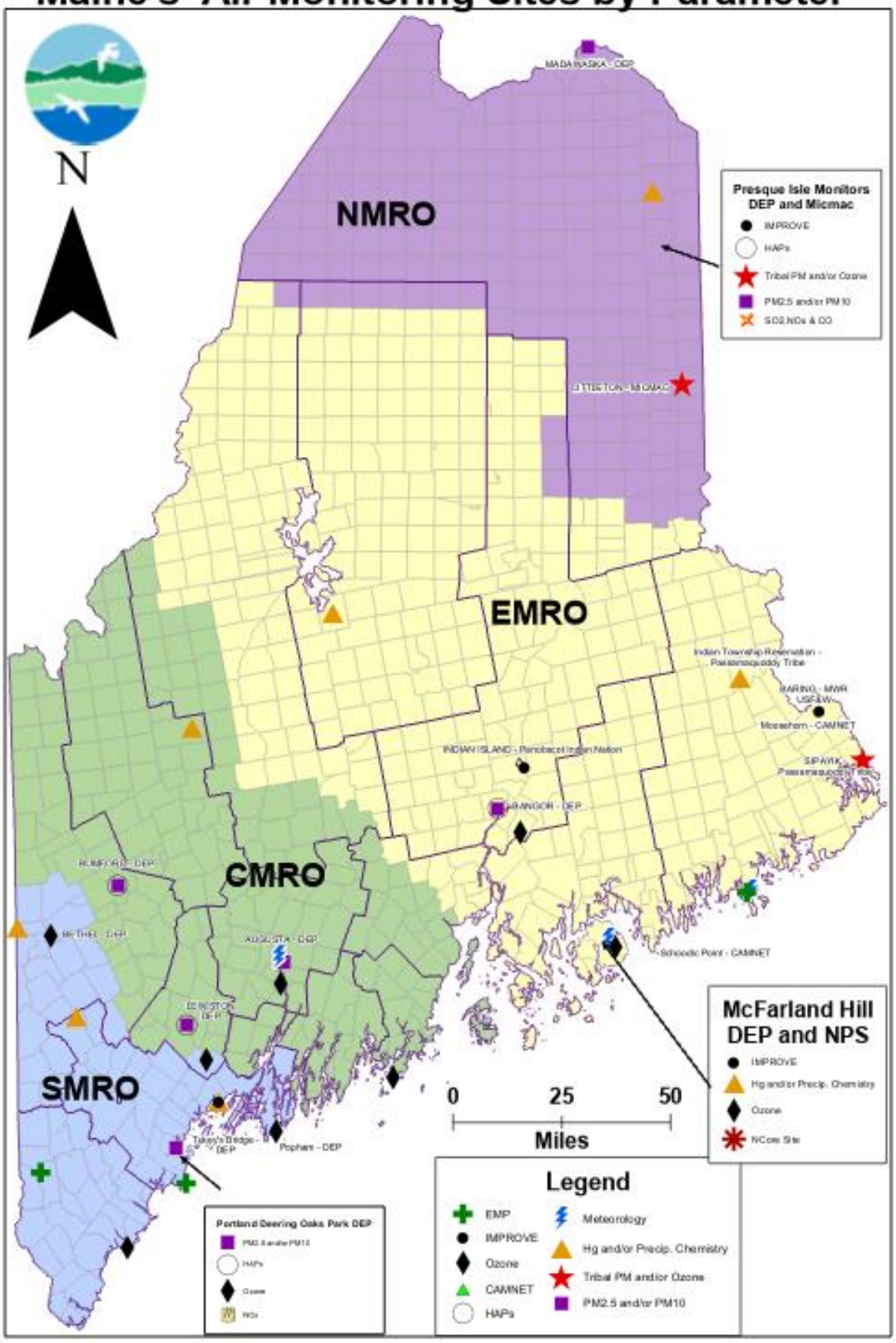
Annual Air Monitoring Plan 2024

Maine Department of Environmental Protection
Bureau of Air Quality
July 1, 2023

Maine's Air Monitoring Sites by Parameter



Introduction

The Maine Department of Environmental Protection (DEP) Bureau of Air Quality (BAQ) operates and maintains a network of air samplers in the state to evaluate ambient air quality in Maine. The Code of Federal Regulations (CFR) and the Environmental Protection Agency (EPA) requires state and local agencies to conduct ambient air quality monitoring to determine whether the ambient concentrations of pollutants in the state exceed ambient air quality standards. The State of Maine remains in attainment with all ambient air quality standards. Air quality data also document trends that may be occurring in the concentrations of these pollutants, support the Maine DEP in providing background information for the licensing program and, when necessary, the development of pollution control strategies. For many of the monitored pollutants, the BAQ maintains an automated polling and reporting technology that provides continuous hourly data to the public and scientific community. These data are also used for timely forecasting of regional air quality conditions for Maine citizens and visitors to the state.

The Maine BAQ has been monitoring air quality in Maine since the DEP was formed in 1972, working in partnership with the EPA to uphold the tenets of the 1970 Clean Air Act and subsequent amendments. The BAQ is responsible for most of the ambient air quality monitors located in Maine. Additional monitoring is conducted by several federal agencies such as the EPA, the National Park Service, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, as well as by several of the Indian tribes in Maine. In 2007, Maine BAQ entered into a Primary Quality Assurance Organization (PQAO) agreement with the Aroostook Band of Micmacs, the Passamaquoddy Tribe at Pleasant Point, and the Penobscot Indian Nation in Maine to conduct air monitoring with shared quality assurance plans, practices, and procedures.

The air monitoring program in Maine has evolved as air quality standards have tightened, scientific knowledge has improved, the levels of concern for different pollutants have evolved, and the technology to monitor these pollutants has developed. The DEP initially concentrated resources on neighborhood monitoring of air pollutants, primarily from local sources. As the impact on the ambient environment from local sources was reduced, the state monitoring network began to focus on establishing statewide background levels and improving air quality forecasts.

Maine is a state with many regions of varying topography. Pollutant impacts in one area of the state may be very different from pollutant impacts in another area. Mountain valleys in the western part of the state may experience higher pollution levels at times because of atmospheric inversions, which trap ground-level pollution in the valleys for extended periods, whereas the coastal locations, with higher dispersion of pollutants due to the constant onshore and offshore winds, may not. Aroostook County may record higher particulate levels because of widespread farming operations and the type of soil found in the county. Southern Maine may record higher ozone levels because of air masses originating from other areas of the U.S. Some pollutants monitored may come from the other side of the world, such as particulates from volcanic eruptions, large forest fires, or emissions from less-controlled sources in some of the rapidly developing countries.

The DEP is also aware of heightened interest in air quality issues by Maine's citizenry. Many internet sites provide real-time or near real-time ambient air quality data. Low-cost air sensors are on the market and becoming more readily available. As a result, the citizens the DEP serves are more informed and frequently more engaged in air quality issues than ever before. That expanding knowledge is creating demand for broadened air quality monitoring across the state and increased interest in monitoring for non-criteria pollutants, such as Hazardous Air Pollutants (HAPs) and Aeroallergens.

In addition, the Maine Climate Council came into being with a charge "to address a number of critical and pressing issues relating to the effects of climate change on the State, its communities and its environment and natural resources, must commence work on those issues as soon as is possible….." Among the findings of this Council

is the lack of active ambient air quality monitoring in many Maine counties. Though the 2024 Ambient Air Monitoring Plan does not define a plan to address the concerns of the Climate Council, it does acknowledge the need to move in the direction of establishing monitoring equipment in under-served regions of the state and to develop a plan to achieve the goal of assessing ambient air quality statewide.

The DEP must also deal with changing federal regulations. As more data are collected and more health study results are published, the impacts of various pollutants are reviewed. Pollution standards and controls may need to be updated to reflect revised recommendations. The EPA is required to review the National Ambient Air Quality Standards (NAAQS) every five years. Changing standards may mean the implementation of additional monitoring requirements. A list of the current State and National Ambient Air Quality Standards (NAAQS) is presented below.

National Ambient Air Quality Standards (NAAQS)

from: https://www.epa.gov/criteria-air-pollutants/naaqs-table
(as of May 2023)

The EPA has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" air pollutants. The current standards are listed below: parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu g/m^3$).

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3-month average	0.15 $\mu g/m^3$ (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	12.0 $\mu g/m^3$	annual mean, averaged over 3 years
		secondary	1 year	15.0 $\mu g/m^3$	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 $\mu g/m^3$ as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards remain in effect in some areas. Revocation of the previous (2008) O3 standards and transitioning to the current (2015) standards will be addressed in future rulemaking.

(4) The previous SO2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Network Overview

By July 1st of each year, the DEP is required to submit to the EPA a proposed monitoring plan for the next calendar year. In 2006, the EPA also required states to make their proposed plan available for a 30-day comment period prior to submittal to the EPA. The DEP annual monitoring plan is constantly subject to change as standards are revised, new pollutants of concern are identified, monitoring sites are no longer acceptable to property owners, and staffing and budget cuts affect the ability to meet a program objective. Consequently, the monitoring plan proposed in this document is our best effort to project what we will be able to do next year given our current standards, staffing, and budget constraints.

The Maine DEP BAQ monitors air quality as required by the 1970 Clean Air Act and subsequent amendments, the Code of Federal Regulations (CFR), and the Federal Environmental Protection Agency (EPA.) Much of the monitoring effort focuses on the six criteria pollutants: ground level ozone, particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead.

Ozone monitoring continues to be a priority for DEP. Ozone at ground level can trigger a variety of health effects, particularly in young children, the elderly, and those with existing health conditions. It is also harmful to vegetation, buildings, and infrastructure. Ground level ozone is not usually emitted directly into the air from any source, but it is created through the presence of sunlight acting on other airborne pollutants like those found in vehicle exhaust, chemical solvents, and gasoline vapors. Since the Clean Air Act of 1970, Maine has operated ozone monitoring stations at many locations, each selected to optimize the assessment of ozone levels across the state.

Quantification of fine airborne particulate matter ($PM_{2.5}$) is another major component of the DEP ambient monitoring program. Particulate matter (PM) is the term used for any airborne mixture of solid particles and liquid droplets, such as those found in soot, dust, and smoke. The particles can be large enough, like pollen, to be seen with the unaided eye, while others are so fine that they can only be detected with electron microscopes. Of particular concern are those particles, generally 10 microns in size (PM_{10}) and less, which are inhalable, for they can become lodged in the lungs and PM2.5 particles can be respired deeply into the lungs. Fine particulate ($PM_{2.5}$) monitoring in Maine has evolved since 1999 when the program was established. The Total Suspended Particulate (TSP) and PM_{10} program in Maine began shortly after the DEP was established in 1972. DEP efforts have focused on introducing more of the continuous $PM_{2.5}$ monitors into the network. Presently, most monitoring sites where particulate sampling takes place include a continuous $PM_{2.5}$ monitor. In addition, the DEP is intending to increase mobility with particulate monitoring in order to be more responsive to "localized" air quality issues.

Nitrogen dioxide (NO_2) is one of a group of highly reactive gasses known as "oxides of nitrogen," or "nitrogen oxides (NO_x)." EPA's National Ambient Air Quality Standard uses NO_2 as the term representing the larger group of nitrogen oxides that include NO, NO_2, NO_x, and NO_y. Nitrogen Oxide (NO) is created during the

combustion stage of engine and boiler operations. The NO, NO_2, NO_x, and NO_y forms of nitrogen oxides react at different rates in the atmosphere in a process that is dependent on sunlight and temperature. NO_x is measured at ground level while NO_y is the reactive form measured at ten meters above ground level. In addition to contributing to the formation of ground-level ozone and fine particle pollution, the oxides of nitrogen are linked with a number of adverse effects on the respiratory system.

Sulfur dioxide (SO_2) and a group of other sulfur oxides, collectively known as SO_x, are emitted into the atmosphere from the burning of fossil fuels by power plants, industrial facilities, ships, locomotives, and heavy equipment. Short-term exposure to SO_2 and SO_x compounds can harm the respiratory system. Children, the elderly, and those with asthma or other breathing troubles are particularly sensitive to these sulfur compounds.

Carbon monoxide (CO) is another harmful gas emitted from combustion processes. Most of this colorless, odorless, yet extremely harmful gas comes from mobile sources like cars and trucks and in the United States is found primarily in and around large urban areas. CO reduces the amount of oxygen that can be absorbed by the body, particularly the heart and brain. At high concentrations, CO can lead to death.

Lead (Pb) in the atmosphere is emitted as particles – mainly from smelters, ore and metal processing facilities, waste incinerators, public utilities, and lead-acid manufactures. Piston aircraft continue to use leaded aviation fuel. Since tetraethyl lead was removed from motor vehicle fuel, the ambient levels of lead in Maine dropped significantly and concentrations are currently at or below minimum detection limits for most Pb monitors.

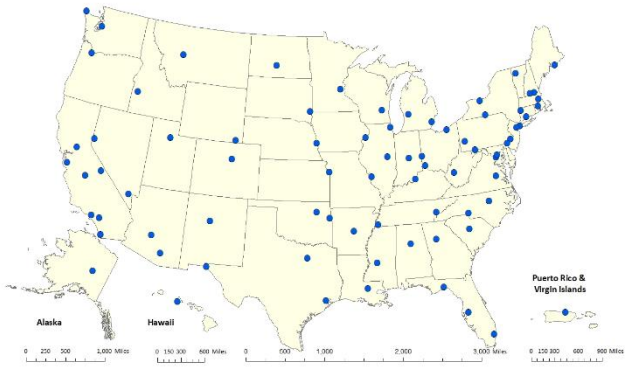
The DEP also tests the ambient air for many non-criteria yet hazardous air pollutants (HAPs). Based on the HAPs testing in ambient air, a priority list of hazardous pollutants was tabulated and DEP has established background concentrations for several of the pollutants on the list. The list is modified as additional data becomes available.

The following section details the individual networks for the various parameters monitored in Maine, any changes proposed for monitored parameters, and identifies future needs for monitoring. Though the spirit and intent of this document is to specify how the network will appear and function for calendar year 2024, the potential exists for additional short-notice changes to the network. If circumstances dictate a change to the network, proposed changes will still be made available for public review and comment prior to implementation.

Monitoring Networks

Most of the sites in the Maine air monitoring network are designated as **SLAMS** – State & Local Air Monitoring Stations. The SLAMS in Maine are part of a standardized, national network administered by the EPA in accordance with the Clean Air Act and subsequent Federal Regulations. Every state must monitor for the criteria air pollutants, following strict criteria set by the EPA that govern all aspects of the monitoring and reporting process. SLAMS sites must meet all stringent monitor siting requirements and utilize specified equipment types. The pollution monitoring instruments at these sites must be approved by the EPA and be designated as either Federal Reference Method (FRM) or Federal Equivalence Method (FEM). In addition, SLAM site operators must follow all quality assurance criteria and must submit detailed quarterly and annual monitoring results to EPA. Data from SLAMS stations are used as one of the factors to define attainment/nonattainment areas and to determine if an area is meeting the NAAQS.

NCore Network:



Established in 2011, the **NCore** (National Core) network is comprised of a specialized subset of SLAMS sites.

The purpose of the NCore network, in addition to aiding in the determination of nonattainment/ attainment areas, is to provide data to the scientific community, from a specific suite of monitors, that is used to make health and ecosystem assessments, to establish long-term trends for criteria and certain precursor pollutants, and to develop and evaluate pollutant transportation models. The NCore site in Maine, located at McFarland Hill in Acadia National Park, near Bar Harbor, is designated as a rural or background site. At McFarland Hill the following suite of parameters is monitored:
https://www.epa.gov/amtic/ncore-monitoring-network#:~:text=NCore%20is%20a%20multi%20pollutant,network%20on%20January%201%2C%202011.

Air Pollutant Parameters Monitored at NCore Sites

$PM_{2.5}$ speciation	Organic and elemental carbon, major ions and trace metals (24-hour average; every 3rd day); IMPROVE or CSN
$PM_{2.5}$ FRM mass	Filter-based 24 hr. average every 3rd day
Continuous $PM_{2.5}$ mass	1-hour reporting interval; FEM
$PM_{(10-2.5)}$ mass – aka PM_{Coarse}	Filter-based 24 hr. average every 3rd day or Continuous
Ozone (O_3)	Continuous, capable of trace levels (low ppm)
Carbon monoxide (CO)	Continuous, capable of trace levels (low ppm)
Sulfur dioxide (SO_2)	Continuous, capable of trace levels (low ppb)
Nitrogen oxide (NO)	Continuous, capable of trace levels (low ppb)
Total reactive nitrogen (NO_y)	Continuous, capable of trace levels (low ppb)
Surface meteorology	Continuous wind speed and direction (reported as "Resultant"), temperature, RH

CASTNET:

CASTNET (Clean Air Status and Trends Network) is a nationwide monitoring operation that collects air pollutant concentrations to evaluate the effectiveness of national and regional emission control programs, to determine compliance with the National Ambient Air Quality Standards for ozone, and to determine rural trends in ozone, nitrogen and sulfur concentrations. It was established in 1991 as a cooperative program with the EPA, the National Park Service, and state and local partners. The CASTNET site location in Maine is at Acadia National Park. The CASTNET site in Ashland was shut down in May 2022. The data are now incorporated in several regional air quality models. https://www.epa.gov/castnet

RadNet:

RadNet has 140 radiation air monitors in 50 states. Maine has two RadNet sites, one in Portland operated by DEP, and one in Orono. https://www.epa.gov/radnet The EPA's Radiation Network runs 24 hours a day, 7 days a week collecting near-real-time measurements of gamma radiation. The RadNet program monitors the nation's air, precipitation and drinking water to track radiation in the environment. Over time, RadNet sample testing and monitoring results show the fluctuations in background levels of environmental radiation. The RadNet system will also detect higher than normal radiation levels during a radiological incident.

Gamma radiation comes from many different radioactive elements, both natural and man-made. Able to penetrate several feet of concrete or a few inches of lead, gamma particles can pose a serious health threat inside and outside the body and the radiation can be lethal depending on the amount received. Scientists use the properties of gamma

radiation to detect the presence of radioactive elements. RadNet stationary air monitors measure gamma radiation emitted from airborne radioactive particles as they collect on the exposed filters. Tracking gamma radiation over time helps to create a picture of the background levels and allows EPA scientists to detect anomalies.

Special Purpose Monitors:

The Maine DEP operates other Special Purpose Monitors around the State. These are often set at locations to monitor specific pollutants for a period, usually not exceeding two years, to investigate localized complaints or to recon a location for a possible long-term site.

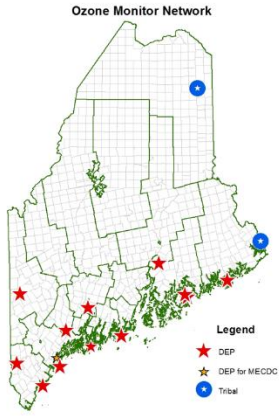
The Deering Oaks Park site in Portland is a special purpose site. It is in a location, determined by the American Lung Association, as being representative of the greater Portland area. Monitoring results at the site are used to provide data useful in tracking relationships between pollutant levels and emergency department visits. Since the Deering Oaks Park location does not meet SLAMS siting requirements, the ozone and nitrogen dioxide data are not used in determining attainment or nonattainment status for criteria pollutants. The information is useful however for other purposes such as quantifying urban air quality in Maine. The area surrounding the monitors have been used as a staging group for nearby construction projects for years influencing the monitors, this and the planned expansion of the walking and bike path that will go through our current monitoring shelter, the department with the help of the City of Portland is looking for a new suitable location for our monitors. The hope is that a new location will be found that has a better representation of the city and will meet the SLAMS siting requirements.

The EPA, National Park Service, U.S. Fish and Wildlife Service (USFWS) and the U.S. Geological Survey each operate monitoring sites in Maine as part of their respective national networks.

The Aroostook Band of Micmacs, the Passamaquoddy Tribes at Indian Township and Sipayik, and the Penobscot Nation each operate several monitoring sites in Maine. These are independently managed monitoring sites, but each tribe has agreed to operate their sites in accordance with Maine DEP Quality Assurance Project Plans.

Other long-term specialized networks including IMPROVE, MDN, CAMNET and EMP are discussed in more detail below.

Ozone Network:



Maine DEP currently operates ground level ozone monitoring sites throughout the state in accordance with SLAMS network requirements. Three of the Maine DEP sites operate year-round while the remainder are "seasonal sites." The EPA operated an ozone site in Ashland as part of the CASTNET program up to May 2022 when that site was shut down, funding permitted, this site may reopen in 2023 or 2024. The Portland Deering Oaks site is within a metropolitan area and the data collected here is used for health studies and not for regulatory purposes. The remaining year-round ozone monitoring sites operated by the Maine DEP are in Bar Harbor and Cape Elizabeth. An additional two ozone sites in Maine are operated by Maine Indian tribes year-round.

In 2020 the Gardner Pray Street School shelter was moved to accommodate a construction project on that property. The shelter was moved a short distance to the Gardiner Area High School property. The Gardiner Area High School was meant to be a temporary location, and siting is not optimal. DEP staff are reviewing options for this site for future monitoring in the Gardiner Area after the 2023 ozone season.

Maine DEP, with the cooperation of the Department of Agriculture, Conservation and Forestry (Maine DACF) installed an ozone site at Popham Beach State Park in 2022. This installation satisfies a long-standing need for a coastal site in between Cape Elizabeth and Port Clyde.

At the end of 2022, the Maine DEP moved the monitoring equipment from the Jonesport Public landing structure to a monitoring shelter in the parking lot of the Jonesport Coast Guard Station. This moved was required due to the planned demolition of the Public Landing structure. The move was done outside of the ozone season, and the 2023 season started as planned at the new location.

Although the federally required ozone season for Maine runs from April through September, most of the Maine sites now operate from the first of March through the first of October, weather permitting. The Maine sites are scattered throughout the state, with most of them situated along the coast and in southern Maine. The highest ozone concentrations tend to occur along the coast because plumes of contaminated air are often transported into the Gulf of Maine from metropolitan areas to the south. These air masses are subsequently blown ashore and carried inland. In addition to determining attainment/nonattainment status, the ozone sites in Maine collect data that is used by the mapping and forecasting programs to provide the public and scientific community with quality data in a timely fashion and to forecast air quality alerts when necessary.

Planned changes for 2024:

If not done in 2023, the Portland Deering Oaks site may be moved to a new location.

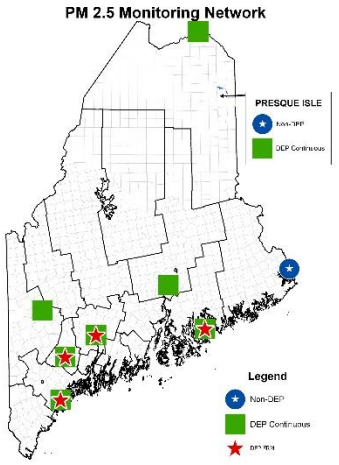
The location of the Gardiner area ozone monitor may be moved. The current siting is not optimal for ozone and was meant to be temporary during the construction of Girls and Boys Club on Pray Street. The Maine DEP is considering options for the future of this site: which includes remaining at the current site or moving to another location with better siting in the Gardiner and Augusta area.

Ozone Monitoring Site Summary

Ozone Monitoring Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill	NCore & CASTNET	Transport, Background	Continuous
Bar Harbor – Top of Cadillac Mountain	SLAMS	Transport	Continuous – Seasonal
Bethel, Smith Farm Road	SLAMS	Max. Conc., Transport	Continuous – Seasonal
Cape Elizabeth – Two Lights State Park	SLAMS & EMP	Transport	Continuous
Durham – Fire Station – Route 9	SLAMS	Max. Concentration	Continuous – Seasonal
Gardiner – Gardner High School	SLAMS	Max. Conc., Transport	Continuous – Seasonal
Holden – Rider Bluff	SLAMS	Max. Conc., Transport	Continuous – Seasonal
Jonesport – Coast Guard Station	SLAMS & EMP	Max. Concentration	Continuous – Seasonal
Kennebunkport – Parsons Way	SLAMS	Max. Conc., Transport	Continuous – Seasonal
Perry – Pleasant Point/Sipayik, 176 County Road	Tribal	-	Continuous
Phippsburg – Popham Beach State Park	SLAMS	Max. Conc., Transport	Continuous – Seasonal
Port Clyde – Marshall Point Lighthouse	SLAMS	Max. Conc., Transport	Continuous – Seasonal
Portland – Deering Oaks	SPM	High Pop. Exposure	Continuous
Presque Isle – 8 Northern Road	Tribal	-	Continuous
Shapleigh – Ball Park, West Newfield Road	SLAMS & EMP	Max. Conc., Transport	Continuous – Seasonal

$PM_{2.5}$ Network:

In 1999 the Maine DEP began a $PM_{2.5}$ monitoring program, using filter-based samplers that met the Federal Reference Method (FRM), with 15 sites started up during the first year of operation. Three years of data collection demonstrated compliance with the $PM_{2.5}$ standard at all the sites, after which some of the samplers were relocated or switched to collect PM_{10} samplers. In 2023 the Maine DEP monitored for $PM_{2.5}$ using the filter-based FRM samplers at 7 sites and continuous Federal Equivalent Method (FEM) $PM_{2.5}$ monitoring was conducted at 10 sites operated by Maine DEP. Three continuous monitors were operated by the Tribes. All the current sites continue to comply with the $PM_{2.5}$ standard remain in operation to gather trend data, document future attainment status, and forecast ambient air quality. $PM_{2.5}$ filters can also be analyzed to determine levels of some of the hazardous air pollutants that are on the priority list.



