

United States Environmental Protection Agency
National Ambient Air Monitoring Technical Systems Audit Checklist

This version attached is very similar to the checklist in the 2008 QA Handbook. It is an example that has been modified for use in EPA Region 5.

Page intentionally left blank

Table of Contents

1) General / Quality Management

- a) Program Organization
- b) Facilities
- c) Independent Quality Assurance and Quality Control
- d) Planning Documents (including QMP, QAPPs, & SOPs)
- e) General Documentation Policies
- f) Training
- g) Corrective Action
- h) Quality Improvement
- i) External Performance Audits

2) Network Management / Field Operations

- a) Network Design
- b) Changes to the Network since the last audit
- c) Proposed changes to the Network
- d) Field Support
 - i) SOPs
 - ii) Instrument Acceptance
 - iii) Calibration
 - iv) Repair
 - v) Record Keeping
 - vi) Site and Monitor Information Form

3) Laboratory Operations

- a) Routine Operations
- b) Quality Control
- c) Laboratory Preventive Maintenance
- d) Laboratory Record Keeping
- e) Laboratory Data Acquisition and Handling
- f) Specific Pollutants: PM10, PM 2.5 and Lead

4) Data and Data Management

- a) Data Handling
- b) Software Documentation
- c) Data Validation and Correction
- d) Data Processing
- e) Internal Reporting
- f) External Reporting

1) General / Quality Management

State/ Local / Tribal Agency Audited:

Address:

City, State, and Zip Code:

Date of Technical System Audit:

Auditor / Agency:

a) Program Organization

Key Individuals

Agency Director:

Ambient Air Monitoring (AAM) Network Manager:

Quality Assurance Manager:

QA Auditors:

Field Operations Supervisor / Lead:

Laboratory Supervisor:

QA Laboratory Manager:

Data Management Supervisor / Lead:

Attach an Organizational Chart:

Flow Chart:

Key position staffing. Number of personnel available to each of the following program areas:							
Program Area	Number of People Primary	Number of People Backup	Vacancies	Program Area	Number of People Primary	Number of People Backup	Vacancies
Network Design and Siting				Data and Data Management			
QC activities				Equipment repair and maintenance			
QA activities				Financial Management			

List available personnel by name and percentage of time spent on each task category.

Name	Network Design and Siting	QC Activities	QA Activities	Equipment repair and maintenance	Data and Data Management	Financial Management

Comment on the need for additional personnel if applicable.

List personnel who have authority or are responsible for:

Activity	Name	Title
QA Training Field/Lab		
Grant Management		
Purchases greater than \$500		
Equipment and Service Contract Management		
Staff appointment		

b) Facilities

Identify the principal facilities where the agency conducts work that is related to air monitoring. Do not include monitoring stations but do include facilities where work is performed by contractors or other organizations.

Facility AAM Function	Offices responsible for ensuring adequacy	Location	Adequate Y/N To be completed by auditor
Instrument repair,			
Certification of Standards e.g. gases, flow transfers, MFC,			
PM filter weighing,			
Data verification and processing,			
General office space,			
Storage space, short and long term,			
Air Toxics (Carbonyls, VOCs, Metals):			
Indicate any facilities that should be upgraded. Identify by function:			
Are facilities adequate concerning safety? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Please explain if answer is no:			
Suggested improvements or recommendations for the items above:			

Are there any significant changes which are likely to be implemented to agency facilities within the next one to two years? Comment on agency's needs for additional physical space (laboratory, office, storage, etc.).

Facility	Function	Proposed Change - Date

c) Independent Quality Assurance and Quality Control

Status of Quality Assurance Program			
Question	Yes	No	Comment
Does the agency perform QA activities with internal personnel? If no go to Section d.	<input type="checkbox"/>	<input type="checkbox"/>	
Does the agency maintain a separate laboratory to support quality assurance activities?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the agency documented and implemented specific audit procedures separate from monitoring procedures?	<input type="checkbox"/>	<input type="checkbox"/>	
Are there two levels of management separation between QA and QC operations? Please describe below:	<input type="checkbox"/>	<input type="checkbox"/>	
Does the agency have identifiable auditing equipment and standards (specifically intended for sole use) for audits?	<input type="checkbox"/>	<input type="checkbox"/>	

Internal Performance Audits

Question	Yes	No	Comment
Does the agency have separate facilities to support audits and calibrations?	<input type="checkbox"/>	<input type="checkbox"/>	
If the agency has in place contracts or similar agreements either with another agency or contractor to perform audits or calibrations, please name the organization and briefly describe the type of agreement.			
If the agency does not have a performance audit SOP (included as an attachment), please describe performance audit procedure for each type of pollutant.			
Does the agency maintain independence of audit standards and personnel?	<input type="checkbox"/>	<input type="checkbox"/>	
Please provide information on certification of audit standards currently being used. Include information on vendor and internal or external certification of standards.			
Does the agency have a certified source of zero air for performance audits?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the agency have procedures for auditing and/or validating performance of Meteorological monitoring?	<input type="checkbox"/>	<input type="checkbox"/>	

Please provide a list of the agency's audit equipment and age of audit equipment.

Is audit equipment ever used to support routine calibration and QC checks required for monitoring network operations? If yes, please describe.

Are standard operating procedures (SOPs) for air monitoring available to all field personnel?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the agency established and has it documented criteria to define agency-acceptable audit results?	<input type="checkbox"/>	<input type="checkbox"/>	

Please complete the table below with the pollutant, monitor and acceptance criteria.

