

***Report on Quarterly Air Monitoring,
Area IV, First Quarter 2024***

***Santa Susana Field Laboratory
Ventura County, California***



***Prepared for:
United States
Department of Energy***

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**REPORT ON QUARTERLY AIR MONITORING, AREA IV,
FIRST QUARTER 2024, SANTA SUSANA FIELD
LABORATORY, VENTURA COUNTY, CA**

July 2024

Contract No. DE-EM0000837-DT0007583

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EXECUTIVE SUMMARY

This report summarizes the United States Department of Energy (DOE) air monitoring activities conducted during the first quarter of 2024, which is the twenty-fourth quarter (Q24) of the monitoring period (January 1, 2024, to March 31, 2024) at Area IV within the Santa Susana Field Laboratory (SSFL), located in Ventura County, California. The area specifically discussed within this report is the DOE portion, Area IV of SSFL, known as the Energy Technology Engineering Center (ETEC). Year one of the Baseline Air Monitoring Program consisted of Q1 through Q4. Year two consisted of Q5 through Q7. Year three consisted of Q8 through Q11. Year four consisted of Q12 through Q15. Year five consisted of Q16 through Q19. Year six consisted of Q20 through Q23. The program is continuing for a seventh year, which consists of 2024, reporting periods Q24 through Q27.

This quarterly report has been developed by North Wind Portage, Inc., on behalf of DOE in cooperation with The Boeing Company (Boeing) and the National Aeronautics and Space Administration (NASA), as part of the Baseline Air Monitoring Program.

In accordance with the *Final Baseline Air Monitoring Work Plan, Santa Susana Field Laboratory, Ventura County, California* (NASA 2017), the responsible parties are monitoring for particulate matter between 2.5 and 10 microns in aerodynamic diameter (PM₁₀), volatile organic compounds (VOCs), and radionuclides at air monitoring stations DOE-1, DOE-2, DOE-3, and DOE-4 encompassing the ETEC, Area IV portion of SSFL. Having developed the baseline levels for PM₁₀, VOCs, and radionuclides helps distinguish between levels that naturally occur or were previously present at the ETEC site and if onsite remediation activities produce elevated results. Air monitoring will be continued throughout remediation activities to be able to compare results from onsite remediation activities to baseline data in the Annual Air Monitoring Reports.

The following air monitoring activities conducted during 2024, first quarter, by DOE within Area IV are summarized in this report:

- Collected meteorological data from one location (DOE-4);
- Collected PM₁₀ data from four locations (DOE-1 through DOE-4);
- Collected air samples from four locations (DOE-1 through DOE-4) for VOC laboratory analysis; and
- Collected radionuclide samples for laboratory analysis from four locations (DOE-1 through DOE-4).

PM₁₀ data, meteorological data, and radionuclide data all met the data completeness goal of 80%, and VOC data met the completeness goal of 85% for Q24. The twenty-fifth quarter of the Air Monitoring Program will begin April 1, 2024.

The following site activities were conducted during Q24 by DOE within Area IV:

- Quarterly site-wide groundwater level monitoring;
- CDM Smith conducted groundwater sampling activities at the Former Sodium Disposal Facility as a part of groundwater interim measures; and
- Surveillance and maintenance.

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
μCi	microcurie(s)
μg/m ³	microgram(s) per cubic meter
Boeing	The Boeing Company
CAAQS	California Ambient Air Quality Standards
CFR	Code of Federal Regulations
DASC	Data Assessment Statistical Calculator
DOE	U.S. Department of Energy
DTSC	State of California Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
ETEC	Energy Technology Engineering Center
GC	gas chromatography
Hg	mercury
HHRA	Human Health Risk Assessment
m	meter(s)
m/sec	meter(s) per second
mb	millibar(s)
MDC	minimum detectable concentration
mL	milliliter(s)
mph	miles per hour
MS	mass spectrometry
MDL	method detection limit
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NIST	National Institute of Standards and Technology
pCi	picocurie(s)
PM ₁₀	particulate matter less than 10 microns in aerodynamic diameter
Q24	twenty-fourth quarter
QA	quality assurance
QC	quality control
RAWS	Remote Automatic Weather Stations
RPD	relative percent difference
SDG	sample delivery group
SSFL	Santa Susana Field Laboratory
VOC	volatile organic compound

1. INTRODUCTION

National Aeronautics and Space Administration (NASA), The Boeing Company (Boeing), and the U.S. Department of Energy (DOE), also known as the responsible parties, are performing air monitoring at the Santa Susana Field Laboratory (SSFL) site located in Ventura County, California. The SSFL was a business segment of Boeing. SSFL includes 2,849 acres located atop a range of hills between the Simi and San Fernando valleys, north of Los Angeles. The westernmost 290 acres of the SSFL, known as Area IV, contains both DOE and Boeing former facilities. The DOE portion is mainly contained within the 90 acres known as the Energy Technology Engineering Center (ETEC).

When opened in the late 1950s, ETEC was ideally remote from population centers to enable development of security-sensitive projects. These projects supported research for DOE and its predecessor agencies for nuclear research and energy development. Area IV included buildings that house test apparatus for large-scale heat transfer and fluid mechanics experiments, mechanical and chemical test facilities, office buildings, and auxiliary facilities.

Air monitoring is being conducted in accordance with the *Final Baseline Air Monitoring Work Plan, Santa Susana Field Laboratory, Ventura County, California* (NASA 2017), which was submitted to the State of California Department of Toxic Substances Control (DTSC) on September 21, 2017. DTSC approved the Work Plan. Final locations of the air monitoring locations were approved by DTSC on January 30, 2018 (DTSC 2018).

The objective of the Air Monitoring Program is to evaluate project conditions and provide a basis for determining the magnitude of deviation from those baseline conditions that may result from onsite remediation activities at SSFL. Responsible parties are monitoring for particulate matter between 2.5 and 10 microns in aerodynamic diameter (PM₁₀), and volatile organic compounds (VOCs), at 14 locations at SSFL. Data was collected for four perimeter samplers (DOE-1 through DOE-4) and analyzed for gross alpha and gross beta. Individual radionuclide concentrations were determined by analysis at an offsite laboratory for these same four locations. Meteorological data is also collected as a part of the Air Monitoring Program.

Figure 1 shows the air monitoring locations for the Air Monitoring Program. These locations were selected based on the areas to be remediated, with consideration of winds in the area, topographic features, and accessibility. The air monitoring sites were also selected based on guidance obtained from the U.S. Environmental Protection Agency's (EPA's) *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, Ambient Air Monitoring Program* (EPA 2017) and *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA 2000). Sites were evaluated per 40 Code of Federal Regulations (CFR) 58, Appendix C – Ambient Air Quality Monitoring Methodology. DOE is responsible for DOE-1, DOE-2, DOE-3, and DOE-4 of the 14 monitoring locations, represented in Figure 1. VOCs, PM₁₀, and radionuclides are monitored at the four DOE monitoring locations, and meteorological conditions are monitored at the DOE-4 location. The DOE monitoring locations DOE-1 through DOE-4 are shown in Figure 2.

This report summarizes the results and quality assurance (QA) activities performed during the first quarter of 2024, which was from January 1, 2024, through March 31, 2024. This represents the twenty-fourth quarter (Q24) of the monitoring period.

1.1 Regional Climate and Wind Direction

The climate in the SSFL area is characterized as “Mediterranean.” The mean temperature during the winter months is approximately 50 degrees Fahrenheit (°F) and the mean temperature in the summer months is approximately 70°F. Based on climate data for 2022 and 2023 from Weather Currents, average rainfall is on the order of 17.83 inches per year. The majority of the rainfall occurs between December and April with January and February being the wettest months.

Through the first quarter in 2024, the Simi Valley received approximately 18.31 inches of rainfall.

The average hourly wind speed in Simi Valley varies significantly by season. The more turbulent part of the year lasts for 6 months, from November to April, with average western wind speeds of more than 7 miles per hour (mph). The calmer time of year lasts for 6 months, with northerly winds from May to October.

During the fall, winter, and spring, Santa Ana winds can blow from the north or northeast in excess of 35 mph.

2. SUMMARY

This report summarizes the air monitoring data collected during the Q24 reporting period (January 1, 2024, through March 31, 2024).

Quality objectives and data completeness were met for all meteorological, PM₁₀, VOC, and radionuclide data for Q24 of the Air Monitoring Program. Urban background data compared with air monitoring data indicate that the PM₁₀ concentrations measured at stations DOE-1, DOE-2, DOE-3, and DOE-4 during Q24 are comparable to the PM₁₀ concentrations measured at stations characterizing urban background. Other sources that emit VOC characteristics are motor vehicle emissions, fossil fuel combustion, and wildfires. The results are reflected when considering SSFL site's urban background and relatively remote location from vehicle traffic. None of the PM₁₀ concentrations exceeded the California Ambient Air Quality Standard (CAAQS; 50 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) or the National Ambient Air Quality Standard (NAAQS; 150 $\mu\text{g}/\text{m}^3$).

During Q24 no downtime was observed for the units at DOE-1, DOE-2, and DOE-4. The unit at DOE-3 was down on February 4, 2024, due to sensor failure; the sample nozzle and tape support vane were cleaned and the unit restarted on February 5, 2024. In addition, the unit at DOE-3 was down starting on March 12, 2024, due to a short in the power cable; the power cable was replaced and the unit was back running on March 18, 2024.

During Q24 one VOC analyte was detected above the EPA regional screening level (RSL). Ethyl acetate was detected at DOE-1, DOE-2, DOE-3, and DOE-4. Ethyl acetate is a solvent used in a variety of industries and applications, such as adhesives, paint and coating products, pharmaceuticals, and printing inks. By using the results from the baseline Air Monitoring Program, along with other site characterization information, analytes were selected for routine air monitoring during soil disturbances. Establishing sources for specific contaminants or performing source apportionment was not a requirement for identifying remedial air quality impacts nor was it within the scope or data quality objectives of the Air Monitoring Program.

Data collected during Q24 agrees with data collected, analyzed, and reported by the State of California DTSC, Los Angeles County Emergency Response Organization, the DOE Emergency Response organization, or other Multi-Agency Task Forces. Air monitoring at Area IV of the SSFL is to be continued starting April 1, 2024, for the twenty-fifth quarter of the Air Monitoring Program.

Site activities during Q24 included quarterly site-wide groundwater level monitoring, surveillance and maintenance, and groundwater sampling activities conducted by CDM Smith at the Former Sodium Disposal Facility as part of the groundwater interim measures.

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3. ANALYTICAL SAMPLING EVENTS

VOCs are collected according to the EPA Toxic Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* (EPA 1999). Twenty-four-hour time-integrated samples are collected into Summa canisters via a flow controller and sent to an offsite laboratory for analysis. VOCs are collected every other week. There were six VOC sampling events with six field duplicate samples collected during this reporting period.

During Q24, radionuclide samples were collected at four perimeter sampler locations, DOE-1 through DOE-4. These samples were collected on glass fiber (Type A/E) filters that are changed twice a week. After a minimum 120-hour holding time to allow the decay of short-lived radon and thoron daughter products, the samples are simultaneously counted for gross alpha and beta activity with a low-background, thin-window, gas-flow proportional-counting system continually purged with P-10 argon/methane counting gas over a preset time interval. There were 93 airborne radioactivity filter samples collected in Q24 — 24 each at DOE-1 and DOE-2, and 23 and 22 at DOE-3 and DOE-4, respectively. Filter sample collection at DOE-3 and DOE-4 was reduced in Q24 due to heavy rain, which caused a potential for saturated filter samples and unsafe conditions due to the wet and muddy conditions during those events. Following analysis for gross alpha and gross beta radiation, sample filters were combined to form one composite sample representative of each location. The four composite samples were then analyzed for individual radionuclides at an offsite laboratory.

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4. DATA

Sections 4.1 through 4.4 discuss Q24 air monitoring data.

4.1 Meteorological Data

General Summary

Meteorological data, also called weather data, is being collected as part of the ETEC cleanup and restoration effort. This information, particularly the wind direction and wind speed, can be used to help understand how dust and other air pollutants from the site are carried by the wind to possibly affect nearby public and residential areas. This is especially important when the E-BAM particulate monitors at the site detect higher-than-normal amounts of dust in the air. Scientific computer models can be used with this weather data in association with the particulate monitoring data to describe the air quality for the communities near the ETEC site. However, before the weather data can be used with the computer models it must first be quality tested for completeness and accuracy to ensure it meets acceptance criteria. A detailed description of the weather data collection and quality testing is provided in the following paragraphs.

Monitored meteorology parameters at the DOE-4 station included wind speed, wind direction, air temperature at 2 meters (m) and 10 m, relative humidity, precipitation, barometric pressure, and solar radiation. In addition, statistical parameters provided by the data logger included delta temperature (i.e., the 10-m temperature minus the 2-m temperature), maximum wind speed (i.e., wind gust), and standard deviation of wind direction. Observations were recorded at 15-minute intervals corresponding to minutes :00, :15, :30, and :45 each hour. There were 91 days in this reporting period (Q24) from 01 Jan 2024 through 31 Mar 2024 with a total of 8,736 possible 15-minute observations. This is the first quarter of Year 7 of the baseline monitoring.

Data Validation and Statistics

Data validation screening was performed on the recorded meteorological observations pursuant to EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA 2000) Table 8-4 (Suggested Data Screening Criteria) and Table 8-3 (Suggested Quality Control Codes). Validation screening provided the basis for evaluating data completeness and for determining sensor performance and/or maintenance status. Validation was performed following each weekly data download. Data validation quality control codes applied to the meteorological observations are defined in Table 1.

Table 1. Data screening quality control codes for meteorological data.

Code	Meaning	Description (as used for ETEC meteorological data validation)
0	Valid	PASS – Observation is accurate within the performance limits of the instrument (i.e., value passes all data validation screening criteria).
3	Acceptable	PASS – Observation originally failed initial quality control (QC) check (see Code 6), but additional review using other independent data and meteorological judgment support final validity.
6	Failed initial QC check	FAIL – Observation did not pass data validation screening criteria.
7	Suspect	FAIL – Observation failed initial data validation QC check (see Code 6) and could not be verified through additional review using other independent data.
8	Invalid	FAIL – Observation judged to be inaccurate or in error, and the cause is known.
9	Missing	FAIL – Observation was not collected.

The validation screening involved comparing, on an individual parameter basis, the recorded values (i.e., observations) against the EPA screening criteria shown in Table 2. The data validation procedure involved an initial automated review to apply a first-level QC Code of 0 (valid), 6 (failed), or 9 (missing) as defined in Table 1. Observations initially flagged with a QC Code = 6 were then manually (i.e., second-level) reviewed by a project meteorologist. The procedure is outlined below:

- Values meeting all screening criteria for the respective meteorological parameter were automatically considered “valid” (QC Code = 0).
- Values not meeting a screening criterion were automatically flagged as “failed initial QC” (QC Code = 6). These values were subjected to second-level manual meteorological review using other available observations (e.g., 2-m vs. 10-m temperature at DOE-4 or from nearby Remote Automatic Weather Stations [RAWS] meteorological station CEEC1 in the Cheeseboro Canyon, California, area located 2.6 miles south of the DOE-4 site), and meteorological judgment:
 - Values confirmed by second-level review were deemed “acceptable” (final QC Code = 3).
 - Otherwise, the values were deemed “suspect” (final QC Code = 7).
- Observations known to be inaccurate (QC Code = 8).
- Missing observations were automatically flagged as “missing” (QC Code = 9).

Values that pass validation with a final QC Code of 0 or 3 are included in the data completeness statistics and the final validated meteorological data set. Values with a final QC Code of 7, 8, or 9 are excluded from the final dataset and counted against the data completeness percentage. Quarterly data statistics for the meteorological parameters are listed in Table 2 along with year-to-date and project-to-date results. Year-to-date and project-to-date percentages are calculated as total valid observations through the completed quarters for the year divided by the total possible observations through this same period.

