Report on Air Monitoring, Area IV, Nineteenth Quarter and Annual Summary 2022

Santa Susana Field Laboratory Ventura County, California

Prepared for:
United States Department of Energy

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Santa Susana Field Laboratory
Ventura County, CA

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EXECUTIVE SUMMARY

This report summarizes the United States Department of Energy (DOE) air monitoring activities conducted during the nineteenth quarter (Q19) of the air monitoring period (October 1, 2022, to December 31, 2022) at Area IV within the Santa Susana Field Laboratory (SSFL), located in Ventura County, California. The report also provides an annual summary for the fifth year of the air monitoring period (Q16 through Q19, January 1, 2022, through December 31, 2022). 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 Quarter 1 through Quarter 4. Year two consisted of Quarter 5 through Quarter 7. Year three consisted of Q8 through Q11. Year four consisted of Q12 through Q15. Year five consists of Q16 through Q19. The program is continuing for a sixth year, which consists of 2023 reporting periods Q20 through Q23.

This 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 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 (PM_{10}), 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 the SSFL. Having developed the baseline levels for PM_{10}, 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. Year 5 observations show a very similar trend when compared to data collected during Years 1, 2, 3, and 4. These stable data trends indicate that site activities are not having an effect on site air conditions. High heat, wind, fires, and holidays like the Fourth of July all show consistent impacts to the air report readings. 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 quarters Q16 through Q19 by DOE within Area IV are summarized in this report:

- Collected meteorological data from one location (DOE-4);
- Collected PM_{10} 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).

Meteorological, PM_{10}, and radionuclide data all met the data completeness goal of 80% and VOC data met the completeness goal of 85% for Q19. The air monitoring is to be continued beginning January 1, 2023, with the twentieth quarter (Year 6) of air monitoring. Future data collected during remediation may be compared to these summarized conditions.

The following site activities were conducted during Q19 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
Cs-137	cesium-137
DAC	derived airborne concentration
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
FSDF	Former Sodium Disposal Facility
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

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
Q16	sixteenth quarter
Q17	seventeenth quarter
Q18	eighteenth quarter
Q19	nineteenth quarter
QA	quality assurance
QC	quality control
Ra-226	radium-226
Ra-228	radium-228
RAWS	Remote Automatic Weather Stations
RMHF	Radioactive Materials Handling Facility
RPD	relative percent difference
RSL	regional screening level
SDG	sample delivery group
Sr-90	strontium-90
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 is a business segment of Boeing. SSFL operates the 2,849-acre facility 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 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 includes 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 resulting from onsite remediation activities (project) at SSFL. Responsible parties are monitoring for particulate matter between 2.5 and 10 microns in aerodynamic diameter (PM_{10}), and volatile organic compounds (VOCs), at 14 locations at SSFL. Data were collected from 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 are 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 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, PM_{10}, 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 Q19 quarterly results and quality assurance (QA) activities performed at the DOE locations between October 1, 2022, and December 31, 2022. The report also provides an annual summary for the fifth year of the air monitoring period (Q16 through Q19, January 1, 2022, through December 31, 2022). The air monitoring is to be continued beginning January 1, 2023, for 2023 with the sixth year (beginning with Q20) of the Air Monitoring Program.

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 between 2021 and 2022 from Weather Currents, average 12-month total rainfall is on the order of 12.01 inches. The majority of the rainfall occurs between December and April with January and February being the wettest months.

Through the fourth quarter in 2022, the Simi Valley received approximately 7.54 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 Q19 reporting period. The report also provides an annual summary for the fifth year of the air monitoring period (Q16 through Q19, January 1, 2022, through December 31, 2022).

Quality objectives and data completeness were met for all meteorological, PM_{10}, VOC, and radionuclide data for Q19 of the Air Monitoring Program.

Urban background data compared with air monitoring data indicate that the PM_{10} concentrations measured at stations DOE-1, DOE-2, DOE-3, and DOE-4 during Q16 through Q19 are comparable to the PM_{10} concentrations measured at stations characterizing urban background. Concentrations of VOCs characteristic of motor vehicle emissions, fossil fuel combustion, and wildfires are comparable around SSFL compared with the urban background, reflecting the site's relatively remote location from vehicle traffic. PM_{10} concentrations exceeded the California Ambient Air Quality Standard (CAAQS; 50 micrograms per cubic meter [$\mu g/m^3$]) once at DOE-1 during Q19, but the concentrations were below the National Ambient Air Quality Standard (NAAQS; 150 $\mu g/m^3$). Graphs 5–8 in Section 4.2 show that the PM_{10} data for Year 5 are consistent with the baseline data from Year 1, Year 2, Year 3, and Year 4.

During Q19 three VOC analytes were detected above the EPA regional screening level (RSL). Naphthalene was detected at DOE-1, with benzene and ethyl acetate being detected at DOE-3. Naphthalene and benzene are both made from crude oil or coal tar. They can be produced during cigarette smoke, car exhaust, and smoke from forest fires. 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.

During the remainder of Year 5 (Q16, Q17, and Q18), there were two additional instances of VOC analytes detected above either the EPA Residential Air RSL or the DTSC human health risk assessment (HHRA) RSL. During Q16 there were two VOC analytes detected above the EPA Residential Air RSL or the DTSC HHRA; one at DOE-1 and one at DOE-2. During Q17 and Q18 there were no detections above the EPA Residential Air RSL or the DTSC HHRA. VOC data analyzed during Year 5 are consistent with the baseline data from Year 1, Year 2, Year 3, and Year 4. The distribution of the VOC data cannot be explained by the extensive site database.

During Q16 through Q19, detections for gross alpha and gross beta that exceeded the minimum detectable concentration (MDC) are all naturally occurring radionuclides or global fallout. The naturally occurring radionuclides were much higher than the artificial radionuclides. Detections are expected because the results are calculated at a 95% confidence level. Gross alpha, gross beta, and radionuclide data analyzed during Year 5 are consistent with the baseline data from Year 1, Year 2, Year 3, and Year 4. All radiological data reported for the air filter samples are naturally occurring.

Data collected during Q16 through Q19 agree 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. The remaining data were validated and there are no statistically significant changes in the air monitoring results. Air monitoring at Area IV of the SSFL is to be

continued starting January 1, 2023, for 2023 with the sixth year (beginning with Q20) of the Air Monitoring Program.

Site activities during Q19 included surveillance and maintenance, and groundwater sampling activities conducted by CDM Smith at the Former Sodium Disposal Facility (FSDF) as part of the groundwater interim measures. Work area air monitoring was conducted during this building demolition, confirming there was no airborne contamination resulting from the demolition activities (see Section 4). Building demolition was completed by March 1, 2022. Routine activities onsite during the baseline period (Q1–Q7) also included general site maintenance, operations of the meteorological stations, the FSDF groundwater interim measure, which started November 2017, and groundwater sampling. When comparing Q19 and the rest of the Year 5 data, to Year 1, Year 2, Year 3, and Year 4 data, the PM_{10}, VOC, and RAD data collected are consistent, indicating that building demolition activities had no impact on the site air conditions.

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 in this reporting period. One field duplicate sample was collected during each sampling event.

During Q19, radionuclide samples were collected at four perimeter sampling 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-220 and radon-222 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 100 airborne radioactivity filter samples collected in Q19 — 25 each for DOE-1, DOE-2, DOE-3, and DOE-4. Following analysis for gross alpha and gross beta radiation, sample filters from each of the locations 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 Q19 air monitoring data.

4.1 Meteorological Data

General Summary

Meteorological data, also called weather data, are 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 and 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 and particulate monitoring data to describe the air quality for the people and communities living near the ETEC site. However, before the weather data can be used with the computer models it must first be tested for completeness and accuracy. 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., defined as 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 for :00, :15, :30, and :45 minutes each hour. There were 92 days in this reporting period (Q19), which covers October 1, 2022, through December 31, 2022, with a total of 8,832 possible 15-minute observations. During year 5 (Q16 through Q19), there were a total of 35,040 possible 15-minute observations.

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 routinely throughout the reporting period 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 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 quality control (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 all applicable screening criteria 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 “invalid” (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 5 of the baseline monitoring are presented in Table 2.

Wind Rose

The final validated 15-minute meteorological dataset was used to develop wind rose diagrams for Q19 and Year 5 as presented in Figure 3-1 and Figure 3-2, respectively. 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 Q19, data capture for wind speed and direction at DOE-4 was 99.39%. The average and maximum wind speeds were 4.15 m/sec and 19.9 m/s, respectively. The maximum recorded wind gust was 29.4 m/sec. There are two predominant wind directions: the first from the east-southeast (ESE) and the second group clustered around north (NNW, N, NNE).

For entire Year 5, data capture for wind speed and direction at DOE-4 was 96.39%. The annual average and maximum wind speeds were 4.25 m/sec and 19.94 m/s, respectively. The maximum recorded wind gust was 29.4 m/sec. The predominant wind direction is from ESE.

Table 2. Data screening summary for monitored meteorological parameters.

Meteorological Parameter	Screening Criteria [1] (for valid sensor responses)	Data Completeness Percent (%) [2]					
		Q16	Q17	Q18	Q19	Year 5	Project to Date
Wind Speed	between 0 and 25 m/sec > 0.1 m/sec variation over 3 hours > 0.5 m/sec variation over 12 hours	99.99	100	97.62	99.99	99.39	94.71
Wind Direction	between 0 and 360 degrees > 1 degree variation over 3 hours > 10 degree variation over 12 hours	99.99	100	100	99.99	99.994	95.55
Standard Deviation of Wind Direction	Inherits the completeness stats of Wind Direction	99.99	100	100	99.99	99.994	95.55
Temperature @ 2 m	≤ local record high (monthly basis) ≥ local record low (monthly basis) > 0.5 degrees Celsius (°C) variation over 12 hours	99.99	100	100	99.99	99.994	95.55
Temperature @ 10 m	≤ local record high (monthly basis) ≥ local record low (monthly basis) > 0.5°C variation over 12 hours	99.99	100	100	99.99	99.994	95.55
Delta Temperature	≤ 0.1°C during daytime ≥ -0.1°C during nighttime between -3.0 and 5.0°C	99.99	100	100	99.99	99.994	95.55
Relative Humidity (and Dewpoint Temperature)	relative humidity between 0-100% 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	99.99	100	100	99.99	99.994	90.32
Precipitation	≤ 1 inch in 1 hour ≤ 4 inches in 24 hours ≥ 2 inches in 3 months	99.99	100	100	99.99	99.994	95.54
Barometric Pressure	between 871 and 982 millibar (mb) (local) (i.e., between 940 and 1060 mb sea level) ≤ 6 mb variation over 3 hours	99.99	100	100	99.99	99.994	95.55
Solar Radiation	> 0 at night ≤ maximum possible for date and latitude	99.90	100	99.99	99.50	99.85	95.50

(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 (only 3 quarters)
- Year One = 35,040
- Q05 = 8,736
- Q06 = 8,832
- Q07 = 7,488
- 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
- Project = 165,312 (to-date)

4.2 PM_{10} Data

PM_{10} data, also defined as coarse particles between 2.5 and 10 micrometers in 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.

PM_{10} data are being 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 92 days in the Q19 reporting period.

- DOE-1 had valid readings all 92 days.
- DOE-2 had valid readings all 92 days.
- DOE-3 had valid readings all 92 days.
- DOE-4 had valid readings all 92 days.

All of the four (DOE-1, -2, -3, and -4) station units had 100% data completeness for PM_{10} in Q19 (see Table 3). The complete tables of daily averages for both Q19 and for Year 5 are presented in Appendix A.

Table 3. PM_{10} data completeness for October 1, 2022 – December 31, 2022.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	92	92	100
DOE-2	92	92	100
DOE-3	92	92	100
DOE-4	92	92	100
Total Completeness			100

During the 365 days of the annual reporting period (Q16–Q19) the PM_{10} monitoring stations (DOE-1, DOE-2, DOE-3, and DOE-4) exceeded the project goal of 80% data completeness, as shown in Table 4.

Table 4. PM_{10} data completeness for Year 5, January 1, 2022 – December 31, 2022.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	350	365	95.9
DOE-2	362	365	99.2
DOE-3	361	365	98.9
DOE-4	361	365	87.9
Total Completeness			95.4

The five highest PM_{10} results identified for the reporting period are listed in Table 5 along with the CAAQS for PM_{10}. PM_{10} concentrations were consistent with levels typically found in urban air. Of these top five results, four were recorded at DOE-1 and one at DOE-3. One of the five values was above the CAAQS but below the NAAQS of 150 µg/m^3. All of the Top 5 readings were in early October 2022. Over these dates truck traffic may have been more active at offsite locations near the sensors and, in combination, 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 PM_{10} readings.

Table 5. Top five PM_{10} 24-hour average concentration days for October 1, 2022 – December 31, 2022.

Date	Location	PM_{10} Value (µg/m^3)	CAAQS (µg/m^3)
10/13/2022	DOE-1	**51.666**	50
10/11/2022	DOE-3	42.250	50
10/06/2022	DOE-1	42.041	50
10/07/2021	DOE-1	41.833	50
10/08/2021	DOE-1	39.041	50

Bold text and gray shaded – Value exceeds CAAQS.

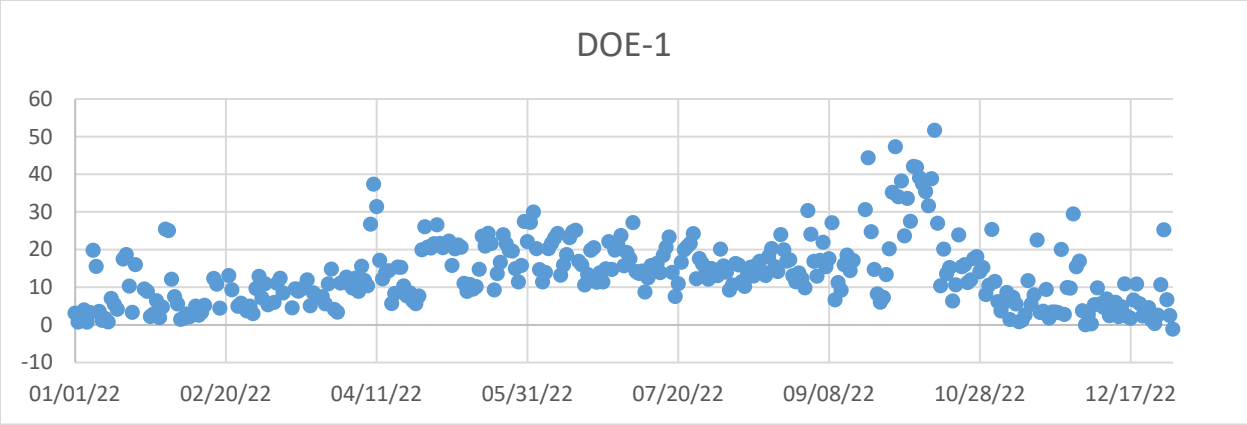
The five highest PM_{10} results identified for the reporting year are listed in Table 6. One of the five values was above the CAAQS but below the NAAQS of 150 µg/m^3. Wildfires, high temperatures, high winds, and the Fourth of July all occurred during this recording period and are known to increase air particulates (as shown in the tables and graphs below).

Table 6. Top five PM_{10} 24-hour average concentration days for January 1, 2022 – December 31, 2022.

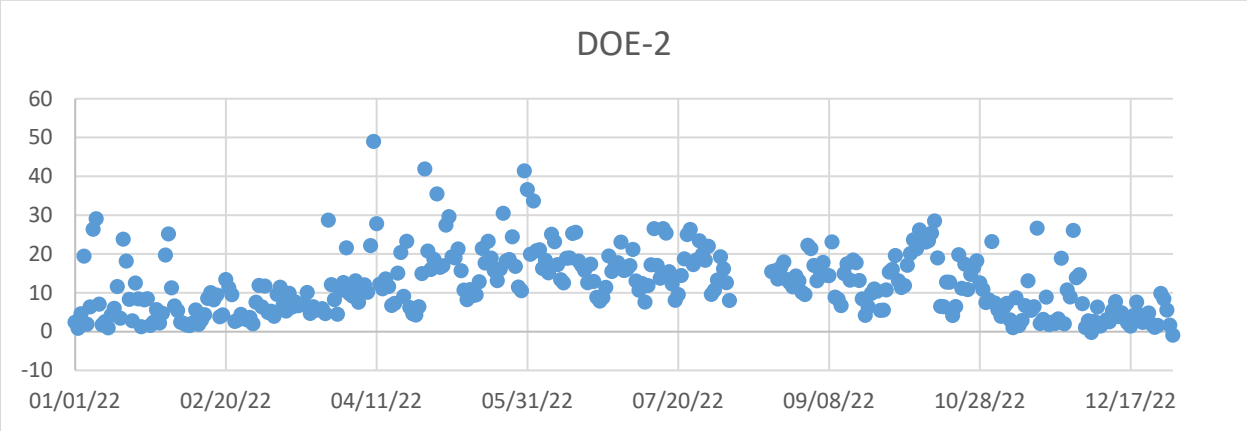
Date	Location	PM_{10} Value (µg/m^3)	CAAQS (µg/m^3)
10/13/2022	DOE-1	**51.666**	50
04/10/2022	DOE-2	48.958	50
09/30/2022	DOE-1	47.291	50
01/17/2022	DOE-4	44.750	50
09/21/2022	DOE-1	44.333	50

Bold text and gray shaded – Value exceeds CAAQS.

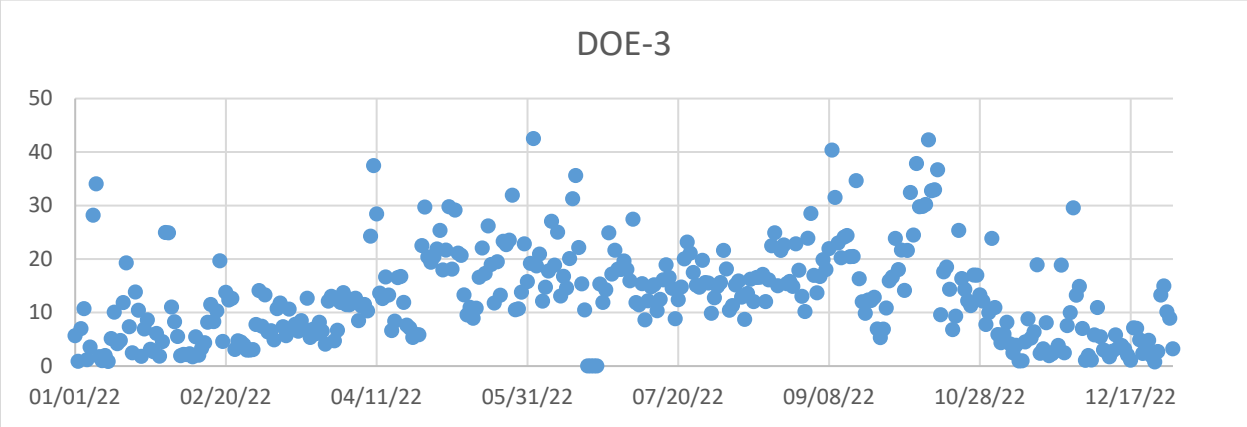
The Year 5 trend data from each monitor are shown below in Graphs 1 through 4. The Year 1 through Year 5 trend data are shown in Graphs 5 through 8 for trend comparison. When reviewing Graphs 5 through 8, one can determine that PM_{10} values have remained constant through baseline and site activities.



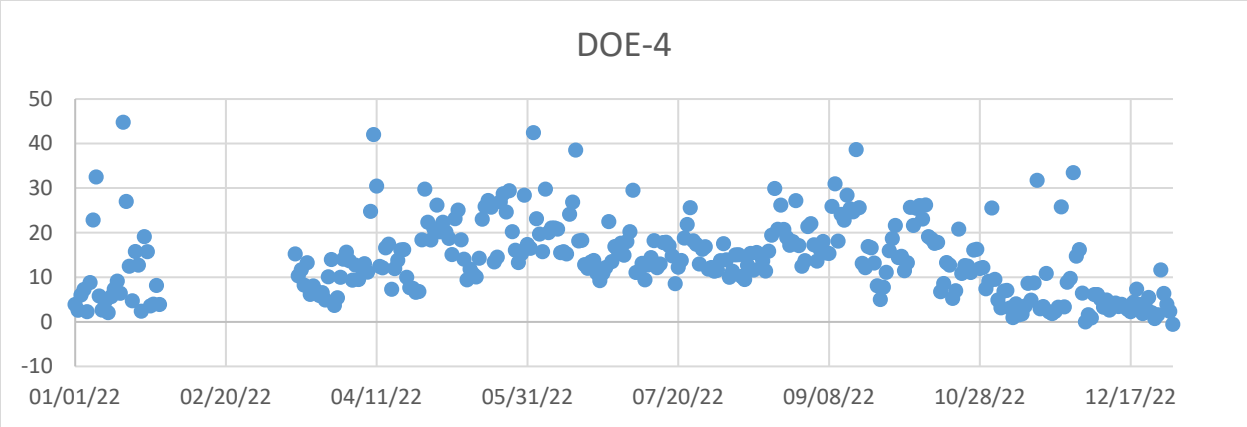
Graph 1. Year 5 trend data, Q16–Q19, for PM_{10} at monitor DOE-1.



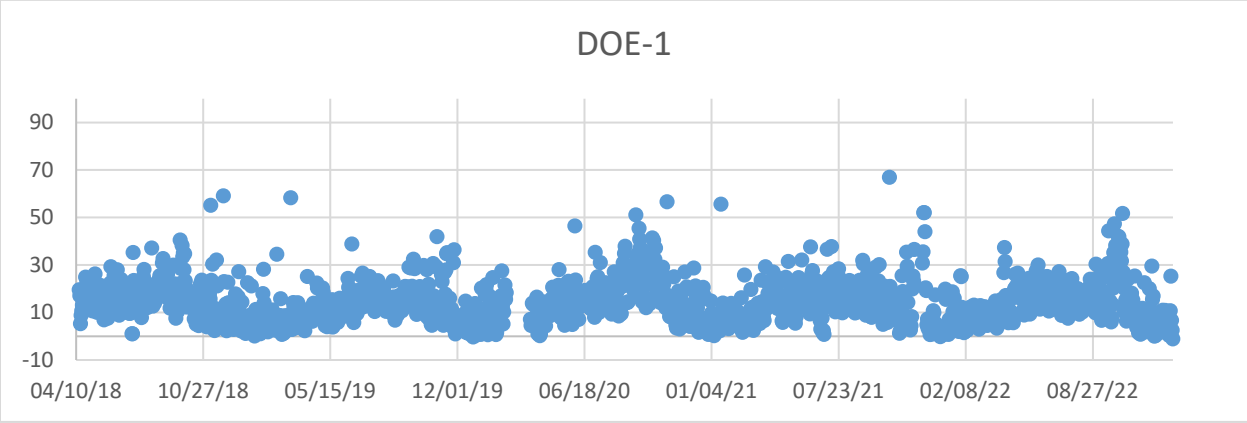
Graph 2. Year 5 trend data, Q16–Q19, for PM_{10} at monitor DOE-2.



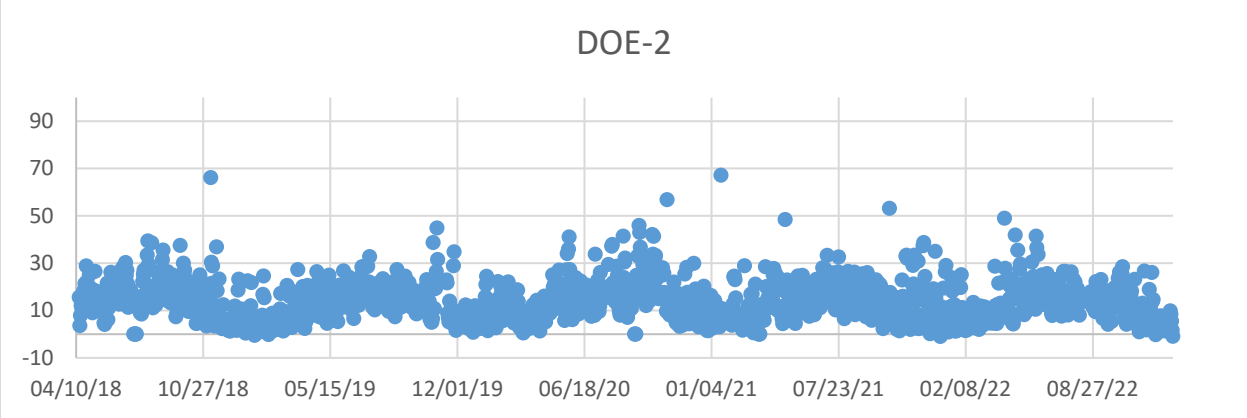
Graph 3. Year 5 trend data, Q16–Q19, for PM_{10} at monitor DOE-3.



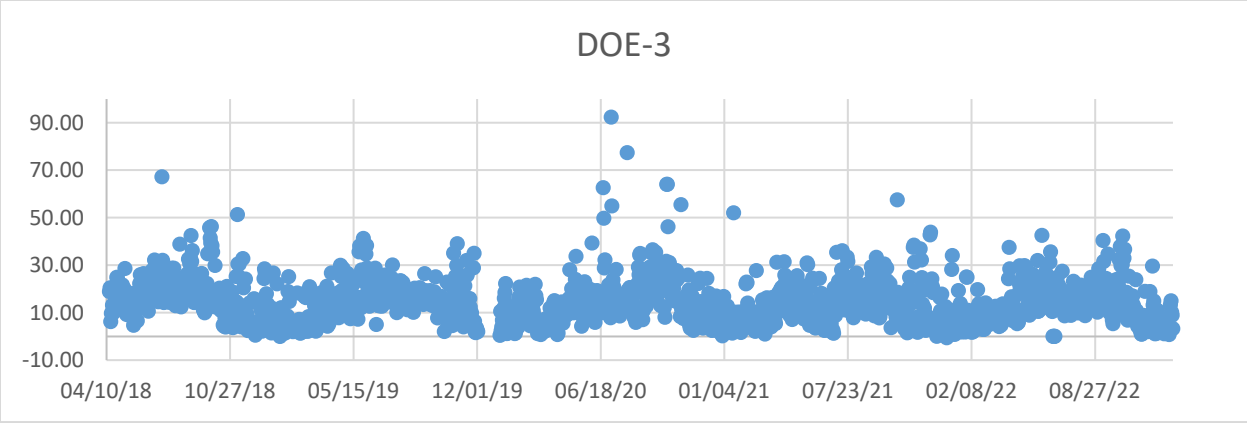
Graph 4. Year 5 trend data, Q16–Q19, for PM_{10} at monitor DOE-4.



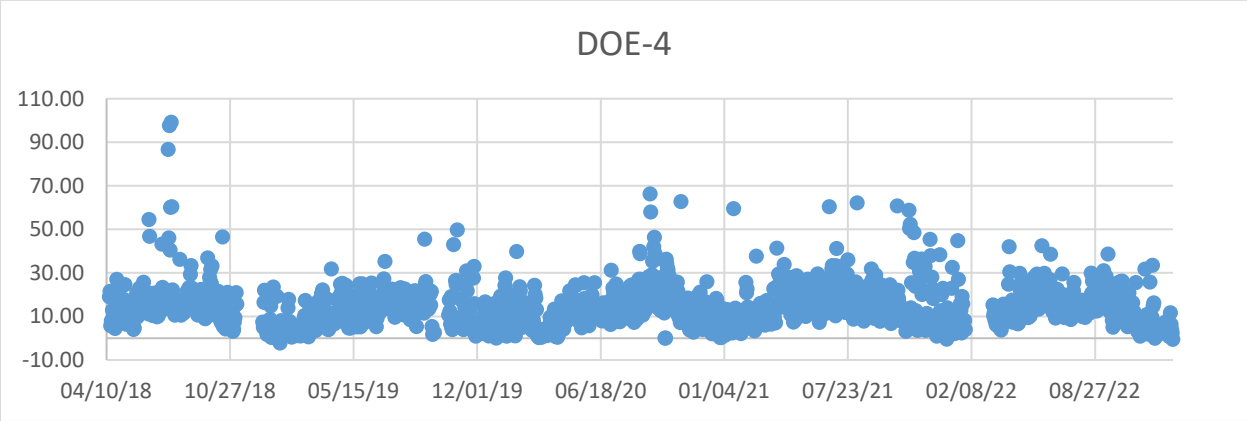
Graph 5. Years 1–5 trend data, Q1–Q19, for PM_{10} at monitor DOE-1.