Pollutant	How is performance tracked (e.g., control charts)	Audit Result Acceptance Criteria
CO		
O3		
NO2		
SO2		
PM10		
PM2.5		
Pb		
VOCs		
Carbonyls		
PM2.5 speciation		
PM10-2.5 speciation		
PM10-2.5 FRM Mass		
Continuous PM2.5		
Trace Levels (CO)		
Trace Levels (SO2)		
Trace Levels (NO)		
Trace Levels (NOy)		
Surface Meteorology		
Others		

Question	Yes	No	Comment
<p>Were these audit criteria based on, or derived from, the guidance found in Volume II of the QA Handbook for Air Pollution Measurement System, Section 10.3?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<p>If no, please explain.</p>
			<p>If yes, please explain any changes or assumptions made in the derivation.</p>
<p>What corrective action may be taken if criteria are exceeded? If possible, indicate two examples of corrective actions, taken within the period since the previous systems audit which are based directly on the criteria discussed above.</p>			
<p>Corrective Action # 1</p>			
<p>Corrective Action #2</p>			

d) Planning Documents (including QMP, QAPP, & SOPs)

QMP questions	Yes	No	Comment
Does the agency have an EPA-approved quality management plan?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, have changes to the plan been approved by the EPA?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the QMP been approved by EPA within the last five years?	<input type="checkbox"/>	<input type="checkbox"/>	
Please provide: Date of Original Approval: _____ Date of Last Revision: _____ Date of Latest Approval: _____			
QAPP questions	Yes	No	Comment
Does the agency have an EPA-approved quality assurance project plan?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, have changes to the plan been approved by the EPA?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the QAPP been reviewed by EPA annually?	<input type="checkbox"/>	<input type="checkbox"/>	
Please provide: Date of Original Approval: _____ Date of Last Revision: _____ Date of Latest Approval: _____			
Does the agency have any revisions to your QA project plan still pending?	<input type="checkbox"/>	<input type="checkbox"/>	
How does the agency verify the QA project plan is fully implemented?			
How are the updates distributed?			
What personnel regularly receive updates?			
SOP questions			
Has the agency prepared and implemented standard operating procedures (SOPs) for all facets of agency operation?	<input type="checkbox"/>	<input type="checkbox"/>	
Do the SOPs adequately address ANSI/ASQC E-4 quality system required by 40 CFR 58, Appendix A?	<input type="checkbox"/>	<input type="checkbox"/>	
Are copies of the SOP or pertinent sections available to agency personnel?	<input type="checkbox"/>	<input type="checkbox"/>	
How does the agency verify that the SOPs are implemented as provided?			
How are the updates distributed?			

e) General Documentation Policies

Question	Yes	No	Comment
Does the agency have a documented records management plan?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the agency have a list of files considered official records and their media type i.e., paper, electronic?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the agency have a schedule for retention and disposition of records?	<input type="checkbox"/>	<input type="checkbox"/>	
Are records for at least three years?	<input type="checkbox"/>	<input type="checkbox"/>	
Who is responsible for the storage and retrieval of records?			
What security measures are utilized to protect records?			
Where/when does the agency rely on electronic files as primary records?			
What is the system for the storage, retrieval and backup of these files?			

f) Training

Question	Yes	No	Comment
Does the agency have a training program and training plan?	<input type="checkbox"/>	<input type="checkbox"/>	
Where is it documented?			
Does it make use of seminars, courses, EPA sponsored college level courses?	<input type="checkbox"/>	<input type="checkbox"/>	
Are personnel cross-trained for other ambient air monitoring duties?	<input type="checkbox"/>	<input type="checkbox"/>	
Are training funds specifically designated in the annual budget?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the training plan include:			
Training requirements by position	<input type="checkbox"/>	<input type="checkbox"/>	
Frequency of training	<input type="checkbox"/>	<input type="checkbox"/>	
Training for contract personnel	<input type="checkbox"/>	<input type="checkbox"/>	
A list of core QA related courses	<input type="checkbox"/>	<input type="checkbox"/>	

Indicate below the three most recent training events and identify the personnel participating in them.		
Event	Dates	Participant(s)

g) Oversight of Contractors and Suppliers

Questions about Contractors	Yes	No	Comment
Who is responsible for oversight of contract personnel?			
What steps are taken to ensure contract personnel meet training and experience criteria?			
How often are contracts reviewed and/or renewed?			
Questions about Suppliers			
Have criteria and specification been established for consumable supplies and for equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
What supplies and equipment have established specifications?			
Is equipment from suppliers open for bid?	<input type="checkbox"/>	<input type="checkbox"/>	

h) Corrective Action

Question	Yes	No	Comment
Does the agency have a comprehensive corrective action program in place and operational?	<input type="checkbox"/>	<input type="checkbox"/>	
Have the procedures been documented?	<input type="checkbox"/>	<input type="checkbox"/>	
As a part of the QA project plan?	<input type="checkbox"/>	<input type="checkbox"/>	
As a separate standard operating procedure?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the agency have established and documented corrective limits for QA and QC activities?	<input type="checkbox"/>	<input type="checkbox"/>	
Are procedures implemented for corrective actions based on results of the following which fall outside the established limits:			
Performance evaluations?	<input type="checkbox"/>	<input type="checkbox"/>	
Precision goals?	<input type="checkbox"/>	<input type="checkbox"/>	
Bias goals?	<input type="checkbox"/>	<input type="checkbox"/>	
NPAP audits?	<input type="checkbox"/>	<input type="checkbox"/>	
PEP audits?	<input type="checkbox"/>	<input type="checkbox"/>	
Validations of one point QC check goals?	<input type="checkbox"/>	<input type="checkbox"/>	
Completeness goals?	<input type="checkbox"/>	<input type="checkbox"/>	
Data audits?	<input type="checkbox"/>	<input type="checkbox"/>	
Calibrations and zero span checks?	<input type="checkbox"/>	<input type="checkbox"/>	
Technical Systems Audit findings?	<input type="checkbox"/>	<input type="checkbox"/>	
Have the procedures been documented?	<input type="checkbox"/>	<input type="checkbox"/>	
How is responsibility for implementing corrective actions assigned? Briefly discuss.			

j) External Performance Audits

Question	Yes	No	Comment
Does your agency participate in NPAP, PM _{2.5} PEP, Pb PEP Pb Strip Audit, AA_PGVP and other performance audits performed by an external party and/or using external standards?	<input type="checkbox"/>	<input type="checkbox"/>	
If the agency does not participate, please explain why not.			
Are NPAP audits performed by QA staff, site operators, calibration staff, and/or another group?	<input type="checkbox"/>	<input type="checkbox"/>	

National Performance Audit Program (NPAP) and Additional Audits

Does the agency participate in the National Performance Audit Program (NPAP) as required under 40 CFR 58, Appendix A? If so, identify the individual with primary responsibility for the required participation in the National Performance Audit Program.

