Impact of Transportation-Related Air Quality in the Fairview Neighborhood of Anchorage, Alaska

Quality Assurance Project Plan for NeighborWorks Alaska and Fairview Community Council

April 2022

Project Name: Impact of Transportation-Related Air Quality in the Fairview Neighborhood of Anchorage, Alaska

Effective Date of Plan:

Name(s) who prepared the plan:

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Distribution List

- Will Wallace, Quality Assurance Coordinator – US EPA Region 10
- Barbara Trost, Air Quality Program Manager – Alaska Department of Environmental Conservation
- Matthew Stichick, Environmental Services Manager – Anchorage Health Department
- Allen Kemplen and Sharon Chamard, Executive Board – Fairview Community Council
- Public website: www.nwalaska.org

Introduction and Purpose

The Fairview Community Council (FVCC) is working in partnership with NeighborWorks Alaska (NWAK), the State of Alaska Department of Environmental Conservation (DEC) Air Division, and the Anchorage Health Department (AHD) to collaborate on an air quality monitoring project in the neighborhood of Fairview in Anchorage, Alaska. This project is possible through the EPA's Environmental Justice Small grant, awarded for January 1, 2022 – December 31, 2022.

FVCC and NWAK, with the assistance of DEC's Air Monitoring and Quality Assurance Program, will sponsor a citizen-led saturation study in Fairview during the summer and fall of 2022 focusing on the overall ambient air quality. A saturation study places many air monitors throughout a study area to evaluate the local air quality patterns. For this study, fine particulate matter ($PM_{2.5}$) is an indicator for traffic related combustion sources, like vehicle and aircraft exhaust. Other sources that might impact the measurements are home heating emissions, neighborhood grilling activities, as well as wildfire smoke. With the support of DEC, residents will establish a dense network of approximately 20 Purple Air PA-II-SD (PA) real-time particulate matter sensors to assess $PM_{2.5}$ levels along the highway and the Merrill Field airport in Fairview.

The study objectives are:

- to increase public understanding of air quality and air monitoring through community engagement and education;
- to address ambient air quality complaints centered on transportation emissions;
- to determine which areas of Fairview are most affected by $PM_{2.5}$;
- to assess if the scale in terms of frequency, duration, spatial variability and severity of these impacts has the potential to significantly affect public health and/or violate Clean Air Act air quality standards.

Problem Definition, Background, and Project Description

Problem Definition

Air quality within Anchorage, Alaska, impacted by transportation-related emissions can potentially have negative impacts on public health, especially within systematically underserved communities. Currently only two regulatory air monitoring sites exist within the Anchorage

Bowl. This project will establish a network of PurpleAir low-cost air monitoring sensors with a focus on $PM_{2.5}$ within the Fairview neighborhood, and involve community members to engage in the monitoring and educate each other throughout the process.

Background

The Fairview Community Council area is located east of Downtown Anchorage and is one of the city's oldest neighborhoods. Fairview has a population of approximately 7,918 individuals in 3,290 households, according to 2014-2018 American Community Survey (ACS) estimates. The 1.33 square mile community consists of Census Tracts 9.02, 10 and the western sections of Census Tracts 9.01 and 6 (see "Other Attachments" for a map). The area is demographically disadvantaged, both within Alaska and EPA Region 10. Nearly half of the population (47%) is low income and 15 percent of the population has less than a high school education--twice the state percentage. People of color comprise a sizeable part of the population (62%) and seven percent of the population is linguistically isolated. Eighty-four percent of occupied housing units are rentals.[1]

Fifty years ago, the city and state converted two local streets to serve as high-speed arterials connecting the Glenn and Seward Highways, effectively creating a highway of an eight-lane couplet separated by one street and averaging 25,000 vehicle trips per day.[2] Fairview is also bounded on the east by the Municipally-owned Merrill Field, one of the nation's busiest general aviation airfields. Aircraft frequently violate published departure procedures and conduct air operations below the required minimum elevations for an urban area. This results in significant disproportionate environmental and public health harms relative to Anchorage, Alaska, and EPA Region 10. The affected area is in the 98th percentile in Alaska and 89th percentile in the United States for traffic proximity and volume.[3]

