

This work under this grant falls under Sections 60105(a) and (b) of the Inflation Reduction Act. Specifically, the funding will be used to deploy and maintain a new national air toxics trend station, and community monitoring under Section 60105(a) and expand the national ambient air quality monitoring network with new multipollutant monitoring stations; and replace and maintain existing monitors under Section 60105(b).

1

The NATTS goals also support the OAQPS Air Toxics Strategy under Data Analytics – Air toxics data collection and assessment. The EPA’s air toxics strategy can be found at:
<https://www.epa.gov/haps/air-toxics-strategy>.

DEC has reviewed the NATTS project, placement, and goals against the EPA IRA Disadvantaged Communities map that was developed using IRA funding covered by the Justice40 initiative. This Hurst Road project site is located on the northwest border of an area designated as disadvantaged and with state support greater than or equal to 90%. The site is downstream of prevailing airflows that pass through or by a portion of the disadvantaged area.

Additionally, activities supporting the air monitoring projects utilizing sensor technologies for data collection and AQI online posting in underserved rural/tribal and other EJ communities will be funded through this grant, satisfying the Justice40 initiative requirements.

OBJECTIVE 1: NEW NATTS SITE

I. Background and Overview

There are currently 187 hazardous air pollutants (HAPs), or air toxics, regulated under the Clean Air Act (CAA) that have been associated with a wide variety of adverse health effects, including cancer and neurological effects. These air toxics are emitted from multiple sources, including major stationary, area, and mobile sources, resulting in population exposure to these pollutants.

The National Air Toxics Trends Station (NATTS) program was developed to fulfill the need for long-term HAP monitoring data of consistent quality. These sites are part of a 26-site national network of air toxics monitoring stations. The primary purpose of the NATTS network is tracking trends in ambient air toxics levels to facilitate measuring progress toward emission and risk reduction goals. The monitoring network is intended, over a multi-year period, to be able to detect a 15% difference (trend) between successive 3-year annual mean concentrations within acceptable levels of decision error.

EPA also implements the National Air Toxics Assessment (NATA) to help characterize the air toxics problem. Principal NATA activities include identification of areas of concern, characterizing risks and tracking progress. These objectives may be met in part through the measurement of technically consistent ambient concentrations of air toxics at trends monitoring sites throughout the nation. They are also met through the National-Scale Air Toxics Assessment (also referred to as NATA), a screening tool based on air quality modeling. Data from NATTS are used to evaluate the modeled concentrations from this assessment.

The Alaska Department of Environmental Conservation (DEC) is currently planning its first National Air Toxics Trends Station site. The site will be constructed and operated using funding made available by the Inflation Reduction Act (IRA) of 2022 and would support a site installation in the Fairbanks North Star Borough (FNSB) nonattainment area.

II. Specific Program Goals and Strategic Targets

- Establishing a new NATTS site in the North Pole PM_{2.5} nonattainment area.
- Developing a site specific QAPP for the project
- Collecting three (3) years of air toxics data
- Reporting HAP data to AQS following the reporting schedule.
- Determining the impact of pollution levels from significant sources or source.
- Communicating findings to the affected community

III. Scope of Work

A. Description of Monitoring Network

A.1 Site Locations

The NATTS network is a collaboration between EPA (including the Office of Air Quality Planning and Standards (OAQPS) and the Regional Offices) and State, Local, and Tribal (SLT) air pollution control agencies. The network is comprised of ambient air monitoring stations in urban, suburban,

and rural locations which are representative of different parts of the country. NATTS monitoring is typically established at sites representative of neighborhood, urban, or regional scales.

The network's monitoring locations are listed at <https://www3.epa.gov/ttnamti1/natts.html> – and are representative of different parts of the country. NATTS monitoring was established at neighborhood-scale sites. DEC has one proposed NATTS monitoring site and is described below.

Hurst Road State and Local Air Monitoring Station (SLAMS) site.

The Hurst Road site is the location of the maximum impact PM_{2.5} monitor for the FNSB nonattainment area and was formerly known as North Pole Fire Station #3. The FNSB was designated nonattainment in 2009 due to an exceedance of the PM_{2.5} National Ambient Air Quality Standard (NAAQS) influenced heavily by wood smoke from solid fuel home heating.