Name:

Program Function:

Please complete the table below:	
Parameter Audited	Date of Last NPAP Audit
CO	
O ₃	
SO ₂	
NO ₂	
PM ₁₀	
PM _{2.5}	
Pb	
VOCs	
Carbonyls	
Trace CO	
Trace SO ₂	
Trace NO	
Trace NO _x	

2) Network Management/Field Operations

State/Local/Tribal Agency Audited:

Address:

City, State, and Zip Code:

Auditor / Agency:

Key Individuals

Ambient Air Monitoring Network Manager:

Quality Assurance Manager:

Field Operations Supervisor/Lead:

Field Operations Staff involved in the TSA:

a) Network Design

Complete the table below for each of the pollutants monitored as part of your air monitoring network. (Record applicable count by category.) Also indicate seasonal monitoring with an S for a Parameter/Category as appropriate. Provide the most recent annual monitoring network plan, including date of approval and AQS quick look or if not available, network description and other similar summary of site data, including SLAMS, Other and Toxics.

Category*	SO2	NO2	CO	O3	PM10	PM2.5	Pb	Other (type)	Other (type)
NCore									
SLAMS									
SPM									
PAMS									
Total									

*NCore - National Core monitoring stations; SLAMS - state and local air monitoring stations; SPM - special purpose monitors; PAMS - photochemical assessment monitoring stations

Question	Yes	No	Comment
What is the date of the most current Monitoring Network Plan?			
Is it available for public inspection?	<input type="checkbox"/>	<input type="checkbox"/>	
Does it include the information required for each site?			
AQS Site ID #?	<input type="checkbox"/>	<input type="checkbox"/>	
Street address and geographic coordinates?	<input type="checkbox"/>	<input type="checkbox"/>	
Sampling and Analysis Method(s)?	<input type="checkbox"/>	<input type="checkbox"/>	
Operating Schedule?	<input type="checkbox"/>	<input type="checkbox"/>	
Monitoring Objective and Scale of Representativeness?	<input type="checkbox"/>	<input type="checkbox"/>	
Site suitable/not suitable for comparison to annual PM2.5 NAAQS?	<input type="checkbox"/>	<input type="checkbox"/>	
MSA, CBSA or CSA indicated as required?	<input type="checkbox"/>	<input type="checkbox"/>	

Indicate by AQS Site ID # any non-conformance with the requirements of 40 CFR 58, Appendices D and E along with any waivers granted by the Regional Office (provide waiver documentation).

Monitor	Site ID	Reason for Non-Conformance
SO ₂		
O ₃		
CO		
NO ₂		
PM ₁₀		
PM _{2.5}		
Pb		

Question	Yes	No	Comment
Are hard copy site information files retained by the agency for all air monitoring stations within the network?	<input type="checkbox"/>	<input type="checkbox"/>	
Does each station have the required information including:			
AQS Site ID Number?	<input type="checkbox"/>	<input type="checkbox"/>	
Photographs/slides to the four cardinal compass points?	<input type="checkbox"/>	<input type="checkbox"/>	
Startup and shutdown dates?	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation of instrumentation?	<input type="checkbox"/>	<input type="checkbox"/>	
Who has custody of the current network documents			Name: Title:
Does the current level of monitoring effort, station placement, instrumentation, etc., meet requirements imposed by current grant conditions?	<input type="checkbox"/>	<input type="checkbox"/>	
How often is the network siting reviewed?			Frequency: Date of last review:
Are there any issues?	<input type="checkbox"/>	<input type="checkbox"/>	
Do any sites vary from the required frequency in 40 CFR 58.12?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the number of collocated monitoring stations meet the requirements of 40 CFR 58 Appendix A?	<input type="checkbox"/>	<input type="checkbox"/>	

b) Changes to the Network since the last audit

What is the date of the most recent network assessment? (Provide copy) Are all SLAMS parameters included? Any others?

Please provide information on any site changes since the last audit.

Pollutant	Site ID	Site Address	Site Added/Deleted/Relocated	Reason (Assessment, lost lease, etc. Provide documentation of reason for each site change.)

c) Proposed changes to the Network				
Are future network changes proposed?				
Please provide information on proposed site changes, including documentation of the need for the change and any required approvals				
Pollutant	Site ID	Site Address	Site to be Added/Deleted/ Relocated	Reason (Assessment, lost lease, etc. Provide documentation of reason for each site change.)

d) Field Support

Question	Yes	No	Comment
On average, how often are most of your stations visited by a field operator?			
Is this visit frequency consistent for all reporting organizations within your agency?	<input type="checkbox"/>	<input type="checkbox"/>	
On average, how many stations does a single operator have responsibility for?			
How many of the stations of your SLAMS/NCORE network are equipped with sampling manifolds?			
Do the sample inlets and manifolds meet the requirements for through the probe audits?			
I. Briefly describe most common manifold type.			
II. Are Manifolds cleaned periodically?	<input type="checkbox"/>	<input type="checkbox"/>	How often?
III. If the manifold is cleaned, what is used to perform cleaning?			
IV. Are manifold(s) equipped with a blower?	<input type="checkbox"/>	<input type="checkbox"/>	
V. Is there sufficient air flow through the manifold at all times?	<input type="checkbox"/>	<input type="checkbox"/>	Approximate air flow:
VI. How is the air flow through the manifold monitored?			
VII. Is there a conditioning period for the manifold after cleaning?	<input type="checkbox"/>	<input type="checkbox"/>	Length of time:
VIII. What is the residence time?			
Sampling lines: What material is used for instrument sampling lines?			
Are lines changed or cleaned once per year?	<input type="checkbox"/>	<input type="checkbox"/>	
Do you utilize uninterruptable power supplies or backup power sources at your sites?	<input type="checkbox"/>	<input type="checkbox"/>	
What instruments or devices are protected?	<input type="checkbox"/>	<input type="checkbox"/>	

i) SOPs

Question	Yes	No	Comment
Is the documentation of monitoring SOPs complete?	<input type="checkbox"/>	<input type="checkbox"/>	
Are any new monitoring SOPs needed?	<input type="checkbox"/>	<input type="checkbox"/>	
Are such procedures available to all field operations personnel?	<input type="checkbox"/>	<input type="checkbox"/>	
Are SOPs that detail operations during episode monitoring prepared and available to field personnel?	<input type="checkbox"/>	<input type="checkbox"/>	
Are SOPs based on the framework contained in Guidance for Preparing Standard Operating Procedures EPA QA/G-6?	<input type="checkbox"/>	<input type="checkbox"/>	