The completeness goal for meteorological data is 80% on an annual basis. Data completeness statistics for all completed reporting quarters in Year 7 of the baseline monitoring are presented in Table 2. Prior to the start of this quarter, the Relative Humidity sensor had failed and was not replaced until several days before the end of the quarter. Consequently, there was a low data completeness for this parameter. Information on sensor replacement is provided in Section 5, QA/QC Activities.

Wind Rose

The final validated 15-minute meteorological dataset was used to develop the wind rose for Q24 as presented in Figure 3. A wind rose is a graphical representation of wind speed and direction distribution (or wind climatology) for the period of interest. The frequency of winds blowing from specific directions are shown as petals on the wind rose, with the frequency of wind speeds depicted by color bands. Calm winds are identified as being less than 0.5 meters per second (m/sec).

During Q24, data capture for wind speed and direction at DOE-4 was 100%. The average and maximum wind speeds were 4.31 m/sec and 18.6 m/s, respectively. The maximum recorded wind gust was 26.2 m/sec. The predominant wind directions this quarter were from the east-southeast (ESE).

Table 2. Data screening summary for monitored meteorological parameters.

Meteorological Parameter	Screening Criteria ⁽¹⁾ (for valid sensor responses)	Data Completeness Percent (%) ⁽²⁾		
		Q24	Year 7 to Date	Project to Date
Wind Speed	between 0 and 25 m/sec	100	100	95.72
	> 0.1 m/sec variation over 3 hours			
	> 0.5 m/sec variation over 12 hours			
Wind Direction	between 0 and 360 degrees	100	100	96.38
	> 1 degree variation over 3 hours			
	> 10 degree variation over 12 hours			
Standard Deviation of Wind Direction	Inherits the completeness stats of Wind Direction	100	100	96.38
Temperature @ 2 m	≤ local record high (monthly basis)	99.99	99.99	96.38
	≥ local record low (monthly basis)			
	> 0.5°C variation over 12 hours			
Temperature @ 10 m	≤ local record high (monthly basis)	98.90	98.90	96.33
	≥ local record low (monthly basis)			
	> 0.5°C variation over 12 hours			
Delta Temperature	≤ 0.1°C during daytime	98.89	98.89	96.33
	≥ -0.1°C during nighttime			
	between -3.0 and 5.0°C			
Relative Humidity (and Dewpoint Temperature)	relative humidity between 0–100%	11.62	11.62	88.08
	dew point T ≤ ambient T			
	dew point T ≤ 5.0°C variation over 1 hour			
	dew point T > 0.5°C variation over 12 hours			
Precipitation	≤ 1 inch in 1 hour	100	100	96.37
	≤ 4 inches in 24 hours			
	≥ 2 inches in 3 months			
Barometric Pressure	between 871 and 982 mb (local) (i.e., between 940 and 1060 mb sea level)	100	100	96.38
	≤ 6 mb variation over 3 hours			
Solar Radiation	> 0 at night	100	100	96.34
	≤ maximum possible for date, time, lat/long			

(1) Screening criteria from EPA Meteorological Monitoring Guidance (EPA 2000), Table 8-4.

(2) Data Completeness % = [Observations Passing] / [Possible Observations].

- a. Missing or suspect observations count against data completeness statistics.
- b. Year Two is an abbreviated data collection year spanning the period Apr 15–Dec 31, 2019 (i.e., Quarters 5, 6, and 7). This was done to synchronize future data collection years with calendar years.
- c. Last column in this table represents the cumulative Completeness % for all completed quarterly reporting periods.

(3) The number of possible 15-minute observations in the completed reporting periods:

- Q01 = 8,736 • Q02 = 8,832 • Q03 = 8,832 • Q04 = 8,640 • Year One = 35,040
- Q05 = 8,736 • Q06 = 8,832 • Q07 = 7,488 (only 3 quarters) • Year Two = 25,056 (abbreviated)
- Q08 = 8,736 • Q09 = 8,736 • Q10 = 8,832 • Q11 = 8,832 • Year Three = 35,136
- Q12 = 8,640 • Q13 = 8,736 • Q14 = 8,832 • Q15 = 8,832 • Year Four = 35,040
- Q16 = 8,640 • Q17 = 8,736 • Q18 = 8,832 • Q19 = 8,832 • Year Five = 35,040
- Q20 = 8,640 • Q21 = 8,736 • Q22 = 8,832 • Q23 = 8,832 • Year Six = 35,040
- Q24 = 8,736 • Project = 209,088 (to-date)

4.2 PM₁₀ Data

PM₁₀ data, defined as coarse particles between 2.5 and 10 microns in aerodynamic diameter, are measured at the ETEC site. Sources of particulate matter can be naturally occurring or caused by human activity. The air monitoring conducted at ETEC is used to determine if any suspended particles are from activities conducted onsite or if they are consistent with surrounding air quality data. Some of the naturally occurring particles can originate from high winds, forest or grass fires, burning of fossil fuels in vehicles, or stirred-up road dust.

PM₁₀ data are collected with Met One E-BAM monitors at four monitoring locations. The Met One E-BAM uses the principle of beta attenuation to provide a determination of mass concentration. Twenty-four-hour concentrations are calculated from the hourly concentrations. There were 91 days in this reporting period.

- DOE-1 had valid readings all 91 days.
- DOE-2 had valid readings all 91 days.
- DOE-3 had valid readings 85 out of 91 days.
- DOE-4 had valid readings all 91 days.

DOE-1, DOE-2, and DOE-4 had 100% data completeness for PM₁₀ in Q24. DOE-3 had a completeness of 93%, for a total data completeness of 98%, exceeding the project goal of 80% completeness for total samples collected during Q24 (see Table 3). In addition, the cumulative total project data completeness has been calculated as 94% for Q1 through Q24. The complete table of daily averages for Q24 is presented in Appendix A. In addition, the nearby State and Local Air Monitoring Stations (SLAMS), Simi Valley – Cochran Street – PM₁₀ Daily Averages, from 01/01/2022 to 07/31/2023 has been presented in Appendix A. Please note, per the EPA website, this EPA data is updated twice per year: once in June to capture the complete data for the prior year and once in December to capture the data for the summer (ozone season). At the time of writing this report the data posted is the most current data available. During Q24 no downtime was observed for the units at DOE-1, DOE-2, and DOE-4. The unit at DOE-3 was down on February 4, 2024, due to sensor failure; the sample nozzle and tape support vane were cleaned and the unit restarted on February 5, 2024. In addition, the unit at DOE-3 was down starting on March 12, 2024, due to a short in the power cable; the power cable was replaced and the unit was back running on March 18, 2024.

Table 3. PM₁₀ data completeness for January 1, 2024, to March 31, 2024.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	91	91	100%
DOE-2	91	91	100%
DOE-3	85	91	93%
DOE-4	91	91	100%

Average Total Data Completeness 98%

The five highest PM₁₀ results identified for the reporting period are listed in Table 4 along with the CAAQS for PM₁₀. PM₁₀ concentrations were consistent with levels typically found in urban air. Of these top five results, four were recorded at DOE-2, and one at DOE-1. None of the five values were above the CAAQS or the NAAQS of 150 µg/m³. Over these dates elevated winds may have aided in the elevated readings. From year to year, it has been noticeable that there is a direct correlation between high wind speeds and higher PM₁₀ readings.

Table 4. Top five PM₁₀ 24-hour average concentration days for Q24.

Date	Location	PM ₁₀ Value (µg/m ³)	CAAQS (µg/m ³)
3/14/2024	DOE-2	31.29100	50
3/14/2024	DOE-1	29.12500	50
1/19/2024	DOE-2	24.04100	50
2/15/2024	DOE-2	23.29100	50
3/20/2024	DOE-2	21.75000	50

4.3 Volatile Organic Compound Data

VOCs are organic chemicals that have a high vapor pressure, which causes them to evaporate quickly and enter the surrounding air. VOCs can be naturally occurring or man-made. The VOC data collected can help distinguish between man-made detections from onsite activities or naturally existing organic chemicals. The VOC data collected are compared against screening levels. These screening levels are risk-based concentrations derived from standardized equations combining exposure information with toxicity data.

All four DOE locations were sampled during each of the six VOC sampling events this period. Data completeness goals for VOCs exceeded the project goal of 85% (see Table 5).

Table 5. Ambient air VOC data completeness.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	6	6	100%
DOE-2	6	6	100%
DOE-3	6	6	100%
DOE-4	6	6	100%
Average Total Data Completeness			100%

VOC detection results are presented in Table B-1 (Appendix B), including comparison to the April 2019 DTSC Human Health Risk Assessment (HHRA) Note 3 Screening Levels (DTSC 2019) or the EPA RSLs. Ethyl acetate was detected at the March 12, 2024, sampling at four locations at concentrations of 220 µg/m³, 250 µg/m³, 96 µg/m³, and 84 µg/m³, which exceeds its EPA RSL limit of 73 µg/m³. Ethyl acetate was detected at the March 27, 2024, sampling at one location at a concentration of 83 µg/m³, which exceeds its EPA RSL limit of 73 µg/m³.

Two man-made VOC analytes, dichlorodifluoromethane (freon-12) and ethyl acetate, have been detected routinely at all four monitoring stations, during all quarterly sampling events, and in duplicate samples indicating that these VOCs were not caused by the building demolition activities performed. These analytes were also detected as estimated values at NASA stations but were not detected at Boeing stations. Based on laboratory QC data (method blanks, clean canister certifications), the sampling process and laboratory process are not the sources of the two analytes. The onsite source of the analytes is currently unknown.

Neither the establishment of sources for specific contaminants nor the performance of source apportionment was required for identifying remedial air quality impacts, nor was either within the scope or data quality objectives of the Air Monitoring Program.

4.4 Radionuclide Data

EETEC continuously monitors air at multiple locations for radioactive particles. This is performed for two reasons: (1) to determine the background airborne radioactivity concentration so that any possible releases from work activities can be detected, and (2) to detect any possible release from existing activities.

There were 93 airborne radioactivity filter samples collected in Q24 — 24 each for DOE-1 and DOE-2, and 23 and 22 at DOE-3 and DOE-4, respectively. Filter sample collection at DOE-3 and DOE-4 was reduced in Q24 due to heavy rain, which caused a potential for saturated filter samples and unsafe conditions due to the wet and muddy conditions during those events. Each sample was collected on a glass-fiber filter (as discussed in Section 3) and was analyzed using a “low background” Protean radiation counter system onsite. These samples included background radioactive materials and the potential of Area IV–specific radioactive materials.

The alpha and beta data are presented in Table C-1 (Appendix C). The onsite analysis determined only “alpha” or “beta/gamma” and did not analyze for specific isotopes. Isotopic analysis was performed later by an offsite laboratory. Each sample produced a gross alpha and beta-gamma count. The analysis compared these values with the background radiation count rates, and using the volume of air collected determined the net counts and the minimum detectable concentration (MDC) for each sampling event. Some results in Table C-1 (Appendix C) are shown as negative values (because detector background is subtracted from the result).

All alpha samples except two were below the MDC, and these samples were only slightly greater than the MDC. Each MDC was below the airborne effluent limits specified in California regulations. There was no possibility of significant Area IV alpha radioactive material on these filters.

Approximately 60% of the beta samples were below MDC, and the gross (background radioactive material included) samples exceeded the MDC in 40% of samples, indicating the presence of airborne radioactive material (including background materials). The beta-gamma samples greater than the MDC were only slightly above the MDC and were well below the effluent limits specified in California regulations. The elevated (but still low) results may be due to more airborne dust. Historically there has been a noticeable direct correlation between high wind speeds and higher beta result readings.

Following collection and onsite analysis, the air filters were composited and analyzed for specific radionuclides by an offsite laboratory. This data is shown in Table C-2 (Appendix C). This laboratory data determined that most radioactive material present was natural in origin, consisting of beryllium-7, polonium-210, potassium-40, combined radium-226 and radium-228, thorium-228, thorium-230, thorium-232, uranium-233/234, uranium-235/236, and uranium-238.

While artificial radionuclides (e.g., cesium-137, strontium-90, plutonium-239) were present in very small amounts, none of the results were above the MDC in Q24. The presence of these radionuclides is considered a part of the normal variation of global fallout and resuspension activities.

A summary of the gross air sampling data is shown in Table 6 below.

Table 6. Gross alpha and beta-gamma average results for Q24.

Location	Average alpha result (μCi/mL)	Average alpha MDC (μCi/mL)	Average beta result (μCi/mL)	Average beta MDC (μCi/mL)
DOE-1	-2.18E-16	6.40E-15	1.94E-14	2.79E-14
DOE-2	5.89E-16	6.44E-15	2.69E-14	2.80E-14
DOE-3	-6.45E-17	6.84E-15	3.44E-14	2.96E-14
DOE-4	4.99E-16	6.45E-15	2.62E-14	2.79E-14
Average	1.98E-16	6.53E-15	2.66E-14	2.83E-14

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5. QA/QC ACTIVITIES

The following QA/QC activities were conducted for the PM₁₀, VOC, radionuclide, and meteorological data collection and analysis.

5.1 Field QA/QC

5.1.1 PM₁₀

The 24-hour daily averages for Q24 are presented in Appendix A along with the monthly minimum, maximum, and 95th percentile for each station location. In addition, the nearby SLAMS, Simi Valley – Cochran Street – PM₁₀ Daily Averages, from 01/01/2022 to 07/31/2023 along with the monthly average minimum, maximum, and 95th percentile for the Simi Valley – Cochran Street location, have been presented in Appendix A. Please note, only the Simi Valley PM₁₀ data from the SLAMS have been reported. The Simi Valley PM_{2.5} and the Reseda PM_{2.5} have not been reported here since this report discusses only PM₁₀ data, not PM_{2.5} data. In addition, per the EPA website, this EPA data is updated twice per year: once in June to capture the complete data for the prior year and once in December to capture the data for the summer (ozone season). At the time of writing this report the data posted is the most current data available.

Flow Verifications

Functionality of the Met One E-BAM units is verified and recorded monthly during instrument audits; however, the instruments are also checked several times a week for operability. During the monthly audits, the Met One E-BAM temperature, pressure, and flow rate are verified against a National Institute of Standards and Technology (NIST) traceable flowmeter. E-BAM units are occasionally swapped out for maintenance, and preliminary audits of the new units are performed. The Q24 audit results for the four DOE sites showed bias percentages that ranged from 2.42 to -0.51%. None of the results exceeded the flow rate measurement quality objective of +/- 4%.

Complete audit reports and flow verification results for Q24 are presented in Appendix D of this document. The flow rate verifications were based on 40 CFR 58, Appendix A, 3.3.1 and 4.2.2 through 4.2.3, along with the *Guideline on the Meaning and the Use of Precision and Bias Data Required by 40 CFR Part 58 Appendix A* (EPA 2007). The *Data Assessment Statistical Calculator* (DASC) tool, which is an EPA Excel-based software application, was used to perform the necessary statistical calculations based on the flowrate data collected during the monthly audits. Sections 2 and 2.5 of this EPA guidance document (EPA 2007) provide additional information and instruction for using the DASC tool.

5.1.2 VOCs

All data underwent at least two levels of QC review at the laboratory prior to transmission to North Wind. A minimum of 20% of the transmitted VOC results undergo a Level IV third-party data validation, annually. During this quarter, two of the six SDGs, P2401222 and P2402257, underwent the Level IV data validation. The data validation ensures that the required analytical measurement quality objectives are met to ensure the data are of sufficient quality for their intended purpose.

Each location had valid readings on the six sample days for a sample completeness of 100%. Data completeness goals for VOCs exceeded the project goal of 85%.

5.1.3 Field Duplicates

Six field duplicates were collected during this reporting period. Six sampling events were conducted for the Q24 effort. Chloromethane in SDG P2400257; ethyl acetate in SDGs P2400257, P2400469, P2400830, and P2401222; carbon disulfide in SDG P2400469; trichlorofluoromethane in SDG P2400657; and 2-butanone and toluene in SDG P2401222 exceeded the quality objective of +/- 15% relative percent difference (RPD). Fifteen sample and duplicate analyte detections were within the quality objective of +/- 15% RPD. There were no other detections associated with the samples and associated duplicates collected during this reporting period.