Graph 6. Years 1–5 trend data, Q1–Q19, for PM_{10} at monitor DOE-2.



Graph 7. Years 1–5 trend data, Q1–Q19, for PM_{10} at monitor DOE-3.



Graph 8. Years 1–5 trend data, Q1–Q19, for PM_{10} at monitor DOE-4.

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 both 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.

There were six VOC sampling events in the Q19 reporting period. Each of the four DOE locations was sampled during each sampling event. Data completeness goals for VOCs exceeded the project goal of 85% (see Table 7).

Table 7. Ambient air VOC data completeness for Q19.

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

There were 25 annual VOC sampling events. Each of the four locations was sampled during each sampling event. Data completeness goals for VOCs exceeded the project goal of 85% (Table 8).

Table 8. Ambient air VOC data completeness for Q16–Q19.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	25	25	100
DOE-2	25	25	100
DOE-3	25	25	100
DOE-4	25	25	100
Average Total Data Completeness			100

VOC detection results for Q19 are presented in Table B-1 (Appendix B), including comparison to the April 2019 DTSC HHRA Note 3 Screening Levels (DTSC 2019) or the 40 CFR 136 Appendix D for MDLs. Ethyl acetate and benzene were detected at the October 13, 2022, sampling at concentrations of 120 µg/m^3 and 0.93 µg/m^3, respectively, which exceeds their respective EPA RSL limits of 73 µg/m^3 and 0.097 µg/m^3. Naphthalene was detected at the October 26, 2022, sampling at concentration of 2.3 µg/m^3, which exceeds its EPA RSL limit of 0.083 µg/m^3. Benzene and ethyl acetate were detected at the November 22, 2022, sampling at concentrations of 0.74 µg/m^3 and 120 µg/m^3, respectively, which exceeds their respective EPA RSL limits of 0.097 µg/m^3 and 73 µg/m^3.

VOC analytical results for Q16 through Q19 are presented in Table B-2 (Appendix B). During Q16 there were two VOC analytes detected above the EPA Residential Air RSL or the DTSC HHRA: one at DOE-1 and one at DOE-2. During Q17 and Q18 there were no detections above the EPA Residential Air RSL or the DTSC HHRA. During Q19 four VOC analytes were detected above the EPA Residential Air RSL or the DTSC HHRA: three VOC analytes at DOE-3 and one at DOE-1.

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, including Year 1, Year 2, Year 3, Year 4, and Year 5 baseline monitoring, indicating that these VOCs are not caused by the building demolition activities being performed. 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.

VOC data analyzed for Year 5 are consistent with VOC data analyzed for Year 1, Year 2, Year 3, and Year 4 baseline data.

4.4 Radionuclide Data

DOE continuously monitors air at multiple locations for radioactive particles. This activity is performed for two reasons: (1) to determine the background airborne radioactivity concentration so that any possible releases from future work activities can be detected, and (2) to detect any possible release from existing activities. During Q19, the background airborne radioactive contamination continued at low and stable concentrations, and there was no detected release of material. Based on EPA's 3,000 soil samples, the radionuclides of concern are strontium-90 (Sr-90) and cesium-137 (Cs-137). The locations with elevated concentrations of both radionuclides are near the Radioactive Materials Handling Facility (RMHF), beneath the RMHF asphalt, and in the rocky terrain area south of the Sodium Reactor Experiment complex. There has been no dust-producing activity in the Sr-90 and Cs-137 impacted soil areas to contribute to any sample. The EPA's data show the majority of Area IV to be free of these radiological contaminants.

There were 100 airborne radioactivity samples collected in Q19 — 25 each with DOE-1, DOE-2, DOE-3, and DOE-4. 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.

Gross alpha and gross beta data are used to evaluate whether site remediation work is potentially causing airborne radionuclide emissions. The gross alpha and beta analyses are performed at the site using a Protean alpha/beta radiation counter and a Ludlum 2929 gross alpha/beta counter.

The individual filters are analyzed within approximately one week following collection. The delay in analysis is required for the naturally occurring short-lived radon daughters to decay and not affect the analysis results. The benefit of analyzing the filters at the site is to allow for an early warning of potential site remediation-caused elevated radionuclide emissions.

The air sample analysis results are tabulated and reviewed for trends. Some results are less than zero once background is subtracted, some are above background, and some are above MDC, a value statistically above background. The MDC is tracked and reviewed with every analysis to determine if the instrument performance is stable. Any variation will be investigated, and may provoke a repair or a calibration.

While approximately 13% of the gross alpha results and most (69%) of the gross beta-gamma results are above the MDC, none of these results are significant. This is due to the fact that the "background" value is computed with a clean filter, not a filter exposed to background airborne concentrations. While a proportion of the beta results were detectable, the average results remained low. The results do correlate in time with the regional fires that release natural radioactive materials into the air.

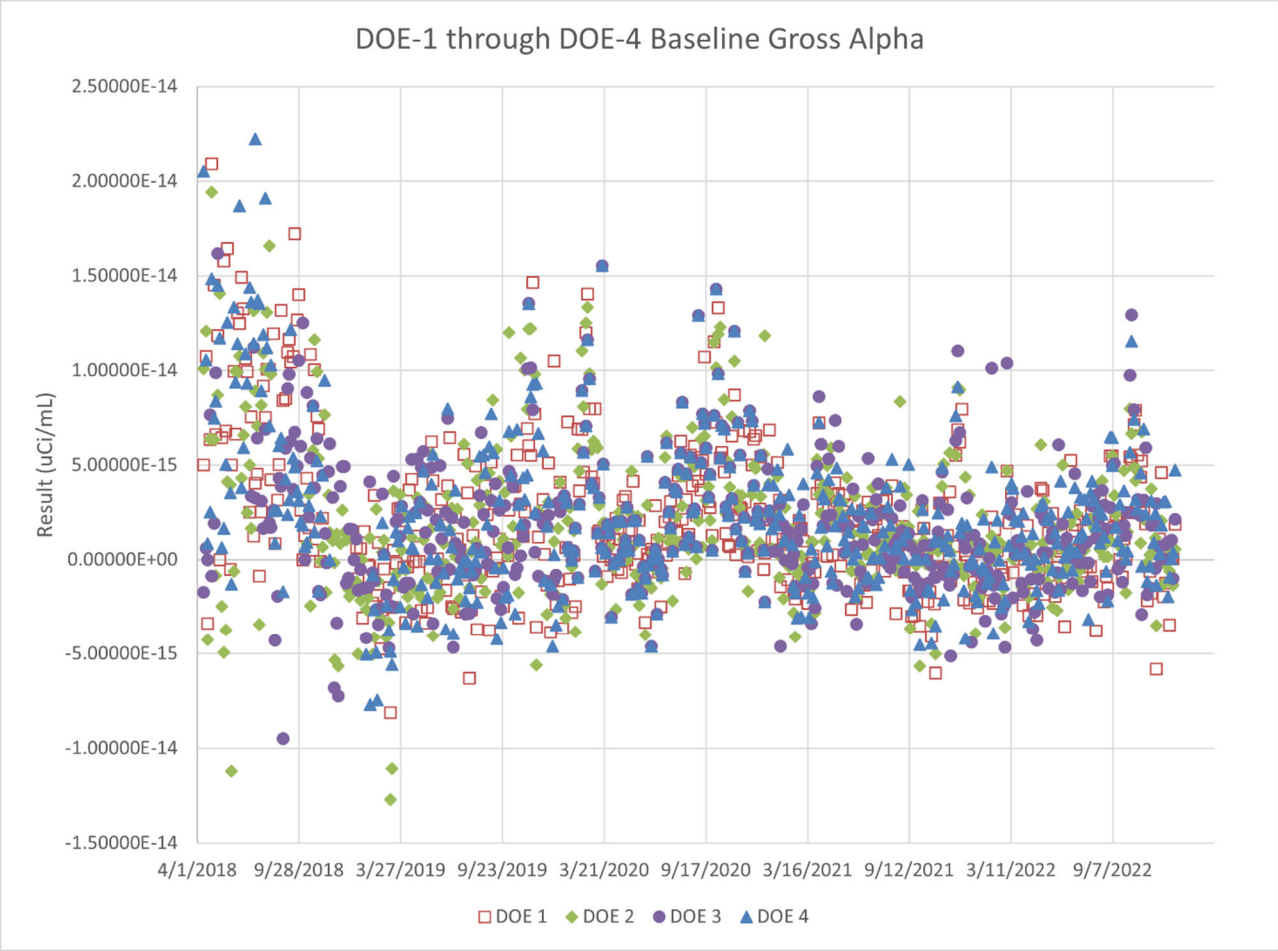
For conservatism, the air sample gross counting results are reviewed considering that all alpha activity is from the most restrictive expected radionuclide (plutonium-239 [Pu-239]), and all beta activity is from the most restrictive expected radionuclide (strontium/yttrium-90). In all cases the results are less than 1% of the airborne limit for the most conservative radionuclide.

After the end of a quarter, the samples are composited and sent to a laboratory for detailed isotopic analysis. All analyses to date show a broad range of radioactive material consistent with background material and global fallout. These results vary seasonally, and do not show any contribution from ETEC activities. There is a small spike in November 2020 that is attributed to environmental factors external to

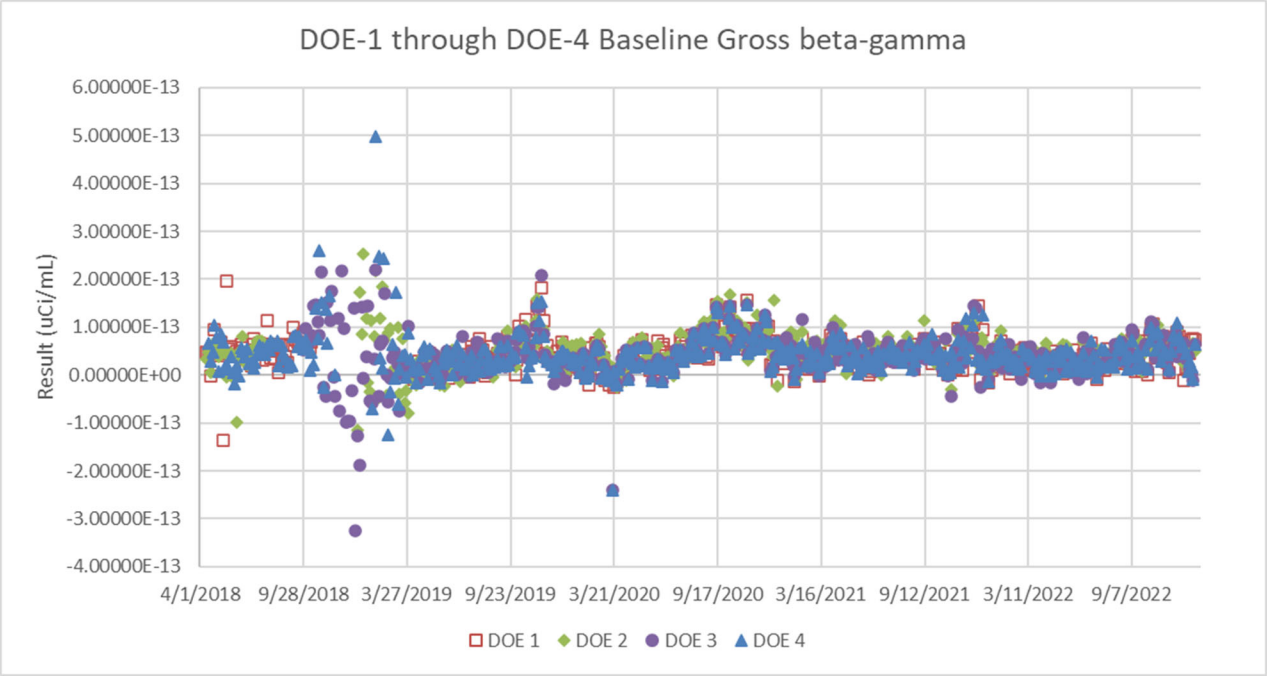
SSFL. A similar spike was seen in November of 2019. Gross alpha and gross beta results along with the radionuclide analytical results for Q19 and Year 5 (Q16–Q19) can be found in Appendix C. The gross alpha and gross beta results for Year 1 through Year 5 are presented in Graph 9 and Graph 10, respectively, with multiple years included to show the natural variability. To give a full picture of the significance in background variation, Graph 11 presents the gross alpha results for Year 1 through Year 5 compared to the Pu-239 limit. Graph 11 shows how the air samples are less than 1% of the limit, hover around 0.1%, and are sometimes less than zero.

Table 9. Gross alpha and beta-gamma average results for Q19.

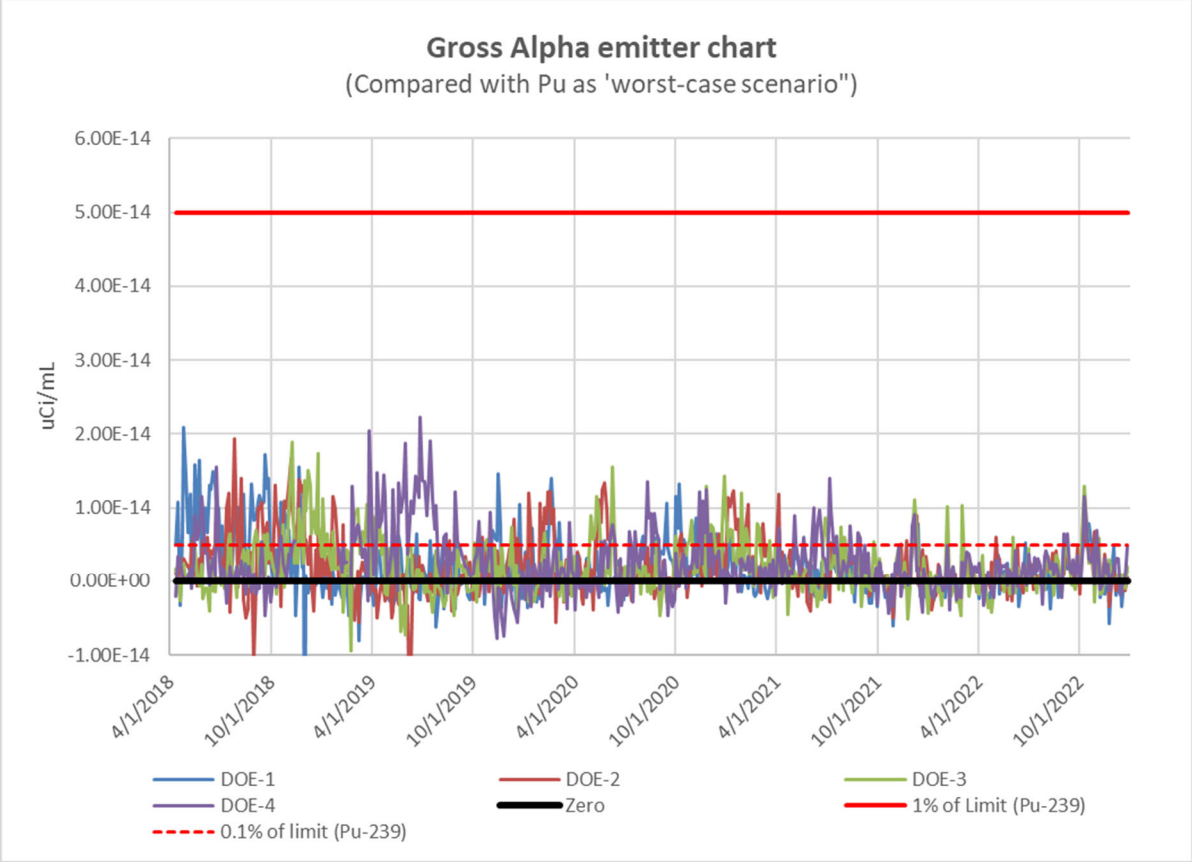
Location	Average alpha result (µCi/mL)	Average alpha MDC (µCi/mL)	Average beta result (µCi/mL)	Average beta MDC (µCi/mL)
DOE-1	1.63E-15	5.97E-15	5.58E-14	2.63E-14
DOE-2	1.79E-15	6.19E-15	5.87E-14	2.73E-14
DOE-3	2.19E-15	6.04E-15	5.31E-14	2.67E-14
DOE-4	2.34E-15	5.99E-15	5.30E-14	2.64E-14
Average	1.99E-15	6.05E-15	5.51E-14	2.67E-14



Graph 9. Gross alpha results for Year 1 through Year 5.



Graph 10. Gross beta results for Year 1 through Year 5.



Graph 11. Year 1 through Year 5 gross alpha worst-case emitter chart.

When radionuclides are collated and compared, it is clear that the primary contributors are background radioactive materials. The two most common indicators of artificial radionuclides are Cs-137 and cobalt-60, which have short half-lives. These radionuclides are either negative values, or below the MDC in all cases. For this analysis, the radioisotopic analyses from Year 5 were summed, then compared to the airborne radioactivity limits (derived airborne concentration [DAC]) (Table 10).

Table 10. Comparison of air sample results with DAC.

Radionuclide	Average (no Zero) µCi/mL	% contribution to total alpha activity	DAC alpha	%DAC (of measured nuclides)	DAC beta	% of DAC (of measured nuclides)	% contribution to beta-gamma activity
Cesium-137	0				8.00E-08	0.00E+00	0.00%
Strontium-90	7.84E-16				1.00E-08	7.84E-08	0.33%
Cobalt-60	0				3.00E-08	0.00E+00	0.00%
Potassium-40	8.10E-14				1.00E-07	8.10E-07	33.65%
Beryllium-7	1.59E-13				2.00E-08	7.95E-06	66.02%
Plutonium-238	6.61E-17	0.17%	5.00E-11	0			
Polonium-210	1.08E-14	28.13%	2.00E-10	5.39E-05			
Plutonium-241	1.48E-14	38.63%	2.00E-10	0			
Thorium-230	9.76E-16	2.55%	3.00E-12	3.25E-04			
Thorium-228	6.28E-16	1.64%	2.00E-11	3.14E-05			
Actinium-228	0	0.00%	6.00E-09	0			
Americium-241	2.57E-15	6.70%	5.00E-12	5.14E-04			
Plutonium-239	0	0.00%	5.00E-12	0			
Ra-228 – total	8.26E-16	2.15%	1.00E-10	8.26E-06			
Radium-226, 228 combined	2.89E-15	7.54%	2.00E-10	1.45E-05			
Thorium-232	2.98E-15	7.78%	3.00E-12	9.94E-04			
Uranium-238	7.56E-16	1.97%	3.00E-10	2.52E-06			
Uranium-233/234	6.52E-16	1.70%	2.00E-10	3.26E-06			
Uranium-235/236	3.98E-16	1.04%	3.00E-10	1.33E-06			

Artificial Radionuclides
Natural Radionuclides

Most of the alpha-emitting radionuclide activity is from background radioactive materials, indicating airborne dust. Less than 1% of the alpha contribution is from artificial radionuclides (e.g., plutonium). As discussed above, it is likely that most of the airborne radioactivity is from the environment, either cosmogenic or global fallout. There is no indication of a local release, as there is no clear mixture associated with fission reactions, given the absence of Cs-137 and Sr-90. The air sample results are compared using conservative assumptions. Since the results hover near or below the detection limit of the instruments, there are no plans to investigate minor variations in background. These radionuclide data are consistent with Year 1, Year 2, Year 3, and Year 4 baseline data.

5. QA/QC ACTIVITIES

The following QA/QC activities were conducted for the PM_{10}, VOC, radionuclide, and meteorological data collection and analysis.

5.1 Field QA/QC

5.1.1 PM_{10}

The 24-hour daily averages for Q19 are presented in Appendix A along with the monthly average minimum, maximum, and 95th percentile for each station location.

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 Q19 audit results for the four DOE sites showed bias percentages that ranged from -1.08 to +0.74%. None of the results exceeded the flow rate measurement quality objective of ± 4%.

Complete audit reports and flow verification results for Q19 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

A minimum of 20% of the VOC results are undergoing third-party data validation. During Q19, two of the six sample delivery groups (SDGs), #P2204597 and P2205677, underwent 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.

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 Q19 effort. Ethyl acetate in SDGs #P2204597, P2204818, P2205132, and P2205500; toluene for SDG #P2204597; and dichlorodifluoromethane (CFC 12) for SDG #P2205132 were detected in five field duplicates pairs that exceeded the quality objective of +/- 15% relative percent difference (RPD). Isopropyl alcohol and toluene in SDG #P2204818 were detected in the parent sample but not the duplicate. However, the absolute difference between the sample result and non-detect was less than the method reporting limit. This meets duplicate criteria components. Thirteen 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 -13.81 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 in 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. While some QC tests for radium appeared to be biased low, the results do not indicate a release of radium, which is not a contaminant of concern at the site because it is a natural radionuclide. 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 PM_{10} monitors and the meteorological station are noted in Sections 5.1.8.1 and Section 5.1.8.2, respectively. No issues or corrective actions were noted regarding the remaining monitoring equipment or sampling events during this reporting period.

5.1.8.1 PM_{10} Monitors

Refer to Section 4.2 for a detailed description of PM_{10} air monitoring equipment issues that occurred during Q19.

5.1.8.2 Meteorological Station

Although the data percent completion goal during Q19 has been met: (1) the solar radiometer sensor was replaced to resolve an upward drift (i.e., bias) of observations from the old sensor, (2) the wind sensor was replaced to resolve suspected worn bearings, and (3) the delta temperature calculated by the datalogger continues to be post-processed to resolve a datalogger programming equation where the 10-m and 2-m temperature parameters are reversed. The recommended sensor maintenance schedule is provided as item (4) below.

(1) Solar Radiometer:

- Data Quality Issues:
    - In previous quarters, the solar radiometer displayed an upward bias drift in the raw data observations.
- Corrective Actions:
    - Resolution – The solar radiometer was replaced on October 12–13, 2022. This also including applying a new sensitivity factor for this sensor in the datalogger programming from 7.66 mV/kW/m^2 (old sensor) to 11.09 mV/kW/m^2 (new sensor). The bias adjustment scaling factors that had been applied during previous quarters were no longer necessary after this date. However, the bias adjustment factor of 0.849 that had been applied to the previous quarter's (Q18) drifting solar radiometer observations was applied to the October 1–11, 2022, observations from the old sensor prior to its replacement.

(2) Wind Speed Sensor:

- Data Quality Issue:
    - In previous quarters, the wind speed sensor exhibited behavior that was indicative of bearing wear.
- Corrective Action:
    - Resolution – The wind speed sensor was replaced on October 12, 2022. No adjustments to the datalogger were required.

(3) Delta Temperature Calculation

- Data Quality Issue:
    - For meteorological monitoring, delta temperature is 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 Q3/2018. 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:

    Delta Temperature = [Temperature @ 10 m] minus [Temperature @ 2 m]

(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 11 lists the recommended maintenance schedules for the Met One sensors installed at the DOE-4 meteorological station.

Table 11. 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 and 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 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 certified clean canisters are discussed by ALS in the case narrative of each SDG.

5.3 Audit Results

The PM_{10} instruments were calibrated at the manufacturer and were functioning properly upon installation. The PM_{10} 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 12 lists the dates for audits conducted in October through December. 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 12. PM_{10} audit completeness.

Location	Met One E-BAM Serial Number	Parameter	Date
DOE-1	X16067	PM_{10}	10/21/2022
DOE-2	W23313	PM_{10}	10/21/2022
DOE-3	W23314	PM_{10}	10/21/2022
DOE-4	W23310	PM_{10}	10/21/2022
DOE-1	X16067	PM_{10}	11/22/2022
DOE-2	W23313	PM_{10}	11/22/2022
DOE-3	W23314	PM_{10}	11/22/2022
DOE-4	W23310	PM_{10}	11/22/2022
DOE-1	X16067	PM_{10}	12/22/2022
DOE-2	W23313	PM_{10}	12/22/2022
DOE-3	W23314	PM_{10}	12/22/2022
DOE-4	W23310	PM_{10}	12/22/2022

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6. CONCLUSION

The Year 5 data (PM_{10}, VOC, gross alpha and gross beta, and RAD) show a very similar pattern when compared to the baseline data collected during Years 1–4 (Q1–Q15). This conclusion is supported by the data shown in the graphs for Years 1–5, PM_{10} data, and radionuclide data, shown in Section 4 of this report. These stable trends indicate that onsite remediation activities performed in Year 4 had no recordable impact on the site air conditions.

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7. 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.