Please complete the following table:

Pollutant Monitored	Date of Last SOP Review	Date of Last SOP Revision
SO ₂		
NO ₂		
CO		
O ₃		
PM ₁₀		
PM _{2.5} FRM mass		
Pb		
PM _{2.5} speciation		
PM _{10-2.5} FRM mass		
PM _{10-2.5} speciation		
Continuous PM _{2.5} mass		
Trace levels (CO)		
Trace levels (SO ₂)		
Trace levels (NO)		
Trace levels (NO _y) Total reactive nitrogen		
Surface Meteorology Wind speed and direction, temperature, RH, precipitation and solar radiation		
Other parameters		

ii) Instrument Acceptance

Has your agency obtained necessary waiver provisions to operate equipment which does not meet the effective reference and equivalency requirements? List all waivers.

Please list instruments in your inventory

Pollutant	Number	Make and Models	Reference or Equivalent number
SO ₂			
NO ₂			
CO			
O ₃			
PM ₁₀			
PM _{2.5}			
Pb			
Multi gas calibrator			
PM _{2.5} speciation			
PM _{10-2.5} speciation			
PM _{10-2.5} FRM mass			
Continuous PM _{2.5} mass			
Trace levels (CO)			
Trace levels (SO ₂)			
Trace levels (NO)			
Trace levels (NO _x)			
Surface Meteorology			
Others			

Please comment briefly and prioritize your currently identified instrument needs.

Question	Yes	No	Comment
Are criteria established for field QC equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
Are criteria established for field QC gas standards?	<input type="checkbox"/>	<input type="checkbox"/>	

iii) Calibration

Please indicate the frequency of multi point calibrations.		
Pollutant	Frequency	Name of Calibration Method

Question	Yes	No	Comment
Are field calibration procedures included in the document? SOPs?	<input type="checkbox"/>	<input type="checkbox"/>	Location (site, lab etc.):
Are calibrations performed in keeping with the guidance in Vol. II of the QA Handbook for Air Pollution Measurement Systems?	<input type="checkbox"/>	<input type="checkbox"/>	If no, why not?
Are calibration procedures consistent with the operational requirements of Appendices to 40 CFR 50 or to analyzer operation/instruction manuals?	<input type="checkbox"/>	<input type="checkbox"/>	If no, why not?
Have changes been made to calibration methods based on manufacturer's suggestions for a particular instrument?	<input type="checkbox"/>	<input type="checkbox"/>	
Do standard materials used for calibrations meet the requirements of appendices to 40 CFR 50 (EPA reference methods) and Appendix A to 40 CFR 58 (traceability of materials to NIST-SRMs or CRMs)?	<input type="checkbox"/>	<input type="checkbox"/>	Comment on deviations
Are all flow-measurement devices checked and certified?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional comments:

Please list the authoritative standards used for each type of flow measurement, indicate the certification frequency of standards to maintain field material/device credibility.

Flow Device	Primary Standard	Frequency of Certification
Hi-Volume orifice		
Streamline		
TriCal		
BIOS		
Delta Cal		
Gilibrators		

Where do field operations personnel obtain gaseous standards?			
Standards are certified by:			
The agency laboratory?	<input type="checkbox"/>	<input type="checkbox"/>	
EPA/NERL standards laboratory?	<input type="checkbox"/>	<input type="checkbox"/>	
A laboratory separate from this agency's but part of the same reporting organization?	<input type="checkbox"/>	<input type="checkbox"/>	
The vendor?	<input type="checkbox"/>	<input type="checkbox"/>	
Other (describe).	<input type="checkbox"/>	<input type="checkbox"/>	
How are the gas standards verified after receipt?			
How are flow measurement devices certified?			
Please provide copies of certifications of all standards currently in use from your master and/or satellite standard certification logbooks (i.e., chemical standards, ozone standards, flow standards, and zero air standards).			
What equipment is used to perform calibrations (e.g., dilution devices) and how is the performance of this equipment verified?			
Does the documentation include expiration date of certification?	<input type="checkbox"/>	<input type="checkbox"/>	
Reference to primary standard used?	<input type="checkbox"/>	<input type="checkbox"/>	
What traceability is used?			
Please attach an example of recent documentation of traceability			
Is calibration equipment maintained at each station?	<input type="checkbox"/>	<input type="checkbox"/>	
How is the functional integrity of this equipment documented?			
Who has responsibility for maintaining field calibration standards?			
Please list the authoritative standards and frequency of each type of dilution, permeation and ozone calibrator and indicate the certification frequency.			
Calibrator	Primary Standard		Frequency of Certification
Permeation calibrator flow controller			
Permeation calibrator temperature			
Dilution calibrator air and gas flow controllers			
Field/working standard photometer			
Ozone generator			

Explain any situations where instrument down time was due to lack of preventive maintenance or unavailability of parts.

