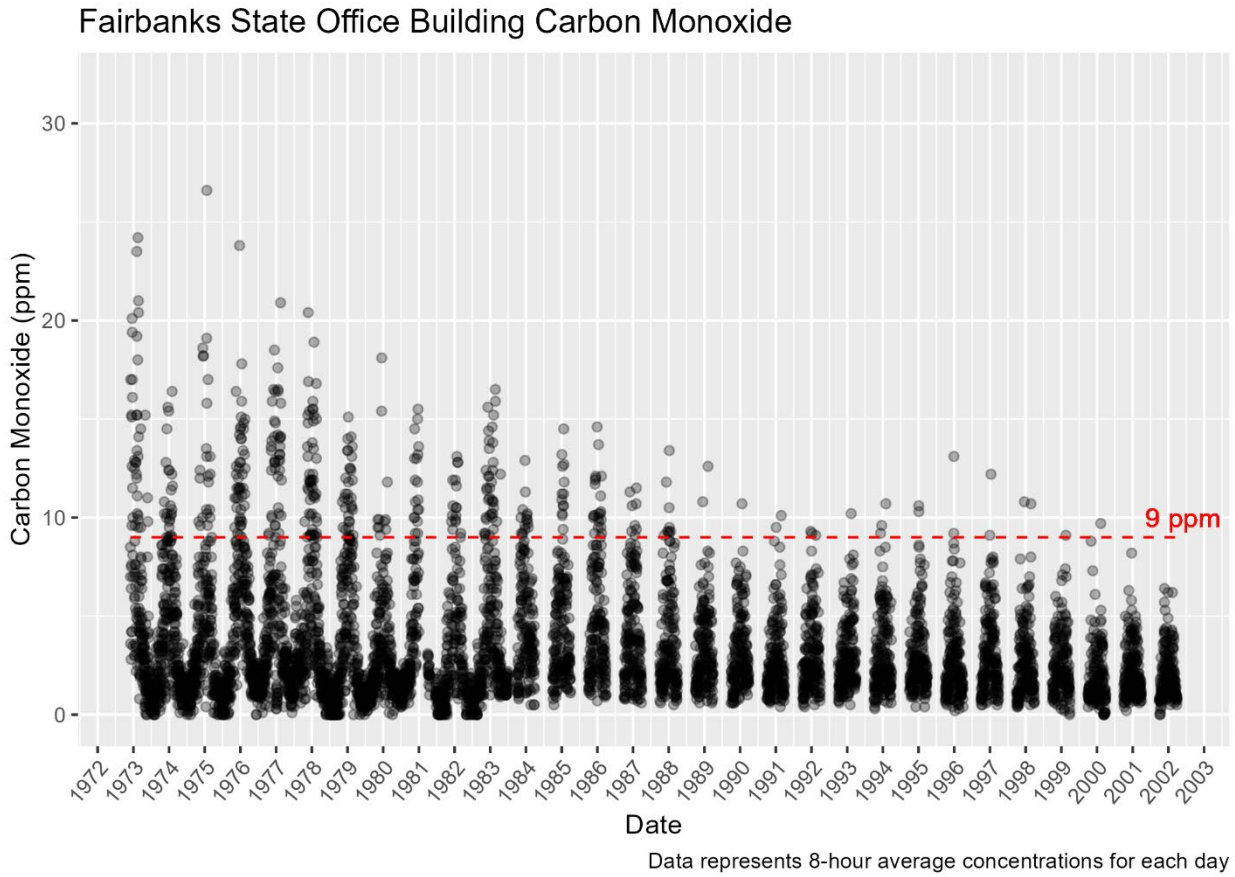

Figure 5 Fairbanks State Office Building daily 8-hour average CO (ppm) from 1972-2002. The red dashed line represents the 8-hour CO NAAQS of 9 ppm. CO monitoring was only seasonally measured in the winter from 1984 on, so there are time gaps in the data.

Table 3 First and second maximum CO values at the FSOB.

1st Max	Date of 1st Max	End Hour of 1st Max	2nd Max	Date of 2nd Max	End Hour of 2nd Max
20.9	1972-12-19	15:00	19.4	1972-12-20	15:00
25.7	1973-02-16	20:00	23.5	1973-02-05	19:00
18.6	1974-12-12	18:00	18.3	1974-12-17	19:00
26.6	1975-01-22	18:00	23.8	1975-12-23	20:00
19.0	1976-12-14	16:00	17.8	1976-01-15	20:00
20.9	1977-02-15	17:00	20.4	1977-11-25	22:00
18.9	1978-01-23	20:00	16.8	1978-02-15	18:00
18.1	1979-12-17	14:00	15.4	1979-12-16	23:00
15.5	1980-12-23	20:00	15.0	1980-11-19	15:00
11.9	1981-12-14	21:00	10.7	1981-12-14	15:00
15.6	1982-12-08	15:00	14.4	1982-12-15	23:00
19.0	1983-02-22	19:00	15.9	1983-02-23	22:00
10.3	1984-01-14	18:00	10.1	1984-01-10	18:00
14.6	1985-12-30	18:00	14.5	1985-01-22	18:00
13.7	1986-01-13	17:00	12.1	1986-02-12	23:00
11.8	1987-12-08	20:00	11.5	1987-02-04	18:00
13.4	1988-01-07	19:00	10.8	1988-12-15	17:00
12.6	1989-02-06	19:00	8.3	1989-02-03	22:00
10.7	1990-01-21	0:00	8.8	1990-12-18	18:00
10.1	1991-02-26	23:00	9.5	1991-01-05	23:00
9.2	1992-01-06	18:00	9.1	1992-02-15	1:00
10.3	1993-02-10	22:00	9.6	1993-12-20	17:00
10.7	1994-01-31	19:00	8.5	1994-01-27	22:00
13.1	1995-12-29	18:00	10.6	1995-01-03	18:00
9.1	1996-12-30	17:00	8.4	1996-01-02	17:00
12.2	1997-01-11	17:00	10.8	1997-12-19	18:00
11.1	1998-02-24	19:00	8.0	1998-02-23	20:00
9.1	1999-02-16	22:00	8.9	1999-11-02	13:00
9.7	2000-02-08	18:00	8.2	2000-12-21	19:00
6.4	2001-11-22	21:00	6.2	2001-12-27	20:00
6.2	2002-02-11	19:00	4.6	2002-02-11	16:00

Particulate Matter Monitoring at FSOB

Particulate matter monitoring at FSOB was intended to monitor attainment of NAAQS for PM_{10} and $PM_{2.5}$ at the neighborhood scale. The equipment for monitoring particulate matter at the FSOB was located on the roof of the first story of the building near the east end. The inlets for all samplers were approximately six meters above ground. There was unrestricted airflow around the samplers. The building had a partial second floor that was approximately 3.75 meters higher than the roof the samplers sat on. The nearest second floor wall was approximately 30 meters west of the samplers. There was a birch tree approximately 10 meters south of the samplers whose height exceeded that of the inlets. The primary source of particulate matter in the area was from home heating, automobile exhaust, and wood smoke in the winter months and wildfire smoke in the summer months.