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Figure 1

SSFL Air Monitoring Locations

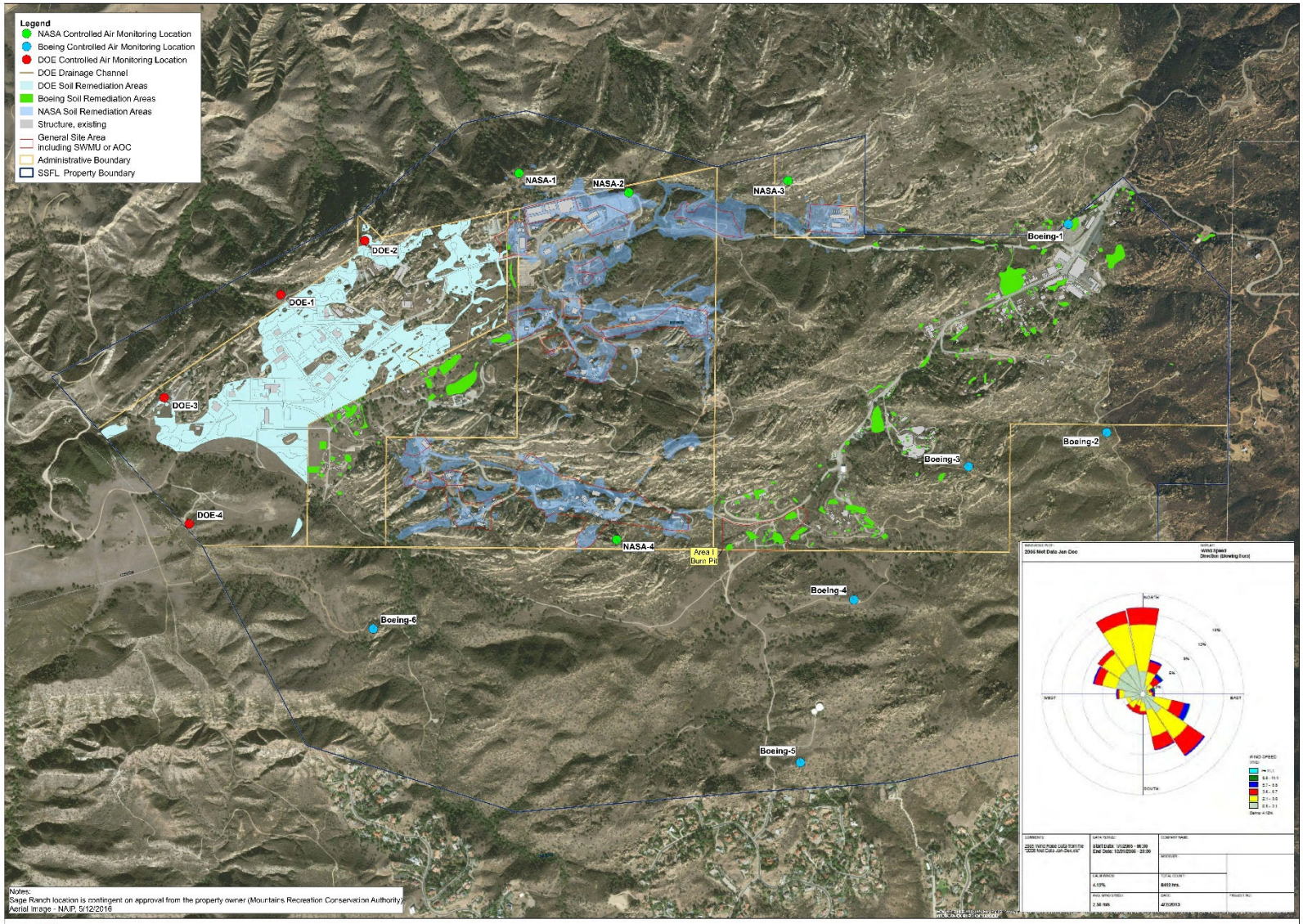


Figure 1
Air Monitoring Locations
Santa Susana Field Laboratory
Ventura County, California

Figure 2

DOE Air Monitoring Locations

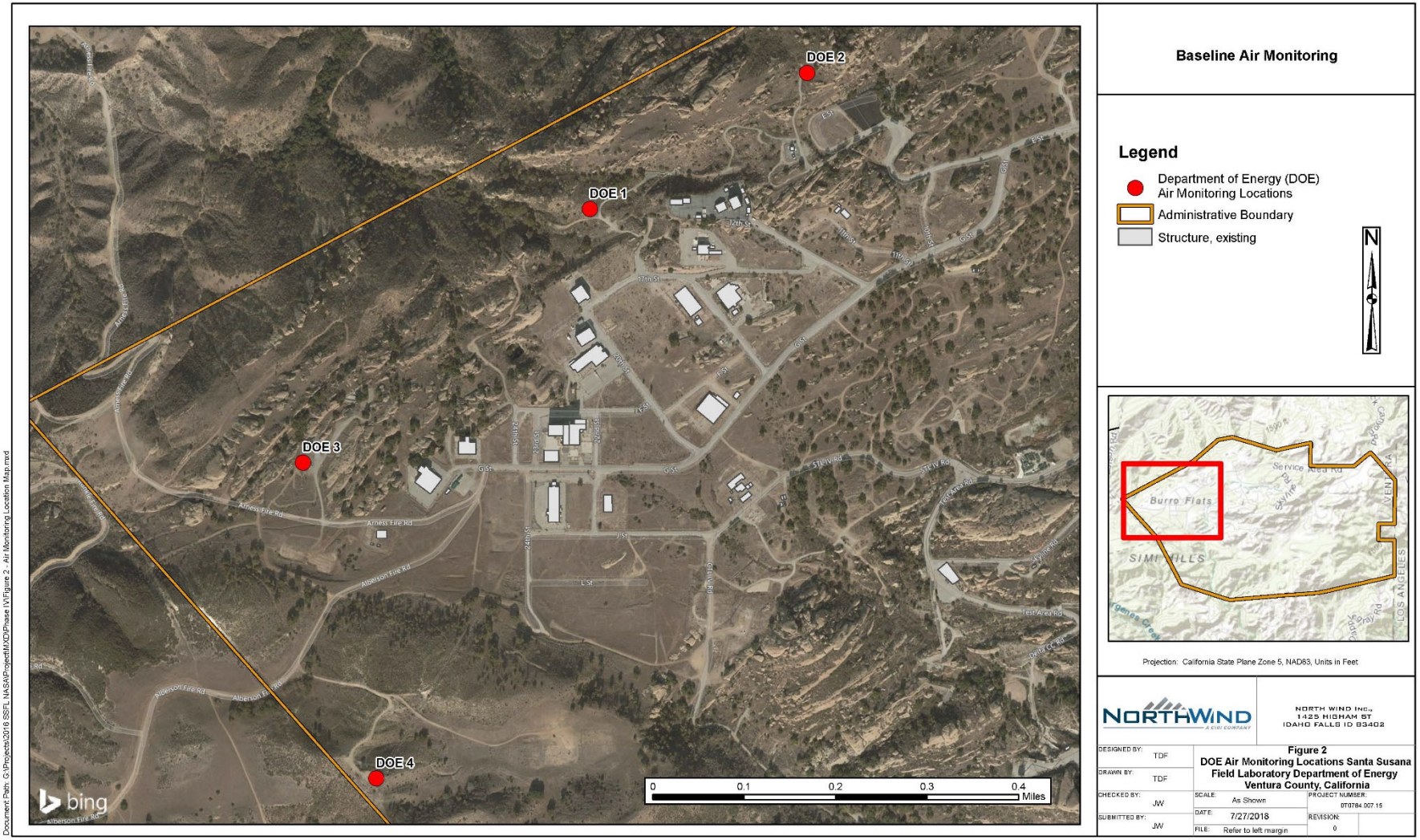

DOE 1
DOE 2
DOE 3
DOE 4
Baseline Air Monitoring
Legend
Department of Energy (DOE) Air Monitoring Locations
Administrative Boundary
Structure, existing
N
Burro Flats
SIMI HILLS
LOS ANGELES
Service Area Rd
Projection: California State Plane Zone 5, NAD83, Units in Feet
NORTHWIND
NORTH WIND INC.,
1425 HIGHAM ST
IDAHO FALLS ID 83402
Figure 2
DOE Air Monitoring Locations Santa Susana Field Laboratory Department of Energy Ventura County, California
DESIGNED BY: TDF
DRAWN BY: TDF
CHECKED BY: JW
SUBMITTED BY: JW
SCALE: As Shown
DATE: 7/27/2018
FILE: Refer to left margin
PROJECT NUMBER: 070784.007.15
REVISION: 0
0 0.1 0.2 0.3 0.4 Miles
bing
Document Path: G:\Projects\2016 SSFL NASA\Project\MXD\Phase IV\Figure 2 - Air Monitoring Location Map.mxd

Figure 3 – DOE Quarterly Wind Rose

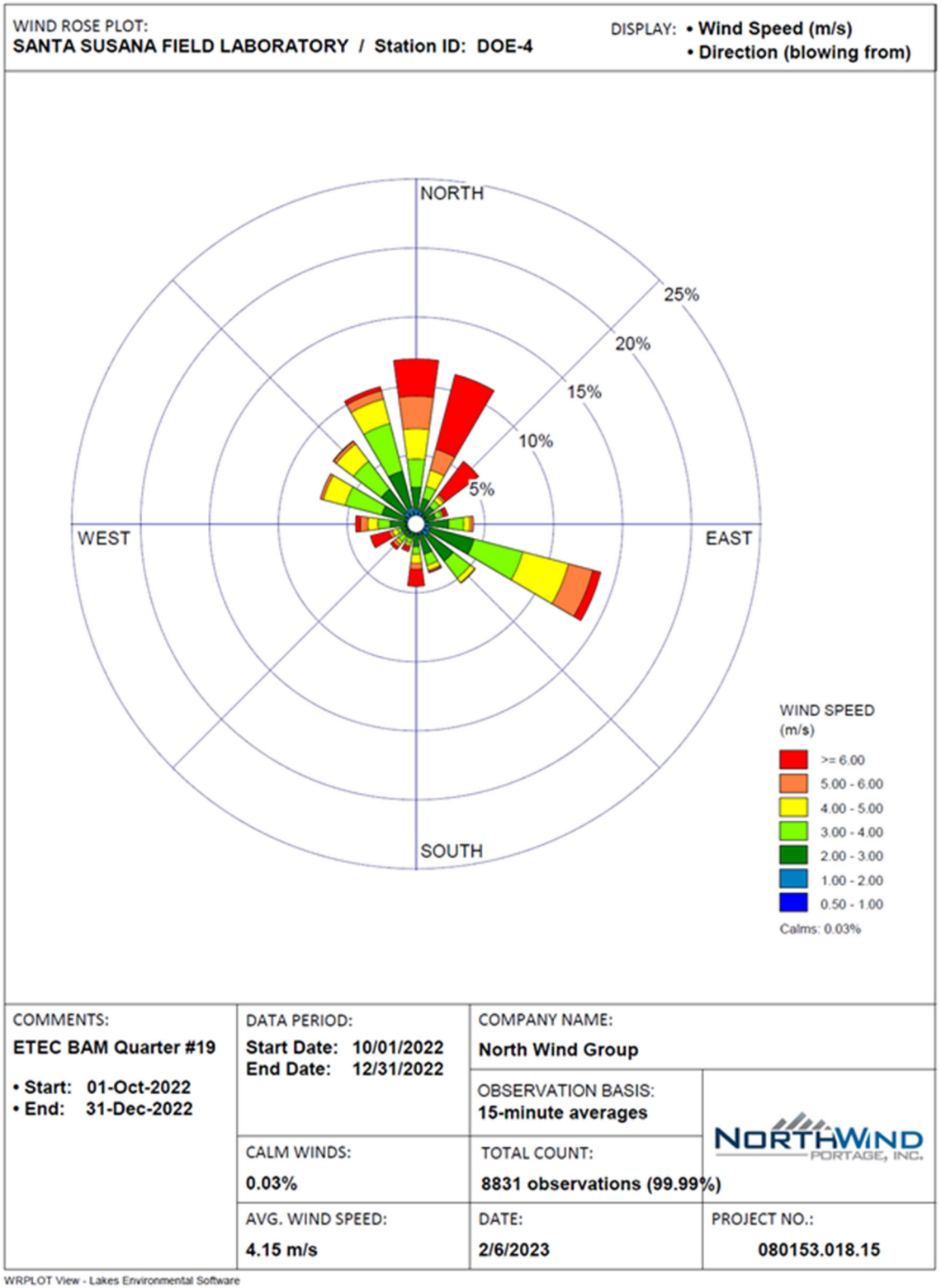
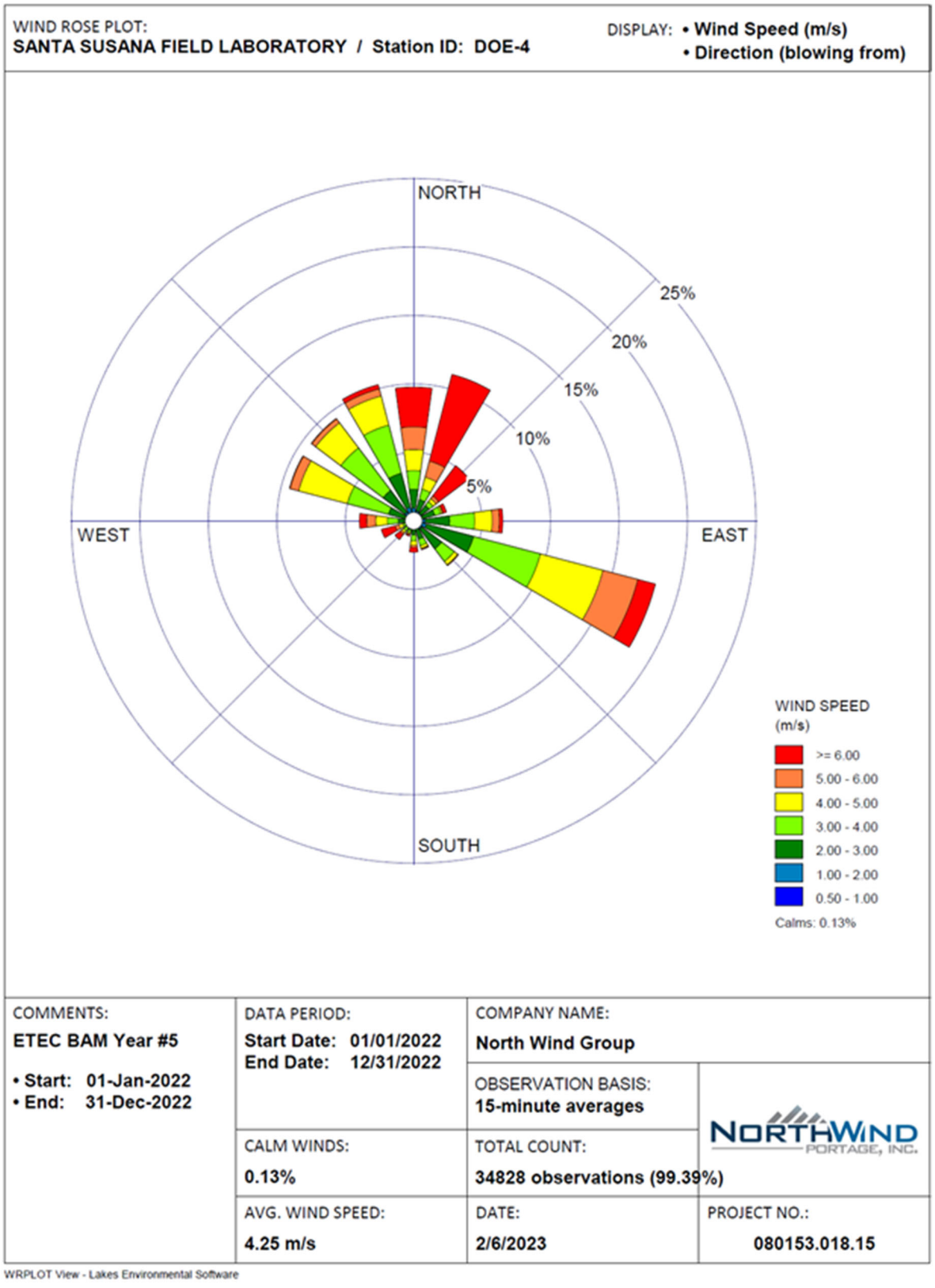


Figure 4 – DOE Annual Wind Rose



APPENDIX A

PM_{10} Daily Averages and Monthly Statistics

.

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PM_{10} Daily Averages, Q19

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
10/01/2022	34	13.041	18	14.375
10/02/2022	38.208	11.333	21.666	14.666
10/03/2022	23.625	11.833	14.125	11.458
10/04/2022	33.541	17.041	21.583	13.25
10/05/2022	27.5	20.083	32.416	25.666
10/06/2022	42.041	23.625	24.458	21.583
10/07/2022	41.833	21.25	37.833	25.458
10/08/2022	39.041	26.166	29.75	26.041
10/09/2022	37.416	23.291	29.833	23.041
10/10/2022	35.375	23.041	30.166	26.208
10/11/2022	31.625	23.375	42.25	19.083
10/12/2022	38.791	25.333	32.75	18.541
10/13/2022	**51.666**	28.458	32.916	17.583
10/14/2022	26.958	18.958	36.666	17.791
10/15/2022	10.375	6.458	9.583	6.75
10/16/2022	20.083	6.375	17.583	8.583
10/17/2022	13.541	12.708	18.5	13.291
10/18/2022	15.208	12.666	14.333	12.708
10/19/2022	6.333	4.125	6.791	5.25
10/20/2022	10.625	6.416	9.291	6.958
10/21/2022	23.875	19.791	25.333	20.791
10/22/2022	15.416	11.125	16.333	10.833
10/23/2022	15.958	17.333	14.291	12.583
10/24/2022	11.208	10.791	12.166	12.5
10/25/2022	11.916	14.708	11.291	11.041
10/26/2022	17.583	16.541	17	16.083
10/27/2022	18.083	18.208	16.958	16.25
10/28/2022	14.083	12.5	13.291	11.958
10/29/2022	15.208	10.833	12.125	12.166
10/30/2022	8.041	7.458	7.75	7.375
10/31/2022	10.5	8.166	9.958	9.083
11/01/2022	25.333	23.166	23.833	25.5
11/02/2022	11.5	7.333	10.916	9.5
11/03/2022	6.166	5.541	5.875	4.875
11/04/2022	3.708	3.916	4.333	3.125
11/05/2022	5.875	6.25	5.958	6.875

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
11/06/2022	8.583	7.25	8.166	7.041
11/07/2022	1.416	3	4.125	3.083
11/08/2022	7.291	0.958	2.458	0.916
11/09/2022	5.541	8.666	3.875	4
11/10/2022	0.791	1.5	0.916	1.583
11/11/2022	1.208	2.833	0.958	1.75
11/12/2022	2.625	6.666	4.5	3.5
11/13/2022	11.708	13.041	8.791	8.625
11/14/2022	5.416	5.416	5.208	4.833
11/15/2022	7.958	6.375	6.375	8.708
11/16/2022	22.5	26.625	18.916	31.708
11/17/2022	3.291	2.041	2.375	2.916
11/18/2022	3.625	3.125	3.208	3.416
11/19/2022	9.375	8.833	8.083	10.833
11/20/2022	1.791	1.75	1.916	2.208
11/21/2022	3.416	2.375	2.291	1.833
11/22/2022	3.416	2.041	2.791	2.333
11/23/2022	3.208	3.25	3.833	3.25
11/24/2022	20	18.875	18.833	25.75
11/25/2022	2.75	1.958	2.458	3.333
11/26/2022	9.916	10.708	7.541	8.875
11/27/2022	9.708	8.875	9.958	9.708
11/28/2022	29.458	26.041	29.541	33.458
11/29/2022	15.416	13.833	13.208	14.708
11/30/2022	16.916	14.625	14.875	16.166
12/01/2022	3.75	7.166	7	6.416
12/02/2022	0	1	1.041	-0.041
12/03/2022	2.75	2.75	1.958	1.583
12/04/2022	0.25	-0.25	1.125	0.875
12/05/2022	5.333	2.583	5.791	6.083
12/06/2022	9.833	6.291	10.916	6.083
12/07/2022	5.583	1.375	5.458	5.083
12/08/2022	4.625	2.208	3	3.25
12/09/2022	6.875	3.041	2.625	4.875
12/10/2022	2.416	2.5	1.708	2.625
12/11/2022	5.291	5.333	2.75	3.833
12/12/2022	6	7.708	5.791	4.208

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
12/13/2022	2.166	3.833	3.416	3.416
12/14/2022	4.791	4.791	3.833	3.916
12/15/2022	10.875	3.708	3.166	3.458
12/16/2022	2.208	2.208	2.041	2.791
12/17/2022	1.75	1.375	1.083	2.25
12/18/2022	6.583	4.125	7.125	4.375
12/19/2022	10.833	7.583	7.041	7.333
12/20/2022	5.625	4.333	4.875	3.916
12/21/2022	2.333	2.333	2.333	1.833
12/22/2022	4.291	4.166	3.708	3.125
12/23/2022	4.541	4.75	4.791	5.458
12/24/2022	1.25	1.833	1.833	2.041
12/25/2022	0.333	1.041	0.75	0.708
12/26/2022	2.541	1.541	2.708	1.583
12/27/2022	10.666	9.791	13.25	11.625
12/28/2022	25.25	8.416	14.958	6.333
12/29/2022	6.666	5.5	10.125	3.916
12/30/2022	2.458	1.625	8.916	2.333
12/31/2022	-1.166	-0.958	3.208	-0.583

Notes:

Negative values mean the background exceeded the particulate count.

Bold numbers indicate value exceeded CAAQS but is below the NAAQS of 150 µg/m³.

PM_{10} Daily Averages, Q16 through Q19

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
Q16				
01/01/22	3.083	2.375	5.667	3.875
01/02/22	0.708	0.791	0.875	2.583
01/03/22	2.625	4.541	6.958	6
01/04/22	3.958	19.416	10.708	7.25
01/05/22	0.708	1.875	1.166	2.25
01/06/22	3.291	6.333	3.541	8.791
01/07/22	19.791	26.333	28.166	22.833
01/08/22	15.5	29.041	34.041	32.458

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
01/09/22	3.583	7.041	1.75	5.791
01/10/22	1.188	1.708	1	2.625
01/11/22	1.708	2.541	1.958	4.541
01/12/22	0.75	0.916	0.833	2.041
01/13/22	7	4.25	5.125	5.625
01/14/22	5.5	5.958	10.041	7.333
01/15/22	4.125	11.583	4.166	9.125
01/16/22	—	3.416	4.75	6.375
01/17/22	17.467	23.791	11.833	44.75
01/18/22	18.666	18.125	19.25	27
01/19/22	10.291	8.291	7.333	12.458
01/20/22	3.313	2.75	2.458	4.708
01/21/22	15.958	12.458	13.833	15.75
01/22/22	—	8.416	10.416	12.708
01/23/22	—	1.208	1.791	2.375
01/24/22	9.5	8.166	6.916	19.083
01/25/22	8.867	8.458	8.625	15.708
01/26/22	2.188	1.541	3.125	3.541
01/27/22	2.833	2.375	2.666	3.958
01/28/22	6.429	5.625	6.083	8.125
01/29/22	1.916	2.166	1.833	3.875
01/30/22	4.708	4.666	4.541	—
01/31/22	25.416	19.708	24.958	—
02/01/22	25.041	25.125	24.875	—
02/02/22	12.125	11.25	11	—
02/03/22	7.458	6.583	8.25	—
02/04/22	5.541	5.375	5.5	—
02/05/22	1.458	2.375	1.916	—
02/06/22	1.708	2.083	2.166	—
02/07/22	2.875	1.666	2.125	—
02/08/22	2.125	1.5	2.291	—
02/09/22	2.833	2.166	1.708	—
02/10/22	4.958	5.541	5.458	—
02/11/22	2.541	1.833	2	—
02/12/22	3.333	2.958	3.291	—
02/13/22	5.166	4.333	4.333	—
02/14/22	—	8.5	8.166	—

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
02/15/22	—	10	11.5	—
02/16/22	12.333	8.166	8.291	—
02/17/22	10.791	9.375	10.291	—
02/18/22	4.416	3.791	19.666	—
02/19/22	—	4.291	4.583	—
02/20/22	—	13.375	13.75	—
02/21/22	13.067	11.25	12.333	—
02/22/22	9.291	9.458	12.625	—
02/23/22	—	2.583	3.083	—
02/24/22	4.938	2.958	4.708	—
02/25/22	5.75	4.416	4.458	—
02/26/22	4.625	3.416	3.958	—
02/27/22	3.708	3	2.958	—
02/28/22	4.958	3.625	2.958	—
03/01/22	2.958	1.958	3.041	—
03/02/22	9.625	7.541	7.75	—
03/03/22	12.875	11.875	14.083	—
03/04/22	7.125	6.333	7.416	—
03/05/22	10.916	11.708	13.291	—
03/06/22	5.291	4.875	6.333	—
03/07/22	—	5.208	6.583	—
03/08/22	5.933	3.916	4.875	—
03/09/22	11	9.541	10.708	—
03/10/22	12.375	11.416	11.75	—
03/11/22	8.458	6.708	7.333	—
03/12/22	—	5.25	5.666	—
03/13/22	—	9.833	10.625	—
03/14/22	4.5	6.291	7.083	—
03/15/22	9.541	7.625	7.791	15.214
03/16/22	8.938	6.625	6.5	10.291
03/17/22	9.471	6.958	8.458	11.666
03/18/22	9.923	7.208	6.875	8.208
03/19/22	11.958	10.041	12.666	13.25
03/20/22	5.041	4.625	5.333	6.125
03/21/22	8.5	6.375	6.875	8.041
03/22/22	—	5.5	6.041	6.791
03/23/22	7.125	5.583	8.166	5.875

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
03/24/22	7.458	5.875	6.5	6.541
03/25/22	5.583	4.583	4.083	4.863
03/26/22	10.875	28.666	12.125	10.083
03/27/22	14.791	12.083	13	13.958
03/28/22	4.083	8.208	4.708	3.666
03/29/22	3.375	4.458	6.666	5.375
03/30/22	11.083	10.625	11.875	9.958
03/31/22	11.304	12.608	13.695	14.043
Q17				
04/01/22	12.666	21.541	11.458	15.625
04/02/22	10.833	9.75	11.416	13.666
04/03/22	9.791	9.083	12.458	9.333
04/04/22	12.416	13.041	12.666	12.708
04/05/22	8.875	7.541	8.458	9.458
04/06/22	15.541	10.5	11.166	12.166
04/07/22	11.75	12.041	11.5	13.041
04/08/22	10.375	10.083	10.291	11.125
04/09/22	26.708	22.125	24.25	24.75
04/10/22	37.333	48.958	37.458	42
04/11/22	31.375	27.791	28.416	30.416
04/12/22	17.125	12.208	13.625	12.416
04/13/22	12.208	11	12.583	12.083
04/14/22	13.833	13.541	16.625	16.583
04/15/22	14.375	11.583	13.25	17.416
04/16/22	5.666	6.708	6.625	7.291
04/17/22	8.333	7.25	8.375	11.916
04/18/22	15.333	15.041	16.5	13.791
04/19/22	15.25	20.333	16.708	16.125
04/20/22	10.333	9.041	11.875	16.166
04/21/22	7.708	23.25	7.625	9.958
04/22/22	8.5	6.166	7.083	7.625
04/23/22	6.375	4.541	5.333	7.5
04/24/22	5.625	4.25	5.875	6.583
04/25/22	7.625	6.375	5.833	6.791
04/26/22	19.916	14.916	22.5	18.375
04/27/22	26.041	41.875	29.708	29.75
04/28/22	20.666	20.708	20.375	22.333

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
04/29/22	20.375	16	19.375	18.333
04/30/22	21.541	18.625	20.416	20.833
05/01/22	26.541	35.458	21.875	26.166
05/02/22	21.625	16.5	25.333	20.166
05/03/22	20.458	16.916	17.958	22.333
05/04/22	21.208	27.416	21.666	20.125
05/05/22	22.208	29.583	29.75	18.708
05/06/22	15.75	19.25	18.083	15.083
05/07/22	20.166	18.958	29.125	23.125
05/08/22	21.208	21.25	21.083	25.041
05/09/22	20.583	15.666	20.666	18.375
05/10/22	11	10.666	13.291	14.041
05/11/22	8.875	8.208	9.541	9.416
05/12/22	10.708	10.791	10.958	11.791
05/13/22	9.458	9.25	8.916	10.708
05/14/22	10.166	9.416	10.791	10.041
05/15/22	14.75	12.791	16.583	14.25
05/16/22	23.541	21.375	22.041	23
05/17/22	20.916	17.625	17.291	25.833
05/18/22	24.291	23.25	26.166	27.208
05/19/22	21.583	18.916	18.958	25.708
05/20/22	9.25	15.708	11.75	13.416
05/21/22	13.583	13.083	19.458	14.5
05/22/22	16.625	16.125	13.208	26.916
05/23/22	23.916	30.458	23.291	28.708
05/24/22	21.5	18.166	22.666	24.625
05/25/22	19.75	18.541	23.5	29.375
05/26/22	19.583	24.375	31.916	20.208
05/27/22	14.916	16.75	10.5	16.041
05/28/22	11.375	11.458	10.666	13.291
05/29/22	15.75	10.5	13.791	15.25
05/30/22	27.458	41.375	22.833	28.375
05/31/22	22.083	36.541	15.75	17.333
06/01/22	27.208	19.916	19.166	16.458
06/02/22	29.958	33.625	42.5	42.416
06/03/22	20.208	20.791	18.708	23.125
06/04/22	14.666	21.041	20.916	19.666

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
06/05/22	11.375	16.25	12.125	15.708
06/06/22	13.875	18.333	14.708	29.75
06/07/22	20.208	15.125	17.75	20
06/08/22	21.625	25.041	27.041	21.041
06/09/22	23.041	23.125	18.833	21.041
06/10/22	24.25	17.208	25	20.791
06/11/22	13.166	13.333	13.083	15.5
06/12/22	15.875	12.5	16.75	15.708
06/13/22	18.666	18.875	14.583	15.208
06/14/22	23.166	18.958	20.083	24.125
06/15/22	24.666	25.25	31.25	26.833
06/16/22	25.125	25.541	35.583	38.5
06/17/22	16.875	18.125	22.125	18.125
06/18/22	15.916	16.958	15.333	18.25
06/19/22	10.583	15.75	10.458	12.791
06/20/22	13.375	12.541	—	12
06/21/22	19.791	17.333	—	13.375
06/22/22	20.458	12.875	—	13.75
06/23/22	11.291	8.791	—	10.916
06/24/22	13.791	7.833	15.318	9.208
06/25/22	11.375	8.708	11.875	10.916
06/26/22	14.875	11.375	14.25	12.166
06/27/22	22.083	19.458	24.875	22.458
06/28/22	14.708	15.458	17.166	13.5
06/29/22	19.833	16.625	21.625	16.875
06/30/22	21.208	17.708	18.083	16.041
Q18				
07/01/22	23.708	23.041	18.041	17.625
07/02/22	15.666	15.708	19.625	14.916
07/03/22	19.208	16.041	18.041	17.958
07/04/22	17.541	16.958	15.916	20.208
07/05/22	27.166	21.125	27.416	29.5
07/06/22	14.125	13	11.833	11.041
07/07/22	13.625	10.625	11.416	11
07/08/22	14.291	12.375	15.375	13.083
07/09/22	8.708	7.583	8.625	9.416
07/10/22	12.458	11.833	12.166	12.75