The area experiences increased noise associated with traffic, decreased air quality (Fairview is in the 95-96th percentile in Alaska for NATA Diesel PM, NATA Air Toxics Cancer Risk, and the NATA Respiratory Hazard Index)[4] and decreased pedestrian safety. Anchorage received a grade of F by the American Lung Association in their 2021 "State of the Air" report for short-term particle pollution (PM 2.5).[5] A November 2020 article in *Frontiers in Public Health* revealed a significant correlation between air pollution and COVID-19 infections and mortalities. The available data also indicates that exposure to air pollution may influence COVID-19 transmission.[6]

High volumes of congested Interstate traffic spew particulates and greenhouse gases into the neighborhood airshed. The intent to advance an at-grade interstate connection will only make

[1] EJSCREEN ACS Summary Report
[2] See http://www.dot.alaska.gov/stwdplng/transdata/traffic_AADT_map.shtml
[3] EJSCREEN Report
[4] EJSCREEN Report
[5] Press Releases | American Lung Association
[6] Frontiers | The Effects of Air Pollution on COVID-19 Infection and Mortality—A Review on Recent Evidence | Public Health (frontiersin.org)

the problems worse. It is critical that the new facility be placed below grade and covered over with green spaces so that the neighborhood can breathe healthy again. Such an option is more expensive, and established vested interests are deeply concerned about costs versus benefits. Cleaner air in the community keeps people healthier, including safer from COVID-19.

To date there has not been a comprehensive air monitoring study specific to the Fairview neighborhood. Currently there is only one (PA) air sensor located within Fairview, "USFWS_ANC_02" located at Orca Street and E 16th Terrace.

Project Description

Over the course of the summer and fall, the community will experience variability in air quality. The impacts depend on the local meteorology, the number and types of vehicles using the Gambell-Ingra corridor, and the number and types of aircraft at Merrill Field, as well as surrounding activities in the community that can contribute to localized pollution (for example, idling vehicles within the neighborhood on cold days, or home heating emissions). Variability in weather is one of the dominating factors for whether an area is impacted and for how long. The other factor is the emission source.

The citizen science project will use approximately 20 PurpleAir PA-II PM Sensors (https://www.purpleair.com/sensors) distributed throughout Fairview to record particulate matter concentrations throughout the community. For this study $PM_{2.5}$ is considered a tracer for exhaust plumes. To better distinguish which source is contributing to the measurements, the fine time resolution $PM_{2.5}$ data will be correlated to traffic counts at 2-3 locations.

Sampling locations will be identified throughout the Fairview neighborhood with preference to locations regularly spaced, near the highway corridor and Merrill Field, as well as further away, and within the Chester Creek low-lying area. Locations will need access to power and wifi. A map will be provided with the final report.

Project Objectives

The study objectives are:

- to increase public understanding of air monitoring through community engagement and education;
- to address ambient air quality complaints centered on transportation emissions;
- to determine which areas of Fairview are most affected by $PM_{2.5}$;
- to assess if the scale in terms of frequency, duration, spatial variability and severity of these impacts has the potential to significantly affect public health and/or violate Clean Air Act air quality standards.

Project Sites or Study Area

This study is being coordinated by the Fairview Community Council, which is recognized by the Municipality of Anchorage as the official body to voice the common concerns, goals and

planning objectives of the Fairview neighborhood. The community council boundaries are defined in municipal code.

