

June 17, 2019



Via Email

Environmental Quality Board
RegComments@pa.gov

Re: Comments on Air Quality Fee Schedule Amendments

49 Pa.B. 1777 (April 13, 2019)

To whom it may concern:

Clean Air Council (the “Council”) hereby submits the following comments on the Environmental Quality Board’s (“EQB”) proposed rulemaking listed as Regulation #7-536 (Air Quality Fee Schedule Amendments, or “Amendments”).

The Council is a non-profit environmental and health organization headquartered at 135 South 19th Street, Suite 300, Philadelphia, Pennsylvania 19103. For more than 50 years, the Council has fought to improve air quality and the environment across Pennsylvania. The Council has members throughout Pennsylvania who support its mission to protect everyone’s right to a healthy environment.

The Council is joined in these comments by Earthjustice, Breathe Project, and PennEnvironment Research & Policy Center (collectively, “Commenters”).

Earthjustice is a non-profit public interest law firm dedicated to protecting the magnificent places, natural resources, and wildlife of this earth, and to defending the right of all people to a healthy environment.

Breathe Project is a clearinghouse for information on air quality in Pittsburgh, southwestern Pennsylvania and beyond. Breathe Project uses the best available science and technology to better understand the quality of the air we breathe and provide opportunities for citizens to engage and take action.

PennEnvironment Research & Policy Center is an environmental organization working to promote clean air and clean water and to protect Pennsylvania’s great natural heritage.

Commenters strongly support the spirit of the Amendments. There is an urgent need for increased fees to make ends meet at the Department of Environmental Protection (the “Department”). However, the Amendments do not go far enough to ensure the solvency and quality of the air quality program. The Amendments only maintain the existing level of funding when using overly optimistic projections of the amount of other sources of funding. Moreover,

the existing level of funding is not enough to adequately protect air quality in Pennsylvania. Therefore, Commenters urge the EQB to revise the proposed fee schedule upward to fully staff the air quality program and bring Pennsylvania into compliance with the Clean Air Act.

The Air Quality Fee Schedule Amendments are Authorized, Required, and Justified

The authority and indeed the requirement for the Amendments are presented in the Department's Regulatory Analysis Form ("Form") submission to IRRC. The Department writes on page 2 of the Form,

Section 6.3(a) of the APCA [Air Pollution Control Act] authorizes the Board to establish fees sufficient to cover the indirect and direct costs of administering the air pollution control plan approval process, operating permit program required by Title V of the CAA [Clean Air Act], other requirements of the CAA and the indirect and direct costs of administering the Small Business Stationary Source Technical and Environmental Compliance Assistance Program, the Small Business Compliance Advisory Committee, and the Office of Small Business Ombudsman.

The key phrase is "fees sufficient to cover the indirect and direct costs." The Clean Air Act, through the Pennsylvania State Implementation Plan, requires that funding be sufficient to cover adequate personnel and funds to carry out the Plan. 42 U.S.C.A. § 7410(a)(2)(E)(i).

Thus there is no question that the Department has the authority under the Air Pollution Control Act to raise fees to cover its costs. Absent additional funding from another source, the Clean Air Act compels it to do so. Assuming the Department's accounting as expressed in the Form and in its attached Clean Air Fund Fiscal Analysis and Fee Report ("Fiscal Analysis") is roughly accurate, its Title V Account will dwindle rapidly toward nothing within the next five years, and the Non-Title V Account will be in the red within the next year.

EPA has corroborated DEP's accounting. A 2014 report of the US EPA Office of Inspector General criticized the Commonwealth for not raising sufficient Title V revenues to cover its costs.¹ In four out of the five years from 2008–2012, annual Title V expenses exceeded annual Title V revenues. *Id.* at page 14, Table 3. While Title V costs declined 3% from 2008 to 2012, Title V revenues declined 21% over that period. *Id.* at page 15, Table 4. This is the greatest disparity among all the analyzed states. According to a 2013 Pennsylvania rulemaking, "a deficit of \$7.235 million is projected for the Title V Major Emission Facilities Account by the end of Fiscal Year 2015–2016. Funds sufficient to support the program need to be collected before the fund is in deficit." *Id.*

Fee increases are not just needed, they are urgent and have been urgent for years.

¹ See Enhanced EPA Oversight Needed to Address Risks From Declining Clean Air Act Title V Revenues, dated October 20, 2014, available at <https://www.epa.gov/sites/production/files/2015-09/documents/20141020-15-p-0006.pdf>.

On page 16 of the Proposed Rulemaking, the Department explains that “[w]ith this proposed rulemaking, the Air Quality Program could maintain its current level of effort, gradually fill 17 currently vacant Title V positions, expand its air monitoring network in shale gas areas and develop new and improved IT systems including ePermitting and publicly available online air quality data.” This is not an ambitious program of work, but rather a minimal level of upkeep the Department is proposing.

Commenters have no reason to doubt the extensive accounting the Department has done to come up with the minimal fee schedule hikes it proposes. Viewed in comparison to similar types of fees that neighboring jurisdictions charge, the proposed fee schedule appears somewhat higher than average. *See* Form at page 9, Table 6. That is simply because the legislatures of most neighboring states have allocated more funding for their air quality programs.

The Bureau of Air Quality gets significantly less than \$10 million in general funding. *See* Fiscal Analysis at page 10, Table 2. Delaware has the lowest fees among neighboring states. But Delaware has a similar nominal budget allocation for its smaller air quality program to much larger Pennsylvania.² The second lowest fees are in Ohio, a state comparably sized to Pennsylvania. Ohio’s air pollution control budget allocation is \$44 million.³ Given the far smaller budget allocations that the Pennsylvania Department receives from its legislature, the proposed permitting fees are stunningly low.

In short, increases in the current fee schedule are warranted and very much needed.

The Proposed Fee Schedule Is Set Too Low to Maintain Existing Efforts

Commentators strongly support the proposal to increase fees to cover costs, but believe that the amount of the increases is not enough. As noted above, the Department set these rates to “maintain [the Air Quality Program’s] current level of effort.” Yet the Department’s projection that the specified increases would meet future needs for maintaining the current level of effort is based on shaky assumptions.

The Department is systematically asking to set fees at levels that are less than the estimated costs from past years, despite costs going up over time due to inflation among other things. *See* Fiscal Analysis at pages 27-28, Table 20. The Department then relies on the stability of its General Fund funding and federal grants to make up the difference. *Id.* at page 27. This assumption is unwarranted. The Department even includes a sideways acknowledgment of this in its Notice of Proposed Rulemaking at page 15: “It is unlikely that General Fund monies or Federal Grants directed toward air quality will increase in the foreseeable future.”

² *See* Delaware House Bill No. 50 (appropriations), Fiscal Year 2020 Operating Budget Supplement at page 45, available at <http://legis.delaware.gov/json/BillDetail/GetPdfDocument?fileAttachmentId=266366>.

³ *See* Ohio Environmental Protection Agency, Legislative Service Commission Analysis of Enacted Budget “Greenbook,” September 2017, at page 3, Table 3, available at <https://www.lsc.ohio.gov/documents/budget/132/MainOperating/greenbook/EPA.PDF>.

Pennsylvania has a structural deficit, and official projections show economic growth slowing in the upcoming years.⁴ Besides the slowing of growth, the Commonwealth's budget has been shrinking in proportion to the size of the state economy.⁵ Historically, the Department has seen draconian cuts worse than the average state agency. According to analysis from the Pennsylvania Budget and Policy Center, "General Fund support for DEP has decreased 39% since 2007-08 (Figure 22); adjusted for inflation the cut is about 50%. This year, the Department of Environmental Protection would see a further 13% decrease in nominal dollar funding under Governor Wolf's proposal, from \$158.5 million to \$137.8 million." *Id.* at page 32. Governor Wolf is proposing to raid special funds to cover some of that deficit. *Id.* at pages 33-35. Even if that happens, it is not a sustainable solution.

The Department writes, "However, if either or both of the General Fund Appropriation money allocated to the Air Quality Program or Federal Grant funding decrease significantly, this will create additional pressure to implement increases to the plan approval application and operating permit fees and consider additional new fees to maintain the solvency of the Clean Air Fund." *See* Fiscal Analysis at page 27. This is already foreseeable. Rather than have the Department need to repeat this process shortly, the EQB should request the Department to raise the amounts of its proposed fees to adjust for the anticipated decrease in General Fund Appropriation for the upcoming budget year, and further projected decreases due to lowered Commonwealth revenues in the years to come.

**The Proposed Fee Schedule Should be Higher—
High Enough to Fully Fund the Air Quality Program**

Even setting aside the need to raise the fees to levels high enough to compensate for foreseeable drops in General Funding, Commenters urge the EQB to set higher rates to ensure the Department can comply with the law and adequately serve the public and regulated community. The proposed fee schedule would only "maintain [the Air Quality Program's] current level of effort." Simply maintaining the current level of effort is not enough to meet the requirements of the Clean Air Act, because the Department has been starved and understaffed over the last two decades.

As of a year ago, 47 out of the 285 positions in the Air Quality staffing (16.5%) were vacant. *See* Fiscal Analysis at page 14. These positions need to be filled, but the Amendments as they stand would not accomplish that. Rather, the Amendments would only allow the Department to "gradually fill 17 currently vacant Title V positions," leaving more than a tenth of the vacant positions still unfilled. *See* Proposed Rulemaking at page 16. This is plainly inadequate.

⁴ Commonwealth of Pennsylvania Budget in Brief, 2019-20, available at https://www.budget.pa.gov/PublicationsAndReports/CommonwealthBudget/Documents/2019-20%20Proposed%20Budget/2019-20_Budget_in_Brief_Web.pdf, page 20.

⁵ Keystone Research Center and PA Budget and Policy Center, "Pointing in the Right Direction but Limited by a Lack of Revenue: An Analysis of the Governor's Proposed 2019-20 Budget," March 2019, available at https://www.pennbpc.org/sites/default/files/2019_BudgAnalysisFinal.pdf, page 4.

The greater need, though, is to remedy the understaffing caused by losses of air quality positions. On pages 3 and 4 of the Form, the Department documents the decline in its funding, staffing, and services over the last fourteen years.