The site is a rural to suburban neighborhood scale site surrounded primarily by single family housing and is situated on the same property as the aforementioned fire station. It is situated off a paved roadway with a traffic count below 3500 vehicles per day. The location is generally lower in elevation than the surrounding area and is affected by strong seasonal temperature inversions and low air flow, which allows for the buildup of pollutants within the airshed.

In addition to the proposed air toxics sampling, the site currently has Federal Reference Method (FRM) primary and collocation samplers, a continuous non-Federal Equivalent Method (non-FEM) PM_{2.5} monitor, Chemical Speciation Network (CSN) samplers, and a trace level FEM Sulfur Dioxide (SO₂) analyzer. These instruments are present to characterize the site, and to further assist in modeling, forecasting, and curtailment efforts, which are also supported by a 22-meter above ground level (AGL) meteorological tower.

Table 2. Planned Hurst Road NATTS Site Information.

Site Name	Hurst Road
EPA Site number	02 090 0035
Borough	Fairbanks North Star
Address	3288 Hurst Road, North Pole 99705
Latitude	64.762641
Longitude	-147.310279
Elevation	151 meters

A.2 Meteorological Measurements

Measurement of site-specific meteorological parameters is not a requirement of the NATTS Program but is highly desirable if it can be accomplished. Further information regarding in situ meteorological measurements is available in the NATTS Technical Assistance Document (<https://www.epa.gov/amtic/natts-technical-assistance-document>). If site specific meteorological monitoring is conducted, each site must provide parameter measurement details. If site specific meteorological monitoring is not conducted, each site must provide location and parameter details of the closest off-site meteorological monitoring station (i.e., National Weather Service, local airport, etc.).

Routine, continuous (reported hourly) monitoring of meteorological variables currently are being determined by direct measurement for the Hurst Road site and will continue for the duration of the NATTS monitoring.

The station currently is equipped with a 22-meter tower with sonic anemometers for vector and scalar wind direction and wind speed coupled with resistance temperature detectors (RTD) at a height of 4m, 10m, and 22m AGL. Additionally, relative humidity is measured at 4m. The station does not have rainfall sensors or ceilometers. Eielson Air Force Base (PAEI) located 9.1 miles away to the east, also has comprehensive weather data.

For further information see section “5.0 Meteorological Measurements” of the “Technical Assistance Document for the National Ambient Air Toxics Trends Station Program, Revision 4” available at <https://www.epa.gov/system/files/documents/2022-08/NATTS-TAD-Revision-4-Final-July-2022-508.pdf>.

A.3 Measured Pollutants.

The recipient agrees to measure the complete list of analytes specified in “Table 1.2-1 Analytes of Principle Interest for the NATTS Program” from the NATTS TAD, as listed below, and measured by the NATTS contract laboratory.

Table 3. NATTS analytes of principal interest to be monitored.

VOC	VOC	Metals
acrolein	1,1,2,2-tetrachloroethane	nickel
tetrachloroethylene	toluene	arsenic
benzene	1,1,2-trichloroethane	cadmium
carbon tetrachloride	1,2,4-trichlorobenzene	manganese
chloroform	m&p-xylenes	beryllium
trichloroethylene	o-xylene	lead
1,3-butadiene		antimony
vinyl chloride		chromium
acetonitrile	Carbonyl	cobalt
acrylonitrile	Acetaldehyde	selenium
bromoform	Formaldehyde	PAHS
carbon disulfide		naphthalene
chlorobenzene		benzo(a)pyrene
chloroprene		acenaphthene
p-dichlorobenzene		acenaphthylene
cis-1,3-dichloropropene		anthracene
trans-1,3-dichloropropene		benz(a)anthracene
ethyl acrylate		benzo(b)fluoranthene
ethyl benzene		benzo(e)pyrene
ethylene oxide		benzo(k)fluoranthene
hexachloro-1,3-butadiene		chrysene
methyl ethyl ketone		dibenz(a,h)anthracene
methyl isobutyl ketone		fluoranthene
methyl methacrylate		fluorene
methyl tert-butyl ether		indeno(1,2,3-cd)pyrene
methylene chloride		phenanthrene
styrene		pyrene

A.4 Sampling Methods and Minimum Detection Limits (MDL).

