Annual Air Monitoring Data Certification

Data Certification – The Basics

- Formal statement attesting to ambient data completeness and accuracy
- Submitted by monitoring agencies to EPA on annual basis
- Process that combines a required action followed by a discretionary EPA review

The Actual Requirement in CFR Language

§ 58.15 Annual air monitoring data certification.

(a) The State, or where appropriate local, agency shall submit to the EPA Regional Administrator an annual air monitoring data certification letter to certify data collected by FRM, FEM, and ARM monitors at SLAMS and SPM sites that meet criteria in appendix A to this part from January 1 to December 31 of the previous year. ... The annual data certification letter is due by May 1 of each year."

(b) Along with each certification letter, the state shall submit to the Regional Administrator an annual summary report of all the ambient air quality data collected by FRM, FEM, and ARM monitors at SLAMS and SPM sites. …"

(c) Along with each certification letter, the State shall submit to the Regional Administrator a summary of the precision and accuracy data for all ambient air quality data collected by FRM, FEM, and ARM monitors at SLAMS and SPM sites. …"

URL for AMTIC Cert & Validation: https://www3.epa.gov/ttn/amtic/qacert.html

Data Certification Information On AMTIC (Ambient Monitoring Technology Information Center)

The AMTIC website is located at https://www3.epa.gov/ttn/amtic/

Quality Assurance/Quality Control

- Quality Assurance Guidance Documents
- National Performance Evaluation Program
- Quality Indicator Assessment Reports
- QA/QC Workgroup Activities (national meeting)
- Newsletters
- Pollutant/Network Specific QA
- QC of Filters for PM2.5, PM10 and Low Volume Pb
- Data Certification/Validation
- Training and Announcements

Data Certification/Validation

- Ambient Air Monitoring Data Certification Q&A for CY2015 (PDF) (4pp, 258k)
- Data Certification Flag Values (PDF) (1pg, 59k)
- Additional Information Related to the 2014 AMP600 Data Certification Process (PDF) (11pp, 1.2 MB)

Data Certification Qualifier Values

Flag Value	Application
X	Certification is not required by 40 CFR 58.15 and no conditions apply to be the basis for assigning another flag value
U	Uncertified. The certifying agency did not submit a required certification letter and summary reports for this monitor even though the due date has passed, or the state's certification letter specifically did not apply the certification to this monitor.
S	The certifying agency has submitted the certification letter and required summary reports. A value of "S" conveys no Regional assessment regarding data quality per se. This flag will remain until the Region provides an "N" or "Y" concurrence flag.
N	The certifying agency has submitted the certification letter and required summary reports, but the certifying agency and/or EPA has determined that issues regarding the quality of the ambient concentration data cannot be resolved due to data completeness, the lack of performed quality assurance checks or the results of uncertainty statistics shown in the AMP256 report or the certification and quality assurance report.
Y	The certifying agency has submitted a certification letter, and EPA has no unresolved reservations about data quality (after reviewing the letter, the attached summary reports, the amount of quality assurance data submitted to AQS, the quality statistics, and the highest reported concentrations).
M	The monitoring organization has revised data from this monitor since the most recent certification letter received from the state.

Criteria that Generate Green (Acceptable) Warning (Yellow) and "N" Qualifiers (Red)

Assessment	Current CFR Requirement or Guidance	Green (Acceptable)	Yellow (Warning)	Red (Recommend N Flag)	Comments
Technical Systems Audit	PQAO every 3 years	TSA within 3 years	TSA within 4 years	TSA > 5 years	Not a monitoring Org responsibility. Will be reported on summary page not by pollutant
Gaseous Criteria Pollutants					
Routine Data Completeness	75%	≥80%	80-70%	<70%	Based on CFR criteria for data use 100* Number of hourly obs/number of hours in monitor sample period
QAPP Approval	Approval date within 5 years of current date	Approval date within 5 years of current date	Approval date between 5-10 years	Not approved and/or approval date greater than 10 years	Could be sole reason for "N" flag if QAPP not approved.
1-Point QC Completeness	75%	≥75%	65-75%	<65%	Based on 26, 1-point QC for a year. Calculated based on the number of days the monitor operated.
1-Point QC Precision	7% O3, 10% others	≤7% O3, 10% others	8-20% O3 11-25% others	> 20% O3 > 25% others	Based on all valid 1-point QC checks in AQS for the year. Value should reflect AMP-256 value
1-Point QC Bias	±7% O3, ±10% others	≤ ±7% O3, ≤ ±10% others	± 8-20% O3 ±11-25% others	> ±20% O3 > ±25% others	Based on all valid 1-point QC checks in AQS. Value should reflect AMP-256 value
Annual PE Completeness	1 PE/year 3 audit levels	1 PE/year 3 audit levels	1 PE/year 2 audit levels	No PE or 1 audit level	Will not count more than one actual value in an audit level. For example, two audit in one level count as 1 audit level.
Annual PE Bias O3 , SO2 , NO2 CO	≤ ±1.5 ppb / ±15% ≤ ±0.03 ppm/ ± 15%	≤ ±1.5 ppb / ±15% ≤ ±0.03 ppm/ ± 15%	≤ ± 1.6-3.0 ppb / ± 16-25% ≤ ± 0.04-0.06 ppm/ ± 16-25%	> ±3.0 ppb / ± 25% > ±0.06 ppm/ ± 25%	Average PD of all PE values for the monitor
NPAP Audit Completeness -PQAO	20% of sites in PQAO	20% of sites in PQAO	10-19% of sites in PQAO	<10% of sites in PQAO	Not a monitoring Org responsibility. Will be marked as "Y"
NPAP Bias	≤ ±10% O3 ≤ ±15% others	≤ ±10% O3 ≤ ±15% others	± 11-20% O3 ±16-25% others	> ±20% O3 > ±25% others	median PD for all values at a site and median PD for PQAO level estimate
NPAP Audit Completeness -Site	4 levels	4 levels	2-3 levels	≤1 level	Not a monitoring Org responsibility
Outliers					Not implemented in 2014
PM2.5 Criteria					