Since the last fee increase in 2005, the Department has tried to maintain parity between its revenue and expenditures by reducing costs associated with administering the Air Quality Program. In addition to streamlining the air permitting program through the Permit Decision Guarantee policy, creating the online Request for Determination (RFD) form, developing general plan approvals and general operating permits for 19 source categories, and establishing electronic emissions reporting, the Department has reduced the number of air quality staff by 72 positions from 349 to 277, or 21 percent.

Looking back further, losses are even starker: “The Air Quality Program has seen significant reductions in staff since 2000 (99 positions or 26%).” *See* Notice of Proposed Rulemaking at page 15. The Air Quality Program’s losses are not belt-tightening, they are understaffing.

EPA conducted an audit of DEP’s air monitoring network and found major non-conformance of the program—which was unacceptable and must be remedied—due to understaffing.⁶ Merely reaching compliance with federal law required hiring, EPA concluded: “Vacant positions need to be filled in order to continue operating air monitoring program pursuant to 40 CFR 58 Appendix A.” *Id.*

The Department at the time acknowledged that “Staffing levels have been a major issue. Critical work is being completed, however the program has had to operate in reactive mode instead of proactive. Hiring has begun again in mid-2015 with a full complement expected by mid-2016.” *Id.* That complement did not materialize. In a comment-response document the Department drafted in October 2017, it responded to comments requesting the Department to enhance its monitoring network by remarking, “In addition, please be aware that the Department continues to be constrained by insufficient staffing levels.”⁷

Plenty of other evidence underscores DEP’s lack of compliance due to understaffing. For example, the data show that the Department has not managed to timely process Title V Operating Permit applications. The Group Against Smog and Pollution recently analyzed the Department’s

⁶ *See* US EPA Region 3, Technical Systems Audit of the Pennsylvania Department of Environmental Protection, Bureau of Air Quality, 2015, appended hereto, pages 5-6.

⁷ Pennsylvania’s 2017 Ambient Air Monitoring Network Plan Comment/Response Document, October 2017, page 6, available at <http://www.depgreenport.state.pa.us/elibrary/PDFProvider.aspx?action=PDFStream&docID=12300&chksum=&revision=0&docName=02+2017+ANNUAL+AMBIENT+AIR+MONITORING+NETWORK+PLAN+COMMENT+AND+RESPONSE+DOCUMENT.PDF+&nativeExt=pdf&PromptToSave=False&Size=755542&ViewerMode=2&overlay=0>.

records from its regional offices to determine the backlog of Title V application.⁸ It discovered that 26 major source Title V Operating Permits were backlogged or unissued (i.e. the facility is operating without the required permit), across all but one regional office. *Id.*

The Department is unable to shift significant resources to the Air Quality Program from other programs because the Commonwealth has starved them too. A couple years ago, PA Environment Digest gathered documentation of deficiencies in many of the Department's programs, including four water programs and a mining program.⁹ In 2014, the Auditor General conducted a Special Performance Audit on "DEP's performance in monitoring potential impacts to water quality from shale gas development, 2009 -2012."¹⁰ The audit concluded that "as evidenced by this audit, DEP needs assistance. It is underfunded, understaffed, and does not have the infrastructure in place to meet the continuing demands placed upon the agency by expanded shale gas development." *Id.*

The evidence is stark that the Department has not been able to fulfill its obligations due to underfunding and understaffing. Legal compliance is important, and for that reason alone, EQB should revise the proposed Department fee schedule upward to cover actual costs.

However, we should not lose track of the crucial role the Department's air quality program plays in preventing premature deaths, chronic disease, crop damage, and overall harm to Pennsylvania residents and local ecologies. Our lives depend on the purity and stability of our air and climate. The Department is the agency at the front lines charged with preserving them.

Better funding would remedy the main complaint industry has about the Department as well—its slowness in processing permit applications. Without enough staff, the Department can neither process nor enforce permits adequately.

The Department writes to IRRC, "The proposed fee structure would ensure the continued protection of public health and welfare of the approximately 12.8 million Commonwealth residents and the environment, and allow the Commonwealth to meet the obligations required by the CAA." Form at page 4. Not quite so. The proposed fee structure would help the Department avoid major declines in its ability to protect the health and welfare of Pennsylvanians, but it is not enough to ensure protection, nor enough to achieve legal compliance. For that, the EQB must raise the fees substantially from the proposed rates in the Amendments.

⁸ See GASP, "By the Numbers: A Look at Allegheny County Health Department, DEP Title V Permit Backlog Reduction Efforts," April 19, 2019, available at <https://gasp-pgh.org/2019/04/19/by-the-numbers-a-look-at-allegheny-county-health-department-dep-title-v-permit-backlog-reduction-efforts/>.

⁹ David E. Hess, "EPA: DEP Lacks Resources To Enforce Minimum Federal Safe Drinking Water Regs," *PA Environment Digest*, January 31, 2017, available at <http://www.paenvironmentdigest.com/newsletter/default.asp?NewsletterArticleID=38651>.

¹⁰ Available at <https://www.paauditor.gov/Media/Default/Reports/speDEP072114.pdf>.

Besides the Need for Higher Fees, the Details of the Amendments are Reasonable

Commenters have not identified any significant problems in the other details of the Amendments besides the fee schedule needing an upward adjustment.

The Department remarks that its proposal to institute an “annual maintenance fee” as opposed to an increase in an emissions fee is the best option because it spreads out the burden of the program costs more evenly across Title V facilities. *See* Fiscal Analysis at pages 33-34. The proposal has the added benefit, which the Department does not discuss, of making the program more sustainable long-term if emissions continue to decrease. There is a drawback in this approach in that it presents less of a deterrent for higher increased emissions. However, the Department’s choice to go with an annual maintenance fee is a reasonable way to balance the benefits and drawbacks.

The rulemaking contains a new Section 127.465, titled Operating Permit Modifications. Commenters request that the Department provide a more complete explanation of the purpose of this section.

Lastly, Commenters support the introduction of a fee for requests to the Department to treat permitting materials confidentially. Besides the obvious benefit of pricing a request which imposes costs on the agency, there is the added benefit of giving the permit applicant “skin in the game” in making the request.

Based on Commenters’ experience reviewing permit applications and litigating some of the resulting permits, claims of confidentiality are often made overzealously, including materials that are not truly confidential. This needlessly puts more application material out of reach of public access and scrutiny, hampering the public’s ability to comment on and watchdog permit applications. Excessive withholding due to claims of confidentiality is a problem with little remedy at the moment. It should be deterred.

First and foremost, the Department should more closely scrutinize claims of confidentiality. Fixing the Department’s understaffing—see above—is needed for that. Meanwhile, though, building in a fee for claims of confidentiality may help deter frivolous claims.

Conclusion

Commenters strongly urge the EQB to adopt the Air Quality Fee Schedule Amendments after making upward adjustments of the rates to compensate for (1) the forecast drop in General Funding for the Department and (2) the need to restore the Air Quality Program and bring it back into legal compliance.

Sincerely,



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Appendix

**TECHNICAL SYSTEMS AUDIT
OF THE
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY
2015**

Conducted by US EPA Region 3
Air Protection Division
Office of Air Monitoring and Analysis

November 2015

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1.0 EXECUTIVE SUMMARY

This document is a final report on the findings made by the United States Environmental Protection Agency (EPA), Region 3 Air Protection Division, Office of Air Monitoring and Analysis, following a Technical Systems Audit (TSA) for the Pennsylvania Department of Environmental Protection (PADEP) Bureau of Air Quality (BAC) ambient air monitoring program in accordance to 40 CFR 58 Appendix A Section 2.5:

"Technical systems audits of each ambient air monitoring organization shall be conducted at least every 3 years by the appropriate EPA Regional Office and reported to the AQS."

A TSA is an on-site review and inspection of a state or local agency's ambient air monitoring program to assess its compliance with established regulations governing the collection, analysis, validation, and reporting of ambient air quality data. It includes (but is not limited to) on-site interviews with key program personnel, evaluations of ambient air monitoring sites operated by the state or local, and a review of quality assurance and data reported to EPA's Air Quality System (AQS).

The TSA primarily focused on PA DEP's: network management, quality assurance/quality control, data management, field and laboratory operations, and facilities. Region 3 identified several major findings. Those findings are discussed in detail with recommendations and corrective actions in Section 3 of this report. The most significant findings are:

- The Field Operations & Maintenance Section (FOMS) does not have adequate personnel resources to operate PA DEP's SLAMS network.
- Missing approved QAPPs for several NAAQS pollutants. Missing approved QAPPs for several NAAQS pollutants.
- Ozone sensors are not traceable to the Regional Standard Reference Photometer (SRP).
- Backup temperature and humidity sensors used for PM_{2.5} filter weighing are not verified.
- Standard Operating Procedures for ambient air analyzers and samplers need to be updated.
- PM_{2.5} continuous FEM and PM_{2.5} FRM at the Farrell site (AQS ID: 42-085-0100) do not satisfy the siting criteria for collocation.

2.0 INTRODUCTION

PA DEP operates the Commonwealth of Pennsylvania Air Monitoring System (COPAMS) and Air Toxics network. Combined there are a total of 72 monitoring sites located throughout six regions (Southeast, Northeast, South Central, North Central, Southwest and Northwest) in Pennsylvania. COPAMS sites monitor and sample for criteria pollutants [Carbon Monoxide (CO), Ozone (O₃), Lead (Pb), Nitrogen Dioxides (NO₂) and Particulate Matter (PM_{2.5}, and PM₁₀), and Sulfur Dioxide (SO₂)], Meteorology, PM Coarse and Speciated PM_{2.5}. Air Toxic sites collect samples that are analyzed for heavy metals (ex. mercury and chromium) and VOCs (ex. benzene, trichloroethylene, and methylene chloride). Heavy metals, lead (Pb), PM filter weighing and TO-15 canisters are analyzed by the Bureau of Laboratories (BOL) in Harrisburg PA.

On July 27-30, 2015 the Region 3 audit group, comprised of Kia Hence, Loretta Hyden and Elizabeth Gaige, conducted a Technical Systems Audit for PA DEP's air monitoring network. Prior to the audit, PA DEP submitted the Appendix H TSA Questionnaire for Region 3's review. Table 1 lists DAQ, BOL Laboratory and EPA audit participants. Region 3 greatly appreciates the efforts made by PA DEP to make the TSA audit successful.

