CASTNET Plan for Part 58 Compliance

Version 1.013

1. Overview

CASTNET is coordinated by two federal agencies, the Environmental Protection Agency (EPA) and the National Park Service (NPS); additionally there are numerous other participants including the Cherokee Nation, the Bureau of Land Management, and others. Both EPA and NPS each have their own contractor; EPA's contractor is AMEC, Inc. and the NPS' contractor is ARS, Inc. The EPA manages 58 sites and NPS manages 25 sites for a total of 83 CASTNET sites. Environmental, Engineering & Measurement Services, Inc (EEMS) performs independent audits at every CASTNET site. RTI International performs technical system audits (TSAs) at both the EPA contractor's and NPS contractor's facilities. For the remainder of this document contracted groups will be referred to in the following manner: AMEC as *EPA contractor*, ARS as *NPS contractor*, EEMS as *independent auditor*, and RTI International as *3rd party auditor*.

CASTNET completed upgrading and updating ozone monitoring equipment at all EPA sites to comply with the requirements in 40 CFR Part 58 in FY 2011. This document summarizes the site and equipment audit schedules and quality assurance methods that the CASTNET program will follow to meet the regulatory requirements. The procedures laid out in this document were adapted from the requirements placed on the States to meet the needs of an EPA national monitoring network. This document is a detailed interpretation of information as described in the CASTNET QAPP Version 8.0 Appendix 1 Field SOP Section 3.3; there currently is no mention of this document within the CASTNET QAPP Version 8.0 Appendix 8 Quality Management Plan.

Both the EPA and NPS contractor submit hourly ozone data to AQS on a monthly basis. Annual data certification will be completed by the CAMD QA officer (currently Larry Kertcher of CAMD) by May 1st of each year for all of the CASTNET sites provided that all data certification information from the EPA and NPS contractors are supplied on time; otherwise NPS sites will be responsible for this data certification at the NPS CASTNET sites.

States will work with regional EPA offices on assigning exceptional event informational qualifier codes to CASTNET ozone data housed within AQS. State agencies have the responsibility, according to the Exceptional Events Rule, to demonstrate to their EPA region that an exceptional event occurred and should be flagged. CASTNET will work with the states to provide supporting information.

CASTNET will use the monitoring quality objectives shown in Table 1 to ensure that the highest quality data are being submitted to AQS. This table has been reviewed by OAQPS, NPS, CAMD, the EPA contractor, and the NPS contractor. The AQS QA qualifier table which includes qualifier codes, descriptions, and valid/invalid status codes is available in Appendix C.

Table 1 originated from the Quality Assurance Handbook for Air Pollution Measurement Systems QA Handbook Volume II, Appendix D Revision 1, December 2008. EPA, NPS, the EPA contractor, and the NPS contractor added comments to this table to further explain actions to be taken regarding data validation.

Table 1 Monitoring Quality Objectives

Ozone Validation Template – CASTNET				
Requirement	**Minimum Frequency**	**Acceptance Criteria**	**Information/Action**	**Comments**
CRITICAL CRITERIA				
One Point QC Check Single analyzer	1/ 2 weeks	≤ ±7% (percent difference)	0.01 - 0.10 ppm Relative to routine concentrations 40 CFR Part 58 App A Sec 3.2	(10 – 100 ppb) Relative to routine concentrations This problem doesn't say the O3 analyzer data is bad, just that the transfer standard has a problem.
Zero/span check	1/2 weeks	Zero drift ≤ ± 2% of full scale* Span drift ≤ ± 7 %		CASTNET protocol requires daily checks. Invalidate all data associated with a failure – from the last check that met the criterion to the next meeting the criterion. If the problem can be verifiably traced to a system or subsystem that does not affect reported data, the associated data may be treated as valid. Missing checks will not automatically require invalidation until they drop below the minimum EPA-required frequency of once every 2 weeks. Drift in ozonator concentrations should be treated as an operational criterion. If reference concentrations (those generated by the transfer standard) are not within 2% of full scale, investigate the problem. When evaluating zero drift, apply the criterion to direct readings and to comparisons with the onsite transfer standard. Take action if either fails to meet the criterion.
OPERATIONAL CRITERIA				
Shelter Temperature				