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
07/11/22	15.708	17.166	14.791	14.375
07/12/22	14.291	26.5	15.166	18.208
07/13/22	16.333	17	10.333	12.125
07/14/22	13.833	13.708	12.458	12.958
07/15/22	18.416	26.5	16.083	17.75
07/16/22	20.541	25.333	18.916	17.833
07/17/22	23.333	15.416	16.541	17.041
07/18/22	13.916	12.25	14.5	14.791
07/19/22	7.5	8.041	8.833	8.541
07/20/22	10.916	9.5	12.375	12.25
07/21/22	16.625	14.416	14.75	13.75
07/22/22	19.916	18.708	20	18.75
07/23/22	20.791	24.958	23.166	21.833
07/24/22	21.625	26.291	21.083	25.583
07/25/22	24.208	17.208	17.458	18.166
07/26/22	12.25	18.416	15.083	17.375
07/27/22	17.583	23.375	14.708	12.958
07/28/22	16.208	19.875	19.75	16.25
07/29/22	15.166	18.333	15.583	16.833
07/30/22	12.125	21.958	15.5	11.791
07/31/22	14.958	9.541	9.833	12.166
08/01/22	14.583	10.625	12.75	11.333
08/02/22	13.041	13.25	14.875	11.541
08/03/22	20.083	19.25	15.583	13.708
08/04/22	15.625	16.166	21.583	17.5
08/05/22	13.958	12.541	18.125	13.875
08/06/22	9.208	8	10.416	9.958
08/07/22	10.583	—	11.291	11.333
08/08/22	16.291	—	15.125	15
08/09/22	15.875	—	15.875	15.041
08/10/22	11.416	—	12.875	10.166
08/11/22	10.208	—	8.708	9.458
08/12/22	13.416	—	13.541	12.666
08/13/22	15.291	—	16.208	15.333
08/14/22	12.958	—	12.041	11.583
08/15/22	15.916	—	16.541	15.541
08/16/22	16.875	—	16.583	15.083

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
08/17/22	14	—	17.125	13.625
08/18/22	13.083	—	12.041	11.375
08/19/22	18.125	—	16.083	15.833
08/20/22	20.25	15.416	22.458	19.416
08/21/22	15.458	15.625	24.875	29.875
08/22/22	14.125	13.5	15	20.75
08/23/22	23.958	16.458	21.583	26.166
08/24/22	19.916	17.916	22.625	20.708
08/25/22	16.916	13.375	15.375	18.916
08/26/22	17.25	12.541	15.791	17.166
08/27/22	13.041	11.5	14.875	17.958
08/28/22	11.416	14.291	22.833	27.166
08/29/22	13.75	13	17.875	17.083
08/30/22	12.291	10.083	13	12.458
08/31/22	9.833	9.5	10.166	13.708
09/01/22	30.333	22.208	23.875	21.333
09/02/22	24.041	21.333	28.5	22
09/03/22	16.875	17	16.916	17.25
09/04/22	12.916	13.041	13.666	13.583
09/05/22	17.125	15.75	16.708	16.25
09/06/22	21.916	17.791	19.875	18
09/07/22	15.416	14.5	18	15.416
09/08/22	17.541	14.375	21.916	15.333
09/09/22	27.083	23.083	40.333	25.875
09/10/22	6.625	8.833	31.5	30.916
09/11/22	11.208	8.333	22.958	18.083
09/12/22	9.166	6.666	20.208	24.083
09/13/22	15.958	14.916	24.083	22.791
09/14/22	18.541	17.416	24.375	28.375
09/15/22	14.416	13.208	20.416	25.333
09/16/22	17.083	18.416	20.458	24.666
09/17/22	—	17.708	34.625	38.625
09/18/22	—	13.125	16.291	25.583
09/19/22	—	8.416	12	13.083
09/20/22	30.583	4.166	9.833	12.125
09/21/22	44.333	6.333	12.333	16.875
09/22/22	24.708	9.75	12.25	16.583

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
09/23/22	14.708	10.958	12.833	13.166
09/24/22	8.208	10.375	6.916	8.083
09/25/22	6	5.416	5.291	5
09/26/22	7.25	5.5	6.875	7.75
09/27/22	13.333	10.708	10.833	11.083
09/28/22	20.166	15.291	15.916	15.916
09/29/22	35.166	16	16.625	18.666
09/30/22	47.291	19.583	23.833	21.583
Q19				
10/01/22	34	13.041	18	14.375
10/02/22	38.208	11.333	21.666	14.666
10/03/22	23.625	11.833	14.125	11.458
10/04/22	33.541	17.041	21.583	13.25
10/05/22	27.5	20.083	32.416	25.666
10/06/22	42.041	23.625	24.458	21.583
10/07/22	41.833	21.25	37.833	25.458
10/08/22	39.041	26.166	29.75	26.041
10/09/22	37.416	23.291	29.833	23.041
10/10/22	35.375	23.041	30.166	26.208
10/11/22	31.625	23.375	42.25	19.083
10/12/22	38.791	25.333	32.75	18.541
10/13/22	**51.666**	28.458	32.916	17.583
10/14/22	26.958	18.958	36.666	17.791
10/15/22	10.375	6.458	9.583	6.75
10/16/22	20.083	6.375	17.583	8.583
10/17/22	13.541	12.708	18.5	13.291
10/18/22	15.208	12.666	14.333	12.708
10/19/22	6.333	4.125	6.791	5.25
10/20/22	10.625	6.416	9.291	6.958
10/21/22	23.875	19.791	25.333	20.791
10/22/22	15.416	11.125	16.333	10.833
10/23/22	15.958	17.333	14.291	12.583
10/24/22	11.208	10.791	12.166	12.5
10/25/22	11.916	14.708	11.291	11.041
10/26/22	17.583	16.541	17	16.083
10/27/22	18.083	18.208	16.958	16.25
10/28/22	14.083	12.5	13.291	11.958

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
10/29/22	15.208	10.833	12.125	12.166
10/30/22	8.041	7.458	7.75	7.375
10/31/22	10.5	8.166	9.958	9.083
11/01/22	25.333	23.166	23.833	25.5
11/02/22	11.5	7.333	10.916	9.5
11/03/22	6.166	5.541	5.875	4.875
11/04/22	3.708	3.916	4.333	3.125
11/05/22	5.875	6.25	5.958	6.875
11/06/22	8.583	7.25	8.166	7.041
11/07/22	1.416	3	4.125	3.083
11/08/22	7.291	0.958	2.458	0.916
11/09/22	5.541	8.666	3.875	4
11/10/22	0.791	1.5	0.916	1.583
11/11/22	1.208	2.833	0.958	1.75
11/12/22	2.625	6.666	4.5	3.5
11/13/22	11.708	13.041	8.791	8.625
11/14/22	5.416	5.416	5.208	4.833
11/15/22	7.958	6.375	6.375	8.708
11/16/22	22.5	26.625	18.916	31.708
11/17/22	3.291	2.041	2.375	2.916
11/18/22	3.625	3.125	3.208	3.416
11/19/22	9.375	8.833	8.083	10.833
11/20/22	1.791	1.75	1.916	2.208
11/21/22	3.416	2.375	2.291	1.833
11/22/22	3.416	2.041	2.791	2.333
11/23/22	3.208	3.25	3.833	3.25
11/24/22	20	18.875	18.833	25.75
11/25/22	2.75	1.958	2.458	3.333
11/26/22	9.916	10.708	7.541	8.875
11/27/22	9.708	8.875	9.958	9.708
11/28/22	29.458	26.041	29.541	33.458
11/29/22	15.416	13.833	13.208	14.708
11/30/22	16.916	14.625	14.875	16.166
12/01/22	3.75	7.166	7	6.416
12/02/22	0	1	1.041	-0.041
12/03/22	2.75	2.75	1.958	1.583
12/04/22	0.25	-0.25	1.125	0.875

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	**PM_{10} ($\mu g/m^3$) (CAAQS 50 $\mu g/m^3$)**	**PM_{10} ($\mu g/m^3$) (CAAQS 50 $\mu g/m^3$)**	**PM_{10} ($\mu g/m^3$) (CAAQS 50 $\mu g/m^3$)**	**PM_{10} ($\mu g/m^3$) (CAAQS 50 $\mu g/m^3$)**
12/05/22	5.333	2.583	5.791	6.083
12/06/22	9.833	6.291	10.916	6.083
12/07/22	5.583	1.375	5.458	5.083
12/08/22	4.625	2.208	3	3.25
12/09/22	6.875	3.041	2.625	4.875
12/10/22	2.416	2.5	1.708	2.625
12/11/22	5.291	5.333	2.75	3.833
12/12/22	6	7.708	5.791	4.208
12/13/22	2.166	3.833	3.416	3.416
12/14/22	4.791	4.791	3.833	3.916
12/15/22	10.875	3.708	3.166	3.458
12/16/22	2.208	2.208	2.041	2.791
12/17/22	1.75	1.375	1.083	2.25
12/18/22	6.583	4.125	7.125	4.375
12/19/22	10.833	7.583	7.041	7.333
12/20/22	5.625	4.333	4.875	3.916
12/21/22	2.333	2.333	2.333	1.833
12/22/22	4.291	4.166	3.708	3.125
12/23/22	4.541	4.75	4.791	5.458
12/24/22	1.25	1.833	1.833	2.041
12/25/22	0.333	1.041	0.75	0.708
12/26/22	2.541	1.541	2.708	1.583
12/27/22	10.666	9.791	13.25	11.625
12/28/22	25.25	8.416	14.958	6.333
12/29/22	6.666	5.5	10.125	3.916
12/30/22	2.458	1.625	8.916	2.333
12/31/22	-1.166	-0.958	3.208	-0.583

Notes:

Gray-shaded boxes indicate a filter sensor pressure failure.

Bold numbers indicate value exceeded CAAQS but is below the NAAQS of 150 $\mu g/m^3$.

PM_{10} Monthly Statistics, Q19

Location ID	October 2022			November 2022			December 2022		
	PM_{10}			PM_{10}			PM_{10}		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	51.66600	6.33300	41.93700	29.45800	0.79100	24.05815	25.25000	1.16600	10.85400
DOE-2	28.45800	4.12500	25.74950	26.62500	0.95800	24.74725	9.79100	0.95800	8.06200
DOE-3	42.25000	6.79100	25.74950	29.54100	0.91600	21.37450	14.95800	0.75000	10.10830
DOE-4	26.20800	5.25000	25.85350	33.45800	0.91600	29.02690	11.62500	0.58300	6.87450

PCTL = percentile

PM_{10} Monthly Statistics, Q16 through Q19

Location ID	January 2022			February 2022			March 2022		
	PM_{10}			PM_{10}			PM_{10}		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	19.79100	0.70800	19.39725	25.04100	1.45800	13.01900	14.79100	3.37500	12.31245
DOE-2	29.04100	0.79100	25.06200	25.12500	1.50000	12.62500	28.66600	3.91600	12.42425
DOE-3	34.04100	0.83300	26.56200	24.87500	1.70800	16.87450	13.69500	4.08300	13.18915
DOE-4	44.75000	2.04100	30.27480	—	—	—	15.21400	3.66600	14.27720
Location ID	April 2022			May 2022			June 2022		
	PM_{10}			PM_{10}			PM_{10}		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	37.70800	9.83300	32.45800	31.91600	9.75000	26.97900	30.08300	7.91600	27.84550
DOE-2	33.25000	9.33300	30.12500	26.54100	6.50000	25.99950	26.00000	5.83300	22.85975
DOE-3	36.04100	8.83300	34.33300	29.20800	7.83300	26.52050	33.29100	7.75000	29.66630
DOE-4	41.16600	10.25000	34.58300	62.08300	7.83300	29.22900	29.00000	7.70800	25.09565

	July 2022			August 2022			September 2022		
	PM_{10}			PM_{10}			PM_{10}		
Location ID	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	27.16600	7.50000	23.95800	23.95800	9.20800	20.16650	47.29100	6.00000	41.58290
DOE-2	26.50000	7.58300	26.39550	19.25000	8.00000	18.11610	23.08300	4.16600	21.81425
DOE-3	27.41600	8.62500	26.39550	24.87500	8.70800	22.72900	40.33300	5.29100	28.65000
DOE-4	29.50000	8.54100	23.70800	29.87500	9.45800	26.66600	38.62500	5.00000	29.77255
	October 2022			November 2022			December 2022		
	PM_{10}			PM_{10}			PM_{10}		
Location ID	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	51.66600	6.33300	41.93700	29.45800	0.79100	24.05815	25.25000	1.16600	10.85400
DOE-2	28.45800	4.12500	25.74950	26.62500	0.95800	24.74725	9.79100	0.95800	8.06200
DOE-3	42.25000	6.79100	25.74950	29.54100	0.91600	21.37450	14.95800	0.75000	10.10830
DOE-4	26.20800	5.25000	25.85350	33.45800	0.91600	29.02690	11.62500	0.58300	6.87450

Note: DOE-4 had no valid readings in February 2022.

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APPENDIX B

Analytical Results for Ambient Air VOCs

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Table B-1. Ambient air VOC detection results compared to RSLs.

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-1	10/13/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-1	10/13/2022	Ethyl acetate	15 (;J)	73	US EPA RSL
DOE-1	10/13/2022	Toluene	1 (;J)	310	DTSC HHRA NOTE 3
DOE-1	10/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	10/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-2	10/13/2022	Ethyl acetate	6	73	US EPA RSL
DOE-2	10/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	10/13/2022	2-butanone	1.5	5200	US EPA RSL
DOE-3	10/13/2022	Benzene	**0.93**	0.097	DTSC HHRA NOTE 3
DOE-3	10/13/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-3	10/13/2022	Ethyl acetate	**120**	73	US EPA RSL
DOE-3	10/13/2022	Toluene	2.6	310	DTSC HHRA NOTE 3
DOE-3	10/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	10/13/2022	2-butanone	1.4	5200	US EPA RSL
DOE-4	10/13/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	10/13/2022	Ethyl acetate	4.8	73	US EPA RSL
DOE-4	10/13/2022	Trichloroethene	1.3	0.48	US EPA RSL
DOE-4	10/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	10/26/2022	Dichlorodifluoromethane	2	100	US EPA RSL
DOE-1	10/26/2022	Ethyl acetate	14	73	US EPA RSL
DOE-1	10/26/2022	Naphthalene	**2.3**	0.083	US EPA RSL
DOE-1	10/26/2022	Toluene	0.77	310	DTSC HHRA NOTE 3
DOE-1	10/26/2022	Trichlorofluoromethane	1	1300	DTSC HHRA NOTE 3
DOE-2	10/26/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	10/26/2022	Ethyl acetate	21	73	US EPA RSL
DOE-2	10/26/2022	Isopropanol	1.8	210	US EPA RSL
DOE-2	10/26/2022	Toluene	0.98	310	DTSC HHRA NOTE 3
DOE-2	10/26/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	10/26/2022	Dichlorodifluoromethane	2.6	100	US EPA RSL
DOE-3	10/26/2022	Ethyl acetate	8	73	US EPA RSL
DOE-3	10/26/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	10/26/2022	Dichlorodifluoromethane	2	100	US EPA RSL
DOE-4	10/26/2022	Ethyl acetate	21	73	US EPA RSL
DOE-4	10/26/2022	Toluene	1	310	DTSC HHRA NOTE 3
DOE-4	10/26/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	11/11/2022	Dichlorodifluoromethane	2.8	100	US EPA RSL
DOE-1	11/11/2022	Ethyl acetate	10	73	US EPA RSL
DOE-1	11/11/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-2	11/11/2022	Dichlorodifluoromethane	3	100	US EPA RSL
DOE-2	11/11/2022	Ethyl acetate	10	73	US EPA RSL
DOE-3	11/11/2022	Dichlorodifluoromethane	2.8	100	US EPA RSL
DOE-3	11/11/2022	Ethyl acetate	14	73	US EPA RSL
DOE-3	11/11/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	11/11/2022	Ethyl acetate	5.5	73	US EPA RSL
DOE-4	11/11/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	11/22/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-1	11/22/2022	Ethyl acetate	9.2	73	US EPA RSL
DOE-1	11/22/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-2	11/22/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-2	11/22/2022	Ethyl acetate	8.9	73	US EPA RSL
DOE-2	11/22/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	11/22/2022	Benzene	**0.74**	0.097	DTSC HHRA NOTE 3
DOE-3	11/22/2022	Dichlorodifluoromethane	1.8	100	US EPA RSL
DOE-3	11/22/2022	Ethyl acetate	**120**	73	US EPA RSL
DOE-3	11/22/2022	Toluene	1.2	310	DTSC HHRA NOTE 3
DOE-3	11/22/2022	Trichlorofluoromethane	0.97	1300	DTSC HHRA NOTE 3
DOE-4	11/22/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	11/22/2022	Ethyl acetate	18	73	US EPA RSL
DOE-4	11/22/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	12/07/2022	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-1	12/07/2022	Ethyl acetate	16	73	US EPA RSL
DOE-1	12/07/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	12/07/2022	Ethyl acetate	48	73	US EPA RSL
DOE-2	12/07/2022	Toluene	1.0	310	DTSC HHRA NOTE 3
DOE-2	12/07/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	12/07/2022	Dichlorodifluoromethane	2.6	100	US EPA RSL
DOE-3	12/07/2022	Ethyl acetate	10	73	US EPA RSL
DOE-3	12/07/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	12/07/2022	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-4	12/07/2022	Ethyl acetate	3.4	73	US EPA RSL
DOE-4	12/07/2022	Trichlorofluoromethane	1.3	1300	DTSC HHRA NOTE 3
DOE-1	12/16/2022	Dichlorodifluoromethane	1.8	100	US EPA RSL
DOE-1	12/16/2022	Ethyl acetate	10	73	US EPA RSL
DOE-1	12/16/2022	Trichlorofluoromethane	0.98	1300	DTSC HHRA NOTE 3
DOE-2	12/16/2022	Dichlorodifluoromethane	1.8	100	US EPA RSL
DOE-2	12/16/2022	Ethyl acetate	4.7	73	US EPA RSL

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-2	12/16/2022	Trichlorofluoromethane	0.99	1300	DTSC HHRA NOTE 3
DOE-3	12/16/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-3	12/16/2022	Ethyl acetate	35	73	US EPA RSL
DOE-3	12/16/2022	Trichlorofluoromethane	1	1300	DTSC HHRA NOTE 3
DOE-4	12/16/2022	Dichlorodifluoromethane	1.8	100	US EPA RSL
DOE-4	12/16/2022	Ethyl acetate	59	73	US EPA RSL
DOE-4	12/16/2022	Toluene	1.3	310	DTSC HHRA NOTE 3
DOE-4	12/16/2022	Trichlorofluoromethane	0.99	1300	DTSC HHRA NOTE 3

Notes:
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.

Table B-2. Year 5 Ambient air VOC detection results compared to RSLs.

Location ID	Sample Date	Analyte	Result (µg/m^3)	Screening Level Value (µg/m^3)	Screening Level Source
DOE-1	01/06/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-1	01/06/2022	Ethyl acetate	17	73	US EPA RSL
DOE-1	01/06/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	01/06/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-2	01/06/2022	Ethyl acetate	3.4	73	US EPA RSL
DOE-2	01/06/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	01/06/2022	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-3	01/06/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	01/06/2022	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-4	01/06/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	01/21/2022	Dichlorodifluoromethane	2.6	100	US EPA RSL
DOE-1	01/21/2022	Trichlorofluoromethane	1.4	1300	DTSC HHRA NOTE 3
DOE-2	01/21/2022	Dichlorodifluoromethane	2.7	100	US EPA RSL
DOE-2	01/21/2022	Trichlorofluoromethane	1.4	1300	DTSC HHRA NOTE 3
DOE-3	01/21/2022	Dichlorodifluoromethane	2.6	100	US EPA RSL
DOE-3	01/21/2022	Trichlorofluoromethane	1.4	1300	DTSC HHRA NOTE 3
DOE-4	01/21/2022	Dichlorodifluoromethane	2.7	100	US EPA RSL
DOE-4	01/21/2022	Trichlorofluoromethane	1.4	1300	DTSC HHRA NOTE 3
DOE-1	02/04/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-1	02/04/2022	Ethyl acetate	8.8	73	US EPA RSL
DOE-1	02/04/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	02/04/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	02/04/2022	Ethyl acetate	5.3	73	US EPA RSL
DOE-2	02/04/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	02/04/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-3	02/04/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	02/04/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-4	02/04/2022	Ethyl acetate	3.8	73	US EPA RSL
DOE-4	02/04/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	02/17/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-1	02/17/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-2	02/17/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-2	02/17/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-3	02/17/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-3	02/17/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-4	02/17/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-4	02/17/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-1	03/02/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-1	03/02/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-2	03/02/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-2	03/02/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-3	03/02/2022	Dichlorodifluoromethane	2.0	100	US EPA RSL
DOE-3	03/02/2022	Ethyl acetate	4.0	73	US EPA RSL
DOE-3	03/02/2022	Trichlorofluoromethane	0.99	1300	DTSC HHRA NOTE 3
DOE-4	03/02/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-4	03/02/2022	Ethyl acetate	18	73	US EPA RSL
DOE-4	03/02/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-1	03/15/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-1	03/15/2022	Ethyl acetate	2.9	73	US EPA RSL
DOE-1	03/15/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	03/15/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	03/15/2022	Ethyl acetate	28 (;J)	73	US EPA RSL
DOE-2	03/15/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	03/15/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-3	03/15/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	03/15/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	03/15/2022	Ethyl acetate	6.4	73	US EPA RSL
DOE-4	03/15/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	03/29/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-1	03/29/2022	Ethyl acetate	3.9	73	US EPA RSL
DOE-1	03/29/2022	Naphthalene	**1.2**	0.083	US EPA RSL
DOE-1	03/29/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-2	03/29/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	03/29/2022	Ethyl acetate	17	73	US EPA RSL
DOE-2	03/29/2022	Methylene chloride	**1.3**	1	DTSC HHRA NOTE 3
DOE-2	03/29/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	03/29/2022	Dichlorodifluoromethane	2.0	100	US EPA RSL
DOE-3	03/29/2022	Ethyl acetate	3.0	73	US EPA RSL
DOE-3	03/29/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-4	03/29/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-4	03/29/2022	Ethyl acetate	5.3	73	US EPA RSL
DOE-4	03/29/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	04/13/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-1	04/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	04/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-2	04/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	04/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-3	04/13/2022	Ethyl acetate	20	73	US EPA RSL
DOE-3	04/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	04/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-4	04/13/2022	Ethyl acetate	5 (;J)	73	US EPA RSL
DOE-4	04/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	04/13/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-4	04/13/2022	Ethyl acetate	14 (;J)	73	US EPA RSL
DOE-4	04/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	04/28/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-1	04/28/2022	Ethyl acetate	16	73	US EPA RSL
DOE-1	04/28/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	04/28/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-1	04/28/2022	Ethyl acetate	14	73	US EPA RSL
DOE-1	04/28/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	04/28/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-2	04/28/2022	Ethyl acetate	8.1	73	US EPA RSL
DOE-2	04/28/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	04/28/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-3	04/28/2022	Ethyl acetate	3.7	73	US EPA RSL
DOE-3	04/28/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	04/28/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-4	04/28/2022	Ethyl acetate	6.1	73	US EPA RSL
DOE-4	04/28/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	05/13/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-1	05/13/2022	Ethyl acetate	18	73	US EPA RSL
DOE-1	05/13/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	05/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-2	05/13/2022	Ethyl acetate	13	73	US EPA RSL
DOE-2	05/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	05/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-2	05/13/2022	Ethyl acetate	3.3	73	US EPA RSL
DOE-2	05/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	05/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-3	05/13/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	05/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-4	05/13/2022	Ethyl acetate	28	73	US EPA RSL
DOE-4	05/13/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	05/27/2022	Ethyl acetate	12 (V;)	73	US EPA RSL
DOE-1	05/27/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	05/27/2022	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-2	05/27/2022	Ethyl acetate	8.1 (V;)	73	US EPA RSL
DOE-2	05/27/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	05/27/2022	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-3	05/27/2022	Ethyl acetate	7.8 (V;)	73	US EPA RSL
DOE-3	05/27/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	05/27/2022	Dichlorodifluoromethane	2.6	100	US EPA RSL
DOE-3	05/27/2022	Ethyl acetate	20 (V;)	73	US EPA RSL
DOE-3	05/27/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-4	05/27/2022	Dichlorodifluoromethane	2.6	100	US EPA RSL
DOE-4	05/27/2022	Ethyl acetate	9.6 (V;)	73	US EPA RSL
DOE-4	05/27/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	06/09/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-1	06/09/2022	Ethyl acetate	12	73	US EPA RSL
DOE-1	06/09/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	06/09/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	06/09/2022	Ethyl acetate	13	73	US EPA RSL
DOE-2	06/09/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	06/09/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-3	06/09/2022	Ethyl acetate	6.0	73	US EPA RSL
DOE-3	06/09/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	06/09/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-4	06/09/2022	Ethyl acetate	8.1	73	US EPA RSL
DOE-4	06/09/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	06/09/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	06/09/2022	Ethyl acetate	15	73	US EPA RSL
DOE-4	06/09/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	06/22/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-1	06/22/2022	Hexane, n-	1.3	730	US EPA RSL
DOE-1	06/22/2022	N-heptane	0.86	420	US EPA RSL
DOE-1	06/22/2022	Toluene	0.95	310	DTSC HHRA NOTE 3
DOE-1	06/22/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	06/22/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-1	06/22/2022	Ethyl acetate	3.7	73	US EPA RSL
DOE-1	06/22/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	06/22/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	06/22/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	06/22/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-3	06/22/2022	Ethyl acetate	10	73	US EPA RSL
DOE-3	06/22/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	06/22/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-1	07/06/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-1	07/06/2022	Ethyl acetate	26	73	US EPA RSL
DOE-1	07/06/2022	Toluene	1.1	310	DTSC HHRA NOTE 3
DOE-1	07/06/2022	Trichlorofluoromethane	1	1300	DTSC HHRA NOTE 3
DOE-2	07/06/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-2	07/06/2022	Ethyl acetate	26	73	US EPA RSL
DOE-2	07/06/2022	Toluene	1	310	DTSC HHRA NOTE 3
DOE-2	07/06/2022	Trichlorofluoromethane	1	1300	DTSC HHRA NOTE 3
DOE-3	07/06/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-3	07/06/2022	Ethyl acetate	44 (;J)	73	US EPA RSL

