

Final Report

Upper South and Appalachia Citizen Air Monitoring Project (USACAMP)

OCTOBER 2026

Appalachian Voices

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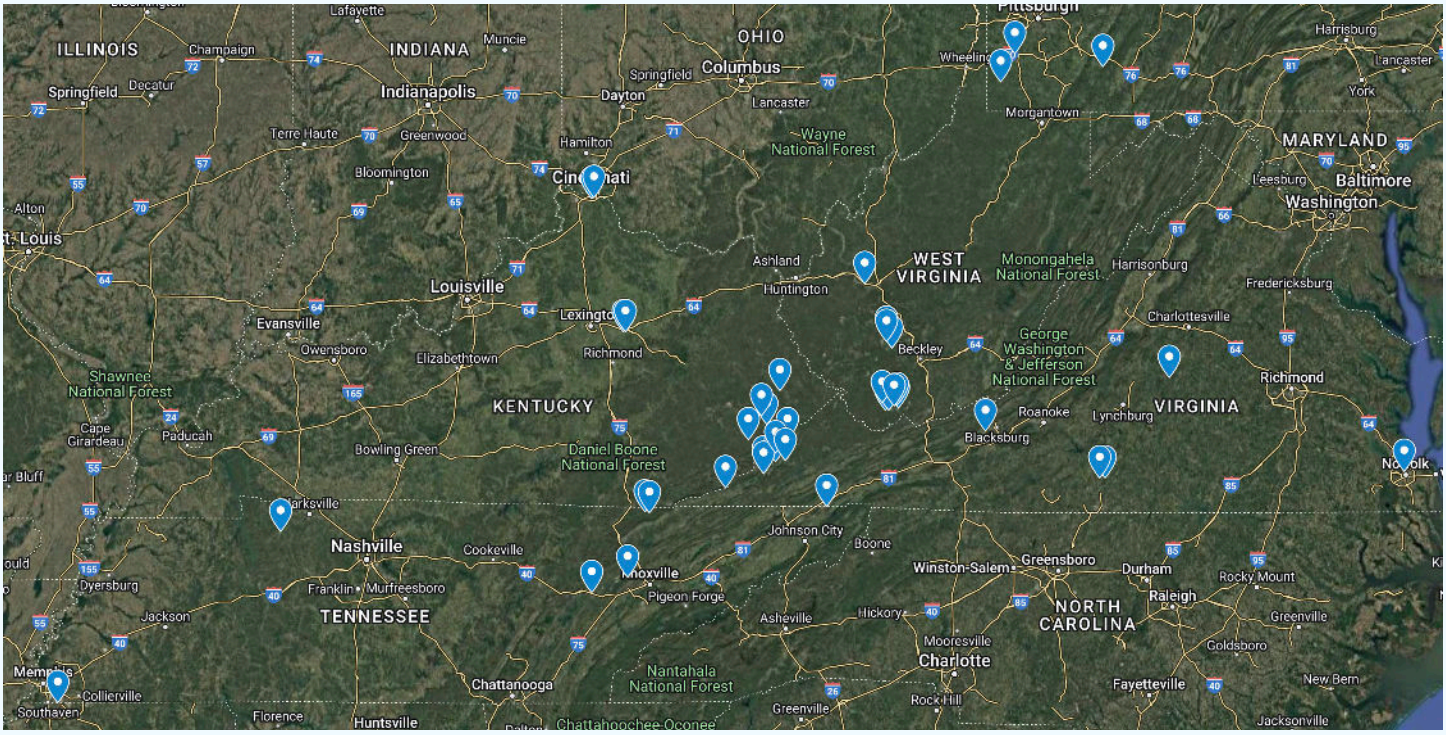
Executive Summary

The Upper South and Appalachia Citizen Air Monitoring Project (USACAMP) established a community-based air-monitoring network across Kentucky, Pennsylvania, Tennessee, Virginia, and West Virginia. The project deployed PurpleAir monitors alongside targeted gas-monitoring equipment and laboratory-based volatile organic compound (VOC) sampling. Monitoring near the Bristol landfill identified recurring elevations in sulfur dioxide (SO_2), particularly during warmer months, with some measurements reaching levels of potential health concern. These findings build on concerns identified in ATSDR's 2025 health consultation and highlight the need for continued monitoring and further investigation. Together, these efforts expanded access to air-quality information in rural and underserved communities. Project data and reports are publicly available through the Appalachian Voices website..

The PurpleAir network produced a large, multi-year collection of PM2.5 and PM10 measurements. The project also developed correction, cross-validation, and replacement-monitor procedures to improve the quality and continuity of the data collected across the regional network. Overall, the corrected PM2.5 results and screening-level PM10 estimates were generally consistent with the numerical levels of current federal particulate-matter standards.

Monitoring near the Bristol landfill provided additional information about sulfur dioxide, VOCs, hydrogen sulfide, ammonia, and carbon monoxide. Sulfur dioxide showed an apparent seasonal pattern, with higher concentrations

Community Partner Locations



occurring more often during summer and the highest hourly measurements occurring during summer 2025. VOC levels, measured by electronic sensors, remained below actionable threshold levels of the project's EPA approved QAPP.

Passive sorbent-tube sampling provided more detailed information about specific VOCs near the Bristol landfill. Toluene was the most consistently detected compound and generally occurred at higher concentrations than the other measured VOCs. Ethylbenzene and xylenes were also detected, usually at lower concentrations, while benzene was frequently below laboratory detection limits or present at comparatively low concentrations. Overall, the sampling identified recurring low-level VOC mixtures dominated primarily by toluene.

USACAMP created a substantial public air-quality dataset while strengthening community participation in monitoring and environmental-health discussions. The project demonstrated how community-hosted sensors, technical quality-assurance procedures, public reporting, and regional partnerships can work together to fill information gaps and make localized air-quality data more accessible. Because the PurpleAir network is publicly available, the data may also continue to support research and analysis beyond the formal grant period.

Introduction

The Upper South and Appalachia Citizen Air Monitoring Project (USACAMP) was a multi-year, community-based monitoring initiative led by Appalachian Voices through an EPA Enhanced Air Quality Monitoring for Communities grant. The project combined community-hosted PurpleAir particulate-matter monitors with targeted gas and VOC monitoring to develop localized air-quality information across Kentucky, Pennsylvania, Tennessee, Virginia, and West Virginia. Its purpose was to make monitoring data more accessible to participating communities, support evaluation of local pollution concerns, and strengthen the information available for future research, public-health discussions, and environmental decision-making.

USACAMP was established to expand access to localized, continuous air-quality information in communities that are often underrepresented in conventional monitoring networks. Funded through an EPA Enhanced Air Quality Monitoring for Communities grant, the project was implemented by Appalachian Voices in partnership with community organizations, universities, local residents, and other regional collaborators. Community partners helped identify local concerns, host monitoring equipment, support deployment and maintenance, and communicate results to participating communities.

USACAMP used community-hosted PurpleAir monitors to collect particulate-matter data across the project area. SENSIT RAMP and SENSIT SPOD gas-monitoring systems, were also deployed in communities where residents had concerns extending beyond dust exposure, and used passive sorbent-tube sampling in Bristol to characterize specific VOCs. Together, these tools were intended to provide screening-level information, improve public access to air-quality data, identify patterns that may warrant further investigation, and support community participation in environmental-health decision-making.

This report documents the project's design, monitoring methods, quality-assurance procedures, analytical approach, results, limitations, and public uses of the data. Although the monitoring network provides valuable localized information, its purpose was to determine areas which my require additional follow up screening, and while the report does make an attempt at calculating the National Ambient Air Quality standards, it should be noted that these are not regulatory grade determinations.

Community Air-quality Concerns

Many rural communities across Appalachia and the Upper South are located near surface mines, coal-haul roads, landfills, chemical and manufacturing facilities, transportation corridors, and other potential sources of air pollution. Despite these concerns, many of these communities have limited access to nearby state or federal regulatory air-monitoring stations. Regional models and screening tools can provide useful information, but they may not capture pollution events or localized exposure conditions in geographically isolated and sparsely populated areas.

These monitoring gaps are particularly important in communities already burdened by respiratory illness

and other environmental-health stressors. Appalachian coalfield communities experience elevated rates of chronic respiratory disease, including black lung disease, chronic obstructive pulmonary disease, and asthma. In these areas, a lack of localized monitoring can make it difficult to evaluate changing air-quality conditions or understand the potential impacts of nearby emission sources.

Community concerns often extend beyond regional air-quality trends to include pollution associated with individual facilities, industrial activities, transportation routes, and other local sources. Conventional monitoring networks may not adequately characterize conditions in these communities, particularly where pollution events are intermittent or geographically localized. This creates a need for accessible, long-term monitoring data that can help residents better understand the air quality in their communities.

In communities with limited access to regulatory air-monitoring stations, residents often have little information about local pollution levels or how air quality changes over time. This lack of information can make it difficult to evaluate concerns about nearby industrial activities or determine whether additional investigation is warranted. Expanding access to localized air-quality data can help address these uncertainties and provide a stronger foundation for understanding environmental conditions and potential public-health concerns

The need for localized monitoring is particularly relevant in Appalachian communities where industrial activities and residential areas are often located near one another. In these settings, continuous monitoring can help document changing conditions over time and provide information that may not be captured by regional monitoring networks or short-duration sampling efforts. Such information can support additional investigation, public awareness, and more informed environmental and public-health discussions.

Project Design

USACAMP was developed to help address these information gaps by collecting localized, continuous air-quality data in communities that are often underrepresented in conventional monitoring networks. Through scientifically validated correction methods; targeted monitoring of particulate matter, VOCs, and other pollutants; and direct public engagement, USACAMP expanded the information available to participating communities and supported their involvement in public-health and environmental decision-making.

The project sought to expand community access to air-quality data, improve understanding of localized pollution conditions, and support more informed public-health and environmental decision-making. The monitoring program focused on rural and historically underserved communities across Appalachia and the Upper South, particularly in areas lacking nearby regulatory-grade monitoring infrastructure.

The monitoring network evaluated concentrations of PM2.5, PM10, sulfur dioxide, volatile organic compounds (VOCs), ammonia (NH_3), hydrogen sulfide (H_2S), and carbon monoxide (CO) across portions of Kentucky, Tennessee, Virginia, West Virginia, and Pennsylvania. The work plan centered on two primary questions: 1) whether monitored communities were experiencing particulate-matter concentrations approaching or exceeding the numerical levels of federal air-quality standards, and 2) whether VOC and other gas concentrations in Bristol, Virginia, may be harmful to human health.

The project design relied primarily on continuous monitoring using low-cost sensor technologies distributed across a large geographic region. USACAMP purchased 80 PurpleAir monitors, of which 75 were deployed during the project. These monitors operated at 65 unique monitoring locations across 35 communities in the project area. The number of active monitors varied over time as equipment was installed, relocated, repaired, or replaced. Monitoring clusters often included colocated or nearby monitors used for cross-validation, redundancy, and improved data continuity. Although the project sought to place multiple monitors in each community, some communities had only one monitor collecting data.

The project selected continuous low-cost monitoring because it allowed for the collection of large, high-frequency datasets over a multi-year period while remaining practical for deployment by staff, volunteers, partner organizations, and community hosts. The project specifically focused

on particulate matter because of the well-established relationship between particulate exposure and cardiovascular and respiratory illnesses, including asthma and chronic obstructive pulmonary disease (COPD), which are important health concerns in Appalachian coalfield communities.

Monitoring locations were selected through partner outreach and informed by community concerns regarding nearby industrial activities and pollution sources. Sites were prioritized near coal mining operations, landfills, industrial facilities, transportation corridors, and manufacturing sites where residents believed air quality might be impaired. Community partnerships formed a foundational component of the monitoring strategy, with local residents, advocacy organizations, health clinics, and community groups helping identify concerns, host equipment, support deployment and maintenance, and communicate results. These partner organizations are recognized in the Acknowledgments section at the end of this report. Particular attention was given to vulnerable populations, including communities affected by black lung disease and chronic respiratory illness.

In addition to particulate monitoring, the project incorporated targeted gas-phase pollutant monitoring in communities where residents reported concerns extending beyond dust exposure alone. Two SENSIT RAMP multi-gas detectors were deployed in Bristol, Virginia, and Bristol, Tennessee, near a landfill where residents frequently reported odors and air-quality concerns. These monitors continuously measured sulfur dioxide, VOCs, ammonia, hydrogen sulfide, and carbon monoxide. The project also incorporated sorbent-tube sampling and laboratory analysis using gas chromatography/mass spectrometry (GC/MS) methods to further characterize VOC composition. The monitoring plan specified that quarterly VOC sampling would escalate to monthly sampling if VOC concentrations exceeded 100 ppb, although this escalation threshold was never triggered during the project period.

In McCoy, Virginia, the project partnered with Virginia Tech to deploy a SENSIT SPOD fixed photoionization detector near the Radford Army Ammunition Plant to evaluate total VOC concentrations and other gases. That separate report is available on the USACAMP website.

USACAMP was intentionally designed as a long-term monitoring effort rather than a short-duration sampling campaign. Quarterly and annual analyses were used to evaluate pollutant spikes, recurring seasonal patterns, long-term exposure trends, and potential exceedances of particulate-matter standards. The project also emphasized public transparency, technical education, and community engagement by making corrected monitoring data publicly available, providing context through quarterly reports, and encouraging dialogue among residents, researchers, advocacy organizations, and policymakers.

By combining continuous monitoring, regional-scale analysis, and community participation, USACAMP sought to develop a more comprehensive understanding of rural Appalachian air-quality conditions while creating publicly accessible datasets for future research, community use, and environmental decision-making.

Quality Assurance and Quality Control

USACAMP incorporated a multi-layered quality assurance and quality control (QA/QC) framework designed to improve data reliability, maintain consistency across monitoring locations, and document the limitations inherent to community-scale low-cost sensor monitoring. Quality oversight responsibilities were divided among project management, field staff, partner organizations, laboratory personnel, and an independent quality assurance manager.

The project relied heavily on continuous electronic monitoring devices, including PurpleAir particulate matter monitors, SENSIT RAMP multi-gas detectors, and the SENSIT SPOD photoionization detector. Because these devices operated continuously in community settings over long periods of time, quality control procedures focused on maintaining device functionality, evaluating data completeness, identifying anomalous readings, and documenting maintenance activities. Devices were inspected upon receipt and installation, and field personnel completed readiness reviews and training exercises before conducting monitoring activities.

For PurpleAir monitors, QA/QC procedures emphasized data completeness, sensor precision, cross-validation, and identification of abnormal readings. Each PurpleAir

unit contains dual laser particle counters, allowing direct comparison between Channel A and Channel B measurements. For hourly Channel A/Channel B screening, a record was excluded when the absolute difference between the channels exceeded 5 µg/m^3 and the percent difference, calculated as |A−B| / ((A+B)/2) × 100, exceeded 70%. Monitoring data were reviewed quarterly for indicators of poor-quality data, including flat lines, repeated zeros, unexplained spikes, loss of connectivity, or incomplete datasets. Devices failing to collect sufficient data or exhibiting persistent sensor disagreement were inspected, cleaned, repaired, or replaced when necessary. Common maintenance issues included debris accumulation, spider webs, unstable power supplies, and intermittent internet connectivity.

The monitoring network also incorporated a regional cross-validation framework to improve confidence in data continuity and identify potentially malfunctioning sensors. Multiple monitors placed within the same geographic area were grouped into monitoring clusters where readings could be compared against nearby devices expected to experience similar regional air-quality conditions. If one PurpleAir laser channel failed while nearby monitors continued operating normally, the remaining operational channel could remain in use provided regional comparability remained acceptable.

Data transformation and processing procedures were standardized to improve consistency throughout the project. Raw PurpleAir PM2.5 cf=atm values were downloaded quarterly through the PurpleAir API and corrected using the linear equation presented by Barkjohn et al. (2019): corrected PM2.5 = 0.38 × raw PurpleAir PM2.5 + 2.94. This correction was applied to improve comparability with EPA Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors. The project's data processing workflow further incorporated automated scripts and structured database management procedures to identify incomplete records, flag suspect readings, evaluate monitor uptime, standardize timestamps, and maintain continuity between replacement sensors and legacy devices. PM10 results were treated as screening-level estimates and interpreted with greater uncertainty, consistent with EPA Region 4 guidance, though it does not use the same correction equation (EPA 2024).

The project's use of dual-channel comparisons and corrected PM2.5 measurements is consistent with practices described in EPA Region 4's PM2.5 Sensor Loan Program Quality Assurance Project Plan (EPA 2024). That guidance emphasizes evaluating agreement between the two internal PurpleAir channels, reviewing data completeness, and applying an appropriate correction to PM2.5 measurements. Plaas et al. (2025) similarly found that bias-corrected PurpleAir PM2.5 measurements agreed with a composite of the three nearest federal reference and equivalent monitors within approximately 1 µg/m^3 on average.

Recent research indicates that Plantower sensor response can vary substantially with particle size, aerosol composition, relative humidity, and dust loading. Kaur et al. (2026) found that Plantower PMS5003/6003 sensors can substantially underestimate both PM2.5 and PM10 during periods of elevated dust concentrations, particularly when larger particles dominate the particle-size distribution. This limitation is especially relevant to PM10 because coarse particles constitute a substantial portion of the PM10 size fraction. PM10 values in the USACAMP analysis were reported without applying the Barkjohn PM2.5 correction. These limitations further support interpreting the USACAMP PurpleAir results as screening-level measurements rather than regulatory-grade determinations.

Quality control procedures for the SENSIT RAMP and SENSIT SPOD gas monitoring systems focused on comparison with laboratory sampling results, meteorological validation, and routine review of instrument performance. Weather station outputs from the SENSIT instruments were compared against NOAA and local meteorological observations to evaluate consistency in wind direction, wind speed, humidity, and temperature measurements. Electronic VOC measurements were also compared against laboratory-analyzed sorbent tube samples to evaluate whether continuous sensor readings reflected broader VOC concentration trends over time.

Electronic VOC measurements were supplemented through sorbent tube sampling and laboratory analysis using gas chromatography/mass spectrometry (GC/MS) methods following EPA Method 325B and TO-17 procedures (U.S. EPA 2019 and U.S. EPA 1999). Passive and active sampling events incorporated duplicate samples, field blanks, laboratory blanks,

chain-of-custody documentation, flow-rate verification, and calibrated standards to improve analytical reliability. Duplicate samples exceeding established agreement thresholds were flagged or discarded from quantitative analysis, while contaminated blanks triggered additional review and qualification procedures. Sorbent tube samples were refrigerated, transported under chain-of-custody procedures, and analyzed within prescribed holding times to minimize degradation and maintain sample integrity.

Quarterly quality reviews formed a central component of the project's QA/QC process. Monitoring data were downloaded, transformed, reviewed, and validated on a recurring schedule that included raw data review, verification of calculations, completeness checks, and repeatability assessments. The quality assurance manager independently reviewed subsets of raw data, checked data transformations for reproducibility, evaluated equipment maintenance records, and documented any corrective actions or identified deficiencies. Data-quality flags were used to identify estimated values, non-detects, and results determined to be unsuitable for quantitative interpretation.

The project also recognized the inherent limitations associated with low-cost community monitoring. Monitor placement was intentionally biased toward communities located near suspected emission sources rather than randomized regional sampling locations. The monitoring network was designed to estimate localized community exposure conditions and identify potential pollution trends. Data generated through the project were therefore treated as screening-level environmental information intended to support public awareness, guide future research, and identify locations where additional investigation may be warranted. Throughout the project lifecycle, several monitors had to be replaced, and some had to be permanently removed. These are noted in Appendices A and B.

PM2.5 and PM10 Results

The primary project objective was to screen for particulate-matter concentrations approaching or exceeding the numerical levels of federal air-quality standards. The USACAMP monitoring program generated a large, continuous particulate-matter dataset derived primarily from PurpleAir outdoor monitors deployed throughout the five-state study area. The network collected high-frequency measurements over multiple years, producing hourly, daily, quarterly, and annualized datasets suitable for screening-level trend analysis, cross-validation, and comparison with the numerical levels and calculation procedures used in EPA particulate-matter standards. Detailed PM2.5 and PM10 results are presented in Appendices C-E.

The foundational dataset consisted of continuous hourly measurements from individual PurpleAir sensors, including raw and corrected PM2.5 concentrations, PM10 estimates, timestamps, monitor identifiers, and information needed to track replacement monitors. Data-cleaning procedures standardized timestamps, removed incomplete or invalid records, and flagged suspect values. For each location, records were assembled chronologically using the original monitor, followed by any replacement monitors, with replacement data beginning only when the preceding monitor was no longer available. PM2.5 and PM10 were handled independently by hour, and the source monitor identifier was retained to document data provenance.

After the original and replacement-monitor sequence was assembled, data from other monitors within designated cross-validation groups were used to fill remaining missing hours where possible. These monitors were generally located within the same community. This approach was necessary because staffing changes, host departures, equipment problems, the large geographic area covered by the project, and the time required to identify and service equipment occasionally created gaps in the monitoring record. In some cases, hosts also chose to discontinue participation, requiring monitors to be removed or redeployed. A table identifying monitors that were redeployed or used as replacements is provided in Appendix A.

Most monitoring locations required at least some cross-validation data to produce a record sufficient for the project's longer-term screening calculations. Even after replacement and cross-validation data were incorporated, some locations still did not have complete records; those locations are identified in Appendix D. Because neighboring monitors were sometimes used to complete these records, the resulting long-term datasets are best interpreted at the community scale rather than as continuous measurements at one exact monitoring location.

Particulate Matter Regulatory Overview

This report references the following EPA National Ambient Air Quality Standards (NAAQS) for particulate matter:

- **24-hour PM10: 150 $\mu g/m^3$**
- **24-hour PM2.5: 35 $\mu g/m^3$ (based on the 98th percentile average**
- **Annual PM2.5: 9 $\mu g/m^3$ (updated in 2024 from 12 $\mu g/m^3$)**

Due to the multi-year nature of NAAQS compliance calculations, direct exceedance determination is not always possible. Instead, this report provides metrics and visuals that mimic NAAQS methodologies to give insight into likely patterns of exposure.

EPA Administrator Lee Zeldin has announced that the agency will reconsider the standards for PM 2.5 as part of a broad deregulatory agenda. At this time, the applicable standards are as they appear above, but in the coming months, EPA is may commence rule-making procedures to change the annual and/or 24-hour standards for this pollutant, making these standards less stringent.

Low-cost air-quality sensors, such as those produced by PurpleAir, have expanded access to fine particulate matter (PM2.5) monitoring, particularly in underserved or rural areas. However, the raw measurements produced by these sensors often require adjustment to ensure comparability with reference-grade monitors used by regulatory agencies, such as the EPA's Federal Reference Method (FRM) and Federal Equivalent Method (FEM) instruments.

The first model tested applies a linear transformation developed by Barkjohn et al. (2021), which adjusts for the typical overestimation of PM2.5 by PurpleAir sensors. This approach is expressed by the formula:

CPM2.5-transformed =
0.38 × Raw PM2.5 + 2.94

Our 2024 annual report noted that this model performs well in the region and is competitive with other popular PurpleAir transformation models.

About PurpleAir and Data Adjustments

PurpleAir monitors use laser-based sensors to estimate the size and concentration of airborne particulate matter. These affordable, internet-connected devices make air-quality data more accessible, especially in underserved areas.



A PurpleAir air-quality monitoring device.

However, raw PurpleAir data is known to overestimate PM2.5 concentrations. As a result, USACAMP has adopted a correction formula developed by Barkjohn et al. (2021), applying it uniformly to all PM2.5 data for improved alignment with Federal Reference Monitors (FRMs).

Corrected PM2.5 = 0.38 × PA + 2.94

In this equation, PA refers to the PM2.5 concentration reported directly by the PurpleAir sensor.

For quantitative daily analyses, PM2.5 values were required to contain at least 18 valid hourly observations, equivalent to 75% of a day. Time-series graphs, however, display available measurements without imposing the 18-hour daily-completeness requirement.

Screening-level analysis indicated that corrected PurpleAir PM2.5 results and the PM10 estimates were generally consistent with the numerical levels of the current National Ambient Air Quality Standards (NAAQS). EPA's current standards include an annual PM2.5 standard of 9 $\mu g/m^3$, a 24-hour PM2.5 standard of 35 $\mu g/m^3$, and a 24-hour PM10 standard of 150 $\mu g/m^3$ (EPA 2026).

These comparisons should not be interpreted as formal regulatory attainment determinations. Regulatory determinations depend on approved monitoring methods, prescribed data-completeness requirements, and specific multi-year calculations. Most USACAMP monitoring locations produced approximately 10 quarters of data rather than the full 12 quarters needed to evaluate a complete three-year period. Obtaining a complete three years of monitoring within the grant period would not have been possible unless monitors had been purchased and deployed before the grant began. Nevertheless, approximately 10 quarters provide a substantial record for screening purposes and for identifying communities that may warrant closer evaluation.

Based on these screening-level comparisons, participating USACAMP communities generally appear to be on track to remain below the numerical NAAQS levels for annual and daily PM2.5 and daily PM10.

Results below particulate-matter standards do not necessarily mean that dust had no effect on residents' quality of life. Air-quality standards address defined particle sizes and averaging periods, while community concerns may also include brief dust events, visible dust, deposited material, repeated cleaning of homes and vehicles, reduced enjoyment of outdoor spaces, and stress associated with nearby pollution sources. The PurpleAir results are useful for evaluating particulate concentrations but do not capture every way that dust can affect daily life.

VOC and Other Landfill-Gas Monitoring Results

Two SENSIT RAMP systems were operated in Bristol, Virginia, and Bristol, Tennessee, to monitor air quality near the landfill. The instruments continuously measured total VOC response, sulfur dioxide, hydrogen sulfide, ammonia, and carbon monoxide, along with meteorological conditions.

Results varied by pollutant and over time. Hydrogen sulfide, ammonia, and carbon monoxide were generally low but detectable. The VOC sensors experienced several failures and required replacement during the project, creating gaps in the continuous VOC record.

Sulfur dioxide showed the clearest pattern warranting additional attention. SO_2 concentrations appeared to increase seasonally, with elevated readings occurring more frequently during summer months and the highest measurements observed during summer 2025. Some individual hourly readings approached or exceeded the numerical level of the federal one-hour SO_2 standard of 75 ppb.

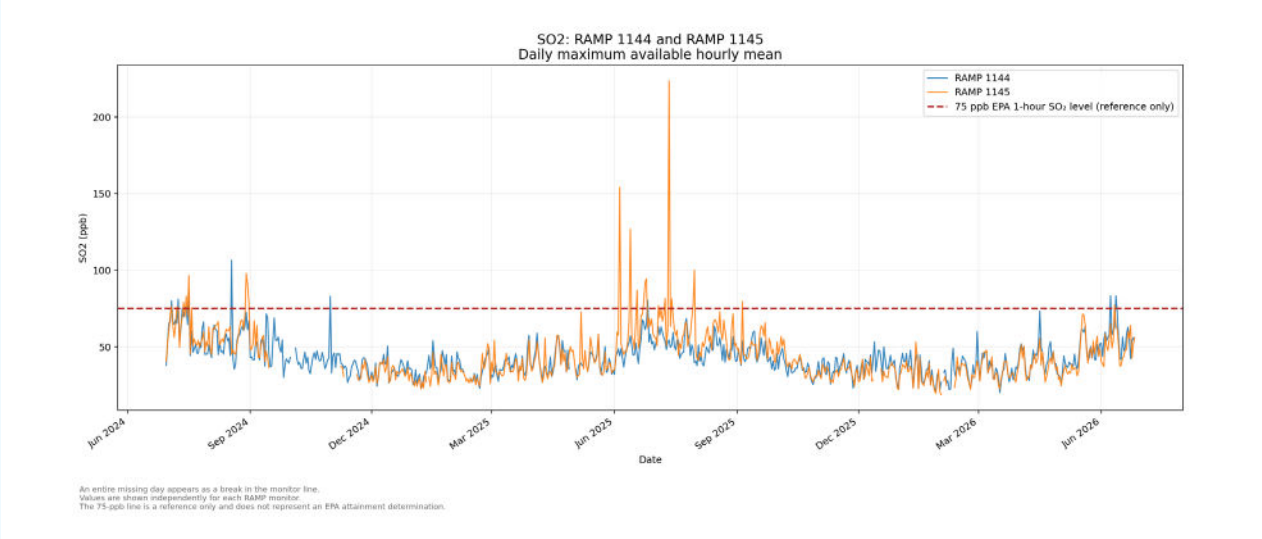
Individual hourly measurements above 75 ppb do not, by themselves, constitute regulatory exceedances. The regulatory form of the SO_2 standard is based on the three-year average of the annual 99th percentile of daily maximum one-hour concentrations (EPA 2026). The USACAMP monitoring period and equipment therefore support screening-level interpretation rather than a regulatory determination. The SO_2 graph and data tables are provided on pages 10-11.

The recurring summer pattern and elevated measurements during 2025 suggest that additional investigation may be warranted, although the monitoring data alone cannot identify the source or cause of the pattern. Interpretation should consider available information about nearby emission sources. Continued monitoring using more reliable or regulatory-grade equipment would help determine whether the apparent seasonal pattern represents a persistent local air-quality concern.