5.1.4 Canister Pressure

Vacuum in the canisters is measured before and after sampling with an analog pressure gauge to ensure proper function. Final canister vacuums ranged from -5.0 inches mercury (Hg) to -1 inches Hg during this reporting period.

5.1.5 Radiological

The detector for onsite gross alpha and beta sample analysis is calibrated annually by a third-party vendor using sources traceable to the NIST. The detector is checked by counting alpha- and beta-emitting sources at the site when received from the vendor following calibration. This establishes an acceptable performance range for daily source checks. On each day the detector is used, performance is determined with the site source. The detector may be used if the daily check is within the acceptable performance range.

Samples analyzed at the offsite laboratory are QC-checked at the laboratory. These QC checks include blanks, laboratory replicates, matrix spikes, and matrix spike duplicates. Barium, which behaves chemically similar to radium, is used as a carrier to determine the yield of the chemical extraction.

Since Q13, 100% of the radiological analytical results have undergone Level IV, third-party data validation. The data validation ensures that the required analytical measurement quality objectives are met to ensure the data are of sufficient quality for their intended purpose.

5.1.6 Meteorological

During the reporting period, a weekly data validation screening and review was performed on the monitored meteorological parameters based on the EPA guidance document *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA 2000), Table 8-4 – Suggested Data Screening Criteria, as outlined in Section 4.1. The data validation procedure provided the basis for evaluating data completeness and for determining sensor performance and/or maintenance status.

5.1.7 Maintenance

Routine visual checks were performed on the meteorological station during weekly data downloading site visits. This included inspection of the meteorological tower sensors, E-BAM monitoring unit wind sensors, and solar-powered batteries to ensure proper functioning.

5.1.8 Corrective Action

Issues and corrective actions regarding the PM₁₀ monitors and the meteorological station are noted in Sections 5.1.8.1 and 5.1.8.2, respectively. Issues and corrective actions regarding the E-BAM monitors are

noted in Section 4.2. No issues or corrective actions were noted regarding the remaining monitoring equipment or sampling events during this reporting period.

5.1.8.1 *PM₁₀ Monitors*

Refer to Section 4.2 for a detailed description of PM₁₀ air monitoring equipment issues.

5.1.8.2 *Meteorological Station*

This section covers data quality issues and associated corrective actions that occurred during the current monitoring quarter. The data percent completion goal of $\geq 80\%$ was met during Q24 for all parameters except Relative Humidity. Quality issues this quarter included: (1) continued post-processing of the delta temperature data to resolve a datalogger programming equation where the 10-m and 2-m temperature parameters are reversed, (2) replacement at the end of March 2024 of the relative humidity sensor that had failed mid-December 2023, and (3) preventative maintenance replacement of the temperature sensors at 2 m and 10 m. Also, the recommended sensor maintenance schedule is provided for reference.

(1) Delta Temperature Calculation

- Data Quality Issue:
 - For meteorological monitoring, delta temperature should be defined as T at the higher level minus T at the lower level. However, the datalogger was improperly programmed to calculate the inverse of delta temperature when the station was replaced after the Woolsey Wildfire during Q3. Consequently, delta temperature observations are being calculated with an opposite sign compared to the values from the original data logger.
- Corrective Action:
 - Datalogger Equation – Instead of reprogramming the datalogger to correctly calculate delta temperature, an adjustment multiplication factor of “-1” has been applied to the delta temperature values from the new data logger prior to performing the data validation.
Resolution – With application of the “-1” multiplication factor, delta temperature values in the validated project dataset accurately present delta temperature as:

$$\text{Delta Temperature} = [\text{Temperature @ 10 m}] \text{ minus } [\text{Temperature @ 2 m}]$$

(2) Relative Humidity Sensor:

- Data Quality Issue:
 - The relative humidity sensor failed mid-December 2023. During the data quality validation process, the DOE-4 relative humidity observations were found to deviate significantly from observations at nearby off-site meteorological stations CEEC1 (Cheeseboro Canyon 2.6 miles south of DOE-4) and SV (Simi Valley 4.0 miles north-northeast of DOE-4) starting December 21, 2023, at 13:30 PST. Additionally, there were multiple occurrences of the DOE-4 relative humidity observations falling to 0% for extended periods of time after the initial failure date. The cause of sensor failure was not determined.

- Corrective Actions:
 - Replacement Sensor – The relative humidity sensor was replaced on March 21, 2024, and is performing within quality acceptance criteria. Although the sensor had failed in December 2023, several very heavy rainfall events during the Q24 severely impacted road conditions, causing a significant delay in accessing the site to perform the needed sensor replacement.

(3) Temperature Sensors:

- Data Quality Issue:
 - Delta temperature is calculated as the difference between the 10-m and 2-m temperature observations. Although data quality objectives for the individual existing temperature sensors were being met, the data validation process during the past several quarters identified delta temperature calculations frequently outside acceptance criteria (i.e., screening range) for this parameter. Since delta temperature is not included in the data records from nearby off-site meteorology stations, a second-level manual meteorological review could not be performed to confirm or invalidate values outside the screening range. While values outside the screening range are not necessarily an indication of invalid data, the frequent occurrence raised suspicion that one or both temperature sensors (used to calculate delta temperature) may have developed a bias.
- Corrective Actions:
 - Replacement Sensors – The temperature sensors at the 2-m and 10-m levels were both replaced as a preventive maintenance action to ensure data for temperature and delta temperature would continue to meet quality acceptance criteria. There have been no delta temperature values outside the screening range since replacement of the temperature sensors.

(4) Recommended Maintenance Schedule:

Although not a corrective action, the manufacturer’s recommended maintenance frequency for meteorological sensors is presented below for information purposes. Proper and timely maintenance of the meteorological sensors is critical for ensuring that the data are not only valid (based on screening criteria) but also accurate. Schedules for maintenance and calibration are provided in the sensor user manuals and based on the in-service time of the sensor. Table 7 lists the recommended maintenance schedules for the Met One sensors installed at the DOE-4 meteorological station.

Table 7. Meteorological sensor recommended maintenance frequency (Met One).

Sensor	Frequency	Maintenance
WS	6–12 Month	Inspect for proper operation (manual check of pulses per revolution, bearing condition, anemometer cup condition, and bearing replacement if warranted)
	12–24 Month	Return to Met One for complete overhaul
WD	6–12 Month	Inspect for proper operation (manual check of sensor readings through 360°)
	6–12 Month	Field calibration
	12–24 month	Replace bearings & potentiometer
T	6–12 Month	Inspect sensor for proper operation (field comparison sensor reading against a precision mercury thermometer)
RH	6–12 Month	Inspect sensor for proper operation (compare sensor reading against local weather service or field psychrometer)
	12 Month	Return sensor to Met One for calibration and replacement of O-rings and filter membrane
Rain Gauge	6 Month	Clean sensor and bucket and field verify proper operation
Pressure	12 Month	Return sensor to Met One for calibration and replacement of O-rings and filter membrane
Radiometer	Monthly	Clean sensor glass dome with clean rag/tissue

Note: Maintenance schedules are as specified in the respective Met One sensor user manuals.

5.2 Laboratory QA/QC

This report covers 30 air monitoring samples for VOCs collected and analyzed according to the EPA Toxic Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* (EPA 1999). These samples were reported under six SDGs by the laboratory. All six SDG analyses were performed by ALS in Simi Valley, CA. For each SDG, the laboratory ran continuing calibration verification, a method blank, and laboratory control samples, and verified surrogate recoveries for each sample.

The laboratory provided certified clean canisters for the sampling events. The certification of the canister batch is considered the equipment blank for each sampling event. The ALS case narrative discusses the cleaning of the canisters.

5.3 Audit Results

The PM₁₀ instruments were calibrated at the manufacturer and were functioning properly upon installation. The PM₁₀ instruments were audited monthly with a secondary NIST traceable flow meter. Although audits occur only monthly, the instruments were checked several times a week to ensure that they were functioning. Table 8 lists the dates for audits conducted in January through March. No flow rate comparisons exceeded the project’s acceptance criterion of +/- 4. The sample nozzles and support vanes were cleaned as needed. Complete audit reports are presented in Appendix D.

Table 8. PM₁₀ audit completeness.

Location	Met One E-BAM Serial Number	Parameter	Date
DOE-1	W23313	PM ₁₀	01/17/2024
DOE-2	Y12096	PM ₁₀	01/17/2024
DOE-3	X16067	PM ₁₀	01/17/2024
DOE-4	B18932	PM ₁₀	01/17/2024
DOE-1	W23313	PM ₁₀	02/22/2024
DOE-2	Y12096	PM ₁₀	02/22/2024
DOE-3	X16067	PM ₁₀	02/22/2024
DOE-4	B18932	PM ₁₀	02/22/2024
DOE-1	W23313	PM ₁₀	03/22/2024
DOE-2	Y12096	PM ₁₀	03/22/2024
DOE-3	X16067	PM ₁₀	03/22/2024
DOE-4	B18932	PM ₁₀	03/22/2024

6. REFERENCES

- 10 Code of Federal Regulations (CFR) 20, Appendix B, “Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage,” Table 2.
- 40 CFR 58, Appendix C – Ambient Air Quality Monitoring Methodology.
- 40 CFR 136, Appendix B – Definition and Procedure for the Determination of the Method Detection Limit.
- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). 2018. *Approval of the Final Air Monitoring Station Locations for the Santa Susana Field Laboratory, Ventura County, California*. January.
- California Environmental Protection Agency, DTSC. 2022. Human and Ecological Risk Office Human Health Risk Assessment Note Number 3, DTSC-modified Screening Levels. April. Available online at: [Human Health Risk Assessment Note 3 -June 2020 revised May 2022 \(ca.gov\)](#) and [HHRA-Note-3-Tables-June2020-Revised-May2022A.xlsx \(live.com\)](#).
- National Aeronautics and Space Administration (NASA). 2017. *Baseline Air Monitoring Work Plan, Santa Susana Field Laboratory, Ventura County, California*. Prepared for California Department of Toxic Substances Control. Prepared on behalf of National Aeronautics and Space Administration, George C. Marshall Space Flight Center, The Boeing Company, and Department of Energy, Energy Technology and Engineering Center. September. Available online at: [SSFL Baseline Air Monitoring Work Plan](#)
- U.S. Environmental Protection Agency (EPA). 1999. *Air Method, Toxic Organics-15 (TO-15), Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*. EPA 625/R-96/010b. January. Available online at: <https://www.epa.gov/homeland-security-research/epa-air-method-toxic-organics-15-15-determination-volatile-organic>
- U.S. Environmental Protection Agency (EPA). 2000. *Meteorological Monitoring Guidance for Regulatory Modeling Applications, United State Environmental Protection Agency, Office of Air Quality Planning and Standards*. EPA-454/R-99-005. February.
- U.S. Environmental Protection Agency (EPA). 2007. *Guideline on the Meaning and the Use of Precision and Bias Data Required by 40 CFR Part 58 Appendix A, Version 1.1*. EPA-454/B-07-001. October.
- U.S. Environmental Protection Agency (EPA). 2017. *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, Ambient Air Monitoring Program*. EPA-454/B-17-001. January.
- U.S. Environmental Protection Agency (EPA). 2023. Regional Screening Levels – Generic Tables. <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>. November.
- U.S. Environmental Protection Agency (EPA). 2023. Air Data, Pre-Generated Data Files, Particulates 2023 PM10 Daily Mass. https://aqs.epa.gov/aqsweb/airdata/download_files.html#Meta. October 26.

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Figure 1 – SSFL Air Monitoring Locations