DEC agrees to collect samples as specified for the following methods:

- TO-15 or 15a for all VOCs to include those listed in Table 3 above, including acrolein, benzene, 1,3-butadiene, carbon tetrachloride, chloroform, perchloroethylene, trichloroethylene, and vinyl chloride.
- TO-11A for carbonyls to include acetaldehyde and formaldehyde.
- TO-13A / ASTM D 6209 for PAHs to include benzo(a)pyrene and naphthalene.
- IO 3.5 for all PM₁₀ metals to include arsenic compounds, beryllium compounds, cadmium compounds, lead compounds, manganese compounds and nickel compounds.

DEC will use the NATTS Contract Laboratory and MDLs will meet the requirements of the current NATTS TAD under section 4.1 Method Detection Limits. A table is included below with the cancer/non-cancer health risks and MDL measurement quality objectives (MQO)

Table 4. NATTS Parameter health risks and MDLs.

Pollutant	Cancer Risk 10⁻⁶ (µg/m3) as per NATTS TAD 4	Non-cancer at HQ = 0.1 (µg/m3) as per NATTS TAD 4	Required Minimum Detection Limit (µg/m3)
Acrolein	--	0.00200	0.09000
Benzene	0.13	3.00000	0.13000
Butadiene, 1,3-	0.03	0.20000	0.10000
Carbon tetrachloride	0.17	10.00000	0.17000
Chloroform	--	9.80000	0.50000
Ethylene oxide ²	0.0002	--	0.05400
Tetrachloroethylene	3.8462	4.00000	0.17000
Trichloroethylene	0.2083	0.2000	0.20000
Vinyl Chloride	0.11	10.00000	0.11000
Acetaldehyde	0.45	0.90000	0.45000
Formaldehyde	0.08	0.98	0.08000
Benzo(a)pyrene	0.00057	--	0.00091
Naphthalene	0.0294	0.4	0.02900
Arsenic compounds (PM ₁₀)	0.00023	0.0015	0.00023
Beryllium compounds	0.00042	0.00200	0.00042
Cadmium compounds	0.00056	0.001	0.00056
Lead compounds (PM ₁₀)	--	0.01500	0.01500
Manganese compounds	--	0.03	0.00500
Nickel compounds (PM ₁₀)	0.0021	0.00900	0.00210

A.5 Sampling Frequency, Duration, and Quantity.

DEC agrees to monitor for all pollutants at a 1 in 6 day frequency on EPA's sampling schedule <https://www.epa.gov/amtic/sampling-schedule-calendar>. The minimum numbers of samples required for the grant period of January 1, 2026 through December 31, 2028 is indicated in the table below.

Table 5. Number of samples per site, per method, per year.

Year		Hurst Primary	Field Blanks	Base Total
From Jan 1, 2026	Carbonyls	61	12	73
	VOCs	61	0	61
	Metals	61	12	73
	PAHs	61	12	73
2027	Carbonyls	61	12	73
	VOCs	61	0	61
	Metals	61	12	73
	PAHs	61	12	73
To Dec 31, 2028	Carbonyls	61	12	73
	VOCs	61	0	61
	Metals	61	12	73
	PAHs	61	12	73
	Total	732	108	1120

A.6 Precision Measurements.

For method precision measurements, if capability for duplicate or collocated monitoring exists, a minimum of 10% (6 samples) as shown in the table below is required. Currently, DEC does not have the capability of performing collocated samples. DEC will reassess if this capability exists prior to each year of operation to determine if a change is warranted. If capacity allows, DEC will work with EPA Region 10 and the Office of Air Quality Planning and Standards (OAQPS) regarding a modification to the workplan.

Analytical labs are required to perform replicate analysis for all pollutant categories to demonstrate analytical precision (6 replicate analyses). As this will be Alaska's only NATTS site, there will be a total of 61 samples per year per method. This means that there needs to be a total of 6 replicates to reach the 10% requirement.