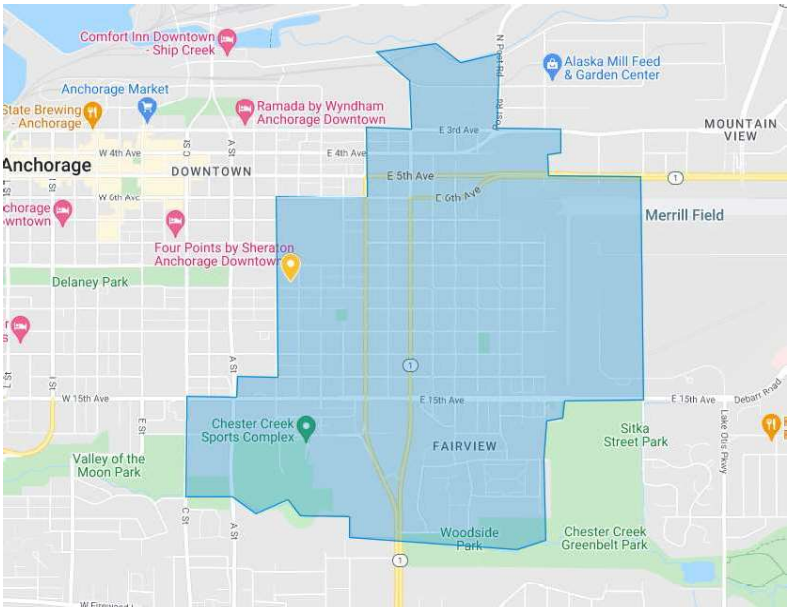


Figure 1 Map of Fairview Community Council in relation to neighboring councils within Anchorage, Alaska. FVCC area is marked in blue.

Proposed sensor locations are indicated as purple circles on the map in Figure 2. Final sensor location will depend on access to power, wifi and volunteers. Actual monitor locations and site characteristics will and be detailed in the final report.

Time Period

Due to the timing of the EPA Environmental Justice grant project period, air monitoring will be set up in April 2022 and monitored through October 2022 for analysis and reporting purposes. The intention is to continue to engage residents into the winter of 2022-2023. The Fairview community is subject to negative air quality impacts, particularly during winter months, when periodic high-pressure air systems move over the Anchorage Bowl and create temperature inversions that trap automotive-generated pollutants.

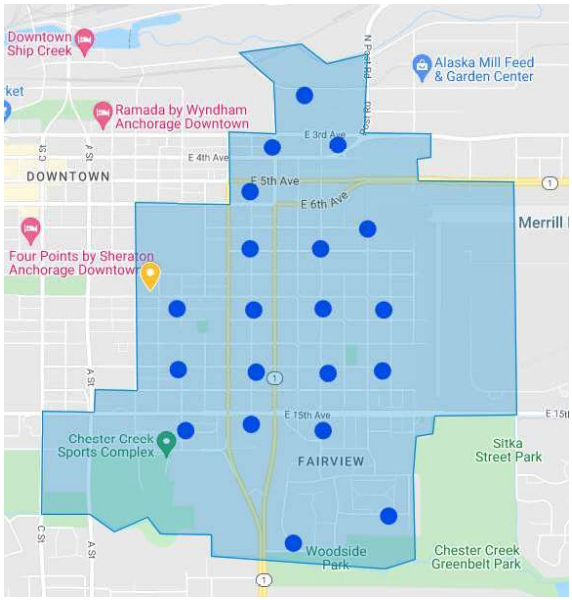


Figure 2 Proposed sensor locations within the Fairview Community Council boundaries.

PurpleAir monitors will be installed in April 2022, and collect data at least through October 2022 for a minimum of six months of data collection. The analysis and report will be shared with the Fairview community in November 2022 before the holidays.

Data Users

The project will educate the public, especially residents of the Fairview neighborhood. Data will be uploaded to the PurpleAir monitoring map and appear throughout Anchorage (https://map.purpleair.com/1/mAQI/a30/p604800/cC0#11/61.1779/-149.9202). Data will also be shared out on a project-specific website, "Voices of Fairview," linking to the PA website. Data will be downloaded and binned into the appropriate time intervals to compare with traffic counts, and other data that can help determine the source of periodically-elevated particulate matter concentration. The data will be summarized in the final project report and will be electronically available for future use by the community.

Data Quality Objectives and Indicators

This project will include continuous measurements of $PM_{2.5}$ to be collected at both five-minute and one-hour intervals for a duration of six months, so that fine particle concentration data may be assessed for correlation with highway or airport traffic counts and meteorological conditions to the greatest resolution and confidence that the extent of corollary factor data may allow.

$PM_{2.5}$ data bias, precision, and comparability

Purple Air (PA) sensors are low-cost portable air sensors designed for use in non-regulatory applications. They are factory calibrated and cannot be adjusted by the end user. No in-field calibrations or adjustments will occur during the study. The focus of the study is to compare the particulate matter sensors to each other to assess if air quality impacts from highway and airport traffic can be measured and how far they reach into the community.