v) RECORD KEEPING

Question	Yes	No	Comment
What type of station logbooks are maintained at each monitoring station? (maintenance logs, calibration logs, personal logs, etc.)			
What information is included in the station logbooks?			
Who reviews and verifies the logbooks for adequacy of station performance?			
How is control of logbook maintained?			
Where is the completed logbook archived?			
What other records are used?			
Zero span record?	<input type="checkbox"/>	<input type="checkbox"/>	
Gas usage log?	<input type="checkbox"/>	<input type="checkbox"/>	
Maintenance log?	<input type="checkbox"/>	<input type="checkbox"/>	
Log of precision checks?	<input type="checkbox"/>	<input type="checkbox"/>	
Control charts?	<input type="checkbox"/>	<input type="checkbox"/>	
A record of audits?	<input type="checkbox"/>	<input type="checkbox"/>	
Please describe the use and storage of these documents.			
Are calibration records or at least calibration constants available to field operators?	<input type="checkbox"/>	<input type="checkbox"/>	
Please attach an example field calibration record sheet to this questionnaire.			

vi) Site Information and monitor Information

PQAO:

AQS Site Name:

AQS Site Number:

Agency Site Name/No.:
(if different than AQS Site
Name/Number)

Site Address:

City & County:

Site Coordinates:
(specify lat/long or UTM)

Site Elevation (m):

Criteria Pollutants Monitored:

Other Parameters:

Nearest Meteorological Site:
(‘on site’ is met tower present at this site)

Photographs to and from each cardinal direction attached?
(Yes or No)

Name(s) of Report Preparer(s):

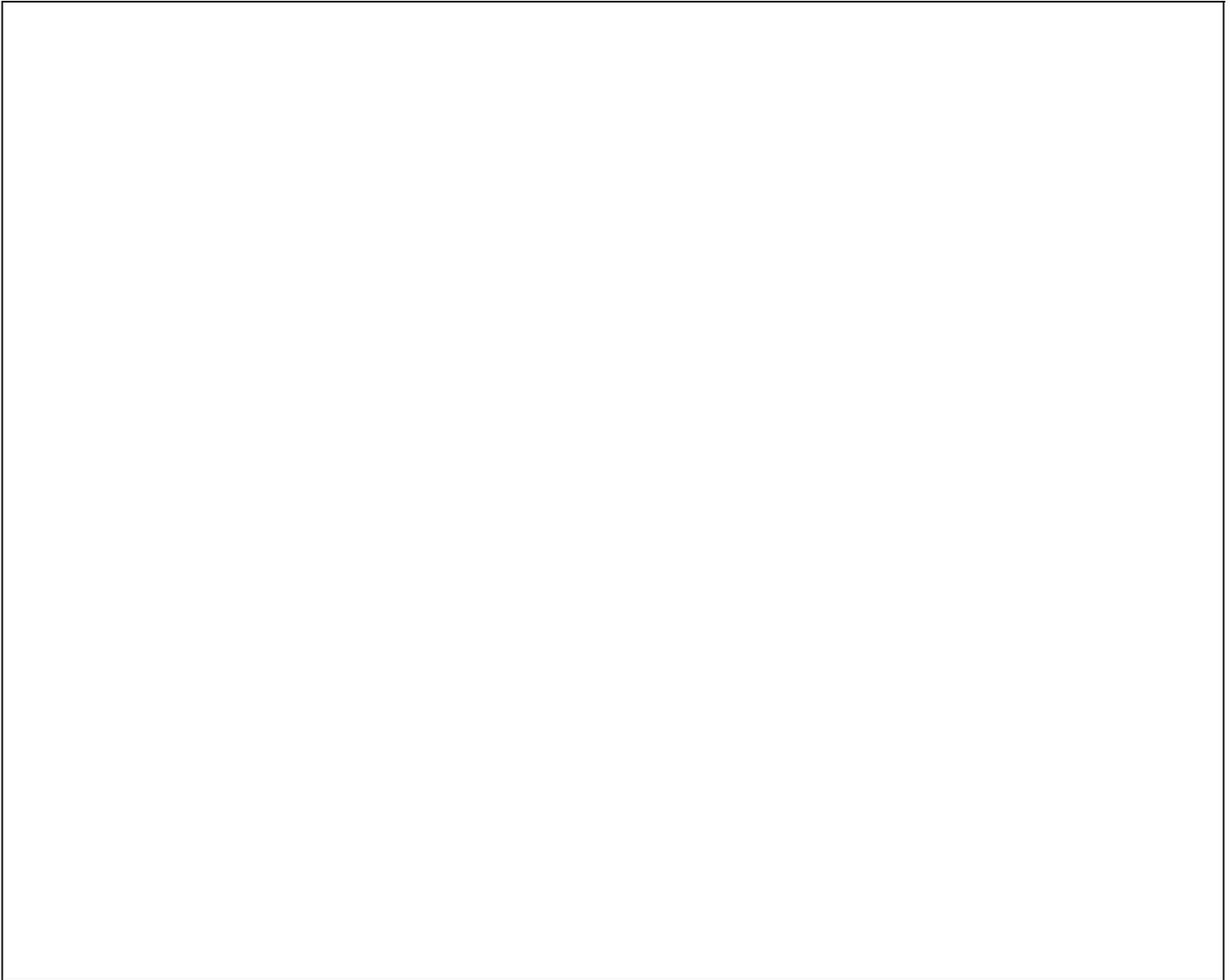
Name(s) of Auditors:

Date:

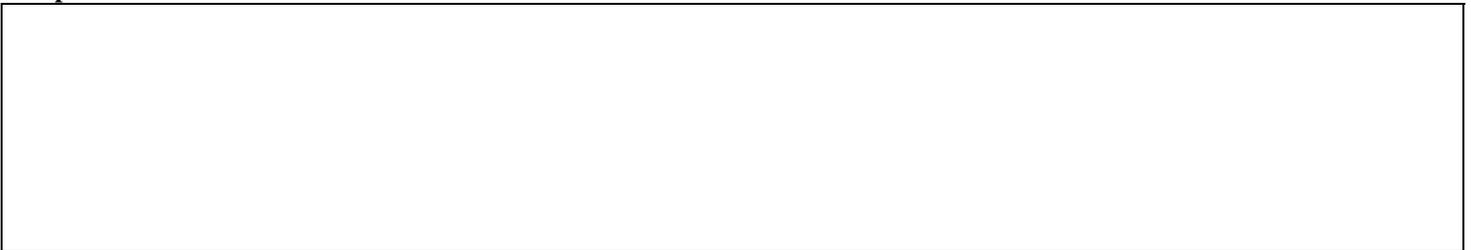
Phone Number:

Site Map

Draw map of site and surrounding terrain and features, up to 100 meters.

