2023 – 4th 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 - III

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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 Bureau of Land Management

BLM-WSO Bureau of Land Management – Wyoming State Office

CAL Central Analytical Laboratory

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
HAL Mercury Analytical Laboratory

LADCO Lake Michigan Air Directors Consortium

lpm liters per minute

ME DEP Maine Department of Environmental Protection

MD DNR Maryland Department of Natural Resources

MLM Multilayer Model

MN PCA Minnesota Pollution Control Agency

m/s meters per second

mv millivolt

NESCAUM Northeast States for Coordinated Air Use Management

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

NPS National Park Service

NYDEC New York Department of Conservation

NYSERDA New York State Energy Research and Development Authority

OH EPA Ohio Environmental Protection Agency

PE Performance Evaluation

QAPP Quality Assurance Project Plan

SLT State Local and Tribal

SCDHEC South Carolina Department of Health and Environmental Control

SFWMD South Florida Water Management District

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 Local and Tribal (SLT) air monitoring stations 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

File location 1 EEMS/transfer/clients/EPA

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

As of December 2023, the network is comprised of 92 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. WSP (formally Wood Environment and Infrastructure Solutions) 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	$-5.0 \text{ ppb} \le \text{b} \le 5.0 \text{ ppb}$
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 $\leq \pm 0.0015$ 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.

File location 3 EEMS/transfer/clients/EPA

- All ambient air quality instruments are functional, being operated in the appropriate range, and the zero-air supply desiccant is unsaturated.
- All instruments are in current calibration.
- Site documentation (maintenance schedules, on-site SOPs, etc.) is current and log book records are complete.
- All maintenance and on-site SOPs are performed on schedule.
- Corrective actions are documented and appropriate for required maintenance/repair activity.
- Site operators demonstrate an adequate knowledge and ability to perform required site activities, including documentation and maintenance activities.

1.3 CASTNET Sites Visited Fourth Quarter 2023

This report consists of the systems and performance, and other audit results from the CASTNET sites visited during the fourth quarter (October through December) of 2023. The site locations, sponsor, visit dates, and parameters audited, are included in Table 2.

Table 2. CASTNET Site Audit Visits

Site ID	Date	MET	FSA	O3 PE	SO2	СО	NOy	FLOW	Sponsor
KNZ184	10/10/2023		1					1	EPA
VOY413	10/10/2023		1	1				1	NPS
DEN417	10/11/2023			1					NPS
THR422	10/13/2023		1					1	NPS
GLR468	10/18/2023		1	1				1	NPS
HOX148	10/19/2023			1					EPA
UVL124	10/19/2023			1					EPA
ANA115	10/20/2023			1					EPA
CAV436	10/23/2023		1	1					NPS
CHA467	10/24/2023			1					NPS
GRC474	10/25/2023			1					NPS
PET427	10/26/2023			1					NPS
STK138	10/29/2023		1	1				1	EPA
PND165	10/31/2023		1	1				1	EPA / BLM- WSO

File location 4 EEMS/transfer/clients/EPA

Site ID	Date	MET	FSA	O3 PE	SO2	СО	NOy	FLOW	Sponsor
GRB411	11/6/2023			1					NPS
SHE604	11/6/2023		1					1	BLM-WSO
BUF603	11/7/2023		1					1	BLM-WSO
CTH110	11/8/2023			1					EPA
WFM105	11/9/2023		1					1	EPA
BAS601	11/9/2023			1					BLM-WSO
NIC001	11/11/2023		1					1	EPA
DUK008	11/14/2023			1					EPA
LAV410	11/14/2023		1	1				1	NPS
BFT142	11/15/2023		1	1				1	EPA
DEV412	11/20/2023		1	1					NPS
SAN189	11/27/2023		1	1				1	EPA
KIC003	11/28/2023		1					1	EPA
SPD111	12/5/2023			1					EPA
SND152	12/6/2023			1					EPA
CND125	12/22/2023		1	1				1	EPA
COW137	12/26/2023			1					EPA

1.4 CASTNET Audit Results

The observations and results of the systems, performance, and Ozone PE 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*.

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://www.epa.gov/castnet/documents-reports#QuarterlyQualityAssuranceReports

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 labs have been combined and renamed as the NADP Analytical Laboratory (NAL). 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 and their operation. 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 audits 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 Fourth Quarter 2023

This report presents the NADP sites audited during the fourth quarter (October through December) of 2023. The station locations, sponsors, network. and dates of the surveys are presented in Table 3.

Table 3. NADP Site Audit Visits

Site ID	Date	NTN	MDN	AMON	Site Sponsor	Site Name
WI10	10/5/2023	1	1		Forest County Potawatomi Community	Potawatomi
MI99	10/6/2023	1			USDA-FS	Chassell
MN97	10/9/2023		1		Unknown	Grand Portage Band of Chippewa
AK01	10/10/2023	1			USDA-FS	Poker Creek
KS31	10/10/2023			1	WSP - EPA	Konza Prairie
MN32	10/10/2023	1			National Park Service - NIFA	Voyageurs National Park- Sullivan Bay
AK03	10/11/2023	1			National Park Service - NIFA	Denali National Park-Mt. McKinley
MN23	10/12/2023	1	1		USGS / Minnesota Pollution Control Agency	Camp Ripley
ND00	10/13/2023	1			National Park Service - NIFA	Theodore Roosevelt National Park-Painted Canyon
ID11	10/16/2023	1			USGS	Reynolds Creek
ID02	10/17/2023	1			USDA-FS	Priest River Experimental Forest
MT05	10/18/2023	1	1		National Park Service - NIFA	Glacier National Park-Fire Weather Station
MI51	10/19/2023			1	WSP -EPA	Unionville
MI95	10/19/2023			1	WSP -EPA	Hoxeyville
MT96	10/19/2023	1			Fort Peck Tribes	Poplar River
MI52	10/20/2023		1		Lake Michigan Air Directors Consortium (LADCO)	Ann Arbor
IL37	10/29/2023			1	WSP -EPA	Stockton
WY06	10/31/2023		1	1	Unknown / WSP-EPA	Pinedale
NY67	11/8/2023			1	WSP -EPA	Ithaca
NY98	11/9/2023	_		1	WSP -EPA	Whiteface Mountain
WY93	11/9/2023			1	Air Resource Specialists, Inc.	Basin - Big Horn

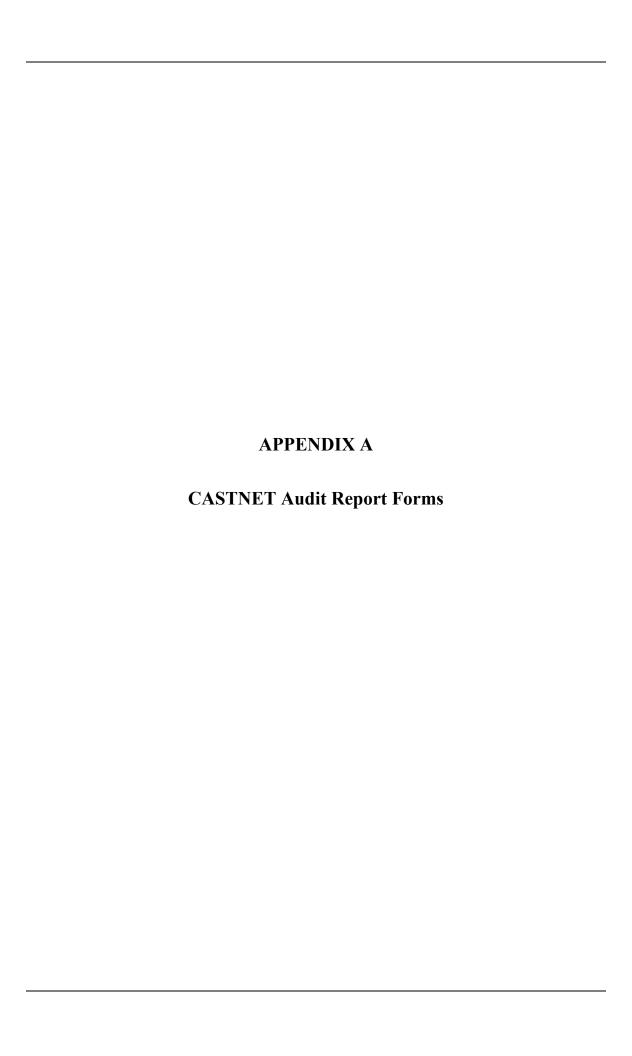
Site ID	Date	NTN	MDN	AMON	Site Sponsor	Site Name
NY94	11/11/2023			1	WSP -EPA	Nick's Lake
NY43	11/13/2023	1	1		New York State Department of Environmental Conservation	Rochester
NC06	11/15/2023			1	WSP -EPA	Beaufort
CA88	11/15/2023	1			USGS - NIFA	Davis
NE98	11/27/2023			1	WSP -EPA	Santee
KS97	11/28/2023			1	WSP -EPA	Kickapoo Tribe-Powhattan
TN04	12/5/2023	1		1	WSP -EPA	Speedwell
AL99	12/6/2023			1	WSP -EPA	Sand Mountain Research & Extension Center
NC26	12/22/2023		1		North Carolina Department of Environmental Quality	Candor
NC25	12/26/2023			1	WSP -EPA	Coweeta

2.4 NADP Audit Results

NADP site audit 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.

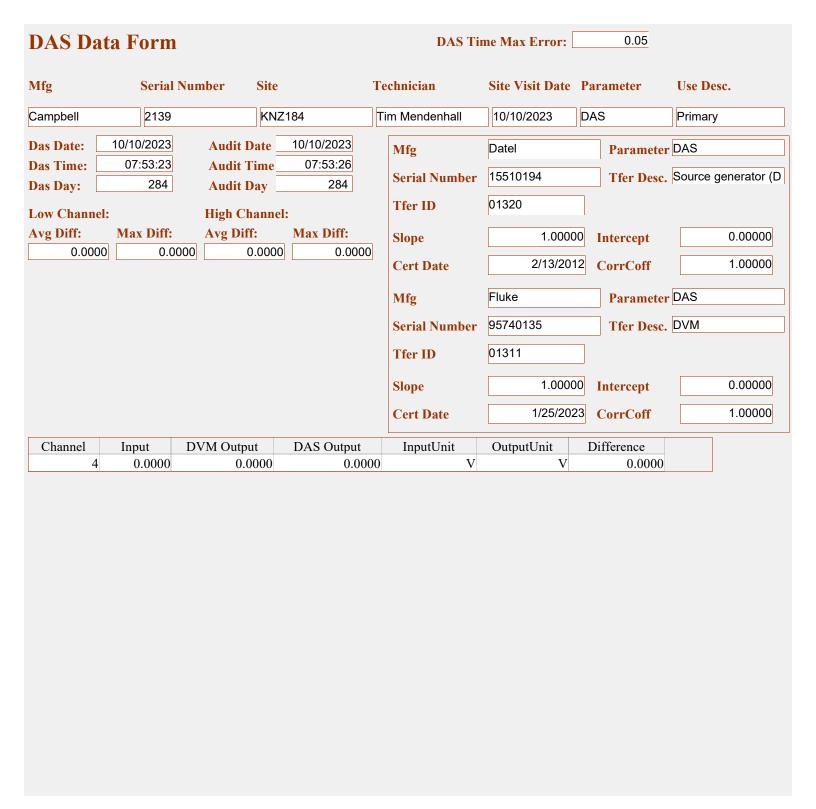
Other items gathered during the audits (i.e., photographs, Belfort charts, etc.) are uploaded to the EPA OneDrive account where the NADP PO and the U.S. EPA POs can access them and download them as needed.

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



Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
KNZ		endenhall-10/10/2023				
1	10/10/2023	Computer	Dell	07014	Inspiron 15	313MC12
2	10/10/2023	DAS	Campbell	000361	CR3000	2139
3	10/10/2023	Elevation	Elevation	None	1	None
4	10/10/2023	Flow Rate	Apex	000925	AXMC105LPMDPCV	illegible
5	10/10/2023	Infrastructure	Infrastructure	none	none	none
6	10/10/2023	Modem	Digi	07182	LR54	Illegible
7	10/10/2023	Sample Tower	Aluma Tower	missing	В	none
8	10/10/2023	Shelter Temperature	Campbell	none	107-L	none
9	10/10/2023	Siting Criteria	Siting Criteria	None	1	None
10	10/10/2023	Temperature	RM Young	06541	41432VC	14082



Flow Data Form **Technician** Site Visit Date Parameter **Owner ID** Mfg Serial Number Tag Site KNZ184 000925 Apex illegible Tim Mendenhall 10/10/2023 Flow Rate Mfg BIOS Parameter Flow Rate 148613 Tfer Desc. BIOS 220-H **Serial Number** 01421 Tfer ID 0.00000 **Slope** 1.00000 Intercept 2/23/2023 1.00000 CorrCoff **Cert Date** 0 **DAS 2: DAS 1:** Cal Factor Zero 0 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 3 0.78% 1.35% **Rotometer Reading:** Desc. Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignal PctDifference primary pump off 0.000 0.0000.00 0.0000.00 1/m1/mleak check 0.000 0.000 0.01 0.0000.01 1/ml/mprimary 2.97 0.000 1/m 1.35% test pt 1 2.961 2.960 3.00 1/mprimary 2.989 2.990 2.97 0.000 3.00 1/m1/m0.33% primary test pt 2 2.96 0.0000.67% test pt 3 2.993 2.990 3.01 1/m1/mprimary 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 5.0 cm Status pass Sensor Component Filter Depth Condition 4.0 cm Status pass Status pass **Sensor Component** Filter Azimuth Condition 360 deg Status pass Sensor Component System Memo Condition

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg RM Young 14082 KNZ184 10/10/2023 Temperature 06541 Tim Mendenhall Mfg Extech Parameter Temperature Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 0.08161 **Slope** 1.01172 **Intercept DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.05 0.14 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.16 0.08 0.0000.1 \mathbf{C} C Temp Mid Range 24.84 24.47 0.000 24.3 -0.14 primary 47.92 47.28 0.000 C primary Temp High Range 47.3 0.02 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** Campbell KNZ184 Tim Mendenhall 10/10/2023 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 H232679 **Serial Number** 0.13 0.38 01228 Tfer ID 1.01172 0.08161 **Slope** Intercept 2/17/2023 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 23.72 23.36 0.00023.4 \mathbf{C} 0.01 24.29 C Temp Mid Range 23.93 0.00023.9 -0.01

0.000

23.40

Condition

23.76

C

Status pass

0.38

23.8

primary

primary

Temp Mid Range

Sensor Component System Memo

Infrastructure Data For

Site ID KNZ184 Technician Tim Mendenhall Site Visit Date 10/10/2023

Shelter Make	Shelter Model	Shelter Size
Wells Cargo	EW1211 (s/n 1WC200E1623048028)	640 cuft

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	Fair	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Moisture Trap Type	Condition	Glass bottle and filter	Status	pass
Sensor Component	Power Cables	Condition	Fair	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	Fair	Status	pass
Sensor Component	Shelter Floor	Condition	Poor	Status	Fail
Sensor Component	Shelter walls	Condition	Fair	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
Sensor Component	System Memo	Condition		Status	pass

Siting Criteria Form

Sensor Component City > Sensor Component City 1, Sensor Component City 10	,000 to 10,000	Condition Condition	Status Status	pass
		Condition	Status	
Sensor Component City 10	0.000 to 50.000			pass
•	0,000 10 50,000	Condition	Status	pass
Sensor Component Feedlo	ot operations	Condition	Status	pass
Sensor Component Large	parking lot	Condition	Status	pass
Sensor Component Limited	d agriculture operations	Condition	Status	pass
Sensor Component Major	industrial source	Condition	Status	pass
Sensor Component Secon	ndary road < or = 100 per da	Condition	Status	pass
Sensor Component Secon	ndary road >100 vehicles/da	Condition	Status	pass
Sensor Component Small	parking lot	Condition	Status	pass
Sensor Component System	m Memo	Condition	Status	pass
Sensor Component Major	highway, airport, or rail yard	Condition	Status	pass
Sensor Component Intensi	sive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	l Problem		
Flow Rate	KNZ184	Tim Mendenhall	10/10/2023	Moisture Present	Apex	4778				
The filter sample tubing has drops of moisture in low sections outside the shelter.										

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is located at a Long Term Ecological Research site operated by KSU.

2 Parameter: ShelterCleanNotes

The shelter is very clean, neat an well organized. Although patched, he shelter floor is deteriorated and in poor condition.

3 Parameter: MetSensorComme

The temperature sensor is mounted on the north side of the sample tower.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
VOY	413-Eric H	lebert-10/10/2023				
1	10/10/2023	DAS	Environmental Sys Corp	90632	8816	2505
2	10/10/2023	Elevation	Elevation	None	1	None
3	10/10/2023	Filter pack flow pump	Thomas	none	illegible	illegible
4	10/10/2023	Flow Rate	Alicat	none	MC-10SLPM-D-PCV	Unknown
5	10/10/2023	Infrastructure	Infrastructure	none	none	none
6	10/10/2023	Ozone	ThermoElectron Inc	90714	49C	49C-66828-354
7	10/10/2023	Ozone Standard	ThermoElectron Inc	90569	49C	49C-59260-322
8	10/10/2023	Sample Tower	Aluma Tower	none	В	AT-51159-11-G
9	10/10/2023	Shelter Temperature	ARS	none	none	none
10	10/10/2023	Siting Criteria	Siting Criteria	None	1	None
11	10/10/2023	Temperature2meter	RM Young	none	41342VC	029199
12	10/10/2023	Zero air pump	Twin Tower Engineering	90719	TT70/E4	526294



Flow Data Form **Technician Owner ID** Mfg Serial Number Tag Site Site Visit Date Parameter Alicat VOY413 10/10/2023 Unknown Eric Hebert Flow Rate none Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID 0.00000 **Slope** 1.00000 Intercept 2/23/2023 1.00000 CorrCoff **Cert Date** -0.06 **DAS 2: DAS 1:** Cal Factor Zero 4.899 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 1.93% 2.05% **Rotometer Reading:** OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. Test type Input l/m Input Corr MfcDisp. primary pump off 0.0000.0000.00 0.0000.051/m1/mleak check 0.000 0.03 0.0000.08 1/ml/m0.000primary 2.99 1/m 2.05% test pt 1 2.932 2.930 1.45 0.000 1/mprimary 2.934 2.930 1.45 0.000 2.99 1/m1/m2.05% primary test pt 2 1.45 0.0001/m1.70% test pt 3 2.935 2.940 2.99 1/mprimary 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 6.0 cm

Condition 1.0 cm

Condition 270 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 Numb	er Tag	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	49C-66828-3	54	VOY41	3	Er	ic Hebert	10/10/2023	Ozone		90714
Slope: Intercept		1.01225 Slo j 0.10569 Int	pe: ercept		0.00000	_	Mfg Serial Number	ThermoElectron			ozone c. Ozone primary stan
CorrCoff:	(0.99999 Cor	rCoff:		0.00000)		01115	7		
							Tfer ID	01113			
DAS 1:	A B.A		AS 2:	D:00 A	3.7	V Dic	Slope	1.004	50 Inter	rcept	-0.25270
	0% A M	0.0%	AVg %	DIII A	Niax 7	/o DII	Cert Date	4/24/20	23 Cori	Coff	1.00000
								'	·		'
UseDescr	•	ConcGroup		r Raw		er Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	•	2		0.49 3.86		-0.19 19.00	0.18 19.22	ppb ppb			0.37
prima	•	3		2.46		32.49	32.91	ppb		1.28	0.22
prima	•	4		3.57		58.32	68.98	ppb		0.96	
prima	•	5	_	2.11		11.51	113.20	ppb		1.5	
-	•	nt Audit Press		2.11	1		721 mmHg	рро	Status		
	•	nt 26.6 degree		ructed r	ule	Condition			Status		
Sensor C	ompone	nt Tree dewlir	ie >10m	or belov	w inlet	Condition	on True		Status	pass	
Sensor C	ompone	ADT 1000-	10000 v	ehicles f	urther t	Condition	on True		Status	pass	
Sensor C	ompone	nt ADT <1000	vehicle	s further	than 5	Condition	on True		Status	pass	
Sensor C	ompone	Sample Tra	iin			Conditi	on Good		Status	pass	
Sensor C	ompone	nt Inlet Filter (Condition	า		Condition	on Clean		Status	pass	
Sensor C	ompone	Offset				Condition	on -0.1		Status	pass	
Sensor C	ompone	Span				Condition	on 1.016		Status	pass	
		Zero Voltaç				Condition			Status	pass	
Sensor C	ompone	Fullscale V	oltage			Condition			Status		
	•	cell A Freq					on 99.0 kHz		Status		
		Cell A Nois					on 1.0 ppb		Status		
	•	cell A Flow					on 0.69 lpm		Status		
		Cell A Pres					on 707.9 mmHg		Status		
	•	cell A Tmp					on 34.0 C		Status		
	_	Cell B Freq					on 84.5 kHz		Status		
	•	Cell B Nois					on 1.4 ppb		Status		
		Cell B Flow					on 0.71 lpm		Status		
	•	Cell B Pres					708.4 mmHg		Status		
	_	Nafion drye		ed		Condition	on False		Status		
Sensor C	ompone	System Me	mo			Condition	on		Status	pass	

2 Meter Temperature Data Form Calc. Difference Serial Number Tag Site **Technician** Site Visit Date Parameter Mfg **Owner ID** VOY413 10/10/2023 Temperature2meter RM Young 029199 Eric Hebert none Mfg Extech Parameter Temperature H232734 Tfer Desc. RTD **Serial Number** 01227 Tfer ID **Slope** 1.00945 **Intercept** 0.16485 **DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff **Cert Date** 0.41 0.58 UseDescription InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference Test type Temp Low Rang 0.23 0.06 0.000 0.37C 0.31 primary 23.66 0.000 24.00 C 0.34 primary Temp Mid Range 24.05 Temp High Rang primary 49.60 48.97 0.000 49.55 C 0.58 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** ARS VOY413 10/10/2023 none Eric Hebert Shelter Temperature 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** 0.97 1.92 01227 Tfer ID 1.00945 0.16485 **Slope** Intercept 2/17/2023 1.00000 **Cert Date** CorrCoff OSE Unit Difference UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng primary Temp Mid Range 19.79 19.44 0.00019.5 \mathbf{C} 0.02 20.9 C Temp Mid Range 19.36 19.02 0.0001.92 primary Sensor Component System Memo Condition Status pass

Infrastructure Data For

Site ID	VOY413	Technician	Eric Hebert	Site Visit Date	10/10/2023

Shelter Make	Shelter Model	Shelter Size	
Ekto	8810 (s/n 2880-2)	640 cuft	

Sensor Component	Sample Tower Type	Condition	Туре В	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	Moisture Trap Type	Condition	Filter	Status	pass
Sensor Component	Power Cables	Condition	Fair	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	Fair	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	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass
Sensor Component	System Memo	Condition		Status	pass

Siting Criteria Form

Sensor Component City > Sensor Component City 1, Sensor Component City 10	,000 to 10,000	Condition Condition	Status Status	
		Condition	Status	nass
Sensor Component City 10	0,000 to 50,000			puoo
•		Condition	Status	pass
Sensor Component Feedlo	ot operations	Condition	Status	pass
Sensor Component Large	parking lot	Condition	Status	pass
Sensor Component Limited	ed agriculture operations	Condition	Status	pass
Sensor Component Major	industrial source	Condition	Status	pass
Sensor Component Secon	ndary road < or = 100 per da	Condition	Status	pass
Sensor Component Secon	ndary road >100 vehicles/da	Condition	Status	pass
Sensor Component Small	parking lot	Condition	Status	pass
Sensor Component System	m Memo	Condition	Status	pass
Sensor Component Major	highway, airport, or rail yard	Condition	Status	pass
Sensor Component Intens	sive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator handles the filter barehanded.

2 Parameter: DasComments

The sample tower itself is not grounded, however it is bolted to the shelter which is grounded. The roof leak above the instrument rack may have been repaired, it is dry at this time.

3 Parameter: SitingCriteriaCom

The site is located at the top of a hill in a forest. There are trees surrounding the site which are below the tower height, but within 10 m of the inlet.

4 Parameter: ShelterCleanNotes

The shelter is in fair condition, and is neat and well organized.

5 Parameter: PollAnalyzerCom

There are no trees violating the 22.5 degree cone above the ozone sample inlet. However, there is a communication tower which is above the 22.5 degree threshold.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 10/10/2023 Technician Tim Mendenhall KNZ184 Site ID Swede Creek **USGS Map EPA Site Sponsor (agency)** Map Scale Kansas State University **Operating Group Map Date** 20-161-9991 AQS# R.M. Young **Meteorological Type** 39.1021 Air Pollutant Analyzer Ozone **QAPP** Latitude dry, wet **QAPP** Longitude -96.6096 **Deposition Measurement** 348 Land Use range **QAPP Elevation Meters** 4.5 gently rolling Terrain **QAPP Declination** 01/07/2005 Yes Conforms to MLM **OAPP Declination Date** (785) 770-8426 39.10216 **Site Telephone Audit Latitude** Konza Prairie Lane -96.609583 Site Address 1 **Audit Longitude** CR 901 Site Address 2 **Audit Elevation** 346 Riley 4.2 **County Audit Declination** Manhattan, KZ City, State **Present** Fire Extinguisher 66502 New in 2015 Zip Code central **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 Secure Shelter** Backup Op. Phone # Stable Entry Steps Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model EW1211 (s/n 1WC20 Wells Cargo **Shelter Size** 640 cuft **✓** Notes The shelter is very clean, neat an well organized. Although patched, he shelter floor is deteriorated Shelter Clean and in poor condition. **✓** Notes Site OK From Manhattan take route 177 south. At the east edge of town, immediately after crossing the Kansas river, turn **Driving Directions**

right onto CR901 (McDowell Creek Road). Continue approximately 6.2 miles and turn left into the Konza Prairie

Biological Station. The site is through the gate and up the hill past the three-story stone farm house.

ite ID	KNZ184	Technician Tim	Mendenhall	Site Visit Date	10/10/2023	
	wind speed and directions influenced by obstructions		avoid 🗸	N/A		
(i.e. hor	wind sensors mounted wind sensors should be izontally extended boom er into the prevailing wi	mounted atop the town >2x the max diameter	er or on a	N/A		
Are	the tower and sensors p	olumb?	✓	N/A		
	the temperature shields	-		south		
con sur	temperature and RH so ditions? (i.e. ground bel- face and not steeply slop nding water should be av	ow sensors should be n ed. Ridges, hollows, ar	atural			
Is t	he solar radiation sensor	r plumb?	\checkmark	N/A		
Is it	sited to avoid shading,	or any artificial or refl	ected light?	N/A		
Is t	he rain gauge plumb?		✓	N/A		
	sited to avoid shelteringers, etc?	g effects from building	s, trees,	N/A		
	he surface wetness sensong north?	or sited with the grid su	ırface 🔽	N/A		
l Is it	inclined approximately	y 30 degrees?	✓	N/A		

The temperature sensor is mounted on the north side of the sample tower.

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	KNZ184 Technician Tim Mendenhall		Site Visit Date 10/10/2023
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,

KNZ184	Technician Tim Mendenhal		Site Visit Date 10/10/2023
g Criteria: Are the po	ollutant analyzers and deposition e	quipı	ment sited in accordance with 40 CFR 58, Appendix E
	at least a 270 degree arc of	✓	
the sample inlets 3 - 1	5 meters above the ground?	✓	
		~	
tant analyzers and d	eposition equipment operations an	d ma	intenance
		✓	N/A
•	nitors operational, on-line, and	✓	N/A
ribe ozone sample tul	oe.		N/A
ribe dry dep sample t	ube.		3/8 teflon by 12 meters
	the ozone sample line? (if yes	✓	N/A
	ee of kinks, moisture, and	✓	
e zero air supply desi	ccant unsaturated?	✓	N/A
here moisture traps i	in the sample lines?	✓	
ere a rotometer in the	e dry deposition filter line, and is it	✓	Clean and dry
	the sample inlets have stricted airflow? the sample inlets 3 - 1 the sample inlets > 1 in the analyzers and equipation and well maintable analyzers and morting data? The dry dep sample to the inlets of the sample inlets used in the sample lines clean, from the country of the sample in the s	g Criteria: Are the pollutant analyzers and deposition enters ample inlets have at least a 270 degree arc of stricted airflow? The sample inlets 3 - 15 meters above the ground? The sample inlets > 1 meter from any major obstruction, 20 meters from trees? The analyzers and deposition equipment operations and the analyzers and equipment appear to be in good ition and well maintained? The analyzers and monitors operational, on-line, and reting data? The ozone sample tube. The dry dep sample tube. The dry dep sample tube. The dry dep sample tube. The analyzers and monitors operational, on-line, and reting data? The ozone sample tube. The dry dep sample tube. The dry dep sample tube. The dry dep sample tube. The ozone sample line? (if yes sample lines clean, free of kinks, moisture, and ructions? The exercise are supply desiccant unsaturated? There moisture traps in the sample lines?	g Criteria: Are the pollutant analyzers and deposition equipment in the sample inlets have at least a 270 degree arc of stricted airflow? The sample inlets 3 - 15 meters above the ground? The sample inlets > 1 meter from any major obstruction, where in the sample inlets > 1 meter from any major obstruction, where in the sample inlets > 1 meter from any major obstruction, where in the sample inlets > 1 meter from any major obstruction, where in the sample and present the sample and the sample inlets and deposition equipment operations and manual metant analyzers and deposition equipment operations and manual metant analyzers and equipment appear to be in good ition and well maintained? The analyzers and monitors operational, on-line, and ring data? The analyzers and monitors operational, on-line, and ring data? The analyzers and monitors operational, on-line, and ring data? The analyzers and monitors operational, on-line, and ring data? The analyzers and monitors operational, on-line, and ring data? The analyzers and deposition equipment operations and manualyzers and equipment operations and manualyzers and deposition equipment operatio

Field Systems Data Form F-02058-1500-S6-rev002 **Site ID** KNZ184 Technician Tim Mendenhall Site Visit Date 10/10/2023 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) **✓** N/A 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?