To evaluate individual monitor precision and comparability, all twenty PA samples will operate in a collocated setting for two 72-hour periods, one prior to and another following their six months of site deployment. This intercomparison will occur at one of the volunteer locations and will rely on the data collected using the sensor SD cards, since it will be difficult to find a location that can support 20 sensors with Wi-Fi. All sensors will be compared to the average of the sensors in the network, by correlating the 5 minute and hourly averages of the individual sensors to the averages of the 20 sensors. Should the 72-hour comparison not contain sufficiently high concentration levels, another post study comparison will be conducted at another location or in a controlled test environment (smoke chamber).

The second 72 hours collocation period after site deployment is intended to verify that sampler response characteristics have not changed significantly since the initial 72-hour comparison period.

Sensor accuracy will be evaluated by collocating one PA sensor next to the Federal Equivalent Method (FEM) $PM_{2.5}$ BAM monitor at DEC's Anchorage Trinity Church monitoring site for the entire monitoring effort. The data averaging time for the analysis will be 1-hour to be commensurate to the $PM_{2.5}$ measurements of the BAM. This BAM-collocated sensor will hence-forth be referred to as the *Reference PA Sensor*. Coincident data obtained during its six-month collocation with BAM will be used to establish a linear correction factor for the *Reference PA Sensor* to achieve a least-squares regression for hourly data from the *Reference PA Sensor* paired against values from the BAM. That correction factor will subsequently be applied to raw data that the *Reference PA Sensor* acquires during its final 72-hour collocation with the remainder of PA sensors following their six months of neighborhood sites data collection. Corrected (BAM normalized) data from the *Reference PA Sensor* collected during the post-study 72-hour collocate test will be used as the accepted value to assess accuracy and bias for the remaining 19 field sensors.

Collocated data collected both at the beginning and end of the study, will thus provide for evaluation of individual PA sensor precision (and possible drift in individual sensor response) when compared to the group mean 72-hour average value obtained by each PA sensor during both its pre-study and post-study collocate tests. We expect the 72-hour average value obtained independently from each PA sensor to be within ±30% of the 72-hour average PA sensors group mean resulting from collocation tests performed both before and following sensors being deployed to neighborhood sites.

PA sensor accuracy will be determined as % Error as determined solely from the post-deployment 72-hour collocate test of all PA sensors. The BAM-normalized, 72-hour average from the PA Reference Sensor will be applied as the Accepted (True) 72-hour mean to determine % Error for each of the remaining 19 PA sensors that were deployed to neighborhood sites.

$$\%\ Error = \frac{[Measured - True]}{True} * 100$$

$PM_{2.5}$ data representativeness and completeness

Deployment of 19 monitors to collect continuous PM values throughout Fairview for approximately six months will provide the measurements needed to identify potential hotspots and assess what concentration of particulates residents are breathing at different locations and under a variety of meteorological conditions and transportation scenarios.

The data completeness goal is ≥ 75 % data recovery for hourly averages from late April to early October.

The following table summarizes the data quality indicators that will be used for the assessment of the Measurement Quality Objectives (MQOs) Data not meeting the MQOs will be flagged and annotated for the failed DQO:

Data Quality Indicators (DQI)	Quality control activities and checks	DQI goals
Precision	Collocated instruments are run concurrently (or side by side)	30% RPD (relative percent deviation from the collocated mean hourly average value)
Bias	Compared to PA Reference Sensor (BAM normalized) Collocate Test Data	Data are not biased in a particular direction (RPD < 20% for the 72-Hr test average values ≥ 5 ug/m^3).
Representativeness	Evaluate whether the data in terms of spatial (distance from sources) and temporal (seasonal) for baseline. Evaluate significant events that may impact results.	Sample at various distances from highway corridor and airfield. This round of data will establish a summer-fall baseline for this phase of study.
Completeness	Evaluate percent of samples collected	≥75% of full hourly average data set is minimum goal for each sensor.
Comparability	Reference PA Sensor will be correlated to the FEM BAM at the Garden FEM site (Anchorage Trinity Church) Assessment period is 72-hour collocate, individual sensor against the mean of the 20-sensor collective	Agreement for the individual sensor against the mean of the collective to be within ±50% of the PA sensors at comparison sites for concentration over 3 ug/m3