TABLE 1: TSA PARTICIPANTS

PA DEP PARTICIPANTS	
NAME	POSITION
Don Torsello	Field Operations and Maintenance – Section Chief
Sean Nolan	Quality Assurance & Data Assessment – Section Chief
Brian Hurzing	Quality Assurance and Quality Control
Larry Schaeffer	Quality Assurance and Quality Control
Dave Hoffman	Field Operations
Rob Valentich	Field Operations
David Fenstermacher	Field Operations
Jon Ferdinand	Field Operations
Roger Briggs	Field Operations
Tim Matzik	Field Operations
Jim McAvoy	Field Operations
Doug Schardt	Field Operations
PA BUREAU OF LABORATORIES	
Taru Upadhyay	Technical Director
Jim Yoder	Quality Assurance and Safety
EPA REGION 3 AUDITORS	
NAME	POSITION
Kia Hence	Physical Scientist
Loretta Hyden	Environmental Engineer
Elizabeth Gaige	Life Scientist

3.0 TSA FINDINGS

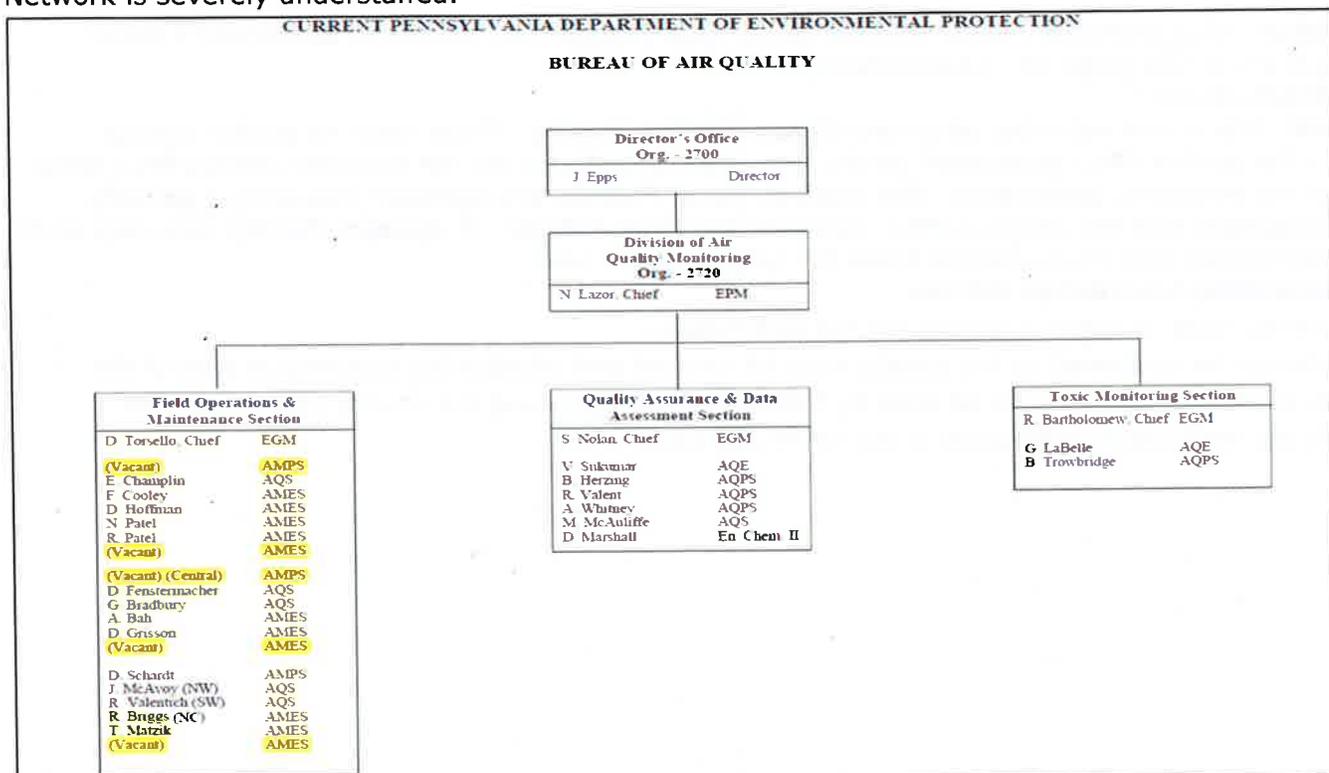
This section lists audit findings made by the EPA Region 3 audit team. In September 2015, Region 3 sent an initial audit findings summary (Appendix A) to PADEP for their review. Subsequent calls and emails between Region 3 and PADEP to discuss the findings. PADEP responded to the findings summary; those comments are in Appendix B of this report. Region 3 found issues in the areas of network management, quality assurance/quality control, and laboratory and field operations.

TSA findings are categorized and defined as:

Major	Nonconformance of high importance which is unacceptable and must be remedied. Such nonconformances impact data quality, indicate unacceptable procedures are in use (per guidance documents), endanger staff members, and/or obscure the traceability of data.
Minor	Nonconformance of somewhat lesser importance as compared to a major finding, but one that should be remedied. Such nonconformances have marginal impact on data quality. Action taken to address such nonconformances will yield improvements in data quality and/or bring procedures into full compliance with guidance documents and/or quality system standards.
Observation	Either a nonconformance with no impact to data quality or a recommendation for an improved or best practice

MONITORING NETWORK (MN)

Finding MN1: The Field Operation & Maintenance Section (FOMS) responsible for maintaining the SLAMS Network is severely understaffed.



Finding Type: MAJOR

Discussion: *"The monitoring organization's quality system must have adequate resources both in personnel and funding to plan, implement, assess and report on the achievement of the requirements of this appendix and its approved QAPP". 40 CFR Part 58 Appendix A 2.1.3*

At the time of the audit, there were five (5) vacant staff positions in FOMS. PADEP stated in the TSA Appendix H Questionnaire that: *"Staffing levels have been a major issue. Critical work is being completed, however the program has had to operate in a reactive mode instead of proactive. Hiring has begun again in mid-2015 with a full complement expected by mid-2016."* EPA auditors found significant concerns with PADEP's field staff shortage. Critical tasks/operations are being performed, however the work is done by personnel who have to shoulder their workload with that of the vacant positions. In some cases, field supervisors are operating field sites in addition to their own responsibilities.

Recommendation/Corrective Action: Vacant positions need to be filled in order to continue operating air monitoring program pursuant to 40 CFR 58 Appendix A.

QUALITY ASSURANCE (QA)

Finding QA1: It's not clear if PADEP receives PM_{2.5} & PM₁₀ weighing room conditions (temperature and humidity) from BOL.

Finding Type: MAJOR

Discussion: Weighing room environmental conditions for PM_{2.5} & PM₁₀ are critical criteria that must be met for sample validation. As part of their QA/QC validation procedures PADEP should periodically review BOL's 24 hour average temperature and humidity data to ensure that these criteria are met.

Recommendation/Corrective Action: PADEP should request and review weighing room conditions periodically for PM_{2.5} and PM₁₀.

Finding QA2: PM_{2.5} instrument serial number on QC data sheets does not match instrument's serial number at the Erie site (AQS ID: 42-049-0003).

Finding Type: MAJOR

Discussion: Inaccurate reporting adversely affects the data quality. There were no quality control records for the current PM_{2.5} instrument at the site. The site operator did not have the correct PM_{2.5} serial number on the electronic worksheets. EPA auditors found that the site operator was using a partially prefilled worksheet with the previous PM_{2.5} instrument's serial number. It appears that the incorrect serial number was carried over from sheet to sheet for long period of time.

Recommendation/Corrective Action:

1. Field sheets must be filled in accurately and completely.
2. The information contained on the sheets must be verified and checked for accuracy as part of the validation process. This should be done by field staff, managers and the quality assurance staff.
3. Specify the verification procedures in the QAPP and SOP.

Finding QA3: The PM_{2.5} (TEOM 1400A) serial number on the QC data sheet does not match serial number of PM_{2.5} (TEOM 1400A) at the New Castle site (AQS ID: 42-073-0015).

TEOM SERIES 1400ab PM₁₀ CALIBRATION SUMMARY

Sensor Model: TEOM 1400AB
Sensor S/N: 226529906
Date of Last Calibration: 12/16/2014

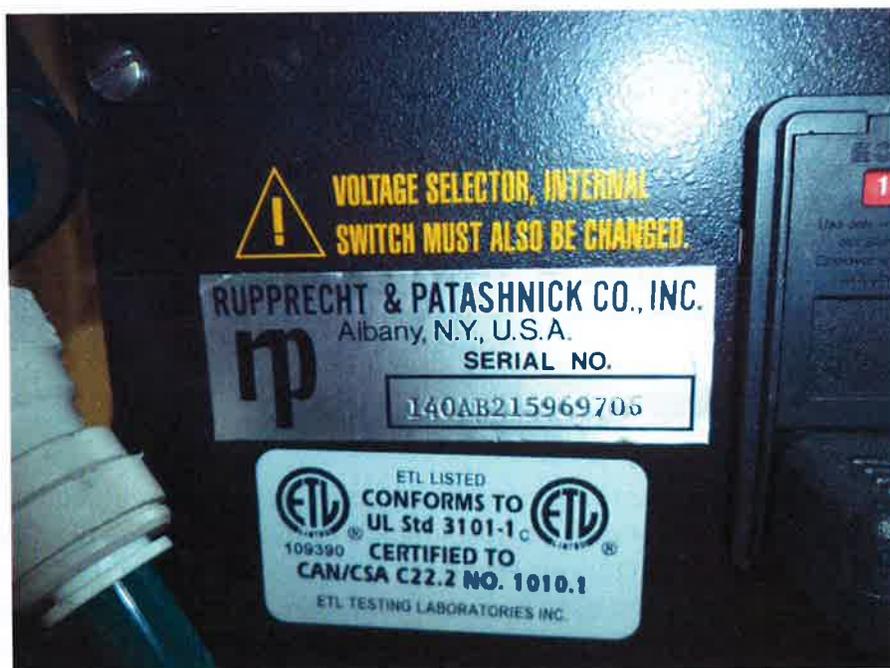
Analog Calibration Summary (Input Channels 8-14 for 1400ab series only)

Analog Input Channel	Unadjusted Reading in % F.S.	Adjusted Reading in % F.S.	Analog Input Channel	Unadjusted Reading in % F.S.	Adjusted Reading in % F.S.
8	89.97	90.00	9	89.97	90.00
9	89.98	90.00	10	90.00	90.00
10	89.94	90.00	11	89.98	90.00
11	89.97	90.00	12	89.98	90.00
12	89.98	90.00	13	89.99	90.00
13	89.97	90.00	14	89.98	90.00
14	89.97	90.00	15	90.00	90.00

Ambient Temperature and Pressure Calibration (TEOM SERIES 1400ab only)

Actual reading	Sensor reading		% Error
	Unadjusted	Adjusted	
Ambient Temperature reading in °C	25.100	24.000	-1.99
Ambient Pressure reading in atmos	0.949	0.949	0.00

MPC Hardware Calibration Summary



Finding Type: MAJOR

Discussion: The field data sheets reported the site's TEOM instrument (S/N 140AB215969706) as S/N 140AB226529906. There were no quality control records for the current PM_{2.5} instrument at the site. The site operator did not have the correct PM_{2.5} serial number on the electronic worksheets. EPA auditors found that the site operator was using a partially prefilled worksheet with the previous PM_{2.5} instrument's serial number. It appears that the incorrect serial number was carried over from sheet to sheet for long period of time.