The USACAMP findings are also consistent with concerns identified through earlier monitoring in Bristol. In its December 2025 health consultation, the Agency for Toxic

(text continues on p. 12)

Sulfur Dioxide: Bristol Virginia and Tennessee



Events With Average SO_2 Over 100 ppb

Monitor	Valid_10min_averages	10min_averages_above_100_ppb	Percent_above_100_ppb	Separate_above_100_episodes
1144	47618	15	0.032	10
1145	35029	17	0.049	13
Both monitors	82647	32	0.039	23

Hourly Average Summary Statistics for SO_2

Monitor	First_valid_hour	Last_valid_hour	Valid_hourly_averages	Mean_ppb	Median_ppb	Standard_deviation_ppb	Minimum_ppb
1144	2024-06-30 20:00:00	2025-11-12 23:00:00	7939	31.6	30.87	9.174	2.963
1145	2024-06-30 20:00:00	2026-06-26 23:00:00	5834	32.515	31.535	10.802	7.174
Both monitors	2024-06-30 20:00:00	2026-06-26 23:00:00	13773	31.988	31.137		

(continued)

Monitor	Maximum_ppb	Range_ppb	25th_percentile_ppb	75th_percentile_ppb	95th_percentile_ppb	99th_percentile_ppb	IQR_ppb	Skewness
1144	106.467	103.504	24.91	36.738	47.305	60.847	11.828	1.006
1145	97.848	90.674	24.532	38.558	51.986	65.282	14.027	0.897
Both monitors								

Individual Episodes of SO_2

Event	monitor	episode_number	ten_min_start	ten_min_end	SO_2_10min ppb	valid_minutess
1	1145	1	2024-07-11 21:00:00	2024-07-11 21:10:00	100.759	10
2	1145	2	2024-07-12 16:50:00	2024-07-12 17:00:00	108.915	10
3	1145	3	2024-07-17 18:10:00	2024-07-17 18:20:00	103.062	10
3	1145	3	2024-07-17 18:20:00	2024-07-17 18:30:00	102.574	9
4	1145	4	2024-07-30 14:20:00	2024-07-30 14:30:00	103.416	10
5	1145	5	2024-08-04 15:10:00	2024-08-04 15:20:00	107.097	10
6	1145	6	2024-08-08 17:10:00	2024-08-08 17:20:00	105.545	10
7	1145	7	2024-08-15 16:00:00	2024-08-15 16:10:00	107.459	10
8	1144	1	2024-08-18 12:30:00	2024-08-18 12:40:00	109.169	9
9	1144	2	2024-08-18 12:50:00	2024-08-18 13:00:00	156.753	10
10	1144	3	2024-08-18 14:00:00	2024-08-18 14:10:00	223.478	10
10	1144	3	2024-08-18 14:10:00	2024-08-18 14:20:00	132.088	10
10	1144	3	2024-08-18 14:20:00	2024-08-18 14:30:00	105.831	10
11	1145	8	2024-08-29 15:50:00	2024-08-29 16:00:00	126.013	10
11	1145	8	2024-08-29 16:00:00	2024-08-29 16:10:00	121.166	10
11	1145	8	2024-08-29 16:10:00	2024-08-29 16:20:00	112.991	10
11	1145	8	2024-08-29 16:20:00	2024-08-29 16:30:00	137.932	10
12	1145	9	2024-08-30 17:30:00	2024-08-30 17:40:00	122.132	10
13	1145	10	2024-09-04 18:10:00	2024-09-04 18:20:00	126.961	10
14	1144	4	2024-09-09 16:50:00	2024-09-09 17:00:00	169.024	10
15	1144	5	2024-09-13 15:40:00	2024-09-13 15:50:00	184.137	10
16	1144	6	2024-09-14 16:10:00	2024-09-14 16:20:00	170.936	10
17	1144	7	2024-09-19 16:20:00	2024-09-19 16:30:00	105.139	10
18	1144	8	2024-10-31 8:30:00	2024-10-31 8:40:00	129.382	10
18	1144	8	2024-10-31 8:40:00	2024-10-31 8:50:00	136.182	10
18	1144	8	2024-10-31 8:50:00	2024-10-31 9:00:00	121.867	10
19	1144	9	2025-04-20 13:50:00	2025-04-20 14:00:00	117.83	10
19	1144	9	2025-04-20 14:00:00	2025-04-20 14:10:00	108.16	10
20	1144	10	2025-05-25 15:00:00	2025-05-25 15:10:00	117.97	10
21	1145	11	2026-05-23 8:40:00	2026-05-23 8:50:00	100.02	10
22	1145	12	2026-06-11 15:30:00	2026-06-11 15:40:00	116.675	10
23	1145	13	2026-06-23 19:50:00	2026-06-23 20:00:00	131.458	10

(continued from p. 9)

Substances and Disease Registry (ATSDR 2025) reported that maximum five-minute SO_2 concentrations exceeded 100 ppb during monitoring conducted between 2020 and 2022. ATSDR noted research in which five-minute exposures between 100 and 250 ppb during exercise caused severe narrowing of the airways in adults with asthma.

The more recent USACAMP measurements indicate that short-term elevated SO_2 concentrations remained present in Bristol, with recurring summer increases and particularly high hourly measurements during summer 2025. Together, the two monitoring efforts indicate that short-term SO_2 elevations warrant additional investigation.

Across both SENSIT RAMP monitors, 13,773 valid hourly SO_2 averages were available for analysis. Mean hourly concentrations were similar at the two locations, averaging 31.6 ppb at Monitor 1144 and 32.5 ppb at Monitor 1145, with medians of 30.9 and 31.5 ppb. The 99th percentile of all valid hourly measurements was 60.8 ppb at Monitor 1144 and 65.3 ppb at Monitor 1145. Monitor 1144 recorded 11 hourly averages above 75 ppb, while Monitor 1145 recorded 18. Maximum hourly concentrations reached 106.5 and 97.8 ppb, respectively. These individual measurements should not be interpreted as regulatory exceedances because the federal SO_2 standard is based on the three-year average of the annual 99th percentile of daily maximum 1-hour concentrations.

The results nevertheless indicate that Bristol warrants additional investigation. EPA data for 2019–2021 show that the national median daily maximum 1-hour SO_2 concentration was only 0.9 ppb and the national 99th percentile was 39.4 ppb. (EPA 2023). Bristol's 99th percentiles were 60.8 and 65.3 ppb, indicating that Bristol's SO_2 levels are much higher than national averages (Appendix F).

Short-duration SO_2 events occurred intermittently during the USACAMP monitoring period. Monitor 1144 recorded 10 separate episodes in which a valid 10-minute average exceeded 100 ppb, while Monitor 1145 recorded 13 such episodes. Where elevated concentrations were observed by both monitors during the same period, they are treated here as the same event rather than counted twice. On that basis, the monitoring indicates approximately 13 distinct elevated SO_2 episodes, with maximum 10-minute averages reaching 223.5 ppb at Monitor 1144 and 137.9 ppb at Monitor 1145.

These events provide additional context for ATSDR's December 2025 health consultation. ATSDR reported that maximum five-minute SO_2 concentrations measured in Bristol between 2020 and 2022 exceeded 100 ppb and discussed research showing that adults with asthma experienced severe narrowing of the airways during exercise at short-term concentrations between 100 and 250 ppb. USACAMP used a different 10-minute averaging period, so the measurements are not directly comparable, but the repeated occurrence of episodes above 100 ppb indicates that short-duration elevated SO_2 events continued to occur in Bristol during the USACAMP monitoring period.

VOC and Benzene Sampling

Because benzene was a community-identified pollutant of concern, USACAMP supplemented the SENSIT RAMP systems with passive sorbent-tube sampling in the Bristol area during 2024 and 2025. The RAMP instruments measured a broad total VOC response, whereas the sorbent tubes collected approximately two-week integrated air samples that were analyzed by a laboratory for individual BTEX compounds: benzene, toluene, ethylbenzene, and xylenes.

Toluene was the most consistently detected compound and generally occurred at higher concentrations than the other measured VOCs. Ethylbenzene and xylenes were also detected, usually at lower concentrations. Benzene was frequently below laboratory detection limits or present at comparatively low concentrations.

Detectable VOCs were also found in several blank samples, indicating that some low-level contamination may have occurred during sampling, handling, transportation, or laboratory analysis. A small number of samples had additional analytical or collection limitations. Despite these limitations, the sorbent-tube program provided substantially more information about VOC composition than the electronic sensors alone and indicated the repeated presence of low-level VOC mixtures dominated primarily by toluene and aromatic hydrocarbons other than benzene. Graphs and tables for the VOC monitoring are provided on p.10-11.

ATSDR's December 2025 health consultation provides important context for interpreting the benzene results. ATSDR identified benzene as a potential concern and concluded that long-term exposure to the highest concentrations previously measured near the landfill could cause harmful non-cancer effects and slightly increase leukemia risk. ATSDR reported that the highest time-weighted benzene concentrations occurred on January 25, 2022, while the landfill operator was conducting pipe and well cleaning, and concluded that this temporary activity may have increased ambient benzene concentrations above typical levels.

USACAMP's later sorbent-tube sampling detected benzene less consistently than the other BTEX compounds, with concentrations frequently below laboratory detection limits or comparatively low when detected. These results do not reproduce the unusually high concentrations associated with the January 2022 activity identified by ATSDR, but they provide additional information about the mixture of VOCs present in the Bristol area during 2024 and 2025.

Overall Results and Interpretation

Taken together, the USACAMP monitoring results provide a multi-year screening-level record of community air quality across the project area. The particulate-matter results generally remained consistent with the numerical levels of current PM2.5 and PM10 standards, although gaps, monitor replacements, cross-validation filling, the approximately 10-quarter monitoring period, and the use of non-regulatory monitoring equipment limit direct comparison with formal NAAQS attainment procedures.

The Bristol monitoring identified a different pattern. Continuous and passive sampling generally indicated low concentrations of most measured landfill-related gases and VOCs, but recurring short-term SO_2 elevations, particularly during summer 2025, warrant additional investigation. Sorbent-tube results showed that the VOC mixture detected during 2024 and 2025 was generally dominated by toluene and aromatic compounds other than benzene, while earlier ATSDR monitoring demonstrates that temporary landfill activities may produce conditions different from those represented by the later integrated samples.

Detailed quantitative analyses for individual PurpleAir monitors, Bristol monitoring results, and annual SENSIT RAMP graphs are provided in the appendices. Quarterly and annual reports, corrected PurpleAir datasets, SENSIT RAMP data, and sorbent-tube laboratory results are also publicly available through the Appalachian Voices USACAMP project webpage (AppVoices.org/epa-dust-monitoring). Previous annual reports include weather information, fulfilling the related grant-reporting requirement.





SENSIT RAMP monitors.

Public use of Monitoring Data:

USACAMP monitoring data were used by community and research partners to inform public discussions and ongoing research. HOPE for Bristol cited sulfur dioxide data from the SENSIT monitors during an ATSDR meeting concerning its Public Health Assessment, raising concerns about elevated concentrations relative to applicable Clean Air Act benchmarks. University of Kentucky researchers also monitored project data throughout their Bristol landfill study, which concluded in 2026. HOPE further reported that after the City of Bristol, Virginia, discontinued its perimeter benzene monitoring, USACAMP's grant-funded testing provided the only known benzene monitoring near the landfill during the ensuing period. Separately, the Protect Our Water, Heritage, Rights coalition (POWHR) used Purple Air project monitoring data in a presentation to a Virginia state council in Richmond in April 2026. Data from the project was also presented to a class at UVA Wise that participated in the project.

In addition, several organizations that were not formal project partners contacted Appalachian Voices for assistance in establishing their own air-monitoring programs. At least three groups requested guidance during the early stages of their projects. Appalachian Voices also shared its Quality Assurance Project Plan with other nonprofit organizations as a template for developing their own monitoring plans. During the project, Appalachian Voices published several blog posts and newspaper articles and hosted four webinars to communicate directly with community members about the project and its air-quality data.

Throughout the project, numerous participants expressed appreciation for having access to local air-quality data and for knowing that their concerns were being monitored. Because PurpleAir data are publicly accessible through the broader PurpleAir network, the project's monitoring data may also be supporting additional analyses or studies that have not yet been identified by the project team.

Recommendations and Closing

USACAMP established a strong foundation for continued community air monitoring across Appalachia and the Upper South. The project created a substantial public dataset, expanded local access to air-quality information, strengthened partnerships among communities and researchers, and identified several areas where continued monitoring and analysis would be valuable. Based on the project's findings and experience, Appalachian Voices offers the following recommendations to project partners, HOPE for Bristol, the EPA and other public agencies, researchers, local governments, and monitored facilities.

1. **Continue and strengthen SO_2 monitoring near the Bristol landfill.** Local agencies, universities, and community partners should support continued monitoring near the Bristol landfill, with particular attention to the recurring pattern of higher sulfur dioxide concentrations during summer. More sensitive monitoring equipment should be used where possible to better characterize sulfur dioxide concentrations, evaluate potential nearby emission sources, and determine whether the seasonal pattern persists over time. Continued monitoring would also provide Bristol-area communities with updated information about local air-quality conditions.

2. **Continue periodic laboratory-based VOC sampling.** HOPE for Bristol should continue periodic sampling for benzene, toluene, ethylbenzene, xylenes, and other compounds of community concern. Because ATSDR identified benzene as a pollutant of concern near the landfill, continued laboratory-based sampling would help determine whether benzene concentrations or the broader VOC mixture change over time and would build on the baseline information developed through USACAMP.

3. **Maintain the regional PurpleAir network where continued operation is practical.** Appalachian Voices and community partners should continue operating monitors at established locations where hosts remain interested and equipment can be reasonably maintained. Maintaining these sites will preserve valuable long-term

records, allow comparisons across years, and provide participating communities with continued access to localized PM2.5 and PM10 information.

4. **Design future monitoring projects around realistic maintenance capacity.** Organizations undertaking similar grant-funded monitoring projects should consider concentrating monitoring in fewer communities while deploying multiple monitors within each participating community. Projects should minimize organizational handoffs between the grantee and the staff or volunteers responsible for installation, maintenance, and fieldwork. A more manageable geographic scope would make it easier to identify equipment problems and service, repair, or replace monitors within a reasonable timeframe. If a large regional network is necessary, project budgets and staffing plans should include dedicated personnel time specifically for monitor maintenance, troubleshooting, replacement, and participant coordination.

USACAMP's lasting contribution extends beyond the monitoring results collected during the grant period. The project created a regional air-monitoring network, a public record of localized air-quality conditions, and stronger relationships among residents, community organizations, and researchers. Most importantly, it gave participating communities greater access to information about the air they breathe and demonstrated the value of community-based monitoring across Appalachia and the Upper South.

Acknowledgments

This project would not have been possible without the contributions of numerous individuals, community partners, organizations, and technical collaborators across Appalachia and the Upper South.

Special thanks are extended to Charles Rominiyi and Erin Savage for their extensive assistance with quality assurance, quality control, data review, and technical oversight throughout the project period.

Major thanks to Jimmy Davidson for his work on graphic design, report layout, visual communication, and data presentation materials used throughout the project.

The project greatly benefited from the guidance and laboratory support provided by Gabriel Isaacman-VanWertz at Virginia Tech, including assistance with VOC sampling methodologies, laboratory coordination, and interpretation of sorbent tube data.

Special appreciation is also extended to Jana Jones for her accounting and administrative support throughout the grant period.

We also thank Jacob Lineberry for his initial contributions to the development and processing code used for PurpleAir data management and analysis.

We thank Willie Dodson for his leadership, community outreach, public engagement, and extensive support coordinating monitoring activities and community partnerships throughout the project period as part of Appalachian Voices.

We further thank the many Appalachian Voices staff members, organizers, field coordinators, interns, and volunteers who assisted with monitor deployment, maintenance, troubleshooting, data collection, outreach, and community coordination across the region and feedback on grant proposal. Their willingness to travel, deploy monitors, replace failed equipment, communicate with community hosts, and maintain the operational network over multiple years was essential to the success of the project.

This project was led by Matt Hepler, Appalachian Voices' staff environmental scientist. It is difficult to overstate the breadth and depth of Matt's knowledge of environmental sciences and regulatory systems or his abilities as a community organizer and project manager. Matt was also the author of this report, but his colleagues have penned this note of acknowledgment and gratitude. This project — and many others — would not have been possible without Matt's expertise and hard-work.

USACAMP also relied on the collaboration and support of numerous partner organizations and community groups across the five-state study area. These partners hosted monitors, provided local guidance, identified community concerns, assisted with outreach efforts, and helped

expand access to community-scale air-quality monitoring in underserved areas. Partner organizations included:

- *Appalachian Mountain Flows*
- *Center for Coalfield Justice*
- *Clearfork Community Institute*
- *Coal River Mountain Watch*
- *Friends of Buckingham*
- *HOPE for Bristol (Healing Our Polluted Environment)*
- *Institute, West Dunbar, Pinewood Sub-Area Planning Committee*
- *Kentuckians for the Commonwealth*
- *Memphis Community Against Pollution*
- *Mountain Watershed Alliance*
- *Pittsylvania County NAACP*
- *Press Pause Coalition*
- *Sierra Club Virginia Chapter*
- *Southern Appalachian Mountain Stewards*
- *Statewide Organizing for Community Empowerment*
- *University of Virginia at Wise Department of Natural Science*
- *Virginia Tech*
- *Individual community volunteers throughout Kentucky, Tennessee, Virginia, West Virginia, and Pennsylvania*

The project team also expresses the deepest appreciation to the organizations listed above and to the many community members who hosted monitors at their homes, businesses, universities, clinics, and community centers. Their participation made it possible to build one of the largest community-centered rural air monitoring networks in Appalachia.

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Questions and data requests can be directed to Matt Hepler at matt.hepler@appvoices.org or Willie Dodson at willie@appvoices.org.


Photo: Michael Swensen for EarthJustice

Appendix A

Monitor Replacements and Replacement-Period Data Coverage

Monitor Replacements and Replacement-Period Data Coverage

Table of monitor replacements, replacement dates, and data coverage across each replacement period.

Original / Previous Monitor	Sensor ID	Replacement Monitor	Replacement Sensor ID	Replacement chain
AV-02	183791	AV-37	183783	AV-02 —> AV-37 —> AV-78
AV-05	183813	AV-79	301703	AV-05 —> AV-79
AV-13	183777	AV-75	301663	AV-13 —> AV-75
AV-18	183753	AV-25	184559	AV-18 —> AV-25
AV-31	184567	AV-62	211949	AV-31 —> AV-62
AV-32	184561	AV-74	301645	AV-32 —> AV-74
AV-34	183737	AV-76	301637	AV-34 —> AV-76
AV-37	183783	AV-78	301657	AV-02 —> AV-37—> AV-78
AV-46	198999	AV-71	301837	AV-46 —> AV-71
AV-50	196153	AV-48	198819	AV-50 —> AV-48
AV-56	199033	AV-06	183739	AV-56 —> AV-06

Appendix B

Permanently Removed Monitors

Permanently Removed Monitors

Table of monitors permanently removed from the network.

Monitor	Sensor_ID	Year	Location
AV-07	183755	2023	Raleigh County, WV
AV-11	183781	2024	Lackawanna County, PA
AV-17	183799	2024	Wise County, VA
AV-19	184351	2024	Wise County, VA
AV-21	183779	2025	McDowell County, WV
AV-23	184345	2024	Campbell County, TN
AV-25	184559	2026	Wise County, VA
AV-32	184561	2026	Institute, WV
AV-33	184553	2024	Claiborne County, TN
AV-41	198821	2025	McDowell County, WV
AV-43	198477	2026	Raleigh County, WV
AV-62	211949	2026	Pittsylvania County, VA
AV-66	211961	2024	Buchanan County, VA
AV-68	211957	2024	Shelby County, TN

Appendix C

Calculated NAAQS Metrics and Individual Monitor Graphs

Note: In cases where data from a primary sensor was unavailable or incomplete, data from a co-located or nearby PurpleAir sensor of the same cross-validation group was substituted. Substituted data are clearly flagged in the dataset and included only when quality assurance criteria were met.

KENTUCKY

USACAMP Particulate Matter Summary KY — Winchester — AV-40 — Sensor 184505

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-40 | CV group: 10.0

PM2.5 Annual Design Value

8.1 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

14.0 µg/m³

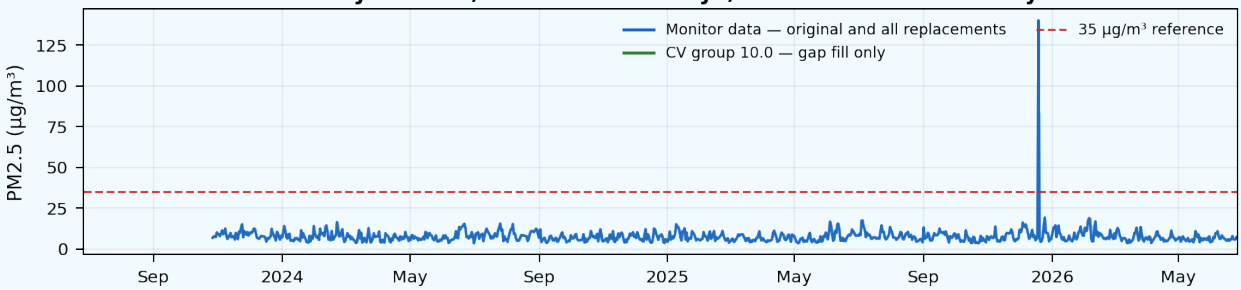
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

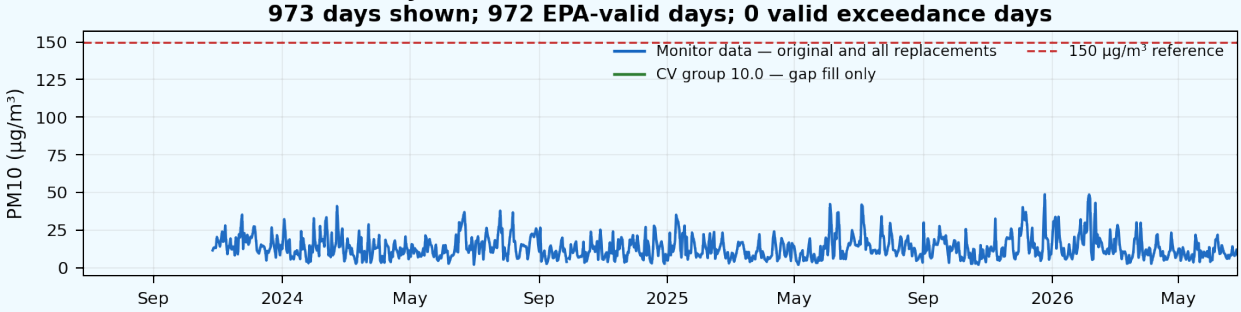
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
973 days shown; 971 EPA-valid days; 1 valid exceedance days



Daily PM10 Concentrations — All Available Data
973 days shown; 972 EPA-valid days; 0 valid exceedance days



PM2.5: 971 valid days; 1 days above 35 µg/m³.
PM10: 972 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-40. Handoffs: AV-40 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-40': 23280, 'Missing': 2996, 'CV group 10.0': 28}.
PM10 hourly sources: {'AV-40': 23292, 'Missing': 2985, 'CV group 10.0': 27}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
KY — Langley — AV-26 — Sensor 184563

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-26 | CV group: 31.0

PM2.5 Annual Design Value

6.9 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

13.0 µg/m³

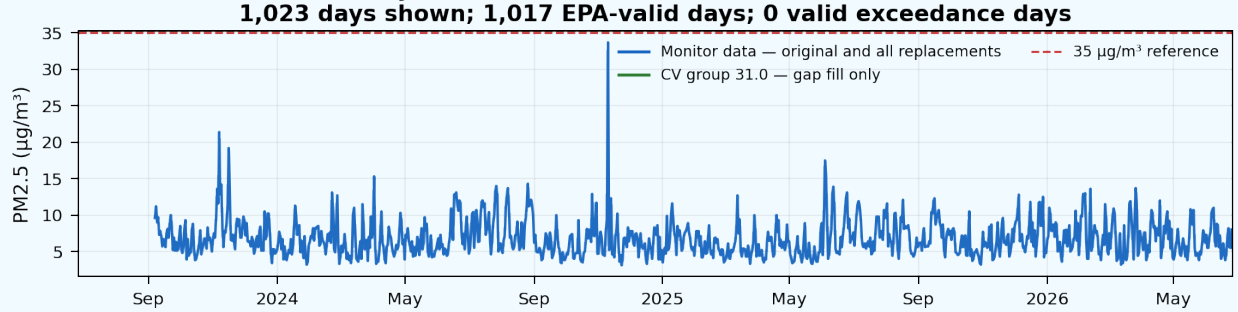
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

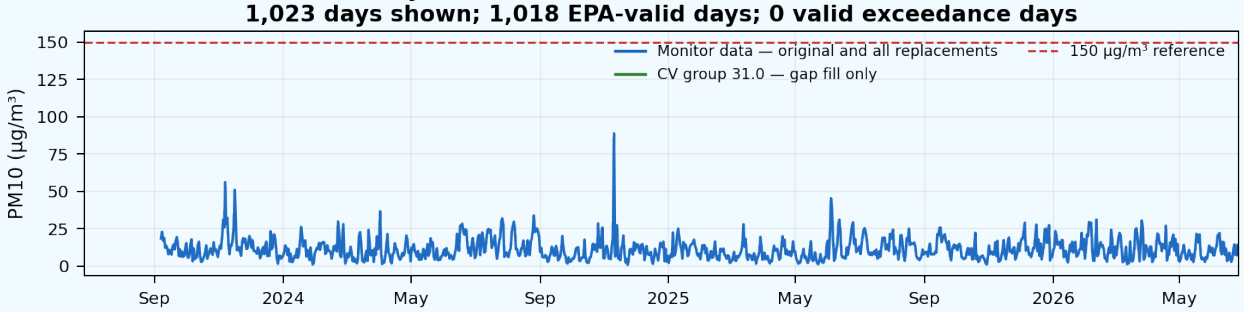
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,023 days shown; 1,017 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,023 days shown; 1,018 EPA-valid days; 0 valid exceedance days



PM2.5: 1,017 valid days; 0 days above 35 µg/m³.
PM10: 1,018 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-26. Handoffs: AV-26 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-26': 24376, 'Missing': 1928}.
PM10 hourly sources: {'AV-26': 24420, 'Missing': 1884}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary KY — Covington — AV-14 — Sensor 183773

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-14 | CV group: 7.0

PM2.5 Annual Design Value

8.6 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

15.0 µg/m³

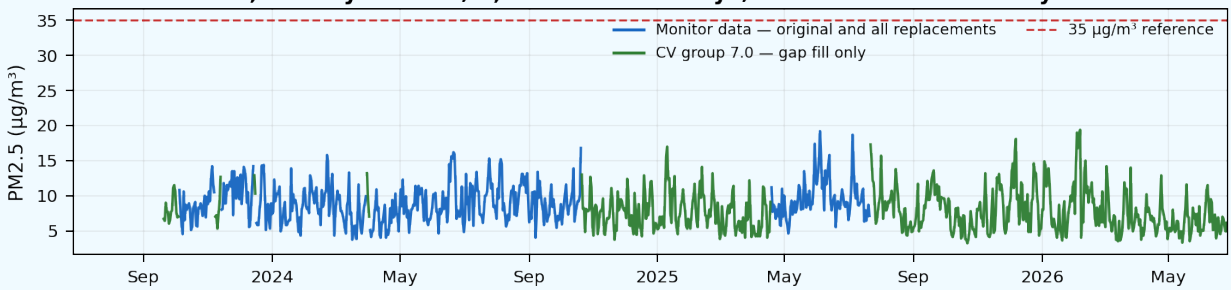
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

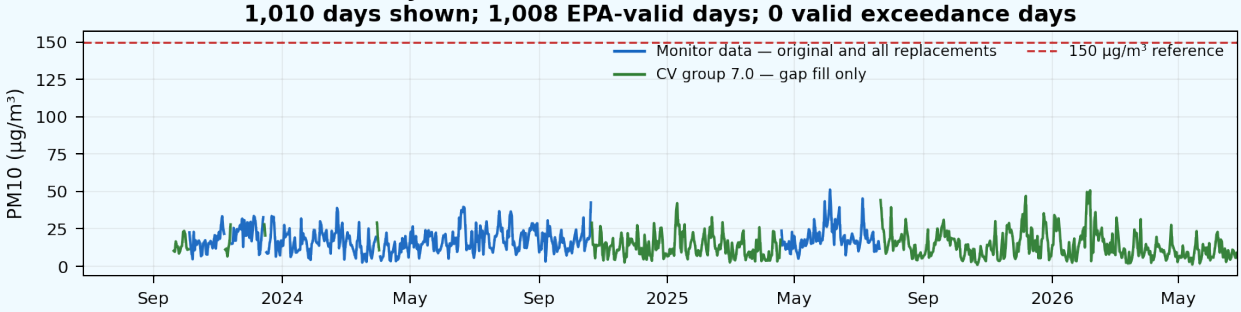
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,010 days shown; 1,008 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,010 days shown; 1,008 EPA-valid days; 0 valid exceedance days



PM2.5: 1,008 valid days; 0 days above 35 µg/m³.
PM10: 1,008 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-14. Handoffs: AV-14 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'CV group 7.0': 13036, 'AV-14': 11148, 'Missing': 2120}.
PM10 hourly sources: {'CV group 7.0': 13039, 'AV-14': 11148, 'Missing': 2117}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
KY — Covington — AV-15 — Sensor 183761

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-15 | CV group: 7.0

PM2.5 Annual Design Value

8.2 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

15.0 µg/m³

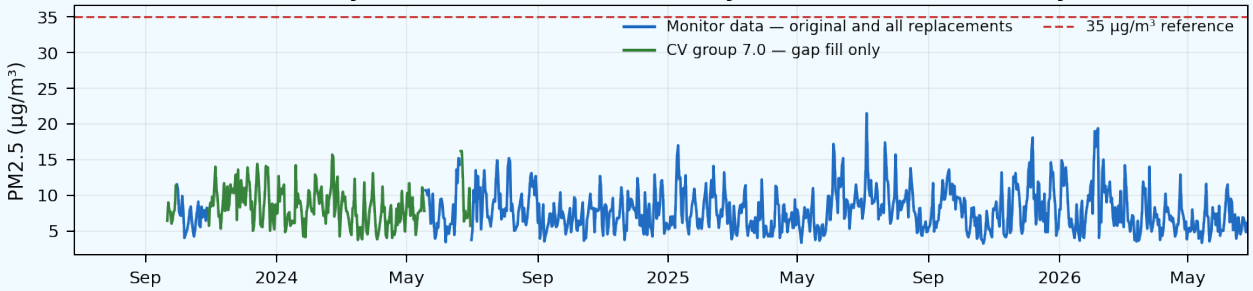
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