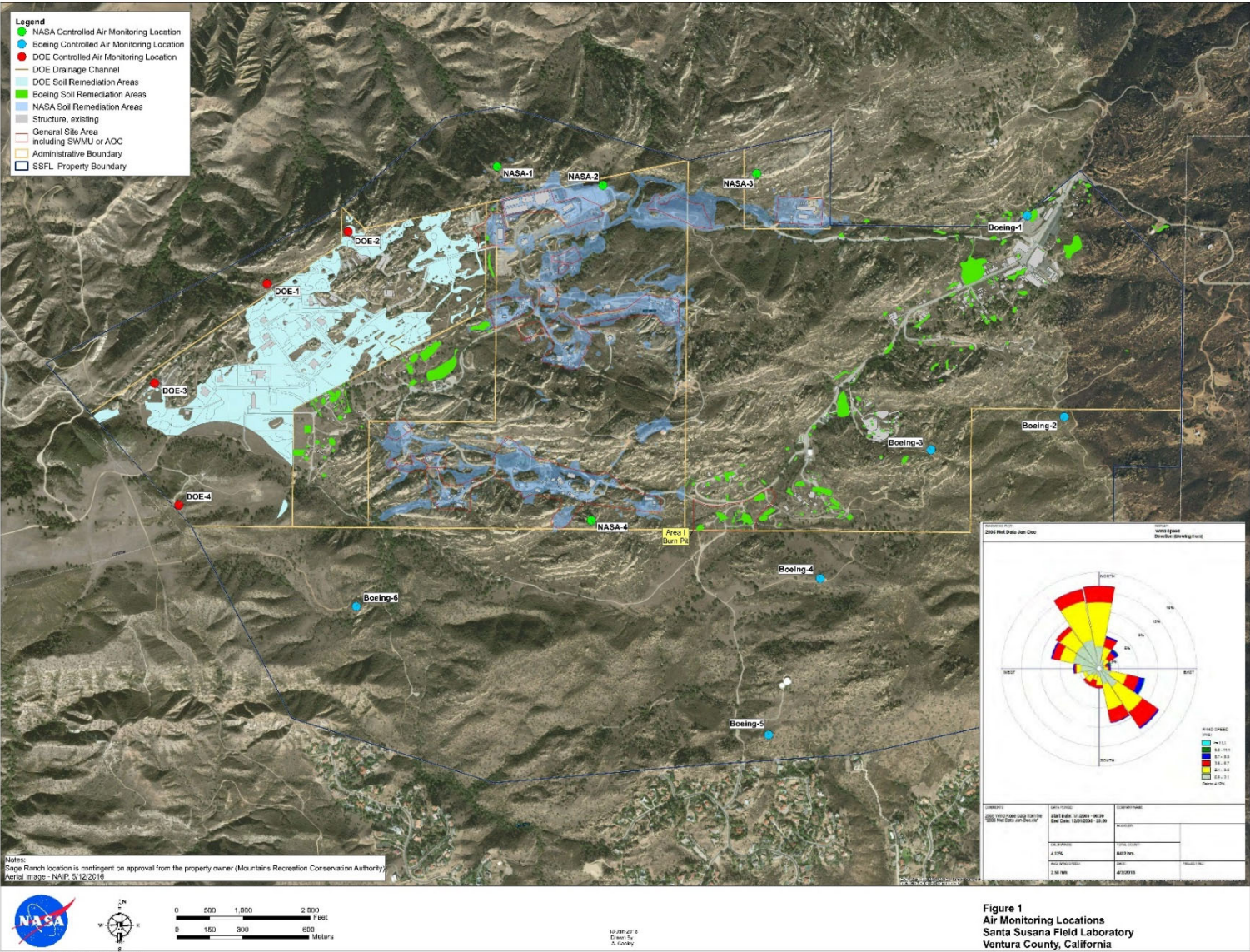
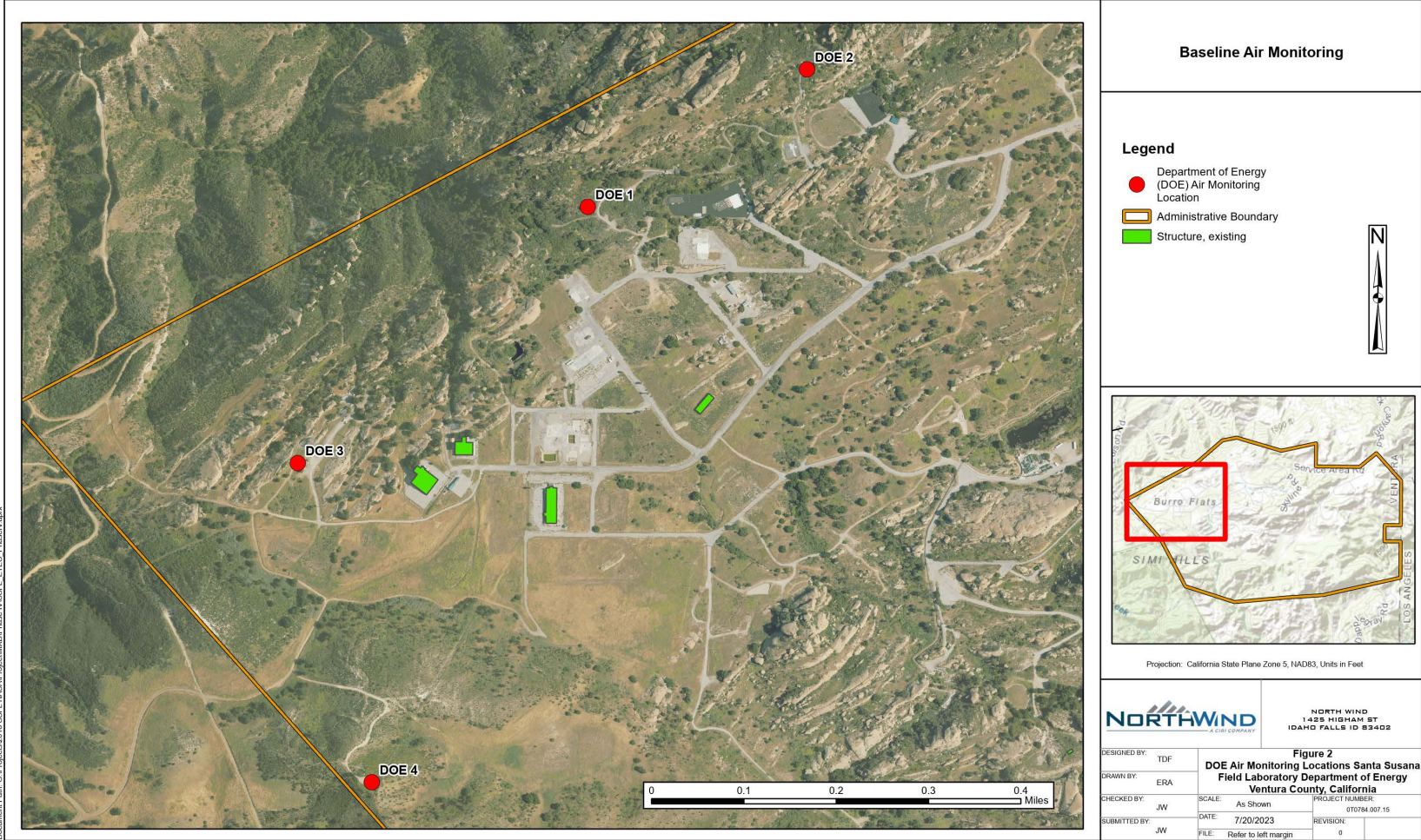
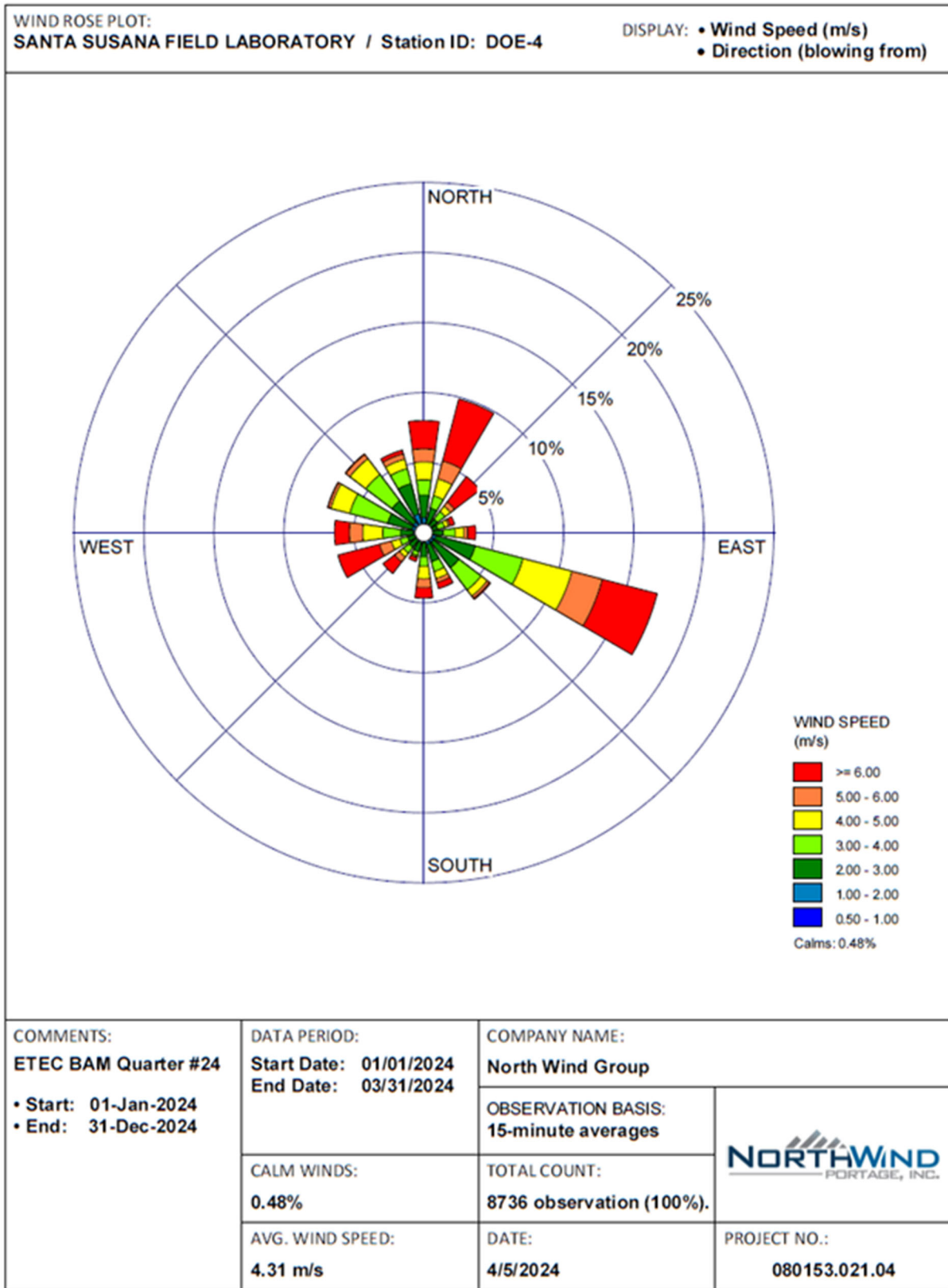


Figure 2 – DOE Air Monitoring Locations



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Figure 3 – DOE Quarterly Wind Rose



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APPENDIX A

PM₁₀ Daily Averages and Monthly Statistics

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PM₁₀ Daily Averages

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)
01/01/24	3.458	3.666	2.708	2.008
01/02/24	3.208	4.791	2.666	1.987
01/03/24	4.5	2.916	3.541	1.441
01/04/24	1.416	1.583	0.75	0.42
01/05/24	2.041	3.791	1.583	1.283
01/06/24	4.5	5.083	4.333	3.283
01/07/24	3.541	2.583	2.5	2.137
01/08/24	2.25	1.625	1.583	1.325
01/09/24	3.083	3.791	1.75	1.095
01/10/24	4.125	6.166	3.833	2.062
01/11/24	2.833	2.666	2.375	1.654
01/12/24	3.291	4	3.208	1.845
01/13/24	8.333	8.625	6.916	9.654
01/14/24	12.375	18.25	9.708	6.883
01/15/24	11.666	14.75	12.458	7.295
01/16/24	6.916	4.75	6.041	3.841
01/17/24	9.541	19.541	4.708	4.78
01/18/24	17.666	21.166	15.541	5.604
01/19/24	15.708	24.041	13.5	6.833
01/20/24	8.75	18.833	8.291	4.033
01/21/24	4.166	-5	-5	0.725
01/22/24	1.125	-2.291	-5	-0.679
01/23/24	2.958	1.708	1.916	2.12
01/24/24	7.166	7.125	6.708	3.575
01/25/24	7.875	6.5	4.583	1.829
01/26/24	1.625	2.375	1.083	1.695
01/27/24	1.416	2.041	1.125	2.3
01/28/24	1.291	0.708	0.916	0.595
01/29/24	3.166	3.083	6.125	2.212
01/30/24	7.208	6.416	6.083	4.908
01/31/24	16.541	16.041	16.75	11.633
02/01/24	3.75	2.25	1.625	0.229
02/02/24	4.083	4.125	3.958	1.5
02/03/24	8.583	6.916	7.458	3.125
02/04/24	4.916	2.208	—	1.162
02/05/24	-0.416	-0.125	-0.001	-0.337

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)
02/06/24	4.041	0.916	0.458	-0.712
02/07/24	5.041	3.625	2.333	1.591
02/08/24	6.416	4.5	3.208	1.787
02/09/24	7.5	12.166	2.541	1.100
02/10/24	9.291	4.333	1.916	2.329
02/11/24	5.75	8.583	2.208	1.504
02/12/24	5.416	4.041	2.208	1.995
02/13/24	11.25	6.083	3.875	3.437
02/14/24	16.416	15.75	8.541	5.004
02/15/24	21.208	23.291	3.208	2.029
02/16/24	15.625	13.5	9.125	4.341
02/17/24	19	18.791	13.208	6.462
02/18/24	3.041	7.833	1.083	0.520
02/19/24	-0.75	-0.916	4.041	-1.020
02/20/24	-0.958	1.375	-0.708	-1.125
02/21/24	9.541	12.291	1.541	0.250
02/22/24	17.125	16.208	4.5	2.329
02/23/24	3.083	1.541	1	1.562
02/24/24	9.166	6.583	3.791	1.375
02/25/24	16.083	10.958	4.208	2.962
02/26/24	14.291	13.166	5.958	4.020
02/27/24	17.416	19.916	4.416	2.479
02/28/24	15.75	10.666	5.916	4.016
02/29/24	14.625	16.583	6.083	4.129
03/01/24	1.75	13.375	1.041	-0.425
03/02/24	3.416	4.5	1.833	0.704
03/03/24	5	7.833	3.041	1.508
03/04/24	10.083	16.833	4.625	2.970
03/05/24	7.5	13	5.458	3.575
03/06/24	11.583	3.958	1.583	0.945
03/07/24	4.458	6.833	2.916	1.333
03/08/24	13.5	8.375	5.791	3.116
03/09/24	7.583	8.583	3.666	2.083
03/10/24	10.75	6.541	2.541	2.333
03/11/24	12.291	16.875	5.416	2.820
03/12/24	10.125	12.458	5.625	2.754

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)
03/13/24	8.291	11.625	—	3.883
03/14/24	29.125	31.291	—	21.354
03/15/24	5.541	7.041	—	4.579
03/16/24	10.083	14.75	—	5.283
03/17/24	11.458	12.875	—	5.875
03/18/24	10.041	9.166	11.6	4.466
03/19/24	13.75	12.833	11.666	6.787
03/20/24	13.666	21.75	12.208	8.000
03/21/24	15.625	13.791	13.416	9.316
03/22/24	13.666	15.916	16.625	9.562
03/23/24	6.916	9.208	4.875	2.725
03/24/24	9.458	13.541	4.291	2.195
03/25/24	11.083	9.166	6.833	3.716
03/26/24	18	14.083	9.875	4.600
03/27/24	14.208	14.833	11.916	7.120
03/28/24	16.5	16.541	7.625	4.240
03/29/24	10.833	9.958	8.916	3.841
03/30/24	3.458	9.041	3.625	1.900
03/31/24	7.75	14.583	1.54100	0.312

Notes:

Gray-shaded boxes indicate a filter sensor pressure failure.

Negative values mean the background exceeded the particulate count.

EPA – Simi Valley – Cochran Street – PM₁₀ Daily Averages, 01/01/2023–07/31/2023

	Simi Valley AQS # 061112002
Simi Valley PM ₁₀ Sample Date	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)
01/01/23	12
01/02/23	9
01/03/23	3
01/04/23	2
01/05/23	12
01/06/23	9
01/07/23	12
01/08/23	10
01/09/23	1
01/10/23	11
01/11/23	17
01/12/23	6
01/13/23	17
01/14/23	11
01/15/23	8
01/16/23	4
01/17/23	5
01/18/23	11
01/24/23	16
01/25/23	6
01/26/23	10
01/27/23	13
01/28/23	19
01/29/23	14
01/30/23	8
01/31/23	16
02/01/23	6
02/02/23	15
02/03/23	14
02/05/23	7
02/06/23	3
02/07/23	4
02/08/23	8
02/09/23	7
02/10/23	12
02/11/23	15
02/12/23	11
02/13/23	14

	Simi Valley AQS # 061112002
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
02/14/23	26
02/15/23	9
02/16/23	8
02/17/23	10
02/18/23	13
02/19/23	15
02/20/23	17
02/21/23	33
02/22/23	20
02/23/23	5
02/24/23	2
02/25/23	3
02/26/23	6
02/27/23	6
02/28/23	6
03/01/23	6
03/02/23	8
03/03/23	14
03/04/23	21
03/05/23	10
03/06/23	7
03/07/23	7
03/08/23	12
03/09/23	12
03/10/23	3
03/11/23	2
03/12/23	2
03/13/23	8
03/14/23	6
03/15/23	7
03/16/23	13
03/17/23	17
03/18/23	12
03/19/23	11
03/20/23	6
03/21/23	7
03/22/23	7
03/23/23	10

	Simi Valley AQS # 061112002
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
03/24/23	8
03/25/23	9
03/26/23	11
03/27/23	13
03/28/23	11
03/29/23	8
03/30/23	5
03/31/23	9
04/01/23	9
04/02/23	13
04/03/23	12
04/04/23	10
04/05/23	11
04/06/23	12
04/07/23	17
04/08/23	13
04/09/23	13
04/10/23	20
04/11/23	19
04/12/23	25
04/13/23	11
04/14/23	16
04/15/23	20
04/16/23	20
04/17/23	23
04/18/23	26
04/19/23	27
04/20/23	24
04/21/23	20
04/22/23	16
04/23/23	23
04/24/23	22
04/25/23	27
04/26/23	25
04/27/23	23
04/28/23	21
04/29/23	18
04/30/23	18

	Simi Valley AQS # 061112002
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
05/01/23	10
05/02/23	6
05/03/23	4
05/04/23	4
05/05/23	5
05/06/23	5
05/07/23	9
05/08/23	14
05/09/23	17
05/10/23	19
05/11/23	18
05/12/23	27
05/13/23	29
05/14/23	29
05/15/23	23
05/16/23	17
05/17/23	18
05/18/23	28
05/19/23	24
05/20/23	21
05/21/23	16
05/22/23	18
05/23/23	9
05/24/23	13
05/25/23	15
05/26/23	12
05/27/23	17
05/28/23	16
05/29/23	12
05/30/23	14
05/31/23	11
06/01/23	24
06/02/23	27
06/03/23	24
06/04/23	21
06/05/23	12
06/06/23	13
06/07/23	8

Simi Valley AQS # 061112002	
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
06/08/23	10
06/09/23	15
06/10/23	15
06/11/23	11
06/12/23	9
06/13/23	11
06/14/23	15
06/15/23	12
06/16/23	15
06/17/23	19
06/18/23	16
06/19/23	16
06/20/23	21
06/21/23	25
06/22/23	24
06/23/23	19
06/24/23	19
06/25/23	16
06/26/23	22
06/27/23	26
06/28/23	27
06/29/23	28
06/30/23	32
07/01/23	24
07/02/23	20
07/03/23	23
07/04/23	28
07/05/23	32
07/06/23	25
07/07/23	27
07/08/23	28
07/09/23	25
07/10/23	30
07/11/23	25
07/12/23	20
07/13/23	19
07/14/23	27
07/15/23	32

Simi Valley AQS # 061112002	
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
07/16/23	27
07/17/23	33
07/18/23	29
07/19/23	26
07/20/23	29
07/21/23	36
07/22/23	25
07/23/23	28
07/24/23	31
07/25/23	33
07/26/23	36
07/27/23	36
07/28/23	41
07/29/23	37
07/30/23	38
07/31/23	85

Notes:

Data supplied from https://aqs.epa.gov/aqsweb/airdata/download_files.html#Meta Only the Simi Valley PM₁₀ data from the State and Local Air Monitoring Stations (SLAMS) have been reported here. The Simi Valley PM_{2.5} and the Reseda PM_{2.5} have not been reported here since this report discusses only PM₁₀ data, not PM_{2.5} data. This webpage page contains pre-generated files of data available for download. The files are updated twice per year: once in June to capture the complete data for the prior year and once in December to capture the data for the summer (ozone season). At the time of writing this report the data posted is the most current data available.