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-3	07/06/2022	Toluene	1.5 (;J)	310	DTSC HHRA NOTE 3
DOE-3	07/06/2022	Trichlorofluoromethane	1	1300	DTSC HHRA NOTE 3
DOE-4	07/06/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-4	07/06/2022	Ethyl acetate	19	73	US EPA RSL
DOE-4	07/06/2022	Isopropanol	1.5	210	US EPA RSL
DOE-4	07/06/2022	Toluene	0.94	310	DTSC HHRA NOTE 3
DOE-4	07/06/2022	Trichlorofluoromethane	1	1300	DTSC HHRA NOTE 3
DOE-1	07/19/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-1	07/19/2022	Ethyl acetate	25	73	US EPA RSL
DOE-1	07/19/2022	Trichlorofluoromethane	0.95	1300	DTSC HHRA NOTE 3
DOE-2	07/19/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-2	07/19/2022	Ethyl acetate	15	73	US EPA RSL
DOE-2	07/19/2022	Trichlorofluoromethane	0.95	1300	DTSC HHRA NOTE 3
DOE-3	07/19/2022	Dichlorodifluoromethane	2.0	100	US EPA RSL
DOE-3	07/19/2022	Trichlorofluoromethane	0.98	1300	DTSC HHRA NOTE 3
DOE-4	07/19/2022	Dichlorodifluoromethane	2.0	100	US EPA RSL
DOE-4	07/19/2022	Ethyl acetate	13	73	US EPA RSL
DOE-4	07/19/2022	Trichlorofluoromethane	0.99	1300	DTSC HHRA NOTE 3
DOE-1	08/02/2022	Dichlorodifluoromethane	1.7	100	US EPA RSL
DOE-1	08/02/2022	Ethyl acetate	35	73	US EPA RSL
DOE-1	08/02/2022	Toluene	1.7	310	DTSC HHRA NOTE 3
DOE-1	08/02/2022	Trichlorofluoromethane	0.82	1300	DTSC HHRA NOTE 3
DOE-2	08/02/2022	Dichlorodifluoromethane	1.7	100	US EPA RSL
DOE-2	08/02/2022	Ethyl acetate	33	73	US EPA RSL
DOE-2	08/02/2022	Toluene	1.3	310	DTSC HHRA NOTE 3
DOE-2	08/02/2022	Trichlorofluoromethane	0.86	1300	DTSC HHRA NOTE 3
DOE-3	08/02/2022	Dichlorodifluoromethane	1.7	100	US EPA RSL
DOE-3	08/02/2022	Ethyl acetate	22	73	US EPA RSL
DOE-3	08/02/2022	Toluene	1.2	310	DTSC HHRA NOTE 3
DOE-3	08/02/2022	Trichlorofluoromethane	0.83	1300	DTSC HHRA NOTE 3
DOE-4	08/02/2022	Dichlorodifluoromethane	1.7	100	US EPA RSL
DOE-4	08/02/2022	Ethyl acetate	12	73	US EPA RSL
DOE-4	08/02/2022	Trichlorofluoromethane	0.84	1300	DTSC HHRA NOTE 3
DOE-1	09/01/2022	2-butanone	2.4	5200	US EPA RSL
DOE-1	09/01/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-1	09/01/2022	Ethyl acetate	11	73	US EPA RSL
DOE-1	09/01/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	09/01/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-2	09/01/2022	Ethyl acetate	23	73	US EPA RSL
DOE-2	09/01/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	09/01/2022	Ethyl acetate	18	73	US EPA RSL
DOE-3	09/01/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	09/01/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-4	09/01/2022	Ethyl acetate	11	73	US EPA RSL
DOE-4	09/01/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	09/16/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-1	09/16/2022	Ethyl acetate	4.7	73	US EPA RSL
DOE-1	09/16/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	09/16/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-2	09/16/2022	Ethyl acetate	19	73	US EPA RSL
DOE-3	09/16/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-3	09/16/2022	Ethyl acetate	9 (;J)	73	US EPA RSL
DOE-3	09/16/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	09/16/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-4	09/16/2022	Ethyl acetate	10	73	US EPA RSL
DOE-4	09/16/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	09/30/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-1	09/30/2022	Ethyl acetate	27	73	US EPA RSL
DOE-1	09/30/2022	Toluene	1.4	310	DTSC HHRA NOTE 3
DOE-1	09/30/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	09/30/2022	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-2	09/30/2022	Ethyl acetate	22	73	US EPA RSL
DOE-2	09/30/2022	Toluene	0.99	310	DTSC HHRA NOTE 3
DOE-2	09/30/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	09/30/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-3	09/30/2022	Ethyl acetate	31	73	US EPA RSL
DOE-3	09/30/2022	Toluene	1.3	310	DTSC HHRA NOTE 3
DOE-3	09/30/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	09/30/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-4	09/30/2022	Ethyl acetate	11	73	US EPA RSL
DOE-4	09/30/2022	Toluene	0.94	310	DTSC HHRA NOTE 3
DOE-4	09/30/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	10/13/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-1	10/13/2022	Ethyl acetate	15 (;J)	73	US EPA RSL
DOE-1	10/13/2022	Toluene	1 (;J)	310	DTSC HHRA NOTE 3
DOE-1	10/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	10/13/2022	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-2	10/13/2022	Ethyl acetate	6	73	US EPA RSL
DOE-2	10/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	10/13/2022	2-butanone	1.5	5200	US EPA RSL
DOE-3	10/13/2022	Benzene	**0.93**	0.097	DTSC HHRA NOTE 3
DOE-3	10/13/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-3	10/13/2022	Ethyl acetate	**120**	73	US EPA RSL
DOE-3	10/13/2022	Toluene	2.6	310	DTSC HHRA NOTE 3
DOE-3	10/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	10/13/2022	2-butanone	1.4	5200	US EPA RSL

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-4	10/13/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	10/13/2022	Ethyl acetate	4.8	73	US EPA RSL
DOE-4	10/13/2022	Trichloroethene	1.3	0.48	US EPA RSL
DOE-4	10/13/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	10/26/2022	Dichlorodifluoromethane	2	100	US EPA RSL
DOE-1	10/26/2022	Ethyl acetate	14	73	US EPA RSL
DOE-1	10/26/2022	Naphthalene	**2.3**	0.083	US EPA RSL
DOE-1	10/26/2022	Toluene	0.77	310	DTSC HHRA NOTE 3
DOE-1	10/26/2022	Trichlorofluoromethane	1	1300	DTSC HHRA NOTE 3
DOE-2	10/26/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	10/26/2022	Ethyl acetate	21	73	US EPA RSL
DOE-2	10/26/2022	Isopropanol	1.8	210	US EPA RSL
DOE-2	10/26/2022	Toluene	0.98	310	DTSC HHRA NOTE 3
DOE-2	10/26/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	10/26/2022	Dichlorodifluoromethane	2.6	100	US EPA RSL
DOE-3	10/26/2022	Ethyl acetate	8	73	US EPA RSL
DOE-3	10/26/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	10/26/2022	Dichlorodifluoromethane	2	100	US EPA RSL
DOE-4	10/26/2022	Ethyl acetate	21	73	US EPA RSL
DOE-4	10/26/2022	Toluene	1	310	DTSC HHRA NOTE 3
DOE-4	10/26/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	11/11/2022	Dichlorodifluoromethane	2.8	100	US EPA RSL
DOE-1	11/11/2022	Ethyl acetate	10	73	US EPA RSL
DOE-1	11/11/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	11/11/2022	Dichlorodifluoromethane	3	100	US EPA RSL
DOE-2	11/11/2022	Ethyl acetate	10	73	US EPA RSL
DOE-3	11/11/2022	Dichlorodifluoromethane	2.8	100	US EPA RSL
DOE-3	11/11/2022	Ethyl acetate	14	73	US EPA RSL
DOE-3	11/11/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	11/11/2022	Ethyl acetate	5.5	73	US EPA RSL
DOE-4	11/11/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	11/22/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-1	11/22/2022	Ethyl acetate	9.2	73	US EPA RSL
DOE-1	11/22/2022	Trichlorofluoromethane	1.0	1300	DTSC HHRA NOTE 3
DOE-2	11/22/2022	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-2	11/22/2022	Ethyl acetate	8.9	73	US EPA RSL
DOE-2	11/22/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	11/22/2022	Benzene	**0.74**	0.097	DTSC HHRA NOTE 3
DOE-3	11/22/2022	Dichlorodifluoromethane	1.8	100	US EPA RSL
DOE-3	11/22/2022	Ethyl acetate	**120**	73	US EPA RSL
DOE-3	11/22/2022	Toluene	1.2	310	DTSC HHRA NOTE 3
DOE-3	11/22/2022	Trichlorofluoromethane	0.97	1300	DTSC HHRA NOTE 3
DOE-4	11/22/2022	Dichlorodifluoromethane	2.2	100	US EPA RSL

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-4	11/22/2022	Ethyl acetate	18	73	US EPA RSL
DOE-4	11/22/2022	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	12/07/2022	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-1	12/07/2022	Ethyl acetate	16	73	US EPA RSL
DOE-1	12/07/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	12/07/2022	Ethyl acetate	48	73	US EPA RSL
DOE-2	12/07/2022	Toluene	1.0	310	DTSC HHRA NOTE 3
DOE-2	12/07/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	12/07/2022	Dichlorodifluoromethane	2.6	100	US EPA RSL
DOE-3	12/07/2022	Ethyl acetate	10	73	US EPA RSL
DOE-3	12/07/2022	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	12/07/2022	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-4	12/07/2022	Ethyl acetate	3.4	73	US EPA RSL
DOE-4	12/07/2022	Trichlorofluoromethane	1.3	1300	DTSC HHRA NOTE 3
DOE-1	12/16/2022	Dichlorodifluoromethane	1.8	100	US EPA RSL
DOE-1	12/16/2022	Ethyl acetate	10	73	US EPA RSL
DOE-1	12/16/2022	Trichlorofluoromethane	0.98	1300	DTSC HHRA NOTE 3
DOE-2	12/16/2022	Dichlorodifluoromethane	1.8	100	US EPA RSL
DOE-2	12/16/2022	Ethyl acetate	4.7	73	US EPA RSL
DOE-2	12/16/2022	Trichlorofluoromethane	0.99	1300	DTSC HHRA NOTE 3
DOE-3	12/16/2022	Dichlorodifluoromethane	1.9	100	US EPA RSL
DOE-3	12/16/2022	Ethyl acetate	35	73	US EPA RSL
DOE-3	12/16/2022	Trichlorofluoromethane	1	1300	DTSC HHRA NOTE 3
DOE-4	12/16/2022	Dichlorodifluoromethane	1.8	100	US EPA RSL
DOE-4	12/16/2022	Ethyl acetate	59	73	US EPA RSL
DOE-4	12/16/2022	Toluene	1.3	310	DTSC HHRA NOTE 3
DOE-4	12/16/2022	Trichlorofluoromethane	0.99	1300	DTSC HHRA NOTE 3

Notes:

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.

V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

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APPENDIX C

Radiological Results

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Table C-1. Gross alpha and gross beta air sample results for air samplers, Q19

Quarter	Air Station ID	Sample Collection Date	Gross Alpha (µCi/mL)	Gross Alpha MDC (µCi/mL)	Gross Beta (µCi/mL)	Gross Beta MDC (µCi/mL)
Sample Location – DOE-1						
Q19	DOE-1	10/3/2022	2.48E-15	6.46E-15	5.68E-17	2.97E-14
Q19	DOE-1	10/7/2022	5.42E-15	4.82E-15	7.92E-14	2.21E-14
Q19	DOE-1	10/10/2022	5.28E-15	6.55E-15	9.78E-14	3.01E-14
Q19	DOE-1	10/14/2022	7.15E-15	4.79E-15	1.06E-13	2.20E-14
Q19	DOE-1	10/17/2022	7.90E-15	6.42E-15	3.67E-14	2.95E-14
Q19	DOE-1	10/21/2022	5.53E-15	4.92E-15	7.65E-14	2.26E-14
Q19	DOE-1	10/26/2022	4.36E-15	3.88E-15	5.98E-14	1.78E-14
Q19	DOE-1	10/28/2022	5.22E-15	9.61E-15	7.87E-14	4.41E-14
Q19	DOE-1	10/31/2022	2.48E-15	6.45E-15	8.15E-14	2.96E-14
Q19	DOE-1	11/4/2022	1.89E-15	5.01E-15	5.16E-14	2.13E-14
Q19	DOE-1	11/7/2022	-2.18E-15	6.70E-15	2.60E-14	2.85E-14
Q19	DOE-1	11/11/2022	-6.15E-16	4.94E-15	4.93E-15	2.10E-14
Q19	DOE-1	11/14/2022	-1.79E-15	6.50E-15	4.47E-14	2.76E-14
Q19	DOE-1	11/18/2022	-1.23E-16	5.12E-15	5.32E-14	2.17E-14
Q19	DOE-1	11/21/2022	1.85E-15	6.67E-15	7.94E-14	2.83E-14
Q19	DOE-1	11/23/2022	-5.82E-15	1.01E-14	8.91E-14	4.29E-14
Q19	DOE-1	11/28/2022	1.09E-15	3.95E-15	8.03E-14	1.68E-14
Q19	DOE-1	12/2/2022	4.59E-15	5.00E-15	6.89E-14	2.19E-14
Q19	DOE-1	12/5/2022	-1.97E-15	6.61E-15	-1.08E-14	2.90E-14
Q19	DOE-1	12/9/2022	-1.23E-15	4.98E-15	1.41E-14	2.18E-14
Q19	DOE-1	12/13/2022	7.81E-16	4.94E-15	9.50E-15	2.16E-14
Q19	DOE-1	12/16/2022	-3.46E-15	6.28E-15	4.45E-14	2.75E-14
Q19	DOE-1	12/19/2022	3.95E-17	6.50E-15	7.40E-14	2.85E-14
Q19	DOE-1	12/22/2022	4.19E-17	6.89E-15	7.56E-14	3.02E-14
Q19	DOE-1	12/26/2022	1.86E-15	5.16E-15	7.33E-14	2.26E-14
Sample Location – DOE-2						
Q19	DOE-2	10/3/2022	1.46E-15	6.45E-15	1.49E-14	2.96E-14
Q19	DOE-2	10/7/2022	7.98E-15	4.83E-15	7.32E-14	2.22E-14
Q19	DOE-2	10/10/2022	6.67E-15	6.55E-15	1.00E-13	3.01E-14
Q19	DOE-2	10/14/2022	4.88E-15	4.79E-15	1.07E-13	2.20E-14
Q19	DOE-2	10/17/2022	4.16E-15	6.42E-15	5.33E-14	2.95E-14
Q19	DOE-2	10/21/2022	4.75E-15	4.92E-15	1.05E-13	2.26E-14
Q19	DOE-2	10/26/2022	8.76E-16	3.88E-15	6.03E-14	1.78E-14

Quarter	Air Station ID	Sample Collection Date	Gross Alpha (µCi/mL)	Gross Alpha MDC (µCi/mL)	Gross Beta (µCi/mL)	Gross Beta MDC (µCi/mL)
Q19	DOE-2	10/28/2022	6.74E-15	9.61E-15	3.75E-14	4.41E-14
Q19	DOE-2	10/31/2022	2.14E-15	6.45E-15	8.54E-14	2.96E-14
Q19	DOE-2	11/4/2022	3.15E-15	5.01E-15	5.18E-14	2.13E-14
Q19	DOE-2	11/7/2022	-1.61E-16	6.71E-15	3.48E-14	2.84E-14
Q19	DOE-2	11/11/2022	2.61E-16	1.00E-14	4.46E-14	4.25E-14
Q19	DOE-2	11/14/2022	3.75E-15	6.50E-15	6.44E-14	2.76E-14
Q19	DOE-2	11/18/2022	6.47E-16	5.12E-15	7.49E-14	2.17E-14
Q19	DOE-2	11/21/2022	1.13E-15	6.42E-15	6.70E-14	2.72E-14
Q19	DOE-2	11/23/2022	-3.49E-15	1.07E-14	9.52E-14	4.56E-14
Q19	DOE-2	11/28/2022	-2.93E-16	3.95E-15	5.99E-14	1.68E-14
Q19	DOE-2	12/2/2022	2.06E-15	5.00E-15	6.07E-14	2.19E-14
Q19	DOE-2	12/5/2022	-1.30E-15	6.59E-15	2.50E-14	2.89E-14
Q19	DOE-2	12/9/2022	-2.23E-16	4.99E-15	3.06E-14	2.19E-14
Q19	DOE-2	12/13/2022	5.30E-16	4.93E-15	1.05E-14	2.16E-14
Q19	DOE-2	12/16/2022	-5.98E-16	6.27E-15	4.58E-14	2.75E-14
Q19	DOE-2	12/19/2022	3.69E-16	6.50E-15	4.68E-14	2.85E-14
Q19	DOE-2	12/22/2022	-1.36E-15	6.89E-15	6.72E-14	3.02E-14
Q19	DOE-2	12/26/2022	5.55E-16	5.16E-15	5.08E-14	2.26E-14
Sample Location – DOE-3						
Q19	DOE-3	10/3/2022	2.47E-15	6.43E-15	1.21E-14	2.96E-14
Q19	DOE-3	10/7/2022	9.74E-15	4.82E-15	9.18E-14	2.21E-14
Q19	DOE-3	10/10/2022	1.29E-14	6.57E-15	1.11E-13	3.02E-14
Q19	DOE-3	10/14/2022	7.92E-15	4.80E-15	1.07E-13	2.20E-14
Q19	DOE-3	10/17/2022	2.47E-15	6.42E-15	3.50E-14	2.95E-14
Q19	DOE-3	10/21/2022	3.19E-15	4.92E-15	7.51E-14	2.26E-14
Q19	DOE-3	10/26/2022	2.31E-15	3.88E-15	5.96E-14	1.78E-14
Q19	DOE-3	10/28/2022	-2.90E-15	9.61E-15	7.81E-14	4.41E-14
Q19	DOE-3	10/31/2022	3.16E-15	6.45E-15	8.25E-14	2.96E-14
Q19	DOE-3	11/4/2022	5.91E-15	5.01E-15	5.36E-14	2.13E-14
Q19	DOE-3	11/7/2022	-1.84E-15	6.71E-15	2.78E-14	2.85E-14
Q19	DOE-3	11/11/2022	-1.48E-15	5.38E-15	7.34E-15	2.28E-14
Q19	DOE-3	11/14/2022	1.80E-15	6.51E-15	5.36E-14	2.76E-14
Q19	DOE-3	11/18/2022	1.93E-15	5.12E-15	6.76E-14	2.17E-14
Q19	DOE-3	11/21/2022	-4.76E-16	6.41E-15	8.85E-14	2.72E-14
Q19	DOE-3	11/23/2022	2.98E-15	1.08E-14	3.89E-14	4.56E-14

Quarter	Air Station ID	Sample Collection Date	Gross Alpha (µCi/mL)	Gross Alpha MDC (µCi/mL)	Gross Beta (µCi/mL)	Gross Beta MDC (µCi/mL)
Q19	DOE-3	11/28/2022	6.98E-16	3.95E-15	6.94E-14	1.68E-14
Q19	DOE-3	12/2/2022	3.08E-17	5.06E-15	5.84E-14	2.22E-14
Q19	DOE-3	12/5/2022	4.01E-17	6.59E-15	6.60E-14	2.89E-14
Q19	DOE-3	12/9/2022	7.90E-16	4.99E-15	3.43E-14	2.19E-14
Q19	DOE-3	12/13/2022	9.22E-16	5.83E-15	4.13E-14	2.55E-14
Q19	DOE-3	12/16/2022	3.81E-17	6.26E-15	1.24E-14	2.74E-14
Q19	DOE-3	12/19/2022	1.03E-15	6.52E-15	3.19E-15	2.86E-14
Q19	DOE-3	12/22/2022	-1.01E-15	6.89E-15	-1.17E-14	3.02E-14
Q19	DOE-3	12/26/2022	2.13E-15	5.16E-15	6.38E-14	2.26E-14
Sample Location – DOE-4						
Q19	DOE-4	10/3/2022	4.34E-16	6.42E-15	1.35E-14	2.95E-14
Q19	DOE-4	10/7/2022	5.67E-15	4.82E-15	7.13E-14	2.22E-14
Q19	DOE-4	10/10/2022	1.15E-14	6.57E-15	9.89E-14	3.02E-14
Q19	DOE-4	10/14/2022	7.41E-15	4.79E-15	8.45E-14	2.20E-14
Q19	DOE-4	10/17/2022	3.15E-15	6.42E-15	5.33E-14	2.95E-14
Q19	DOE-4	10/21/2022	2.67E-15	4.92E-15	8.91E-14	2.26E-14
Q19	DOE-4	10/26/2022	4.56E-15	3.88E-15	6.62E-14	1.78E-14
Q19	DOE-4	10/28/2022	-3.65E-16	9.60E-15	2.96E-14	4.41E-14
Q19	DOE-4	10/31/2022	6.91E-15	6.45E-15	4.61E-14	2.96E-14
Q19	DOE-4	11/4/2022	2.39E-15	5.01E-15	4.84E-14	2.13E-14
Q19	DOE-4	11/7/2022	-1.17E-15	6.71E-15	4.40E-14	2.85E-14
Q19	DOE-4	11/11/2022	-3.66E-16	4.93E-15	1.24E-14	2.09E-14
Q19	DOE-4	11/14/2022	3.11E-15	6.51E-15	4.92E-14	2.76E-14
Q19	DOE-4	11/18/2022	9.03E-16	5.12E-15	8.25E-14	2.17E-14
Q19	DOE-4	11/21/2022	2.42E-15	6.41E-15	7.33E-14	2.72E-14
Q19	DOE-4	11/23/2022	-1.34E-15	1.08E-14	1.10E-13	4.57E-14
Q19	DOE-4	11/28/2022	3.01E-16	3.95E-15	7.80E-14	1.68E-14
Q19	DOE-4	12/2/2022	1.80E-15	4.99E-15	5.89E-14	2.19E-14
Q19	DOE-4	12/5/2022	3.05E-15	6.61E-15	5.98E-14	2.90E-14
Q19	DOE-4	12/9/2022	3.07E-15	5.00E-15	4.63E-14	2.19E-14
Q19	DOE-4	12/13/2022	-1.97E-15	4.92E-15	6.86E-15	2.16E-14
Q19	DOE-4	12/16/2022	-9.13E-16	6.25E-15	2.97E-14	2.74E-14
Q19	DOE-4	12/19/2022	3.97E-17	6.53E-15	1.78E-14	2.86E-14
Q19	DOE-4	12/22/2022	3.91E-16	6.89E-15	-9.45E-15	3.02E-14
Q19	DOE-4	12/26/2022	4.75E-15	5.17E-15	6.35E-14	2.26E-14

Note: Results less than the MDC are noted in the table as negative numbers.

Table C-2. Gross alpha and gross beta air sample results for air samplers, Q16–Q19.