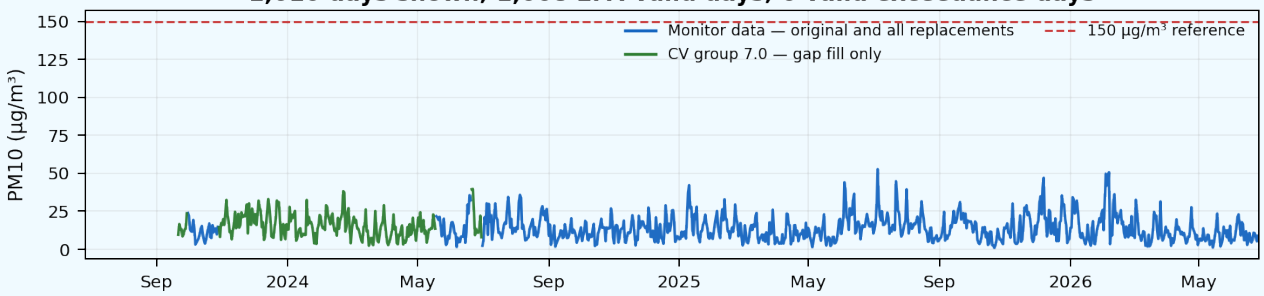
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,010 days shown; 1,008 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,010 days shown; 1,008 EPA-valid days; 0 valid exceedance days



PM2.5: 1,008 valid days; 0 days above 35 µg/m³.
PM10: 1,008 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-15. Handoffs: AV-15 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-15': 18886, 'CV group 7.0': 5298, 'Missing': 2120}.
PM10 hourly sources: {'AV-15': 18889, 'CV group 7.0': 5298, 'Missing': 2117}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

PENNSYLVANIA

USACAMP Particulate Matter Summary PA — Wayensburg — AV-12 — Sensor 183751

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-12 | CV group: 6.0

PM2.5 Annual Design Value

6.5 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

13.0 µg/m³

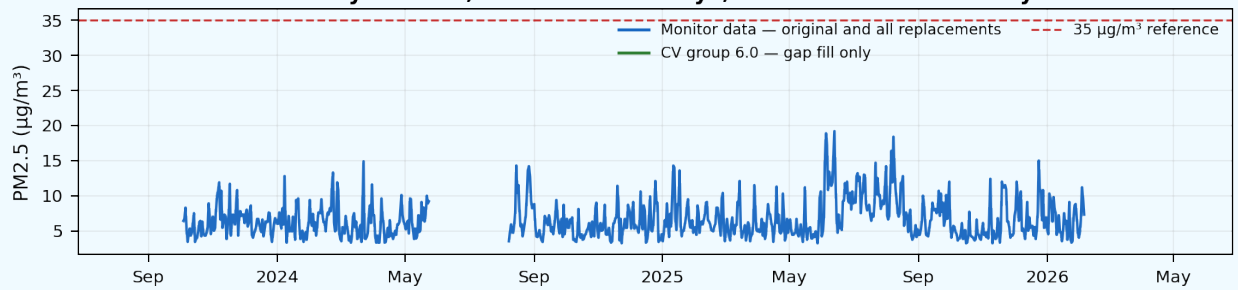
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

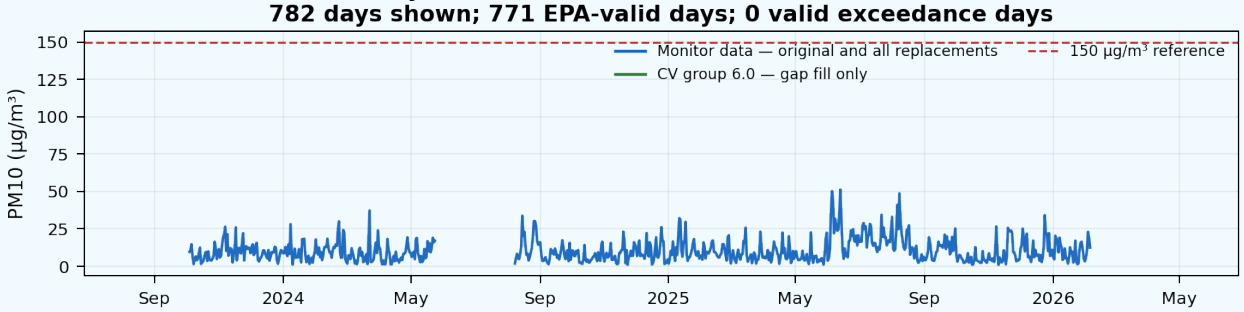
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
782 days shown; 770 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
782 days shown; 771 EPA-valid days; 0 valid exceedance days



PM2.5: 770 valid days; 0 days above 35 µg/m³.
PM10: 771 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-12. Handoffs: AV-12 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-12': 18500, 'Missing': 7797, 'CV group 6.0': 7}.
PM10 hourly sources: {'AV-12': 18522, 'Missing': 7778, 'CV group 6.0': 4}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
PA — Donegal_Township — AV-09 — Sensor 183735

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-09 | CV group: 67.0

PM2.5 Annual Design Value



Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value



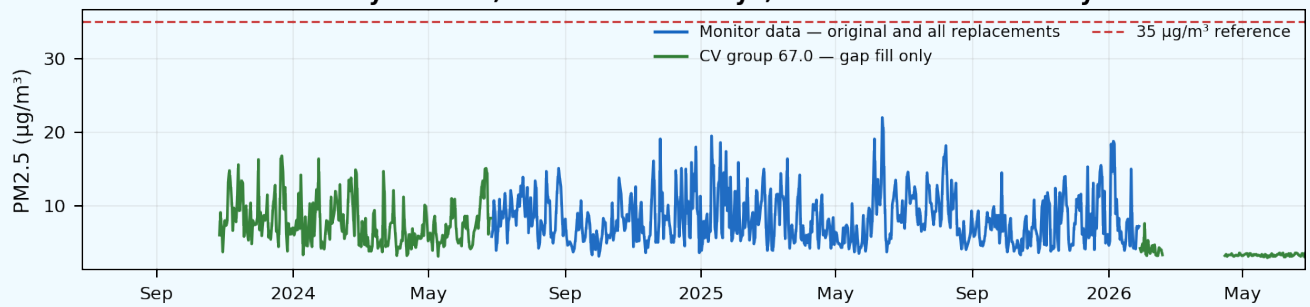
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

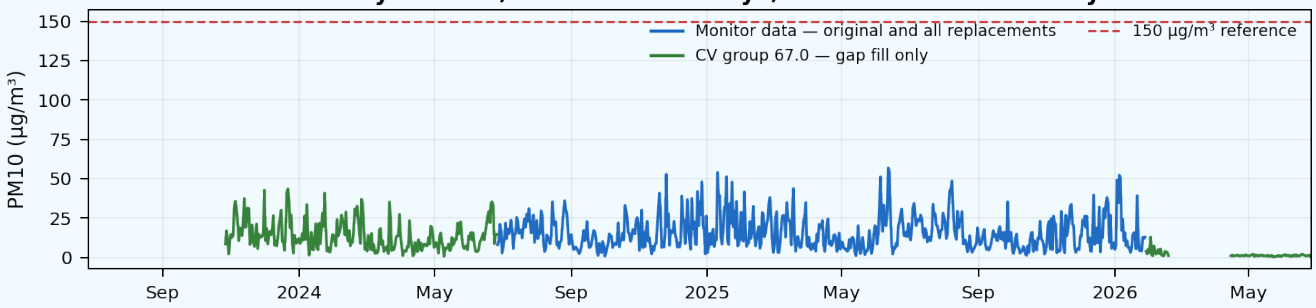


Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
919 days shown; 913 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
919 days shown; 914 EPA-valid days; 0 valid exceedance days



PM2.5: 913 valid days; 0 days above 35 µg/m³.
PM10: 914 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-09. Handoffs: AV-09 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-09': 13904, 'CV group 67.0': 8031, 'Missing': 4369}.
PM10 hourly sources: {'AV-09': 13929, 'CV group 67.0': 8033, 'Missing': 4342}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
PA — Donegal_Township — AV-10 — Sensor 183811

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-10 | CV group: 67.0

PM2.5 Annual Design Value

7.0 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

15.0 µg/m³

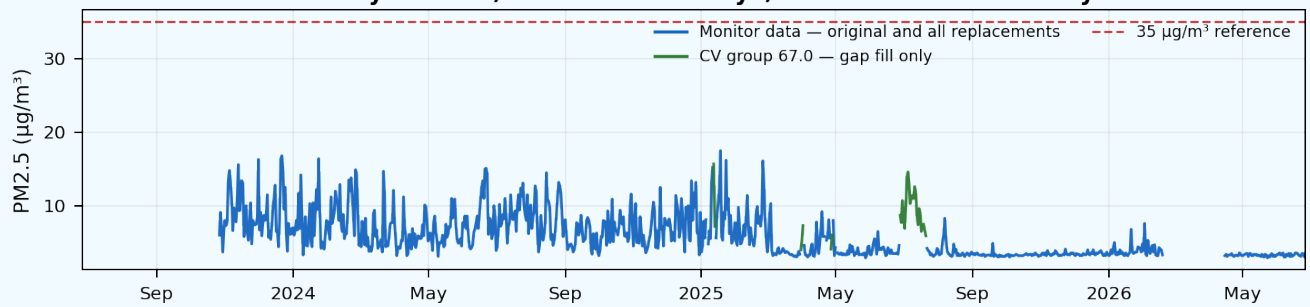
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

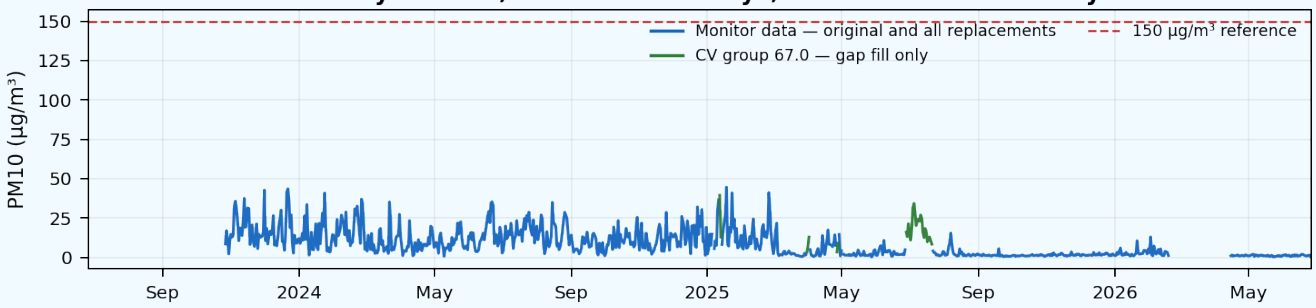
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
919 days shown; 913 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
919 days shown; 914 EPA-valid days; 0 valid exceedance days



PM2.5: 913 valid days; 0 days above 35 µg/m³.
PM10: 914 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-10. Handoffs: AV-10 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-10': 21078, 'Missing': 4369, 'CV group 67.0': 857}.
PM10 hourly sources: {'AV-10': 21125, 'Missing': 4342, 'CV group 67.0': 837}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

TENNESSEE

USACAMP Particulate Matter Summary
TN — Clinton — AV-49 — Sensor 196109

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-49 | CV group: 545.0

PM2.5 Annual Mean

7.4 µg/m³

Reference: 9
Period: 2025
Incomplete / screening

PM2.5 Annual 98th Percentile

15.9 µg/m³

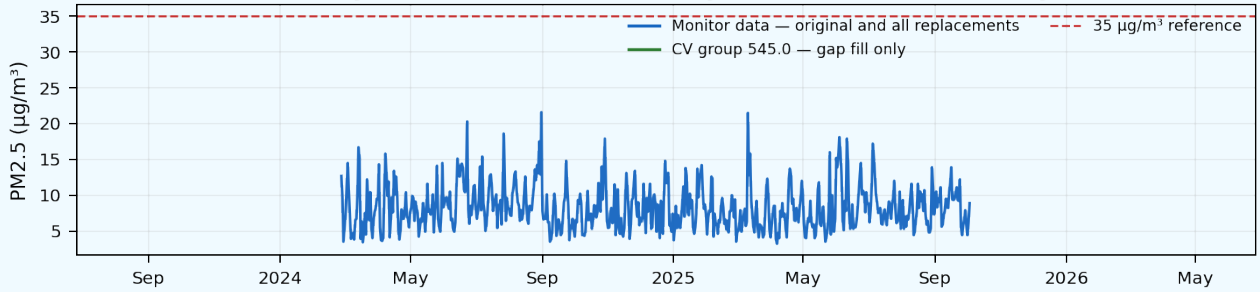
Reference: 35
Period: 2025
Incomplete / screening

PM10 Expected Exceedances / Year

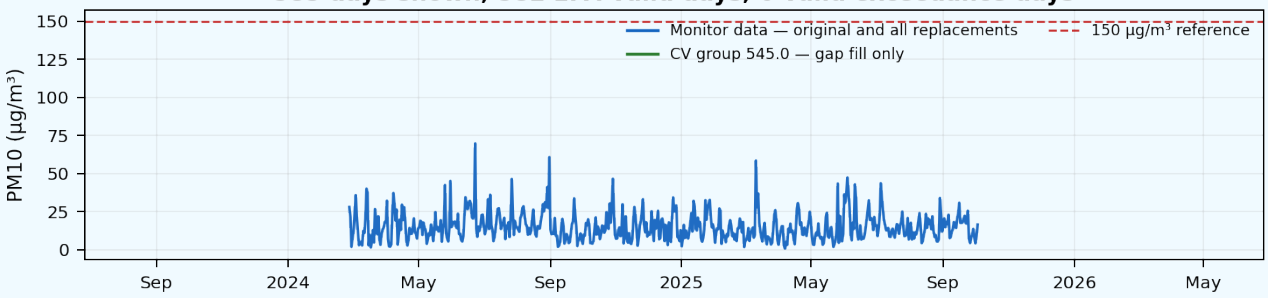
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
585 days shown; 581 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
585 days shown; 582 EPA-valid days; 0 valid exceedance days



PM2.5: 581 valid days; 0 days above 35 µg/m³.
PM10: 582 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-49. Handoffs: AV-49 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-49': 13948, 'Missing': 12356}.
PM10 hourly sources: {'AV-49': 13973, 'Missing': 12331}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
TN — Memphis — AV-53 — Sensor 198253

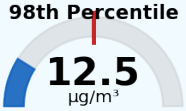
Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-53 | CV group: 999.0

PM2.5 Annual Mean



6.7 µg/m³
Reference: 9
Period: 2025
Complete

PM2.5 Annual 98th Percentile



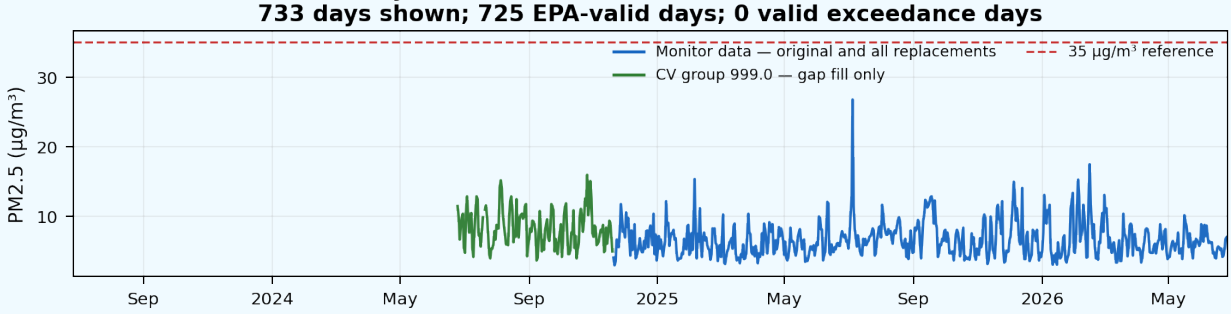
12.5 µg/m³
Reference: 35
Period: 2025
Complete

PM10 Expected Exceedances / Year

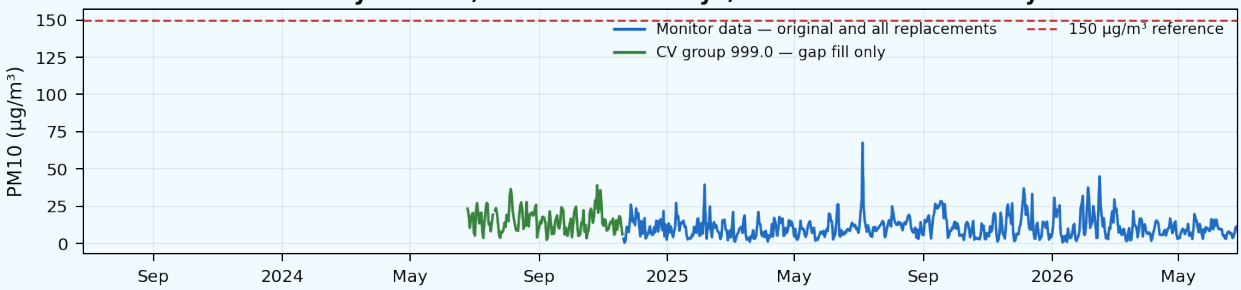


0.0 exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
733 days shown; 725 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
733 days shown; 726 EPA-valid days; 0 valid exceedance days



PM2.5: 725 valid days; 0 days above 35 µg/m³.
PM10: 726 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-53. Handoffs: AV-53 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-53': 13918, 'Missing': 8882, 'CV group 999.0': 3504}.
PM10 hourly sources: {'AV-53': 13940, 'Missing': 8858, 'CV group 999.0': 3506}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
TN — Kingston — AV-30 — Sensor 184349

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-30 | CV group: 12.0

PM2.5 Annual Design Value

8.0 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

15.0 µg/m³

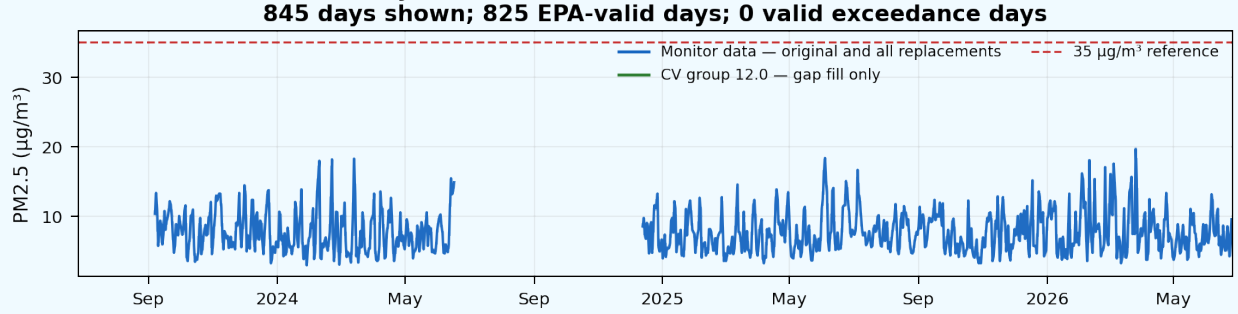
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

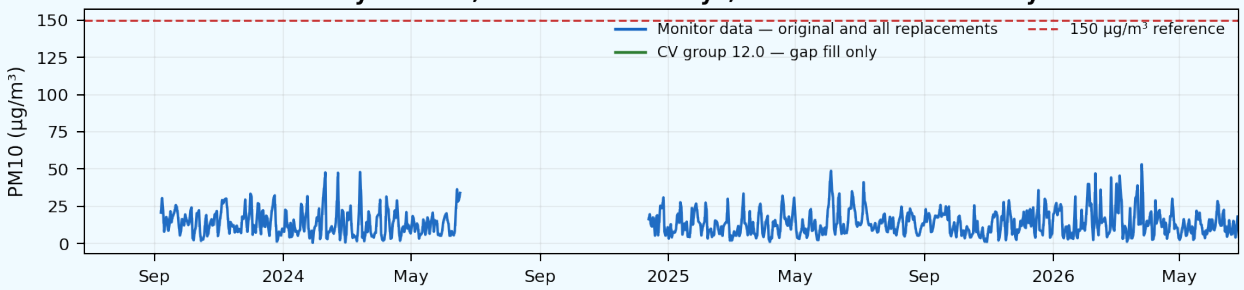
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
845 days shown; 825 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
845 days shown; 826 EPA-valid days; 0 valid exceedance days



PM2.5: 825 valid days; 0 days above 35 µg/m³.
PM10: 826 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-30. Handoffs: AV-30 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-30': 19946, 'Missing': 6358}.
PM10 hourly sources: {'AV-30': 19964, 'Missing': 6340}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
TN — Bristol — AV-59 — Sensor 199001

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-59 | CV group: 9.0

PM2.5 Annual Mean

8.6 µg/m³

Reference: 9
Period: 2025
Incomplete / screening

PM2.5 Annual 98th Percentile

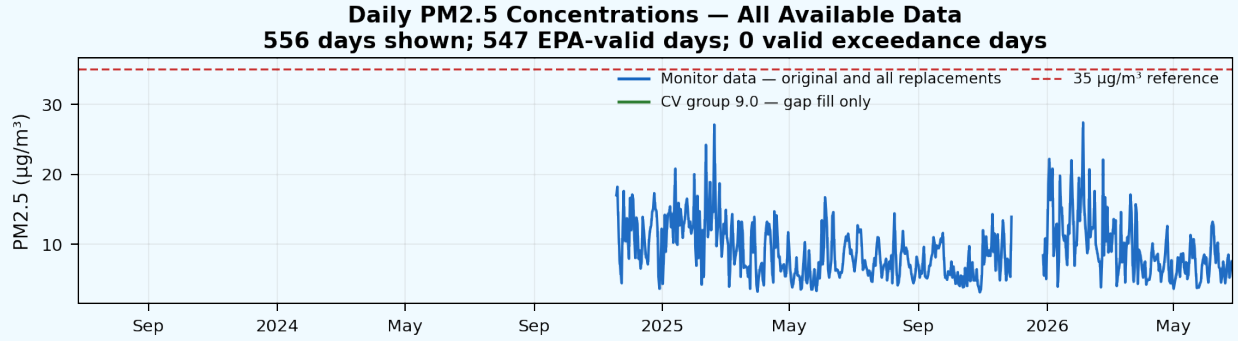
17.8 µg/m³

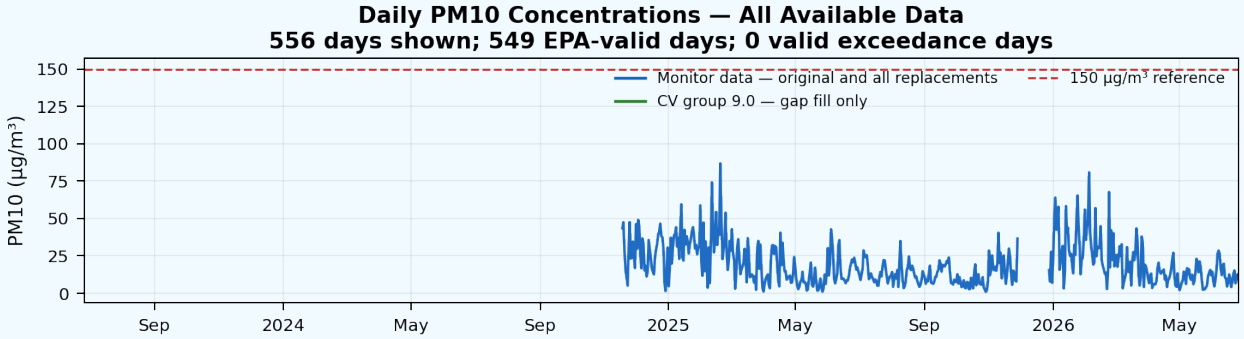
Reference: 35
Period: 2025
Incomplete / screening

PM10 Expected Exceedances / Year

0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening





PM2.5: 547 valid days; 0 days above 35 µg/m³.
PM10: 549 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-59. Handoffs: AV-59 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 13174, 'AV-59': 13130}.
PM10 hourly sources: {'AV-59': 13176, 'Missing': 13128}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
TN — Bristol — AV-60 — Sensor 198979

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-60 | CV group: 4.0

PM2.5 Annual Design Value

7.9 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

14.0 µg/m³

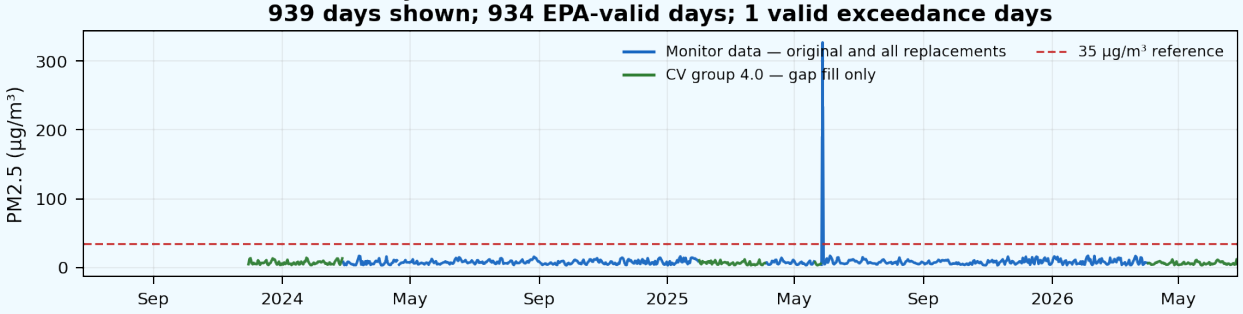
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

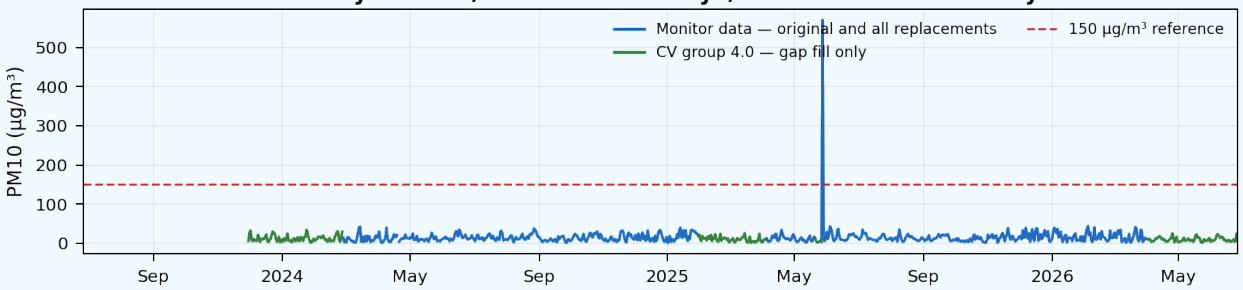
0.3 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
939 days shown; 934 EPA-valid days; 1 valid exceedance days



Daily PM10 Concentrations — All Available Data
939 days shown; 936 EPA-valid days; 1 valid exceedance days



PM2.5: 934 valid days; 1 days above 35 µg/m³.
PM10: 936 valid days; 1 days exceeding 150 µg/m³.
Monitor source: AV-60. Handoffs: AV-60 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-60': 16550, 'CV group 4.0': 5882, 'Missing': 3872}.
PM10 hourly sources: {'AV-60': 16581, 'CV group 4.0': 5888, 'Missing': 3835}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

VIRGINIA

USACAMP Particulate Matter Summary
VA — Roseann — AV-57 — Sensor 198281

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-57 | CV group: 36.0

PM2.5 Annual Mean

7.7 µg/m³

Reference: 9
Period: 2025
Complete

PM2.5 Annual 98th Percentile

15.1 µg/m³

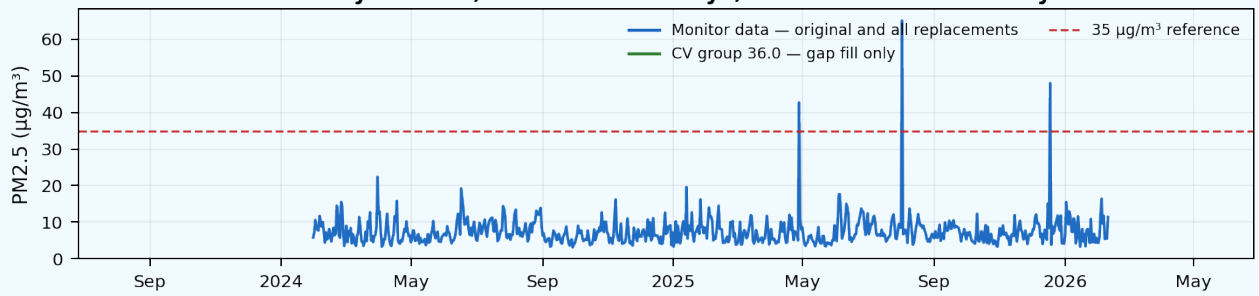
Reference: 35
Period: 2025
Complete

PM10 Expected Exceedances / Year

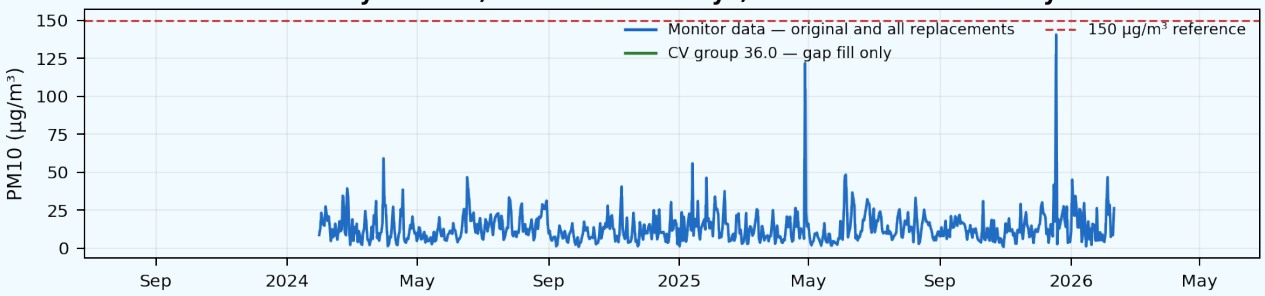
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
742 days shown; 730 EPA-valid days; 3 valid exceedance days