Criteria that Generate Green (Acceptable) Warning (Yellow) and "N" Qualifiers (Red)

Assessment	Current CFR Requirement or Guidance	Green (Acceptable)	Yellow (Warning)	Red (Recommend N Flag)	Comments
Technical Systems Audit	PQAO every 3 years	TSA within 3 years	TSA within 4 years	TSA > 5 years	Not a monitoring Org responsibility. Will be reported on summary page not by pollutant
Gaseous Criteria Pollutants					
Routine Data Completeness	75%	≥80%	80-70%	<70%	Based on CFR criteria for data use 100* Number of hourly obs/number of hours in monitor sample period
QAPP Approval	Approval date within 5 years of current date	Approval date within 5 years of current date	Approval date between 5-10 years	Not approved and/or approval date greater than 10 years	Could be sole reason for "N" flag if QAPP not approved.
1-Point QC Completeness	75%	≥75%	65-75%	<65%	Based on 26, 1-point QC for a year. Calculated based on the number of days the monitor operated.

1. Blue shaded rows are evaluations that will be reported (when data is available) but not used in certification flag settings
2. One Red for any monitor will elicit an AQS recommended "N" flag
3. Three warnings for any monitor will elicit an AQS recommended "N" flag

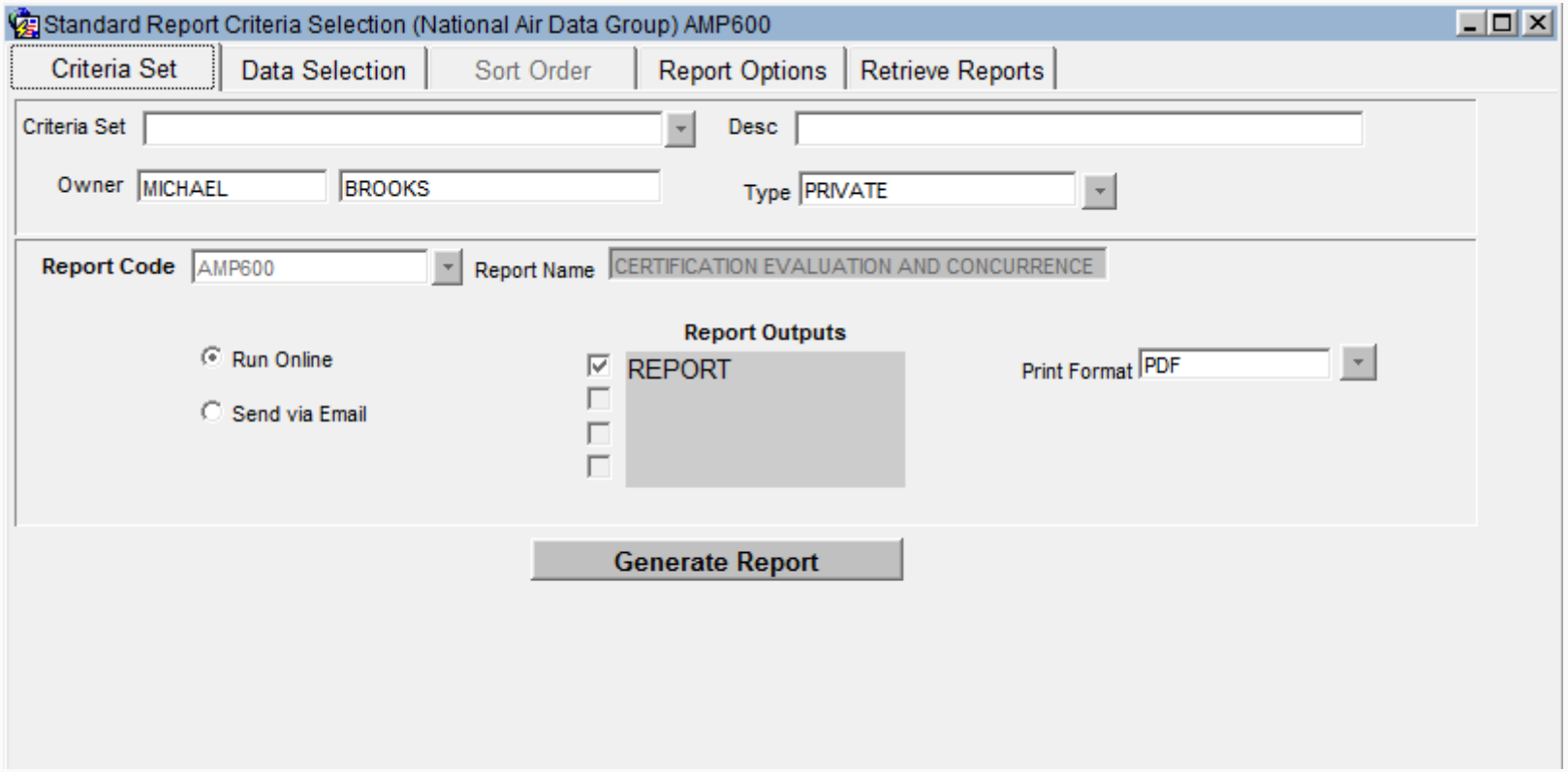
Preliminaries: What should a certifying agency do?