A large, empty rectangular box with a thin black border, intended for drawing a site map. The box is currently blank.

Map notes

A large, empty rectangular box with a thin black border, intended for writing map notes. The box is currently blank.

Monitor Information

	Pollutants		
Manufacturer			
Model			
Serial number			
Scale of representation Micro, Middle, Neighborhood, Urban			
Objective (Population, Max concentration, Background, Transport)			
Height of probe above ground(m)			
Distance from obstruction (m)			
Type of obstruction (Wall, Tree, etc)			
Distance from roadway (m)			
Unrestricted airflow (Yes, No)			
Designation (NCore, SLAMS, etc)			
Siting Criteria Met (Yes, No)			

	Pollutants		
Manufacturer			
Model			
Serial number			
Scale of representation Micro, Middle, Neighborhood, Urban			
Averaging time 1-, 8-, 24-hour			
Objective (Population, Max concentration, Background, Transport)			
Height of probe above ground(m)			
Distance from obstruction (m)			
Type of obstruction (Wall, Tree, etc)			
Distance from roadway (m)			
Unrestricted airflow (Yes, No)			
Designation (NCore, SLAMS, etc)			
Siting Criteria Met (Yes, No)			

Insert additional copies of table as needed:

Area Information

Street Name	Traffic Count (Vehicles/day)

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	
East	
South	
West	

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West			

Note: This table is for large obstructions that affect the entire site, such as large clusters of trees or entire buildings. Individual obstructions, such as walls, single trees, other monitors, etc, should be entered in the Monitor Information table.

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		
East		
South		
West		

Comments:

3) Laboratory Operations

State/Local/Tribal Agency Audited:

City, State, and Zip Code:

Date of Technical System Audit:

Auditor / Agency:

Key Individuals

Laboratory Manager:

Laboratory Supervisor:

Quality Assurance Manager:

Laboratory Staff involved in the TSA:

a) Routine Operations

What analytical methods are employed in support of your air monitoring network?

Analysis	Name or Description of Method
PM10	
PM2.5	
Pb	
Others (list by pollutant)	

1. Please describe areas where there have been difficulties meeting the regulatory requirements for any of the above analytical methods.

In the table below, please identify the current versions of written methods, supplements, and guidelines that are used in your agency.

Analysis	Documentation of Method
PM10	
PM2.5	
Pb	
Others (list by pollutant)	

Question	Yes	No	Comment
Were procedures for the methods listed above included in the agency's QAAP or SOPs and were they reviewed by EPA? Also, are SOPs easily/readily accessible for use and reference?	<input type="checkbox"/>	<input type="checkbox"/>	
Does your lab have sufficient instrumentation to conduct analyses?	<input type="checkbox"/>	<input type="checkbox"/>	

Please describe needs for laboratory instrumentation

b) Laboratory Quality Control

Please identify laboratory standards used in support of the air monitoring program, including standards which may be kept in an analytical laboratory and standards which may be kept in a field support area or quality assurance laboratory that is dedicated to the air monitoring program (attach additional sheets if appropriate):

Parameter	Location of Standards	Laboratory Standard	Recertification Date	Primary Standard*
CO				
NO2				
SO2				
O3				
Weights				
Temperature				
Moisture				
Barometric Pressure				
Flow				
Other Flow Standard				
Lead				
Other				

*Standards to which the laboratory standards can be traced.

Question	Yes	No	Comment
Are all chemicals and solutions clearly marked with an indication of shelf life?	<input type="checkbox"/>	<input type="checkbox"/>	
Are chemicals removed and properly disposed of when shelf life expires?	<input type="checkbox"/>	<input type="checkbox"/>	
Are only ACS grade chemicals used by the laboratory?	<input type="checkbox"/>	<input type="checkbox"/>	
Comment on the traceability of chemicals used in the preparation of calibration standards.			

Question	Yes	No	Comment
Does the laboratory routinely include samples of reference material within an analytical batch?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, indicate frequency, level, and material used.			
Are mid-range standards included in analytical batches?	<input type="checkbox"/>	<input type="checkbox"/>	
Please describe the frequency, level and compound used in the space provided below.			
Are criteria for real time quality control established that are based on the results obtained for the mid-range standards discussed above?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, briefly discuss them below or indicate the document in which they can be found.			
Are appropriate acceptance criteria for each type of analysis documented?	<input type="checkbox"/>	<input type="checkbox"/>	

c) Laboratory Preventive Maintenance

Question	Yes	No	Comment
For laboratory equipment, who has the responsibility for performing preventive maintenance?			
Is most maintenance performed in the lab?	<input type="checkbox"/>	<input type="checkbox"/>	
Is a maintenance log maintained for each major laboratory instrument?	<input type="checkbox"/>	<input type="checkbox"/>	
Are service contracts in place for major analytical instruments?	<input type="checkbox"/>	<input type="checkbox"/>	

d) Laboratory Record Keeping

Question	Yes	No	Comment
Are all samples that are received by the laboratory logged in?	<input type="checkbox"/>	<input type="checkbox"/>	
Discuss sample routing and special needs for analysis (or attach a copy of the latest SOP which covers this). Attach a flow chart if possible.			
Are log books kept for all analytical laboratory instruments?	<input type="checkbox"/>	<input type="checkbox"/>	
Are there log books or other records that indicate the checks made on materials and instruments such as weights, humidity indicators, balances, and thermometers?	<input type="checkbox"/>	<input type="checkbox"/>	
Identify type of record, acceptable/non-acceptable.			
Are log books maintained to track the preparation of filters for the field?	<input type="checkbox"/>	<input type="checkbox"/>	
Are they current?	<input type="checkbox"/>	<input type="checkbox"/>	
Do they indicate proper use of conditioning?	<input type="checkbox"/>	<input type="checkbox"/>	
Weightings?	<input type="checkbox"/>	<input type="checkbox"/>	
Stamping and numbering?	<input type="checkbox"/>	<input type="checkbox"/>	
Are log books kept which track filters returning from the field for analysis?	<input type="checkbox"/>	<input type="checkbox"/>	
<p>How are data records from the laboratory archived?</p> <p style="padding-left: 40px;">Where?</p> <p style="padding-left: 40px;">Who has the responsibility?</p> <p style="padding-left: 40px;">Title:</p> <p style="padding-left: 40px;">How long are records kept? Years</p>			
Does a chain-of-custody procedure exist for laboratory samples?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, indicate date, title and revision number where it can be found.			