Ozone Validation Template – CASTNET				
Requirement	**Minimum Frequency**	**Acceptance Criteria**	**Information/Action**	**Comments**
Temperature Range	Daily (hourly values)	20 to 30° C. (Hourly average) or per manufacturer's specifications if designated to a wider temperature range	Generally the 20-30° C range will apply, but the most restrictive operable range of the instruments in the shelter may also be used as guidance.	Investigate data associated with temperatures outside of 18 to 32° C window: Review data for reasonableness†. If temperature is outside of this window for 3 or more consecutive hours or outside of a 15 to 35° C window for any recorded hour, verify that the analyzer internal temperature is between 25 and 40° C during the excursion. Invalidate data deemed unreasonable† for ambient conditions or per site history and any data collected while analyzer internal temperatures were not between 25 and 40° C. This is an example of the AMEC specifics in the table that might cause confusion. This is the advisory range from Thermo. Any of these ranges could change with use a different equivalent method.
Temperature Control	Daily (hourly values)	≤ ± 2° C SD over 24 hours		If a 24 hr period is outside of the criterion, review associated data for reasonableness†. Treat hourly temperature readings that are out of range as described above.
Temperature Device Check	2/year	± 2° C of standard		CASTNET requirement for device field calibration is ± 0.5° C of standard. Data associated with a failure of ± 2° C or greater must be reviewed as described above. If the failure is linear 2° C may be added or subtracted as appropriate to determine which periods require further investigation. If the failure is non-linear or the temperature device is otherwise non-functional, the temperature probe is replaced and the entire period must be reviewed for reasonableness† and to verify internal analyzer temperatures. [Applies to routine calibration visits]
Precision (using 1-point QC checks)	Calculated annually and as appropriate for design value estimates	90% CL CV ≤ 7% (monitor level)	90% of Confidence Limit of coefficient of variation. 40 CFR Part 58 App A sec 4.1.2	This metric is reviewed as part of the annual review screening procedure. Exceeding the criterion will trigger additional review including data from nearby sites (including SLAMS), site narrative logs, and the analyzer's internal systems monitoring (a.k.a "housekeeping") data. [Calculation performed by Data Manager and results reviewed by Data and QA Managers]

Ozone Validation Template – CASTNET				
Requirement	**Minimum Frequency**	**Acceptance Criteria**	**Information/Action**	**Comments**
Bias (using 1-point QC checks)	Calculated annually and as appropriate for design value estimates	95% CL CV ≤ ± 7% (monitor level)	95% of Confidence Limit of coefficient of variation. 40 CFR Part 58 App A sec 4.1.3	[Calculation performed by Data Manager and results reviewed by Data and QA Managers]
Annual Performance Evaluation				
Single Analyzer	Every site 1/year or 25 % of sites quarterly	Percent difference of audit levels 3-10 ≤ ±15% [Audit levels 1&2 ± 1.5 ppb difference or ±15%]	3 consecutive audit concentration not including zero. 40 CFR Part 58 App A sec 3.2.2	Reviewed as part of the annual review screening procedure. Exceeding the criterion will trigger additional review as noted above. [EPA Responsibility]
Primary QA Organization (PQAO)	Annually	95% of audit percent differences fall within the one point QC check 95% probability intervals at PQAO level of aggregation	Same as above. 40 CFR Part 58 App A sec 4.1.4	
Federal Audits (NPAP)	1/year at selected sites 20% of sites audited	Mean absolute difference < 10%	40 CFR Part 58 App A sec 2.4	
State audits	1/year	State requirements		
Verification/Calibration	Upon receipt/adjustment/repair/ installation/moving -1/6 months if manual zero/span performed biweekly -1/year if continuous zero/span performed daily	All points within ± 2% of full scale of best fit straight line Linearity error < 5%	Multi-point calibration (0-4 upscale points) 40 CFR Part 58 App D sec 5.2.3	If verification results are outside of the listed criteria, review the calibration forms, problem tickets and repair logs to confirm proper operation of the analyzer and onsite transfer standard. If a starting point for the problem can be determined and documented, use this period as that to be invalidated. If the problem can be verifiably traced to a system or subsystem that does not affect reported data, the associated data may be treated as valid. Otherwise, invalidate all associated data. Ensure confirmation of the onsite transfer standard and the "calibration standard." [Applies to routine calibration visits]
Zero Air		Concentration below LDL		If the criterion is exceeded (± 0.003 ppm), correlate with any zero/span results that exceed critical criteria. If the zero air system is implicated, report this finding immediately to the project manager, field operations manager, and QA manager. [Applies to routine calibration visits] Replacing traps would seem to make for sense than reporting it to somebody far far away. Applies to 6-month duration; 6-month calibration will not invalidate all 6-months of data. Action item: review calibration results.