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Sample location DOE-1						
Q16	DOE-1	1/4/2022	-1.18E-15	5.24E-15	1.80E-14	2.18E-14
Q16	DOE-1	1/7/2022	-1.58E-15	7.06E-15	1.02E-14	2.94E-14
Q16	DOE-1	1/10/2022	-2.55E-15	6.95E-15	2.19E-14	2.90E-14
Q16	DOE-1	1/14/2022	-1.48E-15	5.45E-15	3.26E-14	2.27E-14
Q16	DOE-1	1/18/2022	-1.21E-15	5.40E-15	5.72E-14	2.25E-14
Q16	DOE-1	1/21/2022	4.33E-16	7.11E-15	7.18E-14	2.96E-14
Q16	DOE-1	1/24/2022	-9.07E-16	7.02E-15	3.89E-14	2.93E-14
Q16	DOE-1	1/27/2022	4.29E-16	7.06E-15	6.21E-14	2.94E-14
Q16	DOE-1	1/31/2022	-2.17E-15	5.24E-15	3.22E-14	2.18E-14
Q16	DOE-1	2/4/2022	2.27E-15	5.27E-15	4.92E-14	2.28E-14
Q16	DOE-1	2/7/2022	-2.30E-15	6.60E-15	3.43E-15	2.85E-14
Q16	DOE-1	2/10/2022	1.60E-15	6.80E-15	4.94E-14	2.93E-14
Q16	DOE-1	2/14/2022	4.86E-16	5.42E-15	2.18E-14	2.34E-14
Q16	DOE-1	2/18/2022	-1.26E-15	5.01E-15	1.55E-14	2.16E-14
Q16	DOE-1	2/21/2022	-4.08E-16	7.22E-15	4.24E-14	3.12E-14
Q16	DOE-1	2/25/2022	-7.84E-16	5.09E-15	8.94E-15	2.20E-14
Q16	DOE-1	2/28/2022	-2.19E-15	7.29E-15	5.15E-14	3.15E-14
Q16	DOE-1	3/3/2022	4.69E-15	7.06E-15	5.70E-14	2.92E-14
Q16	DOE-1	3/7/2022	1.95E-15	5.13E-15	1.32E-14	2.12E-14
Q16	DOE-1	3/11/2022	3.51E-15	5.28E-15	3.80E-14	2.19E-14
Q16	DOE-1	3/14/2022	-6.67E-16	7.19E-15	1.05E-14	2.98E-14
Q16	DOE-1	3/18/2022	2.37E-15	5.54E-15	2.53E-14	2.29E-14
Q16	DOE-1	3/21/2022	3.48E-16	7.07E-15	1.03E-14	2.93E-14
Q16	DOE-1	3/24/2022	1.01E-17	5.33E-15	1.70E-14	2.21E-14
Q16	DOE-1	3/29/2022	2.55E-16	5.18E-15	4.26E-14	2.15E-14
Q17	DOE-1	4/1/2021	3.51E-15	6.94E-15	8.38E-14	3.02E-14
Q17	DOE-1	4/1/2022	-2.43E-15	7.37E-15	1.90E-14	2.99E-14
Q17	DOE-1	4/4/2022	1.40E-17	7.37E-15	3.40E-14	2.99E-14
Q17	DOE-1	4/8/2022	1.80E-15	5.41E-15	2.74E-14	2.19E-14
Q17	DOE-1	4/11/2022	-2.96E-15	6.97E-15	3.94E-14	2.82E-14
Q17	DOE-1	4/15/2022	-1.80E-15	5.47E-15	1.87E-14	2.22E-14
Q17	DOE-1	4/18/2022	-2.33E-15	7.07E-15	-2.24E-15	2.86E-14
Q17	DOE-1	4/22/2022	-1.52E-15	5.39E-15	1.84E-14	2.18E-14
Q17	DOE-1	4/25/2022	-2.97E-15	6.99E-15	5.00E-14	2.83E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q17	DOE-1	4/29/2022	-5.05E-16	5.44E-15	2.08E-14	2.21E-14
Q17	DOE-1	5/2/2022	3.76E-15	6.59E-15	4.04E-14	2.84E-14
Q17	DOE-1	5/6/2022	3.66E-15	5.07E-15	2.58E-14	2.19E-14
Q17	DOE-1	5/9/2022	-1.83E-15	6.54E-15	3.19E-15	2.82E-14
Q17	DOE-1	5/13/2022	-1.50E-16	5.00E-15	9.82E-15	2.16E-14
Q17	DOE-1	5/16/2022	1.40E-15	6.37E-15	3.71E-14	2.75E-14
Q17	DOE-1	5/20/2022	-1.40E-15	4.98E-15	2.45E-14	2.15E-14
Q17	DOE-1	5/23/2022	2.47E-15	6.67E-15	1.17E-14	2.88E-14
Q17	DOE-1	5/27/2022	-1.94E-15	5.09E-15	5.32E-14	2.20E-14
Q17	DOE-1	5/31/2022	-4.05E-16	5.06E-15	1.24E-14	2.19E-14
Q17	DOE-1	6/3/2022	1.88E-15	6.88E-15	2.33E-14	2.99E-14
Q17	DOE-1	6/6/2022	4.55E-16	6.58E-15	1.49E-14	2.86E-14
Q17	DOE-1	6/10/2022	6.08E-16	5.06E-15	2.33E-14	2.20E-14
Q17	DOE-1	6/13/2022	-3.54E-15	6.53E-15	4.40E-14	2.84E-14
Q17	DOE-1	6/17/2022	-9.51E-16	5.13E-15	1.30E-14	2.23E-14
Q17	DOE-1	6/20/2022	1.22E-16	6.67E-15	1.76E-14	2.90E-14
Q17	DOE-1	6/24/2022	5.23E-15	5.05E-15	3.81E-14	2.19E-14
Q18	DOE-1	7/1/2022	1.85E-15	4.63E-15	3.38E-14	2.14E-14
Q18	DOE-1	7/5/2022	2.17E-15	4.80E-15	1.40E-14	2.22E-14
Q18	DOE-1	7/8/2022	5.10E-16	6.32E-15	-9.35E-15	2.92E-14
Q18	DOE-1	7/11/2022	2.59E-15	6.48E-15	1.45E-14	3.00E-14
Q18	DOE-1	7/15/2022	-6.28E-16	4.77E-15	1.98E-14	2.21E-14
Q18	DOE-1	7/18/2022	-1.60E-16	6.26E-15	3.09E-14	2.90E-14
Q18	DOE-1	7/22/2022	-3.75E-16	4.78E-15	1.04E-14	2.21E-14
Q18	DOE-1	7/25/2022	1.51E-15	6.28E-15	5.50E-14	2.91E-14
Q18	DOE-1	7/29/2022	-3.83E-16	4.88E-15	4.14E-14	2.26E-14
Q18	DOE-1	8/1/2022	-1.17E-15	6.86E-15	2.91E-14	2.89E-14
Q18	DOE-1	8/5/2022	2.13E-15	5.18E-15	4.11E-14	2.19E-14
Q18	DOE-1	8/8/2022	-3.77E-15	6.76E-15	2.34E-14	2.85E-14
Q18	DOE-1	8/12/2022	1.64E-15	5.23E-15	3.36E-14	2.21E-14
Q18	DOE-1	8/15/2022	3.39E-15	7.37E-15	4.12E-14	3.11E-14
Q18	DOE-1	8/19/2022	1.38E-15	5.22E-15	6.32E-14	2.20E-14
Q18	DOE-1	8/22/2022	-2.22E-15	7.03E-15	2.44E-14	2.96E-14
Q18	DOE-1	8/26/2022	-8.79E-16	5.15E-15	5.79E-14	2.17E-14
Q18	DOE-1	8/29/2022	-1.51E-15	6.90E-15	2.79E-14	2.91E-14
Q18	DOE-1	9/2/2022	5.49E-15	4.82E-15	5.17E-14	2.18E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q18	DOE-1	9/6/2022	5.48E-15	4.81E-15	7.33E-14	2.18E-14
Q18	DOE-1	9/9/2022	1.71E-15	6.54E-15	8.33E-14	2.96E-14
Q18	DOE-1	9/12/2022	2.38E-15	6.51E-15	7.94E-15	2.95E-14
Q18	DOE-1	9/16/2022	1.27E-15	4.83E-15	3.40E-14	2.19E-14
Q18	DOE-1	9/19/2022	2.60E-17	6.29E-15	3.17E-14	2.85E-14
Q18	DOE-1	9/23/2022	-9.30E-16	4.60E-15	7.13E-15	2.08E-14
Q18	DOE-1	9/26/2022	1.11E-15	6.97E-15	7.18E-14	3.16E-14
Q18	DOE-1	9/30/2022	2.02E-17	4.89E-15	6.36E-14	2.21E-14
Q19	DOE-1	10/3/2022	2.48E-15	6.46E-15	5.68E-17	2.97E-14
Q19	DOE-1	10/7/2022	5.42E-15	4.82E-15	7.92E-14	2.21E-14
Q19	DOE-1	10/10/2022	5.28E-15	6.55E-15	9.78E-14	3.01E-14
Q19	DOE-1	10/14/2022	7.15E-15	4.79E-15	1.06E-13	2.20E-14
Q19	DOE-1	10/17/2022	7.90E-15	6.42E-15	3.67E-14	2.95E-14
Q19	DOE-1	10/21/2022	5.53E-15	4.92E-15	7.65E-14	2.26E-14
Q19	DOE-1	10/26/2022	4.36E-15	3.88E-15	5.98E-14	1.78E-14
Q19	DOE-1	10/28/2022	5.22E-15	9.61E-15	7.87E-14	4.41E-14
Q19	DOE-1	10/31/2022	2.48E-15	6.45E-15	8.15E-14	2.96E-14
Q19	DOE-1	11/4/2022	1.89E-15	5.01E-15	5.16E-14	2.13E-14
Q19	DOE-1	11/7/2022	-2.18E-15	6.70E-15	2.60E-14	2.85E-14
Q19	DOE-1	11/11/2022	-6.15E-16	4.94E-15	4.93E-15	2.10E-14
Q19	DOE-1	11/14/2022	-1.79E-15	6.50E-15	4.47E-14	2.76E-14
Q19	DOE-1	11/18/2022	-1.23E-16	5.12E-15	5.32E-14	2.17E-14
Q19	DOE-1	11/21/2022	1.85E-15	6.67E-15	7.94E-14	2.83E-14
Q19	DOE-1	11/23/2022	-5.82E-15	1.01E-14	8.91E-14	4.29E-14
Q19	DOE-1	11/28/2022	1.09E-15	3.95E-15	8.03E-14	1.68E-14
Q19	DOE-1	12/2/2022	4.59E-15	5.00E-15	6.89E-14	2.19E-14
Q19	DOE-1	12/5/2022	-1.97E-15	6.61E-15	-1.08E-14	2.90E-14
Q19	DOE-1	12/9/2022	-1.23E-15	4.98E-15	1.41E-14	2.18E-14
Q19	DOE-1	12/13/2022	7.81E-16	4.94E-15	9.50E-15	2.16E-14
Q19	DOE-1	12/16/2022	-3.46E-15	6.28E-15	4.45E-14	2.75E-14
Q19	DOE-1	12/19/2022	3.95E-17	6.50E-15	7.40E-14	2.85E-14
Q19	DOE-1	12/22/2022	4.19E-17	6.89E-15	7.56E-14	3.02E-14
Q19	DOE-1	12/26/2022	1.86E-15	5.16E-15	7.33E-14	2.26E-14
Sample location DOE-2						
Q16	DOE-2	1/4/2022	-1.42E-15	5.24E-15	1.07E-14	2.18E-14
Q16	DOE-2	1/7/2022	-3.93E-15	7.05E-15	1.62E-14	2.94E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q16	DOE-2	1/10/2022	-2.22E-15	6.96E-15	5.12E-14	2.90E-14
Q16	DOE-2	1/14/2022	-1.99E-15	5.44E-15	5.87E-14	2.27E-14
Q16	DOE-2	1/18/2022	2.39E-15	5.41E-15	6.90E-14	2.26E-14
Q16	DOE-2	1/21/2022	7.71E-16	7.11E-15	9.35E-14	2.96E-14
Q16	DOE-2	1/24/2022	4.27E-16	7.02E-15	4.84E-14	2.93E-14
Q16	DOE-2	1/27/2022	4.29E-16	7.06E-15	5.15E-14	2.94E-14
Q16	DOE-2	1/31/2022	-1.79E-16	5.24E-15	5.57E-14	2.18E-14
Q16	DOE-2	2/4/2022	1.24E-15	5.27E-15	5.49E-14	2.27E-14
Q16	DOE-2	2/7/2022	2.71E-16	6.61E-15	3.27E-14	2.85E-14
Q16	DOE-2	2/10/2022	6.10E-16	6.80E-15	2.88E-14	2.94E-14
Q16	DOE-2	2/14/2022	4.86E-16	5.42E-15	5.11E-14	2.34E-14
Q16	DOE-2	2/18/2022	9.37E-16	5.01E-15	3.20E-14	2.16E-14
Q16	DOE-2	2/21/2022	-2.17E-15	7.23E-15	4.96E-14	3.12E-14
Q16	DOE-2	2/25/2022	-1.53E-15	5.09E-15	3.41E-14	2.20E-14
Q16	DOE-2	2/28/2022	-3.60E-15	7.28E-15	4.43E-14	3.14E-14
Q16	DOE-2	3/3/2022	4.70E-15	7.07E-15	3.94E-14	2.93E-14
Q16	DOE-2	3/7/2022	7.38E-16	5.13E-15	3.83E-14	2.12E-14
Q16	DOE-2	3/11/2022	3.76E-15	5.28E-15	4.16E-14	2.19E-14
Q16	DOE-2	3/14/2022	1.36E-17	7.19E-15	5.18E-14	2.98E-14
Q16	DOE-2	3/18/2022	5.35E-16	5.54E-15	5.28E-14	2.29E-14
Q16	DOE-2	3/21/2022	3.48E-16	7.06E-15	3.11E-14	2.92E-14
Q16	DOE-2	3/24/2022	7.69E-16	5.34E-15	5.02E-14	2.21E-14
Q16	DOE-2	3/29/2022	-1.46E-15	5.18E-15	1.34E-14	2.15E-14
Q17	DOE-2	4/1/2022	-1.38E-15	7.38E-15	-5.28E-15	2.99E-14
Q17	DOE-2	4/4/2022	-1.38E-15	7.37E-15	2.23E-14	2.99E-14
Q17	DOE-2	4/8/2022	2.67E-16	5.41E-15	5.52E-14	2.19E-14
Q17	DOE-2	4/11/2022	-1.99E-15	7.04E-15	6.61E-14	2.85E-14
Q17	DOE-2	4/15/2022	7.88E-16	5.48E-15	3.81E-14	2.22E-14
Q17	DOE-2	4/18/2022	1.34E-17	7.07E-15	2.73E-14	2.86E-14
Q17	DOE-2	4/22/2022	-1.01E-15	5.39E-15	2.54E-14	2.18E-14
Q17	DOE-2	4/25/2022	2.66E-15	6.99E-15	1.48E-14	2.83E-14
Q17	DOE-2	4/29/2022	-5.05E-16	5.44E-15	3.68E-14	2.21E-14
Q17	DOE-2	5/2/2022	6.07E-15	6.59E-15	3.42E-14	2.84E-14
Q17	DOE-2	5/6/2022	8.63E-16	5.07E-15	3.19E-14	2.19E-14
Q17	DOE-2	5/9/2022	3.08E-15	6.54E-15	6.32E-14	2.82E-14
Q17	DOE-2	5/13/2022	-1.15E-15	4.99E-15	4.09E-14	2.16E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q17	DOE-2	5/16/2022	-5.11E-16	6.38E-15	6.20E-14	2.75E-14
Q17	DOE-2	5/20/2022	3.49E-16	4.98E-15	3.58E-14	2.15E-14
Q17	DOE-2	5/23/2022	-2.54E-15	6.67E-15	2.93E-14	2.88E-14
Q17	DOE-2	5/27/2022	1.63E-15	5.09E-15	2.45E-14	2.20E-14
Q17	DOE-2	5/31/2022	-2.69E-15	5.06E-15	2.20E-14	2.19E-14
Q17	DOE-2	6/3/2022	-9.23E-16	6.87E-15	2.98E-14	2.99E-14
Q17	DOE-2	6/6/2022	1.79E-15	6.56E-15	2.62E-15	2.85E-14
Q17	DOE-2	6/10/2022	5.00E-15	5.08E-15	2.26E-14	2.21E-14
Q17	DOE-2	6/13/2022	4.52E-16	6.53E-15	6.95E-14	2.84E-14
Q17	DOE-2	6/17/2022	-4.28E-16	5.13E-15	4.28E-14	2.23E-14
Q17	DOE-2	6/20/2022	-1.58E-15	6.67E-15	3.08E-14	2.90E-14
Q17	DOE-2	6/24/2022	1.89E-15	5.05E-15	4.29E-14	2.20E-14
Q17	DOE-2	6/27/2022	4.70E-16	6.79E-15	4.04E-14	2.95E-14
Q18	DOE-2	7/1/2022	2.34E-15	4.63E-15	3.46E-14	2.14E-14
Q18	DOE-2	7/5/2022	2.43E-15	4.80E-15	1.10E-14	2.22E-14
Q18	DOE-2	7/8/2022	-1.17E-15	6.32E-15	1.70E-14	2.92E-14
Q18	DOE-2	7/11/2022	-5.09E-16	6.48E-15	5.13E-14	3.00E-14
Q18	DOE-2	7/15/2022	6.38E-16	4.77E-15	4.69E-14	2.21E-14
Q18	DOE-2	7/18/2022	5.06E-16	6.27E-15	4.86E-14	2.90E-14
Q18	DOE-2	7/22/2022	8.92E-16	4.78E-15	4.19E-14	2.21E-14
Q18	DOE-2	7/25/2022	-1.60E-16	6.28E-15	2.39E-14	2.91E-14
Q18	DOE-2	7/29/2022	1.95E-15	4.88E-15	2.13E-14	2.26E-14
Q18	DOE-2	8/1/2022	2.15E-15	6.86E-15	5.05E-14	2.89E-14
Q18	DOE-2	8/5/2022	1.63E-15	5.18E-15	3.81E-14	2.19E-14
Q18	DOE-2	8/8/2022	1.47E-15	6.76E-15	5.25E-14	2.85E-14
Q18	DOE-2	8/12/2022	3.93E-15	5.23E-15	5.45E-14	2.21E-14
Q18	DOE-2	8/15/2022	5.29E-16	7.37E-15	6.83E-14	3.11E-14
Q18	DOE-2	8/19/2022	4.17E-15	5.22E-15	7.68E-14	2.20E-14
Q18	DOE-2	8/22/2022	1.63E-16	7.02E-15	2.62E-14	2.96E-14
Q18	DOE-2	8/26/2022	8.69E-16	5.15E-15	3.12E-14	2.17E-14
Q18	DOE-2	8/29/2022	1.61E-16	6.90E-15	3.32E-14	2.91E-14
Q18	DOE-2	9/2/2022	1.01E-15	4.82E-15	4.19E-14	2.18E-14
Q18	DOE-2	9/6/2022	5.49E-15	4.81E-15	7.47E-14	2.18E-14
Q18	DOE-2	9/9/2022	3.40E-15	6.54E-15	8.62E-14	2.96E-14
Q18	DOE-2	9/12/2022	2.38E-15	6.51E-15	6.53E-14	2.95E-14
Q18	DOE-2	9/16/2022	1.76E-15	4.82E-15	4.57E-14	2.18E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q18	DOE-2	9/19/2022	6.78E-16	6.31E-15	7.27E-14	2.86E-14
Q18	DOE-2	9/23/2022	-2.18E-16	4.60E-15	7.39E-15	2.08E-14
Q18	DOE-2	9/26/2022	4.70E-15	6.97E-15	5.44E-14	3.16E-14
Q18	DOE-2	9/30/2022	-1.74E-15	4.89E-15	4.79E-14	2.21E-14
Q19	DOE-2	10/3/2022	1.46E-15	6.45E-15	1.49E-14	2.96E-14
Q19	DOE-2	10/7/2022	7.98E-15	4.83E-15	7.32E-14	2.22E-14
Q19	DOE-2	10/10/2022	6.67E-15	6.55E-15	1.00E-13	3.01E-14
Q19	DOE-2	10/14/2022	4.88E-15	4.79E-15	1.07E-13	2.20E-14
Q19	DOE-2	10/17/2022	4.16E-15	6.42E-15	5.33E-14	2.95E-14
Q19	DOE-2	10/21/2022	4.75E-15	4.92E-15	1.05E-13	2.26E-14
Q19	DOE-2	10/26/2022	8.76E-16	3.88E-15	6.03E-14	1.78E-14
Q19	DOE-2	10/28/2022	6.74E-15	9.61E-15	3.75E-14	4.41E-14
Q19	DOE-2	10/31/2022	2.14E-15	6.45E-15	8.54E-14	2.96E-14
Q19	DOE-2	11/4/2022	3.15E-15	5.01E-15	5.18E-14	2.13E-14
Q19	DOE-2	11/7/2022	-1.61E-16	6.71E-15	3.48E-14	2.84E-14
Q19	DOE-2	11/11/2022	2.61E-16	1.00E-14	4.46E-14	4.25E-14
Q19	DOE-2	11/14/2022	3.75E-15	6.50E-15	6.44E-14	2.76E-14
Q19	DOE-2	11/18/2022	6.47E-16	5.12E-15	7.49E-14	2.17E-14
Q19	DOE-2	11/21/2022	1.13E-15	6.42E-15	6.70E-14	2.72E-14
Q19	DOE-2	11/23/2022	-3.49E-15	1.07E-14	9.52E-14	4.56E-14
Q19	DOE-2	11/28/2022	-2.93E-16	3.95E-15	5.99E-14	1.68E-14
Q19	DOE-2	12/2/2022	2.06E-15	5.00E-15	6.07E-14	2.19E-14
Q19	DOE-2	12/5/2022	-1.30E-15	6.59E-15	2.50E-14	2.89E-14
Q19	DOE-2	12/9/2022	-2.23E-16	4.99E-15	3.06E-14	2.19E-14
Q19	DOE-2	12/13/2022	5.30E-16	4.93E-15	1.05E-14	2.16E-14
Q19	DOE-2	12/16/2022	-5.98E-16	6.27E-15	4.58E-14	2.75E-14
Q19	DOE-2	12/19/2022	3.69E-16	6.50E-15	4.68E-14	2.85E-14
Q19	DOE-2	12/22/2022	-1.36E-15	6.89E-15	6.72E-14	3.02E-14
Q19	DOE-2	12/26/2022	5.55E-16	5.16E-15	5.08E-14	2.26E-14
Sample location DOE-3						
Q16	DOE-3	1/4/2022	1.31E-15	5.23E-15	1.59E-14	2.18E-14
Q16	DOE-3	1/7/2022	-5.76E-16	7.04E-15	5.49E-14	2.93E-14
Q16	DOE-3	1/10/2022	4.24E-16	6.98E-15	4.50E-14	2.91E-14
Q16	DOE-3	1/14/2022	8.46E-16	5.43E-15	5.02E-14	2.26E-14
Q16	DOE-3	1/18/2022	-1.47E-15	5.42E-15	4.58E-14	2.26E-14
Q16	DOE-3	1/21/2022	-8.71E-16	6.73E-15	6.53E-14	2.81E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q16	DOE-3	1/24/2022	-3.24E-15	7.02E-15	1.47E-14	2.93E-14
Q16	DOE-3	1/27/2022	-5.77E-16	7.06E-15	5.36E-14	2.94E-14
Q16	DOE-3	1/31/2022	6.87E-17	5.16E-15	6.01E-14	2.15E-14
Q16	DOE-3	2/4/2022	1.01E-14	5.34E-15	6.45E-14	2.31E-14
Q16	DOE-3	2/7/2022	-1.34E-15	6.61E-15	1.33E-14	2.85E-14
Q16	DOE-3	2/10/2022	-2.03E-15	6.77E-15	2.45E-14	2.92E-14
Q16	DOE-3	2/14/2022	-8.38E-16	5.44E-15	3.81E-14	2.35E-14
Q16	DOE-3	2/18/2022	-1.02E-15	5.01E-15	3.64E-14	2.16E-14
Q16	DOE-3	2/21/2022	-2.87E-15	7.23E-15	3.06E-14	3.12E-14
Q16	DOE-3	2/25/2022	-2.52E-15	5.09E-15	-8.11E-15	2.20E-14
Q16	DOE-3	2/28/2022	-4.67E-15	7.28E-15	2.55E-14	3.14E-14
Q16	DOE-3	3/3/2022	1.04E-14	7.07E-15	5.81E-14	2.93E-14
Q16	DOE-3	3/7/2022	2.43E-15	5.11E-15	2.80E-14	2.12E-14
Q16	DOE-3	3/11/2022	3.02E-15	5.29E-15	5.43E-14	2.19E-14
Q16	DOE-3	3/14/2022	-2.03E-15	7.19E-15	5.88E-14	2.98E-14
Q16	DOE-3	3/18/2022	2.72E-16	5.53E-15	4.30E-14	2.29E-14
Q16	DOE-3	3/21/2022	1.02E-15	7.07E-15	3.83E-15	2.93E-14
Q16	DOE-3	3/24/2022	7.69E-16	5.34E-15	2.14E-14	2.21E-14
Q16	DOE-3	3/29/2022	-1.24E-15	6.60E-15	7.27E-15	2.73E-14
Q17	DOE-3	4/1/2022	-1.73E-15	7.38E-15	-1.63E-14	2.99E-14
Q17	DOE-3	4/4/2022	3.62E-16	7.36E-15	4.50E-14	2.98E-14
Q17	DOE-3	4/8/2022	3.60E-15	5.42E-15	4.06E-14	2.20E-14
Q17	DOE-3	4/11/2022	1.32E-17	6.95E-15	2.65E-14	2.82E-14
Q17	DOE-3	4/15/2022	-1.03E-15	5.48E-15	1.60E-14	2.22E-14
Q17	DOE-3	4/18/2022	-3.67E-15	7.07E-15	-1.60E-14	2.86E-14
Q17	DOE-3	4/22/2022	-2.76E-15	5.85E-15	1.62E-14	2.37E-14
Q17	DOE-3	4/25/2022	-4.29E-15	6.99E-15	1.24E-14	2.83E-14
Q17	DOE-3	4/29/2022	-1.02E-15	5.44E-15	3.46E-14	2.21E-14
Q17	DOE-3	5/2/2022	2.44E-15	6.58E-15	1.26E-14	2.84E-14
Q17	DOE-3	5/6/2022	3.56E-16	5.07E-15	5.04E-14	2.19E-14
Q17	DOE-3	5/9/2022	2.09E-15	6.54E-15	4.49E-14	2.82E-14
Q17	DOE-3	5/13/2022	3.56E-16	5.08E-15	1.12E-14	2.16E-14
Q17	DOE-3	5/16/2022	-1.51E-15	6.54E-15	3.44E-14	2.78E-14
Q17	DOE-3	5/20/2022	1.12E-15	5.09E-15	9.59E-15	2.16E-14
Q17	DOE-3	5/23/2022	1.50E-15	6.80E-15	4.68E-15	2.89E-14
Q17	DOE-3	5/27/2022	-1.71E-15	5.19E-15	3.57E-14	2.21E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q17	DOE-3	5/31/2022	-6.73E-16	5.17E-15	1.06E-14	2.20E-14
Q17	DOE-3	6/3/2022	6.06E-15	6.86E-15	2.14E-14	2.98E-14
Q17	DOE-3	6/6/2022	-1.55E-15	6.57E-15	-8.94E-15	2.86E-14
Q17	DOE-3	6/10/2022	1.90E-15	5.07E-15	2.21E-14	2.21E-14
Q17	DOE-3	6/13/2022	7.85E-16	6.53E-15	7.78E-14	2.84E-14
Q17	DOE-3	6/17/2022	1.14E-15	5.13E-15	5.05E-14	2.23E-14
Q17	DOE-3	6/20/2022	1.22E-16	6.67E-15	1.95E-15	2.90E-14
Q17	DOE-3	6/24/2022	9.25E-17	5.05E-15	4.67E-14	2.19E-14
Q17	DOE-3	6/27/2022	-1.26E-15	6.79E-15	3.24E-14	2.95E-14
Q18	DOE-3	7/1/2022	4.53E-15	4.61E-15	4.30E-14	2.13E-14
Q18	DOE-3	7/8/2022	-1.61E-16	6.32E-15	4.17E-15	2.92E-14
Q18	DOE-3	7/11/2022	5.23E-16	6.48E-15	1.56E-14	3.00E-14
Q18	DOE-3	7/15/2022	-1.64E-15	4.76E-15	1.52E-14	2.20E-14
Q18	DOE-3	7/18/2022	-1.60E-16	6.28E-15	2.43E-14	2.91E-14
Q18	DOE-3	7/22/2022	8.93E-16	4.78E-15	1.90E-14	2.21E-14
Q18	DOE-3	7/25/2022	-1.60E-16	6.28E-15	4.34E-14	2.91E-14
Q18	DOE-3	7/29/2022	-1.16E-15	4.88E-15	3.86E-14	2.26E-14
Q18	DOE-3	8/1/2022	2.82E-15	6.86E-15	2.81E-14	2.89E-14
Q18	DOE-3	8/5/2022	3.39E-15	5.19E-15	4.51E-14	2.19E-14
Q18	DOE-3	8/8/2022	1.14E-15	6.76E-15	6.37E-14	2.85E-14
Q18	DOE-3	8/12/2022	2.15E-15	5.23E-15	2.79E-14	2.21E-14
Q18	DOE-3	8/15/2022	-1.97E-15	7.37E-15	3.97E-14	3.11E-14
Q18	DOE-3	8/19/2022	3.66E-15	5.22E-15	6.89E-14	2.20E-14
Q18	DOE-3	8/22/2022	2.89E-15	7.03E-15	2.91E-14	2.96E-14
Q18	DOE-3	8/26/2022	1.62E-15	5.15E-15	5.10E-14	2.17E-14
Q18	DOE-3	8/29/2022	-1.85E-15	6.90E-15	2.46E-14	2.91E-14
Q18	DOE-3	9/2/2022	2.75E-15	4.82E-15	4.80E-14	2.18E-14
Q18	DOE-3	9/6/2022	4.99E-15	4.81E-15	9.54E-14	2.18E-14
Q18	DOE-3	9/9/2022	5.09E-15	6.54E-15	8.66E-14	2.96E-14
Q18	DOE-3	9/12/2022	1.71E-15	6.51E-15	1.73E-14	2.95E-14
Q18	DOE-3	9/16/2022	-4.78E-16	4.82E-15	1.68E-14	2.18E-14
Q18	DOE-3	9/19/2022	-2.96E-16	6.24E-15	1.80E-14	2.83E-14
Q18	DOE-3	9/23/2022	-1.18E-15	4.64E-15	1.75E-14	2.10E-14
Q18	DOE-3	9/26/2022	1.83E-15	6.96E-15	5.48E-14	3.16E-14
Q18	DOE-3	9/30/2022	1.28E-15	4.89E-15	6.42E-14	2.21E-14
Q19	DOE-3	10/3/2022	2.47E-15	6.43E-15	1.21E-14	2.96E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q19	DOE-3	10/7/2022	9.74E-15	4.82E-15	9.18E-14	2.21E-14
Q19	DOE-3	10/10/2022	1.29E-14	6.57E-15	1.11E-13	3.02E-14
Q19	DOE-3	10/14/2022	7.92E-15	4.80E-15	1.07E-13	2.20E-14
Q19	DOE-3	10/17/2022	2.47E-15	6.42E-15	3.50E-14	2.95E-14
Q19	DOE-3	10/21/2022	3.19E-15	4.92E-15	7.51E-14	2.26E-14
Q19	DOE-3	10/26/2022	2.31E-15	3.88E-15	5.96E-14	1.78E-14
Q19	DOE-3	10/28/2022	-2.90E-15	9.61E-15	7.81E-14	4.41E-14
Q19	DOE-3	10/31/2022	3.16E-15	6.45E-15	8.25E-14	2.96E-14
Q19	DOE-3	11/4/2022	5.91E-15	5.01E-15	5.36E-14	2.13E-14
Q19	DOE-3	11/7/2022	-1.84E-15	6.71E-15	2.78E-14	2.85E-14
Q19	DOE-3	11/11/2022	-1.48E-15	5.38E-15	7.34E-15	2.28E-14
Q19	DOE-3	11/14/2022	1.80E-15	6.51E-15	5.36E-14	2.76E-14
Q19	DOE-3	11/18/2022	1.93E-15	5.12E-15	6.76E-14	2.17E-14
Q19	DOE-3	11/21/2022	-4.76E-16	6.41E-15	8.85E-14	2.72E-14
Q19	DOE-3	11/23/2022	2.98E-15	1.08E-14	3.89E-14	4.56E-14
Q19	DOE-3	11/28/2022	6.98E-16	3.95E-15	6.94E-14	1.68E-14
Q19	DOE-3	12/2/2022	3.08E-17	5.06E-15	5.84E-14	2.22E-14
Q19	DOE-3	12/5/2022	4.01E-17	6.59E-15	6.60E-14	2.89E-14
Q19	DOE-3	12/9/2022	7.90E-16	4.99E-15	3.43E-14	2.19E-14
Q19	DOE-3	12/13/2022	9.22E-16	5.83E-15	4.13E-14	2.55E-14
Q19	DOE-3	12/16/2022	3.81E-17	6.26E-15	1.24E-14	2.74E-14
Q19	DOE-3	12/19/2022	1.03E-15	6.52E-15	3.19E-15	2.86E-14
Q19	DOE-3	12/22/2022	-1.01E-15	6.89E-15	-1.17E-14	3.02E-14
Q19	DOE-3	12/26/2022	2.13E-15	5.16E-15	6.38E-14	2.26E-14
Sample location DOE-4						
Q16	DOE-4	1/4/2022	-1.79E-16	5.24E-15	3.01E-14	2.18E-14
Q16	DOE-4	1/7/2022	-1.91E-15	7.01E-15	2.62E-14	2.92E-14
Q16	DOE-4	1/10/2022	-2.23E-15	6.98E-15	2.93E-14	2.91E-14
Q16	DOE-4	1/14/2022	5.89E-16	5.44E-15	3.72E-14	2.27E-14
Q16	DOE-4	1/18/2022	-4.44E-16	5.43E-15	6.43E-14	2.26E-14
Q16	DOE-4	1/21/2022	2.12E-15	7.11E-15	7.32E-14	2.96E-14
Q16	DOE-4	1/24/2022	-5.74E-16	7.02E-15	4.66E-14	2.93E-14
Q16	DOE-4	1/27/2022	-1.25E-15	7.06E-15	3.28E-14	2.94E-14
Q16	DOE-4	1/31/2022	-9.12E-16	5.16E-15	4.49E-14	2.15E-14
Q16	DOE-4	2/4/2022	4.91E-15	5.34E-15	4.19E-14	2.31E-14
Q16	DOE-4	2/7/2022	-3.91E-15	6.60E-15	2.39E-14	2.85E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q16	DOE-4	2/10/2022	9.42E-16	6.80E-15	2.04E-14	2.94E-14
Q16	DOE-4	2/14/2022	2.09E-15	5.48E-15	3.19E-14	2.37E-14
Q16	DOE-4	2/18/2022	-3.90E-17	5.00E-15	2.58E-14	2.16E-14
Q16	DOE-4	2/21/2022	-2.52E-15	7.23E-15	1.12E-14	3.12E-14
Q16	DOE-4	2/25/2022	-1.30E-15	5.17E-15	1.63E-14	2.23E-14
Q16	DOE-4	2/28/2022	-2.19E-15	7.28E-15	5.52E-14	3.14E-14
Q16	DOE-4	3/3/2022	2.69E-15	7.07E-15	3.98E-14	2.93E-14
Q16	DOE-4	3/7/2022	7.36E-16	5.11E-15	4.26E-14	2.12E-14
Q16	DOE-4	3/11/2022	4.02E-15	5.29E-15	4.41E-14	2.19E-14
Q16	DOE-4	3/14/2022	3.76E-15	7.19E-15	4.08E-14	2.98E-14
Q16	DOE-4	3/18/2022	2.11E-15	5.54E-15	3.32E-14	2.29E-14
Q16	DOE-4	3/21/2022	3.48E-16	7.06E-15	6.70E-15	2.92E-14
Q16	DOE-4	3/24/2022	2.03E-15	5.34E-15	2.27E-14	2.21E-14
Q16	DOE-4	3/29/2022	1.24E-15	5.18E-15	3.15E-14	2.14E-14
Q17	DOE-4	4/1/2022	2.46E-15	7.38E-15	-1.60E-15	2.99E-14
Q17	DOE-4	4/4/2022	3.63E-16	7.36E-15	1.38E-14	2.98E-14
Q17	DOE-4	4/8/2022	1.03E-17	5.42E-15	3.50E-14	2.20E-14
Q17	DOE-4	4/11/2022	-3.28E-15	6.95E-15	4.11E-14	2.82E-14
Q17	DOE-4	4/15/2022	-2.49E-16	5.48E-15	2.80E-14	2.22E-14
Q17	DOE-4	4/18/2022	1.35E-15	7.07E-15	-8.31E-16	2.86E-14
Q17	DOE-4	4/22/2022	1.02E-17	5.39E-15	4.07E-14	2.18E-14
Q17	DOE-4	4/25/2022	-1.64E-15	6.99E-15	4.05E-15	2.83E-14
Q17	DOE-4	4/29/2022	-2.31E-15	5.44E-15	4.33E-14	2.21E-14
Q17	DOE-4	5/2/2022	2.83E-15	6.72E-15	2.81E-14	2.86E-14
Q17	DOE-4	5/6/2022	2.96E-15	5.18E-15	4.91E-14	2.20E-14
Q17	DOE-4	5/9/2022	1.34E-16	6.67E-15	2.96E-14	2.84E-14
Q17	DOE-4	5/13/2022	2.13E-15	5.08E-15	7.46E-15	2.16E-14
Q17	DOE-4	5/16/2022	2.10E-15	6.54E-15	5.42E-14	2.78E-14
Q17	DOE-4	5/20/2022	2.39E-15	5.09E-15	1.09E-14	2.16E-14
Q17	DOE-4	5/23/2022	-5.45E-16	6.80E-15	4.71E-14	2.89E-14
Q17	DOE-4	5/27/2022	1.40E-15	5.19E-15	3.27E-14	2.21E-14
Q17	DOE-4	5/31/2022	8.81E-16	5.18E-15	2.70E-14	2.20E-14
Q17	DOE-4	6/3/2022	-1.62E-15	6.85E-15	9.67E-15	2.98E-14
Q17	DOE-4	6/6/2022	4.14E-15	6.57E-15	1.87E-14	2.86E-14
Q17	DOE-4	6/10/2022	-6.82E-16	5.07E-15	2.39E-14	2.21E-14
Q17	DOE-4	6/13/2022	1.20E-16	6.53E-15	4.51E-14	2.84E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q17	DOE-4	6/17/2022	3.55E-16	5.13E-15	1.82E-14	2.23E-14
Q17	DOE-4	6/20/2022	2.50E-15	6.68E-15	6.58E-15	2.90E-14
Q17	DOE-4	6/24/2022	6.06E-16	5.05E-15	2.68E-14	2.19E-14
Q17	DOE-4	6/27/2022	-5.67E-16	6.79E-15	7.12E-14	2.95E-14
Q18	DOE-4	7/1/2022	3.80E-15	4.61E-15	4.07E-14	2.13E-14
Q18	DOE-4	7/5/2022	3.89E-16	4.83E-15	1.21E-14	2.23E-14
Q18	DOE-4	7/8/2022	1.18E-15	6.31E-15	-4.36E-15	2.92E-14
Q18	DOE-4	7/11/2022	3.28E-15	6.49E-15	2.36E-14	3.00E-14
Q18	DOE-4	7/15/2022	1.39E-15	4.75E-15	5.37E-14	2.20E-14
Q18	DOE-4	7/18/2022	3.18E-15	6.29E-15	1.65E-14	2.91E-14
Q18	DOE-4	7/22/2022	2.16E-15	4.78E-15	5.27E-14	2.21E-14
Q18	DOE-4	7/25/2022	-3.16E-15	6.28E-15	1.65E-14	2.91E-14
Q18	DOE-4	7/29/2022	3.50E-15	4.87E-15	2.13E-14	2.25E-14
Q18	DOE-4	8/1/2022	4.15E-15	6.87E-15	2.17E-14	2.90E-14
Q18	DOE-4	8/5/2022	3.14E-15	5.19E-15	1.64E-14	2.19E-14
Q18	DOE-4	8/8/2022	1.80E-15	6.76E-15	3.15E-14	2.85E-14
Q18	DOE-4	8/12/2022	2.66E-15	5.23E-15	5.28E-14	2.21E-14
Q18	DOE-4	8/15/2022	8.86E-16	7.37E-15	7.18E-14	3.11E-14
Q18	DOE-4	8/19/2022	2.40E-15	5.22E-15	6.70E-14	2.20E-14
Q18	DOE-4	8/22/2022	1.18E-15	7.03E-15	5.71E-14	2.96E-14
Q18	DOE-4	8/26/2022	-6.29E-16	5.15E-15	3.42E-14	2.17E-14
Q18	DOE-4	8/29/2022	-2.18E-15	6.90E-15	1.21E-14	2.91E-14
Q18	DOE-4	9/2/2022	6.48E-15	4.82E-15	3.95E-14	2.18E-14
Q18	DOE-4	9/6/2022	4.99E-15	4.81E-15	7.33E-14	2.18E-14
Q18	DOE-4	9/6/2022	6.44E-15	6.54E-15	7.13E-14	2.96E-14
Q18	DOE-4	9/12/2022	1.71E-15	6.52E-15	1.37E-14	2.95E-14
Q18	DOE-4	9/16/2022	1.02E-15	4.82E-15	4.70E-14	2.18E-14
Q18	DOE-4	9/19/2022	2.92E-15	6.24E-15	3.94E-14	2.83E-14
Q18	DOE-4	9/23/2022	4.98E-16	4.64E-15	2.39E-14	2.10E-14
Q18	DOE-4	9/26/2022	3.62E-15	6.96E-15	2.28E-14	3.16E-14
Q18	DOE-4	9/30/2022	2.02E-17	4.89E-15	5.14E-14	2.21E-14
Q19	DOE-4	10/3/2022	4.34E-16	6.42E-15	1.35E-14	2.95E-14
Q19	DOE-4	10/7/2022	5.67E-15	4.82E-15	7.13E-14	2.22E-14
Q19	DOE-4	10/10/2022	1.15E-14	6.57E-15	9.89E-14	3.02E-14
Q19	DOE-4	10/14/2022	7.41E-15	4.79E-15	8.45E-14	2.20E-14
Q19	DOE-4	10/17/2022	3.15E-15	6.42E-15	5.33E-14	2.95E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q19	DOE-4	10/21/2022	2.67E-15	4.92E-15	8.91E-14	2.26E-14
Q19	DOE-4	10/26/2022	4.56E-15	3.88E-15	6.62E-14	1.78E-14
Q19	DOE-4	10/28/2022	-3.65E-16	9.60E-15	2.96E-14	4.41E-14
Q19	DOE-4	10/31/2022	6.91E-15	6.45E-15	4.61E-14	2.96E-14
Q19	DOE-4	11/4/2022	2.39E-15	5.01E-15	4.84E-14	2.13E-14
Q19	DOE-4	11/7/2022	-1.17E-15	6.71E-15	4.40E-14	2.85E-14
Q19	DOE-4	11/11/2022	-3.66E-16	4.93E-15	1.24E-14	2.09E-14
Q19	DOE-4	11/14/2022	3.11E-15	6.51E-15	4.92E-14	2.76E-14
Q19	DOE-4	11/18/2022	9.03E-16	5.12E-15	8.25E-14	2.17E-14
Q19	DOE-4	11/21/2022	2.42E-15	6.41E-15	7.33E-14	2.72E-14
Q19	DOE-4	11/23/2022	-1.34E-15	1.08E-14	1.10E-13	4.57E-14
Q19	DOE-4	11/28/2022	3.01E-16	3.95E-15	7.80E-14	1.68E-14
Q19	DOE-4	12/2/2022	1.80E-15	4.99E-15	5.89E-14	2.19E-14
Q19	DOE-4	12/5/2022	3.05E-15	6.61E-15	5.98E-14	2.90E-14
Q19	DOE-4	12/9/2022	3.07E-15	5.00E-15	4.63E-14	2.19E-14
Q19	DOE-4	12/13/2022	-1.97E-15	4.92E-15	6.86E-15	2.16E-14
Q19	DOE-4	12/16/2022	-9.13E-16	6.25E-15	2.97E-14	2.74E-14
Q19	DOE-4	12/19/2022	3.97E-17	6.53E-15	1.78E-14	2.86E-14
Q19	DOE-4	12/22/2022	3.91E-16	6.89E-15	-9.45E-15	3.02E-14
Q19	DOE-4	12/26/2022	4.75E-15	5.17E-15	6.35E-14	2.26E-14

