2020 – 3rd Quarter Report

Support for Conducting Systems & Performance Audits of Clean Air Status and Trends Network (CASTNET) Sites and National Atmospheric Deposition Program (NADP) Monitoring Stations - II

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List of Acronyms and Abbreviations

% diff percent difference

A/D analog to digital converter
ARS Air Resource Specialists, Inc.

ASTM American Society for Testing and Materials

BLM-WSO Bureau of Land Management – Wyoming State Office

CASTNET Clean Air Status and Trends Network
CMAQ Community Multiscale Air Quality

DAS data acquisition system

deg degree

DVM digital voltmeter

ECCC Environment and Climate Change Canada

EEMS Environmental, Engineering & Measurement Services, Inc.

EPA U.S. Environmental Protection Agency
ESC Environmental Systems Corporation

FSA Field Systems Audit
FSAD Field Site Audit Database
GPS geographical positioning system

lpm liters per minute
MLM Multilayer Model

MN PCA Minnesota Pollution Control Agency

m/s meters per second

mv millivolt

NIST National Institute of Standards and Technology
NOAA National Oceanic and Atmospheric Administration

NPS National Park Service

NYSERDA New York State Energy Research and Development Authority

PE Performance Evaluation

QAPP Quality Assurance Project Plan

SCDHEC South Carolina Department of Health and Environmental Control

SOP standard operating procedure

TDEP Total Deposition

TEI Thermo Environmental Instruments

USDA-FS United States Department of Agriculture – Forest Service

USFS United States Forest Service

USFWS United States Fish and Wildlife Service
USGS United States Geological Survey
USNO United States Naval Observatory

VDC volts direct current

WDEQ Wyoming Department of Environmental Quality
WDNR Wisconsin Department of Natural Resources

WRR World Radiation Reference

WSLH Wisconsin State Laboratory of Hygiene

1.0 CASTNET Quarterly Report

1.1 Introduction

The Clean Air Status and Trends Network (CASTNET) is a national air monitoring program established in 1988 by the US EPA. Nearly all CASTNET sites measures weekly concentrations of acidic gases and particles to provide accountability for EPA's emission reduction programs. Most sites measure ground-level ozone as well as supplemental measurements such as meteorology and/or other trace gas concentrations.

Ambient concentrations 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 critical loads research.

Historically, CASTNET pollutant flux measurements have been reported as the aggregate product of weekly measured concentrations and model-estimated deposition velocities. The Multi-layer Model (MLM) was used to derive deposition velocity estimates from on-site meteorological parameters, land use types, and site characteristics. In 2011, EPA discontinued meteorological measurements at most EPA-sponsored CASTNET sites.

Currently, CASTNET pollutant flux estimates are calculated as the aggregate product of weekly measured chemical concentrations and gridded model-estimated deposition velocities. Total deposition is assessed using the NADP's Total Deposition Hybrid Method (TDEP; EPA, 2015c; Schwede and Lear, 2014), which combines data from established ambient monitoring networks and chemical-transport models. To estimate dry deposition, ambient measurement data from CASTNET and other networks were merged with dry deposition rates and flux output from the Community Multiscale Air Quality (CMAQ) modeling system.

Since 2011 nearly all CASTNET ozone monitors have adhered to the requirements for State or Local Air Monitoring Stations (SLAMS) as specified by the EPA in 40 CFR Part 58. As such, the ozone data collected must meet the requirements in 40 CFR Part 58 Appendix A, which defines the quality assurance (QA) requirements for gaseous pollutant ambient air monitoring. The audits performed by EEMS under this contract fulfilled the requirement for annual performance evaluation audits of pollutant monitors in the network. The QA requirements can be found at: https://www.epa.gov/amtic/regulations-guidance-and-monitoring-plans

Currently 87 sites at 85 distinct locations measure ground-level ozone concentrations. Annual performance evaluation (PE), ozone audit data are submitted to the Air Quality System (AQS) database.

As of September 2020, the network is comprised of 97 active rural sampling sites across the United States and Canada, cooperatively operated by the Environmental Protection Agency (EPA), the National Park Service (NPS), Bureau of Land Management – Wyoming State Office (BLM-WSO) and several independent partners. Wood Environment and Infrastructure Solutions (Wood) is responsible for operating the EPA sponsored sites, and Air Resource Specialists, Inc. (ARS) is responsible for operating the NPS and BLM-WSO 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 reported 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.

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	$\leq \pm 10.0\%$ 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

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Shelter Temperature	Accuracy	Comparison to station temperature sensor	≤ ± 2.0° 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	$\leq \pm 0.5$ mps below 5.0 mps input; $\leq \pm 5.0\%$ 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	\leq ± 5.0% of designated rate
Ozone	Slope	Linear regression of multi-	$0.9000 \le m \le 1.1000$
Ozone	Intercept	point test gas concentration as measured with a certified	-5.0 ppb ≤ b ≤ 5.0 ppb
Ozone	Correlation Coefficient	measured with a certified transfer standard	0.9950 ≤ r
Ozone	Percent Difference	Comparison with Level 2 standard concentration	$\leq \pm 15.1\%$ of test gas concentration and $\leq \pm 0.003$ ppm actual difference
DAS	Accuracy	Comparison with certified standard	≤± 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, at least annually.

Field site systems audits (FSA) 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 Third Quarter 2020

This report consists of the systems and performance, and other audit results from the CASTNET sites visited during the third quarter (July through September) of 2020. The site locations, sponsor, visit dates, and parameters audited are included in Table 2. The number of sites visited during this period were fewer than scheduled due to the impact of the COVID-19 pandemic.

Table 2. CASTNET Site Audit Visits

Site ID	Sponsor	Date	MET	FSA	O3 PE	NOy	FLOW
CRM435	NPS	7/6/2020		1	1		
NPT006	EPA	7/8/2020		1	1		1
HWF187	EPA	7/13/2020		1	1	1	1
CNT169	EPA	7/15/2020			1		
CTH110	EPA	7/20/2020		1	1		1
MKG113	EPA	7/21/2020		1	1		1
KEF112	EPA	7/22/2020		1	1		1
PSU106	EPA	7/27/2020		1	1		1
ARE128	EPA	7/28/2020		1	1		1
WSP144	EPA	7/30/2020			1		
PND165	EPA	8/8/2020			1	1	
GRT434	NPS	8/10/2020		1	1		

Site ID	Sponsor	Date	MET	FSA	O3 PE	NOy	FLOW
YEL408	NPS	8/11/2020			1		
GLR468	NPS	8/13/2020			1		
MAC426	NPS	8/19/2020			1	1	
CHE185	EPA	8/21/2020			1		
CAD150	EPA	8/22/2020			1		
CVL151	EPA	8/23/2020			1		
CHC432	NPS	8/24/2020			1		
ZIO433	NPS	8/26/2020			1		
CAN407	NPS	8/27/2020		1	1		1
DIN431	NPS	8/28/2020		1	1		1
DCP114	EPA	8/29/2020			1		
BEL116	EPA	9/21/2020	1	1	1		1
PET427	NPS	9/24/2020		1	1		1
WST109	EPA	9/25/2020		1	1		1
GRC474	NPS	9/25/2020		1	1		1
ASH135	EPA	9/27/2020		1	1		1
ABT147	EPA	9/28/2020		1	1		1
CHA467	NPS	9/28/2020		1	1		1
RED006	EPA	9/29/2020		1			1
CAVE	NPS	9/29/2020		1	1		
VOY413	NPS	9/30/2020			1		

1.4 Audit Results

The observations and results of the systems and performance audits are included in Appendix A, *CASTNET Audit Report Forms* by site, arranged by audit date. Photographs of site conditions are included within each system report where necessary. Copies of the spot reports that were sent following the audit of each site are included as Appendix B, *CASTNET Site Spot Report Forms*. The Ozone PE results and observations are included in Appendix C, *CASTNET Ozone Performance Evaluation Forms*.

Results of the PE audits of the gaseous pollutant monitors other than ozone, were submitted immediately following the PE and are not included in this report. All TTP PE results of gaseous pollutant monitors are uploaded to AQS and are available there. All audit data and reports are available from the EPA CASTNET website: https://java.epa.gov/castnet/reportPage.do

2.0 NADP Quarterly Report

2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates two 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 precipitation event-based Atmospheric Integrated Research Monitoring Network (AIRMON) began operation in 1992, and as of July 2019 is no longer in operation. The Mercury Deposition Network (MDN) measures total mercury in precipitation samples from approximately 90 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 networks of the NADP are sponsored by several federal, state, and local agencies as well as private organizations.

The NADP Program Office (PO) operates and administers the two precipitation chemistry networks (NTN and MDN), two atmospheric concentration networks (AMNet and AMoN), and two analytical laboratories (CAL and HAL), from the Wisconsin State Lab of Hygiene (WSLH) at the University of Wisconsin in Madison. The network equipment depot (NED) is also located at the WSLH.

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 NADP Sites Visited Third Quarter 2020

This report presents the NADP sites surveyed during the third quarter (July through September) of 2020. The station locations, sponsors, network. and dates of the surveys are presented in Table 3.

The number of sites visited during this period were fewer than scheduled due to the impact of the COVID-19 pandemic.

Table 3. NADP Site Survey Visits

Site ID	Sponsor	Date	NTN	MDN	AMoN
ID03	NPS	7/6/2020	1		1
ID07	EPA	7/8/2020			1
ID11	USGS	7/9/2020	1		
NY20	NYSERDA	7/13/2020			1
FL05	US FWS	7/14/2020	1	1	
WY95	EPA	7/15/2020			1
CA88	USGS	7/20/2020	1		
NY67	EPA	7/20/2020			1
CA66	NPS	7/21/2020	1		
PA56	EPA	7/21/2020			1
PA29	USDA-FS	7/22/2020	1		1
CA45	USGS	7/23/2020	1		
CA76	USGS	7/24/2020	1		
PA42	PSU	7/24/2020	1		
OR10	USDA-FS	7/27/2020	1		
PA96	EPA	7/27/2020			1
OR97	EPA	7/28/2020	1		
PA00	EPA	7/28/2020	1		1
PA13	NPS	7/28/2020	1	1	
OR18	USGS	7/29/2020	1		
NJ98	EPA	7/30/2020	-		1
WY06	EPA	8/8/2020			1

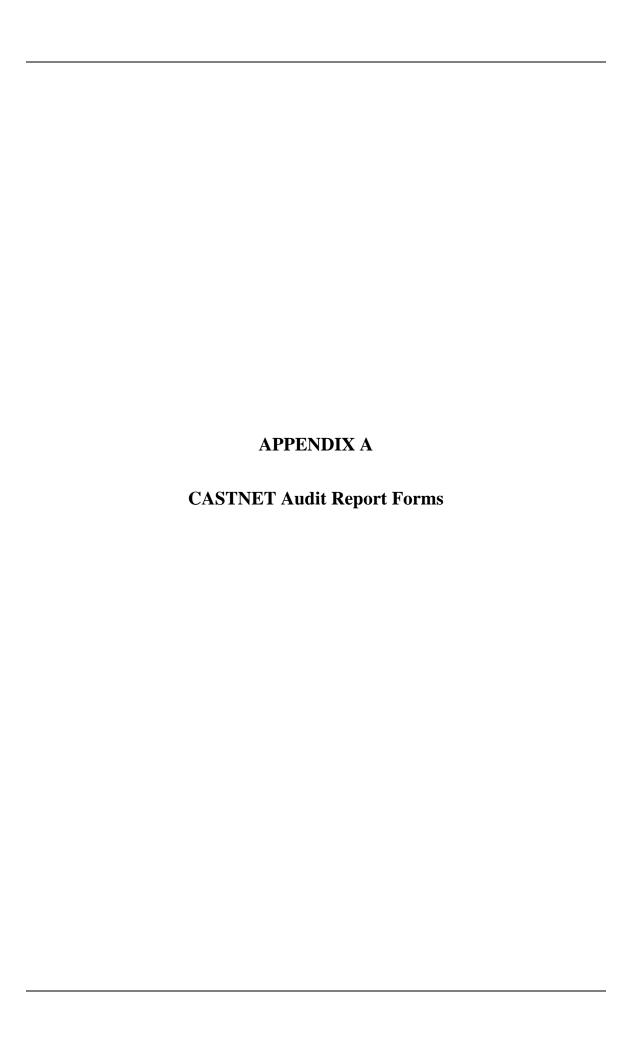
Site ID	Sponsor	Date	NTN	MDN	AMoN
WY94	NPS	8/10/2020			1
WY08	NPS / WY DEQ	8/11/2020	1	1	
MT05	NPS	8/13/2020		1	
KY10	NPS	8/19/2020	1	1	
KY22	USGS	8/21/2020	1		
OK99	EPA	8/21/2020			1
AR03	EPA	8/22/2020			1
MS30	USDA-FS	8/23/2020			1
KY35	USGS	8/24/2020	1		
KY03	USGS	8/25/2020	1		1
KY19	USGS	8/25/2020	1		
UT09	NPS	8/27/2020			1
OH54	EPA	8/29/2020			1
LA12	USGS	9/2/2020	1		
MS12	NOAA	9/3/2020	1	1	
MD99	MD DNR	9/22/2020			1
NH02	EPA	9/25/2020			1
ME04	EPA / Penobscot Nat	9/26/2020	1	1	
ME93	EPA	9/27/2020			1
MN23	USGS / MN PCA	9/27/2020	1	1	
AZ98	EPA	9/28/2020			1
CT15	EPA	9/28/2020			1
MN02	EPA	9/29/2020			1
MN32	NPS	9/30/2020	1		

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 the EPA OneDrive account where the NADP PO and the U.S. EPA POs can access them and download them as needed.

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



Site Inventory by Site Visit

Site V	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number	
CRM-	CRM435-Martin Valvur-07/06/2020						
1	7/6/2020	Computer	Gateway	none	Probook	5CD1520H6N	
2	7/6/2020	DAS	Environmental Sys Corp	none	8816	3504	
3	7/6/2020	Modem	Sierra wireless	none	Airlink	unknown	
4	7/6/2020	Ozone	ThermoElectron Inc	none	49iQ-ABBN	1183030010	
5	7/6/2020	Ozone Standard	ThermoElectron Inc	90605	49C	49C-62025-333	
6	7/6/2020	Sample Tower	Aluma Tower	missing	В	none	
7	7/6/2020	siting criteria	Siting Criteria	none	none	None	
8	7/6/2020	Zero air pump	Werther International	none	C 70/4	000847661	

Ozone Data Form

Mfg		Serial Numb	er Tag S	Site		Technician S		Site Visit Date	Parame	eter	Owner ID
ThermoElec	etron Inc	1183030010		CRM435		Martin Valvur		07/06/2020	Ozone		none
Slope: Intercept CorrCoff:	(oe: rcept rCoff:	0.0	00000	Serial Number		ThermoElectror			ozone c. Ozone primary stan
							Tfer ID	01110			
DAS 1:			AS 2:				Slope	1.002	60 Inter	rcept	0.03590
		Iax % Dif A	Avg %I	Diff A N	Iax % D	if	Cert Date	1/14/20	20 Cori	·Coff	0.99999
0.	0%	0.0%					CCIT Date	1	Corr	Con	
UseDescr	iption	ConcGroup	Tfer	Raw	Tfer C	Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	ry	1	0.1	13	0.09	9	0.38	ppb			0.29
prima	ry	2	14.	.48	14.4	0	13.83	ppb			-0.57
prima	ry	3	37.	.67	37.5	3	36.49	ppb		-2.81	
prima	ry	4	66.	.91	66.7	0	64.92	ppb		-2.7	
prima	ry	5	118	3.35	118.0	00	114.90	ppb		-2.66	
Sensor C	ompone	nt Audit Press	ure		Со	nditi	617.7 mmHg		Status	pass	
Sensor C	ompone	nt Sample Tra	in		Со	nditi	Good		Status	pass	
Sensor C	ompone	nt Minimum di	stance fr	om road r	net Co	nditi	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	Condition		Co	nditi	On Clean		Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstr	ucted rule	Co	nditi	Good		Status	pass	
Sensor C	ompone	nt Tree dewlin	e >10m (or below i	nlet Co	Condition True			Status	pass	
Sensor C	ompone	nt Offset			Со	Condition 1.7			Status	pass	
Sensor C	ompone	nt Span			Co	Condition 0.988			Status	pass	
Sensor C	ompone	nt Zero Voltag	е		Co	nditi	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	oltage		Со	nditi	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq			Со	nditi	on 90.5 kHz		Status	pass	
Sensor C	ompone	nt Cell A Nois	е		Co	nditi	0.6 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow			Co	nditi	1.31 lpm		Status	pass	
Sensor C	ompone	nt Cell A Pres	sure		Со	nditi	589.7 mmHg		Status	pass	
Sensor C	Sensor Component Cell A Tmp.				28.3 C		Status				
Sensor C	Sensor Component Cell B Freq.				90.4 kHz		Status	pass			
Sensor C	Sensor Component Cell B Noise				0.8 ppb		Status				
Sensor C	Sensor Component Cell B Flow				N/A		Status				
Sensor C	ompone	nt Cell B Pres	sure				ndition 589.3 mmHg			pass	
Sensor C	Sensor Component Line Loss			Со	nditi	Not tested		Status	pass		
Sensor C	ompone	nt System Me	mo		Co	nditi	on		Status	pass	

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition 50 m	Status	Fail
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition 60 m	Status	Fail
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition 10 m	Status	Fail
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: ShelterCleanNotes

The station monitor is located in the electrical room inside the visitors center.

2 Parameter: PollAnalyzerCom

The station does not operate a dry deposition filter system.

3 Parameter: MetSensorComme

The combination RH/temperature sensor could not be submerged for audit. It is mounted only two feet above the building roof.

F-02058-1500-S1-rev002 **Field Systems Data Form** Site Visit Date 07/06/2020 CRM435 Site ID Technician Martin Valvur **USGS Map NPS** Site Sponsor (agency) **Map Scale NPS Operating Group Map Date** 160230101 AQS# **Meteorological Type Air Pollutant Analyzer** Ozone **QAPP** Latitude **Deposition Measurement QAPP** Longitude **Land Use QAPP Elevation Meters Terrain QAPP Declination** Conforms to MLM **QAPP Declination Date** 43.462158 **Site Telephone Audit Latitude** -113.561718 Site Address 1 **Audit Longitude** 1803 Site Address 2 **Audit Elevation** Butte 12 **County Audit Declination** Arco, ID City, State **Present** Fire Extinguisher 83213 **Zip Code V** Mountain First Aid Kit **Time Zone Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # Primary Op. E-mail **Climbing Belt Backup Operator Security Fence ~** Backup Op. Phone # **Secure Shelter** Stable Entry Steps Backup Op. E-mail Shelter Working Room Model **Shelter Size** □ Notes The station monitor is located in the electrical room inside the visitors center. **Shelter Clean** □ Notes Site OK

Driving Directions

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S3-rev002
Site	e ID	CRM435	Technician	Martin Valvur		Site Visit Date 07/06/2020
1		d speed and direction fluenced by obstruction		as to avoid	✓	N/A
2	(i.e. wind horizont	d sensors mounted so d sensors should be m tally extended boom >	ounted atop the 2x the max diar	tower or on a	✓	N/A
		to the prevailing wind				
3	Are the	tower and sensors plu	mb?		✓	N/A
4		temperature shields p diated heat sources su				No, two feet above roof
5	condition surface	perature and RH sens ns? (i.e. ground below and not steeply sloped g water should be avoi	sensors should. Ridges, hollow	be natural		No, two feet above roof
6		' lar radiation sensor p	,		V	N/A
v	is the so	ar radiation sensor p	iumo.			
7	Is it site	d to avoid shading, or	any artificial o	r reflected light?	V	N/A
8	Is the ra	in gauge plumb?			✓	N/A
9	Is it sited towers,	d to avoid sheltering e	ffects from buil	dings, trees,	✓	N/A
10	Is the su facing n	rface wetness sensor s orth?	sited with the gr	rid surface	✓	N/A
11	Is it inc	lined approximately 3	0 degrees?		✓	N/A
		additional explanation				ry) regarding conditions listed above, or any other features,

The combination RH/temperature sensor could not be submerged for audit. It is mounted only two feet above the building roof.

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	CRM435 Technician Martin Valvur		Site Visit Date 07/06/2020
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?	✓	
	ride any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:		regarding conditions listed above, or any other features,

Field Systems Data Form F-02058-1500-S5-rev002 CRM435 Technician | Martin Valvur Site Visit Date 07/06/2020 Site ID Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **~** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? **~** Are the sample inlets 3 - 15 meters above the ground? **~** Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance **~** Do the analyzers and equipment appear to be in good condition and well maintained? **V** Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 8 meters Describe dry dep sample tube. N/A At inlet only Are in-line filters used in the ozone sample line? (if ves indicate location) **~** Are sample lines clean, free of kinks, moisture, and obstructions? **V** Is the zero air supply desiccant unsaturated? No Are there moisture traps in the sample lines? ✓ N/A 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:

The station does not operate a dry deposition filter system.

Field Systems Data Form F-02058-1500-S6-rev002 Site ID CRM435 Technician Martin Valvur Site Visit Date 07/06/2020 DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **✓** Are all the components of the DAS operational? (printers, modem, backup, etc) **✓** Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **~** grounded? **✓** Does the instrument shelter have a stable power source? **✓** Is the instrument shelter temperature controlled? Grounded Stable Is the met tower stable and grounded? **V ✓** Is the sample tower stable and grounded? **V V** 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 CRM435 Technician | Martin Valvur Site Visit Date 07/06/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A **✓** Wind speed sensor **Data logger V V** Wind direction sensor Data logger **V** П **V Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump Filter flow pump **V Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge Lightning protection device \checkmark **V Shelter heater** Ozone analyzer **V V** Filter pack flow controller Shelter air conditioner **V** Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log V V** Dataview **SSRF** N/A **V V Site Ops Manual** Electronic copy **HASP Field Ops Manual Calibration Reports V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ N/A **V** Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document **✓** N/A sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current?

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 CRM435 Site Visit Date 07/06/2020 Site ID Technician Martin Valvur Site operation procedures N/A Has the site operator attended a formal CASTNET training ✓ course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET N/A ~ training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** N/A **Multipoint Calibrations V V** N/A **Visual Inspections ✓ V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test ✓ V** N/A **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant QC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Every 2 weeks Manual Zero/Span Tests **V** Daily **Automatic Precision Level Tests V Manual Precision Level Test V V Analyzer Diagnostics Tests** Weekly **~** Every 2 weeks **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **V V 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?

	Unknown
✓	
✓	Dataview

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-rev0				
Site ID CRM435 Tecl	hnician Martin Valvur		Site Visit Date 07/06/2020				
Site operation procedures							
1 Is the filter pack being changed every	y Tuesday as scheduled?	<u> </u>	N/A				
2 Are the Site Status Report Forms bei correctly?	ng completed and filed	✓	N/A				
3 Are data downloads and backups bei scheduled?	ng performed as	V	N/A				
4 Are general observations being made	e and recorded? How?	✓	N/A				
5 Are site supplies on-hand and replent fashion?	ished in a timely	✓					
6 Are sample flow rates recorded? How	v?	✓	N/A				
7 Are samples sent to the lab on a regularishion?	lar schedule in a timely	✓	N/A				
8 Are filters protected from contamina and shipping? How?	tion during handling	✓	N/A				
9 Are the site conditions reported regular operations manager or staff?	larly to the field	V	N/A				
QC Check Performed	Frequency		Compliant				
Multi-point MFC Calibrations	✓ N/A		✓				
Flow System Leak Checks	✓ N/A		✓				
Filter Pack Inspection	✓ N/A		✓				
Flow Rate Setting Checks	✓ N/A		✓				
Visual Check of Flow Rate Rotometer	✓ N/A		✓				
In-line Filter Inspection/Replacement	✓ N/A		✓				
Sample Line Check for Dirt/Water	✓ N/A		✓				
Provide any additional explanation (photogratural or man-made, that may affect the i		sary)	regarding conditions listed above, or any other features,				

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID CRM435 Technician Martin Valvur Site Visit Date 07/06/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Gateway	Probook	5CD1520H6N	none
DAS	Environmental Sys Corp	8816	3504	none
Modem	Sierra wireless	Airlink	unknown	none
Ozone	ThermoElectron Inc	49iQ-ABBN	1183030010	none
Ozone Standard	ThermoElectron Inc	49C	49C-62025-333	90605
Sample Tower	Aluma Tower	В	none	missing
siting criteria	Siting Criteria	none	None	none
Zero air pump	Werther International	C 70/4	000847661	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number		
NP7	NPT006-Martin Valvur-07/08/2020							
1	7/8/2020	Computer	Dell	07069	Inspiron 15	263MC12		
2	7/8/2020	DAS	Campbell	000353	CR3000	2131		
3	7/8/2020	elevation	Elevation	none	none	none		
4	7/8/2020	Filter pack flow pump	Permotec	none	BL30EB	432201630446		
5	7/8/2020	Flow Rate	Apex	00854	AXMC105LPMDPCV	illegible		
6	7/8/2020	Infrastructure	Infrastructure	none	none	none		
7	7/8/2020	Modem	Sierra wireless	06990	GX440	Unknown		
8	7/8/2020	Ozone	ThermoElectron Inc	000612	49i A1NAA	1009241779		
9	7/8/2020	Ozone Standard	ThermoElectron Inc	000448	49i A3NAA	CM08200024		
10	7/8/2020	Sample Tower	Aluma Tower	000839	AT516D1	AT214153Z12		
11	7/8/2020	Shelter Temperature	Campbell	none	107-L	none		
12	7/8/2020	siting criteria	Siting Criteria	none	none	None		
13	7/8/2020	Temperature	RM Young	04681	41342VC	6695		
14	7/8/2020	Zero air pump	Werther International	000626	PC 70/4	000815300		

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter Martin Valvur 07/08/2020 00854 Apex NPT006 Flow Rate illegible Mfg BIOS Parameter Flow Rate 122974 Tfer Desc. BIOS 220-H **Serial Number** 01416 Tfer ID 0.00000 **Slope** 1.00000 **Intercept** 5/6/2020 1.00000 CorrCoff **Cert Date** 0 **DAS 2: DAS 1: Cal Factor Zero** 1 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 1.45% 1.63% 3 **Rotometer Reading:** Test type Input l/m Input Corr OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. MfcDisp. primary pump off 0.000 0.0000.00 0.000 -0.011/m1/mleak check 0.01 0.000 -0.01 1/m0.000 0.000 1/mprimary test pt 1 3.036 3.040 2.96 0.000 3.00 1/m1/m -1.41% primary 3.040 2.96 0.000 3.00 1/m-1.32% primary test pt 2 3.038 1/m test pt 3 3.059 3.060 2.96 0.000 3.01 1/m1/m -1.63% primary Sensor Component Leak Test Condition **Status** pass **Condition** Good **Status** pass **Sensor Component** Tubing Condition Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Status pass Condition Clean and dry Sensor Component Moisture Present Condition No moisture present Status pass Sensor Component Filter Distance Condition 5.5 cm Status pass Condition 4.0 cm Status pass Sensor Component Filter Depth Status pass **Sensor Component** Filter Azimuth Condition 315 deg

Condition

Status pass

Sensor Component System Memo

Ozone Data Form

Mfg		Serial Numb	er Tag Sit	te	Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	ctron Inc	1009241779	NI	PT006	Ma	artin Valvur	07/08/2020	Ozone		000612
Slope: Intercept CorrCoff:	-(oe: ercept erCoff:	0.0000 0.0000 0.0000	0	Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-3			ozone C. Ozone primary stan
DAS 1:		n	AS 2:							0.00500
	iff. A N	Iax % Dif A		iff A May (% Dif	Slope	1.0026	60 Inter	cept	0.03590
	0%	0.0%	Avg /0DI	III A WIAX	70 DII	Cert Date	1/14/202	20 Corr	Coff	0.99999
UseDescr	iption	ConcGroup	Tfer R	aw Tf	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima		1	0.09		0.05	0.25	ppb			0.2
prima	•	2	13.20		13.12	12.70	ppb			-0.42
prima		3	38.7		38.63	39.13	ppb		1.29	
prima		4	64.60		64.39	65.02	ppb		0.97	
prima	•	5	114.7		14.40	118.10	ppb		3.18	
		nt Audit Press		, , , ,		on 683.7 mmHg	PPC	Status		
Sensor C	ompone	nt Sample Tra	in		Conditi	on Good		Status	pass	
Sensor C	ompone	nt Minimum d	stance fror	m road met	Conditi			Status	pass	
	_	nt Inlet Filter (Conditi	on Clean		Status		
	_	nt 26.6 degree		cted rule		on False		Status		
	_	nt Tree dewlin			Conditi			Status		
Sensor C	_					on 0.000		Status		
Sensor C	•					on 1.081		Status		
	•	nt Zero Voltag	10		Conditi			Status		
	_									
	•	Fullscale V			Conditi			Status		
	•	nt Cell A Freq				on 113.9 kHz		Status		
	_	nt Cell A Nois				on 2.0 ppb		Status		
	•	nt Cell A Flow				on 0.70 lpm		Status		
	_	nt Cell A Pres				on 657.8 mmHg		Status		
	•	nt Cell A Tmp				on 43.9 C		Status		
Sensor C	ompone	nt Cell B Freq				on 92.6 kHz		Status	pass	
Sensor C	ompone	nt Cell B Nois	е		Conditi	on 1.3 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow			Conditi	on 0.73 lpm		Status	pass	
Sensor C	ompone	nt Cell B Pres	sure		Conditi	on 657.5 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss			Conditi	on Not tested		Status	pass	
Sensor C	ompone	nt System Me	mo		Conditi	on See comments	3	Status	pass	

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg Martin Valvur 6695 NPT006 07/08/2020 Temperature 04681 RM Young Mfg Fluke Parameter Temperature Tfer Desc. RTD 3275143 **Serial Number** 01229 Tfer ID -0.01710 **Slope** 1.00026 **Intercept DAS 1: DAS 2:** 1/29/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.25 0.30 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.07 0.09 0.000 -0.2 \mathbf{C} -0.3 C Temp Mid Range 25.25 25.26 0.000 25.0 -0.23 primary 0.000 C primary Temp High Range 46.66 46.66 46.4 -0.22Status pass Sensor Component Shield **Condition** Clean **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Martin Valvur 07/08/2020 Shelter Temperature Campbell none NPT006 none **DAS 1: DAS 2:** Mfg Fluke Parameter Shelter Temperature Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD 3275143 **Serial Number** 0.58 0.93 01229 **Tfer ID** 1.00026 -0.01710 **Slope** Intercept 1/29/2020 1.00000 **Cert Date** CorrCoff

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.79	22.80	0.000	23.1	С	0.31
primary	Temp Mid Range	22.22	22.23	0.000	23.2	С	0.93
primary	Temp Mid Range	21.56	21.57	0.000	22.1	С	0.49
Sensor Cor	nponent System Memo	1	Condition S	ee comments	Status	pass	

Infrastructure Data For NPT006 Site Visit Date 07/08/2020 Technician Martin Valvur Site ID **Shelter Make Shelter Model Shelter Size** Ekto Sensor Component | Sample Tower Type Status pass **Condition** Type B **Condition** Good Sensor Component Conduit 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 Status Fail **Condition** Not functioning Condition Installed Sensor Component Rotometer Status pass **Condition** Good Status pass Sensor Component | Sample Tower 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 | Shelter walls **Condition** Good **Status** pass Sensor Component Excessive mold present **Condition** Good **Status** pass Sensor Component | Signal Cable **Status** pass **Condition** Good **Sensor Component** Tubing Type Condition 3/8 teflon **Status** pass

Condition Good

Status pass

Sensor Component | Sample Train

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition	Status	pass
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	d Problem
Ozone	NPT006	Martin Valvur	07/08/2020	Cell A Tmp.	ThermoElectron	3362		

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

Field Systems Comments

1 Parameter: DasComments

The shelter air conditioner is not functioning. The shelter temperature sensor is accurate. The ozone monitor cell temperature was above acceptable limits.

2 Parameter: SitingCriteriaCom

Site is located in wooded mountainous area.

Field Systems	Data Form		F-02058-1500-S1-rev002
Site ID NPT006	Technician Martin Valvur	Site Visit Date 07/0	08/2020
Site Sponsor (agency)	EPA	USGS Map	
Operating Group	Nez Perce Tribe	Map Scale	
AQS#	160499991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyze	r Ozone	QAPP Latitude	
Deposition Measurem	ent dry	QAPP Longitude	
Land Use		QAPP Elevation Meters	
Terrain		QAPP Declination	
Conforms to MLM		QAPP Declination Date	
Site Telephone		Audit Latitude	46.276031
Site Address 1		Audit Longitude	-116.020137
Site Address 2		Audit Elevation	965
County	Idaho	Audit Declination	14.0
City, State	Kamiah, ID	Present	
Zip Code	83536	Fire Extinguisher	In vehicle
Time Zone	Pacific	First Aid Kit	In vehicle
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 Steps ✓	
Shelter Working Room	m ✓ Make Ekto	Model	Shelter Size
Shelter Clean	Notes		
Site OK	✓ Notes		

From the town of Kamiah, travel east on route 12. immediately after crossing the Clearwater river, turn left onto Woodland drive. Travel approximately 7 miles on Woodland Dr and look for the road leading to the 140 foot tower.

Driving Directions

Fic	eld Systems Data Form		F-02058-1500-S3-rev002
Site	NPT006 Technician Martin Valvur		Site Visit Date 07/08/2020
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:

Fi	eld Systems Data Form		F-02058-1500-S4-rev002				
Site	NPT006 Technician Martin Valvur		Site Visit Date 07/08/2020				
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?	✓					
	ride any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	sary)	regarding conditions listed above, or any other features,				

F 1 (eld Systems Data Form		F-02058-1500-S5-rev002
Site	NPT006 Technician Martin Valvur		Site Visit Date 07/08/2020
	Siting Criteria: Are the pollutant analyzers and deposition	<u>equipr</u>	nent 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?	ı, 🗸	
	Pollutant analyzers and deposition equipment operations a	nd ma	<u>intenance</u>
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 10 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 clean?	it 🔽	
	ide any additional explanation (photograph or sketch if necoral or man-made, that may affect the monitoring parameter		regarding conditions listed above, or any other features,

Field Systems Data Form

natural or man-made, that may affect the monitoring parameters:

acceptable limits.

F-02058-1500-S6-rev002

Site	e ID	NPT006	Technician	Martin Valvur		Site Visit D	oate 07/08/202	20		
	DAS, se	nsor translators, and	peripheral equi	oment operation	ns ar	nd maintenance	<u>.</u>			
1		OAS instruments appeintained?	ar to be in good	condition and	✓					
2		the components of the backup, etc)	DAS operations	al? (printers,	✓					
3		analyzer and sensor sig g protection circuitry	-	hrough						
4		signal connections pro intained?	otected from the	e weather and	✓					
5	Are the	signal leads connected	to the correct	DAS channel?	✓					
6	Are the grounde	DAS, sensor translatoed?	rs, and shelter j	properly	✓					
7	Does the	e instrument shelter h	ave a stable pov	ver source?	✓					
8	Is the instrument shelter temperature controlled?					No				
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded		
10	Is the sa	ample tower stable and	l grounded?							
11	Tower o	comments?								
Pro	Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,									

The shelter air conditioner is not functioning. The shelter temperature sensor is accurate. The ozone monitor cell temperature was above

Field Systems Data Form F-02058-1500-S7-rev002 NPT006 Technician | Martin Valvur Site Visit Date 07/08/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A П **V ✓** Wind speed sensor **Data logger ✓ V** Wind direction sensor Data logger **V V** П **Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer ✓ П П П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor** ✓ **V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V ~ Humidity sensor translator Surge protector** П **V ~ UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device ✓ ✓ Shelter heater** Ozone analyzer **V ✓** 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 V V SSRF V V V V Site Ops Manual V HASP V V Field Ops Manual V Calibration Reports V V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 NPT006 Technician Martin Valvur Site Visit Date 07/08/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) V** N/A **Manual Rain Gauge Test V** Weekly **Confirm Reasonableness of Current Values V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **QC Check Performed Compliant** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V** N/A Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests V** N/A **Manual Precision Level Test V V** Weekly **Analyzer Diagnostics Tests V** Every 2 weeks **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V V** Weekly Sample Line Check for Dirt/Water **~ Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the

✓

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

SSRF, logbook

complete sample train including all filters?

reported? If yes, how?

Are the automatic and manual z/s/p checks monitored and

natural or man-made, that may affect the monitoring parameters:

Fi	eld Sy	stems Data For	m				F-02058-1500-S9-rev002				
Sit	e ID	NPT006	Technic	ian	Martin Valvur		Site Visit Date	07/08/2020			
	Site ope	ration procedures									
1	Is the fil	ter pack being changed	every Tu	esda	ay as scheduled?	V					
2	Are the correctly	Site Status Report Forn y?	ns being o	com _]	pleted and filed	✓					
3	scheduled?						No longer required				
4	4 Are general observations being made and recorded? How						SSRF				
5	5 Are site supplies on-hand and replenished in a timely fashion?										
6	6 Are sample flow rates recorded? How?					✓	SSRF, logbook				
7	Are sam	ples sent to the lab on a	regular	sche	dule in a timely	✓					
8		rs protected from conta	mination	duı	ring handling	✓	Clean gloves on an	d off			
9		site conditions reported ns manager or staff?	regularl	y to	the field	✓					
QC	Check Po	erformed		Fre	quency			Compliant			
ľ	Multi-poir	nt MFC Calibrations	✓	Sem	niannually			✓			
1	Flow Syste	em Leak Checks	✓	Wee	ekly			✓			
I	Filter Pack Inspection						✓				
Flow Rate Setting Checks Weekly						✓					
Visual Check of Flow Rate Rotometer Weekly						✓					
1	In-line Filter Inspection/Replacement Semiannually					✓					
5	Sample Li	ne Check for Dirt/Wate	r	Wee	ekly			✓			
	-	dditional explanation (p				_	y) regarding conditi	ions listed above, or a	ny other features,		

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID NPT006 Technician Martin Valvur Site Visit Date 07/08/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	263MC12	07069
DAS	Campbell	CR3000	2131	000353
elevation	Elevation	none	none	none
Filter pack flow pump	Permotec	BL30EB	432201630446	none
Flow Rate	Apex	AXMC105LPMDPC	illegible	00854
Infrastructure	Infrastructure	none	none	none
Modem	Sierra wireless	GX440	Unknown	06990
Ozone	ThermoElectron Inc	49i A1NAA	1009241779	000612
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200024	000448
Sample Tower	Aluma Tower	AT516D1	AT214153Z12	000839
Shelter Temperature	Campbell	107-L	none	none
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342VC	6695	04681
Zero air pump	Werther International	PC 70/4	000815300	000626

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
HWI	F187-Korey	Devins-07/13/2020				
1	7/13/2020	Computer	Dell	07034	Inspiron 15	Unknown
2	7/13/2020	DAS	Campbell	000356	CR3000	2134
3	7/13/2020	Elevation	Elevation	None	1	None
4	7/13/2020	Filter pack flow pump	Thomas	02358	illegible	illegible
5	7/13/2020	Flow Rate	Apex	000592	AXMC105LPMDPCV	illegible
6	7/13/2020	Infrastructure	Infrastructure	none	none	none
7	7/13/2020	Modem	Digi	07158	LR54	unknown
8	7/13/2020	Ozone	ThermoElectron Inc	000731	49i A1NAA	1105347309
9	7/13/2020	Ozone Standard	ThermoElectron Inc	000450	49i A3NAA	CM08200026
10	7/13/2020	Sample Tower	Aluma Tower	000864	В	unknown
11	7/13/2020	Shelter Temperature	Campbell	none	107-L	unknown
12	7/13/2020	Siting Criteria	Siting Criteria	None	1	None
13	7/13/2020	Temperature	RM Young	03934	41342	1860
14	7/13/2020	Zero air pump	Werther International	06931	C 70/4	000836212
15	7/13/2020	Zero air pump	Teledyne	000772	701H	608

DAS Data Form 3.45 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2134 **HWF187** Korey Devins 07/13/2020 DAS Primary Das Date: 7 /13/2020 **Audit Date** 7 /13/2020 Datel **Parameter** DAS Mfg 11:43:00 **Das Time:** 11:46:27 **Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** 195 Das Day: 195 **Audit Day** Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0000 0.0000 0.0001 0.0001 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 0.0000 0.0000 0.00007 0.0999 0.0999 V V 0.0000 0.1000 7 0.3000 0.2997 0.2997 V V 0.00007 V V 0.5000 0.4995 0.4995 0.0000 V V 7 0.7000 0.6995 0.6994 -0.0001 7 V V 0.9000 0.8993 0.8992 -0.0001 7 1.0000 0.9992 0.9991 V V -0.0001

Flow Data Form **Technician** Site Visit Date Parameter **Owner ID** Mfg **Serial Number Tag Site** Korey Devins 07/13/2020 000592 Apex HWF187 Flow Rate illegible Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** 0 **DAS 2: DAS 1: Cal Factor Zero** 0.99 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.89% 1.34% 1.5 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. primary pump off 0.000 0.0000.00 0.0000.01 1/m1/m leak check 0.00 0.000 0.00 1/m0.000 0.000 1/mprimary test pt 1 1.473 1.490 1.53 0.000 1.51 1/m1/m 1.34% primary 1.474 1.500 1.53 0.000 1/m0.67% primary test pt 2 1.51 1/m test pt 3 1.476 1.500 1.53 0.000 1.51 1/m1/m 0.67% primary Sensor Component Leak Test Condition **Status** pass **Condition** Good **Status** pass **Sensor Component** Tubing Condition Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Status pass Condition Clean and dry Sensor Component Moisture Present **Condition** See comments Status pass Sensor Component Filter Distance Condition 5.5 cm Status pass

Condition 1.0 cm

Condition 90 deg

Condition

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Status pass

Status pass

Status pass

Ozone Data Form

Mfg		Serial Numb	er Tag S	Site	To	echnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1105347309		HWF187	K	orey Devins	07/13/2020	Ozone		000731
Slope: Intercept CorrCoff:	-(oe: crcept rCoff:	0.000	000	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114			ozone Ozone primary stan
DAS 1:		n	AS 2:							0.00040
)iff· Δ M	Iax % Dif A		Diff A Ma	x % Dif	Slope	0.9995	50 Inter	cept	0.29010
	0%	0.0%	1119 /01		70 211	Cert Date	1/14/202	20 Corr	Coff	0.99999
UseDescr	intion	ConcGroup	Tfer	Paw	Tfer Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima		1	0.3		0.00	-0.54	ppb	Kell el	ווע	-0.54
prima	•	2	14.		14.67	14.16	ppb			-0.51
prima	•	3	36.		36.24	35.49	ppb		-2.09	0.51
prima	•	3 4	66.		66.04	65.13	ppb		-1.39	
-	•	5	110		110.21	109.00	1		-1.39	
prima				0.43			ppb	G		
		Audit Press				713.4 mmHg		Status		
Sensor C	ompone	nt Sample Tra	in		Condit	ion Good		Status	pass	
Sensor C	ompone	nt Minimum di	stance fr	om road me	Condit	ion True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	Condition		Condit	ion Moderately cle	ean	Status	pass	
Sensor C	ompone	26.6 degree	unobstr	ucted rule	Condit	ion True		Status	pass	
Sensor C	ompone	nt Tree dewlin	e >10m d	or below inle	Condit	ion False		Status	fail	
Sensor C	ompone	Offset			Condit	ion -0.2		Status	pass	
Sensor C	ompone	nt Span			Condit	ion 1.001		Status	pass	
Sensor C	ompone	nt Zero Voltag	je		Condit	ion N/A		Status	pass	
Sensor C	ompone	rullscale Vo	oltage		Condit	ion N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq	•		Condit	ion 89.2 kHz		Status	pass	
Sensor C	ompone	cell A Nois	е		Condit	ion 0.8 ppb		Status	pass	
Sensor C	ompone	cell A Flow			Condit	ion 0.67 lpm		Status	pass	
Sensor C	ompone	cell A Pres	sure		Condit	ion 696.7 mmHg		Status	pass	
Sensor C	ompone	cell A Tmp			Condit	ion 38.5 C		Status	pass	
Sensor C	ompone	cell B Freq			Condit	ion 88.0 kHz		Status	pass	
Sensor C	ompone	cell B Nois	е		Condit	ion 1.1 ppb		Status	pass	
Sensor C	ompone	cell B Flow			Condit	ion 0.56 lpm		Status	pass	
Sensor C	ompone	cell B Pres	sure		Condit	ion 697.3 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss			Condit	ion Not tested		Status	pass	
Sensor C	ompone	nt System Me	mo		Condit	ion		Status	pass	

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 1860 HWF187 Korey Devins 07/13/2020 Temperature 03934 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.30 0.44 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.16 0.03 0.000 0.4 \mathbf{C} 0.32 C Temp Mid Range 26.96 26.62 0.000 26.5 -0.14 primary C primary Temp High Range 45.36 44.87 0.000 44.4 -0.44Condition Moderately clean Status pass Sensor Component Shield **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter Owner ID Korey Devins 07/13/2020 Shelter Temperature Campbell HWF187 unknown none **DAS 1: DAS 2:** Mfg Extech Parameter Shelter Temperature Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.22 0.39 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 2/14/2020 1.00000 **Cert Date** CorrCoff

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	30.84	30.47	0.000	30.1	C	-0.39
primary	Temp Mid Range	29.41	29.05	0.000	29.3	C	0.22
primary	Temp Mid Range	28.94	28.58	0.000	28.5	C	-0.06
Sensor Cor	nponent System Memo	<u> </u>	Condition	Status pass			

Infrastructure Data For

Si	te ID	HWF187	Technician	Korey Devins	Site Visit Date	07/13/2020	
	Shelter Ma	ake	Shelter Model	Sh	nelter Size		
	ESF		none	16	30 cuft		
	L.	A RESIDENCE AND THE SERVICE		nace and a second second second			

Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	Good	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	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Shelter walls	Condition	Good	Status	pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component City Sensor Cit		Condition Condition	Status	pass
Sensor Component City	1,000 to 10,000	Condition		
		Condition	Status	pass
Sensor Component City	10,000 to 50,000	Condition	Status	pass
Sensor Component Feed	dlot operations	Condition	Status	pass
Sensor Component Large	ge parking lot	Condition	Status	pass
Sensor Component Limit	ted agriculture operations	Condition	Status	pass
Sensor Component Majo	or industrial source	Condition	Status	pass
Sensor Component Seco	ondary road < or = 100 per da	Condition	Status	pass
Sensor Component Seco	ondary road >100 vehicles/da	Condition	Status	pass
Sensor Component Smal	all parking lot	Condition	Status	pass
Sensor Component Syste	tem Memo	Condition	Status	pass
Sensor Component Majo	or highway, airport, or rail yard	Condition	Status	pass
Sensor Component Inten	nsive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	HWF187	Korey Devins	07/13/2020	Moisture Present	Apex	4026		

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

Field Systems Comments

1 Parameter: SiteOpsProcComm

It was discussed with the operator that the outside filter change field on the SSRF refers to the ozone inlet filter and not the dry deposition filter pack.

2 Parameter: SiteOpsProcedures

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

3 Parameter: SitingCriteriaCom

Trees are beginning to approach the limit for ozone inlet criteria. The conditions were discussed with the site operator.

4 Parameter: ShelterCleanNotes

The shelter is in fair condition.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 07/13/2020 HWF187 Technician Korey Devins Site ID Newcomb **USGS Map EPA** Site Sponsor (agency) Map Scale SUNY/ESF **Operating Group Map Date** 36-031-9991 AQS# R.M. Young **Meteorological Type** Air Pollutant Analyzer Ozone, Hg **QAPP** Latitude 43.9732 dry, wet, Hg **QAPP** Longitude -74.2232 **Deposition Measurement** woodland - mixed 502 **Land Use QAPP Elevation Meters** 14.5 Terrain complex **QAPP Declination** 6/17/2004 No Conforms to MLM **OAPP Declination Date** (518) 582-4800 43.973044 **Site Telephone Audit Latitude** Adirondack Ecological Center -74.223317 Site Address 1 **Audit Longitude** Site Address 2 **Audit Elevation** 497 -14 Essex **County Audit Declination** Newcomb, NY City, State **Present** Fire Extinguisher 12852 Inspected in Oct 2019 Zip Code Eastern **First Aid Kit** Time Zone **✓ Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **V Climbing Belt** Primary Op. E-mail **Security Fence Backup Operator Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** ESF **Model** none **Shelter Size** 1630 cuft **✓** Notes **Shelter Clean** The shelter is in fair condition.

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.

✓ Notes

Site OK

Driving Directions

Fic	eld Systems Data Form		F-02058-1500-S3-rev002
Site	HWF187 Technician Korey Devins		Site Visit Date 07/13/2020
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:

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	HWF187 Technician Korey Devins		Site Visit Date 07/13/2020
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?	✓	
	ide any additional explanation (photograph or sketch if neces ral or man-made, that may affect the monitoring parameters:		regarding conditions listed above, or any other features,

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Sit	HWF187 Technician Korey Devins		Site Visit Date 07/13/2020
	Siting Criteria: Are the pollutant analyzers and deposition ec	uipr	nent 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	l ma	<u>intenance</u>
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
	vide any additional explanation (photograph or sketch if necess	sary)	regarding conditions listed above, or any other features,
atu	ral or man-made, that may affect the monitoring parameters:		

Field Systems Data Form

F-02058-1500-S6-rev002

Site	ID	HWF187	Technician	Korey Devins		Site Visit I	Date 07/1	3/2020	
	DAC gov	agen then eletens and a	aninhanal aguin	mont oneuction		d maintanana			
	DAS, Sei	sor translators, and p	<u> Jeripheral equip</u>	-	s an ✓	<u> </u>	<u>e</u>		
1	Do the DAS instruments appear to be in good condition and well maintained?								
2		he components of the backup, etc)	DAS operationa	l? (printers,	✓				
3		nalyzer and sensor sig protection circuitry?		nrough	✓	Met sensors or	nly		
4	Are the swell mai	signal connections prontained?	otected from the	weather and	✓				
5	Are the	signal leads connected	to the correct D	AS channel?	✓				
6	Are the l	DAS, sensor translato d?	rs, and shelter p	roperly	✓				
7	Does the	instrument shelter ha	ave a stable pow	er source?	✓				
8	Is the in	strument shelter temp	erature controll	ed?	✓				
9	Is the mo	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	l grounded?						
11	Tower co	omments?				Met Tower rem	ioved		
		additional explanation an-made, that may af				y) regarding c	onditions	s listed above, or a	any other features,
	g P								

Field Systems Data Form F-02058-1500-S7-rev002 HWF187 Technician Korey Devins Site Visit Date 07/13/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A **V V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger **V V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V ~ Humidity sensor translator Surge protector** П П **V ~ UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** \checkmark **✓ Shelter heater** Ozone analyzer ~ **✓** 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 V V SSRF ✓ V ✓ V Site Ops Manual** May 2019 **V HASP ✓** May 2019 **Field Ops Manual Calibration Reports V ✓** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 HWF187 Technician Korey Devins Site Visit Date 07/13/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant OC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V** Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests V Manual Precision Level Test V V** Weekly **Analyzer Diagnostics Tests V V** Every 2 weeks **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ V Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters? ✓ SSRF, call-in Are the automatic and manual z/s/p checks monitored and reported? If yes, how?