Daily PM10 Concentrations — All Available Data
742 days shown; 732 EPA-valid days; 0 valid exceedance days



PM2.5: 730 valid days; 3 days above 35 µg/m³.
PM10: 732 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-57. Handoffs: AV-57 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-57': 17547, 'Missing': 8750, 'CV group 36.0': 7}.
PM10 hourly sources: {'AV-57': 17611, 'Missing': 8690, 'CV group 36.0': 3}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
VA — Big_Rock — AV-64 — Sensor 211973

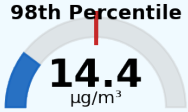
Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-64 | CV group: 35.0

PM2.5 Annual Mean



Reference: 9
Period: 2025
Complete

PM2.5 Annual 98th Percentile



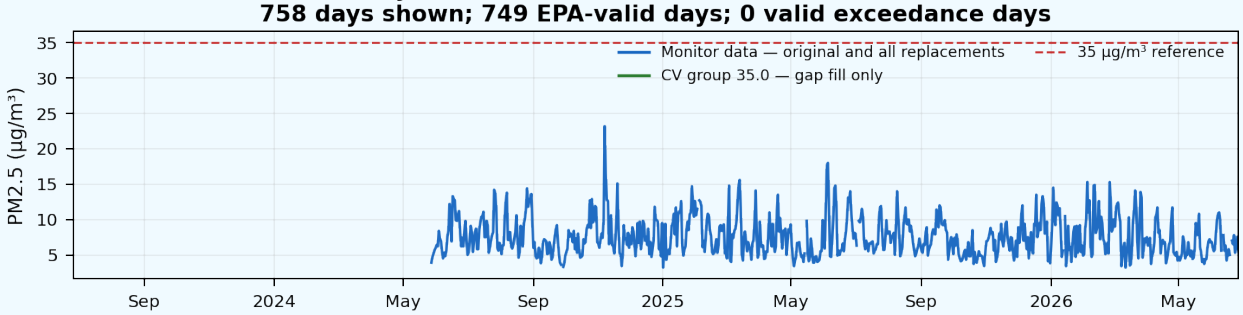
Reference: 35
Period: 2025
Complete

PM10 Expected Exceedances / Year

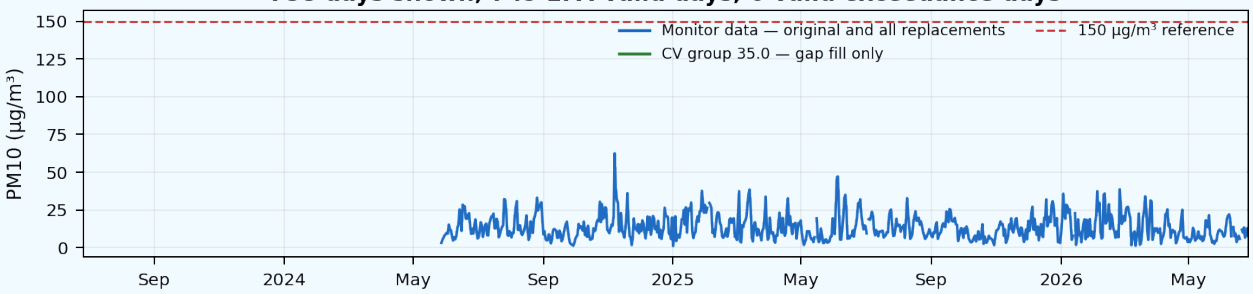


Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
758 days shown; 749 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
758 days shown; 749 EPA-valid days; 0 valid exceedance days



PM2.5: 749 valid days; 0 days above 35 µg/m³.
PM10: 749 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-64. Handoffs: AV-64 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-64': 17733, 'Missing': 8282, 'CV group 35.0': 289}.
PM10 hourly sources: {'AV-64': 17751, 'Missing': 8274, 'CV group 35.0': 279}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
VA — Big_Rock — AV-65 — Sensor 211937

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-65 | CV group: 35.0

PM2.5 Annual Mean

6.9
µg/m³
Reference: 9
Period: 2025
Complete

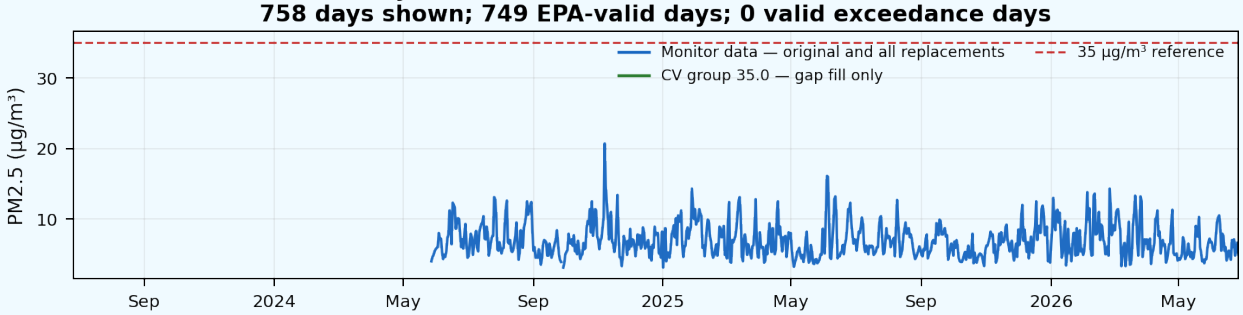
PM2.5 Annual 98th Percentile

12.7
µg/m³
Reference: 35
Period: 2025
Complete

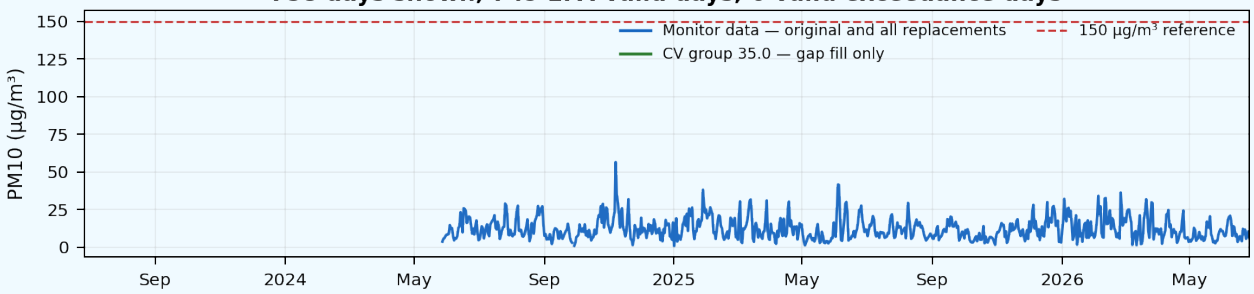
PM10 Expected Exceedances / Year

0.0
exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
758 days shown; 749 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
758 days shown; 749 EPA-valid days; 0 valid exceedance days



PM2.5: 749 valid days; 0 days above 35 µg/m³.
PM10: 749 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-65. Handoffs: AV-65 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-65': 18009, 'Missing': 8282, 'CV group 35.0': 13}.
PM10 hourly sources: {'AV-65': 18019, 'Missing': 8274, 'CV group 35.0': 11}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary VA — Buckingham — AV-34 — Sensor 183737

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-34 → AV-76 | CV group: 14.0

PM2.5 Annual Design Value

6.6 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

13.0 µg/m³

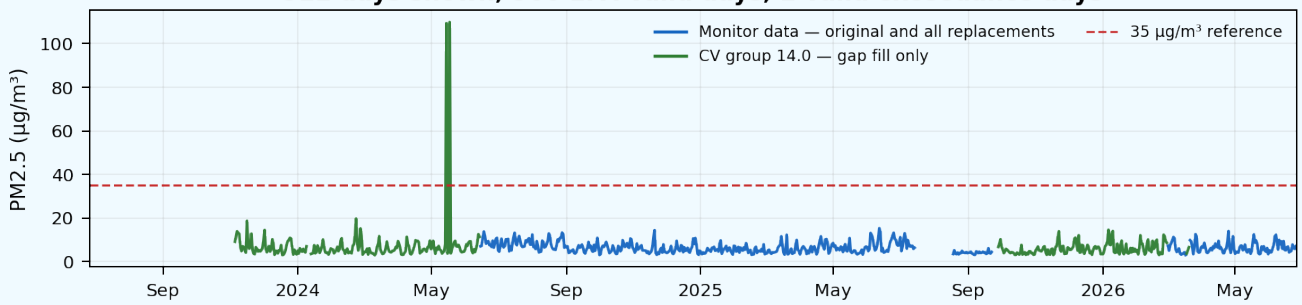
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

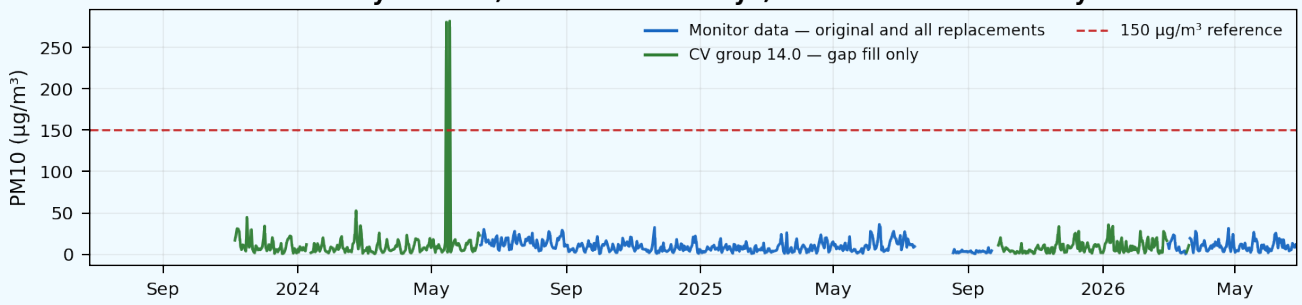
0.7 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
922 days shown; 900 EPA-valid days; 2 valid exceedance days



Daily PM10 Concentrations — All Available Data
922 days shown; 903 EPA-valid days; 2 valid exceedance days



PM2.5: 900 valid days; 2 days above 35 µg/m³.
PM10: 903 valid days; 2 days exceeding 150 µg/m³.
Replacement history: AV-34 → AV-76. Handoffs: AV-34 (grant start to handoff) -> AV-76 (from 2026-02-28). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-34': 10156, 'CV group 14.0': 8839, 'Missing': 4606, 'AV-76': 2703}.
PM10 hourly sources: {'AV-34': 10174, 'CV group 14.0': 8878, 'Missing': 4534, 'AV-76': 2718}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary VA — Buckingham — AV-39 — Sensor 184523

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-39 | CV group: 14.0

PM2.5 Annual Design Value



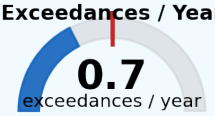
Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value



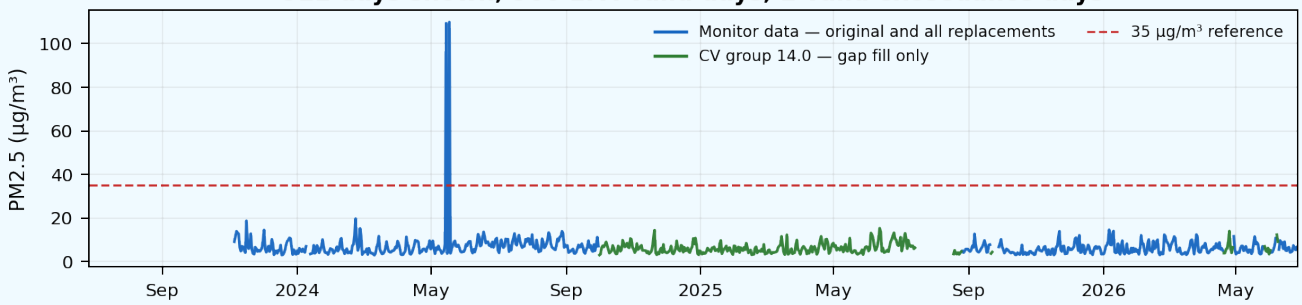
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

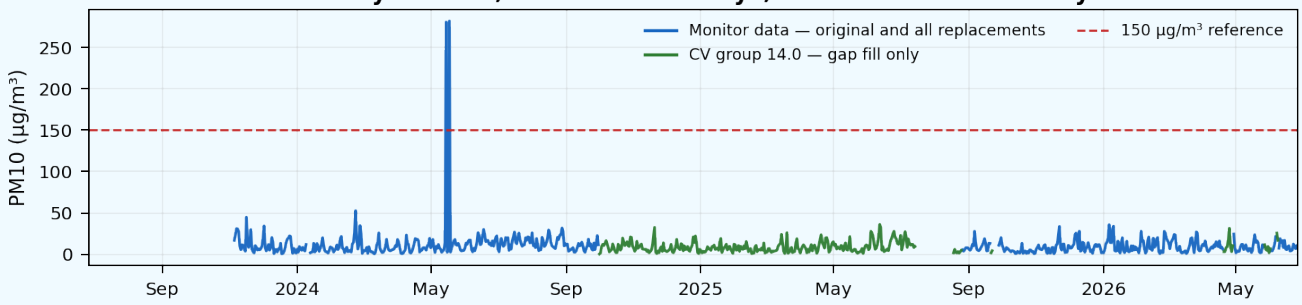


Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
922 days shown; 900 EPA-valid days; 2 valid exceedance days



Daily PM10 Concentrations — All Available Data
922 days shown; 903 EPA-valid days; 2 valid exceedance days



PM2.5: 900 valid days; 2 days above 35 µg/m³.
PM10: 903 valid days; 2 days exceeding 150 µg/m³.
Monitor source: AV-39. Handoffs: AV-39 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-39': 14313, 'CV group 14.0': 7385, 'Missing': 4606}.
PM10 hourly sources: {'AV-39': 14367, 'CV group 14.0': 7403, 'Missing': 4534}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
VA — Elliston — AV-04 — Sensor 183743

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-04 | CV group: 4.0

PM2.5 Annual Design Value

7.6 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

14.0 µg/m³

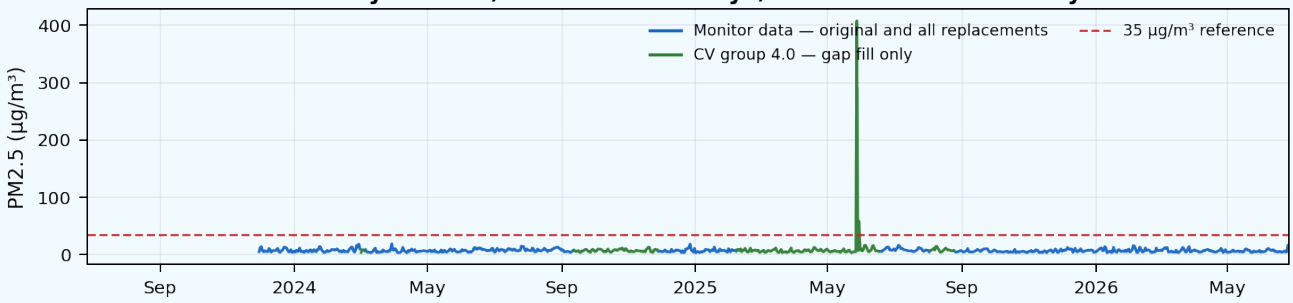
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

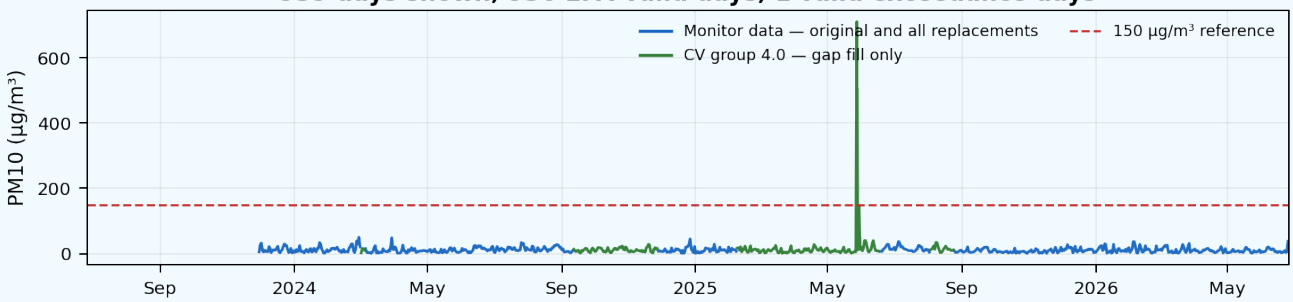
0.3 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
939 days shown; 934 EPA-valid days; 2 valid exceedance days



Daily PM10 Concentrations — All Available Data
939 days shown; 936 EPA-valid days; 1 valid exceedance days



PM2.5: 934 valid days; 2 days above 35 µg/m³.
PM10: 936 valid days; 1 days exceeding 150 µg/m³.
Monitor source: AV-04. Handoffs: AV-04 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-04': 16770, 'CV group 4.0': 5662, 'Missing': 3872}.
PM10 hourly sources: {'AV-04': 16838, 'CV group 4.0': 5631, 'Missing': 3835}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary VA — Lafayette — AV-05 — Sensor 183813

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-05 → AV-79 | CV group: 4.0

PM2.5 Annual Design Value

7.7 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

14.0 µg/m³

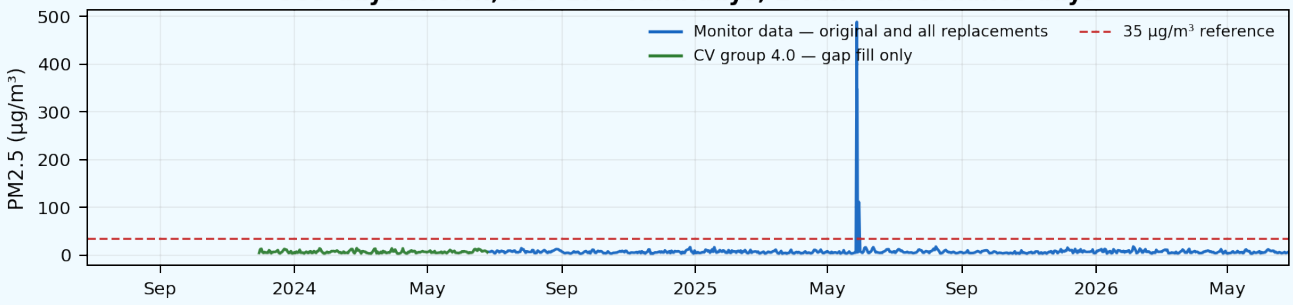
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

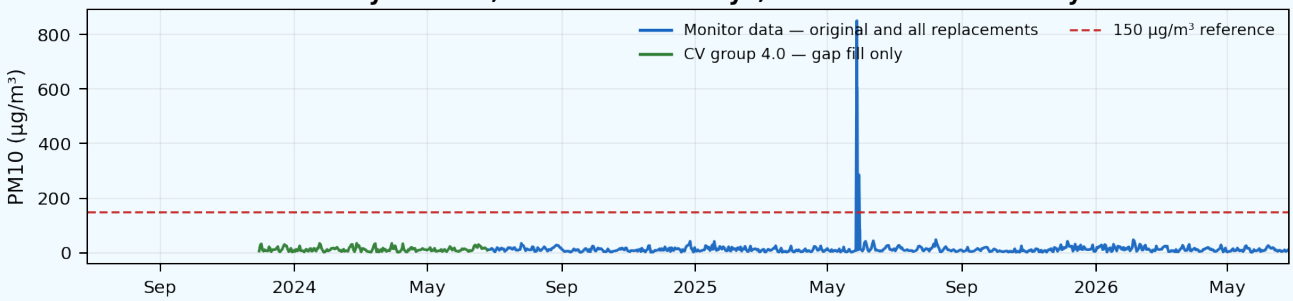
0.7 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
939 days shown; 934 EPA-valid days; 2 valid exceedance days



Daily PM10 Concentrations — All Available Data
939 days shown; 936 EPA-valid days; 2 valid exceedance days



PM2.5: 934 valid days; 2 days above 35 µg/m³.
PM10: 936 valid days; 2 days exceeding 150 µg/m³.
Replacement history: AV-05 → AV-79. Handoffs: AV-05 (grant start to handoff) -> AV-79 (from 2026-03-29). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-05': 15257, 'CV group 4.0': 5078, 'Missing': 3872, 'AV-79': 2097}.
PM10 hourly sources: {'AV-05': 15301, 'CV group 4.0': 5058, 'Missing': 3835, 'AV-79': 2110}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
VA — Chatham — AV-35 — Sensor 184519

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-35 | CV group: 13.0

PM2.5 Annual Design Value

6.9 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

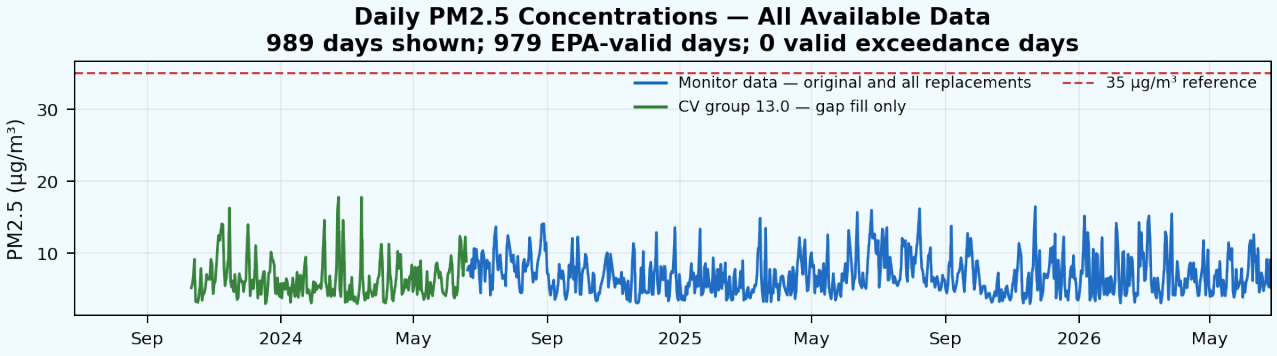
14.0 µg/m³

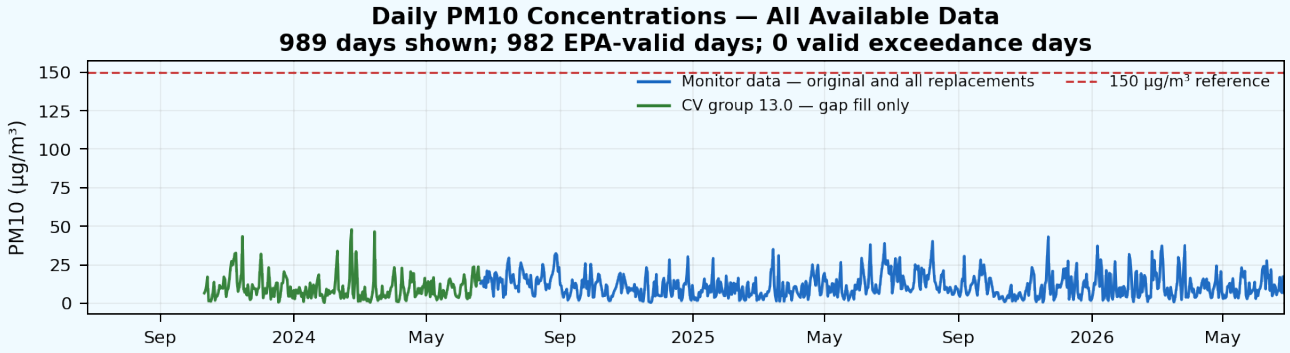
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening





PM2.5: 979 valid days; 0 days above 35 µg/m³.
PM10: 982 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-35. Handoffs: AV-35 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-35': 17513, 'CV group 13.0': 5962, 'Missing': 2829}.
PM10 hourly sources: {'AV-35': 17556, 'CV group 13.0': 6018, 'Missing': 2730}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary VA — Big_Stone_Gap — AV-16 — Sensor 183749

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-16 | CV group: 88.0

PM2.5 Annual Design Value

6.8 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

13.0 µg/m³

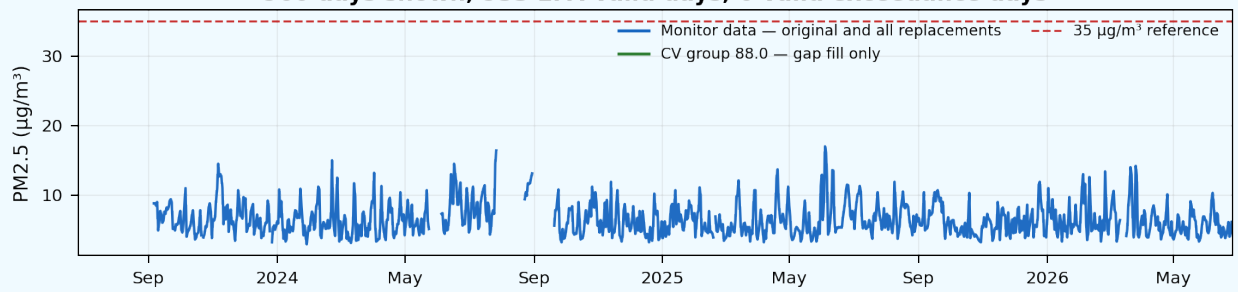
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

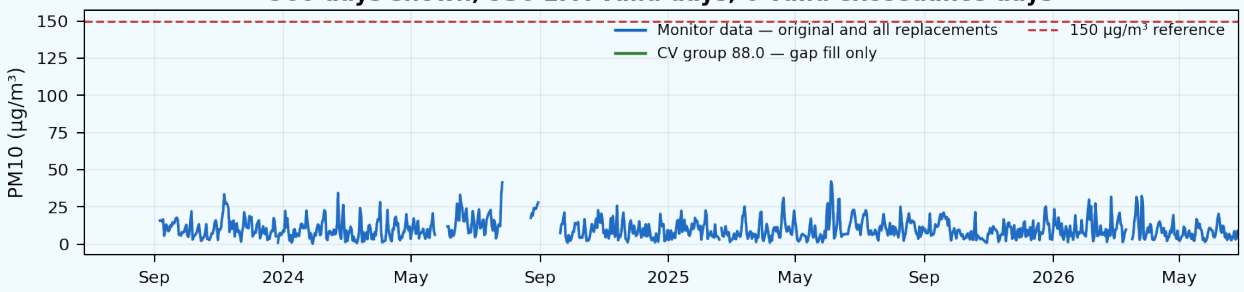
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
960 days shown; 933 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
960 days shown; 936 EPA-valid days; 0 valid exceedance days



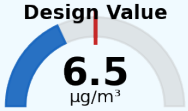
PM2.5: 933 valid days; 0 days above 35 µg/m³.
PM10: 936 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-16. Handoffs: AV-16 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-16': 22492, 'Missing': 3767, 'CV group 88.0': 45}.
PM10 hourly sources: {'AV-16': 22512, 'Missing': 3729, 'CV group 88.0': 63}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
VA — Stephens — AV-25 — Sensor 184559

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-18 → AV-25 | CV group: 8.0

PM2.5 Annual Design Value



Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value



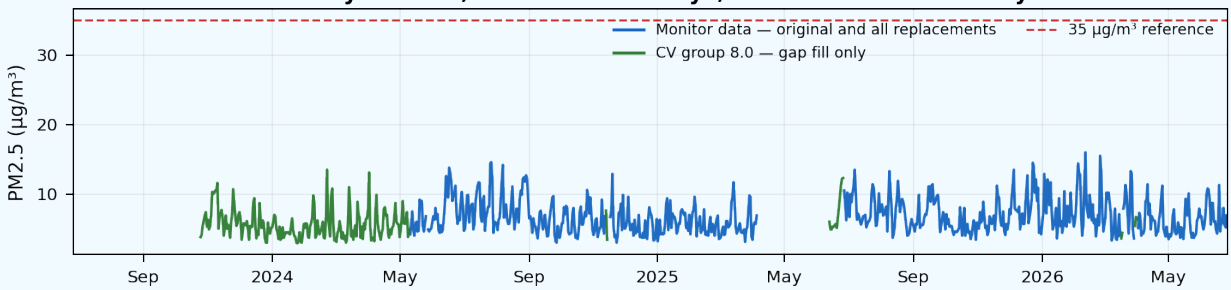
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

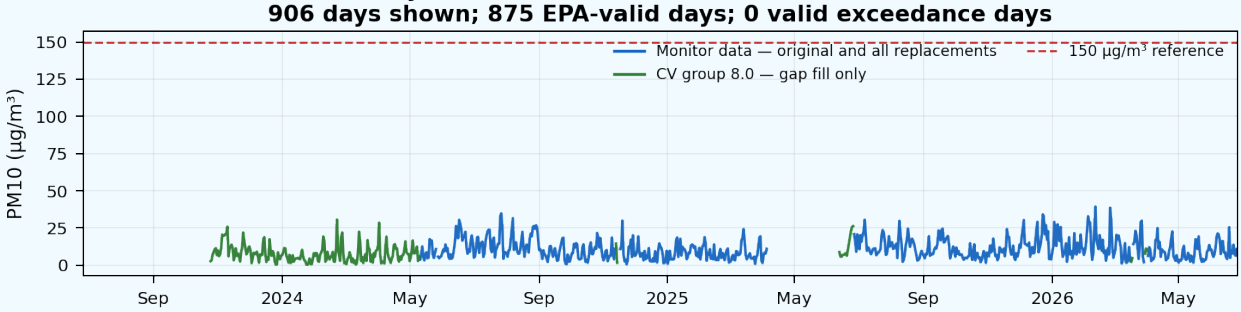


Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
906 days shown; 872 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
906 days shown; 875 EPA-valid days; 0 valid exceedance days