DEC Federal Reference Method (FRM) particulate matter sampling at FSOB involved continuously pumping ambient air through a size selective inlet and pre-weighed Teflon filter for 24 hours. DEC staff collected the filters, weighed them and used the difference between the filter weights before and after sampling along with flow rate, flow duration, ambient temperature, and ambient barometric pressure to calculate the concentration of particulate matter during the sampling period. DEC sampled according to the national EPA schedule at varying frequency across the years that the site was operational (Table 4 and 6).

DEC also did Federal Equivalent Method (FEM) particulate matter sampling at FSOB, which uses a glass-fiber filter tape that lasts several weeks. This sampling method involves drawing ambient air through a size selective inlet over an hour period. The sampler measures the amount of beta radiation that passes through the tape and uses that data to calculate the particulate matter mass of the sample. Flow rate, flow duration, ambient temperature, and ambient barometric pressure are then used to calculate concentration.

Both FRM and FEM data undergo quality assurance (QA) checks by DEC before it is uploaded to the EPA's national database of ambient air quality data, the Air Quality System (AQS). This data is available for the public at https://www.epa.gov/outdoor-air-quality-data. DEC and EPA use this data to determine whether the air quality of a locality meets the NAAQS set by the EPA. A standard is a rule against which to measure or compare a pollutant. Most standards set an upper bound to a pollutant. EPA has two methods for determining compliance, or attainment, with ambient air quality standards: deterministic and probabilistic.

A deterministic method allows a certain (low) number of exceedances over a set time and a specific number of valid samples. EPA uses this method to determine compliance with the 24-hour PM_{10} NAAQS of 150 $\mu g/m^3$ under standard conditions of temperature and pressure. An area complies with this NAAQS if it has no more than one exceedance per year of valid samples on a one-in-three day schedule with a data capture rate of at least 75%.

A probabilistic method allows for multiple exceedances if the distribution of sampled values is such that a set statistic is less than the NAAQS. This method makes compliance with the NAAQS less sensitive to extreme conditions that may not be typical of the local area. EPA uses this method to determine compliance with the $PM_{2.5}$ 24-hour NAAQS of 65 µg/m^3 (1997-2006) or 35 µg/m^3 (2006-present) and with the annual NAAQS if the 3-year weighted annual mean is less than 15 µg/m^3 (1997-2006), 12 µg/m^3 (2006-2024), or 9 µg/m^3 (2024-present)[4]. The NAAQS for $PM_{2.5}$ became stricter over the years that FSOB was operational due to research on the negative health impacts of the pollutant and desire to be more protective of human health.

EPA's probabilistic methods employ a statistic called the "design value". Design values can be calculated from the sample data, using modeling results, or be a count of the number of exceedances of a NAAQS. Design values change from year to year depending on meteorological conditions, pollutant levels, and unusual events.

The EPA does have a process by which data arising from unusual or "exceptional" events can be excluded from the data set used to determine compliance with a standard. EPA introduced an exceptional events policy in 2007 where ambient air monitoring agencies can request exceptional event waivers to exclude these events from calculations of design values. DEC commonly requests exceptional event waiver requests for FNSB monitoring sites due to the frequency of wildfires in the summer months in the area.

If an area cannot meet an air quality standard, the EPA through the powers outlined in the Clean Air Act may designate it as a "non-attainment" area. This designation triggers a five-year window during which the state must gather additional data, must submit a State Implementation Plan to the EPA, must institute control measures, and must meet the standard at the end of that time. EPA can levy sanctions against a designated non-attainment area that may result in loss of federal highway funding and of economic development opportunities.

PM_{10} Monitoring

Gravimetric monitoring of PM_{10} occurred at the FSOB site from 1985 to 2000 (Table 4). During these 15 years, only two exceedances of PM_{10} of 150 µg/m^3 were recorded during a wildfire event in July 1990, which EPA waived as exceptional events per request by DEC (Figure 6). Due to the lack of exceedances over the 15 years, barring the two wildfire driven exceedances (Table 5), monitoring was discontinued at the site in 2000. Today PM_{10} is monitored in the FNSB at the NCore (EPA site number 02-090-0034) monitoring site in Fairbanks.

[4] Timeline of Particulate Matter (PM) National Ambient Air Quality Standards (NAAQS) EPA. Last updated on December 31, 2024. https://www.epa.gov/pm-pollution/timeline-particulate-matter-pm-national-ambient-air-quality-standards-naaqs. April 29, 2025.

Table 4 PM_{10} monitoring method codes, type, and instruments at FSOB.

Years	Method Code	Method Type	Sample Frequency	Analysis Type	Instrument
1985-1987	54			Gravimetric	HI-VOL-W10
1987	54		Every 3rd day	Gravimetric	HI-VOL-W10
1987	62	FRM	Every other day	Gravimetric	HI-VOL-WEDDING-INLET
1988-2000	62	FRM	Every 6th day	Gravimetric	HI-VOL-WEDDING-INLET
1990	54		Every 6th day	Gravimetric	HI-VOL-W10