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 F	F-02058-1500-S7-rev002				
Site ID KNZ184	Technician Tim Me	ndenhall Site Visit Date 1	0/10/2023)	
Documentation					
Does the site have the required	l instrument and equipm	ent manuals?			
Wind speed sensor Wind direction sensor Temperature sensor Relative humidity sensor Solar radiation sensor Surface wetness sensor Wind sensor translator Temperature translator Humidity sensor translator Solar radiation translator Tipping bucket rain gauge Ozone analyzer Filter pack flow controller	es No N/A V V V V V V V V V V V V V	Data logger Data logger Strip chart recorder Computer Modem Printer Zero air pump Filter flow pump Surge protector UPS Lightning protection device Shelter heater Shelter air conditioner	Yes V C C C C C C C C C C C C	No	N/A V V V V V V V V V V V V V V V V V V
_	Present	ocuments and report forms.	Curre	nt	
Station Log SSRF Site Ops Manual HASP	✓ ✓ ✓ ✓ Oct 2014		✓✓<th></th><th></th>		
Field Ops Manual Calibration Reports Ozone z/s/p Control Charts Preventive maintenance schedule			✓<!--</th--><th></th><th></th>		
1 Is the station log properly co	ompleted during every sit	te visit? 🗸			
2 Are the Site Status Report F current?	orms being completed ar	nd 🗸			
3 Are the chain-of-custody for sample transfer to and from		ument 🗸			
4 Are ozone z/s/p control char- current?	ts properly completed an	ıd ✓ N/A			
Provide any additional explanationatural or man-made, that may a			ns listed a	above, o	or any other features,

Field Systems Data Form F-02058-1500-S8-rev002 KNZ184 Technician Tim Mendenhall Site Visit Date 10/10/2023 Site ID Site operation procedures Trained by previous 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 Trained by site operator 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? **OC Check Performed** Compliant 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 V** 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 ✓** N/A 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:

N/A

✓ N/A

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	Field Systems Data Form						F-02058-1500-S9-rev002			
Site	e ID	KNZ184 Te	chnic	cian	Tim Mendenhal	I	Site Visit Dat	10/10/2023	3	
	Site ope	ration procedures								
1	Is the fi	ter pack being changed eve	ry Tı	ıesda	y as scheduled	? ✓	Filter changed morinings			
2	Are the correctl	Site Status Report Forms b	eing	comp	oleted and filed	~				
3	Are data downloads and backups being performed as scheduled?					No longer required				
4	Are general observations being made and recorded? How?					✓	SSRF, logbook			
5	Are site supplies on-hand and replenished in a timely fashion?				✓					
6	Are sample flow rates recorded? How?			✓	SSRF, call-in					
7	Are sam	ples sent to the lab on a reg	ular	sche	dule in a timely	. 🗸				
8		ers protected from contaminoping? How?	atior	ı dur	ing handling	✓	Clean gloves on and off			
9		site conditions reported regons manager or staff?	ularl	y to t	the field	✓				
QC	Check P	erformed		Freq	quency			Complian	t	
N	Aulti-poi	nt MFC Calibrations	✓	Sem	iannually			✓		
F	Flow Syst	em Leak Checks	✓	Wee	kly			✓		
F	ilter Pac	k Inspection								
F	Flow Rate Setting Checks Weekly				✓					
1	Visual Check of Flow Rate Rotometer Weekly				✓					
I	In-line Filter Inspection/Replacement Weekly				✓					
S	Sample Line Check for Dirt/Water Weekly					✓				
		dditional explanation (photon-made, that may affect the) regarding condi	tions listed a	bove, or any	other features,

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID KNZ184 Technician Tim Mendenhall Site Visit Date 10/10/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	313MC12	07014
DAS	Campbell	CR3000	2139	000361
Elevation	Elevation	1	None	None
Flow Rate	Apex	AXMC105LPMDPC	illegible	000925
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07182
Sample Tower	Aluma Tower	В	none	missing
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41432VC	14082	06541

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 10/10/2023 VOY413 Technician Eric Hebert Site ID Ash River NE **USGS Map** NPS Site Sponsor (agency) Map Scale NPS **Operating Group Map Date** 27-137-0034 AQS# Climatronics **Meteorological Type** Ozone, IMPROVE 48.4128 Air Pollutant Analyzer **QAPP** Latitude -92.8292 dry, wet **QAPP** Longitude **Deposition Measurement** woodland - mixed 429 **Land Use QAPP Elevation Meters** Terrain rolling **QAPP Declination** Marginally Conforms to MLM **OAPP Declination Date** 48.412518 **Site Telephone Audit Latitude** CR 129 -92.829225 Site Address 1 **Audit Longitude** Ash River Visitor Center Rd. Site Address 2 **Audit Elevation** 427 St. Louis 0.5 **County Audit Declination** Orr, MN City, State **Present** Fire Extinguisher 55771 Zip Code Central **First Aid Kit** Time Zone **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 2880-2) Ekto **Shelter Size** 640 cuft **✓** Notes The shelter is in fair condition, and is neat and well organized. Shelter Clean **✓** Notes Site OK From Duluth take route 53 north towards International Falls. Approximately 20 miles south of International Falls and **Driving Directions** just north of Orr, turn right (east) on County Road 129. Continue approximately 9.5 miles and turn left toward the Ash River Visitor Center. Continue approximately 1.5 miles and look for a closed gate on the right. The site is

approximately 1 mile up the trail from the road.

Fi	eld Sy	stems Data Fo	orm				F-020	58-15	500-S3-ı	rev002
Site	e ID	VOY413	Technician Eri	ic Hebert		Site Visit Date	10/10/2023			
1		d speed and direction a fluenced by obstruction		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 to 2x the max diamet	wer or on a	✓	N/A				
3	Are the	tower and sensors plu	mb?	[✓	N/A				
4		temperature shields po diated heat sources su		sitioned to	✓					
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped gwater should be avoid	sensors should be . Ridges, hollows,	natural	✓					
6	Is the so	lar radiation sensor pl	lumb?	[✓	N/A				
7	Is it site	d to avoid shading, or	any artificial or re	eflected light?	✓	N/A				
8	Is the ra	in gauge plumb?		[✓	N/A				
9	Is it site towers,	d to avoid sheltering eletc?	ffects from buildin	ngs, trees,	✓	N/A				
10	Is the su facing n	rface wetness sensor s orth?	ited with the grid	surface	✓	N/A				
11	Is it inc	lined approximately 3	0 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	VOY413 Technician Eric Hebert	Site Visit Date 10/10/2023			
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?				
	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 VOY413 Technician Eric Hebert Site Visit Date 10/10/2023 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? **V** Trees have been cut 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 12 meters Describe dry dep sample tube. 3/8 teflon by 9 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? 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,

There are no trees violating the 22.5 degree cone above the ozone sample inlet. However, there is a communication tower which is above

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

the 22.5 degree threshold.

Field Systems Data Form

F-02058-1500-S6-rev002

Site	e ID	VOY413	Technician Eri	c Hebert	Site Visi	t Date 10/10/202	3	
	DAS, se	ensor translators, and p	peripheral equipm	ent operations a	nd maintena	<u>nce</u>		
1		DAS instruments appe intained?	ar to be in good co	ondition and				
2		the components of the , backup, etc)	DAS operational?	(printers,				
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?			ough 🔽	Met sensors only			
4	Are the signal connections protected from the weather and well maintained?			eather and				
5	Are the signal leads connected to the correct DAS channel?							
6	Are the DAS, sensor translators, and shelter properly grounded?							
7	Does the instrument shelter have a stable power source?			source?				
8	Is the in	nstrument shelter temp	erature controlled	!? ✓				
9	Is the n	net tower stable and gr	ounded?		Stable		Grounded	
10	Is the sa	ample tower stable and	grounded?					
11	Tower	comments?						

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

The sample tower itself is not grounded, however it is bolted to the shelter which is grounded. The roof leak above the instrument rack may

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

have been repaired, it is dry at this time.

Field Systems Data Form F-02058-1500-S7-rev002 VOY413 Technician Eric Hebert Site Visit Date 10/10/2023 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 V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** Solar radiation sensor **V** Modem П **V ~ Printer** Surface wetness sensor **V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump **V ~ Humidity sensor translator** Surge protector П П **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** Dataview **SSRF ✓ V V V** Site Ops Manual Jan 2006 **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? ✓ Dataview Flow section only 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 VOY413 Technician Eric Hebert Site Visit Date 10/10/2023 Site ID Site operation procedures Trained by previous 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** 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? **OC Check Performed** Compliant Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V** Weekly Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests Manual Precision Level Test** Weekly **V V** Alarm values only **Analyzer Diagnostics Tests ~** Every 3 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 **~ V** 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

✓

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

Dataview

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	VOY413	Technicia	n Eric Hebert		Site Visit Date	10/10/2023		
	Site oper	ration procedures							
1	Is the fil	ter pack being changed	every Tues	day as scheduled	V	Filter changed mornings			
2	correctly?				✓				
3	Are data downloads and backups being performed as scheduled?					No longer required			
4	Are general observations being made and recorded? How?					SSRF			
5	Are site supplies on-hand and replenished in a timely fashion?				✓				
6	Are sam	Are sample flow rates recorded? How?			✓	SSRF			
7	Are samples sent to the lab on a regular schedule in a timely fashion?			✓					
8		rs protected from containing? How?	mination d	uring handling		gloves not used			
9		site conditions reported ns manager or staff?	regularly t	to the field					
QC	Check Pe	erformed	Fı	equency			Compliant		
N	Multi-poin	t MFC Calibrations	✓ Se	emiannually			✓		
I	Flow Syste	em Leak Checks	✓ W	eekly			✓		
I	Filter Pacl	Inspection							
I	Flow Rate	Setting Checks	✓ W				✓		
1	Visual Cho	eck of Flow Rate Rotom		-			✓		
		er Inspection/Replacem		needed			V		
S	Sample Li	ne Check for Dirt/Water	r 🗸 W	eekly			✓		
		dditional explanation (p) regarding condit	ions listed above, or ar	ny other features,	

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

The site operator handles the filter barehanded.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID VOY413 Eric Hebert Site Visit Date 10/10/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Environmental Sys Corp	8816	2505	90632
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	illegible	illegible	none
Flow Rate	Alicat	MC-10SLPM-D-PCV	Unknown	none
Infrastructure	Infrastructure	none	none	none
Ozone	ThermoElectron Inc	49C	49C-66828-354	90714
Ozone Standard	ThermoElectron Inc	49C	49C-59260-322	90569
Sample Tower	Aluma Tower	В	AT-51159-11-G	none
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342VC	029199	none
Zero air pump	Twin Tower Engineering	TT70/E4	526294	90719

Site Inventory by Site Visit

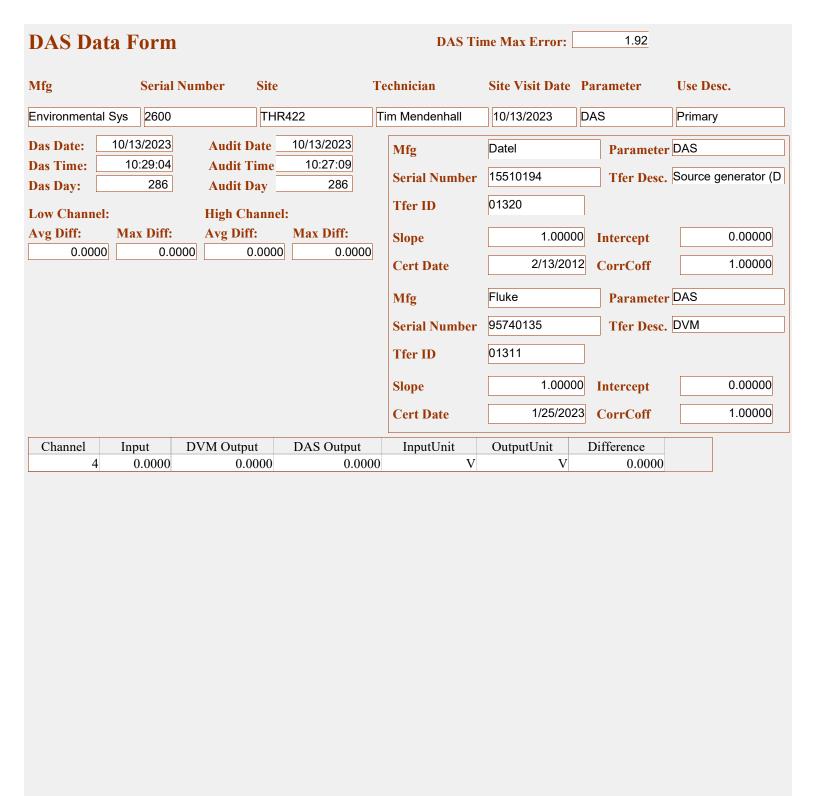
Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
DEN	N417 - Martii	n Valvur-10/11/2023				
1	10/11/2023	DAS	Environmental Sys Corp	90600	8816	2274
2	10/11/2023	Ozone	ThermoElectron Inc	90835	49C	0520012327
3	10/11/2023	Ozone Standard	ThermoElectron Inc	none	49C	49C-71310-368
4	10/11/2023	Zero air pump	Werther International	none	PC70/4	526281

Ozone Data Form

Mfg	Serial Number	er Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	0520012327	DEN417	7	Martin Valvur	10/11/2023	Ozone	90835
Intercept		rcept	0.00000	Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-3		ozone c. Ozone primary stan
DAS 1: A Avg % Diff: A M		AS 2: Avg %Diff A	Max % Dif	Slope	1.0042		0.20413
UseDescription	ConcGroup	Tfer Raw	Tfer Co		Site Unit	RelPerDif	AbsDif
primary	1	-0.20	-0.40	-0.06	ppb		0.34
primary	2	14.81	14.49		ppb		0.49
primary	3	34.79	34.95		ppb	1.34	
primary	4	65.18	64.48		ppb	3.11	
primary	5	114.78	113.71		ppb	2.6	
Sensor Compone	Audit Press	ure	Con	dition 699 mmHg		Status pass	
Sensor Compone	26.6 degree	unobstructed ru	le Con	dition True		Status pass	
Sensor Compone	Tree dewline	e >10m or below	inlet Con	dition True		Status pass	
Sensor Compone	ADT 1000-1	0000 vehicles fu	rther t Con	dition True		Status pass	
Sensor Compone	ADT <1000	vehicles further	than 5 Con	dition True		Status pass	
Sensor Compone	Sample Tra	in	Con	dition Good		Status pass	
Sensor Compone	Inlet Filter C	ondition	Con	dition Clean		Status pass	
Sensor Compone	Offset		Con	dition -0.2		Status pass	
Sensor Compone	Span		Con	dition 1.029		Status pass	
Sensor Compone	Zero Voltag	е	Con	dition -0.0007		Status pass	
Sensor Compone	Fullscale Vo	ltage	Con	dition 0.9998		Status pass	
Sensor Compone	Cell A Freq.		Con	dition 92.9 kHz		Status pass	
Sensor Compone	Cell A Noise)	Con	dition 0.5 ppb		Status pass	
Sensor Compone	cent Cell A Flow		Con	dition 0.61 lpm		Status pass	
Sensor Compone	Cell A Press	sure	Con	dition 691.1 mmHg		Status pass	
Sensor Compone	Cell A Tmp.		Con	dition 29.6 C		Status pass	
Sensor Compone	Cell B Freq.		Con	dition 80.6 kHz		Status pass	
Sensor Compone	Cell B Noise)	Con	dition 0.5 ppb		Status pass	
Sensor Compone	Cell B Flow		Con	dition 0.64 lpm		Status pass	
Sensor Compone	Cell B Press	sure	Con	dition 690.6 mmHg		Status pass	
Sensor Compone	Nafion drye	rinstalled	Con	dition False		Status pass	
Sensor Compone	System Mer	no	Con	dition		Status pass	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
THR	422-Tim M	endenhall-10/13/2023				_
1	10/13/2023	Computer	Hewlett Packard	none	65606	5CB1520H68
2	10/13/2023	DAS	Environmental Sys Corp	90656	8816	2600
3	10/13/2023	Elevation	Elevation	None	1	None
4	10/13/2023	Filter pack flow pump	Thomas	none	107CAB18	Illegible
5	10/13/2023	Flow Rate	Alicat	none	MC-10SLPM-D-PCV	301232
6	10/13/2023	Infrastructure	Infrastructure	none	none	none
7	10/13/2023	Met tower	Rohn	none	unknown	none
8	10/13/2023	Sample Tower	Aluma Tower	none	В	AT-81077-J5
9	10/13/2023	Shelter Temperature	ARS	none	none	none
10	10/13/2023	Siting Criteria	Siting Criteria	None	1	None
11	10/13/2023	Temperature2meter	RM Young	none	41342VC	29200



Flow Data Form **Technician Owner ID** Mfg Serial Number Tag Site Site Visit Date Parameter Alicat 301232 THR422 Tim Mendenhall 10/13/2023 Flow Rate none Mfg BIOS Parameter Flow Rate 148613 Tfer Desc. BIOS 220-H **Serial Number** 01421 Tfer ID 0.00000 **Slope** 1.00000 Intercept 2/23/2023 1.00000 CorrCoff **Cert Date** 0 **DAS 2: DAS 1:** Cal Factor Zero 5 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 3 50.33% 50.50% **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignal PctDifference Desc. primary pump off 0.0000.0000.00 0.0000.01 1/m1/mleak check 0.000 0.02 0.0000.01 1/ml/m0.000 primary 2.990 1.49 1/m -50.17% test pt 1 2.990 1.68 0.000 1/mprimary 3.002 3.000 1.68 0.000 1.49 1/m1/m-50.33% primary test pt 2 0.0001.49 -50.50% test pt 3 3.012 3.010 1.68 1/m1/mprimary 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 4.5 cm Status pass Sensor Component Filter Depth Condition 3.0 cm Status pass

Condition 360 deg

Condition

Sensor Component Filter Azimuth

Sensor Component System Memo

Status pass

Status pass

2 Meter Temperature Data Form Calc. Difference Serial Number Tag Site **Technician** Site Visit Date Parameter Mfg **Owner ID** 29200 THR422 RM Young Tim Mendenhall 10/13/2023 Temperature2meter none Mfg Extech Parameter Temperature H232679 Tfer Desc. RTD **Serial Number** 01228 Tfer ID **Slope** 1.01172 **Intercept** 0.08161 **DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff **Cert Date** 0.27 0.39 InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference UseDescription Test type Temp Low Rang 0.34 0.26 0.000 $0.65\,\mathrm{C}$ 0.39 primary 27.71 27.31 0.000 27.65 C 0.34 primary Temp Mid Range Temp High Rang primary 49.47 48.82 0.000 48.90 C 0.08 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** ARS none THR422 Tim Mendenhall 10/13/2023 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 H232679 **Serial Number** 0.59 0.80 01228 Tfer ID 1.01172 0.08161 **Slope** Intercept 2/17/2023 1.00000 **Cert Date** CorrCoff OSE Unit Difference UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng primary Temp Mid Range 20.81 20.49 0.00020.7 \mathbf{C} 0.19 19.73 19.42 C Temp Mid Range 0.00020.2 0.79 primary C 23.59 23.24 0.000 22.4 primary Temp Mid Range -0.8 Status pass Sensor Component System Memo Condition

Infrastructure Data For

Site ID THR	R422 Technician	Tim Mendenhall	Site Visit Date	10/13/2023
-------------	-----------------	----------------	-----------------	------------

Shelter Make	Shelter Model	Shelter Size	
Ekto	8814 (s/n 3028-1)	896 cuft	
		Carried and the Carried and Ca	

Sensor Component	Sample Tower Type	Condition	Туре В	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	Moisture Trap Type	Condition	Filter	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	Fair	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
Sensor Component	System Memo	Condition		Status	pass

Siting Criteria Form

	arge point source of So2 or Nox	Condition	Status	pass
Sensor Component C	ity > 50,000	Condition	Status	pass
Sensor Component C	ity 1,000 to 10,000	Condition	Status	pass
Sensor Component C	ity 10,000 to 50,000	Condition	Status	pass
Sensor Component Fo	eedlot operations	Condition	Status	pass
Sensor Component La	arge parking lot	Condition 200 m	Status	Fail
Sensor Component Li	imited agriculture operations	Condition	Status	pass
Sensor Component M	lajor industrial source	Condition	Status	pass
Sensor Component S	econdary road < or = 100 per da	Condition	Status	pass
Sensor Component S	econdary road >100 vehicles/da	Condition	Status	pass
Sensor Component S	mall parking lot	Condition	Status	pass
Sensor Component S	ystem Memo	Condition	Status	pass
Sensor Component M	lajor highway, airport, or rail yard	Condition 300 m	Status	Fail
Sensor Component In	itensive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: SiteOpsProcComm

Gloves are not used to handle the filter pack. The filter bag is used as a glove.

2 Parameter: DasComments

The met tower is no longer in use.

3 Parameter: SiteOpsProcedures

The ozone sample train does not have a means to introduce test gas at the sample inlet. Results of routine zero, span, precision, and any multipoint calibration checks are maintained by the state personnel who perform the tests. The two inlet filters in the sample train are creating a large pressure drop.

4 Parameter: SitingCriteriaCom

The site is located 200 meters from an interstate rest area, and 300 meters from interstate 94. The rest area can have parked and idling vehicles for extended periods.

5 Parameter: ShelterCleanNotes

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

6 Parameter: PollAnalyzerCom

The ozone monitor is operated by the state of North Dakota. There is approximately 1.5 meters of tygon tubing attached to the 3/8 filter pack flow tubing. The data logger was recording the flow rate as 1.5 lpm while the rotometer and the audit standard device were measuring approximately 3 lpm.

7 Parameter: MetSensorComme

The 2-meter temperature sensor is mounted on south side of the sample tower, which is attached to the site shelter. The sensor is 4.1 meters above ground and close to the shelter.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 10/13/2023 THR422 Technician Tim Mendenhall Site ID Fryburg NW **USGS Map** NPS Site Sponsor (agency) Map Scale NPS and state of ND **Operating Group Map Date** 38-007-0002 AQS# Climatronics **Meteorological Type** Ozone, SO2, IMPROVE, PM2.5 46.8947 Air Pollutant Analyzer **QAPP** Latitude -103.3778 **Deposition Measurement** dry, wet **QAPP** Longitude 850 **Land Use** prairie **QAPP Elevation Meters** rolling - complex Terrain **QAPP Declination** Marginally Conforms to MLM **OAPP Declination Date** 46.894844 **Site Telephone Audit Latitude** Painted Canyon Visitor Center -103.377719 Site Address 1 **Audit Longitude** Exit 32 Interstate 94 840 Site Address 2 **Audit Elevation** 8.2 Billings **County Audit Declination** Medora, ND City, State **Present** Fire Extinguisher 58645 Zip Code **✓** Mountain **First Aid Kit** Time Zone **Primary Operator Safety Glasses** Safety Hard Hat Primary Op. Phone # **✓ Climbing Belt** Primary Op. E-mail **V Security Fence Backup Operator V Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8814 (s/n 3028-1) Ekto **Shelter Size** 896 cuft **✓** Notes **Shelter Clean** The shelter is in good condition, clean and well organized.

From Interstate 94 take exit 32 to the Painted Canyon rest area and visitor center. The site is just east of the parking

✓ Notes

lot on a gravel road.

Site OK

Driving Directions

Fi	eld Systems Data Form		F-02058-1500-S3-rev0				
Site	THR422 Technician Tim Mendenhall		Site Visit Date 10/13/2023				
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				
	vide any additional explanation (photograph or sketch if nece ural or man-made, that may affect the monitoring parameters		ry) regarding conditions listed above, or any other features,				

The 2-meter temperature sensor is mounted on south side of the sample tower, which is attached to the site shelter. The sensor is 4.1 meters above ground and close to the shelter.

atures,
2

Field Systems Data Form F-02058-1500-S5-rev002 THR422 Technician Tim Mendenhall Site Visit Date 10/13/2023 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. 3/8 teflon by 10 meters and glass manifold Describe dry dep sample tube. 3/8 teflon by 12 meters and 1.5 meters of tygon At inlet and analyzer 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? 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 ozone monitor is operated by the state of North Dakota. There is approximately 1.5 meters of tygon tubing attached to the 3/8 filter pack flow tubing. The data logger was recording the flow rate as 1.5 lpm while the rotometer and the audit standard device were measuring approximately 3 lpm.

Field Systems Data Form F-02058-1500-S6-rev002 THR422 Technician Tim Mendenhall Site Visit Date 10/13/2023 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

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 is no longer in use.

11 Tower comments?

Field Systems Data Form F-02058-1500-S7-rev002 THR422 Technician Tim Mendenhall Site Visit Date 10/13/2023 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 Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** Solar radiation sensor **V** Modem П **V V Printer** Surface wetness sensor **V V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump **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 **✓** \checkmark 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 **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? not used Flow section only 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 THR422 Technician Tim Mendenhall Site Visit Date 10/13/2023 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 Trained by current 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 V** N/A **Multipoint Calibrations V V** N/A **Visual Inspections V 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** N/A **Automatic Zero/Span Tests V** Every 2 weeks Manual Zero/Span Tests **V** N/A **Automatic Precision Level Tests V** Every 2 weeks **Manual Precision Level Test V V Analyzer Diagnostics Tests** Semiannually **V V** every 2 months **In-line Filter Replacement (at inlet) V V** every 2 months In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **V V** Every 2 weeks **Zero Air Desiccant Check** not tested 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 Not tested complete sample train including all filters? Unknown 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 sample train does not have a means to introduce test gas at the sample inlet. Results of routine zero, span, precision, and any multipoint calibration checks are maintained by the state personnel who perform the tests. The two inlet filters in the sample train are creating a large pressure drop.

Fi	eld Systems Data Form				F-02058-1500-S9-rev002		
Sit	e ID THR422 Tec	hnician T	im Mendenhall		Site Visit Date 10/13/2023		
	Site operation procedures						
1	Is the filter pack being changed every	y Tuesday	as scheduled?	✓	Filter changed mornings		
2	Are the Site Status Report Forms bei	ing comple	eted and filed	✓			
3	Are data downloads and backups be scheduled?	ing perfor	med as		No longer required		
4	Are general observations being made	and reco	rded? How?	✓	SSRF		
5	Are site supplies on-hand and replen fashion?	ished in a	timely	✓			
6	Are sample flow rates recorded? How	w?		✓	SSRF		
7	Are samples sent to the lab on a regularishion?	lar schedu	le in a timely	✓			
8	Are filters protected from contamina and shipping? How?	tion durin	g handling	✓			
9	Are the site conditions reported regu operations manager or staff?	larly to th	e field				
QC	Check Performed	Frequ	ency		Compliant		
]	Multi-point MFC Calibrations	✓ Semia	nnually		✓		
	Flow System Leak Checks	Weekly	y		✓		
]	Filter Pack Inspection						
]	Flow Rate Setting Checks	✓ Weekly	У		✓		
7	Visual Check of Flow Rate Rotometer	✓ Weekly	У		✓		
]	In-line Filter Inspection/Replacement	✓ As nee	eded		✓		
	Sample Line Check for Dirt/Water						
	vide any additional explanation (photo iral or man-made, that may affect the			sary	ry) regarding conditions listed above, or any other features,		

Gloves are not used to handle the filter pack. The filter bag is used as a glove.

Field Systems Data Form

F-02058-1500-S10-rev002

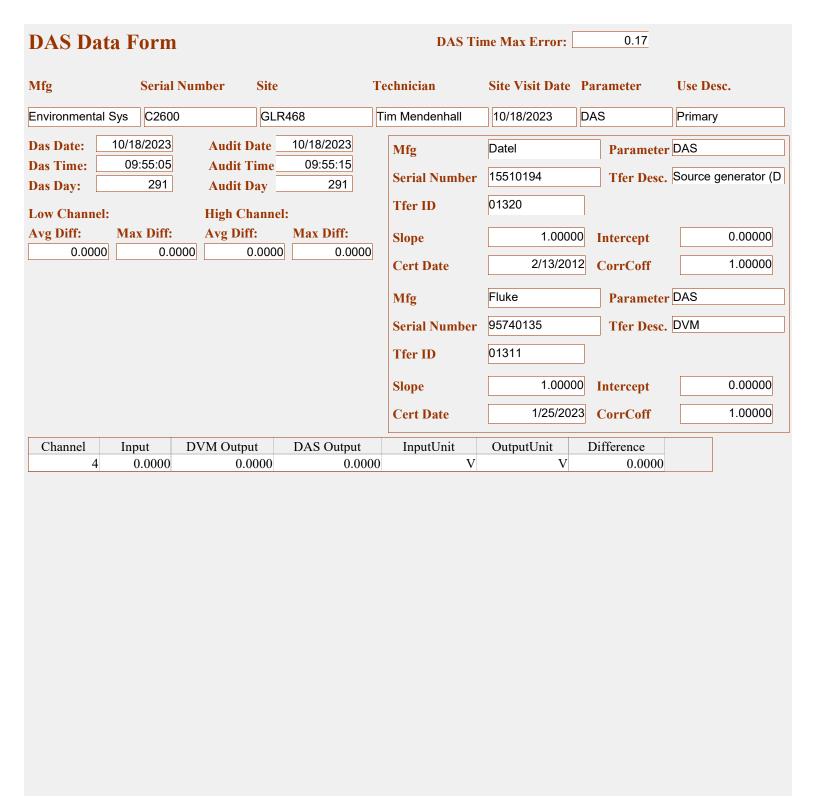
Site ID THR422 Technician Tim Mendenhall Site Visit Date 10/13/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	65606	5CB1520H68	none
DAS	Environmental Sys Corp	8816	2600	90656
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	Illegible	none
Flow Rate	Alicat	MC-10SLPM-D-PCV	301232	none
Infrastructure	Infrastructure	none	none	none
Met tower	Rohn	unknown	none	none
Sample Tower	Aluma Tower	В	AT-81077-J5	none
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342VC	29200	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number					
GLR	GLR468-Tim Mendenhall-10/18/2023										
1	10/18/2023	Computer	Hewlett Packard	ACAD	6730b	CNU9335F7W					
2	10/18/2023	Elevation	Elevation	None	1	None					
3	10/18/2023	Filter pack flow pump	Thomas	none	107CAB18	Illegible					
4	10/18/2023	Flow Rate	Tylan	none	FC280	AW9710138					
5	10/18/2023	Infrastructure	Infrastructure	none	none	none					
6	10/18/2023	MFC power supply	Tylan	03944	RO-32	FP9605010					
7	10/18/2023	Ozone	ThermoElectron Inc	none	49i A3NCA	1201477661					
8	10/18/2023	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	0733726104					
9	10/18/2023	Sample Tower	Aluma Tower	none	В	none					
10	10/18/2023	Shelter Temperature	ARS	77	none	none					
11	10/18/2023	Siting Criteria	Siting Criteria	None	1	None					
12	10/18/2023	Temperature2meter	RM Young	none	41342	17625					
13	10/18/2023	Zero air pump	Werther International	none	C 120/TC	001007354					



Flow Data Form **Technician Owner ID** Mfg Serial Number Tag Site Site Visit Date Parameter Tylan AW9710138 GLR468 Tim Mendenhall 10/18/2023 Flow Rate none Mfg BIOS Parameter Flow Rate Tylan Mfg 148613 Tfer Desc. BIOS 220-H **Serial Number** FP9605010 03944 **SN/Owner ID** 01421 Tfer ID MFC power supply Parameter: 0.00000 **Slope** 1.00000 Intercept 2/23/2023 1.00000 CorrCoff **Cert Date** 0.094 **DAS 1: DAS 2:** Cal Factor Zero 5.441 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.22% 0.33% 3.1 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignal PctDifference Desc. primary pump off 0.0000.000-0.040.0000.08 1/ml/m leak check 0.000 -0.01 0.0000.12 1/ml/m0.000 primary 2.72 1/m -0.33% test pt 1 3.009 3.010 0.000 3.00 1/mprimary 3.008 3.010 2.71 0.000 3.00 1/m-0.33% primary test pt 2 1/m0.0000.00% test pt 3 3.008 3.010 2.72 3.01 1/m1/mprimary 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 4.5 cm Status pass