PM2.5: 872 valid days; 0 days above 35 µg/m³.
PM10: 875 valid days; 0 days exceeding 150 µg/m³.
Replacement history: AV-18 → AV-25. Handoffs: AV-18 (grant start to handoff) -> AV-25 (from 2024-05-10). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-25': 16133, 'Missing': 5140, 'CV group 8.0': 5031}.
PM10
hourly sources: {'AV-25': 16157, 'Missing': 5085, 'CV group 8.0': 5062}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

WEST VIRGINIA

USACAMP Particulate Matter Summary WV — Institute — AV-24 — Sensor 184513

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-24 | CV group: 111.0

PM2.5 Annual Design Value

8.0 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

16.0 µg/m³

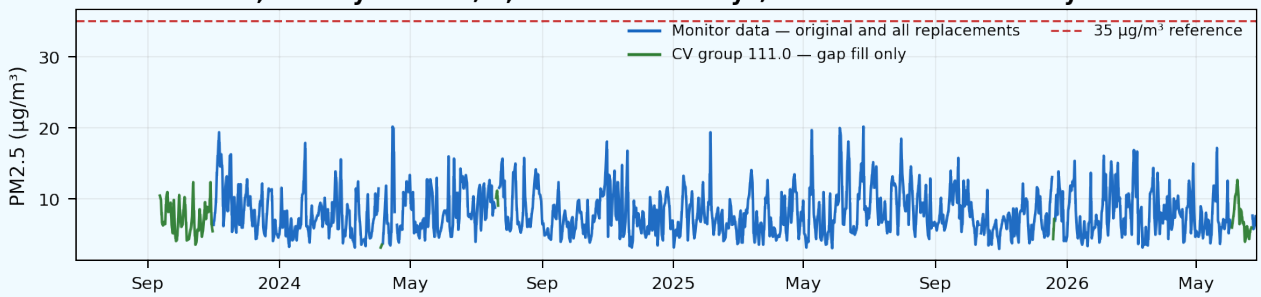
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

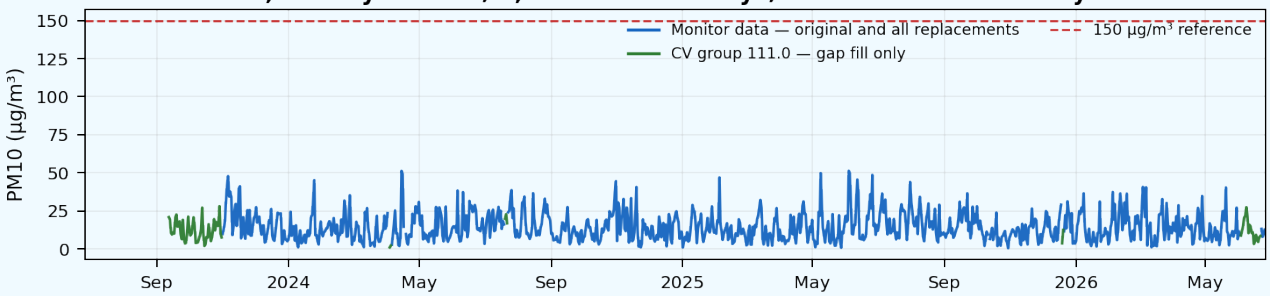
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,017 days shown; 1,013 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,017 days shown; 1,014 EPA-valid days; 0 valid exceedance days



PM2.5: 1,013 valid days; 0 days above 35 µg/m³.
PM10: 1,014 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-24. Handoffs: AV-24 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-24': 22421, 'Missing': 1987, 'CV group 111.0': 1896}.
PM10 hourly sources: {'AV-24': 22444, 'Missing': 1949, 'CV group 111.0': 1911}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Institute — AV-32 — Sensor 184561

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-32 → AV-74 | CV group: 111.0

PM2.5 Annual Design Value

7.5 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

15.0 µg/m³

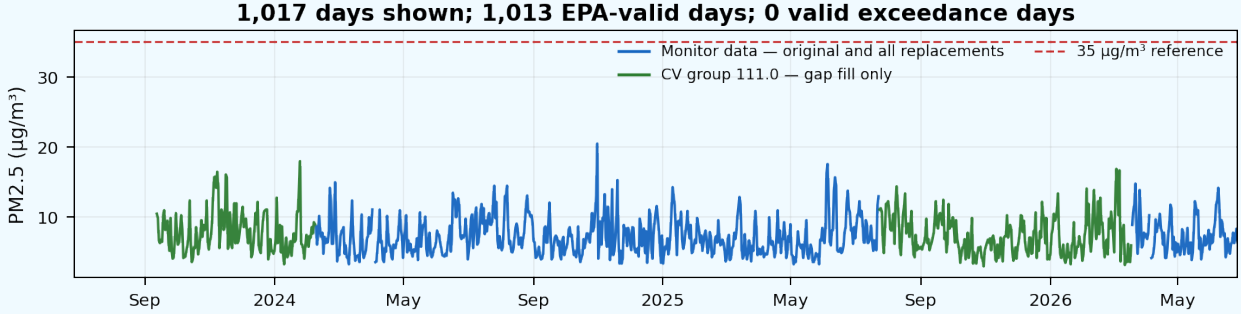
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

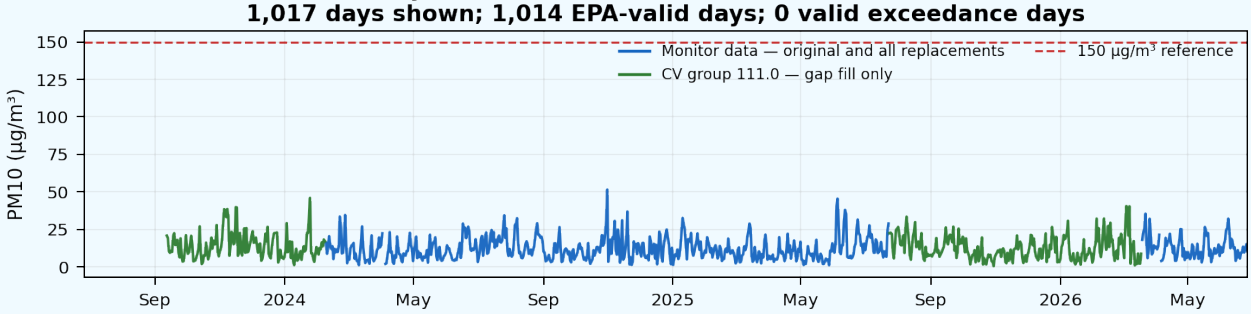
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,017 days shown; 1,013 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,017 days shown; 1,014 EPA-valid days; 0 valid exceedance days



PM2.5: 1,013 valid days; 0 days above 35 µg/m³.
PM10: 1,014 valid days; 0 days exceeding 150 µg/m³.
Replacement history: AV-32 → AV-74. Handoffs: AV-32 (grant start to handoff) -> AV-74 (from 2026-03-18). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-32': 12635, 'CV group 111.0': 9315, 'AV-74': 2367, 'Missing': 1987}.
PM10 hourly sources: {'AV-32': 12642, 'CV group 111.0': 9345, 'AV-74': 2368, 'Missing': 1949}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary WV — Institute — AV-36 — Sensor 184515

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-36 | CV group: 111.0

PM2.5 Annual Design Value

7.8 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

15.0 µg/m³

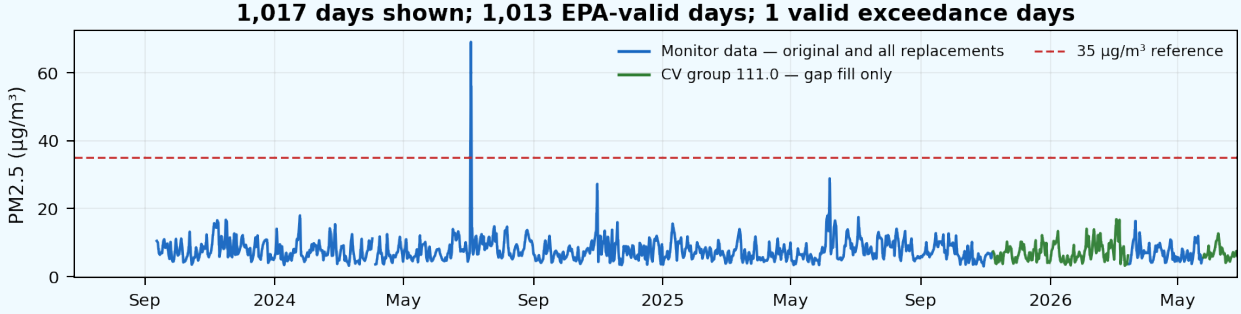
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

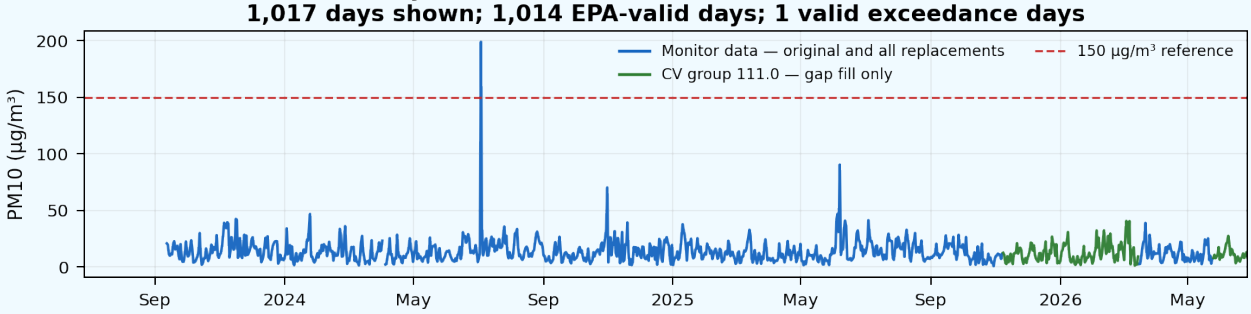
0.3 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,017 days shown; 1,013 EPA-valid days; 1 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,017 days shown; 1,014 EPA-valid days; 1 valid exceedance days



PM2.5: 1,013 valid days; 1 days above 35 µg/m³.
PM10: 1,014 valid days; 1 days exceeding 150 µg/m³.
Monitor source: AV-36. Handoffs: AV-36 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-36': 20417, 'CV group 111.0': 3900, 'Missing': 1987}.
PM10 hourly sources: {'AV-36': 20454, 'CV group 111.0': 3901, 'Missing': 1949}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Institute — AV-38 — Sensor 183793

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-38 | CV group: 111.0

PM2.5 Annual Design Value

7.2 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

14.0 µg/m³

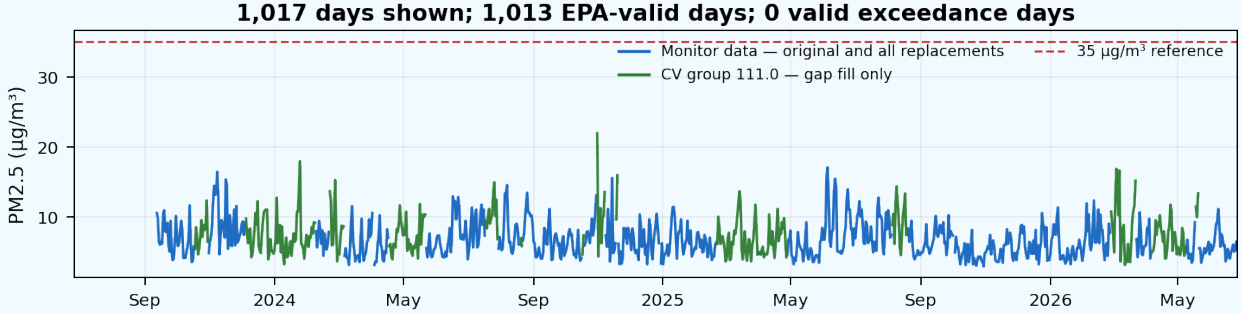
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

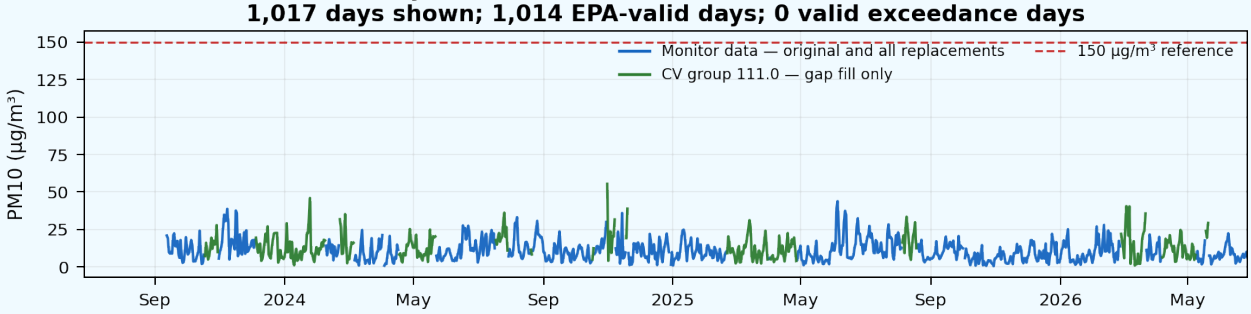
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,017 days shown; 1,013 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,017 days shown; 1,014 EPA-valid days; 0 valid exceedance days



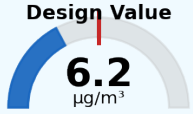
PM2.5: 1,013 valid days; 0 days above 35 µg/m³.
PM10: 1,014 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-38. Handoffs: AV-38 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-38': 17310, 'CV group 111.0': 7007, 'Missing': 1987}.
PM10 hourly sources: {'AV-38': 17333, 'CV group 111.0': 7022, 'Missing': 1949}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Gary — AV-42 — Sensor 198997

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-42 | CV group: 15.0

PM2.5 Annual Design Value



Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value



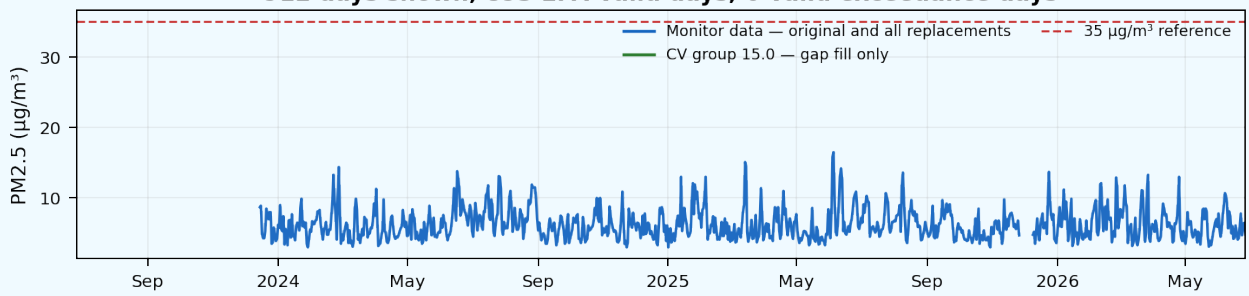
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

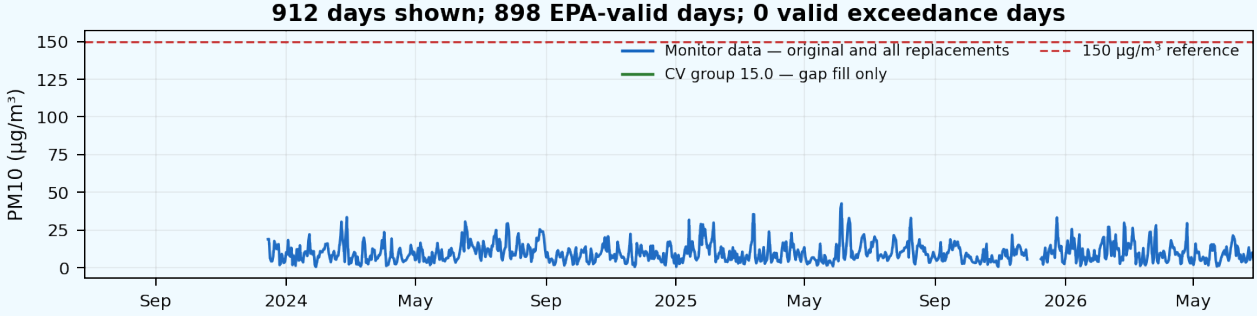


Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
912 days shown; 893 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
912 days shown; 898 EPA-valid days; 0 valid exceedance days



PM2.5: 893 valid days; 0 days above 35 µg/m³.
PM10: 898 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-42. Handoffs: AV-42 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-42': 21561, 'Missing': 4743}.
PM10 hourly sources: {'AV-42': 21651, 'Missing': 4653}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Eunice — AV-43 — Sensor 198477

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-43 | CV group: 5.0

PM2.5 Annual Design Value

7.6 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

16.0 µg/m³

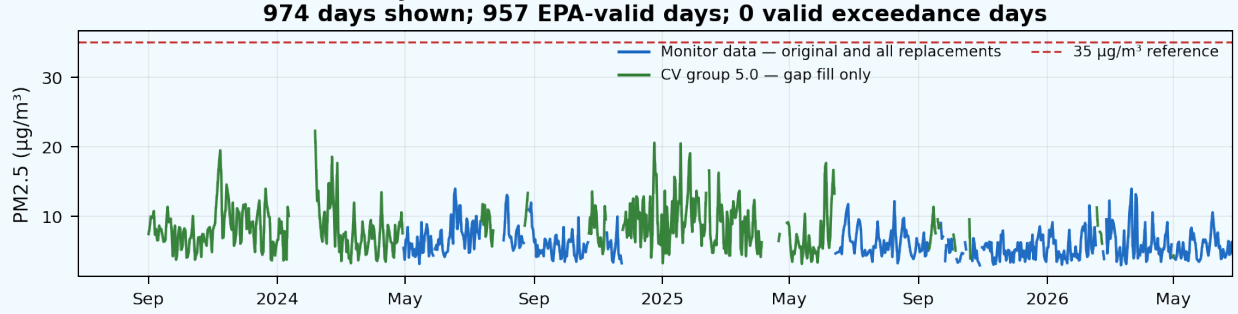
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

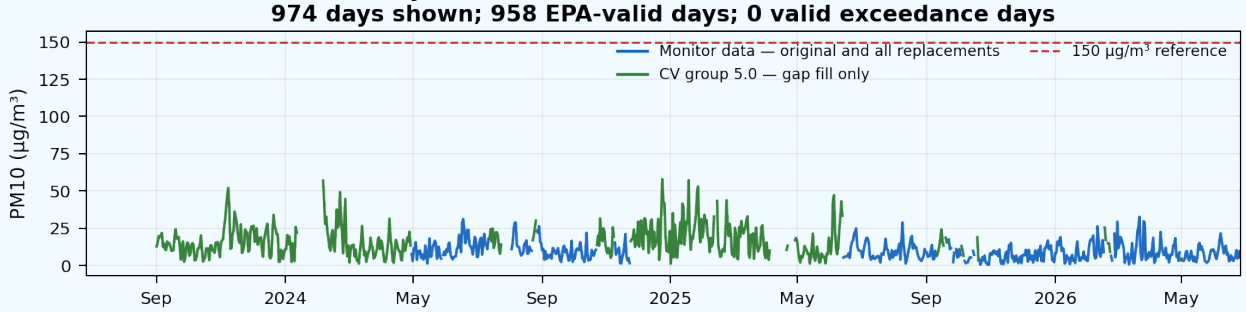
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
974 days shown; 957 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
974 days shown; 958 EPA-valid days; 0 valid exceedance days



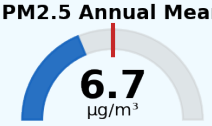
PM2.5: 957 valid days; 0 days above 35 µg/m³.
PM10: 958 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-43. Handoffs: AV-43 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-43': 11759, 'CV group 5.0': 11275, 'Missing': 3270}.
PM10 hourly sources: {'AV-43': 11843, 'CV group 5.0': 11220, 'Missing': 3241}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Welch — AV-44 — Sensor 199027

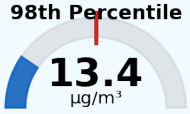
Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-44 | CV group: 99.0

PM2.5 Annual Mean



Reference: 9
Period: 2025
Incomplete / screening

PM2.5 Annual 98th Percentile



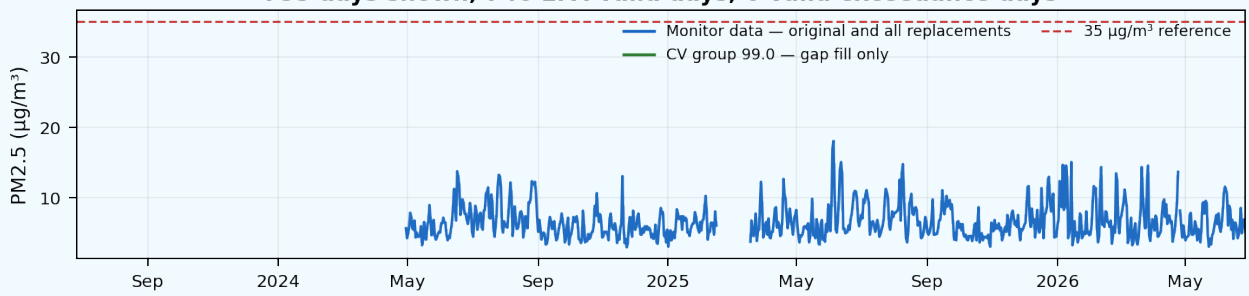
Reference: 35
Period: 2025
Incomplete / screening

PM10 Expected Exceedances / Year

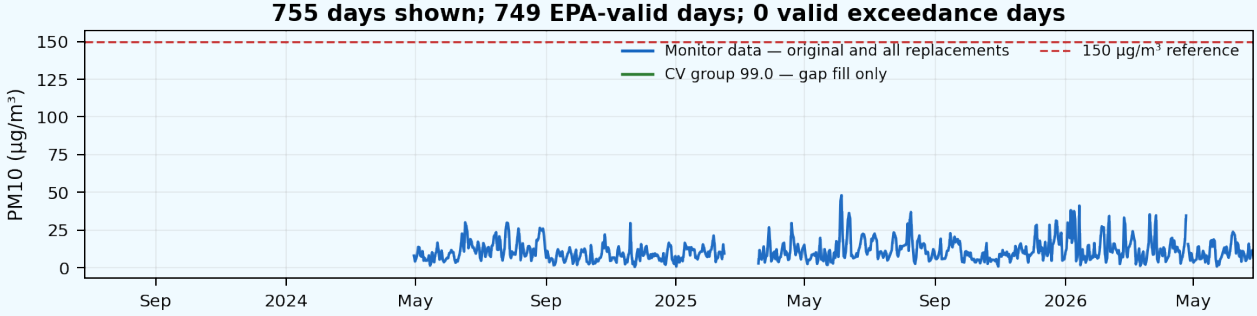


Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
755 days shown; 746 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
755 days shown; 749 EPA-valid days; 0 valid exceedance days



PM2.5: 746 valid days; 0 days above 35 µg/m³.
PM10: 749 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-44. Handoffs: AV-44 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-44': 17925, 'Missing': 8379}.
PM10 hourly sources: {'AV-44': 17994, 'Missing': 8310}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Naoma — AV-08 — Sensor 183769

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-08 | CV group: 5.0

PM2.5 Annual Design Value

8.3 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

17.0 µg/m³

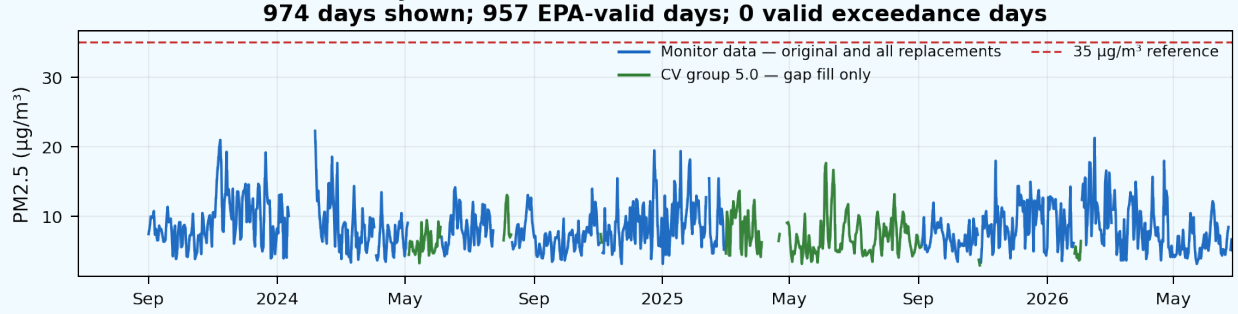
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

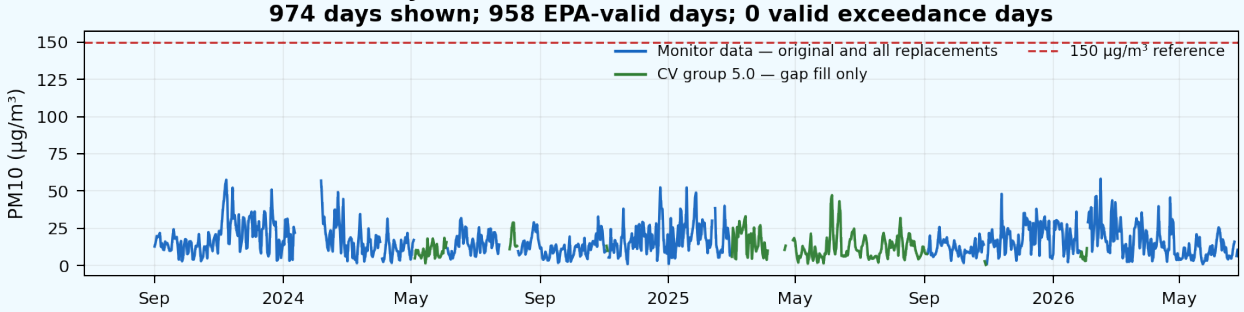
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
974 days shown; 957 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
974 days shown; 958 EPA-valid days; 0 valid exceedance days



PM2.5: 957 valid days; 0 days above 35 µg/m³.
PM10: 958 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-08. Handoffs: AV-08 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-08': 17943, 'CV group 5.0': 5091, 'Missing': 3270}.
PM10 hourly sources: {'AV-08': 17966, 'CV group 5.0': 5097, 'Missing': 3241}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Naoma — AV-54 — Sensor 199037

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-54 | CV group: 5.0

PM2.5 Annual Design Value



8.1 µg/m³
Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value



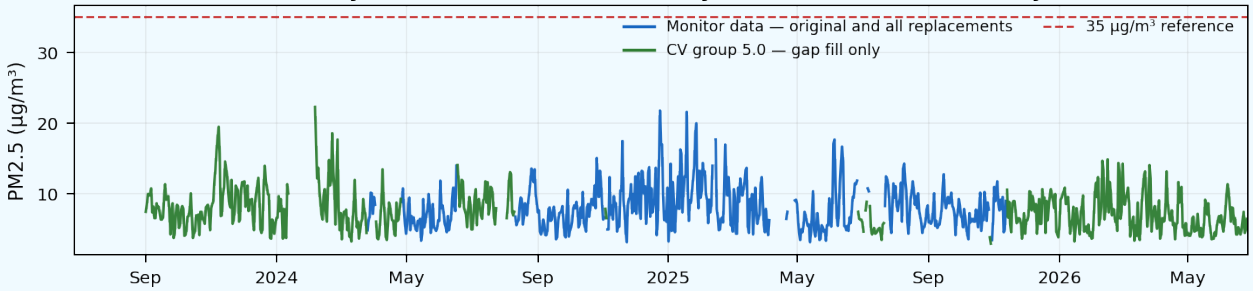
16.0 µg/m³
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

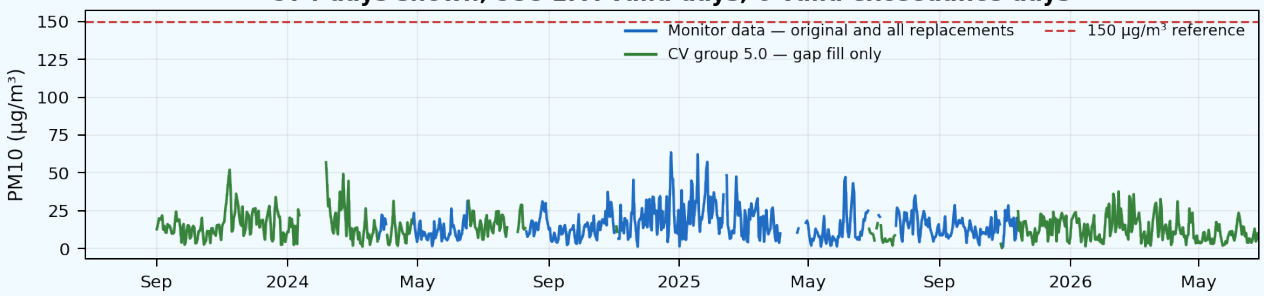


0.0 exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
974 days shown; 957 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
974 days shown; 958 EPA-valid days; 0 valid exceedance days



PM2.5: 957 valid days; 0 days above 35 µg/m³.
PM10: 958 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-54. Handoffs: AV-54 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'CV group 5.0': 11989, 'AV-54': 11045, 'Missing': 3270}.
PM10 hourly sources: {'CV group 5.0': 12005, 'AV-54': 11058, 'Missing': 3241}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Beckley — AV-61 — Sensor 212029