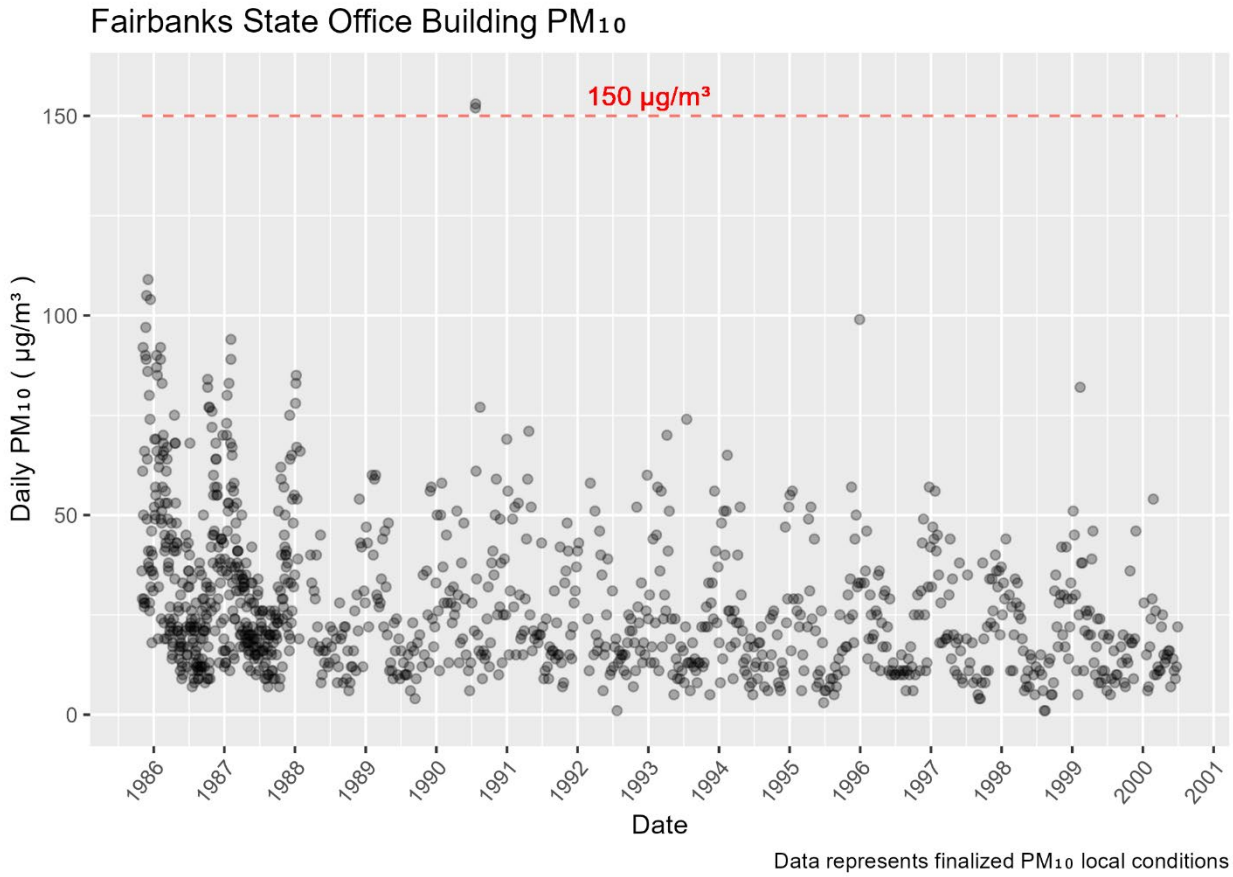

Figure 6 FSOB daily PM_{10} (measured gravimetrically) from 1985-2000. The red dashed line represents the PM_{10} 24-hour NAAQS for the given year.

Table 5 First and second maximum PM_{10} values.

1st Max	Date of 1st Max	Notes	2nd Max	Date of 2nd Max	Notes	POC
109.0	1985-12-03		105.0	1985-11-25		2
89.0	1985-11-23		86.0	1985-12-01		3
92.0	1986-02-05		90.0	1986-01-16		2
89.0	1986-02-05		87.0	1986-01-16		3
75.0	1987-12-05		65.0	1987-12-15		1
94.0	1987-02-04		83.0	1987-01-25		2
89.0	1987-02-04		70.0	1987-01-13		3
85.0	1988-01-08		83.0	1988-01-06		1
60.0	1989-02-03		60.0	1989-02-21		1
77.0	1990-08-15	Exceptional events excluded	69.0	1990-12-31	Exceptional events excluded	1
153.0	1990-07-23	Exceptional events included	152.0	1990-07-22	Exceptional events included	1
153.0	1990-07-23	Exceptional events with EPA concurrence excluded	152.0	1990-07-22	Exceptional events with EPA concurrence excluded	1
71.0	1991-04-24		59.0	1991-04-18		1
60.0	1992-12-26		58.0	1992-03-07		1
74.0	1993-07-18		70.0	1993-04-07		1
65.0	1994-02-13		52.0	1994-04-20		1
99.0	1995-12-29		57.0	1995-11-17		1
57.0	1996-12-23		49.0	1996-11-23		1
56.0	1997-01-22		47.0	1997-01-10		1
44.0	1998-01-23		42.0	1998-11-07		1
82.0	1999-02-11		51.0	1999-01-06		1
54.0	2000-02-24		29.0	2000-02-18		1

Note: some years have multiple values listed when exceptional events with and without EPA concurrence were excluded or included in the calculation. Notes on how the values were calculated are made in the “Notes” column. Years with only one value either had no exceptional events, or the first maximum was the same regardless of the inclusion or exclusion of exceptional events and no note is included in the “Notes” column in those cases.

$PM_{2.5}$ Monitoring

$PM_{2.5}$ monitoring at the FSOB site began in 1998 to demonstrate attainment of the 24-hour $PM_{2.5}$ NAAQS (65 $\mu g/m^3$) promulgated on July 18, 1997. $PM_{2.5}$ monitoring included both FRM daily gravimetric measurements (1999-2019, Figure 7) and continuous non-Federal Equivalent Method (non-FEM) hourly measurements (2005-2013, Table 6). Continuous monitoring of $PM_{2.5}$ was never given FEM status at the FSOB site due to poor agreement between the Met One Beta Attenuation Monitors (BAM) and the FRM instrumentation at the site (Figure 8). $PM_{2.5}$ continuous monitoring was discontinued at the site in 2013 to consolidate monitoring efforts in the downtown area of Fairbanks that were happening at other nearby sites. Daily FRM monitoring of $PM_{2.5}$, however, continued until 2019 until monitoring for the area was moved to the A Street monitoring site (EPA site number 02-090-0040).

$PM_{2.5}$ concentrations in the FNSB are largely driven by home heating in the winter months and by wildfires in the summer months. While $PM_{2.5}$ was monitored at the FSOB, 86 days of gravimetric data were qualified with some form of wildfire EPA qualifier code (E, IT, or RT qualifier codes). Of these 86 days with wildfire qualified data there were 32 $PM_{2.5}$ NAAQS exceedances. DEC can request that the wildfire days be excluded from calculations of design values with exceptional event waiver requests. Exceptional event waivers are intended to exclude wildfire smoke impacted data from design value calculations, as wildfires are a naturally occurring event that cannot be regulated. Excluding wildfire smoke impacted days from design value calculations is more in line with human contributions to PM2.5 pollution. Both design values with and without exceptional events included are plotted in Figure 9 and listed in Table 7.