Ozone Validation Template – CASTNET				
Requirement	**Minimum Frequency**	**Acceptance Criteria**	**Information/Action**	**Comments**
Gaseous Standards		NIST Traceable (e.g., EPA Protocol Gas)	40 CFR Part 58 App A sec 2.6.1	
Zero Air Check	1/year	Concentrations below LDL		
Ozone Level 2 Standard				
Certification/recertification to Standard Reference Photometer	1/year	single point difference ≤ ± 3%	Primary Standards usually transported to EPA Regions SRP for comparison	If the standard exceeds the criterion and its authority has been used at any sites for re-verification or calibration the associated site analyzers must be re-verified with a properly certified standard.
(if recertified via a transfer standard)	1/year	Regression slopes = 1.00 ± 0.03 and two intercepts are 0 and ± 3 ppb		See above. Additionally, the travelling transfers are audited with a stationary standard 2x/calendar quarter to verify proper calibration w/o applying the certification calculation. The audit results must meet the criteria listed below: • New slope=± 0.05 of previous and RSD of six slopes ≤ 3.7% • Std. Dev. of 6 intercepts ≤ 1.5 Failure to meet these criteria will require servicing and/or recertification as appropriate.
Ozone Transfer Standard				
Qualification	Upon receipt of transfer standard	±4% or ±4 ppb (whichever greater)	Transfer Standard Doc EPA 600/4-79-056 Section 6.4	All analyzers are on the list of USEPA Designated Equivalent Methods and are therefore qualified by their manufacturer. To maintain designation, they must not be modified or operated contrary to manufacturer's instructions or QA requirements.
Certification	After qualification and upon receipt/adjustment/repair	RSD of six slopes ≤ 3.7% Std. Dev. Of 6 intercepts ≤ 1.5	Transfer Standard Doc EPA 600/4-79-056 Section 6.6	If the analyzer has been used at any sites for re-verification or calibration, the associated site analyzers must be re-verified with a properly certified analyzer.
Recertification to local primary standard	Beginning and end of O_3 season or 1/6 months whichever less	New slope = ± 0.05 of previous and RSD of six slopes ≤ 3.7% Std. Dev. Of 6 intercepts ≤ 1.5	1 recertification test that then gets added to most recent 5 tests. If this does not meet acceptability certification fails	Recertification to Level 2 standard. See above. This applies to onsite stationary Level 3 transfer standards.
Lower Detectable Level (LDL)	1/year	0.003 ppm	If the standard exceeds the criterion and its authority has been used at any sites for re-verification or calibration the associated site analyzers must be re-verified with a properly certified standard.	(3 ppb) Ref. 40 CFR Part 136 App B. If the standard exceeds the criterion and its authority has been used at any sites for re-verification or calibration, the associated site analyzers must be re-verified with a properly certified standard.
SYSTEMATIC CRITERIA				
Standard Reporting Units	All data	ppm (final units in AQS)		Data must be converted to correct units.
Completeness (seasonal)	Daily	75% of hourly averages for the 8-hour period	8-hour average	If the criterion is exceeded, data may not be used for reporting 8-hour averages.

Ozone Validation Template – CASTNET				
Requirement	**Minimum Frequency**	**Acceptance Criteria**	**Information/Action**	**Comments**
Sample Residence Times		≤ 20 seconds		Report any sites found to exceed this criterion to the project manager, field operations manager, and QA manager. Indicates a problem that should be checked at site. Tubing? Pump? Leaks?
Sample Probe, Inlet, Sampling train		Borosilicate glass (e.g., Pyrex®) or Teflon®	40 CFR Part 58 App E	See above.
Siting		Un-obstructed probe inlet	40 CFR Part 58 App E	See above.
EPA Standard Ozone Reference Photometer (SRP) Recertification	1/year	Regression slope = 1.00 ± 0.01 and intercept < 3 ppb	This is usually at an EPA Regional Office and is compared against the traveling SRP	Standard Reference Level 2. There is a traveling standard (Level 2) which is deployed to the field and 2 standard reference level 2 devices that stay in the lab to verify the traveling standards to eliminate the need for sending traveling standards back to NIST after field deployment. Both lab and field SRPs are level 2. If the standard exceeds the criterion and its authority has been used at any sites for re-verification or calibration the associated site analyzers must be re-verified with a properly certified standard.