Condition 2.0 cm

Condition 360 deg

Condition

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Status pass

Status pass

Status pass

Ozone Data Form

Slope: 0.9977 Intercept -0.8229 CorrCoff: 1.0000 DAS 1: A Avg % Diff: A Max % 0.0%	53 Intercep 00 CorrCo	of C	0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID	10/18/2023 ThermoElectron 1180030022			none
Thercept	53 Intercep 00 CorrCof DAS 2	of C	0.00000		Serial Number				
A Avg % Diff: A Max % 0.0%	6 Dif A Avg					01114		er Desc	Ozone primary stan
UseDescription Cond			Max %	% Dif	Slope Cert Date	0.9973		•	0.29920
·	cGroup 7	Γfer Raw		er Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	0.45		0.15	-0.54	ppb			-0.69
primary	2	16.06		5.80	14.90	ppb			-0.9
primary	3	34.46		4.24	33.22	ppb		-3.02	
primary	4	63.59		3.45		ppb		-1.59	
primary	5	107.98		07.96	106.96	ppb		-0.93	
Sensor Component Au	ıdit Pressure			Condition	704 mmHg		Status	pass	
Sensor Component 26.	6.6 degree und	bstructed ru	le	Condition	True		Status	pass	
Sensor Component Tre	ee dewline >1	0m or below	inlet	Conditio	7rue		Status	pass	
Sensor Component AD	OT 1000-1000	0 vehicles fu	rther t	Conditio	on True		Status	pass	
Sensor Component AD	OT <1000 vehi	cles further	than 5	Conditio	True		Status	pass	
Sensor Component Sa	ample Train			Conditio	Good		Status	pass	
Sensor Component Inle	et Filter Condi	ition		Conditio	Clean		Status	pass	
Sensor Component Off	fset			Conditio	0.4		Status	pass	
Sensor Component Sp	oan			Conditio	1.013		Status	pass	
Sensor Component Ze	ero Voltage			Conditio	n N/A		Status	pass	
Sensor Component Fu	ıllscale Voltag	e		Conditio	on N/A		Status	pass	
Sensor Component Ce	ell A Freq.			Conditio	on 123.7 kHz		Status	pass	
Sensor Component Ce	ell A Noise			Conditio	2.3 ppb		Status	pass	
Sensor Component Ce	ell A Flow			Conditio	0.68 lpm		Status	pass	
Sensor Component Ce	ell A Pressure			Conditio	on 673.9 mmHg		Status	pass	
Sensor Component Ce	ell A Tmp.			Conditio	on 31.5 C		Status	pass	
Sensor Component Ce	ell B Freq.			Conditio	80.8 kHz		Status	pass	
Sensor Component Ce	ell B Noise			Conditio	on 1.1 ppb		Status	pass	
Sensor Component Ce	ell B Flow			Conditio	0.70 lpm		Status	pass	
Sensor Component Ce	ell B Pressure			Conditio	674.2 mmHg		Status	pass	
Sensor Component Na	afion dryer inst	talled		Conditio	Palse		Status	pass	
Sensor Component Sys	stem Memo			Conditio	on		Status	pass	

2 Meter Temperature Data Form Calc. Difference Serial Number Tag Site **Technician** Site Visit Date Parameter Mfg **Owner ID** GLR468 RM Young 17625 Tim Mendenhall 10/18/2023 Temperature2meter none Mfg Extech Parameter Temperature H232679 Tfer Desc. RTD **Serial Number** 01228 Tfer ID **Slope** 1.01172 **Intercept** 0.08161 **DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff **Cert Date** 0.21 0.24 UseDescription InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Test type Difference Temp Low Rang 0.31 0.23 0.000 $0.06\,\mathrm{C}$ -0.17 primary 22.91 22.56 0.000 22.34C -0.22 primary Temp Mid Range Temp High Rang primary 50.45 49.78 0.000 49.54C -0.24Sensor 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** ARS none GLR468 Tim Mendenhall 10/18/2023 Shelter Temperature **DAS 1: DAS 2:** Parameter Shelter Temperature Extech Mfg Abs Avg Err Abs Max Err **Abs Avg Err Abs Max Err** Tfer Desc. RTD H232679 **Serial Number** 0.63 0.70 01228 **Tfer ID** 1.01172 0.08161 **Slope** Intercept 2/17/2023 1.00000 **Cert Date** CorrCoff OSE Unit Difference UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng primary Temp Mid Range 23.11 22.76 0.00023.3 \mathbf{C} 0.5 21.37 21.04 21.7 C 0.7 Temp Mid Range 0.000primary 21.80 C 21.47 0.000 22.2 0.69 primary Temp Mid Range Sensor Component System Memo Status pass Condition

Infrastructure Data For

GLR468	Technician	Tim Mendenhall	Site Visit Date	10/18/2023
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Shelter Make	Shelter Model	Shelter Size	
Ekto	8810 (s/n 2149-20)	640 cuft	

Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	Fair	Status	pass
Sensor Component	Met Tower	Condition	Poor	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Moisture Trap Type	Condition	Filter	Status	pass
Sensor Component	Power Cables	Condition	Fair	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	Fair	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	Poor	Status	Fail
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass
Sensor Component	System Memo	Condition		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 20 km	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

The site operator uses the filter bad as a glove.

2 Parameter: SitingCriteriaCom

The site is located in a small clearing within 100 meters of a horse stable. There is a plywood and aluminum processing plant within 20 km of the site.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition. Evidence of repairs to roof leaks attempted. The floor has been repaired since the previous audit visit.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 10/18/2023 GLR468 Technician Tim Mendenhall Site ID Lake McDonald West **USGS Map** NPS **Site Sponsor (agency)** Map Scale NPS **Operating Group Map Date** 30-029-8001 AQS# R.M. Young **Meteorological Type** Ozone, IMPROVE 48.5103 Air Pollutant Analyzer **QAPP** Latitude dry, wet, Hg **QAPP** Longitude -113.9956 **Deposition Measurement** woodland - mixed 976 Land Use **QAPP Elevation Meters** 18 Terrain complex **QAPP Declination** 12/27/2004 No Conforms to MLM **OAPP Declination Date** (406) 888-7983 48.510301 **Site Telephone Audit Latitude** Horse Stables -113.996807 Site Address 1 **Audit Longitude** Quarter Circle Bridge Rd Site Address 2 **Audit Elevation** 964 Flathead 14.1 **County Audit Declination** West Glacier, MT City, State **Present** Fire Extinguisher 59936 Inspected June 2011 **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 (s/n 2149-20) Ekto **Shelter Size** 640 cuft **✓** Notes The shelter is in fair condition. Evidence of repairs to roof leaks attempted. The floor has been Shelter Clean repaired since the previous audit visit. **✓** Notes Site OK

From Kalispell proceed north on route 2 to West Glacier. Turn left onto Going To The Sun Road into Glacier National

Park. Proceed approximately 0.2 miles past the entrance and fee station, and turn left toward the horse stables. Bear right at the fork and continue through the gate past the stables. The site is visible in the clearing on the left.

Driving Directions

Field Systems Data Form F-02058-1500-S3-rev002 Site Visit Date 10/18/2023 Technician Tim Mendenhall Site ID GLR468 ✓ 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 avoid radiated heat sources such as buildings, walls, etc? Temperature now at 2 meters 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:

Fic	eld Systems Data Form		F-02058-1500-S4-rev002
Site	GLR468 Technician Tim Mendenhall		Site Visit Date 10/18/2023
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?		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:	ary)	regarding conditions listed above, or any other features,

Field Systems Data Form F-02058-1500-S5-rev002 GLR468 Technician Tim Mendenhall Site Visit Date 10/18/2023 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 15 meters Describe dry dep sample tube. 3/8 Teflon by 12 meters and 0.5 meters tygon 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 Site ID GLR468 Technician Tim Mendenhall Site Visit Date 10/18/2023 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 GLR468 Technician Tim Mendenhall Site Visit Date 10/18/2023 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 Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer **✓** П Solar radiation sensor **V** Modem 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 Surge protector** П 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 2016 **✓ HASP** April 2004 **✓** Field Ops Manual April 2004 **Calibration Reports ✓** Ozone z/s/p Control Charts Preventive maintenance schedule 1 Is the station log properly completed during every site visit? ✓ Dataview Are the Site Status Report Forms being completed and **V** 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:

F-02058-1500-S7-rev002

Field Systems Data Form F-02058-1500-S8-rev002 GLR468 Technician Tim Mendenhall Site Visit Date 10/18/2023 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** 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? **OC Check Performed** Compliant 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 Manual Precision Level Test ✓** Alarm values only **Analyzer Diagnostics Tests ~** Every 2 weeks **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **V ~** 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

✓

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

Dataview

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 Systems Data Form			F-02058-1500-S9-rev002				
Site	e ID GLR468 Tec	hnician Tim Mendenhal		Site Visit Date 10/18/2023				
	Site operation procedures							
1	Is the filter pack being changed every	y Tuesday as scheduled	V	Filter changed various times				
2	Are the Site Status Report Forms bei correctly?	ing completed and filed	✓					
3	Are data downloads and backups bei scheduled?	ng performed as		No longer required				
4	Are general observations being made	and recorded? How?	✓	Dataview				
5	Are site supplies on-hand and replentashion?	ished in a timely	✓					
6	Are sample flow rates recorded? How	v?	✓	SSRF				
7	Are samples sent to the lab on a regulation?	lar schedule in a timely	✓					
8	Are filters protected from contamina and shipping? How?	tion during handling	✓					
9	Are the site conditions reported reguloperations manager or staff?	larly to the field						
QC	Check Performed	Frequency		Compliant				
N	Multi-point MFC Calibrations	Semiannually		✓				
F	Flow System Leak Checks	Weekly		✓				
F	Filter Pack Inspection							
F	Flow Rate Setting Checks	✓ Weekly		✓				
1	Visual Check of Flow Rate Rotometer	✓ Weekly		✓				
I	n-line Filter Inspection/Replacement	✓ As needed		✓				
S	Sample Line Check for Dirt/Water							
	ride any additional explanation (photo ral or man-made, that may affect the			y) regarding conditions listed above, or any other features,				

The site operator uses the filter bad as a glove.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID

GLR468

Technician Tim Mendenhall

Site Visit Date 10/18/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	6730b	CNU9335F7W	ACAD
DAS	Environmental Sys Corp	8864	C2600	None
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	Illegible	none
Flow Rate	Tylan	FC280	AW9710138	none
Infrastructure	Infrastructure	none	none	none
MFC power supply	Tylan	RO-32	FP9605010	03944
Ozone	ThermoElectron Inc	49i A3NCA	1201477661	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	0733726104	none
Sample Tower	Aluma Tower	В	none	none
Shelter Temperature	ARS	none	none	77
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342	17625	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
UVL	.124-Eric H	lebert-10/19/2023				
1	10/19/2023	DAS	Campbell	000347	CR3000	2126
2	10/19/2023	Ozone	ThermoElectron Inc	000680	49i A1NAA	1030244792
3	10/19/2023	Ozone Standard	ThermoElectron Inc	000438	49i A3NAA	CM08200014
4	10/19/2023	Zero air pump	Werther International	06936	C 70/4	000829169

Ozone Data Form

Mfg	Serial Number	er Tag Site		Te	chnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElectron Inc	1030244792	UVL124		Er	ic Hebert	10/19/2023	Ozone		000680
Slope:	1.00788 Slop	e: (0.00000		Mfg	ThermoElectron	Inc Pa	ramete	rozone
Intercept			0.00000		Serial Number	1180930075	Tf	er Desc	Ozone primary stan
CorrCoff:	0.99998 Cor	rCoff:	0.00000		Tfer ID	01115			
DAS 1:	D	AS 2:			Slope	1.0045	50 Inte	rcent	-0.25270
A Avg % Diff: A	Max % Dif A	Avg %Diff A	Max %	Dif	•			•	
0.0%	0.0%				Cert Date	4/24/202	23 Cori	Coff	1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer	Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	-0.41	-0.		-0.13	ppb			-0.02
primary	2	16.44	16.		16.07	ppb			-0.53
primary	3	32.45	32.		32.09	ppb		-1.21	
primary ·	4	66.61	66. 113		66.43	ppb		0.09	
primary Sensor Compon	5 Audit Press	113.90			113.90 on 732 mmHg	ppb	Status	0.54	
Sensor Compon	ent 26.6 degree	unobstructed ru	le C	onditi	on True		Status	pass	
Sensor Compon	ent Tree dewline	e >10m or below	inlet	onditi	on True		Status	pass	
Sensor Compon	ent ADT 1000-1	0000 vehicles fu	rther t C	onditi	on True		Status	pass	
Sensor Compon	ent ADT <1000	vehicles further	than 5	onditi	on True		Status	pass	
Sensor Compon	ent Sample Tra	in	C	onditi	on Good		Status	pass	
Sensor Compon	ent Inlet Filter C	ondition	C	onditi	on Clean		Status	pass	
Sensor Compon	ent Offset		C	onditi	on 0.40		Status	pass	
Sensor Compon	ent Span		C	onditi	on 1.030		Status	pass	
Sensor Compon	ent Zero Voltag	е	C	onditi	on N/A		Status	pass	
Sensor Compon	ent Fullscale Vo	ltage	C	onditi	on N/A		Status	pass	
Sensor Compon	ent Cell A Freq.		C	onditi	on 115.1 kHz		Status	pass	
Sensor Compon	ent Cell A Noise)	C	onditi	on 0.6 ppb		Status	pass	
Sensor Compon	ent Cell A Flow		C	onditi	0.68 lpm		Status	pass	
Sensor Compon	ent Cell A Press	sure	C	onditi	on 713.5 mmHg		Status	pass	
Sensor Compon	ent Cell A Tmp.		C	onditi	on 33.5 C		Status	pass	
Sensor Compon	ent Cell B Freq.		C	onditi	on 100.7 kHz		Status	pass	
Sensor Compon	ent Cell B Noise)	C	onditi	0n 1.1 ppb		Status	pass	
Sensor Compon	ent Cell B Flow		C	onditi	on 0.68 lpm		Status	pass	
Sensor Compon	ent Cell B Press	sure	C	onditi	on 714.4 mmHg		Status	pass	
Sensor Compon	ent Nafion drye	installed	C	onditi	on False		Status	pass	
Sensor Compon	ent System Mer	mo	C	onditi	on		Status	pass	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
НОХ	X148-Eric F	Hebert-10/19/2023				
1	10/19/2023	DAS	Campbell	000426	CR3000	2533
2	10/19/2023	Ozone	ThermoElectron Inc	000734	49i A1NAA	1105347317
3	10/19/2023	Ozone Standard	ThermoElectron Inc	000544	49i A3NAA	0929938242
4	10/19/2023	Zero air pump	Werther International	06938	C 70/4	000829164

Ozone Data Form

Mfg	S	erial Numbe	r Tag	Site		Tec	chnician	Site Visit Date	Parame	ter	Owner ID
ThermoElectro	on Inc	1105347317		HOX148	3	Er	ic Hebert	10/19/2023	Ozone		000734
Slope: Intercept CorrCoff:	0.4		e: cept [Coff: [C	0.00000		Mfg Serial Number Tfer ID	ThermoElectron 1180930075 01115		rametei er Desc.	Ozone primary stan
DAS 1:		D	AS 2:				Clare	1.0045	50 I4	4	-0.25270
A Avg % Dif	ff: A Ma			Diff A	Max %	% Dif	Slope		_	-	
0.0%	%	0.0%					Cert Date	4/24/202	23 Corr	Coff	1.00000
UseDescrip	tion (ConcGroup	Tfer	Raw	Tf	er Corr	Site	Site Unit	RelPerl	Dif	AbsDif
primary	7	1	-0	.57	-	-0.27	0.19	ppb			0.46
primary	7	2		5.43		5.59	16.45	ppb			0.86
primary	7	3		5.17		35.18	36.04	ppb		2.42	
primary	<i>'</i>	4		.95		54.72	66.09	ppb		2.09	
primary	<i>r</i>	5	11′	7.25	1	16.61	118.90	ppb		1.94	
Sensor Cor	mponent	Audit Pressu	ıre			Condition	738 mmHg		Status	pass	
Sensor Cor	mponent	26.6 degree	unobst	ructed ru	le	Condition	on True		Status	pass	
Sensor Con	mponent	Tree dewline	e >10m	or below	inlet	Condition	On True		Status	pass	
Sensor Con	mponent	ADT 1000-1	0000 ve	ehicles fu	rther t	Condition	True		Status	pass	
Sensor Con	mponent	ADT <1000	vehicles	s further t	than 5	Condition	on True		Status	pass	
Sensor Cor	mponent	Sample Trai	n			Condition	Good		Status	pass	
Sensor Con	mponent	Inlet Filter C	onditior	1		Condition	On Clean		Status	pass	
Sensor Con	mponent	Offset				Condition	0.000		Status	pass	
Sensor Con	mponent	Span				Condition	on 1.023		Status	pass	
Sensor Cor	mponent	Zero Voltage)			Condition	on N/A		Status	pass	
Sensor Cor	mponent	Fullscale Vo	Itage			Condition	N/A		Status	pass	
Sensor Con	mponent	Cell A Freq.				Condition	on 100.3 kHz		Status	pass	
Sensor Con	mponent	Cell A Noise				Condition	1.6 ppb		Status	pass	
Sensor Con	mponent	Cell A Flow				Condition	0.72 lpm		Status	pass	
Sensor Con	mponent	Cell A Press	ure			Condition	695.8 mmHg		Status		
Sensor Cor	mponent	Cell A Tmp.				Condition	on 37.0 C		Status	pass	
Sensor Cor	mponent	Cell B Freq.					on 104.8 kHz		Status	pass	
Sensor Con	mponent	Cell B Noise				Condition	1.3 ppb		Status	pass	
Sensor Con	mponent	Cell B Flow				Condition	0.68 lpm		Status	pass	
Sensor Con	mponent	Cell B Press	ure			Condition	696.7 mmHg		Status	pass	
Sensor Cor	mponent	Nafion dryer	installe	ed		Condition	True		Status	pass	
Sensor Con	mponent	System Men	no			Condition	on		Status	pass	

Site Inventory by Site Visit

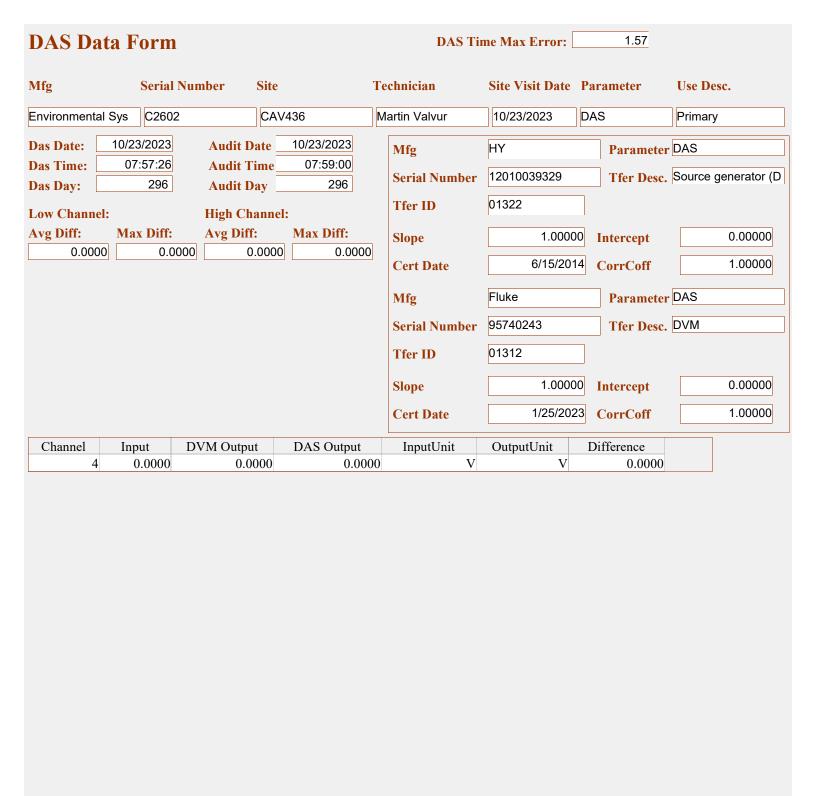
Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ANA	115-Eric H	lebert-10/20/2023				
1	10/20/2023	DAS	Campbell	000339	CR3000	2118
2	10/20/2023	Ozone	ThermoElectron Inc	000699	49i A1NAA	1030244804
3	10/20/2023	Ozone Standard	ThermoElectron Inc	000513	49i A3NAA	0922236889
4	10/20/2023	Zero air pump	Werther International	06933	C 70/4	000836202

Ozone Data Form

Mfg	;	Serial Numb	er Tag	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElect	tron Inc	1030244804		ANA11	15	Er	ic Hebert	10/20/2023	Ozone		000699
Slope: [Intercept		0.99806 Slop 0.18415 Inte	e: ercept		0.00000	=	Mfg Serial Number	ThermoElectron			ozone c. Ozone primary stan
CorrCoff:	1		rCoff:		0.00000)				cr Des	
							Tfer ID	01115			
DAS 1:			AS 2:				Slope	1.004	50 Inter	rcept	-0.25270
		ax % Dif A	Avg %	Diff A	A Max %	% Dif	Cert Date	4/24/20	23 Cori	·Coff	1.00000
0.0	J%	0.0%									
UseDescri	•	ConcGroup		r Raw		er Corr	Site	Site Unit	RelPer	Dif	AbsDif
primar		1		.18		0.46	0.34	ppb			-0.12
primar		3		5.03 3.02		16.19 33.04	16.06	ppb		-1.28	-0.13
primar		4		9.12		58.86	32.62 68.50	ppb ppb		-0.52	
primar	•	5		3.65		13.04	112.70	**		-0.32	
primar Sangar Co	•	1t Audit Press		3.03	1		723 mmHg	ppb	Status		
	•										
Sensor Co	omponen	26.6 degree	unobst	tructed r	rule	Conditi	on True		Status	pass	
Sensor Co	omponen	Tree dewlin	e >10m	or belov	w inlet	Conditi	on True		Status	pass	
Sensor Co	omponen	ADT 1000-	10000 v	ehicles f	further t	Conditi	On True		Status	pass	
Sensor Co	omponen	ADT <1000	vehicle	s furthe	r than 5	Conditi	on True		Status	pass	
Sensor Co	omponer	Sample Tra	in			Conditi	Good		Status	pass	
Sensor Co	omponen	Inlet Filter (Conditio	n		Conditi	on Clean		Status	pass	
Sensor Co	omponen	Offset				Conditi	on -0.20		Status	pass	
Sensor Co	omponen	Span Span				Conditi	on 1.014		Status	pass	
Sensor Co	omponen	zero Voltag	е	Cond		Conditi	ion N/A		Status	pass	
Sensor Co	omponen	Fullscale Vo	oltage			Conditi	on N/A		Status	pass	
Sensor Co	omponen	Cell A Freq	-			Conditi	99.5 kHz		Status	pass	
Sensor Co	omponen	Cell A Nois	е			Conditi	Not tested		Status	pass	
Sensor Co	omponen	Cell A Flow				Conditi	0.70 lpm		Status	pass	
Sensor Co	omponen	Cell A Pres	sure			Conditi	on 690.1 mmHg		Status	pass	
Sensor Co	omponen	Cell A Tmp				Conditi	on 34.3 C		Status	pass	
Sensor Co	omponen	Cell B Freq				Conditi	on 102.8 kHz		Status	pass	
Sensor Co	omponen	Cell B Nois	е			Conditi	Not tested		Status	pass	
Sensor Co	omponer	Cell B Flow				Conditi	0.65 lpm		Status	pass	
Sensor Co	omponen	Cell B Pres	sure			Conditi	0n 689.4 mmHg		Status	pass	
Sensor Co	omponen	Nafion drye	r installe	ed		Conditi	True		Status	pass	
Sensor Co	omponen	System Me	mo			Conditi	on		Status	pass	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CAV	436-Martin	valvur-10/23/2023				
1	10/23/2023	Computer	Hewlett Packard	none	ProBook	5CD01715DB
2	10/23/2023	DAS	Environmental Sys Corp	None	8864	C2602
3	10/23/2023	Modem	Sierra wireless	none	GX450	Unknown
4	10/23/2023	Ozone	ThermoElectron Inc	none	49i A3NAA	0733726103
5	10/23/2023	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460009
6	10/23/2023	Shelter Temperature	ARS	none	none	none
7	10/23/2023	Temperature2meter	RM Young	none	41432VC	31823
8	10/23/2023	Zero air pump	Werther International	none	C 70/4	000915011



Ozone Data Form

Mfg	Serial Number	er Tag Site		Te	chnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElectron Inc	0733726103	CAV436	<u> </u>	Ma	artin Valvur	10/23/2023	Ozone		none
Slope:	0.97980 Slop		0.00000		Mfg	ThermoElectron		ramete	
Intercept CorrCoff:			0.00000		Serial Number	49CPS-70008-3	64 Tf	er Desc	Ozone primary stan
CorrCoii:	1.00000 Cor	rcon:	7.00000		Tfer ID	01110			
DAS 1:	D	AS 2:			Slope	1.0042	26 Inter	rcent	0.20413
A Avg % Diff: A	Max % Dif A	Avg %Diff A	Max % D	oif	•	10/31/202		•	1.00000
0.0%	0.0%				Cert Date	10/31/202	22 Cori	·Coff	1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer C	Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	-0.02	-0.2		-1.00	ppb			-0.78
primary	2	14.45	14.1		12.91	ppb			-1.22
primary	3	33.86	33.4		32.09	ppb		-4	
primary	5	64.00 115.04	63.3		61.40	ppb		-3.06 -2.82	
primary Sensor Compon					on 648 mmHg	ppb	Status		
Sensor Compon	ent 26.6 degree	unobstructed ru	le Co	nditi	True		Status	pass	
Sensor Compon	Tree dewlin	e >10m or below	inlet Co	nditi	True		Status	pass	
Sensor Compon	ADT 1000-1	0000 vehicles fu	rther t Co	nditi	True		Status	pass	
Sensor Compon	ADT <1000	vehicles further	than 5 Co	nditi	True		Status	pass	
Sensor Compon	Sample Tra	in	Со	nditi	Good		Status	pass	
Sensor Compon	ent Inlet Filter C	Condition	Со	nditi	Clean		Status	pass	
Sensor Compon	Offset		Со	nditi	on -0.2		Status	pass	
Sensor Compon	Span Span				on 1.004		Status	pass	
Sensor Compon	Zero Voltag	e			N/A		Status	pass	
Sensor Compon	Fullscale Vo	oltage			N/A		Status		
Sensor Compon	Cell A Freq.		Co	nditi	124.5 kHz		Status	pass	
Sensor Compon	cent Cell A Noise)	Со	nditi	1.1 ppb		Status	pass	
Sensor Compon	Cell A Flow		Со	nditi	0.70 lpm		Status	pass	
Sensor Compon	Cell A Press	sure	Со	nditi	633.4 mmHg		Status	pass	
Sensor Compon	Cell A Tmp.		Со	nditi	37.9 C		Status	pass	
Sensor Compon	Cell B Freq.		Со	nditi	71.8 kHz		Status	pass	
Sensor Compon	Cell B Noise	9	Со	nditi	0.6 ppb		Status	pass	
Sensor Compon	Cell B Flow		Co	nditi	0.69 lpm		Status	pass	
Sensor Compon	Cell B Press	sure	Со	Condition 632.8 mmHg			Status	pass	
Sensor Compon	Nafion drye	r installed	Со	nditi	False		Status	pass	
Sensor Compon	ent System Mer	no	Со	nditi	on		Status	pass	

2 Meter Temperature Data Form Calc. Difference Serial Number Tag Site **Technician** Site Visit Date Parameter Mfg **Owner ID** CAV436 Martin Valvur 10/23/2023 RM Young 31823 Temperature2meter none Mfg Fluke Parameter Temperature 3275143 Tfer Desc. RTD **Serial Number** 01229 Tfer ID **Slope** 1.00002 **Intercept** -0.00336 **DAS 1: DAS 2:** 1/23/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff **Cert Date** 0.69 0.74 InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Difference UseDescription Test type Temp Low Rang 0.14 0.14 0.000 0.88C0.74 primary 24.40 0.000 25.11 C 0.71 primary Temp Mid Range 24.40 Temp High Rang primary 48.09 48.09 0.000 48.71 C 0.62 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** ARS Martin Valvur none CAV436 10/23/2023 Shelter Temperature 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** 0.32 0.69 01229 Tfer ID 1.00002 -0.00336 **Slope** Intercept 1/23/2023 1.00000 **Cert Date** CorrCoff OSE Unit Difference UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng primary Temp Mid Range 20.51 20.51 0.00021.2 \mathbf{C} 0.69 21.06 21.06 C Temp Mid Range 0.00021.3 0.26 primary C 24.12 24.12 0.000 -0.02 primary Temp Mid Range 24.1 Status pass Sensor Component System Memo

Condition

Field Systems Comments

1 Parameter: SiteOpsProcComm

Dry deposition samples are not collected at this site.

2 Parameter: DocumentationCo

The site is visited every other Tuesday.

3 Parameter: MetSensorComme

The 2-meter temperature sensor is mounted one meter above the building roof and facing south. The building is likely to impact the accuracy of the measurements.

F-02058-1500-S1-rev002 Field Systems Data Form Site Visit Date 10/23/2023 CAV436 Technician | Martin Valvur **Site ID 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 OAPP 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** City, State Carlsbad, NM **Present** Fire Extinguisher 88220 Inspected March 2023 **Zip Code** Mountain in vehicle 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** Shelter One Model E8129-29034 768 cutt **Shelter Size ✓** Notes **Shelter Clean ✓** Notes Site OK

Driving Directions

Fi	eld Systems Data Form		F-02058-1500-S3-rev002
Site	CAV436 Technician Martin Valvur		Site Visit Date 10/23/2023
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)	V	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?		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 areas of standing water should be avoided)	of	Attached to roof railing
6	Is the solar radiation sensor plumb?	✓	
7	Is it sited to avoid shading, or any artificial or reflected ligh	ıt? 🗹	
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?	✓	
	vide any additional explanation (photograph or sketch if ne ural or man-made, that may affect the monitoring paramete		y) regarding conditions listed above, or any other features,

The 2-meter temperature sensor is mounted one meter above the building roof and facing south. The building is likely to impact the accuracy of the measurements.

Fi	eld Systems Data Form	F-02058-1500-S4-rev002
Site	CAV436 Technician Martin Valvur	Site Visit Date 10/23/2023
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?	
	vide any additional explanation (photograph or sketch if necess ral or man-made, that may affect the monitoring parameters:	

Fi	eld Systems Data Form	F-02058-1500-S5-rev002	
Site	CAV436 Technician Martin Valvur		Site Visit Date 10/23/2023
	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	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 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?		
9	Is there a rotometer in the dry deposition filter line, and is it clean?	✓	N/A
Prov natu	vide 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 ID CAV436 Technician Martin Valvur Site Visit Date 10/23/2023 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?