Recommendation/Corrective Action:

1. Field sheets must be filled in accurately and completely.
2. The information contained on the sheets must be verified and checked for accuracy as part of the validation process. This should be done by field staff, managers and the quality assurance staff.
3. Specify the verification procedures in the QAPP and SOP.

Finding QA4: Inconsistent and incomplete recording field data into logbooks and/or electronic files. The amount of data and information recorded in logs is inconsistent and varies from operator to operator.

Finding Type: MAJOR

Discussion: PADEP uses standard worksheets and electronic logs for recording QC checks and instrument diagnostics. However, the information recorded in the logbooks ranged from detailed to vague and incomplete. In our interviews, the field staff had differing opinions as to what information should be recorded.

Recommendation/Corrective Action:

1. Develop standard procedures for documenting QC and instrument maintenance information (ex. worksheet template for manual PCs).
2. Train staff to ensure that the new procedures are followed.

Finding QA5: Ozone station analyzers (sensors) responsible for generating 1-point QC and Span checks are not verified against a higher Level O₃ standard traceable to the Regional Standard Reference Photometer (SRP).

Finding Type: MAJOR

Discussion: The station analyzer (sensor) is calibrated three times a year but it is not verified according to the *Transfer Standards For Calibration of Air Monitoring Analyzers for Ozone Technical Assistance Document*. All O₃ transfer standards must be traceable to a Level 1 standard.

<http://www.epa.gov/ttnamti1/files/ambient/qaqc/OzoneTransferStandardGuidance.pdf>

Recommendation/Corrective Action: The transfer standards used for generating the span and 1-point QC checks must be verified according to the Transfer Standard TAD. Initially, each sensor will need 6x6 verifications then 6x1 thereafter according to the schedule specified in Table 3-1 of the TAD.

Finding QA6: Missing approved QAPPs for several NAAQS pollutants.

Finding Type: MAJOR

Discussion: QAPPs are a major component of a quality system. They are a "blueprint" for obtaining quantity and quality of data needed to support environmental decision making. The QAPP documents all quality assurance (QA), quality control (QC) and technical activities and procedures associated with planning, implementing, documenting and assessing environmental data operations. Region 3 reviewed the QAPPs submitted by PADEP and is awaiting revisions. PADEP is working on those revisions and plans to re-submit QAPPs for approval.

Recommendation/Corrective Action: PADEP must submit a QAPP schedule to EPA Region 3 on anticipated QAPP submissions. All QAPPs need to be submitted by 12/31/2015.

Finding QA7: Bureau of Laboratories: Standard Operating Procedure for PM_{2.5} "*Determination of PM_{2.5} Particulate Matter in Ambient by Gravimetric Analysis EPA Title 40 CFR Appendix L to Part 50*" Revision 002, the SOP does not indicate what actions are taken if the weighing room temperature and humidity exceeds the criteria.

Finding Type: MAJOR

Discussion: The SOP doesn't indicate if filter weighing is suspended when the weighing room is outside acceptable criteria for temperature and humidity.

Recommendation/Corrective Action: Update the SOP to indicate the actions taken when the weighing room's temperature and humidity exceed criteria.

Finding QA8: Standard Operating Procedures for ambient air analyzers and samplers need to be updated.

Finding Type: MAJOR

Discussion: SOPs for criteria pollutants are not up to date.

Recommendation/Corrective Action: Update standard procedures for all data collecting activities.

Finding QA9: At the Erie site (AQS ID: 42-049-0003) Electronic files were disorganized on the Operator's computer.

Finding Type: MINOR

Discussion: The EPA audit team found no standard filing system for electronic records. QC and maintenance files were disorganized; the station operator couldn't produce all of the QC records at the time of the audit. Field staff save the QC and maintenance records on a central server but not all site operators retain a copy for their records.

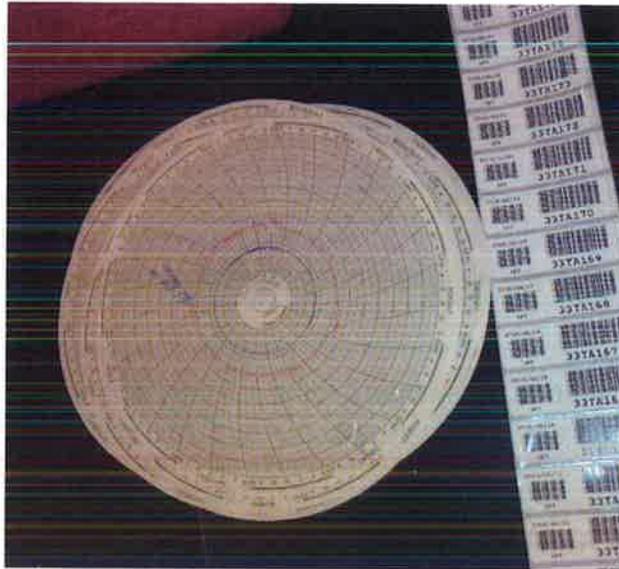
Recommendation/Corrective Action:

1. Develop standard filename conventions and organize files into folders.
2. Update SOPs and QAPPs to include PADEP's electronic file system.

LABORATORY (LAB)

Finding LAB1: PM_{2.5} filter weighing: backup temperature and humidity sensors not verified. The backup system has a digital output and uses a Dixon chart to record the room's conditions. At the time of the audit the digital reading did not match the chart recorder reading.





Finding Type: MAJOR

Discussion: BOL should have backup temperature and humidity sensors in addition to the Building's maintenance system. These backup sensors should be checked periodically and verified annual.

Recommendation/Corrective Action:

1. Install secondary temperature and humidity sensors as a backup to the primary MDL system.
2. Verify the sensors against a NIST traceable standard annually and check them routinely

Finding LAB2: PM₁₀ filter weighing log had RH% above 45% that exceeded the weighing criteria.

Finding Type: MAJOR

Discussion: The lab recorded humidity values above the acceptance criteria. There were no comments for values greater than 45% RH in the logbook. It's not clear if filters were weighed outside of the acceptance criteria. The PM₁₀ filter conditioning requirement is a humidity range between 20% - 45% RH. Filters must be conditioned and weighed according 40 CFR 50 Appendix J Section 7

Recommendation/Corrective Action: Flag PM₁₀ data (in AQS) for the last three years where the weighed filters exceeded the humidity and/or temperature criteria using the QA code "1" (Deviation from a CFR/Critical Criteria Requirement).

FIELD SITES (FSE)

Finding FSE1: Spacing from trees: BAM 1020 continuous PM_{2.5} monitor is 7.62m (25ft.) from the tree drip-line at the Johnstown site (AQS ID: 42-0021-0011).



Finding Type: MAJOR

Discussion: PM_{2.5} inlets must be 10m from the dripline and should be greater than 20m from the dripline when tree(s) act as an obstruction. 40 CFR part 58 Appendix E Table E-4.

Recommendation/Corrective Action: (1) The tree(s) must be removed or cutback or (2) the inlet must be moved to adhere to the minimum requirements in Appendix E.

Finding FSE2: The collocated PM_{2.5} continuous and PM_{2.5} FRM monitors are 6m apart. The FRM is on the ground and the continuous on roof of the shelter at the Farrell site (AQS ID: 42-085-0100).



Finding Type: MAJOR

Discussion: PM_{2.5} collocating FRM and FEM: The inlets to be within 1-4 meters horizontally and 1 meter vertically. EPA can accept a vertical difference of 3 meters if PADEP requests a waiver from the Regional Administrator. *"A waiver allowing up to 10 meters horizontal distance and up to 3 meters vertical distance (inlet to inlet) between a primary and collocated sampler may be approved by the Regional Administrator for sites at a neighborhood or larger scale of representation."* 40 CFR 58 Appendix 3.2.5.6

Recommendation/Corrective Action: PADEP must either:

1. Move FRM to roof of the station to meet the vertical collocation requirements from inlet to inlet.
2. Request a waiver from the R3 Administrator attached to 2016 Annual Network Plan.

Finding FSE3: The Met One BAM 1020 inlet tube at the Washington site (AQS ID: 42-125-0020) was slightly angled and not perpendicular to the base of the instrument.

Finding Type: MAJOR

Discussion: *"To achieve proper alignment, the BAM-1020 must be level, and the inlet tube must be absolutely vertical. This alignment is important to avoid transverse stress on the inlet as it enters the top of the BAM-1020. Stress may interfere with nozzle movement or cause air leaks at the BAM inlet."*

Standard Operating Procedure for the Continuous Measurement of Particulate Matter, Met One BAM-1020 PM_{2.5} Federal Equivalent Method EQPM-0308-170 Section 9.5.1 page 9-7.

Recommendation/Corrective Action:

1. Straighten the inlet and downtube so that it's perpendicular to the base.

2. Review data and flag or invalidate data as appropriate.

Finding FSE4: Dirty manifold at the Hookstown site (AQS ID: 42-007-0002).