The DEP initiated continuous monitoring of $PM_{2.5}$ in 2000 using Tapered Element Oscillating Microbalance (TEOM) samplers. The continuous monitors generate hourly average data that are available in near real-time and very useful in helping to forecast air quality. TEOM sites were set up in Bangor, Bar Harbor, Greenville, Lewiston, and Portland. The Passamaquoddy Tribe operated a TEOM monitor in Sipayik, and the Micmac Tribe operates TEOM monitors in Presque Isle and Littleton.

In 2012, the TEOMs were nearing the end of their expected life cycle, so that year the Maine DEP initiated a program to procure new continuous $PM_{2.5}$ monitors known as Beta Attenuation Monitors (BAM). The BAMs are an EPA-approved FEM, so Maine DEP monitors $PM_{2.5}$ NAAQS using both the filter-based FRM and the continuous FEM monitors throughout the state. BAMs replaced the TEOMs in Lewiston, Bangor, and Bar Harbor. The TEOM in Portland remained in operation alongside the new BAM for comparison of methods until the end of June 2015. BAMs were later installed to supplement the filter-based FRM sampling in Presque Isle, Madawaska, and Rumford, and replaced the Passamaquoddy Tribe TEOM in Sipayik. In 2018, the Met One BAM in Bar Harbor was replaced with a Thermo Fisher Scientific Instruments model 5030i continuous $PM_{2.5}$ sampler. In 2020, the Maine DEP designated the continuous BAMs as the primary monitors, which allowed for the removal of the $PM_{2.5}$ filter based FRM samplers in Lewiston, Bangor and Madawaska.

In 2022, the Maine DEP applied for an American Rescue Plan Grant, which requested funds to purchase six Teledyne T640x instruments. These instruments use scattered light spectrometry and produces continuous real-time 1 minute and hourly data for $PM_{2.5}$, along with PM_{10} and PM_{Coarse} simultaneously. The Maine DEP was awarded the grant, and the six T640x instruments arrived in December of 2022. Starting in January 2023, The Maine DEP started the deployment of 6 Teledyne T640x instruments starting at Presque Isle Riverside, replacing a Metone BAM and Bar Harbor replacing the Thermo Fisher Scientific Instruments 5030*i*. The Maine DEP plans to install the remaining 3 in Augusta, Portland Tukey's Bridge, and the Presque Isle Background Site in 2023.

The continuous, hourly averaged $PM_{2.5}$ records are reported in near real time to both the Maine DEP web page and the EPA AirNow web site. Access to this continuous $PM_{2.5}$ data has permitted better forecasting for particulate levels under specific weather conditions for many parts of the state. The Rumford site was chosen to meet a long-standing interest in having real-time continuous data from western mountain valley locations. Complex meteorological conditions in Maine's western mountains and the subsequent dispersion of fine particulates like wood smoke are of particular interest to the DEP as it strives to produce better air quality forecasts in a region with few monitors and sparse data.

In 2020, the TEOM operated by the Micmac Tribe stopped reporting data due to a malfunction at the site. This site has yet to resume data reporting, but the Micmac tribe would still like to return this site to operational status when time and resources allow.

The Maine DEP also utilize multiple low-cost sensors. More on low-cost sensors can be found below in the "Special Purpose Monitoring sites and Air Quality Studies" section below.

Proposed calendar year 2024 changes for the $PM_{2.5}$ network:
If not done in 2023, the Portland Deering Oaks site may be moved.

If not completed in 2023, finish the deployment of the Teledyne T640x instruments as followed

- Replace FRM samplers at the Tukey's Bridge Site in Portland with a continuous sampler.
- Replace an FRM sampler at the Presque Isle Background site with a continuous sampler.
- Upgrade the Augusta Lincoln Street School with a continuous sampler to collocate with method 143.

If resources allow, the DEP may establish two-level ambient temperature monitoring in Presque Isle and Madawaska to identify the possibility atmospheric inversions during the winter and early spring. Presque Isle and Madawaska experience occasional short duration particulate events under certain atmospheric conditions (calm winds, lack of cloud cover, diurnal temperature swings) that appear to be due to atmospheric inversions. Having near ground level temperature data coupled with temperature data between 10 to 15 meters above ground would provide direct measure of the temperature gradient above the ground surface.

The DEP may purchase more T640x instruments to replace or supplement the BAM monitors in Bangor and/or Lewiston.

$PM_{2.5}$ Monitoring Site Summary

$PM_{2.5}$ Monitoring Site Address	**Site Type**	**Monitoring Objective**	**Sampling Method and Frequency**
Augusta – Lincoln Street School	SLAMS	200K Pop. Coverage[1]	FRM[2], every 6 days
Augusta – Lincoln Street School	SLAMS	Collocated	FRM[2], every 6 days
Augusta – Lincoln Street School	SLAMS	Collocation	FEM[3], Continuous*
Bangor – Mary Snow School	SPM	200K Pop Coverage/AQI Forecasting/Mapping[1]	FEM[4], Continuous*
Bar Harbor – McFarland Hill	NCore	Transport	FRM[2], every 3 days*
Bar Harbor – McFarland Hill	SLAMS	Mapping	FEM[3], Continuous
Lewiston – Country Kitchen Lot	SLAMS	200K Pop. Coverage/ Mapping[1]	FEM[4], Continuous*
Madawaska – Public Safety Bldg.	SLAMS	High Pop. Exposure/ AQI Forecasting/Mapping	FEM[3], Continuous*
Littleton	Tribal	Mapping	TEOM, Continuous
Perry – Pleasant Point/Sipayik, 176 County Road	Tribal	Mapping	FEM[4], Continuous
Portland – Deering Oaks	SLAMS	MSA of 200-500K	FEM[4], Continuous*
Portland – Deering Oaks	SLAMS	MSA of 200-500K	FRM[2], every 6 days
Portland – Tukey's Bridge	SLAMS	High Traffic	FEM[3], Continuous*
Presque Isle – 8 Northern Road	Tribal	Mapping	TEOM, Continuous
Presque Isle – Regional Office	SLAMS	Background	FEM[3], Continuous*
Presque Isle – Riverside Street	SLAMS	200K Pop Coverage/AQI Forecasting/Mapping[1]	FEM[3], Continuous*
Presque Isle – Riverside Street	SLAMS	Collocated	FRM[2], every 6 days
Rumford – Rumford Avenue	SLAMS	High Pop. Exposure/ AQI Forecasting/Mapping[1]	FEM[4], Continuous*

1 – 200K Pop. – 200,000 Population; AQI – Air Quality Index; MSA – Metropolitan Statistical Area
2 – Monitor method: RFPS-1006-143: Thermo-Fisher Scientific Model 2000i
3 – Monitor method EQPM–0516 –238: Teledyne Model T640x
4 – Monitor method: EQPM – 0308-170: Met One Instruments Model 1020 BAM
* – Denotes that monitor is the primary for that site

PM Speciation Network (IMPROVE)

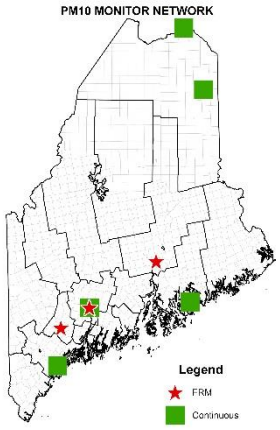
Many stunning and breathtaking vistas at National Parks and Wilderness Areas may be lost or diminished due to the haze formed by air pollutants. These light scattering hazes cause discoloration, loss of texture, and reduced visual range. Recognizing the importance of visual air quality, Congress included legislation in the Clean Air Act to prevent and remedy visibility impairment. To aid in the implementation of this legislation, the Interagency Monitoring of Protected Visual Environments (IMPROVE) program was initiated in 1985. The Maine DEP operates one IMPROVE site in Freeport, Maine at Wolfe's Neck Farm. The National Park Service operates an IMPROVE site in Maine's designated Class 1 visibility area in Acadia National Park. The US Fish and Wildlife Service operates an IMPROVE site in Maine's designated Class 1 visibility area in the Moosehorn National Wildlife Refuge in Baring. IMPROVE sites are also operated by the Penobscot and Micmac Tribes on Indian Island and in Presque Isle, respectively.

In 2015 the EPA reassessed each of the IMPROVE sites to optimize the Chemical Speciation Network. As a result of that process, the Bridgton site was discontinued on January 1, 2016. The DEP understands the continued available, the Bridgton monitors may be re-installed if the Maine DEP can obtain funds to restabilize monitoring at the site.

IMPROVE Network Summary

IMPROVE Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill	NPS/NCore	Regional Haze	Every 3 days
Freeport – Wolfe's Neck Road	SLAMS	Deposition Project	Every 3 days
Indian Island – Penobscot	Tribal	Regional Haze	Every 3 days
Baring – Moosehorn NWR	USFWS	Regional Haze	Every 3 days
Presque Isle – 8 Northern Road	Tribal	Regional Haze	Every 3 days

PM_{10} Network:



Prior to the end of 2022, the Maine DEP operated most of the PM_{10} sampling needs using Thermo 2000*i* FRM samplers with the $PM_{2.5}$ separator removed collect PM_{10} particles using method 126. A continuous Beta Attenuated Monitor (BAM) was operated in Presque Isle as part of the control strategy for the historically high PM_{10} levels there. After an exceedance of the NAAQS on August 12, 2018, another BAM was installed in Madawaska at the Public Safety building in 2020 to assess the potential frequency of the exceedances more accurately to document compliance with the NAAQS and allow for daily averages.

In 2022, the Maine DEP applied for an American Rescue Plan Grant, which requested funds to purchase six Teledyne T640x instruments capable of measuring PM_{10}, along with $PM_{2.5}$ and PM_{Coarse}. The Maine DEP was awarded the grant, and the six T640x instruments arrived in December of 2022. This instrument allows for the replacement of both the FRM method 126 and BAMs at sites where the these are installed.

In January of 2023, the Maine DEP installed T640x instruments at the Bar Harbor McFarland Hill NCore site, followed by the removal of two FRM samplers. The Maine DEP also installed a T640x at the Presque Isle Riverside site, which allowed for the removal of the Metone BAMs. The Maine DEP decided to continue operating the BAM as part of a short co-location study between the two methods. The BAM will be removed prior to the end of 2023.

In May 2023, the DEP installed a T640x on the Madawaska Public Safety Building roof, replacing both Met One 1020 BAMs. The Maine DEP is working to install the 3 remaining T640x instruments as time allows.

Proposed Calendar Year 2024 changes to the PM_{10} Network:

If not completed in 2023, finish the deployment of the Teledyne T640x instruments

- Replace FRM samplers at the Tukey's Bridge Site in Portland with a T640x.
- Replace an FRM sampler at the Presque Isle Background site with a T640x.
- Upgrade the Augusta Lincoln Street School with a T640x.

The DEP is reviewing the potential to remove the manual FRM method 126 from the network. If this is done, then the FRM sampler in Augusta will be removed, and the FRM samplers in Lewiston and Bangor will be replaced with continuous PM_{10} methods, either a Teledyne T640x or a Met One BAM.

PM_{10} Monitoring Site Summary

PM_{10} Monitoring Site Address	**Site Type**	**Monitoring Objective**	**Sampling Frequency**
Augusta – Lincoln Street School	SLAMS	Attainment/Nonattainment	FRM[1], every 6 days
Augusta – Lincoln Street School	SLAMS	Attainment/Nonattainment	FEM[2], Continuous
Bangor – Mary Snow Elementary School	SLAMS	Attainment/Nonattainment	FRM[1], every 6 days
Bangor – Mary Snow Elementary School	SLAMS	Collocated	FRM[1], every 12 days
Bar Harbor – McFarland Hill	NCore	Rural Background	FEM[2], Continuous
Lewiston – Country Kitchen Lot	SLAMS	Attainment/Nonattainment	FRM[1], every 6 days
Madawaska – Public Safety Bldg.	SLAMS	Attainment/Nonattainment	FEM[2], Continuous
Portland – Tukey's Bridge	SLAMS	Attainment/Nonattainment	FEM[2], Continuous
Presque Isle – Riverside Street	SLAMS	Attainment/Nonattainment	FEM[2], Continuous
Presque Isle – Regional Office	SLAMS	Background	FEM[2], Continuous

1- Method RFPS-1298-126: Thermo Scientific model 2000i

2- Monitor method EQPM–0516 –239: Teledyne model T640x

PM_{Coarse} Network:

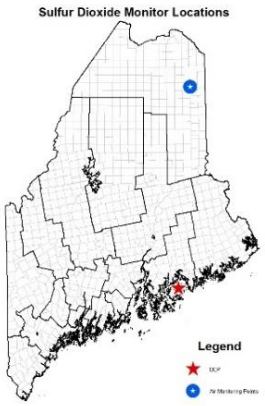
Required PM_{Coarse}, or $PM_{10\text{-}2.5}$ measurements at the NCore site in Bar Harbor are obtained from the Teledyne T640x PM monitor installed in January of 2023. In addition, $PM_{10\text{-}2.5}$ data can be collected from the other Teledyne T640x instruments in the network.

***PM_{Coarse}* Site Address**	**Site Type**	**Monitoring Objective**	**Sampling Frequency**
Bar Harbor – McFarland Hill	NCore	Rural Background	FEM[1], Continuous

1- Monitor method EQPM–0516 –240: Teledyne model T640x

Sulfur Dioxide Network:

The Maine DEP currently operates one sulfur dioxide (SO_2) monitor, a trace-level monitor located at the NCore site in Bar Harbor. The Micmac Indian Tribe operates an SO_2 monitor in Presque Isle. Maine had operated a SO_2 monitor in Gardiner to gather background data, this monitor was shut down at the end of 2019. The SO_2 monitor used at Portland – Dearing Oaks was shut down. The purpose of the Portland monitor was to provide health assessment data for the Greater Portland Area, however after multiple years of exceedingly low data, it was assessed that an exceedance of the NAAQS to be unlikely. The monitor and resources spent to maintain the monitor were determined to be unnecessary. No changes in the current long-term SO_2 network are anticipated for 2024.

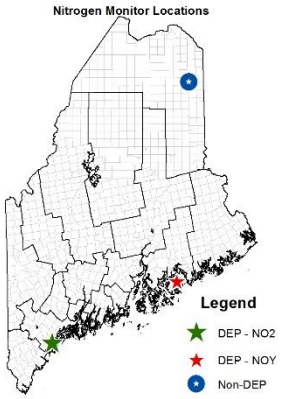


SO_2 Monitoring Site Summary

SO_2 Monitoring Site Address	**Site Type**	**Monitoring Objective**	**Sampling Frequency**
Bar Harbor – McFarland Hill	NCore	Background	Continuous
Presque Isle – 8 Northern Road	Tribal	-	Continuous

Nitrogen Oxides Network (NO_2, NOx, NO, NOy):

The DEP currently operates one trace-level NO_x monitor and one trace-level NO_y monitor. The NO_x monitor is located at the Deering Oaks site in Portland. The NO_x monitor at Deering Oaks is a non-regulatory monitor. The NO_y monitor is located at the NCore site in Bar Harbor. The Micmac Tribe also operates a trace-level NO_2 monitor at their site in Presque Isle. The NO_y monitor at the Cape Elizabeth site was shut down in October 2022 after a review of the data determined there was no-longer a need for monitoring at this location. There are no changes in the Nitrogen Oxides Network planned for 2024.

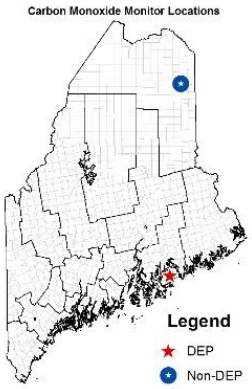


NO_x Monitoring Network Summary

Nitrogen Oxides Network Site Address	**Site Type**	**Monitoring Objective**	**Sampling Frequency**
Portland – Deering Oaks (NO_x)	SPMS	Maximum Concentration, Urban Background	Continuous
Bar Harbor – McFarland Hill (NO_y)	NCore	Transport (trace-level)	Continuous
Presque Isle – 8 Northern Road (NO_2)	Tribal	(trace-level)	Continuous

Carbon Monoxide Network:

The DEP currently operates one trace-level carbon monoxide (CO) monitor located at the NCore site in Bar Harbor. The DEP shut down the CO monitor at the Deering Oaks site early in 2022 as data recorded from this monitor were well below the NAAQS, and resources directed at that monitor could be better used elsewhere in the network. The Micmac Indian Tribe also operates a trace-level CO monitor at their site in Presque Isle. There are no changes in the Carbon Monoxide Network planned for 2024.

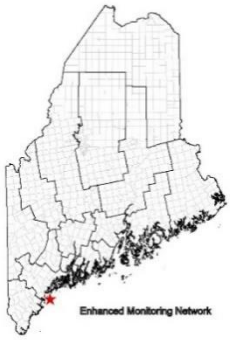


CO Monitoring Network Summary

Carbon Monoxide Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill	NCore	Transport	Continuous
Presque Isle – 8 Northern Road	Tribal	-	Continuous

Enhanced Monitoring Plan:

The State of Maine is required to maintain an Enhanced Monitoring Plan (EMP) as it is within the ozone transport region as defined in the 40 CFR, part 58, appendix d, paragraph 5(h). As part of this plan, Maine has originally continued the operation of the historical Photochemical Assessment Monitoring Station (PAMS) that was established at Cape Elizabeth – Two Lights State Park (CETL) in 1993. This site had year-round Ozone, NOy, Meteorology, and from June 1 to August 31st, a continuous GC system measuring hourly hydrocarbon VOCs.



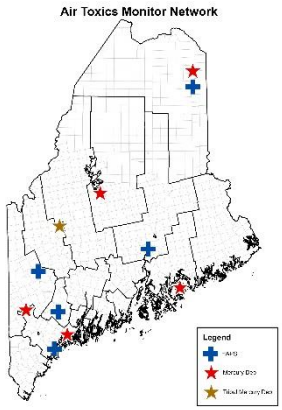
In 2021 a Pandora was established at CETL. The Pandora Sun spectrometer is an instrument developed to measure vertical column densities (total columns) of trace gases in the atmosphere using Sun and sky radiation in the UV visible part of the spectrum. Staff from the Maine DEP will provide in-person support to keep the instrument running and the EPA and NASA will provide data analysis. A major joint objective is to support the validation and verification of more than a dozen low-earth orbit and geostationary orbit-based UV-visible sensors.
In October of 2022, after years of low values and needs to refocus limited staff availability on monitoring concerns within the state of Maine, the DEP shut down the NOy instrument and the GC system. The meteorology tower also had to be replaced as the old tower was becoming a safety concern due to wear. The replacement tower is not heavy duty, and to ensure the longevity of the tower through Maine winters, it was determined to only run the metrology equipment during the Ozone Season. The Ozone monitor will continue to run year-round as it provides important early spring data for forecasters and modelers. The Maine DEP would like to reinstall a HAPs sampler at the Cape Elizabeth still once resources allow.

The new EMP plan for Maine includes the operation of Ozone monitors beyond those minimally required under 40 CFR, part 58, appendix d, Paragraph 4.1 and the enhanced upper air pollution concentrations produced by the Pandora spectrometer.
Maine would support the installation of a ceilometer proximate to the NCore site in Bar Harbor. The addition of a ceilometer is contingent on the availability of funds to acquire and support the instrument.

Enhanced Ozone Monitoring Plan Site Summary

Site Address	Site Type	Monitoring Objective	Sampling Frequency
Cape Elizabeth – Two Lights State Park	SLAMS & EMP	Transport	Continuous – Seasonal
Jonesport – Coast Guard Station	SLAMS & EMP	Max. Concentration	Continuous – Seasonal
Shapleigh – Ball Park, West Newfield Road	SLAMS & EMP	Max. Conc., Transport	Continuous – Seasonal

Hazardous Air Pollutants (HAPs) Network:



Although not a required monitoring network, the DEP samples for 67 HAPs compounds at five Special Purpose Monitoring Site (SPMS) locations around the state. The monitoring objective is to document background concentrations around the state and to establish whether there are any trends in the levels of these compounds. Maine monitors for most HAPs compounds using EPA's method TO-15. As detailed in the lead section below, the DEP may use XRF spectroanalysis on randomly selected $PM_{2.5}$ and PM_{10} filters to determine concentrations of several metals designated as HAPs.

The addition of a HAPs sampler at the Background site in Presque Isle has been on the DEPs to-monitor list for an extended period to allow for a comparison to the Presque Isle Riverside site which showed high concentrations of acrolein and naphthalene. A sampler at this location will be installed as soon as resources allow. The HAPs sampler at Cape Elizabeth was shut down in June 2019 as the sampler was relocated for a special study in South Portland and Portland. The Maine DEP will reinstall a sampler to this location as resources allow, after the Presque Isle Background site.

The Maine DEP also have several Special Purpose Monitoring HAPs Samplers through the State. More information on this can be found below in the "Special Purpose Monitoring Projects and Studies" section.

Proposed Calendar Year 2024 changes to the HAPS monitoring Network:

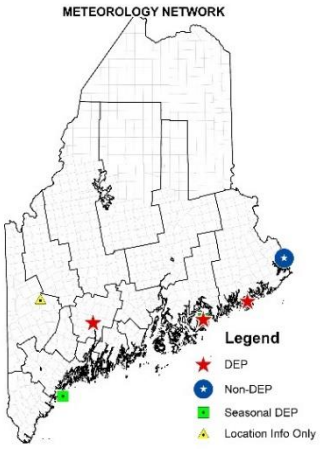
- If not already done in 2023 and as resources allow a HAPs sampler will be installed at the Presque Isle Background site, then reestablished at Cape Elizabeth.

HAPS Monitoring Site Summary

Site Address	Site Type	Monitoring Objective	Sampling Frequency
Bangor – Mary Snow School	SPMS	Maximum Conc.& Trends	Every 6 days
Cape Elizabeth – Two Lights Park	EMP	Maximum Conc.& Trends	Every 6 days
Lewiston – Country Kitchen Lot	SPMS	Maximum Conc.& Trends	Every 6 days
Portland – 356 State Street	SPMS	Maximum Conc.& Trends	Every 6 days
Presque Isle – Riverside Street	SPMS	Maximum Conc.& Trends	Every 6 days
Presque Isle – Background Site	SPMS	Maximum Conc & Trends	Every 6 Days
Rumford – Rumford Avenue	SPMS	Maximum Conc.& Trends	Every 6 days

Meteorological Network:

The DEP, and the Passamaquoddy tribe fund, operate, and maintain year-round meteorological monitoring sites at five locations in the state and two seasonal sites to collect data for use in the analysis and evaluation of air pollutant data. One site contains only metrological parameters, while the rest are collocated with air pollutant monitoring equipment. The instruments at these sites measure scalar wind speed and direction, sigma theta (an indicator of the amount of variability in the wind direction) and a few of the sites collect additional parameters such as relative humidity, barometric pressure, temperature, solar radiation and vector wind speed and direction.



State forecasters also have access to NOAA weather data from airport stations and other sites located throughout the state. The NOAA airport sites record raw values in 1-minute averages which oblige Maine DEP staff to calculate the hourly averages, making data from the DEP sites more desirable.