e) Laboratory Data Acquisition and Handling

Question	Yes	No	Comment
Identify those laboratory instruments which make use of computer interfaces directly to record data. Which ones use strip charts? Integrators?			
Are QC data readily available to the analyst during a given analytical run?	<input type="checkbox"/>	<input type="checkbox"/>	
What is the laboratory's capability with regard to data recovery? In case of problems, can they recapture data or are they dependent on computer operations? Discuss briefly.			
Has a user's manual been prepared for the automated data acquisition instrumentation?	<input type="checkbox"/>	<input type="checkbox"/>	
Please provide below a data flow diagram which establishes, by a short summary flow chart: transcriptions, validations, and reporting format changes the data goes through before being released by the laboratory.			

f) Specific Pollutants: PM₁₀, PM_{2.5} and Lead			
Question	Yes	No	Comment
PM10 and PM2.5			
Does the agency use filters supplied by EPA?	<input type="checkbox"/>	<input type="checkbox"/>	
Do filters meet the specifications in 40 CFR 50?	<input type="checkbox"/>	<input type="checkbox"/>	
Are filters visually inspected via strong light from a view box for pinholes and other imperfections?	<input type="checkbox"/>	<input type="checkbox"/>	
Where does the laboratory keep records of the serial numbers of filters?			
Are unexposed filters equilibrated in controlled conditioning environment which meets or exceeds the requirements of 40 CFR 50?			
Are the temperature and relative humidity of the conditioning environment monitored?	<input type="checkbox"/>	<input type="checkbox"/>	
Are the temperature and humidity monitors calibrated?	<input type="checkbox"/>	<input type="checkbox"/>	
Are balances checked with Class S or Class M weights each day when they are used?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the balance check information placed in QC log book?	<input type="checkbox"/>	<input type="checkbox"/>	
To what sensitivity are filter weights recorded?			
Are filter serial numbers and tare weights recorded in a bound notebook?	<input type="checkbox"/>	<input type="checkbox"/>	
Are filters packaged for protection while transporting to and from the monitoring stations?	<input type="checkbox"/>	<input type="checkbox"/>	
How often are filter samples collected? (Indicate the average elapsed time in hours between end of sampling and laboratory receipt.)			
In what medium are field measurements recorded (e.g., in a log book, on a filter folder, or on standard forms)?			
Are exposed filters reconditioned for at least 24 hrs in the same conditioning environment as for unexposed filters?			
Briefly describe how exposed filters are prepared for conditioning.			

Briefly describe how exposed filters are stored after being weighed.			
Are blank filters reweighed? How often?			
Are chemical analyses performed on filters?	<input type="checkbox"/>	<input type="checkbox"/>	
LEAD			
Is analysis for lead being conducted using atomic absorption spectrometry with air acetylene flame?	<input type="checkbox"/>	<input type="checkbox"/>	If not, has the agency received an equivalency designation of their procedure?
Is either the hot acid or ultrasonic extraction procedure being followed precisely?	<input type="checkbox"/>	<input type="checkbox"/>	Which?
Is Class A borosilicate glassware used throughout the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	
Is all glassware cleaned with detergent, soaked and rinsed three times with distilled or de-ionized water?	<input type="checkbox"/>	<input type="checkbox"/>	
If extracted samples are stored, are linear polyethylene bottles used?	<input type="checkbox"/>	<input type="checkbox"/>	
Are all batches of glass fiber filters tested for background lead content?	<input type="checkbox"/>	<input type="checkbox"/>	
At a rate of 20 to 30 random filters per batch of 500 or greater?	<input type="checkbox"/>	<input type="checkbox"/>	Indicate rate.
Are ACS reagent grade HNO ₃ and HCl used in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	
Is a calibration curve available having concentrations that cover the linear absorption range of the atomic absorption instrumentation?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the stability of the calibration curve checked by alternately re-measuring every 10th sample a concentration of <= 1ug Pb/ml; <= 10 ug Pb/ml?	<input type="checkbox"/>	<input type="checkbox"/>	

4) DATA AND DATA MANAGEMENT

State/Local/Tribal Agency Audited:

City, State, and Zip Code:

Date of Technical System Audit:

Auditor / Agency:

Key Individuals

Data Manager:

Data Supervisor:

Quality Assurance Manager:

a) Data Handling			
Question	Yes	No	Comment
Is there a procedure, description, or a chart which shows a complete data sequence from point of acquisition to point of submission of data to EPA?	<input type="checkbox"/>	<input type="checkbox"/>	
Please provide below a data flow diagram indicating both the data flow within the reporting organization.			
Are procedures for data handling (e.g., data reduction, review, etc.) documented?	<input type="checkbox"/>	<input type="checkbox"/>	
In what media (e.g., diskette, data cartridge, or telemetry) and formats do data arrive at the data processing location? Please list below.			
Category of Data (by Pollutant)	Data Media and Formats		
How often are data received at the processing location from the field sites and laboratory?			
Is there documentation accompanying the data regarding any media changes, transcriptions, or flags which have been placed into the data before data are released to agency internal data processing?	<input type="checkbox"/>	<input type="checkbox"/>	
Describe the type of documentation.			
How data are actually entered to the computer system (e.g., computerized transcription (copy from disk or data transfer device), manual entry, digitization of strip charts, or other)?			