Note: Results less than the MDC are noted in the table as negative numbers.

Table C-3. Individual radionuclide analysis for composite filter samples, Q19.

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Location DOE-1 – Air volume/sample = 9.41E+08				**9.41E+08**
Cesium-137	-3.46	7.32	U U	-3.677E-15
Strontium-90	0.57	2.64	U U	6.057E-16
Cobalt-60	2.68	11.7	U U	2.848E-15
Potassium-40	108	78.3	UI UJ	1.148E-13
Beryllium-7	151	82.7		1.605E-13
Plutonium-238	0.143	0.384	U U	1.520E-16
Polonium-210	12.8	0.745	J	1.360E-14
Plutonium-241	4.85	67.2	U U	5.154E-15
Thorium-230	1.04	0.783	UJ	1.105E-15
Thorium-228	0.528	0.693	U U	5.611E-16
Actinium-228	-2.18	37.3	U U	-2.317E-15
Americium-241	0.0614	0.184	U U	6.525E-17
Plutonium-239	-0.0251	0.545	U U	-2.667E-17
Ra-228 - total	-0.528	4.3	U U	-5.611E-16
Radium-226, -228 combined	1.73	1.74	U U	1.838E-15
Thorium-232	0.58	0.511	UJ	6.164E-16
Uranium-238	0.599	0.517	UJ	6.366E-16
Uranium-233/234	0.434	0.537	U U	4.612E-16
Uranium-235/236	0.0657	0.414	U U	6.982E-17
Location DOE-2 – Air volume/sample =9.19E+08				**9.19E+08**
Cesium-137	-3.34	10.9	U U	-3.634E-15
Strontium-90	1.69	2.83	U U	1.839E-15
Cobalt-60	4.78	12.7	U U	5.201E-15
Potassium-40	91.3	80.4	UI UJ	9.935E-14
Beryllium-7	237	70.4		2.579E-13
Plutonium-238	-0.0114	0.398	U U	-1.240E-17
Polonium-210	11.1	0.613	J	1.208E-14
Plutonium-241	-2.85	71.1	U U	-3.101E-15
Thorium-230	0.793	1.02	U U	8.629E-16
Thorium-228	0.525	0.855	U U	5.713E-16
Actinium-228	-22.3	39	U U	-2.427E-14
Americium-241	0.069	0.329	U U	7.508E-17
Plutonium-239	-0.0272	0.314	U U	-2.960E-17
Ra-228 - total	2.24	3.01	U U	2.437E-15
Radium-226, -228 combined	1.56	1.69	U U	1.697E-15
Thorium-232	0.836	0.638	UJ	9.097E-16
Uranium-238	1.19	0.363	UJ	1.295E-15
Uranium-233/234	0.777	0.578	UJ	8.455E-16

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Uranium-235/236	0.0936	0.281	U U	1.018E-16
Location DOE-3 – Air volume/sample = 9.31E+08				**9.31E+08**
Cesium-137	-0.546	10.1	U U	-5.865E-16
Strontium-90	0.0608	2.1	U U	6.531E-17
Cobalt-60	3.49	10.6	U U	3.749E-15
Potassium-40	122	83.2		1.310E-13
Beryllium-7	98.4	103	U U	1.057E-13
Plutonium-238	0	0.158	U UJ	0.000E+0
Polonium-210	10.1	0.545	J	1.085E-14
Plutonium-241	-0.277	68.1	U UJ	-2.975E-16
Thorium-230	0.717	0.811	U U	7.701E-16
Thorium-228	0.402	0.636	U U	4.318E-16
Actinium-228	12.2	41.8	U U	1.310E-14
Americium-241	0.0328	0.349	U U	3.523E-17
Plutonium-239	0.0525	0.158	U UJ	5.639E-17
Ra-228 - total	2.99	3.76	U U	3.212E-15
Radium-226, -228 combined	1.37	1.91	U U	1.472E-15
Thorium-232	0.41	0.556	U U	4.404E-16
Uranium-238	0.676	0.567	UJ	7.261E-16
Uranium-233/234	0.915	0.623	UJ	9.828E-16
Uranium-235/236	0	0.344	U U	0.000E+0
Location DOE-4 – Air volume/sample = 9.41E+08				**9.41E+08**
Cesium-137	0.411	9.11	U U	4.368E-16
Strontium-90	2.27	2.91	U U	2.412E-15
Cobalt-60	-2.86	4.25	U U	-3.039E-15
Potassium-40	34.8	172	U U	3.698E-14
Beryllium-7	173	85.7		1.838E-13
Plutonium-238	-0.0655	0.383	U U	-6.961E-17
Polonium-210	7.06	0.555	J	7.503E-15
Plutonium-241	-7.21	64.5	U U	-7.662E-15
Thorium-230	0.189	0.759	U U	2.009E-16
Thorium-228	0.487	0.698	U U	5.175E-16
Actinium-228	-17.2	31.8	U U	-1.828E-14
Americium-241	0.00442	0.446	U U	4.697E-18
Plutonium-239	-0.0371	0.423	U U	-3.943E-17
Ra-228 - total	3.67	3.17		3.900E-15
Radium-226, -228 combined	2.61	1.72		2.774E-15
Thorium-232	-0.00784	0.429	U U	-8.332E-18
Uranium-238	0.509	0.428	UJ	5.409E-16
Uranium-233/234	0.712	0.54	UJ	7.566E-16

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Uranium-235/236	-0.0415	0.479	U UJ	-4.410E-17

[1] Qualifier column contains laboratory flags; validation qualifiers.

Notes:

U = Sample result is less than MDC and/or two sigma uncertainty.

UU = Sample was analyzed for but not detected and is qualified as a non-detect.

UJ = Sample was rejected by laboratory due to spectra issues and was determined to be an estimated value.

Table C-4. Individual radionuclide analysis for composite filter samples, Q16 through Q19.

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q16					
Location DOE-1 – Air volume/sample = 9.54E+08					**9.54E+08**
Q16	Cesium-137	0.815	7.05	U U	8.543E-16
Q16	Strontium-90	-0.230	2.29	U U	-2.411E-16
Q16	Cobalt-60	-0.757	7.20	U U	-7.935E-16
Q16	Potassium-40	10.1	108	U U	1.059E-14
Q16	Beryllium-7	239	80.6		2.505E-13
Q16	Plutonium-238	-0.0464	0.529	U U	-4.864E-17
Q16	Polonium-210	14.0	0.769		1.468E-14
Q16	Plutonium-241	26.9	40.2	U U	2.820E-14
Q16	Thorium-230	1.22	1.25	U U	1.279E-15
Q16	Thorium-228	0.586	1.37	U U	6.143E-16
Q16	Actinium-228	4.16	31.2	U	4.361E-15
Q16	Americium-241	9.81	38.0	U U	1.028E-14
Q16	Plutonium-239	-0.193	1.39	U U	-2.023E-16
Q16	Ra-228 - total	-0.0490	0.416	U U	-5.136E-17
Q16	Radium-226, -228 combined	4.84	6.89	U UJ	5.073E-15
Q16	Thorium-232	9.94	7.61	UJ	1.042E-14
Q16	Uranium-238	0.656	0.617	U	6.876E-16
Q16	Uranium-233/234	0.621	0.497	UJ	6.509E-16
Q16	Uranium-235/236	1.30	0.557	UJ	1.363E-15
Location DOE-2 – Air volume/sample = 9.54E+08					**9.54E+08**
Q16	Cesium-137	1.39	6.66	U U	1.457E-15
Q16	Strontium-90	2.28	2.73	U U	2.390E-15
Q16	Cobalt-60	-1.95	5.25	U U	-2.044E-15
Q16	Potassium-40	39	55.9	U U	4.088E-14
Q16	Beryllium-7	163	98.1		1.709E-13
Q16	Plutonium-238	0.0731	0.349	U UJ	7.662E-17
Q16	Polonium-210	12.3	1.09		1.289E-14
Q16	Plutonium-241	18.5	33.1	U UJ	1.939E-14
Q16	Thorium-230	0.901	0.466	UJ	9.444E-16
Q16	Thorium-228	0.524	0.608	U U	5.493E-16
Q16	Actinium-228	3.22	30.1	U U	3.375E-15
Q16	Americium-241	0.108	1.19	U UJ	1.132E-16
Q16	Plutonium-239	-0.151	0.51	U UJ	-1.583E-16
Q16	Ra-228 - total	7.36	5.55	J	7.715E-15

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q16	Radium-226, -228 combined	3.42	11.3	U U	3.585E-15
Q16	Thorium-232	0.344	0.425	U U	3.606E-16
Q16	Uranium-238	0.813	0.44	UJ	8.522E-16
Q16	Uranium-233/234	0.629	0.572	UJ	6.593E-16
Q16	Uranium-235/236	0.177	0.389	U U	1.855E-16
Location DOE-3 – Air volume/sample = 9.46E+08					**9.46E+08**
Q16	Cesium-137	0.908	8.27	U U	9.598E-16
Q16	Strontium-90	-1.3	2.24	U U	-1.374E-15
Q16	Cobalt-60	-0.524	7.19	U U	-5.539E-16
Q16	Potassium-40	127	65.4		1.342E-13
Q16	Beryllium-7	113	108		1.195E-13
Q16	Plutonium-238	0.0614	0.184	U U	6.490E-17
Q16	Polonium-210	13.6	0.818		1.438E-14
Q16	Plutonium-241	-5.43	40.9	U U	-5.740E-15
Q16	Thorium-230	1.46	0.692	UJ	1.543E-15
Q16	Thorium-228	0.845	0.545		8.932E-16
Q16	Actinium-228	-9.47	36.4	U U	-1.001E-14
Q16	Americium-241	0.113	1.09	U UJ	1.195E-16
Q16	Plutonium-239	0.0956	0.453	U U	1.011E-16
Q16	Ra-228 - total	9.57	4.8	J	1.012E-14
Q16	Radium-226, -228 combined	6.7	6.88	U U	7.082E-15
Q16	Thorium-232	0.681	0.475	UJ	7.199E-16
Q16	Uranium-238	0.738	0.482	UJ	7.801E-16
Q16	Uranium-233/234	0.265	0.604	U U	2.801E-16
Q16	Uranium-235/236	-0.0142	0.498	U U	-1.501E-17
Location DOE-4 – Air volume/sample = 9.62E+08					**9.62E+08**
Q16	Cesium-137	4.09	9.69	U U	4.292E-15
Q16	Strontium-90	0.0165	2.68	U U	1.731E-17
Q16	Cobalt-60	-5.46	7.7	U U	-5.729E-15
Q16	Potassium-40	-16.8	159	U U	-1.763E-14
Q16	Beryllium-7	118	130	U U	1.238E-13
Q16	Plutonium-238	0.0524	0.332	U U	5.498E-17
Q16	Polonium-210	15.8	0.831		1.658E-14
Q16	Plutonium-241	18.1	31	U U	1.899E-14
Q16	Thorium-230	0.62	0.609	UJ	6.506E-16
Q16	Thorium-228	0.781	0.586		8.195E-16
Q16	Actinium-228	-2.31	49.1	U U	-2.424E-15

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q16	Americium-241	-0.194	1.48	U UJ	-2.036E-16
Q16	Plutonium-239	-0.0101	0.353	U U	-1.060E-17
Q16	Ra-228 - total	4.83	5.88	U UJ	5.068E-15
Q16	Radium-226, -228 combined	1.92	12.6	U U	2.015E-15
Q16	Thorium-232	0.559	0.451	UJ	5.866E-16
Q16	Uranium-238	0.616	0.462	UJ	6.464E-16
Q16	Uranium-233/234	0.511	0.506	UJ	5.362E-16
Q16	Uranium-235/236	0.056	0.354	U U	5.876E-17
Q17					
Location DOE-1 – Air volume/sample = 9.72E+08					**9.72E+08**
Q17	Cesium-137	-1.85	5.44	U U	-1.903E-15
Q17	Strontium-90	1.79	8.18	U U	1.842E-15
Q17	Cobalt-60	0.268	8.08	U U	2.757E-16
Q17	Potassium-40	143	53.3		1.471E-13
Q17	Beryllium-7	106	58.4		1.091E-13
Q17	Plutonium-238	0.0614	0.271	U UJ	6.317E-17
Q17	Polonium-210	6.1	0.188	J	6.276E-15
Q17	Plutonium-241	18.4	29.5	U UJ	1.893E-14
Q17	Thorium-230	1.37	0.667	UJ	1.409E-15
Q17	Thorium-228	0.58	0.731	U U	5.967E-16
Q17	Actinium-228	-6.48	30.6	U U	-6.667E-15
Q17	Americium-241	0.133	0.223	U U	1.368E-16
Q17	Plutonium-239	-0.0322	0.344	U UJ	-3.313E-17
Q17	Ra-228 - total	-4.82	15.2	U U	-4.959E-15
Q17	Radium-226, -228 combined	4.02	4.65	U U	4.136E-15
Q17	Thorium-232	0.846	0.317	UJ	8.704E-16
Q17	Uranium-238	0.958	0.173	UJ	9.856E-16
Q17	Uranium-233/234	0.986	0.216	UJ	1.014E-15
Q17	Uranium-235/236	0.121	0.214	U U	1.245E-16
Location DOE-2 – Air volume/sample = 9.72E+08					**9.72E+08**
Q17	Cesium-137	1.4	7.61	U U	1.440E-15
Q17	Strontium-90	2.79	7.29	U U	2.870E-15
Q17	Cobalt-60	4.19	9.21	U U	4.311E-15
Q17	Potassium-40	128	85.1		1.317E-13
Q17	Beryllium-7	86	70.6	UI UJ	8.848E-14
Q17	Plutonium-238	-0.0168	0.26	U UJ	-1.728E-17
Q17	Polonium-210	6.37	0.257	J	6.553E-15

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q17	Plutonium-241	22	34.5	U UJ	2.263E-14
Q17	Thorium-230	1.36	0.568	UJ	1.399E-15
Q17	Thorium-228	0.413	0.42	U U	4.249E-16
Q17	Actinium-228	5.37	31.6	U U	5.525E-15
Q17	Americium-241	0.0405	0.361	U U	4.167E-17
Q17	Plutonium-239	-0.0165	0.191	U UJ	-1.698E-17
Q17	Ra-228 - total	2.56	12.3	U U	2.634E-15
Q17	Radium-226, -228 combined	-1.99	5.37	U U	-2.047E-15
Q17	Thorium-232	0.742	0.243	UJ	7.634E-16
Q17	Uranium-238	0.458	0.242	UJ	4.712E-16
Q17	Uranium-233/234	0.855	0.259	UJ	8.796E-16
Q17	Uranium-235/236	0.0148	0.175	U U	1.523E-17
Location DOE-3 – Air volume/sample = 9.69E+08					**9.69E+08**
Q17	Cesium-137	0.659	7.77	U U	6.801E-16
Q17	Strontium-90	4	7.45	U U	4.128E-15
Q17	Cobalt-60	-0.246	7.88	U U	-2.539E-16
Q17	Potassium-40	84.4	76.9		8.710E-14
Q17	Beryllium-7	136	66.9		1.404E-13
Q17	Plutonium-238	0.0319	0.227	U U	3.292E-17
Q17	Polonium-210	5.65	0.318	J	5.831E-15
Q17	Plutonium-241	3.54	37.9	U U	3.653E-15
Q17	Thorium-230	0.994	0.729	UJ	1.026E-15
Q17	Thorium-228	0.866	0.704	UJ	8.937E-16
Q17	Actinium-228	-15.7	32	U U	-1.620E-14
Q17	Americium-241	-0.0819	0.505	U U	-8.452E-17
Q17	Plutonium-239	0.0319	0.227	U U	3.292E-17
Q17	Ra-228 - total	-7.09	16.4	U U	-7.317E-15
Q17	Radium-226, -228 combined	6.08	6.79	U U	6.275E-15
Q17	Thorium-232	0.538	0.506	UJ	5.552E-16
Q17	Uranium-238	0.875	0.295	UJ	9.030E-16
Q17	Uranium-233/234	0.619	0.343	J	6.388E-16
Q17	Uranium-235/236	0.0933	0.315	U U	9.628E-17
Location DOE-4 – Air volume/sample = 9.72E+08					**9.72E+08**
Q17	Cesium-137	-1.5	5.95	U U	-1.543E-15
Q17	Strontium-90	4.77	6.75	U U	4.907E-15
Q17	Cobalt-60	1.37	7.05	U U	1.409E-15
Q17	Potassium-40	163	63.8		1.677E-13

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q17	Beryllium-7	90.3	69.4		9.290E-14
Q17	Plutonium-238	-0.0186	0.287	U UJ	-1.914E-17
Q17	Polonium-210	6.07	0.131	J	6.245E-15
Q17	Plutonium-241	17.8	42.4	U UJ	1.831E-14
Q17	Thorium-230	1.36	0.5	UJ	1.399E-15
Q17	Thorium-228	0.535	0.6	U U	5.504E-16
Q17	Actinium-228	-33.3	29.1	U U	-3.426E-14
Q17	Americium-241	0.0725	0.109	U U	7.459E-17
Q17	Plutonium-239	-0.0185	0.287	U UJ	-1.903E-17
Q17	Ra-228 - total	1.58	8.92	U U	1.626E-15
Q17	Radium-226, -228 combined	5.04	3.91		5.185E-15
Q17	Thorium-232	0.282	0.421	U U	2.901E-16
Q17	Uranium-238	0.405	0.328	UJ	4.167E-16
Q17	Uranium-233/234	0.866	0.294	UJ	8.909E-16
Q17	Uranium-235/236	-0.000972	0.325	U U	-1.000E-18
Q18					
Location DOE-1 – Air volume/sample = 1.03+09					**1.03E+09**
Q18	Cesium-137	-0.359	7.6	U U	-3.485E-16
Q18	Strontium-90	0.957	2.89	U U	9.291E-16
Q18	Cobalt-60	-2.8	10	U U	-2.718E-15
Q18	Potassium-40	53	166	U U	5.146E-14
Q18	Beryllium-7	119	74.9		1.155E-13
Q18	Plutonium-238	0.101	0.151	U U	9.806E-17
Q18	Polonium-210	8.85	0.632	J	8.592E-15
Q18	Plutonium-241	7.17	31	U U	6.961E-15
Q18	Thorium-230	0.115	1.02	U U	1.117E-16
Q18	Thorium-228	0.764	1.23	U U	7.417E-16
Q18	Actinium-228	-1.35	33.6	U U	-1.311E-15
Q18	Americium-241	-0.216	0.912	U U	-2.097E-16
Q18	Plutonium-239	0.0262	0.279	U U	2.544E-17
Q18	Ra-228 - total	9.14	6.12	UJ	8.874E-15
Q18	Radium-226, -228 combined	0.536	2.74	U U	5.204E-16
Q18	Thorium-232	0.0277	0.781	U U	2.689E-17
Q18	Uranium-238	0.736	0.374	UJ	7.146E-16
Q18	Uranium-233/234	0.495	0.527	U U	4.806E-16
Q18	Uranium-235/236	0.0343	0.365	U U	3.330E-17