†Review for reasonableness may include:

- Synoptic meteorological conditions (where available)
- Calibration schedule
- Site Visit Log
- Data from nearby sites (including SLAMS sites, where applicable)

CL = Confidence Limit

CV = Coefficient of Variation

LDL = Lower Detectable Level

RSD = Relative Standard Deviation

SD = Standard Deviation

All transfer standards at the EPA-sponsored CASTNET sites are NIST traceable at Level 3. The EPA contractor performs routine calibrations at each CASTNET site twice a year. During the calibration, ozone equipment is audited with a traveling transfer standard (Level 2), the data logger is tested and the shelter temperature device is placed in a temperature bath for accuracy. Calibration results are submitted monthly to and stored within an Oracle database of their respective federal agency. The transfer standards at NPS-sponsored CASTNET sites are NIST traceable at Level 4. NPS will update their calibration method to ensure all NPS-sponsored CASTNET sites have Level 3 transfer standards by January 1, 2013. Calibration results from NPS-sponsored sites are submitted monthly by ARS to NPS.

The network audit requirements for 40 CFR Part 58 compliance are summarized in Table 2. CAMD intends to reach out to States and Regions prior to the Technical Systems Audits (TSA) and provide the schedules at least 6 months in advance to ensure they have enough time to arrange for travel if they chose to participate in the audits.

Table 2 Summary of CASTNET audit requirements.

Calibration information is not included in this table

Required Audits	Audits Performed By	Site Selection	Audit Frequency	Audit Results Submitted	Funding Organization
Independent Audit (includes PE audit, metrological sensors and flow for filter pack)	Independent auditor	CAMD/NPS	Every other year (all CASTNET sites)	Submitted to CAMD /NPS (a) spot report (monthly) (b) database (quarterly)	CAMD → independent auditor
Performance Audit (PE)	Independent auditor	CAMD/NPS	Annually (All CASTNET sites)	AQS CAMD/NPS	CAMD/NPS → independent auditor
National Performance Audit Program (NPAP)	OAQPS (Mark Shanis) will coordinate with the regional offices	OAQPS	20% of the sites (both EPA and NPS sponsored CASTNET sites) each year	AQS	CAMD/NPS → OAQPS → Regional Office → ESAT
Technical System Audits (TSA) Field Audit	Independent auditor + CAMD/NPS + Regions/States Regions may visit site along with auditor	CAMD/NPS	10% of the network each year	CAMD/NPS OAQPS	CAMD/NPS → independent auditor
Technical System Audits (TSA) Facilities Audit	3rd party auditor/CAMD/ Independent Auditor/NPS	CAMD/NPS	Every 3 years	EPA contractor/NPS contractor AQS	CAMD (Base Funding) NPS

2. Daily Quality Assurance Checks

Each CASTNET ozone analyzer is connected to a data logger which records daily zero/span/precision (z/s/p) checks. The z/s/p scans are performed nightly, but can also be run manually if needed. A summary of the daily verifications calibrations is included in Table 1. If the automated span and precision differ by more than 7 % of the target value it is considered a failure. If the zero reading is outside of ±10 ppb, this is considered a failure. The site operator is instructed to call the Field Operations Manager to troubleshoot the problem if a failure occurs, although federal contractors generally know about failures first.

3. Independent Audits (at sites)

Independent audits are performed every other year by a contractor (currently EEMS). The purpose of the audits is to provide an independent assessment of the site, the equipment performance, and the proficiency of the site operator. The auditor will test flow, ozone, and meteorological equipment at the site for any errors in precision or accuracy. The auditor will also complete a performance evaluation (PE) for ozone (see below). In addition the auditor will acknowledge if the CASTNET siting criteria is being violated. During the independent audit, EEMS will discuss any issues related to equipment, siting criteria, or operator handling with the operator and/or site supervisor.

4. Performance Evaluations (PE) (at contractor's facility)

Annual ozone PE will be conducted in accordance with EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems: Volume II - Ambient Air Specific Methods, 40 CFR Parts 53 and Parts 58 Revisions to Ambient Air Monitoring Regulations: Final Rule*. Results of the ozone PE will be submitted to AQS quarterly by EEMS.

The proposed PE audit schedule is shown in Table 3 below. Site IDs in blue are NPS-sponsored CASTNET sites. Auditing equipment will be NIST certified twice a year, or more often if necessary.

Table 3 Field Site Audit and Ozone PE Schedule

PE and TSA visits are not differentiated within this table. One independent audit performed at each site annually. States may perform site audits when possible as coordinated with the independent auditor.