Project Schedule

Activities	Group/Person responsible for activity completion	Timeframe
Develop Quality Assurance Project Plan, revise as necessary	Lindsey Hajduk, NWAK	January – March 2022
Plan volunteer program, recruit resident and business owners to host PA monitors	Allen Kemplen & Sharon Chamard, FVCC	January – March 2022
Purchase and acquire PA monitors	Lindsey Hajduk, NWAK	February 2022

Identify placement locations	Allen Kemplen & Sharon Chamard, FVCC	February – March 2022
PA monitor linearity tests	Barbara Trost, DEC Matthew Stichick, AHD	March 2022, and October 2022
Host training to PA monitor volunteers	Allen Kemplen & Sharon Chamard, FVCC	April 2022
Install air monitoring sensor pods	Allen Kemplen & Sharon Chamard, FVCC	April 2022
Collect air monitoring data and conduct field checks	Allen Kemplen & Sharon Chamard, FVCC	April – October 2022
Analyze collected air quality data, including data validation and reduction	Barbara Trost, DEC Matthew Stichick, AHD	October – November 2022
Host air quality community workshop	Allen Kemplen & Sharon Chamard, FVCC	November/December 2022
Prepare final report	Lindsey Hajduk, NWAK	November/December 2022

Training and Specialized Experience

Training

Personnel/Group to be Trained	Description of Training (including trainers)	Frequency of Training
Air monitoring collection training: Residents and business owners that volunteer to host air monitor sites (10-20 volunteers, some may have multiple sites)	AHD and DEC air quality specialists to understand how the PA monitors work, will be set up, and maintained	Beginning of monitoring program, then as-needed if there are additional volunteers
Data management: For project management and FVCC steering team	AHD and DEC air quality specialists to ensure proper data collection and management	Beginning of monitoring program, and conclusion

Specialized Experience

The partnership with the Alaska Department of Environmental Conservation and Anchorage Health Department are critical for the success of this project. ADEC's Division of Air Quality, Air Monitoring and Quality Assurance Program is managed by Barbara Trost, with relevant supporting documentation available here, https://dec.alaska.gov/air/air-monitoring/. This program operates ambient air quality monitoring networks to assess compliance with National Ambient Air Quality Standards (NAAQS), assesses ambient air quality for toxics, provides

technical assistance in developing monitoring plans and projects, and issues air advisories as needed.

The Anchorage Health Department's Environmental Services Program includes the municipality's Air Quality Program, which is responsible for monitoring and reporting levels of air pollutants and fine particles. Additional supporting documentation is available here, https://www.muni.org/Departments/health/Admin/environment/AirQ/Pages/default.aspx.

Person	Specialized Experience	Years of Experience
Barbara Trost	ADEC Environmental Program Manager	30
Matthew Stichick	AHD Environmental Services Program	20

Documents and Records

Document or record	Description	Person responsible
Document Control	Once the QAPP is finalized, all parties and volunteers will use the same document, which will be available on the project website.	Lindsey Hajduk, NWAK
Data Generation	Field data will be sent directly to the PA monitoring website. Study data will be downloaded and collected in Excel spreadsheets to be provided to ADEC for analysis.	Barbara Trost, ADEC
Data Report Package	Records and documents in the final data report will include raw QA and field data, summarized data, and meteorological data from NWS databases.	Lindsey Hajduk, NWAK
Reporting Format	Electronic reports will be provided, and hard copies of summary and educational materials will be distributed to community members	Allen Kemplen & Sharon Chamard, FVCC
Storage	ADEC will store documents in accordance to their policy for the retention and disposition of files.	Barbara Trost, ADEC

Existing Data and Data from Other Sources

Existing Data & Sources	Ten current PA air monitors are set up within the Anchorage Bowl, as well as two air monitoring stations managed by ADEC. The Alaska Department of Transportation has estimates of transportation activities, including traffic count data provided over the course of one week in June or July, as well as continuous daily traffic

	counts at one location (E 20th Ave and Ingra Street). Data files can be accessed here: https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp . FVCC is requesting that DOT and AMATS potentially will conduct traffic counts at several spots along the highway corridor to align with seasonal counts. Meteorological data will also be accessed.
Data Usage	Air monitoring data outside of the Fairview area may offer comparisons across the city. Transportation usage data can be paired with real-time air monitoring data to estimate the source of emissions. Meteorological data will be used to compare weather and impacts to air quality.
Requirements and Limitations	The project focus is on public education and awareness. The project will be clear about the limitations to any data sources or relationships to the public and will not make causal associations if the data cannot justify it.