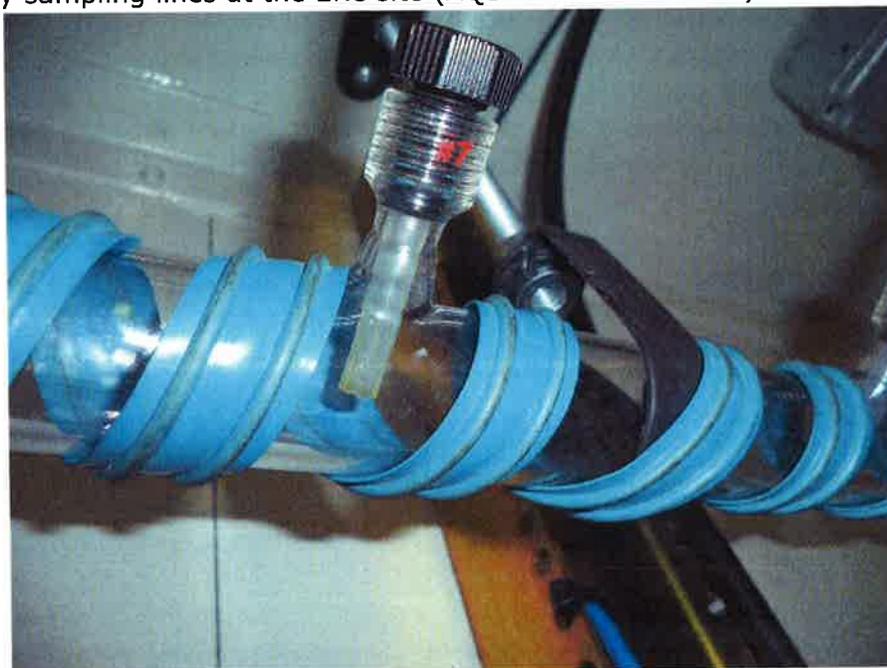


Finding Type: MINOR

Discussion: Small insects and particles can accumulate inside of the tubing. This can cause blockage and affect the response of the instruments. In addition, particles can collect inside the tubing, especially at the entrance, thus affecting precursor gas concentrations.

Recommendation/Corrective Action: Clean the manifold. It's recommended that manifolds be cleaned every 6 months or sooner if needed.

Finding FSE5: Dirty sampling lines at the Erie site (AQS ID: 42-049-0003).

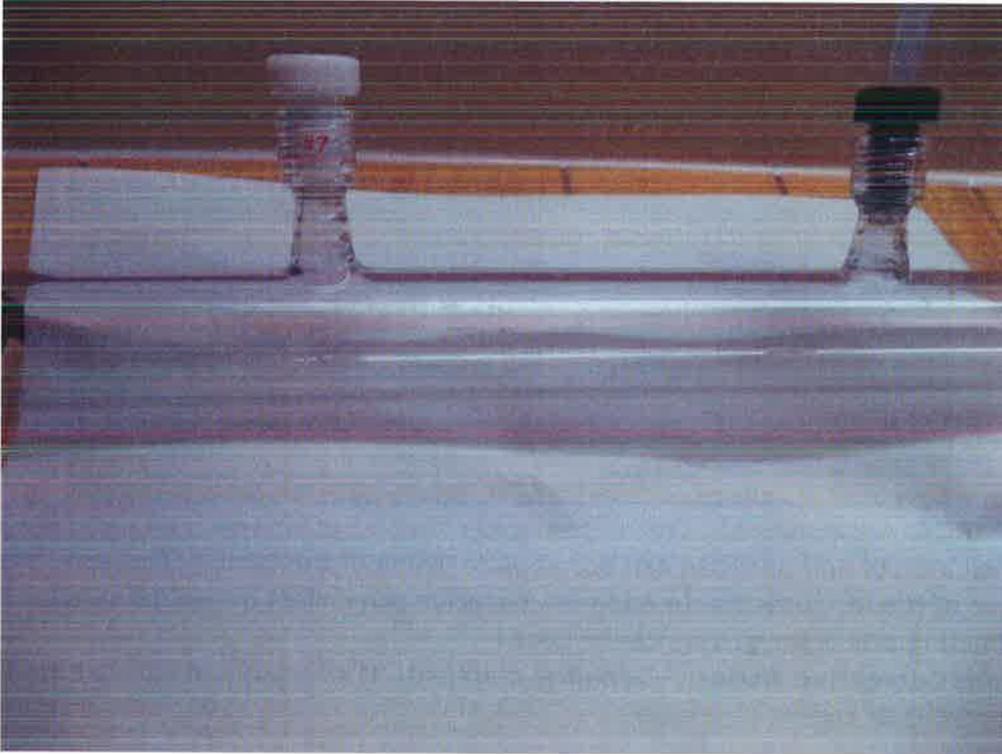


Finding Type: MINOR

Discussion: Small insects and particles can accumulate inside of the tubing. This can cause blockage and affect the response of the instruments. In addition, particles can collect inside the tubing, especially at the entrance, thus affecting precursor gas concentrations.

Recommendation/Corrective Action: Replace dirty sampling lines.

Finding FSE6: Dirty manifold and sampling lines at the Strongstown site (AQS ID: 42-063-0004).



Finding Type: MINOR

Discussion: Small insects and particles can accumulate inside of the tubing. This can cause blockage and affect the response of the instruments. In addition, particles can collect inside the tubing, especially at the entrance, thus affecting precursor gas concentrations.

Recommendation/Corrective Action: Clean the manifold and replace dirty sampling lines. It's recommended that manifolds be cleaned every 6 months or sooner if needed.

Finding FSE7: Meteorological tower less than 10 meters high at the Farrell site (AQS ID: 42-085-0100).

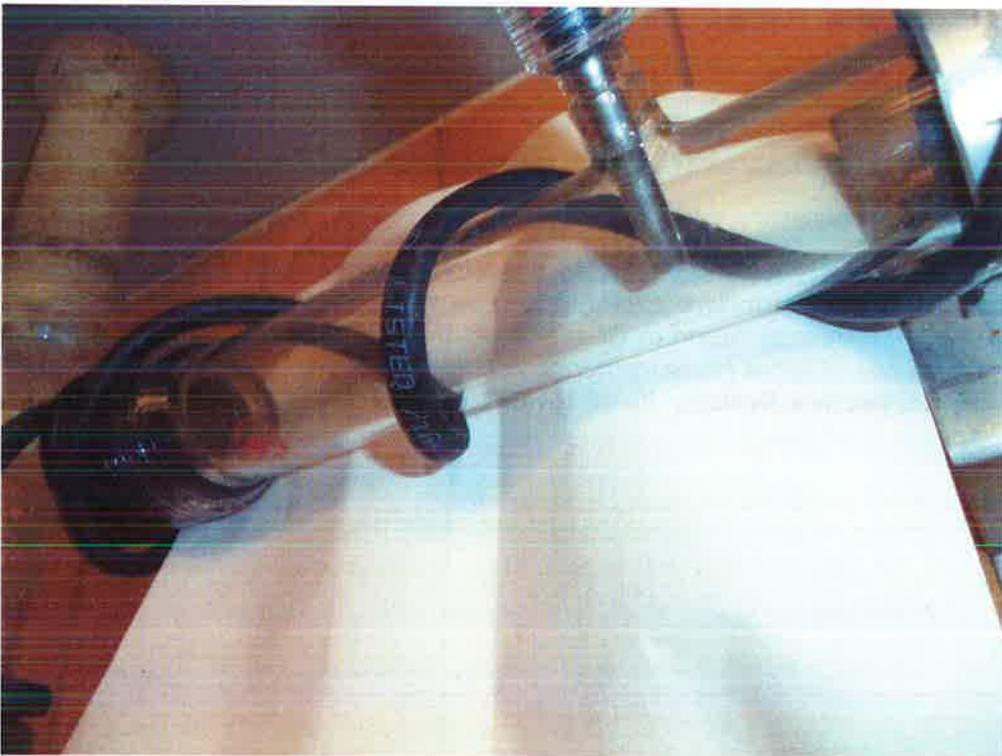
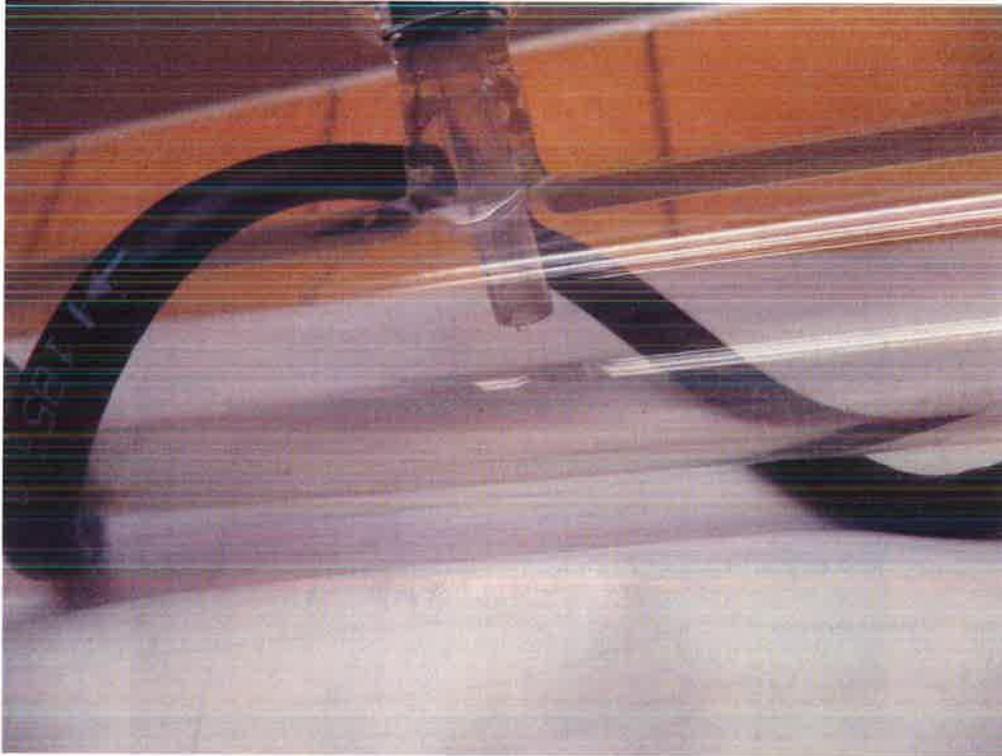


Finding Type: MINOR

Discussion: "To accommodate wind speed/wind direction sensors, a meteorological tower must be able to reach a height of 10 m. The standard exposure of the wind instruments over level, open terrain is 10 meters above ground." References found in *Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV: Meteorological Measurements Version 2.0 (Final) 2008*.