The meteorological instruments installed with the Cape Elizabeth, Cadillac Mtn., and Jonesport Ozone monitors augment the ozone measured at those sites. The data is important for forecasting unhealthy levels of Ozone. In 2021 the pollutant monitors at the Passamaquoddy site in Sipayik was moved to a new shelter, however the metrological tower has now been moved yet and the collection of meteorology data cannot resume until that is done. At the end of 2022, two changes were made to the meteorological network. First, due to the deteriorating condition of the aluminum meteorological tower at Cape Elizabeth, the wind direction and speed sensors were removed. In 2023 a replacement tower was installed, but due to concerns of ice loading causing undue ware to the tower, meteorology here became seasonal only. The second change was due to the move of the ozone site from Jonesport Public landing to the Jonesport Coast Guard station. The Jonesport Coast Guard Station has excellent siting for meteorology, and it was requested to operate the wind direction and speed here year-round for modeling purposes.

The Micmac Tribe in Presque also operate a suite of meteorological parameters for the USDA National Water and Climate Center. This is not part of the Maine DEP network, and this data is not reported to the EPA.

The BAQ operates several portable meteorological sensor stations as part of the South Portland VOC study. More information on these stations can be found in the "Special Purpose Monitoring Projects and Studies" section below.

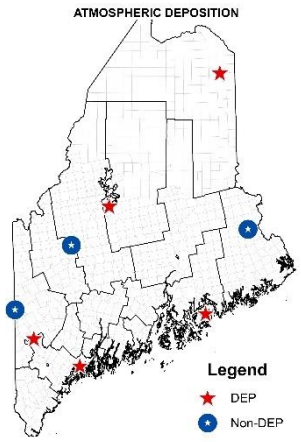
Proposed calendar year 2024 changes to the Meteorological Network:

If resources allow, the BAQ proposes to establish two-level ambient temperature monitoring in Presque Isle and Madawaska. These two-level ambient temperature measurements would augment the particulate monitoring done at those sites to further investigate the impact that temperature inversions have on local air quality.

Meteorology Monitoring Site Summary

Site Address	Site Type	Monitoring Objective	Sampling Frequency
Augusta – State Airport	SLAMS	Data Analyses & Modeling	Continuous
Bar Harbor – Cadillac Mountain	SLAMS	Transport	Continuous – Seasonal
Bar Harbor – McFarland Hill	NCore	Transport	Continuous
Cape Elizabeth – Two Lights Park	EMP	Transport	Continuous – Seasonal
Jonesport – Coast Guard Station	SLAMS	Data Analyses & Transport	Continuous
Rumford - Rumford Avenue Parking	SLAMS	Localized wind	Continuous
Sipayik – 184 County Road	Tribal	-	Continuous

Atmospheric Deposition Network:



There is an extensive atmospheric deposition network in the State of Maine with several sites operated by the Maine DEP. All but two of the sites are part of the National Atmospheric Deposition Program's Mercury Deposition Network (MDN) in addition to the National Trends Network (NTN) that measures precipitation chemistry. Early in the program, several agencies and organizations participated and provided funds for the operation of these deposition network sites. As funds have diminished and budgets have been cut, the continued operation of some of these sites has been in question. The MDN and NTN data are valuable to DEP data users, policy makers, and the public, and to various users representing many scientific disciplines: wildlife biologists, water quality specialists, epidemiologists, atmospheric chemists, government regulators, and academic researchers.

In 2021, in response to the Governor's PFAS (perfluoroalkyl and polyfluoroalkyl substances) Task Force's final report released in January 2020, which recommended that the Department should "consider establishing an air deposition sampling program for a suite of PFAS," the Department communicated this interest to and had conversations with the NADP Program Office and the Wisconsin State Laboratory of Hygiene. We received a favorable response from them being able to include a PFAS analysis whenever there is a sufficient sample volume in the amount of precipitation collected by the NTN sampler. DEP staff began collecting samples for PFAS analysis in early 2021 from the ME96 monitoring station and will continue sample collection through 2023.

No changes are proposed for 2024.

Deposition Monitoring Site Summary

Site Address and NADP ID	Site Type	Monitoring Objective	Sampling Frequency
Bar Harbor – McFarland Hill (MDN) ME98	NPS-SPMS	Transport/Trends	Weekly Composite
Bridgton – Upper Ridge Road (NTN and MDN) ME02	SPMS	Transport/Trends	Weekly Composite
Caribou – Airport (NTN and MDN) ME00	SPMS	Transport/Trends	Weekly Composite
Carrabassett Valley – Airport (NTN and MDN) ME04	Tribal	Transport/Trends	Weekly Composite
Freeport – Wolfe's Neck Farm (NTN and MDN) ME96	SPMS	Transport/Trends	Weekly Composite
Gilead – White Mtn. Nat 'l. Forest (NTN) ME08	USGS	Transport/Trends	Weekly Composite
Greenville Station (NTN and MDN) ME09	SPMS	Transport/Trends	Weekly Composite
Indian Township (NTN) ME94	Tribal	Transport/Trends	Weekly Composite

Lead Network:

In 2008 EPA promulgated a lead (Pb) standard and issued some minimum monitoring requirements to the states. At that time, Maine was going to be required to operate one Pb monitor in the Portland CBSA (Core-based statistical area). The state purchased an X-ray fluorescence (XRF) analyzer to measure lead concentrations from PM_{10} filters. The EPA Pb requirement was subsequently revised to require Pb monitoring at urban NCore sites only. The Bar Harbor NCore site is designated as a rural site, so there is no requirement for Pb monitoring in Maine.

Maine DEP maintains the capability and capacity to analyze particulate filters for Pb and other several other metals that are listed as Hazardous Air Pollutants (HAPs) such as arsenic and chromium. As schedules permit, random selections from archived Maine $PM_{2.5}$ and PM_{10} filters may be analyzed with the XRF to determine what the state background concentrations might be for lead and the other metals.

Camnet:

Maine DEP, along with several other state and local agencies and non-profit organizations, helps support the Northeast States for Coordinated Air Use Management (NESCAUM) operate Camnet – a network of real-time visibility cameras situated throughout the Northeast. In Maine, there is an active Camnet location at Schoodic Point with two cameras pointing west towards Acadia National Park on Mount Desert Island. Air quality sensors at the site allow users of Camnet to see the effects of air pollution on visibility. There was a Camnet location in the Moosehorn National Wildlife Refuge. That site was shut down in 2018. **https://www.hazecam.net/**

Special Purpose Monitoring Sites and Air Quality Studies:

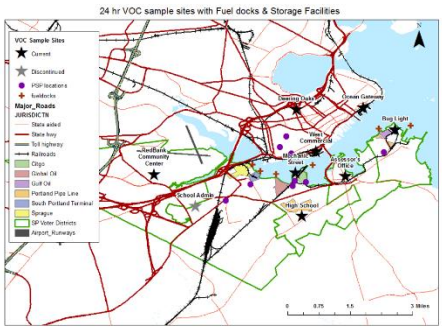
Low-cost Sensors:

Use of low-cost sensors in recent years have grown substantial. Due to their low cost and ease of operation, they are widely used by private citizens, researchers, and public entities. The Maine DEP uses several low-cost sensors as part of our network; however, it is important to note that these sensors are not regulatory monitors and do not have a Federal Reference Method (FRM) or Federal Equivalent Method (FEM) designation. Without FRM or FEM destination, these sensors may not be used for compliance and enforcement actions, may not be used to calculate health risk, and may not be submitted to the EPA Air Quality System. These devices may be used to supplement regulatory monitoring, as a screening tool to determine the need for regulatory monitoring or as part of an air quality study that does not require regulatory monitoring. Sensors may be collocated with regulatory monitors as a tool to provide validation to the sensors functionality and accuracy. Sensor manufacturers, the EPA, and researchers also benefit from collocated data and have developed better sensor pollutant calculation formulations and corrections over time as more data becomes available. The use of sensors by the Maine DEP are highly variable and may be removed and/or setup in new locations on a as needed basis and are subject to change with little to no notice. The brand of low-cost sensors and their measurable parameter(s) used by the Maine DEP as of 2023 are listed below and are subject to change without notice. The use of a certain sensor by the Maine DEP does not constituent a promotion of that sensor or the brand of sensor.

Purple Air(1): $PM_{2.5}$
Clarity(1): $PM_{2.5}$, PM_{10}, NO_2, Wind Speed, Wind Direction.
Honeywell(1): Hydrogen Sulfide
Rainwise: Wind Speed, Wind Direction, Outdoor Temperature, Relative Humidity, Barometric Pressure.
Pollen Sense: Aeroallergens

(1): Some or all of these sensors are on loan to, or otherwise owned by other entities such as the EPA but are operated and maintained by the Maine DEP.

South Portland/Portland VOC Monitoring Project:



24-hour Sampling locations

At the request of South Portland City officials, DEP staff attended an April 16, 2019 City Council public workshop focused on citizen concerns about odors and air emissions coming from petroleum product storage facilities in the city. One topic that was repeatedly expressed by the residents who spoke was the very strong desire for air quality monitoring to be conducted within the City's boundaries, since none had been done since the early 2000s. DEP made a commitment at the workshop that it would work with the City to accomplish that goal. On August 28, 2019, officials from the City of Portland formally communicated identical air quality concerns of their citizens about the same VOC sources in South Portland. Since then, Air Bureau staff have collaborated with officials from both cities and other local partners to conduct an ambient air quality monitoring project, where the monitoring objective is to collect data that will help answer the question "Is the air safe to breathe?"

The focus of the monitoring project is to measure Volatile Organic Compounds (VOCs), since they constitute a large majority of the compounds associated with the types of odors being reported, as well as air emissions that come from the facilities of concern. VOCs were also chosen because making that type of measurement is something that the Air Bureau air monitoring program is already set up to do (and is doing) and capable of supporting.

In calendar year 2019 the project consisted of two phases 1) an early "grab sampling" effort in South Portland, and 2) a network of eight fixed 24-hour sampling sites (five in South Portland and three in Portland). The grab sampling phase was launched on June 10, 2019 and concluded on September 15, 2019. As of November 1, 2019, all planned 24-hour sampling sites were established and samples were collected on a frequency of every-6-days. The sites in South Portland were placed so that each of the five voting districts had a sampler established within their boundary.

Fixed 24-hour sampling sites were established at: Bug Light Park; the South Portland City Assessors office; South Portland High School; South Portland School Administration building; Red Bank Community Center in South Portland; Ocean Gateway building in Portland; and on West Commercial Street in Portland. The two new monitoring sites in Portland augment data from the DEP's site at Deering Oaks Park. The DEP established portable meteorological monitors at some of the HAPS sampling locations in 2020 and 2021. Resource limitations prevented full deployment of meteorological monitors.

During calendar year 2020, the implementation of phase 3 began, which includes the deployment of a portable sampling platform (PSP). The process of the MET system installations are still a work in progress, with the first two sites coming online in June 2020 at the South Portland Assessors Office and the Portland Deering Oaks sites. Additional MET systems were established at Bug Light Park, Ocean Gateway, Portland-West Commercial Street, and at South Portland – Mechanics Street. The South Portland Assessors site was taken down due to operational issues. The PSP will initially have both a canister sampling system for measuring VOCs (identical to ones used at the fixed 24-hour sampling sites), and a tube sampling system for measuring Polycyclic Aromatic Hydrocarbons (PAHs). A MET monitoring system, and a continuous particulate matter monitoring sensor was added in 2021. Since the PSP can easily be moved from one location to another, it allowed 24-hour samples to be taken at a number of additional places early in the program. This PSP data helped improve the overall spatial and temporal understanding of air quality in the project area. The first deployment of the PSP took place at the end of August 2020 and continued through 2021.

After the first full year of concurrent 24-hour sampling by all of the VOC sites in the Project's monitoring network, DEP informed officials in both cities that it intended to extend its support of the Project's monitoring activities through 2021. DEP had committed to run these sites for one full year from the network completion date; that is, until November 2020. After review of the entire dataset is completed by the Maine CDC, DEP, and the Project's partners, any recommendations for adjustments to the Project's monitoring activities will be considered and implemented as resources allow.

For Phase 4 the Maine DEP agreed that, after at least a year of data had been collected in the South Portland – Portland VOC network, the location of sites would be reevaluated. South Portland ~~has~~ proposed some changes. Maine DEP and the City remain in discussion about the immediate future of the program at this time. The site list below will be updated as new sites begin to measure VOCs and more information will be provided here when all new sites for Phase 4 have been agreed upon.

In 2022, the DEP supported continued VOC canister sampling at the locations established in 2019. In addition, DEP had applied for an EPA Community-Scale Air Toxics Monitoring grant award. The application was not successful. Had the application been successful, the grant award would have supported expanded monitoring activities for other pollutants, such as PAHs, and continuous monitoring instrumentation for VOCs and hydrogen sulfide. Continuous monitoring instrumentation would be operated and maintained by a qualified contractor. Maine will continue supporting this program with existing grant resources.

The DEP assembled a Portable Sampling Platform (PSP) in 2020 to collect samples from a number of locations in the study area. The sampler was deployed for three to four weeks at a time with the intent to identify potential "hot spots" of pollutant impacts. In 2021 the PSP was established at the Cash Corner Fire Station and remained there through 2021 and becoming a long-term site in 2022.

Proposed calendar years 2023/2024 changes to the South Portland/Portland VOC network:

The Maine DEP is waiting on a 3-year assessment of the sample data from the Maine CDC prior to making any decisions on moving or removing the current samplers. The DEP would like to reallocate time and resources used on this project to other areas in the State that require monitoring. The DEP is working with the City of South Portland to hand-over site service of select locations to the city. The DEP also intends to reduce the number of samplers in this project, so that they may be used in other areas of the state.

South Portland/Portland VOC Monitoring Sites

Site Address	Site Type	Monitoring Objective	Sampling Frequency
So. Portland – Bug Light Park	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – High School	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – Redbank Community Ctr	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – Mechanics Street	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – Cash Corner Fire Station	SPMS	Max Conc.& Population Exposure	Every 6 days
Portland – Ocean Gateway	SPMS	Max Conc.& Population Exposure	Every 6 days
Portland – West Commercial Street	SPMS	Max Conc.& Population Exposure	Every 6 days
So. Portland – Pearl St.*	SPMS	Max Conc.& Population Exposure	Every 6 days

***** Denotes that location is to be serviced by persons who are not affiliated, or staffed by the DEP

Mobile Monitoring Trailer:

The Maine DEP would like to establish a mobile monitoring trailer. The DEP acquired a trailer for the purpose of providing a portable platform to support sampling equipment. The intention is to facilitate quick transport of air sampling equipment in response to citizen complaint regarding air quality; citizen inquiry about air quality; and as a screening tool to assess air quality in areas of the state where little or no ambient air quality data exist.

Hydrogen Sulfide - Old Town and Rumford:

Due to a substantial increase of public concern over the air quality from the areas around the pulp and paper mills in Old Town and Rumford, the Maine DEP with the help of the EPA have initiated monitoring for Hydrogen Sulfide (H_2S) in both towns. The Maine DEP did not have the means to measure for H_2S and borrowed H_2S sensors from the US EPA. The sensors borrowed from the EPA have a high minimum detection limit of 0.1 ppmv and are not useable for health screening. Currently the Maine DEP is seeking funds for a more robust instrument capable of accurately measuring down to 0.001 ppmv of H_2S. The sensors used in the Rumford area failed shortly after installation and did not provide usable data. The intent is it run this instrument for 1 year around in a location near both mills.

Aeroallergens:

In part of a Building Resilience Against Climate Effects (BRACE) grant from the US CDC, the Maine CDC received funding to initiate pollen monitoring in a state-wide network. The Maine CDC invited the Maine DEP to be partners on the project and created a Pollen Advisory Group (PAG) that included allergist, and specialist in climate sciences, and meteorology. With funding received from the BRACE grant, the state was able to purchase 4 continuous pollen monitors, the Pollen Sense APS-400 series, and 2 weekday pollen monitors, rotorods which are considered to be the 'gold-standard' of pollen monitoring. The primary purpose of these sensors is to create historic trends overtime to create an observed impact due to the effects of climate change. The data from these sensors are also to be used as part of a health network to allow the Maine CDC to forecast for high allergen days to the public. The State plans to deploy the 4 continuous monitors at 4 distinct locations in Maine, with the idea to provide the best coverage to populations determined to be sensitive to allergens, provide maximum population coverage, and provide maximum geographical coverage. 1 rotorod will be collocated with a Pollen Sense unit to provide an additional layer of quality control over the new continuous units.
The State is still working to determine the best locations for the pollen sensors.

Summary of Proposed Calendar Year 2024 Network Changes:

The proposed monitoring network changes for 2024 are relatively moderate, with only the move of the Portland Dearing Oaks monitoring location being the only large, planned change to occur for the calendar year. Much of the focus will be on Special Purpose Monitoring around the State. The program is always subject to adjustment because of staffing changes, budget cuts, and the disposition of landowners who allow the placement of air monitoring sites on their property. The field monitoring staff continue to look for increased efficiencies, especially through automation and improved remote access to monitors, to optimize DEP resources.

The following changes are being contemplated or are likely to occur:

- If not accomplished in 2023, the Portland Deering Oaks monitoring station may be relocated. Applicable siting criteria will be met at any new location.
- If not accomplished in 2023, the Augusta – Lincoln Street School will be upgraded with a Teledyne T640x continuous sampler to collocate with method 143.
- If not accomplished in 2023, the Portland – Tukey's Bridge site will be upgraded with a Teledyne T640x which will replace three filter – based samplers presently at that site.
- If not accomplished in 2023, the FRM sampler at the Presque Isle – Background site will be replaced with a T640x continuous PM monitor.
- Two-level ambient temperature monitoring may be established in Presque Isle and Madawaska if resources allow.
- If resources allow, a mobile monitoring platform will be populated with sampling equipment and readied for use.
- Once resources allow, HAPs samplers will be installed at Presque background site, and Cape Elizabeth Site.
- South Portland/Portland VOC network: Pending assessment of sample data, one or more sites may be discontinued, and others made permanent.
- The remaining PM_{10} manual FRM method 126 maybe completely replaced with automated PM_{10} methods.

The monitors operated by the Maine DEP undergo constant review to ensure that the ambient air monitoring network is appropriate to meet monitoring goals, does not contain irrelevant monitoring, and can be accomplished within the available budget. The table below presents the location of each active monitor in the State. In the table, each monitor has been identified as meeting one or more State objectives. While there are presently no indications further changes to the network will be contemplated, budget and staffing issues may require cuts in the monitoring program. This table will help to determine the relative importance of each site and assist with the decision - making process.

Maine Ambient Air Monitoring Locations and Objectives as of 2023

EPA-Endorsed Potential Resource Savings (Y/N)	DEP Concurrence (Y/N)	AQS - ID	Site Abbreviation	Parameter	Operator Agency	Monitoring Objective(s)									Comments
						Population Exposure	Maximum Concentration	Historical Trends	Research /Special Studies	CFR Mandate	SIP Required	AQI Forecasting/ Mapping	Data Different from Nearby Monitors	Background Air Quality	
		23-001-0011	LCKP	PM2.5 Hourly	DEP	x	x	x				x		x	Lewiston-Auburn-State's 2nd largest urban area
Y	N	23-001-0011	LCKPX	PM10 FRM	DEP	x	x	x						x	Central Maine urban area. See footnote
		23-001-0011	LCKP	VOCs - Canister	DEP	x		x	x						Lewiston-Auburn - State's 2nd largest urban area
		23-001-0014	DFS	O3	DEP				x	x	x	x			Max. ozone from Greater Portland precursors; Maint. Area
		23-003-0014	MPSB	PM2.5 Hourly	DEP	x	x	x				x		x	
		23-003-0014	MPSB	PM10 Hourly	DEP	x	x	x		x		x			
		23-003-1002	ME00-Caribou	NADP NTN/MDN	DEP			x							Northern Maine precipitation chemistry & Hg deposition
Y	Y	23-003-1008	PIBS	PM2.5 Hourly	DEP			x						x	FRM to be replaced with continuous PM in 2023
		23-003-1008	PIBS	VOCs - Canister	DEP	x			x						Expanded assessment of area acrolein & naphthalene levels
Y	N	23-003-1011	PIRS	PM2.5 FRM	DEP	x	x	x							Northern Maine region's collocated FRM & FEM site
		23-003-1011	PIRS	PM2.5 FEM Hourly	DEP	x	x	x				x			Metone PM2.5 BAM replaced Jan. 2023 with Teledyne T640x. Metone
		23-003-1011	PIRSX	PM10 FEM Hourly	DEP	x	x	x		x	x	x			PM10 still in operation to conduct a colocation study.
		23-003-1011	PIRS	VOCs - Canister	DEP	x		x	x						Northern Maine region urban area
		23-003-1100	PIMM	CO	Tribal	x						x		x	
		23-003-1100	PIMM	IMPROVE	Tribal			x	x						Regional haze; Micmac's Presque Isle IMPROVE Protocol site
		23-003-1100	PIMM	NO2	Tribal	x						x		x	
		23-003-1100	PIMM	O3	Tribal	x						x			
		23-003-1100	PIMM	PM2.5 Hourly	Tribal	x						x			
		23-003-1100	PIMM	SO2	Tribal	x						x		x	
		23-003-1101	LITTLETON	PM2.5 Hourly	Tribal							x			Currently non-functional
		23-005-0002	ME02-Bridgton	NADP NTN/MDN	LEA			x							South-interior Maine precipitation chemistry & Hg deposition
Y	Y	23-005-0015	PTB	PM2.5 Hourly	DEP		x	x					x		High traffic - near road impacts. T640x instrument to be installed 2023 to
Y	Y	23-005-0015	PTBXR	PM10 Hourly	DEP		x	x							monitor both parameters continuously.
Y	N	23-005-0029	PDO	NO2	DEP	x	x	x				x		x	Greater Portland - State's largest urban area
Y	N	23-005-0029	PDO	O3	DEP	x		x	x			x			Health effects & exposure correlation study
Y	N	23-005-0029	PDOR	PM2.5 FRM	DEP	x		x					x		SMRO Collolation against Method 170. Portland MSA requires one site
		23-005-0029	PDO	PM2.5 Hourly	DEP				x		x	x		x	Southern Maine region's collocated FRM & FEM site
		23-005-0029	PDO1	VOCs - Canister	DEP	x		x	x						Southern Maine region urban area; SoPo/Po VOC Project
		23-005-0029	PDO2	VOCs - Canister	DEP			x	x	x					Collocation for canister method
		23-005-2003	CETL	O3	DEP	x	x	x		x		x			Enhanced ozone monitoring site
		23-005-2003	CETL	VOCs - Canister	DEP			x	x						To resume when resources allow
		23-005-9002	CABA1	IMPROVE	DEP			x	x						Regional Haze; Freeport - Casco Bay IMPROVE Protocol site
		23-005-9002	ME96-Freeport	NADP NTN/MDN	DEP			x							South-coastal Maine precipitation chemistry & Hg deposition
		23-007-2002	ME04-Carrabassett	NADP NTN/MDN	Tribal			x							Tribal land precipitation chemistry & Hg deposition
		23-009-0102	BHCM	O3	DEP	x	x	x			x	x			Long range rural transport. High concentration.
		23-009-0103	BHMH	CO	DEP					x		x		x	Ncore - rural
		23-009-0103	BHMH	IMPROVE	NPS/DEP			x	x		x				Regional haze; Class 1 area
		23-009-0103	BHMH	NOY	DEP			x	x	x				x	Ncore - rural
		23-009-0103	BHMH	O3	DEP	x		x		x		x			Ncore - rural
		23-009-0103	BHMH	PM2.5 FRM	DEP			x		x				x	Ncore - rural
		23-009-0103	BHMH	PM2.5 Hourly	DEP			x		x		x		x	Ncore - rural
		23-009-0103	BHMHX	PM10 Hourly	DEP			x		x				x	Ncore - rural
		23-009-0103	BHMH	$PM_{10-2.5}$ Hourly	DEP				x					x	Ncore - rural
		23-009-0103	BHMH	SO2	DEP					x				x	Ncore - rural
		23-009-0103	BHMH	SO4	DEP			x	x						Regional haze
		23-009-0103	ME98-Bar Harbor	NADP NTN/MDN	NPS/DEP			x	x						Acadia NP precipitation chemistry & Hg deposition
Y	N	23-011-0016	ALSSC	PM2.5 FRM	DEP					x					Required collocation for method 143
Y	N	23-011-0016	ALSSR	PM2.5 FRM	DEP	x		x							Network site for meeting required PM2.5 method collocation
Y	N	23-011-0016	ALSSX	PM10 FRM	DEP	x		x							See Footnote
		23-011-0016	ALSS	PM10 Hourly	DEP	x									Teledyne T640x to be installed in 2023. To be collocated with FRM samplers.
		23-011-0016	ALSS	PM2.5 Hourly	DEP	x									
		23-011-2001	GAHS	O3	DEP	x	x	x			x	x			Site established as part of a maintenance area requirement
		23-013-0004	PCMP	O3	DEP	x	x	x			x	x			Long range rural transport
		23-017-2011	RAP	PM2.5 Hourly	DEP	x		x				x		x	
		23-017-2011	RAP	VOCs - canister	DEP	x		x	x						Western Maine mountains / river valley urban area
		23-017-3002	BSFR	O3	DEP	x			x			x	x		
		23-019-0017	BMSS	PM10 FRM	DEP	x	x	x						x	Bangor-Brewer - State's 3rd largest urban area, See Footnote
		23-019-0018	BMSSC	PM10 FRM	DEP										Required for method 126 collocation, See Footnote
		23-019-0017	BMSS	PM2.5 Hourly	DEP	x	x		x			x			Bangor-Brewer - State's 3rd largest urban area
		23-019-0017	BMSS	VOCs - canister	DEP	x		x	x						Bangor-Brewer - State's 3rd largest urban area