B. Training and Travel

DEC intends to use funds from this grant to pay for staff to attend the National Air Toxic Conference or the National Ambient Air Monitoring Conference, whichever conference is held during the first year of the grant.

C. Quality Assurance Project and Quality Management Plans

Quality Assurance is an integral part of the NATTS program. OAQPS and the EPA Regional Offices review and track QA information in order to comply with the performance measures (i.e., Data Quality Objectives and Measurement Quality Objectives) that have been established for the program. The DQO and MQOs for the program are in the following document: The National Air Toxics Trends Stations Quality Management Plan, located at <https://www.epa.gov/amtic/air-toxics-monitoring-qa-reports>.

Outside of DEC's normal quality assurance checks, the EPA requires that the State and Local agencies that support the NATTS participate in the following activities:

- Follow all quality control guidance and requirements as detailed in the NATTS TAD data validation tables. (<https://www.epa.gov/amtic/natts-technical-assistance-document>)
- Analyze the quarterly Proficiency Testing (PT) samples that are provided by the designated EPA contractor.
- Annually review and, if needed, update the prior year Quality Assurance Project Plans (QAPPs) and associated Standard Operating Procedures (SOPs). The QAPP shall provide a level of detail and organization that is consistent with the new EPA Directive CIO 2105-S-02.0 Quality Assurance Project Plan Standard, located at [EPA IT/IM Directive: Quality Assurance Project Plan Standard, Directive # CIO 2105-S-02.0](#).
- DEC agrees to comply with the requirements of Quality Policy (CIO 2105.1) and Quality Procedure (CIO 2105-P-01.1), <https://www.epa.gov/irmpoli8/environmental-information-quality-policy> .
- Submit air toxics collocated, duplicate and replicate data, as applicable, to the AQS database within 180 days after the end of the quarter.
- Participate in NATTS teleconference calls that are initiated by OAQPS.
- Participate in Regional air toxics monitoring teleconferences.
- Provide OAQPS and/or their QA contractor with updated (not less than annually) method detection limits (MDLs) as required in the NATTS PT program.
- Participate in OAQPS-instituted Technical Systems Audits.
- Participate in providing corrective action plans to address audit findings resulting from the technical systems audits.

D. Workplan Activities

D1. Monitoring Network Coordination and Oversight

DEC will create and submit and Air Toxics QAPP to Region 10 EPA by the end of 3rd Quarter 2025 using the EPA's 2023 NATTS TAD.

D2. Network Operation and Maintenance

NATTS sites are expected to operate over not less than a six-year period for assessments of national trends. Within a given year, data quality objectives will be met at a particular monitoring site if samples are collected on a 1-in-6 day sampling schedule with at least an 85% quarterly completeness. Monitoring data should be submitted to the Air Quality System (AQS) within 180 days of completing a data collection quarter.

DEC will collect field blanks at the site and conduct flow audits and leak checks for all methods as specified in the NATTS TAD and approved QAPP.

The Inflation Reduction Act (IRA) grant funding for this project is expected to allow for 3 years of data collection. DEC will assess the status of the project after the second year of data collection and

determine if the analysis supports continued data collection and site funding and staffing are sustainable.

D3. Data Management and Reporting

The data management and reporting of data from the Hurst Road NATTS sites will follow the procedures identified below:

- Report all quality assured ambient monitoring data to the U.S. EPA's Air Quality System (AQS) Database (<http://www.epa.gov/ttn/airs/airsaqs>) on a quarterly schedule within 180 days of completing a data collection quarter.
- Follow all guidelines and procedures as detailed in the NATTS Technical Assistance Document (available on AMTIC) which include, but are not limited to, the following:
 - Include values below MDL; under no circumstances are data value substitutions (e.g., ½ MDL) acceptable. Values reported below MDL must be flagged appropriately.
 - Sample-specific "alternate" MDLs (the unique MDL generated for each individual sample) must be included with data reported to AQS.
 - Reporting units for all data, to include MDLs, must be as specified in the NATTS TAD (i.e., ppbv, µg/m³, ng/m³) specific to each target pollutant.
 - Units of mass per cartridge or filter are not acceptable.
 - For each monitor, in addition to the AQS required "Reporting" agency and "PQAO", report the "Collecting" and "Analyzing" agencies.
- Thereafter, only subsequent changes need be entered.
- Submit quality assurance data (collocated, duplicate and replicate), as applicable, to the AQS database within 180 days after the end of the quarter.
 - Definitions for collocated, duplicate, and replicate data (*as well as associated requisite reporting procedures*) are provided in the NATTS TAD.