1. Review the Certifying Agency role assignments:
   a) Run the AQS Monitor Description Report (AMP390) – Will show all Agency Roles for each monitor.
   b) Compare against Monitoring Network Plan
2. Use AQS (Batch MD transaction or Maintain Monitor) to correct any discrepancies.

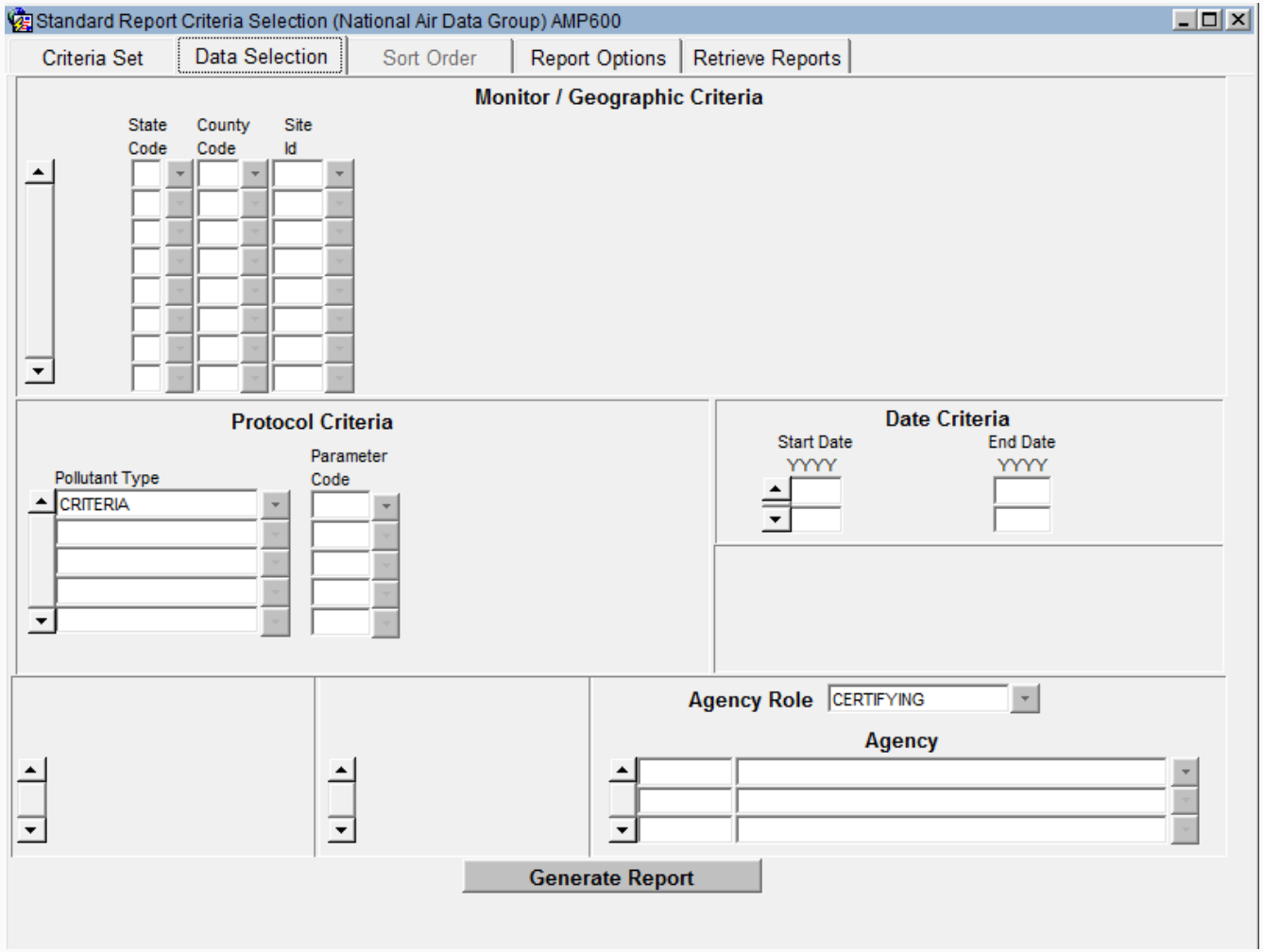
The Procedure: What does an agency do?