Bold number indicates value exceeded CAAQS but is below the NAAQS of 150 µg/m³.

PM₁₀ Monthly Statistics

Location ID	January 2024			February 2024			March 2024		
	PM ₁₀			PM ₁₀			PM ₁₀		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	17.66600	1.12500	16.12450	21.20800	-0.95800	18.36640	29.12500	1.75000	17.25000
DOE-2	24.04100	-5.00000	20.35350	23.29100	-0.91600	19.46600	31.29100	3.95800	19.31250
DOE-3	16.75000	-5.00000	14.52050	13.20800	-0.70800	8.92060	16.62500	1.04100	13.11400
DOE-4	11.63300	-0.67900	8.47450	6.46200	-1.12500	4.73880	21.35400	-0.42500	9.43900

PCTL = percentile

EPA – Simi Valley – Cochran Street – PM₁₀ Monthly Statistics, 01/01/2023–07/31/2023

Location ID	January 2023			February 2023			March 2023		
	PM ₁₀			PM ₁₀			PM ₁₀		
	High	Low	95 th PCTL	High	Low	95 th PCTL	High	Low	95 th PCTL
Simi Valley AQS # 061112002 (PM ₁₀)	19.00000	1.00000	17.00000	33.00000	2.00000	24.20000	21.00000	2.00000	15.50000
Location ID	April 2023			May 2023			June 2023		
	PM ₁₀			PM ₁₀			PM ₁₀		
	High	Low	95 th PCTL	High	Low	95 th PCTL	High	Low	95 th PCTL
Simi Valley AQS # 061112002 (PM ₁₀)	27.00000	9.00000	26.55000	29.00000	4.00000	28.50000	32.00000	8.00000	27.55000
Location ID	July 2023								
	PM ₁₀								
	High	Low	95 th PCTL						
Simi Valley AQS # 061112002 (PM ₁₀)	85.00000	19.00000	39.50000						

Notes:

Data supplied from https://aqg.epa.gov/aqgweb/airdata/download_files.html#Meta Only the Simi Valley PM₁₀ data from the State and Local Air Monitoring Stations (SLAMS) have been reported here. The Simi Valley PM_{2.5} and the Reseda PM_{2.5} have not been reported here since this report discusses only PM₁₀ data, not PM_{2.5} data. This webpage page contains pre-generated files of data available for download. The files are updated twice per year: once in June to capture the complete data for the prior year and once in December to capture the data for the summer (ozone season).

APPENDIX B

Analytical Results for Ambient Air VOCs

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Table B-1. Ambient air VOC detection results compared to Screening Level Values.

Location ID	Sample Date	Analyte	Method Detection Limit	Result	Screening Level Value	SL Source
DOE-1	01/19/2024	Dichlorodifluoromethane	0.13	2.1	100	US EPA RSL
DOE-1	01/19/2024	Ethyl acetate	0.41	6.4	73	US EPA RSL
DOE-1	01/19/2024	Tetrahydrofuran	0.098	1.2	2100	US EPA RSL
DOE-1	01/19/2024	Toluene	0.096	1.3	310	DTSC HHRA NOTE 3
DOE-1	01/19/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-2	01/19/2024	Chloromethane	0.12	0.72(;;J)	94	US EPA RSL
DOE-2	01/19/2024	Dichlorodifluoromethane	0.13	2.2	100	US EPA RSL
DOE-2	01/19/2024	Ethyl acetate	0.40	5.6 (;;J)	73	US EPA RSL
DOE-2	01/19/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-3	01/19/2024	Dichlorodifluoromethane	0.13	2.2	100	US EPA RSL
DOE-3	01/19/2024	Ethyl acetate	0.42	6.3	73	US EPA RSL
DOE-3	01/19/2024	Isopropanol	0.33	2.2	210	US EPA RSL
DOE-3	01/19/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-4	01/19/2024	Dichlorodifluoromethane	0.13	2.2	100	US EPA RSL
DOE-4	01/19/2024	Ethyl acetate	0.42	7.4	73	US EPA RSL
DOE-4	01/19/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-1	02/02/2024	Dichlorodifluoromethane	0.11	2.7	100	US EPA RSL
DOE-1	02/02/2024	Ethyl acetate	0.36	8.5	73	US EPA RSL
DOE-1	02/02/2024	Isopropanol	0.29	1.7	210	US EPA RSL
DOE-1	02/02/2024	Trichlorofluoromethane	0.11	1.2	1300	DTSC HHRA NOTE 3
DOE-2	02/02/2024	Dichlorodifluoromethane	0.12	2.7	100	US EPA RSL
DOE-2	02/02/2024	Ethyl acetate	0.37	7.1	73	US EPA RSL
DOE-2	02/02/2024	Trichlorofluoromethane	0.11	1.3	1300	DTSC HHRA NOTE 3
DOE-3	02/02/2024	Dichlorodifluoromethane	0.12	2.6	100	US EPA RSL
DOE-3	02/02/2024	Ethyl acetate	0.37	6.4	73	US EPA RSL
DOE-3	02/02/2024	Trichlorofluoromethane	0.11	1.3	1300	DTSC HHRA NOTE 3
DOE-4	02/02/2024	Dichlorodifluoromethane	0.13	2.7	100	US EPA RSL
DOE-4	02/02/2024	Ethyl acetate	0.41	27	73	US EPA RSL
DOE-4	02/02/2024	Trichlorofluoromethane	0.12	1.3	1300	DTSC HHRA NOTE 3
DOE-1	02/15/2024	Dichlorodifluoromethane	0.12	2.5	100	US EPA RSL
DOE-1	02/15/2024	Ethyl acetate	1.0	4.4	73	US EPA RSL
DOE-1	02/15/2024	Trichlorofluoromethane	0.11	1.4	1300	DTSC HHRA NOTE 3
DOE-2	02/15/2024	Dichlorodifluoromethane	0.12	2.4	100	US EPA RSL
DOE-2	02/15/2024	Ethyl acetate	1.1	7.4	73	US EPA RSL
DOE-2	02/15/2024	Trichlorofluoromethane	0.11	1.3	1300	DTSC HHRA NOTE 3
DOE-3	02/15/2024	Dichlorodifluoromethane	0.12	2.5	100	US EPA RSL
DOE-3	02/15/2024	Ethyl acetate	1.1	8.3	73	US EPA RSL
DOE-3	02/15/2024	Trichlorofluoromethane	0.11	1.4	1300	DTSC HHRA NOTE 3
DOE-4	02/15/2024	Dichlorodifluoromethane	0.13	2.4	100	US EPA RSL
DOE-4	02/15/2024	Ethyl acetate	1.1	36	73	US EPA RSL
DOE-4	02/15/2024	Trichlorofluoromethane	0.12	1.4	1300	DTSC HHRA NOTE 3
DOE-1	02/28/2024	Chloromethane	0.12	1.3	94	US EPA RSL

Location ID	Sample Date	Analyte	Method Detection Limit	Result	Screening Level Value	SL Source
DOE-1	02/28/2024	Dichlorodifluoromethane	0.13	2.2	100	US EPA RSL
DOE-1	02/28/2024	Ethyl acetate	1.1	29	73	US EPA RSL
DOE-1	02/28/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3
DOE-2	02/28/2024	Chloromethane	0.13	1.4	94	US EPA RSL
DOE-2	02/28/2024	Dichlorodifluoromethane	0.13	2.3	100	US EPA RSL
DOE-2	02/28/2024	Ethyl acetate	1.1	18	73	US EPA RSL
DOE-2	02/28/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3
DOE-3	02/28/2024	2-butanone	0.36	1.6	5200	US EPA RSL
DOE-3	02/28/2024	Chloromethane	0.13	1.5	94	US EPA RSL
DOE-3	02/28/2024	Dichlorodifluoromethane	0.13	2.2	100	US EPA RSL
DOE-3	02/28/2024	Ethyl acetate	1.1	11	73	US EPA RSL
DOE-3	02/28/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3
DOE-4	02/28/2024	Chloromethane	0.13	1.6	94	US EPA RSL
DOE-4	02/28/2024	Dichlorodifluoromethane	0.13	2.3	100	US EPA RSL
DOE-4	02/28/2024	Ethyl acetate	1.1	13	73	US EPA RSL
DOE-4	02/28/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3
DOE-1	03/12/2024	Chloromethane	0.12	1.4	94	US EPA RSL
DOE-1	03/12/2024	Dichlorodifluoromethane	0.12	2.3	100	US EPA RSL
DOE-1	03/12/2024	Ethyl acetate	1.0	220	73	US EPA RSL
DOE-1	03/12/2024	Isopropanol	0.30	1.7	210	US EPA RSL
DOE-1	03/12/2024	Methylene chloride	0.21	0.83	1	DTSC HHRA NOTE 3
DOE-1	03/12/2024	Trichlorofluoromethane	0.11	1.2	1300	DTSC HHRA NOTE 3
DOE-2	03/12/2024	Chloromethane	0.12	1.4	94	US EPA RSL
DOE-2	03/12/2024	Dichlorodifluoromethane	0.13	2.4	100	US EPA RSL
DOE-2	03/12/2024	Ethyl acetate	1.1	250	73	US EPA RSL
DOE-2	03/12/2024	Methylene chloride	0.22	0.85	1	DTSC HHRA NOTE 3
DOE-2	03/12/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3
DOE-3	03/12/2024	Carbon disulfide	0.20	3.6	730	US EPA RSL
DOE-3	03/12/2024	Chloromethane	0.11	1.4	94	US EPA RSL
DOE-3	03/12/2024	Dichlorodifluoromethane	0.11	2.3	100	US EPA RSL
DOE-3	03/12/2024	Ethyl acetate	0.94	96	73	US EPA RSL
DOE-3	03/12/2024	Methylene chloride	0.19	0.80	1	DTSC HHRA NOTE 3
DOE-3	03/12/2024	Trichlorofluoromethane	0.10	1.2	1300	DTSC HHRA NOTE 3
DOE-4	03/12/2024	Chloromethane	0.12	1.4	94	US EPA RSL
DOE-4	03/12/2024	Dichlorodifluoromethane	0.12	2.3	100	US EPA RSL
DOE-4	03/12/2024	Ethyl acetate	1.1	84	73	US EPA RSL
DOE-4	03/12/2024	Isopropanol	0.31	1.5	210	US EPA RSL
DOE-4	03/12/2024	Methylene chloride	0.21	0.70	1	DTSC HHRA NOTE 3
DOE-4	03/12/2024	Trichlorofluoromethane	0.11	1.2	1300	DTSC HHRA NOTE 3
DOE-1	03/27/2024	Dichlorodifluoromethane	0.13	2.3	100	US EPA RSL
DOE-1	03/27/2024	Ethyl acetate	1.1	83	73	US EPA RSL
DOE-1	03/27/2024	Toluene	0.098	0.97	310	DTSC HHRA NOTE 3
DOE-1	03/27/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3

Location ID	Sample Date	Analyte	Method Detection Limit	Result	Screening Level Value	SL Source
DOE-2	03/27/2024	Dichlorodifluoromethane	0.12	2.4	100	US EPA RSL
DOE-2	03/27/2024	Ethyl acetate	1.1	23	73	US EPA RSL
DOE-2	03/27/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-3	03/27/2024	2-butanone	0.34	2.8 (;J)	5200	US EPA RSL
DOE-3	03/27/2024	Dichlorodifluoromethane	0.12	2.3	100	US EPA RSL
DOE-3	03/27/2024	Ethyl acetate	1.1	19 (;J)	73	US EPA RSL
DOE-3	03/27/2024	Toluene	0.093	1.4 (;J)	310	DTSC HHRA NOTE 3
DOE-3	03/27/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3
DOE-4	03/27/2024	Dichlorodifluoromethane	0.13	2.3	100	US EPA RSL
DOE-4	03/27/2024	Ethyl acetate	1.1	36	73	US EPA RSL
DOE-4	03/27/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3

Note:

Bold text and gray-shaded boxes indicate detection above reporting limit, and also exceeds the EPA or DTSC Screening Level.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

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APPENDIX C
Radionuclide Results

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Table C-1. Gross alpha and gross beta air sample results for air samplers.

Sample Collection Date	Result Alpha (mCi/mL)	MDC – Alpha (mCi/mL)	Result Beta (mCi/mL)	MDC – Beta (mCi/mL)
Sample location DOE-1				
1/5/2024	-2.48E-15	7.24E-15	6.37E-15	2.98E-14
1/8/2024	1.53E-15	7.17E-15	1.96E-14	2.95E-14
1/12/2024	-1.09E-15	5.34E-15	-1.07E-16	2.20E-14
1/16/2024	-1.86E-15	5.42E-15	2.94E-14	2.23E-14
1/19/2024	8.65E-16	7.18E-15	3.00E-14	2.95E-14
1/23/2024	1.49E-16	5.37E-15	-5.21E-15	2.21E-14
1/26/2024	-4.17E-15	7.27E-15	-2.38E-14	2.99E-14
1/29/2024	-4.66E-16	7.19E-15	9.92E-15	2.96E-14
1/31/2024	-4.68E-15	1.08E-14	6.49E-14	4.42E-14
2/2/2024	-6.11E-15	9.92E-15	6.79E-14	4.29E-14
2/9/2024	-3.70E-15	1.02E-14	-8.41E-15	4.40E-14
2/12/2024	1.24E-15	6.53E-15	1.60E-14	2.83E-14
2/16/2024	2.81E-15	5.18E-15	4.54E-14	2.24E-14
2/20/2024	2.70E-15	4.98E-15	4.58E-15	2.16E-14
2/26/2024	-5.01E-17	4.14E-15	2.11E-14	1.79E-14
3/1/2024	3.35E-15	4.62E-15	3.73E-14	2.17E-14
3/4/2024	2.51E-15	6.19E-15	-1.89E-14	2.90E-14
3/8/2024	1.61E-16	4.72E-15	8.99E-15	2.22E-14
3/11/2024	-1.17E-16	6.11E-15	1.86E-14	2.87E-14
3/15/2024	-3.47E-16	4.80E-15	9.69E-15	2.25E-14
3/18/2024	-1.15E-16	6.01E-15	1.87E-14	2.82E-14
3/22/2024	2.20E-15	4.78E-15	6.56E-14	2.24E-14
3/25/2024	-1.19E-16	6.19E-15	2.03E-14	2.91E-14
3/28/2024	2.56E-15	6.30E-15	2.86E-14	2.96E-14