Odd years:

1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
	ALC188	CDZ171	CKT136	CAN407	CNT169	DEN417	ALH157	ABT147	ARE128	CDR119	
	BBE401	COW137	DCP114	CHA467	GRB411	GLR468	ANA115	ACA416	BEL116	CTH110	
	CAD150	CVL151	OXF122	GRC474	GTH161	KNZ184	BVL130	ASH135	BFT142	KEF112	
	CHE185	ESP127	QAK172	JOT403	PND165	MOR409	HOX148	GRS420	BWR139	LRL117	
	GAS153	MAC426		LAV410	ROM406	SAN189	PRK134	HOW132	CND125	MKG113	
	IRL141	MCK131		PET427	YEL408	THR422	SAL133	HWF187	PSU106	PAR107	
	PAL190	MCK231		PIN414		WNC429	STK138	PED108	WSP144	SHN418	
	SND152	PNF126		SEK430			UVL124	VPI120			
	SUM156	SPD111		YOS404			VIN140	WST109			
							VOY413				

Even years:

1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

	CAD150 CHE185 **EVE419** GAS153 IRL141 PAL190 SND152 SUM156	ALC188 **BBE401** CDZ171 COW137 ESP127 **MAC426** MCK131 MCK231 PAL190 PNF126 SPD111	**CAN407** **CHA467** CKT136 DCP114 **GRC474** **MEV405** OXF122 **PET427** QAK172	**GRB411** **JOT403** **LAV410** **PIN414** **SEK430** **YOS404**	CNT169 CTH161 **DEN417** **GLR468** KNZ184 **MOR409** PND165 **ROM406** SAN189 **YEL408**	ALH157 ANA115 BVL130 HOX148 PRK134 SAL133 STK138 UVL124 VIN140	ABT147 **ACA416** ASH135 HOW132 PED108 VPI120	CAT175 HWF187 **THR422** **VOY413** **WNC429** WST109	CDR119 CTH110 EGB181 **GRS420** KEF112 LRL117 MKG113 PAR107 **SHN418**	ARE128 BEL116 BFT142 BWR139 CND125 PSU106 WSP144	

Color scheme: blue font = NPS sites operated by NPS, red font = NPS sites operated by states, underlined font = sites where PE audits have been performed by States in the past and may do so again in the future.

The verification of the ozone analyzer during the PE audit requires that the zero/span be within 2% of the full scale of the best fit linear line. Per the memorandum from OAQPS in February 2011, ten audit levels are included, but a minimum of three audit levels are necessary for CASTNET compliance to represent the routine concentration of the site. See Table 4 for acceptable audit ranges. The lowest two audit levels must be within ±1.5 ppb or a 15% difference, whichever is greater to meet the acceptance criteria. Levels 3-10 levels must be within 15% to meet the acceptance criteria. The audit levels must bracket 85% of a site's data.

Table 4 Audit Levels for Independent, Annual Audit

Audit Level	Concentration Range, ppm	Acceptance Criteria
1	0.004 – 0.0059	±1.5 ppb or ±15%, whichever is greater
2	0.006 – 0.019	±1.5 ppb or ±15%, whichever is greater
3	0.020 – 0.039	±15%
4	0.040 – 0.069	±15%
5	0.070 – 0.089	±15%
6	0.090 – 0.119	±15%
7	0.120 – 0.139	±15%
8	0.140 – 0.169	±15%
9	0.170 – 0.189	±15%
10	0.190 - 0.259	±15%

Table from US EPA OAQPS dated Feb 17, 2011; "Guidance on Statistics for Use at Audit Levels 1 and 2 of the Expanded List of Audit Levels for Annual Performance Evaluation for SO_2, NO_2, O_3, and CO as Described in 40 CFR Part 58 Appendix A Section 3.2.2"

5. National Performance Audit Program

The CASTNET Team will work with Mark Shanis, in OAQPS, to coordinate with regional offices and the Environmental Services Assistance Team (ESAT) to fulfill the requirements under the National Performance Audit Program (NPAP). The goal for the CASTNET program is to complete NPAP audits at 20% of the sites each year. OAQPS will be responsible for selecting the sites that will be audited. Special priority will be given to those sites documented or expected to have concentrations near 0.075

ppm. The audit results will be submitted to AQS by the NPAP auditor. CAMD and NPS will incur all costs/fees associated with the audits.

The purpose of the NPAP is to assess the proficiency of the monitoring organization. The ozone audits will be performed through the probe using a NIST certified gas, which has been validated at least quarterly. The on-site analyzer will be tested at 3-4 known concentrations for accuracy by the auditor. The acceptable ranges can be found in 40 CFR Part 58, Appendix A, Section 3.2.2.1.

6. Technical Systems Audit (TSA)

a. Facilities

CAMD will use a 3rd party auditor to conduct the facilities portion of the TSA at EPA contractor's facility and at the NPS contractor's facility. Provided travel funds are available, CAMD staff will be present at the facility audit. EPA will also provide the date of the scheduled audit to the States, Regions at least 6 months prior to the visit. This audit will be performed once every three years.