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-61 | CV group: 43.0

PM2.5 Annual Mean

6.8 µg/m³

Reference: 9
Period: 2025
Complete

PM2.5 Annual 98th Percentile

13.8 µg/m³

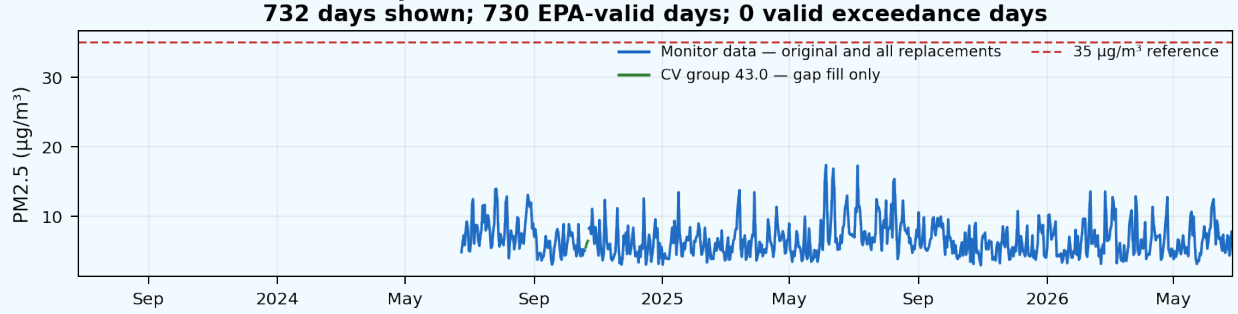
Reference: 35
Period: 2025
Complete

PM10 Expected Exceedances / Year

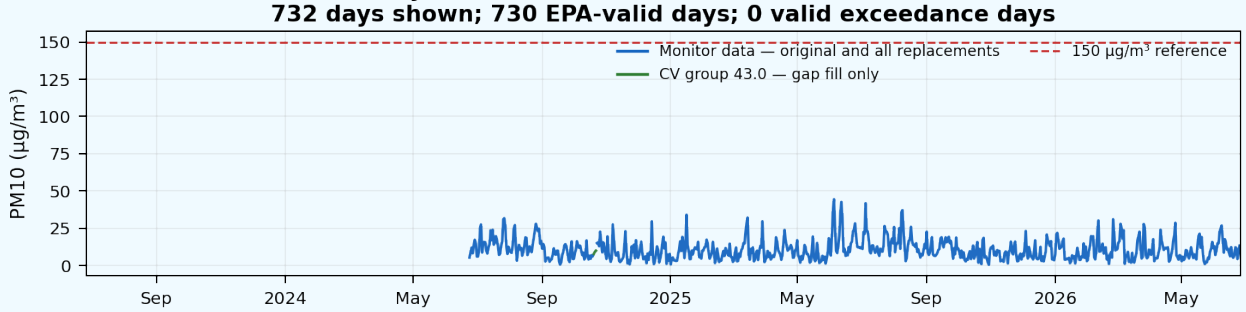
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
732 days shown; 730 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
732 days shown; 730 EPA-valid days; 0 valid exceedance days



PM2.5: 730 valid days; 0 days above 35 µg/m³.
PM10: 730 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-61. Handoffs: AV-61 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-61': 17373, 'Missing': 8799, 'CV group 43.0': 132}.
PM10 hourly sources: {'AV-61': 17410, 'Missing': 8776, 'CV group 43.0': 118}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Beckley — AV-69 — Sensor 211969

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-69 | CV group: 43.0

PM2.5 Annual Mean

6.6 µg/m³

Reference: 9
Period: 2025
Complete

PM2.5 Annual 98th Percentile

13.5 µg/m³

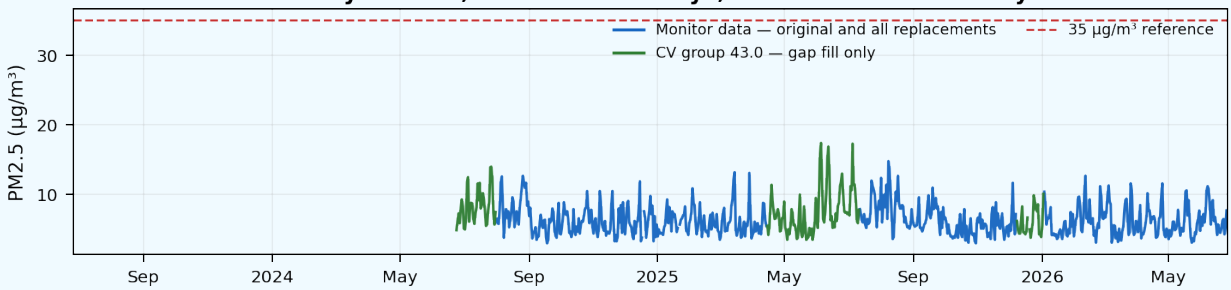
Reference: 35
Period: 2025
Complete

PM10 Expected Exceedances / Year

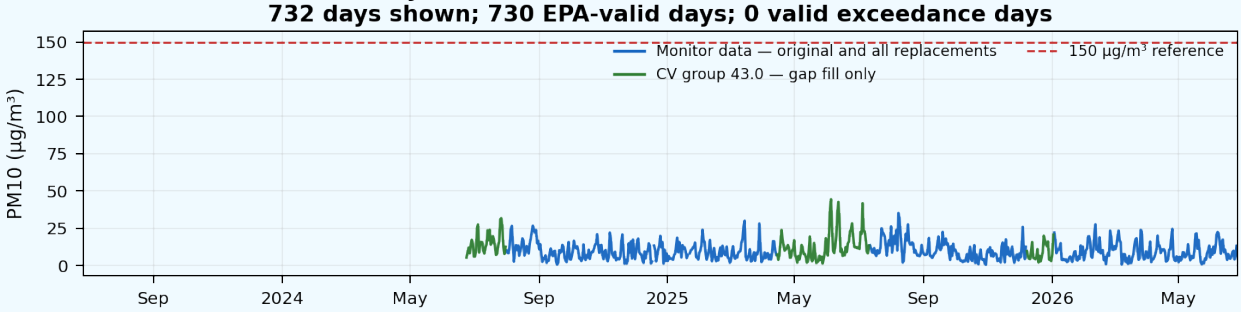
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
732 days shown; 730 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
732 days shown; 730 EPA-valid days; 0 valid exceedance days



PM2.5: 730 valid days; 0 days above 35 µg/m³.
PM10: 730 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-69. Handoffs: AV-69 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-69': 13999, 'Missing': 8799, 'CV group 43.0': 3506}.
PM10 hourly sources: {'AV-69': 14035, 'Missing': 8776, 'CV group 43.0': 3493}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

Appendix D

Monitors Removed from the Network or with Incomplete Data Records

KENTUCKY

USACAMP Particulate Matter Summary
KY — Benham — AV-51 — Sensor 198479

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-51 | CV group: 38.0

PM2.5 Annual Mean

41.0
µg/m³
Reference: 9
Period: 2025
Incomplete / screening

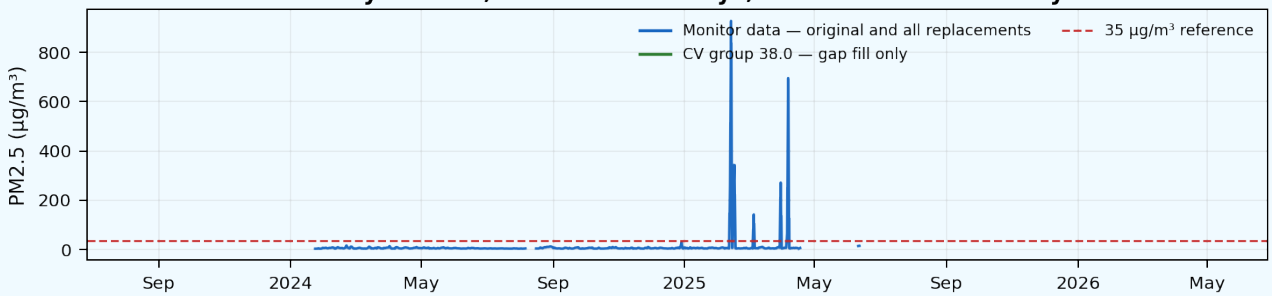
PM2.5 Annual 98th Percentile

343.2
µg/m³
Reference: 35
Period: 2025
Incomplete / screening

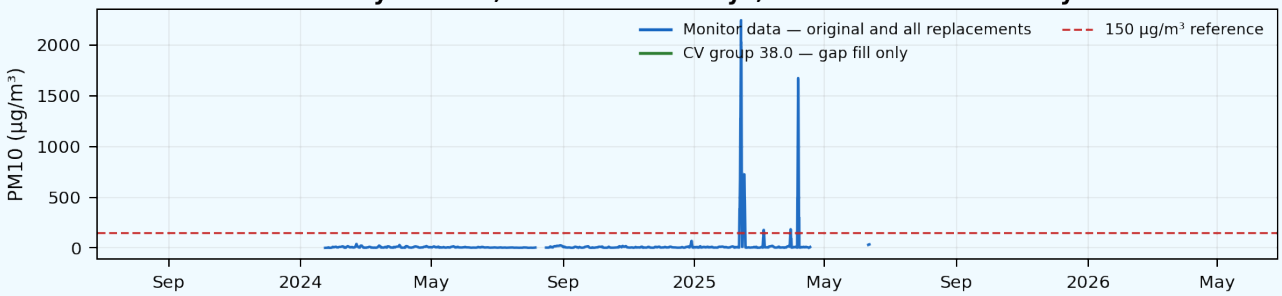
PM10 Expected Exceedances / Year

3.9
exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
442 days shown; 430 EPA-valid days; 8 valid exceedance days



Daily PM10 Concentrations — All Available Data
442 days shown; 432 EPA-valid days; 7 valid exceedance days



PM2.5: 430 valid days; 8 days above 35 µg/m³.
PM10: 432 valid days; 7 days exceeding 150 µg/m³.
Monitor source: AV-51. Handoffs: AV-51 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 15905, 'AV-51': 10399}.
PM10 hourly sources: {'Missing': 15883, 'AV-51': 10421}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
KY — Covington — AV-13 — Sensor 183777

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-13 → AV-75 | CV group: 7.0

PM2.5 Annual Design Value

8.2 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

15.0 µg/m³

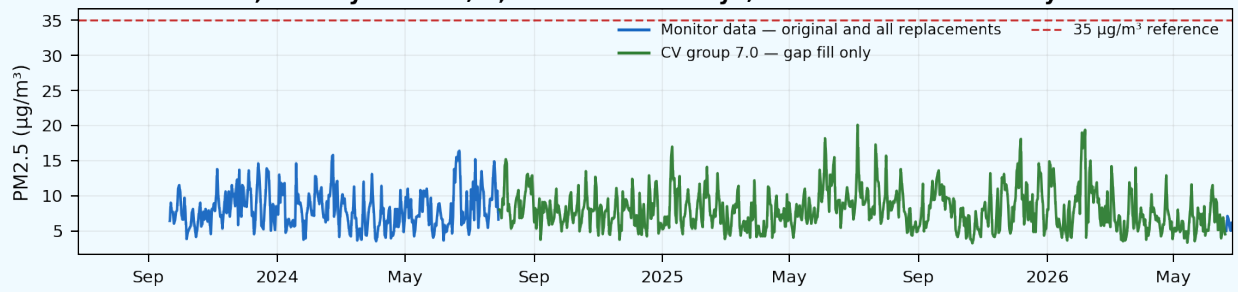
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

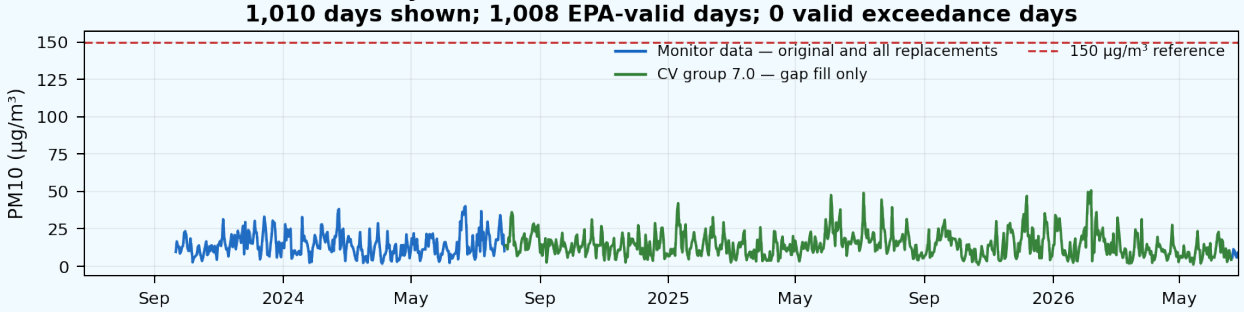
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,010 days shown; 1,008 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,010 days shown; 1,008 EPA-valid days; 0 valid exceedance days



PM2.5: 1,008 valid days; 0 days above 35 µg/m³.
PM10: 1,008 valid days; 0 days exceeding 150 µg/m³.
Replacement history: AV-13 → AV-75. Handoffs: AV-13 (grant start to handoff) -> AV-75 (from 2026-06-19). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'CV group 7.0': 16546, 'AV-13': 7491, 'Missing': 2120, 'AV-75': 147}.
PM10 hourly sources: {'CV group 7.0': 16544, 'AV-13': 7496, 'Missing': 2117, 'AV-75': 147}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
KY — Covington — AV-75 — Sensor 301663

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-13 → AV-75 | CV group: 7.0

PM2.5 Annual Design Value

8.2 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

15.0 µg/m³

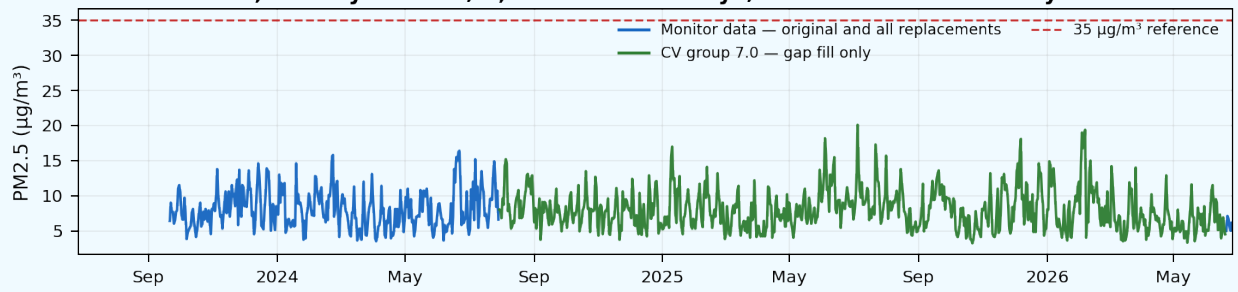
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

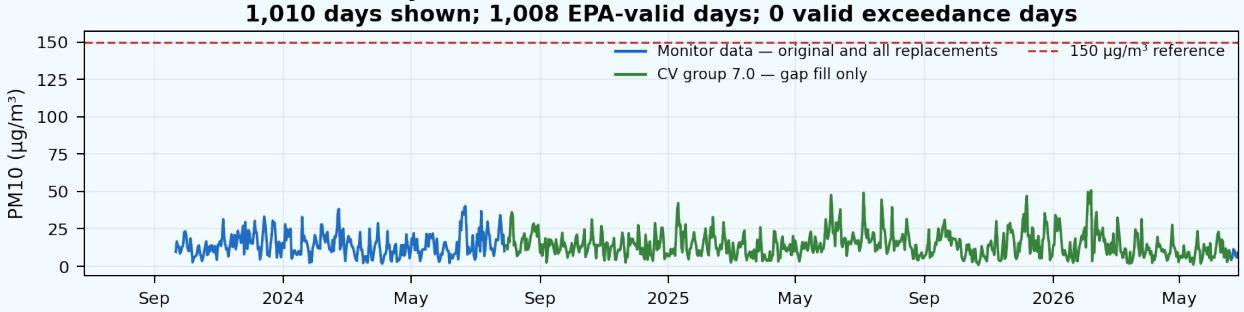
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
1,010 days shown; 1,008 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
1,010 days shown; 1,008 EPA-valid days; 0 valid exceedance days



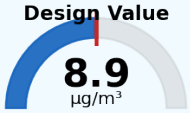
PM2.5: 1,008 valid days; 0 days above 35 µg/m³.
PM10: 1,008 valid days; 0 days exceeding 150 µg/m³.
Replacement history: AV-13 → AV-75. Handoffs: AV-13 (grant start to handoff) -> AV-75 (from 2026-06-19). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'CV group 7.0': 16546, 'AV-13': 7491, 'Missing': 2120, 'AV-75': 147}.
PM10 hourly sources: {'CV group 7.0': 16544, 'AV-13': 7496, 'Missing': 2117, 'AV-75': 147}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
KY — Deane — AV-27 — Sensor 184537

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-27 | CV group: 32.0

PM2.5 Annual Design Value



Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value



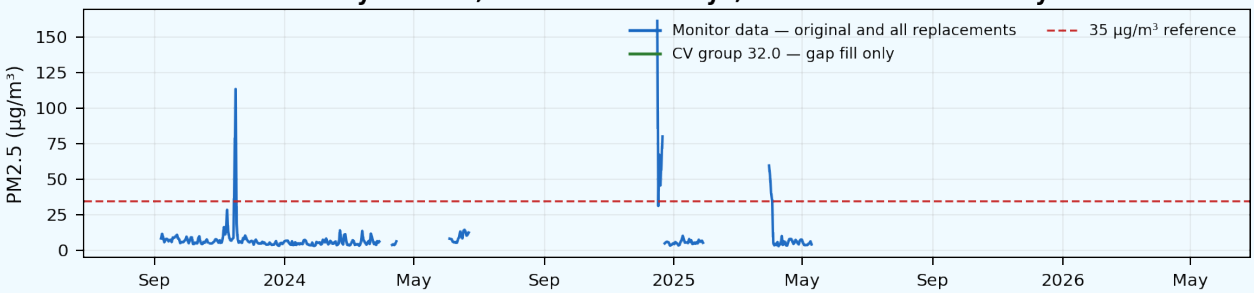
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

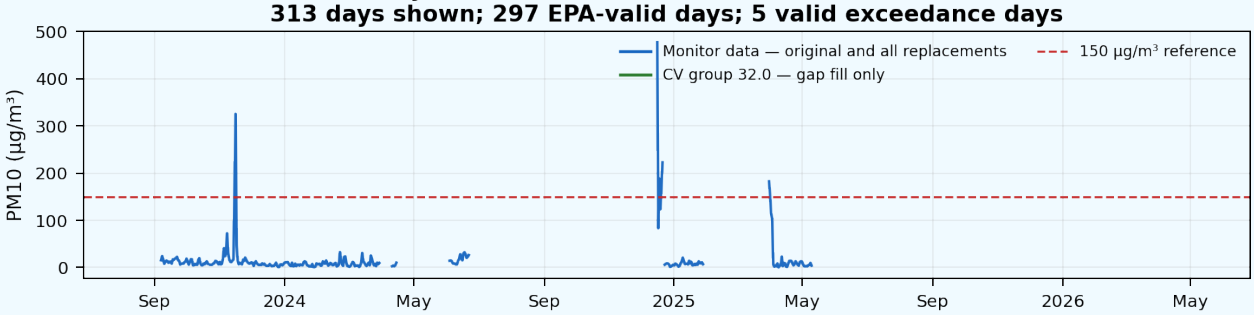


Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
313 days shown; 295 EPA-valid days; 8 valid exceedance days



Daily PM10 Concentrations — All Available Data
313 days shown; 297 EPA-valid days; 5 valid exceedance days



PM2.5: 295 valid days; 8 days above 35 µg/m³.
PM10: 297 valid days; 5 days exceeding 150 µg/m³.
Monitor source: AV-27. Handoffs: AV-27 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 19126, 'AV-27': 7178}.
PM10 hourly sources: {'Missing': 19104, 'AV-27': 7200}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
KY — Kite — AV-70 — Sensor 211965

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-70 | CV group: 39.0

PM2.5 Annual Mean

7.0
µg/m³
Reference: 9
Period: 2025
Incomplete / screening

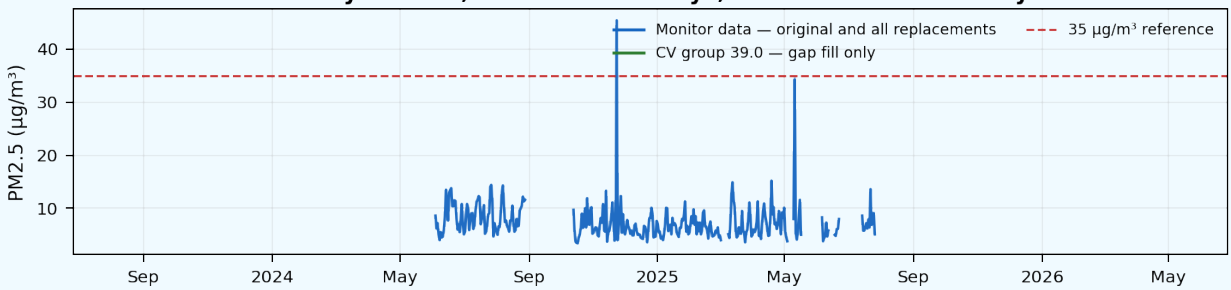
PM2.5 Annual 98th Percentile

13.6
µg/m³
Reference: 35
Period: 2025
Incomplete / screening

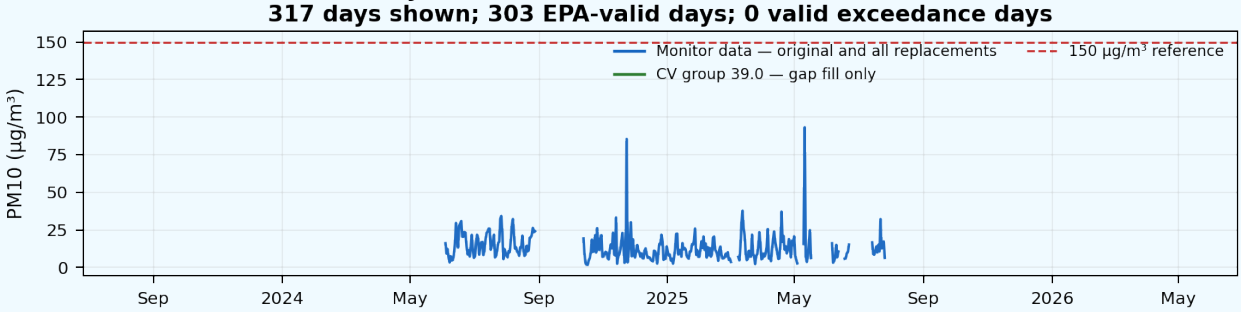
PM10 Expected Exceedances / Year

0.0
exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
317 days shown; 303 EPA-valid days; 1 valid exceedance days



Daily PM10 Concentrations — All Available Data
317 days shown; 303 EPA-valid days; 0 valid exceedance days



PM2.5: 303 valid days; 1 days above 35 µg/m³.
PM10: 303 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-70. Handoffs: AV-70 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 18981, 'AV-70': 7323}.
PM10 hourly sources: {'Missing': 18979, 'AV-70': 7325}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

PENNSYLVANIA

USACAMP Particulate Matter Summary
PA — --- — AV-11 — Sensor 183781

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-11 | CV group: 6.0

PM2.5 Annual Design Value

6.5 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

13.0 µg/m³

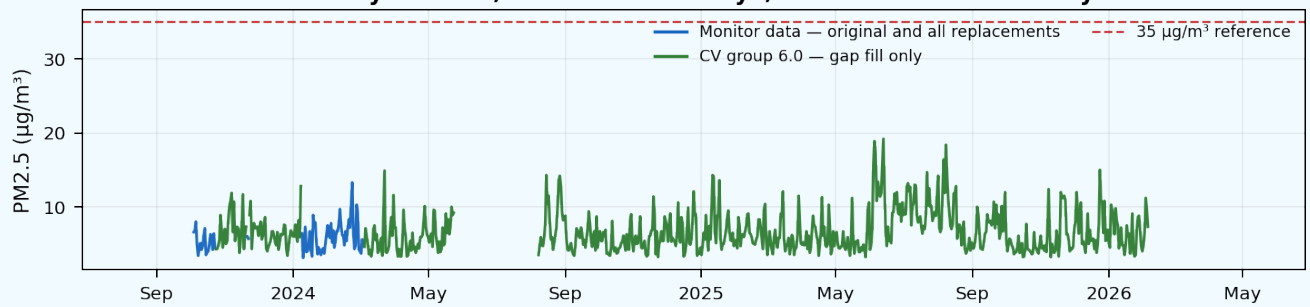
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

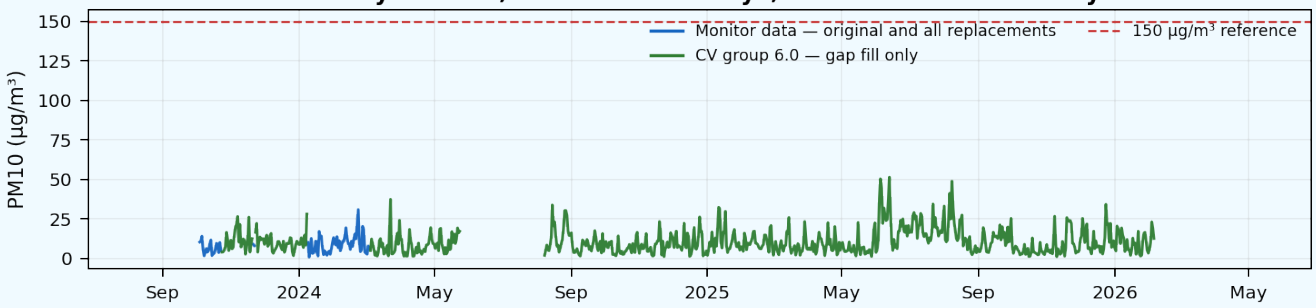
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
782 days shown; 770 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
782 days shown; 771 EPA-valid days; 0 valid exceedance days



PM2.5: 770 valid days; 0 days above 35 µg/m³.
PM10: 771 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-11. Handoffs: AV-11 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'CV group 6.0': 16687, 'Missing': 7797, 'AV-11': 1820}.
PM10 hourly sources: {'CV group 6.0': 16704, 'Missing': 7778, 'AV-11': 1822}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

TENNESSEE

USACAMP Particulate Matter Summary
TN — Eagan — AV-33 — Sensor 184553

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-33 | CV group: 68.0

PM2.5 Annual Mean

N/A
µg/m³
Reference: 9
Period: 2025
Incomplete / screening

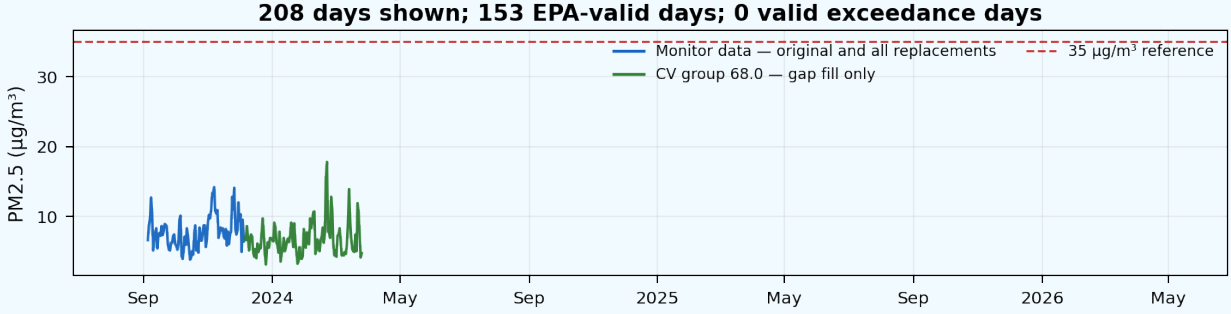
PM2.5 Annual 98th Percentile

N/A
µg/m³
Reference: 35
Period: 2025
Incomplete / screening

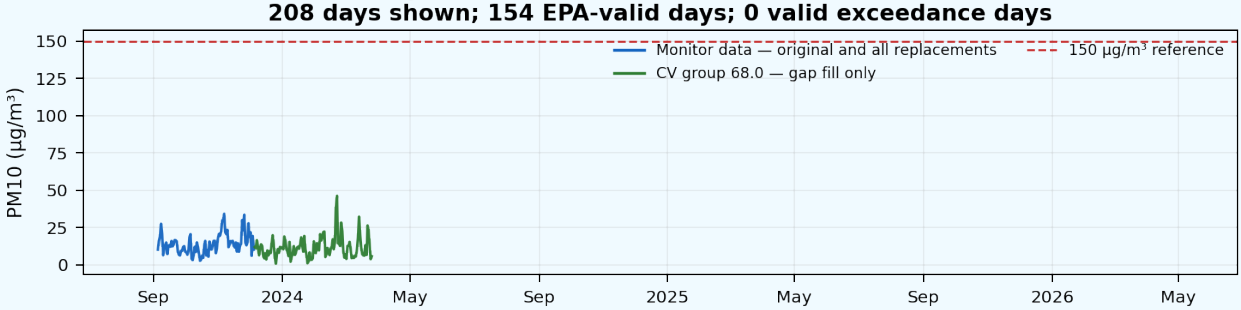
PM10 Expected Exceedances / Year

0.0
exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
208 days shown; 153 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
208 days shown; 154 EPA-valid days; 0 valid exceedance days



PM2.5: 153 valid days; 0 days above 35 µg/m³.
PM10: 154 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-33. Handoffs: AV-33 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 21915, 'CV group 68.0': 2861, 'AV-33': 1528}.
PM10 hourly sources: {'Missing': 21905, 'CV group 68.0': 2871, 'AV-33': 1528}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
TN — Hartford — AV-45 — Sensor 198977