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

CAV436 Technician | Martin Valvur Site Visit Date 10/23/2023 Site ID **Documentation** Does the site have the required instrument and equipment manuals? N/A Yes No No N/A Yes **V ✓** Wind speed sensor Data logger П **V V** Wind direction sensor Data logger ✓ **V** П **Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** Solar radiation sensor **V** Modem 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 Surge protector** П **V ~ UPS Solar radiation translator ~ V** Tipping bucket rain gauge Lightning protection device ~ \checkmark П **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** П Site Ops Manual **HASP Field Ops Manual Calibration Reports** Ozone z/s/p Control Charts Preventive maintenance schedule Is the station log properly completed during every site visit? 🗸 Dataview 1 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? 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:

F-02058-1500-S7-rev002

Field Systems Data Form

The site is visited every other Tuesday.

Field Systems Data Form F-02058-1500-S8-rev002 CAV436 Technician Martin Valvur Site Visit Date 10/23/2023 Site ID Site operation procedures N/A Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? N/A 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 every other 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 **✓** Semiannually **Multipoint Calibrations V** П Bi-monthly **Visual Inspections Translator Zero/Span Tests (climatronics) ✓** Bi-monthly **Manual Rain Gauge Test ✓** Bi-monthly **Confirm Reasonableness of Current Values Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed** Compliant Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Bi-monthly Manual Zero/Span Tests **V ~** Daily **Automatic Precision Level Tests V Manual Precision Level Test ✓ V** Bi-monthly **Analyzer Diagnostics Tests V ✓** Bi-monthly **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze **V V** Sample Line Check for Dirt/Water Bi-monthly **V ~** Bi-monthly **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?

Field Systems Data Form			F-02058-1500-S9-rev0				
Site ID CAV436 Tec	hnician Martin Valvur		Site Visit Date 10/23/2023				
Site operation procedures							
1 Is the filter pack being changed every	y Tuesday as scheduled?	V	N/A				
2 Are the Site Status Report Forms be correctly?	ing completed and filed	✓ N	N/A				
3 Are data downloads and backups be scheduled?	ing performed as	✓ N	N/A				
4 Are general observations being made	e and recorded? How?	V	N/A				
5 Are site supplies on-hand and replen fashion?	ished in a timely	V	N/A				
6 Are sample flow rates recorded? How	w?	✓ N	N/A				
7 Are samples sent to the lab on a regularishion?	ılar schedule in a timely	✓ N	N/A				
8 Are filters protected from contamina and shipping? How?	ntion during handling		N/A				
9 Are the site conditions reported regular operations manager or staff?	llarly 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 ✓ N/A			✓				
In-line Filter Inspection/Replacement	✓ N/A		✓				
Sample Line Check for Dirt/Water	✓ N/A		✓				
Provide any additional explanation (photo natural or man-made, that may affect the		sary) 1) regarding conditions listed above, or any other features,				

Dry deposition samples are not collected at this site.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID CAV436 Technician Martin Valvur Site Visit Date 10/23/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	ProBook	5CD01715DB	none
DAS	Environmental Sys Corp	8864	C2602	None
Modem	Sierra wireless	GX450	Unknown	none
Ozone	ThermoElectron Inc	49i A3NAA	0733726103	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	CM08460009	none
Shelter Temperature	ARS	none	none	none
Temperature2meter	RM Young	41432VC	31823	none
Zero air pump	Werther International	C 70/4	000915011	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
СНА	1467-Martii	n Valvur-10/24/2023				
1	10/24/2023	DAS	Environmental Sys Corp	90611	8816	2613
2	10/24/2023	Ozone	ThermoElectron Inc	none	49i A3NAA	CM08460007
3	10/24/2023	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460051
4	10/24/2023	Zero air pump	Werther International	none	PC70/4	531392

Ozone Data Form

Mfg	Serial Number	er Tag Site	Т	echnician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	CM08460007	CHA467	N	Martin Valvur	10/24/2023	Ozone	none
Intercept		e: 0.00 rcept 0.00 rCoff: 0.00	000	Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-36 01110		ozone C. Ozone primary stan
DAS 1:	D	AS 2:		Slope	1.0042	5 Intercept	0.20413
A Avg % Diff: A		Avg %Diff A Ma	x % Dif	Cert Date	10/31/202	_	1.00000
0.0%	0.0%			CCIT Date		Correon	
UseDescription	ConcGroup	Tfer Raw	Tfer Corr		Site Unit	RelPerDif	AbsDif
primary	1	0.09	-0.11	0.84	ppb		0.95
primary	2	15.10	14.78	14.04	ppb	1.61	-0.74
primary	3	34.97	34.50	33.95	ppb	-1.61	
primary	5	64.57 115.40	63.88	62.57	ppb	-2.07 -0.98	
primary Sensor Compone				tion 633 mmHg	ppb	Status pass	
			_				
Sensor Compone	ent 26.6 degree	unobstructed rule	Condi	tion True		Status pass	
Sensor Compone	Tree dewline	e >10m or below inle	et Condi	tion True		Status pass	
Sensor Compone	ent ADT 1000-1	0000 vehicles furthe	er t Condi	tion True		Status pass	
Sensor Compone	ent ADT <1000	vehicles further than	15 Condi	tion True		Status pass	
Sensor Compone	ent Sample Trai	n	Condi	tion Good		Status pass	
Sensor Compone	ent Inlet Filter C	ondition	Condi	tion Clean		Status pass	
Sensor Compone	ent Offset		Condi	tion -0.4		Status pass	
Sensor Compone	ent Span		Condi	tion 1.025		Status pass	
Sensor Compone	ent Zero Voltage	е	Condi	tion 0.000		Status pass	
Sensor Compone	ent Fullscale Vo	ltage	Condi	tion 1.000		Status pass	
Sensor Compone	ent Cell A Freq.		Condi	tion 110.3 kHz		Status pass	
Sensor Compone	ent Cell A Noise)	Condi	tion 1.4 ppb		Status pass	
Sensor Compone	ent Cell A Flow		Condi	tion 0.71 lpm		Status pass	
Sensor Compone	ent Cell A Press	sure	Condi	tion 625.4 mmHg		Status pass	
Sensor Compone	ent Cell A Tmp.		Condi	tion 33.3 C		Status pass	
Sensor Compone	ent Cell B Freq.		Condi	tion 103.7 kHz		Status pass	
Sensor Compone	ent Cell B Noise)	Condi	tion 1.8 ppb		Status pass	
Sensor Compone	ent Cell B Flow		Condi	tion 0.67 lpm		Status pass	
Sensor Compone	ent Cell B Press	sure	Condi	tion 624.5 mmHg		Status pass	
Sensor Compone	ent Nafion dryer	· installed	Condi	tion False		Status pass	
Sensor Compone	System Mer	mo	Condi	tion		Status pass	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRC474-Martin Valvur-10/25/2023						
1	10/25/2023	DAS	Environmental Sys Corp	90602	8816	2270
2	10/25/2023	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943902
3	10/25/2023	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450191
4	10/25/2023	Zero air pump	Werther International	none	PC70/4	531380

Ozone Data Form

Mfg	Serial Number	er Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1023943902	GRC47	4	Martin Valvur	10/25/2023	Ozone	none
Intercept -(rcept	0.0000.0 0.0000.0 0.00000	Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-36		ozone Ozone primary stan
DAS 1: A Avg % Diff: A M 0.0%		AS 2: Avg %Diff A	Max % Dif	Slope Cert Date	1.0042		0.20413
UseDescription	ConcGroup	Tfer Raw	Tfer Co		Site Unit	RelPerDif	AbsDif
primary	1	0.07	-0.13	-1.01	ppb		-0.88
primary	2	14.33	14.01	13.02	ppb		-0.99
primary	3	35.51	35.04		ppb	-4.52	
primary	4	65.15	64.45	61.91	ppb	-4.02	
primary	5	116.24	115.16		ppb	-3.23	
Sensor Compone	nt Audit Pressi	ure	Con	dition 597 mmHg		Status pass	
Sensor Compone	nt 26.6 degree	unobstructed ru	le Con	dition True		Status pass	
Sensor Compone	nt Tree dewline	e >10m or below	inlet Con	dition True		Status pass	
Sensor Compone	nt ADT 1000-1	0000 vehicles fu	ırther t Con	dition True		Status pass	
Sensor Compone	nt ADT <1000	vehicles further	than 5 Con	dition True		Status pass	
Sensor Compone	nt Sample Trai	n	Con	dition Good		Status pass	
Sensor Compone	nt Inlet Filter C	ondition	Con	dition Clean		Status pass	
Sensor Compone	nt Offset		Con	dition -0.1		Status pass	
Sensor Compone	nt Span		Con	dition 1.021		Status pass	
Sensor Compone	nt Zero Voltag	е	Con	dition 0.0002		Status pass	
Sensor Compone	nt Fullscale Vo	ltage	Con	dition 1.0001		Status pass	
Sensor Compone	nt Cell A Freq.		Con	dition 87.3 kHz		Status pass	
Sensor Compone	nt Cell A Noise)	Con	dition 0.9 ppb		Status pass	
Sensor Compone	nt Cell A Flow		Con	dition 0.68 lpm		Status pass	
Sensor Compone	nt Cell A Press	sure	Con	dition 592.7 mmHg		Status pass	
Sensor Compone	nt Cell A Tmp.		Con	dition 34.1 C		Status pass	
Sensor Compone	nt Cell B Freq.		Con	dition 80.5 kHz		Status pass	
Sensor Compone	nt Cell B Noise		Con	dition 0.6 ppb		Status pass	
Sensor Compone	nt Cell B Flow		Con	dition 0.69 lpm		Status pass	
Sensor Compone	nt Cell B Press	sure	Con	dition 592.1 mmHg		Status pass	
Sensor Compone	nt Nafion dryer	installed	Con	dition False		Status pass	
Sensor Compone	System Mor	no	Con	dition		Status pass	

Site Inventory by Site Visit

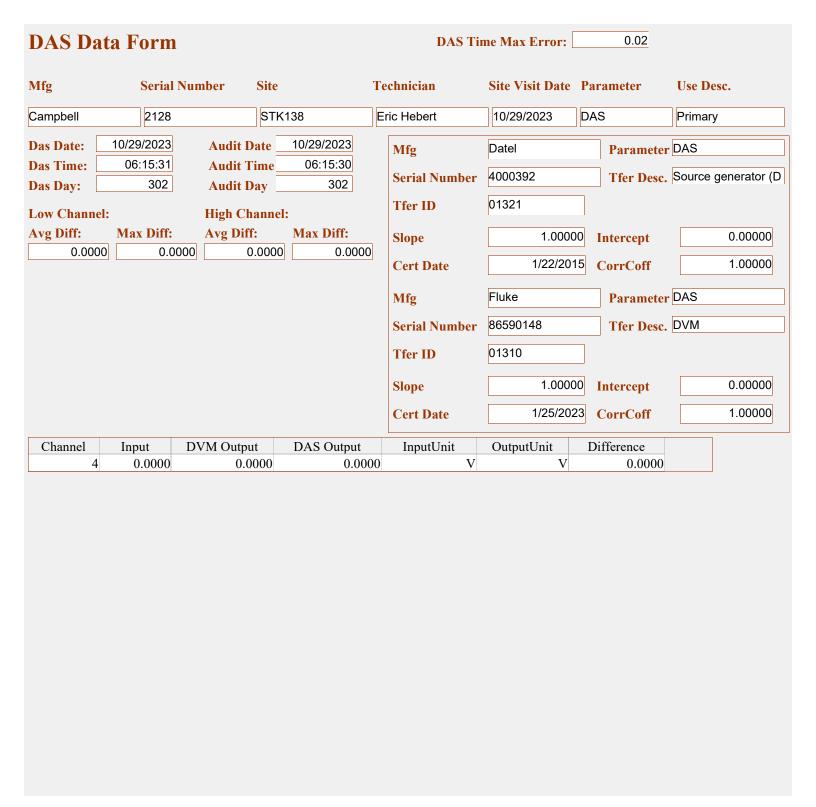
Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number	
PET427-Martin Valvur-10/26/2023							
1	10/26/2023	DAS	Environmental Sys Corp	90641	8816	2526	
2	10/26/2023	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943901	
3	10/26/2023	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1211052489	
4	10/26/2023	Zero air pump	Werther International	none	PC 70/4	531382	

Ozone Data Form

Mfg	Serial Number	er Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1023943901	PET427		Martin Valvur	10/26/2023	Ozone	none
Slope:	0.95667 Slop 0.46781 Inte		0.0000.0000.000.000.0000.0000.00000.0000	Mfg	ThermoElectron		
Intercept CorrCoff:		терг	0.00000	Serial Number	49CPS-70008-3	64 Tfer Des	Ozone primary stan
	Con	Con.		Tfer ID	01110		
DAS 1:	D	AS 2:		Slope	1.0042	26 Intercept	0.20413
A Avg % Diff: A 0.0%	Max % Dif A 0.0%	Avg %Diff A	Max % D	Cert Date	10/31/202	CorrCoff	1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer C	orr Site	Site Unit	RelPerDif	AbsDif
primary	1	0.14	-0.00		ppb		1.83
primary	2	15.38	15.0		ppb		-1.31
primary ·	3	34.30	33.8		ppb	-4.29	
primary primary	5	58.46 115.72	57.8 114.6		ppb ppb	-3.9 -3.68	
Sensor Compon		I .		ndition 622 mmHg	rr	Status pass	
Sensor Compon				ndition True		Status pass	
Sensor Compon				ndition True		Status pass	
Sensor Compon	ent ADT 1000-1	0000 vehicles fu	rther t Co	ndition True		Status pass	
Sensor Compon	ent ADT <1000	vehicles further	than 5 Co	ndition True		Status pass	
Sensor Compon	ent Sample Tra	in	Co	ndition Good		Status pass	
Sensor Compon	ent Inlet Filter C	ondition	Co	ndition Not tested		Status pass	
Sensor Compon	ent Offset		Co	ndition 0.000		Status pass	
Sensor Compon	ent Span		Co	ndition 1.004		Status pass	
Sensor Compon	ent Zero Voltag	е	Co	ndition 0.0001		Status pass	
Sensor Compon	ent Fullscale Vo	ltage	Co	ndition 1.0001		Status pass	
Sensor Compon	ent Cell A Freq.		Co	ndition 87.5 kHz		Status pass	
Sensor Compon	ent Cell A Noise)	Co	ndition 0.4 ppb		Status pass	
Sensor Compon	ent Cell A Flow		Co	ndition 0.52 lpm		Status pass	
Sensor Compon	ent Cell A Press	sure	Co	ndition 615.5 mmHg		Status pass	
Sensor Compon	cent Cell A Tmp.		Co	ndition 33.6 C		Status pass	
Sensor Compon	ent Cell B Freq.		Co	ndition 87.1 kHz		Status pass	
Sensor Compon	ent Cell B Noise)	Co	ndition 0.6 ppb		Status pass	
Sensor Compon	cent Cell B Flow		Co	ndition 0.51 lpm		Status pass	
Sensor Compon	ent Cell B Press	sure	Co	ndition 614.9 mmHg		Status pass	
Sensor Compon	ent Nafion drye	rinstalled	Co	ndition False		Status pass	
Sensor Compon	ent System Mer	no	Co	ndition		Status pass	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number				
STK	TK138-Eric Hebert-10/29/2023									
1	10/29/2023	Computer	Dell	07065	Inspiron 15	1Y3MC12				
2	10/29/2023	DAS	Campbell	000349	CR3000	2128				
3	10/29/2023	Elevation	Elevation	None	1	None				
4	10/29/2023	Filter pack flow pump	Thomas	04923	107CAB18	060300019959				
5	10/29/2023	Flow Rate	Apex	000461	AXMC105LPMDPCV	illegible				
6	10/29/2023	Infrastructure	Infrastructure	none	none	none				
7	10/29/2023	Modem	Digi	07179	LR54	unknown				
8	10/29/2023	Ozone	ThermoElectron Inc	000625	49i A1NAA	1009241797				
9	10/29/2023	Ozone Standard	ThermoElectron Inc	000445	49i A3NAA	CM08200021				
10	10/29/2023	Sample Tower	Aluma Tower	03554	Α	none				
11	10/29/2023	Shelter Temperature	Campbell	none	107-L	unknown				
12	10/29/2023	Siting Criteria	Siting Criteria	None	1	None				
13	10/29/2023	Temperature	RM Young	06407	41342VC	14040				
14	10/29/2023	Zero air pump	Werther International	06897	C 70/4	000821893				



Flow Data Form **Technician Owner ID** Mfg Serial Number Tag Site Site Visit Date Parameter STK138 Eric Hebert 000461 Apex illegible 10/29/2023 Flow Rate Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID 0.00000 **Slope** 1.00000 Intercept 2/23/2023 1.00000 CorrCoff **Cert Date** 0.01 **DAS 2: DAS 1:** Cal Factor Zero 1.02 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.90% 1.35% 1.45 **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignal PctDifference Desc. primary pump off 0.000 0.000-0.01 0.0000.001/m1/mleak check 0.000 0.000 0.01 0.0000.02 1/ml/mprimary 1.47 0.000 1/m 1.35% test pt 1 1.483 1.480 1.50 1/mprimary 1.483 1.480 1.47 0.000 1.50 1/m1/m1.35% primary test pt 2 1.47 0.0001/m0.00% test pt 3 1.500 1.500 1.50 1/mprimary 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 6.0 cm Status pass

Condition 2.2 cm

Condition 270 deg

Condition

Status pass

Status pass

Status pass

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Ozone Data Form

Mfg	Serial Numbe	er Tag Site		Tec	hnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElectron Inc	1009241797	STK138	I	Eri	c Hebert	10/29/2023	Ozone		000625
Intercept 0		rcept	0.00000 0.00000 0.00000		Mfg Serial Number	ThermoElectron			ozone c. Ozone primary stan
					Tfer ID	01115			
DAS 1:	D	AS 2:			Slope	1.004	50 Inte	rcept	-0.25270
A Avg % Diff: A Ma		Avg %Diff A	Max % Di	f	Cert Date	4/24/20	_	:Coff	1.00000
0.0%	0.0%				Cert Date	172 1720	Corr	Con	1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer Co	orr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	-0.22	0.07		0.38	ppb			0.31
primary	2	16.50	16.65			ppb			0.38
primary	3	36.35	36.35		37.00	ppb		1.77	
primary	4	69.71	69.45		70.68	ppb		1.76	
primary	5	114.62	114.0	0	116.10	ppb		1.83	
Sensor Componen	Audit Pressi	ure	Con	nditio	Not tested		Status	pass	
Sensor Componen	26.6 degree	unobstructed ru	le Con	nditio	True		Status	pass	
Sensor Componen	Tree dewline	e >10m or below	inlet Con	nditio	True		Status	pass	
Sensor Componen	ADT 1000-1	0000 vehicles fu	ırther t Con	nditio	True		Status	pass	
Sensor Componen	ADT <1000	vehicles further	than 5 Con	ditio	True		Status	pass	
Sensor Componen	Sample Trai	in	Con	nditio	Good		Status	pass	
Sensor Componen	Inlet Filter C	ondition	Con	nditio	n Clean		Status	pass	
Sensor Componen	Offset		Con	nditio	on -0.20		Status	pass	
Sensor Componen	Span		Con	ıditio	n 1.032		Status	pass	
Sensor Componen	Zero Voltag	е	Con	nditio	n N/A		Status	pass	
Sensor Componen	t Fullscale Vo	ltage	Con	nditio	n N/A		Status	pass	
Sensor Componen	t Cell A Freq.		Con	nditio	100.4 kHz		Status	pass	
Sensor Componen	Cell A Noise)	Con	nditio	0.9 ppb		Status	pass	
Sensor Componen	Cell A Flow		Con	nditio	0.63 lpm		Status	pass	
Sensor Componen	Cell A Press	sure	Con	nditio	699.3 mmHg		Status	pass	
Sensor Componen	Cell A Tmp.		Con	nditio	34.1 C		Status	pass	
Sensor Componen	Cell B Freq.		Con	nditio	n 101.7 kHz		Status	pass	
Sensor Componen	Cell B Noise)	Con	nditio	1.0 ppb		Status	pass	
Sensor Componen	Cell B Flow		Con	nditio	0.57 lpm		Status	pass	
Sensor Componen	Cell B Press	sure	Con	nditio	698.7 mmHg		Status	pass	
Sensor Componen	Nafion dryer	rinstalled	Con	nditio	True		Status	pass	
Sensor Componen	System Mer	no	Con	nditio	on		Status	pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg RM Young 14040 STK138 Eric Hebert 10/29/2023 Temperature 06407 Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID 0.16485 **Slope** 1.00945 **Intercept DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.08 0.11 UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Low Range 0.19 0.02 0.0000.1 \mathbf{C} 0.11 C Temp Mid Range 28.50 28.07 0.000 28.0 -0.11 primary 48.89 48.27 0.000 C -0.02 primary Temp High Range 48.3 **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** STK138 10/29/2023 Shelter Temperature Campbell unknown Eric Hebert 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** 0.65 1.54 01227 **Tfer ID** 1.00945 0.16485 **Slope** Intercept 2/17/2023 1.00000 **Cert Date** CorrCoff

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	25.82	25.42	0.000	25.2	С	-0.21
primary	Temp Mid Range	23.14	22.76	0.000	24.3	С	1.54
primary	Temp Mid Range	28.48	28.05	0.000	27.9	С	-0.2
Sensor Con	nponent System Memo)	Condition	Status pass			





Infrastructure Data For

Site ID STK138 Technician Eric Hebert Site Visit Date 10/29/2023

Shelter Make	Shelter Model	Shelter Size	
Ekto	8810 (s/n 2149-21)	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	Moisture Trap Type	Condition	Glass bottle and filter	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	Poor	Status	Fail
Sensor Component	Shelter Condition	Condition	Poor	Status	Fail
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Poor	Status	Fail
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
Sensor Component	System Memo	Condition		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 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	System Memo	Condition	Status	pass
	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is completing the SSRF information on the day the filter is removed rather than when installed. He is also indicating on the form that the ozone inlet filter is changed every week.

2 Parameter: DasComments

The sample tower is original and is in poor condition. The lower section has been cut to allow the upper section to fold down completely.

3 Parameter: SiteOpsProcedures

The ozone sample train is leak tested every 2 weeks.

4 Parameter: SitingCriteriaCom

The site is located in a corn field on a cattle farm. Corn is planted within 10 meters.

5 Parameter: ShelterCleanNotes

There are signs of leaks on the walls and floor rot. The shelter has continued to deteriorate since the previous audit visit.

Field Systems Da	ata Form		F-02058-1500-S1-rev002
Site ID STK138	Technician Eric Hebert	Site Visit Date 10/2	29/2023
Site Sponsor (agency)	EPA	USGS Map	Kent
Operating Group	Private	Map Scale	
AQS#	17-085-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	42.2872
Deposition Measurement	dry	QAPP Longitude	-89.9998
Land Use	agricultural	QAPP Elevation Meters	274
Terrain	rolling	QAPP Declination	1.3
Conforms to MLM	Yes	QAPP Declination Date	2/22/2006
Site Telephone		Audit Latitude	42.287216
Site Address 1	10939 E. Parker Road	Audit Longitude	-89.99995
Site Address 2		Audit Elevation	281
County	Jo Daviess	Audit Declination	-1.3
City, State	Stockton, IL	Present	
Zip Code	61085	Fire Extinguisher	new in 2015
Time Zone	Central	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Steps	
Shelter Working Room ✓	Make Ekto M	odel 8810 (s/n 2149-21)	Shelter Size 640 cuft
Shelter Clean	Notes There are signs of leaks on the previous audit visit.	e walls and floor rot. The shelt	er has continued to deteriorate since the
Site OK	Notes Notes		
	Stockton go south on 78 (Main Street) for ue straight onto a dirt road. There will be		
Contir	nue through that intersection, the site will liles bearing to the left on dirt roads to the	be visible in the distance on a	hill-side to the left. Continue another

Field Systems Data Form F-02058-1500-S3-rev002 Site Visit Date 10/29/2023 Technician Eric Hebert Site ID STK138 ✓ 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? Mounted to sample tower 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 facing north?

✓ N/A

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

11 Is it inclined approximately 30 degrees?

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

Fi	eld Systems Data Form	F-02058-1500-S4-rev002
Site	STK138 Technician Eric Hebert	Site Visit Date 10/29/2023
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:	esary) regarding conditions listed above, or any other features,

Fi	eld Systems Data Form	F-02058-1500-S5-rev002							
Site	STK138 Technician Eric Hebert		Site Visit Date 10/29/2023						
	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	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 18 meters						
4	Describe dry dep sample tube.		3/8 teflon by 18 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

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

F-02058-1500-S6-rev002

Site	e ID	STK138	Technician	Eric Hebert		Site Visit Date	10/29/2023	
	DAS, sensor translators, and peripheral equipment operations and maintenance							
1		DAS instruments appealintained?	ar to be in good	condition and	✓			
2		the components of the , backup, etc)	DAS operation	al? (printers,	✓			
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?					Met sensors only		
4					✓			
5	Are the	signal leads connected	to the correct	DAS channel?	✓			
6	6 Are the DAS, sensor translators, and shelter properly grounded?							
7	Does th	e instrument shelter ha	ave a stable pow	ver source?	✓			
8	Is the in	nstrument shelter temp	erature control	lled?	✓			
9	Is the n	net tower stable and gr	ounded?			Stable	Grounded	
10	Is the sa	ample tower stable and	grounded?			✓	✓	
11	Tower	comments?					V	
Pro	Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,							

The sample tower is original and is in poor condition. The lower section has been cut to allow the upper section to fold down completely.

Field Systems Data Form F-02058-1500-S7-rev002 STK138 Technician Eric Hebert Site Visit Date 10/29/2023 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 V Temperature sensor** Strip chart recorder **✓ V** Relative humidity sensor Computer **V** Solar radiation sensor **V** Modem П **V V Printer** Surface wetness sensor **✓ V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump **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 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 **✓** 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 STK138 Technician Eric Hebert Site Visit Date 10/29/2023 Site ID Site operation procedures Trained by previous 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 **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** 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 **V V** As needed Manual Zero/Span Tests **V ~** Daily **Automatic Precision Level Tests V Manual Precision Level Test** As needed **✓ V** Weekly **Analyzer Diagnostics Tests V** Weekly **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** 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, natural or man-made, that may affect the monitoring parameters:

Call-in only

The ozone sample train is leak tested every 2 weeks.

reported? If yes, how?

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

Field Systems Data Form F-02058-1500-S9-rev002 STK138 Technician Eric Hebert Site Visit Date 10/29/2023 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? **✓** 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** 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 is completing the SSRF information on the day the filter is removed rather than when installed. He is also indicating on the

form that the ozone inlet filter is changed every week.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID

STK138

Technician Eric Hebert

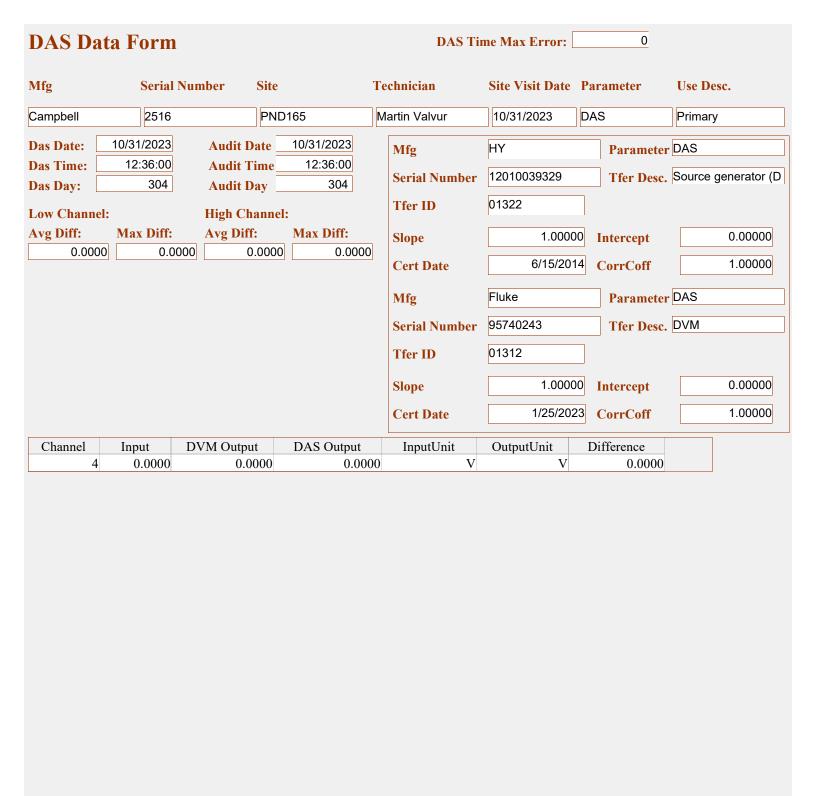
Site Visit Date 10/29/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	1Y3MC12	07065
DAS	Campbell	CR3000	2128	000349
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060300019959	04923
Flow Rate	Apex	AXMC105LPMDPC	illegible	000461
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07179
Ozone	ThermoElectron Inc	49i A1NAA	1009241797	000625
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200021	000445
Sample Tower	Aluma Tower	A	none	03554
Shelter Temperature	Campbell	107-L	unknown	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	14040	06407
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
PNI	D165-Martir	ı Valvur-10/31/2023				
1	10/31/2023	DAS	Campbell	000403	CR3000	2516
2	10/31/2023	Elevation	Elevation	None	1	None
3	10/31/2023	Filter pack flow pump	Thomas	00534	107CA18	0000162757
4	10/31/2023	Flow Rate	Apex	000871	AXMC105LPMDPCV	illegible
5	10/31/2023	Infrastructure	Infrastructure	none	none	none
6	10/31/2023	Modem	Digi	07123	LR54	Illegible
7	10/31/2023	Noy	Teledyne	000807	T200U	112
8	10/31/2023	Ozone	ThermoElectron Inc	000676	49i A1NAA	1030244794
9	10/31/2023	Ozone Standard	ThermoElectron Inc	000694	49i A3NAA	1030244815
10	10/31/2023	Sample Tower	Aluma Tower	000055	В	AT-81213-J12
11	10/31/2023	Shelter Temperature	Campbell	none	107-L	none
12	10/31/2023	Siting Criteria	Siting Criteria	None	1	None
13	10/31/2023	Temperature	RM Young	06539	41342	14800
14	10/31/2023	Zero air pump	Werther International	06881	C 70/4	000815264



Flow Data Form **Technician Owner ID** Mfg Serial Number Tag Site Site Visit Date Parameter Martin Valvur 10/31/2023 000871 Apex illegible PND165 Flow Rate Mfg BIOS Parameter Flow Rate 152253 Tfer Desc. BIOS 220-H **Serial Number** 15225 Tfer ID 0.00000 **Slope** 1.00000 Intercept 5/2/2022 1.00000 CorrCoff **Cert Date** 0.01 **DAS 2: DAS 1:** Cal Factor Zero 1 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.29% 0.33% 3.6 **Rotometer Reading:** OutputSignal Output S E InputUnit OutputSignall PctDifference Test type Input l/m Input Corr MfcDisp. Desc. 1/mprimary pump off 0.000 0.0000.00 0.0000.01 1/mleak check 0.000 0.000 0.01 0.0000.02 1/ml/mprimary 3.01 0.000 1/m 0.33% test pt 1 3.011 3.010 3.02 1/mprimary 3.016 3.020 3.02 0.000 3.01 1/m1/m-0.33% primary test pt 2 3.02 0.0001/m0.20% test pt 3 3.004 3.000 3.01 1/mprimary 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 Sensor Component Filter Depth Condition 2.5 cm Status pass Status pass **Sensor Component** Filter Azimuth Condition 180 deg