A site systems audit will be conducted at the EPA contractor's and NPS contractor's facility to provide a qualitative appraisal of the total measurement system. Site planning, organization, and operation will be evaluated to ensure that good Quality Assurance/Quality Control (QA/QC) practices are being applied.

The audit will consist of an assessment of the staff, facilities, data and document control, and the quality control programs. The CASTNET contractor's project manager, database manager, laboratory manager, and QA manager will be present during the audit. CAMD or the independent auditor will officially accept and summarize the findings and present them to the facility management. A report of the network TSA results will be prepared for each the facilities and submitted to OAQPS with copies to the Regions. Results from the facility TSA may be shared with the states through a NACAA call or email.

b. Field

For the TSA field audit, CAMD and NPS will use their independent auditor to conduct the field TSAs. The contractor, EEMS, also performs the independent field audits and performance evaluations for ozone at all CASTNET sites. Prior to field TSAs, announcement letters to site operators and parks, list of visitors, and purpose of visit should be sent 2-4 weeks prior to ensure all parties involved are prepared and eliminate park entrance fees when possible. If and when travel funds permit, a CAMD or National Park Service (NPS) representative will be present at the field TSA. States and Regions will have 6 months notice prior to the field TSA and their participation in the field TSA's will be encouraged. Ten percent of all CASTNET sites will have a field TSA completed each year. A sample schedule is shown in Table 5.

Results from the field TSA's will be written up with the facilities TSA results by CAMD or NPS staff. An outline of the TSA report layout is shown in Appendix A.

Table 5 Proposed TSA schedule for 2012

TSA audit schedule 2012									
					Sponsoring Agency				
Site ID	Site Name	State	Region	Audit Month	EPA	NPS	Sponsor attending?	Region Contact	State Contact
BEL116	Beltsville	MD	3	Nov	x		y		
BWR139	Blackwater NWR	MD	3	Oct	x				
GRS420	Great Smokey Mtns NP	TN	4	Sept		x			
JOT403	Joshua Tree	CA	9	May		x			
PIN414	Pinnacles NM	CA	9	May		x			
ROM406	Rocky Mtn NP	CO	8	Jun		x			
SEK430	Sequoia NP – Ash Mountain	CA	9	May		x			
WSP144	Washington Crossing	NJ	2	Oct	x				
YOS404	Yosemite NP – Turtleback Dome	CA	9	May		x			

7. Annual Monitoring Network Plans and Network Assessment

CAMD will prepare an annual CASTNET (EPA and NPS-sponsored sites) monitoring network plan for public review. The network plan will focus on the ozone component of CASTNET and will address the ozone monitoring requirements of 40 CFR 58.10(b), including any anticipated new CASTNET ozone sites or ozone sites that are in jeopardy of being shut down. The NPS will need to have final say whether ozone monitoring at an NPS site is discontinued. A given NPS site may no longer meet the needs of CASTNET, but still be considered of value to NPS. The annual monitoring network plan will be posted for 30 days of public inspection on approximately May 15. The plan and response to any comments received during the inspection period will be distributed to OAQPS and all EPA Regional Office contacts, and submitted to the CAMD Division Director for approval no later than July 1. The schedule for these activities is outlined in Table 6. OAQPS will provide comments within 120 days on any plans proposing changes to the ozone network, and the final plan will be posted on the CAMD and TTNS web sites.

Table 6 Network Plan Schedule

Date	Network Plan Steps
March 30th	Final data submitted to AQS
April 30th	Submit network plan to NPS for review
May 15st	Posted for public review – TTNS site, CASTNET site
June 15st	CAMD begins response to public comments
July 1st	Submitted to EPA/CAMD division director for

	approval

CAMD will complete a network assessment every 5 years in accordance with 40 CFR 58.10(d) and send to NPS for review/coordination prior to submittal. The network assessment shall be submitted to the CAMD Division Director, OAQPS, and all EPA Regional Office contacts. The next assessment is due July 1, 2015, and every 5 years thereafter.

8. Ozone Network Modification

CAMD and NPS will consult with OAQPS and applicable EPA Regional Offices before discontinuing any ozone monitor in accordance with the requirements of 40 CFR 58.14. The implications arising from a monitor discontinuation will be reviewed, involving affected state monitoring agencies if appropriate. Although no formal approval will be required, CAMD and NPS will consider pertinent comments on the network modification before making the change. It is preferable that such network modifications be documented in the annual monitoring network plan process described above. If resource constraints dictate that an ozone-monitoring CASTNET site should be removed from the network; then this site may not be removed as network modifications are not allowed without OAQPS approval.