1. Conduct and complete ambient air quality monitoring and QA as per 40 CFR Part 58 and submit all relevant data to AQS.
2. Run the Data Certification Report (AMP600) for your Certifying Agency.
   a) This will calculate a recommended certification flag for each monitor-year based on Part 58 criteria and display the results for all monitors and PQAOs associated with the Certifying Agency.

Requesting a Data Certification Report



Request Criteria



AMP600 Summary Report
Before Certifying Agency Certification

Data Evaluation and Concurrence Report Summary

Jul. 22, 2014

Certification Year: 2012
Certifying Agency (CA):

Pollutants in Report:

Parameter Name	Code	Monitors Evaluated	Monitors Recommended for Concurrence by AQS	Monitors NOT Recommended for Concurrence by AQS
Carbon monoxide	42101	3	3	0
Nitrogen dioxide (NO2)	42602	2	2	0
Ozone	44201	16	14	2
PM10 Total 0-10um STP	81102	8	7	1
PM2.5 - Local Conditions	88101	12	9	3
Sulfur dioxide	42401	4	4	0

PQAOs in Report:

PQAO Name	PQAO Code	TSA Date
		09/27/12

Summary of 'N' flags for all pollutants:

PQAO	Parameter Code	AQS Site-ID	POC	AQS Recommended Flag	Cert. Agency Recommended Flag	Reason for AQS Recommendation
	44201	-019-1100	1	N		Annual Performance Evaluation Audit Missing or 1 Level.
	44201	-029-0032	1	N		Annual Performance Evaluation Audit Missing or 1 Level.
	88101	-011-0016	2	N		Annual Summary completeness < 70%.
	88101	-003-0014	1	N		Annual Summary completeness < 70%.
	88101	-009-0103	1	N		PQAO-Level Collocation criteria not met.
	81102	-003-0014	1	N		Flow Rate Audit completeness < 65%.

Signature of Monitoring Organization Representative: _____

AMP600- Ozone Before Certification

Certifying Year	2012
Certifying Agency Code	
Parameter	Ozone (44201) (ppm)
PQAO Name	
QAPP Approval Date	06/23/2009