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-45 | CV group: 3.0

PM2.5 Annual Mean

6.4 µg/m³

Reference: 9
Period: 2025
Incomplete / screening

PM2.5 Annual 98th Percentile

13.2 µg/m³

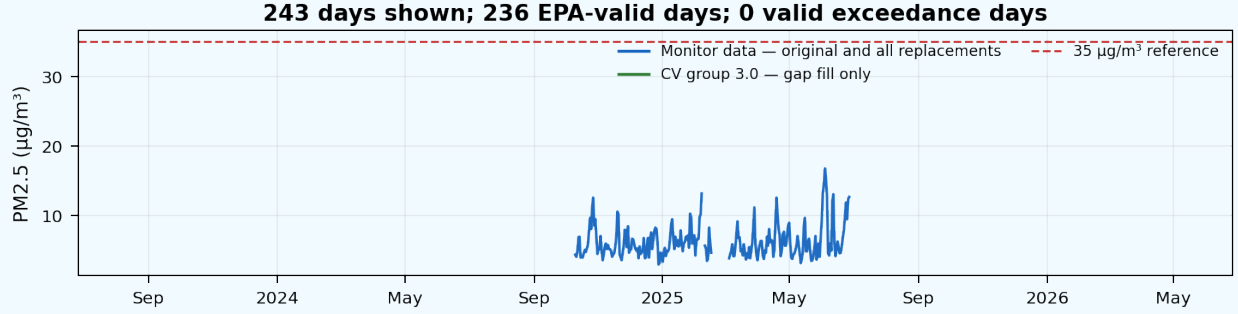
Reference: 35
Period: 2025
Incomplete / screening

PM10 Expected Exceedances / Year

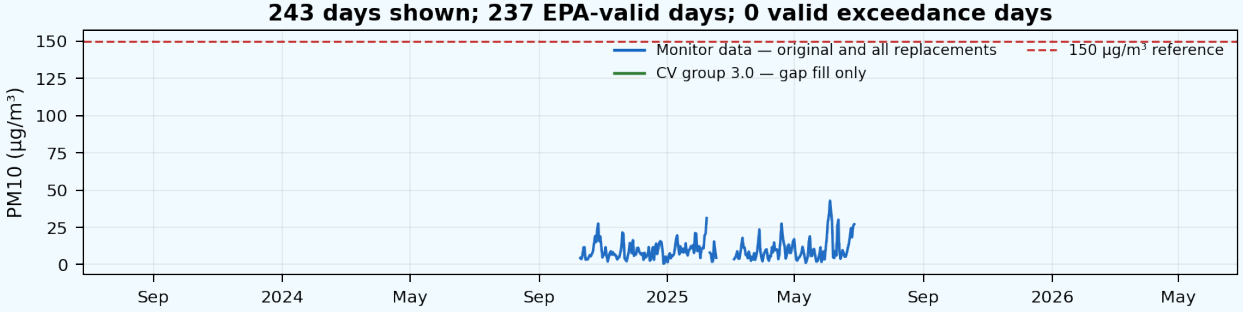
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
243 days shown; 236 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
243 days shown; 237 EPA-valid days; 0 valid exceedance days



PM2.5: 236 valid days; 0 days above 35 µg/m³.
PM10: 237 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-45. Handoffs: AV-45 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 20622, 'AV-45': 5682}.
PM10 hourly sources: {'Missing': 20584, 'AV-45': 5720}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
TN — Memphis — AV-63 — Sensor 212013

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-63 | CV group: 999.0

PM2.5 Annual Mean

4.8
µg/m³
Reference: 9
Period: 2025
Complete

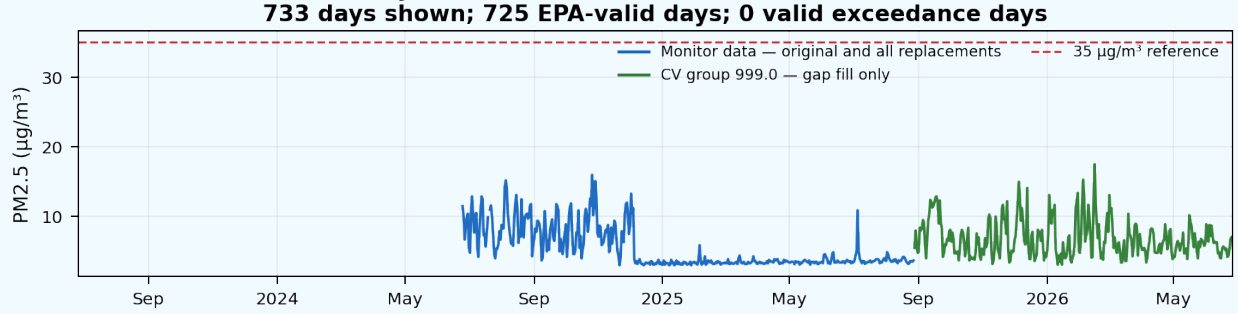
PM2.5 Annual 98th Percentile

12.2
µg/m³
Reference: 35
Period: 2025
Complete

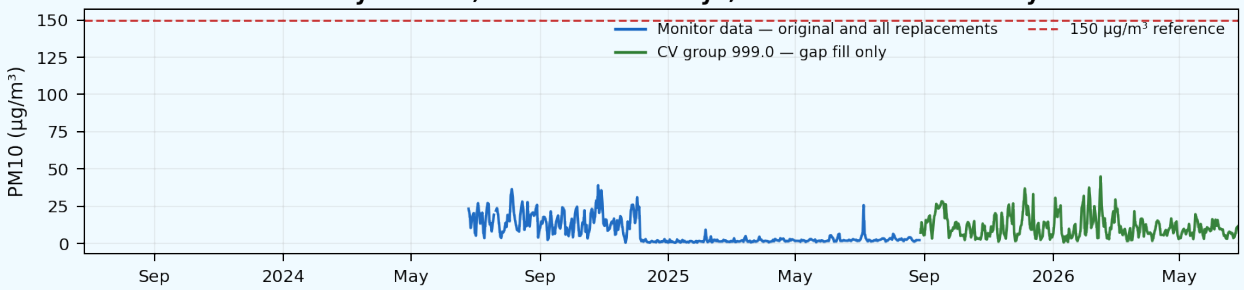
PM10 Expected Exceedances / Year

0.0
exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
733 days shown; 725 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
733 days shown; 726 EPA-valid days; 0 valid exceedance days



PM2.5: 725 valid days; 0 days above 35 µg/m³.
PM10: 726 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-63. Handoffs: AV-63 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-63': 10152, 'Missing': 8882, 'CV group 999.0': 7270}.
PM10 hourly sources: {'AV-63': 10172, 'Missing': 8858, 'CV group 999.0': 7274}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
TN — Memphis — AV-68 — Sensor 211957

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-68 | CV group: 999.0

PM2.5 Annual Mean

5.8
µg/m³
Reference: 9
Period: 2025
Complete

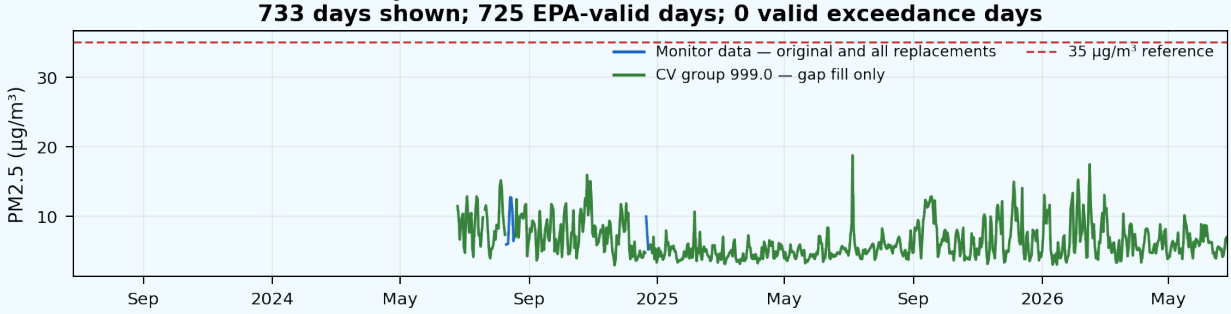
PM2.5 Annual 98th Percentile

12.3
µg/m³
Reference: 35
Period: 2025
Complete

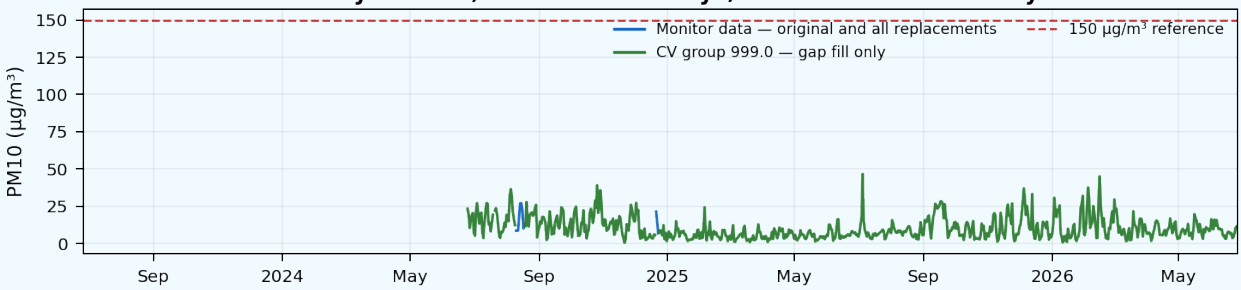
PM10 Expected Exceedances / Year

0.0
exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
733 days shown; 725 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
733 days shown; 726 EPA-valid days; 0 valid exceedance days



PM2.5: 725 valid days; 0 days above 35 µg/m³.
PM10: 726 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-68. Handoffs: AV-68 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'CV group 999.0': 17126, 'Missing': 8882, 'AV-68': 296}.
PM10 hourly sources: {'CV group 999.0': 17150, 'Missing': 8858, 'AV-68': 296}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
TN — White_Oak — AV-23 — Sensor 184345

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-23 | CV group: 68.0

PM2.5 Annual Mean

N/A
µg/m³
Reference: 9
Period: 2025
Incomplete / screening

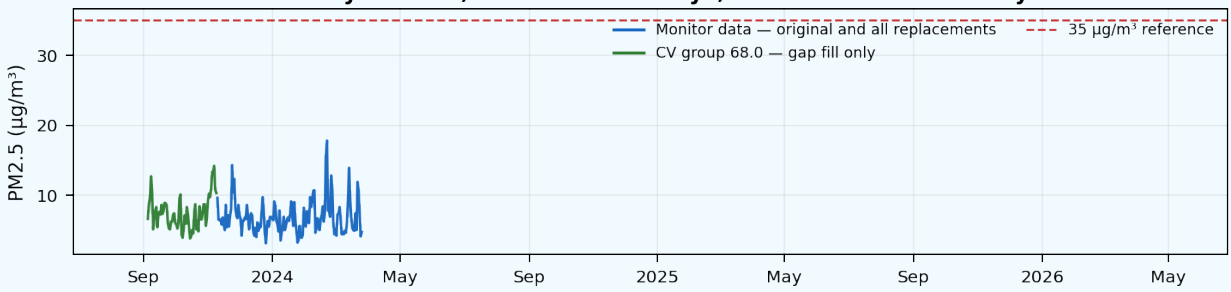
PM2.5 Annual 98th Percentile

N/A
µg/m³
Reference: 35
Period: 2025
Incomplete / screening

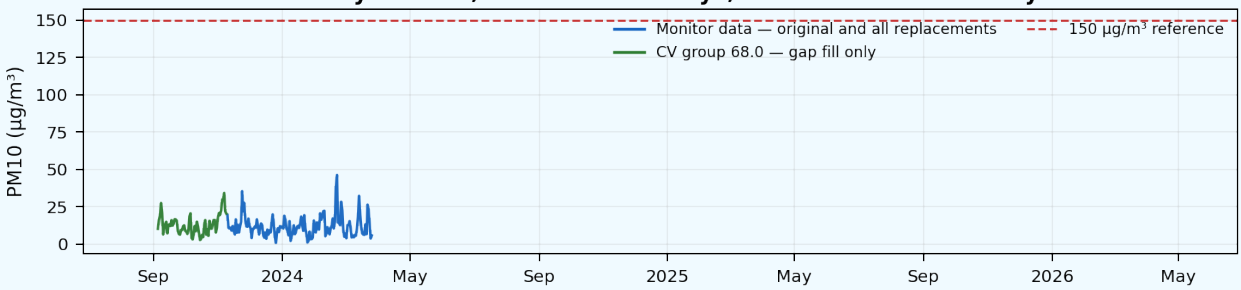
PM10 Expected Exceedances / Year

0.0
exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
208 days shown; 153 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
208 days shown; 154 EPA-valid days; 0 valid exceedance days



PM2.5: 153 valid days; 0 days above 35 µg/m³.
PM10: 154 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-23. Handoffs: AV-23 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 21915, 'AV-23': 3250, 'CV group 68.0': 1139}.
PM10 hourly sources: {'Missing': 21905, 'AV-23': 3260, 'CV group 68.0': 1139}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

VIRGINIA

USACAMP Particulate Matter Summary
VA — Norfolk — AV-46 — Sensor 198999

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-46 → AV-71 | CV group: 11.0

PM2.5 Annual Mean

6.7
µg/m³
Reference: 9
Period: 2025
Incomplete / screening

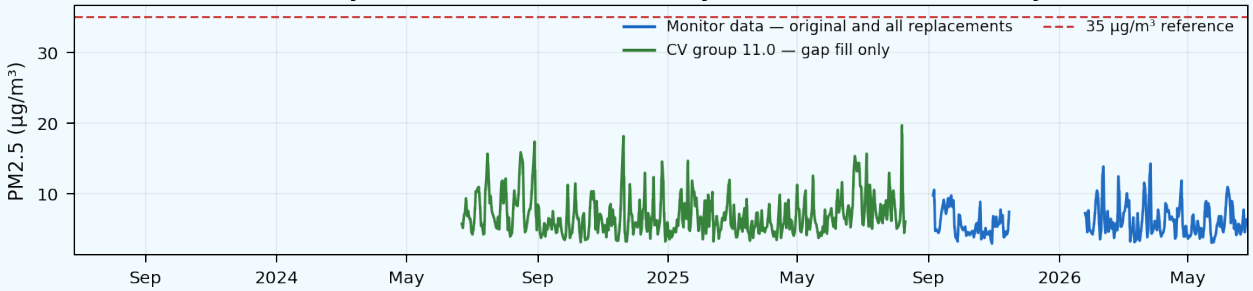
PM2.5 Annual 98th Percentile

14.4
µg/m³
Reference: 35
Period: 2025
Incomplete / screening

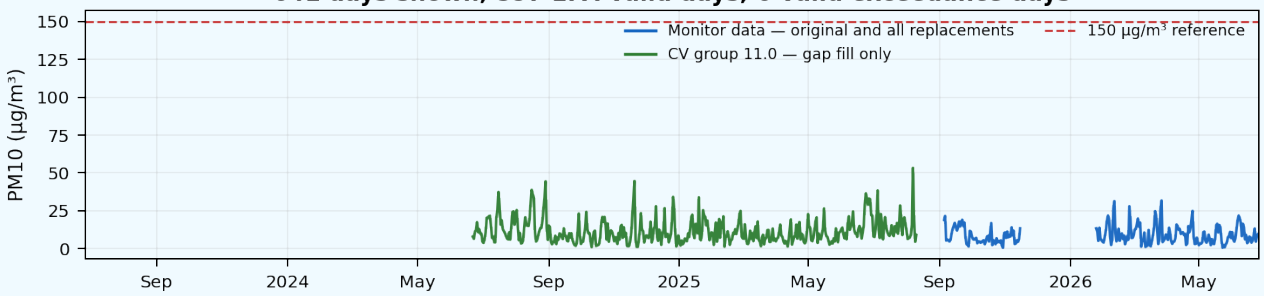
PM10 Expected Exceedances / Year

0.0
exceedances / year
Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
641 days shown; 596 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
641 days shown; 597 EPA-valid days; 0 valid exceedance days



PM2.5: 596 valid days; 0 days above 35 µg/m³.
PM10: 597 valid days; 0 days exceeding 150 µg/m³.
Replacement history: AV-46 → AV-71. Handoffs: AV-46 (grant start to handoff) -> AV-71 (from 2026-01-26). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 11683, 'CV group 11.0': 9892, 'AV-71': 3529, 'AV-46': 1200}.
PM10 hourly sources: {'Missing': 11661, 'CV group 11.0': 9903, 'AV-71': 3535, 'AV-46': 1205}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
VA — Norfolk — AV-47 — Sensor 196167

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-47 | CV group: 11.0

PM2.5 Annual Mean

6.7 µg/m³

Reference: 9
Period: 2025
Incomplete / screening

PM2.5 Annual 98th Percentile

14.4 µg/m³

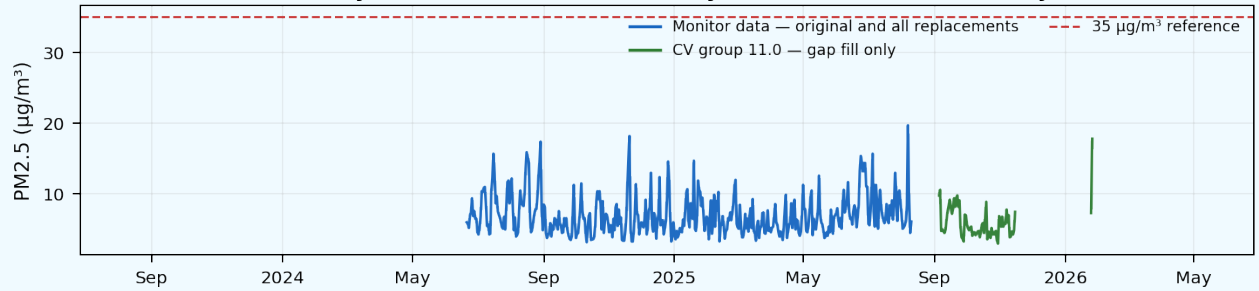
Reference: 35
Period: 2025
Incomplete / screening

PM10 Expected Exceedances / Year

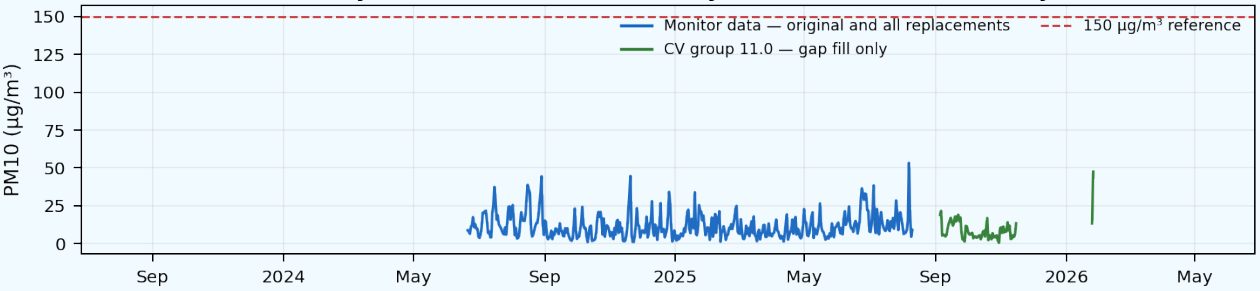
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
491 days shown; 448 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
491 days shown; 448 EPA-valid days; 0 valid exceedance days



PM2.5: 448 valid days; 0 days above 35 µg/m³.
PM10: 448 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-47. Handoffs: AV-47 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 15212, 'AV-47': 9895, 'CV group 11.0': 1197}.
PM10 hourly sources: {'Missing': 15196, 'AV-47': 9906, 'CV group 11.0': 1202}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
VA — Wise — AV-52 — Sensor 199007

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-52 | CV group: 8.0

PM2.5 Annual Design Value

6.2 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

12.0 µg/m³

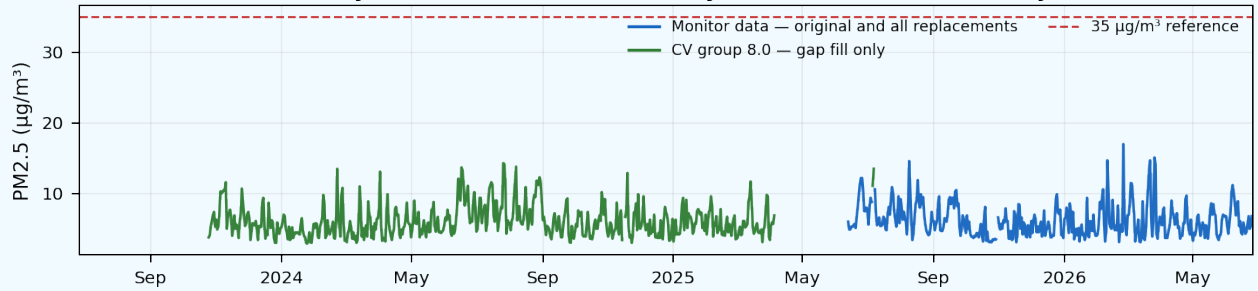
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

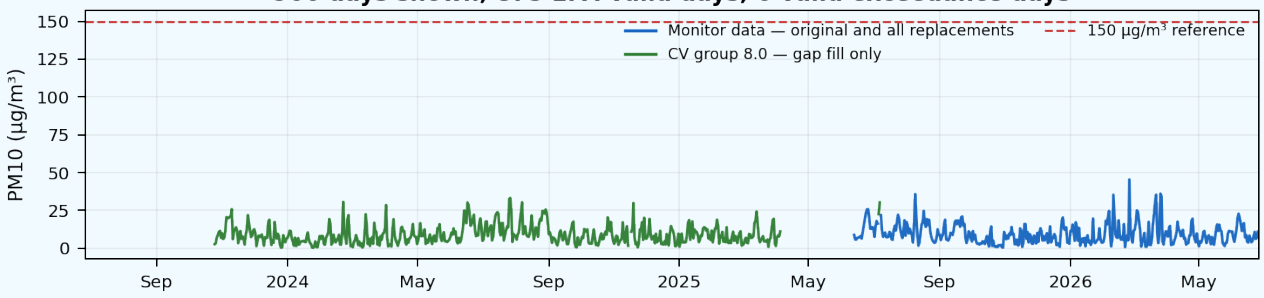
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
906 days shown; 872 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
906 days shown; 875 EPA-valid days; 0 valid exceedance days



PM2.5: 872 valid days; 0 days above 35 µg/m³.
PM10: 875 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-52. Handoffs: AV-52 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'CV group 8.0': 12268, 'AV-52': 8896, 'Missing': 5140}.
PM10 hourly sources: {'CV group 8.0': 12245, 'AV-52': 8974, 'Missing': 5085}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

WEST VIRGINIA

USACAMP Particulate Matter Summary
WV — Eckman — AV-41 — Sensor 198821

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-41 | CV group: 2.0

PM2.5 Annual Design Value

6.2 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

14.0 µg/m³

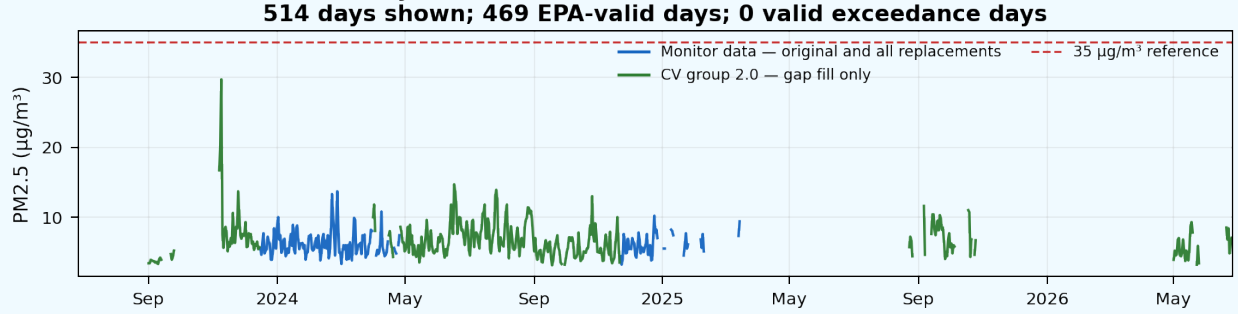
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

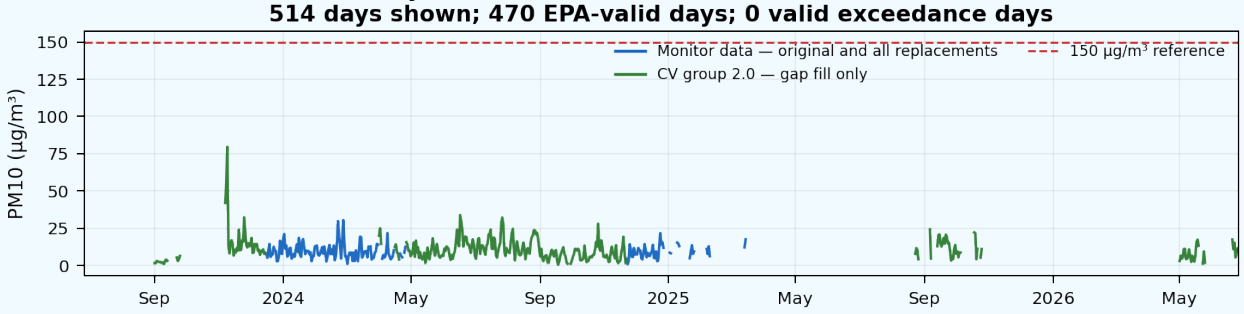
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
514 days shown; 469 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
514 days shown; 470 EPA-valid days; 0 valid exceedance days



PM2.5: 469 valid days; 0 days above 35 µg/m³.
PM10: 470 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-41. Handoffs: AV-41 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 14750, 'CV group 2.0': 7643, 'AV-41': 3911}.
PM10 hourly sources: {'Missing': 14725, 'CV group 2.0': 7655, 'AV-41': 3924}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Elkhorn — AV-21 — Sensor 183779

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-21 | CV group: 95.0

PM2.5 Annual Design Value

5.1 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

12.0 µg/m³

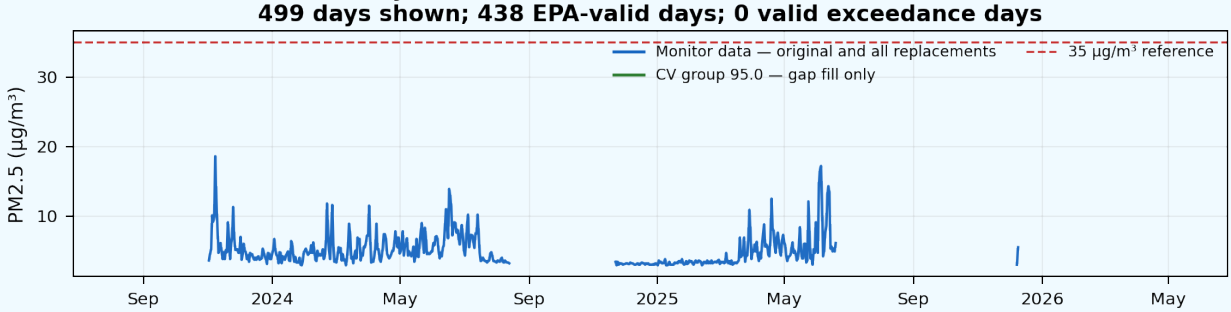
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

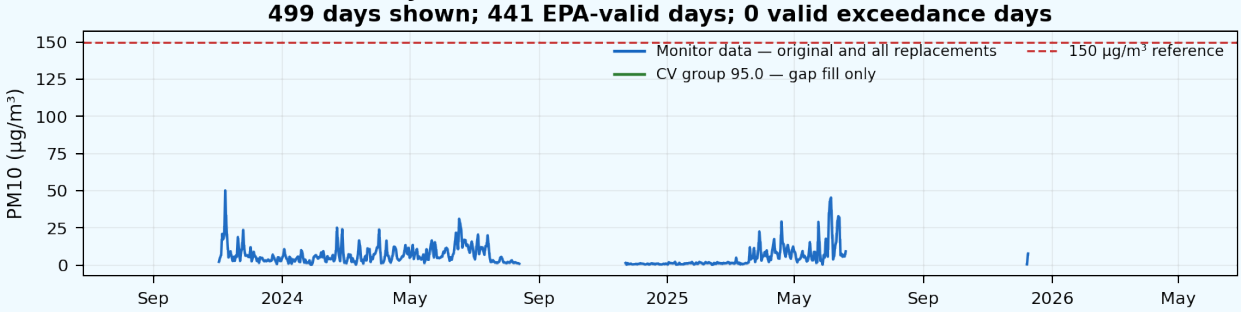
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
499 days shown; 438 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
499 days shown; 441 EPA-valid days; 0 valid exceedance days



PM2.5: 438 valid days; 0 days above 35 µg/m³.
PM10: 441 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-21. Handoffs: AV-21 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 15378, 'AV-21': 10926}.
PM10 hourly sources: {'Missing': 15322, 'AV-21': 10982}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Naoma — AV-07 — Sensor 183755

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-07 | CV group: 5.0

PM2.5 Annual Design Value

7.9 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

16.0 µg/m³

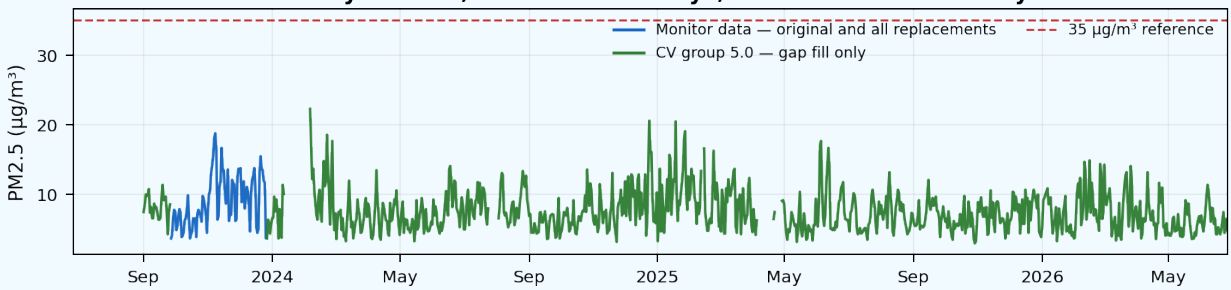
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