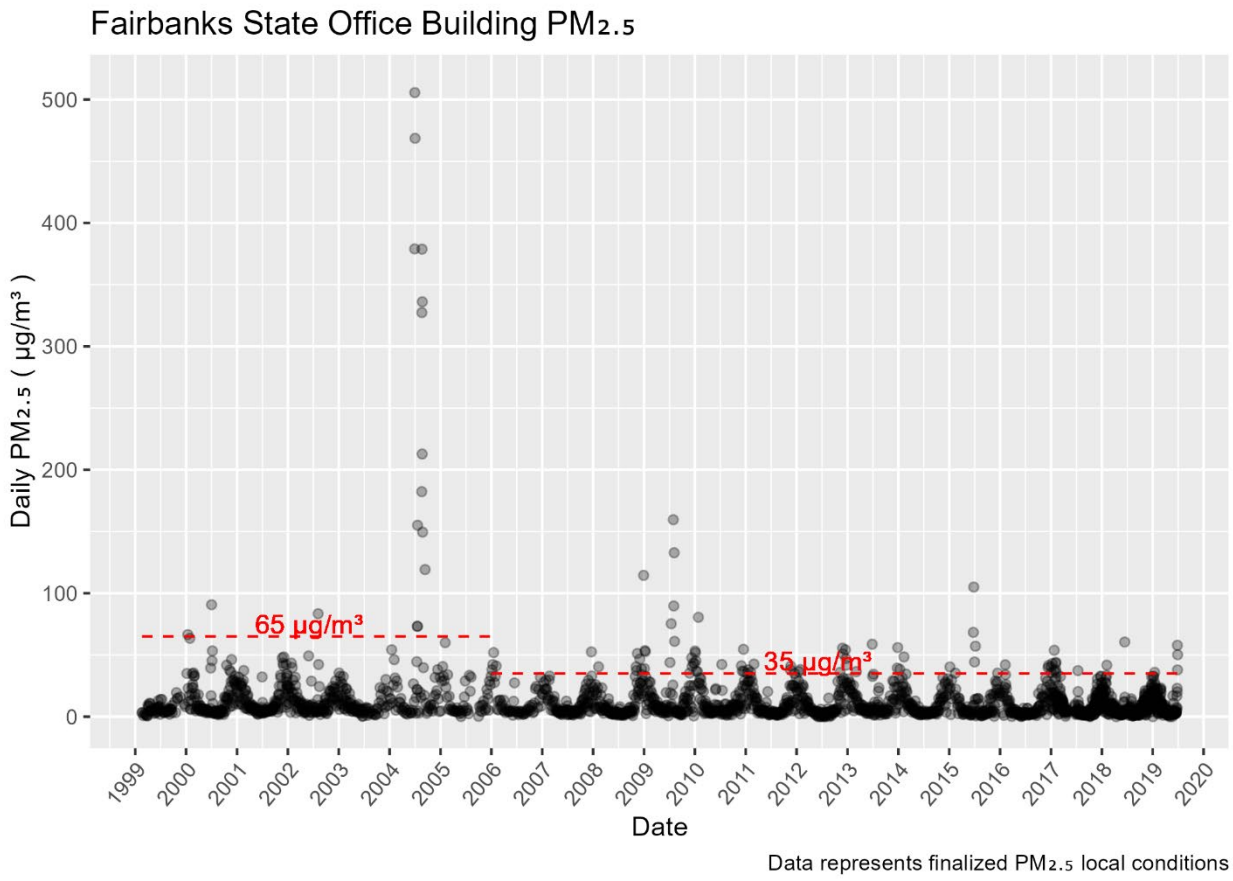

Figure 7 Daily $PM_{2.5}$ (FRM) from 2000-2019. The red dashed line represents the $PM_{2.5}$ 24-hour NAAQS for the given year.

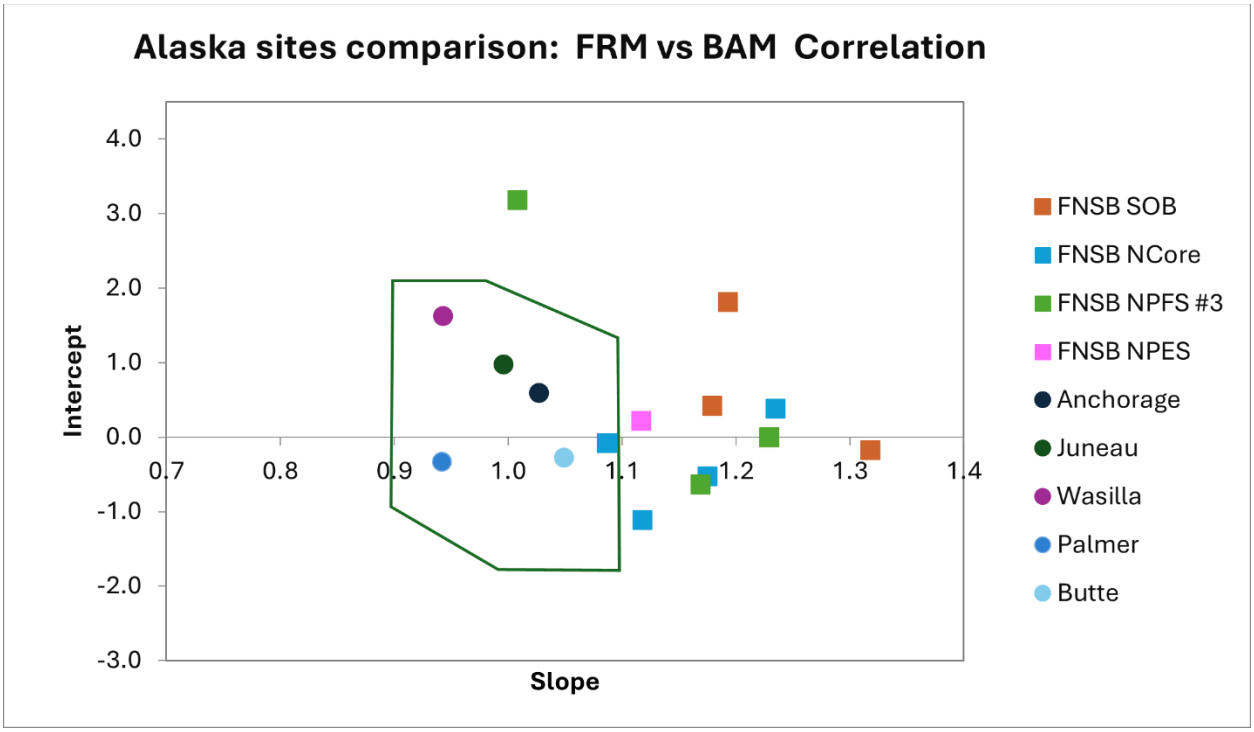

Figure 8 Coffin plots of FRM versus BAM correlations prior to 2014. The FSOB (referenced as FNSB SOB in the figure) BAM had poor correlation with the FRM instrument at the site between 2009-2013 when $PM_{2.5}$ continuous monitoring was conducted at the site.

Table 6 $PM_{2.5}$ monitoring method codes, type, and instruments at the FSOB.

Years	Parameter	Method Code	Method Type	Sample Frequency	Analysis Type	Instrument
1999-2003	88101	117	FRM	Every 3rd day	Gravimetric	R & P Model 2000 PM2.5 Sampler with WINS
2003-2006	88101	117	FRM	Every 6th day	Gravimetric	R & P Model 2000 PM2.5 Sampler with WINS
2005-2013	88501	731		Every day	Beta Attenuation	Met-One BAM-1020 with PM2.5 SCC
2007	88101	117	FRM	Every 3rd day	Gravimetric	R & P Model 2000 PM2.5 Sampler with WINS
2008-2011	88101	117	FRM	Every 3rd day	Gravimetric	R & P Model 2000 PM2.5 Sampler with WINS
2011-2016	88101	143	FRM	Every 3rd day	Gravimetric	R & P Model 2000 PM2.5 Air Sampler with VSCC
2017-2019	88101	145	FRM	Every day	Gravimetric	Thermo Scientific Sequential Partisol 2025i