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
7	1.21951	Y

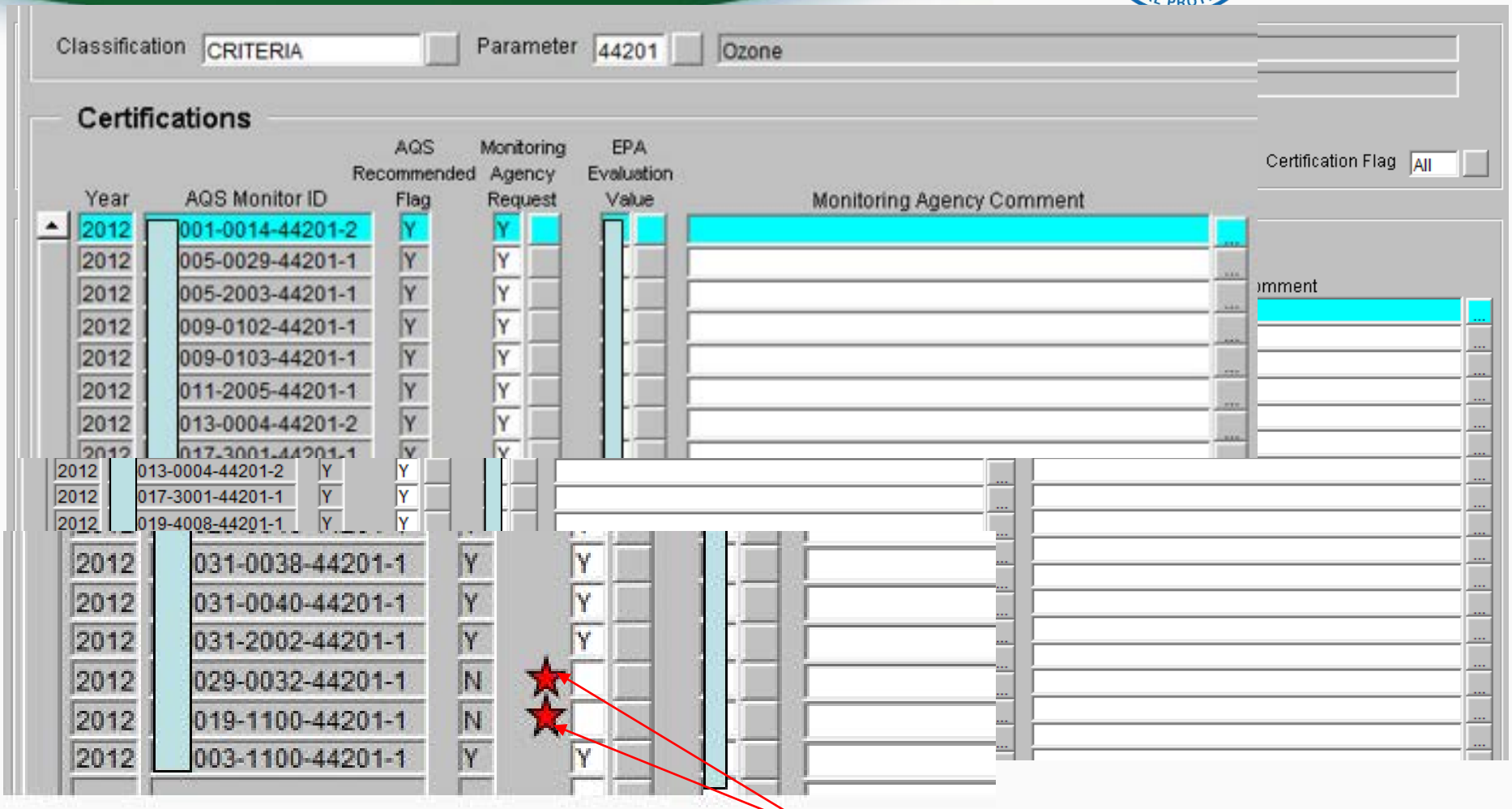
AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
001-0014	2	SPM	0.042	0.016	0.085	0	0	93	2.95	+/-2.39	100	- 3.54	100		Y	Y	Y		
003-1100	1	TRIBAL	0.038	0.014	0.059	0	0	91	1.87	+/-1.36	100	- 0.43	100		Y	Y	Y		
005-2003	1	SLAMS	0.046	0.014	0.094	0	0	99	1.52	+3.35	100	0.90	100	0.00	Y	Y	Y		
009-0102	1	SLAMS	0.047	0.024	0.080	0	0	98	2.64	+/-1.99	100	- 3.74	100	1.01	Y	Y	Y		
009-0103	1	SLAMS	0.044	0.017	0.078	0	0	95	1.43	-2.56	100	- 1.35	100	1.22	Y	Y	Y		
011-2005	1	SLAMS	0.042	0.014	0.082	0	0	99	1.40	+/-1.28	100	- 2.02	100		Y	Y	Y		
013-0004	2	SLAMS	0.043	0.021	0.087	0	0	96	4.69	+/-3.63	100	0.41	100		Y	Y	Y		
017-3001	1	SPM	0.038	0.010	0.081	0	0	99	0.93	+/-1.13	100	- 1.41	100		Y	Y	Y		
019-1100	1	TRIBAL	0.040	0.019	0.071	0	0	89	1.53	+/-1.04	100		0	3.70	Y	Y	N		
019-4008	1	SLAMS	0.041	0.018	0.069	0	0	99	2.27	+/-1.96	100	0.67	100		Y	Y	Y		
023-0006	1	SPM	0.043	0.014	0.108	0	0	99	8.98	+/-5.88	100	0.07	100	1.00	Y	Y	Y		
029-0019	1	SPM	0.040	0.021	0.075	0	0	98	3.91	+/-3.60	100	0.72	100		Y	Y	Y		
029-0032	1	TRIBAL	0.038	0.011	0.062	0	0	99	1.27	+/-1.46	100		0		Y	Y	N		
031-0038	1	SPM	0.044	0.011	0.094	0	0	99	1.89	+3.68	100	3.43	100		Y	Y	Y		
031-0040	1	SPM	0.044	0.017	0.088	0	0	98	1.13	+2.30	100	2.61	100		Y	Y	Y		
031-2002	1	SLAMS	0.047	0.016	0.096	0	0	99	1.59	+/-1.82	100	0.30	100	1.89	Y	Y	Y		

No values

The Procedure – Part 2: Data Review

1. Review the certification report. For 'N' recommendations:
    1. Has any ambient monitoring data not yet been submitted?
    2. Has any QA/QC data (e.g. Precision and Accuracy transactions) not been submitted?
    3. Should any ambient monitoring data be invalidated and removed from AQS based on QA/QC results?
2. Make corrections to AQS data as needed.
3. Rerun certification report and verify results are final.
4. Use the AQS certification form to accept or override the AQS recommended value.