9. Data Reporting and Certification

CAMD and NPS will comply with the annual air monitoring certification requirements in accordance with 40 CFR 58.15. The certification process will be completed by May 1 of each year for the prior calendar year's ambient and quality assurance data. The certification materials will be signed by designated senior managers in CAMD and NPS for their respective CASTNET sites and submitted to OAQPS for review. CAMD can certify for all CASTNET sites provided that NPS submits pertinent information in a timely manner. CAMD's Division Director will approve with input from States and Regions. After certification, this information will be public for 30 days.

CAMD and NPS will comply with the data submittal requirements in accordance with 40 CFR 58.16. Applicable ambient and quality assurance data will be submitted to AQS within 90 days after the end of each quarterly reporting period.

Appendix A

Outline for TSA Report

1. Executive Summary
2. Introduction
3. General Program and Quality Management (Audit of EPA contractor's office and NPS contractor's office)
    a. Complete General/Quality Management Forms
    b. Findings, Discussions, Recommendations
4. Network Management
    a. Complete Network Management, Field Support, Instrument Certification/Testing, Standards and Calibrations, and Instrument Repair Forms
    b. Table listing the site locations, number of monitors at each location, type of monitor (SLAMS, SPM, etc…), what is measured
    c. Findings, Discussions, Recommendations
5. Field Operations
    a. Complete Field Overview Forms
    b. Table that list site name, AQS ID, and pollutants monitored
    c. Findings, Discussions, Recommendations
6. Laboratory Operations
    a. Complete Laboratory Operations Forms
    b. Findings, Discussions, Recommendations
7. Data and Data Management
    a. Complete Data and Data Management Forms
    b. Findings, Discussions, Recommendations
8. Quality Control and Quality Assurance

Appendix B

Regional Contacts Information for TSA Report

Region	Name	Position	Phone	Email
Region 1	Judge, Bob		617-918-8387	judge.robert@epa.gov
Region 2	Ruvo, Richard A.	Mgr	212-637-4014	ruvo.richard@epa.gov
Region 3	Hass, Drew		215-814-2049	hass.andrew@epa.gov
Region 4	Rinck, Todd	Mgr	404-562-9062	rinck.todd@epa.gov
Region 5	McGrath, Jesse		312-886-1532	mcgrath.jesse@epa.gov
Region 6	Sather, Mark		214-665-8353	sather.mark@epa.gov
Region 7	Nichols, Robert	Mgr	913-551-5266	nichols.robert@epa.gov
Region 8	Payton, Richard		303-312-6439	payton.richard@epa.gov
Region 9	Clover, Fletcher		415-972-3991	clover.fletcher@epa.gov
Region 10	Hall, Christopher		206-553-0521	hall.christopher@epa.gov

Appendix C

AQS Qualifier Codes and Descriptions

Codes with Status = I are not valid for reporting new data

18-AUG-10

Qt Qualifier Type	Qualifier Type Desc	Qualifier Code	Qualifier Desc
INFORM	Informational Only	A	High Winds
	Informational Only	B	Stratospheric Ozone Intrusion
	Informational Only	C	Volcanic Eruption
	Informational Only	D	Sandblasting
	Informational Only	F	Structural Fire
	Informational Only	G	High Pollen Count
	Informational Only	H	Chem. Spills & Indust. Accidents
	Informational Only	I	Unusual Traffic Congestion
	Informational Only	IA	African Dust
	Informational Only	IB	Asian Dust
	Informational Only	IC	Chem. Spills & Indust Accidents
	Informational Only	ID	Cleanup After a Major Disaster
	Informational Only	IE	Demolition
	Informational Only	IF	Fire - Canadian
	Informational Only	IG	Fire - Mexico/Central America
	Informational Only	IH	Fireworks
	Informational Only	II	High Pollen Count
	Informational Only	IJ	High Winds
	Informational Only	IK	Infrequent Large Gatherings
	Informational Only	IL	Other
	Informational Only	IM	Prescribed Fire
	Informational Only	IN	Seismic Activity
	Informational Only	IO	Stratospheric Ozone Intrusion
	Informational Only	IP	Structural Fire
	Informational Only	IQ	Terrorist Act
	Informational Only	IR	Unique Traffic Disruption
	Informational Only	IS	Volcanic Eruptions
	Informational Only	IT	Wildfire-U. S.
	Informational Only	IU	Wildland Fire Use Fire-U. S.
	Informational Only	J	Construction/Demolition
	Informational Only	K	Agricultural Tilling
	Informational Only	L	Highway Construction
	Informational Only	M	Rerouting of Traffic
	Informational Only	N	Sanding/Salting of Streets
	Informational Only	O	Infrequent Large Gatherings
	Informational Only	P	Roofing Operations
	Informational Only	Q	Prescribed Burning