Condition

Sensor Component System Memo

Status pass

Ozone Data Form

A Avg % Diff: A Max % Dif A Avg %Diff A Max % Dif	Mfg		Serial Numb	er Tag	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
Intercept	ThermoElec	tron Inc	1030244794		PND16	55	Ma	artin Valvur	10/31/2023	Ozone		000676
DAS 1:	Intercept	-:	2.68838 Into	ercept		0.00000	ס	Serial Number	49CPS-70008-3			
A vg % Diff: A Max % Dif								Tfer ID	01110			
UseDescription ConcGroup Tfer Raw Tfer Corr Site Site Unit RelPerDif AbsDif Primary 1 0.14 -0.06 -4.20 ppb -4.14 Primary 2 16.32 15.99 14.65 ppb -4.19 Primary 3 36.12 35.64 33.92 ppb -4.95 Primary 4 66.12 65.41 62.78 ppb -4.11 Primary 5 117.68 116.59 114.40 ppb -1.9 Primary 5 117.68 116.59 Primary 5 117.68 116.59 Primary 5 117.68 116.59 Primary 5 117.68 116.59 Primary 5 117.68 Primary	DAS 1:		D	AS 2:				Slope	1.0042	26 Inter	rcept	0.20413
UseDescription ConeGroup Tfer Raw Tfer Corr Site Site Unit RelPerDif AbsDif				Avg %	Diff A	Max 9	% Dif	Cert Date	10/31/20	22 Corr	·Coff	1.00000
Primary 1 0.14 -0.06 -4.20 ppb -4.14 Primary 2 16.32 15.99 14.65 ppb -1.34 Primary 3 36.12 35.64 33.92 ppb -4.95 Primary 4 66.12 65.41 62.78 ppb -4.11 Primary 5 117.68 116.59 114.40 ppb -1.9 Sensor Component Audit Pressure Condition True Status pass Sensor Component Ze6.6 degree unobstructed rule Condition True Status pass Sensor Component Tree dewline > 10m or below inlet Condition True Status pass Sensor Component ADT 1000-10000 vehicles further t Condition True Status pass Sensor Component ADT 1000-vehicles further than 5 Condition True Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Offset Condition Condition Condition Condition Sensor Component Span Condition 1.99 Status pass Sensor Component Span Condition 1.068 Status pass Sensor Component Span Condition N/A Status pass Sensor Component Cell A Freq. Condition N/A Status pass Sensor Component Cell A Freq. Condition Condition Sensor Component Cell A Freq. Condition Sensor Component Cell A Freq. Condition Sensor Component Cell A Freq. Condition Sensor Sensor Component Cell B Freq. Condition Sensor Sensor Component Cell B Freq. Condition Sensor Sensor Sensor Sensor Component Cell B Freq. Condition Sensor Sensor Sensor Sensor Sensor Sens	0.0	0%	0.0%							Con		
	UseDescri	iption	ConcGroup						Site Unit	RelPer	Dif	
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	Sensor C	ompone	nt Cell B Flow	1			Condition	0.62 lpm		Status	pass	
Sensor Component Nation dryer installed Condition False Status pass	Sensor C	ompone	nt Cell B Pres	sure			Condition	560.7 mmHg		Status	pass	
Status Page	Sensor C	ompone	nt Nafion drye	r installe	ed		Condition	on False		Status	pass	
Sensor Component System Memo Condition Status pass	Sensor C	ompone	nt System Me	mo			Condition	on		Status	pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg RM Young 14800 PND165 Martin Valvur 10/31/2023 Temperature 06539 Mfg Fluke Parameter Temperature Tfer Desc. RTD 3275143 **Serial Number** 01229 Tfer ID 1.00002 -0.00336 **Slope Intercept DAS 1: DAS 2: Cert Date** 1/23/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.06 0.08 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.12 0.12 0.0000.2 \mathbf{C} 0.07 C Temp Mid Range 21.62 21.62 0.000 21.6 -0.03 primary 0.000 C primary Temp High Range 47.14 47.14 47.1 -0.08Status pass Sensor Component | Shield **Condition** Clean **Condition** Functioning 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 Campbell PND165 10/31/2023 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** 0.43 0.82 01229 Tfer ID 1.00002 -0.00336 **Slope** Intercept 1/23/2023 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 21.16 21.16 0.00020.3 C -0.82C Temp Mid Range 21.29 21.29 0.00021.6 0.33 primary

21.16

Condition

0.000

21.16

primary

Temp Mid Range

Sensor Component System Memo

C

Status pass

0.15

21.3

Infrastructure Data For

Site ID PND165 Technician Martin Valvur Site Visit Date 10/3	0/31/2023
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Shelter Make	Shelter Model	Shelter Size	
Ekto	8810 (s/n 2149-22)	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	Moisture Trap Type	Condition	Glass bottle and filter	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	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	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass
Sensor Component	System Memo	Condition		Status	pass

Siting Criteria Form

Sensor Component City > Sensor Component City 1, Sensor Component City 10	,000 to 10,000	Condition Condition	Status Status	
		Condition	Status	nass
Sensor Component City 10	0,000 to 50,000			puoo
•		Condition	Status	pass
Sensor Component Feedlo	ot operations	Condition	Status	pass
Sensor Component Large	parking lot	Condition	Status	pass
Sensor Component Limited	ed agriculture operations	Condition	Status	pass
Sensor Component Major	industrial source	Condition	Status	pass
Sensor Component Secon	ndary road < or = 100 per da	Condition	Status	pass
Sensor Component Secon	ndary road >100 vehicles/da	Condition	Status	pass
Sensor Component Small	parking lot	Condition	Status	pass
Sensor Component System	m Memo	Condition	Status	pass
Sensor Component Major	highway, airport, or rail yard	Condition	Status	pass
Sensor Component Intens	sive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: SitingCriteriaCom

Construction at the bottom of the hill and entrance to the site access road has been completed.

2 Parameter: ShelterCleanNotes

The floor tiles are loose and breaking into pieces.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 10/31/2023 PND165 Technician | Martin Valvur Site ID Fremont Lake South **USGS Map** BLM-WSO Site Sponsor (agency) Map Scale Private / BLM **Operating Group Map Date** 56-035-9991 AQS# R.M. Young **Meteorological Type** 42.9214 Air Pollutant Analyzer Ozone **QAPP** Latitude -109.7900 dry, wet **QAPP** Longitude **Deposition Measurement** 2388 **Land Use** range **QAPP Elevation Meters** 12.75 Terrain complex **QAPP Declination** Marginally 2/22/2006 Conforms to MLM **OAPP Declination Date** (307) 367-6584 42.929031 **Site Telephone Audit Latitude** Skyline Drive -109.787796 Site Address 1 **Audit Longitude** Fremont Lake Rd. Site Address 2 **Audit Elevation** 2386 Sublette 10.9 **County Audit Declination** Pinedale, WY City, State **Present** Fire Extinguisher 82941 New in 2015 Zip Code Mountain **First Aid Kit** Time Zone **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 2149-22) Ekto **Shelter Size** 640 cuft **✓** Notes The floor tiles are loose and breaking into pieces. Shelter Clean **✓** Notes Site OK From Rock Springs take route 191 north to Pinedale. At the south edge of town turn right onto Fremont Lake Rd. **Driving Directions**

Continue approximately 6.5 miles on the main road, past Fremont Lake. The road changes to Skyline Drive. The site

is visible on a ridge on the right. There is a dirt access road to the site in the summer.

Field Systems Data Form F-02058-1500-S3-rev002 Site Visit Date 10/31/2023 Technician Martin Valvur Site ID PND165 ✓ 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? Over shelter Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc? ✓ Over shelter 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

✓ N/A

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

facing north?

11 Is it inclined approximately 30 degrees?

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

Fi	eld Systems Data Form	F-02058-1500-S4-rev002
Site	PND165 Technician Martin Valvur	Site Visit Date 10/31/2023
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?	✓ 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?	
	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	PND165 Technician Martin Valvur		Site Visit Date 10/31/2023
	Siting Criteria: Are the pollutant analyzers and deposition eq	<u>uipı</u>	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	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?	✓	
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
	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 ID PND165 Technician Martin Valvur Site Visit Date 10/31/2023

Site	ID	PND165	Technician	Martin Valvur		Site Visit	t Date	10/31/2023	
	DAS, sei	nsor translators, and p	peripheral equip	ment operation	ıs ar	ıd maintenan	ıce		
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 pro ntained?	otected from the	weather and	✓				
5	Are the	signal leads connected	to the correct D	AS 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 in	strument shelter temp	erature controll	ed?	✓				
9	Is the mo	et tower stable and gr	ounded?			Stable 🗸		Grounded	1
10	Is the sa	mple tower stable and	grounded?			✓		✓	
11	Tower co	omments?							
		additional explanation an-made, that may af				ry) regarding	condit	ions listed above, or	any other features,

Fie	ld Syste	ms Data F	or	m						F-02	2058-	1500	-S7-rev002
Site	ID PNI	D165		Techr	nician	Martin Valv	ur	Site Vis	sit Date	10/31/2023	3		
<u>Do</u>	ocumentation	<u>1</u>											
<u>Do</u>	oes the site h	ave the required	l inst	rume	nt and	<u>equipment</u>	manuals'	?					
Wind Temp Relat Solar Surfa Wind Temp Hum Solar Tippi Ozon Filter	•	ensor sor sensor sensor ensor ensor slator translator anslator an gauge ontroller		No No V V V V V Add most	N/A V V V V V V V C St rece		Compute Modem Printer Zero air J Filter flow Surge pro UPS Lightning Shelter ho	rt recorder r oump v pump otector g protection eater r condition	n device ner	Yes		N/A	
		P	rese	nt						Curre	ent		
Statio	on Log		~							✓			
SSRF	7		✓	•						✓			
Site (Ops Manual		<u> </u>	F	eb 20	14				✓			
HAS	P		✓	1 F	eb 20	14				✓			
Field	Ops Manua	l	V	F	eb 20	14				✓			
Calib	oration Repo	rts	✓	•						✓			
Ozon	ie z/s/p Conti	rol Charts											
Preve	entive mainto	enance schedule											
2		log properly co					isit? ✓						
3	Are the chai	n-of-custody for sfer to and from			ly used	d to docum	ent 🗸						
	Are ozone z/s	s/p control char	ts pr	operly	comp	oleted and		Control cha	irts not us	sed			
		tional explanation) regarding	g conditi	ons listed	above, o	or any o	ther features,

Field Systems Data Form F-02058-1500-S8-rev002 PND165 Technician Martin Valvur Site Visit Date 10/31/2023 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 trained by current 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? **OC 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** Every 2 weeks **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 **~ V** Weekly **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,

SSRF, call-in

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

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

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

complete sample train including all filters?

reported? If yes, how?

Fi	eld Sy	stems Data Forn	1				F-02058-1500-S9-rev					
Sit	e ID	PND165	echni	cian	Martin Valvur		Site Visit Date	10/31/2023				
	Site ope	ration procedures										
1	Is the fil	ter pack being changed ev	ery Tı	aesda	y as scheduled	?	Filter changed afte	rnoons approximately 80%				
2	Are the correctly	Site Status Report Forms y?	being	comp	oleted and filed	✓						
3	Are data	a downloads and backups ed?	being	perfo	ormed as		No longer required					
4	Are gen	eral observations being ma	ide an	d rec	orded? How?	✓	SSRF					
5	Are site supplies on-hand and replenished in a timely fashion?					✓						
6	Are sample flow rates recorded? How?					✓	SSRF, call-in					
7	Are sam	aples sent to the lab on a re	gular	sche	dule in a timely	✓						
8		ers protected from contami oping? How?	natio	ı dur	ing handling	✓						
9		site conditions reported reons manager or staff?	gularl	y to t	the field	✓						
QC	Check Po	erformed		Freq	quency			Compliant				
I	Multi-poir	nt MFC Calibrations	✓	Sem	iannually			\checkmark				
1	Flow Syste	em Leak Checks	✓	Wee	kly			\checkmark				
1	Filter Pac	k Inspection										
1	Flow Rate	Setting Checks	✓	Wee	kly			\checkmark				
1	Visual Check of Flow Rate Rotometer Weekly				kly			\checkmark				
1	n-line Fil	n-line Filter Inspection/Replacement Semiannually						\checkmark				
5	Sample Line Check for Dirt/Water Weekly							\checkmark				
		dditional explanation (phonomade, that may affect the					regarding condit	tions listed above, or any other features,				

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID PND165 Technician Martin Valvur Site Visit Date 10/31/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR3000	2516	000403
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	0000162757	00534
Flow Rate	Apex	AXMC105LPMDPC	illegible	000871
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07123
Noy	Teledyne	T200U	112	000807
Ozone	ThermoElectron Inc	49i A1NAA	1030244794	000676
Ozone Standard	ThermoElectron Inc	49i A3NAA	1030244815	000694
Sample Tower	Aluma Tower	В	AT-81213-J12	000055
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14800	06539
Zero air pump	Werther International	C 70/4	000815264	06881

Site Inventory by Site Visit

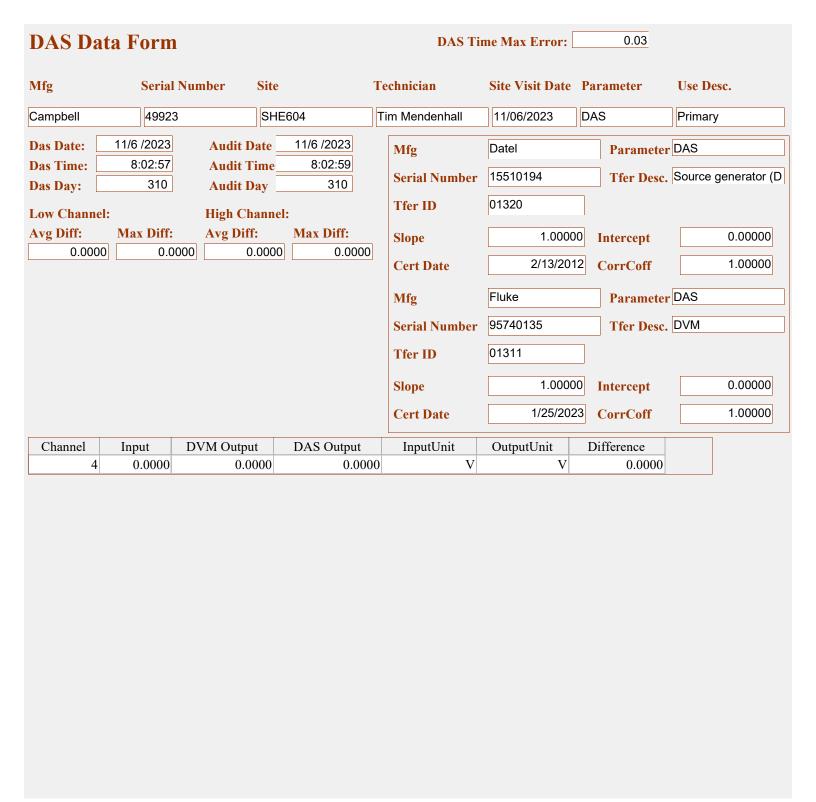
Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRB-	411-Martii	n Valvur-11/06/2023				
1	11/6/2023	DAS	Environmental Sys Corp	90635	8816	2507
2	11/6/2023	Ozone	ThermoElectron Inc	none	49i A3NAA	1200666539
3	11/6/2023	Ozone Standard	ThermoElectron Inc	none	49C	0330302753
4	11/6/2023	Zero air pump	Werther International	90722	TT70/4E	507782

Ozone Data Form

		r Tag Site		160	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElectron Inc	1200666539	GRB41	1	Ма	artin Valvur	11/06/2023	Ozone		none
Intercept -0		rcept	0.00000		Mfg Serial Number Tfer ID	ThermoElectron CM23147126 01116			ozone Ozone primary stan
DAS 1: A Avg % Diff: A M: 0.0%		AS 2: Avg %Diff A	Max % D	if	Slope Cert Date	9/19/202		•	-0.03885 1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer C		Site	Site Unit	RelPer	Dif	AbsDif
primary	1	0.19	0.22		-0.79	ppb			-1.01
primary	2	16.13	16.0		15.42	ppb			-0.58
primary	3	35.15	34.8		34.66	ppb		-0.49	
primary	4	64.95	64.3		63.77	ppb		-0.86	
primary	5	114.11	112.9		113.50	ppb		0.46	
Sensor Componen	Audit Pressu	ıre	Co	nditio	588 mmHg		Status	pass	
Sensor Componen	26.6 degree	unobstructed ru	le Co	nditio	True		Status	pass	
Sensor Componen	Tree dewline	e >10m or below	inlet Co	nditio	True		Status	pass	
Sensor Componen	ADT 1000-1	0000 vehicles fu	rther t Co	nditio	True		Status	pass	
Sensor Componen	ADT <1000	vehicles further	than 5 Co	nditio	True		Status	pass	
Sensor Componen	Sample Trai	n	Со	nditio	Good		Status	pass	
Sensor Componen	Inlet Filter C	ondition	Со	nditio	Clean		Status	pass	
Sensor Componen	Offset		Со	nditio	0.000		Status	pass	
Sensor Componen	Span		Со	nditio	n 1.005		Status pass		
Sensor Componen	Zero Voltage	9	Co	nditio	-0.0002		Status pass		
Sensor Componen	Fullscale Vo	ltage	Co	nditio	n 1.0002		Status pass		
Sensor Componen	Cell A Freq.		Со	nditio	78.8 kHz		Status	pass	
Sensor Componen	Cell A Noise		Со	nditio	0.9 ppb		Status	pass	
Sensor Componen	Cell A Flow		Co	nditio	0.62 lpm		Status	pass	
Sensor Componen	Cell A Press	ure	Co	nditio	582.3 mmHg		Status	pass	
Sensor Componen	Cell A Tmp.		Co	nditio	32.5 C		Status	pass	
Sensor Componen	Cell B Freq.		Со	nditio	63.9 kHz		Status	pass	
Sensor Componen	Cell B Noise		Со	nditio	0.7 ppb		Status	pass	
Sensor Component Cell B Flow				nditio	0.60 lpm		Status	pass	
Sensor Component Cell B Pressure				nditio	582.0 mmHg		Status	pass	
Sensor Component Nafion dryer installed				nditio	False		Status pass		
Sensor Componen	System Men	no	Со	nditio	on		Status	pass	

Site Inventory by Site Visit

Site 1	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
SHE604-Tim Mendenhall-11/06/2023									
1	11/6/2023	DAS	Campbell	none	CR1000	49923			
2	11/6/2023	elevation	Elevation	none	none	none			
3	11/6/2023	Flow Rate	AALBORG	none	GFC-17	illegibile			
4	11/6/2023	Infrastructure	Infrastructure	none	none	none			
5	11/6/2023	Sample Tower	Unknown	none	Unknown	None			
6	11/6/2023	siting criteria	Siting Criteria	none	none	None			
7	11/6/2023	Temperature2meter	Campbell	none	10755	Illegible			



Flow Data Form

Ifg	Serial	Number Ta	Site	Site Technician Site Vis		Site Visit I	Date Param	neter	Owner ID	
ALBORG	illegib	ile	SHE604	Tim	Mendenhall	11/06/2023	Flow R	late	none	
				-	Mfg	BIOS		arameter Flo	w Rate	
					Serial Number 148613			Tfer Desc. BIOS 220-H		
					Tfer ID	01421				
				1	Slope	1.	00000 Into	ercept	0.0000	
				•	Cert Date	2/23	3/2023 Co	rrCoff	1.0000	
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.2	26		
A Avg % Diff:	A Max %	Di A Avg %	Diff A Max	w Mi	Cal Factor F	ull Scale	0.98	37		
0.89%	1.6	64%			Rotometer R	eading:		0		
Desc.	Test ty	pe Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	I PctDifferenc	
primary	pump off	0.000	0.000	0.00	0.000	0.26	1/m	1/m		
primary	leak check	0.000	0.000	0.00	0.000	0.26	l/m	1/m		
primary	test pt 1	2.933	2.930	2.70	0.000	2.96	l/m	1/m	1.029	
primary	test pt 2	3.045	3.040	2.75	0.000	2.99	1/m	1/m	-1.64%	
primary	test pt 3	2.975	2.980	2.75	0.000	2.98	1/m	1/m	0.009	
Sensor Compo	onent Leal	k Test		Condition	n		Status	pass		
Sensor Compo	onent Tub	ing Condition		Condition	Good		Status	pass		
Sensor Compo	onent Filte	r Position		Condition	Good		Status	pass		
Sensor Compo	onent Roto	ometer Condition	n	Condition	n N/A		Status	pass		
Sensor Compo	onent Mois	sture Present		Condition	No moisture pr	esent	Status	pass		
Sensor Compo	onent Filte	r Distance		Condition	2.0 cm		Status	pass		
Sensor Compo	onent Filte	r Depth		Condition	2.0 cm		Status	pass		
Sensor Compo	onent Filte	r Azimuth		Condition	270 deg		Status	pass		
Sansor Compa	onent Syst	System Memo Cond			n		Status pass			

2 Meter Temperature Data Form Calc. Difference Serial Number Ta **Technician** Site Visit Date Parameter Mfg Site **Owner ID** Campbell SHE604 Tim Mendenhall 11/06/2023 Temperature2meter Illegible none Mfg Extech **Parameter** Temperature H232679 Tfer Desc. RTD **Serial Number** 01228 Tfer ID 0.08161 **Slope** 1.01172 Intercept **DAS 1: DAS 2: Cert Date** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff 0.11 0.17 Test type UseDescription InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit | Difference 0.000 primary Temp Low Rang 0.17 0.09 0.14 C 0.05 0.000 Temp Mid Rang 25.76 25.38 25.21 C -0.17 primary primary Temp High Rang 40.51 39.96 0.00040.08 C 0.12 Condition Clean Sensor Component | Shield Status pass Sensor Component Properly Sited Condition Properly sited Status pass Sensor Component Blower **Condition** N/A Status pass Sensor Component System Memo Status pass Condition

Infrastructure Data For Site Visit Date 11/06/2023 Technician Tim Mendenhall SHE604 Site ID **Shelter Make Shelter Model Shelter Size** Sensor Component | Sample Tower Type **Condition** Other Status pass Sensor Component | Conduit **Condition** N/A Status pass Status pass Sensor Component | Met Tower **Condition** Fair Sensor Component Moisture Trap **Condition** Installed Status pass Sensor Component | Moisture Trap Type **Condition** Filter Status pass Sensor Component Power Cables **Condition** Good Status pass Sensor Component | Shelter Temp Control **Condition** Functioning Status pass **Condition** Not installed Status pass Sensor Component Rotometer 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

Condition 3/8 teflon

Condition Fair

Condition

Status pass

Status pass

Status pass

Sensor Component Tubing Type

Sensor Component | Sample Train

Sensor Component System Memo

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: DasComments

The site power source is solar and wind with battery storage. The NEMA enclosure has a cooling fan and heat for the 2B ozone monitor.

2 Parameter: SiteOpsProcedures

observations of current meteorological measurements are recorded on a hardcopy checklist for ARS and not on the SSRF.

3 Parameter: DocumentationCo

The site operator is supplied with a disc containing the QAPP, operating procedures, and HASP which is kept at his office. A hard copy BLM check list developed by ARS is completed and sent to ARS each week. Standard CASTNET SSRF forms are being used now.

4 Parameter: SitingCriteriaCom

The site is located in range land. There is an active rail line with coal trains within one kilometer of the site.

5 Parameter: ShelterCleanNotes

NEMA enclosure, wind and solar power

6 Parameter: PollAnalyzerCom

The dry deposition filter pack enclosure is not the standard "pot" size as at the other CASTNET sites. The diameter is much smaller. It is not clear if this will impact particle collection efficiency. The filter is not plumb inside the enclosure and there is a section of tygon tubing between the pump and MFC.

7 Parameter: MetSensorComme

The site is a small footprint solar powered site that has been operating as part of the WARMS network for more than 10 years. Objects violate the 45 degree rule for the tipping bucket rain gage. The temperature and RH are being measured at 2.5 meters above the ground. The upper section of the tower is not plumb. The guy wires could be adjusted to correct.

F-02058-1500-S1-rev002 Field Systems Data Form SHE604 Technician Tim Mendenhall Site Visit Date 11/06/2023 Site ID **USGS Map** BLM-WSO **Site Sponsor (agency) Map Scale** BLM **Operating Group Map Date** AQS# Met One **Meteorological Type** Air Pollutant Analyzer **QAPP** Latitude **Deposition Measurement QAPP** Longitude **Land Use QAPP Elevation Meters Terrain QAPP Declination** Conforms to MLM **OAPP Declination Date** 44.933601 **Site Telephone Audit Latitude** -106.847161 Site Address 1 **Audit Longitude** Site Address 2 **Audit Elevation** 1141 Sheridan 9.8 **Audit Declination County** City, State Sheridan, WY **Present** Fire Extinguisher 82801 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 ~** Backup Op. Phone # **Secure Shelter** Stable Entry Step Backup Op. E-mail Shelter Working Room Model **Shelter Size ✓** Notes NEMA enclosure, wind and solar power **Shelter Clean** □ Notes Site OK

Driving Directions

F-02058-1500-S3-rev002 Field Systems Data Form Site Visit Date 11/06/2023 Technician Tim Mendenhall Site ID SHE604 **~** Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? **~** 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) tower upper section not plumb Are the tower and sensors plumb? **~** 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) **~** Is the solar radiation sensor plumb? **~** Is it sited to avoid shading, or any artificial or reflected light? Is the rain gauge plumb? 45 degree rule violation 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 site is a small footprint solar powered site that has been operating as part of the WARMS network for more than 10 years. Objects

violate the 45 degree rule for the tipping bucket rain gage. The temperature and RH are being measured at 2.5 meters above the ground.

The upper section of the tower is not plumb. The guy wires could be adjusted to correct.

F-02058-1500-S4-rev002
Site Visit Date 11/06/2023
✓ N/A
✓ N/A
d 🗸
essary) regarding conditions listed above, or any other features, s:

Field Systems Data Form F-02058-1500-S5-rev002 SHE604 Technician Tim Mendenhall Site Visit Date 11/06/2023 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. N/A Describe dry dep sample tube. 3/8 teflon by 10 meters **~** Are in-line filters used in the ozone sample line? (if ves indicate location) **~** Are sample lines clean, free of kinks, moisture, and obstructions? ✓ N/A Is the zero air supply desiccant unsaturated? in-line filter Are there moisture traps in the sample lines? Not present 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 dry deposition filter pack enclosure is not the standard "pot" size as at the other CASTNET sites. The diameter is much smaller. It is not clear if this will impact particle collection efficiency. The filter is not plumb inside the enclosure and there is a section of tygon tubing between the pump and MFC.

Field Systems Data Form

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

F-02058-1500-S6-rev002

Site	e ID	SHE604	Technician	Tim Mendenhall		Site Visi	it Date	11/06/2023	I	
	DAS, se	nsor translators, and p	peripheral equi	pment operation	ns ai	nd maintena	<u>nce</u>			
1		OAS instruments appe intained?	ar to be in good	l condition and	✓					
2		the components of the backup, etc)	DAS operation	al? (printers,	✓					
3		nalyzer and sensor sig g protection circuitry?		through		Not present				
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 translato	rs, and shelter j	properly	✓					
7	Does the	e instrument shelter ha	ave a stable pov	ver source?	✓					
8	Is the in	strument shelter temp	erature control	lled?		Marginally				
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?				V			✓	
Pro	vide any	additional explanation	n (photograph o	or sketch if nece	essar	y) regarding	g condit	ions listed	above, or a	any other features,

The site power source is solar and wind with battery storage. The NEMA enclosure has a cooling fan and heat for the 2B ozone monitor.

SHE604 Site Visit Date 11/06/2023 Site ID Technician Tim Mendenhall **Documentation** Does the site have the required instrument and equipment manuals? Yes No N/A No N/A Yes **V ✓** Wind speed sensor Data logger **V V** Wind direction sensor Data logger ✓ **V** Temperature sensor Strip chart recorder **V V** Relative humidity sensor Computer **V** П П **V** Solar radiation sensor Modem П **V V** Surface wetness sensor **Printer** П \checkmark **V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump **V V Humidity sensor translator Surge protector** П **V V** Solar radiation translator **UPS** П П **V V** Tipping bucket rain gauge Lightning protection device **V V** Ozone analyzer Shelter heater \checkmark Shelter air conditioner **V** 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 SSRF V V V V** Site Ops Manual 2013 **V HASP V** 2013 Field Ops Manual **V** 2013 **V Calibration Reports** Not present Ozone z/s/p Control Charts Preventive maintenance schedule 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 **✓** 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:

The site operator is supplied with a disc containing the QAPP, operating procedures, and HASP which is kept at his office. A hard copy BLM

check list developed by ARS is completed and sent to ARS each week. Standard CASTNET SSRF forms are being used now.

F-02058-1500-S7-rev002

Field Systems Data Form

Field Systems Data Form F-02058-1500-S8-rev002 SHE604 Technician Tim Mendenhall Site Visit Date 11/06/2023 Site ID Site operation procedures Training provided by ARS 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** N/A Translator Zero/Span Tests (climatronics) **✓ V** Monthly **Manual Rain Gauge Test ✓ V** Weekly **Confirm Reasonableness of Current Values** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed Compliant** 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 V** N/A **Manual Precision Level Test V** N/A **Analyzer Diagnostics Tests V** 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 ✓** N/A 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 N/A complete sample train including all filters? **✓** N/A 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, natural or man-made, that may affect the monitoring parameters:

observations of current meteorological measurements are recorded on a hardcopy checklist for ARS and not on the SSRF.

reported? If yes, how?