Certification Form for Certifying Agency



If certifying this data, we'd really like a Certifying Agency comment

AMP600
After Certifying Agency Certification

Certifying Year 2012
Certifying Agency Code [redacted]
Parameter Ozone (44201) (ppm)
PQAO Name [redacted]
QAPP Approval Date 06/23/2009

NPAP Audit Summary:

Number of Valid Audits	NPAP Bias	Criteria Met
7	1.21951	Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
001-0014	2	SPM	0.042	0.016	0.085	0	0	93	2.95	+/-2.39	100	- 3.54	100		Y	Y	Y	Y	
003-1100	1	TRIBAL	0.038	0.014	0.059	0	0	91	1.87	+/-1.36	100	- 0.43	100		Y	Y	Y	Y	
005-2003	1	SLAMS	0.046	0.014	0.094	0	0	99	1.52	+3.35	100	0.90	100	0.00	Y	Y	Y	Y	
009-0102	1	SLAMS	0.047	0.024	0.080	0	0	98	2.64	+/-1.99	100	- 3.74	100	1.01	Y	Y	Y	Y	
009-0103	1	SLAMS	0.044	0.017	0.078	0	0	95	1.43	-2.56	100	- 1.35	100	1.22	Y	Y	Y	Y	
011-2005	1	SLAMS	0.042	0.014	0.082	0	0	99	1.40	+/-1.28	100	- 2.02	100		Y	Y	Y	Y	
013-0004	2	SLAMS	0.043	0.021	0.087	0	0	96	4.69	+/-3.63	100	0.41	100		Y	Y	Y	Y	
017-3001	1	SPM	0.038	0.010	0.081	0	0	99	0.93	+/-1.13	100	- 1.41	100		Y	Y	Y	Y	
019-1100	1	TRIBAL	0.040	0.019	0.071	0	0	89	1.53	+/-1.04	100		0	3.70	Y	Y	N		
019-4008	1	SLAMS	0.041	0.018	0.069	0	0	99	2.27	+/-1.96	100	0.67	100		Y	Y	Y	Y	
023-0006	1	SPM	0.043	0.014	0.108	0	0	99	8.98	+/-5.88	100	0.07	100	1.00	Y	Y	Y	Y	
029-0019	1	SPM	0.040	0.021	0.075	0	0	98	3.91	+/-3.60	100	0.72	100		Y	Y	Y	Y	
029-0032	1	TRIBAL	0.038	0.011	0.062	0	0	99	1.27	+/-1.46	100		0		Y	Y	N		
031-0038	1	SPM	0.044	0.011	0.094	0	0	99	1.89	+3.68	100	3.43	100		Y	Y	Y	Y	
031-0040	1	SPM	0.044	0.017	0.088	0	0	98	1.13	+2.30	100	2.61	100		Y	Y	Y	Y	
031-2002	1	SLAMS	0.047	0.016	0.096	0	0	99	1.59	+/-1.82	100	0.30	100	1.89	Y	Y	Y	Y	

AMP600 Summary
After Certifying Agency Certification

Data Evaluation and Concurrence Report Summary

Jul. 22, 2014

Certification Year: 2012
Certifying Agency (CA):

Pollutants in Report:

Parameter Name	Code	Monitors Evaluated	Monitors Recommended for Concurrence by AQS	Monitors NOT Recommended for Concurrence by AQS
Carbon monoxide	42101	3	3	0
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Ozone	44201	16	14	2
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PM2.5 - Local Conditions	88101	12	9	3
Sulfur dioxide	42401	4	4	0

PQAOs in Report:

PQAO Name	PQAO Code	TSA Date
		09/27/12

Summary of 'N' flags for all pollutants:

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	44201	-029-0032	1	N		Annual Performance Evaluation Audit Missing or 1 Level.
	88101	-011-0016	2	N	Y	Annual Summary completeness < 70%.
	88101	-003-0014	1	N	Y	Annual Summary completeness < 70%.
	88101	-009-0103	1	N	Y	PQAO-Level Collocation criteria not met.
	81102	-003-0014	1	N	Y	Flow Rate Audit completeness < 65%.

Signature of Monitoring Organization Representative: _____

AMP600
After EPA Regional Concurrence

Certifying Year	2012
Certifying Agency Code	
Parameter	Ozone (44201
PQAO Name	
QAPP Approval Date	06/23/2009