Sample Collection Date	Result Alpha (mCi/mL)	MDC – Alpha (mCi/mL)	Result Beta (mCi/mL)	MDC – Beta (mCi/mL)
Sample location DOE-2				
1/5/2024	-5.83E-15	7.24E-15	-1.75E-14	2.98E-14
1/8/2024	-4.45E-15	7.17E-15	9.54E-15	2.95E-14
1/12/2024	3.96E-16	5.34E-15	1.38E-14	2.20E-14
1/16/2024	6.53E-16	5.42E-15	4.76E-14	2.23E-14
1/19/2024	8.65E-16	7.19E-15	4.37E-14	2.95E-14
1/23/2023	-2.59E-15	5.37E-15	2.94E-14	2.21E-14
1/26/2024	-2.83E-15	7.27E-15	2.60E-14	2.99E-14
1/29/2024	2.87E-15	7.19E-15	5.61E-15	2.96E-14
1/31/2024	-1.69E-15	1.07E-14	4.22E-14	4.41E-14
2/2/2024	-1.62E-15	9.93E-15	1.24E-15	4.30E-14
2/9/2024	-1.23E-16	1.02E-14	-8.95E-15	4.40E-14
2/12/2024	3.54E-15	6.53E-15	4.96E-14	2.83E-14
2/16/2024	7.20E-16	5.18E-15	4.97E-14	2.24E-14
2/20/2024	1.19E-15	4.97E-15	7.20E-15	2.15E-14
2/26/2024	9.92E-16	4.14E-15	2.55E-14	1.79E-14
3/1/2024	2.12E-15	4.62E-15	3.07E-14	2.17E-14
3/4/2024	5.39E-16	6.18E-15	-1.26E-14	2.90E-14
3/8/2024	1.45E-15	4.83E-15	9.61E-15	2.23E-14
3/11/2024	4.54E-15	6.26E-15	5.79E-14	2.90E-14
3/15/2024	1.21E-15	4.91E-15	3.22E-14	2.27E-14
3/18/2024	4.46E-15	6.15E-15	5.52E-14	2.85E-14
3/22/2024	3.55E-15	4.89E-15	1.25E-13	2.26E-14
3/25/2024	1.90E-15	6.34E-15	1.80E-14	2.93E-14
3/28/2024	2.28E-15	6.45E-15	4.49E-15	2.99E-14

Sample Collection Date	Result Alpha (mCi/mL)	MDC – Alpha (mCi/mL)	Result Beta (mCi/mL)	MDC – Beta (mCi/mL)
Sample location DOE-3				
1/5/2024	-1.34E-16	7.24E-15	-1.32E-14	2.98E-14
1/8/2024	8.64E-16	7.17E-15	-5.02E-16	2.95E-14
1/12/2024	-3.46E-16	5.34E-15	1.32E-14	2.19E-14
1/16/2024	-1.00E-16	5.42E-15	4.41E-14	2.23E-14
1/19/2024	-4.66E-16	7.19E-15	7.28E-14	2.95E-14
1/23/2024	-2.96E-15	7.60E-15	-2.81E-15	3.12E-14
1/26/2024	-2.16E-15	7.28E-15	1.99E-14	2.99E-14
1/29/2024	-1.13E-15	7.19E-15	4.62E-14	2.95E-14
1/31/2024	7.96E-16	1.07E-14	4.28E-14	4.42E-14
2/2/2024	-1.12E-15	9.94E-15	8.02E-14	4.30E-14
2/9/2024	-3.86E-15	1.23E-14	2.95E-14	5.32E-14
2/12/2024	2.50E-16	6.53E-15	3.51E-14	2.83E-14
2/16/2024	1.98E-16	5.18E-15	6.40E-14	2.24E-14
2/20/2024	9.80E-16	5.17E-15	6.40E-15	2.24E-14
2/26/2024	2.65E-15	4.13E-15	2.54E-14	1.79E-14
3/1/2024	-3.43E-16	4.74E-15	1.77E-14	2.19E-14
3/4/2024	-1.65E-15	9.26E-15	9.05E-15	4.29E-14
3/8/2024	-1.05E-15	5.90E-15	9.42E-15	2.73E-14
3/11/2024	1.55E-15	6.26E-15	7.13E-14	2.90E-14
3/15/2024	-1.92E-15	4.91E-15	3.13E-14	2.27E-14
3/18/2024	5.37E-16	6.15E-15	3.89E-14	2.85E-14
3/22/2024	5.89E-15	4.89E-15	1.09E-13	2.26E-14
3/25/2024	2.04E-15	6.81E-15	4.08E-14	3.15E-14
3/28/2024	—	—	—	—

Sample Collection Date	Result Alpha (mCi/mL)	MDC – Alpha (mCi/mL)	Result Beta (mCi/mL)	MDC – Beta (mCi/mL)
Sample location DOE-4				
1/5/2024	-4.69E-16	7.24E-15	1.22E-14	2.98E-14
1/8/2024	-4.36E-16	6.73E-15	1.13E-14	2.77E-14
1/12/2024	-8.41E-16	5.34E-15	-5.98E-15	2.19E-14
1/16/2024	1.16E-15	5.42E-15	3.95E-14	2.23E-14
1/19/2024	-1.46E-15	7.19E-15	4.62E-14	2.95E-14
1/23/2024	-4.31E-15	5.34E-15	6.57E-15	2.20E-14
1/26/2024	1.90E-15	7.32E-15	2.55E-14	3.01E-14
1/29/2024	-1.80E-15	7.20E-15	3.44E-14	2.96E-14
1/31/2024	1.29E-15	1.07E-14	5.72E-14	4.42E-14
2/2/2024	-1.19E-16	9.88E-15	-9.75E-15	4.28E-14
2/9/2024	-3.21E-15	1.02E-14	-2.25E-14	4.42E-14
2/12/2024	1.91E-15	6.57E-15	9.17E-15	2.85E-14
2/16/2024	1.76E-15	5.18E-15	5.63E-14	2.24E-14
2/20/2024	-3.05E-15	4.94E-15	2.18E-14	2.14E-14
2/26/2024	1.19E-15	4.98E-15	6.96E-15	2.16E-14
3/1/2024	2.18E-15	4.74E-15	2.73E-14	2.19E-14
3/4/2024	3.23E-15	6.30E-15	-2.71E-15	2.92E-14
3/8/2024	—	—	—	—
3/11/2024	1.48E-15	6.00E-15	6.40E-14	2.78E-14
3/15/2024	2.75E-15	4.86E-15	9.12E-15	2.25E-14
3/18/2024	1.52E-15	6.16E-15	3.34E-14	2.85E-14
3/22/2024	5.63E-15	4.89E-15	1.16E-13	2.27E-14
3/26/2024	6.72E-16	4.79E-15	3.97E-14	2.22E-14
3/28/2024	—	—	—	—

Note: Some values are negative after background subtraction.

Gray-shaded box indicates that samples at DOE-3 and DOE-4 were not collected during these events.

Table C-2. Individual radionuclide analysis for the composite filter samples.

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier	Airborne Concentration (μCi/mL)
Location DOE-1 – Air volume/sample = 8.64E+08				
Cesium-137	-0.98	6.91	U U	-1.134E-15
Strontium-90	-0.805	2.85	U U	-9.317E-16
Cobalt-60	2.64	8.09	U U	3.056E-15
Potassium-40	109	75.4		1.262E-13
Beryllium-7	48.4	97.4	U U	5.602E-14
Plutonium-238	0.0288	0.307	U U	3.333E-17
Polonium-210	5.06	0.655		5.856E-15
Plutonium-241	18.6	41.8	U U	2.153E-14
Thorium-230	1.07	0.631	UJ	1.238E-15
Thorium-228	0.994	0.799		1.150E-15
Actinium-228	1.38	32.4	U U	1.597E-15
Americium-241	0.0729	0.219	U U	8.438E-17
Plutonium-239	0.111	0.166	U U	1.285E-16
Ra-228 - total	2.38	3.61	U U	2.755E-15
Radium-226, -228 combined	-1.23	14.3	U U	-1.424E-15
Thorium-232	0.712	0.487		8.241E-16
Uranium-238	0.744	0.219	UJ	8.611E-16
Uranium-233/234	0.995	0.268	UJ	1.152E-15
Uranium-235/236	0.192	0.115		2.222E-16
Location DOE-2 – Air volume/sample = 8.64E+08				
Cesium-137	1.4	6.57	U U	1.620E-15
Strontium-90	-0.733	2.8	U U	-8.484E-16
Cobalt-60	0.0527	7.19	U U	6.100E-17
Potassium-40	55.3	56.5	U U	6.400E-14
Beryllium-7	34.3	86.6	U U	3.970E-14
Plutonium-238	0	0.183	U U	0.000E+0
Polonium-210	6.63	1.13		7.674E-15
Plutonium-241	17.3	45.5	U U	2.002E-14
Thorium-230	0.449	0.768	U U	5.197E-16
Thorium-228	0.55	0.911	U U	6.366E-16
Actinium-228	-10.3	26.4	U U	-1.192E-14
Americium-241	-0.118	0.546	U U	-1.366E-16
Plutonium-239	0.0926	0.337	U U	1.072E-16
Ra-228 - total	0.51	3.37	U U	5.903E-16
Radium-226, -228 combined	12.7	14.6	U U	1.470E-14
Thorium-232	0.774	0.582		8.958E-16
Uranium-238	1.02	0.0986	UJ	1.181E-15

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier	Airborne Concentration (µCi/mL)
Uranium-233/234	0.744	0.304	UJ	8.611E-16
Uranium-235/236	0.0812	0.122	U U	9.398E-17
Location DOE-3 – Air volume/sample = 7.93E+08				
Cesium-137	-2.76	7.58	U U	-3.480E-15
Strontium-90	0.613	2.68	U U	7.730E-16
Cobalt-60	1.91	11.5	U U	2.409E-15
Potassium-40	55.6	71.3	U U	7.011E-14
Beryllium-7	73.7	114	U U	9.294E-14
Plutonium-238	0.0641	0.192	U U	8.083E-17
Polonium-210	7.85	0.626		9.899E-15
Plutonium-241	11.3	52.6	U U	1.425E-14
Thorium-230	1.04	0.956	UJ	1.311E-15
Thorium-228	0.162	1.43	U U	2.043E-16
Actinium-228	18.7	54.9	U U	2.358E-14
Americium-241	0.103	0.376	U U	1.299E-16
Plutonium-239	0.0333	0.355	U U	4.199E-17
Ra-228 - total	6.21	4.21		7.831E-15
Radium-226, -228 combined	-0.536	11.2	U U	-6.759E-16
Thorium-232	0.535	0.517		6.747E-16
Uranium-238	0.937	0.208	UJ	1.182E-15
Uranium-233/234	0.753	0.298	UJ	9.496E-16
Uranium-235/236	0.153	0.257	U U	1.929E-16
Location DOE-4 – Air volume/sample = 7.95E+08				
Cesium-137	-2.04	6.76	U U	-2.566E-15
Strontium-90	0.21	2.81	U U	2.642E-16
Cobalt-60	-0.163	7.34	U U	-2.050E-16
Potassium-40	104	69.2	UI UJ	1.308E-13
Beryllium-7	40.9	92.8	U U	5.145E-14
Plutonium-238	-0.0132	0.263	U U	-1.660E-17
Polonium-210	5.41	0.355		6.805E-15
Plutonium-241	2.91	44.4	U U	3.660E-15
Thorium-230	1.46	0.837	UJ	1.836E-15
Thorium-228	0.687	0.751	U U	8.642E-16
Actinium-228	-11.9	33.2	U U	-1.497E-14
Americium-241	0.121	0.329	U U	1.522E-16
Plutonium-239	0.0416	0.263	U U	5.233E-17
Ra-228 - total	1.64	4.67	U U	2.063E-15
Radium-226, -228 combined	-6.46	12.5	U U	-8.126E-15
Thorium-232	0.982	0.426		1.235E-15

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier	Airborne Concentration (μCi/mL)
Uranium-238	0.968	0.0937	UJ	1.218E-15
Uranium-233/234	0.768	0.29	UJ	9.660E-16
Uranium-235/236	0.309	0.116		3.887E-16

Notes – Data Qualifier meanings:

U U – Analyte was analyzed for but not detected and is qualified as a non-detect.

UI – Results are considered a false positive due to high peak-width.

UJ – The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

J – The analyte was detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

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APPENDIX D

PM₁₀ Monthly Audit Reports and Flow Verification Results

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One-Point Flow Rate Bias Estimate

ETEC Site: DOE-1	Pollutant type: PM10	Bias (%)
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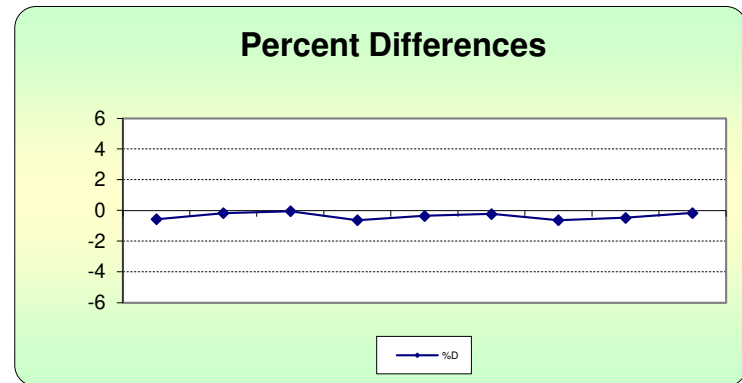
Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d ²	d	d ²
24	W23313	1/17/2024	14.00	14.08	-0.568	25th -0.568	0.323	0.568	0.323
			16.70	16.73	-0.179		0.032	0.179	0.032
			17.50	17.51	-0.057		0.003	0.057	0.003
24	W23313	2/22/2024	14.00	14.09	-0.639	75th -0.179	0.408	0.639	0.408
			16.70	16.76	-0.358		0.128	0.358	0.128
			17.50	17.54	-0.228		0.052	0.228	0.052
24	W23313	3/22/2024	14.00	14.09	-0.639		0.408	0.639	0.408
			16.70	16.78	-0.477		0.227	0.477	0.227
			17.50	17.53	-0.171		0.029	0.171	0.029

n	$\sum d $	"AB" (Eqn 4)
9	3.316	0.368
n-1	$\sum d^2$	"AS" (Eqn 5)
8	1.611	0.221

Bias (%) (Eqn 3)	Both Signs Positive
0.51	FALSE
Signed Bias (%)	Both Signs Negative
-0.51	TRUE

Note: No quality issues reported this quarter.

Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
 Quality Indicator Assessment Reports
 Data Assessment Statistical Calculator - Software to calculate precision and bias statistics
 MS EXCEL filename - "11/3/2017 (dasc)11_3_17.xls"
<https://www3.epa.gov/tnn/amtic/qareport.html>



One-Point Flow Rate Bias Estimate

ETEC Site: DOE-2						Pollutant type: PM10				Bias (%)	
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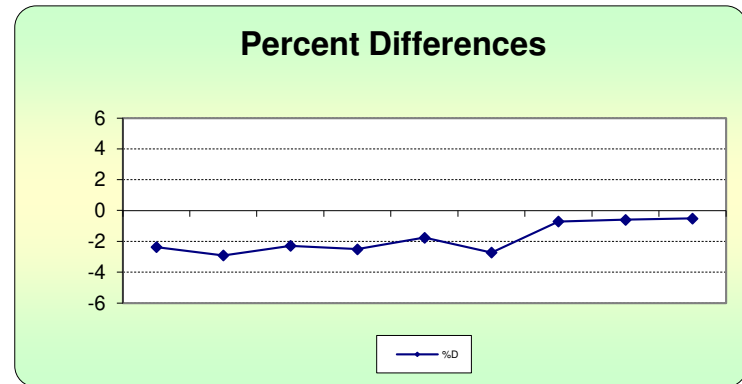
Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d ²	d	d ²
24	Y12096	1/17/2024	14.00	14.34	-2.371	25th -2.507	5.622	2.371	5.622
			16.70	17.20	-2.907		8.451	2.907	8.451
			17.50	17.91	-2.289		5.241	2.289	5.241
24	Y12096	2/22/2024	14.00	14.36	-2.507	75th -0.709	6.285	2.507	6.285
			16.70	17.00	-1.765		3.114	1.765	3.114
			17.50	17.99	-2.724		7.419	2.724	7.419
24	Y12096	3/22/2024	14.00	14.10	-0.709		0.503	0.709	0.503
			16.70	16.80	-0.595		0.354	0.595	0.354
			17.50	17.59	-0.512		0.262	0.512	0.262

n	Σ d	"AB" (Eqn 4)
9	16.379	1.820
n-1	Σ d ²	"AS" (Eqn 5)
8	37.250	0.965

Bias (%) (Eqn 3)	Both Signs Positive
2.42	FALSE
Signed Bias (%)	Both Signs Negative
-2.42	TRUE

Note: No quality issues reported this quarter.

Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
 Quality Indicator Assessment Reports
 Data Assessment Statistical Calculator - Software to calculate precision and bias statistics
 MS EXCEL filename - "11/3/2017 (dasc)11_3_17.xls"
<https://www3.epa.gov/tnn/amtic/qareport.html>





One-Point Flow Rate Bias Estimate

ETEC Site: DOE-3	Pollutant type: PM10	Bias (%)
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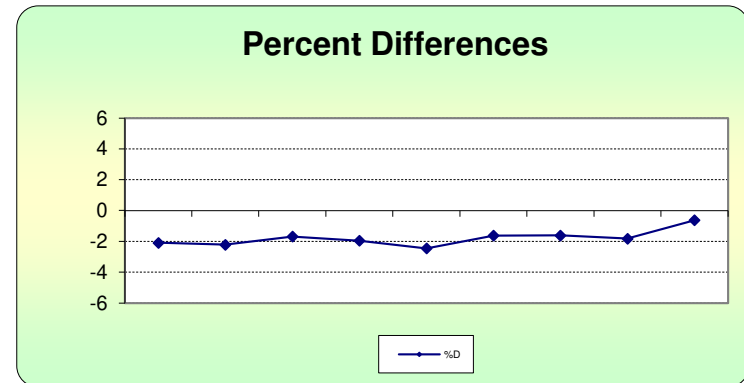
Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d ²	d	d ²
24	X16067	1/17/2024	14.00	14.30	-2.098	25th -2.098	4.401	2.098	4.401
			16.70	17.08	-2.225		4.950	2.225	4.950
			17.50	17.80	-1.685		2.841	1.685	2.841
24	X16067	2/22/2024	14.00	14.28	-1.961	75th -1.630	3.845	1.961	3.845
			16.70	17.12	-2.453		6.019	2.453	6.019
			17.50	17.79	-1.630		2.657	1.630	2.657
24	X16067	3/22/2024	14.00	14.23	-1.616		2.612	1.616	2.612
			16.70	17.01	-1.822		3.321	1.822	3.321
			17.50	17.61	-0.625		0.390	0.625	0.390

n	$\sum d $	"AB" (Eqn 4)
9	16.116	1.791
n-1	$\sum d ^2$	"AS" (Eqn 5)
8	31.036	0.522

Bias (%) (Eqn 3)	Both Signs Positive
2.11	FALSE
Signed Bias (%)	Both Signs Negative
-2.11	TRUE

Note: No quality issues reported this quarter.

Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
 Quality Indicator Assessment Reports
 Data Assessment Statistical Calculator - Software to calculate precision and bias statistics
 MS EXCEL filename - "11/3/2017 (dasc)11_3_17.xls"
<https://www3.epa.gov/tnn/amtic/qareport.html>





One-Point Flow Rate Bias Estimate

ETEC Site: DOE-4					Pollutant type: PM10				Bias (%)	
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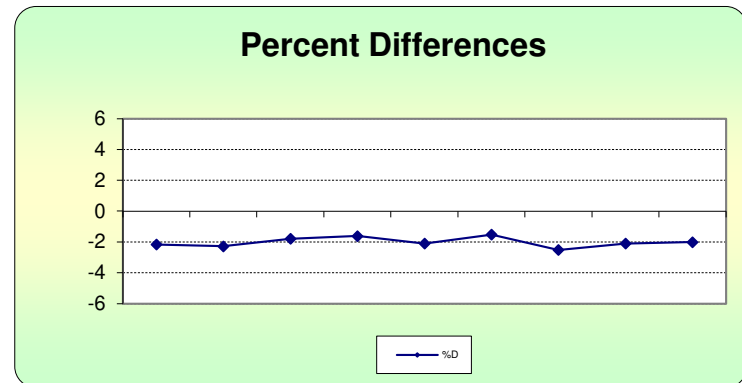
Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d ²	d	d ²
24	B18932	1/17/2024	14.00	14.31	-2.166	25th -2.166	4.693	2.166	4.693
			16.70	17.09	-2.282		5.208	2.282	5.208
			17.50	17.82	-1.796		3.225	1.796	3.225
24	B18932	2/22/2024	14.00	14.23	-1.616	75th -1.796	2.612	1.616	2.612
			16.70	17.06	-2.110		4.453	2.110	4.453
			17.50	17.77	-1.519		2.309	1.519	2.309
24	B18932	3/22/2024	14.00	14.36	-2.507		6.285	2.507	6.285
			16.70	17.06	-2.110	4.453	2.110	4.453	
			17.50	17.86	-2.016	4.063	2.016	4.063	

n	Σ d	"AB" (Eqn 4)
9	18.123	2.014
n-1	Σd ²	"AS" (Eqn 5)
8	37.300	0.318

Bias (%) (Eqn 3)	Both Signs Positive
2.21	FALSE
Signed Bias (%)	Both Signs Negative
-2.21	TRUE

Note: No quality issues reported this quarter.

Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
 Quality Indicator Assessment Reports
 Data Assessment Statistical Calculator - Software to calculate precision and bias statistics
 MS EXCEL filename - "11/3/2017 (dasc)11_3_17.xls"
<https://www3.epa.gov/tnn/amtic/qareport.html>





Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1

Serial # W23313

Audit Date: 1/17/2024

Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/27/2023

Leak Check Value: as found: 0.6 as left: 0.6

	E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found: <u>11.4</u> °C	<u>11.3</u> °C	as left:	<u>11.4</u> °C	<u>11.3</u> °C
Barometric Pressure:	as found: <u>716.0</u> mmHg	<u>715.5</u> mmHg	as left:	<u>716.0</u> mmHg	<u>715.5</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	<u>16.73</u> lpm	as left:	<u>16.7</u> lpm	<u>16.73</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	<u>14.08</u> lpm	as left:	<u>14.0</u> lpm	<u>14.08</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	<u>17.51</u> lpm	as left:	<u>17.5</u> lpm	<u>17.51</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm ²):	<u>0.885</u>	Flow Rate	Vacuum	Quality Category
Measured Span Mass (mg/cm ²):	<u>0.898</u>	14.0 - 15.0	Value	Good / Marginal / Poor
Difference (mg/cm ²):	<u>0.013</u>	(lpm)	(Hg)	
% Difference / Pass or Fail:	<u>1.50%</u>	<u>14.5</u>	<u>408.9</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1228</u>	<u>1228</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>1</u>	<u>1</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5V</u>
Tape Advance	24 hrs	<u>24</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0V</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>OFF</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>1/17/23</u>	<u>1228</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # Y12096
 Audit Date: 1/16/2024 Audited By: T.S. Williford

17 TSW

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/27/2023
 Leak Check Value: as found: 0.4 as left: 0.4

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	<u>11.9</u> °C	<u>12.2</u> °C	as left:	<u>11.9</u> °C	<u>12.2</u> °C
Barometric Pressure:	as found:	<u>711.5</u> mmHg	<u>713.0</u> mmHg	as left:	<u>711.5</u> mmHg	<u>713.0</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>17.2</u> lpm	as left:	<u>16.7</u> lpm	<u>17.2</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.34</u> lpm	as left:	<u>14.0</u> lpm	<u>14.34</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.91</u> lpm	as left:	<u>17.5</u> lpm	<u>17.91</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm ²):	<u>0.891</u>	Flow Rate	14.0 - 15.0 (lpm)	Vacuum Value (Hg)	397.6	Quality Category	Good / Marginal / Poor
Measured Span Mass (mg/cm ²):	<u>0.884</u>						
Difference (mg/cm ²):	<u>0.007</u>						
% Difference / Pass or Fail:	<u>0.79%</u>						<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1118</u>	<u>1118</u>	Analog Mode	Hourly	<u>hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>2</u>	<u>2</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>OFF</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No New Messages</u>	<u>1/17/23</u>	<u>126</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # X16067
 Audit Date: 1/17/24 Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/27/2023
 Leak Check Value: as found: 0.4 as left: 0.4

	as found:	E-BAM	Ref. Std.	as left:	E-BAM	Ref. Std.
Ambient Temperature:	11.7 °C	11.7 °C	11.3 °C	11.7 °C	11.7 °C	11.3 °C
Barometric Pressure:	714.2 mmHg	714.2 mmHg	713.5 mmHg	714.2 mmHg	714.2 mmHg	713.5 mmHg
16.7 lpm Flow Rate	16.7 lpm	16.7 lpm	17.08 lpm	16.7 lpm	16.7 lpm	17.08 lpm
14.0 lpm Flow Rate	14.0 lpm	14.0 lpm	14.30 lpm	14.0 lpm	14.0 lpm	14.30 lpm
17.5 lpm Flow Rate	17.5 lpm	17.5 lpm	17.80 lpm	17.5 lpm	17.5 lpm	17.80 lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm ²):	<u>0.950</u>	Flow Rate	Vacuum	Quality Category
Measured Span Mass (mg/cm ²):	<u>0.938</u>	14.0 - 15.0	Value	Good / Marginal / Poor
Difference (mg/cm ²):	<u>0.012</u>	(lpm)	(Hg)	
% Difference / Pass or Fail:	<u>1.27%</u>	<u>14.7</u>	<u>428.3</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1320</u>	<u>1320</u>	Analog Mode	Hourly	<u>hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>3</u>	<u>3</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new Messages</u>	<u>1/17/24</u>	<u>1320</u>	4		
<u>2</u>			5		
<u>3</u>			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4

Serial # B18932

Audit Date: 1/17/2024

Audited By: T.S. Williford

Flow Audit													
Flow Audit Device Model:	<u>BGI Delta Cal DC-1A</u>	Serial No:	<u>158047</u>	Calibration Date:	<u>2/27/2023</u>								
Leak Check Value:	as found: <u>0.38</u>	as left:	<u>0.38</u>										
	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>10.7</u> °C</td><td><u>11.1</u> °C</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>10.7</u> °C	<u>11.1</u> °C			<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>10.7</u> °C</td><td><u>11.1</u> °C</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>10.7</u> °C	<u>11.1</u> °C	
E-BAM	Ref. Std.												
<u>10.7</u> °C	<u>11.1</u> °C												
E-BAM	Ref. Std.												
<u>10.7</u> °C	<u>11.1</u> °C												
Ambient Temperature:	as found:			as left:									
Barometric Pressure:	as found:	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>705.7</u> mmHg</td><td><u>705.0</u> mmHg</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>705.7</u> mmHg	<u>705.0</u> mmHg		as left:	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>705.7</u> mmHg</td><td><u>705.0</u> mmHg</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>705.7</u> mmHg	<u>705.0</u> mmHg
E-BAM	Ref. Std.												
<u>705.7</u> mmHg	<u>705.0</u> mmHg												
E-BAM	Ref. Std.												
<u>705.7</u> mmHg	<u>705.0</u> mmHg												
16.7 lpm Flow Rate	as found:	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>16.7</u> lpm</td><td><u>17.09</u> lpm</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>16.7</u> lpm	<u>17.09</u> lpm		as left:	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>16.7</u> lpm</td><td><u>17.09</u> lpm</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>16.7</u> lpm	<u>17.09</u> lpm
E-BAM	Ref. Std.												
<u>16.7</u> lpm	<u>17.09</u> lpm												
E-BAM	Ref. Std.												
<u>16.7</u> lpm	<u>17.09</u> lpm												
14.0 lpm Flow Rate	as found:	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>14.0</u> lpm</td><td><u>14.31</u> lpm</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>14.0</u> lpm	<u>14.31</u> lpm		as left:	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>14.0</u> lpm</td><td><u>14.31</u> lpm</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>14.0</u> lpm	<u>14.31</u> lpm
E-BAM	Ref. Std.												
<u>14.0</u> lpm	<u>14.31</u> lpm												
E-BAM	Ref. Std.												
<u>14.0</u> lpm	<u>14.31</u> lpm												
17.5 lpm Flow Rate	as found:	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>17.5</u> lpm</td><td><u>17.82</u> lpm</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>17.5</u> lpm	<u>17.82</u> lpm		as left:	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>17.5</u> lpm</td><td><u>17.82</u> lpm</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>17.5</u> lpm	<u>17.82</u> lpm
E-BAM	Ref. Std.												
<u>17.5</u> lpm	<u>17.82</u> lpm												
E-BAM	Ref. Std.												
<u>17.5</u> lpm	<u>17.82</u> lpm												

Mechanical Audits (Y = Yes N = No)			
Sample nozzle clean:	as found	<u>Y</u>	as left <u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left <u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left <u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left <u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left <u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left <u>Y</u>

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2): <u>0.858</u>	Flow Rate	Vacuum	Quality Category
Measured Span Mass (mg/cm2): <u>0.854</u>	14.0 - 15.0	Value	Good / Marginal / Poor
Difference (mg/cm2): <u>0.46</u> <u>0.004</u>	(lpm)	(Hg)	
% Difference / Pass or Fail: <u>0.5%</u>	<u>14.4</u>	<u>370.2</u>	<u>Good</u>

Setup and Calibration Values								
Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1409</u>	<u>1409</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	
Location	<u>4</u>	<u>4</u>	Baud Rate	<u>9600</u>	<u>115200</u>	Restart Voltage	12.5 v	<u>12.5</u>
Tape Advance	24 hrs	<u>24</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0V</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log					
Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>1/17/24</u>	<u>1416</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # W23313
 Audit Date: 2/22/2024 Audited By: TSW:Willford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.6 as left: 0.6

	E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found: <u>10.8</u> °C	<u>11.3</u> °C	as left:	<u>10.8</u> °C	<u>11.3</u> °C
Barometric Pressure:	as found: <u>715.4</u> mmHg	<u>715.5</u> mmHg	as left:	<u>715.8</u> mmHg	<u>715.5</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	<u>16.76</u> lpm	as left:	<u>16.7</u> lpm	<u>16.76</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	<u>14.09</u> lpm	as left:	<u>14.0</u> lpm	<u>14.09</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	<u>17.54</u> lpm	as left:	<u>17.5</u> lpm	<u>17.54</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test	Pump Test		
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Expected Span Mass (mg/cm2): <u>0.885</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): <u>0.899</u>			
Difference (mg/cm2): <u>0.014</u>			
% Difference / Pass or Fail: <u>1.6%</u>	<u>14.6</u>	<u>416.9</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0831</u>	<u>0831</u>	Analog Mode	Hourly	<u>✓</u>	Flow Type	Actual	<u>✓</u>
Location	<u>1</u>	<u>✓</u>	Baud Rate	9600	<u>✓</u>	Restart Voltage	12.5 v	<u>✓</u>
Tape Advance	24 hrs	<u>✓</u>	RH Setpoint	45%	<u>✓</u>	Std Cond Temp	25 C	<u>✓</u>
Realtime Avg	60 mins	<u>✓</u>	Delta T Setpoint	15 C	<u>✓</u>	DAC	8.0 v	<u>✓</u>
Machine Type	PM-10	<u>✓</u>	RH Control	On	<u>✓</u>	RH Connect	No	<u>✓</u>
Analog FS	1.0 v	<u>✓</u>	Flow Setpoint	16.7	<u>✓</u>	Pump Protect	Off	<u>✓</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new Messages</u>	<u>2/22/24</u>	<u>0840</u>	4		
2			5		
3			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # Y12096
 Audit Date: 2/22/2024 Audited By: TS Willi Ford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024
 Leak Check Value: as found: 0.4 as left: 0.4