Fi	eld Sy	stems Data Forn	ı					F-02058-15	500-S9-rev002		
Site	e ID	SHE604 T	echnic	cian	Tim Mendenhal	<u> </u>	Site Visit Date	11/06/2023			
	Site ope	ration procedures									
1	Is the fi	lter pack being changed ev	ery Tu	ıesda	ay as scheduled	V	Filter changed mornings				
2	Are the correctl	Site Status Report Forms l y?	oeing	comj	pleted and filed	✓					
3	Are data	a downloads and backups led?	oeing]	perfo	ormed as		No longer required				
4	Are gen	eral observations being ma	de an	d rec	corded? How?	✓	SSRF				
5	Are site supplies on-hand and replenished in a timely fashion?										
6	Are san	ple flow rates recorded? H	low?			✓	SSRF				
7	Are samples sent to the lab on a regular schedule in a timely fashion?										
8		ers protected from contami oping? How?	natior	duı	ring handling	✓	One set of gloves only				
9	••										
QC	Check P	erformed		Free	quency			Compliant			
N	Multi-point MFC Calibrations Semiannually						✓				
I	Flow System Leak Checks Weekly					✓					
I	ilter Pack Inspection										
I	Flow Rate Setting Checks Weekly							✓			
	Visual Check of Flow Rate Rotometer Not present										
	In-line Filter Inspection/Replacement Semiannually					✓					
S	Sample Li	ne Check for Dirt/Water	Ш								
		dditional explanation (pho n-made, that may affect th					v) regarding conditi	ons listed above, or a	ny other features,		

Field Systems Data Form

F-02058-1500-S10-rev002

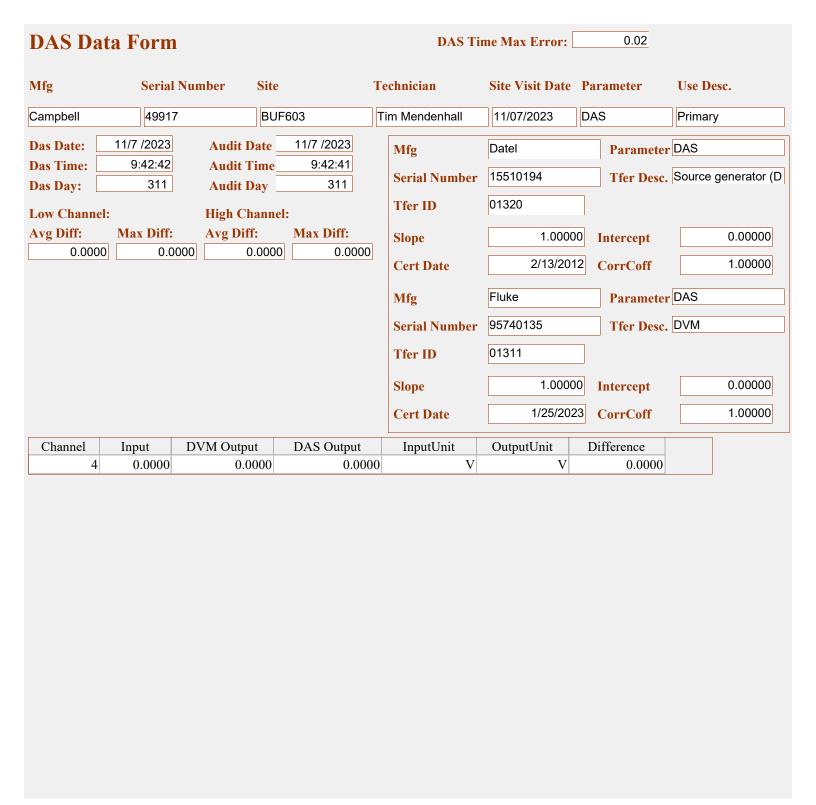
Site ID SHE604 Technician Tim Mendenhall Site Visit Date 11/06/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR1000	49923	none
elevation	Elevation	none	none	none
Flow Rate	AALBORG	GFC-17	illegibile	none
Infrastructure	Infrastructure	none	none	none
Sample Tower	Unknown	Unknown	None	none
siting criteria	Siting Criteria	none	None	none
Temperature2meter	Campbell	10755	Illegible	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BUF	5603-Tim M	Tendenhall-11/07/2023				
1	11/7/2023	DAS	Campbell	49917	CR1000	49917
2	11/7/2023	elevation	Elevation	none	none	none
3	11/7/2023	Filter pack flow pump	Thomas	02980	107CA18	608102A
4	11/7/2023	Flow Rate	Omega	none	FMA6518ST-RS232	315688-1
5	11/7/2023	Infrastructure	Infrastructure	none	none	none
6	11/7/2023	Sample Tower	Unknown	none	Unknown	None
7	11/7/2023	siting criteria	Siting Criteria	none	none	None
8	11/7/2023	Temperature2meter	Campbell	none	10755	Missing



Flow Data Form

Mfg	Se	erial Num	ber Ta	Site	Tec	hnician	Site Visit I	Date Param	eter	Owner ID
Omega	3	15688-1		BUF603	Tin	n Mendenhall	11/07/2023	Flow R	Flow Rate	
						Mfg	BIOS	P	arameter Flo	w Rate
						Serial Number	148613	Т	fer Desc. BIC	S 220-H
						Tfer ID	01421			
						Slope	1.	00000 Inte	ercept	0.0000
						Cert Date	2/23	3/2023 Con	rCoff	1.0000
DAS 1:			DAS 2:		L	Cal Factor Z	ero	0.41	7	
A Avg % Diff:	A Max			Diff A Max	% Di	Cal Factor F		0.97	'8	
1.24%		1.35%				Rotometer R	eading:		0	
Desc.	Tes	st type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignall	PctDifference
primary	pump	off	0.000	0.000	0.00	0.000	0.42	l/m	l/m	
primary	leak c	heck	0.000	0.000	0.00	0.000	0.42	l/m	l/m	
primary	test pt	1	2.956	2.960	0.00	0.000	3.00	1/m	l/m	1.35%
primary	test pt	2	2.957	2.960	0.00	0.000	3.00	1/m	l/m	1.35%
primary	test pt	3	2.980	2.980	0.00	0.000	3.01	l/m	l/m	1.01%
Sensor Compo	onent	Leak Test			Condition	dition			pass	
Sensor Compo	onent	Tubing Condition			Condition	Good	Status	Status pass		
Sensor Compo	onent	Filter Position			Condition	Good		Status	pass	
Sensor Compo	onent	Rotomete	r Condition		Condition	Not installed	Status	pass		
Sensor Compo	onent	Moisture F	Present		Condition	dition No moisture present			pass	
Sensor Component Filter Distance			Condition	3.5 cm	Status	pass				
Sensor Component Filter Depth			Condition	9.0 cm			pass			
Sensor Component Filter Azimuth			Condition	90 deg	Status	pass				
Sensor Component System Memo			Condition	n	Status	Status pass				

2 Meter Temperature Data Form Calc. Difference Serial Number Ta **Technician** Site Visit Date Parameter Mfg Site **Owner ID** Campbell BUF603 Tim Mendenhall 11/07/2023 Temperature2meter Missing none Mfg Extech **Parameter** Temperature H232679 Tfer Desc. RTD **Serial Number** 01228 Tfer ID 0.08161 **Slope** 1.01172 Intercept **DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.28 0.42 UseDescription Test type InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit | Difference 0.000 0.58 C primary Temp Low Rang 0.24 0.16 0.42 0.000 Temp Mid Rang 25.59 25.21 25.06 C -0.15 primary 0.27 primary Temp High Rang 42.06 41.49 0.00041.76 C Sensor Component | Shield **Condition** Clean Status pass Sensor Component Properly Sited Condition Properly sited Status pass Sensor Component Blower **Condition** N/A Status pass Sensor Component System Memo Status pass Condition

Infrastructure Data For Site Visit Date 11/07/2023 BUF603 Technician Tim Mendenhall Site ID **Shelter Make Shelter Model Shelter Size** Sensor Component | Sample Tower Type **Condition** Other Status pass Sensor Component | Conduit **Condition** N/A Status pass **Condition** Good Status pass Sensor Component | Met Tower Sensor Component Moisture Trap Condition Installed Status pass Sensor Component | Moisture Trap Type **Condition** Filter Status pass Sensor Component Power Cables **Condition** Not tested Status pass Sensor Component | Shelter Temp Control **Condition** N/A Status pass Status pass Sensor Component Rotometer **Condition** Not installed 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

Condition 3/8 teflon

Condition Good

Condition

Status pass

Status pass

Status pass

Sensor Component Tubing Type

Sensor Component | Sample Train

Sensor Component System Memo

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

The site operator does not use gloves, however, he uses the filter bag when handling the filter.

2 Parameter: DasComments

The NEMA enclosure has a cooling fan.

3 Parameter: DocumentationCo

A disc with the current QAPP has been received and is kept at the site operator's office. The site operator completes and files a hardcopy checklist and logbook developed by ARS for BLM each week.

4 Parameter: ShelterCleanNotes

NEMA enclosure, 120 VAC power

5 Parameter: PollAnalyzerCom

The dry deposition filter pack enclosure is not the standard "pot" size that is used at the other CASTNET sites. The diameter of the enclosure is much smaller and the filter is mounted much deeper inside the opening. The geometry of the filter pack and enclosure is likely to impact particle collection efficiency.

6 Parameter: MetSensorComme

The temperature is measured at 2.5 meters above the ground. The top section of the tower is not perfectly plumb and guy wire tension could be applied to improve position.

7 Parameter: MetOpMaintCom

Some signal cables are showing signs of wear.

Field Sy	stems Da	ata Fo	rm				F-02	058-15	500-S1-rev002
Site ID	BUF603		Technician	Tim Mendenh	all	Site Visit Date	11/07/2023		
Site Sponsor	(agency)	BLM-WS	0		USG	S Map			
Operating G	roup	BLM			Map	Scale			
AQS#					Map	Date			
Meteorologic	cal Type								
Air Pollutant	t Analyzer				QAP	P Latitude			
Deposition M	Ieasurement				QAP	P Longitude			
Land Use					QAP	P Elevation Met	ers		
Terrain					QAP	P Declination			
Conforms to	MLM				QAP	P Declination Da	ate		
Site Telephor	ne				Audi	t Latitude			44.144135
Site Address	1				Audi	t Longitude			-106.108771
Site Address	2				Audi	t Elevation			1320
County		Johnson			Audi	t Declination	9.3		
City, State		Buffalo, V	VY			Pres	ent		
Zip Code		82834			Fire	Extinguisher			
Time Zone		Mountain			First	Aid Kit			
Primary Ope	erator				Safe	y Glasses			
Primary Op.	Phone #				Safe	y Hard Hat			
Primary Op.	E-mail				Clim	bing Belt			
Backup Oper	rator				Secu	rity Fence			
Backup Op.	Phone #				Secu	re Shelter			
Backup Op.	E-mail				Stab	le Entry Step 🗹			
Shelter Worl	king Room	Make		N	Aodel		She	elter Size	
Shelter Clean	n \square	Notes	NEMA enclosu	ure, 120 VAC p	ower				
Site OK		Notes							

Driving Directions

Fi	eld Systems Data For	m		F-02058-1500-S3-rev002				
Site	e ID BUF603	Technician Tim	n Mendenhall	Site Visit Date	11/07/2023			
1	Are wind speed and direction serbeing influenced by obstructions		to avoid					
2	Are wind sensors mounted so as (i.e. wind sensors should be mou horizontally extended boom >2x tower into the prevailing wind)	nted atop the tov	ver or on a					
3	Are the tower and sensors pluml	?	✓					
4	Are the temperature shields poin avoid radiated heat sources such							
5	Are temperature and RH sensor conditions? (i.e. ground below se surface and not steeply sloped. R standing water should be avoide	nsors should be lidges, hollows, a	natural					
6	Is the solar radiation sensor plur	mb?	✓					
7	Is it sited to avoid shading, or an light?	y artificial or re	flected					
8	Is the rain gauge plumb?		✓					
9	Is it sited to avoid sheltering effetowers, etc?	cts from buildin	gs, trees,	45 degree rule viola	ation			
10	Is the surface wetness sensor site facing north?	d with the grid s	surface 🗸	N/A				
11	Is it inclined approximately 30 c	legrees?	✓	N/A				
	ovide any additional explanation (tural or man-made, that may affec			ry) regarding condi	tions listed above, or	any other features,		

The temperature is measured at 2.5 meters above the ground. The top section of the tower is not perfectly plumb and guy wire tension could be applied to improve position.

Fie	eld Systems Data Form	F-02058-1500-S4-rev002
Site	ID BUF603 Technician Tim Mendenhall	Site Visit Date 11/07/2023
1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	d 🗸
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?	✓ N/A
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?	ed 🗸
	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, es:
Some	signal cables are showing signs of wear.	
COMM	a signal cables are showing signs of wear.	

Field Systems Data Form F-02058-1500-S5-rev002 BUF603 Technician Tim Mendenhall Site Visit Date 11/07/2023 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 **✓** N/A Do the analyzers and equipment appear to be in good condition and well maintained? **V** N/A Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. N/A Describe dry dep sample tube. 3/8 teflon by 10 meters **✓** N/A Are in-line filters used in the ozone sample line? (if ves indicate location) **~** Are sample lines clean, free of kinks, moisture, and obstructions? **✓** N/A Is the zero air supply desiccant unsaturated? **~** Are there moisture traps in the sample lines? Not present 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 dry deposition filter pack enclosure is not the standard "pot" size that is used at the other CASTNET sites. The diameter of the enclosure is much smaller and the filter is mounted much deeper inside the opening. The geometry of the filter pack and enclosure is likely to impact particle collection efficiency.

Field Systems Data Form F-02058-1500-S6-rev002 BUF603 Technician Tim Mendenhall Site Visit Date 11/07/2023 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) Not present 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? cooling fan only 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:

The NEMA enclosure has a cooling fan.

BUF603 Technician Tim Mendenhall Site Visit Date 11/07/2023 Site ID **Documentation** Does the site have the required instrument and equipment manuals? Yes No N/A No N/A Yes **V** Wind speed sensor **✓** Data logger П **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 Printer** Surface wetness sensor \checkmark **V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump **V V Humidity sensor translator Surge protector** П **~ UPS V Solar radiation translator** П П **V V** Tipping bucket rain gauge **Lightning protection device V V** Ozone analyzer Shelter heater \checkmark **V** 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** Not present **SSRF ✓ V V V** Site Ops Manual 2013 **V HASP V** 2013 Field Ops Manual **V** 2013 **V Calibration Reports** Not present Ozone z/s/p Control Charts N/A **V** Preventive maintenance schedule Not present 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 **✓** 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:

A disc with the current QAPP has been received and is kept at the site operator's office. The site operator completes and files a hardcopy

checklist and logbook developed by ARS for BLM each week.

F-02058-1500-S7-rev002

Field Systems Data Form

Field Systems Data Form F-02058-1500-S8-rev002 BUF603 Technician Tim Mendenhall Site Visit Date 11/07/2023 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** Monthly **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? **OC Check Performed Compliant** 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 V** 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 ✓** N/A 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 N/A 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?

✓ N/A

Field Systems Data Form F-02058-1500-S9-rev002 BUF603 Technician Tim Mendenhall Site Visit Date 11/07/2023 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 Are general observations being made and recorded? How? **~** Are site supplies on-hand and replenished in a timely fashion? SSRF Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely fashion? **✓** 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** Not present **Visual Check of Flow Rate Rotometer ✓** Semiannually **V In-line Filter Inspection/Replacement** 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 does not use gloves, however, he uses the filter bag when handling the filter.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID BUF603 Technician Tim Mendenhall Site Visit Date 11/07/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR1000	49917	49917
elevation	Elevation	none	none	none
Filter pack flow pump	Thomas	107CA18	608102A	02980
Flow Rate	Omega	FMA6518ST-RS232	315688-1	none
Infrastructure	Infrastructure	none	none	none
Sample Tower	Unknown	Unknown	None	none
siting criteria	Siting Criteria	none	None	none
Temperature2meter	Campbell	10755	Missing	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
СТН	110-Eric H	lebert-11/08/2023				
1	11/8/2023	DAS	Campbell	000415	CR3000	2510
2	11/8/2023	Ozone	ThermoElectron Inc	000735	49i A1NAA	1105347308
3	11/8/2023	Ozone Standard	ThermoElectron Inc	000447	49i A3NAA	CM08200023
4	11/8/2023	Zero air pump	Werther International	06864	PC70/4	000815261

Ozone Data Form

Mfg		Serial Numb	er Tag	Site		Te	chnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElec	tron Inc	1105347308		CTH11	0	Er	ic Hebert	11/08/2023	Ozone		000735
Slope: Intercept		0.98097 Slo j 0.09209 Int e	oe: ercept	0.00000		=	Mfg	ThermoElectron			er ozone c. Ozone primary stan
CorrCoff:			rCoff:		0.00000		Serial Number		11	er Des	c. Ozone primary starr
						_	Tfer ID	01115			
DAS 1:		D	AS 2:				Slope	1.004	50 Inter	rcept	-0.25270
		ax % Dif A	Avg %	Diff A	Max %	% Dif	Cert Date	4/24/20	23 Cori	·Coff	1.00000
0.0	0%	0.0%					Cert Date	172 1720	-o Com	Con	1.00000
UseDescr	iption	ConcGroup	Tfe	r Raw	Tf	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	-	1).42		-0.12	0.00	ppb			0.12
prima	-	2		7.41		17.56	17.17	ppb			-0.39
prima	•	3		3.36		33.38	32.91	ppb		-1.42	
prima	•	4		7.87		67.62	66.54	ppb		-1.61	
prima	ry	5	11	6.00	1	15.37	113.20	ppb		-1.9	
Sensor C	omponei	Audit Press	ure			Condition	716.5 mmHg		Status	pass	
Sensor C	omponei	26.6 degree	e unobst	ructed r	ule	Condition	on True		Status	pass	
Sensor C	omponei	Tree dewlin	e >10m	or belov	w inlet	Condition	on True		Status	pass	
Sensor C	omponei	ADT 1000-	10000 v	ehicles f	urther t	Condition	On True		Status	pass	
Sensor C	omponei	ADT <1000	vehicle	s further	than 5	Condition	on True		Status	pass	
Sensor C	omponei	Sample Tra	iin			Condition	Good		Status	pass	
Sensor C	omponei	Inlet Filter (Conditio	า		Condition	on Moderately cle	ean	Status	pass	
Sensor C	omponei	Offset				Condition	on -0.10		Status	pass	
Sensor C	omponei	Span				Condition 1.003			Status	pass	
Sensor C	omponei	Zero Voltag	je			Condition	on N/A		Status	pass	
Sensor C	omponei	Fullscale Vo	oltage			Condition	on N/A		Status	pass	
Sensor C	omponei	Cell A Freq	-			Condition	ion 110.3 kHz		Status	pass	
Sensor C	omponei	Cell A Nois	е			Condition	Not tested		Status	pass	
Sensor C	omponei	Cell A Flow					on 0.69 lpm		Status	pass	
Sensor C	omponei	Cell A Pres	sure			Condition	on 685.1 mmHg		Status	pass	
Sensor C	omponei	Cell A Tmp	•			Condition	on 34.3 C		Status	pass	
Sensor C	omponei	Cell B Freq	•			Condition	on 89.4 kHz		Status	pass	
Sensor C	omponei	Cell B Nois	е			Condition	Not tested		Status	pass	
Sensor C	omponei	Cell B Flow				Condition	0.68 lpm		Status	pass	
Sensor C	omponei	Cell B Pres	sure			Condition	684.8 mmHg		Status	pass	
Sensor C	omponei	Nafion drye	r installe	ed		Condition	on True		Status	pass	
Sensor C	omponei	System Me	mo			Condition	on		Status	pass	

Site Inventory by Site Visit

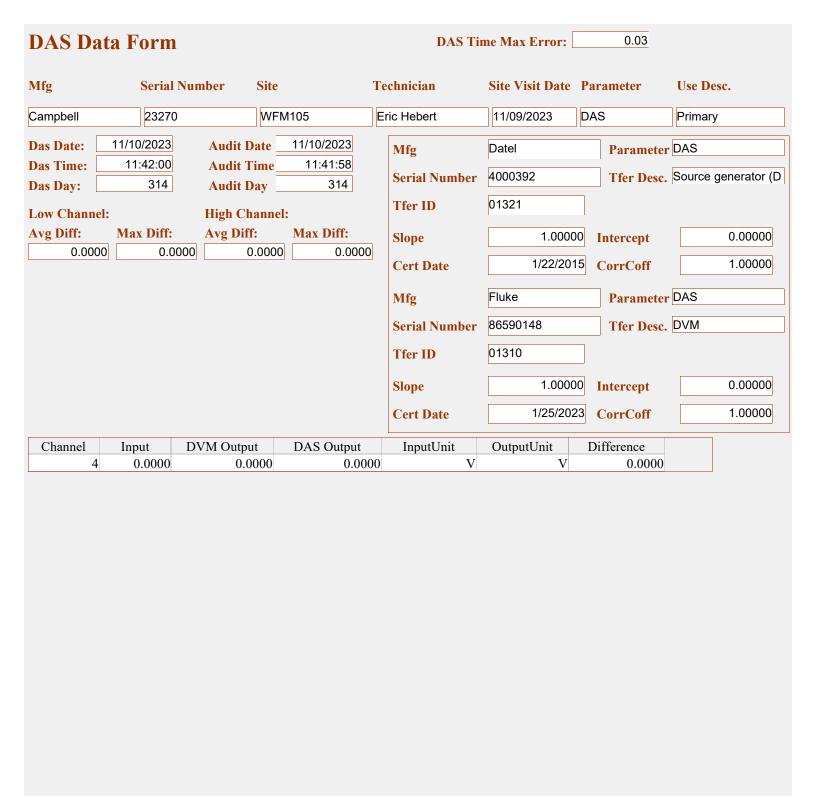
Site \	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number	
BAS601-Tim Mendenhall-11/09/2023							
1	11/9/2023	DAS	Campbell	none	CR1000	47759	
2	11/9/2023	Filter pack flow pump	Thomas	02980	107CA18	608102A	
3	11/9/2023	Ozone	ThermoElectron Inc	L0534684	49i A1NAA	1214552973	
4	11/9/2023	Ozone Standard	ThermoElectron Inc	none	49i E3CAA	1214552971	

Ozone Data Form

Mfg	Serial Numbe	er Ta Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1214552973	BAS601		Tim Mendenhall	11/09/2023	Ozone	L0534684
1	0.97330 Slop	-	0.00000	Mfg	ThermoElectron		
		- T	0.00000	Serial Number	1180030022	Tfer Des	c. Ozone primary stan
Correon	2.00001	Con	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tfer ID	01114		
DAS 1:		AS 2:		Slope	0.9973	Intercept	0.29920
A Avg % Diff: A M		Avg %Diff A	Max % Di	Cert Date	4/25/202	23 CorrCoff	1.00000
0.0%	0.0%						
UseDescription	ConcGroup	Tfer Raw	Tfer Cor		Site Unit	RelPerDif	AbsDif
primary	1	0.43	0.13	-0.78	ppb		-0.91
primary	2	16.98	16.72	15.47	ppb		-1.25
primary	3	36.32	36.11	34.16	ppb	-5.55	
primary	4	67.51	67.38	63.52	ppb	-5.9	
primary	5	115.63	115.63		ppb	-3.18	
Sensor Componer	nt Audit Pressi	ure	Cond	lition 662 mmHg		Status pass	
Sensor Componer	nt 26.6 degree	unobstructed ru	le Cond	True True		Status pass	
Sensor Componer	nt Tree dewline	e >10m or below	inlet Cond	lition True		Status pass	
Sensor Componer	ADT 1000-1	0000 vehicles fu	ırther Cond	Ition True		Status pass	
Sensor Componer	ADT <1000	vehicles further	than Cond	Ition True		Status pass	
Sensor Componer	nt Sample Trai	n	Cond	lition Good		Status pass	
Sensor Componer	nt Inlet Filter C	ondition	Cond	lition Clean		Status pass	
Sensor Componer	offset Offset		Cond	lition 0.1		Status pass	
Sensor Componer	nt Span		Cond	ition 1.017		Status pass	
Sensor Componer	nt Zero Voltage	Э	Cond	lition N/A		Status pass	
Sensor Componer	Fullscale Vo	ltage	Cond	lition N/A		Status pass	
Sensor Componer	cell A Freq.		Cond	lition 79.7 kHz		Status pass	
Sensor Componer	nt Cell A Noise	,	Cond	lition 0.9 ppb		Status pass	
Sensor Componer	Cell A Flow		Cond	lition 0.63 lpm		Status pass	
Sensor Componer	Cell A Press	sure	Cond	ition 656.0 mmHg		Status pass	
Sensor Componer	Cell A Tmp.		Cond	lition 31.3 C		Status pass	
Sensor Componer	Cell B Freq.		Cond	ition 57.6 kHz		Status pass	
Sensor Componer	Cell B Noise	•	Cond	lition 0.6 ppb		Status pass	
Sensor Componer	Cell B Flow		Cond	lition 0.65 lpm		Status pass	
Sensor Componer	Cell B Press	sure	Cond	lition 655.4 mmHg		Status pass	
Sensor Componer	nt Nafion dryer	installed	Cond	lition False		Status pass	
Sensor Componer	nt System Mer	no	Cond	lition		Status pass	
			_				

Site Inventory by Site Visit

Site)	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
WFM	WFM105-Eric Hebert-11/09/2023								
1	11/9/2023	DAS	Campbell	000803	CR850	23270			
2	11/9/2023	elevation	Elevation	none	none	none			
3	11/9/2023	Filter pack flow pump	Permotec	none	BL30EB	Illegible			
4	11/9/2023	Flow Rate	Apex	000900	AXMC105LPMDPCV	illegible			
5	11/9/2023	Infrastructure	Infrastructure	none	none	none			
6	11/9/2023	Modem	Sierra wireless	06983	unknown	unknown			
7	11/9/2023	siting criteria	Siting Criteria	none	none	None			
8	11/9/2023	Temperature	RM Young	04683	41342VC	6697			



Flow Data Form **Technician Owner ID** Mfg Serial Number Tag Site Site Visit Date Parameter WFM105 Eric Hebert 11/09/2023 000900 Apex illegible Flow Rate Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID 0.00000 **Slope** 1.00000 **Intercept** 2/23/2023 1.00000 CorrCoff **Cert Date** 0.047 **DAS 2: DAS 1:** Cal Factor Zero 1.049 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 1.12% 1.35% 2.95 **Rotometer Reading:** Desc. Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignal PctDifference primary pump off 0.000 0.0000.00 0.0000.051/m1/mleak check 0.000 0.01 0.0000.06 1/ml/m0.000 primary 2.95 1/m 1.35% test pt 1 2.965 2.960 0.000 3.00 1/mprimary 2.963 2.960 2.95 0.000 3.00 1/m1/m1.35% primary test pt 2 2.95 0.0001/m0.67% test pt 3 2.980 2.980 3.00 1/mprimary 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 3.0 cm

Condition 270 deg

Condition

Status pass

Status pass

Status pass

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg RM Young 6697 WFM105 Eric Hebert 11/09/2023 Temperature 04683 Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID 0.16485 **Slope** 1.00945 **Intercept DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.10 0.25 UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Low Range 0.10 -0.06 0.0000.0 \mathbf{C} 0.04 25.9 C Temp Mid Range 26.56 26.15 0.000 -0.25 primary 47.40 46.79 0.000 C primary Temp High Range 46.8 -0.01 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**

Infrastructure Data For WFM105 Site Visit Date 11/09/2023 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 **Condition** Installed **Sensor Component** Moisture Trap Status pass **Sensor Component** Moisture Trap Type **Condition** Filter Status pass Sensor Component Power Cables Status pass **Condition** Good Sensor Component | Shelter Temp Control **Condition** N/A Status pass Sensor Component Rotometer **Condition** Installed Status pass Sensor Component | Sample Tower **Condition** Good Status pass 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 Condition 3/8 teflon **Sensor Component** Tubing Type Status pass

Condition Good

Condition

Status pass

Status pass

Sensor Component Sample Train

Sensor Component System Memo

Siting Criteria Form

Sensor Component City > Sensor Component City 1, Sensor Component City 10	,000 to 10,000	Condition Condition	Status Status	pass
		Condition	Status	
Sensor Component City 10	0.000 to 50.000			pass
•	0,000 10 50,000	Condition	Status	pass
Sensor Component Feedlo	ot operations	Condition	Status	pass
Sensor Component Large	parking lot	Condition	Status	pass
Sensor Component Limited	d agriculture operations	Condition	Status	pass
Sensor Component Major	industrial source	Condition	Status	pass
Sensor Component Secon	ndary road < or = 100 per da	Condition	Status	pass
Sensor Component Secon	ndary road >100 vehicles/da	Condition	Status	pass
Sensor Component Small	parking lot	Condition	Status	pass
Sensor Component System	m Memo	Condition	Status	pass
Sensor Component Major	highway, airport, or rail yard	Condition	Status	pass
Sensor Component Intensi	sive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: SiteOpsProcComm

The observation section of the SSRF is completed the day the filer is removed and not the day of installation.

2 Parameter: DasComments

Single tower, with filter pack at 10 meters and temperature at 9 meters.

3 Parameter: DocumentationCo

The site operator takes notes in his own field notebook, there is no site logbook.

4 Parameter: SitingCriteriaCom

The site is located at the Atmospheric Science Research Center (ASRC) operated by the NY University (SUNY) system.

5 Parameter: ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

F-02058-1500-S1-rev002 Field Systems Data Form WFM105 Site Visit Date 11/09/2023 **Site ID** Technician Eric Hebert **USGS Map** EPA Site Sponsor (agency) **Map Scale** SUNY **Operating Group Map Date** AQS# **Meteorological Type** Air Pollutant Analyzer **QAPP** Latitude **Deposition Measurement** dry, wet **QAPP** Longitude Woodland - mixed **Land Use QAPP Elevation Meters** Complex Terrain **QAPP Declination** No Conforms to MLM **OAPP Declination Date** 44.39322 **Site Telephone Audit Latitude** -73.85874 Site Address 1 **Audit Longitude** 608 Site Address 2 **Audit Elevation Audit Declination County** Wilmington, NY City, State **Present** Fire Extinguisher 12997 **Zip Code V** Eastern 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 no shelter. Equipment housed in enclosure on sample tower. **Shelter Clean ✓** Notes Site OK

Driving Directions

Fi	eld Systems Data Form		F-02058-1500-S3-rev002
Site	WFM105 Technician Eric Hebert		Site Visit Date 11/09/2023
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	WFM105 Technician Eric Hebert	Site Visit Date 11/09/2023
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:	sary) regarding conditions listed above, or any other features,

f I(eld Systems Data Form		F-02058-1500-S5-rev002
Site	ID WFM105 Technician Eric Hebert		Site Visit Date 11/09/2023
	Siting Criteria: Are the pollutant analyzers and deposition e	quipı	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 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.		N/A
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)	✓	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?	✓	inline filter
9	Is there a rotometer in the dry deposition filter line, and is it clean?	✓	
	ide any additional explanation (photograph or sketch if necestal or man-made, that may affect the monitoring parameters		regarding conditions listed above, or any other features,

Field Systems Data Form F-02058-1500-S6-rev002 WFM105 Technician Eric Hebert Site Visit Date 11/09/2023 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? Grounded **Stable** Is the met tower stable and grounded? 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:Single tower, with filter pack at 10 meters and temperature at 9 meters.

WFM105 Technician Eric Hebert Site Visit Date 11/09/2023 Site ID **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 ✓ **V 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** Temperature translator **V** Filter flow pump **V ~ Humidity sensor translator Surge protector** П **V ~ UPS Solar radiation translator ~ V** Tipping bucket rain gauge Lightning protection device **V 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 **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? Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **✓** 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:

The site operator takes notes in his own field notebook, there is no site logbook.

F-02058-1500-S7-rev002

Field Systems Data Form

Field Systems Data Form F-02058-1500-S8-rev002 WFM105 Technician Eric Hebert Site Visit Date 11/09/2023 Site ID Site operation procedures Trained onsite by AMEC personnel 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 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** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed** Compliant 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 V** 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 ✓** N/A 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:

complete sample train including all filters?

reported? If yes, how?