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 HWF187 Technician Korey Devins Site Visit Date 07/13/2020 Site ID **Site operation procedures** Is the filter pack being changed every Tuesday as scheduled? Filter changed morinings Are the Site Status Report Forms being completed and filed correctly? No longer required Are data downloads and backups being performed as scheduled? **✓** SSRF Are general observations being made and recorded? How? **V** Are site supplies on-hand and replenished in a timely fashion? SSRF, call-in Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely fashion? **✓** Clean gloves on and off Are filters protected from contamination during handling and shipping? How? **~** Are the site conditions reported regularly to the field operations manager or staff? **QC Check Performed Compliant Frequency V** ✓ Semiannually **Multi-point MFC Calibrations V** Weekly Flow System Leak Checks **Filter Pack Inspection V ✓** Weekly **Flow Rate Setting Checks V ✓** Weekly **Visual Check of Flow Rate Rotometer** ✓ Semiannually **V In-line Filter Inspection/Replacement ✓** Weekly Sample Line Check for Dirt/Water Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

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:

It was discussed with the operator that the outside filter change field on the SSRF refers to the ozone inlet filter and not the dry deposition filter pack.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID HWF187 Technician Korey Devins Site Visit Date 07/13/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07034
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
Modem	Digi	LR54	unknown	07158
Ozone	ThermoElectron Inc	49i A1NAA	1105347309	000731
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200026	000450
Sample Tower	Aluma Tower	В	unknown	000864
Shelter Temperature	Campbell	107-L	unknown	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	1860	03934
Zero air pump	Teledyne	701H	608	000772
Zero air pump	Werther International	C 70/4	000836212	06931

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number					
CTF	CTH110-Korey Devins-07/20/2020										
1	7/20/2020	Computer	Dell	07044	Inspiron 15	Unknown					
2	7/20/2020	DAS	Campbell	000415	CR3000	2510					
3	7/20/2020	Elevation	Elevation	None	1	None					
4	7/20/2020	Filter pack flow pump	Thomas	02664	107CA18	1092135217					
5	7/20/2020	Flow Rate	Apex	000557	AXMC105LPMDPCV	unknown					
6	7/20/2020	Infrastructure	Infrastructure	none	none	none					
7	7/20/2020	Modem	Digi	07208	LR54	unknown					
8	7/20/2020	Ozone	ThermoElectron Inc	000735	49i A1NAA	1105347308					
9	7/20/2020	Ozone Standard	ThermoElectron Inc	000447	49i A3NAA	CM08200023					
10	7/20/2020	Sample Tower	Aluma Tower	666363	В	AT-5107-E-4-10					
11	7/20/2020	Shelter Temperature	Campbell	none	107-L	none					
12	7/20/2020	Shield (10 meter)	RM Young	none	unknown	none					
13	7/20/2020	Siting Criteria	Siting Criteria	None	1	None					
14	7/20/2020	Temperature	RM Young	06301	41342	12540					
15	7/20/2020	Zero air pump	Werther International	06864	PC70/4	000815261					

DAS Data Form 0 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2510 CTH110 Korey Devins 07/20/2020 DAS Primary Das Date: 7 /20/2020 **Audit Date** 7 /20/2020 Datel **Parameter** DAS Mfg 13:55:00 13:55:00 **Das Time: Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** Das Day: 202 **Audit Day** 202 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0001 0.0002 0.0001 0.0002 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 0.0000 0.0000 0.00007 0.0999 0.0999 V V 0.0000 0.1000 7 0.3000 0.2997 0.2997 V V 0.00007 V V 0.5000 0.4996 0.4995 -0.0001 V V 7 0.7000 0.6995 0.6994 -0.0001 7 V V 0.9000 0.8994 0.8992 -0.0002 7 1.0000 0.9992 0.9990 V V -0.0002

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter Korey Devins 07/20/2020 000557 Apex CTH110 Flow Rate unknown Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** 0 **DAS 2: DAS 1: Cal Factor Zero** 0.89 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 1.96% 1.96% 1.6 **Rotometer Reading:** Test type Input l/m Input Corr OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. MfcDisp. primary pump off 0.000 0.0000.00 0.0000.00 1/m1/m leak check 0.00 0.000 0.00 1/m0.000 0.000 1/mprimary test pt 1 1.505 1.530 1.68 0.000 1.50 1/m1/m -1.96% primary 1.68 0.000 1/m-1.96% primary test pt 2 1.504 1.530 1.50 1/m test pt 3 1.513 1.530 1.68 0.000 1.50 1/m1/m -1.96% primary 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 Status pass Condition Clean and dry Sensor Component Moisture Present **Condition** See comments Status pass Sensor Component Filter Distance Condition 2.0 cm Status pass Status pass Sensor Component Filter Depth Condition 2.0 cm

Condition 190 deg

Condition

Sensor Component Filter Azimuth

Sensor Component System Memo

Status pass

Status pass

Ozone Data Form

Mfg	;	Serial Numbe	r Tag Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElectro	on Inc	1105347308	CTH110)	Ko	orey Devins	07/20/2020	Ozone		000735
Slope: Intercept CorrCoff: DAS 1:	-0 1	.00000 Cori	rcept	0.00000 0.00000 0.00000	Dif	Mfg Serial Number Tfer ID Slope	ThermoElectron 1180030022 01114 0.9998	Tf	er Desc	ozone Ozone primary stan 0.29010
0.0%		0.0%		111421 / 0 1		Cert Date	1/14/20	20 Cori	·Coff	0.99999
UseDescrip primary primary primary primary		ConcGroup 1 2 3 4	Tfer Raw 0.39 14.49 35.83 67.20	Tfer 0.0 14. 35. 66.	09 20 55	Site -0.33 13.20 33.41 63.32	Site Unit ppb ppb ppb ppb	RelPer	-6.21 -5.56	AbsDif -0.42 -1
primary		5	110.94	110		105.30	ppb		-5	
Sensor Cor	mponer	Audit Pressu	n	c	onditi	on Good		Status Status	pass	
Sensor Cor	mponer	Minimum dis	stance from road	met C	onditi	on True		Status	pass	
Sensor Cor	mponer	Inlet Filter C	ondition	C	onditi	on Clean		Status	pass	
Sensor Cor	mponer	26.6 degree	unobstructed ru	le C	onditi	on True		Status	pass	
Sensor Con	mponer	Tree dewline	e >10m or below	inlet	onditi	on True		Status	pass	
Sensor Cor	mponer	Offset		C	onditi	on 0.2		Status	pass	
Sensor Cor	mponer	span Span		C	onditi	on 1.000		Status	pass	
Sensor Cor	mponer	Zero Voltage	9	C	onditi	on N/A		Status	pass	
Sensor Cor	mponer	t Fullscale Vo	Itage	C	onditi	on N/A		Status	pass	
Sensor Cor	- mponer	cell A Freq.		C	onditi	on 100.3 kHz		Status	pass	
	_	t Cell A Noise				on 0.8 ppb		Status		
		t Cell A Flow		· · · · · · · · · · · · · · · · · · ·		on 0.58 lpm		Status		
		t Cell A Press	urα			on 680.3 mmHg		Status		
	•		oui e							
	•	Cell A Tmp.		· · · · · · · · · · · · · · · · · · ·		on 36.5 C		Status		
	•	Cell B Freq.				on 93.4 kHz		Status		
	•	t Cell B Noise				on 1.1 ppb		Status	pass	
Sensor Cor	mponer	Cell B Flow		C	onditi	on 0.71 lpm		Status	pass	
Sensor Cor	mponer	Cell B Press	ure	C	onditi	on 680.9 mmHg		Status	pass	
Sensor Con	mponer	Line Loss		C	onditi	on Not tested		Status	pass	
Sensor Cor	mponer	System Mer	no	C	onditi	on		Status	pass	
				_						

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 12540 CTH110 Korey Devins 07/20/2020 Temperature 06301 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2: Cert Date** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.14 0.24 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.71 0.58 0.000 0.3 \mathbf{C} -0.24 C 25.26 24.93 0.000 24.9 -0.03 primary Temp Mid Range Sensor Component Shield **Condition** Clean **Status** pass Status pass **Sensor Component** Blower **Condition** N/A **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass **Status** pass Sensor Component System Memo **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Korey Devins Campbell CTH110 07/20/2020 Shelter Temperature none none **DAS 1: DAS 2:** Parameter Shelter Temperature Extech Mfg **Abs Avg Err** Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.09 0.10 01227 Tfer ID 1.00797 0.12950 **Slope** Intercept 2/14/2020 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 30.85 30.48 0.000 30.4 \mathbf{C} -0.09 C Temp Mid Range 30.57 30.20 0.000 30.3 0.08 primary C

0.000

30.4

Status pass

0.1

30.31

Condition

30.68

primary

Temp Mid Range

Sensor Component System Memo

Infrastructure Data For

Site ID CTH110 Technician Korey Devins Site Visit Date 07/20/2020

Shelter Make	Shelter Model	Shelter Size	
Ekto	8810 (s/n 2116-6)	640 cuft	

Sensor Component	Sample Tower Type	Condition	Type B	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	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Shelter walls	Condition	Fair	Status	pass
Sensor Component	Excessive mold present	Condition	Fair	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition	Status	pass
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	CTH110	Korey Devins	07/20/2020	Moisture Present	Apex	3324		

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

Field Systems Comments

1 Parameter: DasComments

The meteorological tower has been removed and the temperature sensor has been moved to the east leg of the sample tower at 10 meters above the ground. The shield has been changed from aspirated to naturally aspirated.

2 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and a Z/S/P is performed every two weeks.

3 Parameter: SitingCriteriaCom

There is a point source north of Ithaca within 40 km of the site. The tree line is less than 50 m from the site. The siting is acceptable even with the noted exceptions. Trees and overgrowth have recently been removed from the site which has improved siting criteria.

4 Parameter: ShelterCleanNotes

The condition of the shelter walls are beginning to deteriorate.

5 Parameter: MetSensorComme

The temperature sensor is mounted on the east leg of the sample tower. The temperature sensor was found hanging loose outside of the

Field Systems Data Form F-02058-1500-S1-rev002 Technician Korey Devins Site Visit Date 07/20/2020 CTH110 Site ID Mecklenburg **USGS Map EPA** Site Sponsor (agency) Map Scale IES **Operating Group Map Date** 36-109-9991 AQS# R.M. Young **Meteorological Type** Air Pollutant Analyzer Ozone, ammonia **QAPP** Latitude 42.4010 dry, wet **QAPP** Longitude -76.6535 **Deposition Measurement** 515 **Land Use** woodland - mixed **QAPP Elevation Meters** rolling 12.3 Terrain **QAPP Declination** No 12/28/2004 Conforms to MLM **OAPP Declination Date** (607) 564-7622 42.400875 **Site Telephone Audit Latitude** CR 136 (Connecticut Hill Road) -76.653516 Site Address 1 **Audit Longitude** Site Address 2 **Audit Elevation** 511 -12.0 Tompkins **County Audit Declination** Newfield, NY City, State **Present** Fire Extinguisher 14867 New in 2015 Zip Code Eastern First Aid Kit Time Zone **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 (s/n 2116-6) Ekto **Shelter Size** 640 cuft □ Notes The condition of the shelter walls are beginning to deteriorate. Shelter Clean **✓** Notes Site OK

Driving Directions

From Ithaca take route 13 south to hwy 327. Bear right onto hwy 327 and go past both the lower and upper entrances for Robert Treman St Park. Turn left at the second left past the upper entrance to the park onto Trumbell Corners Road. Continue on Trumbell Corners Rd for approximately one mile to the stop sign. Turn right at the stop onto Connecticut Hill Road and continue for approximately 1/4 mile where it veers to the right. The site is up the hill on the left just after the turn in the road.

Fi	eld Sy	stems Data Fo	orm				F-02058	3-15	500-S3-rev002
Site	e ID	CTH110	Technician	Korey Devins		Site Visit Date	07/20/2020		
1		d speed and direction fluenced by obstruction		as to avoid	✓	N/A			
2	(i.e. win horizon	d sensors mounted so d sensors should be m tally extended boom > nto the prevailing wind	ounted atop the 2x the max dian	tower or on a	✓	N/A			
3	Are the	tower and sensors plu	mb?		✓	N/A			
4		temperature shields p adiated heat sources su		•	✓	East			
5	condition surface	perature and RH sens ons? (i.e. ground below and not steeply sloped g water should be avoi	sensors should. Ridges, hollow	be natural	✓				
6	Is the so	olar radiation sensor p	lumb?		✓	N/A			
7	Is it site	d to avoid shading, or	any artificial or	reflected light?	V	N/A			
8	Is the ra	nin gauge plumb?			✓	N/A			
9	Is it site towers,	d to avoid sheltering e etc?	ffects from buil	dings, trees,	✓	N/A			
10	Is the su facing n	urface wetness sensor sorth?	sited with the gr	id surface	✓	N/A			
11	Is it inc	clined approximately 3	0 degrees?		✓	N/A			
Pro	ovide any	additional explanatio	n (photograph o	or sketch if neces	ssary	v) regarding condi	tions listed above	e, or	any other features,

The temperature sensor is mounted on the east leg of the sample tower. The temperature sensor was found hanging loose outside of the

natural or man-made, that may affect the monitoring parameters:

shield.

Fi	eld Systems Data Form	F-02058-1500-S4-rev002				
Site	CTH110 Technician Korey Devins		Site Visit Date 07/20/2020			
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?	✓				
	ide any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:) regarding conditions listed above, or any other features,			

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site	CTH110 Technician Korey Devins		Site Visit Date 07/20/2020
	Siting Criteria: Are the pollutant analyzers and deposition eq	uipr	nent 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	l mai	intenance
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
	ride any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	ary)	regarding conditions listed above, or any other features,

Field Systems Data Form

F-02058-1500-S6-rev002

Site	e ID	CTH110	Technician	Korey Devins		Site Visit Date	07/20/2020)	
	DAS, se	nsor translators, and p	oeripheral equi	pment operatio	ns ar	nd maintenance			
1		OAS instruments appeintained?	ar to be in good	l condition and	✓				
2		the components of the backup, etc)	DAS operation	al? (printers,	✓				
3		nnalyzer and sensor sig g protection circuitry?		through	✓	Met sensors only			
4		signal connections prointained?	tected from the	e weather and	✓				
5	Are the	signal leads connected	to the correct	DAS channel?	✓				
6	Are the grounde	DAS, sensor translatoed?	rs, and shelter	properly	✓				
7	Does the	e instrument shelter ha	ive a stable pov	ver source?	✓				
8	Is the in	strument shelter temp	erature control	lled?	✓				
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	grounded?					✓	
11	Tower c	comments?				Met tower removed		<u> </u>	

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 tower has been removed and the temperature sensor has been moved to the east leg of the sample tower at 10 meters above the ground. The shield has been changed from aspirated to naturally aspirated.

Field Systems Data Form F-02058-1500-S7-rev002 CTH110 Technician Korey Devins Site Visit Date 07/20/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A П **✓** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** П **Solar radiation sensor V Modem** П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** ~ **✓ Shelter heater** Ozone analyzer **✓** \checkmark Filter pack flow controller Shelter air conditioner \checkmark Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log V V SSRF ✓ V ✓ Site Ops Manual** Oct 2001 **HASP ✓** Oct 2015 **✓ Field Ops Manual** Oct 2015 **Calibration Reports V V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Minimal information Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 CTH110 Technician Korey Devins Site Visit Date 07/20/2020 Site ID Site operation procedures Trained at ESE in 1987 Has the site operator attended a formal CASTNET training ✓ course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections ✓ V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant OC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Manual Zero/Span Tests **V ✓** Daily **Automatic Precision Level Tests V V Manual Precision Level Test V V** Weekly **Analyzer Diagnostics Tests V** Every 2 weeks **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete sample train including all filters?

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:

✓

✓

SSRF, call-in

The ozone inlet filter is replaced and a Z/S/P is performed every two weeks.

Do automatic and manual z/s/p gasses go through the

Are the automatic and manual z/s/p checks monitored and

complete sample train including all filters?

reported? If yes, how?

Fi	eld Sy	stems Data Form				F-02058-1500-S9-rev002				
Sit	te ID	CTH110 Te	chnician Korey	y Devins		Site Visit Date	07/20/2020			
	Site ope	ration procedures								
1	Is the fi	ter pack being changed ever	y Tuesday as s	scheduled?	✓	Filter changed mor	nings			
2	Are the correctl	Site Status Report Forms boy?	ing completed	and filed	✓					
3	Are dat	a downloads and backups beed?	ing performed	l as		No longer required				
4	Are gen	eral observations being mad	e and recorded	d? How?	✓	SSRF				
5	Are site	supplies on-hand and reple	nished in a tim	ely	✓					
6	Are sample flow rates recorded? How?					SSRF, call-in				
7	Are san	uples sent to the lab on a reg	ılar schedule i	n a timely	✓					
8		ers protected from contamin oping? How?	ation during h	andling	✓	Clean gloves on and off				
9		site conditions reported reg ons manager or staff?	ılarly to the fie	eld	✓					
QC	Check P	erformed	Frequenc	y			Compliant			
]	Multi-poi	nt MFC Calibrations	Semiannu	ally			✓			
]	Flow Syst	em Leak Checks	✓ Weekly				✓			
]	Filter Pac	k Inspection								
]	Flow Rate Setting Checks Weekly					V				
7	Visual Check of Flow Rate Rotometer ✓ Weekly					✓				
]	In-line Filter Inspection/Replacement Semiannually						\checkmark			
	Sample Line Check for Dirt/Water Weekly						\checkmark			
		dditional explanation (photon-made, that may affect the			ary)	regarding condit	ions listed abov	ve, or any other features,		

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID CTH110 Technician Korey Devins Site Visit Date 07/20/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07044
DAS	Campbell	CR3000	2510	000415
Elevation	Elevation	<u> </u> 1	None	None
Filter pack flow pump	Thomas	107CA18	1092135217	02664
Flow Rate	Apex	AXMC105LPMDPC	unknown	000557
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07208
Ozone	ThermoElectron Inc	49i A1NAA	1105347308	000735
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200023	000447
Sample Tower	Aluma Tower	В	AT-5107-E-4-10	666363
Shelter Temperature	Campbell	107-L	none	none
Shield (10 meter)	RM Young	unknown	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	12540	06301
Zero air pump	Werther International	PC70/4	000815261	06864

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
MK	G113-Korey	Devins-07/21/2020				
1	7/21/2020	Computer	Dell	07030	Inspiron 15	Unknown
2	7/21/2020	DAS	Campbell	000404	CR3000	2521
3	7/21/2020	Elevation	Elevation	None	1	None
4	7/21/2020	Filter pack flow pump	Thomas	03639	107CAB18	049400004427
5	7/21/2020	Flow Rate	Apex	000637	AXMC105LPMDPCV	illegible
6	7/21/2020	Infrastructure	Infrastructure	none	none	none
7	7/21/2020	Modem	Digi	07161	LR54	unknown
8	7/21/2020	Ozone	ThermoElectron Inc	000723	49i A1NAA	1105347327
9	7/21/2020	Ozone Standard	ThermoElectron Inc	000370	49i A3NAA	0726124689
10	7/21/2020	Sample Tower	Aluma Tower	666362	В	AT-5107-E-4-11
11	7/21/2020	Shelter Temperature	Campbell	none	107-L	none
12	7/21/2020	Siting Criteria	Siting Criteria	None	1	None
13	7/21/2020	Temperature	RM Young	04312	41342	4009
14	7/21/2020	Zero air pump	Werther International	06897	C 70/4	000821893

DAS Data Form 0 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2521 MKG113 Korey Devins 07/21/2020 DAS Primary Das Date: 7 /21/2020 **Audit Date** 7 /21/2020 Datel **Parameter** DAS Mfg 12:14:15 12:14:15 **Das Time: Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** Das Day: 203 **Audit Day** 203 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0001 0.0002 0.0001 0.0002 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 -0.0001 0.0000 0.0001 7 0.0999 0.0999 V V 0.0000 0.1000 7 0.3000 0.2997 0.2996 V V -0.0001 7 V V 0.5000 0.4996 0.4995 -0.0001 V V 7 0.7000 0.6995 0.6993 -0.0002 7 V V 0.9000 0.8993 0.8991 -0.0002 7 1.0000 0.9992 0.9990 V V -0.0002

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter Korey Devins MKG113 07/21/2020 000637 Apex Flow Rate illegible Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** 0.011 **DAS 2: DAS 1: Cal Factor Zero** 0.971 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 3.46% 3.87% 1.5 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. primary pump off 0.000 0.0000.01 0.0000.02 1/m1/m leak check 0.00 0.000 0.01 1/m0.000 0.000 1/mprimary test pt 1 1.517 1.540 1.54 0.000 1.49 1/m1/m -3.25% primary 1.54 0.000 1.49 1/m-3.25% primary test pt 2 1.519 1.540 1/m test pt 3 1.528 1.550 1.54 0.000 1.49 1/m1/m -3.87% primary Sensor Component Leak Test Condition **Status** pass **Condition** Good **Status** pass **Sensor Component** Tubing Condition Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Status pass Condition Clean and dry Sensor Component Moisture Present **Condition** See comments Status pass

Condition 3.0 cm

Condition 2.5 cm

Condition 40 deg

Condition

Status pass

Status pass

Status pass

Status pass

Sensor Component Filter Distance

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Mfg		Serial Numbe	er Tag	Site	ŗ	Tec	hnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElec	tron Inc	1105347327		MKG113		Kor	rey Devins	07/21/2020	Ozone		000723
Slope: Intercept CorrCoff:	-().99998 Cor i	e: [rcept rCoff:	0.00 0.00 0.00	000	,	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114	Tf	er Des	ozone c. Ozone primary stan
	iff: A M	lax % Dif A		Diff A Ma	x % Dif	3	Slope	0.999		rcept	0.29010
	0%	0.0%				•	Cert Date	1/14/20	20 Cori	Coff	0.99999
UseDescri primai primai	ry ry	ConcGroup 1 2 3	0. 15 35	Raw .26 .84	Tfer Corr -0.03 15.55 35.55	r	Site 0.23 15.15 35.02	Site Unit ppb ppb	RelPer	-1.5	AbsDif 0.26 -0.4
primai	•	4		3.12	67.86		66.93	ppb		-1.38	
prima		5		1.40	111.16	1242 -	110.40 n 730.0 mmHg	ppb	C4-4	-0.69	
	_	Audit Pressi							Status		
Sensor C	omponei	Sample Trai	in		Cond	litio	n Good		Status	pass	
Sensor C	omponei	Minimum dis	stance f	rom road me	t Cond	litio	n True		Status	pass	
Sensor C	omponei	Inlet Filter C	ondition	1	Cond	litio	n Moderately cle	an	Status	pass	
Sensor C	omponei	26.6 degree	unobst	ructed rule	Cond	litio	n True		Status	pass	
Sensor C	omponei	Tree dewline	e >10m	or below inle	et Cond	litio	n True		Status	pass	
Sensor C	omponei	Offset			Cond	litio	n -0.1		Status	pass	
Sensor C	omponei	Span			Cond	litio	n 0.997		Status	pass	
Sensor C	omponei	Zero Voltage	е		Cond	litio	n N/A		Status	pass	
Sensor C	omponei	Fullscale Vo	ltage		Cond	litio	n N/A		Status	pass	
Sensor C	omponei	Cell A Freq.			Cond	litio	n 93.5 kHz		Status	pass	
Sensor C	omponei	cell A Noise)		Cond	litio	n 0.6 ppb		Status	pass	
Sensor C	omponei	Cell A Flow			Cond	litio	n 0.67 lpm		Status	pass	
Sensor C	omponei	Cell A Press	sure		Cond	litio	n 700.8 mmHg		Status	pass	
Sensor C	omponei	Cell A Tmp.			Cond	litio	n 37.2 C		Status	pass	
Sensor C	omponei	Cell B Freq.			Cond	litio	n 95.1 kHz		Status	pass	
Sensor C	omponei	cell B Noise)		Cond	litio	n 0.7 ppb		Status	pass	
Sensor C	omponei	Cell B Flow			Cond	litio	n 0.68 lpm		Status	pass	
Sensor C	omponei	cell B Press	sure		Cond	litio	701.7 mmHg		Status	pass	
Sensor C	omponei	t Line Loss			Cond	litio	n Not tested		Status	pass	
Sensor C	omponei	System Mer	no		Cond	litio	n		Status	pass	

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 4009 MKG113 Korey Devins 07/21/2020 Temperature 04312 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.07 0.10 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.29 0.16 0.000 0.2 \mathbf{C} 0.04 C Temp Mid Range 25.15 24.82 0.000 24.8 -0.07 primary 47.80 47.29 C primary Temp High Range 0.000 47.2 -0.1 Condition Moderately clean Status pass Sensor Component Shield **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** MKG113 Korey Devins 07/21/2020 Shelter Temperature Campbell none none **DAS 2: DAS 1:** Mfg Extech Parameter Shelter Temperature Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.55 0.71 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 2/14/2020 ${\bf CorrCoff}$ 1.00000 **Cert Date**

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	29.67	29.31	0.000	28.9	C	-0.45
primary	Temp Mid Range	27.53	27.18	0.000	26.7	C	-0.49
primary	Temp Mid Range	29.15	28.79	0.000	28.1	C	-0.71
Sensor Cor	nponent System Memo)	Condition		Status	pass	

Infrastructure Data For

Site ID	MKG113	Technician	Korey Devins	Site Visit Date	07/21/2020
,	·				

Shelter Make	Shelter Model	Shelter Size	
Ekto	8810 (s/n 2116-4)	640 cuft	

Sensor Component	Sample Tower Type	Condition	Type B	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	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	Shelter walls	Condition	Good	Status pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status pass
Sensor Component	City > 50,000	Condition	Status pass
Sensor Component	City 1,000 to 10,000	Condition	Status pass
Sensor Component	City 10,000 to 50,000	Condition	Status pass
Sensor Component	Feedlot operations	Condition	Status pass
Sensor Component	Large parking lot	Condition	Status pass
Sensor Component	Limited agriculture operations	Condition	Status pass
Sensor Component	Major industrial source	Condition	Status pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component	Small parking lot	Condition 60 m	Status Fail
Sensor Component	System Memo	Condition	Status pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status pass
Sensor Component	Intensive agriculture operations	Condition	Status pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	MKG113	Korey Devins	07/21/2020	Moisture Present	Apex	3997		
FF1 6"1. 1 . 1 .	1 1 6			1.				

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

Field Systems Comments

1 Parameter: DasComments

The Met tower has been removed and the temperature sensor is now mounted on the sample tower in a naturally aspirated shield.

2 Parameter: SiteOpsProcedures

The onsite calibration line for automatic QC checks is attached downstream of the ozone inlet filter.

3 Parameter: ShelterCleanNotes

The shelter is clean and organized and in good condition.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 07/21/2020 MKG113 Technician Korey Devins Site ID Hadley **USGS Map EPA** Site Sponsor (agency) Map Scale PA/private **Operating Group Map Date** 42-085-9991 AQS# Climatronics **Meteorological Type** Ozone, IMPROVE Air Pollutant Analyzer **QAPP** Latitude 41.4250 dry **QAPP** Longitude -80.1447 **Deposition Measurement** 384 **Land Use** woodland - mixed, agriculture **QAPP Elevation Meters** 9.25 Terrain gently rolling **QAPP Declination** 2/22/2006 Conforms to MLM Marginally **OAPP Declination Date** (724) 253-3685 41.426847 **Site Telephone Audit Latitude** M. K. Goddard St. Park -80.145247 Site Address 1 **Audit Longitude** 684 Lake Wilhelm Rd. Site Address 2 **Audit Elevation** 377 Mercer -9.3 **County Audit Declination** Sandy Lake, PA City, State **Present** Fire Extinguisher 16145 New in 2014 Zip Code Time Zone Eastern First Aid Kit **✓ Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **V Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 (s/n 2116-4) Ekto **Shelter Size** 640 cuft **✓** Notes The shelter is clean and organized and in good condition. Shelter Clean **✓** Notes Site OK

From I-79 take exit 130 (route 358). Go west and bear right onto Sheakleyville Road. Continue less than a mile to

the stop sign, and turn right onto Lake Wilhelm Road. Continue approximately 1.5 miles, just after crossing the lake

the site will be visible on the right at the state park headquarters facility.

Driving Directions

Fic	eld Systems Data Form		F-02058-1500-S3-rev002
Site	MKG113 Technician Korey Devins		Site Visit Date 07/21/2020
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:

Fic	eld Systems Data Form	F-02058-1500-S4-rev002
Site	ID MKG113 Technician Korey Devins	Site Visit Date 07/21/2020
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?	d 🗸
	ide any additional explanation (photograph or sketch if necessal or man-made, that may affect the monitoring parameters	essary) regarding conditions listed above, or any other features, s:

Field Systems Data Form F-02058-1500-S5-rev002 MKG113 Technician Korey Devins Site Visit Date 07/21/2020 Site ID Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **~** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? **~** Are the sample inlets 3 - 15 meters above the ground? One tree as tall as inlet within 12 meters Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance **~** Do the analyzers and equipment appear to be in good condition and well maintained? **~** Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 15 meters Describe dry dep sample tube. 3/8 teflon by 15 meters At inlet only Are in-line filters used in the ozone sample line? (if ves indicate location) **~** Are sample lines clean, free of kinks, moisture, and obstructions? **V** Is the zero air supply desiccant unsaturated? Flow line only Are there moisture traps in the sample lines? **✓** Clean and dry 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	e ID	MKG113	Technician	Korey Devins		Site Visit Date	07/21/2020		
	DAS, se	nsor translators, and j	peripheral equi	pment operation	ıs aı	nd maintenance			
1		DAS instruments appe intained?	ar to be in good	l condition and	✓				
2		the components of the backup, etc)	DAS operation	al? (printers,	✓				
3		nnalyzer and sensor sig g protection circuitry?		through	✓	Met sensors only			
4		signal connections pro intained?	otected from the	e weather and	✓				
5	Are the	signal leads connected	to the correct	DAS channel?	✓				
6	Are the grounde	DAS, sensor translatoed?	rs, and shelter	properly	✓				
7	Does the	e instrument shelter ha	ave a stable pov	ver source?	✓				
8	Is the in	strument shelter temp	erature contro	lled?	✓				
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	ample tower stable and	l grounded?					✓	
11	Tower o	comments?				Met tower removed	·		
		additional explanationan-made, that may af				ry) regarding condi	tions listed	above, or a	any other features,

The Met tower has been removed and the temperature sensor is now mounted on the sample tower in a naturally aspirated shield.

Field Systems Data Form F-02058-1500-S7-rev002 MKG113 Technician Korey Devins Site Visit Date 07/21/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A П **V V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer **V** П **Solar radiation sensor V Modem** П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** ~ **✓ Shelter heater** Ozone analyzer ~ **✓** Filter pack flow controller Shelter air conditioner **V** Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log V V SSRF ✓ V ✓ Site Ops Manual** March 2015 **✓ HASP** March 2015 **✓ Field Ops Manual** March 2015 **Calibration Reports V V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 MKG113 Technician Korey Devins Site Visit Date 07/21/2020 Site ID Site operation procedures July 2006, refresher training by Howell and Lavery Has the site operator attended a formal CASTNET training ✓ course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **V** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant OC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** As needed Manual Zero/Span Tests **V ~** Daily **Automatic Precision Level Tests V Manual Precision Level Test** As needed **V V** Weekly **Analyzer Diagnostics Tests V** Every 2 weeks **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **V V Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete

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:

line attached after filter

SSRF, logbook, call-in

The onsite calibration line for automatic QC checks is attached downstream of the ozone inlet filter.

sample train including all filters?

reported? If yes, how?

complete sample train including all filters?

Do automatic and manual z/s/p gasses go through the

Are the automatic and manual z/s/p checks monitored and

Field Sys	tems Data Form				F-02058-1500-89-rev00.
Site ID	MKG113 Tec	chnician Korey Devins		Site Visit Date	07/21/2020
Site opera	ntion procedures				
1 Is the filte	er pack being changed ever	y Tuesday as scheduled?	V	Filter changed vario	us times of day
2 Are the Si correctly?	ite Status Report Forms be	ing completed and filed	✓		
3 Are data scheduled	downloads and backups be	ing performed as		No longer required	
4 Are gener	al observations being mad	e and recorded? How?	✓	SSRF, logbook	
5 Are site so fashion?	upplies on-hand and repler	nished in a timely	✓		
6 Are samp	le flow rates recorded? Ho	w?	✓	SSRF, logbook, call-	in
7 Are samp fashion?	les sent to the lab on a regu	ılar schedule in a timely	✓		
	s protected from contaminating? How?	ation during handling	✓	Clean gloves on and	d off
	te conditions reported regus manager or staff?	larly to the field	✓		
QC Check Per	formed	Frequency			Compliant
Multi-point	MFC Calibrations	✓ Semiannually			\checkmark
Flow System	n Leak Checks	₩eekly			✓
Filter Pack	Inspection	✓ Weekly			✓
Flow Rate S	Setting Checks	✓ Weekly			✓
Visual Chec	ck of Flow Rate Rotometer	✓ Weekly			✓
In-line Filte	r Inspection/Replacement	✓ Semiannually			✓
Sample Lin	e Check for Dirt/Water	✓ Weekly			✓
	ditional explanation (photo- made, that may affect the			regarding condition	ons listed above, or any other features,

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID

MKG113

Technician Korey Devins

Site Visit Date 07/21/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07030
DAS	Campbell	CR3000	2521	000404
Elevation	Elevation	<u> </u> 1	None	None
Filter pack flow pump	Thomas	107CAB18	049400004427	03639
Flow Rate	Apex	AXMC105LPMDPC	illegible	000637
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07161
Ozone	ThermoElectron Inc	49i A1NAA	1105347327	000723
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124689	000370
Sample Tower	Aluma Tower	В	AT-5107-E-4-11	666362
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	4009	04312
Zero air pump	Werther International	C 70/4	000821893	06897

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
KEF	112-Korey	Devins-07/22/2020				
1	7/22/2020	Computer	Dell	07054	Inspiron 15	Unknown
2	7/22/2020	DAS	Campbell	000414	CR3000	2537
3	7/22/2020	Elevation	Elevation	None	1	None
4	7/22/2020	Filter pack flow pump	Thomas	000965	107CA18	00000878
5	7/22/2020	Flow Rate	Apex	000671	AXMC105LPMDPCV	illegible
6	7/22/2020	Infrastructure	Infrastructure	none	none	none
7	7/22/2020	Modem	Digi	07192	LR54	unknown
8	7/22/2020	Ozone	ThermoElectron Inc	000700	49i A1NAA	1030244793
9	7/22/2020	Ozone Standard	ThermoElectron Inc	000432	49i A3NAA	CM08200008
10	7/22/2020	Sample Tower	Aluma Tower	03443	A	none
11	7/22/2020	Shelter Temperature	Campbell	none	107-L	none
12	7/22/2020	Siting Criteria	Siting Criteria	None	1	None
13	7/22/2020	Temperature	RM Young	06388	41342	13992
14	7/22/2020	Zero air pump	Werther International	06932	C 70/4	000829174

DAS Data Form 0.02 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2537 KEF112 Korey Devins 07/22/2020 DAS Primary Das Date: 7 /22/2020 **Audit Date** 7 /22/2020 Datel **Parameter** DAS Mfg 13:01:29 13:01:30 **Das Time: Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** Das Day: 204 **Audit Day** 204 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 **Slope** Intercept 0.0000 0.0000 0.0001 0.0001 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 0.0000 0.0000 0.00007 0.0999 0.0999 V V 0.0000 0.1000 7 0.3000 0.2997 0.2997 V V 0.00007 V V 0.5000 0.4996 0.4996 0.0000 V V 7 0.7000 0.6995 0.6995 0.0000 7 V V 0.9000 0.0001 0.8993 0.8994 7 1.0000 0.9992 0.9993 V V 0.0001

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter Korey Devins 07/22/2020 000671 Apex KEF112 Flow Rate illegible Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** -0.014 **DAS 2: DAS 1: Cal Factor Zero** 0.972 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 3.03% 3.25% 1.6 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. primary pump off 0.000 0.0000.00 0.000 -0.01 1/m1/m leak check 0.00 0.000 -0.02 1/m0.000 0.000 1/mprimary test pt 1 1.518 1.540 1.53 0.000 1.49 1/m1/m -3.25% primary 1.540 1.53 0.000 1.50 1/m-2.60% primary test pt 2 1.520 1/m test pt 3 1.519 1.540 1.53 0.000 1.49 1/m1/m -3.25% primary Sensor Component Leak Test Condition **Status** pass **Condition** Good **Status** pass **Sensor Component** Tubing Condition Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Status pass Condition Clean and dry Sensor Component Moisture Present **Condition** See comments **Status** Pass

Condition 3.5 cm

Condition 1.0 cm

Condition 300 deg

Condition

Status pass

Status pass

Status pass

Status pass

Sensor Component Filter Distance

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Intercept 0.24380 Intercept 0.00000 CorrCoff: 0.99998 Intercept 0.00000 Serial Number 1180030022 Tfer Desc. Ozone primary stan Tfer ID 01114	Mfg	:	Serial Numb	er Tag	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
DAS 1: DAS 2: DAS 2: Siope 0.9999 CorrCoff: 0.00000 CorrCoff: 0.000000 CorrCoff: 0.000000 CorrCoff: 0.000000 CorrCoff: 0.000000 CorrCoff: 0.0000000 CorrCoff: 0.0000000000000000000000000000000000	ThermoElec	ctron Inc	1030244793		KEF112	!	Kc	orey Devins	07/22/2020	Ozone		000700
A New Source A New Source A New Source Cert Date 1/14/2020 Corr Coff 0.99999	Slope: Intercept CorrCoff:	0	.24380 Inte	rcept	(0.00000		Serial Number	1180030022			
Avg % Diff: A Max % Dif	DAS 1:		D	AS 2:				Slone	0.9995	iO Inter	rcent	0.29010
UseDescription ConcGroup Ticr Raw Ticr Corr Site Site Unit RelPerDif AbsDif primary 1 0.09 -0.20 0.43 ppb 0.63 ppt -0.47 primary 2 15.60 15.31 14.84 ppb -0.47 primary 3 34.81 34.53 33.66 ppb -2.55 ppt -2.65 primary 5 110.14 109.90 107.20 ppb -2.49	A Avg % D	oiff: A M	ax % Dif A	Avg %	Diff A	Max %	Dif	Бюрс			•	
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		_		- Cui G								
Sensor Component System Memo Condition Status pass												
	Sensor C	omponen	System Me	mo			Condition	on		Status	pass	

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg KEF112 Korey Devins 07/22/2020 Temperature 06388 RM Young 13992 Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.12 0.18 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.28 0.15 0.000 0.2 \mathbf{C} 0.04 C Temp Mid Range 26.08 25.75 0.000 25.6 -0.13 primary C primary Temp High Range 47.65 47.14 0.000 47.0 -0.18 Condition Moderately clean Status pass Sensor Component Shield **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** KEF112 Korey Devins 07/22/2020 Shelter Temperature Campbell none none **DAS 1: DAS 2:** Mfg Extech Parameter Shelter Temperature Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.39 0.58 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 2/14/2020 1.00000 **Cert Date** CorrCoff

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	26.20	25.86	0.000	25.7	C	-0.13
primary	Temp Mid Range	26.98	26.64	0.000	26.2	C	-0.46
primary	Temp Mid Range	26.85	26.51	0.000	25.9	C	-0.58
Sensor Con	nponent System Memo		Condition		Status	pass	

Infrastructure Data For

Site ID KEF112 Technician Korey Devins Site Visit Date 07/22/2020

Shelter Make	Shelter Model	Shelter Size	
Ekto	8810 (s/n 2149-14)	640 cuft	
CANCEL MATERIAL DESCRIPTION OF THE PROPERTY OF			

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	Shelter walls	Condition	Fair	Status	pass
Sensor Component	Excessive mold present	Condition	Poor	Status	Fail
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

Siting Criteria Form

Sensor Component City Sensor Component City		Condition Condition	Status	pass
Sensor Component City	1,000 to 10,000	Condition		
		Condition	Status	pass
Sensor Component City	10,000 to 50,000	Condition	Status	pass
Sensor Component Feed	dlot operations	Condition	Status	pass
Sensor Component Large	ge parking lot	Condition	Status	pass
Sensor Component Limit	ted agriculture operations	Condition	Status	pass
Sensor Component Majo	or industrial source	Condition	Status	pass
Sensor Component Seco	ondary road < or = 100 per da	Condition	Status	pass
Sensor Component Seco	ondary road >100 vehicles/da	Condition	Status	pass
Sensor Component Smal	all parking lot	Condition	Status	pass
Sensor Component Syste	tem Memo	Condition	Status	pass
Sensor Component Majo	or highway, airport, or rail yard	Condition	Status	pass
Sensor Component Inten	nsive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	KEF112	Korey Devins	07/22/2020	Moisture Present	Apex	3652		
				2				

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

Field Systems Comments

1 Parameter: SiteOpsProcedures

The inlet filter is replaced and a zero/span/precision check is performed every two weeks.

2 Parameter: SitingCriteriaCom

The site is in a clearing within the Kane Experimental Forest, the tree line is within 10 meters of the site.

3 Parameter: ShelterCleanNotes

The shelter is clean and very well organized. The floor has been replaced but the bottom of walls are beginning to deteriorate.

4 Parameter: PollAnalyzerCom

Trees to the east are within 10 meters of the ozone inlet and at the same height as the inlet.

Field Systems Data Form F-02058-1500-S1-rev002 Technician Korey Devins Site Visit Date 07/22/2020 KEF112 Site ID James City **USGS Map EPA** Site Sponsor (agency) Map Scale PAFS/private **Operating Group Map Date** 42-047-9991 AQS# R.M. Young **Meteorological Type** Air Pollutant Analyzer Ozone **QAPP** Latitude 41.5981 dry, wet **QAPP** Longitude -78.7683 **Deposition Measurement** 622 **Land Use** woodland - mixed **QAPP Elevation Meters** 10.5 Terrain rolling **QAPP Declination** Yes 2/24/2006 Conforms to MLM **OAPP Declination Date** (814) 837-8069 41.598119 **Site Telephone Audit Latitude** Kane Experimental Forest Hdgts -78.767866 Site Address 1 **Audit Longitude** Seven Mile Road Site Address 2 **Audit Elevation** 618 Elk -10.3 **County Audit Declination** Kane, PA City, State **Present** Fire Extinguisher 16735 New in 2015 Zip Code Eastern First Aid Kit Time Zone **✓ Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 (s/n 2149-14) Ekto **Shelter Size** 640 cuft **✓** Notes The shelter is clean and very well organized. The floor has been replaced but the bottom of walls **Shelter Clean** are beginning to deteriorate. **✓** Notes

Driving Directions

Site OK

From Kane go south on route 66 for approximately 1 mile. Just past the 2nd cemetery turn left. Continue to the stop sign just over the railroad tracks. Turn right and continue approximately 3.2 miles through the town of Lamont. About 0.5 mile past Lamont, turn left on a gravel road which is marked with a brown Forest Service sign for the NE Forest Experimental Station. Continue approximately 2 miles and bear left at the fork. The site is behind the green Forest Service buildings on the left.

Fi	eld Systems Data Form	F-02058-1500-S3-rev002				
Site	KEF112 Technician Korey Devins		Site Visit Date 07/22/2020			
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	✓	N/A			
3	tower into the prevailing wind) 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:

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	KEF112 Technician Korey Devins		Site Visit Date 07/22/2020
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?	✓	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?	✓	
	ide any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	sary)	regarding conditions listed above, or any other features,

Field Systems Data Form F-02058-1500-S5-rev002 KEF112 Technician Korey Devins Site Visit Date 07/22/2020 Site ID Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **~** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? **~** Are the sample inlets 3 - 15 meters above the ground? Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance **~** Do the analyzers and equipment appear to be in good condition and well maintained? **V** Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 15 meters Describe dry dep sample tube. 3/8 teflon by 12 meters At inlet only Are in-line filters used in the ozone sample line? (if ves indicate location) **~** Are sample lines clean, free of kinks, moisture, and obstructions? **V** Is the zero air supply desiccant unsaturated? Flow line only Are there moisture traps in the sample lines? **✓** Clean and dry 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:

Trees to the east are within 10 meters of the ozone inlet and at the same height as the inlet.

Field Systems Data Form

F-02058-1500-S6-rev002

Site	e ID	KEF112	Technician	Korey Devins		Site Visi	it Date 07/22/202	20	
	DAS, sei	nsor translators, and p	peripheral equip	ment operation	ıs ar	ıd maintena	<u>nce</u>		
1		OAS instruments appentained?	ar to be in good	condition and	✓				
2		he components of the backup, etc)	DAS operationa	l? (printers,	✓				
3		nalyzer and sensor sig g protection circuitry?		nrough	✓	Met sensors	only		
4		signal connections prontained?	otected from the	weather and	✓				
5	Are the	signal leads connected	I to the correct D	OAS channel?	✓				
6	Are the grounde	DAS, sensor translato d?	rs, and shelter p	roperly	✓				
7	Does the	instrument shelter ha	ave a stable pow	er source?	✓				
8	Is the ins	strument shelter temp	erature controll	ed?	✓				
9	Is the mo	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	l grounded?			✓			
11	Tower co	omments?					emoved, SampleT	ower not gro	unded
		additional explanatio an-made, that may af				y) regardinį	g conditions liste	d above, or a	any other features,

Field Systems Data Form F-02058-1500-S7-rev002 KEF112 Technician Korey Devins Site Visit Date 07/22/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A П **✓ V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger **V V** П **Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer **V** П **Solar radiation sensor V Modem** П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** ~ **✓ Shelter heater** Ozone analyzer **V ✓** 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 V V SSRF ✓ V ✓ Site Ops Manual** March 2015 **V HASP** March 2015 **✓ Field Ops Manual** March 2015 **Calibration Reports V V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 KEF112 Technician Korey Devins Site Visit Date 07/22/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training Current operator trained by previous operator, who was trained by previous operator course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **V** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant OC Check Performed Frequency Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V** As needed Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests V Manual Precision Level Test** As needed **V V** Weekly **Analyzer Diagnostics Tests V** Every 2 weeks **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the

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:

✓

SSRF, call-in

The inlet filter is replaced and a zero/span/precision check is performed every two weeks.

complete sample train including all filters?

reported? If yes, how?

Are the automatic and manual z/s/p checks monitored and

Fi	eld Sy	stems Data Form			F-02058-1500-S9-rev002				
Sit	e ID	KEF112 Tec	hnician Korey Devins		Site Visit Date	e 07/22/2020			
	Site ope	ration procedures							
1	Is the fil	ter pack being changed ever	y Tuesday as scheduled	? ✓	Filter changed vari	ious times			
2	Are the correctl	Site Status Report Forms be y?	ing completed and filed	✓					
3	Are data	a downloads and backups be ed?	ing performed as		No longer required	i			
4	Are gen	eral observations being mad	e and recorded? How?	✓	SSRF, logbook				
5	Are site	supplies on-hand and replen	ished in a timely	✓					
6	Are sam	ple flow rates recorded? Ho	w?	✓	SSRF, call-in				
7	Are san	ples sent to the lab on a regu	ılar schedule in a timely	V					
8		ers protected from contamination	ation during handling	✓	Clean gloves on a	nd off			
9		site conditions reported regu ons manager or staff?	llarly to the field	✓					
QC	Check P	erformed	Frequency			Compliant			
I	Multi-poi	nt MFC Calibrations	✓ Semiannually			✓			
I	Flow Syste	em Leak Checks	✓ Weekly			✓			
I	Filter Pac	k Inspection							
I	Flow Rate	Setting Checks	✓ Weekly			✓			
•	Visual Ch	eck of Flow Rate Rotometer	✓ Weekly			✓			
1	In-line Fil	ter Inspection/Replacement	✓ As needed			✓			
5	Sample Li	ne Check for Dirt/Water	✓ Weekly			✓			
		dditional explanation (photo n-made, that may affect the			y) regarding condi	tions listed above, or any other	features,		

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID KEF112

Technician Korey Devins

Site Visit Date 07/22/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07054
DAS	Campbell	CR3000	2537	000414
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	00000878	000965
Flow Rate	Apex	AXMC105LPMDPC	illegible	000671
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07192
Ozone	ThermoElectron Inc	49i A1NAA	1030244793	000700
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200008	000432
Sample Tower	Aluma Tower	A	none	03443
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	13992	06388
Zero air pump	Werther International	C 70/4	000829174	06932

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PSU	106-Korey	Devins-07/27/2020				
1	7/27/2020	Computer	Dell	07046	Inspiron 15	Unknown
2	7/27/2020	DAS	Campbell	000407	CR3000	2512
3	7/27/2020	Elevation	Elevation	None	1	None
4	7/27/2020	Filter pack flow pump	Thomas	06023	107CAB18	060400022676
5	7/27/2020	Flow Rate	Apex	000549	AXMC105LPMDPCV	illegible
6	7/27/2020	Infrastructure	Infrastructure	none	none	none
7	7/27/2020	Modem	Digi	07181	LR54	unknown
8	7/27/2020	Ozone	ThermoElectron Inc	000678	49i A1NAA	1030244791
9	7/27/2020	Ozone Standard	ThermoElectron Inc	000372	49i A3NAA	0726124684
10	7/27/2020	Sample Tower	Aluma Tower	02747	Α	none
11	7/27/2020	Shelter Temperature	Campbell	none	107-L	none
12	7/27/2020	Siting Criteria	Siting Criteria	None	1	None
13	7/27/2020	Temperature	RM Young	05046	41342VC	9642
14	7/27/2020	Zero air pump	Werther International	06921	C 70/4	000836216

DAS Data Form 0 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2512 PSU106 Korey Devins 07/27/2020 DAS Primary Das Date: 7 /27/2020 **Audit Date** 7 /27/2020 Datel **Parameter** DAS Mfg 16:16:45 16:16:45 **Das Time: Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** 209 Das Day: 209 **Audit Day** Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0001 0.0002 0.0001 0.0002 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 0.0000 0.0000 0.00007 0.0999 0.0999 V V 0.0000 0.1000 7 0.3000 0.2998 0.2997 V V -0.0001 7 V V 0.5000 0.4996 0.4995 -0.0001 V V 7 0.7000 0.6995 0.6994 -0.0001 7 V V 0.9000 0.8993 0.8992 -0.0001 7 1.0000 0.9993 0.9991 V V -0.0002

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter Korey Devins PSU106 07/27/2020 000549 Apex Flow Rate illegible Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** -0.04 **DAS 2: DAS 1: Cal Factor Zero** 0.95 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 3.85% 3.85% 1.6 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. primary pump off 0.000 0.0000.02 0.000 -0.031/m1/m leak check 0.01 0.000 -0.03 1/m0.000 0.000 1/mprimary test pt 1 1.537 1.560 1.55 0.000 1.50 1/m1/m -3.85% primary 1.55 0.000 1.50 1/m-3.85% primary test pt 2 1.536 1.560 1/m test pt 3 1.537 1.560 1.55 0.000 1.50 1/m1/m -3.85% primary Sensor Component Leak Test Condition **Status** pass **Condition** Good **Status** pass **Sensor Component** Tubing Condition Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Status pass Condition Clean and dry

Condition See comments

Condition 4.0 cm

Condition 1.0 cm

Condition 270 deg

Condition

Status pass

Status pass

Status pass

Status pass

Status pass

Sensor Component Moisture Present

Sensor Component Filter Distance

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Mfg	S	erial Numbe	er Tag Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElect	ron Inc	1030244791	PSU106	6	Ko	orey Devins	07/27/2020	Ozone		000678
Slope:	0.	99347 Slop	e:	0.00000		Mfg	ThermoElectron	Inc Pa	ramete	rozone
Intercept	-0.	54192 Inte		0.00000		Serial Number	1180030022	Tf	er Desc	Ozone primary stan
CorrCoff:	1.	00000 Cor	rCoff:	0.00000		Tfer ID	01114			
DAS 1:		D.	AS 2:			Slope	0.9995	50 Inter	·cent	0.29010
A Avg % Di	ff: A Ma	x % Dif A	Avg %Diff A	Max %	Dif	_			•	
0.0	%	0.0%				Cert Date	1/14/202	20 Corr	·Coff	0.99999
UseDescrip	otion (ConcGroup	Tfer Raw	Tfer	Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary	ý	1	0.40	0.	10	-0.43	ppb			-0.53
primary	У	2	15.90	15.	.61	14.93	ppb			-0.68
primary	У	3	35.23	34.		34.17	ppb		-2.26	
primary	У	4	67.95	67.		66.77	ppb		-1.37	
primary	y	5	111.54	111	.30	110.00	ppb		-1.17	
Sensor Co	mponent	Audit Press	ure	C	onditi	723.6 mmHg		Status	pass	
Sensor Co	mponent	Sample Tra	in	C	onditi	on Good		Status	pass	
Sensor Co	mponent	Minimum di	stance from road	d met C	onditi	on True		Status	pass	
Sensor Co	mponent	Inlet Filter C	Condition	C	onditi	on Clean		Status	pass	
Sensor Co	mponent	26.6 degree	unobstructed ru	ıle C	onditi	on True		Status	pass	
Sensor Co	mponent	Tree dewlin	e >10m or below	v inlet C	onditi	on True		Status	pass	
Sensor Co	mponent	Offset		C	Conditi	on 0.2		Status	pass	
Sensor Co	mponent	Span		C	onditi	on 1.010		Status	pass	
Sensor Co	mponent	Zero Voltag	е	C	onditi	on N/A		Status	pass	
Sensor Co	mponent	Fullscale Vo	oltage	C	onditi	on N/A		Status	pass	
Sensor Co	mponent	Cell A Freq.		C	onditi	on 95.8 kHz		Status	pass	
Sensor Co	mponent	Cell A Noise)	C	onditi	0.5 ppb		Status	pass	
Sensor Co	mponent	Cell A Flow		C	onditi	0.66 lpm		Status	pass	
Sensor Co	mponent	Cell A Press	sure	C	onditi	on 699.8 mmHg		Status	pass	
Sensor Co	mponent	Cell A Tmp.		C	onditi	on 33.3 C		Status	pass	
Sensor Co	mponent	Cell B Freq.		C	onditi	on 102.1 kHz		Status	pass	
Sensor Co	mponent	Cell B Noise)	C	onditi	0.9 ppb		Status	pass	
Sensor Co	mponent	Cell B Flow		C	onditi	0.64 lpm		Status	pass	
Sensor Co	mponent	Cell B Press	sure	C	onditi	700.4 mmHg		Status	pass	
Sensor Co	mponent	Line Loss		C	onditi	On Not tested		Status	pass	
Sensor Co	mponent	System Mei	no	C	onditi	on		Status	pass	

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 9642 PSU106 Korey Devins 07/27/2020 Temperature 05046 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.13 0.31 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.36 0.23 0.000 0.5 \mathbf{C} 0.31 C Temp Mid Range 25.90 25.57 0.000 25.5 -0.03 primary C primary Temp High Range 47.24 46.74 0.000 46.7 -0.06 Condition Moderately clean Status pass Sensor Component Shield **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** PSU106 Korey Devins 07/27/2020 Shelter Temperature Campbell none none **DAS 1: DAS 2:** Mfg Extech Parameter Shelter Temperature Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.33 0.48 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 2/14/2020 ${\bf CorrCoff}$ 1.00000 **Cert Date**

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference	
primary	Temp Mid Range	26.72	26.38	0.000	26.3	C	-0.06	
primary	Temp Mid Range	25.28	24.95	0.000	25.4	C	0.48	
primary	Temp Mid Range	24.30	23.98	0.000	24.4	C	0.44	
Sensor Component System Memo			Condition	Status pass				

Infrastructure Data For

Site ID	PSU106	Technician	Korey Devins	Site Visit Date	07/27/2020
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Shelter Make	Shelter Model	Shelter Size
PSU	N/A	3840 cuft

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	Shelter walls	Condition	Good	Status	pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition 9 km	Status	Fail
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition 10 m	Status	Fail
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition	Status	pass
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem	
Flow Rate	PSU106	Korey Devins	07/27/2020	Moisture Present	Apex	4044			
The filter sample tubing has drops of moisture in low sections outside the shelter.									

Field Systems Comments

1 Parameter: DasComments

The meteorological tower has been removed.

2 Parameter: SitingCriteriaCom

The site is within 10 km of State College which has a population of approximately 50,000. The site is located in a university agricultural research field

3 Parameter: ShelterCleanNotes

The shelter is owned by the university and is clean and orderly. The site is part of the Surfrad network.

4 Parameter: MetOpMaintCom

The 10-meter temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 07/27/2020 PSU106 Technician Korey Devins Site ID Pine Grove Mills **USGS Map EPA** Site Sponsor (agency) Map Scale PSU **Operating Group Map Date** 42-027-9991 AQS# Climatronics **Meteorological Type** Air Pollutant Analyzer Ozone **QAPP** Latitude 40.7209 dry **QAPP** Longitude -77.9316 **Deposition Measurement** 376 **Land Use** agriculture **QAPP Elevation Meters** rolling - complex 10.9 Terrain **QAPP Declination** Marginally 9/16/2005 Conforms to MLM **OAPP Declination Date** (814) 237-5778 40.720902 **Site Telephone Audit Latitude** PSU Agriculture Research Farm **Audit Longitude** -77.931759 Site Address 1 Site Address 2 Tadpole Road **Audit Elevation** 364 Centre -10.7 **County Audit Declination** Rockspring, PA City, State **Present** Fire Extinguisher 16865 new in 2015 Zip Code Eastern First Aid Kit Time Zone **✓ Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** PSU Model N/A **Shelter Size** 3840 cuft **✓** Notes The shelter is owned by the university and is clean and orderly. The site is part of the Surfrad **Shelter Clean**

Driving Directions

Site OK

network.

✓ Notes

From 322 on the east side of State College, take SR 3024 south. After the traffic light at the intersection of route 26, SR 3024 will change to Whitehall Road. Continue on Whitehall road for approximately 3 miles to Fairbrook. Turn left on Tadpole Road in Fairbrook at the church. Continue approximately 0.5 miles, the site will be in the field on the right.

Fic	eld Systems Data Form		F-02058-1500-S3-rev002
Site	PSU106 Technician Korey Devins		Site Visit Date 07/27/2020
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	✓	N/A
3	tower into the prevailing wind) Are the tower and sensors plumb?	✓	N/A
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?	✓	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:

Fie	eld Systems Data Form		F-02058-1500-S4-rev002
Site	PSU106 Technician Korey Devins		Site Visit Date 07/27/2020
1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	ı 🗸	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 protecte from the elements and well maintained?	d 🗸	
	ide any additional explanation (photograph or sketch if necoral or man-made, that may affect the monitoring parameter		regarding conditions listed above, or any other features,
The 1	0-meter temperature sensor is now mounted in a naturally aspir	ated sh	nield on the sample tower.

Field Systems Data Form F-02058-1500-S5-rev002 PSU106 Technician Korey Devins Site Visit Date 07/27/2020 Site ID Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **~** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? **~** Are the sample inlets 3 - 15 meters above the ground? **~** Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance **~** Do the analyzers and equipment appear to be in good condition and well maintained? **~** Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 20 meters Describe dry dep sample tube. 3/8 teflon by 20 meters At inlet only Are in-line filters used in the ozone sample line? (if ves indicate location) **~** Are sample lines clean, free of kinks, moisture, and obstructions? Is the zero air supply desiccant unsaturated? Flow line only Are there moisture traps in the sample lines? **✓** Clean and dry 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 PSU106 Technician Korey Devins Site Visit Date 07/27/2020 Site ID DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **✓** Are all the components of the DAS operational? (printers, modem, backup, etc) Met sensors only Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **~** grounded? **✓** Does the instrument shelter have a stable power source? ~ Is the instrument shelter temperature controlled? Grounded **Stable** Is the met tower stable and grounded? Is the sample tower stable and grounded? **V V** 11 Tower comments? Met tower removed

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 tower has been removed.

Field Systems Data Form F-02058-1500-S7-rev002 PSU106 Technician Korey Devins Site Visit Date 07/27/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A П **✓ V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger **V V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device ✓ V Shelter heater** Ozone analyzer **V ✓** 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 V V SSRF ✓ V ✓ V Site Ops Manual** May 2019 **✓ V HASP** May 2019 **✓ Field Ops Manual V** May 2019 **Calibration Reports V ✓** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 PSU106 Technician Korey Devins Site Visit Date 07/27/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training Trained by previous operator course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET No backup operator training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant QC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V** As needed Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests V Manual Precision Level Test** As needed **V V Analyzer Diagnostics Tests** Weekly **~** Every 2 weeks **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ V 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?

	Unknown
✓	
✓	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:

Field Systems Data Form					F-02058-1500-S9-rev002				
Sit	e ID	PSU106 T	echni	cian	Korey Devins		Site Visit Dat	e 07/27/2020	
	Site ope	ration procedures							
1	Is the fil	ter pack being changed eve	ery T	uesda	y as scheduled	? ~	Filter changed mo	rinings	
2	Are the correctly	Site Status Report Forms I	eing	comp	leted and filed	✓			
3	Are data	a downloads and backups led?	eing	perfo	rmed as		No longer required	t	
4	Are gen	eral observations being ma	de an	d rec	orded? How?	✓	SSRF, logbook		
5	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 sam	ples sent to the lab on a re	gular	sched	dule in a timely	✓			
8		ers protected from contami oping? How?	natio	n dur	ing handling	✓	Clean gloves on and off		
9		site conditions reported reported reports manager or staff?	gularl	ly to t	he field	✓			
QC	Check Po	erformed		Freq	uency			Compliant	
]	Multi-poir	nt MFC Calibrations	✓	Semi	iannually			✓	
]	Flow System Leak Checks Weekly					✓			
]	Filter Pack Inspection								
]	Flow Rate Setting Checks Weekly					✓			
7	Visual Check of Flow Rate Rotometer ✓ Weekly					\checkmark			
]	In-line Filter Inspection/Replacement Semiannually					\checkmark			
	Sample Line Check for Dirt/Water Weekly				✓				
		dditional explanation (pho n-made, that may affect th) regarding condi	tions listed abo	ve, or any other features,

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID PSU106 Technician Korey Devins Site Visit Date 07/27/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07046
DAS	Campbell	CR3000	2512	000407
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060400022676	06023
Flow Rate	Apex	AXMC105LPMDPC	illegible	000549
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07181
Ozone	ThermoElectron Inc	49i A1NAA	1030244791	000678
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124684	000372
Sample Tower	Aluma Tower	A	none	02747
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	9642	05046
Zero air pump	Werther International	C 70/4	000836216	06921

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number					
ARE	ARE128-Korey Devins-07/29/2020										
1	7/29/2020	Computer	Dell	07045	Inspiron 15	Unknown					
2	7/29/2020	DAS	Campbell	000400	CR3000	2524					
3	7/29/2020	Elevation	Elevation	None	1	None					
4	7/29/2020	Filter pack flow pump	Thomas	02661	107CA110	000012187C					
5	7/29/2020	Flow Rate	Apex	000462	AXMC105LPMDPCV	42228					
6	7/29/2020	Infrastructure	Infrastructure	none	none	none					
7	7/29/2020	Modem	Digi	07189	LR54	unknown					
8	7/29/2020	Ozone	ThermoElectron Inc	000725	49i A1NAA	1105347326					
9	7/29/2020	Ozone Standard	ThermoElectron Inc	000747	49i A3NAA	1105347330					
10	7/29/2020	Sample Tower	Aluma Tower	666361	В	none					
11	7/29/2020	Shelter Temperature	Campbell	none	107-L	none					
12	7/29/2020	Siting Criteria	Siting Criteria	None	1	None					
13	7/29/2020	Temperature	RM Young	05048	41342VC	9683					
14	7/29/2020	Zero air pump	Werther International	06866	PC70/4	000815262					

DAS Data Form 0 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2524 ARE128 Korey Devins 07/29/2020 DAS Primary Das Date: 7 /29/2020 **Audit Date** 7 /29/2020 Datel **Parameter** DAS Mfg 11:40:00 11:40:00 **Das Time: Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** Das Day: 211 **Audit Day** 211 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0001 0.0001 0.0001 0.0001 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 0.0000 0.0000 0.00007 0.0999 0.0999 V V 0.0000 0.1000 7 0.3000 0.2997 0.2997 V V 0.00007 V V 0.5000 0.4996 0.4995 -0.0001 V V 7 0.7000 0.6995 0.6994 -0.0001 7 V V 0.9000 0.8992 -0.0001 0.8993 7 1.0000 0.9992 0.9991 V V -0.0001

Flow Data Form Mfg Serial Number Tag Site Technician Site Visit Date Parameter



Owner ID

DAS 1:	DAS 2:		Cal Factor Zero	0.04
A Avg % Diff: A Max % Dif	A Avg %Diff	A Max % Dif	Cal Factor Full Scale	1.01
3.23%			Rotometer Reading:	1.6

Sensor Component Filter Azimuth

Sensor Component System Memo

Desc.	Test type	Input 1/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignalI	PctDifference	
primary	pump off	0.000	0.000	-0.07	0.000	-0.02	1/m	l/m		
primary	leak check	0.000	0.000	00 -0.02 0.00		0.01	1/m	1/m		
primary	test pt 1	1.524	1.550	1.51	0.000	1.50	1/m	1/m	-3.23%	
primary	test pt 2	1.526	1.550	1.51	0.000	1.50	1/m	l/m	-3.23%	
primary	test pt 3	1.529	1.550	1.51	0.000	1.50	1/m	l/m	-3.23%	
Sensor Component Leak Test				Condition			Status	Status pass		
Sensor Component Tubing Condition			Condition Good			Statu	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	s pass			
Sensor Component Filter Distance				Condition 2.0 cm			Status	Status pass		
Sensor Component Filter Depth				Condition 1.5 cm			Statu	Status pass		

Condition 270 deg

Condition

Status pass

Status pass

Ozone Data Form

CorrCoff: 0.99998 CorrCoff: 0.00000 Tfer ID 01114 DAS 1: DAS 2: Slope 0.99950 Intercept 0.2901 A Avg % Diff: A Max % Dif A Avg % Diff	Mfg	Serial Number	r Tag Site	Т	echnician	Site Visit Date	Parameter	Owner ID	
The component The componen	ThermoElectron Inc	1105347326	ARE128	B	Korey Devins	07/29/2020	Ozone	000725	
DAS 1: DAS 2: Slope 0.99950 Intercept 0.2901	Slope:	0.97883 Slope	e: (0.00000	Mfg	ThermoElectron	Inc Paramet	er ozone	
DAS 1:	•			0.00000	Serial Number	1180030022	Tfer Desc. Ozone primary stan		
DAS 1:	CorrCoff:	0.99998 Corr	Coff:	0.00000	Tfer ID	01114			
Name	DAS 1:	DA	S 2:		Clone	0.0005	intorcont	0.29010	
UseDescription ConcGroup Tfer Raw Tfer Corr Site Site Unit RelPerDif AbsDif				Max % Dif	Stope				
primary 1					Cert Date	1/14/202	20 CorrCoff	0.99999	
primary 2 15.60 15.31 14.05 ppb -1.26	UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif	
primary 3 34.73 34.45 32.65 ppb -5.37 primary 4 67.77 67.51 65.20 ppb -3.48 primary 5 108.96 108.72 105.80 ppb -2.72 Sensor Component Audit Pressure Condition 737.2 mmHg Status pass Sensor Component Minimum distance from road met Condition True Status pass Sensor Component Inlet Filter Condition Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition True Status pass Sensor Component Span Condition 1.006 Status pass Sensor Component Zero Voltage Condition N/A Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 96.1 kHz Status pass Sensor Component Cell A Flow Condition 0.72 lpm Status pass Sensor Component Cell A Pressure Condition 70.72 mmHg Status pass Sensor Component Cell A Tmp. Condition 70.72 mmHg Status pass Sensor Component Cell A Tmp. Condition 70.72 mmHg Status pass Sensor Component Cell A Tmp. Condition 70.72 mmHg Status pass Sensor Component Cell A Tmp. Condition 116.3 kHz Status pass Sensor Component Cell B Freq. Condition 70.72 mmHg Status pass Sensor Component Cell B Freq. Condition 70.72 mmHg Status pass Sensor Component Cell B Freq. Condition 70.72 mmHg Status pass Sensor Component Cell B Freq. Condition 70.72 mmHg Status pass Sensor Component Cell B Freq. Condition 70.73 mmHg Status pass Sensor Component Cell B Freq. Condition 116.3 kHz Status pass	primary	1	0.33	0.03	-0.40	ppb		-0.43	
primary 4 67.77 67.51 65.20 ppb -3.48 primary 5 108.96 108.72 105.80 ppb -2.72 Sensor Component Audit Pressure Condition 737.2 mmHg Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Minimum distance from road met Condition True Status pass Sensor Component Inlet Filter Condition Condition True Status pass Sensor Component 26.6 degree unobstructed rule Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition True Status pass Sensor Component Span Condition 1.006 Status pass Sensor Component Zero Voltage Condition N/A Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 96.1 kHz Status pass Sensor Component Cell A Noise Condition 0.72 lpm Status pass Sensor Component Cell A Pressure Condition 709.7 mmHg Status pass Sensor Component Cell A Tmp. Condition 116.3 kHz Status pass Sensor Component Cell B Freq. Condition 116.3 kHz Status pass	primary	2	15.60	15.31	14.05	ppb		-1.26	
Sensor Component Audit Pressure Condition 737.2 mmHg Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Minimum distance from road met Condition True Status pass Sensor Component Inlet Filter Condition Clean Status pass Sensor Component 26.6 degree unobstructed rule Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition True Status pass Sensor Component Offset Condition 0.000 Status pass Sensor Component Zero Voltage Condition N/A Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 96.1 kHz Status pass Sensor Component Cell A Pressure Condition 709.7 mmHg Status pass Sensor Component Cell A Tmp. Condition 35.1 C Status pass Sensor Component Cell B Freq. Condition 709.7 mmHg Status pass Sensor Component Cell B Freq. Condition 35.1 C Status pass	primary	3	34.73	34.45	32.65	ppb	-5.37		
Sensor Component Audit Pressure Condition 737.2 mmHg Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Minimum distance from road met Condition True Status pass Sensor Component Inlet Filter Condition Condition Clean Status pass Sensor Component 26.6 degree unobstructed rule Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition 0.000 Status pass Sensor Component Span Condition 0.000 Status pass Sensor Component Zero Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 0.8 ppb Status pass Sensor Component Cell A Flow Condition 0.72 lpm Status pass <t< td=""><td>primary</td><td>4</td><td>67.77</td><td>67.51</td><td>65.20</td><td>ppb</td><td>-3.48</td><td></td></t<>	primary	4	67.77	67.51	65.20	ppb	-3.48		
Sensor Component Sample Train Sensor Component Minimum distance from road met Condition True Status pass Sensor Component Inlet Filter Condition Condition True Status pass Sensor Component 26.6 degree unobstructed rule Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition 0.000 Status pass Sensor Component Span Condition 1.006 Status pass Sensor Component Zero Voltage Condition N/A Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 96.1 kHz Status pass Sensor Component Cell A Noise Condition 0.72 lpm Status pass Sensor Component Cell A Pressure Condition 709.7 mmHg Status pass Sensor Component Cell A Tmp. Condition 116.3 kHz Status pass Sensor Component Cell B Freq. Condition 15.1 C Status pass	primary	5	108.96	108.72	105.80	ppb	-2.72		
Sensor Component Minimum distance from road met Condition True Status pass Sensor Component Inlet Filter Condition Condition Clean Status pass Sensor Component 26.6 degree unobstructed rule Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition 0.000 Status pass Sensor Component Span Condition 1.006 Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 96.1 kHz Status pass Sensor Component Cell A Noise Condition 0.72 lpm Status pass Sensor Component Cell A Freessure Condition 709.7 mmHg Status pass Sensor Component Cell B Freq. Condition 35.1 C Status pass Sensor Component Cell B Freq. Condition 116.3 kHz S	Sensor Compone	ent Audit Pressu	re	Condi	tion 737.2 mmHg		Status pass		
Sensor Component Inlet Filter Condition Condition Clean Status pass Sensor Component 26.6 degree unobstructed rule Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition 0.000 Status pass Sensor Component Span Condition 1.006 Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 96.1 kHz Status pass Sensor Component Cell A Noise Condition 0.72 lpm Status pass Sensor Component Cell A Fressure Condition 709.7 mmHg Status pass Sensor Component Cell A Tmp. Condition 35.1 C Status pass Sensor Component Cell B Freq. Condition 116.3 kHz Status pass	Sensor Component Sample Train				tion Good		Status pass		
Sensor Component 26.6 degree unobstructed rule Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition 0.000 Status pass Sensor Component Span Condition 1.006 Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 96.1 kHz Status pass Sensor Component Cell A Noise Condition 0.72 lpm Status pass Sensor Component Cell A Fressure Condition 709.7 mmHg Status pass Sensor Component Cell A Tmp. Condition 35.1 C Status pass Sensor Component Cell B Freq. Condition 116.3 kHz Status pass	Sensor Compone	ent Minimum dis	tance from road	I met Condi	tion True		Status pass		
Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Ombition <	Sensor Component Inlet Filter Condition				tion Clean		Status pass	pass	
Sensor ComponentOffsetCondition0.000StatuspassSensor ComponentSpanCondition1.006StatuspassSensor ComponentZero VoltageConditionN/AStatuspassSensor ComponentFullscale VoltageConditionN/AStatuspassSensor ComponentCell A Freq.Condition96.1 kHzStatuspassSensor ComponentCell A NoiseCondition0.8 ppbStatuspassSensor ComponentCell A FlowCondition0.72 lpmStatuspassSensor ComponentCell A PressureCondition709.7 mmHgStatuspassSensor ComponentCell A Tmp.Condition35.1 CStatuspassSensor ComponentCell B Freq.Condition116.3 kHzStatuspass	Sensor Compone	ent 26.6 degree	unobstructed ru	le Condi	tion True		Status pass		
Sensor ComponentSpanCondition1.006StatuspassSensor ComponentZero VoltageConditionN/AStatuspassSensor ComponentFullscale VoltageConditionN/AStatuspassSensor ComponentCell A Freq.Condition96.1 kHzStatuspassSensor ComponentCell A NoiseCondition0.8 ppbStatuspassSensor ComponentCell A FlowCondition0.72 lpmStatuspassSensor ComponentCell A PressureCondition709.7 mmHgStatuspassSensor ComponentCell A Tmp.Condition35.1 CStatuspassSensor ComponentCell B Freq.Condition116.3 kHzStatuspass	Sensor Component Tree dewline >10m or below inlet				tion True		Status pass		
Sensor ComponentZero VoltageConditionN/AStatuspassSensor ComponentFullscale VoltageConditionN/AStatuspassSensor ComponentCell A Freq.Condition96.1 kHzStatuspassSensor ComponentCell A NoiseCondition0.8 ppbStatuspassSensor ComponentCell A FlowCondition0.72 lpmStatuspassSensor ComponentCell A PressureCondition709.7 mmHgStatuspassSensor ComponentCell A Tmp.Condition35.1 CStatuspassSensor ComponentCell B Freq.Condition116.3 kHzStatuspass	Sensor Component Offset				tion 0.000		Status pass		
Sensor ComponentFullscale VoltageConditionN/AStatuspassSensor ComponentCell A Freq.Condition96.1 kHzStatuspassSensor ComponentCell A NoiseCondition0.8 ppbStatuspassSensor ComponentCell A FlowCondition0.72 lpmStatuspassSensor ComponentCell A PressureCondition709.7 mmHgStatuspassSensor ComponentCell A Tmp.Condition35.1 CStatuspassSensor ComponentCell B Freq.Condition116.3 kHzStatuspass	Sensor Component Span			Condi	tion 1.006		Status pass		
Sensor ComponentCell A Freq.Condition96.1 kHzStatuspassSensor ComponentCell A NoiseCondition0.8 ppbStatuspassSensor ComponentCell A FlowCondition0.72 lpmStatuspassSensor ComponentCell A PressureCondition709.7 mmHgStatuspassSensor ComponentCell A Tmp.Condition35.1 CStatuspassSensor ComponentCell B Freq.Condition116.3 kHzStatuspass	Sensor Component Zero Voltage			Condi	tion N/A		Status pass		
Sensor ComponentCell A NoiseCondition0.8 ppbStatuspassSensor ComponentCell A FlowCondition0.72 lpmStatuspassSensor ComponentCell A PressureCondition709.7 mmHgStatuspassSensor ComponentCell A Tmp.Condition35.1 CStatuspassSensor ComponentCell B Freq.Condition116.3 kHzStatuspass	Sensor Component Fullscale Voltage			Condi	tion N/A		Status pass		
Sensor Component Cell A Flow Condition 0.72 lpm Status pass Sensor Component Cell A Pressure Condition 709.7 mmHg Status pass Sensor Component Cell A Tmp. Condition 35.1 C Status pass Sensor Component Cell B Freq. Condition 116.3 kHz Status pass	Sensor Component Cell A Freq.			Condi	tion 96.1 kHz		Status pass		
Sensor Component Cell A Pressure Condition 709.7 mmHg Status pass Sensor Component Cell A Tmp. Condition 35.1 C Status pass Sensor Component Cell B Freq. Condition 116.3 kHz Status pass	Sensor Component Cell A Noise			Condi	tion 0.8 ppb		Status pass		
Sensor Component Cell A Tmp. Condition 35.1 C Status pass Sensor Component Cell B Freq. Condition 116.3 kHz Status pass	Sensor Component Cell A Flow			Condi	tion 0.72 lpm		Status pass		
Sensor Component Cell B Freq. Condition 116.3 kHz Status pass	Sensor Component Cell A Pressure			Condi	tion 709.7 mmHg		Status pass		
	Sensor Compone	ensor Component Cell A Tmp.			35.1 C		Status pass		
Sensor Component Cell B Noise Condition 0.6 ppb Status pass	Sensor Compone	Sensor Component Cell B Freq.			tion 116.3 kHz		Status pass		
	Sensor Compone	ensor Component Cell B Noise			tion 0.6 ppb		Status pass		
Sensor Component Cell B Flow Condition 0.71 lpm Status pass	Sensor Compone	Sensor Component Cell B Flow			tion 0.71 lpm		Status pass		
Sensor Component Cell B Pressure Condition 710.6 mmHg Status pass	Sensor Component Cell B Pressure			Condi	tion 710.6 mmHg		Status pass		
Sensor Component Line Loss Condition Not tested Status pass	Sensor Component Line Loss			Condi	tion Not tested		Status pass		
Sensor Component System Memo Condition Status pass	Sensor Component System Memo				tion		Status pass		

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 9683 ARE128 Korey Devins 07/29/2020 Temperature 05048 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.13 0.20 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.28 0.15 0.000 0.0 \mathbf{C} -0.11 27.2 C Temp Mid Range 27.68 27.33 0.000 -0.09 primary 0.000 C primary Temp High Range 46.93 46.43 46.2 -0.2Status pass Sensor Component Shield **Condition** Clean **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Korey Devins 07/29/2020 Campbell ARE128 Shelter Temperature none none **DAS 1: DAS 2:** Parameter Shelter Temperature Extech Mfg **Abs Avg Err** Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.45 0.70 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 1.00000 2/14/2020 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 27.33 26.99 0.000 27.0 \mathbf{C} 0.01

0.000

0.000

25.83

25.89

Condition

Temp Mid Range

Temp Mid Range

Sensor Component System Memo

primary

primary

26.17

26.23

C

C

Status pass

0.63

0.7

26.5

26.6

Infrastructure Data For

Site ID ARE128 Technician Korey Devins Site Visit Date 07/29/2020

Shelter Make	Shelter Model	Shelter Size	
Ekto	8810 (s/n 2116-7)	640 cuft	

Sensor Component	Sample Tower Type	Condition	Type B	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	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	Shelter walls	Condition	Fair	Status	pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component City > 50,000 Condition Status pass Sensor Component City 1,000 to 10,000 Condition Status pass Sensor Component City 10,000 to 50,000 Condition Status pass Sensor Component Feedlot operations Condition Status pass Sensor Component Large parking lot Condition Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass Sensor Component System Memo Condition Status pass	Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component City 10,000 to 50,000 Condition Status pass Sensor Component Feedlot operations Condition Status pass Sensor Component Large parking lot Condition Status pass Sensor Component Limited agriculture operations Condition Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	City > 50,000	Condition	Status	pass
Sensor ComponentFeedlot operationsConditionStatuspassSensor ComponentLarge parking lotConditionStatuspassSensor ComponentLimited agriculture operationsConditionStatusFailSensor ComponentMajor industrial sourceConditionStatuspassSensor ComponentSecondary road < or = 100 per daConditionStatuspassSensor ComponentSecondary road >100 vehicles/daConditionStatuspassSensor ComponentSmall parking lotConditionStatuspass	Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component Large parking lot Condition Status pass Sensor Component Limited agriculture operations Condition 20 m Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component Limited agriculture operations Condition 20 m Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da	Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component Secondary road < or = 100 per da	Sensor Component	Limited agriculture operations	Condition 20 m	Status	Fail
Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component Small parking lot Condition Status pass	Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
	Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component System Memo Condition Status pass	Sensor Component	Small parking lot	Condition	Status	pass
	Sensor Component	System Memo	Condition	Status	pass
Sensor Component Major highway, airport, or rail yard Condition Status pass	<u>-</u>		Condition	Status	pass
Sensor Component Intensive agriculture operations Condition 20 m Status Fail	Sensor Component	Intensive agriculture operations	Condition 20 m	Status	Fail

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	l Problem
Flow Rate	ARE128	Korey Devins	07/29/2020	Moisture Present	Apex	3308		
The filter sample tubing	has drops of mo	isture in low section	ns outside the sh	elter.	•			

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator handles the filter caps with bare hands but handles the filter pack using the Ziploc filter bag.

2 Parameter: DasComments

The meteorological tower has been removed.

3 Parameter: SitingCriteriaCom

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

4 Parameter: MetOpMaintCom

The 10-meter temperature sensor has been moved to a naturally aspirated shield on the sample tower.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 07/29/2020 ARE128 Technician Korey Devins Site ID Arendtsville **USGS Map EPA** Site Sponsor (agency) Map Scale PSU/private **Operating Group Map Date** 42-001-9991 AQS# Climatronics **Meteorological Type** Ozone, IMROVE Air Pollutant Analyzer **QAPP** Latitude 39.9231 dry, wet, Hg, PM **QAPP** Longitude -77.3078 **Deposition Measurement** 269 **Land Use** agriculture **QAPP Elevation Meters** complex - rolling 10.9 Terrain **QAPP Declination** Marginally 2/22/2006 Conforms to MLM **OAPP Declination Date** (717) 677-9866 39.923241 **Site Telephone Audit Latitude** PSU Fruit Research Orchard -77.307863 Site Address 1 **Audit Longitude** Winding Road Site Address 2 **Audit Elevation** 266 Adams -11 **County Audit Declination** Arendtsville, PA City, State **Present** Fire Extinguisher 17307 New in 2015 Zip Code Eastern First Aid Kit Time Zone **✓ Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 (s/n 2116-7) Ekto **Shelter Size** 640 cuft **✓** Notes Shelter Clean **✓** Notes Site OK

Driving Directions

From Gettysburg take route 34 north to Biglerville. At the intersection of 34 and 234 turn left (west) to Arendtsville. Continue into the town of Arendtsville. At the stop sign next to the gas station, turn left and immediately turn right, onto Chambersburg Street. Continue approximately 0.4 miles and turn right onto Winding Road. There is a sign for Boyer Nursery & Orchard. The site will be visible at the top of the hill in the orchard on the right.

Fi	eld Sy	stems Data Fo	orm				F-020	58-15	00-S3-	rev002
Site	e ID	ARE128	Technician	Korey Devins		Site Visit Date	07/29/2020			
1		d speed and direction s duenced by obstructio		as to avoid	✓	N/A				
2	(i.e. wind horizont	d sensors mounted so a d sensors should be mo ally extended boom >2 to the prevailing wind	ounted atop the 2x the max diar	tower or on a	✓	N/A				
3	Are the	tower and sensors plur	mb?		✓	N/A				
4		temperature shields po diated heat sources su		•	✓					
5	condition surface a	perature and RH sensons? (i.e. ground below and not steeply sloped. water should be avoid	sensors should Ridges, hollow	be natural	✓					
6	Is the so	lar radiation sensor pl	umb?		✓	N/A				
7	Is it sited	l to avoid shading, or	any artificial o	r reflected light?	✓	N/A				
8	Is the ra	in gauge plumb?			✓	N/A				
9	Is it sited towers, e	l to avoid sheltering ef etc?	ffects from buil	dings, trees,	✓	N/A				
10	Is the su facing n	rface wetness sensor siorth?	ited with the gr	rid surface	✓	N/A				

✓ 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:

11 Is it inclined approximately 30 degrees?

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?	visit Date 07/29/2020 Iture only Iture only
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?	
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?	ture only
4 Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? N/A Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained?	
5 Is the solar radiation sensor's lens clean and free of scratches? 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?	
scratches? 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?	
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? ■ The sensor signal and power cables intact, in good condition, and well maintained?	
condition, and well maintained? 8 Are the sensor signal and power cable connections protected from the elements and well maintained?	
from the elements and well maintained?	
Provide any additional explanation (photograph or sketch if necessary) regardinatural or man-made, that may affect the monitoring parameters:	ng conditions listed above, or any other features,
The 10-meter temperature sensor has been moved to a naturally aspirated shield on	he sample tower.

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site	ARE128 Technician Korey Devins		Site Visit Date 07/29/2020
	Siting Criteria: Are the pollutant analyzers and deposition e	quipi	ment 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 an	d ma	intenance
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?	V	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	Site ID ARE128 Technician Korey Devins Site Visit Date 07/29/2020										
	DAS, sensor translators, and peripheral equipment operations and maintenance										
	DAS, SC	iisor translators, and	peripheral equi	pinent operation	115 a1.	<u>iu mamiena</u>	<u>ince</u>				
1		DAS instruments appeintained?	ear to be in good	condition and	✓						
2		the components of the , backup, etc)									
3		analyzer and sensor sig g protection circuitry	_	through	✓	Met sensors	only				
4		signal connections prointained?	otected from the	e weather and	✓						
5	Are the	signal leads connected	d to the correct	DAS channel?	✓						
6	grounded?										
7	Does the	e instrument shelter h	ave a stable pov	ver source?	✓						
8	8 Is the instrument shelter temperature controlled?										
9											
10	10 Is the sample tower stable and grounded? ✓										
11	11 Tower comments? Met tower removed										
		additional explanationan-made, that may a				y) regarding	g conditions liste	d above, or a	nny other features,		
The	meteoro	logical tower has been r	removed.								

Field Systems Data Form F-02058-1500-S7-rev002 ARE128 Technician Korey Devins Site Visit Date 07/29/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A П **✓ V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger **V V** П **Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer **V** П **Solar radiation sensor V Modem** П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge Lightning protection device ~ **✓ Shelter heater** Ozone analyzer **V ✓** 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 V SSRF ✓ V ✓ V Site Ops Manual** May 2019 **✓ V HASP** May 2019 **✓ Field Ops Manual V** May 2019 **Calibration Reports V ✓** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 eneration proceedures								
Site operation procedures Has the site operator attended a formal CASTNET training Refresher training by Lavery and Howell, J course? If yes, when and who instructed?	uly 2006							
2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?	uly 2006							
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)								
Manual Rain Gauge Test N/A								
Confirm Reasonableness of Current Values Weekly								
Test Surface Wetness Response								
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 ✓ Weekly								
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 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?								
Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or a natural or man-made, that may affect the monitoring parameters:	nny other features,							

Field Systems Data Form F-02058-1500-S9-rev002 ARE128 Technician Korey Devins Site Visit Date 07/29/2020 Site ID **Site operation procedures** Is the filter pack being changed every Tuesday as scheduled? Filter changed mornings Are the Site Status Report Forms being completed and filed correctly? No longer required Are data downloads and backups being performed as scheduled? SSRF, logbook Are general observations being made and recorded? How? **V** Are site supplies on-hand and replenished in a timely fashion? SSRF, call-in Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely fashion? Gloves not consistently used Are filters protected from contamination during handling and shipping? How? **~** Are the site conditions reported regularly to the field operations manager or staff? **QC Check Performed Compliant Frequency V** ✓ Semiannually **Multi-point MFC Calibrations** Weekly **V** Flow System Leak Checks **Filter Pack Inspection V ✓** Weekly **Flow Rate Setting Checks V ✓** Weekly **Visual Check of Flow Rate Rotometer** ✓ Semiannually **V In-line Filter Inspection/Replacement ✓** Weekly Sample Line Check for Dirt/Water 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 handles the filter caps with bare hands but handles the filter pack using the Ziploc filter bag.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID

ARE128

Technician Korey Devins

Site Visit Date 07/29/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07045
DAS	Campbell	CR3000	2524	000400
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	000012187C	02661
Flow Rate	Apex	AXMC105LPMDPC	42228	000462
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07189
Ozone	ThermoElectron Inc	49i A1NAA	1105347326	000725
Ozone Standard	ThermoElectron Inc	49i A3NAA	1105347330	000747
Sample Tower	Aluma Tower	В	none	666361
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	9683	05048
Zero air pump	Werther International	PC70/4	000815262	06866

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRT	434-Martir	n Valvur-08/10/2020				
1	8/10/2020	Computer	Hewlett Packard	none	ProBook	CNU02532PM
2	8/10/2020	DAS	Environmental Sys Corp	None	8832	A3793K
3	8/10/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	0703334536
4	8/10/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1023943899
5	8/10/2020	Sample Tower	Aluma Tower	none	FOT-10	218298
6	8/10/2020	Shelter Temperature	ARS	none	unknown	none
7	8/10/2020	Temperature2meter	Vaisala	none	HMP45AC	Y0730041
8	8/10/2020	Zero air pump	Werther International	none	C 120/TC	001007354

DAS Data Form 0.83 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg **Environmental Sys** A3793K GRT434 Martin Valvur 08/10/2020 DAS Primary Das Date: 8 /10/2020 **Audit Date** 8 /10/2020 ΗY **Parameter** DAS Mfg 12:32:10 12:33:00 Das Time: **Audit Time** Tfer Desc. Source generator (D 12010039329 **Serial Number** Das Day: 223 **Audit Day** 223 Tfer ID 01322 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0001 0.0003 0.0001 0.0003 6/15/2014 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740243 Tfer Desc. DVM 01312 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference V 16 0.0000 -0.0005 -0.0004 0.0001 16 0.9996 0.9996 V V 0.0000 0.1000 16 0.3000 2.9998 3.0001 V V 0.0003 V V 16 0.5000 4.9996 4.9996 0.0000 V V 16 0.7000 7.0002 7.0003 0.0001 V V 16 0.9000 9.0001 9.0002 0.0001 16 1.0000 V V 0.0001 1.0002 1.0003

Ozone Data Form

Mfg		Serial Numb	er Tag	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElectron Inc 0703334536 GRT434		1	M	artin Valvur	08/10/2020	Ozone		none			
Intercept 0.11388 Intercept 0.		0.0000.0	D	Mfg Serial Number	ThermoElectron			ozone c. Ozone primary stan			
						_	Tfer ID	01110			
DAS 1:			AS 2:				Slope	1.0026	60 Inter	cept	0.03590
		Iax % Dif A	Avg %	Diff A	Max %	% Dif	Cert Date	1/14/20	20 Cori	Coff	0.99999
0.	0%	0.0%					Cert Date	1711/201	corr	Con	0.0000
UseDescr	iption	ConcGroup	Tfe	r Raw	Tf	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	ry	1		0.06	_	-0.09	0.32	ppb			0.41
prima	ry	2		2.96		12.89	13.13	ppb			0.24
prima	-	3		1.16		34.03	34.93	ppb		2.61	
prima	ry	4	64	1.62	(54.41	65.75	ppb		2.06	
prima	ry	5	11	2.17	1	11.84	114.80	ppb		2.61	
Sensor C	ompone	nt Audit Press	ure			Conditi	on 599 mmHg		Status	pass	
Sensor C	ompone	nt Sample Tra	in			Conditi	on Good		Status	pass	
Sensor C	ompone	nt Minimum d	stance f	rom road	d met	Conditi	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter (Conditio	า		Conditi	on Clean		Status	pass	
Sensor Component 26.6 degree unobstructed rule			Conditi	on True		Status	pass				
Sensor Component Tree dewline >10m or below inlet			Condition	on True		Status	pass				
Sensor Component Offset			Conditi	on 0.10		Status	pass				
Sensor C	ompone	nt Span				Conditi	on 0.994		Status	pass	
Sensor C	ompone	nt Zero Voltag	je			Conditi	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale V	oltage			Conditi	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq				Conditi	on 95.9 kHz		Status	pass	
Sensor C	ompone	nt Cell A Nois	е			Conditi	0.9 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow				Conditi	0.52 lpm		Status	pass	
Sensor C	ompone	nt Cell A Pres	sure			Conditi	on 591.0 kHz		Status	pass	
Sensor C	ompone	nt Cell A Tmp				Conditi	on 32.7 C		Status	pass	
Sensor C	ompone	nt Cell B Freq				Conditi	73.3 kHz		Status	pass	
Sensor Component Cell B Noise				on 0.8 ppb		Status	pass				
Sensor C	ompone	nt Cell B Flow					on 0.58 lpm		Status	pass	
Sensor C	ompone	nt Cell B Pres	sure				on 590.1 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss				Conditi	Not tested		Status	pass	
Sensor C	ompone	nt System Me	mo			Conditi	on		Status	pass	

2 Meter Temperature Data Form Calc. Difference **Serial Number Tag Site Technician** Site Visit Date Parameter Mfg **Owner ID** Martin Valvur Y0730041 GRT434 08/10/2020 Vaisala Temperature2meter none Mfg Fluke Parameter Temperature Tfer Desc. RTD **Serial Number** 3275143 01229 Tfer ID **Slope** 1.00026 **Intercept** -0.01710 **DAS 1: DAS 2: Cert Date** 1/29/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.36 0.48 UseDescription InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Test type Difference Temp Mid Range 28.88 28.89 0.0000 29.14C 0.25 primary 0.0000 29.39 C 0.48 primary Temp Mid Range 28.90 28.91 Sensor Component Shield **Condition** Clean **Status** pass **Status** pass Sensor Component Properly Sited **Condition** Properly sited **Sensor Component** Blower **Condition** Functioning **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For

Mfg	Serial Number Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ARS	none GRT434		Martin Valvur	08/10/2020	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Fluke	Parameter She	ter Temperature
Abs Avg Err Abs	1.81 Abs Avg	Err Abs Max Err	Serial Number	3275143	Tfer Desc. RTD)
			Tfer ID	01229		
			Slope	1.0002	6 Intercept	-0.01710
			Cert Date	1/29/202	CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	24.03	24.04	0.000	25.1	C	1.07
primary	Temp Mid Range	22.46	22.47	0.000	24.3	C	1.81
primary	Temp Mid Range	24.49	24.50	0.000	24.0	C	-0.51

Field Systems Comments

1 Parameter: PollAnalyzerCom

There is no dry deposition filter pack operating at this site.

F-02058-1500-S1-rev002 **Field Systems Data Form** Site Visit Date 08/10/2020 GRT434 Site ID Technician Martin Valvur **USGS Map NPS** Site Sponsor (agency) **Map Scale NPS Operating Group Map Date** 56-039-0008 AQS# **Meteorological Type** Air Pollutant Analyzer **QAPP** Latitude **Deposition Measurement QAPP** Longitude **Land Use QAPP Elevation Meters Terrain QAPP Declination QAPP Declination Date** Conforms to MLM -110.599484 **Site Telephone Audit Latitude** 2128 Site Address 1 **Audit Longitude** 43.670815 Site Address 2 **Audit Elevation** Teton **Audit Declination County** Moose, WY City, State **Present** Fire Extinguisher 83012 **Zip Code** Mountain **Time Zone** First Aid Kit **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # Primary Op. E-mail **Climbing Belt Backup Operator Security Fence Secure Shelter** Backup Op. Phone # Stable Entry Steps Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model **Shelter Size ✓** Notes **Shelter Clean ✓** Notes Site OK

Driving Directions

Fi	eld Syst	ems Data Fo	rm		F-02058-1500-S3-rev002
Site	e ID G	RT434	Technician Martin Valvur		Site Visit Date 08/10/2020
1		speed and direction s enced by obstruction	ensors sited so as to avoid as?	✓	N/A
2	(i.e. wind s horizontall	ensors should be mo	s to minimize tower effects? unted atop the tower or on a x the max diameter of the	✓	N/A
3	Are the tov	wer and sensors plun	nb?	✓	N/A
4	4 Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?				
5	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	r radiation sensor plu	ımb?	✓	N/A
7	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 towers, etc	9	fects from buildings, trees,	✓	N/A
10	Is the surfa facing nort		ted with the grid surface	✓	N/A
11	Is it inclin	ed 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:

Fic	eld Systems Data Form	F-02058-1500-S4-rev002
Site	GRT434 Technician Martin Valvur	Site Visit Date 08/10/2020
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?	
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?	d 🗹
	ide any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	essary) regarding conditions listed above, or any other features, s:

Fi	eld Systems Data Form		F-02058-1500-S5-rev002						
Site	GRT434 Technician Martin Valvur		Site Visit Date 08/10/2020						
	Siting Criteria: Are the pollutant analyzers and deposition ed	quipr	ment 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 10 meters						
4	Describe dry dep sample tube.		N/A						
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?		Not present						
9	Is there a rotometer in the dry deposition filter line, and is it clean?	✓	N/A						
	ide any additional explanation (photograph or sketch if neces ral or man-made, that may affect the monitoring parameters:		regarding conditions listed above, or any other features,						

There is no dry deposition filter pack operating at this site.

Field Systems Data Form F-02058-1500-S6-rev002 GRT434 Technician Martin Valvur Site Visit Date 08/10/2020 Site ID DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **V** Are all the components of the DAS operational? (printers, modem, backup, etc) Met sensors only Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly not grounded grounded? Does the instrument shelter have a stable power source? Is the instrument shelter temperature controlled? Grounded **Stable** Is the met tower stable and grounded? **✓ ✓** Is the sample tower stable and grounded? **V** 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 GRT434 Technician | Martin Valvur Site Visit Date 08/10/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No Yes N/A Yes No N/A Wind speed sensor **Data logger** П Wind direction sensor Data logger П П **Temperature sensor** Strip chart recorder П Relative humidity sensor Computer П П **Solar radiation sensor Modem** П П **Printer Surface wetness sensor** П П Wind sensor translator Zero air pump Filter flow pump **Temperature translator Humidity sensor translator Surge protector** П П **UPS Solar radiation translator** Tipping bucket rain gauge Lightning protection device **Shelter heater** Ozone analyzer 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 V** Dataview **SSRF** П N/A **Site Ops Manual HASP Field Ops Manual Calibration Reports** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ N/A **V** Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document **✓** N/A sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 GRT434 Technician Martin Valvur Site Visit Date 08/10/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? N/A Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections ✓ V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** N/A **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **QC Check Performed** Compliant Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Monthly Manual Zero/Span Tests **V** Daily **Automatic Precision Level Tests V Manual Precision Level Test V Analyzer Diagnostics Tests V ✓** Monthly **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters? **✓** Dataview Are the automatic and manual z/s/p checks monitored and

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

reported? If yes, how?

natural or man-made, that may affect the monitoring parameters:

116	eiu Sy	stems Data	Form			F-02058-1500-S9				
ite	· ID	GRT434	Technic	hnician Martin Valvur		Site Visit Date	08/10/2020			
	Site ope	ration procedures	<u>s</u>							
	Is the fil	lter pack being ch	anged every Tu	esday as scheduled	? 🗆	N/A				
	Are the correctl		t Forms being c	ompleted and filed		N/A				
	Are data	a downloads and led?	backups being p	erformed as		N/A				
	Are general observations being made and recorded? How?			✓	logbook					
Are site supplies on-hand and replenished in a timely fashion?				✓						
	Are sample flow rates recorded? How?					N/A				
	Are samples sent to the lab on a regular schedule in a timely fashion?				N/A					
		ers protected from oping? How?	n contamination	during handling		N/A				
		site conditions re ons manager or st		to the field		N/A				
C	Check P	erformed]	Frequency			Compliant			
N	Iulti-poi:	nt MFC Calibrati	ons	N/A			✓			
F	low Syst	em Leak Checks		V/A			✓			
F	ilter Pac	k Inspection		N/A			✓			
F	low Rate	Setting Checks		V/A			\checkmark			
V	Visual Check of Flow Rate Rotometer N/A					✓				
Iı	n-line Fil	ter Inspection/Re	placement \Box	V/A			\checkmark			
S	ample Li	ine Check for Dir	t/Water 🗆	V/A			✓			

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID GRT434 Technician Martin Valvur Site Visit Date 08/10/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	ProBook	CNU02532PM	none
DAS	Environmental Sys Corp	8832	A3793K	None
Ozone	ThermoElectron Inc	49i A3NAA	0703334536	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	1023943899	none
Sample Tower	Aluma Tower	FOT-10	218298	none
Shelter Temperature	ARS	unknown	none	none
Temperature2meter	Vaisala	HMP45AC	Y0730041	none
Zero air pump	Werther International	C 120/TC	001007354	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CAI	N407-Martir	n Valvur-08/27/2020				
1	8/27/2020	Computer	Hewlett Packard	none	EliteBook	CNV1360668
2	8/27/2020	DAS	Environmental Sys Corp	None	8864	C2598
3	8/27/2020	Elevation	Elevation	None	1	None
4	8/27/2020	Filter pack flow pump	Thomas	none	107CA18	illegible
5	8/27/2020	flow rate	Mykrolis	03388	FC280SAV-4S	AW9403022
6	8/27/2020	Infrastructure	Infrastructure	none	none	none
7	8/27/2020	Met tower	Universal Tower	01357	unknown	none
8	8/27/2020	MFC power supply	Tylan	03678	RO-32	FP9404002
9	8/27/2020	Modem	Sierra wireless	none	GX450	LA54620441001003
10	8/27/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	1030745086
11	8/27/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1030745084
12	8/27/2020	Sample Tower	Aluma Tower	illegible	В	none
13	8/27/2020	Shelter Temperature	ARS	none	none	none
14	8/27/2020	Siting Criteria	Siting Criteria	None	1	None
15	8/27/2020	Temperature2meter	RM Young	none	41432VC	029455
16	8/27/2020	Zero air pump	Twin Tower Engineering	90721	TT70/E4	526297

DAS Data Form 0.67 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg **Environmental Sys** C2598 CAN407 Martin Valvur 08/27/2020 DAS Primary Das Date: 8 /27/2020 **Audit Date** 8 /27/2020 ΗY **Parameter** DAS Mfg 07:57:20 Das Time: **Audit Time** 07:58:00 Tfer Desc. Source generator (D 12010039329 **Serial Number** 240 Das Day: 240 **Audit Day** Tfer ID 01322 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0002 0.0003 0.0002 0.0003 6/15/2014 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740243 Tfer Desc. DVM 01312 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference V 1 0.0000 -0.0001 -0.0004 -0.0003 1 0.0997 0.0995 V V -0.0002 0.1000 1 0.3000 0.2999 0.2997 V V -0.0002 V V 1 0.5000 0.5000 0.4997 -0.0003 V V 1 0.7000 0.6995 0.6995 0.0000 V V 1 0.9000 0.8995 -0.0003 0.8992 1 1.0000 0.9998 V V -0.0002 1.0000

Flow Data Form

CAN407 8 %Diff A Max /m Input Corr_ 0 0.000	S T S	in Valvur Ifg erial Number Ter ID lope Cert Date Cal Factor Ze Cal Factor For	5/6/ ero ull Scale	Tí	arameter Flow fer Desc. BIO ercept rCoff		
: %Diff A Max /m Input Corr_	S T S C	erial Number Ter ID lope Cert Date Cal Factor Ze Cal Factor Fo	122974 01416 1.00 5/6/ ero ull Scale	0000 Inte	fer Desc. BIO rcept rCoff	S 220-H	
: %Diff A Max /m Input Corr_	S O W Dif	fer ID lope Cert Date Cal Factor Ze Cal Factor F	01416 1.00 5/6/ ero ull Scale	0000 Inte	rcept rCoff	0.00000	
%Diff A Max /m Input Corr_	% Dif	lope Cert Date Cal Factor Zo Cal Factor Fo	1.00 5/6/ ero ull Scale	2020 Cor	rCoff		
%Diff A Max /m Input Corr_	% Dif	Cert Date Cal Factor Ze Cal Factor Fe	5/6/ ero ull Scale	2020 Cor	rCoff		
%Diff A Max /m Input Corr_	% Dif	Cert Date Cal Factor Ze Cal Factor Fe	5/6/ ero ull Scale	2020 Cor	rCoff		
%Diff A Max /m Input Corr_	% Dif	Cal Factor Z	ero	-0.02	26	1.00000	
%Diff A Max /m Input Corr_		Cal Factor F	ull Scale		_		
/m Input Corr_				5.3	32		
/m Input Corr_		Rotometer R	eading.		<i>,</i> _		
	MfcDisp.		caums.	3.	.5		
		OutputSignal	Output S E	InputUnit (OutputSignalI	PctDifference	
	0.02	0.0000	0.01	1/m	1/m		
0.000	0.02	0.0000	0.01	1/m	l/m		
7 3.020	2.82	0.0000	3.00	1/m	l/m	-0.70%	
2 3.020	2.81	0.0000	3.00	1/m	l/m	-0.66%	
1 3.040	2.81	0.0000	3.00	1/m	l/m	-1.22%	
	Condition			Status pass			
	Condition	Condition Good			Status pass		
	Condition	Condition Fair			Status pass		
tion	Condition	Condition Clean and dry			pass		
	Condition	Condition No moisture present			pass		
	Condition	Condition 5.5 cm			Status pass		
	Condition	Condition 0.0 cm			pass		
	Condition	Condition 275 deg			pass		
Sensor Component System Memo			Condition				
Sensor Component Filter Distance Sensor Component Filter Depth Sensor Component Filter Azimuth Sensor Component System Memo			Condition 0.0 cm	Condition 0.0 cm Condition 275 deg	Condition 0.0 cm Status Condition 275 deg Status	Condition 0.0 cm Status pass Condition 275 deg Status pass	

Ozone Data Form

Mfg	fg Serial Number Tag Site		Technician	Site Visit Dat	e Parameter	Owner ID	
ThermoElectron Inc	1030745086	CAN40	7	Martin Valvur	08/27/2020	Ozone	none
Intercept		rcept	0.00000	Mfg Serial Numb	ThermoElectro		ter ozone Sc. Ozone primary stan
CorrCoff:	0.99997 Cor	rCoff:	0.00000	Tfer ID	01110		
DAS 1:	D	AS 2:		Slope	1.00	260 Intercept	0.03590
A Avg % Diff: A M	Max % Dif A	Avg %Diff A	Max % Dif		1/14/2		0.99999
0.0%	0.0%			Cert Date	1/14/2	020 CorrCoff	0.99999
UseDescription	ConcGroup	Tfer Raw	Tfer Co	rr Site	Site Unit	RelPerDif	AbsDif
primary	1	0.10	0.06	0.42	ppb		0.36
primary	2	14.10	14.02	13.70	ppb		-0.32
primary	3	36.53	36.39	35.48	ppb	-2.53	
primary	4	66.19	65.98		ppb	-1.8	
primary	5	111.31	110.98	109.60	ppb	-1.25	
Sensor Compone	ent Audit Press	ure	Cone	dition 618 mmHg		Status pass	
Sensor Compone	ent Sample Tra	in	Con	dition Good		Status pass	
Sensor Compone	ent Minimum di	stance from road	d met Con	dition True		Status pass	
Sensor Compone	ent Inlet Filter C	Condition	Cone	dition Clean		Status pass	
Sensor Compone	ent 26.6 degree	unobstructed ru	le Cond	dition True		Status pass	
Sensor Compone	Tree dewlin	e >10m or below	/ inlet Con	dition True		Status pass	
Sensor Compone	ent Offset		Cone	dition -0.2		Status pass	
Sensor Compone	ent Span		Cone	dition 1.001		Status pass	
Sensor Compone	ent Zero Voltag	е	Cone	dition 0.000		Status pass	
Sensor Compone	Fullscale Vo	oltage	Cone	dition 1.0003		Status pass	
Sensor Compone	ent Cell A Freq.		Cone	dition 89.1 kHz		Status pass	
Sensor Compone	ent Cell A Noise)	Cone	dition 0.6 ppb		Status pass	
Sensor Compone	ent Cell A Flow		Cone	dition 0.67 lpm		Status pass	
Sensor Compone	ent Cell A Press	sure	Cone	dition 597.7 mm	lg	Status pass	
Sensor Compone	Cell A Tmp.		Cone	dition 31.4 C		Status pass	
Sensor Compone	ent Cell B Freq.		Cone	dition 93.2 kHz		Status pass	
Sensor Compone	ent Cell B Noise)	Cone	dition 0.6 ppb		Status pass	
Sensor Compone	Cell B Flow		Cone	dition 0.66 lpm		Status pass	
Sensor Compone	Cell B Press	sure	Con	dition 597.1 mmH	lg	Status pass	
Sensor Compone	ent Line Loss		Cone	dition Not tested		Status pass	
Sensor Compone	ent System Mer	no	Cone	dition		Status pass	

2 Meter Temperature Data Form Calc. Difference **Serial Number Tag Site Technician** Site Visit Date Parameter Mfg **Owner ID** CAN407 Martin Valvur 08/27/2020 RM Young 029455 Temperature2meter none Mfg Fluke Parameter Temperature Tfer Desc. RTD **Serial Number** 3275143 01229 Tfer ID **Slope** 1.00026 **Intercept** -0.01710 **DAS 1: DAS 2: Cert Date** 1/29/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.19 0.35 InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference UseDescription Test type Temp Low Rang 0.07 0.09 0.0000 0.13 C 0.04 primary 0.0000 24.42 C 0.17 primary Temp Mid Range 24.24 24.25 Temp High Rang primary 47.51 47.51 0.0000 47.86C 0.35 Sensor Component | Shield **Condition** Clean **Status** pass Sensor Component Properly Sited **Condition** Properly sited **Status** pass Sensor Component Blower **Condition** Functioning **Status** pass Sensor Component System Memo Status pass Condition

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Martin Valvur ARS CAN407 08/27/2020 Shelter Temperature none none **DAS 1: DAS 2:** Parameter Shelter Temperature Mfg Fluke **Abs Avg Err** Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD 3275143 **Serial Number** 0.56 0.79 01229 Tfer ID 1.00026 -0.01710 **Slope** Intercept 1/29/2020 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 24.79 24.80 0.00025.6 \mathbf{C} 0.79 C Temp Mid Range 24.75 24.76 0.000 24.4 -0.33 primary C 26.57 0.000 26.0 primary Temp Mid Range 26.56 -0.56 Sensor Component System Memo **Status** pass Condition

Infrastructure Data For

Site ID CAN407 Technician Martin Valvur Site Visit Date 08/27/2020	
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Shelter Make	Shelter Model	Shelter Size
NPS	R46453	640 cuft

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	Shelter walls	Condition	Good	Status	pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component City Sensor Component City		Condition Condition	Status	pass
Sensor Component City	1,000 to 10,000	Condition		
		Condition	Status	pass
Sensor Component City	10,000 to 50,000	Condition	Status	pass
Sensor Component Feed	dlot operations	Condition	Status	pass
Sensor Component Large	ge parking lot	Condition	Status	pass
Sensor Component Limit	ted agriculture operations	Condition	Status	pass
Sensor Component Majo	or industrial source	Condition	Status	pass
Sensor Component Seco	ondary road < or = 100 per da	Condition	Status	pass
Sensor Component Seco	ondary road >100 vehicles/da	Condition	Status	pass
Sensor Component Smal	all parking lot	Condition	Status	pass
Sensor Component Syste	tem Memo	Condition	Status	pass
Sensor Component Majo	or highway, airport, or rail yard	Condition	Status	pass
Sensor Component Inten	nsive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: DasComments

The shelter heating and air conditioning systems are both operating simultaneously.

2 Parameter: SitingCriteriaCom

The small parking lot at the visitors center is approximately 200m to the northeast.

3 Parameter: ShelterCleanNotes

The shelter is in good condition, well organized and well maintained.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 08/27/2020 CAN407 Technician Martin Valvur Site ID Musselman Arch **USGS Map** NPS/EPA Site Sponsor (agency) Map Scale **NPS Operating Group Map Date** 49-037-0101 AQS# Climatronics **Meteorological Type** Ozone, IMPROVE Air Pollutant Analyzer **QAPP** Latitude dry, wet **Deposition Measurement QAPP** Longitude **Land Use** woodland - mixed, desert range **QAPP Elevation Meters** Terrain complex **QAPP Declination** Marginally Conforms to MLM **OAPP Declination Date** (435) 259-4141 38.458323 **Site Telephone Audit Latitude** Visitors Center -109.82126 Site Address 1 **Audit Longitude** Site Address 2 route 313 **Audit Elevation** 1794 San Juan 11.6 **County Audit Declination** Moab, UT City, State **Present** Fire Extinguisher 84532 Inspected April 2015 Zip Code Mountain Time Zone First Aid Kit in vehicle **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** NPS Model R46453 **Shelter Size** 640 cuft **✓** Notes **Shelter Clean** The shelter is in good condition, well organized and well maintained.

From I-70, take exit 180 south on route 191. Approximately 9 miles north of Moab, turn right (west) on route 313 at

the sign for Canyonlands National Park. Follow 313 west for 25 miles passing the state park and continuing straight

to Canyonlands. The site is at the end of the dirt road behind the visitors center, in the maintenance area.

✓ Notes

Site OK

Driving Directions

Fie	eld Systems Data Form		F-02058-1500-S3-rev002
Site	CAN407 Technician Martin Valvur		Site Visit Date 08/27/2020
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:

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	CAN407 Technician Martin Valvur	Site	Visit Date 08/27/2020
1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	Tempe	rature only
2	Are all the meteorological sensors operational online, and reporting data?	Tempe	rature only
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?		
	ride any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	y) regard	ling conditions listed above, or any other features,

field Systems Data Form	F-02058-1500-S5-rev00
CAN407 Technician Martin Valvur	Site Visit Date 08/27/2020
Siting Criteria: Are the pollutant analyzers and deposition ed	quipment sited in accordance with 40 CFR 58, Appendix E
Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	
Are the sample inlets 3 - 15 meters above the ground?	
Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?	
Pollutant analyzers and deposition equipment operations and	l maintenance
Do the analyzers and equipment appear to be in good condition and well maintained?	
Are the analyzers and monitors operational, on-line, and reporting data?	
Describe ozone sample tube.	1/4 teflon by 10 meters
Describe dry dep sample tube.	3/8 teflon by 10 meters
Are in-line filters used in the ozone sample line? (if yes indicate location)	At inlet only
Are sample lines clean, free of kinks, moisture, and obstructions?	
Is the zero air supply desiccant unsaturated?	
Are there moisture traps in the sample lines?	Flow line only
Is there a rotometer in the dry deposition filter line, and is it clean?	✓ Clean and dry
covide any additional explanation (photograph or sketch if necessitural or man-made, that may affect the monitoring parameters:	

Field Systems Data Form

F-02058-1500-S6-rev002

Site	e ID	CAN407	Technician	Martin Valvur		Site Visi	it Date 08/27/202	0	
	DAS, so	ensor translators, and	peripheral equip	ment operation	ıs ar	nd maintena	nce		
					✓				
1		DAS instruments appenintained?	ear to be in good	condition and	•				
2		the components of the , backup, etc)	DAS operationa	l? (printers,	✓				
3		analyzer and sensor sign protection circuitry		hrough	✓	Met sensors	only		
4		signal connections pro nintained?	otected from the	weather and	✓				
5	Are the	signal leads connected	d to the correct I	OAS channel?	✓				
6	Are the ground	DAS, sensor translateded?	ors, and shelter p	roperly	✓				
7	Does th	e instrument shelter h	ave a stable pow	er source?	✓				
8	Is the in	nstrument shelter temp	perature controll	ed?	✓	heat and a/c	running simultane	eously	
9	Is the n	net tower stable and gr	ounded?			Stable		Grounded	
10	Is the s	ample tower stable and	d grounded?			V		V	
11	Tower	comments?				V		✓	
		y additional explanatio nan-made, that may a				y) regarding	g conditions listed	l above, or a	ny other features,
The	shelter	neating and air condition	ning systems are b	oth operating si	multa	aneously.			

Field Systems Data Form F-02058-1500-S7-rev002 CAN407 Technician | Martin Valvur Site Visit Date 08/27/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? N/A Yes No Yes No N/A **✓ V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device ✓** \checkmark **Shelter heater** Ozone analyzer **V** \checkmark Filter pack flow controller Shelter air conditioner \checkmark Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log V V** Dataview **SSRF ✓ V ✓ V Site Ops Manual** 2015 **HASP Field Ops Manual Calibration Reports V V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Flow & observation sections Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document **✓** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current?

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 CAN407 Site Visit Date 08/27/2020 Site ID Technician Martin Valvur Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections ✓ V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** Monthly **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **QC Check Performed Compliant** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Monthly Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests Manual Precision Level Test ✓ V** Alarm values only weekly **Analyzer Diagnostics Tests ~ V** Monthly **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ Zero Air Desiccant Check** Weekly ✓ Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the

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:

✓

Dataview

complete sample train including all filters?

reported? If yes, how?

Are the automatic and manual z/s/p checks monitored and

Fi	eld Sy	stems Data Form				F-02058-1	500-S9-rev002
Sit	e ID	CAN407 Te	chnician Martin Valvur		Site Visit Date	e 08/27/2020	
	Site ope	ration procedures					
1	Is the fil	ter pack being changed ever	ry Tuesday as scheduled	? 🗸	Filter changed mo	rnings	
2	Are the correctl	Site Status Report Forms boy?	eing completed and filed	✓			
3	Are data	a downloads and backups bo	eing performed as		No longer required	I	
4	Are gen	eral observations being mad	le and recorded? How?	✓	Dataview and SSF	RF	
5	Are site	supplies on-hand and reple	nished in a timely	✓			
6	Are sam	pple flow rates recorded? Ho	ow?	✓	SSRF		
7	Are sam	uples sent to the lab on a reg	ular schedule in a timely	✓			
8		ers protected from contamin oping? How?	ation during handling	✓	Clean gloves on a	nd off	
9		site conditions reported reg ons manager or staff?	ularly to the field				
QC	Check P	erformed	Frequency			Compliant	
I	Multi-poi	nt MFC Calibrations	Semiannually			✓	
]	Flow Syst	em Leak Checks	✓ Weekly			✓	
]	Filter Pac	k Inspection					
1	Flow Rate	Setting Checks	✓ Weekly			✓	
•	Visual Ch	eck of Flow Rate Rotometer	✓ Weekly			✓	
]	In-line Fil	ter Inspection/Replacement	✓ As needed			✓	
5	Sample Li	ne Check for Dirt/Water	✓ Weekly			✓	
		dditional explanation (photon-made, that may affect the			y) regarding condi	tions listed above, or	any other features,

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID CAN407 Technician Martin Valvur Site Visit Date 08/27/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	EliteBook	CNV1360668	none
DAS	Environmental Sys Corp	8864	C2598	None
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	illegible	none
flow rate	Mykrolis	FC280SAV-4S	AW9403022	03388
Infrastructure	Infrastructure	none	none	none
Met tower	Universal Tower	unknown	none	01357
MFC power supply	Tylan	RO-32	FP9404002	03678
Modem	Sierra wireless	GX450	LA54620441001003	none
Ozone	ThermoElectron Inc	49i A3NAA	1030745086	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	1030745084	none
Sample Tower	Aluma Tower	В	none	illegible
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41432VC	029455	none
Zero air pump	Twin Tower Engineering	TT70/E4	526297	90721

Site Inventory by Site Visit

Site \	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
DIN4	131-Martin	Valvur-08/28/2020				
1	8/28/2020	Computer	Hewlett Packard	none	ProBook	5CB22906V2
2	8/28/2020	DAS	Environmental Sys Corp	None	8864	C2603
3	8/28/2020	elevation	Elevation	none	none	none
4	8/28/2020	Filter pack flow pump	Thomas	none	107CA18	0191007241
5	8/28/2020	flow rate	Mykrolis	none	FC280SAV-4S	AW902153
6	8/28/2020	Infrastructure	Infrastructure	none	none	none
7	8/28/2020	MFC power supply	Tylan	none	RO-32	FP9706002
8	8/28/2020	Modem	US Robotics	none	V.92	1MCWZ4iN2382
9	8/28/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	1211052490
10	8/28/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460050
11	8/28/2020	Shelter Temperature	ARS	none	unknown	none
12	8/28/2020	siting criteria	Siting Criteria	none	none	None
13	8/28/2020	Temperature2meter	RM Young	none	41342	4273
14	8/28/2020	Zero air pump	Werther International	none	PC70/4	531395

DAS Data Form 0.27 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg **Environmental Sys** C2603 DIN431 Martin Valvur 08/28/2020 DAS Primary Das Date: 8 /28/2020 **Audit Date** 8 /28/2020 ΗY **Parameter** DAS Mfg 08:31:44 08:32:00 Das Time: **Audit Time** Tfer Desc. Source generator (D 12010039329 **Serial Number** Das Day: 241 **Audit Day** 241 Tfer ID 01322 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0003 0.0006 0.0003 0.0006 6/15/2014 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740243 Tfer Desc. DVM 01312 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference 3 V 0.0000 -0.0007 -0.0008 -0.0001 3 0.0998 0.0993 V V -0.0005 0.1000 3 0.3000 0.2999 0.2998 V V -0.0001 V V 3 0.5000 0.4998 0.4995 -0.0003 3 V V 0.7000 0.6997 0.6993 -0.0004V V 3 0.9000 0.9000 0.8994 -0.0006 3 1.0000 0.9999 0.9996 V V -0.0003

Flow Data Form

Mfg Tylan SN/Owner ID FP9706002 none Parameter: MFC power supply DAS 1: DAS 2: A Avg % Diff: A Max % Dif A Avg % Diff 1.57% 2.58% Desc. Test type Input 1/m Inpurimary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	Dif ScDisp. -0.06 -0.05 0.00 0.00	in Valvur Ifg erial Number Ifer ID lope Cert Date Cal Factor Z Cal Factor F Rotometer R OutputSignal 0.0000 0.0000 0.0000 0.0000 0.0000	5/6/2 ero ull Scale eading: Output S E I 0.02 0.02 3.03 3.03	0000 Inte	arameter Flow fer Desc. BIO ercept erCoff 42 31 .5	0.00000 1.00000 PctDifference
Parameter: MFC power supply DAS 1: DAS 2: A Avg % Diff: A Max % Dif 1.57% 2.58% Desc. Test type Input 1/m Input 1/m primary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Filter Position	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	S T S C Dif fcDisp. -0.06 -0.05 0.00 0.00	erial Number Fer ID lope Cert Date Cal Factor Z Cal Factor F Rotometer R OutputSignal 0.0000 0.0000 0.0000	122974 01416 1.00 5/6/2 ero ull Scale eading: Output S E I 0.02 0.02 3.03 3.03 3.02	0000 Inte 2020 Cor 0.04 10.8 3. nputUnit (1/m) 1/m	fer Desc. BIO Procept Prooff 1/2 31 .5 OutputSignalF 1/m 1/m 1/m	0.00000 1.00000 PctDifference
Parameter: MFC power supply DAS 1: DAS 2: A Avg % Diff: A Max % Dif 1.57% 2.58% Desc. Test type Input 1/m Inpurimary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	Dif fcDisp. -0.06 -0.05 0.00 0.00	Cal Factor Z Cal Factor F Rotometer R OutputSignal 0.0000 0.0000 0.0000	01416 1.00 5/6/2 ero ull Scale eading: Output S E I 0.02 0.02 3.03 3.02	0000 Inte 2020 Cor 0.04 10.8 3. nputUnit (1/m) 1/m 1/m	ercept PrCoff 12 31 .5 OutputSignalF 1/m 1/m 1/m	0.00000 1.00000 PctDifference -0.92%
Parameter: MFC power supply DAS 1: DAS 2: A Avg % Diff: A Max % Dif 1.57% 2.58% Desc. Test type Input 1/m Input	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	Dif fcDisp. -0.06 -0.05 0.00 0.00	Cal Factor Z Cal Factor F Rotometer R OutputSignal 0.0000 0.0000 0.0000	1.00 5/6/2 ero ull Scale eading: Output S E I 0.02 0.02 3.03 3.03 3.02	0.04 10.8 3. nputUnit (1/m 1/m 1/m	rCoff 12 31 .5 OutputSignalF 1/m 1/m	1.00000 PctDifference -0.92%
A Avg % Diff: A Max % Dif 1.57% 2.58% Desc. Test type Input I/m Input Imprimary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	Dif fcDisp. -0.06 -0.05 0.00 0.00	Cal Factor Z Cal Factor F Rotometer R OutputSignal 0.0000 0.0000 0.0000	5/6/2 ero ull Scale eading: Output S E I 0.02 0.02 3.03 3.03	0.04 10.8 3. nputUnit (1/m 1/m 1/m	rCoff 12 31 .5 OutputSignalF 1/m 1/m	1.00000 PctDifference -0.92%
A Avg % Diff: A Max % Dif 1.57% 2.58% Desc. Test type Input I/m Input Imprimary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	Dif fcDisp. -0.06 -0.05 0.00 0.00	Cal Factor Z Cal Factor F Rotometer R OutputSignal 0.0000 0.0000 0.0000	ero ull Scale eading: Output S E I 0.02 0.02 3.03 3.03 3.02	0.04 10.8 3. nputUnit (1/m 1/m 1/m	rCoff 12 31 .5 OutputSignalF 1/m 1/m	PctDifference
A Avg % Diff: A Max % Dif 1.57% 2.58% Desc. Test type Input I/m Input Imprimary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	fcDisp. -0.06 -0.05 0.00 0.00	Cal Factor F Rotometer R OutputSignal 0.0000 0.0000 0.0000 0.0000	Output S E I 0.02 0.02 3.03 3.02	10.8 3. nputUnit (1/m 1/m	31 .5 OutputSignalF 1/m 1/m	-0.92%
A Avg % Diff: A Max % Dif 1.57% 2.58% Desc. Test type Input I/m Input Imprimary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	fcDisp. -0.06 -0.05 0.00 0.00	Cal Factor F Rotometer R OutputSignal 0.0000 0.0000 0.0000 0.0000	Output S E I 0.02 0.02 3.03 3.02	10.8 3. nputUnit (1/m 1/m	31 .5 OutputSignalF 1/m 1/m	-0.92%
Desc. Test type Input I/m	put Corr Mf 0.000 0.000 3.060 0 3.100 0 3.050	fcDisp. -0.06 -0.05 0.00 0.00	Rotometer R OutputSignal 0.0000 0.0000 0.0000 0.0000	Output S E I 0.02 0.02 3.03 3.02	nputUnit (1/m 1/m 1/m	OutputSignalI 1/m 1/m 1/m	-0.92%
primary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	0.000 0.000 3.060 0 3.100 0 3.050	-0.06 -0.05 0.00 0.00 0.00	0.0000 0.0000 0.0000 0.0000	0.02 0.02 3.03 3.02	1/m 1/m 1/m	1/m 1/m 1/m	-0.92%
primary pump off 0.000 primary leak check 0.000 primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	0.000 0.000 3.060 0 3.100 0 3.050	-0.05 0.00 0.00 0.00	0.0000 0.0000 0.0000	0.02 3.03 3.02	1/m 1/m	1/m 1/m	
primary test pt 1 3.056 primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	3.060 3.100 3.050	0.00 0.00 0.00	0.0000 0.0000	3.03 3.02	1/m	1/m	
primary test pt 2 3.097 primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	3.100 3.050	0.00	0.0000	3.02			
primary test pt 3 3.052 Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position	3.050	0.00			1/m	1/m	2.590/
Sensor Component Leak Test Sensor Component Tubing Condition Sensor Component Filter Position		1	0.0000				-2.58%
Sensor Component Tubing Condition Sensor Component Filter Position	C		_	3.01	l/m	1/m	-1.21%
Sensor Component Filter Position		ondition			Status	pass	
_	Co	ondition	Good		Status	pass	
	Co	ondition	Good		Status	pass	
Sensor Component Rotometer Condition	C	ondition	Clean and dry		Status	pass	
Sensor Component Moisture Present	C	ondition	No moisture pr	esent	Status	pass	
Sensor Component Filter Distance	C	ondition	5.0 cm		Status	pass	
Sensor Component Filter Depth	Co	ondition	0.5 cm		Status	pass	
Sensor Component Filter Azimuth	C	ondition	350 deg		Status	pass	
Sensor Component System Memo	C	ondition			Status	pass	

Ozone Data Form

Mfg	Serial Number	er Tag Site		Technician	Site Visit Da	te Parameter	Owner ID
ThermoElectron Inc	1211052490	DIN431		Martin Valvur	08/28/2020	Ozone	none
Intercept		rcept	0.00000	Mfg Serial Numb	ThermoElect 49CPS-7000		eter ozone Ozone primary stan
CorrCoff:	0.99996 Cor	rCoff:	0.00000	Tfer ID	01110		
DAS 1:	D	AS 2:		Slope	1.0	0260 Intercept	0.03590
A Avg % Diff: A M	Max % Dif A	Avg %Diff A	Max % Dif				
0.0%	0.0%			Cert Date	1/14/	2020 CorrCoff	0.99999
UseDescription	ConcGroup	Tfer Raw	Tfer Co	rr Site	Site Unit	RelPerDif	AbsDif
primary	1	0.17	0.13	0.29	ppb		0.16
primary	2	16.25	16.17	15.15	ppb		-1.02
primary	3	36.75	36.61	35.48	ppb	-3.1	
primary	4	65.77	65.56		ppb	-1.	
primary	5	113.53	113.19	111.80	ppb	-1.2	4
Sensor Compone	Audit Press	ure	Con	dition 643.2 mml	Hg	Status pass	3
Sensor Compone	ent Sample Tra	in	Con	dition Good		Status pass	3
Sensor Compone	Minimum di	stance from road	d met Con	dition True		Status pass	3
Sensor Compone	Inlet Filter C	Condition	Con	dition Clean		Status pass	3
Sensor Compone	26.6 degree	unobstructed ru	le Con	dition True		Status pass	3
Sensor Compone	Tree dewlin	e >10m or below	inlet Con	dition True		Status pass	3
Sensor Compone	ent Offset		Con	dition 0.1		Status pass	3
Sensor Compone	ent Span		Con	dition 0.9999		Status pass	3
Sensor Compone	ent Zero Voltag	е	Con	dition 0.0001		Status pass	3
Sensor Compone	ent Fullscale Vo	oltage	Con	dition 0.9995		Status pass	3
Sensor Compone	ent Cell A Freq.		Con	dition 91.1 kHz		Status pass	3
Sensor Compone	ent Cell A Noise)	Con	dition 0.8 ppb		Status pass	3
Sensor Compone	cent Cell A Flow		Con	dition 0.68 lpm		Status pass	3
Sensor Compone	ent Cell A Press	sure	Con	dition 626.0 mml	Hg	Status pass	3
Sensor Compone	Cell A Tmp.		Con	dition 34.6 C		Status pass	3
Sensor Compone	ent Cell B Freq.		Con	dition 95.2 kHz		Status pass	3
Sensor Compone	ent Cell B Noise)	Con	dition 0.8 ppb		Status pass	3
Sensor Compone	Cell B Flow		Con	dition 0.67 lpm		Status pass	3
Sensor Compone	Cell B Press	sure	Con	dition 624.8 mml	Hg	Status pass	3
Sensor Compone	ent Line Loss		Con	dition Not tested		Status pass	3
Sensor Compone	ent System Mer	no	Con	dition		Status pass	3

2 Meter Temperature Data Form Calc. Difference **Serial Number Tag Site Technician** Site Visit Date Parameter Mfg **Owner ID** Martin Valvur 08/28/2020 RM Young 4273 DIN431 Temperature2meter none Mfg Fluke Parameter Temperature Tfer Desc. RTD **Serial Number** 3275143 01229 Tfer ID **Slope** 1.00026 **Intercept** -0.01710 **DAS 1: DAS 2: Cert Date** 1/29/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.14 0.32 InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit UseDescription Test type Difference 0.30 0.32 0.0000 0.00C-0.32 primary Temp Low Rang 0.0000 24.97 C 0.03 primary Temp Low Rang 24.93 24.94 primary Temp Low Rang 47.25 47.25 0.0000 47.32C 0.07 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 System Memo Status pass Condition

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Martin Valvur ARS DIN431 08/28/2020 Shelter Temperature none none **DAS 1: DAS 2:** Parameter Shelter Temperature Fluke Mfg **Abs Avg Err** Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD 3275143 **Serial Number** 0.72 0.97 01229 Tfer ID -0.01710 **Slope** 1.00026 Intercept 1/29/2020 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 25.20 25.21 0.00024.2 \mathbf{C} -0.97 C Temp Mid Range 23.03 23.04 0.000 22.2 -0.83 primary C 0.000 primary Temp Mid Range 21.36 21.37 21.7 0.37 Sensor Component System Memo **Status** pass Condition

Infrastructure Data For

Site ID DIN431 Technician Martin Valvur Site Visit Date 08/28/2020

Shelter Make	Shelter Model	Shelter Size	
American Portable Buildings	A0810	640 cuft	

Sensor Component	Sample Tower Type	Condition	Type C	Status	pass
Sensor Component		Condition		Status	
Sensor Component		Condition		Status	
Sensor Component		Condition		Status	pass
Sensor Component		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	Shelter walls	Condition	Good	Status	pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status pass
Sensor Component	City > 50,000	Condition	Status pass
Sensor Component	City 1,000 to 10,000	Condition	Status pass
Sensor Component	City 10,000 to 50,000	Condition	Status pass
Sensor Component	Feedlot operations	Condition	Status pass
Sensor Component	Large parking lot	Condition	Status pass
Sensor Component	Limited agriculture operations	Condition	Status pass
Sensor Component	Major industrial source	Condition	Status pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component	Small parking lot	Condition 40 m	Status Fail
Sensor Component	System Memo	Condition	Status pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status pass
Sensor Component	Intensive agriculture operations	Condition	Status pass

Field Systems Comments

1 Parameter: DasComments

All sensors, filter pack, and ozone sample inlet are on a single, crank-down tower.

2 Parameter: SiteOpsProcedures

The site operator is not responsible for manual zero/span/precision checks, or multipoint calibrations, of the ozone analyzer.

3 Parameter: DocumentationCo

There are no hardcopies of manuals and operating procedures on-site. All documentation is available via the internet. Status of updates to documentation is evaluated during TSA by EPA.

4 Parameter: SitingCriteriaCom

A small parking lot for park service employees is located approximately 40 meters north of the site.

5 Parameter: ShelterCleanNotes

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

6 Parameter: MetSensorComme

The ambient temperature sensor is mounted approximately 8 meters from the ground and above the shelter roof.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 08/28/2020 DIN431 Technician | Martin Valvur Site ID Dinosaur Quarry **USGS Map NPS** Site Sponsor (agency) Map Scale **NPS Operating Group Map Date** 49-047-1002 AQS# R.M. Young **Meteorological Type** 40.4373 **Air Pollutant Analyzer** Ozone **QAPP** Latitude -109.3046 **Deposition Measurement** dry **QAPP** Longitude 1463 **Land Use** Desert **QAPP Elevation Meters** 10.7 Terrain complex **QAPP Declination** Marginally Conforms to MLM **OAPP Declination Date** 40.4373 **Site Telephone Audit Latitude** -109.3046 Site Address 1 **Audit Longitude** Site Address 2 **Audit Elevation** 1463 Uintah 10.7 **County Audit Declination** Jensen, UT City, State **Present** Fire Extinguisher 84035 Not present Zip Code Mountain **First Aid Kit** Time Zone **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # Primary Op. E-mail **Climbing Belt Backup Operator Security Fence V** Backup Op. Phone # **Secure Shelter** Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** American Portable Bu Model A0810 **Shelter Size** 640 cuft

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

Go east on route 40 from Vernal, UT. Turn north on route 149 and follow signs for Dinosaur National Monument.

✓ Notes

✓ Notes

Shelter Clean

Driving Directions

Site OK

Fi	eld Sy	stems Data Fo	orm				.500-S3-rev002	
Site	e ID	DIN431	Technician	Martin Valvur		Site Visit Date	08/28/2020	
1		d speed and direction fluenced by obstruction		as to avoid	✓	N/A		
2	(i.e. win	d sensors mounted so d sensors should be m tally extended boom > nto the prevailing wind	ounted atop the 2x the max diar	tower or on a	✓	N/A		
3		tower and sensors plu			✓	N/A		
4		temperature shields p ndiated heat sources su				Mounted on south of	of tower, over shelter	
5	condition surface	perature and RH sensons? (i.e. ground below and not steeply sloped g water should be avoi	sensors should. Ridges, hollow	be natural				
6	Is the so	olar radiation sensor p	lumb?		✓	N/A		
7	Is it site	d to avoid shading, or	any artificial o	r reflected light?	~	N/A		
8	Is the ra	ain gauge plumb?			✓	N/A		
9	Is it site towers,	d to avoid sheltering e etc?	ffects from buil	dings, trees,	✓	N/A		
10	Is the su facing n	urface wetness sensor sorth?	sited with the gr	id surface	✓	N/A		
11	Is it inc	clined approximately 3	0 degrees?		✓	N/A		
		additional explanatio				y) regarding condit	ions listed above, o	r any other features,

The ambient temperature sensor is mounted approximately 8 meters from the ground and above the shelter roof.

Fi	eld Systems Data Form	F-02058-1500-S4-rev0					
Sit	e ID DIN431 Technician Martin Valvur		Site Visit Date 08/28/2020				
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?	✓	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?	✓					
	vide any additional explanation (photograph or sketch if necessival or man-made, that may affect the monitoring parameters:) regarding conditions listed above, or any other features,				

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site	DIN431 Technician Martin Valvur		Site Visit Date 08/28/2020
	Siting Criteria: Are the pollutant analyzers and deposition ed	լսւթյ	ment 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	l ma	<u>intenance</u>
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?		No
9	Is there a rotometer in the dry deposition filter line, and is it clean?	✓	Clean and dry
Drov	ide any additional explanation (photograph or sketch if necess	COPT)	regarding conditions listed above, or any other features
	ral or man-made, that may affect the monitoring narameters:		regarding conditions issue above, or any other reactives,

Field Systems Data Form F-02058-1500-S6-rev002 DIN431 Technician Martin Valvur Site Visit Date 08/28/2020 Site ID DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **✓** Are all the components of the DAS operational? (printers, modem, backup, etc) Met sensors only Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **~** grounded? **✓** Does the instrument shelter have a stable power source? ~ Is the instrument shelter temperature controlled? Grounded **Stable** Is the met tower stable and grounded? Is the sample tower stable and grounded? **V V** 11 Tower comments? One tower only

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:

All sensors, filter pack, and ozone sample inlet are on a single, crank-down tower.

DIN431 Site Visit Date 08/28/2020 Site ID Technician Martin Valvur **Documentation** Does the site have the required instrument and equipment manuals? Yes No N/A No N/A Yes **✓** Wind speed sensor **Data logger V V** Wind direction sensor **Data logger** ✓ П **V Temperature sensor** Strip chart recorder **V V** Relative humidity sensor **Computer V** П П **V** Modem Solar radiation sensor П П **V V Surface wetness sensor Printer** \checkmark **V** Wind sensor translator Zero air pump **V Temperature translator V** Filter flow pump **V V Humidity sensor translator Surge protector** П **V UPS V Solar radiation translator** П П **V V** Tipping bucket rain gauge Lightning protection device \checkmark **V** Ozone analyzer **Shelter heater** ~ \checkmark Shelter air conditioner Filter pack flow controller \checkmark Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log** Not present **SSRF ✓ V** Site Ops Manual Not present **HASP** Not present **Field Ops Manual** Not present **V Calibration Reports V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Flow & observation sections Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document **✓** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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:

There are no hardcopies of manuals and operating procedures on-site. All documentation is available via the internet. Status of updates to

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Field Systems Data Form

documentation is evaluated during TSA by EPA.

Field Systems Data Form F-02058-1500-S8-rev002 DIN431 Site Visit Date 08/28/2020 Site ID Technician Martin Valvur Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **V V** N/A **Multipoint Calibrations V V** N/A **Visual Inspections ✓ V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** N/A **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant OC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily Not performed Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests Manual Precision Level Test** Not performed Not performed **Analyzer Diagnostics Tests ~ ✓** Monthly **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water Not performed **V V** Semiannually **Zero Air Desiccant Check** ✓ Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters? **✓** Dataview Are the automatic and manual z/s/p checks monitored and reported? If yes, how? 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 is not responsible for manual zero/span/precision checks, or multipoint calibrations, of the ozone analyzer.

Field Systems Data Form			F-02058-1500-S9-rev002			
Site ID DIN431 Tee	hnician Martin Valvur		Site Visit Date 08/28/2020			
Site operation procedures						
1 Is the filter pack being changed ever	y Tuesday as scheduled	? 🗸	Filter changed various times			
2 Are the Site Status Report Forms be correctly?	ing completed and filed	✓				
3 Are data downloads and backups be scheduled?	ing performed as		No longer required			
4 Are general observations being mad	e and recorded? How?	✓	SSRF			
5 Are site supplies on-hand and replet fashion?	nished in a timely	✓				
6 Are sample flow rates recorded? Ho	w?	✓	SSRF			
7 Are samples sent to the lab on a regularist fashion?	ular schedule in a timely	✓				
8 Are filters protected from contamina and shipping? How?	ation during handling	✓	Clean gloves on and off			
9 Are the site conditions reported regularities operations manager or staff?	nlarly to the field					
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		<u> </u>			
In-line Filter Inspection/Replacement	Semiannually		✓			
Sample Line Check for Dirt/Water	☐ Not performed					
Provide any additional explanation (photo natural or man-made, that may affect the			regarding conditions listed above, or any other features,			

Field Systems Data Form

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Site ID DIN431 Technician Martin Valvur Site Visit Date 08/28/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	ProBook	5CB22906V2	none
DAS	Environmental Sys Corp	8864	C2603	None
elevation	Elevation	none	none	none
Filter pack flow pump	Thomas	107CA18	0191007241	none
flow rate	Mykrolis	FC280SAV-4S	AW902153	none
Infrastructure	Infrastructure	none	none	none
MFC power supply	Tylan	RO-32	FP9706002	none
Modem	US Robotics	V.92	1MCWZ4iN2382	none
Ozone	ThermoElectron Inc	49i A3NAA	1211052490	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	CM08460050	none
Shelter Temperature	ARS	unknown	none	none
siting criteria	Siting Criteria	none	None	none
Temperature2meter	RM Young	41342	4273	none
Zero air pump	Werther International	PC70/4	531395	none

Site Inventory by Site Visit

Site \	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BELI	16-Eric H	ebert-09/22/2020				
1	9/22/2020	Computer	Dell	07005	Inspiron 15	Unknown
2	9/22/2020	DAS	Campbell	000341	CR3000	2120
3	9/22/2020	Elevation	Elevation	None	1	None
4	9/22/2020	Filter pack flow pump	Thomas	02755	107CAB18	1192001881
5	9/22/2020	Flow Rate	Apex	000548	AXMC105LPMDPCV	50742
6	9/22/2020	Infrastructure	Infrastructure	none	none	none
7	9/22/2020	Met tower	Universal Tower	06484	unknown	none
8	9/22/2020	Modem	Raven	06475	H4222-C	0808311155
9	9/22/2020	Ozone	ThermoElectron Inc	000684	49i A1NAA	1030244795
10	9/22/2020	Ozone Standard	ThermoElectron Inc	000373	49i A3NAA	0726124685
11	9/22/2020	Precipitation	Texas Electronics	06332	TR-525i-HT	43527-807
12	9/22/2020	Relative Humidity	Vaisala	07116	HMP60	NO850846
13	9/22/2020	Sample Tower	Aluma Tower	000127	В	none
14	9/22/2020	Shelter Temperature	Campbell	none	107-L	44281
15	9/22/2020	Shield (10 meter)	RM Young	05042	Aspirated 43408	none
16	9/22/2020	Shield (2 meter)	RM Young	05041	Aspirated 43408	none
17	9/22/2020	Siting Criteria	Siting Criteria	None	1	None
18	9/22/2020	Solar Radiation	Licor	06959	LI-200	illegible
19	9/22/2020	Solar Radiation Translator	RM Young	03412	70101-X	none
20	9/22/2020	Surface Wetness	RM Young	04608	58101	none
21	9/22/2020	Temperature	RM Young	06985	41342VO	024086
22	9/22/2020	Temperature2meter	RM Young	02989	41342VO	Illegable
23	9/22/2020	Wind Direction	RM Young	04405	AQ05305	35870wdr
24	9/22/2020	Wind Speed	RM Young	04405	AQ05305	35870wsp
25	9/22/2020	Zero air pump	Werther International	06913	C 70/4	000829178

DAS Data Form 0.02 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2120 BEL116 Eric Hebert 09/22/2020 DAS Primary Das Date: 9 /22/2020 **Audit Date** 9 /22/2020 Datel **Parameter** DAS Mfg 09:34:01 09:34:00 **Das Time: Audit Time** 4000392 Tfer Desc. Source generator (D **Serial Number** 266 Das Day: **Audit Day** 266 Tfer ID 01321 **High Channel: Low Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 **Slope** Intercept 0.0000 0.0000 0.0001 0.0001 1/22/2015 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 86590148 Tfer Desc. DVM 01310 Tfer ID 1.00000 0.00000 **Slope** Intercept 2/4/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference 7 V 0.0000 0.0000 0.0000 0.0000 7 0.1000 0.1000 V V 0.0000 0.1000 7 0.3000 0.3000 0.3000 V V 0.00007 V V 0.5000 0.5000 0.5000 0.0000 V V 7 0.7000 0.7001 0.7000 -0.0001 7 V V 0.9000 0.9001 0.9000 -0.0001 7 1.0000 1.0000 V V -0.0001 1.0001

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter 000548 Apex 50742 BEL116 Eric Hebert 09/22/2020 Flow Rate Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** -0.03 **DAS 1: DAS 2: Cal Factor Zero** 0.95 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 1.96% 1.96% 1.55 **Rotometer Reading:** Test type Input l/m Input Corr OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. MfcDisp. primary pump off 0.000 0.0000.04 0.0000.01 1/m1/mleak check 0.13 0.000 0.10 1/m0.000 0.000 1/mprimary test pt 1 1.509 1.530 1.57 0.000 1.50 1/m1/m -1.96% primary 1.57 0.000 1/m-1.96% primary test pt 2 1.509 1.530 1.50 1/m test pt 3 1.513 1.530 1.57 0.000 1.50 1/m1/m -1.96% primary Sensor Component Leak Test Condition **Status** pass **Condition** Good **Status** pass **Sensor Component** Tubing Condition

Condition Good

Condition 5.5 cm

Condition 1.5 cm

Condition 180 deg

Condition

Condition Clean and dry

Condition No moisture present

Status pass

Status pass

Status pass

Status pass

Status pass

Status pass

Status pass

Sensor Component Filter Position

Sensor Component Rotometer Condition

Sensor Component Moisture Present

Sensor Component Filter Distance

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Mfg	S	erial Numbe	er Tag Site		Te	chnician	Site Visit Date	Parame	ter	Owner ID
ThermoElectro	n Inc	030244795	BEL116	3	Er	ric Hebert	09/22/2020	Ozone		000684
Slope:	0.9	98550 Slop	e:	0.00000		Mfg	ThermoElectron	Inc Pa	ramete	rozone
Intercept			P-	0.00000		Serial Number	1180930075	Tfe	er Desc	Ozone primary stan
CorrCoff:	0.9	99999 Cor	rCoff:	0.00000		Tfer ID	01115			
DAS 1:		D	AS 2:			Slope	0.9949	00 Inter	cept	0.32220
A Avg % Diff:	: A Ma	x % Dif A	Avg %Diff A	Max %	Dif	•	4/44/000	<u> </u>	•	0.00000
0.0%		0.0%				Cert Date	1/14/202	20 Corr	Coff	0.99999
UseDescripti	on C	ConcGroup	Tfer Raw	Tfer	Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary		1	0.09	-0.		0.73	ppb			0.96
primary		2	15.66	15.		15.53	ppb			0.32
primary		3	34.97	34.		34.69	ppb		0.93	
primary		4	67.48	66.		66.43	ppb		-0.29	
primary		5	108.85	107	.66	106.90	ppb		-0.71	
Sensor Com	ponent	Audit Press	ure	C	onditi	on 729.4 mmHg		Status	pass	
Sensor Com	ponent	Sample Tra	in	C	onditi	on Good		Status	pass	
Sensor Com	ponent	Minimum di	stance from road	d met C	onditi	on True		Status	pass	
Sensor Com	ponent	Inlet Filter C	Condition	C	onditi	on Moderately cle	an	Status	pass	
Sensor Com	ponent	26.6 degree	unobstructed ru	ıle C	onditi	on True		Status	pass	
Sensor Com	ponent	Tree dewlin	e >10m or below	v inlet C	onditi	on True		Status	pass	
Sensor Com	ponent	Offset		C	onditi	on -0.6		Status	pass	
Sensor Com	ponent	Span		C	onditi	on 1.017		Status	pass	
Sensor Com	ponent	Zero Voltag	е	C	onditi	on N/A		Status	pass	
Sensor Com	ponent	Fullscale Vo	oltage	C	onditi	on N/A		Status	pass	
Sensor Com	ponent	Cell A Freq.		C	onditi	on 101.6 kHz		Status	pass	
Sensor Com	ponent	Cell A Noise)	C	onditi	on 0.6 ppb		Status	pass	
Sensor Com	ponent	Cell A Flow		C	onditi	on 0.61 lpm		Status	pass	
Sensor Com	ponent	Cell A Press	sure	C	onditi	on 717.9 mmHg		Status	pass	
Sensor Com	ponent	Cell A Tmp.		C	onditi	on 34.2 C		Status	pass	
Sensor Com	ponent	Cell B Freq.		C	onditi	on 93.5 kHz		Status	pass	
Sensor Com	ponent	Cell B Noise)	C	onditi	on 0.9 ppb		Status	pass	
Sensor Com	ponent	Cell B Flow		C	onditi	on 0.55 lpm		Status	pass	
Sensor Com	ponent	Cell B Press	sure	C	onditi	on 718.8 mmHg		Status	pass	
Sensor Com	ponent	Line Loss		C	onditi	on Not tested		Status	pass	
Sensor Com	ponent	System Mer	no	C	onditi	on		Status	pass	

Wind Speed Data Form Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** BEL116 Wind Speed 04405 RM Young 35870wsp Eric Hebert 09/22/2020 RM Young Parameter wind speed Mfg CA04013 Tfer Desc. wind speed motor (I **Serial Number** 01254 Tfer ID 1.00000 0.00000 **Slope Intercept** 65736 **Prop or Cups SN** 0.4 **to** 0.4 **Prop or Cups Torque Cert Date** 6/18/2020 CorrCoff 1.00000 **Prop Correction Facto** 0.0512 Parameter wind speed RM Young Mfg

Serial Number

Tfer ID

Slope

Cert Date

CA04013

1.00000

6/18/2020

Intercept

CorrCoff

01253

Tfer Desc. wind speed motor (h

0.00000

1.00000

DAS 1: DAS 2:

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 Compor	nent Condition		Condition	n Good		Status pass		
Sensor Compor	nent Prop or Cups	s Condition	Condition	n Good		Status pass		
Sensor Compor	nent Sensor Heat	er	Condition	n N/A		Status pass		
Sensor Compon	nent Torque		Condition	n		Status pass		
Sensor Compon	nent Sensor Plum	ıb	Condition	n Plumb		Status pass		
Sensor Compon	nent 50m from tre	e dripline	Condition	n True		Status pass		
Sensor Compor	nent obstacles >1	0x height above	sens Condition	n True		Status pass		
Sensor Compon	nent System Mem	10	Condition	n		Status pass		

Wind Direction Data Form

Mfg	Serial Nu	Serial Number Tag Site			Technician		Site Visit	Date	Param	eter	Owner II	D	
RM Young 35870wdr			BEL11	6	E	ric Hebert	09/22/2020 Wind D			irection 04405			
Vane SN: N/A C. A VaneTorque 12 to 12						Mfg Serial Number		RM Young			Parameter wind direction Tfer Desc. wind direction whe		
			A. Align.	deg. true	:	Tfer ID Slope			1.0000	0 Inte	rcept	0.00	000
					1	Serial Number 192		1/1/2006 CorrCoff			rCoff	1.00000	
								Ushikata Paramete				r wind direction	
								192034			fer Desc. transit		
								01270	1270				
									1.00000 Inte		rcept	0.00	000
						Cert Date		3/2/20		2/2020 CorrCoff		1.00	000
DAS 1: DAS 2:													
	Orientation	Linearit		Orientati	on I	Linearity:	7						
Abs Avg Err	0.8		8.0										
Abs Max Err	2		2										
UseDescription	TferID	Ir	nput Raw	v Line	arity	Output V	Out	out Deg.	Differ	rence	Change	Error	
primary					•	0.000		1		1	44	:#############	
primary	mary 01266				•	0.000		45		0	43.3		
primary	orimary 01266		90		•	0.000		90		0	45.6	:##############	
primary	primary 01266		135		•	0.000		135		0		++++++++++++	
primary	•		180		2	0.000		180		0		############	
primary	primary 01266		225		•	0.000		225		0		###########	
primary	primary 01266		270		•	0.000 272			2			############	
primary			315		•	0.000		317		2	45	0	
primary	•		90			0.000		90		0		0	
primary			180			0.000		180		0		0	
primary	01270 270				0.000		272		2		2		
primary	01270		360			0.000		1		1	1	1	1
Sensor Component Sensor Heater					Condition N/A					Status]
Sensor Component Condition					Condition Good Condition Plumb					Status			
Sensor Component Torque					Condition						pass pass		
Sensor Component Mast					Condition Good					Status			
Sensor Component Vane Condition					Condition Good					Status			
Sensor Component 50m from tree dripline					Condition True					Status			
Sensor Component obstacles >10x height above sens					Condition True					Status			
Sensor Component System Memo					Condition					Status pass			

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 024086 BEL116 Eric Hebert 09/22/2020 Temperature 06985 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.21 0.49 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.00 -0.13 0.000 0.36 \mathbf{C} 0.49 C Temp High Range 35.50 35.09 0.000 35.02 -0.07 primary C primary Temp High Range 50.00 49.48 0.000 49.55 0.07 Condition Moderately clean Status pass Sensor Component Shield **Condition** Functioning Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass Condition

2 Meter Temperature Data Form Calc. Difference **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Mfg 02989 RM Young Illegable BEL116 Eric Hebert 09/22/2020 Temperature2meter Mfg Extech Parameter Temperature H232734 Tfer Desc. RTD **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2: Cert Date** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.22 0.43 InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference UseDescription Test type Temp Low Rang -0.04 -0.17 0.000 0.26C 0.43 primary 35.50 35.09 0.000 35.18C 0.09 primary Temp High Rang Temp High Rang primary 50.00 49.48 0.000 49.61 C 0.13 Sensor Component | Shield **Condition** Moderately clean **Status** pass Sensor Component Properly Sited **Condition** See comments **Status** Fail **Condition** Functioning **Sensor Component** Blower Status pass Sensor Component System Memo Status pass Condition

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Campbell 44281 BEL116 Eric Hebert 09/22/2020 Shelter Temperature none **DAS 1: DAS 2:** Parameter Shelter Temperature Mfg Extech Abs Avg Err Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 1.18 1.72 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 1.00000 2/14/2020 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 25.76 25.43 0.00026.1 \mathbf{C} 0.7

0.000

0.000

22.69

23.93

Condition

Temp Mid Range

Temp Mid Range

Sensor Component System Memo

primary

primary

23.00

24.25

C

C

Status pass

1.72

1.12

24.4

25.1

Humidity Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg BEL116 Relative Humidity 07116 Vaisala NO850846 Eric Hebert 09/22/2020 Mfg AZ Instruments Parameter Relative Humidity Tfer Desc. Psychrometer **Serial Number** 10325187 01222 Tfer ID **Slope** 1.01730 **Intercept** -2.24690 1/29/2020 0.99990 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range: **High Range:** Low Range: **High Range:** 1.9 **Abs Avg Err** 1.1 1.9 1.1 **Abs Max Err** UseDesc. Test type Device Input RH GTL Raw RH Corr. DAS Volts DAS %RH Difference primary RH Low Range Psychrometer 23.7 23.7 0.000 25.6 1.9 RH Low Range Psychrometer 47.6 0.000 49.4 1.8 primary 47.6 Psychrometer 98.9 98.9 0.000 100.0 primary RH High Range 1.1 Sensor Component RH Filter **Condition** Clean **Status** pass **Condition** Moderately clean Sensor Component Shield Status pass Status pass Sensor Component Blower **Condition** N/A Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Sensor Component** System Memo Condition **Status** pass

Solar Radiation Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg Solar Radiation BEL116 Eric Hebert 09/22/2020 06959 Licor illegible Mfg Eppley Parameter solar radiation RM Young Mfg 10765 Tfer Desc. SR transfer translato **Serial Number SN/Owner ID** none 03412 01246 Tfer ID **Parameter:** Solar Radiation Translator **Slope** 1.00000 **Intercept** 0.00000 **DAS 1: DAS 2:** 2/4/2020 1.00000 % Diff of Avg %Diff of Max %Diff of Avg: %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg Eppley Tfer Desc. SR transfer sensor **Serial Number** 34341F3 Tfer ID 01245 1.00000 0.00000 Slope Intercept **Cert Date** 2/4/2020 CorrCoff 1.00000 0.0% 2.5% 1.1% 0.0% MeasureTime DAS w/m2 PctDifference UseDescription Measure Date Tfer Raw Tfer Corr 9/22/2020 11:00 738 738 753 2.1% primary 9/22/2020 12:00 806 806 815 1.1% primary -1.2% 9/22/2020 14:00 726 726 718 primary primary 9/22/2020 15:00 607 606 661 9.0% Sensor Component | Sensor Clean **Condition** Clean **Status** pass Sensor Component Sensor Level **Status** pass **Condition** Level Sensor Component Properly Sited **Condition** Properly sited **Status** pass **Sensor Component** System Memo Status pass **Condition**

Surface Wetness Data Form

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	BEL116	Eric Hebert	09/22/2020	Surface Wetness	04608

MfgOhmiteParameter surface wetnessSerial Number296-1200Tfer Desc. decade boxTfer ID01210Slope1.00000Intercept0.00000Cert Date1/4/2011CorrCoff1.00000

✓ Manual Test Pass

UseDescription	Test Type	Tfer kOhms	OutputSignal	DAS eng	OutputSignalEngUnit	TferUnits	OutputSignalUnit
primary	wet	N/A	0.000	1.02	V	N/A	V
primary	dry	N/A	0.000	0.00	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	west	Status Fail
Sensor Component	Grid Condition	Condition	Fair	Status pass
Sensor Component	Grid Type	Condition	Grid without holes	Status pass
Sensor Component	System Memo	Condition		Status pass

Infrastructure Data For

Site ID See visit Date 05/22/2020	Site ID	BEL116	Technician	Eric Hebert	Site Visit Date	09/22/2020
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Shelter Make	Shelter Model	Shelter Size	
Unknown	Unknown	Unknown	

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	Fair	Status pass
Sensor Component	Shelter Door	Condition	Good	Status pass
Sensor Component	Shelter Roof	Condition	Good	Status pass
Sensor Component	Shelter Floor	Condition	Poor	Status Fail
Sensor Component	Shelter walls	Condition	Good	Status pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition 25 km	Status	Fail
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition	Status	pass
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Temperature2meter	BEL116	Eric Hebert	09/22/2020	Properly Sited	RM Young	4577		
The site is over-grown vinstrumentation.	with underbrush i	naking it difficult to	o check site equ	ipment. The under	brush is beginning	g to encroach on t	the lower	

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.

2 Parameter: MetSensorComme

The trees are encroaching on the lower temperature sensor and tipping bucket rain gauge.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 09/22/2020 BEL116 Technician Eric Hebert Site ID Laurel **USGS Map EPA** Site Sponsor (agency) Map Scale BARC/private **Operating Group Map Date** 24-033-9991 AQS# R.M. Young **Meteorological Type** Ozone, SO2, NOy, NOx, CO, Hg Air Pollutant Analyzer **QAPP** Latitude 39.0283 -76.8175 dry, wet, Hg **QAPP** Longitude **Deposition Measurement** 46 **Land Use** urban - agriculture **QAPP Elevation Meters** flat 11.25 Terrain **QAPP Declination** No 2/23/2006 Conforms to MLM **OAPP Declination Date** (301) 474-3019 39.0281786 **Site Telephone Audit Latitude** BARC old airport -76.817129 Site Address 1 **Audit Longitude** Springfield Road Site Address 2 **Audit Elevation** 47 Prince George's -10 **County Audit Declination** Laurel, MD City, State **Present** Fire Extinguisher 20708 New in 2015 Zip Code Time Zone **✓** Eastern First Aid Kit **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **~ Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make Model** Unknown Unknown **Shelter Size** Unknown **✓** Notes **Shelter Clean ✓** Notes Site OK From the Baltimore - Washington Parkway (route 295) take exit 11(Powder Mill Road). Go east for approximately **Driving Directions**

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.

Fi	eld Systems Data Form		F-02058-1500-S3-rev002
Sit	BEL116 Technician Eric Hebert		Site Visit Date 09/22/2020
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
	ovide any additional explanation (photograph or sketch if nece cural or man-made, that may affect the monitoring parameters		y) regarding conditions listed above, or any other features,

The trees are encroaching on the lower temperature sensor and tipping bucket rain gauge.

Fi	eld Systems Data Form	F-02058-1500-S4-rev002
Site	BEL116 Technician Eric Hebert	Site Visit Date 09/22/2020
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?	Signs of wear
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	
	ide any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	ssary) regarding conditions listed above, or any other features,

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site	BEL116 Technician Eric Hebert		Site Visit Date 09/22/2020
	Siting Criteria: Are the pollutant analyzers and deposition eq	uipr	nent 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	mai	ntenance
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
	ride any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	ary)	regarding conditions listed above, or any other features,

Field Systems Data Form F-02058-1500-S6-rev002 BEL116 Technician Eric Hebert Site Visit Date 09/22/2020 Site ID DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **V** Are all the components of the DAS operational? (printers, modem, backup, etc) Met sensors only Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **V** grounded? **✓** Does the instrument shelter have a stable power source? **✓** Is the instrument shelter temperature controlled? Grounded Stable Is the met tower stable and grounded? **V ✓** Is the sample tower stable and grounded? **V V**

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

11 Tower comments?

natural or man-made, that may affect the monitoring parameters:

Field Systems Data Form F-02058-1500-S7-rev002 BEL116 Technician Eric Hebert Site Visit Date 09/22/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No Yes N/A Yes No N/A $\overline{\mathbf{V}}$ Wind speed sensor **Data logger** П **V** \checkmark П Wind direction sensor Data logger **V** \checkmark П **Temperature sensor** Strip chart recorder **✓** П Relative humidity sensor Computer **V V Solar radiation sensor** Modem **~** П **V Printer Surface wetness sensor** \checkmark П **V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V ~ Humidity sensor translator Surge protector** П \checkmark ~ **UPS Solar radiation translator** П \checkmark **V** Tipping bucket rain gauge Lightning protection device ~ **✓ Shelter heater** Ozone analyzer **V** \checkmark Filter pack flow controller Shelter air conditioner **V** Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log V V SSRF ✓ V ✓ V Site Ops Manual** Feb 2014 **V HASP ✓** Oct 2015 **✓ Field Ops Manual** Oct 2015 **V Calibration Reports V V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 BEL116 Technician Eric Hebert Site Visit Date 09/22/2020 Site ID Site operation procedures Trained by previous site operator Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** Weekly **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** Weekly **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant QC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests Manual Precision Level Test ✓ V** Weekly **Analyzer Diagnostics Tests ~** Every 2 weeks **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete

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:

✓

✓

SSRF, call-in

sample train including all filters?

reported? If yes, how?

complete sample train including all filters?

Do automatic and manual z/s/p gasses go through the

Are the automatic and manual z/s/p checks monitored and

Field Systems Data Form					F-02058-1500-S9-rev002			
Sit	e ID	BEL116 Te	chnician Eric Hebert		Site Visit Date	09/22/2020		
	Site ope	ration procedures						
1	Is the fil	ter pack being changed eve	ry Tuesday as scheduled	V	Filter changed mor	rnings		
2	2 Are the Site Status Report Forms being completed and filed correctly?			✓				
3	Are data	a downloads and backups b ed?	eing performed as		No longer required			
4	Are gen	eral observations being mad	le and recorded? How?	✓	SSRF			
5	5 Are site supplies on-hand and replenished in a timely fashion?			✓				
6	Are sam	ple flow rates recorded? Ho	ow?	✓	SSRF, call-in			
7	Are sam	pples sent to the lab on a reg	ular schedule in a timely	✓				
8		ers protected from contaminoping? How?	nation during handling	✓	Clean glove on and	d off		
9		site conditions reported reg ons manager or staff?	ularly to the field	✓				
QC	Check Po	erformed	Frequency			Compliant		
]	Multi-poii	nt MFC Calibrations	✓ Semiannually			✓		
]	Flow System Leak Checks		✓ Weekly	Weekly		\checkmark		
]	Filter Pac	k Inspection						
]	Flow Rate Setting Checks Weekly					\checkmark		
7	Visual Check of Flow Rate Rotometer Weekly					\checkmark		
]	In-line Filter Inspection/Replacement Semiannually					\checkmark		
	Sample Line Check for Dirt/Water Weekly					\checkmark		
		dditional explanation (photon-made, that may affect the) regarding condit	tions listed above, or a	any other features,	

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID BEL116 Technician Eric Hebert

Site Visit Date 09/22/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07005
DAS	Campbell	CR3000	2120	000341
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	1192001881	02755
Flow Rate	Apex	AXMC105LPMDPC	50742	000548
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	HMP60	NO850846	07116
Sample Tower	Aluma Tower	В	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	illegible	06959
Solar Radiation Translator	RM Young	70101-X	none	03412
Surface Wetness	RM Young	58101	none	04608
Temperature	RM Young	41342VO	024086	06985
Temperature2meter	RM Young	41342VO	Illegable	02989
Wind Direction	RM Young	AQ05305	35870wdr	04405
Wind Speed	RM Young	AQ05305	35870wsp	04405
Zero air pump	Werther International	C 70/4	000829178	06913

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PET427-Martin Valvur-09/24/2020						
1	9/24/2020	Computer	Hewlett Packard	none	6560 b	5CB22906TB
2	9/24/2020	DAS	Environmental Sys Corp	90641	8816	2526
3	9/24/2020	Elevation	Elevation	None	1	None
4	9/24/2020	Filter pack flow pump	Thomas	none	107CAB18B	071100039615
5	9/24/2020	flow rate	Tylan	03379	FC280AV	AW9403023
6	9/24/2020	Infrastructure	Infrastructure	none	none	none
7	9/24/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	CM08460048
8	9/24/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1211052489
9	9/24/2020	Sample Tower	Aluma Tower	none	В	none
10	9/24/2020	Shelter Temperature	ARS	none	none	none
11	9/24/2020	Siting Criteria	Siting Criteria	None	1	None
12	9/24/2020	Temperature2meter	RM Young	none	41342	029201
13	9/24/2020	Zero air pump	Werther International	none	PC 70/4	531382

DAS Data Form 0.22 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg **Environmental Sys** 2526 PET427 Martin Valvur 09/24/2020 DAS Primary 9 /24/2020 Das Date: 9 /24/2020 **Audit Date** ΗY **Parameter** DAS Mfg 09:39:13 09:39:00 **Das Time: Audit Time** Tfer Desc. Source generator (D 12010039329 **Serial Number** Das Day: 268 **Audit Day** 268 Tfer ID 01322 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0003 0.0006 0.0003 0.0006 6/15/2014 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740243 Tfer Desc. DVM 01312 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference V 11 0.0000 -0.0489 -0.0489 0.0000 11 0.0998 0.0999 V V 0.0001 0.1000 11 0.3000 0.2998 0.3000 V V 0.0002 V V 11 0.5000 0.4998 0.5000 0.0002 V V 11 0.7000 0.6999 0.7002 0.0003 V V 11 0.9000 0.8992 0.0004 0.8996 11 1.0000 0.9996 V V 0.0006 1.0002

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter Martin Valvur 03379 Tylan AW9403023 PET427 09/24/2020 flow rate Mfg BIOS Parameter Flow Rate 122974 Tfer Desc. BIOS 220-H **Serial Number** 01416 Tfer ID 0.00000 **Slope** 1.00000 **Intercept** 5/6/2020 1.00000 CorrCoff **Cert Date** 0.205 **DAS 2: DAS 1: Cal Factor Zero** 6.008 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 6.19% 6.19% **Rotometer Reading:** Test type Input l/m Input Corr OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. MfcDisp. primary pump off 0.000 0.000-0.390.0000 -0.171/m1/mleak check -0.39 0.0000 -0.17 1/m0.000 0.000 1/mprimary test pt 1 3.199 3.200 2.66 0.00003.00 1/m1/m -6.19% primary 2.66 0.00003.00 1/m-6.19% primary test pt 2 3.205 3.200 1/m test pt 3 3.198 3.200 2.66 0.00003.00 1/m1/m -6.19% primary 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 Status pass Condition Clean and dry Sensor Component Moisture Present **Condition** No moisture present Status pass

Condition 4.5 cm

Condition 1.0 cm

Condition 90 deg

Condition

Status pass

Status pass

Status pass

Status pass

Sensor Component Filter Distance

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Mfg	Serial Number	er Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	CM08460048	PET427	•	Martin Valvur	09/24/2020	Ozone	none
Intercept		rcept	0.00000 0.00000 0.00000	Mfg Serial Number	ThermoElectron I		ozone c. Ozone primary stan
				Tfer ID	01110		
DAS 1:	D	AS 2:		Slope	1.00260	Intercept	0.03590
A Avg % Diff: A M	0.0% A	Avg %Diff A	Max % Dif	Cert Date	1/14/2020	CorrCoff	0.99999
UseDescription	ConcGroup	Tfer Raw	Tfer Co	r Site	Site Unit	RelPerDif	AbsDif
primary	1	0.31	0.27	0.62	ppb		0.35
primary	2	15.84	15.76	15.04	ppb		-0.72
primary	3	36.36	36.22	35.56	ppb	-1.84	
primary	4	66.72	66.51	65.09	ppb	-2.16	
primary	5	110.34	110.01	108.20	ppb	-1.66	
Sensor Compone	Audit Press	ure	Conc	lition 627.9 mmHg		Status pass	
Sensor Compone	ent Sample Tra	in	Conc	dition Good		Status pass	
Sensor Compone	ent Minimum di	stance from road	d met Cond	lition True		Status pass	
Sensor Compone	ent Inlet Filter C	Condition	Conc	lition Clean		Status pass	
Sensor Compone	ent 26.6 degree	unobstructed ru	le Cond	lition True		Status pass	
Sensor Compone	Tree dewlin	e >10m or below	inlet Cond	lition True		Status pass	
Sensor Compone	ent Offset		Conc	lition 0.1		Status pass	
Sensor Compone	ent Span		Conc	lition 1.004		Status pass	
Sensor Compone	ent Zero Voltag	e	Conc	lition 0.0001		Status pass	
Sensor Compone	ent Fullscale Vo	oltage	Conc	lition 0.9995		Status pass	
Sensor Compone	ent Cell A Freq.		Conc	lition 92.7 kHz		Status pass	
Sensor Compone	ent Cell A Noise)	Conc	lition 0.9 ppb		Status pass	
Sensor Compone	ent Cell A Flow		Conc	lition 0.63 lpm		Status pass	
Sensor Compone	ent Cell A Press	sure	Conc	lition 606.2 mmHg		Status pass	
Sensor Compone	ent Cell A Tmp.		Conc	lition 37.9 C		Status pass	
Sensor Compone	ent Cell B Freq.		Conc	lition 92.3 kHz		Status pass	
Sensor Compone	ent Cell B Noise	9	Conc	lition 0.4 ppb		Status pass	
Sensor Compone	Cell B Flow		Conc	lition 0.64 lpm		Status pass	
Sensor Component Cell B Pressure			Conc	lition 605.9 mmHg		Status pass	
Sensor Component Line Loss			Conc	lition Not tested		Status pass	
Sensor Compone	ent System Mei	mo	Conc	lition		Status pass	
			 -				

2 Meter Temperature Data Form Calc. Difference **Serial Number Tag Site Technician** Site Visit Date Parameter Mfg **Owner ID** Martin Valvur RM Young 029201 PET427 09/24/2020 Temperature2meter none Mfg Fluke Parameter Temperature Tfer Desc. RTD **Serial Number** 3275143 01229 Tfer ID **Slope** 1.00026 **Intercept** -0.01710 **DAS 1: DAS 2: Cert Date** 1/29/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.98 1.16 InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference UseDescription Test type Temp Low Rang 0.14 0.16 0.0000 0.94C 0.78 primary 0.0000 25.75 C 0.99 primary Temp Mid Range 24.75 24.76 Temp High Rang primary 46.73 46.73 0.0000 47.89 C 1.16 Sensor Component | Shield **Condition** Clean **Status** pass Sensor Component Properly Sited **Condition** Properly sited **Status** pass Sensor Component Blower **Condition** Functioning Status pass Sensor Component System Memo Status pass Condition

Infrastructure Data For

Site ID PET427 Technician Martin Valvur Site Visit Date 09/24/2020

Shelter Make	Shelter Model	Shelter Size
Ekto	8814	896 cuft

Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component		Condition		Status	
Sensor Component		Condition		Status	
	<u> </u>				
Sensor Component		Condition		Status	
Sensor Component		Condition		Status	
	Shelter Temp Control		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	Shelter walls	Condition	Good	Status	pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition	Status	pass
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: SiteOpsProcComm

completing the site observation section of the SSRF was discussed with the operator. Clean gloves are now used to remove and install the dry deposition filter pack.

2 Parameter: ShelterCleanNotes

The shelter is in good condition, well organized and maintained.

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Martin Valvur ARS PET427 09/24/2020 Shelter Temperature none none **DAS 1: DAS 2:** Parameter Shelter Temperature Mfg Fluke **Abs Avg Err** Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD 3275143 **Serial Number** 1.95 2.42 01229 Tfer ID -0.01710 **Slope** 1.00026 Intercept 1/29/2020 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 26.12 26.13 0.00027.8 \mathbf{C} 1.64 C Temp Mid Range 26.11 26.12 0.000 27.9 1.78 primary

24.82

Condition

0.000

C

Status pass

2.42

27.2

24.81

primary

Temp Mid Range

Sensor Component System Memo

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 09/24/2020 PET427 Technician | Martin Valvur Site ID Padilla Tank **USGS Map** NPS/EPA Site Sponsor (agency) Map Scale **NPS Operating Group Map Date** 04-017-0119 AQS# R.M. Young **Meteorological Type** Air Pollutant Analyzer Ozone, neph **QAPP** Latitude dry, wet **QAPP** Longitude **Deposition Measurement** desert **Land Use QAPP Elevation Meters** flat Terrain **QAPP Declination** Yes Conforms to MLM **OAPP Declination Date** 34.822508 (928) 524-6668 **Site Telephone Audit Latitude** -109.892485 Site Address 1 **Audit Longitude** Site Address 2 **Audit Elevation** 1712 10.5 Navajo **County Audit Declination** Petrified Forest, AZ City, State **Present** Fire Extinguisher 85942 Inspected March 2018 Zip Code Mountain First Aid Kit Time Zone **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8814 Ekto **Shelter Size** 896 cuft **✓** Notes The shelter is in good condition, well organized and maintained. **Shelter Clean ✓** Notes Site OK

From I-40 take exit 311 to the Petrified Forest. The site operator's office is located in the visitors center. The site is

another 25 miles further south on the park road near the Rainbow Forest at the south end of the park, 1.5 miles west of the main road on a closed side road. The gate at the side road is locked. The key for the gate and shelter is kept

Driving Directions

at the south entrance to the park.

Fic	eld Systems Data Form		F-02058-1500-S3-rev002
Site	PET427 Technician Martin Valvur		Site Visit Date 09/24/2020
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:

Fi	eld Systems Data Form	F-02058-1500-S4-rev002
Site	PET427 Technician Martin Valvur	Site Visit Date 09/24/2020
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?	✓ Temperature only
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?	d 🗹
	ide any additional explanation (photograph or sketch if neces ral or man-made, that may affect the monitoring parameters:	essary) regarding conditions listed above, or any other features, s:

Fi	eld Systems Data Form		F-02058-1500-S5-rev002			
Site	PET427 Technician Martin Valvur		Site Visit Date 09/24/2020			
	Siting Criteria: Are the pollutant analyzers and deposition eq	uipi	nent 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	l ma	intenance			
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 8 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?	✓	Clean and dry			
Prov natu	rovide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, atural or man-made, that may affect the monitoring parameters:					

Field Systems Data Form F-02058-1500-S6-rev002 Site ID PET427 Technician Martin Valvur Site Visit Date 09/24/2020 DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **V** Are all the components of the DAS operational? (printers, modem, backup, etc) Met sensors only Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **~** grounded? **✓** Does the instrument shelter have a stable power source? **✓** Is the instrument shelter temperature controlled? Grounded **Stable** Is the met tower stable and grounded? Is the sample tower stable and grounded? **V**

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:

11 Tower comments?

Field Systems Data Form F-02058-1500-S7-rev002 PET427 Technician | Martin Valvur Site Visit Date 09/24/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? N/A Yes No Yes No N/A **V V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V ~ Humidity sensor translator Surge protector** П **V ~ UPS Solar radiation translator ~ V** Tipping bucket rain gauge Lightning protection device ~ \checkmark **Shelter heater** Ozone analyzer **V** \checkmark Filter pack flow controller Shelter air conditioner \checkmark Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log ✓ V** Dataview **SSRF ✓ V ✓ V Site Ops Manual** Oct 2015 **HASP Field Ops Manual Calibration Reports ✓** Not current Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Dataview Flow & observation sections Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document **✓** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current?

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 PET427 Technician Martin Valvur Site Visit Date 09/24/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** N/A **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** N/A **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **QC Check Performed Compliant** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Every 4 weeks Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests Manual Precision Level Test V V** Alarm values only **Analyzer Diagnostics Tests ~** Every 4 weeks **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ V** Semiannually **Zero Air Desiccant Check** Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters?

✓

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

Are the automatic and manual z/s/p checks monitored and

natural or man-made, that may affect the monitoring parameters:

reported? If yes, how?

Dataview

Fl	eld Systems Data Form				F-02058-1500-89-rev002				
Sit	e ID PET427 Tec	hnician	Martin Valvur		Site Visit Date	09/24/2020			
	Site operation procedures								
1	Is the filter pack being changed every	y Tuesda	ay as scheduled?	✓	Filter changed mornings				
2	Are the Site Status Report Forms bei correctly?	pleted and filed	✓	No observations					
3	Are data downloads and backups bei scheduled?	ormed as		No longer required					
4	Are general observations being made	corded? How?	✓	Dataview					
5	Are site supplies on-hand and replentashion?	a timely	✓						
6	Are sample flow rates recorded? How		✓	SSRF					
7	Are samples sent to the lab on a regularishion?	lar sche	dule in a timely	✓					
8	Are filters protected from contamina and shipping? How?	tion du	ring handling	✓	Clean gloves on and off				
9	Are the site conditions reported reguloperations manager or staff?	larly to	the field						
QC	Check Performed	Fre	quency			Compliant			
I	Multi-point MFC Calibrations	✓ Sem	niannually			✓			
]	Flow System Leak Checks	✓ Wee	ekly			✓			
]	Filter Pack Inspection								
]	Flow Rate Setting Checks Weekly				✓				
•	Visual Check of Flow Rate Rotometer ✓ Weekly				✓				
J	In-line Filter Inspection/Replacement Unknown				✓				
5	Sample Line Check for Dirt/Water Weekly					\checkmark			
	vide any additional explanation (photo aral or man-made, that may affect the			sary	r) regarding condition	ons listed above, or a	ny other features,		

completing the site observation section of the SSRF was discussed with the operator. Clean gloves are now used to remove and install the dry deposition filter pack.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID PET427 Technician Martin Valvur Site Visit Date 09/24/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	6560 b	5CB22906TB	none
DAS	Environmental Sys Corp	8816	2526	90641
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18B	071100039615	none
flow rate	Tylan	FC280AV	AW9403023	03379
Infrastructure	Infrastructure	none	none	none
Ozone	ThermoElectron Inc	49i A3NAA	CM08460048	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	1211052489	none
Sample Tower	Aluma Tower	В	none	none
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria][1	None	None
Temperature2meter	RM Young	41342	029201	none
Zero air pump	Werther International	PC 70/4	531382	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
WST	7109-Korey	Devins-09/25/2020				
1	9/25/2020	Computer	Dell	07027	Inspiron 15	FX2MC12
2	9/25/2020	DAS	Campbell	000354	CR3000	2132
3	9/25/2020	Elevation	Elevation	None	1	None
4	9/25/2020	Filter pack flow pump	Thomas	04925	107CA18	100300020944
5	9/25/2020	Flow Rate	Apex	000859	AXMC105LPMDPCV	illegible
6	9/25/2020	Infrastructure	Infrastructure	none	none	none
7	9/25/2020	Modem	Digi	07159	LR54	Illegible
8	9/25/2020	Ozone	ThermoElectron Inc	000611	49i A1NAA	1009241795
9	9/25/2020	Ozone Standard	ThermoElectron Inc	000443	49i A3NAA	CM08200019
10	9/25/2020	Sample Tower	Aluma Tower	000825	В	unknown
11	9/25/2020	Shelter Temperature	Campbell	none	107-L	none
12	9/25/2020	Siting Criteria	Siting Criteria	None	1	None
13	9/25/2020	Temperature	RM Young	04313	41342	4010
14	9/25/2020	Zero air pump	Werther International	06934	P 70/4	000821881

DAS Data Form 0 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2132 WST109 Korey Devins 09/25/2020 DAS Primary Das Date: 9 /25/2020 **Audit Date** 9 /25/2020 Datel **Parameter** DAS Mfg 10:13:40 10:13:40 **Das Time: Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** Das Day: 269 **Audit Day** 269 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0003 0.0002 0.0003 0.0002 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 -0.0001 0.0000 0.0001 7 0.0998 0.0999 V V 0.0001 0.1000 7 0.3000 0.2996 0.2998 V V 0.00027 V V 0.5000 0.4995 0.4997 0.0002 V V 7 0.7000 0.6995 0.6996 0.0001 7 V V 0.9000 0.8993 0.8995 0.0002 7 1.0000 0.9991 0.9994 V V 0.0003

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter WST109 Korey Devins 000859 Apex 09/25/2020 Flow Rate illegible Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** -0.03 **DAS 2: DAS 1: Cal Factor Zero** 0.99 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.67% 0.67% 1.5 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. primary pump off 0.000 0.0000.02 0.0000.00 1/m1/m leak check 0.01 0.000 -0.01 1/m0.000 0.000 1/mprimary test pt 1 1.470 1.490 1.51 0.000 1.50 1/m1/m 0.67% primary 1.490 1.51 0.000 1.50 1/m0.67% primary test pt 2 1.469 1/m test pt 3 1.469 1.490 1.51 0.000 1.50 1/m1/m 0.67% primary Sensor Component Leak Test Condition **Status** pass **Condition** Good **Status** pass **Sensor Component** Tubing Condition Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Status pass Condition Clean and dry Sensor Component Moisture Present **Condition** See comments Status pass

Condition 4.5 cm

Condition 0.5 cm

Condition 70 deg

Condition

Status pass

Status pass

Status pass

Status pass

Sensor Component Filter Distance

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Mfg	S	erial Numbe	er Tag Site		Te	chnician	Site Visit Date	Paramet	ter	Owner ID
ThermoElectro	on Inc	1009241795	WST10	9	Ko	orey Devins	09/25/2020	Ozone		000611
Slope:	1.0	00016 Slop	e:	0.00000		Mfg	ThermoElectron	Inc Par	ameter	ozone
Intercept	-0.2	21124 Inte	rcept	0.00000		Serial Number	1180030022	Tfe	r Desc.	Ozone primary stan
CorrCoff:	1.0	00000 Cor	rCoff:	0.00000		Tfer ID	01114			
DAS 1:		n	AS 2:					.0 -		0.00040
	f• A Ma		Avg %Diff A	Max %	Dif	Slope	0.9995	0 Inter	cept	0.29010
0.0%		0.0%		111111 / 0		Cert Date	1/14/202	20 Corr	Coff	0.99999
UseDescripti	ion (ConcGroup	Tfer Raw	Tfer	r Corr	Site	Site Unit	RelPerD	Dif	AbsDif
primary		1	0.46		.16	0.04	ppb	TOH OIL		-0.12
primary		2	15.34	15	5.05	14.70	ppb			-0.35
primary		3	35.23	34	1.95	34.75	ppb		-0.57	
primary		4	68.40		3.14	68.01	ppb		-0.19	
primary		5	110.46		0.22	110.00	ppb		-0.2	
	nponent	Audit Press				on 740.4 mmHg	PP	Status		
Sensor Com	nponent	Sample Tra	in		Conditi	on Good		Status	oass	
	_		stance from road			on True		Status		
	_	Inlet Filter C				on Clean		Status		
	_							_		
	_		unobstructed ru			on True		Status		
Sensor Com	nponent	Tree dewlin	e >10m or below			on True		Status	oass	
Sensor Com	nponent	Offset		(Conditi	on -0.2		Status	oass	
Sensor Com	nponent	Span		(Condition 1.011			Status	oass	
Sensor Com	nponent	Zero Voltag	е		Conditi	on N/A		Status	oass	
Sensor Com	nponent	Fullscale Vo	oltage	(Conditi	on N/A		Status	oass	
Sensor Com	nponent	Cell A Freq.			Conditi	on 95.4 kHz		Status	oass	
Sensor Com	nponent	Cell A Noise)	(Conditi	0.6 ppb		Status	oass	
Sensor Com	nponent	Cell A Flow			Conditi	on 0.67 lpm		Status	oass	
	_	Cell A Press			Conditi	on 716.1 mmHg		Status		
	•	Cell A Tmp.				on 35.4 C		Status		
	•	Cell B Freq.				on 96.4 kHz		Status		
		Cell B Noise				on 0.9 ppb		Status		
						0.69 lpm				
Sensor Com	•							Status		
		Cell B Press	sure	_		on 717.0 mmHg		Status		
Sensor Com	•				Conditi	on Not tested		Status		
Sensor Com	nponent	System Mei	no		Conditi	on		Status	oass	

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 4010 WST109 Korey Devins 09/25/2020 Temperature 04313 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.08 0.10 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.21 0.08 0.000 0.2 \mathbf{C} 0.08 C Temp Mid Range 26.54 26.20 0.000 26.1 -0.06 primary 47.9 C primary Temp High Range 48.55 48.04 0.000 -0.1 Condition Moderately clean Status pass Sensor Component Shield **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** WST109 Korey Devins 09/25/2020 Shelter Temperature Campbell none none **DAS 2: DAS 1:** Mfg Extech Parameter Shelter Temperature Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.87 1.13 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 2/14/2020 CorrCoff 1.00000 **Cert Date**

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	24.90	24.57	0.000	25.7	C	1.13
primary	Temp Mid Range	28.34	27.99	0.000	27.4	C	-0.56
primary	Temp Mid Range	27.07	26.73	0.000	27.7	C	0.93
Sensor Con	nponent System Memo		Condition		Status	pass	

Infrastructure Data For

Site ID WST109 Technician Korey Devins Site Visit Date 09/25/2020

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2149-16)	640 cuft
		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -

Sensor Component	Sample Tower Type	Condition	Type B	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	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	Shelter walls	Condition	Fair	Status pass
Sensor Component	Excessive mold present	Condition	Fair	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

Siting Criteria Form

Sensor Component City Sensor Cit		Condition Condition	Status	pass
Sensor Component City	1,000 to 10,000	Condition		
		Condition	Status	pass
Sensor Component City	10,000 to 50,000	Condition	Status	pass
Sensor Component Feed	dlot operations	Condition	Status	pass
Sensor Component Large	ge parking lot	Condition	Status	pass
Sensor Component Limit	ted agriculture operations	Condition	Status	pass
Sensor Component Majo	or industrial source	Condition	Status	pass
Sensor Component Seco	ondary road < or = 100 per da	Condition	Status	pass
Sensor Component Seco	ondary road >100 vehicles/da	Condition	Status	pass
Sensor Component Smal	all parking lot	Condition	Status	pass
Sensor Component Syste	tem Memo	Condition	Status	pass
Sensor Component Majo	or highway, airport, or rail yard	Condition	Status	pass
Sensor Component Inten	nsive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	WST109	Korey Devins	09/25/2020	Moisture Present	Apex	4578		

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

Field Systems Comments

1 Parameter: SiteOpsProcedures

Ozone sample train leak checks are being conducted every two weeks.

2 Parameter: SitingCriteriaCom

The site is in a small clearing surrounded by mountain forest.

3 Parameter: SiteOKNotes

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

4 Parameter: MetSensorComme

The temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 09/25/2020 WST109 Technician Korey Devins Site ID Woodstock **USGS Map EPA** Site Sponsor (agency) Map Scale IES/USFS **Operating Group Map Date** 33-009-9991 AQS# R.M. Young **Meteorological Type** 43.9446 Air Pollutant Analyzer Ozone **QAPP** Latitude dry, wet **QAPP** Longitude -71.7008 **Deposition Measurement** woodland - mixed 258 **Land Use QAPP Elevation Meters** 15.9 Terrain complex **QAPP Declination** 12/28/2004 No Conforms to MLM **OAPP Declination Date** (603) 726-4935 43.944519 **Site Telephone Audit Latitude** 234 Mirror Lake Road -71.700787 Site Address 1 **Audit Longitude** 255 Site Address 2 **Audit Elevation** -15.3 Grafton **County Audit Declination** Campton, NH City, State **Present** Fire Extinguisher 03223 Inspected March 2020 Zip Code Eastern First Aid Kit Time Zone **✓ Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 (s/n 2149-16) Ekto **Shelter Size** 640 cuft **✓** Notes **Shelter Clean**

State of NH Department of Environmental Services contact is Tom Fazzina (603) 271-0911 and

From I-93 take exit 30 and go south on route 3 for approximately 2 miles. Turn right on Mirror Lake road and

✓ Notes

tfazzina@DES.state.NH.US

continue to the end of the road. The site is through the gate on the right.

Site OK

Driving Directions

Field Systems Data Form F-02058-1500-S3-rev002 Site Visit Date 09/25/2020 Site ID WST109 Technician Korey Devins ✓ N/A Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? ✓ N/A 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 Are the tower and sensors plumb? Are the temperature shields pointed north or positioned to Temperature only avoid radiated heat sources such as buildings, walls, etc? ✓ Temperature only 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) ✓ N/A Is the solar radiation sensor plumb? Is it sited to avoid shading, or any artificial or reflected light? N/A Is the rain gauge plumb? ✓ N/A 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?

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:

✓ N/A

The temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

11 Is it inclined approximately 30 degrees?

Fi	eld Systems Data Form	F-02058-1500-S4-rev0	02
Site	WST109 Technician Korey Devins	Site Visit Date 09/25/2020	
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?	✓ N/A	
5	Is the solar radiation sensor's lens clean and free of scratches?	V/A 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?		
	ide any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	ry) regarding conditions listed above, or any other features,	

Fi	eld Systems Data Form	F-02058-1500-S5-rev00				
Site	WST109 Technician Korey Devins		Site Visit Date 09/25/2020			
	Siting Criteria: Are the pollutant analyzers and deposition eq	uipr	nent 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	l ma	intenance			
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			
	vide any additional explanation (photograph or sketch if necessival or man-made, that may affect the monitoring parameters:	ary)	regarding conditions listed above, or any other features,			

Field Systems Data Form

F-02058-1500-S6-rev002

Site	· ID	WST109	Technician	Korey Devins		Site Vis	it Date 09/25/20)20	
	DAS se	nsor translators, and	nerinheral equi	nment operation	ne ar	nd maintena	ince		
	DAD, SC	nsor translators, and	peripheral equi	oment operation		id mamicna	<u>ince</u>		
1		DAS instruments appe intained?	ear to be in good	condition and	✓				
2		the components of the , backup, etc)	DAS operations	al? (printers,	✓				
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?					Met sensors	only		
4		signal connections pro intained?	otected from the	e weather and	✓				
5	Are the	signal leads connected	l to the correct	DAS channel?	✓				
6	Are the DAS, sensor translators, and shelter properly grounded?				✓				
7	Does the	e instrument shelter h	ave a stable pow	ver source?	✓				
8	Is the in	strument shelter temp	perature control	led?	✓				
9	Is the m	net tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	ample tower stable and	d grounded?			✓			
11	Tower	comments?				Met tower re	emoved		
		additional explanationan-made, that may at				y) regarding	g conditions list	ed above, or a	any other features,

Field Systems Data Form F-02058-1500-S7-rev002 WST109 Technician Korey Devins Site Visit Date 09/25/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A **✓ V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V ~ Humidity sensor translator Surge protector** П **V ~ UPS Solar radiation translator V ~** Tipping bucket rain gauge Lightning protection device ~ **✓ Shelter heater** Ozone analyzer ~ **✓** 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 V V SSRF ✓ V ✓ V Site Ops Manual** Oct 2014 **V HASP ✓** Oct 2018 **✓ Field Ops Manual** Oct 2018 **V Calibration Reports V V** Ozone z/s/p Control Charts **V** Preventive maintenance schedule **V** 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 WST109 Technician Korey Devins Site Visit Date 09/25/2020 Site ID Site operation procedures The site operator was trained by the previous operator, who was Has the site operator attended a formal CASTNET training trained by the previous operator course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **V** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test ✓ V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? Compliant **OC Check Performed Frequency Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** As needed Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests V Manual Precision Level Test** As needed **V V** Weekly **Analyzer Diagnostics Tests V** Every 2 weeks **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ V** Every 2 weeks **Zero Air Desiccant Check** Unknown Do multi-point calibration gases go through the complete sample train including all filters?

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:

✓

✓

logbook, call-in

Ozone sample train leak checks are being conducted every two weeks.

Do automatic and manual z/s/p gasses go through the

Are the automatic and manual z/s/p checks monitored and

complete sample train including all filters?

reported? If yes, how?

Fi	eld Sy	stems Data Form			F-02058-1500-S9-rev002				
Sit	e ID	WST109 Tec	hnician Korey Devins		Site Visit Date	e 09/25/2020			
	Site ope	ration procedures							
1	Is the fi	ter pack being changed ever	y Tuesday as scheduled	? ~	Filter changed morinings				
2	Are the correctl	Site Status Report Forms bei	ing completed and filed	✓			-		
3	Are dat	a downloads and backups bei	ing performed as		No longer required				
4	Are gen	eral observations being made	e and recorded? How?	✓	SSRF, logbook				
5	5 Are site supplies on-hand and replenished in a timely fashion?								
6	Are sample flow rates recorded? How?				SSRF, logbook, ca	all-in	-		
7	Are samples sent to the lab on a regular schedule in a timely fashion?			✓			-		
8		ers protected from contamina pping? How?	tion during handling	✓	Clean gloves on and off				
9		site conditions reported regu ons manager or staff?	larly to the field	✓					
QC	Check P	erformed	Frequency			Compliant			
I	Multi-poi	nt MFC Calibrations	✓ Semiannually			✓			
]	Flow Syst	em Leak Checks	✓ Weekly			✓			
]	Filter Pac	k Inspection							
]	Flow Rate Setting Checks Weekly				✓				
7	Visual Check of Flow Rate Rotometer ✓ Weekly				✓				
]	In-line Filter Inspection/Replacement Semiannually				✓				
	Sample Line Check for Dirt/Water Weekly					✓			
		dditional explanation (photon-made, that may affect the			y) regarding condi	tions listed above, or any other features,			

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID WST109 Technician Korey Devins Site Visit Date 09/25/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	FX2MC12	07027
DAS	Campbell	CR3000	2132	000354
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	100300020944	04925
Flow Rate	Apex	AXMC105LPMDPC	illegible	000859
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07159
Ozone	ThermoElectron Inc	49i A1NAA	1009241795	000611
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200019	000443
Sample Tower	Aluma Tower	В	unknown	000825
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	4010	04313
Zero air pump	Werther International	P 70/4	000821881	06934

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRC	474-Martii	n Valvur-09/25/2020				
1	9/25/2020	Computer	Hewlett Packard	none	6560 b	5CB22906T9
2	9/25/2020	DAS	Environmental Sys Corp	90602	8816	2270
3	9/25/2020	Elevation	Elevation	None	1	None
4	9/25/2020	Filter pack flow pump	Thomas	none	107CAB110	109500000031
5	9/25/2020	flow rate	Tylan	none	FC280SAV	AW9805027
6	9/25/2020	Infrastructure	Infrastructure	none	none	none
7	9/25/2020	MFC power supply	Tylan	none	RO-32	illegible
8	9/25/2020	Modem	Sierra wireless	none	GX450	LA54620247001003
9	9/25/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943902
10	9/25/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450191
11	9/25/2020	Printer	Hewlett Packard	none	842C	unknown
12	9/25/2020	Sample Tower	Aluma Tower	none	FOT-10	AT-215178-00-1
13	9/25/2020	Shelter Temperature	ARS	none	none	none
14	9/25/2020	Siting Criteria	Siting Criteria	None	1	None
15	9/25/2020	Temperature2meter	RM Young	none	41432VC	029457
16	9/25/2020	Zero air pump	Werther International	none	PC70/4	531380

DAS Data Form 1.17 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg **Environmental Sys** 2270 GRC474 Martin Valvur 09/25/2020 DAS Primary Das Date: 9 /25/2020 **Audit Date** 9 /25/2020 ΗY **Parameter** DAS Mfg 10:08:50 10:10:00 **Das Time: Audit Time** Tfer Desc. Source generator (D 12010039329 **Serial Number** Das Day: 269 **Audit Day** 269 Tfer ID 01322 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0002 0.0004 0.0002 0.0004 6/15/2014 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740243 Tfer Desc. DVM 01312 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference 15 V 0.0000 -0.0004 -0.0003 0.0001 15 0.1001 0.1001 V V 0.0000 0.1000 15 0.3000 0.2997 0.2997 V V 0.0000V V 15 0.5000 0.4994 0.4998 0.0004 V V 15 0.7000 0.6993 0.6997 0.0004 V V 15 0.9000 0.8996 0.8999 0.0003 15 1.0000 0.9998 V V 0.0004 1.0002

Flow Data Form

Mfg	Serial Nun	Serial Number Tag Site			nnician	Site Visit Date Param		neter	Owner ID	
Tylan	AW980502	AW9805027		GRC474 Martin		09/25/2020	flow ra	ate	none	
Mfg	Tylan			N	Mfg		BIOS		arameter Flow Rate	
SN/Owner ID	illegible	none		S	Serial Number	122974	ı	rfer Desc. Β	IOS 220-H	
Parameter:	MFC power sur	MFC power supply			Γfer ID	01416				
Tarameter.	, o pono: our	о роло: обрр.у			VI am a	1	.00000 Int		0.0000	
					Slope			ercept		
				(Cert Date	5/	6/2020 Co	rrCoff	1.0000	
DAS 1:		DAS 2:			Cal Factor Z	ero	0.1	35		
A Avg % Diff:	A Max % Dif	A Avg %D	iff A Max	x % Dif	Cal Factor F	ull Scale	5.4	.06		
1.99%	2.06%				Rotometer R	eading:	3.	45		
Desc.	Test type	Input 1/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	all PctDifference	
primary	pump off	0.000	0.000	-0.19	0.0000 -0.02		1/m	l/m		
primary	leak check	0.000	0.000	-0.18	0.0000 -0.01		1/m	l/m		
primary	test pt 1	3.057	3.060	2.71	0.0000	3.00	1/m	l/m	-1.96%	
primary	test pt 2	3.062	3.060	2.70	0.0000	3.00	1/m	l/m	-1.96%	
primary	test pt 3	3.064	3.060	2.70	0.0000	3.00	1/m	1/m	-2.06%	
Sensor Comp	onent Leak Tes	t		Condition	1		Statu	pass		
Sensor Comp	onent Tubing C	ondition		Condition	Good		Statu	Status pass		
Sensor Comp	onent Filter Pos	sition		Condition	Good		Statu	Status pass		
Sensor Comp	onent Rotomete	er Condition		Condition	Clean and dry		Statu	Status pass		
Sensor Comp	onent Moisture	Present		Condition	No moisture pr	esent	Statu	Status pass		
Sensor Comp	onent Filter Dis	tance		Condition	5.5 cm		Statu	pass		
Sensor Comp	onent Filter Dep	oth		Condition	1.5 cm		Statu	pass		
Sensor Comp	onent Filter Azi	muth		Condition	315 deg		Statu	pass		
Sensor Component System Memo				Condition			Statu	Status pass		

Ozone Data Form

Mfg	S	erial Numbe	er Tag Site		Te	chnician	Site Visit Date	Parame	ter	Owner ID	
ThermoElectron	n Inc	1023943902	GRC47	4	M	artin Valvur	09/25/2020	Ozone		none	
Slope:	0.9	97316 Slop	e:	0.00000		Mfg	ThermoElectron Inc Parame		ramete	rozone	
Intercept			P	0.00000		Serial Number	49CPS-70008-364 Tfer		er Desc	Ozone primary stan	
CorrCoff:	1.0	00000 Cor	rCoff:	0.00000		Tfer ID 01110					
DAS 1:		D	AS 2:			Slope	1.0026	0 Inter	cept	0.03590	
A Avg % Diff:	A Ma	x % Dif A	Avg %Diff A	Max %	Dif	•			•	2.0000	
0.0%		0.0%				Cert Date	1/14/202	20 Corr	Coff	0.99999	
UseDescription	on C	ConcGroup	Tfer Raw	Tfer	Corr	Site	Site Unit	RelPer	Dif	AbsDif	
primary		1	0.26	0.	.22	0.31	ppb			0.09	
primary		2	15.78	15	5.70	15.14	ppb			-0.56	
primary		3	35.08	34	1.95	33.95	ppb		-2.9		
primary		4	64.20	63	3.99	62.33	ppb		-2.63		
primary		5	111.64	11	1.31	108.30	ppb		-2.74		
Sensor Com	ponent	Audit Press	ure	(Conditi	on 602 mmHg		Status	pass	·	
Sensor Com	ponent	Sample Tra	in	(Conditi	on Good		Status	pass		
Sensor Com	ponent	Minimum di	stance from road	d met (Conditi	on True		Status	tatus pass		
Sensor Component Inlet Filter Condition				Conditi	on Clean		Status	pass			
Sensor Component 26.6 degree unobstructed rule			ıle (Conditi	on True		Status	pass			
Sensor Com	ponent	Tree dewlin	e >10m or belov	v inlet (Conditi	on True		Status	pass		
Sensor Com	ponent	Offset		(Condition -0.1			Status	pass		
Sensor Com	ponent	Span		(Condition 0.999			Status	pass		
Sensor Com	ponent	Zero Voltag	е		Condition 0.0002			Status pass			
Sensor Com	ponent	Fullscale Vo	oltage		Conditi	on 1.000		Status	pass		
Sensor Com	ponent	Cell A Freq.			Condition 88.9 kHz			Status pass			
Sensor Com	ponent	Cell A Noise)	(Conditi	on 0.8 ppb		Status	pass		
Sensor Com	ponent	Cell A Flow		(Conditi	on 0.69 lpm		Status	pass		
Sensor Com	ponent	Cell A Press	sure	(Conditi	on 595.2 mmHg		Status	pass		
Sensor Com	ponent	Cell A Tmp.		(Conditi	on 35.2 C		Status	pass		
Sensor Com	ponent	Cell B Freq.		(Conditi	on 81.2 kHz		Status	pass		
Sensor Com	ponent	Cell B Noise)		Conditi	on 0.3 ppb		Status	pass		
Sensor Com	ponent	Cell B Flow		(Conditi	on 0.70 lpm		Status	pass		
Sensor Com	ponent	Cell B Press	sure	(Conditi	on 594.6 mmHg		Status	pass		
Sensor Com	Sensor Component Line Loss				Condition Not tested			Status pass			
Sensor Com	ponent	System Mer	no		Conditi	on		Status	pass		

2 Meter Temperature Data Form Calc. Difference **Serial Number Tag Site Technician** Site Visit Date Parameter Mfg **Owner ID** GRC474 Martin Valvur 09/25/2020 RM Young 029457 Temperature2meter none Mfg Fluke Parameter Temperature 3275143 Tfer Desc. RTD **Serial Number** 01229 Tfer ID **Slope** 1.00026 **Intercept** -0.01710 **DAS 1: DAS 2: Cert Date** 1/29/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.28 0.35 InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference UseDescription Test type Temp Low Rang 0.05 0.07 0.0000 0.42 C 0.35 primary 22.91 22.92 0.0000 23.19C 0.27 primary Temp Mid Range Temp High Rang primary 46.05 46.06 0.0000 46.29 C 0.23 Sensor Component | Shield **Condition** Clean **Status** pass Sensor Component Properly Sited **Condition** Not properly sited **Status** Fail **Sensor Component** Blower **Condition** N/A **Status** pass Sensor Component System Memo Status pass Condition

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Martin Valvur ARS GRC474 09/25/2020 Shelter Temperature none none **DAS 1: DAS 2:** Parameter Shelter Temperature Fluke Mfg **Abs Avg Err** Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD 3275143 **Serial Number** 0.71 1.68 01229 Tfer ID 1.00026 -0.01710 **Slope** Intercept 1/29/2020 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 24.09 24.10 0.00023.9 \mathbf{C} -0.18 C Temp Mid Range 23.38 23.39 0.000 23.7 0.28 primary

21.57

Condition

primary

Temp Mid Range

Sensor Component System Memo

21.56

0.000

C

Status pass

1.68

23.3

Infrastructure Data For

GRC474	Technician	Martin Valvur	Site Visit Date	09/25/2020
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Shelter Make	Shelter Model	Shelter Size	
Ekto	8810	640 cuft	

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	Shelter walls	Condition	Good	Status	pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition	Status	pass
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Temperature2meter	GRC474	Martin Valvur	09/25/2020	Properly Sited	RM Young	4581		
The lower (delta temperature sensor) shield is not mounted at 2 meters above the ground as stated in the QAPP.								

Field Systems Comments

1 Parameter: SiteOpsProcedures

Ozone inlet filters are changed more often if fires are burning in the area.

2 Parameter: DocumentationCo

Electronic copies of SOP and QAPP are updated and maintained online.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition, clean, neat, and well organized. Some floor tiles are missing and broken.

4 Parameter: MetSensorComme

The 2-meter temperature sensor is mounted 4.2 meters above the ground, and 1.6 meters over the reflective stainless steel shelter roof. The reflective heat from the roof is likely to impact the accuracy of the temperature measurement.

5 Parameter: MetOpMaintCom

The signal cables are beginning to deteriorate and some signal cables are exposed to the elements and not protected.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 09/25/2020 GRC474 Technician Martin Valvur Site ID Grand Canyon **USGS Map** NPS/EPA Site Sponsor (agency) Map Scale **NPS Operating Group Map Date** 04-005-8001 AQS# R.M. Young **Meteorological Type** Ozone, UV-B Air Pollutant Analyzer **QAPP** Latitude dry, wet, IMPROVE **Deposition Measurement QAPP** Longitude **Land Use** woodland - evergreen **QAPP Elevation Meters** Terrain complex **QAPP Declination** No Conforms to MLM **OAPP Declination Date** (928) 638-2031 36.058642 **Site Telephone Audit Latitude** 2D Albright Ave -112.183575 Site Address 1 **Audit Longitude** PO Box 129 Site Address 2 **Audit Elevation** 2070 Coconino 11.5 **County Audit Declination** Grand Canyon, AZ City, State **Present** Fire Extinguisher 86023 No inspection date Zip Code **V Time Zone** Arizona First Aid Kit **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence**

Driving Directions

Shelter Clean

Site OK

Backup Op. Phone #

Backup Op. E-mail

Shelter Working Room ✓ **Make**

Ekto

broken.

✓ Notes

✓ Notes

From Flagstaff, AZ take route 180 north to the Grand Canyon National Park. The site operator's office is in the Mckee building on Albright Ave. Obtain a pass to travel the West Rim Road. The gate code is #1965. The site is a few miles along the rim road on the left just past the Abyss.

Secure Shelter

Model 8810

Stable Entry Steps ✓

The shelter is in fair condition, clean, neat, and well organized. Some floor tiles are missing and

V

Shelter Size

640 cuft

Fi	eld Sy	stems Data F	orm			F-02058-1500-S3-rev002				
Site	e ID	GRC474	Technician N	fartin Valvur		Site Visit Date 0	9/25/2020			
1		d speed and direction fluenced by obstruction		as to avoid	✓	N/A				
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		tower and sensors plu			✓	N/A				
4		temperature shields p diated heat sources si								
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped g water should be avoi	v sensors should b l. Ridges, hollows	e natural		Above shelter				
6	Is the so	lar radiation sensor p	lumb?		✓	N/A				
7	Is it site	d to avoid shading, or	any artificial or	reflected light?	~	N/A				
8	Is the ra	in gauge plumb?			✓	N/A				
9	Is it site	d to avoid sheltering eetc?	effects from build	ings, trees,	✓	N/A				
10	Is the su facing n	orth?	sited with the grid	d surface	✓	N/A				
11	Is it inc	lined approximately 3	30 degrees?		✓	N/A				
		additional explanatio				y) regarding condition	ons listed above	e, or any ot	her features,	

The 2-meter temperature sensor is mounted 4.2 meters above the ground, and 1.6 meters over the reflective stainless steel shelter roof. The reflective heat from the roof is likely to impact the accuracy of the temperature measurement.

Fic	eld Systems Data Form	F-02058-1500-S4-rev002
Site	ID GRC474 Technician Martin Valvur	Site Visit Date 09/25/2020
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?	□ Signs of wear
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	d Some cables exposed
natu	ide any additional explanation (photograph or sketch if necessal or man-made, that may affect the monitoring parameters:	

Field Systems Data Form			F-02058-1500-S5-rev002	
Site	GRC474 Technician Martin Valvur		Site Visit Date 09/25/2020	
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?			
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 GRC474 Technician Martin Valvur Site Visit Date 09/25/2020 DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **✓** Are all the components of the DAS operational? (printers, modem, backup, etc) Met sensors only Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **~** grounded? **✓** Does the instrument shelter have a stable power source? **~** Is the instrument shelter temperature controlled? Grounded **Stable** Is the met tower stable and grounded? **V V** Is the sample tower stable and grounded? **V** Sample tower not grounded but bolted to the shelter 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 GRC474 Site Visit Date 09/25/2020 Site ID Technician Martin Valvur **Documentation** Does the site have the required instrument and equipment manuals? Yes No N/A No N/A Yes П **V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V** ~ **Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V Temperature translator V** Filter flow pump \checkmark **Humidity sensor translator V Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** \checkmark **V Shelter heater** Ozone analyzer **V** \checkmark Shelter air conditioner Filter pack flow controller \checkmark Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log ✓ V** Dataview **SSRF ✓ V ✓ V Site Ops Manual** Oct 2015 **HASP Field Ops Manual ✓ Calibration Reports** Not current Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Flow & observation sections Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document **✓** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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:

Electronic copies of SOP and QAPP are updated and maintained online.

F-02058-1500-S7-rev002

Field Systems Data Form F-02058-1500-S8-rev002 GRC474 Site Visit Date 09/25/2020 Site ID Technician Martin Valvur Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? Compliant **OC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Every 3 or 4 weeks Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests V Manual Precision Level Test V V** Alarm values only **Analyzer Diagnostics Tests V** Every 3 or 4 weeks **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ Zero Air Desiccant Check** Weekly **✓** Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters? **✓** Dataview Are the automatic and manual z/s/p checks monitored and reported? If yes, how? 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:Ozone inlet filters are changed more often if fires are burning in the area.

Field Systems Data Form						F-02058-1500-S9-rev002				
Sit	te ID	GRC474 Te	chnician Martin	Valvur		Site Visit Date	09/25/2020			
	Site ope	ration procedures								
1	Is the filter pack being changed every Tuesday as scheduled?					Filter changed morinings 95% of the time				
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 gen	eral observations being mad	e and recorded	? How?	✓	SSRF				
5	5 Are site supplies on-hand and replenished in a timely fashion?									
6	Are sample flow rates recorded? How?				✓	SSRF				
7	Are sam	aples sent to the lab on a reg	ılar schedule in	a timely	✓					
8		ers protected from contamin oping? How?	ation during ha	ndling	✓	Clean gloves on ar	d off			
9		site conditions reported reg ons manager or staff?	ılarly to the fiel	d						
QC	Check P	erformed	Frequency				Compliant			
]	Multi-poi	nt MFC Calibrations	✓ Semiannual	lly			✓			
]	Flow System Leak Checks Weekly					V				
]	Filter Pack Inspection									
]	Flow Rate Setting Checks Weekly					✓				
7	Visual Check of Flow Rate Rotometer ✓ Weekly				✓					
]	In-line Filter Inspection/Replacement ✓ Not present					\checkmark				
	Sample Li	ne Check for Dirt/Water	✓ Weekly				✓			
		dditional explanation (photon-made, that may affect the			ary) regarding condit	ions listed above, or a	any other features,		

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID GRC474 Technician Martin Valvur Site Visit Date 09/25/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	6560 b	5CB22906T9	none
DAS	Environmental Sys Corp	8816	2270	90602
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB110	109500000031	none
flow rate	Tylan	FC280SAV	AW9805027	none
Infrastructure	Infrastructure	none	none	none
MFC power supply	Tylan	RO-32	illegible	none
Modem	Sierra wireless	GX450	LA54620247001003	none
Ozone	ThermoElectron Inc	49i A3NAA	1023943902	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	1130450191	none
Printer	Hewlett Packard	842C	unknown	none
Sample Tower	Aluma Tower	FOT-10	AT-215178-00-1	none
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41432VC	029457	none
Zero air pump	Werther International	PC70/4	531380	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ASH	135-Korey	Devins-09/27/2020				
1	9/27/2020	Computer	Dell	07033	Inspiron 15	Unknown
2	9/27/2020	DAS	Campbell	000847	CR3000	11444
3	9/27/2020	Elevation	Elevation	None	1	None
4	9/27/2020	Filter pack flow pump	Thomas	01449	107CA110	118700000595
5	9/27/2020	Flow Rate	Apex	000649	AXMC105LPMDPCV	illegible
6	9/27/2020	Infrastructure	Infrastructure	none	none	none
7	9/27/2020	Modem	Digi	07162	LR54	Unknown
8	9/27/2020	Ozone	ThermoElectron Inc	000730	49i A1NAA	1105347325
9	9/27/2020	Ozone Standard	ThermoElectron Inc	000362	49i A3NAA	0726124686
10	9/27/2020	Sample Tower	Aluma Tower	03536	Α	none
11	9/27/2020	Shelter Temperature	Campbell	none	107-L	none
12	9/27/2020	Siting Criteria	Siting Criteria	None	1	None
13	9/27/2020	Temperature	RM Young	06389	41342	13994
14	9/27/2020	Zero air pump	Werther International	06923	C 70/4	000836208

DAS Data Form 0 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 11444 ASH135 Korey Devins 09/27/2020 DAS Primary Das Date: 9 /27/2020 **Audit Date** 9 /27/2020 Datel **Parameter** DAS Mfg 12:41:10 12:41:10 **Das Time: Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** 271 Das Day: **Audit Day** 271 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0001 0.0001 0.0001 0.0001 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 -0.0001 0.0000 0.0001 7 0.0998 0.0999 V V 0.0001 0.1000 7 0.3000 0.2997 0.2997 V V 0.00007 V V 0.5000 0.4995 0.4995 0.0000 V V 7 0.7000 0.6995 0.6994 -0.0001 7 V V 0.9000 0.8993 0.8992 -0.0001 7 1.0000 0.9992 0.9991 V V -0.0001

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter Korey Devins 000649 Apex ASH135 09/27/2020 Flow Rate illegible Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** 0 **DAS 2: DAS 1: Cal Factor Zero** 0.99 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 1.32% 1.32% 1.6 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. primary pump off 0.000 0.0000.01 0.0000.01 1/m1/m leak check 0.00 0.000 -0.01 1/m0.000 0.000 1/mprimary test pt 1 1.501 1.520 1.52 0.000 1.50 1/m1/m -1.32% primary 1.52 0.000 1.50 1/m-1.32% primary test pt 2 1.498 1.520 1/m test pt 3 1.495 1.520 1.52 0.000 1.50 1/m1/m -1.32% primary Sensor Component Leak Test Condition **Status** pass **Condition** Good **Status** pass **Sensor Component** Tubing Condition Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Status pass Condition Clean and dry Sensor Component Moisture Present Condition No moisture present Status pass

Condition 5.0 cm

Condition 2.0 cm

Condition 315 deg

Condition

Status pass

Status pass

Status pass

Status pass

Sensor Component Filter Distance

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Slope: 0.98793 Slope: 0.00000 Mfg ThermoElectron Inc Parameter ozone Intercept -0.62522 Intercept 0.00000 Serial Number 1180030022 Tfer Desc. Ozone processor CorrCoff: 0.99999 CorrCoff: 0.00000 Slope 0.99950 Intercept A Avg % Diff: A Max % Dif A Max % Dif Cert Date 1/14/2020 CorrCoff UseDescription ConcGroup Tfer Raw Tfer Corr Site Site Unit RelPerDif AbsDir primary 1 0.35 0.05 -0.27 ppb	ner ID
The control Concept CorrCoff: CorrCoff: Concept CorrCoff: CorrCoff	730
DAS 1: DAS 2: Slope 0.99950 Intercept	imary stan
ViseDescription ConcGroup Tfer Raw Tfer Corr Site Site Unit RelPerDif AbsDif Primary 1 0.35 0.05 -0.27 ppb Primary 2 15.28 14.99 14.06 ppb -3.79 Primary 3 34.93 34.65 33.36 ppb -2.27 Primary 5 111.47 111.23 109.40 ppb -1.66	0.29010
UseDescription ConcGroup Tfer Raw Tfer Corr Site Site Unit RelPerDif AbsDirection 1	
primary 1 0.35 0.05 -0.27 ppb	0.99999
Primary 2 15.28 14.99 14.06 ppb	
Primary 3 34.93 34.65 33.36 ppb -3.79).32
primary 4 67.58 67.32 65.81 ppb -2.27 primary 5 111.47 111.23 109.40 ppb -1.66 Sensor Component Audit Pressure Condition 737 mmHg Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Minimum distance from road met Condition True Status pass Sensor Component Inlet Filter Condition Condition Moderately clean Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Span Condition 1.018 Status pass Sensor Component Zero Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition N/A Status pass Sensor Component Cell A Freq. Condition 0.6 ppb Status pass Sensor Component Cell A Pressure Condition 729.4 mmHg Status pass Sensor Component Cell A Tmp. Condition 729.4 mmHg Status pass).93
primary 4 67.58 67.32 65.81 ppb -2.27 primary 5 111.47 111.23 109.40 ppb -1.66 Sensor Component Audit Pressure Condition 737 mmHg Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Minimum distance from road met Condition True Status pass Sensor Component Inlet Filter Condition Condition Moderately clean Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Tree dewline >10m or below inlet Condition True Status pass Sensor Component Offset Condition -0.2 Status pass Sensor Component Span Condition N/A Status pass Sensor Component Zero Voltage Condition N/A Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.72 lpm Status pass Sensor Component Cell A Pressure Condition 729.4 mmHg Status pass Sensor Component Cell A Tmp. Condition 729.4 mmHg Status pass	
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Sensor Component Cell A Pressure Condition 729.4 mmHg Status pass Sensor Component Cell A Tmp. Condition 35.8 C Status pass	
Sensor Component Cell A Tmp. Condition 35.8 C Status pass	
Sensor Component Cell B Freq. Condition 92.2 kHz Status pass	
Sensor Component Cell B Noise Condition 0.6 ppb Status pass	
Sensor Component Cell B Flow Condition 0.71 lpm Status pass	
Sensor Component Cell B Pressure Condition 730.0 mmHg Status pass	
Sensor Component Line Loss Condition Not tested Status pass	
Sensor Component System Memo Condition Status pass	

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg ASH135 Korey Devins 09/27/2020 Temperature 06389 RM Young 13994 Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.12 0.27 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.21 0.08 0.000 0.4 \mathbf{C} 0.27 C Temp Mid Range 25.64 25.31 0.000 25.3 -0.02 primary C primary Temp High Range 43.68 43.21 0.000 43.2 -0.06 Condition Moderately clean Status pass Sensor Component Shield **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Korey Devins 09/27/2020 Shelter Temperature Campbell none ASH135 none **DAS 1: DAS 2:** Mfg Extech Parameter Shelter Temperature Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.24 0.37 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 2/14/2020 CorrCoff 1.00000 **Cert Date**

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	27.52	27.17	0.000	27.0	C	-0.18
primary	Temp Mid Range	27.87	27.52	0.000	27.2	C	-0.37
primary	Temp Mid Range	25.02	24.69	0.000	24.9	C	0.17
Sensor Con	nponent System Memo		Condition		Status	pass	

Infrastructure Data For

Site ID ASH135 Technician Korey Devins Site Visit Date 09/27/2020

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

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	Fair	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	Shelter walls	Condition	Fair	Status	pass
Sensor Component	Excessive mold present	Condition	Fair	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition 30 m	Status	Fail
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

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

The evergreen plantation previously 20 meters south of the site has been harvested.

4 Parameter: ShelterCleanNotes

The shelter is in fair condition, clean, and very well organized. Rot is beginning at the bottom of the walls and floor.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 09/27/2020 ASH135 Technician Korey Devins Site ID Squa Pan **USGS Map EPA** Site Sponsor (agency) Map Scale private **Operating Group Map Date** 23-003-9991 AQS# R.M. Young **Meteorological Type** 46.6039 Air Pollutant Analyzer Ozone **QAPP** Latitude dry **QAPP** Longitude -68.4142 **Deposition Measurement** 235 **Land Use** agriculture, woodland - mixed **QAPP Elevation Meters** 18.7 Terrain gently rolling **QAPP Declination** Marginally 2/22/2006 Conforms to MLM **OAPP Declination Date** (207) 435-6482 46.603832 **Site Telephone Audit Latitude** Radar Road -68.413227 Site Address 1 **Audit Longitude** Site Address 2 **Audit Elevation** 231 Aroostook -18.2 **County Audit Declination** Ashland, ME City, State **Present** Fire Extinguisher 04732 New in 2015 Zip Code Eastern First Aid Kit Time Zone **✓ Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **~ Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 (s/n 2149-17) Ekto **Shelter Size** 640 cuft **✓** Notes The shelter is in fair condition, clean, and very well organized. Rot is beginning at the bottom of the **Shelter Clean** walls and floor.

From I-95 take exit #286 which is route 212. Take route 212 west to route 11. Turn north on route 11 and continue

approximately 1.5 miles straight on Goding Rd. (go straight at the 90 deg curve).

toward Ashland. Approximately 2 miles south of Ashland turn left (west) on Goding Road at the DEP sign. The site is

✓ Notes

Site OK

Driving Directions

Field Systems Data Form F-02058-1500-S3-rev002 Site Visit Date 09/27/2020 Site ID ASH135 Technician Korey Devins ✓ N/A Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? ✓ N/A 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 Are the tower and sensors plumb? Pointed south to avoid building Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc? **V** 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) ✓ N/A Is the solar radiation sensor plumb? Is it sited to avoid shading, or any artificial or reflected light? N/A Is the rain gauge plumb? ✓ N/A 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

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:

✓ N/A

facing north?

11 Is it inclined approximately 30 degrees?

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	ASH135 Technician Korey Devins		Site Visit Date 09/27/2020
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?	✓	
	ide any additional explanation (photograph or sketch if neces ral or man-made, that may affect the monitoring parameters:) regarding conditions listed above, or any other features,

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Sit	ASH135 Technician Korey Devins		Site Visit Date 09/27/2020
	Siting Criteria: Are the pollutant analyzers and deposition eq	uipr	nent 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	l mai	intenance
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
Prov	ride any additional explanation (photograph or sketch if necess	earw)	regarding conditions listed above or any other features
iatu	ral or man-made, that may affect the monitoring parameters:	ary)	regarding conditions used above, or any other realities,

Field Systems Data Form

natural or man-made, that may affect the monitoring parameters:

F-02058-1500-S6-rev002

Site	e ID	ASH135	Technician	Korey Devins		Site Visit Date	09/27/2020)		
	DAS sei	nsor translators, and p	perinheral equi	nment operation	16 91	nd maintenance				
				_	<u>√</u>	<u>namicianee</u>				
1		OAS instruments appeartained?	ar to be in good	l condition and						
2		he components of the backup, etc)	DAS operation	al? (printers,						
3		nalyzer and sensor sig g protection circuitry?		through	✓	Met sensors only				
4		signal connections prointained?	tected from the	e weather and	✓					
5	Are the	signal leads connected	to the correct	DAS channel?	✓					
6	Are the grounde	DAS, sensor translato	rs, and shelter	properly	✓					
7	Does the	e instrument shelter ha	ave a stable pov	ver source?	✓					
8	Is the in	strument shelter temp	erature control	lled?	✓					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded		
		•								
10	Is the sa	mple tower stable and	grounded?							
11	Tower c	omments?								
Pro	Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,									

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 ASH135 Technician Korey Devins Site Visit Date 09/27/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A П **✓ V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer ✓ П П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** ~ **✓ Shelter heater** Ozone analyzer ~ **✓** 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 V V SSRF ✓ V ✓ V Site Ops Manual** June 2007 **V HASP V** Oct 2015 **Field Ops Manual** Oct 2001 **Calibration Reports V ✓** Ozone z/s/p Control Charts Preventive maintenance schedule **V** 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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 ASH135 Technician Korey Devins Site Visit Date 09/27/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** N/A **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? Compliant **OC Check Performed** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V** Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests V Manual Precision Level Test V V** Weekly **Analyzer Diagnostics Tests V V** Monthly **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Weekly **~ Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters? ✓ SSRF, call-in Are the automatic and manual z/s/p checks monitored and reported? If yes, how?

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				
Sit	te ID	ASH135 T	echni	cian	Korey Devins		Site Visit Date	e 09/27/2020			
	Site ope	ration procedures									
1	Is the fi	ter pack being changed ev	ery T	uesda	y 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 gen	eral observations being ma	de ar	nd rec	corded? How?	✓	SSRF				
5	5 Are site supplies on-hand and replenished in a timely fashion?					✓					
6	Are sample flow rates recorded? How?					✓	SSRF, call-in				
7	Are san	uples sent to the lab on a re	gular	sche	dule in a timely	✓					
8		ers protected from contami oping? How?	natio	n dur	ring handling	✓	Clean gloves on and off				
9		site conditions reported reons manager or staff?	gular	ly to	the field	✓					
QC	Check P	erformed		Free	quency			Compliant			
]	Multi-poi	nt MFC Calibrations	✓	Sem	iannually			✓			
]	Flow System Leak Checks Weekly					V					
]	Filter Pack Inspection										
]	Flow Rate Setting Checks Weekly					✓					
,	Visual Check of Flow Rate Rotometer ✓ Weekly				✓						
]	In-line Filter Inspection/Replacement ✓ Semiannually					✓					
	Sample Li	ne Check for Dirt/Water	✓	Wee	kly			\checkmark			
		dditional explanation (pho n-made, that may affect tl) regarding condi	tions listed above,	, or any other features,		

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID

ASH135

Technician Korey Devins

Site Visit Date 09/27/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07033
DAS	Campbell	CR3000	11444	000847
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	118700000595	01449
Flow Rate	Apex	AXMC105LPMDPC	illegible	000649
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Unknown	07162
Ozone	ThermoElectron Inc	49i A1NAA	1105347325	000730
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124686	000362
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
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
ABT	147-Korey	Devins-09/28/2020				
1	9/28/2020	Computer	Dell	07023	Inspiron 15	5C4MC12
2	9/28/2020	DAS	Campbell	000413	CR3000	2519
3	9/28/2020	Elevation	Elevation	None	1	None
4	9/28/2020	Filter pack flow pump	Thomas	02974	107CAB18	0493002469
5	9/28/2020	Flow Rate	Apex	000870	AXMC105LPMDPCV	unknown
6	9/28/2020	Infrastructure	Infrastructure	none	none	none
7	9/28/2020	Modem	Digi	07130	LR54	unknown
8	9/28/2020	Ozone	ThermoElectron Inc	000627	49i A1NAA	1009241772
9	9/28/2020	Ozone Standard	ThermoElectron Inc	000449	49i A3NAA	CM08200025
10	9/28/2020	Sample Tower	Aluma Tower	000017	В	AT-61152-A-H8-C
11	9/28/2020	Shelter Temperature	Campbell	none	107-L	none
12	9/28/2020	Siting Criteria	Siting Criteria	None	1	None
13	9/28/2020	Temperature	RM Young	04692	41342	6706
14	9/28/2020	Zero air pump	Werther International	06930	P 70/4	000829168

DAS Data Form 0.02 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2519 ABT147 Korey Devins 09/28/2020 DAS Primary Das Date: 9 /28/2020 **Audit Date** 9 /28/2020 Datel **Parameter** DAS Mfg 13:01:30 13:01:29 **Das Time: Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** Das Day: 272 **Audit Day** 272 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0001 0.0001 0.0001 0.0001 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output DAS Output InputUnit OutputUnit Difference 7 V 0.0000 0.0000 0.0000 0.00007 0.0999 0.0999 V V 0.0000 0.1000 7 0.3000 0.2997 0.2997 V V 0.00007 V V 0.5000 0.4996 0.4995 -0.0001 V V 7 0.7000 0.6995 0.6994 -0.0001 7 V V 0.9000 0.8992 -0.0001 0.8993 7 1.0000 0.9992 0.9991 V V -0.0001

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter Korey Devins 000870 Apex ABT147 09/28/2020 Flow Rate unknown Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** 0.005 **DAS 2: DAS 1: Cal Factor Zero** 1.005 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.89% 1.34% 1.6 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. primary pump off 0.000 0.0000.00 0.0000.00 1/m1/m leak check 0.00 0.000 0.01 1/m0.000 0.000 1/mprimary test pt 1 1.469 1.490 1.50 0.000 1.50 1/m1/m 0.67% primary 1.490 1.50 0.000 1/m1.34% primary test pt 2 1.471 1.51 1/m test pt 3 1.465 1.490 1.50 0.000 1.50 1/m1/m 0.67% primary 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 Status pass Condition Clean and dry

Condition See comments

Condition 4.5 cm

Condition 1.5 cm

Condition 240 deg

Condition

Status pass

Status pass

Status pass

Status pass

Status pass

Sensor Component Moisture Present

Sensor Component Filter Distance

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Mfg		Serial Numb	er Tag	Site		Technician		Site Visit Date	Parame	eter	Owner ID
ThermoElec	ctron Inc	1009241772		ABT147	7	Ko	orey Devins	09/28/2020	Ozone 0000		000627
Slope: Intercept	(ercept	(0.0000	Serial Number 1		ThermoElectron			er ozone c. Ozone primary stan
CorrCoff:		1.00000 Cor	rCoff:	(0.0000	0	Tfer ID	01114			
DAS 1:		D	AS 2:				Slope	0.9995	50 Inte i	rcept	0.29010
A Avg % D	oiff: A M	Iax % Dif A	Avg %	Diff A	Max 9	% Dif	-	1/14/202	_	_	0.99999
0.	0%	0.0%					Cert Date	1/14/202	20 Cori	Con	0.99999
UseDescr	iption	ConcGroup	Tfei	Raw	Tf	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	ry	1	0	.42		0.12	0.22	ppb			0.1
prima	ry	2	15	5.16		14.87	14.93	ppb			0.06
prima	ry	3	_	1.85		34.57	34.47	ppb		-0.29	
prima	ry	4	67	7.70	(67.44	67.17	ppb		-0.4	
prima	ry	5	10	9.98	1	09.74	109.40	ppb		-0.31	
Sensor C	ompone	nt Audit Press	ure			Conditi	on 740.4 mmHg		Status	pass	
Sensor C	ompone	nt Sample Tra	ain			Condition	on Good		Status	pass	
Sensor C	ompone	nt Minimum d	istance f	rom road	d met	Condition	on True		Status	pass	
Sensor C	Sensor Component Inlet Filter Condition			Condition Clean			Status pass				
Sensor C	ompone	nt 26.6 degree	e unobst	ructed ru	ıle	Condition	on True		Status	pass	
Sensor C	ompone	nt Tree dewlin	ne >10m	or below	/ inlet	Condition			Status	pass	
Sensor C	ompone	nt Offset				Condition 0.1			Status	pass	
Sensor C	ompone	nt Span				Condition 1.008			Status	pass	
Sensor C	ompone	nt Zero Voltaç	je			Condition N/A			Status	pass	
Sensor C	ompone	nt Fullscale V	oltage			Condition N/A			Status	tus pass	
Sensor C	ompone	nt Cell A Freq				Condition	on 101.4 kHz		Status pass		
Sensor C	ompone	nt Cell A Nois	е			Condition	on 0.8 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow	1			Condition	on 0.71 lpm		Status	pass	
Sensor C	Sensor Component Cell A Pressure		Condition 717.7 mmHg			Status	pass				
	Sensor Component Cell A Tmp.			on 35.1 C		Status pass					
Sensor C	Sensor Component Cell B Freq.		Condition	on 103.0 kHz		Status	pass				
Sensor C	Sensor Component Cell B Noise			Condition 0.8 ppb			pass				
Sensor C	Sensor Component Cell B Flow			Condition 0.64 lpm			Status				
Sensor C	Sensor Component Cell B Pressure				Condition 718.6 mmHg			pass			
Sensor C	ompone	nt Line Loss				Condition	Condition Not tested			pass	
Sensor Component System Memo			Condition	Condition			pass				

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 6706 ABT147 Korey Devins 09/28/2020 Temperature 04692 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.12 0.15 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.24 0.11 0.000 0.3 \mathbf{C} 0.15 C Temp Mid Range 24.74 24.42 0.000 24.5 0.05 primary 48.10 47.59 C primary Temp High Range 0.000 47.4 -0.15 Condition Moderately clean Status pass Sensor Component Shield **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Korey Devins Campbell ABT147 09/28/2020 Shelter Temperature none none **DAS 1: DAS 2:** Parameter Shelter Temperature Mfg Extech **Abs Avg Err** Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD H232734 **Serial Number** 0.21 0.50 01227 **Tfer ID** 1.00797 0.12950 **Slope** Intercept 2/14/2020 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 26.54 26.20 0.000 26.7 \mathbf{C} 0.5

0.000

0.000

C

C

Status pass

-0.02

0.1

27.7

27.9

27.76

27.80

Condition

28.11

28.15

Temp Mid Range

Temp Mid Range

Sensor Component System Memo

primary

primary

Infrastructure Data For

Site ID ABT147 Technician Korey Devins Site Visit Date 09/28/2020

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

Sensor Component	Sample Tower Type	Condition	Type B	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	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	Shelter walls	Condition	Good	Status pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component City > 50,000 Condition Status pass Sensor Component City 1,000 to 10,000 Condition Status pass Sensor Component City 10,000 to 50,000 Condition Status pass Sensor Component Large parking lot Condition Status pass Sensor Component Limited agriculture operations Condition 10 m Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Small parking lot Condition Status pass Sensor Component System Memo Condition Status pass	Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component City 10,000 to 50,000 Condition Status pass Sensor Component Feedlot operations Condition Status pass Sensor Component Large parking lot Condition Status pass Sensor Component Limited agriculture operations Condition Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component Feedlot operations Condition Status pass Sensor Component Large parking lot Condition Status pass Sensor Component Limited agriculture operations Condition 10 m Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component Large parking lot Condition Status pass Sensor Component Limited agriculture operations Condition 10 m Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component Limited agriculture operations Condition 10 m Status Fail Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da Condition Status pass Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component Major industrial source Condition Status pass Sensor Component Secondary road < or = 100 per da	Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component Secondary road < or = 100 per da	Sensor Component	Limited agriculture operations	Condition 10 m	Status	Fail
Sensor Component Secondary road >100 vehicles/da Condition Status pass Sensor Component Small parking lot Condition Status pass	Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component Small parking lot Condition Status pass	Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
	Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component System Memo Condition Status pass	Sensor Component	Small parking lot	Condition	Status	pass
	Sensor Component	System Memo	Condition	Status	pass
Sensor Component Major highway, airport, or rail yard Condition Status pass	Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component Intensive agriculture operations Condition Status pass	Sensor Component	Intensive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	ABT147	Korey Devins	09/28/2020	Moisture Present	Apex	4584		
				2				

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

Field Systems Comments

1 Parameter: DasComments

The met tower has been removed.

2 Parameter: DocumentationCo

All site instrument manuals are on the site computer desktop folder.

3 Parameter: SitingCriteriaCom

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

4 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: MetSensorComme

Temperature mounted in naturally aspirated shield on sample tower.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 09/28/2020 ABT147 Technician Korey Devins Site ID Hampton **USGS Map EPA** Site Sponsor (agency) Map Scale private **Operating Group Map Date** 09-015-9991 AQS# R.M. Young **Meteorological Type** Air Pollutant Analyzer Ozone **QAPP** Latitude 41.8402 dry, wet **QAPP** Longitude -72.0111 **Deposition Measurement** 209 **Land Use** agriculture, woodland - mixed **QAPP Elevation Meters** 14.8 Terrain rolling **QAPP Declination** Marginally 2/22/2006 Conforms to MLM **OAPP Declination Date** (860) 974-2273 41.84046 **Site Telephone Audit Latitude** -72.010368 80 Ayers Road Site Address 1 **Audit Longitude** Site Address 2 **Audit Elevation** 202 Windham -14.5 **County Audit Declination** Abington, CT City, State **Present** Fire Extinguisher 06230 New in 2015 Zip Code Eastern First Aid Kit Time Zone **✓ Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 (s/n 2149-9) Ekto **Shelter Size** 640 cuft **✓** Notes The shelter is clean and well organized. **Shelter Clean ✓** Notes Site OK

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

Driving Directions

at the top of the hill past the barn.

Fic	eld Systems Data Form		F-02058-1500-S3-rev002
Site	e ID ABT147 Technician Korey D	Devins	Site Visit Date 09/28/2020
1	Are wind speed and direction sensors sited so as to a being influenced by obstructions?	void 🗸	N/A
2	Are wind sensors mounted so as to minimize tower effice, wind sensors should be mounted atop the tower of horizontally extended boom >2x the max diameter of tower into the prevailing wind)	or on a	N/A
3	Are the tower and sensors plumb?	~	N/A
4	Are the temperature shields pointed north or position avoid radiated heat sources such as buildings, walls,		
5	Are temperature and RH sensors sited to avoid unna conditions? (i.e. ground below sensors should be natu surface and not steeply sloped. Ridges, hollows, and a standing water should be avoided)	ural	
6	Is the solar radiation sensor plumb?	✓	N/A
7	Is it sited to avoid shading, or any artificial or reflect	ted light?	N/A
8	Is the rain gauge plumb?	✓	N/A
9	Is it sited to avoid sheltering effects from buildings, t towers, etc?	trees,	N/A
10	Is the surface wetness sensor sited with the grid surfafacing north?	ace	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:

Temperature mounted in naturally aspirated shield on sample tower.

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	ABT147 Technician Korey Devins		Site Visit Date 09/28/2020
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?	✓	
	ide any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:		regarding conditions listed above, or any other features,

Fi	eld Systems Data Form		F-02058-1500-S5-rev002				
Site	ABT147 Technician Korey Devins		Site Visit Date 09/28/2020				
	Siting Criteria: Are the pollutant analyzers and deposition eq	uipr	nent 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	l ma	intenance				
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,						
natu	ral or man-made, that may affect the monitoring parameters:						

Field Systems Data Form F-02058-1500-S6-rev002 ABT147 Technician Korey Devins Site Visit Date 09/28/2020 Site ID DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **✓** Are all the components of the DAS operational? (printers, modem, backup, etc) Met sensors only Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **~** grounded? **✓** Does the instrument shelter have a stable power source? ~ Is the instrument shelter temperature controlled? Grounded **Stable** Is the met tower stable and grounded? Is the sample tower stable and grounded?

V

Met tower removed

V

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.

11 Tower comments?

Field Systems Data Form ABT147 Technician Korey Devins Site Visit Date 09/28/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? No N/A Yes Yes No N/A П **V V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **✓** П **V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V V Printer** Surface wetness sensor **V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V ~ Humidity sensor translator Surge protector** П **V ~ UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** ~ **✓** П **Shelter heater** Ozone analyzer ~ **✓** Shelter air conditioner Filter pack flow controller **~** Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log V V SSRF ✓ V ✓ V** Site Ops Manual Sept 2016 **V HASP ✓** Sept 2016 **V Field Ops Manual V** Oct 2014 **Calibration Reports V** Nov 2018 **V** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current? 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:

All site instrument manuals are on the site computer desktop folder.

F-02058-1500-S7-rev002

Field Systems Data Form F-02058-1500-S8-rev002 ABT147 Technician Korey Devins Site Visit Date 09/28/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** N/A **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **QC Check Performed** Compliant Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** As needed Manual Zero/Span Tests **V ~** Daily **Automatic Precision Level Tests V Manual Precision Level Test** As needed **V V** Weekly **Analyzer Diagnostics Tests V** Every 2 weeks **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V V** Weekly Sample Line Check for Dirt/Water **~ Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters?

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:

Are the automatic and manual z/s/p checks monitored and

reported? If yes, how?

✓

SSRF, logbook, call-in

Fi	Field Systems Data Form						F-02058-1500-S9-rev002			
Sit	e ID	ABT147	'echni	cian	Korey Devins		Site Visit Dat	e 09/28/2020		
	Site ope	ration procedures								
1	Is the fil	ter pack being changed ev	ery T	uesda	y as scheduled	? ✓	Filter changed mo	rinings		
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	5 Are site supplies on-hand and replenished in a timely fashion?			✓						
6	6 Are sample flow rates recorded? How?			✓	SSRF, logbook, call-in					
7	Are sam	aples sent to the lab on a re	gular	sche	dule in a timely	✓				
8		ers protected from contamoping? How?	natio	n dur	ing handling	✓	Clean gloves on a	nd off		
9		site conditions reported rooms manager or staff?	gular	ly to t	the field	✓				
QC	Check P	erformed		Freq	quency			Compliant		
]	Multi-poi	nt MFC Calibrations	✓	Sem	iannually			✓		
]	Flow Syst	em Leak Checks	✓	Wee	kly			✓		
]	Filter Pac	k Inspection								
]	Flow Rate	Setting Checks Weekly				\checkmark				
,	Visual Check of Flow Rate Rotometer Weekly					\checkmark				
]	In-line Filter Inspection/Replacement Semiannually					✓				
	Sample Line Check for Dirt/Water Weekly					✓				
		dditional explanation (phon- n-made, that may affect t) regarding condi	tions listed ab	ove, or any other features,	

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID ABT147 Technician Korey Devins

Site Visit Date 09/28/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	5C4MC12	07023
DAS	Campbell	CR3000	2519	000413
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	0493002469	02974
Flow Rate	Apex	AXMC105LPMDPC	unknown	000870
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07130
Ozone	ThermoElectron Inc	49i A1NAA	1009241772	000627
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200025	000449
Sample Tower	Aluma Tower	В	AT-61152-A-H8-C	000017
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	6706	04692
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
СНА	A467-Martii	n Valvur-09/28/2020				
1	9/28/2020	Computer	Hewlett Packard	none	EliteBook	CNV13607M4
2	9/28/2020	DAS	Environmental Sys Corp	90611	8816	2613
3	9/28/2020	Elevation	Elevation	None	1	None
4	9/28/2020	Filter pack flow pump	Thomas	none	illegible	illegible
5	9/28/2020	flow rate	Tylan	none	FC280SAV	AW9706014
6	9/28/2020	Infrastructure	Infrastructure	none	none	none
7	9/28/2020	MFC power supply	Tylan	none	RO-32	FP99706005
8	9/28/2020	Modem	US Robotics	09615	56k	unknown
9	9/28/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	CM08460007
10	9/28/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460051
11	9/28/2020	Sample Tower	Aluma Tower	03566	Α	none
12	9/28/2020	Shelter Temperature	ARS	none	none	none
13	9/28/2020	Siting Criteria	Siting Criteria	None	1	None
14	9/28/2020	Temperature2meter	RM Young	none	41342	018535
15	9/28/2020	Zero air pump	Werther International	none	PC70/4	000665785

DAS Data Form 0.18 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg **Environmental Sys** 2613 CHA467 Martin Valvur 09/28/2020 DAS Primary Das Date: 9 /28/2020 **Audit Date** 9 /28/2020 ΗY **Parameter** DAS Mfg 08:59:11 08:59:00 **Das Time: Audit Time** Tfer Desc. Source generator (D 12010039329 **Serial Number** Das Day: 272 **Audit Day** 272 Tfer ID 01322 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0002 0.0005 0.0002 0.0005 6/15/2014 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740243 Tfer Desc. DVM 01312 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference V 13 0.0000 -0.0003 -0.0003 0.0000 13 0.0998 0.0998 V V 0.0000 0.1000 13 0.3000 0.2996 0.2998 V V 0.0002V V 13 0.5000 0.4997 0.4999 0.0002 V V 13 0.7000 0.6997 0.7000 0.0003 V V 13 0.9000 0.8996 0.8999 0.0003 13 1.0000 V V 0.0005 1.0006 1.0011

Flow Data Form Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Tylan AW9706014 CHA467 Martin Valvur 09/28/2020 flow rate none Mfg BIOS Parameter Flow Rate Tylan Mfg Tfer Desc. BIOS 220-H 122974 **Serial Number**

FP99706005

Sensor Component System Memo

MFC power supply

SN/Owner ID

Parameter:

none

					Cert Date	5/0	6/2020 Co	rrCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	0.4	88	
A Avg % Diff:	A Max % Dif	A Avg %D	oiff A Max	% Dif	Cal Factor F	ull Scale	5.8	47	
0.74%	0.80%				Rotometer R	eading:	3.	25	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	PctDifference
primary	pump off	0.000	0.000	-0.45	0.0000	0.08	l/m	l/m	
primary	leak check	0.000	0.000	-0.41	0.0000	0.09	l/m	l/m	
primary	test pt 1	2.991	2.990	2.35	0.0000	3.01	l/m	l/m	0.80%
primary	test pt 2	2.993	2.990	2.35	0.0000	3.01	l/m	l/m	0.74%
primary	test pt 3	2.990	2.990	2.35	0.0000	3.01	l/m	1/m	0.67%
Sensor Comp	onent Leak Tes	t		Conditio	n		Statu	spass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Statu	spass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Statu	pass	
Sensor Comp	onent Rotomete	er Condition		Conditio	n Clean and dry		Statu	pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Statu	pass	
Sensor Comp	onent Filter Dist	tance		Conditio	n 6.0 cm		Statu	pass	
Sensor Comp	onent Filter Dep	oth		Conditio	n 2.0 cm		Statu	pass	
Sensor Comp	onent Filter Azir	muth		Conditio	n 90 deg		Statu	pass	

Condition

Tfer ID

Slope

01416

1.00000

Intercept

Status pass

0.00000

Ozone Data Form

Mfg	Serial Number	er Tag Site		Tech	nician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	CM08460007	CHA46	7	Marti	in Valvur	09/28/2020	Ozone	none
•	0.99093 Slop -0.07257 Inte	-	0.00000		Ifg	ThermoElectron 49CPS-70008-3		eter ozone esc. Ozone primary stan
			0.00000		erial Number		11er De	esc. Ozone primary starr
				T	fer ID	01110		
DAS 1:	D	AS 2:		SI	lope	1.0026	Intercept	0.03590
A Avg % Diff: A M		Avg %Diff A	Max % Dif		ert Date	1/14/202	20 CorrCoff	0.99999
0.0%	0.0%							
UseDescription	ConcGroup	Tfer Raw	Tfer Co	rr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.21	0.17		0.35	ppb		0.18
primary	2	13.54	13.46			ppb		-0.29
primary	3	34.46	34.33		34.09	ppb	-0.	
primary	4	64.81	64.60		63.32	ppb		2
primary	5	114.63	114.29		113.50	ppb	-0.6	
Sensor Compone	Audit Press	ure	Con	dition	639.8 mmHg		Status pass	3
Sensor Compone	ent Sample Tra	in	Con	dition	Good		Status pass	3
Sensor Compone	ent Minimum di	stance from road	d met Con	dition	True		Status pass	3
Sensor Compone	Inlet Filter C	Condition	Con	dition	Clean		Status pass	3
Sensor Compone	ent 26.6 degree	unobstructed ru	le Con	dition	True		Status pass	3
Sensor Compone	Tree dewlin	e >10m or below	/ inlet Con	dition	True		Status pass	3
Sensor Compone	Offset		Con	dition	-0.1		Status pass	3
Sensor Compone	ent Span		Con	dition	1.019		Status pass	3
Sensor Compone	ent Zero Voltag	е	Con	dition	0.000		Status pass	3
Sensor Compone	ent Fullscale Vo	oltage	Con	dition	0.9999		Status pass	3
Sensor Compone	ent Cell A Freq.		Con	dition	96.4 kHz		Status pass	3
Sensor Compone	ent Cell A Noise)	Con	dition	1.0 ppb		Status pass	3
Sensor Compone	Cell A Flow		Con	dition	0.75 lpm		Status pass	3
Sensor Compone	Cell A Press	sure	Con	dition	627.2 mmHg		Status pass	3
Sensor Compone	Cell A Tmp.		Con	dition	32.7 C		Status pass	3
Sensor Compone	ent Cell B Freq.		Con	dition	97.0 kHz		Status pass	3
Sensor Compone	Cell B Noise)	Con	dition	2.0 ppb		Status pass	3
Sensor Compone	Cell B Flow		Con	dition	0.68 lpm		Status pass	3
Sensor Compone	Cell B Press	sure	Con	dition	626.6 mmHg		Status pass	3
Sensor Compone	ent Line Loss		Con	dition	Not tested		Status pass	3
Sensor Compone	ent System Mer	no	Con	dition			Status pass	3

2 Meter Temperature Data Form Calc. Difference **Serial Number Tag Site Technician** Site Visit Date Parameter Mfg **Owner ID** CHA467 Martin Valvur 09/28/2020 RM Young 018535 Temperature2meter none Mfg Fluke Parameter Temperature Tfer Desc. RTD **Serial Number** 3275143 01229 Tfer ID **Slope** 1.00026 **Intercept** -0.01710 **DAS 1: DAS 2: Cert Date** 1/29/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.42 0.45 InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference UseDescription Test type Temp Low Rang 0.09 0.0000 0.56C 0.45 primary 0.11 23.33 23.34 0.0000 23.74C primary Temp Mid Range 0.4 Temp High Rang primary 48.35 48.35 0.0000 48.76C 0.41 Sensor Component | Shield **Condition** Clean **Status** pass Sensor Component Properly Sited **Condition** Not properly sited **Status** Fail **Condition** Functioning **Sensor Component** Blower **Status** pass Sensor Component System Memo Status pass Condition

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** ARS Martin Valvur 09/28/2020 Shelter Temperature none CHA467 **DAS 1: DAS 2:** Mfg Fluke Parameter Shelter Temperature Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD 3275143 **Serial Number** 0.92 1.49 01229 **Tfer ID** 1.00026 -0.01710 **Slope** Intercept 1/29/2020 1.00000 **Cert Date** CorrCoff

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	20.33	20.34	0.000	21.5	С	1.17
primary	Temp Mid Range	21.60	21.61	0.000	21.5	С	-0.09
primary	Temp Mid Range	20.23	20.24	0.000	21.7	С	1.49
Sensor Con	nponent System Memo	<u> </u>	Condition		Status	pass	

Infrastructure Data For

Site ID CHA467 Technician Martin Valvur Si	ite Visit Date 09/28/2020
--	---------------------------

Shelter Make	Shelter Model	Shelter Size
Ekto	8810	640 cuft

Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Conduit	Condition	Fair	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	Shelter walls	Condition	Good	Status	pass
Sensor Component	Excessive mold present	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

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition	Status	pass
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	d Problem
Temperature2meter	CHA467	Martin Valvur	09/28/2020	Properly Sited	RM Young	4423		
The lower (delta temperature sensor) shield is not mounted at 2 meters above the ground as stated in the QAPP.								

Field Systems Comments

1 Parameter: SitingCriteriaCom

A large point source is located 40 km northwest of the site, just southwest of Wilcox.

2 Parameter: ShelterCleanNotes

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

3 Parameter: PollAnalyzerCom

The zero-air desiccant is saturated with moisture.

4 Parameter: MetSensorComme

The temperature sensor is mounted on the south side of the meteorological tower, which is attached to the shelter. The temperature sensor is 4.8 meters above the ground and 2.1 meters above the white shelter roof. The reflective heat from the shelter roof may be impacting the accuracy of the measurement.

5 Parameter: MetOpMaintCom

The signal cable insulation is beginning to deteriorate particularly at the base of the meteorological tower.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 09/28/2020 CHA467 Technician Martin Valvur Site ID Bowie Mountain South **USGS Map** NPS/EPA Site Sponsor (agency) Map Scale **NPS Operating Group Map Date** 04-003-8001 AQS# R.M. Young **Meteorological Type** Air Pollutant Analyzer Ozone, neph, IMPROVE **QAPP** Latitude dry, wet **Deposition Measurement QAPP** Longitude **Land Use** desert range, woodland - mixed **QAPP Elevation Meters** Terrain complex **QAPP Declination** No Conforms to MLM **OAPP Declination Date** (520) 824-4182 32.009405 **Site Telephone Audit Latitude** 13063 East Bontia Canyon Road **Audit Longitude** -109.389058 Site Address 1 Site Address 2 **Audit Elevation** 1569 Cochise 9.6 **County Audit Declination** Wilcox, AZ City, State **Present** Fire Extinguisher 85632 Inspected June 2020 Zip Code Mountain First Aid Kit Time Zone **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **Climbing Belt** Primary Op. E-mail **Backup Operator Security Fence V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 Ekto **Shelter Size** 640 cuft **✓** Notes The shelter is in good condition, clean, well organized, and well maintained. **Shelter Clean**

Driving Directions

Site OK

✓ Notes

From I-10 take exit 344 (Wilcox AZ). Continue south on route 186 from Wilcox to Chiricahua National Monument, approximately 30 miles and turn left at route 181 (follow sign for Chiricahua National Monument). Continue another few miles to park entrance. The site is just before the fee both on the north side of the road about 150 meters.

Field Systems Data Form F-02058-1500-S3-rev002 Technician Martin Valvur Site Visit Date 09/28/2020 Site ID CHA467 ✓ N/A Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? **✓** N/A 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 Are the tower and sensors plumb? South Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc? 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) ✓ N/A Is the solar radiation sensor plumb? Is it sited to avoid shading, or any artificial or reflected light? N/A Is the rain gauge plumb? ✓ N/A 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? 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 temperature sensor is mounted on the south side of the meteorological tower, which is attached to the shelter. The temperature sensor

is 4.8 meters above the ground and 2.1 meters above the white shelter roof. The reflective heat from the shelter roof may be impacting the

accuracy of the measurement.

Fic	eld Systems Data Form		F-02058-1500-S4-rev002
Site	e ID CHA467 Technician	Martin Valvur	Site Visit Date 09/28/2020
1	Do all the meterological sensors appear to be	e intact, in good	N/A
2	condition, and well maintained? Are all the meteorological sensors operationareporting data?	al online, and	Temperature only
3	Are the shields for the temperature and RH s	sensors clean?	Moderately clean
4	Are the aspirated motors working?	✓	
5	Is the solar radiation sensor's lens clean and scratches?	free of	N/A
6	Is the surface wetness sensor grid clean and t	undamaged? ✓	N/A
7	Are the sensor signal and power cables intact condition, and well maintained?	t, in good	Signs of wear
8	Are the sensor signal and power cable connection the elements and well maintained?	ctions protected 🗹	
	vide any additional explanation (photograph or ral or man-made, that may affect the monitor		regarding conditions listed above, or any other features,
The	signal cable insulation is beginning to deteriorate	particularly at the base	e of the meteorological tower.

Field Systems Data Form F-02058-1500-S5-rev002 CHA467 Technician | Martin Valvur Site Visit Date 09/28/2020 Site ID Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **~** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? **~** Are the sample inlets 3 - 15 meters above the ground? **~** Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance **~** Do the analyzers and equipment appear to be in good condition and well maintained? **V** Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 15 meters Describe dry dep sample tube. 3/8 teflon by 12 meters At inlet only Are in-line filters used in the ozone sample line? (if ves indicate location) **~** Are sample lines clean, free of kinks, moisture, and obstructions? Is the zero air supply desiccant unsaturated? inline filter Are there moisture traps in the sample lines? **✓** Clean and dry 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:

The zero-air desiccant is saturated with moisture.

Field Systems Data Form F-02058-1500-S6-rev002 Site ID CHA467 Technician Martin Valvur Site Visit Date 09/28/2020 DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **✓** Are all the components of the DAS operational? (printers, modem, backup, etc) Met sensors only Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **~** grounded? **✓** Does the instrument shelter have a stable power source? **~** Is the instrument shelter temperature controlled? Grounded **Stable** Is the met tower stable and grounded?

11 Tower comments? towers bolted to shelter

Is the sample tower stable and grounded?

V

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 CHA467 Technician | Martin Valvur Site Visit Date 09/28/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? N/A Yes No Yes No N/A П **✓ V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer **V** П **Solar radiation sensor V** Modem П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V** Filter flow pump **Temperature translator V V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** ~ \checkmark **Shelter heater** Ozone analyzer **V** \checkmark Filter pack flow controller Shelter air conditioner \checkmark Filter pack MFC power supply □ Does the site have the required and most recent QC documents and report forms? **Present Current Station Log V V** Dataview **SSRF V ✓ V V Site Ops Manual HASP Field Ops Manual Calibration Reports ✓** Not current Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Dataview Flow & observation sections Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document **✓** sample transfer to and from lab? Control charts not used Are ozone z/s/p control charts properly completed and current?

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 CHA467 Technician Martin Valvur Site Visit Date 09/28/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics) ✓ V** Weekly **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **QC Check Performed Compliant** Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Monthly Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests Manual Precision Level Test ✓ V** Monthly **Analyzer Diagnostics Tests ~** Monthly **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **~ ~** Weekly **Zero Air Desiccant Check** ✓ Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters?

✓

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

Are the automatic and manual z/s/p checks monitored and

natural or man-made, that may affect the monitoring parameters:

reported? If yes, how?

Dataview

Field Systems Data Form						F-02058-1	500-S9-rev002
Sit	te ID	CHA467 T	echnician Martin Valvur		Site Visit Date	e 09/28/2020	
	Site ope	ration procedures					
1	Is the fil	ter pack being changed ev	ery Tuesday as scheduled	?	Filter changed mo	rinings	
2	Are the correctl	Site Status Report Forms I y?	being completed and filed	✓			
3	Are data	a downloads and backups led?	peing performed as		No longer required		
4	Are gen	eral observations being ma	de and recorded? How?	✓	Dataview and SSRF		
5	5 Are site supplies on-hand and replenished in a timely fashion?			✓			
6	Are sample flow rates recorded? How?			✓	SSRF		
7	7 Are samples sent to the lab on a regular schedule in a timely fashion?		✓				
8	8 Are filters protected from contamination during handling and shipping? How?		✓	Clean gloves on a	nd off		
9		site conditions reported reons manager or staff?	gularly to the field				
QC	Check Po	erformed	Frequency			Compliant	
]	Multi-poi	nt MFC Calibrations	✓ Semiannually			✓	
]	Flow Syste	em Leak Checks	✓ Weekly			\checkmark	
Filter Pack Inspection							
Flow Rate Setting Checks Weekly					✓		
,	Visual Check of Flow Rate Rotometer ✓ Weekly					\checkmark	
]	In-line Filter Inspection/Replacement Semiannually					\checkmark	
Sample Line Check for Dirt/Water							
		dditional explanation (pho n-made, that may affect th			y) regarding condi	tions listed above, or a	any other features,

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID CHA467 Technician Martin Valvur Site Visit Date 09/28/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	EliteBook	CNV13607M4	none
DAS	Environmental Sys Corp	8816	2613	90611
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	illegible	illegible	none
flow rate	Tylan	FC280SAV	AW9706014	none
Infrastructure	Infrastructure	none	none	none
MFC power supply	Tylan	RO-32	FP99706005	none
Modem	US Robotics	56k	unknown	09615
Ozone	ThermoElectron Inc	49i A3NAA	CM08460007	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	CM08460051	none
Sample Tower	Aluma Tower	A	none	03566
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342	018535	none
Zero air pump	Werther International	PC70/4	000665785	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number		
REL	RED004-Eric Hebert-09/29/2020							
1	9/29/2020	DAS	Campbell	none	CR850	28383		
2	9/29/2020	elevation	Elevation	none	none	none		
3	9/29/2020	Filter pack flow pump	Thomas	none	1420 VP	42624821		
4	9/29/2020	Flow Rate	Apex	000857	AXMC105LPMDPCV	150623		
5	9/29/2020	Infrastructure	Infrastructure	none	none	none		
6	9/29/2020	Modem	Sierra wireless	06950	unknown	unknown		
7	9/29/2020	Sample Tower	Aluma Tower	000813	В	unknown		
8	9/29/2020	siting criteria	Siting Criteria	none	none	None		
9	9/29/2020	Temperature	RM Young	06986	41342	024087		

Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter 000857 Apex 150623 RED004 Eric Hebert 09/29/2020 Flow Rate Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID **Slope** 1.00032 **Intercept** -0.02240 2/17/2020 0.99997 CorrCoff **Cert Date** -0.017 **DAS 1: DAS 2: Cal Factor Zero** 1.004 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 2.76% 5.64% **Rotometer Reading:** Test type Input l/m Input Corr OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. MfcDisp. primary pump off 0.000 0.0000.00 0.000 -0.021/m1/m leak check 0.00 0.000 -0.01 1/m0.000 0.000 1/mprimary test pt 1 3.000 3.020 2.96 0.000 3.00 1/m1/m -0.66% primary 2.95 0.000 2.98 1/m-1.97% primary test pt 2 3.022 3.040 1/m test pt 3 3.171 3.190 2.96 0.000 3.01 1/m1/m -5.64% primary 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 Status pass Condition Clean and dry Sensor Component Moisture Present **Condition** No moisture present Status pass Sensor Component Filter Distance Condition 3.0 cm Status pass

Condition 1.5 cm

Condition 270 deg

Condition

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Status pass

Status pass

Status pass

Temperature Data Form Serial Number Tag Site Technician Site Visit Date Parameter **Owner ID** Mfg 024087 RED004 Eric Hebert 09/29/2020 Temperature 06986 RM Young Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID **Slope** 1.00797 **Intercept** 0.12950 **DAS 1: DAS 2:** 2/14/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.19 0.39 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range -0.09 -0.22 0.000 0.2 \mathbf{C} 0.39 C Temp Mid Range 29.96 29.59 0.000 29.6 -0.03 primary 0.000 C primary Temp High Range 46.85 46.35 46.2 -0.15 Status pass Sensor Component Shield **Condition** Clean **Condition** N/A Status pass **Sensor Component** Blower **Sensor Component** Properly Sited **Condition** Properly sited **Status** pass Sensor Component System Memo Status pass **Condition**

Site Visit Date 09/29/2020 RED004 Technician Eric Hebert Site ID **Shelter Make Shelter Model Shelter Size** Sensor Component | Sample Tower Type Status pass Condition Type B Sensor Component Conduit **Condition** N/A Status pass **Sensor Component** Met Tower **Condition** N/A Status pass **Sensor Component** Moisture Trap **Condition** Not installed **Status** pass **Sensor Component** Power Cables **Condition** Good **Status** pass Sensor Component | Shelter Temp Control **Condition** N/A **Status** pass Condition Installed Sensor Component Rotometer **Status** pass **Condition** Good Status pass Sensor Component | Sample Tower Sensor Component | Shelter Condition **Condition** N/A Status pass Sensor Component | Shelter Door **Condition** N/A **Status** pass Sensor Component Shelter Roof **Condition** N/A **Status** pass Sensor Component | Shelter Floor **Condition** N/A **Status** pass Sensor Component | Shelter walls **Condition** N/A **Status** pass Sensor Component Excessive mold present **Condition** N/A **Status** pass Sensor Component | Signal Cable **Condition** Good **Status** pass **Sensor Component** Tubing Type Condition 3/8 teflon **Status** pass **Condition** Good

Status pass

Infrastructure Data For

Sensor Component Sample Train

Siting Criteria Form

Sensor Component	Large point source of So2 or Nox	Condition	Status	pass
Sensor Component	City > 50,000	Condition	Status	pass
Sensor Component	City 1,000 to 10,000	Condition	Status	pass
Sensor Component	City 10,000 to 50,000	Condition	Status	pass
Sensor Component	Feedlot operations	Condition	Status	pass
Sensor Component	Large parking lot	Condition	Status	pass
Sensor Component	Limited agriculture operations	Condition	Status	pass
Sensor Component	Major industrial source	Condition	Status	pass
Sensor Component	Secondary road < or = 100 per da	Condition	Status	pass
Sensor Component	Secondary road >100 vehicles/da	Condition	Status	pass
Sensor Component	Small parking lot	Condition	Status	pass
Sensor Component	System Memo	Condition	Status	pass
Sensor Component	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: DocumentationCo

There is no site logbook and all manuals are kept electronically since the site is a small footprint site with no place to store hardcopies.

2 Parameter: SitingCriteriaCom

The site has been cleared approximately 8 meters around the base of the tower.

3 Parameter: ShelterCleanNotes

Small footprint site with enclosure for instruments only. No shelter.

F-02058-1500-S1-rev002 **Field Systems Data Form** Site Visit Date 09/29/2020 Site ID RED004 Technician Eric Hebert **USGS Map EPA** Site Sponsor (agency) **Map Scale** Red Lake Nation / AMEC **Operating Group Map Date** AQS# R.M. Young **Meteorological Type Air Pollutant Analyzer QAPP** Latitude **Deposition Measurement** dry **QAPP** Longitude **Land Use QAPP Elevation Meters Terrain QAPP Declination** Conforms to MLM **OAPP Declination Date** 47.863837 **Site Telephone Audit Latitude** -94.835376 Site Address 1 **Audit Longitude** 374 Site Address 2 **Audit Elevation** Beltrami **County Audit Declination** Redby, MN City, State **Present** Fire Extinguisher 56670 **Zip Code** Central First Aid Kit **Time Zone Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # Primary Op. E-mail **Climbing Belt Backup Operator Security Fence Secure Shelter** Backup Op. Phone # Stable Entry Steps Backup Op. E-mail **Shelter Working Room** ☐ **Make** Model **Shelter Size** □ Notes Small footprint site with enclosure for instruments only. No shelter. **Shelter Clean ✓** Notes Site OK

Driving Directions

Fi	eld Systems Data Form		F-02058-1500-S3-rev002
Site	RED004 Technician Eric Hebert		Site Visit Date 09/29/2020
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:

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	RED004 Technician Eric Hebert		Site Visit Date 09/29/2020
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?	✓	
	ide any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:		regarding conditions listed above, or any other features,

Fig	eld Systems Data Form		F-02058-1500-S5-rev002			
Site	RED004 Technician Eric Hebert		Site Visit Date 09/29/2020			
	Siting Criteria: Are the pollutant analyzers and deposition eq	uipı	nent 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	l ma	intenance			
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.		N/A			
4	Describe dry dep sample tube.		3/8 teflon by 8 meters			
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	✓	N/A			
6	Are sample lines clean, free of kinks, moisture, and obstructions?	✓				
7	Is the zero air supply desiccant unsaturated?	✓	N/A			
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, actural or man-made, that may affect the monitoring parameters:					

Field Systems Data Form F-02058-1500-S6-rev002 RED004 Technician Eric Hebert Site Visit Date 09/29/2020 Site ID DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **✓** Are all the components of the DAS operational? (printers, modem, backup, etc) **✓** Do the analyzer and sensor signal leads pass through lightning protection circuitry? **✓** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly **~** grounded? **✓** Does the instrument shelter have a stable power source? **✓** N/A Is the instrument shelter temperature controlled?

Is the met tower stable and grounded?

11 Tower comments?

Is the sample tower stable and grounded?

natural or man-made, that may affect the monitoring parameters:

Stable

V

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

Grounded

V

RED004 Technician Eric Hebert Site Visit Date 09/29/2020 Site ID **Documentation** Does the site have the required instrument and equipment manuals? Yes No N/A Yes No N/A **V** Wind speed sensor **Data logger V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** П **V** Modem Solar radiation sensor П **V V Printer Surface wetness sensor V V** Wind sensor translator Zero air pump **V Temperature translator V** Filter flow pump **V Humidity sensor translator V Surge protector** П **V UPS V Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device V V Shelter heater** Ozone analyzer \checkmark **V** Shelter air conditioner Filter pack flow controller **V** Filter pack MFC power supply Does the site have the required and most recent QC documents and report forms? **Present Current Station Log SSRF ✓ V ✓ V Site Ops Manual** Oct 2014 **V HASP ✓** Oct 2014 **Field Ops Manual V V** Oct 2014 **Calibration Reports** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? No Logbook Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **V** sample transfer to and from lab? N/A Are ozone z/s/p control charts properly completed and current? 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:

There is no site logbook and all manuals are kept electronically since the site is a small footprint site with no place to store hardcopies.

F-02058-1500-S7-rev002

Field Systems Data Form

Field Systems Data Form F-02058-1500-S8-rev002 RED004 Technician Eric Hebert Site Visit Date 09/29/2020 Site ID Site operation procedures Trained by AMEC technician during site installation Has the site operator attended a formal CASTNET training ✓ course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday **~** schedule? **✓** Are the standard CASTNET operational procedures being flollowed by the site operator? 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 **✓ V** Semiannually **Multipoint Calibrations V V** Weekly **Visual Inspections V** N/A **Translator Zero/Span Tests (climatronics)** П **V** N/A **Manual Rain Gauge Test V V** Weekly **Confirm Reasonableness of Current Values V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? Compliant **QC Check Performed Frequency Multi-point Calibrations V** N/A **V** N/A **Automatic Zero/Span Tests V** N/A Manual Zero/Span Tests **V** N/A **Automatic Precision Level Tests** N/A **Manual Precision Level Test V** N/A **Analyzer Diagnostics Tests ~** N/A **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V** N/A Sample Line Check for Dirt/Water **~** N/A **Zero Air Desiccant Check**

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?

✓	N/A
V	N/Δ

✓ 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 D	ata Form			F-02058-1500-S9-rev002					
Site ID RED004	Tech	nician Eric Hebert		Site Visit Date	09/29/2020				
Site operation procedures									
1 Is the filter pack bei	ng changed every	Tuesday as scheduled?	V	Filter changed vario	ous times				
2 Are the Site Status I correctly?	Report Forms bei	ng completed and filed	✓						
3 Are data downloads scheduled?	1 01			No longer required					
4 Are general observa	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 rat	6 Are sample flow rates recorded? How?			SSRF					
7 Are samples sent to fashion?	the lab on a regul	ar schedule in a timely	✓						
8 Are filters protected and shipping? How?		ion during handling	✓	Clean gloves on an	d off				
9 Are the site condition operations manager		arly to the field	✓						
QC Check Performed		Frequency			Compliant				
Multi-point MFC Cali	ibrations	✓ Semiannually			✓				
Flow System Leak Ch	ecks	Weekly			✓				
Filter Pack Inspection									
Flow Rate Setting Che	ecks	Weekly			✓				
Visual Check of Flow	Rate Rotometer	✓ Weekly			✓				
In-line Filter Inspection	on/Replacement	Semiannually			✓				
Sample Line Check fo	r Dirt/Water	Weekly			✓				
Provide any additional ex) regarding conditi	ions listed above, or any other features,				

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID RED004 Technician Eric Hebert Site Visit Date 09/29/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR850	28383	none
elevation	Elevation	none	none	none
Filter pack flow pump	Thomas	1420 VP	42624821	none
Flow Rate	Apex	AXMC105LPMDPC	150623	000857
Infrastructure	Infrastructure	none	none	none
Modem	Sierra wireless	unknown	unknown	06950
Sample Tower	Aluma Tower	В	unknown	000813
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342	024087	06986

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number				
CAV	CAVE-Martin Valvur-09/29/2020									
1	9/29/2020	Computer	Hewlett Packard	none	6730b	CNV94340HR				
2	9/29/2020	DAS	Environmental Sys Corp	none	8832	A4890K				
3	9/29/2020	Modem	Sierra wireless	none	GX450	Unknown				
4	9/29/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	1152780007				
5	9/29/2020	Relative Humidity	Vaisala	none	HMP45C	Unknown				
6	9/29/2020	Shelter Temperature	ARS	none	none	none				
7	9/29/2020	Temperature2meter	Vaisala	none	HMP45C	Unknown				
8	9/29/2020	Zero air pump	Werther International	none	C 120/TC	001002154				

DAS Data Form 0.13 **DAS Time Max Error: Serial Number** Site **Technician** Site Visit Date Parameter Use Desc. Mfg **Environmental Sys** A4890K CAVE Martin Valvur 09/29/2020 DAS Primary Das Date: 9 /29/2020 **Audit Date** 9 /29/2020 ΗY **Parameter** DAS Mfg 08:17:52 Das Time: **Audit Time** 08:18:00 Tfer Desc. Source generator (D 12010039329 **Serial Number** Das Day: 273 **Audit Day** 273 Tfer ID 01322 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope Intercept 0.0003 0.0003 0.0005 0.0005 6/15/2014 1.00000 **Cert Date** CorrCoff Fluke Parameter DAS Mfg **Serial Number** 95740243 Tfer Desc. DVM 01312 Tfer ID 1.00000 0.00000 **Slope** Intercept 1/28/2020 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference 8 V 0.0000 -0.0008 -0.0002 -0.00068 0.0997 0.1001 V V 0.0004 0.1000 8 0.3000 0.2992 0.2997 V V 0.0005V V 8 0.5000 0.4993 0.4993 0.0000 V V 8 0.7000 0.6999 0.7003 0.0004 V V 8 0.9000 0.8993 0.8992 -0.0001 8 1.0000 0.9997 1.0000 V V 0.0003

Ozone Data Form

Mfg Serial Number Tag Site				Technician		Site Visit Date Param		eter	Owner ID
ThermoElectron Inc	1152780007	CAVE		Marti	n Valvur	09/29/2020	Ozone		none
Slope: Intercept CorrCoff:		rcept	0.00000 0.00000 0.00000	Se	Ifg erial Number fer ID	ThermoElectron 49CPS-70008-3 01110			ozone Ozone primary stan
DAS 1:	D	AS 2:		Sl	ope	1.0026	0 Inter	cept	0.03590
A Avg % Diff: A		Avg %Diff A	Max % Dif	f C	ert Date	1/14/202	20 Corr	Coff	0.99999
0.0%	0.0%				ert Date	1/14/202	-o Cori	Con	0.0000
UseDescription	ConcGroup	Tfer Raw	Tfer Co	orr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	0.08	0.04		2.02	ppb			1.98
primary	2	12.48	12.41		13.35	ppb			0.94
primary	3	32.50	32.37		33.48	ppb		3.37	
primary	4	64.24	64.03		64.39	ppb		0.56	
primary	5	116.91	116.57	7	116.50	ppb		-0.06	
Sensor Compone	ent Audit Press	ure	Con	dition	658.7 mmHg		Status	pass	
Sensor Compone	ent Sample Tra	in	Con	dition	Good		Status	pass	
Sensor Compone	ent Minimum di	stance from roa	d met Con	dition	True		Status	pass	
Sensor Compone	ent Inlet Filter C	Condition	Con	dition	Clean		Status	pass	
Sensor Compone	ent 26.6 degree	unobstructed r	ule Con	dition	True		Status	pass	
Sensor Compone	ent Tree dewlin	e >10m or belov	v inlet Con	dition	True		Status	pass	
Sensor Compone	ent Offset		Con	dition	-0.9		Status	pass	
Sensor Compone	ent Span		Con	dition	0.993		Status	pass	
Sensor Compone	ent Zero Voltag	е	Con	dition	N/A		Status	pass	
Sensor Compone	ent Fullscale Vo	oltage	Con	Condition N/A			Status	pass	
Sensor Compone	ent Cell A Freq.		Con	Condition 132.1 kHz			Status	pass	
Sensor Compone	ent Cell A Noise)	Con	dition	0.6 ppb		Status	pass	
Sensor Compone	ent Cell A Flow		Con	dition	0.67 lpm		Status	pass	
Sensor Compone	ent Cell A Press	sure	Con	dition	648.1 mmHg		Status	pass	
Sensor Compone	ent Cell A Tmp.				31.3 C		Status	pass	
Sensor Compone	ent Cell B Freq.		Con	dition	64.9 kHz		Status	pass	
Sensor Compone	ent Cell B Noise)			0.6 ppb		Status	pass	
Sensor Compone	ent Cell B Flow		Con	dition	0.67 lpm		Status		
Sensor Compone	ent Cell B Press	sure			647.5 mmHg		Status		
Sensor Compone	ent Line Loss		Con	dition	Not tested		Status	pass	
Sensor Compone	ent System Mer	no	Con	dition			Status	pass	

2 Meter Temperature Data Form Calc. Difference **Serial Number Tag Site Technician** Site Visit Date Parameter Mfg **Owner ID** CAVE Martin Valvur 09/29/2020 Vaisala Unknown Temperature2meter none Mfg Fluke Parameter Temperature Tfer Desc. RTD **Serial Number** 3275143 01229 Tfer ID **Slope** 1.00026 **Intercept** -0.01710 **DAS 1: DAS 2: Cert Date** 1/29/2020 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.62 0.78 Test type UseDescription InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference Temp Mid Range 18.89 18.90 0.0000 18.12C -0.78 primary 19.74 0.0000 20.20C primary Temp Mid Range 19.75 0.45 Sensor Component Shield **Condition** Clean **Status** pass **Status** pass **Sensor Component** Properly Sited **Condition** Properly sited **Sensor Component** Blower **Condition** N/A **Status** pass Sensor Component System Memo **Condition** See comments Status pass

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** Martin Valvur ARS CAVE 09/29/2020 Shelter Temperature none none **DAS 1: DAS 2:** Parameter Shelter Temperature Fluke Mfg **Abs Avg Err** Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD 3275143 **Serial Number** 0.70 0.72 01229 **Tfer ID** 1.00026 -0.01710 **Slope** Intercept 1/29/2020 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 20.94 20.95 0.00021.7 \mathbf{C} 0.72 C Temp Mid Range 22.64 22.65 0.000 23.3 0.69 primary C 0.000 primary Temp Mid Range 22.66 22.67 23.4 0.68

Condition

Status pass

Sensor Component System Memo

Field Systems Comments

1 Parameter: SiteOpsProcComm

Dry deposition samples are not collected at this site.

2 Parameter: DasComments

The instruments are being operated in a temporary building with no sample tower. The building is not grounded and there is no lightning protection for the signals.

3 Parameter: SiteOpsProcedures

There is no regular site operator at this time.

4 Parameter: DocumentationCo

The site is not visited on a regular weekly basis. The site is only visited at the direction of ARS if an instrument is not responding properly.

5 Parameter: ShelterCleanNotes

The equipment is housed in a temperary building.

6 Parameter: PollAnalyzerCom

The ozone sample train does not have a filter at the inlet. There is a filter at the back of the monitor. The zero-air desiccant is saturated.

7 Parameter: MetSensorComme

The 2-meter temperature sensor is temporarily mounted 1 meter above the building roof and facing south. The sensor is a combination RH/temp sensor and cannot be submerged for audit challenge. The building is likely to impact the accuracy of the measurements.

F-02058-1500-S1-rev002 **Field Systems Data Form** CAVE Site Visit Date 09/29/2020 Site ID Technician Martin Valvur **USGS Map NPS** Site Sponsor (agency) **Map Scale NPS Operating Group Map Date** 35-151-0745 AQS# **Meteorological Type Air Pollutant Analyzer** Ozone **QAPP** Latitude **Deposition Measurement QAPP** Longitude **Land Use QAPP Elevation Meters Terrain QAPP Declination QAPP Declination Date** Conforms to MLM 32.178141 **Site Telephone Audit Latitude** -104.443206 Site Address 1 **Audit Longitude** 1358 Site Address 2 **Audit Elevation Audit Declination County** Carlsbad, NM City, State **Present** Fire Extinguisher 88220 **Zip Code** Mountain First Aid Kit **Time Zone Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # Primary Op. E-mail **Climbing Belt Backup Operator Security Fence Secure Shelter** Backup Op. Phone # Stable Entry Steps Backup Op. E-mail **Shelter Working Room** ☐ **Make** Model **Shelter Size** □ Notes The equipment is housed in a temperary building. **Shelter Clean** □ Notes Site OK

Driving Directions

Fi	eld Systems Data Form		F-02058-1500-S3-rev002
Site	CAVE Technician Martin Valve	ur	Site Visit Date 09/29/2020
1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	ı 🗸	N/A
2	Are wind sensors mounted so as to minimize tower effect (i.e. wind sensors should be mounted atop the tower or o horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	n a	N/A
3	Are the tower and sensors plumb?	✓	N/A
4	Are the temperature shields pointed north or positioned avoid radiated heat sources such as buildings, walls, etc?		south
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 area standing water should be avoided)		No
6	Is the solar radiation sensor plumb?	✓	N/A
7	Is it sited to avoid shading, or any artificial or reflected l	light? ✓	N/A
8	Is the rain gauge plumb?	✓	N/A
9	Is it sited to avoid sheltering effects from buildings, trees towers, etc?	s, v	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
	ovide any additional explanation (photograph or sketch if ural or man-made, that may affect the monitoring param		y) regarding conditions listed above, or any other features,

The 2-meter temperature sensor is temporarily mounted 1 meter above the building roof and facing south. The sensor is a combination RH/temp sensor and cannot be submerged for audit challenge. The building is likely to impact the accuracy of the measurements.

Site ID CAVE Technician Martin Valvur Site Visit Date 09/29/2020 1 Do all the meterological sensors appear to be intact, in good condition, and well maintained? 2 Are all the meterological 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? N/A	
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? N/A	
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? N/A	
4 Are the aspirated motors working? ✓ N/A 5 Is the solar radiation sensor's lens clean and free of scratches?	
5 Is the solar radiation sensor's lens clean and free of scratches?	
scratches?	
6 Is the surface wetness sensor grid clean and undamaged? N/A	
as the surface method sensor gird 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 CAVE Technician | Martin Valvur Site Visit Date 09/29/2020 Site ID Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **~** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? **~** Are the sample inlets 3 - 15 meters above the ground? **~** Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance **~** Do the analyzers and equipment appear to be in good condition and well maintained? **V** Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 10 meters Describe dry dep sample tube. N/A at analyzer only Are in-line filters used in the ozone sample line? (if ves indicate location) **~** Are sample lines clean, free of kinks, moisture, and obstructions? Is the zero air supply desiccant unsaturated? Are there moisture traps in the sample lines? ✓ N/A 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:

The ozone sample train does not have a filter at the inlet. There is a filter at the back of the monitor. The zero-air desiccant is saturated.

Field Systems Data Form F-02058-1500-S6-rev002 CAVE Technician Martin Valvur Site Visit Date 09/29/2020 Site ID DAS, sensor translators, and peripheral equipment operations and maintenance Do the DAS instruments appear to be in good condition and well maintained? **V** Are all the components of the DAS operational? (printers, modem, backup, etc) Do the analyzer and sensor signal leads pass through lightning protection circuitry? **~** Are the signal connections protected from the weather and well maintained? **✓** Are the signal leads connected to the correct DAS channel? Are the DAS, sensor translators, and shelter properly grounded? **✓** Does the instrument shelter have a stable power source? ~ Is the instrument shelter temperature controlled? Grounded **Stable** Is the met tower stable and grounded? Is the sample tower stable and grounded?

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:

11 Tower comments?

The instruments are being operated in a temporary building with no sample tower. The building is not grounded and there is no lightning protection for the signals.

Field Systems Data Fo	orm		F-02	058-	1500-S7-rev002
Site ID CAVE	Technician Martin	Valvur Site Visit Date 0	9/29/2020		
Documentation					
Does the site have the required in	nstrument and equipn	nent manuals?			
Yes			Yes	No	N/A
Wind speed sensor		Data logger		V	
Wind direction sensor		Data logger			
Temperature sensor Relative humidity sensor		Strip chart recorder		∠	
Relative humidity sensor Solar radiation sensor		Computer Modem		▼	
Surface wetness sensor		Printer			<u>✓</u>
Wind sensor translator		Zero air pump		✓	
Temperature translator		Filter flow pump			<u>✓</u>
Humidity sensor translator		Surge protector			✓
Solar radiation translator		UPS			<u> </u>
Tipping bucket rain gauge		Lightning protection device			<u>✓</u>
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 OC d	locuments and report forms?			
	esent		Curre	nt	
Station Log			✓		
SSRF					
Site Ops Manual					
HASP					
Field Ops Manual					
Calibration Reports					
Ozone z/s/p Control Charts					
Preventive maintenance schedule					
1 Is the station log properly com	pleted during every si	te visit?			
2 Are the Site Status Report For current?	ms being completed a	nd 🗆			
3 Are the chain-of-custody form sample transfer to and from la		eument 🗆			
4 Are ozone z/s/p control charts current?	properly completed an	nd 🗆			
Provide any additional explanation natural or man-made, that may aff			ns listed a	above, o	r any other features,

The site is not visited on a regular weekly basis. The site is only visited at the direction of ARS if an instrument is not responding properly.

Field Systems Data Form F-02058-1500-S8-rev002 CAVE Technician Martin Valvur Site Visit Date 09/29/2020 Site ID Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday No schedule? Are the standard CASTNET operational procedures being flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform \Box the required site activities? (including documentation) Are regular operational QA/QC checks performed on meteorological instruments? **QC Check Performed Frequency** Compliant **Multipoint Calibrations** П **Visual Inspections Translator Zero/Span Tests (climatronics)** П **Manual Rain Gauge Test Confirm Reasonableness of Current Values Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **QC Check Performed** Compliant **Frequency Multi-point Calibrations Automatic Zero/Span Tests** Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests In-line Filter Replacement (at inlet)** In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **Zero Air Desiccant Check** Unknown Do multi-point calibration gases go through the complete sample train including all filters? **✓** Do automatic and manual z/s/p gasses go through the complete sample train including all filters? **✓** Dataview Are the automatic and manual z/s/p checks monitored and reported? If yes, how? 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:

There is no regular site operator at this time.

Field Systems Data Form		F-02058-1500-S9-rev00						
Site ID CAVE Tec	hnician Martin Valvur		Site Visit Date	09/29/2020				
Site operation procedures								
1 Is the filter pack being changed ever	y Tuesday as scheduled		I/A					
2 Are the Site Status Report Forms be correctly?								
3 Are data downloads and backups be scheduled?	Are data downloads and backups being performed as scheduled?							
4 Are general observations being made	Are general observations being made and recorded? How?							
5 Are site supplies on-hand and replen fashion?								
6 Are sample flow rates recorded? How	Are sample flow rates recorded? How?			✓ N/A				
7 Are samples sent to the lab on a regularishion?	•							
8 Are filters protected from contamina and shipping? How?	ntion during handling	V	I/A					
9 Are the site conditions reported regular operations manager or staff?	larly to the field							
QC Check Performed	Frequency			Compliant				
Multi-point MFC Calibrations	✓ N/A			✓				
Flow System Leak Checks	✓ N/A			✓				
Filter Pack Inspection	✓ N/A			✓				
Flow Rate Setting Checks	•			✓				
Visual Check of Flow Rate Rotometer				✓				
In-line Filter Inspection/Replacement	✓ N/A			\checkmark				
Sample Line Check for Dirt/Water	✓ N/A			✓				
Provide any additional explanation (photo natural or man-made, that may affect the			regarding condition	ons listed above, or a	ny other features,			

Dry deposition samples are not collected at this site.

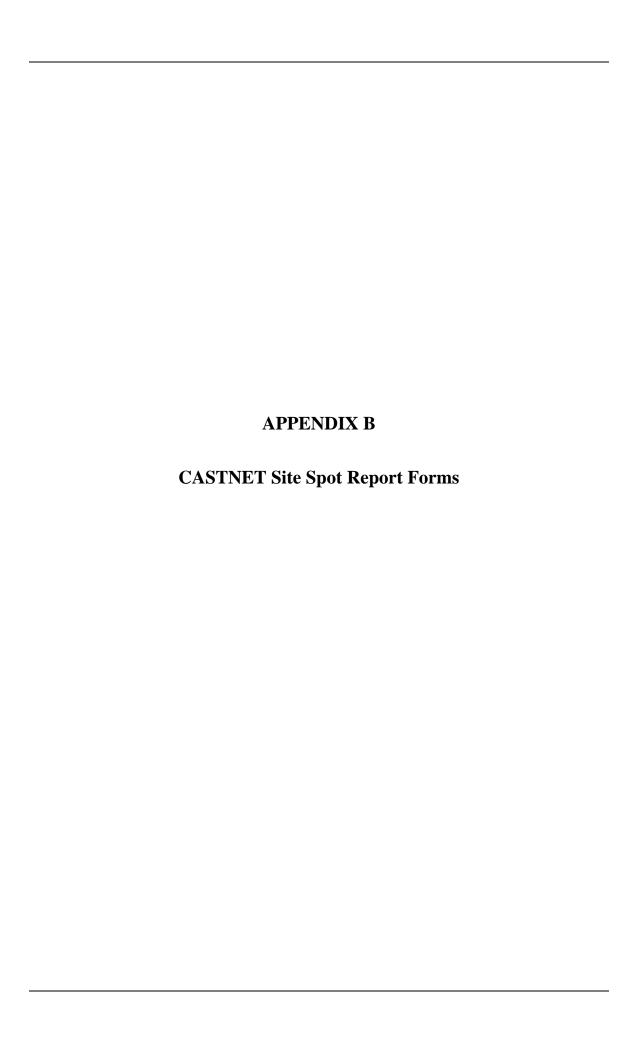
Field Systems Data Form

F-02058-1500-S10-rev002

Site ID CAVE Technician Martin Valvur Site Visit Date 09/29/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	6730b	CNV94340HR	none
DAS	Environmental Sys Corp	8832	A4890K	none
Modem	Sierra wireless	GX450	Unknown	none
Ozone	ThermoElectron Inc	49i A3NAA	1152780007	none
Relative Humidity	Vaisala	HMP45C	Unknown	none
Shelter Temperature	ARS	none	none	none
Temperature2meter	Vaisala	HMP45C	Unknown	none
Zero air pump	Werther International	C 120/TC	001002154	none



Data Compiled:

1/22/2021 10:32:28

SiteVisitDate Site Technician

09/28/2020 ABT147 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	6	0.12	c	P
2	Temperature max error	P	4	0.5	6	0.15	c	P
3	Ozone Slope	P	0	1.1	4	0.99571	unitless	P
4	Ozone Intercept	P	0	5	4	0.08449	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	0.4	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.10	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	0.06	ppb	P
9	Flow Rate average % difference	P	10	5	2	0.89	%	P
10	Flow Rate max % difference	P	10	5	2	1.34	%	P
11	DAS Voltage average error	P	7	0.003	70	0.0001	V	P
12	Shelter Temperature average error	P	5	2	18	0.21	c	P
13	Shelter Temperature max error	P	5	2	18	0.50	c	P

09/28/2020

ABT147

Korey Devins

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 met tower has been removed.

2 Parameter: DocumentationCo

All site instrument manuals are on the site computer desktop folder.

3 Parameter: SitingCriteriaCom

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

4 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: MetSensorComme

Temperature mounted in naturally aspirated shield on sample tower.

Data Compiled:

1/14/2021 10:19:48

SiteVisitDate Site Technician

07/29/2020 ARE128 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	12	0.13	c	P
2	Temperature max error	P	4	0.5	12	0.20	c	P
3	Ozone Slope	P	0	1.1	4	0.97883	unitless	P
4	Ozone Intercept	P	0	5	4	-0.78681	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
6	Ozone % difference avg	P	7	10	4	4.9	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-0.43	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-1.26	ppb	P
9	Flow Rate average % difference	P	10	5	9	3.23	%	P
10	Flow Rate max % difference	P	10	5	9	3.23	%	P
11	DAS Voltage average error	P	7	0.003	84	0.0001	V	P
12	Shelter Temperature average error	P	5	2	18	0.45	c	P
13	Shelter Temperature max error	P	5	2	18	0.70	c	P

07/29/2020

ARE128

Korey Devins

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: SiteOpsProcComm

The site operator handles the filter caps with bare hands but handles the filter pack using the Ziploc filter bag.

2 Parameter: DasComments

The meteorological tower has been removed.

3 Parameter: SitingCriteriaCom

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

4 Parameter: MetOpMaintCom

The 10-meter temperature sensor has been moved to a naturally aspirated shield on the sample tower.

Data Compiled:

1/22/2021 10:14:09

SiteVisitDate Site Technician

09/27/2020 ASH135 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	21	0.12	c	P
2	Temperature max error	P	4	0.5	21	0.27	c	P
3	Ozone Slope	P	0	1.1	4	0.98793	unitless	P
4	Ozone Intercept	P	0	5	4	-0.62522	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
6	Ozone % difference avg	P	7	10	4	3.5	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-0.32	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.93	ppb	P
9	Flow Rate average % difference	P	10	5	3	1.32	%	P
10	Flow Rate max % difference	P	10	5	3	1.32	%	P
11	DAS Voltage average error	P	7	0.003	21	0.0001	V	P
12	Shelter Temperature average error	P	5	2	21	0.24	c	P
13	Shelter Temperature max error	P	5	2	21	0.37	c	P

SiteVisitDate Site Technician	
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09/27/2020

ASH135

Korey Devins

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

The evergreen plantation previously 20 meters south of the site has been harvested.

4 Parameter: ShelterCleanNotes

The shelter is in fair condition, clean, and very well organized. Rot is beginning at the bottom of the walls and floor.

Data Compiled:

1/22/2021 13:30:47

SiteVisitDate Site Technician

09/22/2020 BEL116 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.22	c	P
2	Temperature2meter max error	P	5	0.5	3	0.43	c	P
3	Surface Wetness Wetness Sensor		0		1	0		
4	Wind Speed average error below 5 m/s in m/s	P	3	0.5	16	0.05	m/s	P
5	Wind Speed max error below 5m/s in m/s	P	3	0.5	16	0.20	m/s	P
6	Wind Speed average % difference above 5 m/s	P	3	5	16	0.0	%	P
7	Wind Speed max % difference above 5 m/s	P	3	5	16	0.0	%	P
8	Wind Speed Torque average error	P	3	0.5	1	0.40	g-cm	P
9	Wind Speed Torque max error	P	3	0.5	1	0.4	g-cm	P
10	Wind Direction Input Deg True average error (de	P	2	5	16	0.8	degrees	P
11	Wind Direction Input Deg True max error (deg)	P	2	5	16	2	degrees	P
12	Wind Direction Linearity average error (deg)	P	2	5	32	0.8	degrees	P
13	Wind Direction Linearity max error (deg)	P	2	5	32	2	degrees	P
14	Wind Direction Torque average error	P	2	30	1	12	g-cm	P
15	Wind Direction Torque max error	P	2	30	1	12	g-cm	P
16	Temperature average error	P	4	0.5	3	0.21	c	P
17	Temperature max error	P	4	0.5	3	0.49	c	P
18	Relative Humidity average above 85%	P	6	10	1	1.1	%	P
19	Relative Humidity max above 85%	P	6	10	1	1.1	%	P
20	Relative Humidity average below 85%	P	6	10	2	1.8	%	P
21	Relative Humidity max below 85%	P	6	10	2	1.9	%	P
22	Solar Radiation % diff of avg	P	9	10	8	2.45	%	P
23	Solar Radiation % diff of max STD value	P	9	10	8	1.1	%	P
24	Ozone Slope	P	0	1.1	4	0.98550	unitless	P
25	Ozone Intercept	P	0	5	4	0.77873	ppb	P
26	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
27	Ozone % difference avg	P	7	10	4	1.0	%	P
28	Ozone Absolute Difference g1	P	7	3	1	0.96	ppb	P
29	Ozone Absolute Difference g2	P	7	1.5	1	0.32	ppb	P
30	Flow Rate average % difference	P	10	5	4	1.96	%	P
31	Flow Rate max % difference	P	10	5	4	1.96	%	P
32	DAS Voltage average error	P	7	0.003	84	0.0000	V	P
33	Surface Wetness Response	P	12	0.5	1	1.02		P

iteVisitDate	Site	Technician				
09/22/2020	BEL116	Eric Hebert				
34 Shelter	Temperature average error	P	5	2	21	1.18
35 Shelter	Temperature max error	P	5	2	21	1.72

Field Performance Comments

1 Parameter: Temperature2meter SensorComponent: Properly Sited CommentCode: 5

The site is over-grown with underbrush making it difficult to check site equipment. The underbrush is beginning to encroach on the lower instrumentation.

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.

2 Parameter: MetSensorComme

The trees are encroaching on the lower temperature sensor and tipping bucket rain gauge.

Data Compiled: 1

1/19/2021 15:08:20

SiteVisitDate Site Technician

08/22/2020 CAD150 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.94902	unitless	P
2	Ozone Intercept	P	0	5	4	1.27959	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	P
4	Ozone % difference avg	P	7	10	4	3.8	%	P
5	Ozone Absolute Difference g1	P	7	3	1	1.65	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	0.65	ppb	P

Data Compiled:

1/15/2021 17:30:05

SiteVisitDate Site Technician

08/27/2020 CAN407 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.19	c	P
2	Temperature2meter max error	P	5	0.5	3	0.35	c	P
3	Ozone Slope	P	0	1.1	4	0.98565	unitless	P
4	Ozone Intercept	P	0	5	4	-0.03337	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99997	unitless	P
6	Ozone % difference avg	P	7	10	4	2.0	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.36	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.32	ppb	P
9	Flow Rate average % difference	P	10	5	12	0.86	%	P
10	Flow Rate max % difference	P	10	5	12	1.22	%	P
11	DAS Voltage average error	P	1	0.003	7	0.0002	V	P
12	Shelter Temperature average error	P	5	2	21	0.56	c	P
13	Shelter Temperature max error	P	5	2	21	0.79	c	P

	SiteVisitDate	Site	Technician
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08/27/2020

CAN407

Martin Valvur

Field Systems Comments

1 Parameter: DasComments

The shelter heating and air conditioning systems are both operating simultaneously.

2 Parameter: SitingCriteriaCom

The small parking lot at the visitors center is approximately 200m to the northeast.

3 Parameter: ShelterCleanNotes

The shelter is in good condition, well organized and well maintained.

Data Compiled:

1/22/2021 11:30:55

SiteVisitDate Site Technician

09/29/2020 CAVE Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	2	0.61	c	Fail
2	Temperature2meter max error	P	5	0.5	2	0.78	c	Fail
3	Ozone Slope	P	0	1.1	4	0.98485	unitless	P
4	Ozone Intercept	P	0	5	4	1.5469	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99997	unitless	P
6	Ozone % difference avg	P	7	10	4	2.9	%	P
7	Ozone Absolute Difference g1	P	7	3	1	1.98	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	0.94	ppb	P
9	DAS Voltage average error	P	8	0.003	7	0.0003	V	P
10	Shelter Temperature average error	P	5	2	3	0.70	c	P
11	Shelter Temperature max error	P	5	2	3	0.72	c	P

09/29/2020

CAVE

Martin Valvur

Field Systems Comments

1 Parameter: SiteOpsProcComm

Dry deposition samples are not collected at this site.

2 Parameter: DasComments

The instruments are being operated in a temporary building with no sample tower. The building is not grounded and there is no lightning protection for the signals.

3 Parameter: SiteOpsProcedures

There is no regular site operator at this time.

4 Parameter: DocumentationCo

The site is not visited on a regular weekly basis. The site is only visited at the direction of ARS if an instrument is not responding properly.

5 Parameter: ShelterCleanNotes

The equipment is housed in a temperary building.

6 Parameter: MetSensorComme

The 2-meter temperature sensor is temporarily mounted 1 meter above the building roof and facing south. The sensor is a combination RH/temp sensor and cannot be submerged for audit challenge. The building is likely to impact the accuracy of the measurements.

7 Parameter: PollAnalyzerCom

The ozone sample train does not have a filter at the inlet. There is a filter at the back of the monitor. The zero-air desiccant is saturated.

Data Compiled:

1/22/2021 11:01:09

SiteVisitDate Site Technician

09/28/2020 CHA467 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.42	c	P
2	Temperature2meter max error	P	5	0.5	3	0.45	c	P
3	Ozone Slope	P	0	1.1	4	0.99093	unitless	P
4	Ozone Intercept	P	0	5	4	-0.07257	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99996	unitless	P
6	Ozone % difference avg	P	7	10	4	1.4	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.18	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.29	ppb	P
9	Flow Rate average % difference	P	10	5	12	0.74	%	P
10	Flow Rate max % difference	P	10	5	12	0.80	%	P
11	DAS Voltage average error	P	13	0.003	84	0.0002	V	P
12	Shelter Temperature average error	P	5	2	21	0.92	c	P
13	Shelter Temperature max error	P	5	2	21	1.49	c	P

09/28/2020

CHA467

Martin Valvur

Field Performance Comments

1 Parameter: Temperature2meter SensorComponent: Properly Sited CommentCode: 33

The lower (delta temperature sensor) shield is not mounted at 2 meters above the ground as stated in the QAPP.

Field Systems Comments

1 Parameter: SitingCriteriaCom

A large point source is located 40 km northwest of the site, just southwest of Wilcox.

2 Parameter: ShelterCleanNotes

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

3 Parameter: PollAnalyzerCom

The zero-air desiccant is saturated with moisture.

4 Parameter: MetSensorComme

The temperature sensor is mounted on the south side of the meteorological tower, which is attached to the shelter. The temperature sensor is 4.8 meters above the ground and 2.1 meters above the white shelter roof. The reflective heat from the shelter roof may be impacting the accuracy of the measurement.

5 Parameter: MetOpMaintCom

The signal cable insulation is beginning to deteriorate particularly at the base of the meteorological tower.

Data Compiled:

1/25/2021 16:39:13

 SiteVisitDate
 Site
 Technician

 08/24/2020
 CHC432
 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99221	unitless	P
2	Ozone Intercept	P	0	5	4	0.22496	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 Absolute Difference g1	P	7	3	1	0.35	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	0.08	daa	P

Data Compiled:

1/19/2021 15:09:08

SiteVisitDate Site Technician

08/21/2020 CHE185 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.94897	unitless	P
2	Ozone Intercept	P	0	5	4	0.11020	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	P
4	Ozone % difference avg	P	7	10	4	4.9	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.33	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.52	dqq	P

Data Compiled:

12/30/2020 11:22:47

SiteVisitDate Site Technician

07/15/2020 CNT169 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99445	unitless	P
2	Ozone Intercept	P	0	5	4	0.28335	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 Absolute Difference g1	P	7	3	1	0.61	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.26	ppb	P

Data Compiled: 12/29/2020 16:43:30

SiteVisitDate Site Technician

07/06/2020 CRM435 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97287	unitless	P
2	Ozone Intercept	P	0	5	4	0.04425	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
4	Ozone % difference avg	P	7	10	4	3.0	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.29	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.57	daa	P

SiteVisitDate	Site	Technician

07/06/2020

CRM435

Martin Valvur

Field Systems Comments

1 Parameter: ShelterCleanNotes

The station monitor is located in the electrical room inside the visitors center.

2 Parameter: PollAnalyzerCom

The station does not operate a dry deposition filter system.

3 Parameter: MetSensorComme

The combination RH/temperature sensor could not be submerged for audit. It is mounted only two feet above the building roof.

Data Compiled:

12/30/2020 12:11:19

SiteVisitDate Site Technician

07/20/2020 CTH110 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	6	0.14	c	P
2	Temperature max error	P	4	0.5	6	0.24	c	P
3	Ozone Slope	P	0	1.1	4	0.95439	unitless	P
4	Ozone Intercept	P	0	5	4	-0.44109	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	5.8	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-0.42	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-1.00	ppb	P
9	Flow Rate average % difference	P	10	5	6	1.96	%	P
10	Flow Rate max % difference	P	10	5	6	1.96	%	P
11	DAS Voltage average error	P	7	0.003	70	0.0001	V	P
12	Shelter Temperature average error	P	5	2	18	0.09	c	P
13	Shelter Temperature max error	P	5	2	18	0.10	c	P

07/20/2020

CTH110

Korey Devins

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 meteorological tower has been removed and the temperature sensor has been moved to the east leg of the sample tower at 10 meters above the ground. The shield has been changed from aspirated to naturally aspirated.

2 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and a Z/S/P is performed every two weeks.

3 Parameter: SitingCriteriaCom

There is a point source north of Ithaca within 40 km of the site. The tree line is less than 50 m from the site. The siting is acceptable even with the noted exceptions. Trees and overgrowth have recently been removed from the site which has improved siting criteria.

4 Parameter: ShelterCleanNotes

The condition of the shelter walls are beginning to deteriorate.

5 Parameter: MetSensorComme

The temperature sensor is mounted on the east leg of the sample tower. The temperature sensor was found hanging loose outside of the shield.

Data Compiled:

1/19/2021 16:43:32

SiteVisitDate Site Technician

08/23/2020 CVL151 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99856	unitless	P
2	Ozone Intercept	P	0	5	4	0.72172	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
4	Ozone % difference avg	P	7	10	4	1.8	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.88	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	0.44	daa	P

Data Compiled: 1/1

1/15/2021 18:32:49

SiteVisitDate Site Technician

08/29/2020 DCP114 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99947	unitless	P
2	Ozone Intercept	P	0	5	4	0.26606	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
4	Ozone % difference avg	P	7	10	4	0.5	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.50	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	0.18	daa	P

Data Compiled:

1/15/2021 18:18:34

SiteVisitDate Site Technician

08/28/2020 DIN431 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.14	c	P
2	Temperature2meter max error	P	5	0.5	3	0.32	c	P
3	Ozone Slope	P	0	1.1	4	0.98984	unitless	P
4	Ozone Intercept	P	0	5	4	-0.43922	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99996	unitless	P
6	Ozone % difference avg	P	7	10	4	3.1	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.16	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-1.02	ppb	P
9	Flow Rate average % difference	P	10	5	12	1.57	%	P
10	Flow Rate max % difference	P	10	5	12	2.58	%	P
11	DAS Voltage average error	P	3	0.003	7	0.0003	V	P
12	Shelter Temperature average error	P	5	2	12	0.72	c	P
13	Shelter Temperature max error	P	5	2	12	0.97	c	P

SiteVisitDate	Site	Technician

08/28/2020

DIN431

Martin Valvur

Field Systems Comments

1 Parameter: DasComments

All sensors, filter pack, and ozone sample inlet are on a single, crank-down tower.

2 Parameter: SiteOpsProcedures

The site operator is not responsible for manual zero/span/precision checks, or multipoint calibrations, of the ozone analyzer.

3 Parameter: DocumentationCo

There are no hardcopies of manuals and operating procedures on-site. All documentation is available via the internet. Status of updates to documentation is evaluated during TSA by EPA.

4 Parameter: SitingCriteriaCom

A small parking lot for park service employees is located approximately 40 meters north of the site.

5 Parameter: ShelterCleanNotes

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

6 Parameter: MetSensorComme

The ambient temperature sensor is mounted approximately 8 meters from the ground and above the shelter roof.

Data Compiled:

1/14/2021 14:11:55

 SiteVisitDate
 Site
 Technician

 08/13/2020
 GLR468
 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99774	unitless	P
2	Ozone Intercept	P	0	5	4	-0.83009	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99984	unitless	P
4	Ozone % difference avg	P	7	10	4	3.7	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.31	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-1.42	daa	P

Data Compiled:

1/22/2021 09:54:23

SiteVisitDate Site Technician

09/25/2020 GRC474 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.28	c	P
2	Temperature2meter max error	P	5	0.5	3	0.35	c	P
3	Ozone Slope	P	0	1.1	4	0.97316	unitless	P
4	Ozone Intercept	P	0	5	4	-0.01397	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	2.9	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.09	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.56	ppb	P
9	Flow Rate average % difference	P	10	5	10	1.99	%	P
10	Flow Rate max % difference	P	10	5	10	2.06	%	P
11	DAS Voltage average error	P	15	0.003	84	0.0002	V	P
12	Shelter Temperature average error	P	5	2	21	0.71	c	P
13	Shelter Temperature max error	P	5	2	21	1.68	c	P

09/25/2020

GRC474

Martin Valvur

Field Performance Comments

1 Parameter: Temperature2meter SensorComponent: Properly Sited CommentCode: 33

The lower (delta temperature sensor) shield is not mounted at 2 meters above the ground as stated in the QAPP.

Field Systems Comments

1 Parameter: SiteOpsProcedures

Ozone inlet filters are changed more often if fires are burning in the area.

2 Parameter: DocumentationCo

Electronic copies of SOP and QAPP are updated and maintained online.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition, clean, neat, and well organized. Some floor tiles are missing and broken.

4 Parameter: MetSensorComme

The 2-meter temperature sensor is mounted 4.2 meters above the ground, and 1.6 meters over the reflective stainless steel shelter roof. The reflective heat from the roof is likely to impact the accuracy of the temperature measurement.

5 Parameter: MetOpMaintCom

The signal cables are beginning to deteriorate and some signal cables are exposed to the elements and not protected.

Data Compiled:

1/15/2021 16:46:07

SiteVisitDate Site Technician

08/10/2020 GRT434 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	2	0.37	c	P
2	Temperature2meter max error	P	5	0.5	2	0.48	c	P
3	Ozone Slope	P	0	1.1	4	1.02367	unitless	P
4	Ozone Intercept	P	0	5	4	0.11388	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
6	Ozone % difference avg	P	7	10	4	2.3	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.41	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	0.24	ppb	P
9	DAS Voltage average error	P	16	0.003	7	0.0001	V	P
10	Shelter Temperature average error	P	5	2	3	1.13	c	P
11	Shelter Temperature max error	P	5	2	3	1.81	c	P

SiteVisitDate	Site	Technician
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08/10/2020

GRT434

Martin Valvur

Field Systems Comments

Parameter: PollAnalyzerCom

There is no dry deposition filter pack operating at this site.

Data Compiled:

12/30/2020 11:24:38

SiteVisitDate Site Technician

07/13/2020 HWF187 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	3	0.30	c	P
2	Temperature max error	P	4	0.5	3	0.44	c	P
3	Ozone Slope	P	0	1.1	4	0.99352	unitless	P
4	Ozone Intercept	P	0	5	4	-0.48948	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 Absolute Difference g2	P	7	1.5	1	-0.51	ppb	P
8	Flow Rate average % difference	P	10	5	6	0.89	%	P
9	Flow Rate max % difference	P	10	5	6	1.34	%	P
10	DAS Voltage average error	P	7	0.003	77	0.0000	V	P
11	Shelter Temperature average error	P	5	2	21	0.22	c	P
12	Shelter Temperature max error	P	5	2	21	0.39	c	P

07/13/2020

HWF187

Korey Devins

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: SiteOpsProcComm

It was discussed with the operator that the outside filter change field on the SSRF refers to the ozone inlet filter and not the dry deposition filter pack.

2 Parameter: SiteOpsProcedures

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

3 Parameter: SitingCriteriaCom

Trees are beginning to approach the limit for ozone inlet criteria. The conditions were discussed with the site operator.

4 Parameter: ShelterCleanNotes

The shelter is in fair condition.

Data Compiled:

12/30/2020 14:19:36

SiteVisitDate Site Technician

07/22/2020 KEF112 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	18	0.12	c	P
2	Temperature max error	P	4	0.5	18	0.18	c	P
3	Ozone Slope	P	0	1.1	4	0.97185	unitless	P
4	Ozone Intercept	P	0	5	4	0.24380	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
6	Ozone % difference avg	P	7	10	4	2.7	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.63	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.47	ppb	P
9	Flow Rate average % difference	P	10	5	8	3.03	%	P
10	Flow Rate max % difference	P	10	5	8	3.25	%	P
11	DAS Voltage average error	P	7	0.003	77	0.0000	V	P
12	Shelter Temperature average error	P	5	2	18	0.39	c	P
13	Shelter Temperature max error	P	5	2	18	0.58	c	P

07/22/2020

KEF112

Korey Devins

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: SiteOpsProcedures

The inlet filter is replaced and a zero/span/precision check is performed every two weeks.

2 Parameter: SitingCriteriaCom

The site is in a clearing within the Kane Experimental Forest, the tree line is within 10 meters of the site.

3 Parameter: ShelterCleanNotes

The shelter is clean and very well organized. The floor has been replaced but the bottom of walls are beginning to deteriorate.

4 Parameter: PollAnalyzerCom

Trees to the east are within 10 meters of the ozone inlet and at the same height as the inlet.

Data Compiled:

1/14/2021 14:20:25

SiteVisitDate Site Technician

08/19/2020 MAC426 korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98289	unitless	P
2	Ozone Intercept	P	0	5	4	0.10760	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 Absolute Difference g1	P	7	3	1	0.32	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.22	ppb	P

Data Compiled:

12/30/2020 14:21:02

SiteVisitDate Site Technician

07/21/2020 MKG113 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.07	c	P
2	Temperature max error	P	4	0.5	9	0.10	c	P
3	Ozone Slope	P	0	1.1	4	0.99187	unitless	P
4	Ozone Intercept	P	0	5	4	-0.09786	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
6	Ozone % difference avg	P	7	10	4	1.5	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.26	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.4	ppb	P
9	Flow Rate average % difference	P	10	5	6	3.45	%	P
10	Flow Rate max % difference	P	10	5	6	3.87	%	P
11	DAS Voltage average error	P	7	0.003	77	0.0001	V	P
12	Shelter Temperature average error	P	5	2	18	0.55	c	P
13	Shelter Temperature max error	P	5	2	18	0.71	c	P

SiteVisitDate	Site	Technician

07/21/2020

MKG113

Korey Devins

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 Met tower has been removed and the temperature sensor is now mounted on the sample tower in a naturally aspirated shield.

2 Parameter: SiteOpsProcedures

The onsite calibration line for automatic QC checks is attached downstream of the ozone inlet filter.

3 Parameter: ShelterCleanNotes

The shelter is clean and organized and in good condition.

Data Compiled:

12/29/2020 16:44:18

SiteVisitDate Site Technician

07/08/2020 NPT006 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.25	c	P
2	Temperature max error	P	4	0.5	9	0.30	c	P
3	Ozone Slope	P	0	1.1	4	1.03208	unitless	P
4	Ozone Intercept	P	0	5	4	-0.55726	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99990	unitless	P
6	Ozone % difference avg	P	7	10	4	2.2	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.20	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.42	ppb	P
9	Flow Rate average % difference	P	10	5	3	1.45	%	P
10	Flow Rate max % difference	P	10	5	3	1.63	%	P
11	Shelter Temperature average error	P	5	2	9	0.58	c	P
12	Shelter Temperature max error	P	5	2	9	0.93	c	P

SiteVisitDate	Site	Technician

07/08/2020 NPT006 Martin Valvur

Field Performance Comments

1 Parameter: Ozone SensorComponent: Cell A Tmp. CommentCode: 99

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

Field Systems Comments

1 Parameter: DasComments

The shelter air conditioner is not functioning. The shelter temperature sensor is accurate. The ozone monitor cell temperature was above acceptable limits.

2 Parameter: SitingCriteriaCom

Site is located in wooded mountainous area.

Data Compiled:

1/21/2021 21:32:06

SiteVisitDate Site Technician

09/24/2020 PET427 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.98	c	Fail
2	Temperature2meter max error	P	5	0.5	3	1.16	c	Fail
3	Ozone Slope	P	0	1.1	4	0.98244	unitless	P
4	Ozone Intercept	P	0	5	4	-0.04845	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99997	unitless	P
6	Ozone % difference avg	P	7	10	4	2.5	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.35	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.72	ppb	P
9	Flow Rate average % difference	P	10	5	12	6.19	%	Fail
10	Flow Rate max % difference	P	10	5	12	6.19	%	Fail
11	DAS Voltage average error	P	11	0.003	77	0.0003	V	P
12	Shelter Temperature average error	P	5	2	21	1.95	c	P
13	Shelter Temperature max error	P	5	2	21	2.42	c	Fail

SiteVisitDate	Site	Technician

09/24/2020 F

PET427

Martin Valvur

Field Systems Comments

1 Parameter: SiteOpsProcComm

completing the site observation section of the SSRF was discussed with the operator. Clean gloves are now used to remove and install the dry deposition filter pack.

2 Parameter: ShelterCleanNotes

The shelter is in good condition, well organized and maintained.

Data Compiled:

1/14/2021 12:10:13

 SiteVisitDate
 Site
 Technician

 08/08/2020
 PND165
 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97310	unitless	P
2	Ozone Intercept	P	0	5	4	-0.76266	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99997	unitless	P
4	Ozone % difference avg	P	7	10	4	5.5	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.31	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-1.48	daa	P

Data Compiled:

12/30/2020 15:18:15

SiteVisitDate Site Technician

07/27/2020 PSU106 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	15	0.13	c	P
2	Temperature max error	P	4	0.5	15	0.31	c	P
3	Ozone Slope	P	0	1.1	4	0.99347	unitless	P
4	Ozone Intercept	P	0	5	4	-0.54192	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	2.3	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-0.53	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.68	ppb	P
9	Flow Rate average % difference	P	10	5	8	3.85	%	P
10	Flow Rate max % difference	P	10	5	8	3.85	%	P
11	DAS Voltage average error	P	7	0.003	77	0.0001	V	P
12	Shelter Temperature average error	P	5	2	18	0.33	c	P
13	Shelter Temperature max error	P	5	2	18	0.48	c	P

SiteVisitDate Site Te

07/27/2020

PSU106

Korey Devins

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 meteorological tower has been removed.

2 Parameter: SitingCriteriaCom

The site is within 10 km of State College which has a population of approximately 50,000. The site is located in a university agricultural research field.

3 Parameter: ShelterCleanNotes

The shelter is owned by the university and is clean and orderly. The site is part of the Surfrad network.

4 Parameter: MetOpMaintCom

The 10-meter temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Data Compiled:

1/22/2021 11:47:41

SiteVisitDateSiteTechnician09/29/2020RED004Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	12	0.19	c	P
2	Temperature max error	P	4	0.5	12	0.39	c	P
3	Flow Rate average % difference	P	10	5	3	2.76	%	P
4	Flow Rate max % difference	P	10	5	3	5.64	%	Fail

SiteVisitDate	Site	Technician

09/29/2020 RED004 Eric Hebert

Field Systems Comments

1 Parameter: DocumentationCo

There is no site logbook and all manuals are kept electronically since the site is a small footprint site with no place to store hardcopies.

2 Parameter: SitingCriteriaCom

The site has been cleared approximately 8 meters around the base of the tower.

3 Parameter: ShelterCleanNotes

Small footprint site with enclosure for instruments only. No shelter.

Data Compiled:

1/19/2021 23:15:30

SiteVisitDate Site Technician

09/30/2020 VOY413 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98621	unitless	P
2	Ozone Intercept	P	0	5	4	-0.03828	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99994	unitless	P
4	Ozone % difference avg	P	7	10	4	2.1	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.53	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.43	ppb	P

Data Compiled:

1/1/2021 10:14:36

SiteVisitDate Site Technician

07/30/2020 WSP144 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97793	unitless	P
2	Ozone Intercept	P	0	5	4	-0.48678	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
4	Ozone % difference avg	P	7	10	4	3.9	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.32	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.88	ppb	P

Data Compiled:

1/21/2021 21:56:43

SiteVisitDate Site Technician

09/25/2020 WST109 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	6	0.08	c	P
2	Temperature max error	P	4	0.5	6	0.10	c	P
3	Ozone Slope	P	0	1.1	4	1.00016	unitless	P
4	Ozone Intercept	P	0	5	4	-0.21124	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	0.8	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-0.12	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.35	ppb	P
9	Flow Rate average % difference	P	10	5	2	0.67	%	P
10	Flow Rate max % difference	P	10	5	2	0.67	%	P
11	DAS Voltage average error	P	7	0.003	63	0.0002	V	P
12	Shelter Temperature average error	P	5	2	18	0.87	c	P
13	Shelter Temperature max error	P	5	2	18	1.13	c	P

SiteVisitDate	Site	Technician

09/25/2020

WST109

Korey Devins

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: SiteOpsProcedures

Ozone sample train leak checks are being conducted every two weeks.

2 Parameter: SitingCriteriaCom

The site is in a small clearing surrounded by mountain forest.

3 Parameter: SiteOKNotes

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

4 Parameter: MetSensorComme

The temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Data Compiled:

1/14/2021 13:50:01

 SiteVisitDate
 Site
 Technician

 08/11/2020
 YEL408
 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98725	unitless	P
2	Ozone Intercept	P	0	5	4	-0.28452	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
4	Ozone % difference avg	P	7	10	4	2.4	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.01	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.57	daa	P

EEMS Spot Report

Data Compiled:

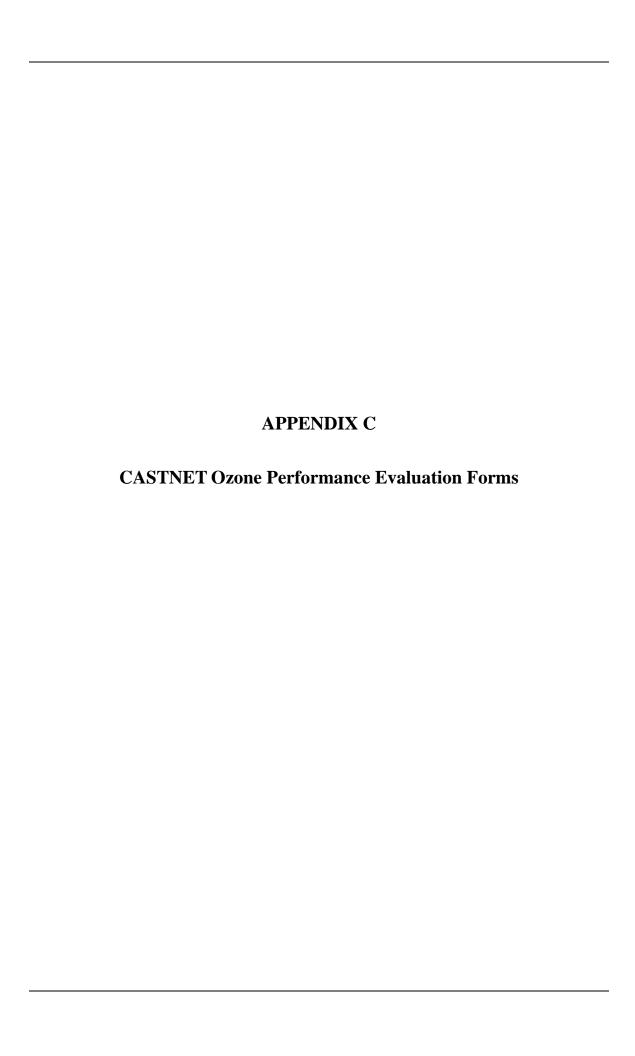
1/14/2021 14:56:58

 SiteVisitDate
 Site
 Technician

 08/26/2020
 ZIO433
 Martin Valvur

Records with valid pass/fail criteria

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.01491	unitless	P
2	Ozone Intercept	P	0	5	4	-1.38144	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
4	Ozone % difference avg	P	7	10	4	2.4	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-1.57	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-1.11	pph	P



Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CNT	169-Martir	ı Valvur-07/15/2020				
1	7/15/2020	DAS	Campbell	000427	CR3000	2526
2	7/15/2020	Ozone	ThermoElectron Inc	000620	49i A1NAA	1009241793
3	7/15/2020	Ozone Standard	ThermoElectron Inc	000687	49i A3NAA	1030244809
4	7/15/2020	Zero air pump	Werther International	06925	C 70/4	000836220

Slope: Intercept CorrCoff:		009241793	CNT16							
Intercept	0.9			9	Ma	artin Valvur	07/15/2020	Ozone		000620
			rcept	0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-3			ozone c. Ozone primary stan
DAS 1:		D.	AS 2:			Slope	1.0026	30 Inter	rcent	0.03590
A Avg % Diff	f: A Ma	x % Dif A	Avg %Diff A	Max %	% Dif	_			_	
0.0%	o	0.0%				Cert Date	1/14/20	20 Corr	Coff	0.99999
UseDescript	ion C	ConcGroup	Tfer Raw	Tf	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary		1	0.20		0.16	0.77	ppb			0.61
primary		2	14.81	1	14.73	14.47	ppb			-0.26
primary		3	34.86	3	34.73	34.74	ppb		0.03	
primary		4	64.64		54.43	64.66	ppb		0.36	
primary		5	112.86		12.53	112.10	ppb		-0.38	
Sensor Con	nponent					on 530 mmHg	ppo	Status		
Sensor Con					Condition	on Good		Status		
	_		stance from roa	d met	Condition			Status		
	_			u met						
Sensor Con	_					on Clean		Status		
	_		unobstructed r		Condition			Status	pass	
Sensor Com	nponent	Tree dewlin	e >10m or belov	w inlet	Condition	on True		Status	pass	
Sensor Con	nponent	Offset			Condition	on -0.3		Status	pass	
Sensor Con	nponent	Span			Condition	on 1.011		Status	pass	
Sensor Com	nponent	Zero Voltag	e		Condition	on N/A		Status	pass	
Sensor Con	nponent	Fullscale Vo	oltage		Condition	on N/A		Status	pass	
Sensor Con	nponent	Cell A Freq.			Condition	on 98.0 kHz		Status	pass	
Sensor Con	nponent	Cell A Noise	Э		Condition	on 0.6 ppb		Status	pass	
Sensor Con	nponent	Cell A Flow			Condition	on 0.57 lpm		Status	pass	
Sensor Con	nponent	Cell A Press	sure		Condition	on 509.2 mmHg		Status	pass	
Sensor Con	nponent	Cell A Tmp.			Condition	on 36.3 C		Status	pass	
Sensor Con	nponent	Cell B Freq.			Condition	on 102.6 kHz		Status	pass	
Sensor Con	nponent	Cell B Noise	9		Condition	on 0.9 ppb		Status	pass	
Sensor Con	nponent	Cell B Flow			Condition	on 0.57 lpm		Status	pass	
Sensor Con	nponent	Cell B Press	sure		Condition	on 508.9 mmHg		Status	pass	
Sensor Con	nponent	Line Loss			Condition	on Not tested		Status	pass	
Sensor Con	nponent	System Mei	mo		Condition	on		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
WSP	144-Korey	Devins-07/30/2020				
1	7/30/2020	DAS	Campbell	000430	CR3000	2525
2	7/30/2020	Ozone	ThermoElectron Inc	000745	49i A1NAA	1105347310
3	7/30/2020	Ozone Standard	ThermoElectron Inc	000543	49i A3NAA	0929938240
4	7/30/2020	Zero air pump	Werther International	06880	C 70/4	000814273

Mfg		Serial Numbe	er Tag S	ite	Tee	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1105347310	V	WSP144	Ko	rey Devins	07/30/2020	Ozone		000745
Slope: Intercept CorrCoff:	-(0.99999 Cor	rcept _ rCoff: _	0.0000 0.0000 0.0000	0	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114			ozone Ozone primary stan
DAS 1: A Avg % D	oiff• A M	DA Iax % Dif A	AS 2: Avg %D	oiff A Max (% Dif	Slope	0.999	50 Inter	rcept	0.29010
	0%	0.0%	111g /0D		70 DII	Cert Date	1/14/20	20 Corr	Coff	0.99999
UseDescri prima prima	ry ry	ConcGroup 1 2 3	Tfer I 0.4 15.3	-1 58	fer Corr 0.11 15.29 34.68	Site -0.21 14.41 33.22	Site Unit ppb ppb ppb	RelPer	Dif	AbsDif -0.32 -0.88
prima		4	67.0		67.39	65.47	ppb		-2.89	
prima	ry	5	110.	.01 1	109.77	106.90	ppb		-2.65	
Sensor C	ompone	Audit Pressi	ure		Condition	752.5 mmHg		Status	pass	
Sensor C	ompone	nt Sample Trai	in		Condition	Good		Status	pass	
Sensor C	ompone	nt Minimum dis	stance fro	om road met	Condition	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition		Condition	On Clean		Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstru	ucted rule	Condition	on True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m o	or below inlet	Condition	On True		Status	pass	
Sensor C	ompone	nt Offset			Condition	0.000		Status	pass	
Sensor C	ompone	nt Span			Condition	on 1.013		Status	pass	
Sensor C	ompone	nt Zero Voltage	e		Condition	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage		Condition	N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq.			Condition	89.0 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise)		Condition	0.8 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow			Condition	0.69 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	sure		Condition	730.6 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.			Condition	37.4 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.			Condition	90.1 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise)		Condition	0.8 ppb		Status	pass	
Sensor C	ompone	Cell B Flow			Condition	0.72 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	sure		Condition	731.5 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss			Condition	Not tested		Status	pass	
	ompono	nt System Mer	no		Condition	on		Status		

Site V	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PNDI	165-Martii	n Valvur-08/08/2020				
1	8/8/2020	DAS	Campbell	000403	CR3000	2516
2	8/8/2020	Ozone	ThermoElectron Inc	000621	49i A1NAA	1009241798
3	8/8/2020	Ozone Standard	ThermoElectron Inc	000435	49i A3NAA	CM08200011
4	8/8/2020	Zero air pump	Werther International	06881	C 70/4	000815264

Mfg		Serial Numb	er Tag S	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	ctron Inc	1009241798		PND165		M	artin Valvur	08/08/2020	Ozone		000621
Slope: Intercept CorrCoff:	-		pe: ercept rCoff:	0.	.00000		Mfg Serial Number	ThermoElectron			ozone Ozone primary stan
							Tfer ID	01110			
DAS 1:			AS 2:	D.100 4 7		D10	Slope	1.002	60 Inter	rcept	0.03590
		Max % Dif A	Avg %l	Diff A	Max %	Dif	Cert Date	1/14/20	20 Corr	·Coff	0.99999
0.	0%	0.0%					34742400				
UseDescr	iption	ConcGroup	Tfer	Raw	Tfer	Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	ry	1	0.0			.01	-0.30	ppb			-0.31
prima	ry	2		.30		5.22	13.74	ppb			-1.48
prima	ry	3	37.	.79	37	.65	35.69	ppb		-5.34	
prima	ry	4	69.	.00	68	3.78	66.01	ppb		-4.11	
prima	ry	5	114	1.58	114	4.24	110.60	ppb		-3.24	
Sensor C	ompone	nt Audit Press	ure		(Conditi	on 579 mmHg		Status	pass	
Sensor C	ompone	nt Sample Tra	in			Conditi	on Good		Status	pass	
Sensor C	ompone	nt Minimum d	stance fr	om road	met (Conditi	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter (Condition		(Conditi	on Clean		Status	pass	
Sensor C	ompone	nt 26.6 degree	e unobstr	ucted rule	e (Conditi	on True		Status	pass	
Sensor C	ompone	nt Tree dewlin	ie >10m	or below	inlet (Conditi	on True		Status	pass	
Sensor C	ompone	ont Offset				Conditi	on -0.2		Status	pass	
Sensor C	ompone	nt Span				Conditi	on 1.002		Status	pass	
Sensor C	ompone	nt Zero Voltag	je			Conditi	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale V	oltage		(Conditi	on N/A		Status	pass	
Sensor C	ompone	cnt Cell A Freq				Conditi	on 101.6 kHz		Status	pass	
Sensor C	ompone	cell A Nois	е			Conditi	on 0.6 ppb		Status	pass	
Sensor C	ompone	Cell A Flow				Conditi	on 0.62 lpm		Status	pass	
Sensor C	ompone	Cell A Pres	sure			Conditi	on 566.6 mmHg		Status	pass	
Sensor C	ompone	cell A Tmp				Conditi	on 38.0 C		Status	pass	
Sensor C	ompone	Cell B Freq			(Conditi	on 90.2 kHz		Status	pass	
Sensor C	ompone	cell B Nois	e				on 0.5 ppb		Status	pass	
Sensor C	ompone	Cell B Flow			(Conditi	on 0.63 lpm		Status	pass	
Sensor C	ompone	Cell B Pres	sure				on 566.0 mmHg		Status		
Sensor C	ompone	Line Loss			(Conditi	on Not tested		Status	pass	
Sensor C	ompone	System Me	mo			Conditi	on		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
YEL4	108-Martin	Valvur-08/11/2020				
1	8/11/2020	DAS	Environmental Sys Corp	None	8832	A4888K
2	8/11/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	1172090002
3	8/11/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAB	0926938287
4	8/11/2020	Zero air pump	Werther International	none	PC 70/4	000836215

Mfg	Serial Number	er Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1172090002	YEL408	1	Martin Valvur	08/11/2020	Ozone	none
Intercept		rcept	0.00000	Mfg Serial Number	ThermoElectron 49CPS-70008-36		ozone c. Ozone primary stan
CorrCoff:	0.99999 Cor	rCoff:	0.00000	Tfer ID	01110		
DAS 1:	D	AS 2:		Slope	1.0026	0 Intercept	0.03590
A Avg % Diff: A N	Max % Dif A	Avg %Diff A	Max % Dif	The state of the s	1/14/202		0.99999
0.0%	0.0%			Cert Date	1/14/202	0 CorrCoff	0.99999
UseDescription	ConcGroup	Tfer Raw	Tfer Co	r Site	Site Unit	RelPerDif	AbsDif
primary	1	0.11	0.07	0.08	ppb		0.01
primary	2	15.86	15.78	15.21	ppb		-0.57
primary	3	38.42	38.28	37.29	ppb	-2.62	
primary	4	63.84	63.63	62.35	ppb	-2.03	
primary	5	112.25	111.92	110.40	ppb	-1.37	
Sensor Compone	ent Audit Press	ure	Conc	lition 574.2 mmHg		Status pass	
Sensor Compone	ent Sample Tra	in	Conc	lition Good		Status pass	
Sensor Compone	ent Minimum di	stance from road	d met Cond	lition True		Status pass	
Sensor Compone	ent Inlet Filter C	Condition	Conc	lition Clean		Status pass	
Sensor Compone	ent 26.6 degree	unobstructed ru	ile Cond	lition False		Status Fail	
Sensor Compone	Tree dewlin	e >10m or below	inlet Cond	lition False		Status Fail	
Sensor Compone	ent Offset		Conc	lition -0.1		Status pass	
Sensor Compone	ent Span			lition 0.978		Status pass	
Sensor Compone		e		lition N/A		Status pass	
Sensor Compone				lition N/A		Status pass	
Sensor Compone				lition 108.2 kHz		Status pass	
Sensor Compone				lition 0.9 ppb		Status pass	
•							
Sensor Compone				lition 0.64 lpm		Status pass	
Sensor Compone				dition 557.3 mmHg		Status pass	
Sensor Compone				lition 34.4 C		Status pass	
Sensor Compone	Cell B Freq.			lition 69.9 kHz		Status pass	
Sensor Compone	ent Cell B Noise	9	Conc	lition 0.8 ppb		Status pass	
Sensor Compone	Cell B Flow		Conc	dition 0.67 lpm		Status pass	
Sensor Compone	ent Cell B Press	sure	Cond	lition 557.0 mmHg		Status pass	
Sensor Compone	ent Line Loss		Conc	lition Not tested		Status pass	
Sensor Compone	ent System Mer	no	Conc	lition		Status pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GLR	468-Martir	ı Valvur-08/13/2020				
1	8/13/2020	DAS	Environmental Sys Corp	None	8864	C2600
2	8/13/2020	Ozone	ThermoElectron Inc	none	49i A3NCA	1201477661
3	8/13/2020	Ozone Standard	ThermoElectron Inc	none	49i A3NAA	0733726104
4	8/13/2020	Zero air pump	Werther International	none	PC70/4	000756725

Mfg	Serial Number	er Tag Site	ŗ	Fechnician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1201477661	GLR468	3	Martin Valvur	08/13/2020	Ozone	none
Intercept		rcept	0.00000 0.00000 0.00000	Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-36 01110		ter ozone Sc. Ozone primary stan
DAS 1:	D	AS 2:		Slope	1.0026	0 Intercept	0.03590
A Avg % Diff: A N	Max % Dif A	Avg %Diff A	Max % Dif			_ •	0.99999
0.0%	0.0%			Cert Date	1/14/202	CorrCoff	0.99999
UseDescription	ConcGroup	Tfer Raw	Tfer Con	r Site	Site Unit	RelPerDif	AbsDif
primary	1	0.12	0.08	0.39	ppb		0.31
primary	2	18.39	18.15	16.73	ppb		-1.42
primary	3	36.01	35.58	33.99	ppb	-4.57	
primary	4	69.03	68.24	66.76	ppb	-2.19	
primary	5	117.63	116.31	115.80	ppb	-0.44	
Sensor Compone	ent Audit Pressi	ure	Cond	ition 682.5 mmHg		Status pass	
Sensor Compone	ent Sample Trai	'n	Cond	ition Good		Status pass	
Sensor Compone	ent Minimum dis	stance from road	I met Cond	ition True		Status pass	
Sensor Compone	ent Inlet Filter C	ondition	Cond	ition Clean		Status pass	
Sensor Compone	ent 26.6 degree	unobstructed ru	le Cond	ition False		Status fail	
Sensor Compone	Tree dewline	e >10m or below	inlet Cond	ition True		Status pass	
Sensor Compone	Offset		Cond	ition 0.6		Status pass	
Sensor Compone	ent Span		Cond	ition 1.017		Status pass	
Sensor Compone	Zero Voltage	9	Cond	ition 0.0005		Status pass	
Sensor Compone	Fullscale Vo	ltage	Cond	ition 1.0007		Status pass	
Sensor Compone	ent Cell A Freq.		Cond	ition 97.1 kHz		Status pass	
Sensor Compone	ent Cell A Noise)	Cond	ition 0.9 ppb		Status pass	
Sensor Compone	Cell A Flow		Cond	ition 0.65 lpm		Status pass	
Sensor Compone	Cell A Press	sure	Cond	ition 669.9 mmHg		Status pass	
Sensor Compone	Cell A Tmp.		Cond	ition 32.5 C		Status pass	
Sensor Compone	Cell B Freq.		Cond	ition 82.2 kHz		Status pass	
Sensor Compone	Cell B Noise)	Cond	ition 0.8 ppb		Status pass	
Sensor Compone	Cell B Flow		Cond	ition 0.67 lpm		Status pass	
Sensor Compone	Cell B Press	sure		ition 669.3 mmHg		Status pass	
Sensor Compone	Line Loss		Cond	ition Not tested		Status pass	
Sensor Compone	System Mer	no	Cond	ition		Status pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
MAC	3426-korey	Devins-08/19/2020				
1	8/19/2020	DAS	Environmental Sys Corp	none	8832	unknown4
2	8/19/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	1030745085
3	8/19/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1015543061
4	8/19/2020	Zero air pump	Werther International	none	PC70/4	606489

Mfg	Serial Numbe	r Tag Site	ר	Гесhnician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1030745085	MAC426	6	korey Devins	08/19/2020	Ozone	none
Slope:	0.98289 Slop	e: (0.00000	Mfg	ThermoElectron	Inc Paramet	er ozone
•			0.00000	Serial Number	1180030022	Tfer Des	c. Ozone primary stan
CorrCoff:	0.99999 Cori	:Coff:	0.00000	Tfer ID	01114		
DAS 1:	D A	AS 2:		Slope	0.9995	50 Intercept	0.29010
A Avg % Diff: A M			Max % Dif	Slope			
0.0%	0.0%			Cert Date	1/14/202	20 CorrCoff	0.99999
UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.31	0.01	0.33	ppb		0.32
primary	2	14.57	14.28	14.06	ppb		-0.22
primary	3	33.66	33.38	32.78	ppb	-1.81	
primary	4	66.60	66.34	65.20	ppb	-1.73	
primary	5	110.55	110.31	108.65	ppb	-1.52	
Sensor Compone	nt Audit Pressu	ıre	Cond	739.3 mmHg		Status pass	
Sensor Compone	nt Sample Trai	n	Cond	ition Good		Status pass	
Sensor Compone	nt Minimum dis	stance from road	I met Cond	ition True		Status pass	
Sensor Compone	nt Inlet Filter C	ondition	Cond	ition Clean		Status pass	
Sensor Compone	nt 26.6 degree	unobstructed ru	le Condi	ition True		Status pass	
Sensor Compone	nt Tree dewline	e >10m or below	inlet Cond	ition True		Status pass	
Sensor Compone	nt Offset		Cond	ition -0.1		Status pass	
Sensor Compone	nt Span		Cond	1.003		Status pass	
Sensor Compone	nt Zero Voltage	Э	Cond	ition N/A		Status pass	
Sensor Compone	nt Fullscale Vo	ltage	Cond	ition N/A		Status pass	
Sensor Compone	nt Cell A Freq.		Cond	ition 98.1 kHz		Status pass	
Sensor Compone	nt Cell A Noise		Cond	ition 0.8 ppb		Status pass	
Sensor Compone	nt Cell A Flow		Cond	ition 0.77 lpm		Status pass	
Sensor Compone	nt Cell A Press	ure	Cond	731.5 mmHg		Status pass	
Sensor Compone	cell A Tmp.		Cond	ition 33.9 C		Status pass	
Sensor Compone	nt Cell B Freq.		Cond	ition 105.6 kHz		Status pass	
Sensor Compone	nt Cell B Noise		Cond	ition 0.6 ppb		Status pass	
Sensor Compone	nt Cell B Flow		Cond	ition 0.77 lpm		Status pass	
Sensor Compone	nt Cell B Press	ure	Cond	ition 732.4 mmHg		Status pass	
Sensor Compone	nt Line Loss		Cond	ition Not tested		Status Pass	
Sensor Compone	nt System Mer	no	Cond	ition		Status pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
СНЕ	E185-Eric H	lebert-08/21/2020				
1	8/21/2020	DAS	Environmental Sys Corp	120283	8832	A0382
2	8/21/2020	Ozone	Ecotech	87161	EC9810B	10-0064
3	8/21/2020	Zero air pump	Ecotech	none	8301LC	01-0658

Mfg		Serial Numbe	r Tag Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
Ecotech		10-0064	CHE18	5	Er	ic Hebert	08/21/2020	Ozone		87161
Slope: Intercept CorrCoff:	ı	0.99997 Cor i	rcept	0.00000		Mfg Serial Number Tfer ID	ThermoElectron 1180930075 01115	Tf	er Des	ozone c. Ozone primary stan
	oiff: A M		AS 2. Avg %Diff A	Max %	Dif	Slope	0.9949		_	0.32220
	0%	0.0%				Cert Date	1/14/20	20 Cori	Coff	0.99999
UseDescri primai primai primai	ry ry ry	ConcGroup 1 2 3 4	Tfer Raw 0.47 11.83 33.72 69.76	Tfer 0 11. 33. 68.	14 .41 .13	Site 0.47 10.89 31.56 64.95	Site Unit ppb ppb ppb ppb	RelPer	-4.85 -5.87	AbsDif 0.33 -0.52
primai	-	5	109.47	108		103.20	ppb		-4.8	
Sensor C	ompone	nt Audit Pressu	ıre	C	onditi	on 732.5 mmHg		Status	pass	
Sensor C	ompone	nt Sample Trai	n	C	onditi	on Good		Status	pass	
Sensor C	ompone	nt Minimum dis	stance from road	l met C	onditi	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition	C	onditi	on Clean		Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstructed ru	le C	onditi	on True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or below	inlet	onditi	on True		Status	pass	
Sensor C	ompone	nt Offset		C	onditi	on N/A		Status	pass	
Sensor C	ompone	nt Span		C	onditi	on 0.994		Status	pass	
Sensor C	ompone	nt Zero Voltage	9	C	onditi	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage	C	onditi	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq.		C	onditi	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Noise	.	C	onditi	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Flow				on 0.49 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure			on 701.8 torr		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		C	onditi	on 32.4 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.				on N/A		Status		
	•	nt Cell B Noise				on N/A		Status		
	_	nt Cell B Flow				on N/A		Status		
	•	nt Cell B Press	ure			on N/A		Status		
	Sensor Component Line Loss			Condition Not tested			Status			
	_	nt System Mer	no		onditi			Status		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CAD	150-Eric H	Hebert-08/22/2020				
1	8/22/2020	DAS	Campbell	000421	CR3000	2530
2	8/22/2020	Ozone	ThermoElectron Inc	000724	49i A1NAA	1105347328
3	8/22/2020	Ozone Standard	ThermoElectron Inc	000439	49i A3NAA	CM08200015
4	8/22/2020	Zero air pump	Werther International	06937	C 70/4	000821896

Mfg		Serial Numbe	er Tag	Site		Tec	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1105347328		CAD150		Eri	ic Hebert	08/22/2020	Ozone		000724
Slope: Intercept CorrCoff:	1		e: rcept rCoff:	0.	00000 00000 00000		Mfg Serial Number Tfer ID	ThermoElectron 1180930075 01115			er ozone c. Ozone primary stan
DAS 1:		D	AS 2:				Slope	0.994	90 Inte	rcept	0.32220
		lax % Dif A	Avg %	Diff A N	Max % Di	f	Cert Date	1/14/20	20 Cori	rCoff	0.99999
0.0	0%	0.0%				[- Cert Bute		Corr		
UseDescri	•	ConcGroup		Raw	Tfer Co	orr	Site	Site Unit	RelPe	:Dif	AbsDif
prima: prima:	•	2		.37	0.04	<u> </u>	1.69	ppb ppb			1.65 0.65
prima	•	3		1.92	34.32		33.30	ppb		-3.02	0.03
prima	ry	4).24	69.36		67.15	ppb		-3.24	
prima	ry	5	109	9.38	108.19		104.10	ppb		-3.85	
Sensor C	omponei	Audit Press	ure		Con	ditio	752.6 mmHg		Status	pass	
Sensor C	omponei	Sample Tra	in		Con	ditio	Good		Status	pass	
Sensor C	omponei	nt Minimum di	stance f	rom road r	met Con	ditio	n True		Status	pass	
Sensor C	omponei	nt Inlet Filter C	ondition	າ	Con	ditio	Clean		Status	pass	
Sensor C	omponei	26.6 degree	unobst	ructed rule	Con	ditio	n True		Status	pass	
Sensor C	omponei	Tree dewline	e >10m	or below i	nlet Con	ditio	n False		Status	Fail	
Sensor C	omponei	Offset			Con	ditio	on -0.3		Status	pass	
Sensor C	omponei	Span			Con	ditio	n 1.003		Status	pass	
Sensor C	omponei	Zero Voltag	е		Con	ditio	on N/A		Status	pass	
Sensor C	omponei	Fullscale Vo	ltage		Con	ditio	on N/A		Status	pass	
Sensor C	omponei	Cell A Freq.			Con	ditio	82.5 kHz		Status	pass	
Sensor C	omponei	Cell A Noise)		Con	ditio	0.6 ppb		Status	pass	
Sensor C	omponei	Cell A Flow			Con	ditio	0.68 lpm		Status	pass	
Sensor C	omponei	Cell A Press	sure		Con	ditio	665.1 mmHg		Status	pass	
Sensor C	omponei	Cell A Tmp.			Con	ditio	37.4 C		Status	pass	
Sensor C	omponei	Cell B Freq.			Con	ditio	82.9 kHz		Status	pass	
Sensor C	omponei	Cell B Noise)		Con	ditio	0.6 ppb		Status	pass	
Sensor C	omponei	Cell B Flow			Con	ditio	0.67 lpm		Status	pass	
Sensor C	Sensor Component Cell B Pressure			Con	ditio	664.5 mmHg		Status	pass		
Sensor C	omponei	Line Loss			Con	ditio	Not tested		Status	pass	
Sensor C	omponei	System Mer	no		Con	ditio	on		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CVL	151-Eric H	lebert-08/23/2020				
1	8/23/2020	DAS	Campbell	000417	CR3000	2515
2	8/23/2020	Ozone	ThermoElectron Inc	000733	49i A1NAA	1105347322
3	8/23/2020	Ozone Standard	ThermoElectron Inc	000696	49i A3NAA	1030244812
4	8/23/2020	Zero air pump	Werther International	06909	C 70/4	000829161

Mfg		Serial Numbe	r Tag S	Site	To	echnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1105347322		CVL151	E	ric Hebert	08/23/2020	Ozone		000733
Slope: Intercept CorrCoff:	C		e: cept Coff:	0.000 0.000 0.000	00	Mfg Serial Number Tfer ID	ThermoElectron 1180930075 01115			ozone Ozone primary stan
		ax % Dif A	AS 2: Avg %I	Diff A Max	x % Dif	Slope Cert Date	0.994		rcept :Coff	0.32220
	0%	0.0%								
UseDescri	•	ConcGroup	Tfer		Γfer Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima: prima:	•	2	-0. 12.		-0.37 12.24	0.51 12.68	ppb ppb			0.88
prima	•	3	36.		36.15	36.85	ppb		1.92	
prima	•	4	69.		68.95	69.72	ppb		1.11	
prima		5	113	3.23	112.01	112.50	ppb		0.44	
Sensor C	omponer	Audit Pressi	ıre		Condit	ion 749.5 mmHg		Status	pass	
Sensor C	omponei	Sample Trai	n		Condit	ion Good		Status	pass	
Sensor C	omponei	nt Minimum dis	stance fr	om road met	Condit	ion True		Status	pass	
Sensor C	omponei	Inlet Filter C	ondition		Condit	ion Clean		Status	pass	
Sensor C	omponei	26.6 degree	unobstr	ucted rule	Condit	ion True		Status	pass	
Sensor C	omponei	Tree dewline	e >10m (or below inlet	Condit	ion False		Status	Fail	
Sensor C	omponer	Offset			Condit	ion -0.5		Status	pass	
Sensor C	omponei	Span			Condit	ion 1.025		Status	pass	
Sensor C	omponei	zero Voltage	Э		Condit	ion N/A		Status	pass	
Sensor C	omponei	Fullscale Vo	ltage		Condit	ion N/A		Status	pass	
Sensor C	omponei	Cell A Freq.			Condit	ion 86.4 kHz		Status	pass	
Sensor C	omponei	cell A Noise)		Condit	ion 0.9 ppb		Status	pass	
Sensor C	omponei	Cell A Flow			Condit	ion 0.71 lpm		Status	pass	
Sensor C	omponei	Cell A Press	ure		Condit	ion 712.8 mmHg		Status	pass	
Sensor C	omponei	Cell A Tmp.			Condit	ion 36.4 C		Status	pass	
Sensor C	omponer	Cell B Freq.			Condit	ion 91.4 kHz		Status	pass	
Sensor C	omponei	Cell B Noise)		Condit	ion 0.6 ppb		Status	pass	
Sensor C	omponei	Cell B Flow			Condit	ion 0.71 lpm		Status	pass	
Sensor C	Sensor Component Cell B Pressure			Condit	ion 713.5 mmHg		Status	pass		
Sensor C	Sensor Component Line Loss			Condit	ion Not tested		Status	pass		
Sensor C	omponer	System Mer	no		Condit	ion		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
СНС	432-Marti	n Valvur-08/24/2020				
1	8/24/2020	DAS	Environmental Sys Corp	none	8832	A4871K
2	8/24/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	CM08460049
3	8/24/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1152780006
4	8/24/2020	Zero air pump	Werther International	none	P 70/4	000756726

Mfg		Serial Numb	er Tag	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	CM0846004	9	CHC432	2	M	artin Valvur	08/24/2020	Ozone		none
Slope: Intercept CorrCoff:		0.22496 Int	pe: ercept rrCoff:	(0.0000.0		Mfg Serial Number	ThermoElectron			ozone c. Ozone primary stan
CorrCon:		1.00000	rrcon;		3.00000	<u>'</u>	Tfer ID	01110			
DAS 1:		I	DAS 2:				Slope	1.0020	60 Inte i	rcept	0.03590
A Avg % I	oiff: A N	Iax % Dif A	A Avg %	Diff A	Max %	6 Dif	-	1/14/20		_	0.99999
0.	0%	0.0%					Cert Date	1/14/20	20 Cori	Coff	0.99999
UseDescr	iption	ConcGroup	Tfe	r Raw	Tfe	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	ry	1		.25	(0.21	0.56	ppb			0.35
prima	ry	2	13	3.26	1	8.17	18.25	ppb			0.08
prima	ry	3	30	5.90	3	36.76	36.49	ppb		-0.74	
prima	ry	4	6	7.24	ϵ	57.02	66.77	ppb		-0.37	
prima	ry	5	11	8.91	1	18.56	117.90	ppb		-0.56	
Sensor C	ompone	nt Audit Pres	sure			Conditi	on 609.5 mmHg		Status	pass	
Sensor C	ompone	nt Sample Tr	ain			Conditi	on Good		Status	pass	
Sensor C	ompone	nt Minimum o	distance	from road	l met	Conditi	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter	Conditio	n		Conditi	on Moderately cle	ean	Status	pass	
Sensor C	ompone	nt 26.6 degre	e unobs	tructed ru	ile	Conditi	on True		Status	pass	
Sensor C	ompone	nt Tree dewli	ne >10m	or below	inlet	Conditi	on True		Status	pass	
Sensor C	ompone	nt Offset				Conditi	on -0.1		Status	pass	
Sensor C	ompone	nt Span				Conditi	on 0.999		Status	pass	
Sensor C	ompone	nt Zero Volta	ge			Conditi	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale \	oltage/			Conditi	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Fred	٦.			Conditi	on 96.7 kHz		Status	pass	
Sensor C	ompone	nt Cell A Nois	se			Conditi	on 0.7 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow	v			Conditi	on 0.63 lpm		Status	pass	
Sensor C	ompone	nt Cell A Pres	ssure			Conditi	on 592.5 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp).				on 32.6 C		Status	pass	
Sensor C	ompone	nt Cell B Free	٦.			Conditi	on 132.4 kHz		Status	pass	
Sensor C	ompone	nt Cell B Nois	se			Conditi	on 0.9 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow	V				on 0.63 lpm		Status	pass	
Sensor C	ompone	nt Cell B Pres	ssure				on 592.2 mmHg		Status		
Sensor C	ompone	nt Line Loss				Conditi	on Not tested		Status	pass	
Sensor C	ompone	nt System Me	emo			Conditi	on		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ZIO4	!33-Martin	Valvur-08/26/2020				
1	8/26/2020	DAS	Environmental Sys Corp	none	8816	4296
2	8/26/2020	Ozone	ThermoElectron Inc	90568	49C	49C-59348-322
3	8/26/2020	Ozone Standard	ThermoElectron Inc	90728	49C	49C-70528-366
4	8/26/2020	Zero air pump	Werther International	none	PC 70/4	000706556

Mfg	Serial Numbe	r Tag Site	T	echnician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	49C-59348-32	ZIO433	N	Martin Valvur	08/26/2020	Ozone	90568
Slope:	1.01491 Slop	e: C	0.0000	Mfg	ThermoElectron	Inc Paramet	er ozone
			0.00000	Serial Number	49CPS-70008-3	64 Tfer Des	c. Ozone primary stan
CorrCoff:	0.99999 Cori	:Coff:	0.00000	Tfer ID	01110		
DAS 1:	D A	AS 2:		Slope	1.0026	Intercept	0.03590
A Avg % Diff: A	Max % Dif A	Avg %Diff A	Max % Dif	_			
0.0%	0.0%			Cert Date	1/14/202	20 CorrCoff	0.99999
UseDescription	ConcGroup	Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif
primary	1	0.27	0.23	-1.34	ppb		-1.57
primary	2	15.71	15.63	14.52	ppb		-1.11
primary	3	36.60	36.46	35.86	ppb	-1.66	
primary	4	67.39	67.17	66.79	ppb	-0.57	
primary	5	110.01	109.68	109.85	ppb	0.15	
Sensor Compon	ent Audit Pressu	ıre	Condit	tion 661.4 mmHg		Status pass	
Sensor Compon	ent Sample Trai	n	Condit	tion Good		Status pass	
Sensor Compon	ent Minimum dis	stance from road	met Condit	tion True		Status pass	
Sensor Compon	ent Inlet Filter C	ondition	Condit	cion Clean		Status pass	
Sensor Compon	ent 26.6 degree	unobstructed ru	le Condit	tion True		Status pass	
Sensor Compon	ent Tree dewline	e >10m or below	inlet Condit	tion True		Status pass	
Sensor Compon	ent Offset		Condit	tion 1.8		Status pass	
Sensor Compon	ent Span		Condit	tion 1.043		Status pass	
Sensor Compon	ent Zero Voltage	9	Condit	tion 0.000		Status pass	
Sensor Compon	ent Fullscale Vo	ltage	Condi	1.000		Status pass	
Sensor Compon	ent Cell A Freq.		Condit	75.2 kHz		Status pass	
Sensor Compon	ent Cell A Noise		Condit	tion 0.5 ppb		Status pass	
Sensor Compon	ent Cell A Flow		Condit	tion 0.73 lpm		Status pass	
Sensor Compon	ent Cell A Press	sure	Condit	tion 645.4 mmHg		Status pass	
Sensor Compon	ent Cell A Tmp.		Condit	37.8 C		Status pass	
Sensor Compon	ent Cell B Freq.		Condit	tion 83.6 mmHg		Status pass	
Sensor Compon	ent Cell B Noise		Condit	tion 0.7 ppb		Status pass	
Sensor Compon	ent Cell B Flow		Condit	tion 0.72 lpm		Status pass	
Sensor Compon	ent Cell B Press	sure	Condit	tion 645.3 mmHg		Status pass	
Sensor Compon	ent Line Loss		Condit	tion Not tested		Status pass	
Sensor Compon	ent System Men	no	Condit	tion		Status pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
DCP	114-Korey	Devins-08/29/2020				
1	8/29/2020	DAS	Campbell	000345	CR3000	2124
2	8/29/2020	Ozone	ThermoElectron Inc	000702	49i A1NAA	1030244799
3	8/29/2020	Ozone Standard	ThermoElectron Inc	000374	49i A3NAA	0726124694
4	8/29/2020	Zero air pump	Werther International	06939	PC70/4	000829175

Mfg		Serial Numb	er Tag S	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1030244799		DCP114		Ko	orey Devins	08/29/2020	Ozone		000702
Slope: Intercept CorrCoff:			pe: ercept rCoff:	0.	00000 00000		Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114			er ozone c. Ozone primary stan
DAS 1:		П	AS 2:						T 4	4	0.29010
	oiff: A N	Max % Dif A		Diff A N	Max % l	Dif	Slope	0.999		rcept	0.29010
	0%	0.0%	11-18 / 12-				Cert Date	1/14/202	20 Cori	Coff	0.99999
UseDescr	iption	ConcGroup	Tfer	Raw	Tfer	Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima		1	0.3	39	0.0)9	0.59	ppb			0.5
prima	•	2	14.		14.	26	14.44	ppb			0.18
prima		3		.54	34.		34.42	ppb		0.47	
prima		4	67.		67.		67.18	ppb		-0.04	
prima		5		2.24	112		112.40	ppb		0.36	
	•	ent Audit Press					729.9 mmHg	PPO	Status		
Sensor C	ompone	ent Sample Tra	ain			onditi	on Good		Status	pass	
Sensor C	ompone	ent Minimum d	istance fr	om road i			on True		Status	pass	
	_	ent Inlet Filter					on Clean		Status		
	_	26.6 degre					on True		Status		
	_	ent Tree dewlir					on True		Status		
	_		1 6 > 10111 (or below i							
Sensor C	•						on -0.4		Status		
Sensor C							on 1.013		Status		
Sensor C	ompone	Zero Voltag	Zero Voltage			Condition N/A			Status	pass	
Sensor C	ompone	Fullscale V	oltage		C	onditi	on N/A		Status	pass	
Sensor C	ompone	Cell A Fred			C	onditi	on 88.0 kHz		Status	pass	
Sensor C	ompone	ent Cell A Nois	е		C	onditi	0.8 ppb		Status	pass	
Sensor C	ompone	ent Cell A Flow	1		C	onditi	on 0.58 lpm		Status	pass	
Sensor C	ompone	ent Cell A Pres	sure		C	onditi	on 707.1 mmHg		Status	pass	
Sensor C	ompone	ent Cell A Tmp			C	onditi	on 38.9 C		Status	pass	
Sensor Component Cell B Freq.			C	Condition 89.8 kHz			Status	pass			
Sensor C	Sensor Component Cell B Noise			C	Condition 0.6 ppb			Status	pass		
Sensor Component Cell B Flow			C	Condition 0.64 lpm			Status	pass			
Sensor Component Cell B Pressure			C	onditi	ndition 707.7 mmHg			pass			
Sensor C	Sensor Component Line Loss			C	onditi	on Not tested	Status				
Sensor C	ompone	ent System Me	mo			onditi			Status		
	_										

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
VOY	413-Eric H	lebert-09/30/2020				
1	9/30/2020	DAS	Environmental Sys Corp	90632	8816	2505
2	9/30/2020	Ozone	ThermoElectron Inc	90714	49C	49C-66828-354
3	9/30/2020	Ozone Standard	ThermoElectron Inc	90569	49C	49C-59260-322
4	9/30/2020	Zero air pump	Twin Tower Engineering	90719	TT70/E4	526294

Mfg		Serial Numb	er Tag Sit	te	Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	49C-66828-3	54 V	OY413	Er	ric Hebert	09/30/2020	Ozone		90714
Slope: Intercept CorrCoff:	-		ercept rCoff:	0.0000 0.0000 0.0000	00	Mfg Serial Number	ThermoElectron 1180930075			ozone Ozone primary stan
						Tfer ID	01115			
DAS 1:			AS 2:	100 1 3 5	0 (70.0	Slope	0.9949	90 Inter	cept	0.32220
		Max % Dif A	Avg %Di	iff A Max	% Dif	Cert Date	1/14/202	20 Cori	·Coff	0.99999
0.0	0%	0.0%				341240	1			
UseDescr	iption	ConcGroup	Tfer R	aw T	fer Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	ry	1	0.07		-0.25	0.28	ppb			0.53
prima	ry	2	15.2		14.78	14.35	ppb			-0.43
prima	ry	3	36.0		35.41	34.56	ppb		-2.43	
prima	ry	4	67.8		66.94	65.50	ppb		-2.17	
prima	ry	5	110.4	12	109.22	108.10	ppb		-1.03	
Sensor C	ompone	ent Audit Press	ure		Conditi	on 713.5 mmHg		Status	pass	
Sensor C	ompone	ent Sample Tra	in		Conditi	on Good		Status	pass	
Sensor C	ompone	ent Minimum d	stance fror	m road met	Conditi	on True		Status	pass	
Sensor C	ompone	ent Inlet Filter (Condition		Conditi	on Clean		Status	pass	
Sensor C	ompone	26.6 degree	e unobstruc	cted rule	Conditi	on False		Status	fail	
Sensor C	ompone	Tree dewlin	e >10m or	below inlet	Conditi	on False		Status	fail	
Sensor C	ompone	Offset			Conditi	on -0.2		Status	pass	
Sensor C	ompone	ent Span			Conditi	on 1.002		Status	pass	
Sensor C	ompone	Zero Voltag	ro Voltage			on 0.0011		Status	pass	
Sensor C	ompone	Fullscale V	oltage		Conditi	on 1.0012		Status	pass	
Sensor C	ompone	ent Cell A Freq	•		Conditi	on 83.8 kHz		Status	pass	
Sensor C	ompone	ent Cell A Nois	е		Conditi	on 0.7 ppb		Status	pass	
Sensor C	ompone	Cell A Flow			Conditi	on 0.70 lpm		Status	pass	
Sensor C	ompone	Cell A Pres	sure		Conditi	on 706.3 mmHg		Status	pass	
Sensor C	ompone	Cell A Tmp			=	on 35.4 C		Status	pass	
Sensor C	Sensor Component Cell B Freq.			Conditi	ondition 65.1 kHz			pass		
Sensor C	Sensor Component Cell B Noise			_	ondition 0.8 ppb			pass		
Sensor Component Cell B Flow				Conditi	ondition 0.73 lpm			pass		
Sensor Component Cell B Pressure			_	on 705.7 mmHg	Status	pass				
Sensor C	ompone	ent Line Loss			Conditi	on Not tested	Status	pass		
Sensor C	ompone	System Me	mo		Conditi	on		Status	pass	