	Informational Only	R	Cleanup After a Major Disaster
	Informational Only	S	Seismic Activity
	Informational Only	U	Sahara Dust
	Informational Only	Z	Other event
QA	Quality Assurance Qualifier	1	Deviation from a CFR/Critical Criteria Requirement
	Quality Assurance Qualifier	2	Operational Deviation
	Quality Assurance Qualifier	3	Field Issue
	Quality Assurance Qualifier	4	Lab Issue
	Quality Assurance Qualifier	5	Outlier
	Quality Assurance Qualifier	6	QAPP Issue
	Quality Assurance Qualifier	7	Below Lowest Calibration Level
	Quality Assurance Qualifier	8	QA/QC Unknown
	Quality Assurance Qualifier	9	Negative value detected - zero reported
	Quality Assurance Qualifier	CB	Values have been Blank Corrected
	Quality Assurance Qualifier	CC	Clean Canister Residue
	Quality Assurance Qualifier	CL	Surrogate Recoveries Outside Control Limits due to analytical interferences
	Quality Assurance Qualifier	EH	Estimated; Exceeds Upper Range
	Quality Assurance Qualifier	FB	Field Blank Value Above Acceptable Limit
	Quality Assurance Qualifier	HT	Sample pick-up hold time exceeded; data questionable
	Quality Assurance Qualifier	LB	Lab blank value above acceptable limit
	Quality Assurance Qualifier	LJ	Identification Of Analyte Is Acceptable; Reported Value Is An Estimate
	Quality Assurance Qualifier	LK	Analyte Identified; Reported Value May Be Biased High
	Quality Assurance Qualifier	LL	Analyte Identified; Reported Value May Be Biased Low
	Quality Assurance Qualifier	MD	Value less than MDL
	Quality Assurance Qualifier	MX	Matrix Effect
	Quality Assurance Qualifier	ND	No Value Detected
	Quality Assurance Qualifier	NS	Influenced by nearby source
	Quality Assurance Qualifier	PQ	Values Between PQL And MDL
	Quality Assurance Qualifier	SQ	Values Between SQL and MDL
	Quality Assurance Qualifier	SS	Value substituted from secondary monitor
	Quality Assurance Qualifier	SX	Does Not Meet Siting Criteria
	Quality Assurance Qualifier	T	Multiple PM2.5 Validity Flags
	Quality Assurance Qualifier	TB	Trip Blank Value Above Acceptable Limit
	Quality Assurance Qualifier	V	Validated Value
	Quality Assurance Qualifier	VB	Value below normal; no reason to invalidate
	Quality Assurance Qualifier	W	Flow Rate Average out of Spec.
	Quality Assurance Qualifier	X	Filter Temperature Difference out of Spec.
	Quality Assurance Qualifier	Y	Elapsed Sample Time out of Spec.
REQEXC	Request Exclusion	E	Forest Fire
	Request Exclusion	RA	African Dust
	Request Exclusion	RB	Asian Dust

	Request Exclusion	RC	Chem. Spills & Indust. Accidents
	Request Exclusion	RD	Cleanup After a Major Disaster
	Request Exclusion	RE	Demolition
	Request Exclusion	RF	Fire - Canadian
	Request Exclusion	RG	Fire - Mexico/Central America
	Request Exclusion	RH	Fireworks
	Request Exclusion	RI	High Pollen Count
	Request Exclusion	RJ	High Winds
	Request Exclusion	RK	Infrequent Large Gatherings
	Request Exclusion	RL	Other
	Request Exclusion	RM	Prescribed Fire
	Request Exclusion	RN	Seismic Activity
	Request Exclusion	RO	Stratospheric Ozone Intrusion
	Request Exclusion	RP	Structural Fire
	Request Exclusion	RQ	Terrorist Act
	Request Exclusion	RR	Unique Traffic Disruption
	Request Exclusion	RS	Volcanic Eruptions
	Request Exclusion	RT	Wildfire-U. S.
	Request Exclusion	RU	Wildland Fire Use Fire-U. S.

URL for AQS Table: http://www.epa.gov/ttn/airs/airsaqs/manuals/Qualifiers Code.xls

AQS Exceptional Event Tutorial: http://www.epa.gov/ttn/airs/airsaqs/manuals/ExceptionalEventTutorial.pdf