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

N/A

✓ N/A

Field Systems Data Form F-02058-1500-S9-rev002 WFM105 Technician Eric Hebert Site Visit Date 11/09/2023 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, logbook Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely fashion? ✓ One set of gloves only 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 **✓** Weekly **V Filter Pack Inspection ✓** Weekly **V Flow Rate Setting Checks ✓** Weekly **V Visual Check of Flow Rate Rotometer** ✓ As needed **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 observation section of the SSRF is completed the day the filer is removed and not the day of installation.

Field Systems Data Form

F-02058-1500-S10-rev002

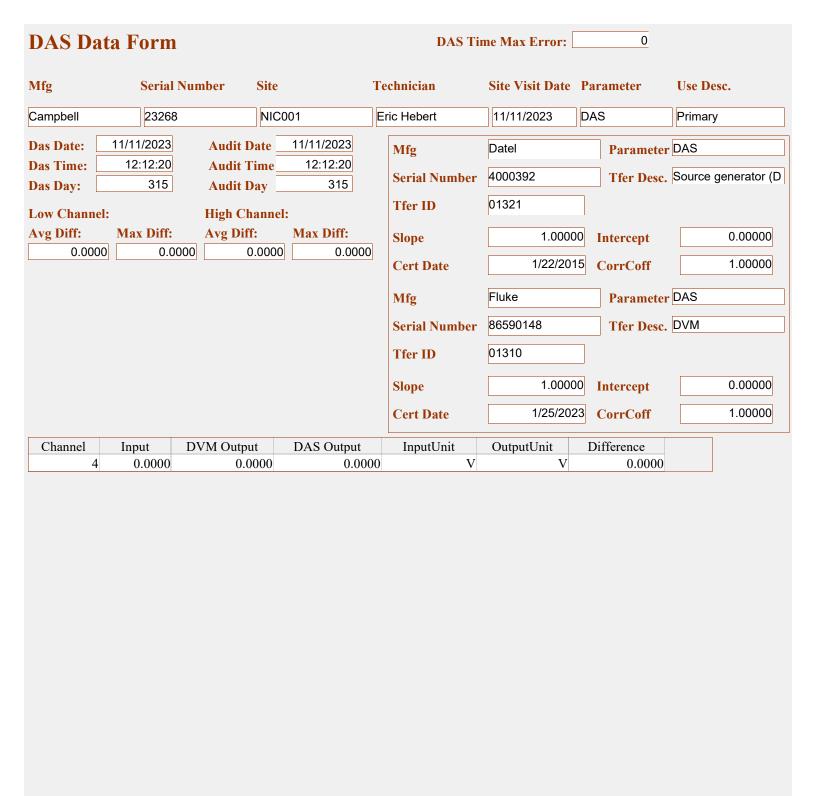
Site ID WFM105 Technician Eric Hebert Site Visit Date 11/09/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR850	23270	000803
elevation	Elevation	none	none	none
Filter pack flow pump	Permotec	BL30EB	Illegible	none
Flow Rate	Apex	AXMC105LPMDPC	illegible	000900
Infrastructure	Infrastructure	none	none	none
Modem	Sierra wireless	unknown	unknown	06983
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342VC	6697	04683

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number				
NIC	NIC001-Eric Hebert-11/11/2023									
1	11/11/2023	DAS	Campbell	000801	CR850	23268				
2	11/11/2023	elevation	Elevation	none	none	none				
3	11/11/2023	Filter pack flow pump	Permotec	none	BL30EB	Illegible				
4	11/11/2023	Flow Rate	Apex	000595	AXMC105LPMDPCV	illegible				
5	11/11/2023	Infrastructure	Infrastructure	none	none	none				
6	11/11/2023	Modem	Sierra wireless	06989	GX440	Unknown				
7	11/11/2023	Sample Tower	Aluma Tower	000785	В	AT-212125X73				
8	11/11/2023	siting criteria	Siting Criteria	none	none	None				
9	11/11/2023	Temperature	RM Young	04943	41342	none				



Flow Data Form **Technician Owner ID** Mfg Serial Number Tag Site Site Visit Date Parameter NIC001 Eric Hebert 11/11/2023 000595 Apex illegible Flow Rate Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID 0.00000 **Slope** 1.00000 **Intercept** 2/23/2023 1.00000 CorrCoff **Cert Date** 0.028 **DAS 2: DAS 1:** Cal Factor Zero 1.024 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.00% 0.00% 2.75 **Rotometer Reading:** Desc. Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignal PctDifference primary pump off 0.0000.0000.00 0.0000.031/m1/mleak check 0.000 0.08 0.0000.11 1/ml/m0.000 primary 2.98 3.00 1/m 0.00% test pt 1 2.998 3.000 0.000 1/mprimary 3.001 3.000 2.98 0.000 3.00 1/m1/m0.00% primary test pt 2 2.98 0.0001/m0.00% test pt 3 3.004 3.000 3.00 1/mprimary Sensor Component Leak Test Condition Status pass **Condition** Good Status pass **Sensor Component** Tubing Condition Sensor Component Filter Position Status pass **Condition** Fair 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 5.0 cm Status pass Sensor Component Filter Depth Condition 0.0 cm Status pass

Condition 360 deg

Condition

Sensor Component Filter Azimuth

Sensor Component System Memo

Status pass

Status pass

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg RM Young NIC001 Eric Hebert 11/11/2023 Temperature 04943 none Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID 0.16485 **Slope** 1.00945 **Intercept DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.06 0.09 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.16 0.00 0.0000.0 \mathbf{C} 0.01 C Temp Mid Range 25.40 25.00 0.000 24.9 -0.09 primary 45.54 0.000 C primary Temp High Range 46.14 45.5 -0.08Condition 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**

Infrastructure Data For Site Visit Date 11/11/2023 NIC001 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 **Condition** Installed **Sensor Component** Moisture Trap Status pass **Sensor Component** Moisture Trap Type **Condition** Filter Status pass Sensor Component Power Cables Status pass **Condition** Good Sensor Component | Shelter Temp Control **Condition** N/A Status pass Sensor Component Rotometer **Condition** Installed Status pass Sensor Component | Sample Tower **Condition** Good Status pass 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 Condition 3/8 teflon **Sensor Component** Tubing Type Status pass **Condition** Good Sensor Component Sample Train Status pass

Condition

Status pass

Sensor Component System Memo

Siting Criteria Form

Sensor Component City > Sensor Component City 1, Sensor Component City 10	,000 to 10,000	Condition Condition	Status Status	
		Condition	Status	nass
Sensor Component City 10	0,000 to 50,000			puoo
•		Condition	Status	pass
Sensor Component Feedlo	ot operations	Condition	Status	pass
Sensor Component Large	parking lot	Condition	Status	pass
Sensor Component Limited	ed agriculture operations	Condition	Status	pass
Sensor Component Major	industrial source	Condition	Status	pass
Sensor Component Secon	ndary road < or = 100 per da	Condition	Status	pass
Sensor Component Secon	ndary road >100 vehicles/da	Condition	Status	pass
Sensor Component Small	parking lot	Condition	Status	pass
Sensor Component System	m Memo	Condition	Status	pass
Sensor Component Major	highway, airport, or rail yard	Condition	Status	pass
Sensor Component Intens	sive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: DasComments

Single tower with filter pack mounted at 10 meters and temperature mounted at 9 meters. The tower is difficult to lower due to the lower section contacting the chain-link fence. This could be a potential safety hazard. It is recommended that a solution be investigated.

2 Parameter: DocumentationCo

There is no logbook onsite to record information regarding site status or filter information.

3 Parameter: ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

F-02058-1500-S1-rev002 Field Systems Data Form Site Visit Date 11/11/2023 NIC001 **Site ID** Technician Eric Hebert **USGS Map** EPA Site Sponsor (agency) **Map Scale** NY DEC **Operating Group Map Date** AQS# **Meteorological Type** Air Pollutant Analyzer **QAPP** Latitude **Deposition Measurement** dry **QAPP** Longitude Woodland - mixed **Land Use QAPP Elevation Meters** Complex Terrain **QAPP Declination** No Conforms to MLM **OAPP Declination Date** 43.68596 **Site Telephone Audit Latitude** -74.9857 Site Address 1 **Audit Longitude** 526 Site Address 2 **Audit Elevation** Herkimer **Audit Declination County** Old Forge, NY City, State **Present** Fire Extinguisher 13420 **Zip Code** Eastern 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 Model **Shelter Size** □ Notes Small footprint site with no shelter. Equipment housed in enclosure on sample tower. **Shelter Clean** □ Notes Site OK

Driving Directions

Field Systems Data Form						F-02058-1500-S3-rev002				
Site	e ID	NIC001	Technician	Eric Hebert		Site Visit Date	11/11/2023			
1		nd speed and direction offluenced by obstruction		as to avoid	✓	N/A				
2	(i.e. win	nd sensors mounted so ad sensors should be m tally extended boom > nto the prevailing wind	ounted atop the 2x the max diar	e tower or on a	✓	N/A				
3	Are the	tower and sensors plu	mb?		✓	N/A				
4		temperature shields p adiated heat sources su		positioned to	✓					
5	condition surface	nperature 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	ed 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,	ed to avoid sheltering e etc?	ffects from buil	dings, trees,	✓	N/A				
10	Is the su facing n	urface wetness sensor s north?	sited with the gr	id surface	✓	N/A				
11	Is it inc	clined approximately 3	0 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	NIC001 Technician Eric Hebert	Site Visit Date 11/11/2023
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:	sary) regarding conditions listed above, or any other features,

Fi	eld Systems Data Form	F-02058-1500-S5-rev002	
Site	NIC001 Technician Eric Hebert		Site Visit Date 11/11/2023
	Siting Criteria: Are the pollutant analyzers and deposition eq	<u>uipı</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?	✓	
	Pollutant analyzers and deposition equipment operations and	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 10 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?		Flow line only (balston filter)
9	Is there a rotometer in the dry deposition filter line, and is it clean?	✓	
	ide 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	NIC001	Technician	Eric Hebert		Site Visit	Date 1	1/11/2023		
	DAC go	near translators and r	aninkanal aguir			d maintanana				
	DAS, se	nsor translators, and g	<u>eripnerai equi</u>	<u>pment operation</u>	<u>is an</u>	<u>a maintenanc</u>	<u>:e</u>			
1		OAS instruments appearintained?	V							
2	Are all the components of the DAS operational? (printers, modem, backup, etc)									
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?									
4	Are the signal connections protected from the weather and well maintained?									
5	Are the signal leads connected to the correct DAS channel?				✓					
6	Are the DAS, sensor translators, and shelter properly grounded?				✓					
7	Does the instrument shelter have a stable power source?				✓					
8	Is the in	strument shelter temp	erature control	lled?	✓	N/A				
9	Is the m	et tower stable and gr	ounded?			Stable		G	rounded	
10	Is the sa	mple tower stable and	grounded?						▽	
11	Tower c	omments?								

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:

Single tower with filter pack mounted at 10 meters and temperature mounted at 9 meters. The tower is difficult to lower due to the lower section contacting the chain-link fence. This could be a potential safety hazard. It is recommended that a solution be investigated.

Field Systems Data Form NIC001 Technician Eric Hebert Site Visit Date 11/11/2023 Site ID **Documentation** Does the site have the required instrument and equipment manuals? Yes No N/A No N/A Yes **V V** Wind speed sensor Data logger П **V V** Wind direction sensor Data logger ✓ **V 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** Temperature translator **V** Filter flow pump **V V Humidity sensor translator Surge protector** П **V V UPS Solar radiation translator ~ V** Tipping bucket rain gauge Lightning protection device **V V** Shelter heater Ozone analyzer \checkmark **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** No logbook **SSRF ✓ V** 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? No logbook Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **✓** 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 logbook onsite to record information regarding site status or filter information.

F-02058-1500-S7-rev002

Field Systems Data Form F-02058-1500-S8-rev002 NIC001 Technician Eric Hebert Site Visit Date 11/11/2023 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 Translator Zero/Span Tests (climatronics)** N/A **V** N/A **Manual Rain Gauge Test V** N/A **Confirm Reasonableness of Current Values V** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed** Compliant 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 V** 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 ✓** N/A 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 N/A complete sample train including all filters? **✓** N/A 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:

Field Systems Data Form				F-0205	8-1500-S9-rev002	
Site	NIC001 Tec	hnician Eric Heber	rt	Site Visit Date 11/11/2023		
	Site operation procedures					
1	Is the filter pack being changed ever	y Tuesday as sched	luled?	Filter changed mornings		
2	Are the Site Status Report Forms be correctly?	ing completed and	filed <			
3	3 Are data downloads and backups being performed as scheduled?			No longer required		
4	Are general observations being made	e and recorded? Ho	ow?	SSRF		
5	5 Are site supplies on-hand and replenished in a timely fashion?					
6	Are sample flow rates recorded? How	w?	✓	SSRF		
7	Are samples sent to the lab on a regulation?	ılar schedule in a ti	mely 🗹			
8	Are filters protected from contamina and shipping? How?	tion during handli	ing 🗸	Clean gloves on and off		
9	Are the site conditions reported regularized operations manager or staff?	larly to the field	✓			
QC	Check Performed	Frequency		Compliant		
N	Nulti-point MFC Calibrations	✓ Semiannually		V		
F	low System Leak Checks	✓ Weekly		✓		
F	ilter Pack Inspection	✓ Weekly		V		
F	Flow Rate Setting Checks Weekly			✓		
V	Visual Check of Flow Rate Rotometer			✓		
Iı	n-line Filter Inspection/Replacement	✓ As needed		✓		
S	ample Line Check for Dirt/Water	✓ Weekly		✓		
	ide any additional explanation (photo ral or man-made, that may affect the			regarding conditions listed above	e, or any other features,	

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID NIC001 Technician Eric Hebert Site Visit Date 11/11/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR850	23268	000801
elevation	Elevation	none	none	none
Filter pack flow pump	Permotec	BL30EB	Illegible	none
Flow Rate	Apex	AXMC105LPMDPC	illegible	000595
Infrastructure	Infrastructure	none	none	none
Modem	Sierra wireless	GX440	Unknown	06989
Sample Tower	Aluma Tower	В	AT-212125X73	000785
siting criteria	Siting Criteria	none	None	none
Temperature	RM Young	41342	none	04943

Site Inventory by Site Visit

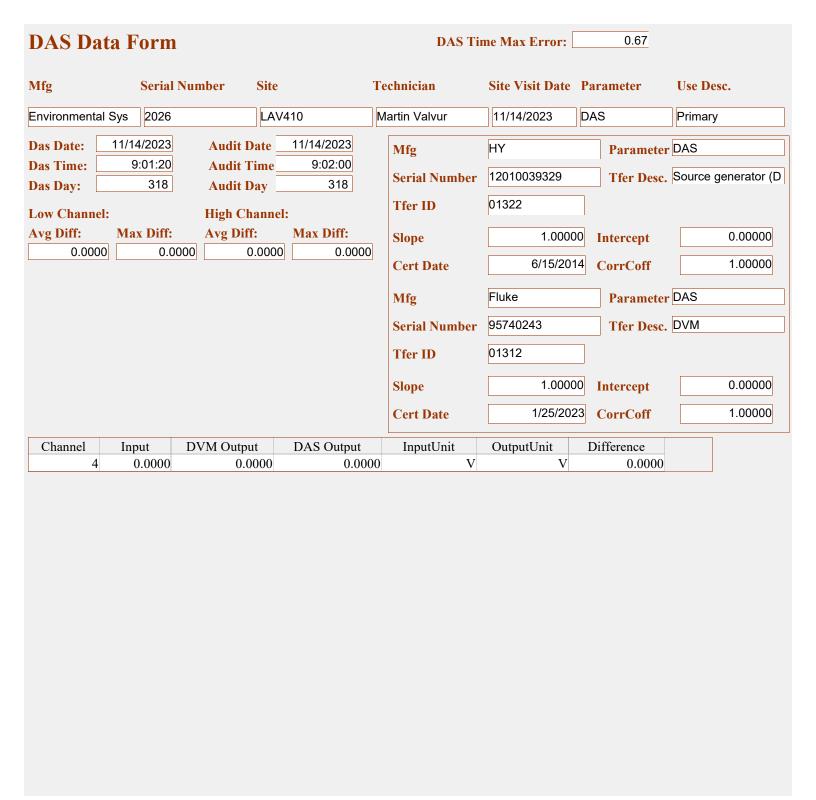
Site Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
DUK008-Eric	Hebert-11/14/2023				
1 11/14/2023	DAS	Campbell	000420	CR3000	2520
2 11/14/2023	Ozone	ThermoElectron Inc	000616	49i A1NAA	1009241781
3 11/14/2023	Ozone Standard	ThermoElectron Inc	000369	49i A3NAA	0726124690

Ozone Data Form

Mfg	Serial Number	er Ta Site		Tec	hnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElectron Inc	1009241781	DUK008	3	Eri	c Hebert	11/14/2023	Ozone		000616
	1.01197 Slop 0.03930 Inte		0.00000		Mfg Serial Number	ThermoElectror			ozone Ozone primary stan
-			0.00000				**	er Desc	Ozono primary otan
					Tfer ID	01115			
DAS 1:	D	AS 2:			Slope	1.0045	50 Inter	rcept	-0.25270
A Avg % Diff: A M	Iax % Di A	Avg %Diff A	Max % Di		•	4/24/202		•	1.00000
0.0%	0.0%				Cert Date	7/24/20/	Cori	rCoff	1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer Co	rr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	-0.05	0.23		0.35	ppb			0.12
primary	2	17.66	17.81		17.94	ppb			0.13
primary	3	37.19	37.18		37.48	ppb		0.8	
primary	4	69.03	68.77		69.44	ppb		0.97	
primary	5	117.87	117.23		118.70	ppb		1.25	
Sensor Componer				ditio	752.8 mmHg		Status	pass	
Sensor Componer	26.6 degree	unobstructed ru	Cone	ditio	True		Status	pass	
Sensor Componer	nt Tree dewline	e >10m or below	inlet Con	ditio	True		Status	pass	
Sensor Componer	ADT 1000-1	0000 vehicles fu	rther Con	ditio	n True		Status	pass	
Sensor Componer	ADT <1000	vehicles further	than Con	ditio	True		Status	pass	
Sensor Componer	Sample Tra	in	Con	ditio	Good		Status	pass	
Sensor Componer	Inlet Filter C	ondition	Con	ditio	Clean		Status	pass	
Sensor Componer	Offset		Con	ditio	n -0.10		Status	pass	
Sensor Componer	Span		Con	ditio	1.020		Status	pass	
Sensor Componer	Zero Voltag	е	Con	ditio	ion N/A		Status	pass	
Sensor Componer	Fullscale Vo	ltage	Con	ditio	n N/A		Status	pass	
Sensor Componer	Cell A Freq.		Con	ditio	84.8 kHz		Status	pass	
Sensor Componer	cell A Noise	;	Con	ditio	Not tested		Status	pass	
Sensor Componer	Cell A Flow		Con	ditio	0.66 lpm		Status	pass	
Sensor Componer	Cell A Press	sure	Con	ditio	682.4 mmHg		Status	pass	
Sensor Componer	Cell A Tmp.		Con	ditio	34.1 C		Status	pass	
Sensor Componer	Cell B Freq.		Con	ditio	91.4 kHz		Status	pass	
Sensor Componer	Cell B Noise	;	Con	ditio	Not tested		Status	pass	
Sensor Componer	Cell B Flow		Con	ditio	0.61 lpm		Status	pass	
Sensor Componer	Cell B Press	sure	Con	ditio	682.7 mmHg		Status	pass	
Sensor Componer	Nafion drye	installed	Con	ditio	n False		Status	pass	
Sensor Componer	System Mer	mo	Con	ditio	n		Status	pass	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number						
LAV	LAV410-Martin Valvur-11/14/2023											
1	11/14/2023	Computer	Hewlett Packard	none	EliteBook	CNU3389G02						
2	11/14/2023	DAS	Environmental Sys Corp	90535	8816	2026						
3	11/14/2023	Elevation	Elevation	None	1	None						
4	11/14/2023	Filter pack flow pump	Thomas	none	107CAB18	Illegible						
5	11/14/2023	flow rate	Tylan	none	FC280SAV	AW02213004						
6	11/14/2023	Infrastructure	Infrastructure	none	none	none						
7	11/14/2023	Met tower	Rohn	none	unknown	none						
8	11/14/2023	MFC power supply	Tylan	00042	RO-32	FP902022						
9	11/14/2023	Ozone	ThermoElectron Inc	none	49i A3NAA	1152780007						
10	11/14/2023	Ozone Standard	ThermoElectron Inc	90567	49C	49C-59283-322						
11	11/14/2023	Sample Tower	Aluma Tower	923314	В	AT-5324-F6-O						
12	11/14/2023	Shelter Temperature	ARS	none	unknown	none						
13	11/14/2023	Siting Criteria	Siting Criteria	None	1	None						
14	11/14/2023	Temperature2meter	RM Young	none	41342VC	029458						
15	11/14/2023	Zero air pump	Twin Tower Engineering	none	TT70/4E	526292						



Flow Data Form **Technician** Mfg **Serial Number Tag Site** Site Visit Date Parameter **Owner ID** Martin Valvur flow rate Tylan AW02213004 LAV410 11/14/2023 none Mfg BIOS Parameter Flow Rate Tylan Mfg 152253 Tfer Desc. BIOS 220-H **Serial Number** 00042 FP902022 **SN/Owner ID** 15225 Tfer ID MFC power supply **Parameter:** 0.00000 **Slope** 1.00000 Intercept 5/2/2022 1.00000 CorrCoff **Cert Date** 0.41 **DAS 1: DAS 2:** Cal Factor Zero 10.42 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 1.28% 1.60% **Rotometer Reading:** Test type Input l/m Input Corr MfcDisp. OutputSignal Output S E InputUnit OutputSignal PctDifference Desc. 0.000primary pump off 0.000-0.300.00000.14 1/m1/m leak check 0.000 0.000 -0.29 0.00000.16 1/ml/mprimary 0.0000 1/m -1.60% test pt 1 3.067 3.070 2.56 3.02 1/mprimary 3.060 2.57 0.0000 3.02 1/m-1.27% primary test pt 2 3.063 1/m0.0000-0.98% test pt 3 3.053 3.050 2.57 3.02 1/m1/mprimary 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 5.0 cm Status pass

Condition 1.5 cm

Condition 165 deg

Condition

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Status pass

Status pass

Status pass

Ozone Data Form

ThermoElectron Inc	none er ozone c. Ozone primary stan -0.03885 1.00000 AbsDif 0.72 0.17
Intercept	-0.03885 1.00000 AbsDif 0.72
A Avg % Diff: A Max % Dif O.0% O.0% O.0% Cert Date	1.00000 AbsDif 0.72
primary 1 -0.24 -0.19 0.53 ppb primary 2 14.36 14.25 14.42 ppb primary 3 34.09 33.78 32.97 ppb -2.43 primary 4 63.60 62.99 61.79 ppb -1.92 primary 5 114.03 112.90 110.90 ppb -1.79 Sensor Component Audit Pressure Condition 611.5 mmHg Status pass Sensor Component Tree dewline >10m or below inlet Condition Not tested Status pass Sensor Component ADT 1000-10000 vehicles further t Condition True Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Inlet Filter Condition Condition Clean Status pass	0.72
primary 2 14.36 14.25 14.42 ppb primary 3 34.09 33.78 32.97 ppb -2.43 primary 4 63.60 62.99 61.79 ppb -1.92 primary 5 114.03 112.90 110.90 ppb -1.79 Sensor Component Audit Pressure Condition 611.5 mmHg Status pass Sensor Component Tree dewline >10m or below inlet Condition 6.8 m Status Fail Sensor Component ADT 1000-10000 vehicles further t Condition True Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Inlet Filter Condition Condition Condition Condition Status pass	
primary 3 34.09 33.78 32.97 ppb -2.43 primary 4 63.60 62.99 61.79 ppb -1.92 primary 5 114.03 112.90 110.90 ppb -1.79 Sensor Component Audit Pressure Condition 611.5 mmHg Status pass Sensor Component Tree dewline >10m or below inlet Condition Not tested Status pass Sensor Component ADT 1000-10000 vehicles further t Condition True Status pass Sensor Component ADT <1000 vehicles further than 5 Condition True Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Inlet Filter Condition Clean Status pass	0.17
primary 4 63.60 62.99 61.79 ppb -1.92 primary 5 114.03 112.90 110.90 ppb -1.79 Sensor Component Audit Pressure Condition 611.5 mmHg Status pass Sensor Component Tree dewline >10m or below inlet Condition 6.8 m Status pass Sensor Component ADT 1000-10000 vehicles further t Condition True Status pass Sensor Component ADT <1000 vehicles further than 5 Condition True Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Inlet Filter Condition Clean Status pass	
primary5114.03112.90110.90ppb-1.79Sensor ComponentAudit PressureCondition611.5 mmHgStatuspassSensor ComponentZero ComponentTree dewline >10m or below inletConditionNot testedStatusFailSensor ComponentADT 1000-10000 vehicles further tConditionTrueStatuspassSensor ComponentADT <1000 vehicles further than 5ConditionTrueStatuspassSensor ComponentSample TrainConditionGoodStatuspassSensor ComponentInlet Filter ConditionConditionCleanStatuspass	
Sensor ComponentAudit PressureCondition611.5 mmHgStatuspassSensor Component26.6 degree unobstructed ruleConditionNot testedStatuspassSensor ComponentTree dewline >10m or below inletCondition6.8 mStatusFailSensor ComponentADT 1000-10000 vehicles further tConditionTrueStatuspassSensor ComponentADT <1000 vehicles further than 5	
Sensor Component26.6 degree unobstructed ruleConditionNot testedStatuspassSensor ComponentTree dewline >10m or below inletCondition6.8 mStatusFailSensor ComponentADT 1000-10000 vehicles further tConditionTrueStatuspassSensor ComponentADT <1000 vehicles further than 5	
Sensor ComponentTree dewline >10m or below inletCondition6.8 mStatusFailSensor ComponentADT 1000-10000 vehicles further tConditionTrueStatuspassSensor ComponentADT <1000 vehicles further than 5	
Sensor Component ADT 1000-10000 vehicles further t Condition True Status pass Sensor Component ADT <1000 vehicles further than 5 Condition True Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Inlet Filter Condition Condition Clean Status pass	
Sensor Component ADT <1000 vehicles further than 5 Condition True Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Inlet Filter Condition Condition Clean Status pass	
Sensor Component Sample Train Condition Good Status pass Sensor Component Inlet Filter Condition Condition Clean Status pass	
Sensor Component Inlet Filter Condition Clean Status pass	
Sensor Component Offset Condition -0.1 Status pass	
Sensor Component Span Condition 1.008 Status pass	
Sensor Component Zero Voltage Condition -0.0001 Status pass	
Sensor Component Fullscale Voltage Condition 1.0002 Status pass	
Sensor Component Cell A Freq. Condition 87.5 kHz Status pass	
Sensor Component Cell A Noise Condition 1.0 ppb Status pass	
Sensor Component Cell A Flow Condition 0.64 lpm Status pass	
Sensor Component Cell A Pressure Condition 606.0 mmHg Status pass	
Sensor Component Cell A Tmp. Condition 37.3 C Status pass	
Sensor Component Cell B Freq. Condition 76.6 kHz Pass	
Sensor Component Cell B Noise Condition 1.0 ppb Status pass	
Sensor Component Cell B Flow Condition 0.66 lpm Status pass	
Sensor Component Cell B Pressure Condition 605.3 mmHg Status pass	
Sensor Component Nafion dryer installed Condition False Status pass	
Sensor Component System Memo Condition Status pass	

2 Meter Temperature Data Form Calc. Difference Serial Number Tag Site **Technician** Site Visit Date Parameter Mfg **Owner ID** LAV410 Martin Valvur 11/14/2023 RM Young 029458 Temperature2meter none Mfg Fluke Parameter Temperature 3275143 Tfer Desc. RTD **Serial Number** 01229 Tfer ID **Slope** 1.00002 **Intercept** -0.00336 **DAS 1: DAS 2:** 1/23/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err CorrCoff **Cert Date** 0.22 0.33 Difference UseDescription InputTmpRaw InputTmpCorrected | OutputTmpSignal | OutputSignalEng | OSE Unit Test type Temp Low Rang 0.25 0.25 0.00000.34C 0.09 primary 21.71 21.71 0.0000 21.96C 0.25 primary Temp Mid Range Temp High Rang primary 46.91 46.91 0.0000 47.24C 0.33 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** ARS Martin Valvur none LAV410 11/14/2023 Shelter Temperature 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** 0.59 0.62 01229 Tfer ID 1.00002 -0.00336 **Slope** Intercept 1/23/2023 1.00000 **Cert Date** CorrCoff UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 23.67 23.67 0.00023.1 \mathbf{C} -0.55 24.39 C Temp Mid Range 24.39 0.00023.8 -0.62 primary C 25.71 25.71 0.000 25.1 -0.59 primary Temp Mid Range

Condition

Sensor Component System Memo

Status pass

Infrastructure Data For Site Visit Date 11/14/2023 Technician Martin Valvur LAV410 Site ID **Shelter Make Shelter Model Shelter Size** 1150 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 **Condition** Filter **Sensor Component** Moisture Trap Type Status pass Sensor Component Power Cables Status pass **Condition** Good **Condition** Functioning Sensor Component | Shelter Temp Control 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 Status pass **Condition** Good Sensor Component | Shelter Roof **Condition** Good Status pass Sensor Component | Shelter Floor **Condition** Good Status pass Sensor Component Shelter walls **Condition** Good Status pass

Condition Good

Condition Good

Condition Good

Condition

Condition 3/8 teflon

Status pass

Status pass

Status pass

Status pass

Status pass

Sensor Component Excessive mold present

Sensor Component Signal Cable

Sensor Component Tubing Type

Sensor Component Sample Train

Sensor Component System Memo

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 25 m	Status	Fail
Sensor Component	System Memo	Condition	Status	pass
	Major highway, airport, or rail yard	Condition	Status	pass
Sensor Component	Intensive agriculture operations	Condition	Status	pass

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone inlet filter is changed and the sample line conditioned every two weeks or as needed.

2 Parameter: SitingCriteriaCom

The site is located at the end of a park service facility parking lot, in a fire station. The tree line is near the building, but the prevailing wind direction is from the clearing. Tree height above the sample inlet is not twice as far away as it is high above the inlet.

3 Parameter: ShelterCleanNotes

The inside equipment is located in room within the fire station, clean, neat, and organized.

4 Parameter: PollAnalyzerCom

Trees violate the ozone sample inlet siting criteria.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 11/14/2023 LAV410 Technician | Martin Valvur Site ID Manzanita Lake **USGS Map** NPS **Site Sponsor (agency)** Map Scale NPS **Operating Group Map Date** 06-065-1004 AQS# Climatronics **Meteorological Type** Ozone, IMPROVE 40.5403 Air Pollutant Analyzer **QAPP** Latitude dry, wet **QAPP** Longitude -121.5764 **Deposition Measurement** 1756 **Land Use** woodland - evergreen **QAPP Elevation Meters** Terrain complex **QAPP Declination** Marginally Conforms to MLM **OAPP Declination Date** (530) 335-7214 40.539991 **Site Telephone Audit Latitude** 38050 Hwy 36E -121.576462 Site Address 1 **Audit Longitude** Site Address 2 **Audit Elevation** 1755 14.5 Shasta **County Audit Declination** Mineral, CA City, State **Present** Fire Extinguisher 96063 Inspected Oct 2023 Zip Code Pacific **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 **Shelter Size** 1150 cuft **✓** Notes The inside equipment is located in room within the fire station, clean, neat, and organized. Shelter Clean **✓** Notes Site OK From Redding take route 44 east for approximately 45 miles. At the park, and intersection of 44 and 89, turn right **Driving Directions** onto route 89. Turn right at the first road into the fire station and maintenance area. Take the first left, the site is behind the fire station at the end of the parking lot. One room in the fire station houses the climate controlled

equipment.