Recommendation/Corrective Action: Raise tower to 10 meters.

Finding FSE8: Dirty manifold at the Florence site (AQS ID: 42-125-5001).



Finding Type: MINOR

Discussion: Small insects and particles can accumulate inside of the tubing. This can cause blockage and affect the response of the instruments. In addition, particles can collect inside the tubing, especially at the entrance, thus affecting precursor gas concentrations.

Recommendation/Corrective Action: Clean the manifold. It's recommended that manifolds be cleaned every 6 months or sooner if needed.

Finding FSE9: The Greensburg site's (AQS ID: 42-129-0008) collocated FEM PM_{2.5} BAMS sampler's concentration (26.64 ug/m³) read 2x greater than the primary PM_{2.5} FEM sampler (12.69ug/m³).

Finding Type: MAJOR

Discussion: The collocated BAMS unit is located next to the air conditioner's vent. Cold air is blows directly on the unit. This could be affecting the sampler's operations and causing the higher concentrations and disparity between the primary and collocated units.

Recommendation/Corrective Action:

1. Both instruments are reported to AQS (POC 3 & POC 4). Data should be reviewed and analyzed. Questionable data should be flagged.
2. Block the air from the vent of move the instrument father away.

Finding FSE10: Water marks found near inlet receiver where downtube meets the unit at the Washington site (AQS ID: 42-125-0020). Dirt was visible on unsampled tape.

Finding Type: Observation

Discussion: Water marks found can indicate that the shelter seal around the downtube is leaking.

Recommendation/Corrective Action: Replace or tighten the seal.

Finding FSE11: PADEP doesn't use control/strip charts in the ambient air monitoring network.

Finding Type: Observation

Discussion: With the objective to minimize data loss, quality control data are most beneficial when they are assessed as soon as they are collected. Information management systems can play a very important role in reviewing QC data and flagging or identifying spurious data for further review. These information management procedures can help the technical staff review the QC checks coming from a number of monitoring sites in a consistent and time efficient manner. There are many graphical techniques (e.g., control charts and outlier checks) that can be employed to quickly identify suspect data.

Recommendation/Corrective Action: Recommend using graphical tools to chart data and perform trends analysis.

APPENDIX A
Region 3's PADEP 2015 TSA Findings Summary

PADEP BUREAU OF AIR QUALITY (BAC) TSA 2015 Finding Summary

MONITORING NETWORK (MN)								
FINDING No.	Finding Type	SITE	AIRS CODE	FINDING	DISCUSSION	CORRECTIVE ACTION / RECOMMENDATION	PADEP Comments	
MN-1	MAJOR	PADEP	N/A	The Field Operation & Maintenance Section (FOMS) responsible for maintaining the SLAMS Network is severely understaffed.	The monitoring or organization's quality system must have adequate resources both in personnel and funding to plan, implement, assess and report on the achievement of the requirements of this appendix and its approved QAPP. 40 CFR Part 58 Appendix A 2.1.3 Currently there are six (6) vacant staff positions in FOMS. Critical tasks/operations are in danger of not being performed. FOMS personnel are tasked with providing coverage for the vacant positions in addition to performing their own duties. For example, one of the field supervisors is operating field sites in addition to his other responsibilities due to the staffing shortage. Additional staff are needed to continue to operate the PADEP's SLAMS network.	Vacant positions need to be filled in order to continue operating air monitoring program pursuant to 40 CFR 58 Appendix A.		
QUALITY ASSURANCE (QA)								
FINDING No.	Finding Type	SITE	AIRS CODE	FINDING	DISCUSSION	CORRECTIVE ACTION / RECOMMENDATION	PADEP Comments	
QA-2	MAJOR	N/A	N/A	It's not clear if BAC receives PM _{2.5} & PM ₁₀ weighing room conditions (temperature and humidity) from BOL. See comment LAB-2.	Weighing room environmental conditions for PM _{2.5} & PM ₁₀ are critical criteria that must be met for sample validation. As part of their QA/QC validation procedures PADEP should periodically review BOL's 24 hour average temperature and humidity data to ensure that these criteria are met.	BAC should request weighing room conditions for PM _{2.5} and PM ₁₀ .		
QA-1	MAJOR	Erie	42-049-0003	PM _{2.5} instrument serial number on QC data sheets does not match instrument's serial number at the station.	No quality control records for the PM _{2.5} instrument at the site. The site operator didn't update the serial number on the electronic worksheet using sheet with a different serial number. We observed that portions of the worksheet are pre-filled. It appears that the incorrect serial number was carried over from sheet to sheet for long period of time. Inaccurate reporting adversely affects the quality of data.	(1) Field sheets must be filled in accurately and completely. (2) The information contained on the sheets must be verified and checked for accuracy as part of the validation process. This should be done by field staff, managers and the quality assurance staff. (3) Specify the verification procedures in the QAPP and SOP.		
QA-2	MAJOR	New Castle	42-073-0015	PM _{2.5} (TEOM 1400A) instrument serial number on QC data sheet does not match serial number of instrument at station.	The field data sheets reported the site's TEOM instrument (sn 140AB215960706) as SN 140AB226529906. No quality control records for the PM _{2.5} instrument at the site. The site operator didn't update the serial number on the electronic worksheet using sheet with a different serial number. We observed that portions of the worksheet are pre-filled. It appears that the incorrect serial number was carried over from sheet to sheet for long period of time. Inaccurate reporting adversely affects the quality of data.	(1) Field sheets must be filled in accurately and completely. (2) The information contained on the sheets must be verified and checked for accuracy as part of the validation process. This should be done by field staff, managers and the quality assurance staff. (3) Specify the verification procedures in the QAPP and SOP.		
QA-3	MINOR	PADEP	All	Inconsistent and incomplete recording field data into logbooks and/or electronic files. The amount of data and information recorded in logs is inconsistent and varies from operator to operator.	PADEP uses standard worksheets and electronic logs for recording QC checks and instrument diagnostics. However the information recorded in the logbooks ranged from detailed to vague and incomplete. In our interviews, the field staff had differing opinions as to what information should be recorded.	(1) Develop standard procedures for documenting QC and instrument maintenance information (ex. worksheet template for manual PCs). (2) Train staff to ensure that the new procedures are followed.		
QA-4	MAJOR	PADEP	All O ₃ Sites	Ozone station analyzer (sensor) responsible for generating 1-point QC and Span checks are not verified against a higher Level O ₃ standard traceable to the Regional Standard Reference Photometer (SRP).	The station analyzer (sensor) is calibrated three times a year but it is not verified according to the Transfer Standards For Calibration of Air Monitoring Analyzers for Ozone Technical Assistance Document. All O ₃ transfer standards must be traceable to a Level 1 standard. http://www.epa.gov/ttnamti/files/transfer/qapp/Docs/TransferStandardsGuidance.pdf	The transfer standards used for generating the span and 1-point QC checks must be verified according to the Transfer Standard TAD. Initially, each sensor will need field verifications then 5:1 thereafter according to the schedule specified in Table 3-1.		
QA-5	MAJOR	PADEP	N/A	Missing approved QAPPs for several NAAQS pollutants.	PADEP is working on the revisions and plan to re-submit	PADEP must submit a time line for when the QAPPs will be submitted. All QAPPs need to be submitted by 12/31/2015.		
QA-6	MAJOR	Bureau of Laboratories	N/A	Standard Operating Procedure for PM _{2.5} "Determination of PM _{2.5} Particulate Matter in Ambient by Gravimetric Analysis EPA Title 40 CFR Appendix L to Part 50" Revision 002, the SOP does not indicate what actions are taken if the weighing room temperature and humidity exceeds the criteria.	The SOP doesn't indicate if filter weighing is suspended when the weighing room is outside acceptable criteria for temperature and humidity.	Update the SOP to indicate the actions taken when the weighing room's temperature and humidity exceed criteria.		
QA-7	MAJOR	PADEP	N/A	Standard Operating Procedures for ambient air analyzers and samplers need to be updated and outdated.	SOPs for criteria pollutants are not up to date.	Update standard procedures for all data collecting activities.		
QA-8	MINOR	Erie	42-049-0003	Electronic files are disorganized on the Operator's computer. There were loose files without a consistent naming structure.	There is no standard filing system for electronic records. QC and maintenance files were disorganized; the station operator couldn't produce all of the QC records at the time of the audit. Field staff save the QC and maintenance records on a central server but not all retain a copy for their reports.	(1) Develop standard filename conventions and organize files into folders. (2) Update SOPs and QAPPs to include PADEP's electronic file system.		
LABORATORY (LAB)								
FINDING No.	Finding Type	SITE	PROGRAM	FINDING	DISCUSSION	CORRECTIVE ACTION / RECOMMENDATION	PADEP Comments	
LAB-1	MAJOR	Bureau of Laboratories	PM _{2.5} filter weighing	PM _{2.5} filter weighing: backup temperature and humidity sensors not verified. The backup system has a digital output and uses a Dixon chart to record the room's conditions. At the time of the audit the digital reading did not match.	BOL should have backup temperature and humidity sensors in addition to the Building's maintenance system. These backup sensors should be checked periodically and verified annual.	(1) Install secondary temperature and humidity sensors as a backup to the primary MDL system. (2) Verify the sensors against a NIST traceable standard annually and check them routinely.		
LAB-2	MAJOR	Bureau of Laboratories	PM ₁₀ filter weighing	PM ₁₀ filter weighing log had RH% above 45% that exceeded the weighing criteria.	The lab recorded humidity values above the acceptance criteria. There were no comments for values greater than 45% RH in the logbook. It's not clear if filters were weighed outside of the acceptance criteria. The PM ₁₀ filter conditioning requirement is a humidity range between 20% - 45% RH. Filters must be conditioned and weighed according to 40 CFR 58 Appendix L.	Flag PM ₁₀ data (in AQS) for the last three years where the weighed filters exceeded the humidity and/or temperature criteria using the QA code "1" (Deviation from a CFR/Critical Criteria Requirement).		
FIELD SITE EVALUATIONS (FSE)								
FINDING No.	Finding Type	SITE	AIRS CODE	FINDING	DISCUSSION	CORRECTIVE ACTION / RECOMMENDATION	PADEP Comments	
FSE-1	MAJOR	Johnstown	42-0021-0011	Spacing from trees: BAM 1020 continuous PM _{2.5} monitor is 7.62m (25ft) from the tree drip-line.	Must be 10m from the dripline and should be greater than 20m from the dripline when tree(s) act as an obstruction. 40 CFR part 58 Appendix E Table E-4.	(1) The tree(s) must be removed or cutback or (2) the inlet must be moved to adhere to the minimum requirements in Appendix E.		
FSE-2	MAJOR	Farrall	42-085-0100	Collocated PM _{2.5} FEM continuous and PM ₁₀ FRM are 8m apart. FRM is on the ground and FEM on roof of the shelter.	PM _{2.5} collocated FRM and FEM: need inlet to be within 1-4 horizontally and 1 meter vertically. EPA can accept vertical difference of 3 meters if they request a waiver from the Regional Administrator. "A waiver allowing up to 10 meters horizontal distance and up to 3 meters vertical distance (in to inlet) between a primary and collocated sampler may be approved by the Regional Administrator for sites at a neighborhood or larger scale of representation." 40 CFR 58 Appendix A 3.2.5.6	PADEP must (1) move FRM to roof of the station to meet the vertical collocation requirements from inlet to inlet. Or (2) request a waiver from the Regional Administrator attached to 2016 ANP.		