Sampling Design and Data Collection Methods

Sampling Design

Even though EPA set the averaging period for the National Ambient Air Quality Standard for fine particulate matter at a 24-hour period, in this study $PM_{2.5}$ will function as representative indicator of relative impacts from a broader scope mobile source pollutants originating from the transiting Glenn and Seward highways and the fully encompassed Merrill Field Airport. $PM_{2.5}$concentrations will be assessed in shorter time intervals from minutes to hourly averages, as well as the 24 hour average. The objective of the saturation study is to determine high-impact locations within the study area and to evaluate if sufficient impact can be measured to warrant a future in-depth study.

Residents have long wondered about the health impacts of having the highway bisect the neighborhood. Concerns are growing as there is talk of expanding the highway, and residents have raised concerns about jet fuel smells in the air, especially during temperature inversions. Sampling locations will be selected to measure if $PM_{2.5}$ vary depending on distance to the highway corridor and airfield.

The PA sensors will be equipped with a wireless transmitter, which will report the instantaneous reading to the PurpleAir website. Data will be displayed on the PurpleAir map website and linked to the “Voices of Fairview” website. The map will be updated hourly. The hourly averaged data will be compared to meteorological data and transportation speed

studies from the State of Alaska Department of Transportation and the local Metropolitan Planning Organization (AMATS) to evaluate source contribution. The samplers will be left in field collecting data during the entire study period to evaluate the difference in air quality seasonally.

The PA sensors are also equipped with a SD card that stores all data. Should the wireless connections fail, the data from these cards will be downloaded to minimize data loss.

$PM_{2.5}$ Measurement Methods

$PM_{2.5}$ concentrations will be measured using the PurpleAir PA-II PM Sensor (https://www.purpleair.com/sensors, performance specification are presented in Table 1). The PA sensor uses a fan to draw air past a small laser. The reflections of the light from the particles in the air is counted. The PA-II is equipped with two sensors which measure and report particle concentrations in six sizes between 0.3µm and 10µm diameter. Each sensor measures a one-second-long particle count approximately every 80 seconds. The second sensor count is offset by 30 seconds from the first allowing for one-second-averaged particle measurements. Temperature, relative humidity and pressure values are also recorded. The sensors are calibrated by the manufacturer to associate a particle size with particle mass and estimate total mass for $PM_{1.0}$, $PM_{2.5}$ and PM_{10}. Readings are then uploaded to the cloud approximately every 80 seconds where they are stored for download and display on the PurpleAir map.

The PA samplers have been compared to continuous $PM_{2.5}$ analyzers in previous studies (http://www.aqmd.gov/aq-spec/sensordetail/purpleair) and have shown high correlation and linearity. For this study one PA sensor will be correlated to the $PM_{2.5}$ BAM at Anchorage Trinity Church SLAMS site for the entire study and all PAs will be correlated to the each other prior and after the monitoring effort. The comparison studies will be used to assess linearity between PA samplers by calculating averages for each sensor that can be compared to the mean response of all the sensors.

Table 1: PurpleAir PA-II specifications.

Range of measurement	0.3~1.0; 1.0~2.5; 2.5~10 Micrometer (µm)
Counting Efficiency:	50%@0.3µm 98%@>=0.5µm
Effective Range:	0~500 µg/m³
Maximum Range:	* ≥1000 µg/m³
Resolution:	1 µg/m³
Maximum Consistency Error:	±10%@100~500µg/m³ ±10µg/m³@0~100µg/m³
Standard Volume:	0.1 Liter (L)
Single Response Time:	≤1 Second
Total Response Time:	≤10 Seconds

Sample Handling and Custody

This study does not include the collection of particulate samples requiring handling procedures.

Analytical Methods

This study does not necessitate laboratory analysis.