E. Outputs

Each successful annual NATTS site operation will result in the collection of a year's worth of quality assured ambient air toxics measurements for selected HAPs with submittal to the national Air Quality System Database (AQS).

F. Environmental Outcomes/goals

- Characterizing ambient levels of air toxics within the community.
- Providing quality assured HAP data for trends determination.
- Providing quality assured HAPs data for risk characterization.
- Increased community awareness.
- Assessing the effectiveness of specific emission reduction activities.
- Better understanding of air toxics present or formed in arctic environments.

G. Performance Measures

It is expected that the description of performance measures will directly relate to the project outcomes and outputs (see previous section). These include, but are not limited to:

- Overseeing subrecipients, and/or contractors and vendors;
- Tracking data completeness goals for the NATTS network of 85%;
- Identification of air toxics which may help with community health assessments;
- Providing public access to validated air toxics data as available for community awareness in the non-attainment area and the adjacent Justice40 community;
- Tracking and reporting of annual data in periodic summary reports;
- Tracking and reporting project progress on expenditures and purchases on a semiannual basis; and
- Tracking, measuring, and reporting accomplishments and proposed timelines/milestones, see timeline in Section H.

H. Workplan Components and Timelines

The work plan components for this Objective include the following:

- DEC will begin instrument selection and procurement beginning shortly after the grant award in January of 2025;
- QAPP development will be begin by the 2nd calendar quarter of 2025 and submitted to EPA for review by the end of calendar quarter 3;
- Instrument testing and site staff hiring will begin in 3rd quarter of 2025;
- For the 4-year grant period, DEC will dedicate roughly ½ FTE to the new NATTS site, with the other ½ FTE covering the sensor network from Objective 2. DEC plans to hire one new staff at the beginning of the 3rd calendar quarter of 2025.
- Site installation of equipment will begin by the 4th quarter of 2025;
- Data collection starting in the 1st calendar quarter of 2026.
- Upon successful completion of the grant at the end of the 4th quarter of 2029, with sufficient funding and need, DEC will transition the NATTS monitoring to PPG.
- DEC will provide semiannual progress reports starting in calendar quarter 3, and provide a final project report at the end of the grant period

Table 6. Objective 1 Timeline Chart

NAATS site	CY25				CY 26				CY 27				CY 28				CY 29
Calendar year quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
grant award (Jan 2025)																	
Instrument selection and procurement																	
QAPP development																	
Instrument testing																	
Recruitment and hire																	
Site installation																	
Data collection																	
Semiannual progress reports																	
Project end																	
Final report																	

J. Roles and responsibilities of the recipient and EPA in carrying out the workplan commitments.

DEC' roles and responsibilities are listed above in Sections III. EPA will not have substantial involvement. EPA will be responsible for the following:

- Review and approval of site selection for any new monitoring sites.
- Reviewing and commenting on any documents under this agreement (i.e. new or revised QAPPs and SOPs)
- Review and approval of any change request to the equipment listed the approved workplan and budget
- Reviewing and commenting on semi-annual progress reports

K. Performance Evaluation and Reporting Requirements

DEC will provide performance progress to EPA semiannually for all workplan components that will describe the progress on completion of workplan objectives and work performed for all workplan components that will reflect the anticipated outputs in the associated CAA 103 IRA workplan. The report will also include a discussion of any existing or potential problems or items of concern that could affect project completion and measures that will be taken to address or correct the identified problem. Additionally, DEC will provide a final progress report when all workplan components are completed.

L. Budget

DEC will use the first grant year to select instrumentation, prepare the monitoring site and develop project plans using existing staff. In mid-year, DEC will recruit for a dedicated staff who will work on both grant objectives.