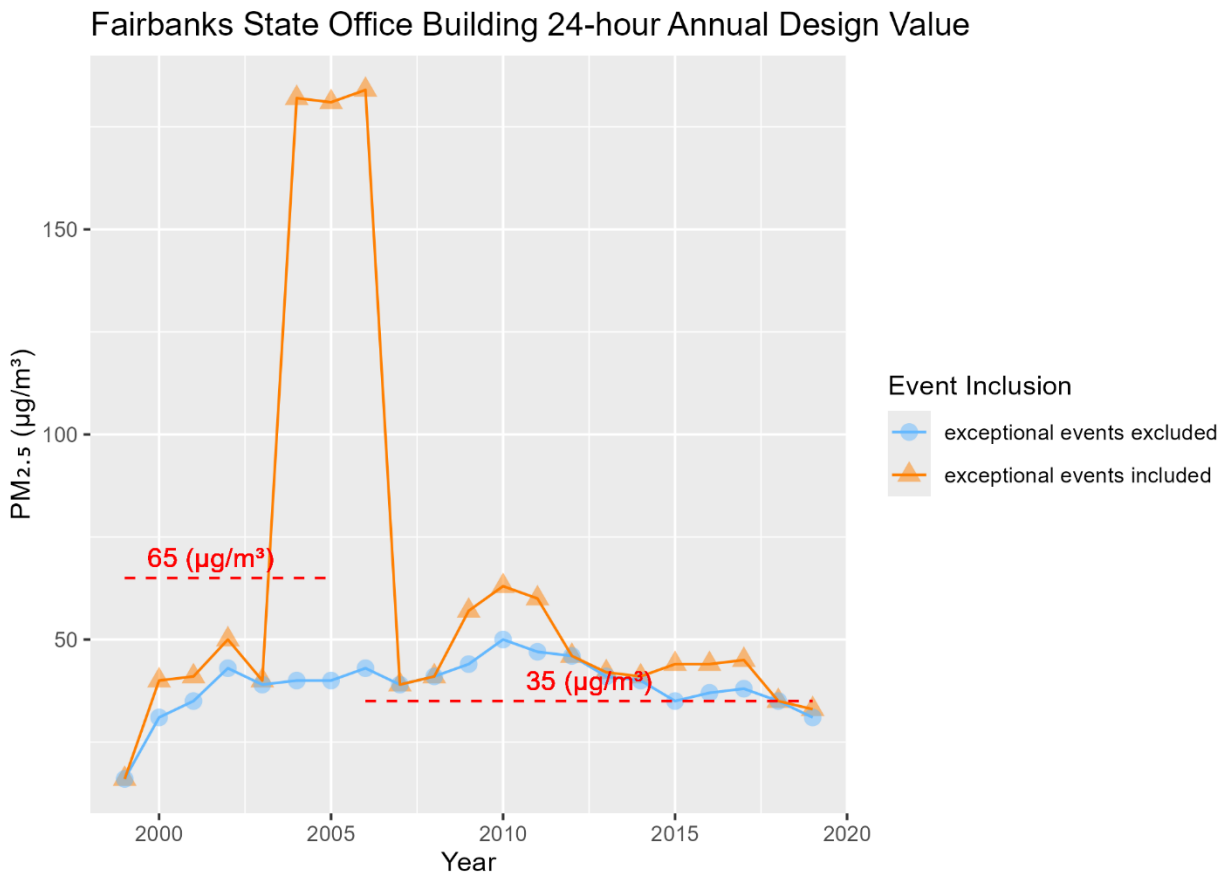

Figure 9 24-hour annual $PM_{2.5}$ design values with and without exceptional events.

Table 7 $PM_{2.5}$ design values – 98th percentile, weighted mean, 24-hour design value, and annual design value.

Year	98th percentile	98th percentile (exceptional events excluded)	Weighted mean	Weighted mean (exceptional events excluded)	24-hour design value	24-hour design value (exceptional events excluded	Annual design value	Annual design value (exceptional events excluded
1999	16.0*		6.6*		16		6.6	
2000	63.5	46.3	14.9	13.5	40	31	10.8	10.1
2001	43.4		13.0	12.8	41	35	11.5	11.0
2002	43.4	39.8	12.9	12.0	50	43	13.6	12.8
2003	32.7		9.8		40	39	11.9	11.5
2004	468.6	43.2	51.2	10.9	182	40	24.6	10.9
2005	40.6		14.0*	10.9*	181	40	25.0	10.5
2006	42.2		11.5		184	43	25.6	11.1
2007	33.1		10.7		39		12.1	11.0
2008	46.7		11.3		41		11.2	
2009	89.7	51.0	16.4	11.5	57	44	12.8	11.2
2010	51.8		13.0	12.3	63	50	13.6	11.7
2011	38.0		10.8	10.7	60	47	13.4	11.5
2012	49.6		10.7		46		11.5	11.2
2013	39.4	36.3	11.9	10.6	42	41	11.2	10.7
2014	34.5		10.3		41	40	11.0	10.5
2015	57.1	35.3*	11.8	9.1	44	35	11.3	10.0
2016	39.7		8.8		44	37	10.3	9.4
2017	38.0		9.3	9.1	45	38	10.0	9.0
2018	27.5*	27.0*	8.0*	7.6*	35		8.7	8.5
2019	34.7*	27.7*	8.6*	7.6*	33	31	8.6	8.1

*value does not meet completeness criteria

Conclusions

Between 1972 and 2019, DEC monitored ambient concentrations of CO and particulate matter (PM_{10} and $PM_{2.5}$) at the FSOB. The site was closed as monitoring efforts were moved to other nearby representative sites in the FNSB. Many exceedances of CO and $PM_{2.5}$ were recorded while the site was operational. Exceedances of PM_{10} were infrequent and only occurred twice. CO exceedances were largely due to vehicle traffic, but Federal regulations on vehicle emissions have improved CO pollution in the FNSB and no exceedances of the CO 8-hour NAAQS were recorded after 2000 so monitoring of the pollutant at the site was ultimately ended. $PM_{2.5}$ pollution, however, continues to be a concern in the FNSB. $PM_{2.5}$ in the FNSB can primarily be attributed to wildfires in the summer months and solid fuel burning for home heating purposes in the winter months. While monitoring for $PM_{2.5}$ at the FSOB was discontinued in 2019, monitoring for the pollutant has continued at the A Street monitoring site in Fairbanks.

Appendix

Table 8 $PM_{2.5}$ gravimetric measurements qualified as a wildfire day at the FSOB. In total, 86 dates at the FSOB site with a wildfire qualifier code (E, IT, or RT qualifier codes) were recorded. Prior to 2006 when the $PM_{2.5}$ NAAQS was 65 µg/m^3 there were 35 days with fire qualifiers, with 15 exceedances of the NAAQS. From 2006 on, when the $PM_{2.5}$ NAAQS was 35 µg/m^3, there were 51 fire days with 17 exceedances of the NAAQS.

Date	$PM_{2.5}$ µg/m^3	Exceeded NAAQS?*
7/2/2000	90.7	Y
7/5/2000	45.3	N
7/8/2000	53.3	N
6/30/2001	32.2	N
8/6/2002	83.4	Y
8/9/2002	42.3	N
6/20/2004	26.6	N
6/26/2004	12.2	N
6/29/2004	379	Y
6/30/2004	505.6	Y
7/2/2004	468.6	Y
7/10/2004	15.5	N
7/14/2004	44.5	N
7/16/2004	22	N
7/17/2004	22	N
7/18/2004	73.2	Y
7/19/2004	73.2	Y
7/20/2004	155.1	Y
8/7/2004	19.6	N
8/13/2004	15.5	N
8/19/2004	182.3	Y
8/20/2004	327.4	Y
8/21/2004	378.8	Y
8/22/2004	212.8	Y
8/23/2004	336.1	Y
8/25/2004	149.5	Y
8/31/2004	39.7	N
9/6/2004	17.3	N
9/12/2004	119.2	Y
9/18/2004	11	N
6/21/2005	16	N
6/27/2005	28.9	N
7/27/2005	33.5	N
8/2/2005	20.6	N