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	<u>11.8</u> °C	<u>12.4</u> °C	as left:	<u>11.8</u> °C	<u>12.4</u> °C
Barometric Pressure:	as found:	<u>714.0</u> mmHg	<u>714.3</u> mmHg	as left:	<u>714.0</u> mmHg	<u>714.3</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>17.0</u> lpm	as left:	<u>16.7</u> lpm	<u>17.0</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.36</u> lpm	as left:	<u>14.0</u> lpm	<u>14.36</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.99</u> lpm	as left:	<u>17.5</u> lpm	<u>17.99</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test		Pump Test		
Expected Span Mass (mg/cm2) :	<u>0.891</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) :	<u>0.879</u>			
Difference (mg/cm2) :	<u>0.012</u>			
% Difference / Pass or Fail: <u>1.36%</u>		<u>14.5</u>	<u>419.8</u>	<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1005</u>	<u>1005</u>	Analog Mode	Hourly	<input checked="" type="checkbox"/>	Flow Type	Actual	<input checked="" type="checkbox"/>
Location	<u>2</u>	<u>2</u>	Baud Rate	9600	<input checked="" type="checkbox"/>	Restart Voltage	12.5 v	<input checked="" type="checkbox"/>
Tape Advance	24 hrs	<input checked="" type="checkbox"/>	RH Setpoint	45%	<input checked="" type="checkbox"/>	Std Cond Temp	25 C	<input checked="" type="checkbox"/>
Realtime Avg	60 mins	<input checked="" type="checkbox"/>	Delta T Setpoint	15 C	<input checked="" type="checkbox"/>	DAC	8.0 v	<input checked="" type="checkbox"/>
Machine Type	PM-10	<input checked="" type="checkbox"/>	RH Control	On	<input checked="" type="checkbox"/>	RH Connect	No	<input checked="" type="checkbox"/>
Analog FS	1.0 v	<input checked="" type="checkbox"/>	Flow Setpoint	16.7	<input checked="" type="checkbox"/>	Pump Protect	Off	<input checked="" type="checkbox"/>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>2/22/24</u>	<u>1016</u>	4		
<u>2</u>			5		
<u>3</u>			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # X16067
 Audit Date: 2/22/2024 Audited By: TS Williford

Flow Audit													
Flow Audit Device Model:	<u>BGI Delta Cal DC-1A</u>	Serial No:	<u>158047</u>	Calibration Date:	<u>2/5/2024</u>								
Leak Check Value:	as found: <u>0.4</u>			as left: <u>0.4</u>									
	<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>18.5</u> °C</td><td><u>19.5</u> °C</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>18.5</u> °C	<u>19.5</u> °C			<table border="1"><thead><tr><th>E-BAM</th><th>Ref. Std.</th></tr></thead><tbody><tr><td><u>18.5</u> °C</td><td><u>19.5</u> °C</td></tr></tbody></table>	E-BAM	Ref. Std.	<u>18.5</u> °C	<u>19.5</u> °C	
E-BAM	Ref. Std.												
<u>18.5</u> °C	<u>19.5</u> °C												
E-BAM	Ref. Std.												
<u>18.5</u> °C	<u>19.5</u> °C												
Ambient Temperature:	as found:			as left:									
Barometric Pressure:	as found: <u>715.0</u> mmHg	<u>715.3</u> mmHg		as left: <u>715.0</u> mmHg	<u>715.3</u> mmHg								
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	<u>17.12</u> lpm		as left: <u>16.7</u> lpm	<u>17.12</u> lpm								
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	<u>14.28</u> lpm		as left: <u>14.0</u> lpm	<u>14.28</u> lpm								
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	<u>17.79</u> lpm		as left: <u>17.5</u> lpm	<u>17.79</u> lpm								

Mechanical Audits (Y = Yes N = No)			
Sample nozzle clean:	as found	<u>Y</u>	as left <u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left <u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left <u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left <u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left <u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left <u>Y</u>

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : <u>0.950</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : <u>0.940</u>			
Difference (mg/cm2) <u>0.010</u>			
% Difference / Pass or Fail: <u>1.06%</u>	<u>14.2</u>	<u>428.3</u>	<u>Marginal</u>

Setup and Calibration Values								
Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1058</u>	<u>1058</u>	Analog Mode	Hourly	<u>✓</u>	Flow Type	Actual	<u>✓</u>
Location	<u>3</u>	<u>3</u>	Baud Rate	9600	<u>✓</u>	Restart Voltage	12.5 v	<u>✓</u>
Tape Advance	24 hrs	<u>✓</u>	RH Setpoint	45%	<u>✓</u>	Std Cond Temp	25 C	<u>✓</u>
Realtime Avg	60 mins	<u>✓</u>	Delta T Setpoint	15 C	<u>✓</u>	DAC	8.0 v	<u>✓</u>
Machine Type	PM-10	<u>✓</u>	RH Control	On	<u>✓</u>	RH Connect	No	<u>✓</u>
Analog FS	1.0 v	<u>✓</u>	Flow Setpoint	16.7	<u>✓</u>	Pump Protect	Off	<u>✓</u>

Last 6 Errors in E-BAM Error Log					
Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>2/22/24</u>	<u>11:14</u>	4		
2			5		
3			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # B18932
 Audit Date: 2/22/24 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024
 Leak Check Value: as found: 0.27 as left: 0.27

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	<u>17.7</u> °C	<u>17.9</u> °C	as left:	<u>17.7</u> °C	<u>17.9</u> °C
Barometric Pressure:	as found:	<u>715.9</u> mmHg	<u>715.2</u> mmHg	as left:	<u>715.9</u> mmHg	<u>715.2</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>17.06</u> lpm	as left:	<u>16.7</u> lpm	<u>17.06</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.23</u> lpm	as left:	<u>14.0</u> lpm	<u>14.23</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.77</u> lpm	as left:	<u>17.5</u> lpm	<u>17.77</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean: as found Y as left Y
 Tape support vane clean: as found Y as left Y
 Tape spool covers tight: as found Y as left Y
 PM10 particle trap clean: as found Y as left Y
 PM10 drip jar empty: as found Y as left Y
 PM10 bug screen clear: as found Y as left Y

Manual Span Membrane Test		Pump Test		
Expected Span Mass (mg/cm2) :	<u>0.854</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) :	<u>0.858</u>			
Difference (mg/cm2) :	<u>0.004</u>			
% Difference / Pass or Fail:	<u>0.47%</u>	<u>14.3</u>	<u>400.2</u>	<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1316</u>	<u>1316</u>	Analog Mode	Hourly	<u>✓</u>	Flow Type	Actual	<u>✓</u>
Location	<u>4</u>	<u>4</u>	Baud Rate	9600	<u>115200</u>	Restart Voltage	12.5 v	<u>✓</u>
Tape Advance	24 hrs	<u>✓</u>	RH Setpoint	45%	<u>✓</u>	Std Cond Temp	25 C	<u>✓</u>
Realtime Avg	60 mins	<u>✓</u>	Delta T Setpoint	15 C	<u>✓</u>	DAC	8.0 v	<u>✓</u>
Machine Type	PM-10	<u>✓</u>	RH Control	On	<u>✓</u>	RH Connect	No	<u>✓</u>
Analog FS	1.0 v	<u>✓</u>	Flow Setpoint	16.7	<u>✓</u>	Pump Protect	Off	<u>✓</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1/No new messages</u>	<u>2/22/24</u>	<u>1340</u>	<u>4</u>		
<u>2</u>			<u>5</u>		
<u>3</u>			<u>6</u>		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # W23313
 Audit Date: 3/22/2024 Audited By: T.S. Williford

Flow Audit					
Flow Audit Device Model:	<u>BGI Delta Cal DC-1A</u>	Serial No:	<u>158047</u>	Calibration Date:	<u>2/5/2024</u>
Leak Check Value:	as found: <u>0.6</u>			as left: <u>0.6</u>	
	E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found: <u>17.4</u> °C	<u>17.5</u> °C	as left:	<u>17.4</u> °C	<u>17.5</u> °C
Barometric Pressure:	as found: <u>716.2</u> mmHg	<u>716.2</u> mmHg	as left:	<u>716.2</u> mmHg	<u>716.2</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	<u>16.78</u> lpm	as left:	<u>16.7</u> lpm	<u>16.78</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	<u>14.09</u> lpm	as left:	<u>14.0</u> lpm	<u>14.09</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	<u>17.53</u> lpm	as left:	<u>17.5</u> lpm	<u>17.53</u> lpm

Mechanical Audits (Y = Yes N = No)			
Sample nozzle clean:	as found	<u>Y</u>	as left <u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left <u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left <u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left <u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left <u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left <u>Y</u>

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : <u>0.885</u>	Flow Rate	Vacuum	Quality Category
Measured Span Mass (mg/cm2) : <u>0.902</u>	14.0 - 15.0	Value	Good / Marginal / Poor
Difference (mg/cm2) : <u>0.017</u>	(lpm)	(Hg)	
% Difference / Pass or Fail: <u>1.9%</u>	<u>14.8</u>	<u>424.8</u>	<u>Good Marginal</u>

Setup and Calibration Values								
Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1205</u>	<u>1205</u>	Analog Mode	Hourly	<u>✓</u>	Flow Type	Actual	<u>✓</u>
Location	<u>DOE-1</u>	<u>1</u>	Baud Rate	9600	<u>✓</u>	Restart Voltage	12.5 v	<u>✓</u>
Tape Advance	24 hrs	<u>✓</u>	RH Setpoint	45%	<u>✓</u>	Std Cond Temp	25 C	<u>✓</u>
Realtime Avg	60 mins	<u>✓</u>	Delta T Setpoint	15 C	<u>✓</u>	DAC	8.0 v	<u>✓</u>
Machine Type	PM-10	<u>✓</u>	RH Control	On	<u>✓</u>	RH Connect	No	<u>✓</u>
Analog FS	1.0 v	<u>✓</u>	Flow Setpoint	16.7	<u>✓</u>	Pump Protect	Off	<u>✓</u>

Last 6 Errors in E-BAM Error Log					
Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>3/22/24</u>	<u>1220</u>	4		
2			5		
3			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2

Serial # Y12096

Audit Date: 3/22/2024

Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.4 as left: 0.4

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	°C	°C	as left:	°C	°C
Barometric Pressure:	as found:	<u>716.5</u> mmHg	<u>716.5</u> mmHg	as left:	<u>716.5</u> mmHg	<u>716.5</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>16.8</u> lpm	as left:	<u>16.7</u> lpm	<u>16.8</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.1</u> lpm	as left:	<u>14.0</u> lpm	<u>14.1</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.59</u> lpm	as left:	<u>17.5</u> lpm	<u>17.59</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test		Pump Test		
Expected Span Mass (mg/cm2) :	<u>0.891</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) :	<u>0.871</u>			
Difference (mg/cm2) :	<u>0.020</u>			
% Difference / Pass or Fail:	<u>2.27%</u>	<u>14.3</u>	<u>398.6</u>	<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1305</u>	<u>1305</u>	Analog Mode	Hourly	<u>✓</u>	Flow Type	Actual	<u>✓</u>
Location	<u>2</u>	<u>2</u>	Baud Rate	9600	<u>✓</u>	Restart Voltage	12.5 v	<u>✓</u>
Tape Advance	24 hrs	<u>✓</u>	RH Setpoint	45%	<u>✓</u>	Std Cond Temp	25 C	<u>✓</u>
Realtime Avg	60 mins	<u>✓</u>	Delta T Setpoint	15 C	<u>✓</u>	DAC	8.0 v	<u>✓</u>
Machine Type	PM-10	<u>✓</u>	RH Control	On	<u>✓</u>	RH Connect	No	<u>✓</u>
Analog FS	1.0 v	<u>✓</u>	Flow Setpoint	16.7	<u>✓</u>	Pump Protect	Off	<u>✓</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>3/22/24</u>	<u>1316</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE
E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # X16067
 Audit Date: 3/22/2024 Audited By: TS Williford

Flow Audit					
Flow Audit Device Model:	BGI Delta Cal DC-1A	Serial No:	158047	Calibration Date:	2/5/2024
Leak Check Value:	as found: <u>0.4</u>		as left: <u>0.4</u>		
	E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found: <u>19.9</u> °C	<u>18.3</u> °C	as left:	<u>19.9</u> °C	<u>18.3</u> °C
Barometric Pressure:	as found: <u>715.6</u> mmHg	<u>715.2</u> mmHg	as left:	<u>715.6</u> mmHg	<u>715.2</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	<u>17.01</u> lpm	as left:	<u>16.7</u> lpm	<u>17.01</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	<u>14.23</u> lpm	as left:	<u>14.0</u> lpm	<u>14.23</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	<u>17.61</u> lpm	as left:	<u>17.5</u> lpm	<u>17.61</u> lpm

Mechanical Audits (Y = Yes N = No)					
Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>	
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>	
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>	
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>	
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>	
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>	

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : <u>0.950</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : <u>0.932</u>			
Difference (mg/cm2) : <u>0.018</u>			
% Difference / Pass or Fail: <u>1.91%</u>	<u>14.0</u>	<u>412.7</u>	<u>Marginal</u>

Setup and Calibration Values								
Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1038</u>	<u>1038</u>	Analog Mode	Hourly	<u>✓</u>	Flow Type	Actual	<u>✓</u>
Location	<u>3</u>	<u>3</u>	Baud Rate	9600	<u>✓</u>	Restart Voltage	12.5 v	<u>✓</u>
Tape Advance	24 hrs	<u>✓</u>	RH Setpoint	45%	<u>✓</u>	Std Cond Temp	25 C	<u>✓</u>
Realtime Avg	60 mins	<u>✓</u>	Delta T Setpoint	15 C	<u>✓</u>	DAC	8.0 v	<u>✓</u>
Machine Type	PM-10	<u>✓</u>	RH Control	On	<u>✓</u>	RH Connect	No	<u>✓</u>
Analog FS	1.0 v	<u>✓</u>	Flow Setpoint	16.7	<u>✓</u>	Pump Protect	Off	<u>✓</u>

Last 6 Errors in E-BAM Error Log					
Error	Date	Time	Error	Date	Time
<u>1 No new message</u>	<u>1046</u>	<u>3/22/24</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # B18932
 Audit Date: 3/22/24 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.25 as left: 0.25

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	<u>11.9</u> °C	<u>11.6</u> °C	as left:	<u>11.9</u> °C	<u>11.6</u> °C
Barometric Pressure:	as found:	<u>707.6</u> mmHg	<u>707.2</u> mmHg	as left:	<u>707.6</u> mmHg	<u>707.2</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>17.06</u> lpm	as left:	<u>16.7</u> lpm	<u>17.06</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.36</u> lpm	as left:	<u>14.0</u> lpm	<u>14.36</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.86</u> lpm	as left:	<u>17.5</u> lpm	<u>17.86</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test		Pump Test		
Expected Span Mass (mg/cm2) :	<u>0.854</u>	Flow Rate	Vacuum	Quality Category
Measured Span Mass (mg/cm2) :	<u>0.859</u>	14.0 - 15.0	Value	Good / Marginal / Poor
Difference (mg/cm2) :	<u>0.005</u>	(lpm)	(Hg)	
% Difference / Pass or Fail:	<u>0.6%</u>	<u>14.8</u>	<u>401.1</u>	<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0908</u>	<u>0908</u>	Analog Mode	Hourly	<u>✓</u>	Flow Type	Actual	<u>✓</u>
Location	<u>4</u>	<u>4</u>	Baud Rate	9600	<u>115200</u>	Restart Voltage	12.5 v	<u>✓</u>
Tape Advance	24 hrs	<u>✓</u>	RH Setpoint	45%	<u>✓</u>	Std Cond Temp	25 C	<u>✓</u>
Realtime Avg	60 mins	<u>✓</u>	Delta T Setpoint	15 C	<u>✓</u>	DAC	8.0 v	<u>✓</u>
Machine Type	PM-10	<u>✓</u>	RH Control	On	<u>✓</u>	RH Connect	No	<u>✓</u>
Analog FS	1.0 v	<u>✓</u>	Flow Setpoint	16.7	<u>✓</u>	Pump Protect	Off	<u>✓</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 <u>Abnew messages</u>	<u>3/22/24</u>	<u>0917</u>	4		
2			5		
3			6		

Audit Notes:

