2014 – 4th Quarter Report
Support for Conducting Systems & Performance Audits of CASTNET Sites and NADP Monitoring Stations

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Prepared for:

U. S. Environmental Protection Agency

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List of Acronyms and Abbreviations

% diff	percent difference
A/D	analog to digital converter
ARS	Air Resource Specialist, Inc.
ASTM	American Society for Testing and Materials
CASTNET	Clean Air Status and Trends Network
DAS	data acquisition system
DC	direct current
deg	degree
DVM	digital voltmeter
EEMS	Environmental, Engineering & Measurement Services, Inc.
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation
FSAD	Field Site Audit Database
GPS	geographical positioning system
lpm	liters per minute
MLM	Multilayer Model
m/s	meters per second
mv	milivolt
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
QAPP	Quality Assurance Project Plan
SOP	standard operating procedure
TEI	Thermo Environmental Instruments
USNO	United States Naval Observatory
V	volts
WRR	World Radiation Reference

1.0 CASTNET Quarterly Report

1.1 Introduction

The Clean Air Status and Trends Network (CASTNET) is a national air monitoring program developed under mandate of the 1990 Clean Air Act Amendments. Each site in the network measures acidic gases and particles and other forms of atmospheric pollution using a continuous collection filter aggregated over a one week period. Hourly averages of surface ozone concentrations and selected meteorological variables are also measured.

Site measurements are used to estimate deposition rates of the various pollutants with the objective of determining relationships between emissions, air quality, deposition, and ecological effects. In conjunction with other national monitoring networks, CASTNET data are used to determine the effectiveness of national emissions control programs and to assess temporal trends and spatial deposition patterns in atmospheric pollutants. CASTNET data are also used for long-range transport model evaluations and effects research.

CASTNET pollutant flux estimates are calculated as the aggregate product of weekly measured chemical concentrations and model-estimated deposition velocities. Currently, the National Oceanic and Atmospheric Administration's multilayer inferential model (NOAA-MLM) described by Meyers et al. [1998] is used to derive deposition velocity estimates.

As of June 2016, the network is comprised of 94 active rural sampling sites across the Untied States and Canada, cooperatively operated by the Environmental Protection Agency (EPA), the National Park Service (NPS), Environment Canada, Bureau of Land Management (BLM) and several independent partners. AMEC is responsible for operating the EPA and Environment Canada sponsored sites, and Air Resource Specialist, Inc. (ARS) is responsible for operating the NPS and BLM sponsored sites.

1.2 Project Objectives

The objectives of this project are to establish an independent and unbiased program of performance and systems audits for all CASTNET sampling sites. Ongoing Quality Assurance (QA) programs are an essential part of any long-term monitoring network.

Performance audits verify that all evaluated variables are consistent with the accuracy goals as defined in the CASTNET Quality Assurance Project Plan (QAPP). The parameter specific accuracy goals are presented in Table 1. Only four EPA sponsored sites that are operated by AMEC continue to operate meteorological sensors. Those sites are BEL116, BVL30, CHE185,

and PAL190. Five new sites sponsored by EPA and operated by the BLM in WY also operate meteorological sensors and are BAS601, NEC602, BUF603, FOR604, and SHE604.

Some or all of the additional monitored variables, NOy, CO, and SO_2 have been added to the EPA sponsored sites BVL130, HWF187, PND165, PNF126, ROM206, and BEL116. Those variables were audited at the PNF126, HWF187, and BEL116 stations during fourth quarter 2014. All of the SO_2 and NOy results for those audits were found to be within acceptance criteria. The preliminary reports of those results were delivered following the audits and are not included in this report.

Table 1. Performance Audit Challenge and Acceptance Criteria

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Precipitation	Response	10 manual tips	1 DAS count per tip
Precipitation	Accuracy	2 introductions of known amounts of water	≤ ±10.0% of input amount
Relative Humidity	Accuracy	Compared to reference instrument or standard solution	≤ ±10.0% RH
Solar Radiation	Accuracy	Compared to WRR traceable standard	≤ ±10.0% of daytime average
Surface Wetness	Response	Distilled water spray mist	Positive response
Surface Wetness	Sensitivity	1% decade resistance	N/A
Temperature	Accuracy	Comparison to 3 NIST measured baths (~ 0° C, ambient, ~ full-scale)	≤ ± 0.5° C
Temperature Difference	Accuracy	Comparison to station temperature sensor	≤ ± 0.50° C
Wind Direction	Orientation Accuracy	Parallel to alignment rod/crossarm, or sighted to distant point	≤ ±5° from degrees true
Wind Direction	Linearity	Eight cardinal points on test fixture	≤ ±5° mean absolute error
Wind Direction	Response Threshold	Starting torque tested with torque gauge	< 10 g-cm Climatronics; < 20 g-cm R.M. Young
Wind Speed	Accuracy	Shaft rotational speed generated and measured with certified synchronous motor	≤ ±0.5 mps below 5.0 mps input; ≤ ±5.0% of input at or above 5.0 mps
Wind Speed	Starting Threshold	Starting torque tested with torque gauge	< 0.5 g-cm
Mass Flow Controller	Flow Rate	Comparison with Primary Standard	≤ ± 5.0% of designated rate

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Ozone	Slope	Linear regression of multi-point test gas concentration as measured with a certified transfer standard	$0.9000 \leq m \leq 1.1000$
Ozone	Intercept		-5.0 ppb $\leq b \leq 5.0$ ppb
Ozone	Correlation Coefficient		$0.9950 \leq r$
DAS	Accuracy	Comparison with certified standard	$\leq \pm 0.003$ VDC

Performance audits are conducted using standards that are traceable to the National Institute of Standards and Technology (NIST), or another authoritative organization, and certified as current.

Site systems audits are intended to provide a qualitative appraisal of the total measurement system. Site planning, organization, and operation are evaluated to ensure that good Quality Assurance/Quality Control (QA/QC) practices are being applied. At a minimum the following audit issues were addressed at each site systems audit:

- Site locations and configurations match those provided in the CASTNET QAPP.
- Meteorological instruments are in good physical and operational condition and are sited to meet EPA ambient monitoring guidelines (EPA-600/4-82-060).
- Sites are accessible, orderly, and if applicable, compliant with OSHA safety standards.
- Sampling lines are free of leaks, kinks, visible contamination, weathering, and moisture.
- Site shelters provide adequate temperature control.
- All ambient air quality instruments are functional, being operated in the appropriate range, and the zero air supply desiccant is unsaturated.
- All instruments are in current calibration.
- Site documentation (maintenance schedules, on-site SOPs, etc.) is current and log book records are complete.
- All maintenance and on-site SOPs are performed on schedule.
- Corrective actions are documented and appropriate for required maintenance/repair activity.
- Site operators demonstrate an adequate knowledge and ability to perform required site activities, including documentation and maintenance activities.

1.3 CASTNET Sites Visited Fourth Quarter 2014

This report consists of the systems and performance and other audit results from the CASTNET sites visited during the fourth quarter (October through December) of 2014. The locations and dates of the site visits for complete audits are presented in Table 2.

Table 2. Site Audit Visits

Side ID	Audit Type	Sponsor	Site Visit Date	Station Name
HWF187	Without met	EPA	10/1/2014	Huntington Wildlife Forest
ACA416	With met	NPS	10/03/2014	Acadia National Park
HOW191	Without met	EPA	10/6/2014	Howland Ameriflux
ASH135	Without met	EPA	10/7/2014	Ashland
PNF126	Without met	EPA	10/30/2014	Cranberry
ABT147	Without met	EPA	11/09/2014	Abington
WST109	Without met	EPA	11/10/2014	Woodstock
BEL116	Without met	EPA	11/10/2014	Beltsville

In addition to the sites listed in Table 2 that were visited for complete audits, the sites listed in Table 3 were visited to conduct Through-The-Probe (TTP) pollutant Performance Evaluations (PE).

Table 3. TTP Pollutant PE Visits

Side ID	Audit Type	Sponsor	Site Visit Date	Station Name
HWF187	NOy	EPA	09/30/2014	Huntington Wildlife Forest
GRS420	Ozone PE	NPS	10/27/2014	Great Smoky NP - Look Rock
PNF126	NOy	EPA	10/30/2014	Cranberry
PED108	Ozone PE	EPA	11/3/2014	Prince Edward

Side ID	Audit Type	Sponsor	Site Visit Date	Station Name
BEL116	SO_2	EPA	11/10/2014	Beltsville
BEL116	Nitrotrain	EPA	11/10/2014	Beltsville
BWR139	Ozone PE	EPA	11/13/2014	Blackwater NWR
WSP144	Ozone PE	EPA	11/14/2014	Washington Crossing State Park
VPI120	Ozone PE	EPA	11/17/2014	Horton Station
SHN418	Ozone PE	NPS	11/18/2014	Shenandoah NP - Big Meadows
PAR107	Ozone PE	EPA	11/19/2014	Parsons
CDR119	Ozone PE	EPA	11/21/2014	Cedar Creek
CND125	Ozone PE	EPA	11/24/2014	Candor
BFT142	Ozone PE	EPA	11/25/2014	Beaufort

1.4 Audit Results

The observations and results of the systems and performance audits are included in Appendix A, *Audit Report Forms* by site, arranged by audit date.

Photographs of site conditions are included within each systems report where necessary.

Copies of the spot reports that were sent immediately following the audit of each site are included as Appendix B, *Site Spot Report Forms*.

The Ozone PE results and observations are included in Appendix C, *Ozone Performance Evaluation Forms.*

2.0 NADP Quarterly Report

2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates three precipitation chemistry networks and two atmospheric concentration networks. The National Trends Network (NTN) has been measuring acidic precipitation since 1978. The network currently has more than 250 sites. The Atmospheric Integrated Research Monitoring Network (AIRMoN) began operation in 1992 and currently measures event based precipitation events at 6 sites. The Mercury Deposition Network (MDN) measures total mercury in precipitation samples from more than 120 stations. The MDN began operation in 1996 and includes sites throughout the US and Canada. The Atmospheric Mercury Network (AMNet) and the Ammonia Monitoring Network (AMoN) measure ambient concentrations of mercury and ammonia, respectively.

The NADP and other long-term monitoring networks provide critical information to the EPA regarding evaluating the effectiveness of emission reduction control programs from the power industry.

The NADP Program Office operates and administers the three precipitation chemistry networks (NTN, MDN and AIRMoN), two atmospheric concentration networks (AMNet and AMoN), two analytical laboratories (the Central Analytical Laboratory (CAL) located at the University of Illinois/Illinois State Water Survey and the Mercury Analytical Laboratory (HAL) located at Frontier Global Sciences), and the network equipment depot (NED).

2.2 Project Objectives

The objective of this project is to perform independent and unbiased evaluations of the sites along with its operations. These evaluations provide quality assurance pertaining to siting, sample collection and handling, equipment operation and maintenance, record keeping and field laboratory procedures.

More specifically, the surveys determine and report findings based on an established methodology consisting of completing a site questionnaire, testing the equipment and documenting with photographs the location, siting criteria, existing equipment, and any issues encountered that require such documentation.

2.3 Sites Visited Fourth Quarter 2014

This report covers the results from the NADP sites surveyed during the fourth quarter (October through December) of 2014. The station names and dates of the audits are presented in Table 4.

Table 4. Sites Surveyed – Fourth Quarter 2015

Side ID	Network	Visit Date	Station Name
ME00	MDN/NTN	10/7/2014	Caribou
ME94	NTN	10/10/2014	Indian Township
ME98	MDN/NTN	10/2/2014	Acadia National Park-McFarland Hill
MN08	NTN	10/22/2014	Hovland
MN16	MDN/NTN	10/20/2014	Marcell Experimental Forest
MN18	MDN/AMoN	10/21/2014	Fernberg
MN99	NTN	10/22/2014	Wolf Ridge
NC45	NTN	10/28/2014	Mt. Mitchell
NF19	MDN	10/15/2014	Stephenville
NS01	MDN/AMoN	10/13/2014	Kejimkujik National Park
CT15	NTN/AMoN	11/9/2014	Abington
MD99	MDN/NTN/AMoN	11/11/2014	Beltsville
NC03	NTN	11/17/2014	Lewiston
NC08	MDN	11/18/2014	Waccamaw State Park
NC34	NTN	11/24/2014	Piedmont Research Station
NC41	NTN	11/25/2014	Finley Farm
NH02	NTN/AMoN	11/10/2014	Hubbard Brook
NY29	NTN	11/13/2014	Moss Lake
NY52	NTN	11/13/2014	Bennett Bridge
NY99	NTN	11/7/2014	West Point
VA00	NTN	11/4/2014	Charlottesville
VA13	NTN	11/17/2014	Horton's Station
VA24	NTN/AMoN	11/3/2014	Prince Edward

Side ID	Network	Visit Date	Station Name
VA28	MDN/NTN	11/18/2014	Shenandoah NP - Big Meadows
VA99	NTN	11/25/2014	Natural Bridge Station
VT01	NTN	11/8/2014	Bennington
VT99	MDN/NTN/AMoN	11/12/2014	Underhill
WV04	NTN	11/24/2014	Babcock State Park
WV18	AMoN	11/19/2014	Parsons
WV99	AIRMoN	11/20/2014	Canaan Valley Institute

2.4 Survey Results

Site survey results are entered into a relational database. The database in turn generates Site Spot Reports which are distributed among the interested parties as soon as all the site data has been entered. Database tables with all the data collected and reviewed are then sent to the NADP Program Office and to the U.S. EPA Project Officers.

Other items gathered during the surveys (i.e., photographs, Belfort charts, etc.) are uploaded to EEMS' server where the NADP PO and the U.S. EPA POs can access them and download them as needed by login into the server site.

Given the volume of data generated, and the fact that data is distributed and/or is available through EEMS' server, no survey results are included in this report.

APPENDIX A

CASTNET Audit Report Forms

Site Inventory by Site Visit

Site Visit Date		*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
HWF187-Eric Hebert-09/30/2014						
1	9/30/2014	Computer	Dell	000290	D520	unknown
2	9/30/2014	DAS	Campbell	000356	CR3000	2134
3	9/30/2014	Elevation	Elevation	None	1	None
4	9/30/2014	Filter pack flow pump	Thomas	02358	illegible	illegible
5	9/30/2014	Flow Rate	Apex	000592	AXMC105LPMDPCV	illegible
6	9/30/2014	Infrastructure	Infrastructure	none	none	none
7	9/30/2014	Met tower	Universal Tower	03579	unknown	none
8	9/30/2014	Modem	Raven	06807	H4223-C	0934393748
9	9/30/2014	Ozone	ThermoElectron Inc	000681	49i A1NAA	1030244790
10	9/30/2014	Ozone Standard	ThermoElectron Inc	000445	49i A3NAA	CM08200021
11	9/30/2014	Sample Tower	Aluma Tower	illegible	B	AT-5107-E-4-12
12	9/30/2014	Shelter Temperature	Campbell	none	107-L	unknown
13	9/30/2014	Shield (10 meter)	RM Young	04676	Aspirated 43408	none
14	9/30/2014	Siting Criteria	Siting Criteria	None	1	None
15	9/30/2014	Temperature	RM Young	06401	41342VO	14034
16	9/30/2014	Zero air pump	Teledyne	000775	701H	611

DAS Data Form

DAS Time Max Error: 0.25

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2134	HWF187	Eric Hebert	09/30/2014	DAS	Primary

Das Date: 10/1 /2014
Das Time: 9:00:15
Das Day: 274

Audit Date 10/1 /2014
Audit Time 9:00:00
Audit Day 274

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0004	0.0002	0.0004

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0004	0.0000	V	V	0.0004
7	0.1000	0.0997	0.0997	V	V	0.0000
7	0.2000	0.1996	0.1995	V	V	-0.0001
7	0.5000	0.4994	0.4995	V	V	0.0001
7	0.7000	0.6999	0.6997	V	V	-0.0002
7	0.9000	0.8995	0.8994	V	V	-0.0001
7	1.0000	1.0003	1.0005	V	V	0.0002

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	HWF187	Eric Hebert	09/30/2014	Flow Rate	000592

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.01
1.12%	1.35%			**Cal Factor Full Scale**	0.99
				Rotometer Reading:	1.55

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.01	0.000	0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.01	l/m	l/m	
primary	test pt 1	1.483	1.480	1.52	0.000	1.50	l/m	l/m	1.35%
primary	test pt 2	1.485	1.480	1.51	0.000	1.50	l/m	l/m	1.35%
primary	test pt 3	1.492	1.490	1.52	0.000	1.50	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	6.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	0.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	180 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244790	HWF187	Eric Hebert	09/30/2014	Ozone	000681

Slope:	0.97152	**Slope:**	0.00000
Intercept	-0.17924	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
3.2%	3.4%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	-0.20	-0.31	-0.50	ppb	
primary	2	26.78	26.41	25.55	ppb	-3.26%
primary	3	47.59	47.03	45.44	ppb	-3.38%
primary	4	77.75	76.91	74.56	ppb	-3.06%
primary	5	107.83	106.72	103.50	ppb	-3.02%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.000	pass
Span	1.006	pass
Cell B Freq.	90.4 kHz	pass
System Memo	See comments	pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.72 lpm	pass
Cell A Tmp.	34.9 C	pass
Cell A Pressure	692.5 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	89.7 kHz	pass
Cell A Flow	0.32 lpm	Fail
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14034	HWF187	Eric Hebert	09/30/2014	Temperature	06401

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.14	0.29		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.02	0.21	0.000	0.3	C	0.06
primary	Temp Mid Range	24.57	24.68	0.000	24.6	C	-0.06
primary	Temp High Range	47.90	47.89	0.000	48.2	C	0.29

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	unknown	HWF187	Eric Hebert	09/30/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.28	0.36		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.40	22.52	0.000	22.9	C	0.36
primary	Temp Mid Range	22.02	22.14	0.000	22.4	C	0.21

Infrastructure Data For

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

Shelter Make	Shelter Model	Shelter Size
ESF	none	1630 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	HWF187	Eric Hebert	09/30/2014	Moisture Present	Apex	4026	☐	☐
The filter sample tubing has drops of moisture in low sections outside the shelter.								
Ozone	HWF187	Eric Hebert	09/30/2014	Cell A Flow	ThermoElectron	3368	☐	☑
This analyzer diagnostic check is outside the manufacturer's recommended value.								

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested every other week.

2 **Parameter:** ShelterCleanNotes

The shelter is in good condition.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	HWF187	**Technician**	Eric Hebert	**Site Visit Date**	09/30/2014

Site Sponsor (agency)	EPA	**USGS Map**	Newcomb
Operating Group	SUNY/ESF	**Map Scale**	
AQS #	36-031-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, Hg	**QAPP Latitude**	43.9732
Deposition Measurement	dry, wet, Hg	**QAPP Longitude**	-74.2232
Land Use	woodland - mixed	**QAPP Elevation Meters**	502
Terrain	complex	**QAPP Declination**	14.5
Conforms to MLM	No	**QAPP Declination Date**	6/17/2004
Site Telephone	(518) 582-4800	**Audit Latitude**	43.973044
Site Address 1	Adirondack Ecological Center	**Audit Longitude**	-74.223317
Site Address 2		**Audit Elevation**	497
County	Essex	**Audit Declination**	-14
City, State	Newcomb, NY		
Zip Code	12852	**Fire Extinguisher** ☑ Present	Inspected Oct 2014
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☐	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	ESF	**Model**	none	**Shelter Size**	1630 cuft
Shelter Clean	☑	**Notes**	The shelter is in good condition.				
Site OK	☑	**Notes**					

Driving Directions From I-87 take exit 29 west to Newcomb. Continue through Newcomb (about 6 miles). Just west of town, turn right (north) at the Adirondack Ecological Center. Continue past the building on the dirt road to the site.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m	20 m	☐
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	Temperature only
2	Are all the meteorological sensors operational online, and reporting data?	☑	Temperature only
3	Are the shields for the temperature and RH sensors clean?	☑	Moderately clean
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	Moisture in tubing only
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☐	☑
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☑	☐
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☐	☑
Filter pack flow controller	☑	☐	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2009	☑
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	HWF187	Technician	Eric Hebert	Site Visit Date	09/30/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Trained during site installation by ESE employee
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	N/A	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone inlet filter is replaced and the sample train is leak tested every other week.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID HWF187 **Technician** Eric Hebert **Site Visit Date** 09/30/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000290
DAS	Campbell	CR3000	2134	000356
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	illegible	illegible	02358
Flow Rate	Apex	AXMC105LPMDPC	illegible	000592
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03579
Modem	Raven	H4223-C	0934393748	06807
Ozone	ThermoElectron Inc	49i A1NAA	1030244790	000681
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200021	000445
Sample Tower	Aluma Tower	B	AT-5107-E-4-12	illegible
Shelter Temperature	Campbell	107-L	unknown	none
Shield (10 meter)	RM Young	Aspirated 43408	none	04676
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	14034	06401
Zero air pump	Teledyne	701H	611	000775

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ACA416-Eric Hebert-10/03/2014					
10/3/2014	Computer	Hewlett Packard	none	8460p	CNU20941M6
10/3/2014	DAS	Environmental Sys Corp	ACADIA1	8832	unknown2
10/3/2014	Delta Temperature	Climatronics	none	100093	illegible
10/3/2014	Elevation	Elevation	None	1	None
10/3/2014	F460 translator	Climatronics	none	100163	683
10/3/2014	Filter pack flow pump	Thomas	none	107CAB11	109500000040
10/3/2014	Flow Rate	Tylan	none	FC260	AW02213003
10/3/2014	Infrastructure	Infrastructure	none	none	none
10/3/2014	Mainframe	Climatronics	01342	100081	1288
10/3/2014	Met tower	Climatronics	none	unknown	illegible
10/3/2014	MFC power supply	Tylan	none	RO-32	none
10/3/2014	Modem	US Robotics	none	33.6 fax modem	unknown
10/3/2014	Ozone	ThermoElectron Inc	90744	49C	49C-74536-376
10/3/2014	Ozone Standard	ThermoElectron Inc	none	49CPS	49CPS-70752-366
10/3/2014	Precipitation	Climatronics	01322	100508-2	illegible
10/3/2014	Precipitation	Texas Electronics	02179	TR-525i-HT	illegible
10/3/2014	Printer	Hewlett Packard	none	842C	unknown
10/3/2014	Relative Humidity	Vaisala	none	HMP45AC	Y0730050
10/3/2014	Sample Tower	Aluma Tower	none	B	AT-71103-7I-3
10/3/2014	Shelter Temperature	unknown	none	none	none
10/3/2014	Shield (10 meter)	Climatronics	none	100325	illegible
10/3/2014	Shield (2 meter)	Climatronics	none	100325	illegible
10/3/2014	Siting Criteria	Siting Criteria	None	1	None
10/3/2014	Solar Radiation	Licor	none	LI-200	PY16746
10/3/2014	Solar Radiation Translator	Climatronics	none	100144	309
10/3/2014	Surface Wetness	RM Young	90725	58101	none
10/3/2014	Temperature	Climatronics	none	100093	illegible
10/3/2014	Temperature Translator	Climatronics	03630	100088-2	401

Site	*Visit Date*	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
29	10/3/2014	Wind Direction	Climatronics	none	100076	illegible
30	10/3/2014	Wind Speed	Climatronics	none	100075	1947
31	10/3/2014	Zero air pump	ThermoElectron Inc	none	111	111-30215-237

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental Sys	unknown2	ACA416	Eric Hebert	10/03/2014	DAS	Primary

Das Date: 10/3 /2014 **Audit Date** 10/3 /2014
Das Time: 9:55:00 **Audit Time** 9:55:00
Das Day: 276 **Audit Day** 276

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0000	0.0001	0.0003	0.0006

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
2	0.0000	-0.0002	-0.0002	V	V	0.0000
2	0.1000	0.1001	0.1002	V	V	0.0001
2	0.3000	0.3010	0.3011	V	V	0.0001
2	0.5000	0.5004	0.5004	V	V	0.0000
2	0.7000	0.6991	0.6991	V	V	0.0000
2	0.9000	0.8995	0.8995	V	V	0.0000
2	1.0000	0.9997	0.9996	V	V	-0.0001
15	0.0000	-0.0005	-0.0006	V	V	-0.0001
15	0.1000	0.0997	0.0997	V	V	0.0000
15	0.3000	0.2999	0.2994	V	V	-0.0005
15	0.5000	0.4998	0.4995	V	V	-0.0003
15	0.7000	0.6990	0.6984	V	V	-0.0006
15	0.9000	0.8998	0.8996	V	V	-0.0002
15	1.0000	0.9998	0.9992	V	V	-0.0006

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Tylan	AW02213003	ACA416	Eric Hebert	10/03/2014	Flow Rate	none

Mfg	Tylan	
SN/Owner ID	none	none
Parameter	MFC power supply	

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.03
6.30%	6.44%			**Cal Factor Full Scale**	15.05
				Rotometer Reading:	1.6

UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignalU	PctDifference:
primary	pump off	0.000	0.000	-0.08	-0.025	-0.04	l/m	l/m	
primary	leak check	0.000	0.000	-0.08	-0.025	-0.04	l/m	l/m	
primary	test pt 1	0.000	1.593	0.96	0.481	1.49	l/m	l/m	-6.44%
primary	test pt 2	0.000	1.592	0.96	0.481	1.49	l/m	l/m	-6.38%
primary	test pt 3	0.000	1.587	0.96	0.481	1.49	l/m	l/m	-6.08%

Sensor Component	Condition	Status
Leak Test		pass
Filter Azimuth	90 deg	pass
Filter Depth	- 2.0 cm	Fail
Filter Position	Poor	Fail
Moisture Present	See comments	pass
Rotometer Condition	Clean and dry	pass
System Memo	See comments	pass
Tubing Condition	Good	pass
Filter Distance	6.0 cm	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	49C-74536-376	ACA416	Eric Hebert	10/03/2014	Ozone	90744

Slope:	1.02704	**Slope:**	0.00000
Intercept	0.18362	**Intercept**	0.00000
CorrCoff	0.99995	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.9%	3.4%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.16	0.04	0.47	ppb	
primary	2	29.03	28.64	29.54	ppb	3.14%
primary	3	52.38	51.78	53.26	ppb	2.86%
primary	4	76.89	76.06	77.73	ppb	2.20%
primary	5	104.61	103.53	107.00	ppb	3.35%

Sensor Component	Condition	Status
Cell B Noise	0.7 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	9.9976	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.1	pass
Span	1.059	pass
Cell B Freq.	83.9 kHz	pass
System Memo	See comments	pass
Sample Train	Fair	pass
Cell B Pressure		pass
Cell B Flow	0.73 lpm	pass
Cell A Tmp.	34.2 C	pass
Cell A Pressure	752 mmHg	pass
Cell A Noise	0.8 ppb	pass
Cell A Freq.	91.3 kHz	pass
Cell A Flow	0.72 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	0.000	pass

Wind Speed Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	1947	ACA416	Eric Hebert	10/03/2014	Wind Speed	none

Mfg	Climatronics		
SN/Owner ID	683	none	
Parameter	F460 translator		

Prop or Cups SN	2033		
Prop or Cups Torque	0.3	**to**	0.3
Prop Correction Fact	N/A		

Mfg	RM Young	**Parameter**	wind speed	
Serial Number		**Tfer Desc.**	wind speed motor (h	
Tfer ID	01262			
Slope	1.00000	**Intercept**	0.00000	
Cert Date	1/16/2014	**CorrCoff**	1.00000	
Mfg	RM Young	**Parameter**	wind speed	
Serial Number		**Tfer Desc.**	wind speed motor (l	
Tfer ID	01261			
Slope	1.00000	**Intercept**	0.00000	
Cert Date	1/16/2014	**CorrCoff**	1.00000	

	DAS 1:		DAS 2:	
	Low Range	**High Range**	**Low Range**	**High Range**
Abs Avg Err	0.17	10.23%		
Abs Max Er	0.20	38.59%		

UseDescription:	InputDevice:	Input RPM:	Input m/s:	Output V:	DAS m/s:	Diff/ %Diff:	Difference:
primary	00000	0	0.20	0.000	0.0		-0.20
primary	00000	50	1.40	0.000	1.2		-0.20
primary	00000	100	2.57	0.000	2.4		-0.17
primary	00000	170	4.22	0.000	4.1		-0.12
primary	00000	250	6.10	0.000	6.0	-1.64%	
primary	00000	500	11.97	0.000	11.9	-0.58%	
primary	00000	800	19.02	0.000	19.0	-0.11%	
primary	00000	2000	47.22	0.000	29.0	-38.59%	

Sensor Component	System Memo	**Condition**	See comments	**Status**	pass
Sensor Component	Sensor Plumb	**Condition**	Plumb	**Status**	pass
Sensor Component	Sensor Heater	**Condition**	Functioning	**Status**	pass
Sensor Component	Prop or Cups Condition	**Condition**	Good	**Status**	pass
Sensor Component	Condition	**Condition**	Good	**Status**	pass
Sensor Component	Torque	**Condition**	Good	**Status**	pass

Wind Direction Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	illegible	ACA416	Eric Hebert	10/03/2014	Wind Direction	none

Mfg	Climatronics	
SN/Owner ID	683	none
Parameter	F460 translator	

Vane SN: 1491 **C. A. Align. deg. true:**

VaneTorque 10 **to** 10 180

Mfg	RM Young	**Parameter**	wind direction
Serial Number		**Tfer Desc.**	wind direction wheel
Tfer ID	01264		

Mfg	Ushikata	**Parameter**	wind direction
Serial Number	190037	**Tfer Desc.**	transit
Tfer ID	01265		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/30/2012	**CorrCoff**	1.00000

	DAS 1: Orientation	DAS 1: Linearity:	DAS 2: Orientation	DAS 2: Linearity:
Abs Avg Err	2.6	1.5		
Abs Max Er	5	3		

UseDescription:	TferID:	Input Raw:	Linearity	Output V:	Output Deg.:	Difference:	Change:	Error:
primary	01264	0	☑	0.000	357	3	42	-3
primary	01264	45	☑	0.000	42	3	45	0
primary	01264	90	☑	0.000	85	5	43	-2
primary	01264	135	☑	0.000	132	3	47	2
primary	01264	180	☑	0.000	178	2	46	1
primary	01264	225	☑	0.000	222	3	44	-1
primary	01264	270	☑	0.000	268	2	46	1
primary	01264	315	☑	0.000	315	0	47	2
primary	01265	90	☐	0.000	85	5		5
primary	01265	90	☐	0.000	89	1		1
primary	01265	180	☐	0.000	178	2		2
primary	01265	270	☐	0.000	268	2		2
primary	01265	360	☐	0.000	357	3		3

Sensor Component	Mast	**Condition**	Good	**Status**	pass
Sensor Component	Condition	**Condition**	Good	**Status**	pass
Sensor Component	Sensor Heater	**Condition**	Functioning	**Status**	pass
Sensor Component	Sensor Plumb	**Condition**	Plumb	**Status**	pass
Sensor Component	Torque	**Condition**	Good	**Status**	pass
Sensor Component	Vane Condition	**Condition**	Good	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	illegible	ACA416	Eric Hebert	10/03/2014	Temperature	none

Mfg	Climatronics
SN/Owner ID	401 03630
Parameter	Temperature Translator

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.17	0.27		

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Low Range	-0.10	0.13	0.377	0.2	C	0.03
primary	Temp Mid Range	25.65	25.75	0.694	25.5	C	-0.22
primary	Temp High Range	49.95	49.93	0.995	49.7	C	-0.27

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Humidity Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Vaisala	Y0730050	ACA416	Eric Hebert	10/03/2014	Relative Humidity	none

Mfg	Rotronic	**Parameter**	Relative Humidity
Serial Number	124432	**Tfer Desc.**	Hygroclip
Tfer ID	01225		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/29/2013	**CorrCoff**	1.00000

	DAS 1:		DAS 2:	
	Low Range	**High Range**	**Low Range**	**High Range**
Abs Avg Err	1.3			
Abs Max Er	2.0			

UseDesc.:	Test type:	Device:	Input RH:	GTL Raw:	RH Corr.:	DAS Volts:	DAS %RH:	Difference:
primary	RH Low Range	Hygroclip	32.8	0.0	32.8	0.328	32.8	0.0
primary	RH Low Range	Hygroclip	52.9	0.0	52.9	0.510	51.0	-1.9
primary	RH High Range	Hygroclip	75.3	0.0	75.3	0.734	73.4	-2.0

Sensor Component	System Memo	**Condition**		**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	RH Filter	**Condition**	Clean	**Status**	pass
Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass

Solar Radiation Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Licor	PY16746	ACA416	Eric Hebert	10/03/2014	Solar Radiation	none

Mfg	Climatronics	
SN/Owner ID	309	none
Parameter	Solar Radiation Translator	

Mfg	Eppley	**Parameter**	solar radiation	
Serial Number	10765	**Tfer Desc.**	SR transfer translat	
Tfer ID	01246			
Slope	1.00000	**Intercept**	0.00000	
Cert Date	12/16/2010	**CorrCoff**	1.00000	
Mfg	Eppley	**Parameter**	solar radiation	
Serial Number	34341F3	**Tfer Desc.**	SR transfer sensor	
Tfer ID	01245			
Slope	1.00000	**Intercept**	0.00000	
Cert Date	12/16/2010	**CorrCoff**	1.00000	

DAS 1:		DAS 2:	
% Diff of Avg	**%Diff of Max**	**%Diff of Avg**	**%Diff of Max**
2.6%	1.8%	0.0%	0.0%

UseDescription:	Measure Date	MeasureTime	Tfer Corr:	DAS w/m2:	PctDifference:
primary	10/3/2014	8:00	647	636	-1.8%
primary	10/3/2014	9:00	522	505	-3.2%
primary	10/3/2014	10:00	425	410	-3.5%
primary	10/3/2014	11:00	495	462	-6.7%
primary	10/3/2014	12:00	420	402	-4.3%
primary	10/3/2014	14:00	278	288	3.7%
primary	10/3/2014	15:00	371	371	0.2%
primary	10/3/2014	16:00	418	409	-2.0%

Sensor Component	Sensor Level	**Condition**	Level	**Status**	pass
Sensor Component	Sensor Clean	**Condition**	Clean	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Precipitation Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	illegible	ACA416	Eric Hebert	10/03/2014	Precipitation	01322

DAS 1:		DAS 2:	
A Avg % Diff:	A Max % Di	A Avg %Dif	A Max % Di
2.0%	4.0%		

Mfg	PMP	Parameter	Precipitation
Serial Number	EW-06134-50	Tfer Desc.	250ml graduate
Tfer ID	01250		
Slope	1.00000	Intercept	0.00000
Cert Date	9/5/2005	CorrCoff	1.00000

UseDesc.	Test type:	TferVolume:	Iteration:	TimePerTip:	Eq.Ht:	DAS eng:	Eq.HtUnit:	OSE Unit:	TferUnits:	PctDifference
primary	test 1	231.5	1	8 - 10 sec	5.00	4.80	mm	mm	ml	-4.0%
primary	test 2	231.5	2	8 - 10 sec	5.00	5.00	mm	mm	ml	0.0%

Sensor Component	System Memo	Condition		Status	pass
Sensor Component	Sensor Heater	Condition	Functioning	Status	pass
Sensor Component	Properly Sited	Condition	See comments	Status	pass
Sensor Component	Gauge Drain Screen	Condition	Not installed	Status	pass
Sensor Component	Level	Condition	Level	Status	pass
Sensor Component	Gauge Clean	Condition	Clean	Status	pass
Sensor Component	Funnel Clean	Condition	Clean	Status	pass
Sensor Component	Condition	Condition	Good	Status	pass
Sensor Component	Gauge Screen	Condition	Installed	Status	pass

Surface Wetness Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	ACA416	Eric Hebert	10/03/2014	Surface Wetness	90725

Mfg	Ohmite	**Parameter**	surface wetness
Serial Number	296-1200	**Tfer Desc.**	decade box
Tfer ID	01210		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/4/2011	**CorrCoff**	1.00000

☑ **Manual Test Pass**

UseDescription:	Test Type:	Tfer kOhms:	OutputSignal:	DAS eng:	OutputSignalEngUni	TferUnits:	OutputSignalUnit
primary	wet	N/A	0.994	99.40	V	N/A	% Wet
primary	dry	N/A	0.298	0.30	V	N/A	% Wet

Sensor Component	Grid Orientation	**Condition**	North	**Status**	pass
Sensor Component	Grid Clean	**Condition**	Clean	**Status**	pass
Sensor Component	Grid Angle	**Condition**	about 45 deg	**Status**	pass
Sensor Component	Grid Condition	**Condition**	Good	**Status**	pass
Sensor Component	Properly Sited	**Condition**	Properly sited	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass
Sensor Component	Grid Type	**Condition**	Grid without holes	**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
unknown	none	ACA416	Eric Hebert	10/03/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
1.24	2.27		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	19.30	19.43	0.000	21.7	C	2.27
primary	Temp Mid Range	21.85	21.97	0.000	22.4	C	0.4
primary	Temp Mid Range	21.02	21.15	0.000	22.2	C	1.04

Infrastructure Data For

Site ID	ACA416	Technician	Eric Hebert	Site Visit Date	10/03/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8818 (s/n 2920-1)	1152 cuft

Sensor Component		Condition		Status	
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	Fail
Sensor Component	Power Cables	Condition	Fair	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	Pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	ACA416	Eric Hebert	10/03/2014	Moisture Present	Tylan	4022	☐	☐
Although there currently is no moisture in the flow sample train, there is evidence of previous moisture events.								
Flow Rate	ACA416	Eric Hebert	10/03/2014	Moisture Present	Tylan	4022	☐	☐
The filter sample tubing has drops of moisture in low sections outside the shelter.								
Ozone	ACA416	Eric Hebert	10/03/2014	System Memo	ThermoElectron	814	☐	☐
The ozone sample train is composed of materials other than the recommended materials which are Teflon and glass only.								
Precipitation	ACA416	Eric Hebert	10/03/2014	Properly Sited	Climatronics	4018	☐	☑
Objects violate the 45 degree rule for the tipping bucket rain gage.								

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

This site is operated partly by the NPS and the State of Maine DEP. It is not visited by ARS for semiannual calibration and maintenance visits. The site operator does not perform many of the routine checks conducted at other CASTNET sites, such as tip checks, wetness sensor tests, and visual checks of the blowers. The state of Maine personnel maintain the meteorological systems.

2 **Parameter:** DocumentationCo

The site operator reported that low flow rate conditions had been observed and reported to ARS recently. The Flow controller has been replaced since then to correct the issue.

3 **Parameter:** SiteOpsProcedures

The meteorological and ozone instrument checks and maintenance are performed by the State of Maine DEP.

4 **Parameter:** ShelterCleanNotes

The shelter is clean and well organized.

5 **Parameter:** PollAnalyzerCom

The ozone sample inlet still has a stainless steel fittings. The recommended material for ozone sample train is Teflon or glass. The site operator indicated that the fittings would be changed.

6 **Parameter:** MetSensorComme

The wind speed translator span is set to 25 m/s and not 50 m/s. This may have affected the low output observed at the highest wind speed challenge.

7 **Parameter:** MetOpMaintCom

The sensor signal cables are beginning to show signs of wear.

Field Systems Data Form

F-02058-1500-S1-rev001

Site ID	ACA416	**Technician**	Eric Hebert	**Site Visit Date**	10/03/2014

Site Sponsor (agency)	NPS/EPA	**USGS Map**	Salsbury Cove
Operating Group	NPS/MEDEP	**Map Scale**	
AQS #	23-009-0103	**Map Date**	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, SO2, NOx, NOy, PM, VOC	**QAPP Latitude**	44.3770
Deposition Measurement	dry, wet, Hg	**QAPP Longitude**	-68.2610
Land Use	Costal, woodland - mixed	**QAPP Elevation Meters**	158
Terrain	rolling	**QAPP Declination**	
Conforms to MLM	No	**QAPP Declination Date**	
Site Telephone	(432) 288-9322	**Audit Latitude**	44.377086
Site Address 1	Route 233	**Audit Longitude**	-68.2608
Site Address 2		**Audit Elevation**	153
County	Hancock	**Audit Declination**	-16.4
City, State	Bar Harbor, ME		
Zip Code	04609		**Present**
Time Zone	Eastern	**Fire Extinguisher**	☑ Inspected Dec 2011
Primary Operator		**First Aid Kit**	☑
Primary Op. Phone #		**Safety Glasses**	☐
Primary Op. E-mail		**Safety Hard Hat**	☐
Backup Operator		**Climbing Belt**	☐
Backup Op. Phone #		**Security Fence**	☐
Backup Op. E-mail		**Secure Shelter**	☑
		Stable Entry Step	☑

Shelter Working Room	☑	**Make**	Ekto	**Model**	8818 (s/n 2920-1)	**Shelter Size**	1152 cuft
Shelter Clean	☑	**Notes**	The shelter is clean and well organized.				
Site OK	☑	**Notes**					

Driving Directions From Bangor go east on 1A to Ellsworth. From Ellsworth take route 3 east to Bar Harbor. At the west edge of town, take Eagle Lake Rd (route 233) west toward Acadia National Park. The site is through a gate, at the end of a gravel road, across from the Park Headquarters.

Field Systems Data Form

F-02058-1500-S2-rev001

Site ID ACA416 **Technician** Eric Hebert **Site Visit Date** 10/03/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m	25 m	☐
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

Field Systems Data Form

F-02058-1500-S3-rev001

Site ID	ACA416	Technician	Eric Hebert	Site Visit Date	10/03/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	
3	Are the tower and sensors plumb?	☑	
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	
8	Is the rain gauge plumb?	☑	
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☐	45 degree rule violation
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	
11	Is it inclined approximately 30 degrees?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The wind speed translator span is set to 25 m/s and not 50 m/s. This may have affected the low output observed at the highest wind speed challenge.

Field Systems Data Form

F-02058-1500-S4-rev001

Site ID ACA416 **Technician** Eric Hebert **Site Visit Date** 10/03/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	
2	Are all the meteorological sensors operational online, and reporting data?	☑	
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	
6	Is the surface wetness sensor grid clean and undamaged?	☑	
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Parameter	Manufacturer	Model	S/N	Client ID
Wind Speed	Climatronics	100075	1947	none
Wind Direction	Climatronics	100076	illegible	none
Met tower	Climatronics	unknown	illegible	none
Shield (10 meter)	Climatronics	100325	illegible	none
Shield (2 meter)	Climatronics	100325	illegible	none
Surface Wetness	RM Young	58101	none	90725
Relative Humidity	Vaisala	HMP45AC	Y0730050	none
Temperature	Climatronics	100093	illegible	none
Delta Temperature	Climatronics	100093	illegible	none
Precipitation	Climatronics	100508-2	illegible	01322
Solar Radiation	Licor	LI-200	PY16746	none

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The sensor signal cables are beginning to show signs of wear.

Field Systems Data Form

F-02058-1500-S5-rev001

Site ID	ACA416	Technician	Eric Hebert	Site Visit Date	10/03/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		3/8 teflon by 12 meters and Stainless Steel
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☐	No moisture traps present
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Parameter	Manufacturer	Model	S/N	Client ID
Sample Tower	Aluma Tower	B	AT-71103-7I-3	none
Ozone	ThermoElectron Inc	49C	49C-74536-376	90744
Zero air pump	ThermoElectron Inc	111	111-30215-237	none
Filter pack flow pump	Thomas	107CAB11	109500000040	none
MFC power supply	Tylan	RO-32	none	none

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone sample inlet still has a stainless steel fittings. The recommended material for ozone sample train is Teflon or glass. The site operator indicated that the fittings would be changed.

Field Systems Data Form

F-02058-1500-S6-rev001

Site ID ACA416 **Technician** Eric Hebert **Site Visit Date** 10/03/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	8460p	CNU20941M6	none
DAS	Environmental Sys Corp	8832	unknown2	ACADIA1
F460 translator	Climatronics	100163	683	none
Mainframe	Climatronics	100081	1288	01342
Modem	US Robotics	33.6 fax modem	unknown	none
Printer	Hewlett Packard	842C	unknown	none
Solar Radiation Translator	Climatronics	100144	309	none
Temperature Translator	Climatronics	100088-2	401	03630

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev001

Site ID ACA416 **Technician** Eric Hebert **Site Visit Date** 10/03/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☑	☐	Data logger	☑	☐	☐
Wind direction sensor	☐	☑	☐	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☑	☐	☐
Relative humidity sensor	☐	☑	☐	Computer	☐	☑	☐
Solar radiation sensor	☑	☐	☐	Modem	☐	☑	☐
Surface wetness sensor	☐	☑	☐	Printer	☐	☑	☐
Wind sensor translator	☐	☑	☐	Zero air pump	☐	☑	☐
Temperature translator	☑	☐	☐	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☑	☐	Surge protector	☐	☑	☐
Solar radiation translator	☑	☐	☐	UPS	☐	☑	☐
Tipping bucket rain gauge	☑	☐	☐	Lightning protection device	☐	☑	☐
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑	Dataview	☑
SSRF	☑		☑
Site Ops Manual	☑	June 2000	☑
HASP	☐		☐
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☑		☑

1	Is the station log properly completed during every site visit?	☑	Dataview
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The site operator reported that low flow rate conditions had been observed and reported to ARS recently. The Flow controller has been replaced since then to correct the issue.

Field Systems Data Form

F-02058-1500-S8-rev001

Site ID	ACA416	Technician	Eric Hebert	Site Visit Date	10/03/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Trained on-site by ARS during site installation
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	Operator procedures are very good for filter replacement
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually by MEDEP	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☑	Semiannually	☑
Manual Rain Gauge Test	☑	Monthly	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☐	Not performed	☐

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Monthly	☑
Automatic Zero/Span Tests	☑	Weekly	☑
Manual Zero/Span Tests	☑	Weekly	☑
Automatic Precision Level Tests	☑	Weekly	☑
Manual Precision Level Test	☑	Weekly	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Monthly	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☑	
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	Results are recorded weekly on a checklist

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The meteorological and ozone instrument checks and maintenance are performed by the State of Maine DEP.

Field Systems Data Form

F-02058-1500-S9-rev001

Site ID ACA416 **Technician** Eric Hebert **Site Visit Date** 10/03/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings, 90%
2	Are the Site Status Report Forms being completed and filed correctly?	☑	Flow and general observation sections only
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☐	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐	Not performed	☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	As needed	☑
Sample Line Check for Dirt/Water	☐	Not performed	☐

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

This site is operated partly by the NPS and the State of Maine DEP. It is not visited by ARS for semiannual calibration and maintenance visits. The site operator does not perform many of the routine checks conducted at other CASTNET sites, such as tip checks, wetness sensor tests, and visual checks of the blowers. The state of Maine personnel maintain the meteorological systems.

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
HOW191-Eric Hebert-10/06/2014					
1 10/6/2014	DAS	Campbell	000419	CR3000	2527
2 10/6/2014	elevation	Elevation	none	none	none
3 10/6/2014	Filter pack flow pump	Thomas	04921	107CAB18	060300019983
4 10/6/2014	Flow Rate	Apex	000645	AXMC105LPMDPCV	illegible
5 10/6/2014	Infrastructure	Infrastructure	none	none	none
6 10/6/2014	Modem	Raven	06470	H4222-C	0808311250
7 10/6/2014	Ozone	ThermoElectron Inc	000616	49i A1NAA	1009241781
8 10/6/2014	Ozone Standard	ThermoElectron Inc	000435	49i A3NAA	CM08200011
9 10/6/2014	Shelter Temperature	Campbell	none	107-L	none
10 10/6/2014	siting criteria	Siting Criteria	none	none	None
11 10/6/2014	Temperature	RM Young	04449	41342VC	4547
12 10/6/2014	Zero air pump	Werther International	06908	C 70/4	000821900

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2527	HOW191	Eric Hebert	10/06/2014	DAS	Primary

Das Date: 10/6 /2014
Das Time: 11:34:00
Das Day: 279

Audit Date 10/6 /2014
Audit Time 11:34:00
Audit Day 279

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0001	0.0002	0.0001	0.0002

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0995	0.0997	V	V	0.0002
7	0.3000	0.3011	0.3010	V	V	-0.0001
7	0.5000	0.5010	0.5009	V	V	-0.0001
7	0.7000	0.6996	0.6995	V	V	-0.0001
7	0.9000	0.8998	0.8996	V	V	-0.0002
7	1.0000	0.9997	0.9995	V	V	-0.0002

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	HOW191	Eric Hebert	10/06/2014	Flow Rate	000645

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.02
0.88%	1.32%			**Cal Factor Full Scale**	1.03
				Rotometer Reading:	0

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.02	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.03	l/m	l/m	
primary	test pt 1	1.516	1.520	1.47	0.000	1.50	l/m	l/m	-1.32%
primary	test pt 2	1.508	1.510	1.47	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 3	1.509	1.510	1.47	0.000	1.50	l/m	l/m	-0.66%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	N/A	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	3.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	3,0 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	360 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241781	HOW191	Eric Hebert	10/06/2014	Ozone	000616

Slope:	0.98661	**Slope:**	0.00000
Intercept	-0.31884	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.0%	2.5%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.12	0.00	-0.31	ppb	
primary	2	29.84	29.44	28.70	ppb	-2.51%
primary	3	52.07	51.47	50.43	ppb	-2.02%
primary	4	78.85	78.00	76.73	ppb	-1.63%
primary	5	113.02	111.86	110.00	ppb	-1.66%

Sensor Component	Condition	Status
Cell B Noise	0.5 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.20	pass
Span	1.007	pass
Cell B Freq.	96.4 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.69 lpm	pass
Cell A Tmp.	33.8 C	pass
Cell A Pressure	702 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	88.5 kHz	pass
Cell A Flow	0.68 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	4547	HOW191	Eric Hebert	10/06/2014	Temperature	04449

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.05	0.09		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.16	0.07	0.000	0.1	C	0.04
primary	Temp Mid Range	21.84	21.96	0.000	21.9	C	-0.02
primary	Temp High Range	45.69	45.69	0.000	45.8	C	0.09

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	HOW191	Eric Hebert	10/06/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.31	0.76		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	20.98	21.11	0.000	21.1	C	0.01
primary	Temp Mid Range	21.73	21.85	0.000	21.7	C	-0.17
primary	Temp Mid Range	21.47	21.59	0.000	20.8	C	-0.76

Infrastructure Data For

Site ID	HOW191	Technician	Eric Hebert	Site Visit Date	10/06/2014

Shelter Make	Shelter Model	Shelter Size
custom	custom	800 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition		Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Not installed	Status	Fail
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	1/4 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator reported that gloves are not consistently used to handle the filter pack.

2 **Parameter:** SitingCriteriaCom

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site.

3 **Parameter:** ShelterCleanNotes

The custom built shelter is clean and organized.

4 **Parameter:** MetSensorComme

Other than a temperature sensor located at the CASTNET filter location the meteorological instrumentation is being operated by the University of Maine and AmeriFlux.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	HOW191	**Technician**	Eric Hebert	**Site Visit Date**	10/06/2014

Site Sponsor (agency)	EPA	**USGS Map**	Howland
Operating Group	University of ME	**Map Scale**	
AQS #		**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	
Deposition Measurement	dry	**QAPP Longitude**	
Land Use	Woodland - mixed	**QAPP Elevation Meters**	
Terrain	flat, gently rolling	**QAPP Declination**	
Conforms to MLM	Yes	**QAPP Declination Date**	
Site Telephone		**Audit Latitude**	45.203963
Site Address 1		**Audit Longitude**	-68.740041
Site Address 2		**Audit Elevation**	68
County	Penobscot	**Audit Declination**	-17
City, State	Howland, ME		
Zip Code			
Time Zone	Eastern		
Primary Operator			
Primary Op. Phone #			
Primary Op. E-mail			
Backup Operator			
Backup Op. Phone #			
Backup Op. E-mail			

	Present		
Fire Extinguisher	☑		
First Aid Kit	☑		
Safety Glasses	☐		
Safety Hard Hat	☑		
Climbing Belt	☑		
Security Fence	☐		
Secure Shelter	☑		
Stable Entry Step	☑		

Shelter Working Room	☑	**Make**	custom	**Model**	custom	**Shelter Size**	800 cuft
Shelter Clean	☑	**Notes**	The custom built shelter is clean and organized.				
Site OK	☑	**Notes**					

Driving Directions Arrange for site visit and access with the site operator.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID HOW191 **Technician** Eric Hebert **Site Visit Date** 10/06/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	HOW191	Technician	Eric Hebert	Site Visit Date	10/06/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Other than a temperature sensor located at the CASTNET filter location the meteorological instrumentation is being operated by the University of Maine and AmeriFlux.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID HOW191 **Technician** Eric Hebert **Site Visit Date** 10/06/2014

1	**Do all the meterological sensors appear to be intact, in good condition, and well maintained?**	☑	N/A
2	**Are all the meteorological sensors operational online, and reporting data?**	☑	N/A
3	**Are the shields for the temperature and RH sensors clean?**	☑	
4	**Are the aspirated motors working?**	☑	N/A
5	**Is the solar radiation sensor's lens clean and free of scratches?**	☑	N/A
6	**Is the surface wetness sensor grid clean and undamaged?**	☑	N/A
7	**Are the sensor signal and power cables intact, in good condition, and well maintained?**	☑	
8	**Are the sensor signal and power cable connections protected from the elements and well maintained?**	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID HOW191 **Technician** Eric Hebert **Site Visit Date** 10/06/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	Above canopy

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 40 meters
4	Describe dry dep sample tube.		1/4 teflon by 40 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☐	
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID HOW191 **Technician** Eric Hebert **Site Visit Date** 10/06/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☐	
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?	24 meter walk-up tower	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	HOW191	Technician	Eric Hebert	Site Visit Date	10/06/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☐	☑
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☐
SSRF	☑		☐
Site Ops Manual	☐		☐
HASP	☑		☐
Field Ops Manual	☐		☐
Calibration Reports	☐		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	HOW191	Technician	Eric Hebert	Site Visit Date	10/06/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Monthly	☑
In-line Filter Replacement (at analyze	☐	N/A	☐
Sample Line Check for Dirt/Water	☑	Weekly	☐
Zero Air Desiccant Check	☑	Weekly	☐

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID HOW191 **Technician** Eric Hebert **Site Visit Date** 10/06/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The site operator reported that gloves are not consistently used to handle the filter pack.

Field Systems Data Form F-02058-1500-S10-rev002

Site ID HOW191 **Technician** Eric Hebert **Site Visit Date** 10/06/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR3000	2527	000419
elevation	Elevation	none	none	none
Filter pack flow pump	Thomas	107CAB18	060300019983	04921
Flow Rate	Apex	AXMC105LPMDPC	illegible	000645
Infrastructure	Infrastructure	none	none	none
Modem	Raven	H4222-C	0808311250	06470
Ozone	ThermoElectron Inc	49i A1NAA	1009241781	000616
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200011	000435
Shelter Temperature	Campbell	107-L	none	none
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342VC	4547	04449
Zero air pump	Werther International	C 70/4	000821900	06908

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ASH135-Eric Hebert-10/07/2014					
1 10/7/2014	Computer	Dell	000430	D630	unknown
2 10/7/2014	DAS	Campbell	000343	CR3000	2122
3 10/7/2014	Elevation	Elevation	None	1	None
4 10/7/2014	Filter pack flow pump	Thomas	01458	107CA110	028871488
5 10/7/2014	Flow Rate	Apex	000648	AXMC105LPMDPCV	54777
6 10/7/2014	Infrastructure	Infrastructure	none	none	none
7 10/7/2014	Modem	Raven	06471	H4222-C	0808311148
8 10/7/2014	Ozone	ThermoElectron Inc	000620	49i A1NAA	1009241793
9 10/7/2014	Ozone Standard	ThermoElectron Inc	000375	49i A3NAA	0726124696
10 10/7/2014	Sample Tower	Aluma Tower	03536	A	none
11 10/7/2014	Shelter Temperature	Campbell	none	107-L	none
12 10/7/2014	Siting Criteria	Siting Criteria	None	1	None
13 10/7/2014	Temperature	RM Young	06389	41342	13994
14 10/7/2014	UPS	APC	06797	RS900	unknown
15 10/7/2014	Zero air pump	Werther International	06923	C 70/4	000836208

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2122	ASH135	Eric Hebert	10/07/2014	DAS	Primary

Das Date: 10/7 /2014
Das Time: 12:44:00
Das Day: 280

Audit Date 10/7 /2014
Audit Time 12:44:00
Audit Day 280

Low Channel: Avg Diff:	Low Channel: Max Diff:	High Channel: Avg Diff:	High Channel: Max Diff:
0.0001	0.0002	0.0001	0.0002

Mfg	HY	**Parameter**	DAS
Serial Number	12010039329	**Tfer Desc.**	Source generator (D
Tfer ID	01322		
Slope	1.00000	**Intercept**	0.00000
Cert Date	6/15/2014	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	86590148	**Tfer Desc.**	DVM
Tfer ID	01310		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/22/2014	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0001	0.0000	V	V	0.0001
7	0.1000	0.0995	0.0995	V	V	0.0000
7	0.3000	0.2992	0.2992	V	V	0.0000
7	0.5000	0.4998	0.4999	V	V	0.0001
7	0.7000	0.6998	0.6996	V	V	-0.0002
7	0.9000	0.8998	0.8998	V	V	0.0000
7	1.0000	0.9997	0.9997	V	V	0.0000

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	54777	ASH135	Eric Hebert	10/07/2014	Flow Rate	000648

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.01
1.96%	1.96%			**Cal Factor Full Scale**	1.01
				Rotometer Reading:	1.45

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.01	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.05	l/m	l/m	
primary	test pt 1	1.529	1.530	1.49	0.000	1.50	l/m	l/m	-1.96%
primary	test pt 2	1.527	1.530	1.49	0.000	1.50	l/m	l/m	-1.96%
primary	test pt 3	1.528	1.530	1.49	0.000	1.50	l/m	l/m	-1.96%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	6.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	2.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	270 deg	**Status**	pass
Sensor Component	System Memo	**Condition**	See comments	**Status**	pass

Ozone Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241793	ASH135	Eric Hebert	10/07/2014	Ozone	000620

Slope:	0.99168	**Slope:**	0.00000
Intercept	-1.27949	**Intercept**	0.00000
CorrCoff	0.99992	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	0419606966	**Tfer Desc.**	Ozone primary stan
Tfer ID	01112		
Slope	1.00928	**Intercept**	0.11780
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.7%	3.5%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.14	0.02	-1.96	ppb	
primary	2	24.32	23.97	23.14	ppb	-3.46%
primary	3	47.76	47.20	45.93	ppb	-2.69%
primary	4	80.72	79.86	77.81	ppb	-2.57%
primary	5	107.62	106.51	104.10	ppb	-2.26%

Sensor Component	Condition	Status
Cell B Noise	1.1 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.10	pass
Span	1.009	pass
Cell B Freq.	91.6 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.74 lpm	pass
Cell A Tmp.	30.6 C	pass
Cell A Pressure	716.4 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	87.6 kHz	pass
Cell A Flow	0.74 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	13994	ASH135	Eric Hebert	10/07/2014	Temperature	06389

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232679	**Tfer Desc.**	RTD
Tfer ID	01228		
Slope	1.00496	**Intercept**	-0.23009
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.02	0.05		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.28	0.51	0.000	0.6	C	0.05
primary	Temp Mid Range	22.75	22.87	0.000	22.9	C	0
primary	Temp High Range	45.20	45.21	0.000	45.2	C	0.01

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ASH135	Eric Hebert	10/07/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.55	0.87		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232679	Tfer Desc.	RTD
Tfer ID	01228		
Slope	1.00496	Intercept	-0.23009
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	23.07	23.19	0.000	23.5	C	0.28
primary	Temp Mid Range	21.85	21.97	0.000	22.8	C	0.87
primary	Temp Mid Range	23.12	23.23	0.000	22.7	C	-0.49

Infrastructure Data For

Site ID	ASH135	Technician	Eric Hebert	Site Visit Date	10/07/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2149-17)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type A	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	ASH135	Eric Hebert	10/07/2014	System Memo	Apex	3668	☐	☑

There is no plastic bag for the installed filter. The operator uses the received bag for the installed filter to ship the removed filter to the lab.

Field Systems Comments

1 **Parameter:** DasComments

The met tower has been removed and the 10 meter temperature sensor is mounted in a naturally aspirated shield on the sample tower.

2 **Parameter:** SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested once each month.

3 **Parameter:** SitingCriteriaCom

There is an evergreen plantation 20 meters south of the site.

4 **Parameter:** ShelterCleanNotes

The shelter is in good condition, clean, and very well organized.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	ASH135	**Technician**	Eric Hebert	**Site Visit Date**	10/07/2014

Site Sponsor (agency)	EPA	**USGS Map**	Squa Pan
Operating Group	private	**Map Scale**	
AQS #	23-003-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	46.6039
Deposition Measurement	dry	**QAPP Longitude**	-68.4142
Land Use	agriculture, woodland - mixed	**QAPP Elevation Meters**	235
Terrain	gently rolling	**QAPP Declination**	18.7
Conforms to MLM	Marginally	**QAPP Declination Date**	2/22/2006
Site Telephone	(207) 435-6482	**Audit Latitude**	46.603832
Site Address 1	Radar Road	**Audit Longitude**	-68.413227
Site Address 2		**Audit Elevation**	231
County	Aroostook	**Audit Declination**	-18.2
City, State	Ashland, ME		
Zip Code	04732	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 2149-17)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is in good condition, clean, and very well organized.				
Site OK	☑	**Notes**					

Driving Directions

From I-95 take exit #286 which is route 212. Take route 212 west to route 11. Turn north on route 11 and continue toward Ashland. Approximately 2 miles south of Ashland turn left (west) on Goding Road at the DEP sign. The site is approximately 1.5 miles straight on Goding Rd. (go straight at the 90 deg curve).

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID ASH135 **Technician** Eric Hebert **Site Visit Date** 10/07/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m	20 m	☐
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

There is an evergreen plantation 20 meters south of the site.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	ASH135	Technician	Eric Hebert	Site Visit Date	10/07/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID ASH135 **Technician** Eric Hebert **Site Visit Date** 10/07/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	N/A
2	Are all the meteorological sensors operational online, and reporting data?	☑	N/A
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	N/A
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	ASH135	Technician	Eric Hebert	Site Visit Date	10/07/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID ASH135 **Technician** Eric Hebert **Site Visit Date** 10/07/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☐	☐
10	Is the sample tower stable and grounded?	☑	☐

11	Tower comments?	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The met tower has been removed and the 10 meter temperature sensor is mounted in a naturally aspirated shield on the sample tower.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	ASH135	Technician	Eric Hebert	Site Visit Date	10/07/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☑	☐	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☑	☐
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	June 2007	☑
HASP	☑	Nov 2009	☑
Field Ops Manual	☐		☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☑		☑

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	ASH135	Technician	Eric Hebert	Site Visit Date	10/07/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	N/A	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Monthly	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The ozone inlet filter is replaced and the sample train is leak tested once each month.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID ASH135 **Technician** Eric Hebert **Site Visit Date** 10/07/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID ASH135 **Technician** Eric Hebert **Site Visit Date** 10/07/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D630	unknown	000430
DAS	Campbell	CR3000	2122	000343
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	028871488	01458
Flow Rate	Apex	AXMC105LPMDPC	54777	000648
Infrastructure	Infrastructure	none	none	none
Modem	Raven	H4222-C	0808311148	06471
Ozone	ThermoElectron Inc	49i A1NAA	1009241793	000620
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124696	000375
Sample Tower	Aluma Tower	A	none	03536
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	13994	06389
UPS	APC	RS900	unknown	06797
Zero air pump	Werther International	C 70/4	000836208	06923

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PNF126-Eric Hebert-10/30/2014						
1	10/30/2014	Computer	Dell	000264	D520	unknown
2	10/30/2014	DAS	Campbell	000346	CR3000	2125
3	10/30/2014	Elevation	Elevation	None	1	None
4	10/30/2014	Filter pack flow pump	Thomas	06030	107CAB18	060400022677
5	10/30/2014	Flow Rate	Apex	000655	AXMC105LPMDPCV	illegible
6	10/30/2014	Infrastructure	Infrastructure	none	none	none
7	10/30/2014	Modem	Raven	06597	V4221-V	0844349884
8	10/30/2014	Ozone	ThermoElectron Inc	000695	49i A1NAA	1030244801
9	10/30/2014	Ozone Standard	ThermoElectron Inc	000437	49i A3NAA	CM08200013
10	10/30/2014	Sample Tower	Aluma Tower	000178	B	none
11	10/30/2014	Shelter Temperature	Campbell	none	107-L	none
12	10/30/2014	Siting Criteria	Siting Criteria	None	1	None
13	10/30/2014	Temperature	RM Young	missing	41342	none
14	10/30/2014	Zero air pump	Werther International	06886	C 70/4	000815259

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2125	PNF126	Eric Hebert	10/30/2014	DAS	Primary

Das Date: 10/30/2014 **Audit Date** 10/30/2014
Das Time: 11:13:00 **Audit Time** 11:13:00
Das Day: 303 **Audit Day** 303

Low Channel:

Avg Diff:	Max Diff:
0.0002	0.0003

High Channel:

Avg Diff:	Max Diff:
0.0002	0.0003

Mfg	Datel	**Parameter**	DAS
Serial Number	4000392	**Tfer Desc.**	Source generator (D
Tfer ID	01321		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740243	**Tfer Desc.**	DVM
Tfer ID	01312		
Slope	1.00000	**Intercept**	0.00000
Cert Date	12/28/2013	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0005	-0.0008	V	V	-0.0003
7	0.1000	0.1004	0.1004	V	V	0.0000
7	0.3000	0.2994	0.2992	V	V	-0.0002
7	0.5000	0.4996	0.4994	V	V	-0.0002
7	0.7000	0.6996	0.6995	V	V	-0.0001
7	0.9000	0.8996	0.8994	V	V	-0.0002
7	1.0000	0.9992	0.9990	V	V	-0.0002

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	PNF126	Eric Hebert	10/30/2014	Flow Rate	000655

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	-0.42
1.10%	1.32%			**Cal Factor Full Scale**	0.994
				Rotometer Reading:	1.65

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.06	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.02	0.000	0.01	l/m	l/m	
primary	test pt 1	1.511	1.510	1.56	0.000	1.49	l/m	l/m	-1.32%
primary	test pt 2	1.509	1.510	1.56	0.000	1.49	l/m	l/m	-1.32%
primary	test pt 3	1.512	1.510	1.56	0.000	1.50	l/m	l/m	-0.66%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	See comments	**Status**	pass
Sensor Component	Filter Distance	**Condition**	4.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	45 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244801	PNF126	Eric Hebert	10/30/2014	Ozone	000695

Slope:	0.98882	**Slope:**	0.00000
Intercept	0.45144	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.6%	0.8%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.35	0.55	0.90	ppb	
primary	2	29.59	29.59	29.83	ppb	0.81%
primary	3	47.23	47.10	47.05	ppb	-0.11%
primary	4	77.66	77.32	76.88	ppb	-0.57%
primary	5	117.80	117.18	116.30	ppb	-0.75%

Sensor Component	Condition	Status
Cell B Noise	1.1 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.10	pass
Span	1.003	pass
Cell B Freq.	90.6 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.65 lpm	pass
Cell A Tmp.	34.9 C	pass
Cell A Pressure	633 mmHg	pass
Cell A Noise	1.0 ppb	pass
Cell A Freq.	100.9 kHz	pass
Cell A Flow	0.61 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	PNF126	Eric Hebert	10/30/2014	Temperature	missing

Mfg	Eutechnics	**Parameter**	Temperature
Serial Number	01D102193	**Tfer Desc.**	RTD translator
Tfer ID	01231		
Slope	1.00133	**Intercept**	-0.05731
Cert Date	12/27/2013	**CorrCoff**	1.00000

Mfg	Eutechnics	**Parameter**	Temperature
Serial Number	01H0060	**Tfer Desc.**	RTD probe
Tfer ID	01230		
Slope	1.00133	**Intercept**	-0.05731
Cert Date	12/27/2013	**CorrCoff**	1.00000

DAS 1: Abs Avg Err	DAS 1: Abs Max Er	DAS 2: Abs Avg Err	DAS 2: Abs Max Er
0.28	0.48		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	-0.07	-0.01	0.000	0.5	C	0.48
primary	Temp Mid Range	23.79	23.82	0.000	24.0	C	0.21
primary	Temp High Range	48.90	48.89	0.000	48.7	C	-0.16

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	PNF126	Eric Hebert	10/30/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.51	0.89		

Mfg	Eutechnics	Parameter	Shelter Temperatur
Serial Number	01D102193	Tfer Desc.	RTD translator
Tfer ID	01231		
Slope	1.00133	Intercept	-0.05731
Cert Date	12/27/2013	CorrCoff	1.00000
Mfg	Eutechnics	Parameter	Shelter Temperatur
Serial Number	01H0060	Tfer Desc.	RTD probe
Tfer ID	01230		
Slope	1.00133	Intercept	-0.05731
Cert Date	12/27/2013	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	21.23	21.26	0.000	22.2	C	0.89
primary	Temp Mid Range	23.41	23.44	0.000	23.1	C	-0.34
primary	Temp Mid Range	24.10	24.13	0.000	23.8	C	-0.29

Infrastructure Data For

Site ID	PNF126	Technician	Eric Hebert	Site Visit Date	10/30/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	PNF126	Eric Hebert	10/30/2014	Moisture Present	Apex	4015	☐	☐

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 **Parameter:** DasComments

The towers are not grounded.

2 **Parameter:** SitingCriteriaCom

The site is in a mountain bowl. The wind pattern from this site would be expected to follow up and down slope patterns. The site is also located in a hay field which is cut 2 or 3 times per year.

3 **Parameter:** ShelterCleanNotes

The shelter is in fair condition.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	PNF126	**Technician**	Eric Hebert	**Site Visit Date**	10/30/2014

Site Sponsor (agency)	EPA	**USGS Map**	Carvers Gap
Operating Group	USFS/private	**Map Scale**	
AQS #	37-011-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	
Deposition Measurement	dry	**QAPP Longitude**	
Land Use	woodland - mixed	**QAPP Elevation Meters**	
Terrain	complex	**QAPP Declination**	
Conforms to MLM	No	**QAPP Declination Date**	
Site Telephone	8287331643	**Audit Latitude**	36.105435
Site Address 1	end of paved road	**Audit Longitude**	-82.045015
Site Address 2	Roaring Creek Road	**Audit Elevation**	1216
County	Avery	**Audit Declination**	-6.3
City, State	, NC		
			Present
Zip Code	28657	**Fire Extinguisher** ☑	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☑	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is in fair condition.				
Site OK	☑	**Notes**					

Driving Directions From Hwy 19E north of Plumb tree, turn west onto Roaring Creek Road. Follow the road to end of pavement always bearing right, and continue 200 meters. Site is off dirt road in the field on the right.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID PNF126 **Technician** Eric Hebert **Site Visit Date** 10/30/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m	5 m	☐
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The site is in a mountain bowl. The wind pattern from this site would be expected to follow up and down slope patterns. The site is also located in a hay field which is cut 2 or 3 times per year.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	PNF126	Technician	Eric Hebert	Site Visit Date	10/30/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	PNF126	Technician	Eric Hebert	Site Visit Date	10/30/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	Temperature only
2	Are all the meteorological sensors operational online, and reporting data?	☑	Temperature only
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	N/A
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	PNF126	Technician	Eric Hebert	Site Visit Date	10/30/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 12 meters
4	Describe dry dep sample tube.		3/8 teflon by 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID PNF126 **Technician** Eric Hebert **Site Visit Date** 10/30/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☐
10	Is the sample tower stable and grounded?	☑	☐
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The towers are not grounded.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID PNF126 **Technician** Eric Hebert **Site Visit Date** 10/30/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☑	☐	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☑	☐	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☐	☑	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2009	☑
Field Ops Manual	☐		☐
Calibration Reports	☐		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	Minimal information
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID PNF126 **Technician** Eric Hebert **Site Visit Date** 10/30/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☑	Trained in Gainesville in 1987
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Monthly	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☑	
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID PNF126 **Technician** Eric Hebert **Site Visit Date** 10/30/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed afternoons
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☐	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	One set of gloves only
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID PNF126 **Technician** Eric Hebert **Site Visit Date** 10/30/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000264
DAS	Campbell	CR3000	2125	000346
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060400022677	06030
Flow Rate	Apex	AXMC105LPMDPC	illegible	000655
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0844349884	06597
Ozone	ThermoElectron Inc	49i A1NAA	1030244801	000695
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200013	000437
Sample Tower	Aluma Tower	B	none	000178
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	none	missing
Zero air pump	Werther International	C 70/4	000815259	06886

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
ABT147-Sandy Grenville-11/09/2014						
1	11/9/2014	Computer	Dell	000296	D520	unknown
2	11/9/2014	DAS	Campbell	000413	CR3000	2519
3	11/9/2014	Elevation	Elevation	None	1	None
4	11/9/2014	Filter pack flow pump	Thomas	02974	107CAB18	0493002469
5	11/9/2014	Flow Rate	Apex	missing	AXMC105LPMDPCV	illegible
6	11/9/2014	Infrastructure	Infrastructure	none	none	none
7	11/9/2014	Met tower	Universal Tower	06486	unknown	none
8	11/9/2014	Modem	Raven	06609	H4223-C	0844356221
9	11/9/2014	Ozone	ThermoElectron Inc	000627	49i A1NAA	1009241772
10	11/9/2014	Ozone Standard	ThermoElectron Inc	000440	49i A3NAA	CM08200025
11	11/9/2014	Sample Tower	Aluma Tower	000017	B	AT-61152-A-H8-C
12	11/9/2014	Shelter Temperature	Campbell	none	107-L	none
13	11/9/2014	Shield (10 meter)	RM Young	02804	Aspirated 43408	none
14	11/9/2014	Siting Criteria	Siting Criteria	None	1	None
15	11/9/2014	Temperature	RM Young	06503	41342	14623
16	11/9/2014	Zero air pump	Werther International	06930	P 70/4	000829168

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2519	ABT147	Sandy Grenville	11/09/2014	DAS	Primary

Das Date: 11/9 /2014
Das Time: 16:43:21
Das Day: 313

Audit Date 11/9 /2014
Audit Time 16:43:21
Audit Day 313

Low Channel:

Avg Diff:	Max Diff:
0.0001	0.0001

High Channel:

Avg Diff:	Max Diff:
0.0001	0.0001

Mfg Datel **Parameter** DAS
Serial Number 15510194 **Tfer Desc.** Source generator (D
Tfer ID 01320

Mfg Fluke **Parameter** DAS
Serial Number 95740135 **Tfer Desc.** DVM
Tfer ID 01311

Slope 1.00000 **Intercept** 0.00000
Cert Date 12/28/2013 **CorrCoff** 1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0001	V	V	0.0001
7	0.1000	0.0999	0.1000	V	V	0.0001
7	0.3000	0.2997	0.2998	V	V	0.0001
7	0.5000	0.4996	0.4997	V	V	0.0001
7	0.7000	0.6996	0.6996	V	V	0.0000
7	0.9000	0.8995	0.8994	V	V	-0.0001
7	1.0000	0.9993	0.9993	V	V	0.0000

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	ABT147	Sandy Grenville	11/09/2014	Flow Rate	missing

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103471	**Tfer Desc.**	nexus
Tfer ID	01420		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997
Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103424	**Tfer Desc.**	BIOS cell
Tfer ID	01410		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.01
0.22%	0.67%			**Cal Factor Full Scale**	1.01
				Rotometer Reading:	1.5

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.02	0.000	-0.03	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
primary	test pt 1	1.520	1.490	1.49	0.000	1.49	l/m	l/m	0.00%
primary	test pt 2	1.520	1.490	1.48	0.000	1.50	l/m	l/m	0.67%
primary	test pt 3	1.522	1.500	1.49	0.000	1.50	l/m	l/m	0.00%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	2.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	0.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	180 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241772	ABT147	Sandy Grenville	11/09/2014	Ozone	000627

Slope:	1.01003	**Slope:**	0.00000
Intercept	-0.59769	**Intercept**	0.00000
CorrCoff	0.99995	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.8%	1.3%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.04	0.15	-0.15	ppb	
primary	2	30.45	30.42	30.02	ppb	-1.31%
primary	3	50.43	50.31	49.96	ppb	-0.70%
primary	4	82.51	82.24	82.00	ppb	-0.29%
primary	5	102.30	101.94	102.90	ppb	0.94%

Sensor Component	Condition	Status
Cell B Noise	0.9 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.20	pass
Span	0.997	pass
Cell B Freq.	96.3 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.70 lpm	pass
Cell A Tmp.	31.4 C	pass
Cell A Pressure	717 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	91.8 kHz	pass
Cell A Flow	0.71 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	14623	ABT147	Sandy Grenville	11/09/2014	Temperature	06503

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00288	**Intercept**	-0.15155
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.12	0.17		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.00	0.15	0.000	0.3	C	0.15
primary	Temp Mid Range	26.45	26.53	0.000	26.6	C	0.04
primary	Temp High Range	48.48	48.49	0.000	48.3	C	-0.17

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ABT147	Sandy Grenville	11/09/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.30	0.38		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00288	Intercept	-0.15155
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	16.77	16.87	0.000	17.3	C	0.38
primary	Temp Mid Range	16.43	16.53	0.000	16.3	C	-0.25
primary	Temp Mid Range	15.46	15.57	0.000	15.8	C	0.26

Infrastructure Data For

Site ID	ABT147	Technician	Sandy Grenville	Site Visit Date	11/09/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2149-9)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 **Parameter:** DasComments

The sample tower is no longer grounded. The lower section of the met tower has been replaced.

2 **Parameter:** SitingCriteriaCom

Manure is routinely spread on the hay fields surrounding the site during the summer.

3 **Parameter:** ShelterCleanNotes

The shelter is clean and well organized.

4 **Parameter:** MetSensorComme

10-meter temperature is operated and maintained on the meteorological tower.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	ABT147	**Technician**	Sandy Grenville	**Site Visit Date**	11/09/2014

Site Sponsor (agency)	EPA	**USGS Map**	Hampton
Operating Group	private	**Map Scale**	
AQS #	09-015-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	41.8402
Deposition Measurement	dry, wet	**QAPP Longitude**	-72.0111
Land Use	agriculture, woodland - mixed	**QAPP Elevation Meters**	209
Terrain	rolling	**QAPP Declination**	14.8
Conforms to MLM	Marginally	**QAPP Declination Date**	2/22/2006
Site Telephone	(860) 974-2273	**Audit Latitude**	41.84046
Site Address 1	80 Ayers Road	**Audit Longitude**	-72.010368
Site Address 2		**Audit Elevation**	202
County	Windham	**Audit Declination**	-14.5
City, State	Abington, CT		**Present**
Zip Code	06230	**Fire Extinguisher** ☑	Inspected Nov 1992
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 2149-9)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter is clean and well organized.				
Site OK	☑	**Notes**					

Driving Directions

From Hartford take I-84 east to exit 69. Continue on route 74 east to route 44. Take route 44 east to Abington. At the traffic light in Abington, turn right (south) on route 97. Continue approximately 1.3 miles to Ayers Road which will be on the left. Ayers Road is a single lane paved road. The site is through the gate at the end of the road, in the field at the top of the hill past the barn.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID ABT147 **Technician** Sandy Grenville **Site Visit Date** 11/09/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m	10 m	☐
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

Manure is routinely spread on the hay fields surrounding the site during the summer.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID ABT147 **Technician** Sandy Grenville **Site Visit Date** 11/09/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

10-meter temperature is operated and maintained on the meteorological tower.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	ABT147	Technician	Sandy Grenville	Site Visit Date	11/09/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	N/A
2	Are all the meteorological sensors operational online, and reporting data?	☑	N/A
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	ABT147	Technician	Sandy Grenville	Site Visit Date	11/09/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☐	Ozone sample pump not functioning
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID ABT147 **Technician** Sandy Grenville **Site Visit Date** 11/09/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The sample tower is no longer grounded. The lower section of the met tower has been replaced.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID ABT147 **Technician** Sandy Grenville **Site Visit Date** 11/09/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☐	☑	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☑	☐
Solar radiation translator	☐	☐	☑	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☑	☐				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Feb 2014	☑
Field Ops Manual	☐		☐
Calibration Reports	☐		☐
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	ABT147	Technician	Sandy Grenville	Site Visit Date	11/09/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	N/A	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☑	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Weekly	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID ABT147 **Technician** Sandy Grenville **Site Visit Date** 11/09/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID ABT147 **Technician** Sandy Grenville **Site Visit Date** 11/09/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000296
DAS	Campbell	CR3000	2519	000413
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	0493002469	02974
Flow Rate	Apex	AXMC105LPMDPC	illegible	missing
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	06486
Modem	Raven	H4223-C	0844356221	06609
Ozone	ThermoElectron Inc	49i A1NAA	1009241772	000627
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200025	000440
Sample Tower	Aluma Tower	B	AT-61152-A-H8-C	000017
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	Aspirated 43408	none	02804
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14623	06503
Zero air pump	Werther International	P 70/4	000829168	06930

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
WST109-Sandy Grenville-11/10/2014					
1 11/10/2014	Computer	Dell	000291	D520	unknown
2 11/10/2014	DAS	Campbell	000427	CR3000	2526
3 11/10/2014	Elevation	Elevation	None	1	None
4 11/10/2014	Filter pack flow pump	Thomas	00476	107CA18	000025705
5 11/10/2014	Flow Rate	Apex	000466	AXMC105LPMDPCV	43970
6 11/10/2014	Infrastructure	Infrastructure	none	none	none
7 11/10/2014	Met tower	Universal Tower	03532	unknown	none
8 11/10/2014	Modem	Raven	06598	V4221-V	0844349943
9 11/10/2014	Ozone	ThermoElectron Inc	000611	49i A1NAA	1009241795
10 11/10/2014	Ozone Standard	ThermoElectron Inc	000696	49i A3NAA	1030244812
11 11/10/2014	Sample Tower	Aluma Tower	03531	A	none
12 11/10/2014	Shelter Temperature	Campbell	none	107-L	none
13 11/10/2014	Shield (10 meter)	RM Young	00947	Aspirated 43408	none
14 11/10/2014	Siting Criteria	Siting Criteria	None	1	None
15 11/10/2014	Temperature2meter	RM Young	04317	41342	4014
16 11/10/2014	Zero air pump	Werther International	06934	P 70/4	000821881

DAS Data Form

DAS Time Max Error: 0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2526	WST109	Sandy Grenville	11/10/2014	DAS	Primary

Das Date: 11/10/2014
Das Time: 16:34:45
Das Day: 314

Audit Date 11/10/2014
Audit Time 16:34:45
Audit Day 314

Low Channel:

Avg Diff:	Max Diff:
0.0001	0.0002

High Channel:

Avg Diff:	Max Diff:
0.0001	0.0002

Mfg	Datel	**Parameter**	DAS
Serial Number	15510194	**Tfer Desc.**	Source generator (D
Tfer ID	01320		

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740135	**Tfer Desc.**	DVM
Tfer ID	01311		
Slope	1.00000	**Intercept**	0.00000
Cert Date	12/28/2013	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0001	0.0001	V	V	0.0002
7	0.1000	0.0998	0.0999	V	V	0.0001
7	0.3000	0.2996	0.2998	V	V	0.0002
7	0.5000	0.4996	0.4996	V	V	0.0000
7	0.7000	0.6995	0.6995	V	V	0.0000
7	0.9000	0.8993	0.8994	V	V	0.0001
7	1.0000	0.9992	0.9993	V	V	0.0001

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	43970	WST109	Sandy Grenville	11/10/2014	Flow Rate	000466

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103471	**Tfer Desc.**	nexus
Tfer ID	01420		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	103424	**Tfer Desc.**	BIOS cell
Tfer ID	01410		
Slope	1.00846	**Intercept**	0.01358
Cert Date	1/8/2014	**CorrCoff**	0.99997

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	-0.01
0.67%	0.67%			**Cal Factor Full Scale**	0.99
				Rotometer Reading:	1.5

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall	PctDifference
primary	pump off	0.000	0.000	-0.01	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.01	l/m	l/m	
primary	test pt 1	1.521	1.490	1.51	0.000	1.50	l/m	l/m	0.67%
primary	test pt 2	1.515	1.490	1.51	0.000	1.50	l/m	l/m	0.67%
primary	test pt 3	1.513	1.490	1.51	0.000	1.50	l/m	l/m	0.67%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	3.5 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	0.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	45 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241795	WST109	Sandy Grenville	11/10/2014	Ozone	000611

Slope:	1.00183	**Slope:**	0.00000
Intercept	-0.02369	**Intercept**	0.00000
CorrCoff	0.99998	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.4%	0.6%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.34	0.45	0.30	ppb	
primary	2	30.38	30.35	30.29	ppb	-0.20%
primary	3	51.36	51.24	51.56	ppb	0.62%
primary	4	79.28	79.03	79.47	ppb	0.56%
primary	5	100.84	100.49	100.30	ppb	-0.19%

Sensor Component	Condition	Status
Cell B Noise	0.9 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.2	pass
Span	1.005	pass
Cell B Freq.	90.2 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.69 lpm	pass
Cell A Tmp.	32.5 C	pass
Cell A Pressure	718 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	89.4 kHz	pass
Cell A Flow	0.69 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	4014	WST109	Sandy Grenville	11/10/2014	Temperature	04317

Mfg	Extech	**Parameter**	Temperature
Serial Number	H232734	**Tfer Desc.**	RTD
Tfer ID	01227		
Slope	1.00288	**Intercept**	-0.15155
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.14	0.21		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.00	0.15	0.000	0.1	C	-0.05
primary	Temp Mid Range	24.99	25.07	0.000	24.9	C	-0.21
primary	Temp High Range	49.36	49.37	0.000	49.2	C	-0.17

Sensor Component	Shield	**Condition**	Clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	Functioning	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	WST109	Sandy Grenville	11/10/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.77	1.45		

Mfg	Extech	Parameter	Shelter Temperatur
Serial Number	H232734	Tfer Desc.	RTD
Tfer ID	01227		
Slope	1.00288	Intercept	-0.15155
Cert Date	1/8/2014	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	18.32	18.42	0.000	18.2	C	-0.21
primary	Temp Mid Range	22.15	22.24	0.000	21.6	C	-0.64
primary	Temp Mid Range	25.15	25.23	0.000	23.8	C	-1.45

Infrastructure Data For

Site ID	WST109	Technician	Sandy Grenville	Site Visit Date	11/10/2014

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2149-16)	640 cuft

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Poor	Status	Fail
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 **Parameter:** DasComments

The sample tower is kinked at the hinge point and is in poor condition. One leg of the met tower is split. Both of these conditions were reported following the two previous site audit visits.

2 **Parameter:** SiteOpsProcedures

The state of NH DES performs monthly multi-point audits of the ozone analyzer. Ozone sample train leak checks are being conducted every two weeks.

3 **Parameter:** SitingCriteriaCom

The site is in a small clearing surrounded by mountain forest. There is a small parking lot used by forest service employees located 50 meters from the site.

4 **Parameter:** SiteOKNotes

State of NH Department of Environmental Services contact is Tom Fazzina (603) 271-0911 and tfazzina@DES.state.NH.US

5 **Parameter:** ShelterCleanNotes

The shelter floor and roof have been repaired. Hand rails have been installed on platform.

6 **Parameter:** MetSensorComme

10-meter temperature is being operated and maintained on the meteorological tower.

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
BEL116-Eric Hebert-11/10/2014						
1	11/10/2014	Computer	Dell	000266	D520	unknown
2	11/10/2014	DAS	Campbell	000341	CR3000	2120
3	11/10/2014	Elevation	Elevation	None	1	None
4	11/10/2014	Filter pack flow pump	Thomas	02755	107CAB18	1192001881
5	11/10/2014	Infrastructure	Infrastructure	none	none	none
6	11/10/2014	Met tower	Universal Tower	06484	unknown	none
7	11/10/2014	Modem	Raven	06475	H4222-C	0808311155
8	11/10/2014	Ozone	ThermoElectron Inc	000684	49i A1NAA	1030244795
9	11/10/2014	Ozone Standard	ThermoElectron Inc	000373	49i A3NAA	0726124685
10	11/10/2014	Precipitation	Texas Electronics	06332	TR-525i-HT	43527-807
11	11/10/2014	Relative Humidity	Vaisala	06749	HMP50UA	E3420005
12	11/10/2014	Sample Tower	Aluma Tower	000127	B	none
13	11/10/2014	Shelter Temperature	Campbell	none	107-L	44281
14	11/10/2014	Shield (10 meter)	RM Young	05042	Aspirated 43408	none
15	11/10/2014	Shield (2 meter)	RM Young	05041	Aspirated 43408	none
16	11/10/2014	Siting Criteria	Siting Criteria	None	1	None
17	11/10/2014	Solar Radiation	Licor	04935	LI-200	PY47675
18	11/10/2014	Solar Radiation Translator	RM Young	04888	70101-X	none
19	11/10/2014	Surface Wetness	RM Young	04608	58101	none
20	11/10/2014	Temperature	RM Young	06308	41342VO	12533
21	11/10/2014	Temperature2meter	RM Young	06309	41342VO	12534
22	11/10/2014	Wind Direction	RM Young	03416	AQ05103-5	17096wdr
23	11/10/2014	Wind Speed	RM Young	03416	AQ05103-5	17096wsp
24	11/10/2014	Zero air pump	Teledyne	000776	701H	606

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2120	BEL116	Eric Hebert	11/10/2014	DAS	Primary

Das Date: 11/12/2014
Das Time: 15:12:00
Das Day: 316

Audit Date 11/12/2014
Audit Time 15:12:01
Audit Day 316

Low Channel:		High Channel:	
Avg Diff:	**Max Diff:**	**Avg Diff:**	**Max Diff:**
0.0002	0.0004	0.0002	0.0004

Mfg	Datel	**Parameter**	DAS
Serial Number	4000392	**Tfer Desc.**	Source generator (D
Tfer ID	01321		
Slope	1.00000	**Intercept**	0.00000
Cert Date	2/13/2012	**CorrCoff**	1.00000

Mfg	Fluke	**Parameter**	DAS
Serial Number	95740243	**Tfer Desc.**	DVM
Tfer ID	01312		
Slope	1.00000	**Intercept**	0.00000
Cert Date	12/28/2013	**CorrCoff**	1.00000

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	-0.0004	-0.0006	V	V	-0.0002
7	0.1000	0.0998	0.0996	V	V	-0.0002
7	0.3000	0.2996	0.2996	V	V	0.0000
7	0.5000	0.4997	0.4995	V	V	-0.0002
7	0.7000	0.6996	0.6995	V	V	-0.0001
7	0.9000	0.8999	0.8995	V	V	-0.0004
7	1.0000	0.9999	0.9996	V	V	-0.0003

Flow Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Apex	illegible	BEL116	Eric Hebert	11/10/2014	Flow Rate	000596

Mfg	BIOS	**Parameter**	Flow Rate
Serial Number	131818	**Tfer Desc.**	BIOS 220-H
Tfer ID	01417		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:			
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**	**Cal Factor Zero**	0.05
2.80%	3.23%			**Cal Factor Full Scale**	1.05
				Rotometer Reading:	1.65

Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	-0.07	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	-0.02	0.000	0.03	l/m	l/m	
primary	test pt 1	1.547	1.550	1.46	0.000	1.50	l/m	l/m	-3.23%
primary	test pt 2	1.549	1.550	1.46	0.000	1.51	l/m	l/m	-2.58%
primary	test pt 3	1.552	1.550	1.46	0.000	1.51	l/m	l/m	-2.58%

Sensor Component	Leak Test	**Condition**		**Status**	pass
Sensor Component	Tubing Condition	**Condition**	Good	**Status**	pass
Sensor Component	Filter Position	**Condition**	Good	**Status**	pass
Sensor Component	Rotometer Condition	**Condition**	Clean and dry	**Status**	pass
Sensor Component	Moisture Present	**Condition**	No moisture present	**Status**	pass
Sensor Component	Filter Distance	**Condition**	6.0 cm	**Status**	pass
Sensor Component	Filter Depth	**Condition**	1.5 cm	**Status**	pass
Sensor Component	Filter Azimuth	**Condition**	180 deg	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244795	BEL116	Eric Hebert	11/10/2014	Ozone	000684

Slope:	1.00369	**Slope:**	0.00000
Intercept	-0.41489	**Intercept**	0.00000
CorrCoff	0.99992	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.4%	0.6%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.11	0.31	-0.77	ppb	
primary	2	28.79	28.79	28.96	ppb	0.59%
primary	3	46.76	46.64	46.71	ppb	0.15%
primary	4	77.96	77.62	77.88	ppb	0.33%
primary	5	114.11	113.51	113.00	ppb	-0.45%

Sensor Component	Condition	Status
Cell B Noise	0.7 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.10	pass
Span	0.997	pass
Cell B Freq.	91.9 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.64 lpm	pass
Cell A Tmp.	34.9 C	pass
Cell A Pressure	723 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	96.3 kHz	pass
Cell A Flow	0.69 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Wind Speed Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	17096wsp	BEL116	Eric Hebert	11/10/2014	Wind Speed	03416

Mfg	RM Young	**Parameter**	wind speed
Serial Number	CA04013	**Tfer Desc.**	wind speed motor (h
Tfer ID	01253		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/16/2014	**CorrCoff**	1.00000

Prop or Cups SN	65736
Prop or Cups Torque	0.3 **to** 0.4
Prop Correction Fact	0.0512

	DAS 1:		DAS 2:	
	Low Range	**High Range**	**Low Range**	**High Range**
Abs Avg Err	0.05	0.00%		
Abs Max Er	0.20	0.00%		

UseDescription:	Input Device	Input RPM	Input m/s	Out V	DAS m/s	Diff/ %Diff	Diff	WsM
primary	none	0	0.20	0.0	0.0		-0.20	
primary	01253	200	1.02	0.0	1.0		0.00	
primary	01253	400	2.05	0.0	2.1		0.00	
primary	01253	800	4.10	0.0	4.1		0.00	
primary	01253	1200	6.14	0.0	6.1	0.00%		
primary	01253	2400	12.29	0.0	12.3	0.00%		
primary	01253	4000	20.48	0.0	20.5	0.00%		
primary	01253	9400	48.13	0.0	48.1	0.00%		

Sensor Component	Condition	**Condition**	Good	**Status**	pass
Sensor Component	Prop or Cups Condition	**Condition**	Good	**Status**	pass
Sensor Component	Sensor Heater	**Condition**	N/A	**Status**	pass
Sensor Component	Torque	**Condition**	Good	**Status**	pass
Sensor Component	Sensor Plumb	**Condition**	Plumb	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Wind Direction Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	17096wdr	BEL116	Eric Hebert	11/10/2014	Wind Direction	03416

Mfg	RM Young	**Parameter**	wind direction
Serial Number		**Tfer Desc.**	wind direction wheel
Tfer ID	01264		

Vane SN: N/A **C. A. Align. deg. true:**
VaneTorque 12 **to** 12 180

Mfg	Ushikata	**Parameter**	wind direction
Serial Number	192034	**Tfer Desc.**	transit
Tfer ID	01270		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/30/2014	**CorrCoff**	1.00000

	DAS 1: Orientation	DAS 1: Linearity:	DAS 2: Orientation	DAS 2: Linearity:
Abs Avg Err	2.0	1.0		
Abs Max Er	4	3		

UseDescription	TferID	Input Raw	Linearity	Output V	Output Deg.	Difference	Change	Error
primary	01264	0	☑	0.000	0	0	48	3
primary	01264	45	☑	0.000	45	0	45	0
primary	01264	90	☑	0.000	89	1	44	-1
primary	01264	135	☑	0.000	133	2	44	-1
primary	01264	180	☑	0.000	178	2	45	0
primary	01264	225	☑	0.000	223	2	45	0
primary	01264	270	☑	0.000	266	4	43	-2
primary	01264	315	☑	0.000	312	3	46	1
primary	01270	90	☐	0.000	94	4		4
primary	01270	180	☐	0.000	182	2		2
primary	01270	270	☐	0.000	269	1		1
primary	01270	360	☐	0.000	1	1		1

Sensor Component	Torque	**Condition**		**Status**	pass
Sensor Component	Sensor Plumb	**Condition**	Plumb	**Status**	pass
Sensor Component	Sensor Heater	**Condition**	N/A	**Status**	pass
Sensor Component	Mast	**Condition**	Good	**Status**	pass
Sensor Component	Condition	**Condition**	Good	**Status**	pass
Sensor Component	Vane Condition	**Condition**	Good	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Temperature Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	12533	BEL116	Eric Hebert	11/10/2014	Temperature	06308

Mfg	Eutechnics	**Parameter**	Temperature
Serial Number	01D102193	**Tfer Desc.**	RTD translator
Tfer ID	01231		
Slope	1.00133	**Intercept**	-0.05731
Cert Date	12/27/2013	**CorrCoff**	1.00000

Mfg	Eutechnics	**Parameter**	Temperature
Serial Number	01H0060	**Tfer Desc.**	RTD probe
Tfer ID	01230		
Slope	1.00133	**Intercept**	-0.05731
Cert Date	12/27/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
Abs Avg Err	**Abs Max Er**	**Abs Avg Err**	**Abs Max Er**
0.09	0.13		

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Range	0.13	0.19	0.000	0.07	C	-0.12
primary	Temp Mid Range	23.01	23.04	0.000	23.03	C	-0.01
primary	Temp High Range	46.65	46.65	0.000	46.78	C	0.13

Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	Functioning	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	Not functioning	**Status**	Fail
Sensor Component	System Memo	**Condition**		**Status**	pass

2 Meter Temperature Data For

Calc. Difference

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	12534	BEL116	Eric Hebert	11/10/2014	Temperature2meter	06309

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.16	0.25		

Mfg	Eutechnics	Parameter	Temperature
Serial Number	01H0060	Tfer Desc.	RTD probe
Tfer ID	01230		
Slope	1.00133	Intercept	-0.05731
Cert Date	12/27/2013	CorrCoff	1.00000

Mfg	Eutechnics	Parameter	Temperature
Serial Number	01D102193	Tfer Desc.	RTD translator
Tfer ID	01231		
Slope	1.00133	Intercept	-0.05731
Cert Date	12/27/2013	CorrCoff	1.00000

UseDescription	Test type	InputTmpRaw	InputTmpCorrected	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Low Rang	0.13	0.19	0.000	0.06	C	-0.13
primary	Temp Mid Rang	23.01	23.04	0.000	23.13	C	0.09
primary	Temp High Rang	46.65	46.65	0.000	46.90	C	0.25

Sensor Component	Shield	Condition	Moderately clean	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	Blower	Condition	Functioning	Status	pass
Sensor Component	Blower Status Switch	Condition	Not functioning	Status	Fail
Sensor Component	System Memo	Condition		Status	pass

Solar Radiation Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Licor	PY47675	BEL116	Eric Hebert	11/10/2014	Solar Radiation	04935

Mfg	RM Young	
SN/Owner ID	none	04888
Parameter	Solar Radiation Translator	

Mfg	RM Young	Parameter	solar radiation	
Serial Number		Tfer Desc.	SR transfer translat	
Tfer ID	01240			
Slope	1.02678	Intercept	-16.91000	
Cert Date	6/14/2014	CorrCoff	0.99800	
Mfg	Licor	Parameter	solar radiation	
Serial Number		Tfer Desc.	SR transfer sensor	
Tfer ID	01241			
Slope	1.02678	Intercept	-16.91000	
Cert Date	6/14/2014	CorrCoff	0.99800	

DAS 1:		DAS 2:	
% Diff of Avg	%Diff of Max	%Diff of Avg	%Diff of Max
0.0%	0.0%	0.0%	0.0%

Sensor Component	Sensor Clean	Condition	Clean	Status	pass
Sensor Component	Sensor Level	Condition	Level	Status	pass
Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	System Memo	Condition		Status	pass

Humidity Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Vaisala	E3420005	BEL116	Eric Hebert	11/10/2014	Relative Humidity	06749

Mfg	Rotronic	**Parameter**	Relative Humidity
Serial Number	75296	**Tfer Desc.**	GTL
Tfer ID	01220		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/5/2010	**CorrCoff**	1.00000

	DAS 1:		DAS 2:	
	Low Range	**High Range**	**Low Range**	**High Range**
Abs Avg Err	1.5	2.2		
Abs Max Er	1.9	2.2		

UseDesc.	Test type	Device	Input RH	GTL Raw	RH Corr.	DAS Volts	DAS %RH	Difference
primary	RH Low Range	GTL	32.8	0.0	32.8	0.000	30.9	-1.9
primary	RH Low Range	GTL	52.9	0.0	52.9	0.000	54.0	1.1
primary	RH High Range	GTL	93.6	0.0	93.6	0.000	95.9	2.2

Sensor Component	RH Filter	**Condition**	Clean	**Status**	pass
Sensor Component	Shield	**Condition**	Moderately clean	**Status**	pass
Sensor Component	Blower	**Condition**	N/A	**Status**	pass
Sensor Component	Blower Status Switch	**Condition**	N/A	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Precipitation Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Texas Electronics	43527-807	BEL116	Eric Hebert	11/10/2014	Precipitation	06332

DAS 1:		DAS 2:	
A Avg % Diff:	A Max % Di	A Avg %Dif	A Max % Di
4.0%	6.0%		

Mfg	PMP	Parameter	Precipitation
Serial Number	EW-06134-50	Tfer Desc.	250ml graduate
Tfer ID	01250		
Slope	1.00000	Intercept	0.00000
Cert Date	9/5/2005	CorrCoff	1.00000

UseDesc.	Test type	TferVolume	Iteration	TimePerTip	Eq.Ht	DAS eng	Eq.HtUnit	OSE Unit	TferUnits	PctDifference
primary	tip check	10 manual	1	2 sec	0.10	0.10	in	in	ml	
primary	test 1	231.5	1	8 - 12 sec	0.50	0.53	in	in	ml	6.0%
primary	test 2	231.5	2	8 - 12 sec	0.50	0.49	in	in	ml	-2.0%

Sensor Component	Properly Sited	Condition	Properly sited	Status	pass
Sensor Component	Gauge Drain Screen	Condition	Installed	Status	pass
Sensor Component	Funnel Clean	Condition	Clean	Status	pass
Sensor Component	Condition	Condition	Good	Status	pass
Sensor Component	Gauge Screen	Condition	Installed	Status	pass
Sensor Component	Gauge Clean	Condition	Clean	Status	pass
Sensor Component	Level	Condition	Level	Status	pass
Sensor Component	Sensor Heater	Condition	Functioning	Status	pass
Sensor Component	System Memo	Condition		Status	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	44281	BEL116	Eric Hebert	11/10/2014	Shelter Temperature	none

DAS 1:		DAS 2:	
Abs Avg Err	Abs Max Er	Abs Avg Err	Abs Max Er
0.66	0.78		

Mfg	Eutechnics	Parameter	Shelter Temperatur
Serial Number	01D102193	Tfer Desc.	RTD translator
Tfer ID	01231		
Slope	1.00133	Intercept	-0.05731
Cert Date	12/27/2013	CorrCoff	1.00000
Mfg	Eutechnics	Parameter	Shelter Temperatur
Serial Number	01H0060	Tfer Desc.	RTD probe
Tfer ID	01230		
Slope	1.00133	Intercept	-0.05731
Cert Date	12/27/2013	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	27.25	27.27	0.000	26.8	C	-0.49
primary	Temp Mid Range	26.74	26.76	0.000	26.0	C	-0.78
primary	Temp Mid Range	25.64	25.66	0.000	24.9	C	-0.72

Surface Wetness Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	BEL116	Eric Hebert	11/10/2014	Surface Wetness	04608

Mfg	Ohmite	**Parameter**	surface wetness
Serial Number	296-1200	**Tfer Desc.**	decade box
Tfer ID	01210		
Slope	1.00000	**Intercept**	0.00000
Cert Date	1/4/2011	**CorrCoff**	1.00000

☑ **Manual Test Pass**

UseDescription	Test Type	Tfer kOhms	OutputSignal	DAS eng	OutputSignalEngUni	TferUnits	OutputSignalUnit
primary	wet	N/A	0.000	1.02	V	N/A	V
primary	dry	N/A	0.000	0.01	V	N/A	V

Sensor Component	Properly Sited	**Condition**	Properly sited	**Status**	pass
Sensor Component	Grid Clean	**Condition**	Clean	**Status**	pass
Sensor Component	Grid Angle	**Condition**	about 45 deg	**Status**	pass
Sensor Component	Grid Orientation	**Condition**	North	**Status**	pass
Sensor Component	Grid Condition	**Condition**	Good	**Status**	pass
Sensor Component	Grid Type	**Condition**	Grid without holes	**Status**	pass
Sensor Component	System Memo	**Condition**		**Status**	pass

Infrastructure Data For

Site ID	BEL116	Technician	Eric Hebert	Site Visit Date	11/10/2014

Shelter Make	Shelter Model	Shelter Size
Unknown	Unknown	Unknown

Sensor Component		Condition		Status	
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Field Systems Comments

1 **Parameter:** SitingCriteriaCom

The site is located between Washington DC and Baltimore, MD near a major transportation corridor. Although the site surroundings are woodland and agriculture, the region surrounding the research center is densely populated and urban.

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	WST109	**Technician**	Sandy Grenville	**Site Visit Date**	11/10/2014

Site Sponsor (agency)	EPA	**USGS Map**	Woodstock
Operating Group	IES/USFS	**Map Scale**	
AQS #	33-009-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	**QAPP Latitude**	43.9446
Deposition Measurement	dry, wet	**QAPP Longitude**	-71.7008
Land Use	woodland - mixed	**QAPP Elevation Meters**	258
Terrain	complex	**QAPP Declination**	15.9
Conforms to MLM	No	**QAPP Declination Date**	12/28/2004
Site Telephone	(603) 726-4935	**Audit Latitude**	43.944519
Site Address 1	234 Mirror Lake Road	**Audit Longitude**	-71.700787
Site Address 2		**Audit Elevation**	255
County	Grafton	**Audit Declination**	-15.3
City, State	Campton, NH		
Zip Code	03223	**Fire Extinguisher** ☑	New Sept 2014
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☑	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	Ekto	**Model**	8810 (s/n 2149-16)	**Shelter Size**	640 cuft
Shelter Clean	☑	**Notes**	The shelter floor and roof have been repaired. Hand rails have been installed on platform.				
Site OK	☑	**Notes**	State of NH Department of Environmental Services contact is Tom Fazzina (603) 271-0911 and tfazzina@DES.state.NH.US				

Driving Directions From I-93 take exit 30 and go south on route 3 for approximately 2 miles. Turn right on Mirror Lake road and continue to the end of the road. The site is through the gate on the right.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID WST109 **Technician** Sandy Grenville **Site Visit Date** 11/10/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km		☑
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m	50 m	☐
Tree line	50 m	10 - 30 m	☐
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☐

Siting Criteria Comment

The site is in a small clearing surrounded by mountain forest. There is a small parking lot used by forest service employees located 50 meters from the site.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	WST109	Technician	Sandy Grenville	Site Visit Date	11/10/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	N/A
3	Are the tower and sensors plumb?	☑	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	N/A
8	Is the rain gauge plumb?	☑	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	N/A
11	Is it inclined approximately 30 degrees?	☑	N/A

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

10-meter temperature is being operated and maintained on the meteorological tower.

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID	WST109	Technician	Sandy Grenville	Site Visit Date	11/10/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	Temperature only
2	Are all the meteorological sensors operational online, and reporting data?	☑	Temperature only
3	Are the shields for the temperature and RH sensors clean?	☑	Moderately clean
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	N/A
6	Is the surface wetness sensor grid clean and undamaged?	☑	N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	WST109	Technician	Sandy Grenville	Site Visit Date	11/10/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	Moisture in tubing only
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID WST109 **Technician** Sandy Grenville **Site Visit Date** 11/10/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☐
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The sample tower is kinked at the hinge point and is in poor condition. One leg of the met tower is split. Both of these conditions were reported following the two previous site audit visits.

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	WST109	Technician	Sandy Grenville	Site Visit Date	11/10/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☐	☑	Data logger	☐	☑	☐
Wind direction sensor	☐	☐	☑	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☐	☑	Computer	☑	☐	☐
Solar radiation sensor	☐	☐	☑	Modem	☐	☑	☐
Surface wetness sensor	☐	☐	☑	Printer	☐	☐	☑
Wind sensor translator	☐	☐	☑	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☑	☐
Solar radiation translator	☐	☐	☑	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☐	☑	Lightning protection device	☐	☐	☑
Ozone analyzer	☐	☑	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☐	☑	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Oct 2001	☐
HASP	☑	Nov 2014	☑
Field Ops Manual	☑	July 1990	☐
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☑
Preventive maintenance schedul	☑		☑

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID	WST109	Technician	Sandy Grenville	Site Visit Date	11/10/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	The site operator was trained by the previous operator, who was trained by the previous operator
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	N/A	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	N/A	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☑	As needed	☑
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☑	As needed	☑
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☑	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☑	Every 2 weeks	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, logbook, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

The state of NH DES performs monthly multi-point audits of the ozone analyzer. Ozone sample train leak checks are being conducted every two weeks.

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID WST109 **Technician** Sandy Grenville **Site Visit Date** 11/10/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed morinings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF, logbook
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, logbook, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean gloves on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID WST109 **Technician** Sandy Grenville **Site Visit Date** 11/10/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000291
DAS	Campbell	CR3000	2526	000427
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	000025705	00476
Flow Rate	Apex	AXMC105LPMDPC	43970	000466
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	03532
Modem	Raven	V4221-V	0844349943	06598
Ozone	ThermoElectron Inc	49i A1NAA	1009241795	000611
Ozone Standard	ThermoElectron Inc	49i A3NAA	1030244812	000696
Sample Tower	Aluma Tower	A	none	03531
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	Aspirated 43408	none	00947
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	4014	04317
Zero air pump	Werther International	P 70/4	000821881	06934

Field Systems Data Form

F-02058-1500-S1-rev002

Site ID	BEL116	**Technician**	Eric Hebert	**Site Visit Date**	11/10/2014

Site Sponsor (agency)	EPA	**USGS Map**	Laurel
Operating Group	BARC/private	**Map Scale**	
AQS #	24-033-9991	**Map Date**	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, SO2, NOy, NOx, CO, Hg	**QAPP Latitude**	39.0283
Deposition Measurement	dry, wet, Hg	**QAPP Longitude**	-76.8175
Land Use	urban - agriculture	**QAPP Elevation Meters**	46
Terrain	flat	**QAPP Declination**	11.25
Conforms to MLM	No	**QAPP Declination Date**	2/23/2006
Site Telephone	(301) 474-3019	**Audit Latitude**	39.028177
Site Address 1	BARC old airport	**Audit Longitude**	-76.817127
Site Address 2	Springfield Road	**Audit Elevation**	47
County	Prince George's	**Audit Declination**	-11
City, State	Laurel, MD		
Zip Code	20708	**Fire Extinguisher** (Present ☑)	No inspection date
Time Zone	Eastern	**First Aid Kit** ☑	
Primary Operator		**Safety Glasses** ☐	
Primary Op. Phone #		**Safety Hard Hat** ☑	
Primary Op. E-mail		**Climbing Belt** ☑	
Backup Operator		**Security Fence** ☐	
Backup Op. Phone #		**Secure Shelter** ☑	
Backup Op. E-mail		**Stable Entry Step** ☑	

Shelter Working Room	☑	**Make**	Unknown	**Model**	Unknown	**Shelter Size**	Unknown
Shelter Clean	☑	**Notes**					
Site OK	☑	**Notes**					

Driving Directions

From the Baltimore - Washington Parkway (route 295) take exit 11(Powder Mill Road). Go east for approximately 0.5 miles and turn right (south) onto Springfield Road. Continue approximately 0.8 miles and look for a gate on the left. The site is on the right of the dirt road approximately 1 mile through the two gates.

Field Systems Data Form

F-02058-1500-S2-rev002

Site ID BEL116 **Technician** Eric Hebert **Site Visit Date** 11/10/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		☑
Major industrial complex	10 to 20 km		☑
City > 50,000 population	40 km	25 km	☐
City 10,000 to 50,000 population	10 km		☑
City 1,000 to 10,000 population	5 km		☑
Major highway, airport or rail yard	2 km		☑
Secondary road, heavily traveled	500 m		☑
Secondary road, lightly traveled	200 m		☑
Feedlot operations	500 m		☑
Intensive agricultural ops (including aerial spraying)	500 m		☑
Limited agricultural operations	200 m		☑
Large parking lot	200 m		☑
Small parking lot	100 m		☑
Tree line	50 m		☑
Obstacles to wind	10 times obstacle height		☑

Siting Distances OK ☑

Siting Criteria Comment

The site is located between Washington DC and Baltimore, MD near a major transportation corridor. Although the site surroundings are woodland and agriculture, the region surrounding the research center is densely populated and urban.

Field Systems Data Form

F-02058-1500-S3-rev002

Site ID	BEL116	Technician	Eric Hebert	Site Visit Date	11/10/2014

1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	☑	
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	☑	
3	Are the tower and sensors plumb?	☑	
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	☑	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	☑	
6	Is the solar radiation sensor plumb?	☑	
7	Is it sited to avoid shading, or any artificial or reflected light?	☑	
8	Is the rain gauge plumb?	☑	
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	☑	
10	Is the surface wetness sensor sited with the grid surface facing north?	☑	
11	Is it inclined approximately 30 degrees?	☑	About 45 degrees

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S4-rev002

Site ID BEL116 **Technician** Eric Hebert **Site Visit Date** 11/10/2014

1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	☑	
2	Are all the meteorological sensors operational online, and reporting data?	☑	
3	Are the shields for the temperature and RH sensors clean?	☑	
4	Are the aspirated motors working?	☑	
5	Is the solar radiation sensor's lens clean and free of scratches?	☑	
6	Is the surface wetness sensor grid clean and undamaged?	☑	
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	☑	
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	☑	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S5-rev002

Site ID	BEL116	Technician	Eric Hebert	Site Visit Date	11/10/2014

Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E

1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	☑	
2	Are the sample inlets 3 - 15 meters above the ground?	☑	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	☑	

Pollutant analyzers and deposition equipment operations and maintenance

1	Do the analyzers and equipment appear to be in good condition and well maintained?	☑	
2	Are the analyzers and monitors operational, on-line, and reporting data?	☑	
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	☑	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	☑	
7	Is the zero air supply desiccant unsaturated?	☑	
8	Are there moisture traps in the sample lines?	☑	Flow line only
9	Is there a rotometer in the dry deposition filter line, and is it clean?	☑	Clean and dry

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S6-rev002

Site ID BEL116 **Technician** Eric Hebert **Site Visit Date** 11/10/2014

DAS, sensor translators, and peripheral equipment operations and maintenance

1	Do the DAS instruments appear to be in good condition and well maintained?	☑	
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	☑	
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	☑	Met sensors only
4	Are the signal connections protected from the weather and well maintained?	☑	
5	Are the signal leads connected to the correct DAS channel?	☑	
6	Are the DAS, sensor translators, and shelter properly grounded?	☑	
7	Does the instrument shelter have a stable power source?	☑	
8	Is the instrument shelter temperature controlled?	☑	

		Stable	Grounded
9	Is the met tower stable and grounded?	☑	☑
10	Is the sample tower stable and grounded?	☑	☑
11	Tower comments?		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S7-rev002

Site ID	BEL116	Technician	Eric Hebert	Site Visit Date	11/10/2014

Documentation

Does the site have the required instrument and equipment manuals?

	Yes	No	N/A		Yes	No	N/A
Wind speed sensor	☐	☑	☐	Data logger	☐	☑	☐
Wind direction sensor	☐	☑	☐	Data logger	☐	☐	☑
Temperature sensor	☐	☑	☐	Strip chart recorder	☐	☐	☑
Relative humidity sensor	☐	☑	☐	Computer	☑	☐	☐
Solar radiation sensor	☑	☐	☐	Modem	☐	☑	☐
Surface wetness sensor	☐	☑	☐	Printer	☐	☐	☑
Wind sensor translator	☐	☑	☐	Zero air pump	☐	☑	☐
Temperature translator	☐	☐	☑	Filter flow pump	☐	☑	☐
Humidity sensor translator	☐	☐	☑	Surge protector	☐	☐	☑
Solar radiation translator	☐	☑	☐	UPS	☐	☑	☐
Tipping bucket rain gauge	☐	☑	☐	Lightning protection device	☐	☐	☑
Ozone analyzer	☑	☐	☐	Shelter heater	☐	☑	☐
Filter pack flow controller	☐	☑	☐	Shelter air conditioner	☑	☐	☐
Filter pack MFC power supply	☐	☐	☑				

Does the site have the required and most recent QC documents and report forms?

	Present		Current
Station Log	☑		☑
SSRF	☑		☑
Site Ops Manual	☑	Feb 2014	☑
HASP	☑	Feb 2014	☐
Field Ops Manual	☑	Feb 2014	☑
Calibration Reports	☑		☑
Ozone z/s/p Control Charts	☐		☐
Preventive maintenance schedul	☐		☐

1	Is the station log properly completed during every site visit?	☑	
2	Are the Site Status Report Forms being completed and current?	☑	
3	Are the chain-of-custody forms properly used to document sample transfer to and from lab?	☑	
4	Are ozone z/s/p control charts properly completed and current?	☐	Control charts not used

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S8-rev002

Site ID BEL116 **Technician** Eric Hebert **Site Visit Date** 11/10/2014

Site operation procedures

1	Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	☐	
3	Is the site visited regularly on the required Tuesday schedule?	☑	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	☑	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	☑	

Are regular operational QA/QC checks performed on meteorological instruments?

QC Check Performed		Frequency	Compliant
Multipoint Calibrations	☑	Semiannually	☑
Visual Inspections	☑	Weekly	☑
Translator Zero/Span Tests (climatronics)	☐	N/A	☑
Manual Rain Gauge Test	☑	Weekly	☑
Confirm Reasonableness of Current Values	☑	Weekly	☑
Test Surface Wetness Response	☑	Weekly	☑

Are regular operational QA/QC checks performed on the ozone analyzer?

QC Check Performed		Frequency	Compliant
Multi-point Calibrations	☑	Semiannually	☑
Automatic Zero/Span Tests	☑	Daily	☑
Manual Zero/Span Tests	☐		☐
Automatic Precision Level Tests	☑	Daily	☑
Manual Precision Level Test	☐		☐
Analyzer Diagnostics Tests	☑	Weekly	☑
In-line Filter Replacement (at inlet)	☑	Every 2 weeks	☑
In-line Filter Replacement (at analyze	☐	N/A	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑
Zero Air Desiccant Check	☐	N/A	☑

1	Do multi-point calibration gases go through the complete sample train including all filters?	☐	Unknown
2	Do automatic and manual z/s/p gasses go through the complete sample train including all filters?	☑	
3	Are the automatic and manual z/s/p checks monitored and reported? If yes, how?	☑	SSRF, call-in

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form

F-02058-1500-S9-rev002

Site ID BEL116 **Technician** Eric Hebert **Site Visit Date** 11/10/2014

Site operation procedures

1	Is the filter pack being changed every Tuesday as scheduled?	☑	Filter changed mornings
2	Are the Site Status Report Forms being completed and filed correctly?	☑	
3	Are data downloads and backups being performed as scheduled?	☐	No longer required
4	Are general observations being made and recorded? How?	☑	SSRF
5	Are site supplies on-hand and replenished in a timely fashion?	☑	
6	Are sample flow rates recorded? How?	☑	SSRF, call-in
7	Are samples sent to the lab on a regular schedule in a timely fashion?	☑	
8	Are filters protected from contamination during handling and shipping? How?	☑	Clean glove on and off
9	Are the site conditions reported regularly to the field operations manager or staff?	☑	

QC Check Performed		Frequency	Compliant
Multi-point MFC Calibrations	☑	Semiannually	☑
Flow System Leak Checks	☑	Weekly	☑
Filter Pack Inspection	☐		☐
Flow Rate Setting Checks	☑	Weekly	☑
Visual Check of Flow Rate Rotometer	☑	Weekly	☑
In-line Filter Inspection/Replacement	☑	Semiannually	☑
Sample Line Check for Dirt/Water	☑	Weekly	☑

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S10-rev002

Site ID BEL116 **Technician** Eric Hebert **Site Visit Date** 11/10/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000266
DAS	Campbell	CR3000	2120	000341
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	1192001881	02755
Flow Rate	Apex	AXMC105LPMDPC	illegible	000596
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	06484
Modem	Raven	H4222-C	0808311155	06475
Ozone	ThermoElectron Inc	49i A1NAA	1030244795	000684
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124685	000373
Precipitation	Texas Electronics	TR-525i-HT	43527-807	06332
Relative Humidity	Vaisala	HMP50UA	E3420005	06749
Sample Tower	Aluma Tower	B	none	000127
Shelter Temperature	Campbell	107-L	44281	none
Shield (10 meter)	RM Young	Aspirated 43408	none	05042
Shield (2 meter)	RM Young	Aspirated 43408	none	05041
Siting Criteria	Siting Criteria	1	None	None
Solar Radiation	Licor	LI-200	PY47675	04935
Solar Radiation Translator	RM Young	70101-X	none	04888
Surface Wetness	RM Young	58101	none	04608
Temperature	RM Young	41342VO	12533	06308
Temperature2meter	RM Young	41342VO	12534	06309
Wind Direction	RM Young	AQ05103-5	17096wdr	03416
Wind Speed	RM Young	AQ05103-5	17096wsp	03416
Zero air pump	Teledyne	701H	606	000776

APPENDIX B

CASTNET Site Spot Report Forms

EEMS Spot Report

Data Compiled: 5/21/2016 3:36:03 PM

SiteVisitDate	Site	Technician
11/09/2014	ABT147	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.12	c	**P**
2	Temperature max error	P	4	0.5	9	0.17	c	**P**
3	Ozone Slope	P	0	1.1	4	1.01003	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.59769	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99995	unitless	**P**
6	Ozone % difference avg	P	7	10	4	0.8	%	**P**
7	Ozone % difference max	P	7	10	4	1.3	%	**P**
8	Flow Rate average % difference	P	10	5	2	0.22	%	**P**
9	Flow Rate max % difference	P	10	5	2	0.67	%	**P**
10	DAS Time maximum error	P	0	5	1	0.00	min	**P**
11	DAS Voltage average error	P	7	0.003	35	0.0001	V	**P**

Field Systems Comments

1 **Parameter:** DasComments

The sample tower is no longer grounded. The lower section of the met tower has been replaced.

2 **Parameter:** SitingCriteriaCom

Manure is routinely spread on the hay fields surrounding the site during the summer.

3 **Parameter:** ShelterCleanNotes

The shelter is clean and well organized.

4 **Parameter:** MetSensorComme

10-meter temperature is operated and maintained on the meteorological tower.

EEMS Spot Report

Data Compiled: 10/21/2015 1:04:19 PM

SiteVisitDate	Site	Technician
10/03/2014	ACA416	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	P	3	0.5	8	0.17	m/s	**P**
2	Wind Speed max error below 5m/s in m/s	P	3	0.5	8	0.20	m/s	**P**
3	Wind Speed average % difference above 5 m/s	P	3	5	8	10.2	%	**Fail**
4	Wind Speed max % difference above 5 m/s	P	3	5	8	38.6	%	**Fail**
5	Wind Speed Torque average error	P	3	0.5	1	0.30	g-cm	**P**
6	Wind Speed Torque max error	P	3	0.5	1	0.3	g-cm	**P**
7	Wind Direction Input Deg True average error (de	P	2	5	10	2.6	degrees	**P**
8	Wind Direction Input Deg True max error (deg)	P	2	5	10	5	degrees	**P**
9	Wind Direction Linearity average error (deg)	P	2	5	16	1.5	degrees	**P**
10	Wind Direction Linearity max error (deg)	P	2	5	16	3	degrees	**P**
11	Wind Direction Torque average error	P	2	20	1	10	g-cm	**P**
12	Wind Direction Torque max error	P	2	20	1	10	g-cm	**P**
13	Temperature average error	P	5	0.5	3	0.17	c	**P**
14	Temperature max error	P	5	0.5	3	0.27	c	**P**
15	Delta Temperature average error	P	6	0.5	1	0.02	c	**P**
16	Delta Temperature average error	P	5	0.5	2	0.04	c	**P**
17	Delta Temperature max error	P	5	0.5	2	0.05	c	**P**
18	Delta Temperature max error	P	6	0.5	1	0.02	c	**P**
19	Relative Humidity average below 85%	P	6	10	9	1.3	%	**P**
20	Relative Humidity max below 85%	P	6	10	9	2.0	%	**P**
21	Solar Radiation % diff of avg	P	9	10	8	2.56	%	**P**
22	Solar Radiation % diff of max STD value	P	9	10	8	1.8	%	**P**
23	Precipitation average % difference	P	1	10	2	2.0	%	**P**
24	Precipitation max % difference	P	1	10	2	4.0	%	**P**
25	Ozone Slope	P	0	1.1	4	1.02704	unitless	**P**
26	Ozone Intercept	P	0	5	4	0.18362	ppb	**P**
27	Ozone correlation	P	0	0.995	4	0.99995	unitless	**P**
28	Ozone % difference avg	P	7	10	4	2.9	%	**P**
29	Ozone % difference max	P	7	10	4	3.4	%	**P**
30	Flow Rate average % difference	P	13	5	2	6.3	%	**Fail**
31	Flow Rate max % difference	P	13	5	2	6.44	%	**Fail**
32	DAS Time maximum error	P	0	5	1	0.00	min	**P**
33	DAS Voltage average error	P	15	0.003	28	0.0003	V	**P**
34	DAS Voltage average error	P	2	0.003	28	0.0000	V	**P**

SiteVisitDate	Site	Technician
10/03/2014	ACA416	Eric Hebert

35	Surface Wetness Response	P	10	100	1	99.4		**P**
36	Shelter Temperature average error	P	5	1	6	1.24	c	**Fail**
37	Shelter Temperature max error	P	5	1	6	2.27	c	**Fail**

SiteVisitDate	Site	Technician
10/03/2014	ACA416	Eric Hebert

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 70

Although there currently is no moisture in the flow sample train, there is evidence of previous moisture events.

2 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

3 **Parameter:** Ozone **SensorComponent:** System Memo **CommentCode** 208

The ozone sample train is composed of materials other than the recommended materials which are Teflon and glass only.

4 **Parameter:** Precipitation **SensorComponent:** Properly Sited **CommentCode** 193

Objects violate the 45 degree rule for the tipping bucket rain gage.

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

This site is operated partly by the NPS and the State of Maine DEP. It is not visited by ARS for semiannual calibration and maintenance visits. The site operator does not perform many of the routine checks conducted at other CASTNET sites, such as tip checks, wetness sensor tests, and visual checks of the blowers. The state of Maine personnel maintain the meteorological systems.

2 **Parameter:** SiteOpsProcedures

The meteorological and ozone instrument checks and maintenance are performed by the State of Maine DEP.

3 **Parameter:** DocumentationCo

The site operator reported that low flow rate conditions had been observed and reported to ARS recently. The Flow controller has been replaced since then to correct the issue.

4 **Parameter:** ShelterCleanNotes

The shelter is clean and well organized.

5 **Parameter:** PollAnalyzerCom

The ozone sample inlet still has a stainless steel fittings. The recommended material for ozone sample train is Teflon or glass. The site operator indicated that the fittings would be changed.

6 **Parameter:** MetSensorComme

The wind speed translator span is set to 25 m/s and not 50 m/s. This may have affected the low output observed at the highest wind speed challenge.

7 **Parameter:** MetOpMaintCom

The sensor signal cables are beginning to show signs of wear.

EEMS Spot Report

Data Compiled: 5/21/2016 3:58:58 PM

SiteVisitDate	Site	Technician
10/07/2014	ASH135	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	12	0.02	c	**P**
2	Temperature max error	P	4	0.5	12	0.05	c	**P**
3	Ozone Slope	P	0	1.1	4	0.99168	unitless	**P**
4	Ozone Intercept	P	0	5	4	-1.27949	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99992	unitless	**P**
6	Ozone % difference avg	P	7	10	4	2.7	%	**P**
7	Ozone % difference max	P	7	10	4	3.5	%	**P**
8	Flow Rate average % difference	P	10	5	3	1.96	%	**P**
9	Flow Rate max % difference	P	10	5	3	1.96	%	**P**
10	DAS Time maximum error	P	0	5	1	0.00	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0001	V	**P**

SiteVisitDate	Site	Technician
10/07/2014	ASH135	Eric Hebert

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** System Memo **CommentCode** 81

There is no plastic bag for the installed filter. The operator uses the received bag for the installed filter to ship the removed filter to the lab.

Field Systems Comments

1 **Parameter:** DasComments

The met tower has been removed and the 10 meter temperature sensor is mounted in a naturally aspirated shield on the sample tower.

2 **Parameter:** SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested once each month.

3 **Parameter:** SitingCriteriaCom

There is an evergreen plantation 20 meters south of the site.

4 **Parameter:** ShelterCleanNotes

The shelter is in good condition, clean, and very well organized.

EEMS Spot Report

Data Compiled: 5/21/2016 4:57:00 PM

SiteVisitDate	Site	Technician
11/10/2014	BEL116	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.16	c	**P**
2	Temperature2meter max error	P	5	0.5	3	0.25	c	**P**
3	Wind Speed average error below 5m/s in m/s	P	3	0.5	8	0.05	m/s	**P**
4	Wind Speed max error below 5m/s in m/s	P	3	0.5	8	0.20	m/s	**P**
5	Wind Speed average % difference above 5 m/s	P	3	5	8	0.0	%	**P**
6	Wind Speed max % difference above 5 m/s	P	3	5	8	0.0	%	**P**
7	Wind Speed Torque average error	P	3	0.5	1	0.35	g-cm	**P**
8	Wind Speed Torque max error	P	3	0.5	1	0.4	g-cm	**P**
9	Wind Direction Input Deg True average error (de	P	2	5	8	2.0	degrees	**P**
10	Wind Direction Input Deg True max error (deg)	P	2	5	8	4	degrees	**P**
11	Wind Direction Linearity average error (deg)	P	2	5	16	1.0	degrees	**P**
12	Wind Direction Linearity max error (deg)	P	2	5	16	3	degrees	**P**
13	Wind Direction Torque average error	P	2	20	1	12	g-cm	**P**
14	Wind Direction Torque max error	P	2	20	1	12	g-cm	**P**
15	Temperature average error	P	4	0.5	12	0.09	c	**P**
16	Temperature max error	P	4	0.5	12	0.13	c	**P**
17	Relative Humidity average above 85%	P	6	10	1	2.2	%	**P**
18	Relative Humidity max above 85%	P	6	10	1	2.2	%	**P**
19	Relative Humidity average below 85%	P	6	10	2	1.5	%	**P**
20	Relative Humidity max below 85%	P	6	10	2	1.9	%	**P**
21	Precipitation average % difference	P	1	10	2	4.0	%	**P**
22	Precipitation max % difference	P	1	10	2	6.0	%	**P**
23	Ozone Slope	P	0	1.1	4	1.00369	unitless	**P**
24	Ozone Intercept	P	0	5	4	-0.41489	ppb	**P**
25	Ozone correlation	P	0	0.995	4	0.99992	unitless	**P**
26	Ozone % difference avg	P	7	10	4	0.4	%	**P**
27	Ozone % difference max	P	7	10	4	0.6	%	**P**
28	Flow Rate average % difference	P	10	5	2	2.8	%	**P**
29	Flow Rate max % difference	P	10	5	2	3.23	%	**P**
30	DAS Time maximum error	P	0	5	1	0.02	min	**P**
31	DAS Voltage average error	P	7	0.003	49	0.0002	V	**P**
32	Surface Wetness Response	P	12	0.5	1	1.02		**P**

SiteVisitDate	Site	Technician
11/10/2014	BEL116	Eric Hebert

Field Systems Comments

1 **Parameter:** SitingCriteriaCom

The site is located between Washington DC and Baltimore, MD near a major transportation corridor. Although the site surroundings are woodland and agriculture, the region surrounding the research center is densely populated and urban.

EEMS Spot Report

Data Compiled: 4/9/2015 9:31:09 PM

SiteVisitDate	Site	Technician
11/25/2014	BFT142	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.03135	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.65714	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99993	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.2	%	**P**
5	Ozone % difference max	P	7	10	4	2.9	%	**P**

EEMS Spot Report

Data Compiled: 4/9/2015 8:23:34 PM

SiteVisitDate	Site	Technician
11/13/2014	BWR139	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.00631	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.08494	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.6	%	**P**
5	Ozone % difference max	P	7	10	4	1.2	%	**P**

EEMS Spot Report

Data Compiled: 4/9/2015 9:10:19 PM

SiteVisitDate	Site	Technician
11/21/2014	CDR119	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98684	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.57024	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.4	%	**P**
5	Ozone % difference max	P	7	10	4	3.5	%	**P**

EEMS Spot Report

Data Compiled: 4/9/2015 9:21:32 PM

SiteVisitDate	Site	Technician
11/24/2014	CND125	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99966	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.05026	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.1	%	**P**
5	Ozone % difference max	P	7	10	4	0.2	%	**P**

EEMS Spot Report

Data Compiled: 4/9/2015 7:48:11 PM

SiteVisitDate	Site	Technician
10/27/2014	GRS420	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99279	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.12506	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.4	%	**P**
5	Ozone % difference max	P	7	10	4	0.8	%	**P**

EEMS Spot Report

Data Compiled: 5/21/2016 5:27:52 PM

SiteVisitDate	Site	Technician
10/06/2014	HOW191	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.05	c	**P**
2	Temperature max error	P	4	0.5	9	0.09	c	**P**
3	Ozone Slope	P	0	1.1	4	0.98661	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.31884	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	2.0	%	**P**
7	Ozone % difference max	P	7	10	4	2.5	%	**P**
8	Flow Rate average % difference	P	10	5	3	0.88	%	**P**
9	Flow Rate max % difference	P	10	5	3	1.32	%	**P**
10	DAS Time maximum error	P	0	5	1	0.00	min	**P**
11	DAS Voltage average error	P	7	0.003	35	0.0001	V	**P**

Field Systems Comments

1 **Parameter:** SiteOpsProcComm

The site operator reported that gloves are not consistently used to handle the filter pack.

2 **Parameter:** SitingCriteriaCom

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site.

3 **Parameter:** ShelterCleanNotes

The custom built shelter is clean and organized.

4 **Parameter:** MetSensorComme

Other than a temperature sensor located at the CASTNET filter location the meteorological instrumentation is being operated by the University of Maine and AmeriFlux.

EEMS Spot Report

Data Compiled: 6/9/2016 6:54:00 PM

SiteVisitDate	Site	Technician
09/30/2014	HWF187	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	12	0.14	c	**P**
2	Temperature max error	P	4	0.5	12	0.29	c	**P**
3	Ozone Slope	P	0	1.1	4	0.97152	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.17924	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	3.2	%	**P**
7	Ozone % difference max	P	7	10	4	3.4	%	**P**
8	Flow Rate average % difference	P	10	5	2	1.12	%	**P**
9	Flow Rate max % difference	P	10	5	2	1.35	%	**P**
10	DAS Time maximum error	P	0	5	1	0.25	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0002	V	**P**

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

2 **Parameter:** Ozone **SensorComponent:** Cell A Flow **CommentCode** 99

This analyzer diagnostic check is outside the manufacturer's recommended value.

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone inlet filter is replaced and the sample train is leak tested every other week.

2 **Parameter:** ShelterCleanNotes

The shelter is in good condition.

EEMS Spot Report

Data Compiled: 4/9/2015 9:00:48 PM

SiteVisitDate	Site	Technician
11/19/2014	PAR107	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99033	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.42713	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.6	%	**P**
5	Ozone % difference max	P	7	10	4	1.8	%	**P**

EEMS Spot Report

Data Compiled: 4/9/2015 8:01:31 PM

SiteVisitDate	Site	Technician
11/03/2014	PED108	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98841	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.05787	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	1.2	%	**P**
5	Ozone % difference max	P	7	10	4	1.3	%	**P**

EEMS Spot Report

Data Compiled: 5/21/2016 9:33:36 PM

SiteVisitDate	Site	Technician
10/30/2014	PNF126	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	3	0.28	c	**P**
2	Temperature max error	P	4	0.5	3	0.48	c	**P**
3	Ozone Slope	P	0	1.1	4	0.98882	unitless	**P**
4	Ozone Intercept	P	0	5	4	0.45144	ppb	**P**
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
6	Ozone % difference avg	P	7	10	4	0.6	%	**P**
7	Ozone % difference max	P	7	10	4	0.8	%	**P**
8	Flow Rate average % difference	P	10	5	2	1.1	%	**P**
9	Flow Rate max % difference	P	10	5	2	1.32	%	**P**
10	DAS Time maximum error	P	0	5	1	0.00	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0002	V	**P**

Field Performance Comments

1 **Parameter:** Flow Rate **SensorComponent:** Moisture Present **CommentCode** 72

The filter sample tubing has drops of moisture in low sections outside the shelter.

Field Systems Comments

1 **Parameter:** DasComments

The towers are not grounded.

2 **Parameter:** SitingCriteriaCom

The site is in a mountain bowl. The wind pattern from this site would be expected to follow up and down slope patterns. The site is also located in a hay field which is cut 2 or 3 times per year.

3 **Parameter:** ShelterCleanNotes

The shelter is in fair condition.

EEMS Spot Report

Data Compiled: 4/9/2015 8:49:32 PM

SiteVisitDate	Site	Technician
11/18/2014	SHN418	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.00083	unitless	**P**
2	Ozone Intercept	P	0	5	4	1.29253	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.6	%	**P**
5	Ozone % difference max	P	7	10	4	5.0	%	**P**

EEMS Spot Report

Data Compiled: 4/9/2015 8:35:38 PM

SiteVisitDate	Site	Technician
11/17/2014	VPI120	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99285	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.42120	ppb	**P**
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.5	%	**P**
5	Ozone % difference max	P	7	10	4	1.2	%	**P**

EEMS Spot Report

Data Compiled: 4/9/2015 8:22:55 PM

SiteVisitDate	Site	Technician
11/14/2014	WSP144	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99369	unitless	**P**
2	Ozone Intercept	P	0	5	4	0.05217	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
4	Ozone % difference avg	P	7	10	4	0.9	%	**P**
5	Ozone % difference max	P	7	10	4	2.0	%	**P**

EEMS Spot Report

Data Compiled: 5/21/2016 9:57:03 PM

SiteVisitDate	Site	Technician
11/10/2014	WST109	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	3	0.14	c	**P**
2	Temperature max error	P	4	0.5	3	0.21	c	**P**
3	Ozone Slope	P	0	1.1	4	1.00183	unitless	**P**
4	Ozone Intercept	P	0	5	4	-0.02369	ppb	**P**
5	Ozone correlation	P	0	0.995	4	0.99998	unitless	**P**
6	Ozone % difference avg	P	7	10	4	0.4	%	**P**
7	Ozone % difference max	P	7	10	4	0.6	%	**P**
8	Flow Rate average % difference	P	10	5	4	0.67	%	**P**
9	Flow Rate max % difference	P	10	5	4	0.67	%	**P**
10	DAS Time maximum error	P	0	5	1	0.00	min	**P**
11	DAS Voltage average error	P	7	0.003	42	0.0001	V	**P**

SiteVisitDate	Site	Technician
11/10/2014	WST109	Sandy Grenville

Field Systems Comments

1 **Parameter:** DasComments

The sample tower is kinked at the hinge point and is in poor condition. One leg of the met tower is split. Both of these conditions were reported following the two previous site audit visits.

2 **Parameter:** SiteOpsProcedures

The state of NH DES performs monthly multi-point audits of the ozone analyzer. Ozone sample train leak checks are being conducted every two weeks.

3 **Parameter:** SitingCriteriaCom

The site is in a small clearing surrounded by mountain forest. There is a small parking lot used by forest service employees located 50 meters from the site.

4 **Parameter:** SiteOKNotes

State of NH Department of Environmental Services contact is Tom Fazzina (603) 271-0911 and tfazzina@DES.state.NH.US

5 **Parameter:** ShelterCleanNotes

The shelter floor and roof have been repaired. Hand rails have been installed on platform.

6 **Parameter:** MetSensorComme

10-meter temperature is being operated and maintained on the meteorological tower.

APPENDIX C

CASTNET Ozone Performance Evaluation Forms

Site Inventory by Site Visit

Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
GRS420-Eric Hebert-10/27/2014					
1 10/27/2014	Computer	Hewlett Packard	none	6560 b	5CB1520H5W
2 10/27/2014	DAS	Environmental Sys Corp	none	8832	unknown4
3 10/27/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943903
4 10/27/2014	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460051
5 10/27/2014	Sample Tower	Aluma Tower	90945	B	none
6 10/27/2014	Zero air pump	Werther International	none	PC70/4	531385

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1023943903	GRS420	Eric Hebert	10/27/2014	Ozone	none

Slope:	0.99279	**Slope:**	0.00000
Intercept	0.12506	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.4%	0.8%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.33	0.53	0.53	ppb	
primary	2	28.00	28.01	27.91	ppb	-0.36%
primary	3	46.61	46.49	46.42	ppb	-0.15%
primary	4	79.35	79.00	78.74	ppb	-0.33%
primary	5	113.46	112.87	112.00	ppb	-0.77%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	1.0005	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.000	pass
Span	1.001	pass
Cell B Freq.	82.1 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.71 lpm	pass
Cell A Tmp.	31.7 C	pass
Cell A Pressure	686 mmHg	pass
Cell A Noise	0.7 ppb	pass
Cell A Freq.	87.0 kHz	pass
Cell A Flow	0.70 Lpm	pass
Battery Backup	N/A	pass
Zero Voltage	0.0006	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PED108-Eric Hebert-11/03/2014						
1	11/3/2014	DAS	Campbell	000406	CR3000	2511
2	11/3/2014	Ozone	ThermoElectron Inc	000732	49i A1NAA	1105347319
3	11/3/2014	Ozone Standard	ThermoElectron Inc	000215	49i A3NAA	0622717856
4	11/3/2014	Sample Tower	Aluma Tower	000788	B	unknown
5	11/3/2014	Zero air pump	Werther International	06883	C 70/4	000815257

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347319	PED108	Eric Hebert	11/03/2014	Ozone	000732

Slope:	0.98841	**Slope:**	0.00000
Intercept	-0.05787	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.2%	1.3%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.22	0.42	0.30	ppb	
primary	2	26.27	26.29	25.96	ppb	-1.26%
primary	3	49.36	49.22	48.60	ppb	-1.26%
primary	4	83.10	82.72	81.80	ppb	-1.11%
primary	5	115.48	114.87	113.40	ppb	-1.28%

Sensor Component	Condition	Status
Cell B Noise	2.0 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.10	pass
Span	0.995	pass
Cell B Freq.	105.4 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.72 lpm	pass
Cell A Tmp.	29.2 C	pass
Cell A Pressure	731 mmHg	pass
Cell A Noise	1.3 ppb	pass
Cell A Freq.	94.0 kHz	pass
Cell A Flow	0.72 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
BWR139-Eric Hebert-11/13/2014						
1	11/13/2014	DAS	Campbell	000431	CR3000	2536
2	11/13/2014	Ozone	ThermoElectron Inc	000731	49i A1NAA	1105347309
3	11/13/2014	Ozone Standard	ThermoElectron Inc	000697	49i A3NAA	1030244814
4	11/13/2014	Sample Tower	Aluma Tower	missing	B	none
5	11/13/2014	Zero air pump	Werther International	06877	C 70/4	000815258

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347309	BWR139	Eric Hebert	11/13/2014	Ozone	000731

Slope:	1.00631	**Slope:**	0.00000
Intercept	-0.08494	**Intercept**	0.00000
CorrCoff	0.99997	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.6%	1.2%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.18	0.38	0.08	ppb	
primary	2	26.95	26.96	27.07	ppb	0.41%
primary	3	48.90	48.76	49.04	ppb	0.57%
primary	4	76.67	76.34	77.23	ppb	1.17%
primary	5	115.23	114.62	114.90	ppb	0.24%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.000	pass
Span	1.023	pass
Cell B Freq.	87.0 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.70 lpm	pass
Cell A Tmp.	30.8 C	pass
Cell A Pressure	741 mmHg	pass
Cell A Noise	0.7 ppb	pass
Cell A Freq.	111.3 kHz	pass
Cell A Flow	0.71 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
WSP144-Eric Hebert-11/14/2014						
1	11/14/2014	DAS	Campbell	000430	CR3000	2525
2	11/14/2014	Ozone	ThermoElectron Inc	000734	49i A1NAA	1105347317
3	11/14/2014	Ozone Standard	ThermoElectron Inc	000543	49i A3NAA	0929938240
4	11/14/2014	Sample Tower	Aluma Tower	000126	B	none
5	11/14/2014	UPS	APC	06267	RS900	unknown
6	11/14/2014	Zero air pump	Werther International	06880	C 70/4	000814273

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347317	WSP144	Eric Hebert	11/14/2014	Ozone	000734

Slope:	0.99369	**Slope:**	0.00000
Intercept	0.05217	**Intercept**	0.00000
CorrCoff	0.99998	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.9%	2.0%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.19	0.39	0.78	ppb	
primary	2	27.14	27.15	26.61	ppb	-1.99%
primary	3	49.35	49.21	48.89	ppb	-0.65%
primary	4	77.55	77.21	76.83	ppb	-0.49%
primary	5	116.20	115.59	115.00	ppb	-0.51%

Sensor Component	Condition	Status
Cell B Noise	1.3 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.40	pass
Span	0.997	pass
Cell B Freq.	100.5 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.69 lpm	pass
Cell A Tmp.	31.7 C	pass
Cell A Pressure	732 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	99.6 kHz	pass
Cell A Flow	0.73 lpm	pass
Battery Backup	Functioning	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
VPI120-Eric Hebert-11/17/2014						
1	11/17/2014	DAS	Campbell	000402	CR3000	2514
2	11/17/2014	Ozone	ThermoElectron Inc	000730	49i A1NAA	1105347325
3	11/17/2014	Ozone Standard	ThermoElectron Inc	000443	49i A3NAA	CM08200019
4	11/17/2014	Sample Tower	Aluma Tower	000631	B	none
5	11/17/2014	Zero air pump	Werther International	06879	C 70/4	000814275

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347325	VPI120	Eric Hebert	11/17/2014	Ozone	000730

Slope:	0.99285	**Slope:**	0.00000
Intercept	0.42120	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.5%	1.2%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.25	0.45	0.77	ppb	
primary	2	26.32	26.34	26.66	ppb	1.21%
primary	3	49.24	49.10	49.21	ppb	0.22%
primary	4	77.17	76.83	76.75	ppb	-0.10%
primary	5	103.31	102.79	102.40	ppb	-0.38%

Sensor Component	Condition	Status
Cell B Noise	0.6 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Moderately clean	pass
Line Loss	Not tested	pass
Offset	-0.70	pass
Span	1.004	pass
Cell B Freq.	92.7 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.69 lpm	pass
Cell A Tmp.	33.4 C	pass
Cell A Pressure	652 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	103.2 kHz	pass
Cell A Flow	0.69 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
SHN418-Eric Hebert-11/18/2014						
1	11/18/2014	DAS	Environmental Sys Corp	90603	8816	2272
2	11/18/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	0903334535
3	11/18/2014	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460009
4	11/18/2014	Sample Tower	Aluma Tower	923307	B	none
5	11/18/2014	Zero air pump	Werther International	none	C 70/4	000855578

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	0903334535	SHN418	Eric Hebert	11/18/2014	Ozone	none

Slope:	1.00083	**Slope:**	0.00000
Intercept	1.29253	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.6%	5.0%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.27	0.47	1.83	ppb	
primary	2	26.89	26.91	28.26	ppb	5.02%
primary	3	50.43	50.28	51.44	ppb	2.31%
primary	4	79.75	79.39	80.74	ppb	1.70%
primary	5	105.68	105.14	106.60	ppb	1.39%

Sensor Component	Condition	Status
Cell B Noise	1.2 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	0.9998	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-1.5	pass
Span	1.012	pass
Cell B Freq.	92.5 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.66 lpm	pass
Cell A Tmp.	31.6 C	pass
Cell A Pressure	655 mmHg	pass
Cell A Noise	0.9 ppb	pass
Cell A Freq.	88.6 kHz	pass
Cell A Flow	0.65 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	0.0002	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
PAR107-Eric Hebert-11/19/2014						
1	11/19/2014	DAS	Campbell	000333	CR3000	2112
2	11/19/2014	Ozone	ThermoElectron Inc	000685	49i A1NAA	1030244789
3	11/19/2014	Ozone Standard	ThermoElectron Inc	000436	49i A3NAA	CM08200012
4	11/19/2014	Sample Tower	Aluma Tower	03449	A	none
5	11/19/2014	Zero air pump	Werther International	06932	C 70/4	000829174

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244789	PAR107	Eric Hebert	11/19/2014	Ozone	000685

Slope:	0.99033	**Slope:**	0.00000
Intercept	-0.42713	**Intercept**	0.00000
CorrCoff	0.99999	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
1.6%	1.8%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.30	0.50	-0.19	ppb	
primary	2	26.02	26.04	25.57	ppb	-1.80%
primary	3	49.43	49.29	48.53	ppb	-1.54%
primary	4	86.50	86.10	84.90	ppb	-1.39%
primary	5	114.18	113.58	111.90	ppb	-1.48%

Sensor Component	Condition	Status
Cell B Noise	1.1 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.50	pass
Span	0.997	pass
Cell B Freq.	90.1 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.65 lpm	pass
Cell A Tmp.	31.6 C	pass
Cell A Pressure	687 mmHg	pass
Cell A Noise	1.3 ppb	pass
Cell A Freq.	92.2 kHz	pass
Cell A Flow	0.64 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CDR119-Eric Hebert-11/21/2014						
1	11/21/2014	DAS	Campbell	000332	CR3000	2111
2	11/21/2014	Ozone	ThermoElectron Inc	000623	49i A1NAA	1009241790
3	11/21/2014	Ozone Standard	ThermoElectron Inc	000365	49i A3NAA	0726124688
4	11/21/2014	Sample Tower	Aluma Tower	928376	B	AT-51060-56
5	11/21/2014	Zero air pump	Werther International	06903	C 70/4	000899159

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1009241790	CDR119	Eric Hebert	11/21/2014	Ozone	000623

Slope:	0.98684	**Slope:**	0.00000
Intercept	-0.57024	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49CPS-70008-364	**Tfer Desc.**	Ozone primary stan
Tfer ID	01110		
Slope	1.00707	**Intercept**	-0.21032
Cert Date	1/8/2014	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.4%	3.5%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.24	0.44	-0.10	ppb	
primary	2	27.17	27.18	26.24	ppb	-3.46%
primary	3	50.65	50.50	49.20	ppb	-2.57%
primary	4	87.79	87.38	85.70	ppb	-1.92%
primary	5	117.63	117.01	114.90	ppb	-1.80%

Sensor Component	Condition	Status
Cell B Noise	1.7 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Dirty	Fail
Line Loss	Not tested	pass
Offset	0.30	pass
Span	0.993	pass
Cell B Freq.	93.6 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.77 lpm	pass
Cell A Tmp.	28.4 C	pass
Cell A Pressure	728 mmHg	pass
Cell A Noise	1.7 ppb	pass
Cell A Freq.	95.4 kHz	pass
Cell A Flow	0.72 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
CND125-Sandy Grenville-11/24/2014						
1	11/24/2014	DAS	Campbell	000499	CR3000	3816
2	11/24/2014	Ozone	ThermoElectron Inc	000692	49i A1NAA	1030244803
3	11/24/2014	Ozone Standard	ThermoElectron Inc	000376	49i A3NAA	0726124693
4	11/24/2014	Zero air pump	Werther International	06868	C 70/4	000814284

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030244803	CND125	Sandy Grenville	11/24/2014	Ozone	000692

Slope:	0.99966	**Slope:**	0.00000
Intercept	-0.05026	**Intercept**	0.00000
CorrCoff	1.00000	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
0.1%	0.2%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.07	0.18	0.06	ppb	
primary	2	29.98	29.95	29.94	ppb	-0.03%
primary	3	50.84	50.72	50.75	ppb	0.06%
primary	4	81.21	80.95	80.80	ppb	-0.19%
primary	5	100.64	100.29	100.20	ppb	-0.09%

Sensor Component	Condition	Status
Cell B Noise	0.7 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	-0.20	pass
Span	1.003	pass
Cell B Freq.	89.7 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.72 lpm	pass
Cell A Tmp.	34.3 C	pass
Cell A Pressure	718 mmHg	pass
Cell A Noise	0.7 ppb	pass
Cell A Freq.	92.5 kHz	pass
Cell A Flow	0.72 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

EEMS Spot Report

Data Compiled: 4/9/2015 9:31:09 PM

SiteVisitDate	Site	Technician
11/25/2014	BFT142	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.03135	unitless	**P**
2	Ozone Intercept	P	0	5	4	-0.65714	ppb	**P**
3	Ozone correlation	P	0	0.995	4	0.99993	unitless	**P**
4	Ozone % difference avg	P	7	10	4	2.2	%	**P**
5	Ozone % difference max	P	7	10	4	2.9	%	**P**

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1045347307	BFT142	Sandy Grenville	11/25/2014	Ozone	000738

Slope:	1.03135	**Slope:**	0.00000
Intercept	-0.65714	**Intercept**	0.00000
CorrCoff	0.99993	**CorrCoff**	0.00000

Mfg	ThermoElectron Inc	**Parameter**	ozone
Serial Number	49C-73104-373	**Tfer Desc.**	Ozone transfer
Tfer ID	01100		
Slope	1.00458	**Intercept**	-0.11484
Cert Date	12/10/2013	**CorrCoff**	1.00000

DAS 1:		DAS 2:	
A Avg % Diff:	**A Max % Di**	**A Avg %Dif**	**A Max % Di**
2.2%	2.9%		

UseDescription:	ConcGroup:	Tfer Raw:	Tfer Corr:	Site:	Site Unit:	PctDifference:
primary	1	0.06	0.17	-0.83	ppb	
primary	2	30.91	30.88	31.25	ppb	1.20%
primary	3	50.54	50.42	51.76	ppb	2.66%
primary	4	80.90	80.64	83.00	ppb	2.93%
primary	5	101.26	100.91	102.80	ppb	1.87%

Sensor Component	Condition	Status
Cell B Noise	0.5 ppb	pass
Cell B Tmp.		pass
Fullscale Voltage	N/A	pass
Inlet Filter Condition	Clean	pass
Line Loss	Not tested	pass
Offset	0.000	pass
Span	1.039	pass
Cell B Freq.	87.7 kHz	pass
System Memo		pass
Sample Train	Good	pass
Cell B Pressure		pass
Cell B Flow	0.70 lpm	pass
Cell A Tmp.	34.2 C	pass
Cell A Pressure	743 mmHg	pass
Cell A Noise	0.6 ppb	pass
Cell A Freq.	89.0 kHz	pass
Cell A Flow	0.76 lpm	pass
Battery Backup	N/A	pass
Zero Voltage	N/A	pass

Site Inventory by Site Visit

	Site Visit Date	*Parameter*	*Mfg*	*Owner ID*	*Model Number*	*Serial Number*
BFT142-Sandy Grenville-11/25/2014						
1	11/25/2014	DAS	Campbell	000498	CR3000	3815
2	11/25/2014	Ozone	ThermoElectron Inc	000738	49i A1NAA	1045347307
3	11/25/2014	Ozone Standard	ThermoElectron Inc	000453	49i A3NAA	CM08200027
4	11/25/2014	Sample Tower	Aluma Tower	000632	B	unknown
5	11/25/2014	Zero air pump	Werther International	06897	C 70/4	000821893