Date	$PM_{2.5}$ µg/m^3	Exceeded NAAQS?*
8/8/2005	32.1	N
6/9/2009	19.5	N
7/6/2009	43.9	Y
7/9/2009	19.3	N
7/15/2009	75.3	Y
7/24/2009	17.7	N
7/27/2009	25.6	N
7/30/2009	159.6	Y
8/2/2009	89.7	Y
8/5/2009	132.8	Y
8/8/2009	61	Y
5/29/2010	21.8	N
6/1/2010	22.7	N
7/13/2010	42.3	Y
7/16/2010	21.3	N
8/6/2010	5.2	N
6/8/2011	20.3	N
8/19/2012	15.1	N
6/21/2013	8.2	N
6/27/2013	58.7	Y
6/30/2013	32.6	N
7/3/2013	7.5	N
7/6/2013	34.4	N
7/15/2013	11.9	N
8/2/2013	7.1	N
8/5/2013	9.6	N
8/8/2013	12.1	N
8/11/2013	20.6	N
8/14/2013	23.4	N
8/17/2013	8.1	N
6/23/2015	68.3	Y
6/26/2015	105	Y
7/2/2015	44.3	Y
7/5/2015	14	N
7/8/2015	57.1	Y
7/14/2015	14.3	N
7/26/2015	14.6	N
7/29/2015	14.6	N
7/13/2017	37.3	Y
7/14/2017	20.3	N
7/15/2017	12.7	N
6/9/2018	12.2	N

Date	$PM_{2.5}$ µg/m^3	Exceeded NAAQS?*
6/14/2018	60.5	Y
6/15/2018	15.8	N
7/31/2018	14.4	N
8/1/2018	12.6	N
6/23/2019	16.7	N
6/25/2019	23	N
6/26/2019	20.1	N
6/27/2019	57.8	Y
6/28/2019	37.9	Y
6/29/2019	50.2	Y

Y = yes, N = no,

*Days exceeded the NAAQS when they were greater than the NAAQS for the given year, the $PM_{2.5}$ NAAQS before 2005 was 65 µg/m^3 after 2005 it was 35 µg/m^3.

Table 9 First and second maximum $PM_{2.5}$ $\mu g/m^3$ values. Some years have multiple values listed as the first maximum when exceptional events with and without EPA concurrence were excluded or included in the calculation. Notes on the how the values were calculated are made in the "Notes" column. Years with only one value either had no exceptional events or the first maximum was the same regardless of the inclusion or exclusion of exceptional events and no note is included in the "Notes" column in those cases.

1st Max	Date of 1st Max	Notes	2nd Max	Date of 2nd Max	Notes	POC
19.5	1999-10-24		16.0	1999-11-20		1
66.5	2000-01-13	Exceptional events excluded	63.5	2000-01-28	Exceptional events excluded	1
90.7	2000-07-02	Exceptional events included	66.5	2000-01-13	Exceptional events included	1
90.7	2000-07-02	Exceptional events with EPA concurrence excluded	66.5	2000-01-13	Exceptional events with EPA concurrence excluded	1
48.4	2001-12-03	Exceptional events excluded	47.6	2001-11-21	Exceptional events excluded	1
48.4	2001-12-03	Exceptional events included	47.6	2001-11-21	Exceptional events included	1
48.4	2001-12-03	Exceptional events with EPA concurrence excluded	47.6	2001-11-21	Exceptional events with EPA concurrence excluded	1
49.2	2002-05-30	Exceptional events excluded	43.4	2002-01-26	Exceptional events excluded	1
83.4	2002-08-06	Exceptional events included	49.2	2002-05-30	Exceptional events included	1
83.4	2002-08-06	Exceptional events with EPA concurrence excluded	49.2	2002-05-30	Exceptional events with EPA concurrence excluded	1
35.4	2003-01-03		32.7	2003-01-12		1
54.2	2004-01-16	Exceptional events excluded	46.2	2004-02-03	Exceptional events excluded	1
505.6	2004-06-30	Exceptional events included	468.6	2004-07-02	Exceptional events included	1

1st Max	Date of 1st Max	Notes	2nd Max	Date of 2nd Max	Notes	POC
505.6	2004-06-30	Exceptional events with EPA concurrence excluded	468.6	2004-07-02	Exceptional events with EPA concurrence excluded	1
60.0	2005-02-03	Exceptional events excluded	40.6	2005-01-16	Exceptional events excluded	1
60.0	2005-02-03	Exceptional events included	40.6	2005-01-16	Exceptional events included	1
60.0	2005-02-03	Exceptional events with EPA concurrence excluded	40.6	2005-01-16	Exceptional events with EPA concurrence excluded	1
51.9	2006-01-17		42.2	2006-01-11		1
31.9	2006-12-19		31.1	2006-11-25		2
51.6	2007-12-20		33.1	2007-02-23		1
52.5	2007-12-20		34.1	2007-02-05		2
114.5	2008-12-29		50.7	2008-11-14		1
51.2	2008-11-14		46.7	2008-12-02		2
59.0	2009-01-07	Exceptional events excluded	52.7	2009-01-10	Exceptional events excluded	1
159.5	2009-07-30	Exceptional events included	127.7	2009-08-05	Exceptional events included	1
159.5	2009-07-30	Exceptional events with EPA concurrence excluded	127.7	2009-08-05	Exceptional events with EPA concurrence excluded	1
53.5	2009-01-07	Exceptional events excluded	47.7	2009-12-09	Exceptional events excluded	2
159.6	2009-07-30	Exceptional events included	132.8	2009-08-05	Exceptional events included	2
159.6	2009-07-30	Exceptional events with EPA concurrence excluded	132.8	2009-08-05	Exceptional events with EPA concurrence excluded	2

1st Max	Date of 1st Max	Notes	2nd Max	Date of 2nd Max	Notes	POC
83.2	2010-01-26	Exceptional events excluded	57.1	2010-12-16	Exceptional events excluded	1
83.2	2010-01-26	Exceptional events included	57.1	2010-12-16	Exceptional events included	1
83.2	2010-01-26	Exceptional events with EPA concurrence excluded	57.1	2010-12-16	Exceptional events with EPA concurrence excluded	1
80.5	2010-01-26	Exceptional events excluded	54.6	2010-12-16	Exceptional events excluded	2
80.5	2010-01-26	Exceptional events included	54.6	2010-12-16	Exceptional events included	2
80.5	2010-01-26	Exceptional events with EPA concurrence excluded	54.6	2010-12-16	Exceptional events with EPA concurrence excluded	2
42.6	2011-03-01	Exceptional events excluded	41.0	2011-11-20	Exceptional events excluded	1
42.6	2011-03-01	Exceptional events included	42.0	2011-11-21	Exceptional events included	1
42.6	2011-03-01	Exceptional events with EPA concurrence excluded	43.0	2011-11-22	Exceptional events with EPA concurrence excluded	1
38.0	2011-11-17	Exceptional events excluded	35.0	2011-12-17	Exceptional events excluded	2
38.0	2011-11-17	Exceptional events included	35.0	2011-12-17	Exceptional events included	2
38.0	2011-11-17	Exceptional events with EPA concurrence excluded	35.0	2011-12-17	Exceptional events with EPA concurrence excluded	2
55.5	2012-11-26	Exceptional events excluded	52.1	2012-12-17	Exceptional events excluded	1