Maine Ambient Air Monitoring Locations and Objectives as of 2023 - Continued

EPA-Endorsed Potential Resource Savings (Y/N)	DEP Concurrence (Y/N)	AQS - ID	Site Abbreviation	Parameter	Operator Agency	Monitoring Objective(s)									Comments
						Population Exposure	Maximum Concentration	Historical Trends	Research /Special Studies	CFR Mandate	SIP Required	AQI Forecasting/ Mapping	Data Different from Nearby Monitors	Background Air Quality	
		23-019-1100	INDIAN ISLAND	IMPROVE	Tribal			x	x						Regional haze; Penobscot's Indian Island IMPROVE Protocol site
		23-019-4008	HRB	O3	DEP	x		x	x			x			
		23-021-0001	ME09-Greenville	NADP NTN/MDN	DEP			x							Central Maine precipitation chemistry & Hg deposition
		23-023-0007	PBSP	O3	DEP	x	x	x				x	x		Long range transport
Y	N	23-029-0021	JCG	O3	DEP	x		x				x			Coverage of coastal downeast area.
		23-029-0032	SIPAYIK	O3	Tribal	x						x			Shelter/site to be maintained for potential future use.
		23-029-0033	SIPAYIK	PM2.5 Hourly	Tribal	x						x			
		23-029-0033	SIPAYIK	O3	Tribal	x						x			New shelter in 2021. 175' from 029-0032
		23-029-0033	SIPAYIK	PM2.5 Hourly	Tribal	x						x			
Y	N	23-031-0040	SBP	O3	DEP	x		x	x			x	x		Highest springtime ozone levels in the network
		23-031-2002	KPW	O3	DEP	x	x	x		x	x	x			Long range rural transport
			HOWLAND	O3	CASTNet										Treetop/Canopy level
			ME94-Indian Twp.	NADP NTN	Tribal			x							Tribal land precipitation chemistry
			Mooshehorn	IMPROVE	USFWS			x			x				Regional haze; Class 1 area
			ME08-Gilead	NADP NTN	USGS			x							Western Maine portion - White Mountain National Forest
		Footnote: Monitor may be unnecessary if Method 126 removed from entire network													

Monitoring Equipment Used by Maine DEP

PARAMETER	INSTRUMENT	DESIGNATION No. (METHOD)*
Atmospheric Deposition	Aerochem Metrics wet/dry collector N-CON collector	
Barometric Pressure	Climatronics Met One	
Carbon Monoxide	Thermo Model 48i-TLE	RFCA-0981-054 (054)
Hazardous Air Pollutants	24-hour 6-liter sub-ambient canister samplers, designed and built by ME DEP	TO-15
Lead	R&P/Thermo Single Model 2000i Spectro XEPOS XRF Spectrometer	
Mercury Deposition	Aerochem Metrics N-CON Wet Deposition collector	
Nitrogen Dioxide	Thermo Model 42i-TLE	RFNA-1289-074 (074)
Organic/Elemental Carbon	Sunset Semicontinuous OC/EC Carbon Aerosol Analyzer	
Other Metals such as Arsenic, Chromium, etc.	R&P Single Model 2000i Spectro XEPOS XRF Spectrometer	
Oxides of Nitrogen	Thermo Model 42i-Y	
Ozone	Thermo Models 49C, 49i; 49iQ	EQOA-0880-047 (047)
PM 10 Continuous	MET One BAM Model 1020 Teledyne API Model T640x	EQPM-0798-122 (122) EQPM-0516-239 (639)
PM 10 FRM	R&P/Thermo Single Model 2000i	RFPS-1298-126 (126)
PM 2.5 Continuous	MET One BAM Model 1020 Teledyne API Model T640x	EQPM-0308-170 (170) EQPM-0516-238 (638)
PM 2.5 FRM	Thermo Single Model 2000i w/ VSCC	RFPS-1006-143 (143)
PM Coarse	Teledyne T640x	EQPM-0516-240 (640)
PM Speciation	IMPROVE Sampler	
Precipitation	ETI Instrument Systems NOAH IV	
Relative Humidity	Climatronics Met One Rotronic HygroClip HC2-S	
Solar Radiation	Climatronics Kipp & Zonen	
Sulfate Continuous	Thermo Model 5020i	
Sulfur Dioxide	Thermo Model 43i-TLE	EQSA-0486-060 (060)
Temperature	Climatronics Met One Rotronic HygroClip HC2-S	
Wind Speed/Direction	Climatronics F460 Met One	

* Designation number and Federal Reference and Equivalent Methods as of June 30th, 2023.

2024 Integrated Sample Schedule

January

Su	M	Tu	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February

Su	M	Tu	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

March

Su	M	Tu	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

April

Su	M	Tu	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May

Su	M	Tu	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

June

Su	M	Tu	W	Th	F	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

July

Su	M	Tu	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August

Su	M	Tu	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September

Su	M	Tu	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October

Su	M	Tu	W	Th	F	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November

Su	M	Tu	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December

Su	M	Tu	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

1 in 3 sample day

1 in 3, 1 in 6, and 1 in 12 sample day

1 in 3, and 1 in 6 sample day

1 State Holdiday

EPA version of sampling schedule can be found at: https://www.epa.gov/amtic/sampling-schedule-calendar

The following page presents descriptions of the ambient air monitoring sites maintained and operated by both the Maine Department of Environmental Protection Bureau of Air Quality and the Tribal Nations. Sites are arranged alphabetically by Town – Site Name; this table offers an index to the sites based on AQS Site ID.

2024 Monitoring Site Information

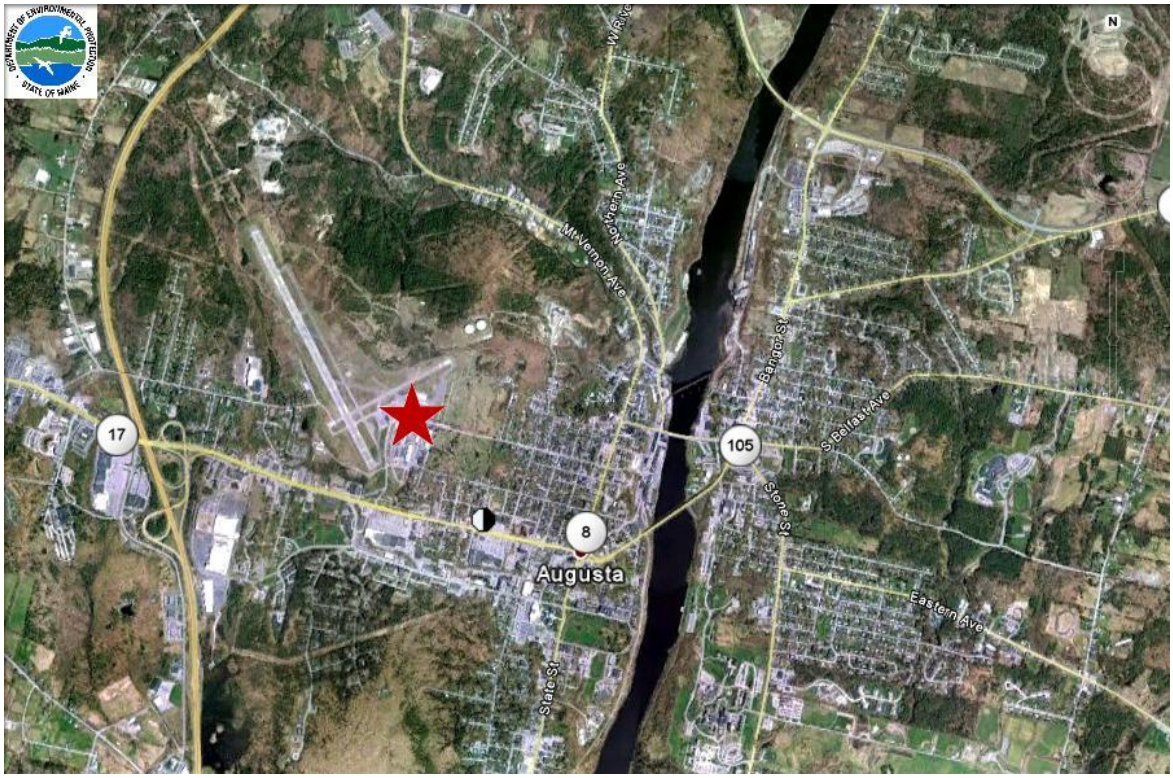
APPENDIX 1

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

MONITORING SITES

FOR 2024

Town – Site:	**Augusta – Airport**		
County:	**Kennebec**	Latitude:	**44.3179**
Address:	**Augusta State Airport**	Longitude:	**-69.7919**
AQS Site ID:	**23-011-0008**	Elevation:	**107 Meters**
Spatial Scale:	**Regional**	Year Established:	**1981**
Statistical Area:	**Augusta-Waterville, ME**		



Augusta – Airport
Pollutant and Meteorological Parameters:

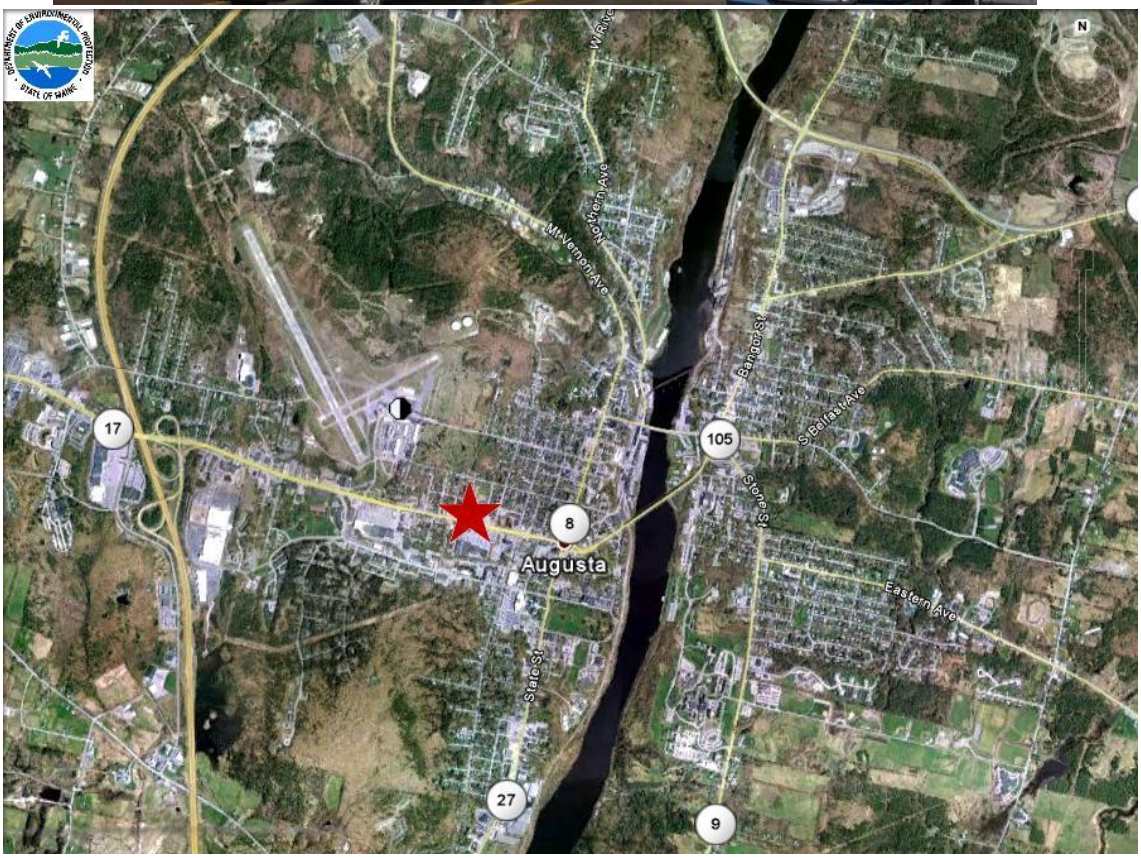
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	01/20/1981	
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
A retractable tower with wind speed and direction sensors is situated on the roof of the Airport Terminal Building at the Augusta State Airport, 0.8 miles NW of the state capitol. The data acquisition equipment and modem are located in the adjacent equipment shed to the west. The 10-meter tower is raised only to the height of the surrounding antennae due to the proximity of the flight line. The tower and equipment were moved to the terminal in October 2015 because the Civil Air Patrol Hanger, where the tower was originally situated, was slated for replacement.

Monitoring Objectives:
Modeling.

Planned changes for 2024: None.

Town – Site:	**Augusta – Lincoln Street School**		
County:	**Kennebec**	Latitude:	**44.3123**
Address:	**30 Lincoln Street**	Longitude:	**-69.7867**
AQS Site ID:	**23-011-0016**	Elevation:	**71 Meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1999**
Statistical Area:	**Augusta-Waterville, ME**		



Augusta – Lincoln Street School
Pollutant and Meteorological Parameters:

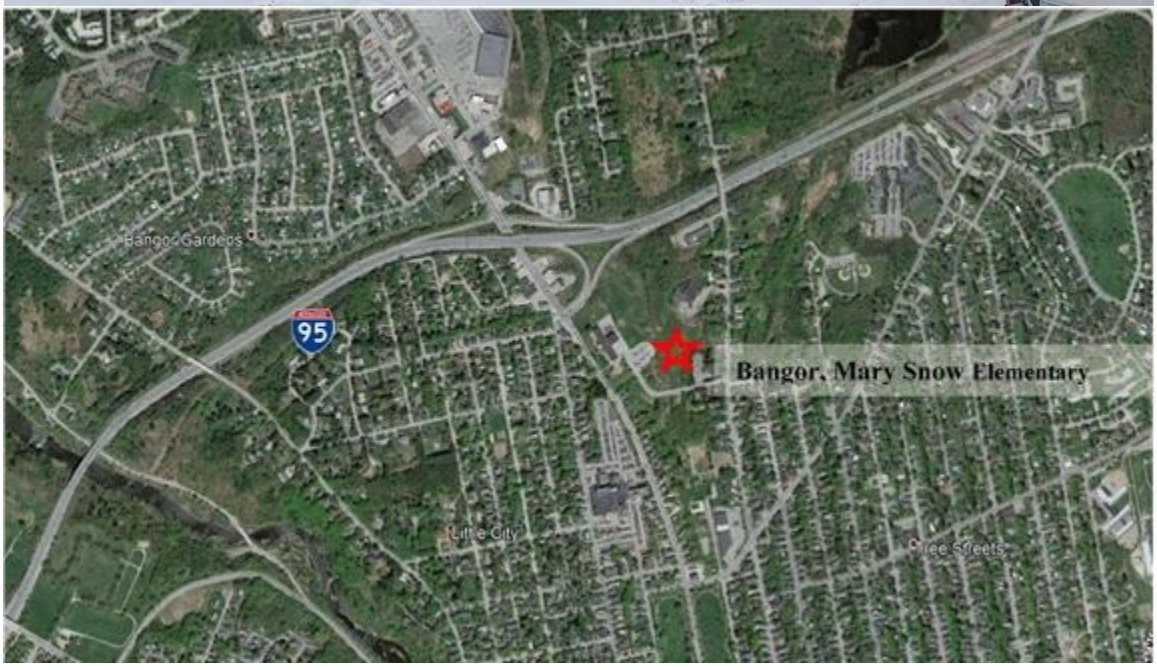
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	01/01/1999		SO_2		
PM2.5 - 24 Hr. Colo	01/01/1999		Ozone		
PM2.5 Cont.	TBD		NOx		
PM10 - 24 Hr.	12/02/2002		NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.	TBD		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Lincoln Street School is located in Augusta just off Western Avenue, 0.4 miles northwest of the state capitol. An aluminum platform is situated on the roof of the gymnasium where all the monitoring equipment reside. A Teledyne T640x is expected to be installed June/July 2023.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. High Population Exposure.

Planned changes for 2024: The manual FRM PM10 sampler may be removed.

Town – Site:	**Bangor – Mary Snow Elementary School**		
County:	**Penobscot**	Latitude:	**44.817398**
Address:	**435 Broadway St.**	Longitude:	**-68.772762**
AQS Site ID:	**23-019-0017**	Elevation:	**54.2 Meters**
Spatial Scale:	**Neighborhood**	Year Established:	**2017**
Statistical Area:	**Bangor, ME**		



Bangor – Mary Snow Elementary School
Pollutant and Meteorological Parameters:

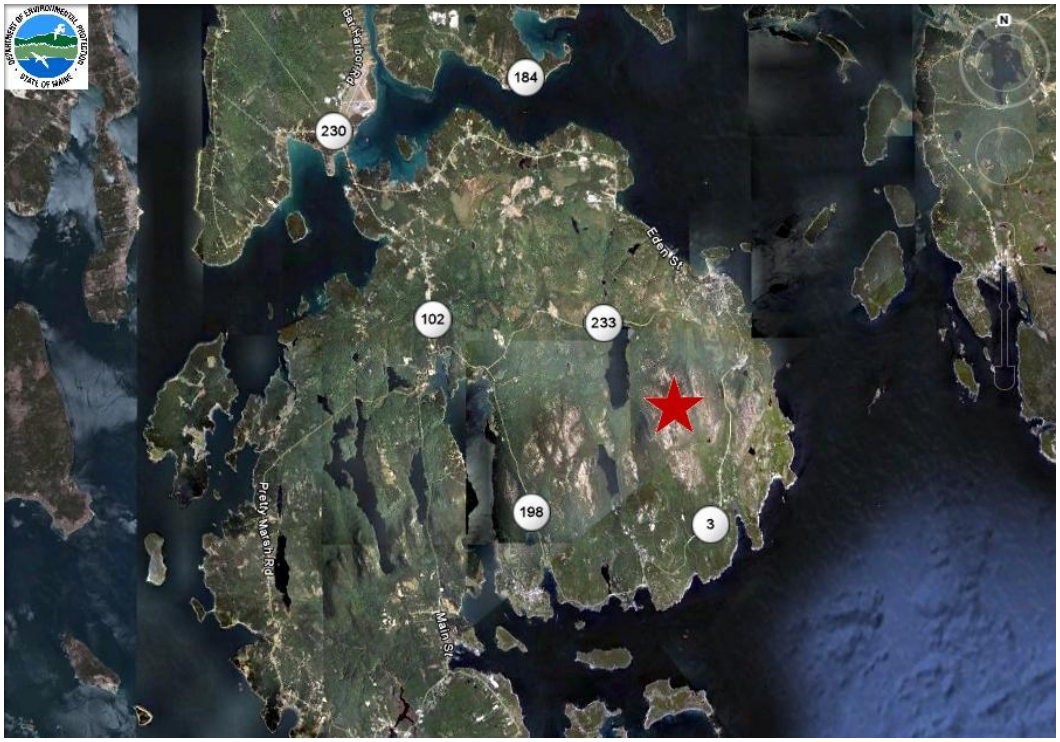
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	10-01-2017	12-31-2019	SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	10-01-2017		NOx		
PM10 - 24 Hr.	10-01-2017		NOy		
PM10 - 24 Hr. Colo	1-24-2023		HAPs	10-01-2017	
PM10 Cont.			VOCs (PAMS)		
PM Coarse	10-01-2017	12-31-2019	Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Monitors are located on the roof of Mary Snow Elementary School located on Broadway just south of the I 95 interchange in Bangor. A second Thermo 2000*i* was installed came into operation for the 1-24-2023 SIPs date. This sampler became the new PM10 collocation site for method 126, replacing Portland Tukeys bridge as the collocated site.

Monitoring Objectives:
Attainment/Non-Attainment/High Population Exposure site. AQI Forecasting and Mapping.

Planned changes for 2024: The manual FRM PM10 samplers may be replaced with a continuous FEM PM10 instrument.

Town – Site:	**Bar Harbor – Cadillac Mountain, Acadia National Park**		
County:	**Hancock**	Latitude:	**44.3517**
Address:	**Top of Cadillac Mountain**	Longitude:	**-68.2272**
AQS Site ID:	**23-009-0102**	Elevation:	**463 M (1519 ft)**
Spatial Scale:	**Regional**	Year Established:	**1995**
Statistical Area:	**None**		



Bar Harbor – Cadillac Mountain, Acadia National Park
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	7-25-1995	
PM2.5 Cont.			NOx	4-1-2004	9-30-2007
PM10 - 24 Hr.			NOy	1-1-2008	9-30-2014
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)	5-1-1996	9-30-2014
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	5-6-1996	
Cont. Sulfate (SO_4)			Outdoor Temperature	4-19-1996	
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity	4-19-1996	
Lead			Dew point		
CO	4-1-2002	10-1-2003	Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Located on the top of Cadillac Mountain in Acadia National Park. It is a seasonal ozone site operating during the months of April to October. Meteorological parameters are also collected seasonally. The 8 by 16 shelter was replaced with an 8 by 10 shelter in 2020 that is more energy efficient and suitable for monitoring going forward.

Monitoring Objectives:
Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2024: None.

Town – Site:	**Bar Harbor – McFarland Hill, Acadia National Park**		
County:	**Hancock**	Latitude:	**44.3771**
Address:	**Route 233**	Longitude:	**-68.2609**
AQS Site ID:	**23-009-0103**	Elevation:	**156 Meters**
Spatial Scale:	**Regional**	Year Established:	**1998**
Statistical Area:	**None**		

Bar Harbor – McFarland Hill, Acadia National Park
Pollutant and Meteorological Parameters:

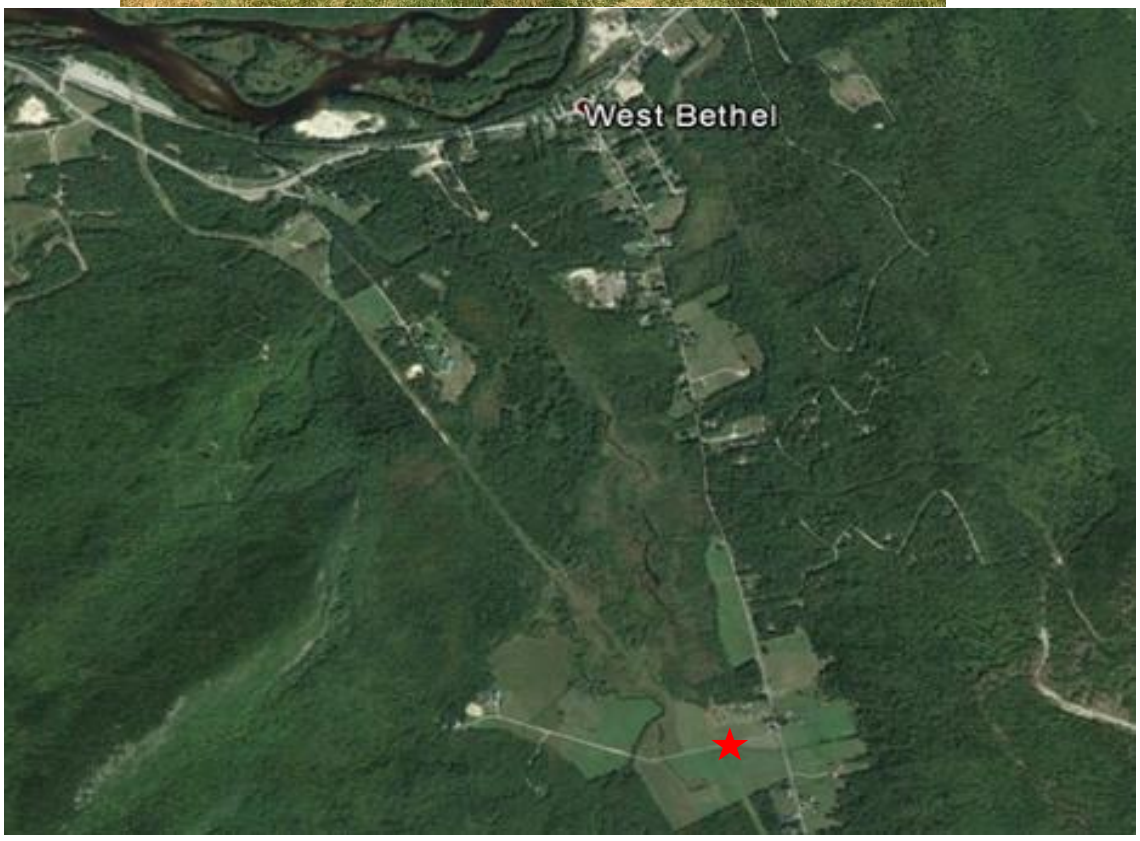
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	1-1-1999		SO_2	2-1-2004	
PM2.5 - 24 Hr. Colo			Ozone	2-1-1998	
PM2.5 Cont.	10-1-2003		NOx		
PM10 - 24 Hr.	1-1-2010	1-6-2023	NOy	2-1-2004	
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.	1/12/2023		VOCs (PAMS)		
PM Coarse	1-1-2010		Wet Deposition - Mercury	1998	
IMPROVE	3-2-1988		Wet Dep. - Precip Chem.	1998	
Cont. OC/EC	6-29-2004		Wind Direction/Speed	2-1-1998	
Cont. Sulfate (SO_4)	6-26-2004		Outdoor Temperature	2-1-1998	
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity	2-1-1998	
Lead			Dew point		
CO	2-1-2004		Precipitation Amount	2-1-1998	
CO_2			Solar Radiation	2-1-1998	
Gamma Radiation			UV-b Radiation		

Site Description:
Site is located in a field on the side of McFarland Hill in Bar Harbor. Site slopes to the south/southeast with the hill rising to the north. The site was established by the National Park Service but has since grown to include a variety of monitors for EPA programs, special studies such as the Rural Aerosol Intensive Network and as the NCore site for Maine A T640x was installed in January of 2023, replacing a Thermo 5030i SHARP, and making the two 2000*i* samplers sampling for PM_{10} redundant, which were also removed.
Monitoring at this site is a joint effort between the NPS and the Maine DEP.

Monitoring Objectives:
Background. NCore Site. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2024: None**.**

Town – Site:	**Bethel – Smith Farm Road**		
County:	**Oxford**	Latitude:	**44.377794**
Address:	**Smith Farm Road**	Longitude:	**-70.854697**
AQS Site ID:	**23-017-3002**	Elevation:	**203 Meters**
Spatial Scale:	**Regional**	Year Established:	**2016**
Statistical Area:	**None**		



Bethel – Smith Farm Road
Pollutant and Meteorological Parameters:

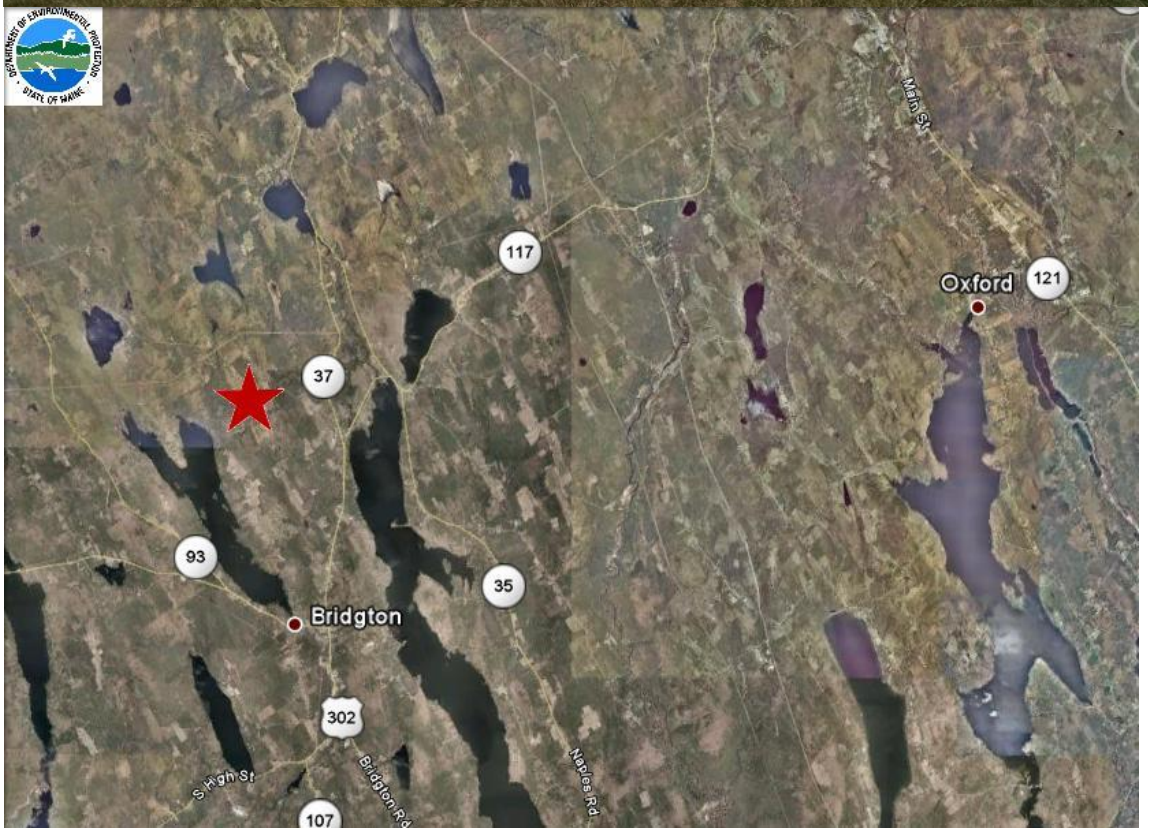
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	5-12-2016	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located approximately 3.5 miles southwest of Bethel, Maine on Smith Farm Road. The shelter is situated in a field along the power line right of way.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Western Mountain Location

Planned changes for 2024: None.

Town – Site:	**Bridgton**		
County:	**Cumberland**	Latitude:	**44.1074**
Address:	**Upper Ridge Road**	Longitude:	**-70.7290**
AQS Site ID:	**23-005-0002**	Elevation:	**223 meters**
Spatial Scale:	**Regional**	Year Established:	**1980**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Bridgton
Pollutant and Meteorological Parameters:

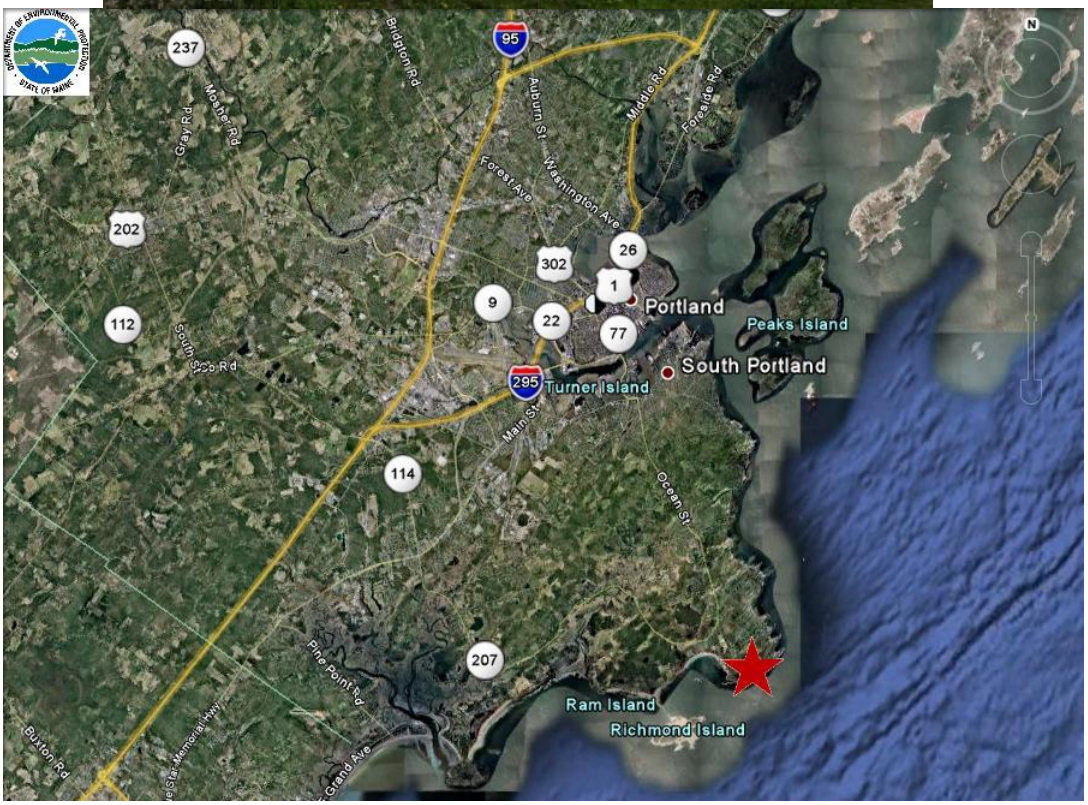
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	6-3-1997	
IMPROVE	3-14-2001	1/1/2016	Wet Dep. - Precip Chem.	1-1-1980	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Site is located on a ridge in an open field area just off the Upper Ridge Road.

Monitoring Objectives:
Long-term tracking of deposition. Western Mountain Location

Planned changes for 2024: None
IMPROVE monitoring was discontinued at the end of 2015. The BAQ is seeking alternative funding to re-establish IMPROVE monitoring in the future.

Town – Site:	**Cape Elizabeth, Two Lights State Park**		
County:	**Cumberland**	Latitude:	**43.5610**
Address:	**Two Lights State Park**	Longitude:	**-70.2073**
AQS Site ID:	**23-005-2003**	Elevation:	**24 meters**
Spatial Scale:	**Regional**	Year Established:	**1981**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Cape Elizabeth, Two Lights State Park
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	1-1-1999	12-17-2002	SO_2		
PM2.5 - 24 Hr. Colo			Ozone	1-1-1981	
PM2.5 Cont.			NOx	6-9-1993	10-31-1995
PM10 - 24 Hr.			NOy	6-26-1995	10-25-2022
PM10 - 24 Hr. Colo			HAPs	12-6-2013	5-30-2019
PM10 Cont.			VOCs (PAMS)	6-1-1993/6-1-2020	8/31/2019/8-31-22
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	6-25-1985	
Cont. Sulfate (SO_4)			Outdoor Temperature	6-7-1994	
Black Carbon			Bar. Pressure	6-7-1994	
Cont. PAH			Relative Humidity	6-7-1994	
Lead			Dew point		
CO	5-1-2001	10-1-2007	Precipitation Amount		
CO_2			Solar Radiation	6-7-1994	
Gamma Radiation			UV-b Radiation	6-1-1995	
			Pandora	June 2021	

Site Description:
The Cape Elizabeth site is located in an open elevated area in the Two Lights State Park in Cape Elizabeth. Ozone is monitored year around, and meteorological parameters are monitored seasonal from April to September, The GC was shut down at the end of the 2022 PAMs season to allow staff to focus on other Air Quality issues more pressing in Maine.

Colby College is interested in operating a Continuous Mass Spectrometer (MS) at this site for research. This instrument and the data collected by this system is not part of the Maine DEP network and is not going to be submitted to AQS.

Monitoring Objectives:
Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2024: If resources allow, a HAPS sampler will be re-established at Cape Elizabeth**.**

Town – Site:	**Caribou – Caribou Airport**		
County:	**Aroostook**	Latitude:	**46.8683**
Address:	**Caribou Airport**	Longitude:	**-67.9931**
AQS Site ID:	**23-003-1002**	Elevation:	**191 meters**
Spatial Scale:	**Regional**	Year Established:	**1982**
Statistical Area:	**None**		

Caribou – Caribou Airport
Pollutant and Meteorological Parameters:

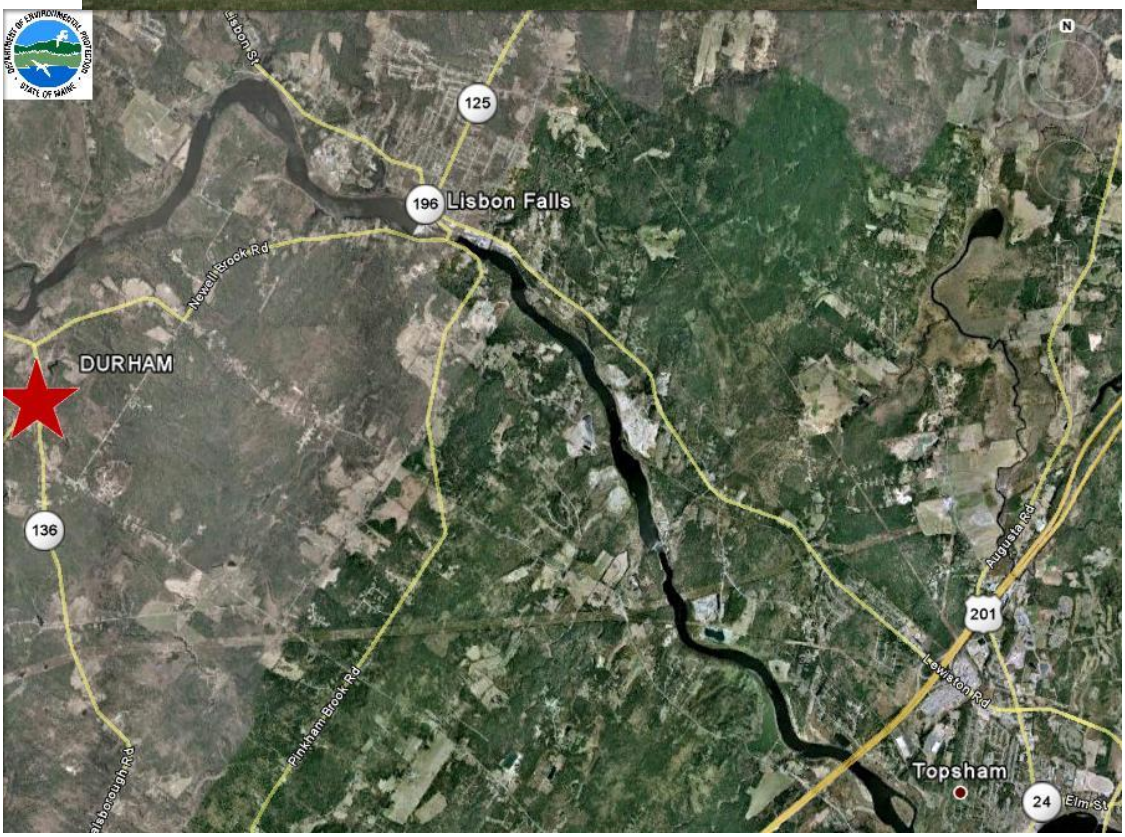
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	5-9-2007	
IMPROVE			Wet Dep. - Precip Chem.	1-1-1982	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount	1-1-1982	
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is in a grassy area inside the fence and off the south end of the runway at Caribou Airport.

Monitoring Objectives:
Long-term monitoring of wet deposition chemistry and precipitation amount in northern Maine.

Planned changes for 2024: None.

Town – Site:	**Durham – Fire Station**		
County:	**Androscoggin**	Latitude:	**43.9745**
Address:	**Route 9**	Longitude:	**-70.1249**
AQS Site ID:	**23-001-0014**	Elevation:	**50 meters**
Spatial Scale:	**Regional**	Year Established:	**2004**
Statistical Area:	**Lewiston-Auburn, ME**		



Durham – Fire Station
Pollutant and Meteorological Parameters:

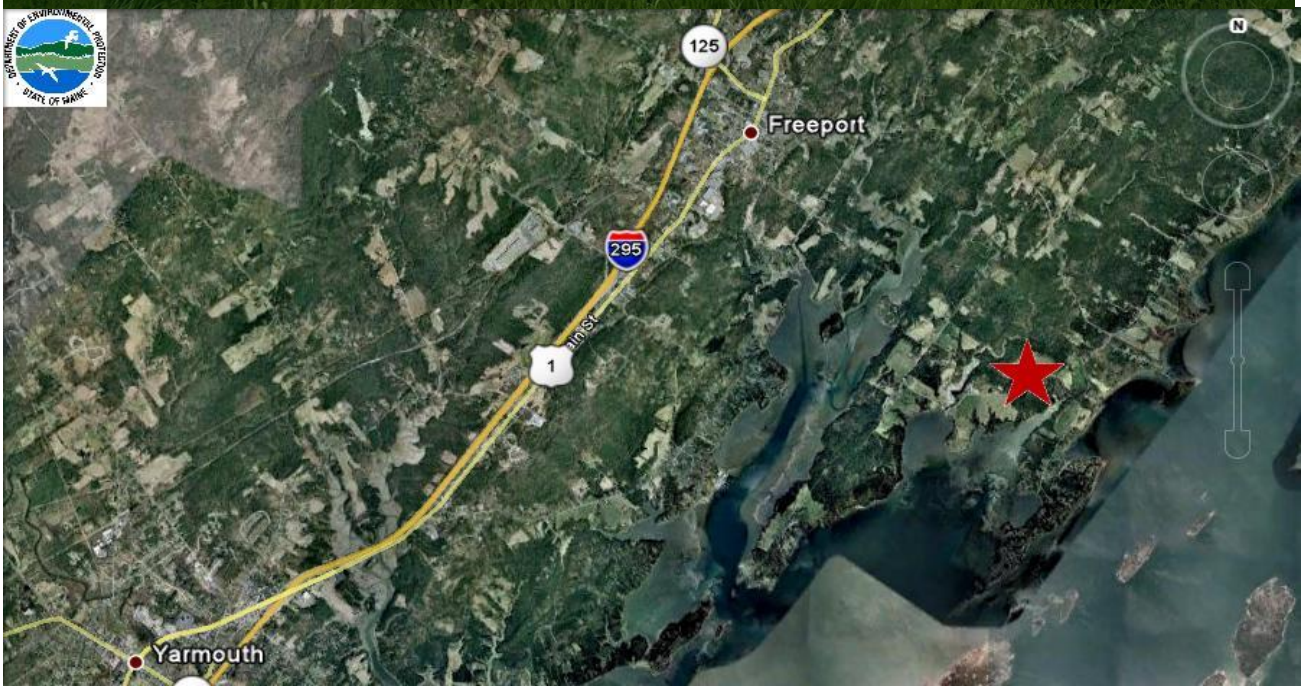
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	04/01/2004	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located on the grounds of the Durham Fire Station, 9 ½ miles SE of Lewiston. An ozone monitor is located within an 8'x8'x8' environmentally controlled shelter. The shelter was installed in 2006 and in the summer of 2022, a new sloped roof was installed onto the shelter.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2024: None.

Town – Site:	**Freeport – Wolfes Neck Farm**		
County:	**Cumberland**	Latitude:	**43.8325**
Address:	**Wolfe's Neck Road**	Longitude:	**-70.0644**
AQS Site ID:	**23-005-9002**	Elevation:	**27 Meters**
Spatial Scale:	**Regional/Neighborhood**	Year Established:	**1998**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Freeport – Wolfes Neck Farm
Pollutant and Meteorological Parameters:

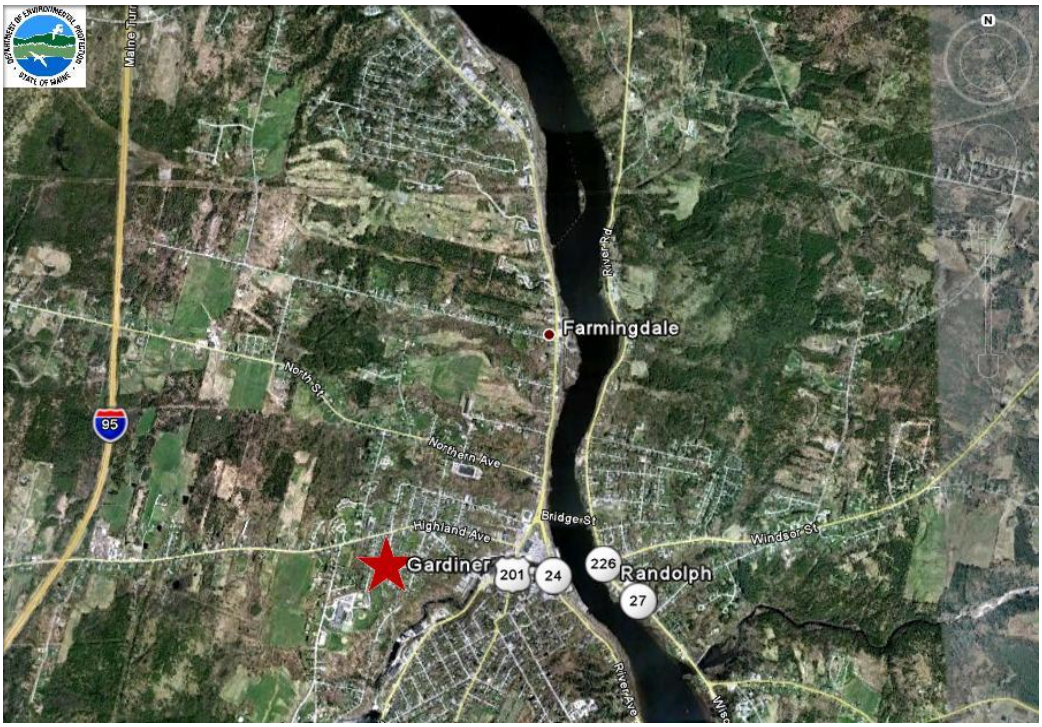
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	1-7-1998	
IMPROVE	3/14/2001		Wet Dep. - Precip Chem.	1-7-1998	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount	1-7-1998	
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		
			Wet Deposition - PFAS	10/13/2020	

Site Description:
Site is located within a fenced in area in the middle of a large open field used as a pasture by the Wolfe's Neck farm. Construction activity near site may force relocation of the samplers.

Monitoring Objectives:
Long-term monitoring of wet deposition chemistry and precipitation amount in northern Maine**.** IMPROVE Site. PFAS sampling started in 2020, anticipated to end in 2023, but is subject to change.

Planned changes for 2024: None.

Town – Site:	**Gardiner – High School**		
County:	**Kennebec**	Latitude:	**44.226566**
Address:	**West Street**	Longitude:	**-69.788624**
AQS Site ID:	**23-011-2001**	Elevation:	**63.6 Meters**
Spatial Scale:	**Regional**	Year Established:	**2020**
Statistical Area:	**Augusta-Waterville, ME**		



Gardiner – High School
Pollutant and Meteorological Parameters

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	01/01/2020	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The shelter is located near the southeast corner of the building.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2024: This site is unfavorable compared to the old location at Pray Street school. Return to the old location, now a Girls and Boys Club is unlikely. Staff are looking into other locations for monitoring in the Gardiner and Augusta areas.