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Location DOE-2 – Air volume/sample =1.03+09					**1.03E+09**
Q18	Cesium-137	-1.88	4.65	U U	-1.825E-15
Q18	Strontium-90	-1.01	2.34	U U	-9.806E-16
Q18	Cobalt-60	-2.11	6.5	U U	-2.049E-15
Q18	Potassium-40	103	59.8	UJ	1.000E-13
Q18	Beryllium-7	132	61.3		1.282E-13
Q18	Plutonium-238	0.0432	0.571	U U	4.194E-17
Q18	Polonium-210	9.3	0.428	J	9.029E-15
Q18	Plutonium-241	18	47.1	U U	1.748E-14
Q18	Thorium-230	0.222	1.24	U U	2.155E-16
Q18	Thorium-228	0.202	1.34	U U	1.961E-16
Q18	Actinium-228	18.2	31.9	U U	1.767E-14
Q18	Americium-241	-0.171	0.837	U U	-1.660E-16
Q18	Plutonium-239	-0.0524	0.597	U U	-5.087E-17
Q18	Ra-228 - total	1.69	3.53	U U	1.641E-15
Q18	Radium-226, -228 combined	3.4	2.78	UJ	3.301E-15
Q18	Thorium-232	0.822	0.713	UJ	7.981E-16
Q18	Uranium-238	0.549	0.534	UJ	5.330E-16
Q18	Uranium-233/234	0.0781	0.712	U U	7.583E-17
Q18	Uranium-235/236	0.0821	0.518	U U	7.971E-17
Location DOE-3 – Air volume/sample = 1.03+09					**1.03E+09**
Q18	Cesium-137	3.72	8.56	U U	3.612E-15
Q18	Strontium-90	-0.464	2.92	U U	-4.505E-16
Q18	Cobalt-60	-0.647	7.68	U U	-6.282E-16
Q18	Potassium-40	38.6	83.3	U U	3.748E-14
Q18	Beryllium-7	115	120	U U	1.117E-13
Q18	Plutonium-238	-0.0492	0.432	U U	-4.777E-17
Q18	Polonium-210	10.4	0.469		1.010E-14
Q18	Plutonium-241	-0.273	33.1	U U	-2.650E-16
Q18	Thorium-230	0.111	1.01	U U	1.078E-16
Q18	Thorium-228	0.31	0.431	U U	3.010E-16
Q18	Actinium-228	15.5	39.8	U U	1.505E-14
Q18	Americium-241	-0.0184	0.647	U U	-1.786E-17
Q18	Plutonium-239	0.0577	0.432	U U	5.602E-17
Q18	Ra-228 - total	9.74	3.16	J	9.456E-15
Q18	Radium-226, -228 combined	2.77	3.48	U U	2.689E-15
Q18	Thorium-232	0.443	0.578	U U	4.301E-16

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q18	Uranium-238	0.686	0.531	UJ	6.660E-16
Q18	Uranium-233/234	0.418	0.743	U U	4.058E-16
Q18	Uranium-235/236	0.00355	0.585	U U	3.447E-18
Location DOE-4 – Air volume/sample = 1.03+09					**1.03E+09**
Q18	Cesium-137	0.685	4.83	U U	6.650E-16
Q18	Strontium-90	-0.823	2.94	U U	-7.990E-16
Q18	Cobalt-60	-0.375	6.28	U U	-3.641E-16
Q18	Potassium-40	76	71.6	UI UJ	7.379E-14
Q18	Beryllium-7	186	59.5		1.806E-13
Q18	Plutonium-238	-0.0528	0.448	U U	-5.126E-17
Q18	Polonium-210	9.68	0.434		9.398E-15
Q18	Plutonium-241	17.7	50.3	U U	1.718E-14
Q18	Thorium-230	0.343	1.08	U U	3.330E-16
Q18	Thorium-228	0.605	0.984	U U	5.874E-16
Q18	Actinium-228	-14	26.2	U U	-1.359E-14
Q18	Americium-241	0.0106	0.818	U U	1.029E-17
Q18	Plutonium-239	0.0615	0.614	U U	5.971E-17
Q18	Ra-228 - total	0.842	3.94	U U	8.175E-16
Q18	Radium-226, -228 combined	2.68	2.47	UJ	2.602E-15
Q18	Thorium-232	0.798	0.797	UJ	7.748E-16
Q18	Uranium-238	0.888	0.393	UJ	8.621E-16
Q18	Uranium-233/234	0.423	0.568	U U	4.107E-16
Q18	Uranium-235/236	-0.021	0.42	U U	-2.039E-17
Q19					
Location DOE-1 – Air volume/sample = 9.41E+08					**9.41E+08**
Q19	Cesium-137	-3.46	7.32	U U	-3.677E-15
Q19	Strontium-90	0.57	2.64	U U	6.057E-16
Q19	Cobalt-60	2.68	11.7	U U	2.848E-15
Q19	Potassium-40	108	78.3	UI UJ	1.148E-13
Q19	Beryllium-7	151	82.7		1.605E-13
Q19	Plutonium-238	0.143	0.384	U U	1.520E-16
Q19	Polonium-210	12.8	0.745	J	1.360E-14
Q19	Plutonium-241	4.85	67.2	U U	5.154E-15
Q19	Thorium-230	1.04	0.783	UJ	1.105E-15
Q19	Thorium-228	0.528	0.693	U U	5.611E-16
Q19	Actinium-228	-2.18	37.3	U U	-2.317E-15
Q19	Americium-241	0.0614	0.184	U U	6.525E-17
Q19	Plutonium-239	-0.0251	0.545	U U	-2.667E-17

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q19	Ra-228 - total	-0.528	4.3	U U	-5.611E-16
Q19	Radium-226, -228 combined	1.73	1.74	U U	1.838E-15
Q19	Thorium-232	0.58	0.511	UJ	6.164E-16
Q19	Uranium-238	0.599	0.517	UJ	6.366E-16
Q19	Uranium-233/234	0.434	0.537	U U	4.612E-16
Q19	Uranium-235/236	0.0657	0.414	U U	6.982E-17
Location DOE-2 – Air volume/sample = 9.19E+08					**9.19E+08**
Q19	Cesium-137	-3.34	10.9	U U	-3.634E-15
Q19	Strontium-90	1.69	2.83	U U	1.839E-15
Q19	Cobalt-60	4.78	12.7	U U	5.201E-15
Q19	Potassium-40	91.3	80.4	UI UJ	9.935E-14
Q19	Beryllium-7	237	70.4		2.579E-13
Q19	Plutonium-238	-0.0114	0.398	U U	-1.240E-17
Q19	Polonium-210	11.1	0.613	J	1.208E-14
Q19	Plutonium-241	-2.85	71.1	U U	-3.101E-15
Q19	Thorium-230	0.793	1.02	U U	8.629E-16
Q19	Thorium-228	0.525	0.855	U U	5.713E-16
Q19	Actinium-228	-22.3	39	U U	-2.427E-14
Q19	Americium-241	0.069	0.329	U U	7.508E-17
Q19	Plutonium-239	-0.0272	0.314	U U	-2.960E-17
Q19	Ra-228 - total	2.24	3.01	U U	2.437E-15
Q19	Radium-226, -228 combined	1.56	1.69	U U	1.697E-15
Q19	Thorium-232	0.836	0.638	UJ	9.097E-16
Q19	Uranium-238	1.19	0.363	UJ	1.295E-15
Q19	Uranium-233/234	0.777	0.578	UJ	8.455E-16
Q19	Uranium-235/236	0.0936	0.281	U U	1.018E-16
Location DOE-3 – Air volume/sample = 9.31E+08					**9.31E+08**
Q19	Cesium-137	-0.546	10.1	U U	-5.865E-16
Q19	Strontium-90	0.0608	2.1	U U	6.531E-17
Q19	Cobalt-60	3.49	10.6	U U	3.749E-15
Q19	Potassium-40	122	83.2		1.310E-13
Q19	Beryllium-7	98.4	103	U U	1.057E-13
Q19	Plutonium-238	0	0.158	U UJ	0.000E+0
Q19	Polonium-210	10.1	0.545	J	1.085E-14
Q19	Plutonium-241	-0.277	68.1	U UJ	-2.975E-16
Q19	Thorium-230	0.717	0.811	U U	7.701E-16
Q19	Thorium-228	0.402	0.636	U U	4.318E-16

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q19	Actinium-228	12.2	41.8	U U	1.310E-14
Q19	Americium-241	0.0328	0.349	U U	3.523E-17
Q19	Plutonium-239	0.0525	0.158	U UJ	5.639E-17
Q19	Ra-228 - total	2.99	3.76	U U	3.212E-15
Q19	Radium-226, -228 combined	1.37	1.91	U U	1.472E-15
Q19	Thorium-232	0.41	0.556	U U	4.404E-16
Q19	Uranium-238	0.676	0.567	UJ	7.261E-16
Q19	Uranium-233/234	0.915	0.623	UJ	9.828E-16
Q19	Uranium-235/236	0	0.344	U U	0.000E+0
Location DOE-4 – Air volume/sample = 9.41E+08					**9.41E+08**
Q19	Cesium-137	0.411	9.11	U U	4.368E-16
Q19	Strontium-90	2.27	2.91	U U	2.412E-15
Q19	Cobalt-60	-2.86	4.25	U U	-3.039E-15
Q19	Potassium-40	34.8	172	U U	3.698E-14
Q19	Beryllium-7	173	85.7		1.838E-13
Q19	Plutonium-238	-0.0655	0.383	U U	-6.961E-17
Q19	Polonium-210	7.06	0.555	J	7.503E-15
Q19	Plutonium-241	-7.21	64.5	U U	-7.662E-15
Q19	Thorium-230	0.189	0.759	U U	2.009E-16
Q19	Thorium-228	0.487	0.698	U U	5.175E-16
Q19	Actinium-228	-17.2	31.8	U U	-1.828E-14
Q19	Americium-241	0.00442	0.446	U U	4.697E-18
Q19	Plutonium-239	-0.0371	0.423	U U	-3.943E-17
Q19	Ra-228 - total	3.67	3.17		3.900E-15
Q19	Radium-226, -228 combined	2.61	1.72		2.774E-15
Q19	Thorium-232	-0.00784	0.429	U U	-8.332E-18
Q19	Uranium-238	0.509	0.428	UJ	5.409E-16
Q19	Uranium-233/234	0.712	0.54	UJ	7.566E-16
Q19	Uranium-235/236	-0.0415	0.479	U UJ	-4.410E-17

[1] Qualifier column contains laboratory flags; validation qualifiers.

Notes:

U = Sample result is less than MDC and/or two sigma uncertainty.

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

UU = Sample was analyzed for but not detected and is qualified as a non-detect.

UJ = Sample was rejected by laboratory due to spectra issues and was determined to be an estimated value.

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APPENDIX D

Q19 PM_{10} Monthly Audit Reports and Flow Verification Results

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NORTHWIND PORTAGE, INC.

One-Point Flow Rate Bias Estimate

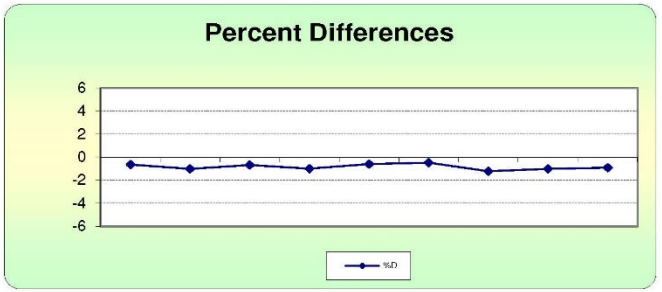
ETEC Site: DOE-1	Pollutant type: PM10	Bias (%)

Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d^2	$\|d\|$	$\|d\|^2$
19	X16067	10/21/2022	14.00	14.09	-0.639		0.408	0.639	0.408
			16.70	16.87	-1.008	**25th**	1.015	1.008	1.015
			17.50	17.62	-0.681	-1.008	0.464	0.681	0.464
19	X16067	11/22/2022	14.00	14.14	-0.990		0.980	0.990	0.980
			16.70	16.80	-0.595	**75th**	0.354	0.595	0.354
			17.50	17.58	-0.455	-0.639	0.207	0.455	0.207
19	X16067	12/22/2022	14.00	14.17	-1.200		1.439	1.200	1.439
			16.70	16.87	-1.008		1.015	1.008	1.015
			17.50	17.66	-0.906		0.821	0.906	0.821

n	$\Sigma\|d\|$	"AB" (Eqn 4)
9	7.481	0.831
n-1	$\Sigma\|d\|^2$	**"AS" (Eqn 5)**
8	6.705	0.246

Bias (%) (Eqn 3)	Both Signs Positive
0.98	FALSE
Signed Bias (%)	Both Signs Negative
-0.98	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

NORTHWIND PORTAGE, INC.

One-Point Flow Rate Bias Estimate

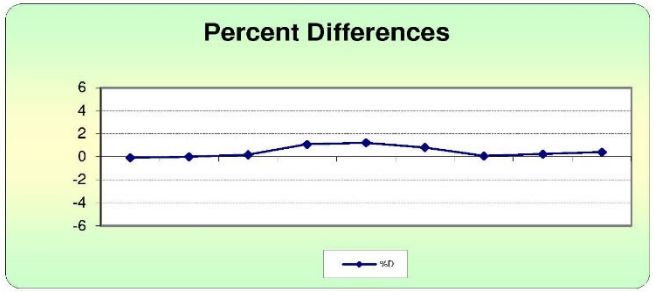
ETEC Site: DOE-2	Pollutant type: PM10	Bias (%)

Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d^2	$\|d\|$	$\|d\|^2$
19	W23313	10/21/2022	14.00	14.01	-0.071		0.005	0.071	0.005
			16.70	16.70	0.000	**25th**	0.000	0.000	0.000
			17.50	17.47	0.172	0.071	0.029	0.172	0.029
19	W23313	11/22/2022	14.00	13.85	1.083		1.173	1.083	1.173
			16.70	16.50	1.212	**75th**	1.469	1.212	1.469
			17.50	17.36	0.806	0.806	0.650	0.806	0.650
19	W23313	12/22/2022	14.00	13.99	0.071		0.005	0.071	0.005
			16.70	16.66	0.240		0.058	0.240	0.058
			17.50	17.43	0.402		0.161	0.402	0.161

n	$\Sigma\|d\|$	"AB" (Eqn 4)
9	4.058	0.451
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
8	3.551	0.464

Bias (%) (Eqn 3)	Both Signs Positive
0.74	TRUE
Signed Bias (%)	Both Signs Negative
+0.74	FALSE

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/ttn/amtic/qareport.html

NORTHWIND PORTAGE, INC.

One-Point Flow Rate Bias Estimate

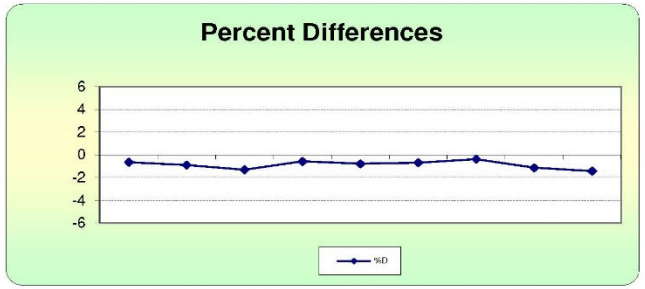
ETEC Site: DOE-3	Pollutant type: PM10	Bias (%)

Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d^2	$\|d\|$	$\|d\|^2$
19	W23314	10/21/2022	14.00	14.09	-0.639		0.408	0.639	0.408
			16.70	16.85	-0.890	**25th**	0.792	0.890	0.792
			17.50	17.73	-1.297	-1.125	1.683	1.297	1.683
19	W23314	11/22/2022	14.00	14.08	-0.568		0.323	0.568	0.323
			16.70	16.83	-0.772	**75th**	0.597	0.772	0.597
			17.50	17.62	-0.681	-0.639	0.464	0.681	0.464
19	W23314	12/22/2022	14.00	14.05	-0.356		0.127	0.356	0.127
			16.70	16.89	-1.125		1.265	1.125	1.265
			17.50	17.75	-1.408		1.984	1.408	1.984

n	$\Sigma\|d\|$	"AB" (Eqn 4)
9	7.737	0.860
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
8	7.642	0.352

Bias (%) (Eqn 3)	Both Signs Positive
1.08	FALSE
Signed Bias (%)	Both Signs Negative
-1.08	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

NORTHWIND PORTAGE, INC.

One-Point Flow Rate Bias Estimate

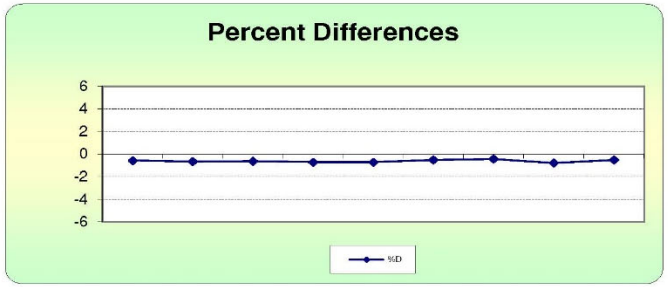
ETEC Site: DOE-4	Pollutant type: PM10	Bias (%)

Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d^2	$\|d\|$	$\|d\|^2$
19	W23310	10/21/2022	14.00	14.08	-0.568		0.323	0.568	0.323
			16.70	16.81	-0.654	**25th**	0.428	0.654	0.428
			17.50	17.61	-0.625	-0.709	0.390	0.625	0.390
19	W23310	11/22/2022	14.00	14.10	-0.709		0.503	0.709	0.503
			16.70	16.82	-0.713	**75th**	0.509	0.713	0.509
			17.50	17.59	-0.512	-0.512	0.262	0.512	0.262
19	W23310	12/22/2022	14.00	14.06	-0.427		0.182	0.427	0.182
			16.70	16.83	-0.772		0.597	0.772	0.597
			17.50	17.59	-0.512		0.262	0.512	0.262

n	$\Sigma\|d\|$	"AB" (Eqn 4)
9	5.492	0.610
n-1	$\Sigma\|d\|^2$	**"AS" (Eqn 5)**
8	3.456	0.114

Bias (%) (Eqn 3)	Both Signs Positive
0.68	FALSE
Signed Bias (%)	Both Signs Negative
-0.68	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

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # X16067

Audit Date: 10/21/2022 Audited By : TS W. Ilford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

Leak Check Value: as found: 0.5 as left: 0.5

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	21.7 °C	20.6 °C	as left:	21.7 °C	20.6 °C
Barometric Pressure:	as found:	713.9 mmHg	714.0 mmHg	as left:	713.9 mmHg	714.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.87 lpm	as left:	16.7 lpm	16.87 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.09 lpm	as left:	14.0 lpm	14.09 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.62 lpm	as left:	17.5 lpm	17.62 lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	N	as left	Y
Tape support vane clean:	as found	N	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) :	0.950	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) :	0.941			
Difference (mg/cm2) :	0.009			
% Difference / Pass or Fail:	0.95%	14.0	420.7	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	0743	0743	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	1	1	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5v
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60mn	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0v
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	No
Analog FS	1.0 v	1.0v	Flow Setpoint	16.7	16.7	Pump Protect	Off	off

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	10/21/22	0750	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # W23313

Audit Date: 10/21/2022 Audited By : TSWilliford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	23.6 °C	23.2 °C	as left:	23.6 °C	23.2 °C
Barometric Pressure:	as found:	711.9 mmHg	711.5 mmHg	as left:	711.9 mmHg	711.5 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.7 lpm	as left:	16.7 lpm	16.7 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.01 lpm	as left:	14.0 lpm	14.01 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.47 lpm	as left:	17.5 lpm	17.47 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	
Expected Span Mass (mg/cm2) :	0.885
Measured Span Mass (mg/cm2) :	0.898
Difference (mg/cm2) :	0.013
% Difference / Pass or Fail:	1.46%

Pump Test		
Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
14.9	426.7	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	0838	0838	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	DOE-2	2	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24 hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25°C
Realtime Avg	60 mins	60 min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0V
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	NO
Analog FS	1.0 v	1.0V	Flow Setpoint	16.7	16.7	Pump Protect	Off	off

Last 6 Errors in E-BAM Error Log

	Error	Date	Time		Error	Date	Time
1	No new messages	10/21/22	0843	4			
2				5			
3				6			

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # W23314

Audit Date: 10/21/22 Audited By : TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	25.2 °C	24.7 °C	as left:	25.2 °C	24.7 °C
Barometric Pressure:	as found:	710.9 mmHg	713.5 mmHg	as left:	710.9 mmHg	713.5 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.85 lpm	as left:	16.7 lpm	16.85 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.09 lpm	as left:	14.0 lpm	14.09 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.73 lpm	as left:	17.5 lpm	17.73 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) : 0.919	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.923			
Difference (mg/cm2) : 0.004			
% Difference / Pass or Fail: 0.43%	14.0	395.2	Good

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	0936	0936	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	3	3	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	~~25~~ 25C
Realtime Avg	60 mins	60min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0V
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	No
Analog FS	1.0 v	1.0V	Flow Setpoint	16.7	16.7	Pump Protect	Off	off

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	10/21/22	0946	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # W23310

Audit Date: 10/21/2022 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	17.7 °C	18.0 °C	as left:	17.7 °C	18.0 °C
Barometric Pressure:	as found:	702.9 mmHg	704.0 mmHg	as left:	702.9 mmHg	704.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.81 lpm	as left:	16.7 lpm	16.81 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.08 lpm	as left:	14.0 lpm	14.08 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.61 lpm	as left:	17.5 lpm	17.61 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) :	0.915	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) :	0.922			
Difference (mg/cm2)	~~0.768~~ 0.007			
% Difference / Pass or Fail:	0.76%	14.9	423.6	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	0648	0648	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	4	4	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5v
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0v
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	NO
Analog FS	1.0 v	1.0v	Flow Setpoint	16.7	16.7	Pump Protect	Off	Off

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	10/21/22	0659	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # X-16067

Audit Date: 11/22/2022 Audited By: T. S Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	13.6 °C	12.8 °C	as left:	13.6 °C	12.8 °C
Barometric Pressure:	as found:	715.1 mmHg	714.5 mmHg	as left:	715.1 mmHg	714.5 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.8 lpm	as left:	16.7 lpm	16.8 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.14 lpm	as left:	14.0 lpm	14.14 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.58 lpm	as left:	17.5 lpm	17.58 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) : 0.950	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.949			
Difference (mg/cm2) : 0.001			
% Difference / Pass or Fail: 0.11%	14.3	412.8	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	0716	0716	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	1	1	Baud Rate	9600	9600	Restart Voltage	12.5 v	12v
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0v
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	NO
Analog FS	1.0 v	1.0v	Flow Setpoint	16.7	16.7	Pump Protect	Off	off

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	11/22/22	0721	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # W23313

Audit Date: 11/22/2022 Audited By : T.S Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	14.9 °C	14.5 °C	as left:	14.9 °C	14.5 °C
Barometric Pressure:	as found:	711.9 mmHg	711.5 mmHg	as left:	711.9 mmHg	711.5 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.5 lpm	as left:	16.7 lpm	16.5 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	13.85 lpm	as left:	14.0 lpm	13.85 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.36 lpm	as left:	17.5 lpm	17.36 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) : 0.885	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.885			
Difference (mg/cm2) : 0.000			
% Difference / Pass or Fail: 0%	14.8	423.6	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	0952	0952	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	2	2	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24hrs	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0V
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	NO
Analog FS	1.0 v	1.0V	Flow Setpoint	16.7	16.7	Pump Protect	Off	~~Off~~

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	1009	11/22/22	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # W23314

Audit Date: 11/22/2022 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	13.2 °C	13.4 °C	as left:	13.2 °C	13.4 °C
Barometric Pressure:	as found:	710.6 mmHg	712.0 mmHg	as left:	710.6 mmHg	712.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.83 lpm	as left:	16.7 lpm	16.83 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.08 lpm	as left:	14.0 lpm	14.08 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.62 lpm	as left:	17.5 lpm	17.62 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) :	0.919	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) :	0.921			
Difference (mg/cm2) :	0.002			
% Difference / Pass or Fail:	0.22%	14.6	410.1	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1158	1158	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	3	3	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5v
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 min	Delta T Setpoint	15 C	15°	DAC	8.0 v	8.0V
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	NO
Analog FS	1.0 v	1.0V	Flow Setpoint	16.7	16.7	Pump Protect	Off	~~off~~

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	11/22/22	1206	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # W23310

Audit Date: 11/22/2022 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	12.9 °C	13.9 °C	as left:	12.9 °C	13.9 °C
Barometric Pressure:	as found:	702.9 mmHg	704.0 mmHg	as left:	702.9 mmHg	704.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.82 lpm	as left:	16.7 lpm	16.82 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.10 lpm	as left:	14.0 lpm	14.10 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.59 lpm	as left:	17.5 lpm	17.59 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) :	0.915	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) :	0.917			
Difference (mg/cm2) :	0.002			
% Difference / Pass or Fail:	0.22%	14.3	401.9	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1321	1321	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	4	4	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24hrs	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0V
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	NO
Analog FS	1.0 v	1.0V	Flow Setpoint	16.7	16.7	Pump Protect	Off	off

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	11/22/22	1340	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # X-16067

Audit Date: 12/22/2022 Audited By : TSwilliford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	20.5 °C	19.3 °C	as left:	20.5 °C	19.3 °C
Barometric Pressure:	as found:	717.0 mmHg	717.0 mmHg	as left:	717.0 mmHg	717.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.87 lpm	as left:	16.7 lpm	16.87 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.17 lpm	as left:	14.0 lpm	14.17 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.66 lpm	as left:	17.5 lpm	17.66 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) : 0.950	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.948			
Difference (mg/cm2) : 0.002			
% Difference / (Pass) or Fail: 0.21%	14.7	435.5	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1121	1121	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	1	1	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5v
Tape Advance	24 hrs	24	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0 V
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	NO
Analog FS	1.0 v	1.0V	Flow Setpoint	16.7	16.7	Pump Protect	Off	off

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new errors messages	12/22/22	1128	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # W23313

Audit Date: 12/22/2022 Audited By : TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	20.1 °C	20.1 °C	as left:	20.1 °C	20.1 °C
Barometric Pressure:	as found:	714.1 mmHg	714.0 mmHg	as left:	714.1 mmHg	714.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.66 lpm	as left:	16.7 lpm	16.66 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	13.99 lpm	as left:	14.0 lpm	13.99 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.43 lpm	as left:	17.5 lpm	17.43 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) : 0.885	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.884			
Difference (mg/cm2) : 0.001			
% Difference / Pass or Fail: 0.11%	15.0	430.0	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1210	1210	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	2	2	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0V
Machine Type	PM-10	PM-10	RH Control	On	ON	RH Connect	No	NO
Analog FS	1.0 v	1.0V	Flow Setpoint	16.7	16.7	Pump Protect	Off	OFF

Last 6 Errors in E-BAM Error Log

	Error	Date	Time		Error	Date	Time
1	No new messages	12/22/22	~~1720~~ 1244	4			
2				5			
3				6			

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # W23314

Audit Date: 12/22/2022 Audited By : TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	19.5 °C	19.0 °C	as left:	19.5 °C	19.0 °C
Barometric Pressure:	as found:	713.0 mmHg	714.1 mmHg	as left:	713.0 mmHg	714.1 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.89 lpm	as left:	16.7 lpm	16.89 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.05 lpm	as left:	14.0 lpm	14.05 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.75 lpm	as left:	17.5 lpm	17.75 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) : 0.919	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.918			
Difference (mg/cm2) : 0.001			
% Difference / Pass or Fail: 0.11 %	14.0	420.2	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1246	1246	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	3	3	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0V
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	No
Analog FS	1.0 v	1.0 V	Flow Setpoint	16.7	16.7	Pump Protect	Off	Off

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	12/22/22	1251	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # W23310

Audit Date: 12/22/2022 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 3/23/2022

Leak Check Value: as found: 0.5 as left: 0.5

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	19.0 °C	18.6 °C	as left:	19.0 °C	18.6 °C
Barometric Pressure:	as found:	705.6 mmHg	707.0 mmHg	as left:	705.6 mmHg	707.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.83 lpm	as left:	16.7 lpm	16.83 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.06 lpm	as left:	14.0 lpm	14.06 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.59 lpm	as left:	17.5 lpm	17.59 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): 0.915	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): 0.921			
Difference (mg/cm2): 0.006			
% Difference / Pass or Fail: 0.65%	14.9	405.6	Good

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1340	1340	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	4	4	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5v
Tape Advance	24 hrs	24hrs	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60mins	Delta T Setpoint	15 C	15 C	DAC	8.0 v	8.0v
Machine Type	PM-10	PM-10	RH Control	On	On	RH Connect	No	No
Analog FS	1.0 v	1.0v	Flow Setpoint	16.7	16.7	Pump Protect	Off	Off

Last 6 Errors in E-BAM Error Log

	Error	Date	Time		Error	Date	Time
1	No new messages	1347	12/22/~~22~~	4			
2				5			
3				6			

Audit Notes:

APPENDIX E

VOC Analytical Data Packages, Q16 through Q19

Appendix E is available via separate attachment.

APPENDIX F

Radiological Analytical Data Packages, Q16 through Q19

Appendix F is available via separate attachment.