NPAP Audit Summary: Number of Valid Aud: 7

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Ex Co	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
001-0014	2	SPM	0.042	0.016	0.085		Y	Y	Y	- 3.54	100		Y	Y	Y	Y	Y
003-1100	1	TRIBAL	0.038	0.014	0.059		Y	Y	Y	- 0.43	100		Y	Y	Y	Y	Y
005-2003	1	SLAMS	0.046	0.014	0.094		Y	Y	Y	0.90	100	0.00	Y	Y	Y	Y	Y
009-0102	1	SLAMS	0.047	0.024	0.080		Y	Y	Y	- 3.74	100	1.01	Y	Y	Y	Y	Y
009-0103	1	SLAMS	0.044	0.017	0.078		N		N	- 1.35	100	1.22	Y	Y	Y	Y	Y
011-2005	1	SLAMS	0.042	0.014	0.082		Y	Y	Y	- 2.02	100		Y	Y	Y	Y	Y
013-0004	2	SLAMS	0.043	0.021	0.087		Y	Y	Y	0.41	100		Y	Y	Y	Y	Y
017-3001	1	SPM	0.038	0.010	0.081		Y	Y	Y	- 1.41	100		Y	Y	Y	Y	Y
019-1100	1	TRIBAL	0.040	0.019	0.071		Y	Y	Y		0	3.70	Y	Y	N		N
019-4008	1	SLAMS	0.041	0.018	0.069					0.67	100		Y	Y	Y	Y	Y
023-0006	1	SPM	0.043	0.014	0.108		N		N	0.07	100	1.00	Y	Y	Y	Y	Y
029-0019	1	SPM	0.040	0.021	0.075		Y	Y	Y	0.72	100		Y	Y	Y	Y	Y
029-0032	1	TRIBAL	0.038	0.011	0.062		Y	Y	Y		0		Y	Y	N		N
031-0038	1	SPM	0.044	0.011	0.094					3.43	100		Y	Y	Y	Y	Y
031-0040	1	SPM	0.044	0.017	0.088		Y	Y	Y	2.61	100		Y	Y	Y	Y	Y
031-2002	1	SLAMS	0.047	0.016	0.096					0.30	100	1.89	Y	Y	Y	Y	Y

AMP600
After EPA Regional Concurrence

Monitors Summaries

AQS Site ID	POC	Monitor Type	Routine Data (ug/m3) Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Flow Rate Verification Bias	Flow Rate Verification % Complete	Flow Rate Audit Bias	Flow Rate Audit % Complete	QAPP Appr.	Concurrence Flag AQS Rec Flag	CA Rec Flag	EPA Concur
-003-1011	2	SLAMS	16.62	.0	491.0		0	97	+0.19	75	-0.22	100	Y	Y	Y	M

Parameter: PM10 Total 0-10um STP (81102) INTERMITTENT
PQAO Name: [redacted]
Quality Assurance Project Plan Approval Date: 10/15/2011

Data changed after certification

Collocation Summary

# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
5	1	1	100	8.87	10.93	Y

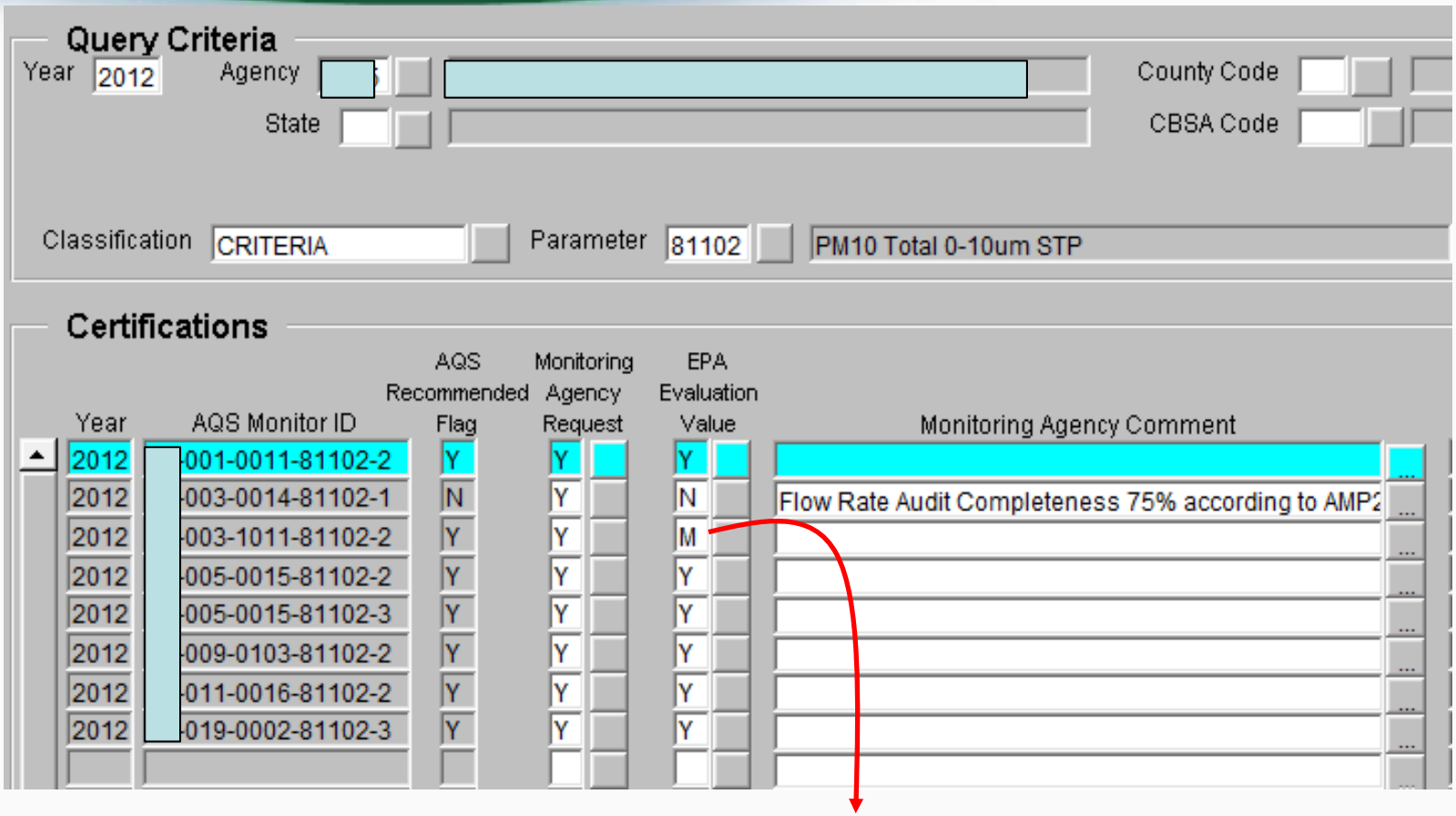
Monitors Summaries

AQS Site ID	POC	Monitor Type	Routine Data (ug/m3) Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Flow Rate Audit Bias	Flow Rate Audit % Complete	Collocation CV	Collocation % Complete	Collocation PQAO Crit. Met	QAPP Appr.	Concurrence Flag AQS Rec Flag	CA Rec Flag	EPA Concur
-001-0011	2	SLAMS	15.25	2.0	54.0	0	0	96	+0.66	100			Y	Y	Y	Y	Y
-005-0015	2	SPM	21.32	8.0	60.0	0	0	86	+0.36	100	10.93	86	Y	Y	Y	Y	Y
-005-0015	3	SPM	19.96	8.0	62.0	0	0	93	+0.78	100			Y	Y	Y	Y	Y
-009-0103	2	SPM	6.15	2.0	19.0	0	0	95	-1.20	100			Y	Y	Y	Y	Y
-011-0016	2	SLAMS	13.84	2.0	61.0	0	0	91	-0.93	100			Y	Y	Y	Y	Y
-019-0002	3	SLAMS	17.66	2.0	89.0	0	0	96	+0.03	100			Y	Y	Y	Y	Y
-003-0014	1	SLAMS	19.22	2.0	80.0	0	0	91	+/-	0			Y	Y	N	Y	N

Submitter Comment: Flow Rate Audit Completeness 75% according to AMP250 **EPA Comment:**

Comment required if Cert Agency changes AQS Recommended Flag

Certification Form



Since the only qualifier that shows up in AQS is the EPA concurrence qualifier, any change in data by the Monitoring Organization will show up as “M” for modified

How the AMP600 Works Found On AMTIC

PQAO Level Flags
For Collocation and PEP, AQS Recommended flags are generated at the PQAO level and then "transfered" back to each site

PQAO Criteria Met for Collocation based on CV not completeness

PEP PQAO Critera based on Bias estimate, not completeness

Certification Report for Particulate Matter

Certifying Year: 2012
Certifying Agency: [redacted]

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: [redacted]
Quality Assurance Project Plan Approval Date:

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
145	4	1	1	100	10.87	12.07	Y

PEP Summary

# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
1	1	5	2	40	+5.41	Y

Monitors Summaries

				Routine Data (ug/m3)						Flow Rate Audit		Collocation			PEP	Certification			
AQS Site ID	POC	Method	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	CV	% Complete	PQAO Crit. Met	PQAO Crit. Met	QAPP Appr.	AQS Rec Req Value	EPA Value
[redacted]	1	145	SLAMS	6.72	.8	16.7		0	87	+1.22	100			Y	Y	Y	Y	
	1	145	SLAMS	4.55	.6	18.1		0	93	+0.53	100			Y	Y	Y	Y	
	1	145	SLAMS	6.73	.4	19.9		0	92	+1.22	100	12.07	100	Y	Y	Y	Y	
	2	145	SLAMS	6.95	.8	17.7		0	90	+1.07	100			Y	Y	Y	Y	
	1	145	SLAMS	8.93	1.8	33.0		0	92	+0.75	100			Y	Y	Y	Y	

See "additional Information Related to AMP600 Certification Process" at
http://www.epa.gov/ttnamti1/qacert.html

What Monitoring Data must have Monitoring Agencies Certified on May 1, 2016?

Only data collected by FRM, FEM, and ARM monitors at SLAMS and SPM monitoring stations that meet Appendix A must be certified[1]. In practice this refers to monitoring data for CO, NO_2, SO_2 (hourly and 5-minute average data), Ozone, Lead, PM_{10}, $PM_{10-2.5}$, and $PM_{2.5}$.

[1] Data certification requirements may also be included in auxiliary agreements such as MOA's between states and operators of industrial networks, for example, SO_2 monitors being installed to comply with the Data Requirements Rule.

Certification Process: Thoughts and Steps Forward

- Use it often
  - Don’t wait till May to run the report
  - It can run on a partial year based on the date the report is run. This may not be perfect but can help.
- By the time data is in AQS it may be to late
  - Internal QC is critical
- Will eventually add outlier statistics.