FSE-3	MAJOR	Washington	42-125-0020	BAM 1020 inlet slightly angled and not perpendicular to the base.	Not operating the instrument according to manufacturer's design and instructions affects sample collections and data quality.	(1) Straighten the inlet and downtube so that it's perpendicular to the base. (2) Review data and flag or invalidate data as appropriate.
FSE-4	MINOR	Hookstown	42-007-0002	Dirty manifold.	See Comment for FSE-5.	Clean the manifold. It's recommended that manifolds be cleaned every 6 months or sooner if needed.
FSE-5	MINOR	Erie	42-049-0003	Dirty sampling lines.	See Comment for FSE-5.	Replace dirty sampling lines.
FSE-6	MINOR	Strongstown	42-063-0004	Dirty manifold and sampling lines.	See Comment for FSE-5.	Clean the manifold and replace dirty sampling lines. It's recommended that manifolds be cleaned every 6 months or sooner.
FSE-7	MINOR	Ferrell	42-085-0100	Meteorological tower less than 10 meters high.	The meteorological tower should be at 10 meters high.	Raise tower to the minimum required height of 10m.
FSE-8	MINOR	Florence	42-125-5001	Dirty manifold.	Small insects and particles can accumulate inside of the tubing. This can cause blockage and affect the response of the instruments. In addition, particles can collect inside the tubing, especially at the entrance, thus affecting accuracy and concentrations.	Clean the manifold. It's recommended that manifolds be cleaned every 6 months or sooner if needed.
FSE-9	OBSERVATION	Washington	42-125-0020	Water marks found near inlet receiver where downtube meets the unit. Dirt visible on unsealed base.	Water marks found can indicate that the shelter seal around the downtube is leaking.	Replace or tighten the seal.
FSE-10	MAJOR	Greenburg	42-129-0008	The collocated PM _{2.5} continuous BAMS sampler's concentration (28.64 ug/m ³) read 2x greater than the primary PM _{2.5} continuous sampler (12.66ug/m ³).	The collocated BAMS unit is located next to the air conditioner's vent. Cold air is blown directly on the unit. This could be affecting the sampler's operations and causing the higher concentrations and disparity between the primary and collocated units.	(1) Both instruments are reported to AQS (POC 3 & POC 4). Data should be reviewed and analyzed. Questionable data should be flagged. (2) Block the air from the vent of down the instrument farther.
FSE-11	OBSERVATION	All PADEP	All Sites	Control/Strip charts are not used.	With the objective to minimize data loss, quality control data are most beneficial when they are assessed as soon as they are collected. Information management systems can play a very important role in reviewing QC data and flagging or identifying spurious data for further review. These information management procedures can help the technical staff review the QC checks coming from a number of monitoring sites in a consistent and time efficient manner. There are many graphical techniques (e.g., control charts and outlier checks) that can be employed to quickly identify suspect data.	Recommend using graphical tools to chart data and perform trends analysis.

DEFINITIONS:

- MAJOR** Nonconformance of high importance which is unacceptable and must be remedied. Such nonconformances impact data quality, indicate unacceptable procedures are in use (per guidance documents), endanger staff members, and/or obscure the traceability of data.
- MINOR** Nonconformance of somewhat lesser importance as compared to a major finding, but one that should be remedied. Such nonconformances have marginal impact on data quality. Action taken to address such nonconformances will yield improvements in data quality and/or bring procedures into full compliance with guidance documents and/or quality system standards.
- OBSERVATION** Either a nonconformance with no impact to data quality or a recommendation for an improved or best practice.

APPENDIX B
PADEP Responses to the U.S. Environmental
Protection (EPA) Region 3 Technical System Audit

**PA Department of Environmental Protection (PADEP)
Responses to the U.S. Environmental Protection (EPA) Region 3 Technical System Audit
Conducted on July 27 – July 30, 2015**

PADEP BUREAU OF AIR QUALITY (BAC) TSA 2015 Findings

1. EPA Finding MN-1:

The Field Operation & Maintenance Section (FOMS) responsible for maintaining the SLAMS Network is severely understaffed.

PADEP Response:

The PA DEP is committed to restoring the Air Quality Monitoring (AQM) Division to its full complement in the Field Operations & Maintenance Section (FOMS). To this end, the DEP has hired a new Air Monitoring Program Supervisor (AMPS) and is awaiting completion of the hiring process for the AMPS position. DEP has also hired a new Air Monitoring Equipment Specialist (AMES) for the Cambria area. The status of recent personnel actions is summarized below.

- Position # 00052998 (Central AMPS) has been filled from within. The resulting vacancy (AMES in Westmoreland County) is in the process of being filled but must wait for State Civil Service -- testing opened in mid-October 2015.
- Position # 00060697 (Cambria AMES) was filled and the new hire starts 10/19/15.
- Position # 00009000 (Eastern AMPS) has been offered and are now awaiting final approval from HR.

Additionally in the FY2015-2016 Clean Air Fund Spending Plan, two AQM positions were approved—we anticipate authorization to move forward with the hiring process following the enactment of Pennsylvania's FY2015-2016 Budget. Barring additional hiring freezes or compliment losses, AQM is expected to have a full complement by mid-2016.

2. EPA Finding QA-2 (first one):

It's not clear if BAC [PADEP Bureau of Air Quality] receives PM_{2.5} & PM₁₀ weighing room conditions (temperature and humidity) from BOL. See comment LAB-2.

PADEP Response:

For the PM_{2.5} weighing room, the old weighing robot, which was custom built by Zymark and in use up to 4/27/15, logged room conditions into a Microsoft Access database (labeled epa2.mdb) which is stored on the state network. A copy of the epa2.mdb database has been

extracted, using data from the past 3 years (1/1/12 to 4/27/15) into Microsoft Excel and provided for your convenience. The new weighing robot (MTL), which has been in use since 4/27/15, also logs room conditions but extracts the data into an internal SQL database. The MTL software is currently programmed to produce two output reports (one for weights that are inputted into Blaze LIMS and the other for weights that are forwarded to AQM staff in a format for use within the Mid-Atlantic Regional Air Management Association's (MARAMA) database). The Lab will contract with the manufacturer to develop a third report specifying room conditions (showing dates, filter numbers, weights, temperature and RH) that will be sent to AQM staff on a monthly basis for compliance verification of EPA criteria. This procedure should be in place by January 1, 2016, barring any unforeseen circumstances.

For the PM₁₀ weighing room, the temperature and relative humidity conditions are logged manually into a "Humidity" logbook (which includes information for date, time, initials, temperature (temp), and relative humidity (RH)). A separate "Filter Weights" logbook is used to record the filter weighing event (which includes information for date, initials, filter number or lab number ranges). Unfortunately, the two logbooks cannot be cross-referenced in all cases. The Lab will modify the Filter Weights logbook to record temp and RH conditions at the actual time of weighing and implement as soon as possible. The template of the logsheet has been revised for the TSP and PM₁₀ filter weights.

It is important to reemphasize that Lab personnel do not conduct filter weighing in either the PM_{2.5} or PM₁₀ rooms when environmental conditions are outside of criteria. There was some confusion, however, on the upper % relative humidity limit for the PM₁₀ filter weight measurements with the Lab using 50% (instead of 45%) as a cutoff. This probably is a result of confusion with 40 CFR Part 50, Appendix B criteria, pertaining to TSP filter weight measurements, which are also conducted in the PM₁₀ room. Additionally Table 9-1 in the EPA Quality Assurance Handbook, Volume II incorrectly references the relevant appendix of 40 CFR Part 50, thereby adding to the confusion as to the proper upper humidity limit. The Lab is currently following procedures for PM₁₀ in 40 CFR Part 50 Appendix J. The Lab will attempt to compile a list of filter and/or Lab ID numbers where the room relative humidity was between 45% and 50%, and provide to Air Quality to allow affected data to be flagged. As noted in LAB-2, manual PM₁₀ sampling and analysis will end by January 1, 2016. Contrary to the language of the finding, in 40 CFR Part 50 Appendices B and J (pertaining to TSP and manual PM₁₀ filters), there is no requirement to conduct filter weighing under the same temperature and humidity conditions as when the filters are conditioned.

3. EPA Finding QA-1, QA-2 (second one) and QA-3:

QA-1 - *PM_{2.5} instrument serial number on QC data sheets does not match instrument's serial number at the station.*

QA-2 (second one) - *PM_{2.5} (TEOM 1400A) instrument serial number on QC data sheet does not match serial number of instrument in station.*

QA-3 - *Inconsistent and incomplete recording field data into logbooks and/or electronic files. The amount of data and information recorded in logs is inconsistent and varies from operator to operator.*

PADEP Response:

Once approval to add Microsoft Access to operator laptops is given, FOMS will transition from the use of excel- based spreadsheets and implement/improve use of a "Tracking" database being created to address these concerns by January 1, 2016. The access database manages sensor inventory, maintenance histories and deployment/location information. The database will consolidate maintenance information to allow, for instance, the ability to see the maintenance performed over the life of a sensor. FOMS/Quality Assurance (QA) management will provide training and direction to field staff at the December 2015 Division Meeting. Technicians at the Lab will also be directed to enter bench repair information into database. QA is also developing/testing a Quality Control (QC) database to replace QC spreadsheets. If workable, advantages would include the following: consolidate information in one location (which is backed up multiple times a day by IT), reduce input errors (i.e. serial numbers must match what is in the system), and implement updates easier (the main database will be updated by management personnel; there will be no need to get updated spreadsheets to operators and get them training on how to use them). QA is also working on a longer term project which includes implementing a web-based system to manage all inventory and QA / QC related information. Field operators will be able to remotely connect to the AQM servers to fill out forms and instantaneously send all necessary data to QA/QC staff and management for their review.