Town – Site:	**Greenville**		
County:	**Piscataquis**	Latitude:	**45.463**
Address:	**Greenville Municipal Airport**	Longitude:	**-69.55579**
AQS Site ID:	**23-021-0001**	Elevation:	**424 Meters**
Spatial Scale:	**Regional**	Year Established:	**2021**
Statistical Area:	**None**		

Greenville
Pollutant and Meteorological Parameters:

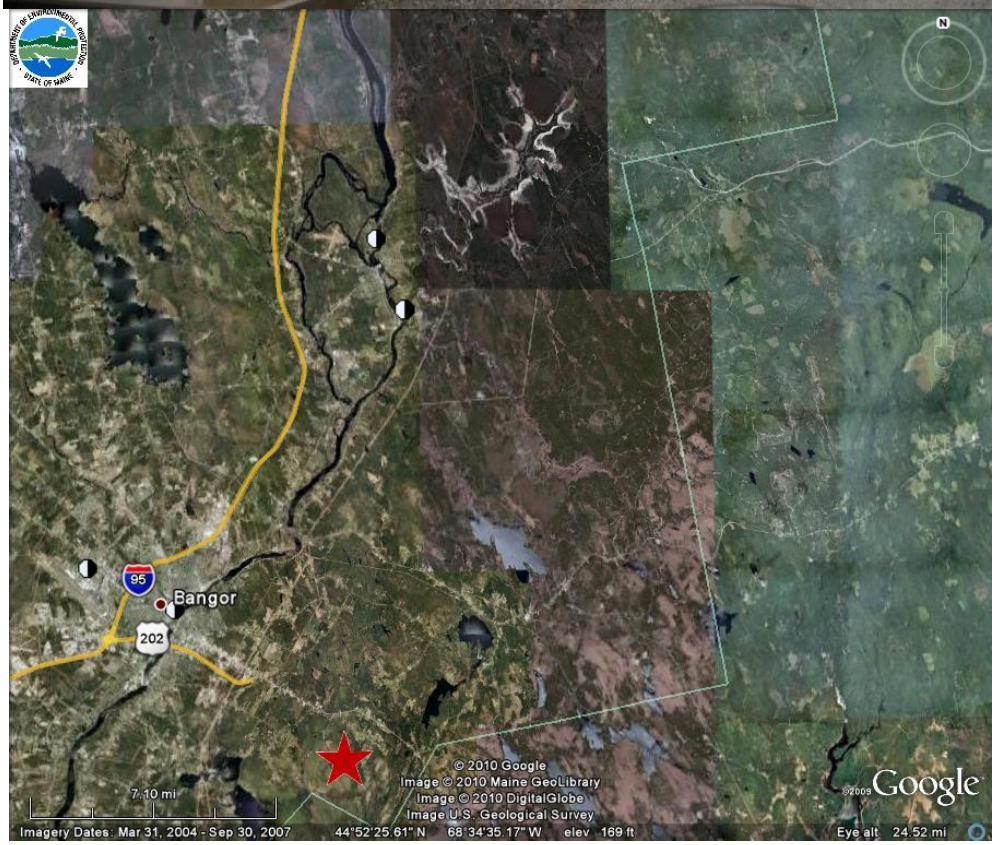
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	7/2021	
IMPROVE			Wet Dep. - Precip Chem.	7/2021	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount	7/2021	
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
This site was moved from the private property northwest of Greenville Junction to the Greenville Municipal Airport property. This was done to improve siting for the samplers. This location has much better exposure to regional air flow.

Monitoring Objectives:
Long-term monitoring of wet deposition chemistry and precipitation amount in western Maine

Planned changes for 2024: None.

Town – Site:	**Holden**		
County:	**Penobscot**	Latitude:	**44.7365**
Address:	**Summit of Rider's Bluff**	Longitude:	**-68.6711**
AQS Site ID:	**23-019-4008**	Elevation:	**250 Meters**
Spatial Scale:	**Regional**	Year Established:	**1993**
Statistical Area:	**Bangor, ME**		



Holden

Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	5-19-1993	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Site is a transmission tower location for a local TV station at the top of a hill in Holden with good exposure in all directions.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2024: None.

Town – Site:	**Jonesport – Coast Guard Station**		
County:	**Washington**	Latitude:	**44.5276553**
Address:	**9 Bridge St.**	Longitude:	**-67.615495**
AQS Site ID:	**23-029-0021**	Elevation:	**2.0 Meters**
Spatial Scale:	**Regional**	Year Established:	**2022**
Statistical Area:	**None**		

Jonesport – Coast Guard Station
Pollutant and Meteorological Parameters:

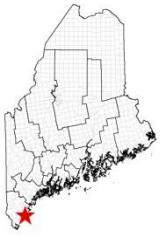
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	2/24/2023	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	11/16/2022	
Cont. Sulfate (SO_4)			Outdoor Temperature	11/16/2022	
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity	11/16/2022	
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

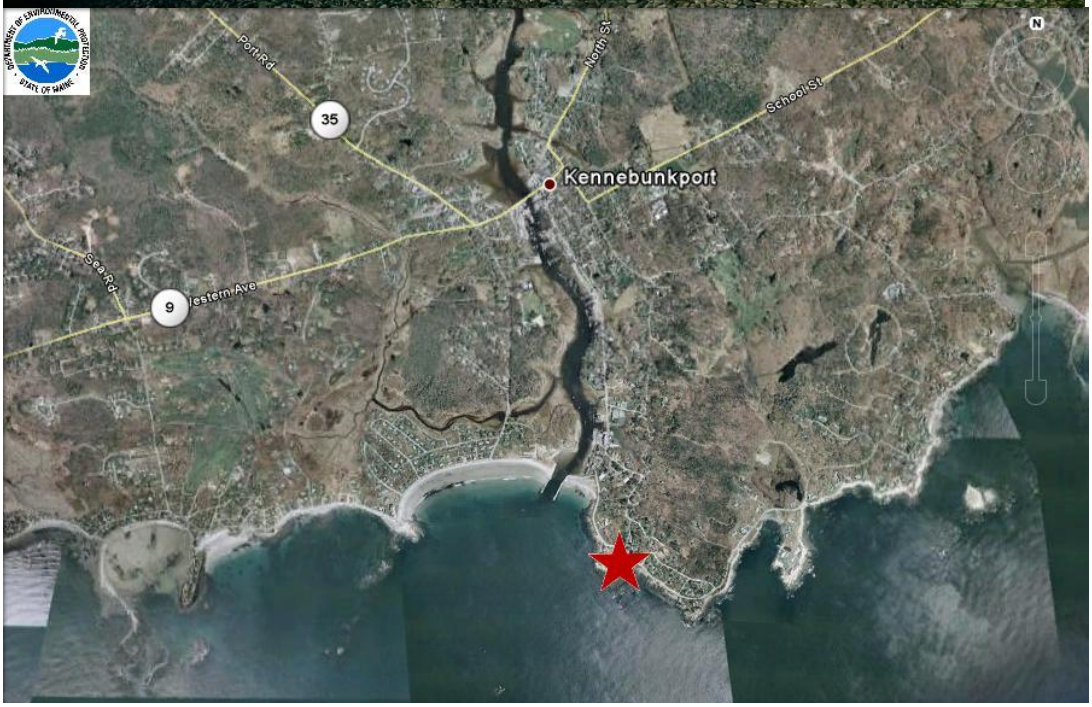
Site Description:
Monitor located in a shelter at the US Coast Guard Station parking lot. This site replaces the Jonesport Public Landing site which was discontinued due to the planned demolition of the Public Landing structure that housed the monitoring equipment.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. EMP.

Planned changes for 2024: None.

Town – Site:	**Kennebunkport – Parson's Way**		
County:	**York**	Latitude:	**43.3431**
Address:	**Ocean Avenue**	Longitude:	**-70.4714**
AQS Site ID:	**23-031-2002**	Elevation:	**6 Meters**
Spatial Scale:	**Regional**	Year Established:	**1983**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		





Kennebunkport – Parson's Way
Pollutant and Meteorological Parameters:

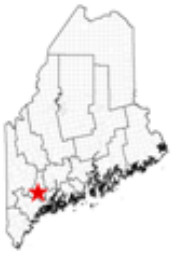
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	1-1-1983	
PM2.5 Cont.			NOx	6-1-1990	9-1-1990
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

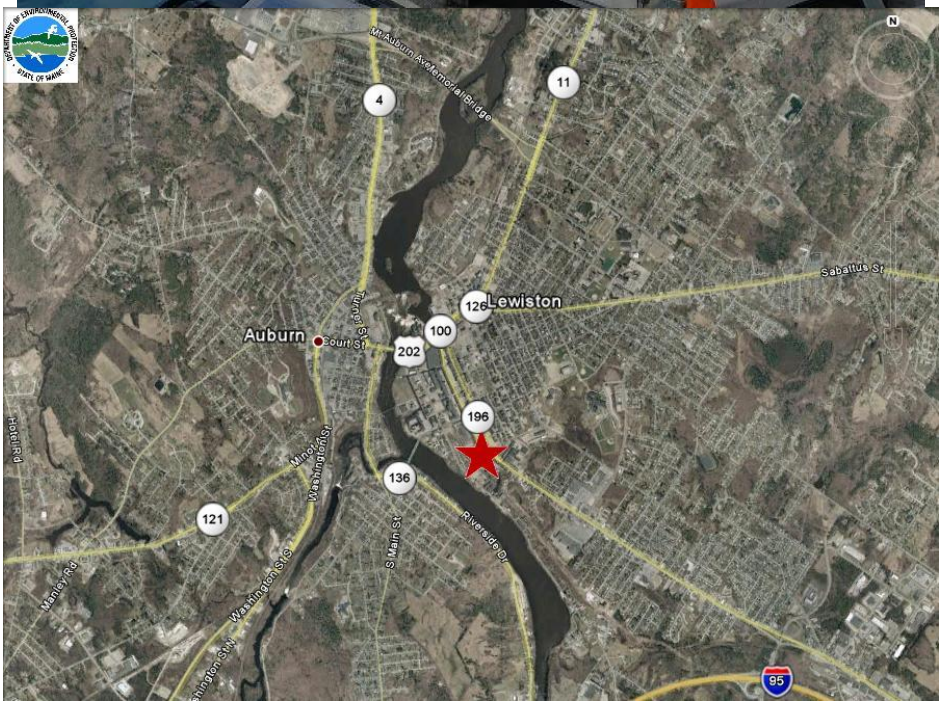
Site Description:
Site is located on a rocky beach area just off Ocean Avenue in a wooden 8'x8'x8' structure. Site has good exposure and has recorded some of the highest ozone concentrations in the state.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2024: None.

Town – Site:	**Lewiston – Country Kitchen Parking Lot**		
County:	**Androscoggin**	Latitude:	**44.0894**
Address:	**Canal Street**	Longitude:	**-70.2141**
AQS Site ID:	**23-001-0011**	Elevation:	**50 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1981**
Statistical Area:	**Lewiston-Auburn ME**		





Lewiston – Country Kitchen Parking Lot
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	01/01/1999	12/31/2019	SO_2	07/13/1998	12/30/2002
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	01/01/2000		NOx		
PM10 - 24 Hr.	04/01/2004		NOy		
PM10 - 24 Hr. Colo			HAPs	06/14/2004	
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead	06/01/1989	12/31/1993	Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located in downtown Lewiston in the parking lot of the Country Kitchen Bakery. An 8'x8'x8' shelter houses electronic monitoring equipment, data acquisition system and modem, in a climate-controlled environment, with PM monitors and intakes situated on the roof.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. High Population Exposure

Planned changes for 2024: The manual FRM PM10 sampler may be replaced with a continuous PM_{10} instrument.

Town – Site:	**Madawaska – Public Safety Bldg.**		
County:	**Aroostook**	Latitude:	**47.3553**
Address:	**East Maine St.**	Longitude:	**-68.3211**
AQS Site ID:	**23-003-0014**	Elevation:	**177 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**2009**
Statistical Area:	**None**		

Madawaska – Public Safety Bldg.
Pollutant and Meteorological Parameters:

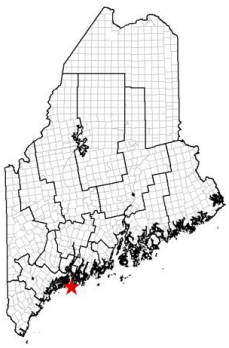
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	8-1-2009	12-31-2019	SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	1-17-2014		NOx		
PM10 - 24 Hr.	8-1-2009	12/31/2021	NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.	September 2020		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

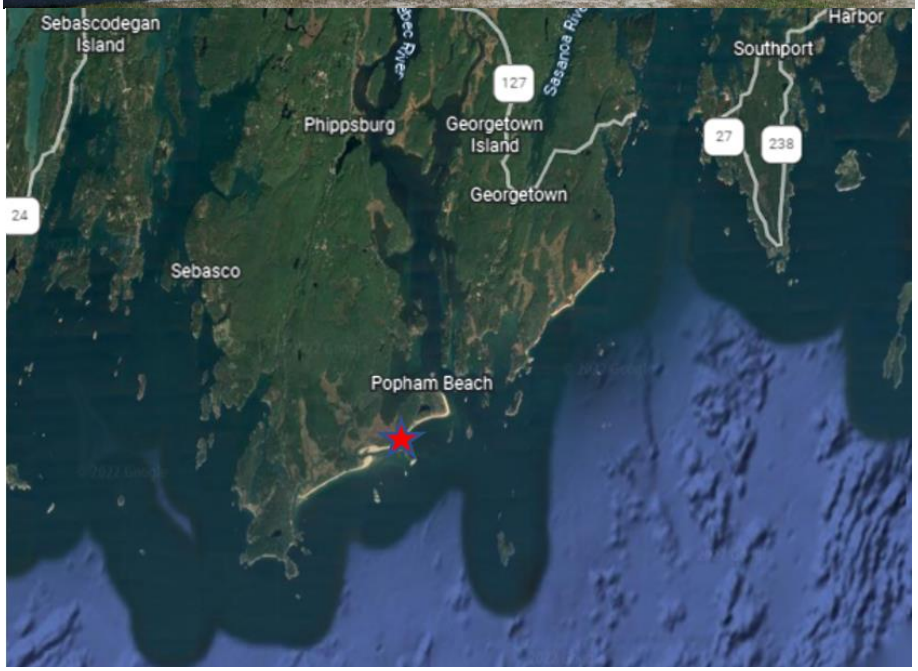
Site Description:
Monitoring platform established in 2009 on the roof of the Madawaska Public Service Building.
NOTE: The fire department has hosted big BBQ events on certain holidays and smoke from the grills are quite often detected by the ambient air monitoring equipment. Continuous PM10 sampler established September 2020 to document ambient air quality effects from this festive event. Both Met One BAMs were replaced with a T640x in May 2023.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2024: . None.

Town – Site:	**Popham Beach State Park**		
County:	**Sagadahoc**	Latitude:	**43.736277**
Address:	**711 Popham Road.**	Longitude:	**-69.797654**
AQS Site ID:	**23-023-0007**	Elevation:	**5 meters**
Spatial Scale:	**Regional**	Year Established:	**2022**
Statistical Area:	**None**		





Popham Beach State Park
Pollutant and Meteorological Parameters:

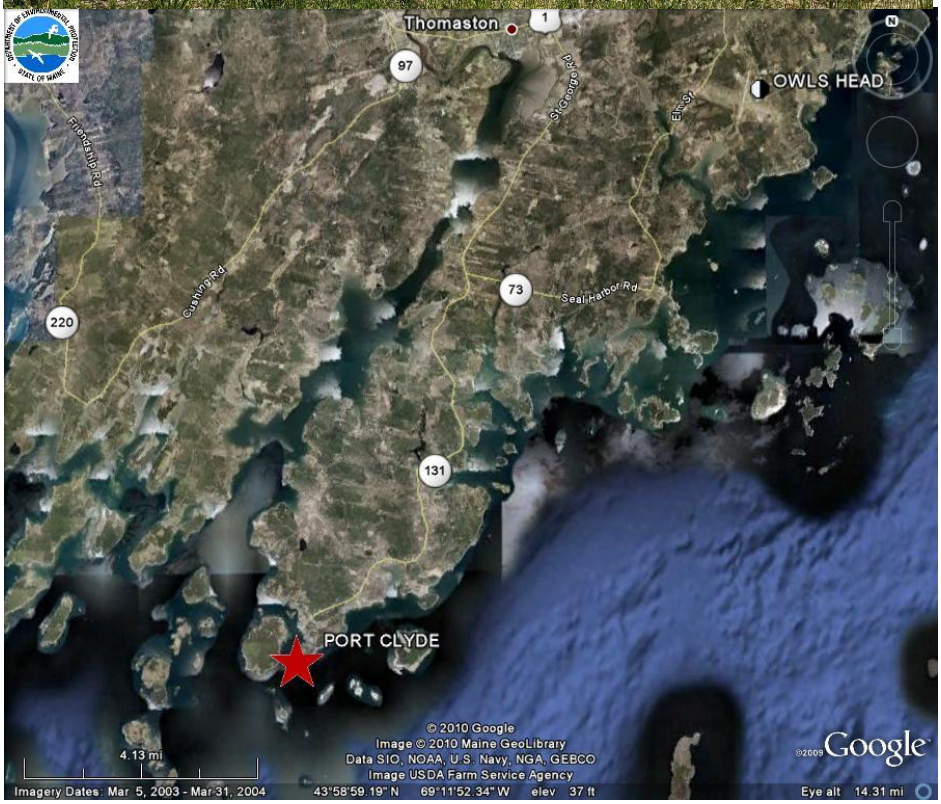
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	April 13, 2022	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Environmentally controlled cabinet installed in a utility room of the "Bath House" at the State Park.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2024: None.

Town – Site:	**Port Clyde – Marshall Point Lighthouse**		
County:	**Knox**	Latitude:	**43.9180**
Address:	**Marshall Point Road**	Longitude:	**-69.2608**
AQS Site ID:	**23-013-0004**	Elevation:	**9 Meters**
Spatial Scale:	**Regional**	Year Established:	**1987**
Statistical Area:	**Rockland, ME**		



Port Clyde – Marshall Point Lighthouse
Pollutant and Meteorological Parameters:

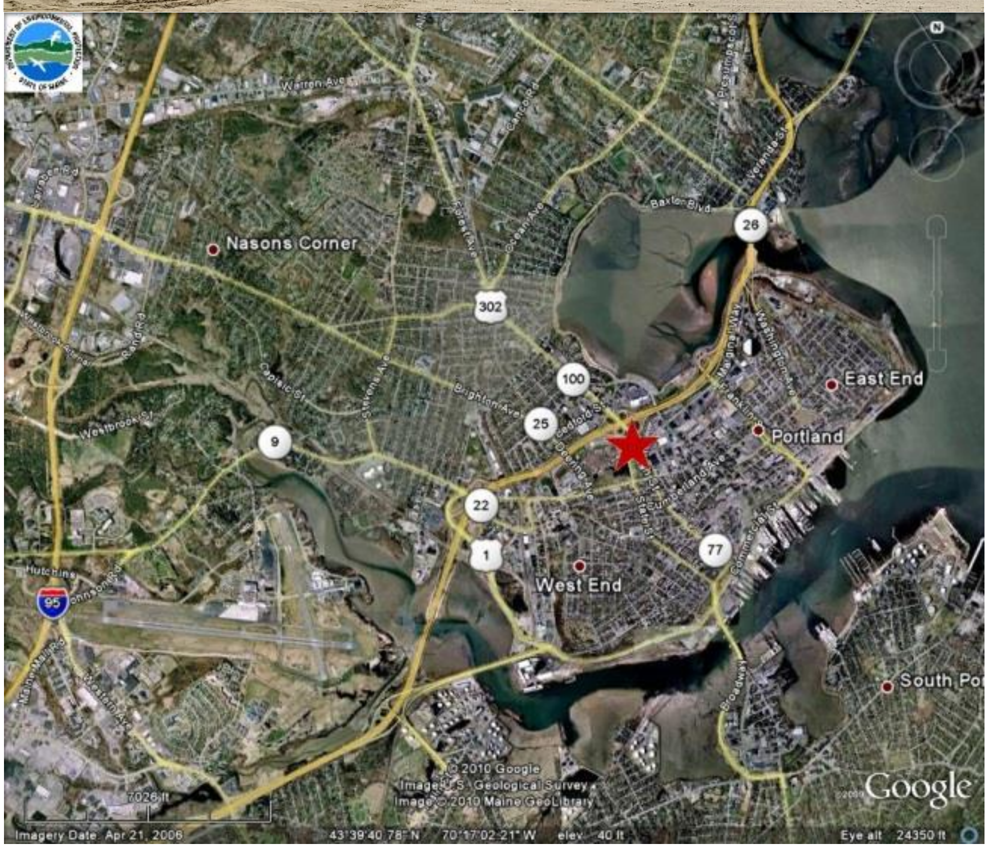
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	05/01/1987	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located at Marshall Point on the grounds of the Marshall Point Lighthouse Museum about 14.8 miles southwest of downtown Rockland. A 6'x6'x'8 environmentally controlled shelter houses the monitor, data acquisition equipment and modem.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2024: None.

Town – Site:	**Portland – Deering Oaks Park**			
County:	**Cumberland**			
Address:	**356 State St.**	Latitude:	**43.6602**	
AQS Site ID:	**23-005-0029**	Longitude:	**-70.2690**	
Spatial Scale:	**Neighborhood**	Elevation:	**4 meters**	
Statistical Area:	**Portland-South Portland-Biddeford, ME**	Year Established:	**2008**	



Portland – Deering Oaks Park
Pollutant and Meteorological Parameters:

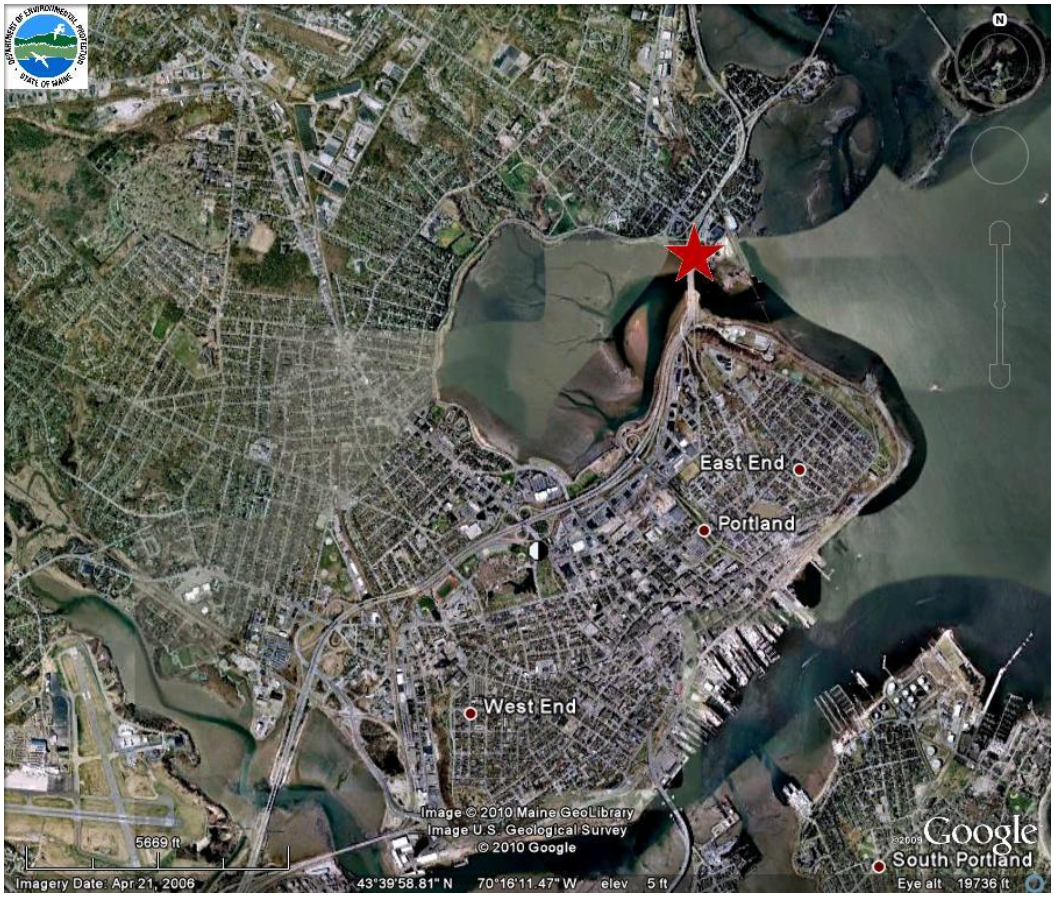
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	1-22-2008		SO_2	1-24-2008	3-1-2021
PM2.5 - 24 Hr. Colo	1-31-2008	1/31/2020	Ozone	1-18-2008	
PM2.5 Cont.	1-18-2008		NOx	2-5-2008	
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs	3-14-2009	
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO	5-1-2008	1 – 17 - 2022	Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation	1-29-2009		UV-b Radiation		

Site Description:
The Portland Deering Oaks (PDO) site was established in 2008 to replace the Marginal Way site, which had to be removed to make way for development activity. The site is located in a grassy area of the park near the intersection of Forest Avenue and State Street, and close to an off ramp from I-295. To the west of the site is a wooded area of the park as well as numerous athletic fields. The site does not meet strict EPA siting criteria so sample results are not used for regulatory purposes. The location was chosen in cooperation with the Maine and American Lung Association for use in their health statistics. Annual Average Daily Traffic volume on Forest Avenue is around 46,000.
Gamma radiation measurements obtained at PDO are included in the EPA radiation network, RadNet.
At present, the City of Portland plans to extend their greenbelt bike path through the location of our shelter. The Maine DEP and the City of Portland are looking for a new location to house monitoring equipment.

Monitoring Objectives:
High Population Exposure Neighborhood scale monitoring. The ozone and nitrogen dioxide monitors are special purpose, non-regulatory monitors installed at the request of the Maine Bureau of Health.

Planned changes for 2024: If not done in 2023, the site will likely be moved from its current location.