Quality Control

The key component of the study's quality control program will be collocated measurements of all PurpleAir samplers to a reference device as well as each other in order to verify sampler performance and comparability under actual field conditions. One PA sensor will installed within 4 meters of the Anchorage Trinity Church $PM_{2.5}$ BAM inlet and at essentially the same height for the entire field study. Prior to the collocation at the regulatory site, all PAs will be compared to each other for at least 72 hours. This linearity test will be repeated for at least three days immediately following the study to verify that sampler response has not changed significantly.

Each PA-II sampler contains two factory-calibrated PM sensors which measure particulate matter. Data from both sensors will regularly be compared to each other to check for drift. If PM values from sensors within the same sampler are found to markedly diverge over time, an audit of the sampler will be conducted. If one sensor shows excessive drift from the true audit value it will be replaced. If data from both sensors are unreasonable the sampler will be replaced with a spare. Two spare samplers will be available for swapping. If additional spare sensors are needed during the study they will be ordered.

Data from the samplers will be reviewed daily or as practical for consistency and reasonableness in order to identify any potential instrument related problems. If a problem is noted it will be promptly investigated and remedied or the sampler will be replaced.

Proper siting and operation according to manufacturer's recommendations will increase the likelihood of collecting good data. Sensors will be regularly inspected and cleaned to prevent buildup of bugs, dirt, cobwebs, etc. Volunteers will be trained in how to do these visual inspections to ensure the sensors are clean, attached correctly, etc. Sensor data will be reviewed for odd patterns, a decrease in overall response or other unusual features and sensors will be replaced if these anomalies occur.

A logbook will be used to record any sensor and site maintenance and issues as well as weather conditions during site visits.

Instrument Testing and Maintenance

All equipment will be verified to be functional and accurate before placed in the field. Should the instrument appear to be operating out of specifications, the manufacturer will be contacted.

Instrument Calibration

As noted above, the PA samplers are factory calibrated and cannot be adjusted in the field. The calibrations will be checked and verified prior to and after deployment in the field by collocation with an FEM monitor, and evaluated by audits during the field study.

Non-direct Measurements

This section addresses data not obtained by direct, study-specific measurements. This includes both outside data and historical monitoring data. It is anticipated that routine data collected by the Alaska DEC will be used during analysis. Additional "non-direct" data could include the following elements:

- Sampler operation and manufacturers literature
- Geographic location
- Meso West and NWS meteorological data

Data Management

Upon completion of the field sampling, the data will be reviewed and validated to provide a data set with any invalid data removed. Adjustment factors for each PA sampler will be finalized based on the results of the collocated monitoring and applied to the data. Comma delimited files will be generated for all data, with "time-ending" time stamps.

Data Review and Validation

Data validation is a combination of checking that data processing operations have been carried out correctly and of monitoring the quality of the field operations. Data validation can identify problems in either of these areas by reviewing data for accuracy, completeness and internal consistency. Once problems are identified, the data can be corrected or invalidated, and corrective actions can be taken. As noted in sections above, the data will be reviewed on a regular basis, during which most data validation issues will be identified. DEC will lead data validation with assistance from the project manager and AHD staff. Should issues arise that need a final decision on data flagging or invalidation, the DEC Quality Assurance Officer will make that decision.

Data will only be invalidated for known, identified instrument issues, as documented by the field technicians. Hourly averaged data must contain valid data points for at least 75% of the averaging period. As there is a possibility of slight negative drift in the responses of the PurpleAir samplers, negative values will not be altered.

The primary means of validating the collected data will be through review of data downloaded into Excel spreadsheets. This allows for the displaying of data in a variety of ways to facilitate the review process. Again, the validation process is a regular, ongoing effort throughout the monitoring period. The review process will incorporate the following:

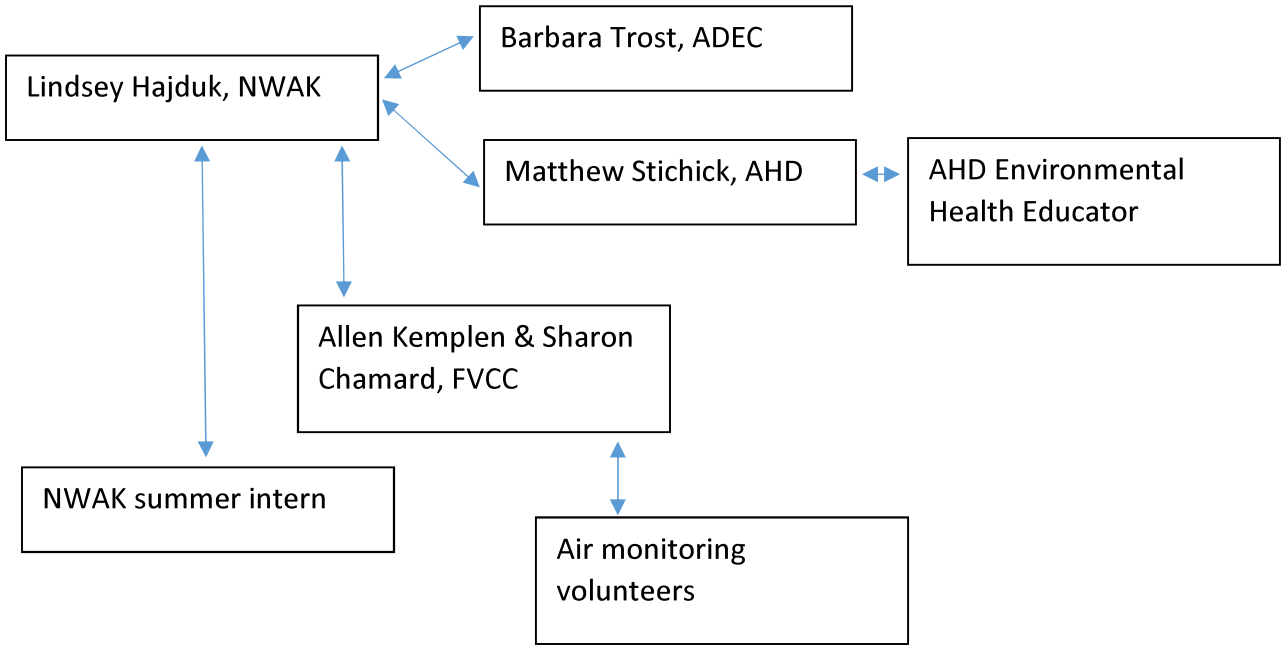
- Range checks
- Internal consistency between samplers
- Reasonableness checks based on reviewers' experience
- Consistency with QC documentation

A checklist may be developed and used for each monitoring site to assure that validation of the data is documented and performed consistently.

Reporting

The data results will be conveyed to the end users via the data reports. These reports will contain results from data assessment and validation tasks, along with case narrative summaries of operations. The quality of the reported data and any limitations on use will be defined and reported in objective measures. If the defined data quality objectives are inadequate for the intended use of the data, these issues will be discussed in the data summary and analysis section of the data reports. A draft report will be available by the end of 2022 and shared during a community workshop with Fairview residents, including those that host the PA monitors. A final report will be issued after all data have been completely reviewed and any public comments addressed.

Project Organization and Chart



Project Organization

Name	Title	Organizational Affiliation	Responsibilities
Lindsey Hajduk	Director of Community Engagement	NeighborWorks Alaska	Project management, coordination, intern supervision
Allen Kemplen	President	Fairview Community Council	Community outreach and recruitment, on-the-ground eyes and ears, maintenance of monitors
Sharon Chamard	Treasurer	Fairview Community Council	Community outreach and recruitment, on-the-ground eyes and ears, maintenance of monitors
Barbara Trost	Environmental Program Manager	Alaska Department of Environmental Conservation	Technical assistance, monitor testing and calibration, data acquisition and analysis
Matthew Stichick	Environmental Services Program	Anchorage Health Department	Technical assistance, monitor testing and calibration, data acquisition and analysis
TBD	Environmental Health Educator	Anchorage Health Department	Public health outreach and communications, workshop training support
TBD	Summer intern	NeighborWorks Alaska	Volunteer training and outreach, maintain monitors
Fairview residents and business owners	Various	Various	Host air monitor stations, attend trainings, engage neighbors

Signature needed: Fairview Air Monitoring

Final Audit Report 2022-05-02

Created:	2022-04-22
By:	Lindsey Hajduk (lhajduk@nwalaska.org)
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