b) Software Documentation			
Question	Yes	No	Comment
Does your agency use any AQS Manual?	<input type="checkbox"/>	<input type="checkbox"/>	
Does your agency use any Air Now Manual?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, list the title of manual used including the, version number and date published.			
Does the agency have information on the reporting of precision and accuracy data available (i.e. AMP 255)?	<input type="checkbox"/>	<input type="checkbox"/>	
What are the origins of the software used to prepare air monitoring data for release into the AQS and Air Now database? Please list the documentation for the software currently in use for data processing, including the names of the software packages, vendor or author, revision numbers, and the revision dates of the software.			
What is the recovery capability in the event of a significant computer problem (i.e., how much time and data would be lost)?			
Has your agency tested the data processing software to ensure its performance of the intended function is consistent with the QA Handbook, Volume II, and Section 14.0?	<input type="checkbox"/>	<input type="checkbox"/>	
Does your agency document software tests?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, provide the documentation.			

c) Data Validation and Correction			
Question	Yes	No	Comment
Have your agency established and document the validation criteria?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, indicate document where such criteria can be found (title, revision date).
Does documentation exist on the identification and applicability of flags (i.e., identification of suspect values) within the data as recorded with the data in the computer files?	<input type="checkbox"/>	<input type="checkbox"/>	
Does your agency document the data validation criteria including limits for values such as flow rates, calibration results, or range tests for ambient measurements?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, please describe what action the data validation will take if he/she fined data with limits exceeded (e.g., flags, modifies, or delete, etc.)			
If yes, give examples to illustrate actions taken when limits were exceeded.			
Please describe how changes made to data that were submitted to AQS and Air Now are documented.			
Who has signature authority for approving corrections?			
Name:		Program Function:	
What criteria are used to determine a data point is deleted? Discuss briefly.			
What criteria are used to determine if data need to be reprocessed? Discuss.			
Are corrected data resubmitted to the issuing group for cross-checking prior to release?	<input type="checkbox"/>	<input type="checkbox"/>	

d) Data Processing			
Question	Yes	No	Comment
Does the agency generate data summary reports?	<input type="checkbox"/>	<input type="checkbox"/>	
Please list at least three reports routinely generated, including the information requested below.			
Report Title	Distribution		Period Covered

Question	Yes	No	Comment
How often are data submitted to AQS and Air Now?			
Briefly comment on difficulties the agency may have encountered in coding and submitting data following the guidance of the AQS guidelines?			
Does the agency routinely request a hard copy printout on submitted data from AQS?	<input type="checkbox"/>	<input type="checkbox"/>	
Are records kept for at least 3 years by the agency in an orderly, accessible form?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, does this include raw data <input type="checkbox"/> , calculation <input type="checkbox"/> , QC data <input type="checkbox"/> , And reports <input type="checkbox"/> ?			
If no, please comment.			
Has your agency submitted data along with the appropriate calibration equations used to the processing center?	<input type="checkbox"/>	<input type="checkbox"/>	
Are concentrations of pollutants (other than PM2.5) corrected to EPA standard temperature and pressure conditions (i.e., 298 K, 760 mm Hg) before input to AQS, and concentrations of PM2.5 reported to AQS under actual (volumetric) conditions?	<input type="checkbox"/>	<input type="checkbox"/>	
I) Are audits on data reduction procedure performed on a routine basis?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, at what frequency?			
Are data precision and accuracy checked each time they are calculated, recorded, or transcribed to ensure that incorrect values are not submitted to EPA?	<input type="checkbox"/>	<input type="checkbox"/>	

e) Internal Reporting	
What internal reports are prepared and submitted as a result of the audits required under 40 CFR 58, Appendix A?	
Report Title	Frequency

What internal reports are prepared and submitted as a result of precision checks also required under 40 CFR 58, Appendix A?	
Report Title	Frequency

Question	Yes	No	Comment
Do either the audit or precision check reports indicated include a discussion of corrective actions initiated based on audit or precision check results?	<input type="checkbox"/>	<input type="checkbox"/>	

Who has the responsibility for the calculation and preparation of data summaries? To whom are such summaries delivered?			
Name	Title	Type of Report	Recipient

f) External Reporting							
For the current calendar year or portion thereof which ended at least 90 calendar days prior to the receipt of this questionnaire, please provide the following percentages for required data submitted on time.							
Percent Submitted on Time*				Period Covered:			
Monitoring Qtr.	SO2	CO	O3	NO2	PM10	PM2.5	Pb
1 (Jan 1 - March 31)							
2 (Apr 1 - June 30)							
3 (July 1 - Sept. 30)							
4 (Oct.1 - Dec. 31)							

*"On time" = within 90 calendar days after the end of the quarter in which the data were collected.

For the same period, what fraction of the stations (by pollutant) reported less than 75% of the data (adjusted for seasonal monitoring and site start-ups and terminations)?							
Percent of Stations <75% Data Recovery				Period Covered:			
Monitoring Qtr.	SO2	CO	O3	NO2	PM10	PM2.5	Pb
1 (Jan 1 - March 31)							
2 (Apr 1 - June 30)							
3 (July 1 - Sept. 30)							
4 (Oct.1 - Dec. 31)							

Identify the individual within the agency with the responsibility for reviewing and releasing the data.

Name:

Program Function:

Question	Yes	No	Comment
Does your agency report the Air Quality Index?	<input type="checkbox"/>	<input type="checkbox"/>	
Has your agency submitted its annual data summary report as required in 40 CFR 58.15(b)?	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, did your agency's annual report include the following:			
Annual precision and accuracy information (i.e. AMP 255) described in 40 CFR 58.15 (c)?	<input type="checkbox"/>	<input type="checkbox"/>	
Location, date, pollution source and duration of all episodes reaching the significant harm levels?	<input type="checkbox"/>	<input type="checkbox"/>	
Is Data Certification signed by a senior officer of your agency?	<input type="checkbox"/>	<input type="checkbox"/>	