Town – Site:	**Portland – Tukey's Bridge**		
County:	**Cumberland**	Latitude:	**43.6780**
Address:	**Tukey's Bridge (Route 295)**	Longitude:	**-70.2562**
AQS Site ID:	**23-005-0015**	Elevation:	**6 meters**
Spatial Scale:	**Middle/Micro**	Year Established:	**1981**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Portland – Tukey's Bridge
Pollutant and Meteorological Parameters:

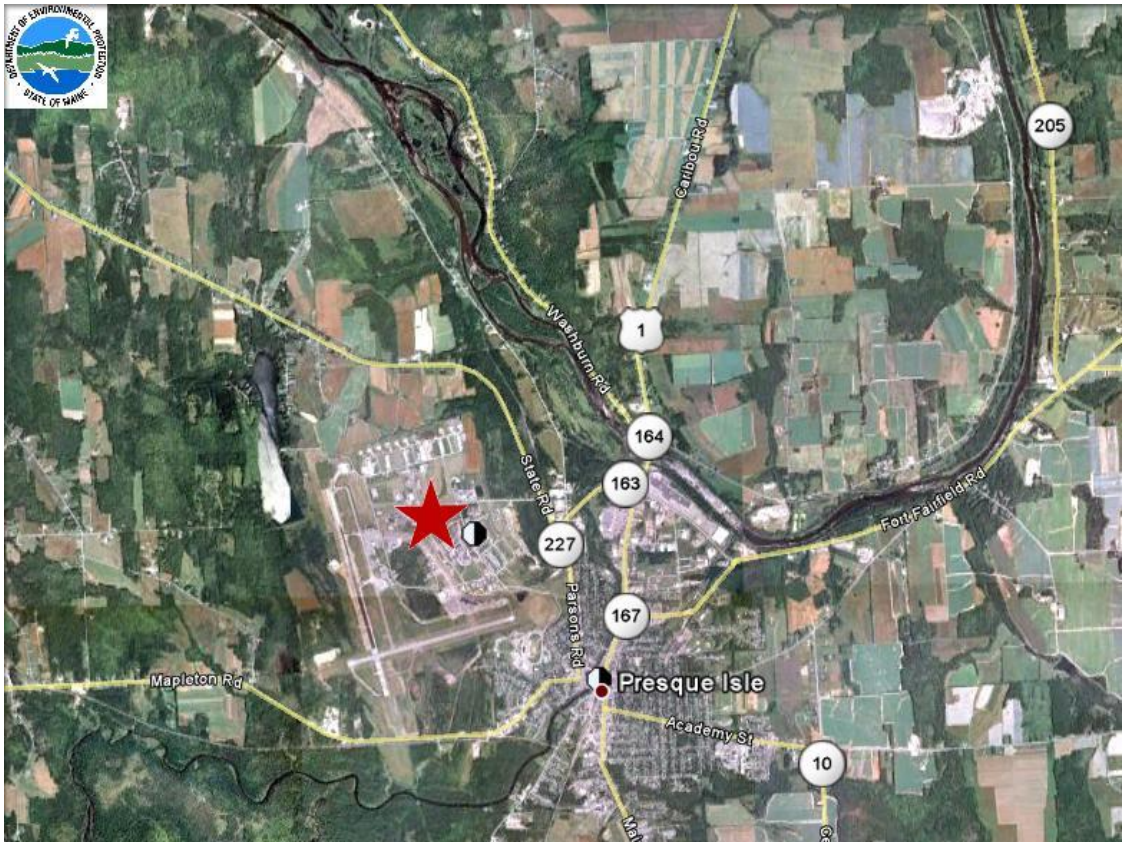
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	1-1-1999	TBD	SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	TBD		NOx		
PM10 - 24 Hr.	2-8-1991	TBD	NOy		
PM10 - 24 Hr. Colo	1-9-2003	1-12-2023	HAPs		
PM10 Cont.	TBD		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Monitors are located on a platform next to I-295/Washington Street. This section of road has some of the highest annual average daily traffic volume in the state. A Teledyne 640x is planned to be installed in June of 2023, replacing the 3 Thermo 2000*i* samplers on the platform.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. High Traffic Volume**.**

Planned changes for 2024: If not done in 2023, a new fence to provide security to the site will be installed.

Town – Site:	**Presque Isle – DEP Regional Office**		
County:	**Aroostook**	Latitude:	**46.6984**
Address:	**528 Central Drive**	Longitude:	**-68.0389**
AQS Site ID:	**23-003-1008**	Elevation:	**158 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1983**
Statistical Area:	**None**		



Presque Isle – DEP Regional Office
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	9-27-2007	TBD	SO_2	8-1-1988	9-21-1989
PM2.5 - 24 Hr. Colo			Ozone	8-1-1988	9-21-1989
PM2.5 Cont.	TBD		NOx		
PM10 - 24 Hr.	7-1-1989	9-27-2007	NOy		
PM10 - 24 Hr. Colo			HAPs	TBD	
PM10 Cont.	TBD		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	2-13-1983	9-21-2016
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Suburban background site for monitoring $PM_{2.5}$. The sampler is in a field next to the regional office in Presque Isle. A Teledyne T640x is planned to be install during the summer of 2023, replacing the Thermo 2000*i*.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. Background Site. Modeling

Planned changes for 2024: The Maine DEP plans to install a VOC (HAPs) at this location once resources allow.

Town – Site:	**Presque Isle – Riverside Shelter**		
County:	**Aroostook**	Latitude:	**46.6823**
Address:	**Riverside Street**	Longitude:	**-68.0156**
AQS Site ID:	**23-003-1011**	Elevation:	**131 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1993**
Statistical Area:	**None**		

Presque Isle – Riverside Shelter
Pollutant and Meteorological Parameters:

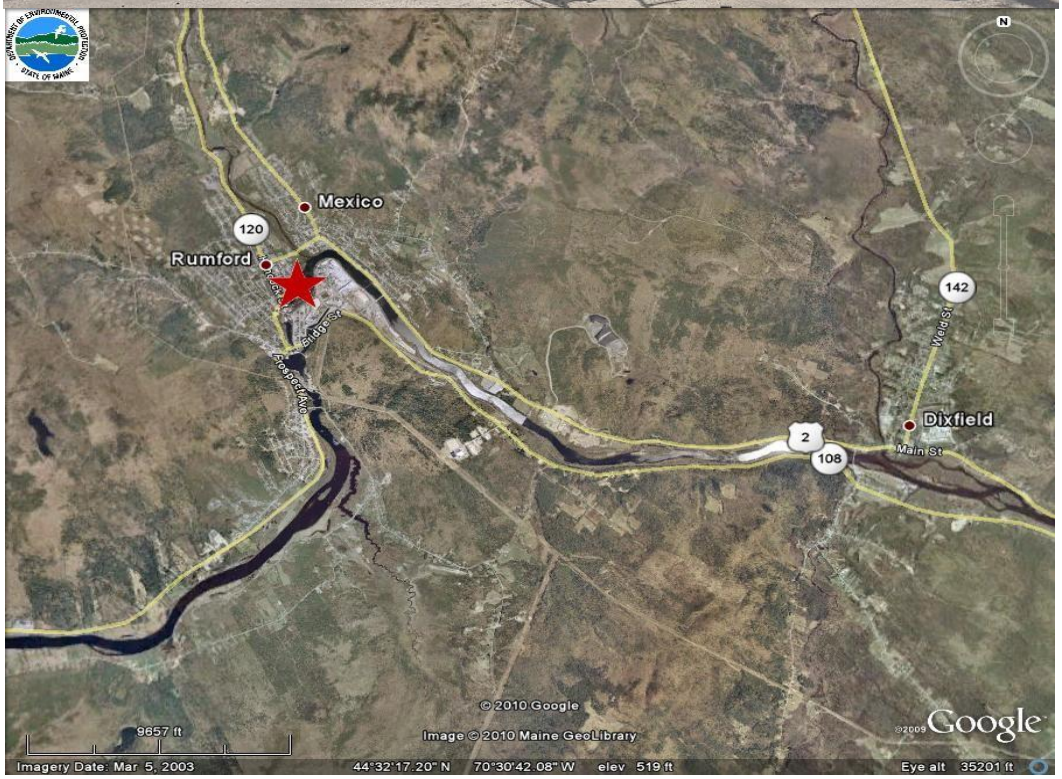
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	10-1-1997		SO_2	9-19-1994	7-2-1996
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	7-18-2014		NOx		
PM10 - 24 Hr.	9-10-1993	11-2-1998	NOy		
PM10 - 24 Hr. Colo			HAPs	12-14-03	
PM10 Cont.	9-15-1995		VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Monitors are located in a parking lot off Main Street in the downtown area of Presque Isle. The site is relatively open, next to the railroad tracks and the Presque Isle Stream. In January of 2023, a Teledyne T640x was installed replacing the Metone $PM_{2.5}$ BAM. The PM_{10} Metone BAM was left to do a short colocation study between the two methods. Thus far a non-insignificant difference between the methods have been measured, plans to remove the PM_{10} Metone BAM are on hold and the timeline is uncertain.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment.

Planned changes for 2024: None.

Town – Site:	**Rumford – Rumford Ave. Parking Lot**		
County:	**Oxford**	Latitude:	**44.5514**
Address:	**Rumford Ave. Parking Lot**	Longitude:	**-70.5463**
AQS Site ID:	**23-017-2011**	Elevation:	**135 Meters**
Spatial Scale:	**Neighborhood**	Year Established:	**1998**
Statistical Area:	**None**		



Rumford – Rumford Ave. Parking Lot
Pollutant and Meteorological Parameters:

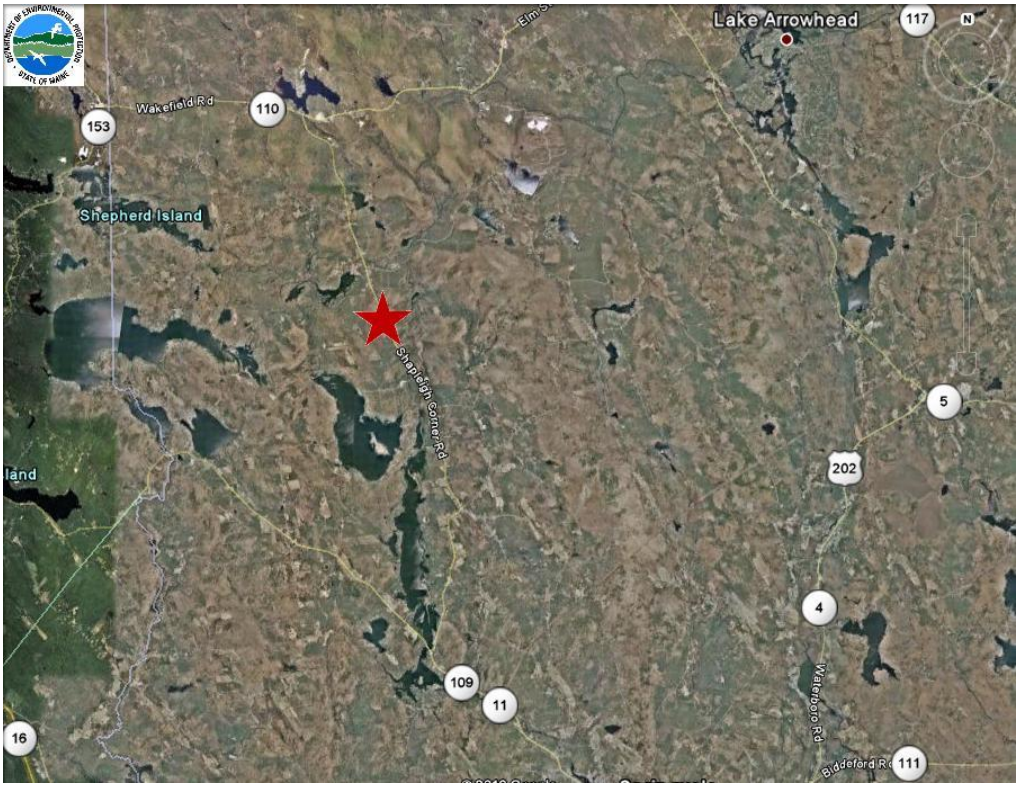
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.	12/01/1998	12/31/2021	SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	10/1/2014		NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs	07/01/1998	
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	12/16/2016	
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
The site is located in a paper mill employees' parking lot off of Rumford Avenue in Rumford, Maine across the street from the Eagles Club and Bingo Parlor. An 8'x8'x10' environmentally controlled shelter houses HAPs sampling equipment, data acquisition system, and a BAM 1020 for continuous $PM_{2.5}$ sampling.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. High Population Exposure. Western Mountain Location.

Planned changes for 2024: None.

Town – Site:	**Shapleigh -- Shapleigh Ball Park**		
County:	**York**	Latitude:	**43.5889**
Address:	**Route 11**	Longitude:	**-70.8773**
AQS Site ID:	**23-031-0040**	Elevation:	**171 Meters**
Spatial Scale:	**Regional**	Year Established:	**2008**
Statistical Area:	**Portland-South Portland-Biddeford, ME**		



Shapleigh -- Shapleigh Ball Park
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	6-13-2008	
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Site is in an open area surrounding a baseball outfield just off Route 11.

Monitoring Objectives:
SLAMS Attainment/Non-Attainment. EMP. Monitoring long-range transport of pollutants on a regional scale.

Planned changes for 2024: None.

TRIBAL MONITORING SITES

FOR 2024

Tribe – Site Name:	**Micmac Tribe -- Littleton**		
County:	**Aroostook**	Latitude:	**46.228730**
Address:	**198 West Ridge Road**	Longitude:	**-67.82566**
AQS Site ID:	**23-003-1101**	Elevation:	**188 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**2014**
Statistical Area:	**None**		

Micmac Tribe -- Littleton
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.	05-01-2014		NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	05-01-2014	
Cont. Sulfate (SO_4)			Outdoor Temperature	05-01-2014	
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

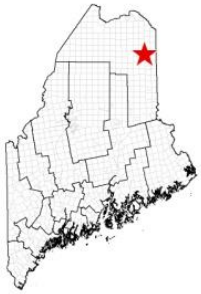
Site Description:
The Aroostook Band of Micmacs ambient air monitor site continuously monitors $PM_{2.5}$ and meteorological parameters in Littleton, ME. The PM2.5 CONT. equipment is audited by Maine DEP.

Note: site has been offline for multiple years but is intended to resume.

Monitoring Objectives:
Population – Orientated Surveillance

Planned changes for 2024: None.

Tribe – Site Name:	**Micmac Tribe -- Presque Isle Shelter**		
County:	**Aroostook**	Latitude:	**46.6964**
Address:	**8 Northern Road**	Longitude:	**-68.0330**
AQS Site ID:	**23-003-1100**	Elevation:	**165 meters**
Spatial Scale:	**Neighborhood**	Year Established:	**2004**
Statistical Area:	**None**		



Micmac Tribe -- Presque Isle Shelter
Pollutant and Meteorological Parameters:

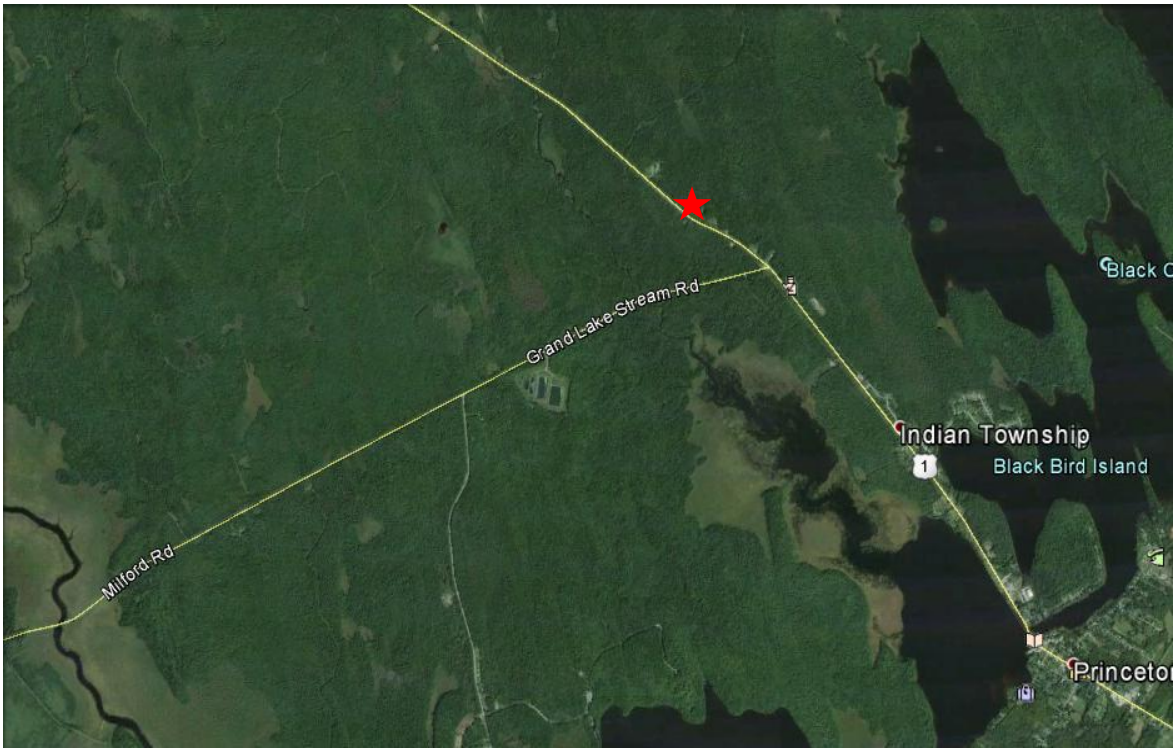
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2	1-1-2006	
PM2.5 - 24 Hr. Colo			Ozone	1-1-2006	
PM2.5 Cont.	1-1-2006		NOx	1-1-2006	
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury	3-1-2014	
IMPROVE	1-1-2004		Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	1-1-2006	
Cont. Sulfate (SO_4)			Outdoor Temperature	1-1-2006	
Black Carbon			Bar. Pressure	1-1-2006	
Cont. PAH			Relative Humidity	1-1-2006	
Lead			Dew point	1-1-2006	
CO	1-1-2006		Precipitation Amount		
CO_2	1-1-2006		Solar Radiation	1-1-2006	
Gamma Radiation			UV-b Radiation		

Site Description:
The Aroostook Band of Micmacs ambient air monitor site continuously monitors ozone, $PM_{2.5}$, carbon monoxide, sulfur dioxide, nitrogen dioxide, carbon dioxide, mercury, and meteorological parameters in Presque Isle, ME. The PM and Gaseous instrument are audited by Maine DEP. The Metrological parameters are part of a USDA network and are not submitted to AQS.

Monitoring Objectives:
To provide local air quality information to Aroostook Band of Micmacs

Planned changes for 2024: Not available.

Tribe – Site Name:	**Passamaquoddy Tribe -- Indian Township**		
County:	**Washington**	Latitude:	**45.2436**
Address:	**Indian Township**	Longitude:	**-67.6308**
AQS Site ID:	**N/A**	Elevation:	**101 meters**
Spatial Scale:	**N/A**	Year Established:	**2013**
Statistical Area:	**None**		



Passamaquoddy Tribe -- Indian Township
Pollutant and Meteorological Parameters:

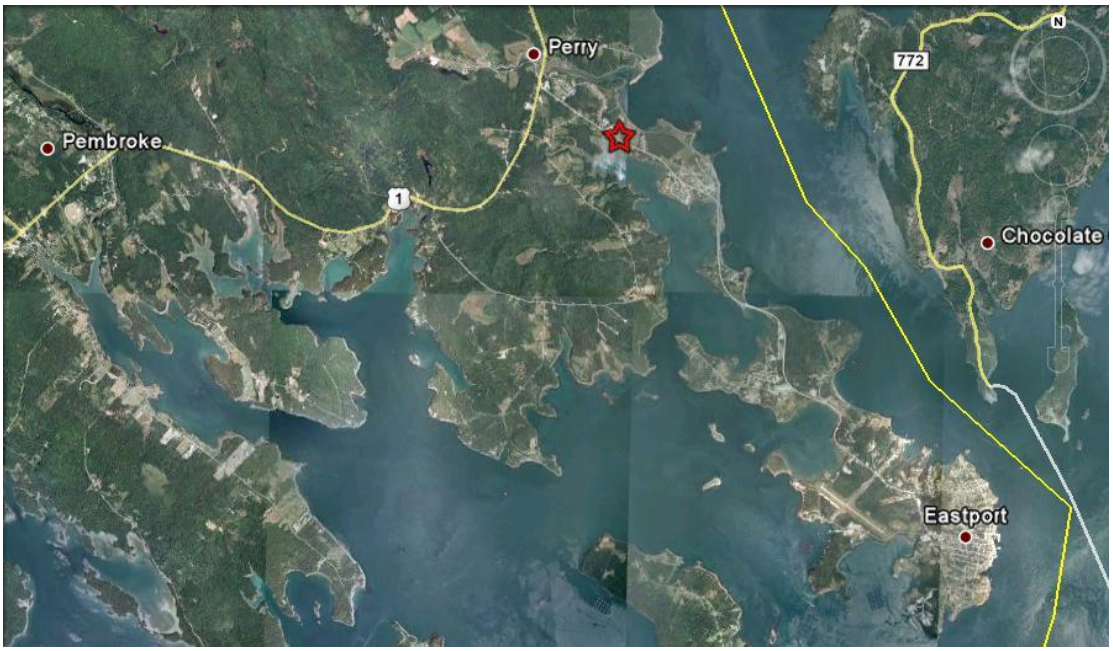
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone		
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.	10-3-2013	
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount	10-3-2013	
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description:
Not available

Monitoring Objectives:
To provide NADP/NDN data from vicinity of the Passamaquoddy Tribe -- Indian Township

Planned changes for 2024:

Tribe – Site Name:	**Passamaquoddy Tribe– Perry, Pleasant Point/Sipayik**		
County:	**Washington**		
Address:	**184 County Road**	Latitude:	**44.9630**
AQS Site ID:	**23-029-0032**	Longitude:	**-67.0592**
Spatial Scale:	**Regional**	Elevation:	**4 meters**
Statistical Area:	**None**	Year Established:	**2006**



Passamaquoddy Tribe– Perry, Pleasant Point/Sipayik
Pollutant and Meteorological Parameters:

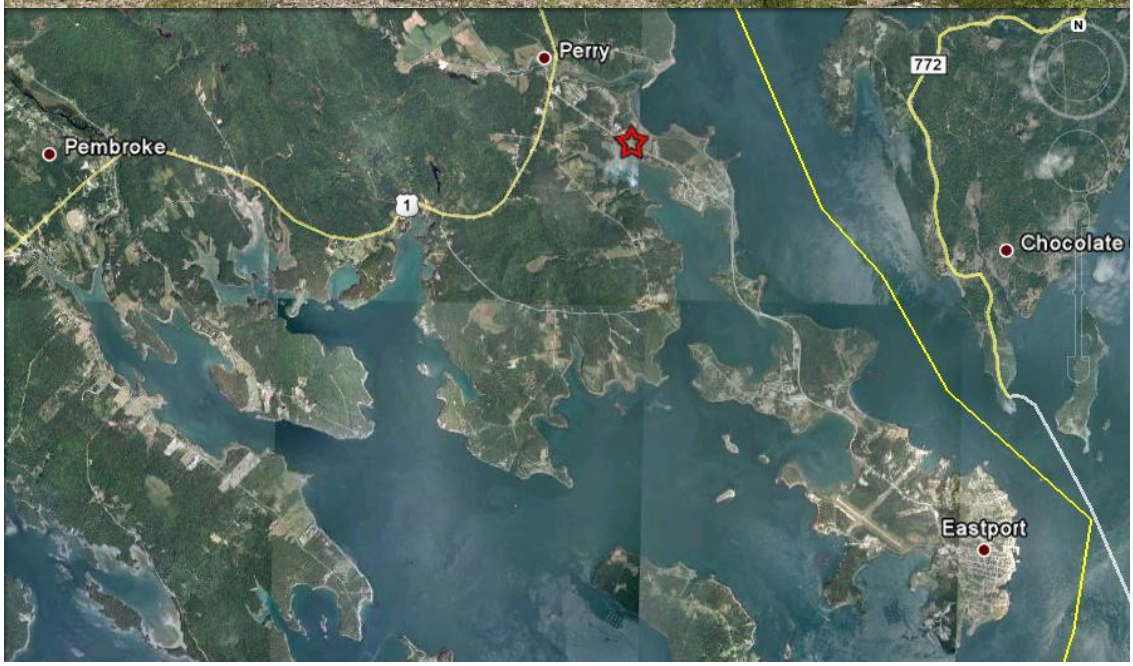
Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	3-31-2006	9-24-2021
PM2.5 Cont.	12-18-2008	9-24-2021	NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	4-20-2005	9-24-2021
Cont. Sulfate (SO_4)			Outdoor Temperature	4-22-2005	9-24-2021
Black Carbon			Bar. Pressure	4-25-2005	9-24-2021
Cont. PAH			Relative Humidity	4-22-2005	9-24-2021
Lead			Dew point		
CO			Precipitation Amount	4-27-2008	9-24-2021
CO_2			Solar Radiation	6-16-2005	9-24-2021
Gamma Radiation			UV-b Radiation	6-16-2005	9-24-2021

Site Description: The site was needed because area monitoring was going to be shut down in Roosevelt-Campobello International Park on Campobello Island, New Brunswick, CAN. Pleasant Point decided to handle the criteria pollutants and run a MET station. Indian Township was going to take on the acid and mercury deposition studies. The Passamaquoddy Tribe wanted to start contributing to the monitoring. The data was polled and used by Maine DEP. The ozone and $PM_{2.5}$ instruments were audited by ME DEP on a quarterly basis. Only the ozone hourly data was uploaded into AQS. The met data was shared with the TREX network and posted on their website. This site was taken out of service in the fall of 2021 and the ozone analyzer moved to another shelter (see next page), and a new continuous PM sampler installed there.