1st Max	Date of 1st Max	Notes	2nd Max	Date of 2nd Max	Notes	POC
55.5	2012-11-26	Exceptional events included	52.1	2012-12-17	Exceptional events included	1
55.5	2012-11-26	Exceptional events with EPA concurrence excluded	52.1	2012-12-17	Exceptional events with EPA concurrence excluded	1
54.2	2012-12-17	Exceptional events excluded	50.9	2012-11-29	Exceptional events excluded	2
54.2	2012-12-17	Exceptional events included	50.9	2012-11-29	Exceptional events included	2
54.2	2012-12-17	Exceptional events with EPA concurrence excluded	50.9	2012-11-29	Exceptional events with EPA concurrence excluded	2
56.0	2013-12-27	Exceptional events excluded	39.4	2013-12-24	Exceptional events excluded	1
58.7	2013-06-27	Exceptional events included	56.0	2013-12-27	Exceptional events included	1
58.7	2013-06-27	Exceptional events with EPA concurrence excluded	56.0	2013-12-27	Exceptional events with EPA concurrence excluded	1
36.5	2013-03-05		27.8	2013-01-16		2
48.4	2014-02-10		38.4	2014-01-11		1
40.3	2015-01-06	Exceptional events excluded	35.3	2015-02-14	Exceptional events excluded	1
105.0	2015-06-26	Exceptional events included	68.3	2015-06-23	Exceptional events included	1
105.0	2015-06-26	Exceptional events with EPA concurrence excluded	68.3	2015-06-23	Exceptional events with EPA concurrence excluded	1
42.0	2016-02-07		41.5	2016-12-14		1
53.8	2017-01-24	Exceptional events excluded	44.0	2017-02-05	Exceptional events excluded	1

1st Max	Date of 1st Max	Notes	2nd Max	Date of 2nd Max	Notes	POC
53.8	2017-01-24	Exceptional events included	44.0	2017-02-05	Exceptional events included	1
53.8	2017-01-24	Exceptional events with EPA concurrence excluded	44.0	2017-02-05	Exceptional events with EPA concurrence excluded	1
43.3	2017-02-03	Exceptional events excluded	43.1	2017-01-10	Exceptional events excluded	2
43.3	2017-02-03	Exceptional events included	43.1	2017-01-10	Exceptional events included	2
43.3	2017-02-03	Exceptional events with EPA concurrence excluded	43.1	2017-01-10	Exceptional events with EPA concurrence excluded	2
41.7	2018-02-05	Exceptional events excluded	33.4	2018-02-04	Exceptional events excluded	1
60.5	2018-06-14	Exceptional events included	41.7	2018-02-05	Exceptional events included	1
60.5	2018-06-14	Exceptional events with EPA concurrence excluded	41.7	2018-02-05	Exceptional events with EPA concurrence excluded	1
27.0	2018-02-01	Exceptional events excluded	23.6	2018-12-22	Exceptional events excluded	2
27.0	2018-02-01	Exceptional events included	23.6	2018-12-22	Exceptional events included	2
27.0	2018-02-01	Exceptional events with EPA concurrence excluded	23.6	2018-12-22	Exceptional events with EPA concurrence excluded	2
34.7	2019-01-15	Exceptional events excluded	32.6	2019-01-08	Exceptional events excluded	1
57.8	2019-06-27	Exceptional events included	50.2	2019-06-29	Exceptional events included	1

1st Max	Date of 1st Max	Notes	2nd Max	Date of 2nd Max	Notes	POC
57.8	2019-06-27	Exceptional events with EPA concurrence excluded	50.2	2019-06-29	Exceptional events with EPA concurrence excluded	1
35.9	2019-01-15		32.5	2019-01-05		2

Table 10 List of all days that exceeded the 24-hour $PM_{2.5}$ NAAQS at the FSOB. In total, 98 days exceeded the 24-hour $PM_{2.5}$ NAAQS between 2000 and 2019.

Date	$PM_{2.5}$ Concentration (µg/m^3)	24-hour $PM_{2.5}$ NAAQS	Qualifier
2000-01-13	66.5	65	X - Filter Temperature Difference or Average out of Spec.
2000-07-02	90.7	65	E - Forest Fire.
2002-08-06	83.4	65	E - Forest Fire.
2004-06-29	379	65	E - Forest Fire.
2004-06-30	505.6	65	E - Forest Fire.
2004-07-02	468.6	65	E - Forest Fire.
2004-07-18	73.2	65	E - Forest Fire.
2004-07-19	73.2	65	E - Forest Fire.
2004-07-20	155.1	65	E - Forest Fire.
2004-08-19	182.3	65	E - Forest Fire.
2004-08-20	327.4	65	E - Forest Fire.
2004-08-21	378.8	65	E - Forest Fire.
2004-08-22	212.8	65	E - Forest Fire.
2004-08-23	336.1	65	E - Forest Fire.
2004-08-25	149.5	65	E - Forest Fire.
2004-09-12	119.2	65	E - Forest Fire.
2006-01-05	38	35	
2006-01-11	42.2	35	
2006-01-17	51.9	35	
2006-02-04	41.1	35	
2007-12-20	52.5	35	
2008-02-09	40.4	35	
2008-11-05	40.4	35	
2008-11-08	37.4	35	
2008-11-14	51.2	35	
2008-12-29	114.5	35	3 - Field Issue.

Date	$PM_{2.5}$ Concentration (µg/m^3)	24-hour $PM_{2.5}$ NAAQS	Qualifier
2008-12-02	46.7	35	
2008-12-14	38.6	35	
2009-07-06	43.9	35	RT - Wildfire-U. S.
2009-07-15	75.3	35	RT - Wildfire-U. S.
2009-07-30	159.6	35	RT - Wildfire-U. S.
2009-08-02	89.7	35	RT - Wildfire-U. S.
2009-08-05	132.8	35	RT - Wildfire-U. S.
2009-08-08	61	35	RT - Wildfire-U. S.
2009-01-04	39	35	X - Filter Temperature Difference or Average out of Spec.
2009-01-07	53.5	35	X - Filter Temperature Difference or Average out of Spec.
2009-01-10	52.7	35	X - Filter Temperature Difference or Average out of Spec.
2009-11-24	35.3	35	
2009-12-09	47.7	35	
2009-12-12	40.8	35	
2009-12-21	43.5	35	
2009-12-30	43.1	35	
2010-12-01	41.2	35	X - Filter Temperature Difference or Average out of Spec.
2010-12-07	36.9	35	X - Filter Temperature Difference or Average out of Spec.
2010-01-02	53.2	35	
2010-01-05	51.8	35	
2010-01-08	45.2	35	
2010-01-11	36.9	35	
2010-01-20	36.5	35	
2010-01-26	80.5	35	
2010-07-13	42.3	35	RT - Wildfire-U. S.
2010-12-16	54.6	35	
2010-12-19	36.7	35	
2011-01-18	38	35	
2011-02-05	36	35	

Date	$PM_{2.5}$ Concentration (µg/m^3)	24-hour $PM_{2.5}$ NAAQS	Qualifier
2011-03-01	42.6	35	
2011-11-17	38	35	
2011-11-20	41	35	
2012-11-08	35.9	35	
2012-11-26	55.5	35	
2012-11-29	50.9	35	
2012-12-17	54.2	35	
2012-12-20	47.1	35	
2012-12-23	41.7	35	
2012-01-19	36.5	35	X - Filter Temperature Difference or Average out of Spec.
2012-01-28	38.2	35	X - Filter Temperature Difference or Average out of Spec.
2013-06-27	58.7	35	RT - Wildfire-U. S.
2013-12-27	56	35	X - Filter Temperature Difference or Average out of Spec.
2013-12-24	39.4	35	
2013-03-05	36.5	35	
2014-01-11	38.4	35	X - Filter Temperature Difference or Average out of Spec.
2014-02-10	48.4	35	
2015-01-06	40.3	35	
2015-02-14	35.3	35	
2015-12-14	35.3	35	
2015-06-23	68.3	35	RT - Wildfire-U. S.
2015-06-26	105	35	RT - Wildfire-U. S.
2015-07-02	44.3	35	RT - Wildfire-U. S.
2015-07-08	57.1	35	RT - Wildfire-U. S.
2016-02-07	42	35	TT - Transport Temperature is Out of Specs.
2016-12-11	39.7	35	
2016-12-14	41.5	35	
2017-01-01	40.5	35	1 - Deviation from a CFR/Critical Criteria Requirement.
2017-01-02	35.6	35	1 - Deviation from a CFR/Critical Criteria Requirement.