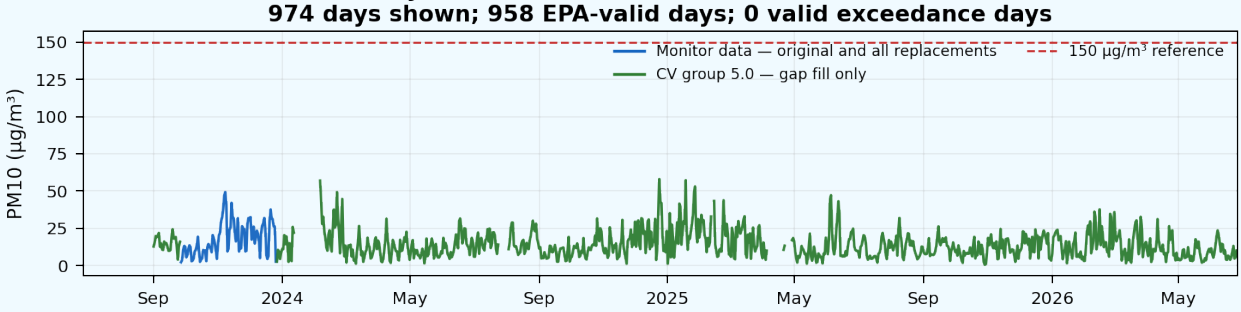
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
974 days shown; 957 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
974 days shown; 958 EPA-valid days; 0 valid exceedance days



PM2.5: 957 valid days; 0 days above 35 µg/m³.
PM10: 958 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-07. Handoffs: AV-07 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'CV group 5.0': 20865, 'Missing': 3270, 'AV-07': 2169}.
PM10 hourly sources: {'CV group 5.0': 20893, 'Missing': 3241, 'AV-07': 2170}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Northfork — AV-20 — Sensor 183741

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-20 | CV group: 2.0

PM2.5 Annual Design Value

6.1 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

14.0 µg/m³

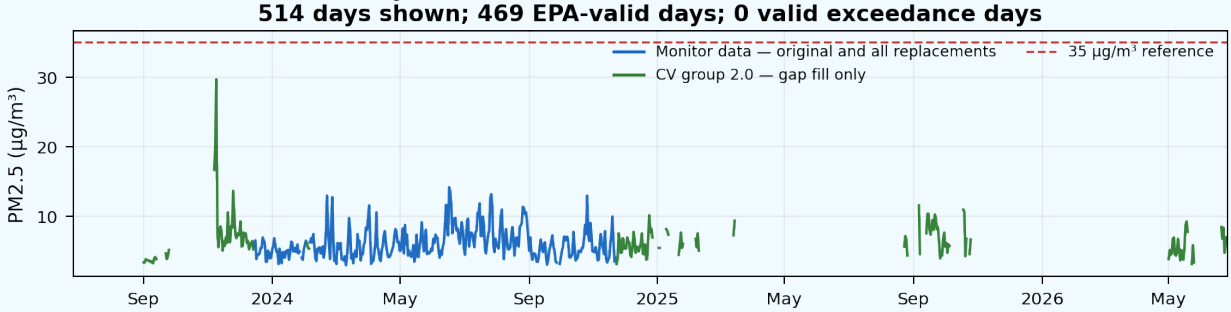
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

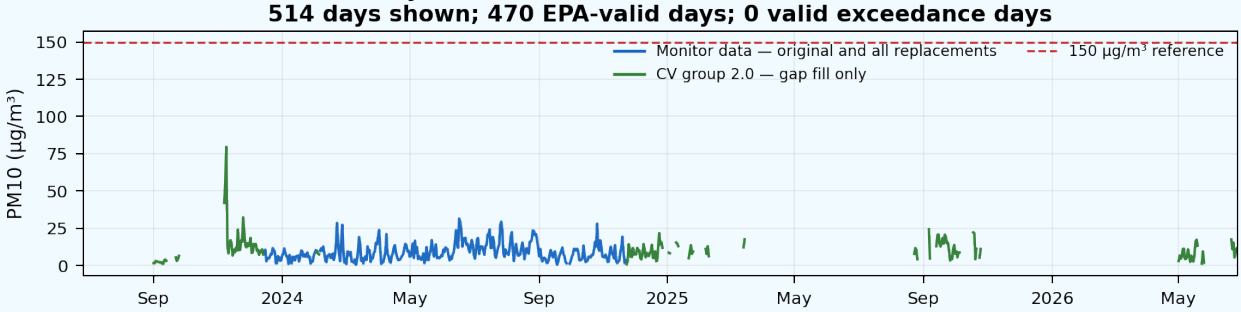
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
514 days shown; 469 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
514 days shown; 470 EPA-valid days; 0 valid exceedance days



PM2.5: 469 valid days; 0 days above 35 µg/m³.
PM10: 470 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-20. Handoffs: AV-20 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 14750, 'AV-20': 8003, 'CV group 2.0': 3551}.
PM10 hourly sources: {'Missing': 14725, 'AV-20': 8038, 'CV group 2.0': 3541}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
WV — Northfork — AV-71 — Sensor 301837

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-46 → AV-71 | CV group: 11.0

PM2.5 Annual Mean

6.7 µg/m³

Reference: 9
Period: 2025
Incomplete / screening

PM2.5 Annual 98th Percentile

14.4 µg/m³

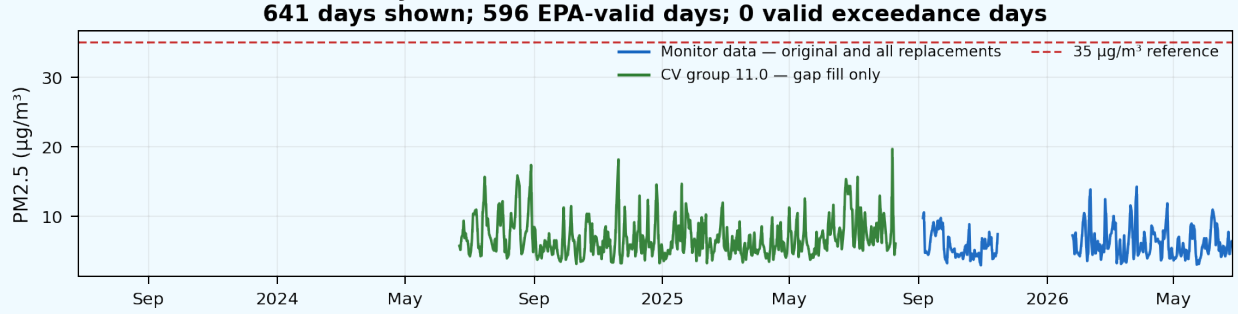
Reference: 35
Period: 2025
Incomplete / screening

PM10 Expected Exceedances / Year

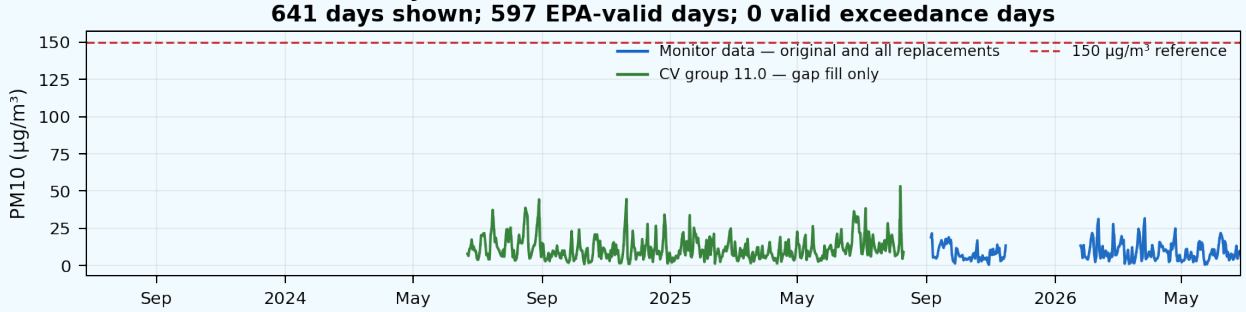
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
641 days shown; 596 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
641 days shown; 597 EPA-valid days; 0 valid exceedance days



PM2.5: 596 valid days; 0 days above 35 µg/m³.
PM10: 597 valid days; 0 days exceeding 150 µg/m³.
Replacement history: AV-46 → AV-71. Handoffs: AV-46 (grant start to handoff) -> AV-71 (from 2026-01-26). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 11683, 'CV group 11.0': 9892, 'AV-71': 3529, 'AV-46': 1200}.
PM10 hourly sources: {'Missing': 11661, 'CV group 11.0': 9903, 'AV-71': 3535, 'AV-46': 1205}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary WV — Whitesburg — AV-67 — Sensor 211955

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-67 | CV group: 42.0

PM2.5 Annual Mean

7.7 µg/m³

Reference: 9
Period: 2025
Incomplete / screening

PM2.5 Annual 98th Percentile

16.9 µg/m³

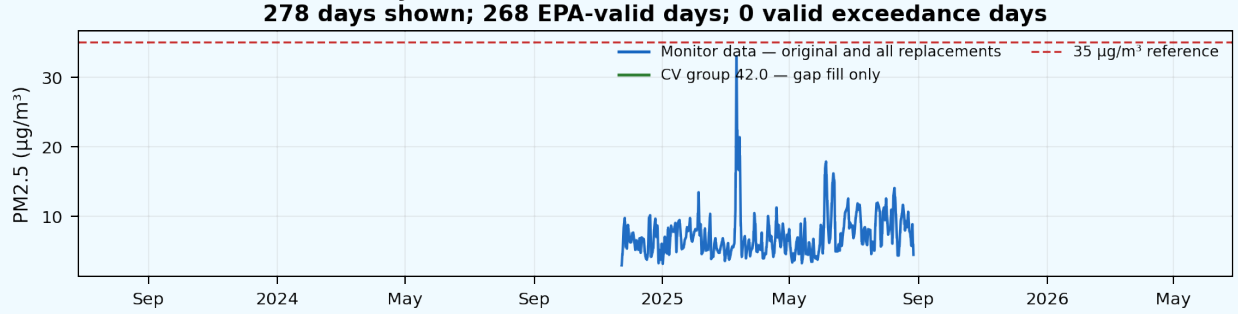
Reference: 35
Period: 2025
Incomplete / screening

PM10 Expected Exceedances / Year

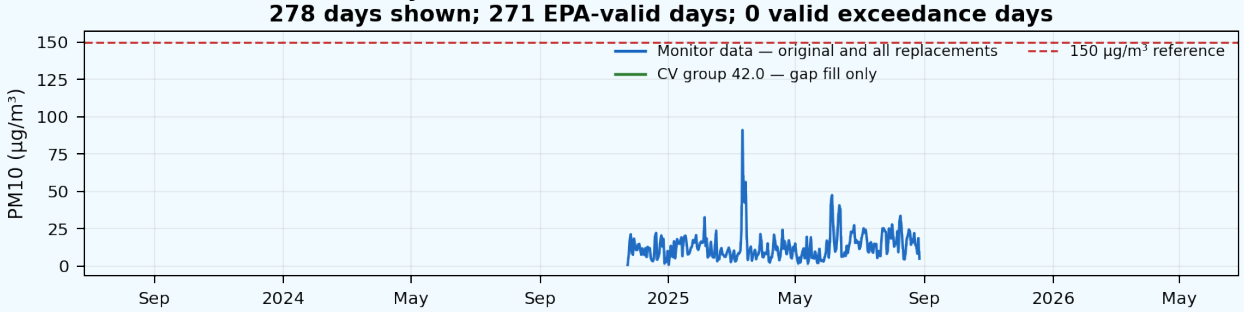
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
278 days shown; 268 EPA-valid days; 0 valid exceedance days



Daily PM10 Concentrations — All Available Data
278 days shown; 271 EPA-valid days; 0 valid exceedance days



PM2.5: 268 valid days; 0 days above 35 µg/m³.
PM10: 271 valid days; 0 days exceeding 150 µg/m³.
Monitor source: AV-67. Handoffs: AV-67 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 19818, 'AV-67': 6486}.
PM10 hourly sources: {'Missing': 19771, 'AV-67': 6533}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

Appendix E

Monitors with Residual Data Spikes After Cleaning

TENNESSEE

USACAMP Particulate Matter Summary
TN — Cumberland_City — AV-29 — Sensor 184531

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-29 | CV group: 33.0

PM2.5 Annual Design Value

65.6 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

1062.0 µg/m³

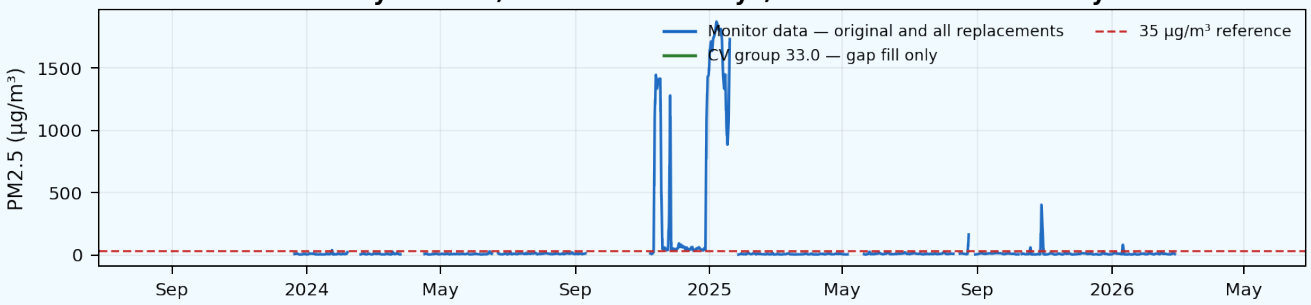
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

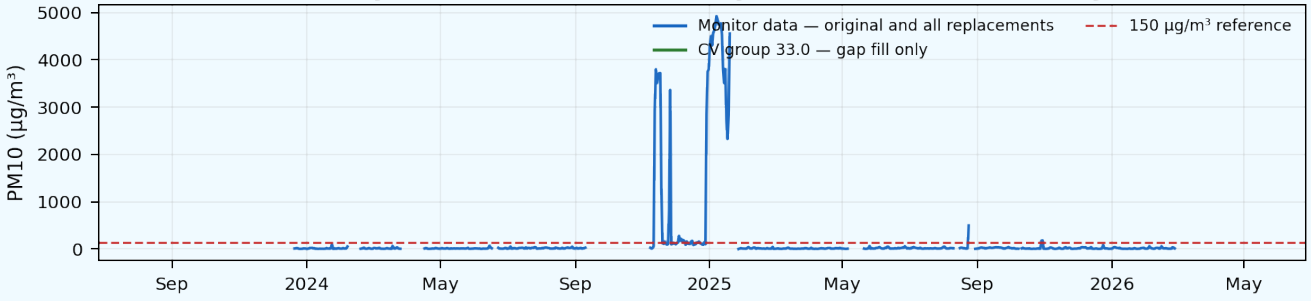
21.8 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
671 days shown; 621 EPA-valid days; 70 valid exceedance days



Daily PM10 Concentrations — All Available Data
671 days shown; 623 EPA-valid days; 44 valid exceedance days



PM2.5: 621 valid days; 70 days above 35 µg/m³.
PM10: 623 valid days; 44 days exceeding 150 µg/m³.
Monitor source: AV-29. Handoffs: AV-29 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-29': 15053, 'Missing': 11251}.
PM10 hourly sources: {'AV-29': 15066, 'Missing': 11238}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

VIRGINIA

USACAMP Particulate Matter Summary
VA — Chatham — AV-31 — Sensor 184567

Grant-period graph window: 2023-06-26 – 2026-06-25 | Replacement history: AV-31 → AV-62 | CV group: 13.0

PM2.5 Annual Design Value

6.7 µg/m³

Reference: 9
Period: 2023-2025
Incomplete / screening

PM2.5 24-Hour Design Value

14.0 µg/m³

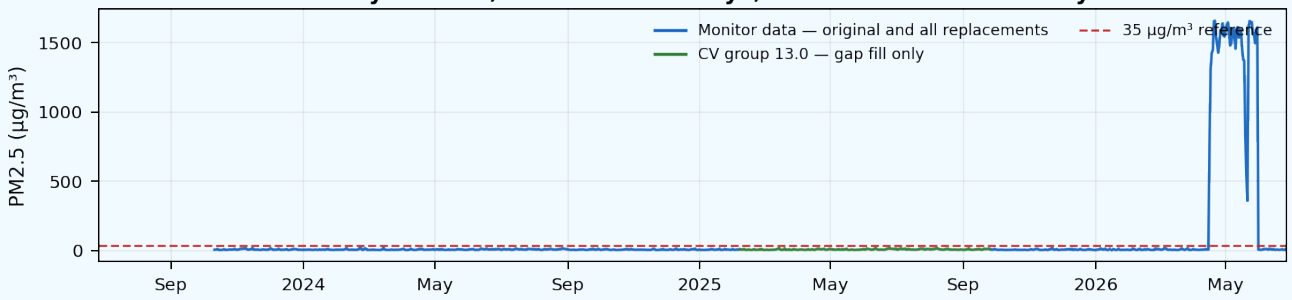
Reference: 35
Period: 2023-2025
Incomplete / screening

PM10 Expected Exceedances / Year

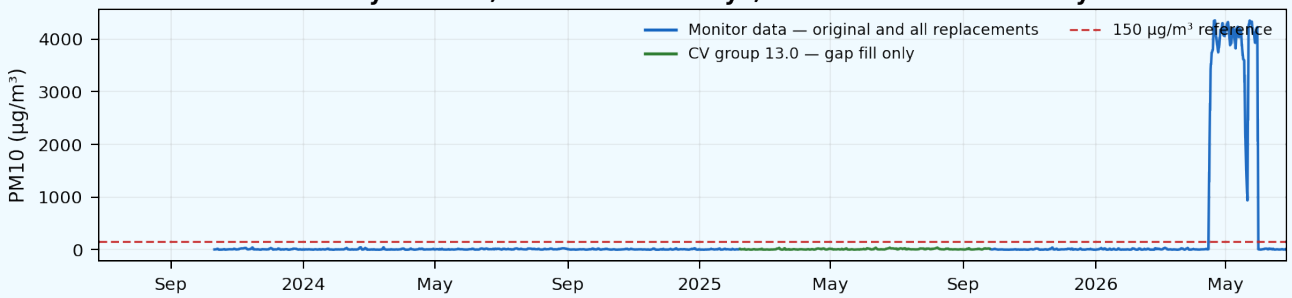
0.0 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening

Daily PM2.5 Concentrations — All Available Data
989 days shown; 979 EPA-valid days; 45 valid exceedance days



Daily PM10 Concentrations — All Available Data
989 days shown; 982 EPA-valid days; 45 valid exceedance days



PM2.5: 979 valid days; 45 days above 35 µg/m³.
PM10: 982 valid days; 45 days exceeding 150 µg/m³.
Replacement history: AV-31 → AV-62. Handoffs: AV-31 (grant start to handoff) -> AV-62 (from 2025-09-25). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'AV-31': 11433, 'AV-62': 6434, 'CV group 13.0': 5608, 'Missing': 2829}.
PM10 hourly sources: {'AV-31': 11518, 'AV-62': 6495, 'CV group 13.0': 5561, 'Missing': 2730}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

USACAMP Particulate Matter Summary
VA — Hurley — AV-55 — Sensor 198969

Grant-period graph window: 2023-06-26 – 2026-06-25 | Monitor source: AV-55 | CV group: 367.0

PM2.5 Annual Mean

547.0 µg/m³

Reference: 9
Period: 2025
Incomplete / screening

PM2.5 Annual 98th Percentile

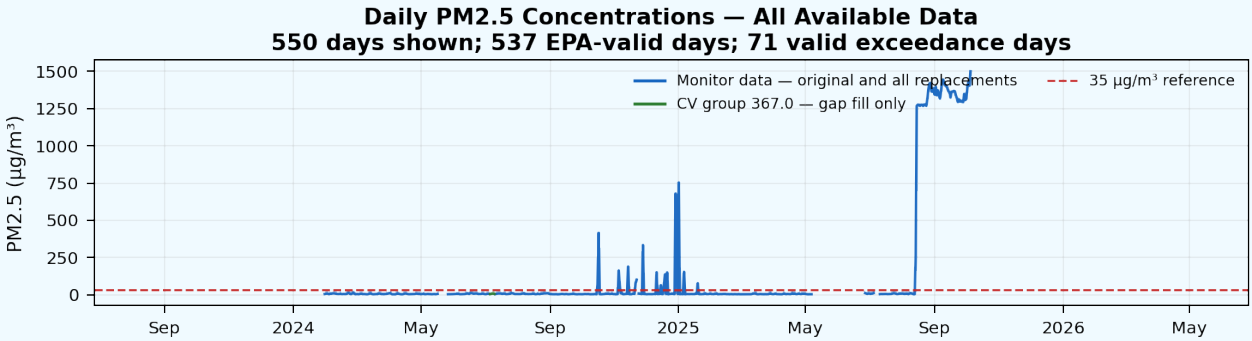
1422.2 µg/m³

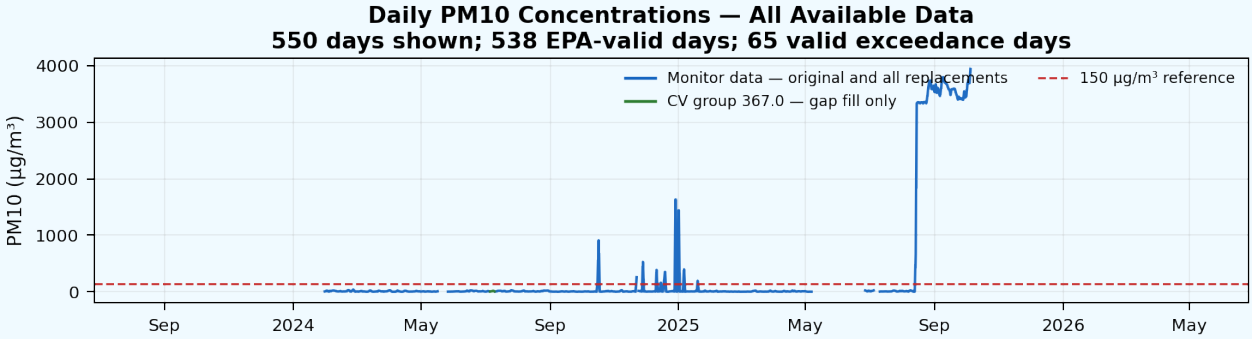
Reference: 35
Period: 2025
Incomplete / screening

PM10 Expected Exceedances / Year

52.3 exceedances / year

Reference: 1
Period: 2023-2025
Incomplete / screening





PM2.5: 537 valid days; 71 days above 35 µg/m³.
PM10: 538 valid days; 65 days exceeding 150 µg/m³.
Monitor source: AV-55. Handoffs: AV-55 (grant start to handoff). Cross-validation fills only hours still missing after the chronological family timeline is assembled.
PM2.5 hourly sources: {'Missing': 13391, 'AV-55': 12781, 'CV group 367.0': 132}.
PM10 hourly sources: {'Missing': 13369, 'AV-55': 12803, 'CV group 367.0': 132}.

The original and all replacement-monitor reports in a family use the same chronological-handoff, CV-filled hourly record for graphs and EPA calculations. Blue represents original/replacement monitor data; green represents cross-validation gap-fill data.

Appendix F

Bristol HOPE Sorbent Tube Data

Bristol HOPE Sorbent Data Calibrated

Arrival Date	Sample time (days)	Temp (C)	Description	benzene	toluene	ethylbenzene	xylene_mp	xylene_o	Notes	benzene	toluene	ethylbenzene	xylene_mp	xylene_o
2/21/2024	14	25	Shakes sample	<LOD	4.1	<LOD	1.1	1.1		<LOD	0.4	<LOD	0.1	0.1
2/21/2024	14	25	Shakes duplicate	<LOD	11.6	2.6	2.9	3.2		<LOD	1.1	0.3	0.3	0.3
2/21/2024	14	25	Shakes blank	<LOD	9	2.6	<LOD	<LOD	Re-run due to leak failure	<LOD	0.9	0.3	<LOD	<LOD
2/21/2024	14	25	MD Ave sample	19.8	16.7	2.8	5.7	6.4	Re-run due to leak failure	1.5	1.6	0.3	0.6	0.7
2/21/2024	14	25	MD Ave duplicate	<LOD	20.1	6.7	8.6	9.9	Re-run due to leak failure	<LOD	1.9	0.7	0.9	1.1
2/21/2024	14	25	MD ave blank	<LOD	46.8	<LOD	<LOD	<LOD		<LOD	4.5	<LOD	<LOD	<LOD
5/22/2024	14	25	Shakes sample	16.3	108.1	31.9	5.1	6.9		1.2	10.3	3.4	0.5	0.7
5/22/2024	14	25	Shakes duplicate	16.6	140	48.4	5.3	8.8		1.2	13.4	5.2	0.6	0.9
5/22/2024	14	25	Shakes blank	7.6	175.2	87.2	2.3	9		0.6	16.7	9.4	0.2	1
5/22/2024	14	25	MD Ave sample	11	137.4	53.6	3.4	6.8		0.8	13.1	5.8	0.4	0.7
5/22/2024	14	25	MD Ave duplicate	15.7	108.6	56.4	3.8	6.6		1.2	10.4	6.1	0.4	0.7
5/22/2024	14	25	MD ave blank	4.2	78.6	26.7	2	4.4		0.3	7.5	2.9	0.2	0.5
10/23/2024	14	25	Shakes sample	17.9	75.6	7.3	9.1	5.9		1.3	7.2	0.8	1	0.6
10/23/2024	14	25	Shakes duplicate	11.5	66.8	3.9	3.9	2.1		0.9	6.4	0.4	0.4	0.2
10/23/2024	14	25	Shakes blank	<LOD	53.7	<LOD	<LOD	<LOD		<LOD	5.1	<LOD	<LOD	<LOD
10/23/2024	14	25	MD Ave sample	<LOD	27.1	2.7	4.5	2.9	Benzene signal is basically non-existent, could be an analytical issue, but not sure why this would be	<LOD	2.6	0.3	0.5	0.3
10/23/2024	14	25	MD Ave duplicate	14.3	44.6	5.5	7.9	5.1		1.1	4.3	0.6	0.9	0.5
10/23/2024	14	25	MD ave blank	<LOD	26.1	<LOD	<LOD	<LOD		<LOD	2.5	<LOD	<LOD	<LOD
2/12/2025	14	25	Shakes sample	<LOD	2.9	<LOD	<LOD	<LOD		<LOD	0.3	<LOD	<LOD	<LOD
2/12/2025	14	25	Shakes duplicate	<LOD	42	59.5	1.9	2.4		<LOD	4	6.4	0.2	0.3
2/12/2025	14	25	Shakes blank	<LOD	<LOD	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	<LOD	<LOD
2/12/2025	14	25	MD Ave sample	<LOD	4.9	<LOD	<LOD	<LOD		<LOD	0.5	<LOD	<LOD	<LOD
2/12/2025	14	25	MD Ave duplicate	<LOD	5.7	<LOD	<LOD	<LOD		<LOD	0.5	<LOD	<LOD	<LOD
2/12/2025	14	25	MD ave blank	<LOD	<LOD	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	<LOD	<LOD

Bristol HOPE Sorbent Data Calibrated (continued)

Arrival Date	Sample time (days)	Temp (C)	Description	benzene	toluene	ethylbenzene	xylene_mp	xylene_o	Notes	benzene	toluene	ethylbenzene	xylene_mp	xylene_o
4/5/2025	14	25	Shakes sample	<LOD	5	2.4	<LOD	<LOD	this batch analyzed in June	<LOD	0.5	0.3	<LOD	<LOD
4/5/2025	14	25	Shakes duplicate	<LOD	3.5	<LOD	<LOD	<LOD		<LOD	0.3	<LOD	<LOD	<LOD
4/5/2025	14	25	Shakes blank	<LOD	4.9	2.9	<LOD	<LOD		<LOD	0.5	0.3	<LOD	<LOD
4/5/2025	14	25	MD Ave sample	3.6	<LOD	<LOD	<LOD	<LOD		0.3	<LOD	<LOD	<LOD	<LOD
4/5/2025	14	25	MD Ave duplicate	6.4	13.7	<LOD	<LOD	<LOD		0.5	1.3	<LOD	<LOD	<LOD
4/5/2025	14	25	MD ave blank	<LOD	<LOD	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	<LOD	<LOD
10/7/2025	14	25	Shakes sample	0.9	0.3	<LOD	<LOD	0.2		0.1	0	<LOD	<LOD	0
10/7/2025	14	25	Shakes duplicate	0.7	<LOD	<LOD	0.2	0.2		0	<LOD	<LOD	0	0
10/7/2025	14	25	Shakes blank	0.8	5.9	4.8	4.7	0.3		0.1	0.6	0.5	0.5	0
10/7/2025	14	25	MD Ave sample	0.8	<LOD	<LOD	0.1	0.3		0.1	<LOD	<LOD	0	0
10/7/2025	14	25	MD Ave duplicate	1.1	0.4	0.6	0.6	0.9		0.1	0	0.1	0.1	0.1
10/7/2025	14	25	MD ave blank	<LOD	<LOD	<LOD	<LOD	0.2		<LOD	<LOD	<LOD	<LOD	0



https://appvoices.org/coal-impacts/epa-dust-monitoring