AQM is investigating the implementation of other initiatives such as labeling front of sensors with serial numbers and a check-in/check-out procedure when sensors come in and out of the Lab. Check-in/check-out procedures would include a designated drop-off location at the lab, logbook for sensors, and the physical tagging of equipment.

The use of the access database applications is a temporary measure to quickly add capabilities and improve maintenance tracking. In the future, the Division will look at integrating the "Tracking," "Maintenance" and "QC" databases into a single web-based application (will require contracting with a vendor) or the purchase of an off-the-shelf software package designed for this purpose.

4. EPA Finding QA-4:

Ozone station analyzers (sensors) responsible for generating 1-point QC and Span checks are not verified against a higher Level O3 standard traceable to the Regional Standard Reference Photometer (SRP).

PADEP Response:

AQM is in the process of purchasing new calibrators, which will be a permanent fixture in each monitoring station. These calibrators will be verified twice annually by a higher level ozone standard traceable to the Regional Standard Reference Photometer (SRP). In the meantime, we will continue to calibrate our sensors twice annually. On a different day, we will verify the individual ozone sensors with the field operators' ozone calibrators, which are traceable back to the Regional SRP, twice annually and on an as needed basis.

5. EPA Finding QA-5:

Missing approved QAPPs for several NAAQS pollutants.

PADEP Response:

The final lead QAPP was submitted for signature to EPA Region 3 in June 2015. The remaining QAPPs (a continuous multi-pollutant (ozone, SO₂, NO₂, and CO) QAPP and a PM_{2.5}/PM₁₀ QAPP) will be submitted to EPA Region 3 by the December 31, 2015 deadline.

6. EPA Finding QA-6:

Standard Operating Procedure for PM_{2.5} "Determination of PM_{2.5} Particulate Matter in Ambient by Gravimetric Analysis EPA Title 40 CFR Appendix L to Part 50" Revision 002, the SOP does not indicate what actions are taken if the weighing room temperature and humidity exceeds the criteria.

PADEP Response:

The Lab Standard Operating Procedures (SOPs) for both for both PM_{2.5} and PM₁₀ will be edited to include the following information:

- Temperature and relative humidity criteria ranges and the reference to Federal Regulations or other sources.
- Procedure for checking environmental conditions, when conditions are acceptable to weigh and what to do when conditions are outside the criteria range.
- Identification of the primary and backup temperature and relative humidity sensors for each room.
- Procedure for certifying all temperature and relative humidity sensors annually against a NIST-traceable standard.

SOP updates will be completed by 12/31/2015.

7. EPA Finding QA-7:

Standard Operating Procedures for ambient air analyzers and samplers need to be updated.

PADEP Response:

The Department will replace the entire network of aging air monitoring and sampling equipment within five years. SOPs for the older models will be updated by FOM Supervisors as position vacancies are filled and supervisors no longer have to service field sites. SOPs for new equipment will be written as equipment is integrated into the network by QA AQPS, FOM Supervisor and FOM AQS personnel.

8. EPA Finding QA-8:

Electronic files are disorganized on the Operator's computer. There were loose files without a consistent naming structure.

PADEP Response:

The FOMS management team will update and redistribute policy on maintaining electronic QC spreadsheet files on laptop and paper Preventative Maintenance (PM) files at site (down to the file-naming formats)

9. EPA Finding LAB-1 (PM2.5 Room):

PM_{2.5} filter weighing: backup temperature and humidity sensors not verified. The backup system has a digital output and uses a Dixon chart to record the room's conditions. At the time of the audit the digital reading did not match the chart recorder reading.

PADEP Response:

The new weighing robot uses a Vaisala brand sensor for temperature and relative humidity measurements. The robot temperature and relative humidity sensors will be the primary system. The secondary system for both will be the Dixon chart recorder located on the outside of the weighing room. The digital display that is part of the HVAC system and typically reads 3 to 4 % high has been marked with a sign that says "DIGITAL DISPLAY NOT TO BE USED FOR COMPLIANCE PURPOSES." Lab personnel will utilize robot settings that will stop weighing when environmental conditions are outside criteria.

The Lab will secure a vendor to certify robot and room temperature and relative humidity sensors on an annual basis. The Lab currently uses Garber Metrology to conduct certifications of other temperature-measuring equipment in the building. Garber's services are outlined

here: <http://www.garbermetrology.com/services-capabilities/metrology-calibration-capabilities/temperature-humidity-calibration/>.

10. EPA Finding LAB-2 (PM10 room):

PM₁₀ filter weighing log had RH% above 45% that exceeded the weighing criteria.

PADEP Response:

By January, 2016, the Department will replace all remaining manual PM10 samplers with continuous units. Nevertheless for special projects, TSP toxics/metals, and lead sampling analysis the following changes will be made:

- Purchase a certifiable primary and secondary Temperature/Relative Humidity sensor with large display and install in weighing room.
- Conditioning boxes for new and sampled glass and quartz filters do not have built-in Temp and RH sensors. The boxes do contain large desiccant pads that are maintained by color indication. The Lab will use Temp/RH devices to routinely check conditions at the beginning and end of conditioning periods. The devices will be compared to PM₁₀ room primary or secondary sensors. A log book will also be maintained and all aspects of this new procedure included in SOP.
- Vendors will be secured to provide annual certification of Temp and RH sensors.

11. EPA Finding FSE-1:

At the Johnstown monitor, regarding the spacing from trees: BAM 1020 continuous PM_{2.5} monitor is 7.62 meters (25 feet) from the tree drip-line.

PADEP Response:

The operator of the Johnstown site received permission from the neighboring property owner to remove the large spruce tree that was within the drip line limits. A contractor provided a quote on 9/11/15 and DEP Purchasing approved the request. The removal of the tree was completed on October 28th 2015.

12. EPA Finding FSE-2:

At the Farrell monitor, the collocated PM_{2.5} continuous and PM_{2.5} FRM are 6 meters apart. FRM is on the ground and Continuous on roof.

PADEP Response:

The Department will raise all PM_{2.5} Federal Reference Method (FRM) samplers (Thermo 2025 and 2025i's) by re-locating the entire unit and existing stand, on to high-volume platforms. The FOMS staff will ensure FRM and Beta Attenuation Monitoring (BAM) inlets meet horizontal collocation distance requirements (< 4 meters). Where the move to platforms still does not allow compliance with vertical collocation requirements (< 1 meter), the PADEP will request a waiver from the EPA Administrator.

13. EPA Finding FSE-3:

At the Washington monitor, the BAM 1020 inlet is slightly angled and not perpendicular to the base.

PADEP Response:

Operator will fix the table that unit is mounted on. Note: Even though the inlet tube appears at a slight angle, the seal at the sampler was tight and the unit has been passing all QC checks with no data lost.

14. EPA Findings FSE-4, FSE-5, FSE-6 and FSE-8:

There are dirty manifold and sampling lines at various monitoring sites.

PADEP Response:

All manifolds were cleaned before the audit. However, FOMS management will review manifold cleaning and sample line replacement procedures and will provide training during the Division meeting in December 2015. Sample lines at Erie and Strongstown have since been replaced. Furthermore, when Supervisory staff is at full complement, Supervisors will be conducting twice-a-year state-level (in-house) technical systems audits at all sites in their jurisdiction.

15. EPA Finding FSE-7:

At the Farrell site, the meteorological tower less than 10 meters high.

PADEP Response:

Due to the age and condition of the unit, the shelter at the Farrell site is scheduled for replacement by January 2016. The replacement shelter will include a 10 meter meteorological tower to address the issue this finding.

16. EPA Finding FSE-9:

At the Washington site, water marks were found near inlet receiver where downtube meets the unit. There was also dirt visible on unsampled tape.

PADEP Response:

The operator was not able to locate water marks or dirt visible on unused tape. If pictures of this finding are available, the Department will conduct further investigations.

17. EPA Finding FSE-10:

The collocated PM_{2.5} continuous BAMS sampler's concentration (26.64 µg/m³) read 2x greater than the primary PM_{2.5} continuous sampler (12.69 µg/m³).

PADEP Response:

The following were maintenance reports for the collocated BAMS at Greensburg since the TSA audit.

- 7/22- verifications on both BAMS were done and passed
- 8/7- calibrated both BAMS, reset BKGD value to 0 and installed zero air filter.
- 8/13- replaced BAM tape to see if bad tape causing high zero air readings.
- 8/21- found co-located BAM in test mode and changed tape in primary BAM.
- 9/29- Bryan Herzing did bi-annual audit on both BAMS and all passed.

Although verifications and audits on the sensors pass, the discrepancy between the collocated BAMS has been an ongoing issue. Repeated efforts to resolve the issue have been tried including: thorough inspections of each sampler to confirm latest firmware and recommended manufacturer settings; replacement of sensors, simultaneous zero background checks, and so on. The Department will continue FRM sampling as the primary source of PM_{2.5} data, but will also try to resolve issue by: moving the collocated setup to another site under a different operator, comparing historical FRM data with each set of BAM data to determine any patterns that may provide a clue to a fix. The PADEP believes this discrepancy illustrates longstanding issues with the fundamental operation of these continuous PM_{2.5} samplers and their inability to replicate FRM readings.

18. EPA Finding FSE-11:

Control/Strip charts are not used at any of the PADEP COPAMS sites.

PADEP Response:

The FOMS currently utilizes daily reports (although not graphical) to review hourly and nightly calibration and precision data from all sites and sensors. This review takes place at 6:30 am each morning and all operators are then called and given priority assignments. Although not utilized on a daily basis by FOMS personnel, the QA staff does have graphical tools (strip charts) available and utilized them on a regular basis. Further capabilities will be planned for/added to unifying web-based application.

Commonwealth of Pennsylvania Air Monitoring System (COPAMS)

Data Retrieval (Air Vision - AV)

Quality Assurance - Data Graphing By Site



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