Date	$PM_{2.5}$ Concentration (µg/m^3)	24-hour $PM_{2.5}$ NAAQS	Qualifier
2017-07-13	37.3	35	RT - Wildfire-U. S.
2017-01-10	43.1	35	
2017-01-23	37.5	35	
2017-01-24	53.8	35	
2017-02-03	43.3	35	
2017-02-04	38	35	
2017-02-05	44	35	
2017-02-07	35.7	35	
2018-06-14	60.5	35	RT - Wildfire-U. S.
2018-02-05	41.7	35	
2019-01-15	35.9	35	
2019-06-27	57.8	35	RT - Wildfire-U. S.
2019-06-28	37.9	35	RT - Wildfire-U. S.
2019-06-29	50.2	35	RT - Wildfire-U. S.
2000-01-13	66.5	65	X - Filter Temperature Difference or Average out of Spec.
2000-07-02	90.7	65	E - Forest Fire.
2002-08-06	83.4	65	E - Forest Fire.
2004-06-29	379	65	E - Forest Fire.
2004-06-30	505.6	65	E - Forest Fire.
2004-07-02	468.6	65	E - Forest Fire.
2004-07-18	73.2	65	E - Forest Fire.
2004-07-19	73.2	65	E - Forest Fire.
2004-07-20	155.1	65	E - Forest Fire.
2004-08-19	182.3	65	E - Forest Fire.
2004-08-20	327.4	65	E - Forest Fire.
2004-08-21	378.8	65	E - Forest Fire.
2004-08-22	212.8	65	E - Forest Fire.
2004-08-23	336.1	65	E - Forest Fire.
2004-08-25	149.5	65	E - Forest Fire.

Date	$PM_{2.5}$ Concentration (µg/m^3)	24-hour $PM_{2.5}$ NAAQS	Qualifier
2004-09-12	119.2	65	E - Forest Fire.
2006-01-05	38	35	NA
2006-01-11	42.2	35	NA
2006-01-17	51.9	35	NA
2006-02-04	41.1	35	NA
2007-12-20	52.5	35	NA
2008-02-09	40.4	35	NA
2008-11-05	40.4	35	NA
2008-11-08	37.4	35	NA
2008-11-14	51.2	35	NA
2008-12-29	114.5	35	3 - Field Issue.
2008-12-02	46.7	35	NA
2008-12-14	38.6	35	NA
2009-07-06	43.9	35	RT - Wildfire-U. S.
2009-07-15	75.3	35	RT - Wildfire-U. S.
2009-07-30	159.6	35	RT - Wildfire-U. S.
2009-08-02	89.7	35	RT - Wildfire-U. S.
2009-08-05	132.8	35	RT - Wildfire-U. S.
2009-08-08	61	35	RT - Wildfire-U. S.
2009-01-04	39	35	X - Filter Temperature Difference or Average out of Spec.
2009-01-07	53.5	35	X - Filter Temperature Difference or Average out of Spec.
2009-01-10	52.7	35	X - Filter Temperature Difference or Average out of Spec.
2009-11-24	35.3	35	NA
2009-12-09	47.7	35	NA
2009-12-12	40.8	35	NA
2009-12-21	43.5	35	NA
2009-12-30	43.1	35	NA
2010-12-01	41.2	35	X - Filter Temperature Difference or Average out of Spec.
2010-12-07	36.9	35	X - Filter Temperature Difference or Average out of Spec.

Date	$PM_{2.5}$ Concentration (µg/m^3)	24-hour $PM_{2.5}$ NAAQS	Qualifier
2010-01-02	53.2	35	NA
2010-01-05	51.8	35	NA
2010-01-08	45.2	35	NA
2010-01-11	36.9	35	NA
2010-01-20	36.5	35	NA
2010-01-26	80.5	35	NA
2010-07-13	42.3	35	RT - Wildfire-U. S.
2010-12-16	54.6	35	NA
2010-12-19	36.7	35	NA
2011-01-18	38	35	NA
2011-02-05	36	35	NA
2011-03-01	42.6	35	NA
2011-11-17	38	35	NA
2011-11-20	41	35	NA
2012-11-08	35.9	35	NA
2012-11-26	55.5	35	NA
2012-11-29	50.9	35	NA
2012-12-17	54.2	35	NA
2012-12-20	47.1	35	NA
2012-12-23	41.7	35	NA
2012-01-19	36.5	35	X - Filter Temperature Difference or Average out of Spec.
2012-01-28	38.2	35	X - Filter Temperature Difference or Average out of Spec.
2013-06-27	58.7	35	RT - Wildfire-U. S.
2013-12-27	56	35	X - Filter Temperature Difference or Average out of Spec.
2013-12-24	39.4	35	NA
2013-03-05	36.5	35	NA
2014-01-11	38.4	35	X - Filter Temperature Difference or Average out of Spec.
2014-02-10	48.4	35	NA
2015-01-06	40.3	35	NA

Date	$PM_{2.5}$ Concentration (µg/m^3)	24-hour $PM_{2.5}$ NAAQS	Qualifier
2015-02-14	35.3	35	NA
2015-12-14	35.3	35	NA
2015-06-23	68.3	35	RT - Wildfire-U. S.
2015-06-26	105	35	RT - Wildfire-U. S.
2015-07-02	44.3	35	RT - Wildfire-U. S.
2015-07-08	57.1	35	RT - Wildfire-U. S.
2016-02-07	42	35	TT - Transport Temperature is Out of Specs.
2016-12-11	39.7	35	NA
2016-12-14	41.5	35	NA
2017-01-01	40.5	35	1 - Deviation from a CFR/Critical Criteria Requirement.
2017-01-02	35.6	35	1 - Deviation from a CFR/Critical Criteria Requirement.
2017-07-13	37.3	35	RT - Wildfire-U. S.
2017-01-10	43.1	35	NA
2017-01-23	37.5	35	NA
2017-01-24	53.8	35	NA
2017-02-03	43.3	35	NA
2017-02-04	38	35	NA
2017-02-05	44	35	NA
2017-02-07	35.7	35	NA
2018-06-14	60.5	35	RT - Wildfire-U. S.
2018-02-05	41.7	35	NA
2019-01-15	35.9	35	NA
2019-06-27	57.8	35	RT - Wildfire-U. S.
2019-06-28	37.9	35	RT - Wildfire-U. S.
2019-06-29	50.2	35	RT - Wildfire-U. S.