Monitoring Objectives: The site is to provide pollutant data for modeling and forecasting needs. The site fills a void in the region. Otherwise, there would be a data gap in the area.

Planned changes for 2024: This site is inactive, but will be maintained in the event monitoring will need to be restored there.

Tribe – Site Name:	**Passamaquoddy Tribe– Perry, Pleasant Point/Sipayik**		
County:	**Washington**		
Address:	**176 County Road**	Latitude:	**44.963894**
AQS Site ID:	**23-029-0033**	Longitude:	**-67.061325**
Spatial Scale:	**Regional**	Elevation:	**4 meters**
Statistical Area:	**None**	Year Established:	**2006**



Passamaquoddy Tribe– Perry, Pleasant Point/Sipayik
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	9-27-2021	
PM2.5 Cont.	10-06-2021		NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE			Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed		
Cont. Sulfate (SO_4)			Outdoor Temperature		
Black Carbon			Bar. Pressure		
Cont. PAH			Relative Humidity		
Lead			Dew point		
CO			Precipitation Amount		
CO_2			Solar Radiation		
Gamma Radiation			UV-b Radiation		

Site Description: The site was needed because area monitoring was going to be shut down in Roosevelt-Campobello International Park on Campobello Island, New Brunswick, CAN. Pleasant Point decided to handle the criteria pollutants and run a MET station. Indian Township was going to take on the acid and mercury deposition studies. The Passamaquoddy Tribe wanted to start contributing to the monitoring. The data are polled and used by ME DEP BAQ. The ozone and $PM_{2.5}$ instruments are audited by ME DEP on a quarterly basis. Only the ozone hourly data is uploaded into AQS. This site replaces 23-029-0032. The shelter at that site is smaller and in very poor condition.

Monitoring Objectives: The site is to provide pollutant data for modeling and forecasting needs. The site fills a void in the region. Otherwise, there would be a data gap in the area.

Planned changes for 2023: The tribal air program is open to monitoring for other pollutants if resources are available.

Tribe – Site Name:	**Penobscot Nation -- Indian Island**		
County:	**Penobscot**	Latitude:	**44.95204**
Address:	**27 Wabanaki Way**	Longitude:	**-68.64768**
AQS Site ID:	**23-019-1100**	Elevation:	**41 meters**
Spatial Scale:	**Regional**	Year Established:	**2006**
Statistical Area:	**None**		

Penobscot Nation -- Indian Island
Pollutant and Meteorological Parameters:

Parameter	Date Began	Date Ended	Parameter	Date Began	Date Ended
PM2.5 - 24 Hr.			SO_2		
PM2.5 - 24 Hr. Colo			Ozone	1-1-2006	1-1-2018
PM2.5 Cont.			NOx		
PM10 - 24 Hr.			NOy		
PM10 - 24 Hr. Colo			HAPs		
PM10 Cont.			VOCs (PAMS)		
PM Coarse			Wet Deposition - Mercury		
IMPROVE	1-14-2006		Wet Dep. - Precip Chem.		
Cont. OC/EC			Wind Direction/Speed	7-2002	1-17-2018
Cont. Sulfate (SO_4)			Outdoor Temperature	7-2002	1-17-2018
Black Carbon			Bar. Pressure	7-2002	1-17-2018
Cont. PAH			Relative Humidity	7-2002	1-17-2018
Lead			Dew point		
CO			Precipitation Amount	7-2002	1-17-2018
CO_2			Solar Radiation	7-2002	1-17-2018
Gamma Radiation			UV-b Radiation		

Site Description: The original IMPROVE Site location, established on 6-27-2001, was located near the Marsh Island Apartments. That location was shut down on 5-29-2006 having been made redundant after 1/14/2006 when the current IMPROVE site was established on Indian Island. After several seasons of contending with failing equipment, all ambient air monitoring at Indian Island, except for the IMPROVE monitoring, was officially discontinued in January 2018.

Monitoring Objectives:
IMPROVE and NADP/NDN, environmental monitoring for Penobscot Nation

Planned changes for 2024: The Penobscot Nation may add Air Toxics monitoring.

Appendix 2
Wyman Station
Update Provision of US EPA'S
2015 Data Requirements Rule

Additional Data to Satisfy Update Provision of USEPA's 2015 "*Data Requirements Rule"*

On August 21, 2015, the United States Environmental Protection Agency (USEPA) finalized the "*Data Requirements Rule for the 2010 1-hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard*" (DRR) which requires all states to characterize ambient SO_2 levels in areas with large sources of SO_2, specifically for the purpose of demonstrating each source's attainment of the 1-hour SO_2 National Ambient Air Quality Standard (NAAQS).

The DRR, which establishes minimum criteria for identifying sources that may be selected for further examination, states that *"…each air agency is required to submit a list to the USEPA by January 15, 2016, that identifies all sources within its jurisdiction that have SO_2 emissions that exceeded a 2000 ton per year annual threshold during the most recent year from which emissions data for that source are available".*

In a January 13, 2016 letter from the Maine Department of Environmental Protection (MEDEP) to the USEPA Region I Air Programs Branch Chief, MEDEP informed USEPA that it did not have any individual sources with actual reported SO_2 emissions exceeding 2000 tons per year (using the three-year period 2013 – 2015). The letter further stated that Maine did not anticipate that any of its currently regulated sources would likely emit in excess of 2000 tons per year of SO_2 in the foreseeable future.

In a March 17, 2016 response letter from USEPA's Regional Administrator to MEDEP, USEPA stated that they had reviewed Maine's January 13th submittal and were identifying William F Wyman Station (Wyman Station), located in Yarmouth Maine, as a source that the DRR requires to be characterized. USEPA's basis for the request cited *"Though total annual SO_2 emissions from Wyman have declined in recent years, it appears that Wyman's operation from month-to-month is highly variable, and that may continue into the future. For example, in 2015, Wyman had 22 days with SO_2 emissions greater than 40 tons per day. Therefore, the USEPA believes that it is appropriate and necessary to characterize William F Wyman under the Data Requirements Rule."*

In addition, the March 17th letter stated that each air agency must identify the approach that it will use to characterize air quality in the source's respective area by July 1, 2016. Under the DRR, each state must indicate if they will use current representative monitoring data, perform ambient dispersion modeling, or establish federally-enforceable SO_2 emissions restrictions in the source's Title V permit. If the state chose either the ambient monitoring or dispersion modeling options, the DRR required that the appropriate protocol be submitted by July 1, 2016.

On June 29, 2016, MEDEP sent a letter to inform USEPA that performing air dispersion modeling was the chosen option for Wyman Station. Attached to the June 29th letter was Wyman Station's air dispersion modeling protocol which provided in-depth discussions of methodologies and assumptions being proposed for use in the modeling demonstration. After several iterations of written correspondence to resolve questions regarding the modeling protocol, MEDEP received agreement from USEPA that the protocol was acceptable. MEDEP, in close consultation with Wyman Station, conducted an air dispersion modeling analysis using USEPA-approved models and modeling guidance/techniques in a manner consistent with the approved June 2016 modeling protocol. The DRR required that Wyman Station's final modeling analyses, results and all supporting documentation be submitted to USEPA by January 13, 2017.

On January 11, 2017, MEDEP submitted Wyman Station's dispersion modeling results and associated files to USEPA. The results, which were based on 2013-2015 hourly current-actual emissions data, demonstrated that

Wyman Station was in compliance with the 1-hour SO_2 NAAQS. On March 9, 2017, MEDEP was contacted by USEPA Region I Air Quality Modeling Manager, Leiran Biton, via telephone stating that the modeling submitted by MEDEP was complete and acceptable to meet the requirements of the DRR.

Federal regulation 40 CFR Part 51 Subpart BB §51.1205(b) states, "*For any area where modeling of actual SO_2 emissions serve as the basis for designating such area as attainment for the 2010 SO_2 NAAQS, the air agency shall submit an annual report to the EPA Regional Administrator by July 1 of each year, either as a stand-alone document made available for public inspection, or as an appendix to its Annual Monitoring Network Plan (also due on July 1 each year under 40 CFR 58.10), that documents the annual SO_2 emissions of each applicable source in each such area and provides an assessment of the cause of any emissions increase from the previous year. The first report for each such area is due by July 1 of the calendar year after the effective date of the area's initial designation*."

Since the effective date for Maine's final SO_2 designation was April 9, 2018 (as published in the January 9, 2018 Federal Register), Maine is submitting the following additional information to meet the above requirements:

As stated previously, Wyman Station's modeling demonstration utilized hourly current-actual emissions and stack flow data from the calendar years 2013 – 2015. Table 1 lists the ton per year (TPY) emissions for the three years modeled (2013 - 2015) as well as the most-recent three-year period (2020 – 2022).

Table 1: Annual Actual SO_2 Emissions Data for Wyman Station

Calendar Year	Actual SO_2 Emissions (TPY)
2013	861.16
2014	844.03
2015	1750.67
2020	86.53
2021	63.51
2022	687.64

Annual actual SO_2 emissions for the most recent three years show that Wyman Station's emissions continue to remain below those that were modeled for the 2013 - 2015 period, the timeframe that served as the basis for USEPA's identification of Wyman Station as a DRR source.

MEDEP recognizes that there has been a significant increase in SO_2 TPY emission values in 2022 versus 2020 and 2021. Wyman Station is primarily relied upon as a peaking power plant and generally operates only when there is a very high demand for electricity; and the facility was called upon more frequently in the past year by ISO-New England to supply electricity for grid stabilization and/or reliability.

Furthermore, the following information was contained in a December 19, 2018 letter from Wyman Station to MEDEP: "*Pursuant to 40 CFR 75.61 (a)(7), FPL Energy Wyman, LLC is hearby providing notice that Units 1 and 2 at the Wyman facility have been shut down, and placed into long-term storage as defined in §72.2. Shutdown of the unit occurred on October 1, 2018 at 0000 hours."* The letter further states that *"…the duration of the shutdown is expected to last for at least two years…*" Units 1 and 2 continue to remain in long-term storage given that Wyman Station has reported zero emissions for both units during the 2019, 2020 and 2021 calendar years.

Therefore, given that the annual 2020 - 2022 SO_2 actual emissions remain below those that were modeled using the 2013 - 2015 actual emissions and that Units #1 and #2 continue to remain idle, MEDEP concludes that the

modeling results required by the DRR demonstrate that Wyman Station currently remains and will likely continue to remain in compliance with the 1-hour SO_2 NAAQS.

Per requirements of the DRR, Maine will continue to update Wyman Station's SO_2 actual TPY emissions (as seen in Table 1) and report those values to USEPA as part of MEDEP's Annual Air Monitoring Plan each subsequent year. Should Wyman Station's actual TPY emissions increase significantly above those 2013 – 2015 values used in the analysis, Maine recognizes that an updated modeling demonstration may be required.

Appendix 3
Public Comment and Response

[No public comments received during open comment period]

Appendix 4
EPA Comments and Response

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
LABORATORY SERVICES AND APPLIED SCIENCE DIVISION
11 Technology Drive
North Chelmsford, MA 01863

June 29, 2023

Andy Johnson
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Dear Mr. Johnson:

Thank you for providing EPA with a draft of the Maine Department of Environmental Protection (ME DEP) 2024 Air Monitoring Network Plan which was made available on June 1, 2023, for public comment. EPA Region 1 has reviewed your draft plan with respect to meeting the requirements of 40 CFR Part 58. Upon final submission of this document in July, we will move forward regarding approval of the Annual Network Plan. Upon final submission of this document, we will work with our Headquarters offices to address the portions of the plan which require their attention, most notably monitoring associated with NCore.

The following are our comments:

1. Over the past few years, we identified many potential resource saving opportunities relative to your overall ambient air monitoring network for each criteria pollutant measured in your network. We are pleased that you seem to have taken some of our suggestions.

2. Page 4, Footnote (4) at the bottom on the page is incorrect. It should be footnote 1.

3. Page 8, Ozone Network - We acknowledge that the Ashland CASTNET site may reopen in 2023 or 2024, funding permitted.

4. Page 9, Jonesport Coast Guard Station – On 5/23/23, EPA personnel completed the Jonesport site evaluation and conducted a TTP audit.

5. Page 9, Planned changes for 2024 – We acknowledge the following:

    - *If not done in 2023, the Portland Deering Oaks site may be moved to a new location.*
    - *The location of the Gardiner area ozone monitor may be moved. The current siting is not optimal for ozone and was meant to be temporary during the construction of Girls and Boys Club on Pray Street. The Maine DEP is considering options for the future of this site: which includes remaining at the current site or moving to another location with better siting in the Gardiner and Augusta area.*

6. Page 10, $PM_{2.5}$ Network – We acknowledge that *in 2022, the Maine DEP applied for an American Rescue Plan Grant, which requested funds to purchase six Teledyne T640x instruments. These instruments use scattered light spectrometry and produces continuous real-time 1 minute and hourly data for $PM_{2.5}$, along with PM_{10} and PM_{Coarse} simultaneously. The Maine DEP was awarded the grant, and the six T640x instruments arrived in December of 2022. Starting in January 2023, The Maine DEP started the deployment of 6 Teledyne T640x instruments starting at Presque Isle Riverside, replacing a Metone BAM and Bar Harbor replacing the Thermo*

Fisher Scientific Instruments 5030i. The Maine DEP plans to install the remaining 3 in Augusta, Portland Tukey's Bridge, and the Presque Isle Background Site in 2023.

7. Page 10, $PM_{2.5}$ Network: We note that *in 2020, the TEOM operated by the Micmac Tribe stopped reporting data due to a malfunction at the site. This site has yet to resume data reporting, but the Micmac tribe would still like to return this site to operational status when time and resources allow.*

8. Page 11, Proposed calendar year 2024 changes for the $PM_{2.5}$ network – We acknowledge the following:

   - *If not done in 2023, the Portland Deering Oaks site may be moved.*
   - *If not completed in 2023, finish the deployment of the Teledyne T640x instruments as follows:*
     - *Replace FRM samplers at the Tukey's Bridge Site in Portland with a continuous sampler.*
     - *Replace an FRM sampler at the Presque Isle Background site with a continuous sampler.*
     - *Upgrade the Augusta Lincoln Street School with a continuous sampler to collocate with method 143.*
   - *If resources allow, the DEP may establish two-level ambient temperature monitoring in Presque Isle and Madawaska to identify the possibility atmospheric inversions during the winter and early spring.*
   - *The DEP may purchase more T640x instruments to replace or supplement the BAM monitors in Bangor and/or Lewiston.*

9. Page 12, PM Speciation Network (IMPROVE), last sentence - Clarify the Bridgton comment.

10. Pages 12 - 13, PM_{10} Network – We acknowledge the following: ME DEP was awarded an American Rescue Plan Grant and purchased six Teledyne T640x instruments. During 2023, three were installed at Bar Harbor (McFarland Hill), Presque Isle (Riverside Shelter) and Madawaska (Public Safety Building).

    Proposed Calendar Year 2024 changes for the PM_{10} network:

    If not completed in 2023, finish the deployment of the Teledyne T640x instruments:

    - *Replace FRM samplers at the Tukey's Bridge Site in Portland with a T640x.*
    - *Replace an FRM sampler at the Presque Isle Background site with a T640x.*
    - *Upgrade the Augusta Lincoln Street School with a T640x.*

    The DEP is reviewing the potential to remove the manual FRM method 126 from the network. If this is done, then the FRM sampler in Augusta will be removed, and the FRM samplers in Lewiston and Bangor will be replaced with continuous PM_{10} methods, either a Teledyne T640x or a Met One BAM.

11. Page 15, Enhanced Monitoring Plan – We acknowledge the following:

    - *In October of 2022, after years of low values and needs to refocus limited staff availability on monitoring concerns within the state of Maine, the DEP shut down the NOy instrument and the GC system. The meteorology tower also had to be replaced as the old tower was becoming a safety concern due to wear. The replacement tower is not heavy duty, and to ensure the longevity of the tower through Maine winters, it was determined to only run the metrology equipment during the Ozone Season. The Ozone monitor will continue to run year-round as it provides important early spring data for forecasters and modelers. The Maine DEP would like to reinstall a HAPs sampler at the Cape Elizabeth still once resources allow.*
    - *The new EMP plan for Maine includes the operation of Ozone monitors beyond those minimally required under 40 CFR, part 58, appendix d, Paragraph 4.1* (Jonesport and Shapleigh) *and the enhanced upper air pollution concentrations produced by the Pandora spectrometer.*

- *Maine would support the installation of a ceilometer proximate to the NCore site in Bar Harbor. The addition of a ceilometer is contingent on the availability of funds to acquire and support the instrument.*

12. Page 16, Hazardous Air Pollutants (HAPs) Network – We note that *if not already done in 2023 and as resources allow a HAPs sampler will be installed at the Presque Isle Background site, then reestablished at Cape Elizabeth.*

13. Page 17, Meteorological Network – We note that two changes were made to the meteorological network. *First, due to the deteriorating condition of the aluminum meteorological tower at Cape Elizabeth, the wind direction and speed sensors were removed. In 2023 a replacement tower was installed, but due to concerns of ice loading causing undue ware to the tower, meteorology here became seasonal only. The second change was due to the move of the ozone site from Jonesport Public landing to the Jonesport Coast Guard station. The Jonesport Coast Guard Station has excellent siting for meteorology, and it was requested to operate the wind direction and speed here year-round for modeling purposes.*

Proposed calendar year 2024 changes: *If resources allow, the BAQ proposes to establish two-level ambient temperature monitoring in Presque Isle and Madawaska. These two-level ambient temperature measurements would augment the particulate monitoring done at those sites to further investigate the impact that temperature inversions have on local air quality.*

14. Page 19, Low-Cost Sensors – We acknowledge the work ME DEP is doing with sensors.

15. Pages 20 – 21, South Portland/Portland VOC Monitoring Project – The page number is missing on page 20. We note the following *proposed calendar years 2023/2024 changes*:
The Maine DEP is waiting on a 3-year assessment of the sample data from the Maine CDC prior to making any decisions on moving or removing the current samplers. The DEP would like to reallocate time and resources used on this project to other areas in the State that require monitoring. The DEP is working with the City of South Portland to hand-over site service of select locations to the city. The DEP also intends to reduce the number of samplers in this project, so that they may be used in other areas of the state.

16. Page 22, Mobile Monitoring Trailer – ME acquired a trailer and would like to establish a mobile monitoring platform with sampling equipment and be ready to use it.

17. Page 22, Hydrogen Sulfide – Old Town and Rumford – We note that ME DEP *is seeking funds for a more robust instrument capable of accurately measuring down to 0.001 ppmv of H2S.*

18. Page 22, Aeroallergens – We note that *the State is still working to determine the best locations for the pollen sensors.*

19. Pages 22 - 23, Summary of Proposed Calendar Year 2024 Network Changes, 1st sentence - Should be 2024 not 2023.
We acknowledge the following changes that are being contemplated or are likely to occur:

    - *If not accomplished in 2023, the Portland Deering Oaks monitoring station may be relocated. Applicable siting criteria will be met at any new location.*
    - *If not accomplished in 2023, the Augusta – Lincoln Street School will be upgraded with a Teledyne T640x continuous sampler to collocate with method 143.*
    - *If not accomplished in 2023, the Portland – Tukey's Bridge site will be upgraded with a Teledyne T640x which will replace three filter – based samplers presently at that site.*
    - *If not accomplished in 2023, the FRM sampler at the Presque Isle – Background site will be replaced with a T640x continuous PM monitor.*

- *Two-level ambient temperature monitoring may be established in Presque Isle and Madawaska if resources allow.*
- *If resources allow, a mobile monitoring platform will be populated with sampling equipment and readied for use.*
- *Once resources allow, HAPs samplers will be installed at Presque background site, and Cape Elizabeth Site.*
- *South Portland/Portland VOC network: Pending assessment of sample data, one or more sites may be discontinued, and others made permanent.*
- *The remaining PM_{10} manual FRM method 126 maybe completely replaced with automated PM_{10} methods.*

20. Page 26, $PM_{2.5}$ FRM – Only one instrument is listed; however, there are two method codes – clarify this.

21. Page 28, 2024 Monitoring Site Information, Bar Harbor - McFarland Hill, Acadia National Park – Page number should be 38, not 40.

22. Page 49, Durham Site Description – Date should be 2006 not 2066.

23. Page 82, Tribal Monitoring Sites – Should be 2024 not 2023.

24. Page 87, Passamaquoddy Tribe – Indian Township – Provide AQS Site ID.

25. Page 90, Passamaquoddy Tribe – Perry, Pleasant Point/Sipayik – Site is inactive, should put in end dates for the monitors.

26. Page 95 – 98, Appendix A Wyman Station – This appendix was not updated this year. Please update this section and Table 1: Annual Actual SO_2 Emissions Data for Wyman Station with the most recent three years of data. Here's the link where you can get the CAMD data for Wyman: https://campd.epa.gov/data/custom-data-download

EPA Region 1 appreciates your partnership in conducting ambient air monitoring, and we look forward to working with you to continuously improve the quality of ambient air in Maine. We look forward to the submission of the Final Annual Network Plan this July. If you have any questions or comments regarding these comments, please contact me at (617) 918-8383.

Sincerely,

Cuzzupe, Mary Jane

Digitally signed by Cuzzupe, Mary Jane
Date: 2023.06.29 17:18:34 -04'00'

Mary Jane Cuzzupe
State Air Monitoring Coordinator
Laboratory Services and Applied Science Division
EPA Region 1

cc: Jeff Crawford, ME DEP
David Lemery, ME DEP
Leiran Biton, EPA Region 1
Alysha Murphy, EPA Region 1

Dear Mary Jane Cuzzupe,

Thank you for your detailed review and comments on Maine 2024 Annual Monitoring Plan. Replies to your comments are below.

1. Acknowledged.
2. Corrected.
3. [Response not required]
4. Acknowledged.
5. [Response not required]
6. [Response not required]
7. [Response not required]
8. [Response not required]
9. Added clarifying text noting that re-install of the IMPROVE samplers are contingent on Maine DEP obtaining funding.
10. [Response not required]
11. [Response not required]
12. [Response not required]
13. [Response not required]
14. [Response not required]
15. Corrected.
16. [Response not required]
17. [Response not required]
18. [Response not required]
19. Disagree with EPA assessment. The first sentence was intended to be used for comparing 2023 and 2024, however the source of confusion is acknowledged. The first 2 sentences were reworded to remove mention of the 2023 network changes for clarification.
20. The EPA 'List of Designated Reference and Equivalent Methods" issued June 15, 2023 list 2 designation numbers for the Thermo 2000i instrument with VSCC. For clarification, I removed one designation, keeping the designation that better fit with the method 143 used and made other edits to add better clarification between the designation numbers that were listed, and the method code being used.
21. Corrected.
22. Corrected.
23. Corrected.
24. No AQS ID is available for this site. Inserted 'N/A' in place of leaving the field blank.
25. Corrected.
26. Corrected.

Sincerely, David Lemery
Environmental Specialist III
Laboratory Analysis and Quality Assurance Section
Maine Department of Environmental Protection