Fi	eld Sy	stems Data Fo			F-020	58-1	500-S3-1	rev002		
Site	e ID	LAV410	Technician	Martin Valvur		Site Visit Date	11/14/2023			
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 > to the prevailing wind	ounted atop the 2x the max diam	e tower or on a	✓	N/A				
3	Are the	tower and sensors plu	mb?		✓	N/A				
4		temperature shields p diated heat sources su			✓					
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped g water should be avoi	sensors should . Ridges, hollov	l be natural	✓					
6	Is the so	lar 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	in gauge plumb?			✓	N/A				
9	Is it site	d to avoid sheltering e	ffects from bui	ldings, trees,	✓	N/A				
10	Is the su facing n	rface wetness sensor sorth?	sited with the g	rid surface	✓	N/A		-		
11	Is it inc	lined approximately 3	0 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	ID LAV410 Technician Martin Valvur	Site Visit Date 11/14/2023
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 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 LAV410 Technician | Martin Valvur Site Visit Date 11/14/2023 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? < 10 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 10 meters Describe dry dep sample tube. 3/8 teflon by 10 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,

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 violate the ozone sample inlet siting criteria.

Field Systems Data Form F-02058-1500-S6-rev002 Site ID LAV410 Technician Martin Valvur Site Visit Date 11/14/2023 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? **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 LAV410 Technician | Martin Valvur Site Visit Date 11/14/2023 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** Relative humidity sensor Computer **V** Solar radiation sensor **V** Modem П **V V Printer** Surface wetness sensor **V V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump ✓ **~ Humidity sensor translator Surge protector** П **V ~ UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** ~ \checkmark **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** DataView2 **SSRF ✓ V ✓ V** Site Ops Manual July 2012 **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? ✓ 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 LAV410 Site Visit Date 11/14/2023 Site ID Technician Martin Valvur Site operation procedures Informal training provided by ARS during maintenance visits, and 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 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** Not performed Manual Zero/Span Tests **V ~** Daily **Automatic Precision Level Tests V V Manual Precision Level Test** Not performed **V V** Alarm values only **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** Weekly **Zero Air Desiccant Check V** 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

The ozone inlet filter is changed and the sample line conditioned every two weeks or as needed.

complete sample train including all filters?

reported? If yes, how?

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

Field Systems Data Form						F-02058-1500-S9-rev002	
Site	e ID	LAV410 To	echnician Martin Valvur		Site Visit Date	11/14/2023	
	Site ope	ration procedures					
1	Is the fil	ter pack being changed eve	ery Tuesday as scheduled?	✓	Filter changed betw	een 11:00 and 13:00	
2	Are the correctly	Site Status Report Forms by?	peing completed and filed	✓			
3	3 Are data downloads and backups being performed as scheduled?				No longer required		
4	Are gen	eral observations being ma	de and recorded? How?	✓	SSRF, dataview		
5	Are site fashion?	supplies on-hand and replo	enished in a timely	✓			
6	Are sam	ple flow rates recorded? H	ow?	✓	SSRF		
7	Are sam	ples sent to the lab on a reg	gular schedule in a timely	✓			
8		rs protected from contami	nation during handling	✓	Clean gloves on and	d off	
9		site conditions reported reg ons manager or staff?	gularly to the field				
QC	Check Po	erformed	Frequency			Compliant	
N	Multi-poii	nt MFC Calibrations	✓ Semiannually			✓	
F	Flow Syste	em Leak Checks	✓ Weekly			\checkmark	
I	Filter Pac	k Inspection					
F	Flow Rate	Setting Checks	✓ Weekly			✓	
1	Visual Ch	eck of Flow Rate Rotomete	r ✓ Weekly			\checkmark	
I	n-line Fil	ter Inspection/Replacemen	t ✓ Weekly			\checkmark	
S	Sample Li	ne Check for Dirt/Water	Weekly			\checkmark	
		dditional explanation (pho n-made, that may affect th			y) regarding conditi	ons listed above, or any other features,	

Field Systems Data Form

F-02058-1500-S10-rev002

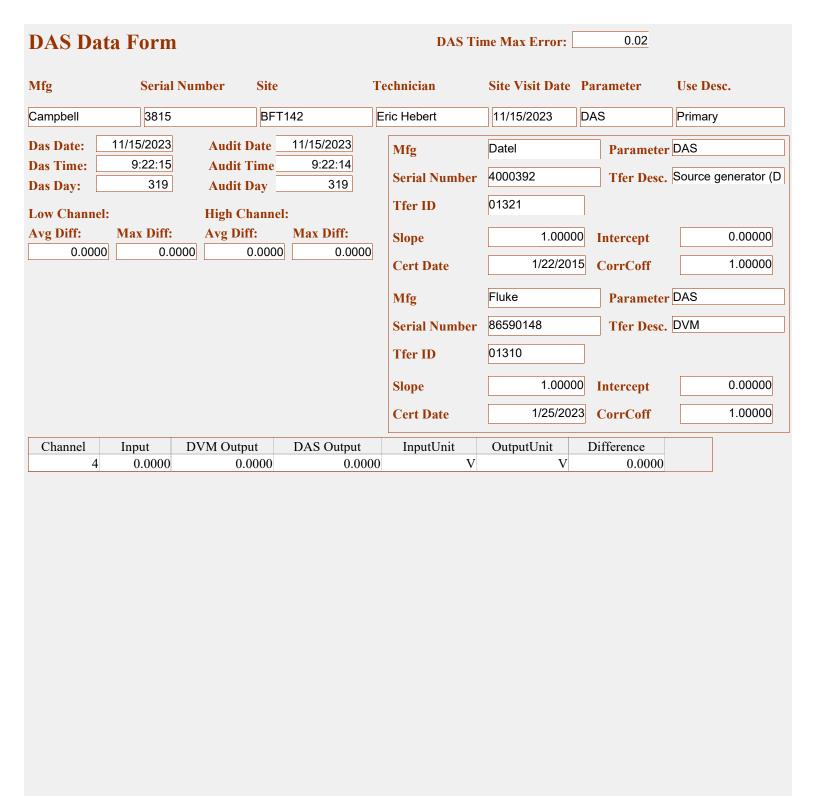
Site ID LAV410 Technician Martin Valvur Site Visit Date 11/14/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	EliteBook	CNU3389G02	none
DAS	Environmental Sys Corp	8816	2026	90535
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	Illegible	none
flow rate	Tylan	FC280SAV	AW02213004	none
Infrastructure	Infrastructure	none	none	none
Met tower	Rohn	unknown	none	none
MFC power supply	Tylan	RO-32	FP902022	00042
Ozone	ThermoElectron Inc	49i A3NAA	1152780007	none
Ozone Standard	ThermoElectron Inc	49C	49C-59283-322	90567
Sample Tower	Aluma Tower	В	AT-5324-F6-O	923314
Shelter Temperature	ARS	unknown	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342VC	029458	none
Zero air pump	Twin Tower Engineering	TT70/4E	526292	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number						
BF1	BFT142-Eric Hebert-11/15/2023											
1	11/15/2023	Computer	Dell	07212	Inspiron 15	Unknown						
2	11/15/2023	DAS	Campbell	000498	CR3000	3815						
3	11/15/2023	Elevation	Elevation	None	1	None						
4	11/15/2023	Filter pack flow pump	Thomas	04279	107CA18	129800010158						
5	11/15/2023	Flow Rate	Apex	000593	AXMC105LPMDPCV	illegible						
6	11/15/2023	Infrastructure	Infrastructure	none	none	none						
7	11/15/2023	Modem	Digi	07135	LR54	Illegible						
8	11/15/2023	Ozone	ThermoElectron Inc	000746	49i A1NAA	1105347315						
9	11/15/2023	Ozone Standard	ThermoElectron Inc	000330	49i A3NAA	0622717854						
10	11/15/2023	Sample Tower	Aluma Tower	000863	В	unknown						
11	11/15/2023	Shelter Temperature	Campbell	none	107-L	none						
12	11/15/2023	Siting Criteria	Siting Criteria	None	1	None						
13	11/15/2023	Temperature	RM Young	04444	41342VO	4542						
14	11/15/2023	Zero air pump	Werther International	07291	C 120/TC	001071024						



Flow Data Form **Technician Owner ID** Mfg Serial Number Tag Site Site Visit Date Parameter 000593 Apex BFT142 Eric Hebert 11/15/2023 Flow Rate illegible Mfg BIOS Parameter Flow Rate 131818 Tfer Desc. BIOS 220-H **Serial Number** 01417 Tfer ID 0.00000 **Slope** 1.00000 Intercept 2/23/2023 CorrCoff 1.00000 **Cert Date** -0.01 **DAS 1: DAS 2:** Cal Factor Zero 0.99 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.00% 0.00% 1.5 **Rotometer Reading:** OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. Test type Input l/m Input Corr MfcDisp. primary pump off 0.0000.0000.000.000-0.011/m1/mleak check 0.000 0.01 0.000-0.01 1/ml/m0.000 primary 1.51 1/m 0.00% test pt 1 1.502 1.500 0.000 1.50 1/mprimary 1.502 1.500 1.51 0.000 1.50 1/m1/m0.00% primary test pt 2 Sensor Component Leak Test Status pass Condition Sensor Component Tubing Condition **Condition** Good Status pass **Condition** Good Status pass **Sensor Component** Filter Position Sensor Component Rotometer Condition Condition Clean and dry Status pass Sensor Component Moisture Present **Condition** See comments Status pass **Sensor Component** Filter Distance Condition 4.5 cm Status pass Condition 2.0 cm Status pass Sensor Component Filter Depth Condition 180 deg Status pass **Sensor Component** Filter Azimuth Sensor Component System Memo Status pass Condition

Ozone Data Form

Mfg So	erial Numbe	r Tag Site		Tec	chnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElectron Inc 1	1105347315	BFT142		Eri	c Hebert	11/15/2023	Ozone		000746
Intercept -0.0	97877 Slope 06249 Inter	cept	0.00000		Mfg Serial Number	ThermoElectron			ozone c. Ozone primary stan
Correon.		Tfer ID	01115						
DAS 1:	DA	AS 2:			Slope	1.004	50 Inter	rcent	-0.25270
A Avg % Diff: A Ma	x % Dif A	Avg %Diff A	Max % Di	f	-			-	
0.0%	0.0%				Cert Date	4/24/20	23 Cori	rCoff	1.00000
UseDescription C	ConcGroup	Tfer Raw	Tfer Co	orr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	0.00	0.28			ppb			0
primary	2	16.54	16.69)	16.25	ppb			-0.44
primary	3	36.27	36.27			ppb		-2.43	
primary	4	66.86	66.62			ppb		-2.32	
primary	5	117.54	116.90	0	114.40	ppb		-2.16	
Sensor Component	Audit Pressu	ıre	Con	ditio	755 mmHg		Status	pass	
Sensor Component	26.6 degree	unobstructed ru	e Con	ditio	True		Status	pass	
Sensor Component	Tree dewline	>10m or below	inlet Con	ditio	True		Status	pass	
Sensor Component	ADT 1000-1	0000 vehicles fu	rther t Con	ditio	True		Status	pass	
Sensor Component	ADT <1000	vehicles further t	han 5 Con	ditio	True		Status	pass	
Sensor Component	Sample Trai	n	Con	ditio	Good		Status	pass	
Sensor Component	Inlet Filter Co	ondition	Con	ditio	Moderately cle	an	Status	pass	
Sensor Component	Offset		Con	ditio	on -0.20		Status	pass	
Sensor Component	Span		Con	ditio	on 0.989		Status	pass	
Sensor Component	Zero Voltage)	Con	ditio	n N/A		Status	pass	
Sensor Component	Fullscale Vo	Itage	Con	ditio	n N/A		Status	pass	
Sensor Component	Cell A Freq.		Con	ditio	99.9 kHz		Status	pass	
Sensor Component	Cell A Noise		Con	ditio	Not tested		Status	pass	
Sensor Component	Cell A Flow		Con	ditio	0.70 lpm		Status	pass	
Sensor Component	Cell A Press	ure	Con	ditio	701.8 mmHg		Status	pass	
Sensor Component	Cell A Tmp.		Con	ditio	31.6 C		Status	pass	
Sensor Component	Cell B Freq.		Con	ditio	on 114.3 kHz		Status	pass	
Sensor Component	Cell B Noise		Con	ditio	Not tested		Status	pass	
Sensor Component	Sensor Component Cell B Flow		Con	ditio	0.69 lpm		Status pass		
Sensor Component	Sensor Component Cell B Pressure			ditio	702.1 mmHg		Status pass		
Sensor Component	Nafion dryer	installed	Con	ditio	True	Status pass			
Sensor Component	System Men	าด	Con	ditio	on		Status	pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg RM Young 4542 BFT142 Eric Hebert 11/15/2023 Temperature 04444 Mfg Extech Parameter Temperature Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID 0.16485 **Slope** 1.00945 **Intercept DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.41 0.70 UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Low Range 0.24 0.07 0.0000.2 C 0.16 C Temp Mid Range 24.51 24.12 0.000 24.5 0.38 primary 46.76 0.00046.9 C primary Temp High Range 46.16 0.7 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** Campbell none BFT142 Eric Hebert 11/15/2023 Shelter Temperature 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** 0.17 0.28 01227 Tfer ID 1.00945 0.16485 **Slope** Intercept 2/17/2023 1.00000 **Cert Date** CorrCoff OSE Unit Difference UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng primary Temp Mid Range 21.00 20.64 0.00020.9 \mathbf{C} 0.28 20.59 C Temp Mid Range 20.95 0.00020.7 0.13 primary C 21.27 20.91 0.000 21.0 0.11 primary Temp Mid Range Status pass Sensor Component System Memo Condition

Infrastructure Data For

Site ID BFT142 Technician Eric Hebert Site Visit Date 11/15/2023

Shelter Make	Shelter Model	Shelter Size	
Ekto	8810	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	
ensor Component Moisture Trap Type	Condition Glass bottle and f	ilter Status pass	
ensor Component Power Cables	Condition Good	Status pass	
Sensor Component Shelter Temp Control	Condition Functioning	Status pass	
ensor Component Rotometer	Condition Installed	Status pass	
ensor Component Sample Tower	Condition Good	Status pass	
ensor Component Shelter Condition	Condition Fair	Status pass	
ensor Component Shelter Door	Condition Poor	Status Fail	
ensor Component Shelter Roof	Condition Fair	Status pass	
ensor Component Shelter Floor	Condition Fair	Status pass	
ensor Component Shelter walls	Condition Poor	Status Fail	
ensor Component Excessive mold present	Condition Poor	Status Fail	
ensor Component Signal Cable	Condition Good	Status pass	
ensor Component Tubing Type	Condition 3/8 teflon	Status pass	
ensor Component Sample Train	Condition Good	Status pass	
ensor Component System Memo	Condition	Status pass	

Siting Criteria Form

Sensor Component City > Sensor Component City 1, Sensor Component City 10	,000 to 10,000	Condition Condition	Status Status	
		Condition	Status	nass
Sensor Component City 10	0,000 to 50,000			puoo
•		Condition	Status	pass
Sensor Component Feedlo	ot operations	Condition	Status	pass
Sensor Component Large	parking lot	Condition	Status	pass
Sensor Component Limited	ed agriculture operations	Condition	Status	pass
Sensor Component Major	industrial source	Condition	Status	pass
Sensor Component Secon	ndary road < or = 100 per da	Condition	Status	pass
Sensor Component Secon	ndary road >100 vehicles/da	Condition	Status	pass
Sensor Component Small	parking lot	Condition	Status	pass
Sensor Component System	m Memo	Condition	Status	pass
Sensor Component Major	highway, airport, or rail yard	Condition	Status	pass
Sensor Component Intens	sive agriculture operations	Condition	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazaro	Problem
Flow Rate	BFT142	Eric Hebert	11/15/2023	Moisture Present	Apex	4169		

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

Field Systems Comments

1 Parameter: SiteOpsProcComm

The SSRF forms are not competed on the day of filter installation. The logbook entries are not up to date.

2 Parameter: DasComments

The new sample tower is not attached to the shelter. The sample tower is not grounded.

3 Parameter: SitingCriteriaCom

The site is surrounded by a corn/soy bean field, within a large-scale commercial agriculture operation.

4 Parameter: ShelterCleanNotes

One shelter light is functioning properly. The shelter is in poor condition due to being flooded during hurricanes. The floor has been repaired.

5 Parameter: MetOpMaintCom

The meteorological tower has been removed and the temperature sensor is installed in a naturally aspirated shield on the sample tower.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 11/15/2023 BFT142 Technician Eric Hebert Site ID Williston **USGS Map EPA Site Sponsor (agency)** Map Scale **UNC-IMS Operating Group Map Date** 37-031-9991 AQS# R.M. Young **Meteorological Type** Air Pollutant Analyzer Ozone **QAPP** Latitude dry, wet **QAPP** Longitude **Deposition Measurement** Land Use agriculture **QAPP Elevation Meters** flat Terrain **QAPP Declination** Yes Conforms to MLM **OAPP Declination Date** 34.884668 **Site Telephone Audit Latitude** Open Grounds Farm -76.620666 Site Address 1 **Audit Longitude** 100 Nelson Bay Rd. Site Address 2 **Audit Elevation** 5.3 Carteret -9.9 **County Audit Declination** Beaufort, NC City, State **Present** Fire Extinguisher 28516 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 Secure Shelter** Backup Op. Phone # Stable Entry Steps ✓ Backup Op. E-mail **Shelter Working Room** ✓ **Make** Model 8810 Ekto **Shelter Size** 640 cuft **✓** Notes One shelter light is functioning properly. The shelter is in poor condition due to being flooded during Shelter Clean hurricanes. The floor has been repaired. **✓** Notes Site OK From I-95 take highway 70 east through Morehead City and over the bridge. Continue through Beaufort staying on **Driving Directions** route 70 east. At East Carteret High School, route 70 turns to the right at a traffic light. Continue straight through the light on Merrimon Rd. (SR 1300), do not follow 70 to the right. Open Grounds Farm will be on the right approximately 6 miles on Merrimon Rd. Sign in at the guard house. Continue on the dirt road into the farm. Turn left at the first dirt

road. The site will be visible in the corner of the field. Follow the dirt road around the field to the site.

Field Systems Data Form						F-02058-1	500-S3-rev002
Site	e ID	BFT142	Technician Eric Heb	ert	Site Visit Date	11/15/2023	
1		d speed and direction fluenced by obstructio	sensors sited so as to avons?	oid 🗸	N/A		
2	(i.e. win	d sensors should be me	as to minimize tower effounted atop the tower of 2x the max diameter of to	r on a	N/A		
3	Are the	tower and sensors plu	mb?	✓	N/A		
4			ointed north or position ch as buildings, walls, e				
5	conditio surface	ns? (i.e. ground below	ors sited to avoid unnate sensors should be natur . Ridges, hollows, and and ded)	ral			
6	Is the so	lar radiation sensor p	lumb?	✓	N/A		
7	Is it site	d to avoid shading, or	any artificial or reflecte	d light? 🔽	N/A		
8	Is the ra	in gauge plumb?		✓	N/A		
9	Is it site towers,		ffects from buildings, tro	ees,	N/A		
10	Is the su facing n		ited with the grid surfac	ce 🗸	N/A		
11	Is it inc	lined approximately 3	0 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	BFT142 Technician Eric Hebert		Site Visit Date 11/15/2023
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:	ary)	regarding conditions listed above, or any other features,
The r	meteorological tower has been removed and the temperature sensor	or is	installed in a naturally aspirated shield on the sample tower.

Fi	eld Systems Data Form	F-02058-1500-S5-rev002				
Site	BFT142 Technician Eric Hebert		Site Visit Date 11/15/2023			
	Siting Criteria: Are the pollutant analyzers and deposition ed	uip	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 10 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?	✓				
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:	sary)	regarding conditions listed above, or any other features,			

Field Systems Data Form F-02058-1500-S6-rev002 BFT142 Technician Eric Hebert Site Visit Date 11/15/2023 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) Temperature 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

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 new sample tower is not attached to the shelter. The sample tower is not grounded.

Is the sample tower stable and grounded?

11 Tower comments?

Field System	ns Data Fo	orm				F-02	058-1	1500-S7-rev002
Site ID BFT	142	Technician	Eric Hebert		Site Visit Date	11/15/2023		
Documentation								
Does the site ha	ve the required i	nstrument an	d equipment ma	nuals?				
	Yes		/A			Yes	No	N/A
Wind speed sensor				ta logger		✓		
Wind direction ser	isor		D at	ta logger				✓
Temperature sense	or 🗸		Stri	ip chart r	ecorder			✓
Relative humidity	sensor		Cor	mputer		✓		
Solar radiation ser	ısor		Mo	dem			✓	
Surface wetness se	nsor		Pri	nter				✓
Wind sensor trans	lator		Zer	o air pun	1 р		\checkmark	
Temperature trans			Filt	ter flow p	ump	✓		
Humidity sensor to	ranslator		Sur	rge protec	tor			✓
Solar radiation tra	nslator		UPS	S				✓
Tipping bucket rai	in gauge		Lig	htning pr	otection device			✓
Ozone analyzer	✓		She	elter heate	er		✓	
Filter pack flow co	ntroller 🗸		She	elter air co	onditioner		✓	
Filter pack MFC p	ower supply							
Does the site h	ave the required	and most rec	ent QC docume	nts and re	eport forms?			
	Pr	esent				Currei	nt	
Station Log		✓				✓		
SSRF		✓				✓		
Site Ops Manual		2019				✓		
HASP		2019				✓		
Field Ops Manual		2019				✓		
Calibration Repor	ts	✓						
Ozone z/s/p Contro	ol Charts							
Preventive mainter	nance schedule							
1 Is the station	log properly con	npleted during	every site visit?	? 🗸				
2 Are the Site S current?	tatus Report Foi	rms being con	pleted and	✓				
	of-custody form fer to and from la		ed to document	✓				
4 Are ozone z/s/current?	p control charts	properly com	pleted and	Con	itrol charts not us	sed		
Provide any additi natural or man-ma					garding conditi	ons listed a	bove, or	r any other features,

Field Systems Data Form F-02058-1500-S8-rev002 BFT142 Technician Eric Hebert Site Visit Date 11/15/2023 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** 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? **OC Check Performed** Compliant Frequency **Multi-point Calibrations V V** Semiannually **V Automatic Zero/Span Tests** Daily **V** As needed Manual Zero/Span Tests **V** Daily **Automatic Precision Level Tests V** As needed **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** Weekly Sample Line Check for Dirt/Water **V ~** As needed **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? **✓** 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:

Field Systems Data Form			F-02058-1500-S9-rev00				
Site ID BFT142 Technician Eric Hebert			Site Visit Date 11/15/2023				
Site operation procedures							
1 Is the filter pack being changed every	y Tuesday as scheduled?	?	Filter changed morinings				
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 made	e and recorded? How?	✓	SSRF				
5 Are site supplies on-hand and replen fashion?	ished in a timely	✓					
6 Are sample flow rates recorded? How	w?	✓	SSRF, logbook, call-in				
7 Are samples sent to the lab on a regulation?	ılar schedule in a timely	✓					
8 Are filters protected from contamina and shipping? How?	ntion during handling	✓	Clean gloves on and off				
9 Are the site conditions reported regular operations manager or staff?	larly 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		✓				
In-line Filter Inspection/Replacement	✓ Semiannually		✓				
Sample Line Check for Dirt/Water	✓ Weekly		✓				
Provide any additional explanation (photo natural or man-made, that may affect the			r) regarding conditions listed above, or any other features,				

The SSRF forms are not competed on the day of filter installation. The logbook entries are not up to date.

Field Systems Data Form

F-02058-1500-S10-rev002

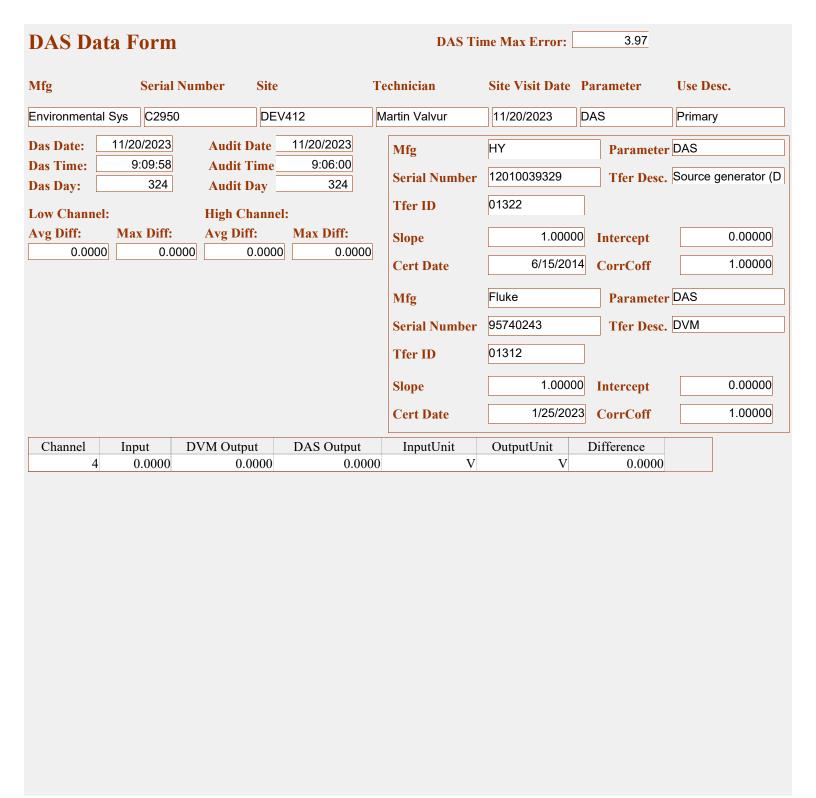
Site ID BFT142 Technician Eric Hebert Site Visit Date 11/15/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07212
DAS	Campbell	CR3000	3815	000498
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	129800010158	04279
Flow Rate	Apex	AXMC105LPMDPC	illegible	000593
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07135
Ozone	ThermoElectron Inc	49i A1NAA	1105347315	000746
Ozone Standard	ThermoElectron Inc	49i A3NAA	0622717854	000330
Sample Tower	Aluma Tower	В	unknown	000863
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	4542	04444
Zero air pump	Werther International	C 120/TC	001071024	07291

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
DEV	/412-Martin	valvur-11/20/2023				
1	11/20/2023	Computer	panasonic	none	CF-53	2ULCUTM
2	11/20/2023	DAS	Environmental Sys Corp	None	8864	C2950
3	11/20/2023	Met tower	Glen Martin Engineering	none	unknown	none
4	11/20/2023	Modem	Hughesnet	none	HN9000	unknown
5	11/20/2023	Ozone	ThermoElectron Inc	none	49i A3NAA	1201557776
6	11/20/2023	Ozone Standard	ThermoElectron Inc	90716	49CPS	66830-354
7	11/20/2023	Sample Tower	Aluma Tower	none	FOT-10	218298EE3
8	11/20/2023	Shelter Temperature	ARS	none	unknown	none
9	11/20/2023	Temperature	Vaisala	none	HMP45AC	F0940121
10	11/20/2023	Zero air pump	Werther International	none	C 70/4	000915005



Ozone Data Form

Mfg	Serial Number	er Tag Site		Tec	chnician	Site Visit Date	Paramo	eter	Owner ID
ThermoElectron In	c 1201557776	DEV412		Ма	artin Valvur	11/20/2023	Ozone		none
Slope:	1.00126 Slop		0.0000		Mfg	ThermoElectron	Inc Pa	ramete	ozone
Intercept			0.00000		Serial Number	CM23147126	Tf	er Desc	Ozone primary stan
CorrCoff:	0.99999 Cor	rCoff:	0.0000		Tfer ID	01116			
DAS 1:	D	AS 2:			Slope	1.0065	54 Inter	rcent	-0.03885
A Avg % Diff: A	Max % Dif A	Avg %Diff A	Max % D	Dif	•	9/19/202		•	1.00000
0.0%	0.0%				Cert Date	9/19/202	25 Cori	Coff	1.00000
UseDescription	ConcGroup	Tfer Raw	Tfer (Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	-0.08	-0.0)4	-0.90	ppb			-0.86
primary	2	14.01	13.9		12.86	ppb			-1.04
primary	3	33.21	32.9		31.88	ppb		-3.18	
primary	4	63.33	62.7		61.52	ppb		-1.93	
primary	5	113.75	112.		111.90	ppb		-0.65	
Sensor Compor					752 mmHg		Status	pass	
Sensor Compor	26.6 degree	unobstructed ru	le Co	onditio	True		Status	pass	
Sensor Compor	Tree dewline	e >10m or below	inlet Co	onditio	True		Status	pass	
Sensor Compor	nent ADT 1000-1	0000 vehicles fu	rther t	onditio	True		Status	pass	
Sensor Compor	nent ADT <1000	vehicles further t	han 5 Co	onditio	True		Status	pass	
Sensor Compor	Sample Tra	in	Co	onditio	Good		Status	pass	
Sensor Compor	nent Inlet Filter C	ondition	Co	onditio	Not tested		Status	pass	
Sensor Compor	nent Offset		Co	onditio	on -0.5		Status	pass	
Sensor Compor	nent Span		Co	onditio	on 0.999		Status	pass	
Sensor Compor	nent Zero Voltag	е	Co	onditio	n N/A		Status	pass	
Sensor Compor	rent Fullscale Vo	ltage	Co	onditio	n N/A		Status	pass	
Sensor Compor	cell A Freq.		Co	onditio	72.0 kHz		Status	pass	
Sensor Compor	cell A Noise	÷	Co	onditio	on 0.4 ppb		Status	pass	
Sensor Compor	cell A Flow		Co	onditio	0.70 lpm		Status	pass	
Sensor Compor	cell A Press	sure	Co	onditio	746.2 mmHg		Status	pass	
Sensor Compor	Cell A Tmp.		Co	onditio	30.8 C		Status	pass	
Sensor Compor	cell B Freq.		Co	onditio	n 125.6 kHz		Status	pass	
Sensor Compor	nent Cell B Noise)	Co	onditio	0.9 ppb		Status	pass	
Sensor Compor	nent Cell B Flow		Co	onditio	0.71 lpm		Status	Pass	
Sensor Compor	nent Cell B Press	sure	Co	onditio	745.6 mmHg		Status	pass	
Sensor Compor	nent Nafion drye	installed	Co	onditio	n False		Status	pass	
	nent System Mer	mo		onditio			Status	nace	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg Martin Valvur Vaisala F0940121 DEV412 11/20/2023 Temperature none Mfg Fluke Parameter Temperature Tfer Desc. RTD 3275143 **Serial Number** 01229 Tfer ID 1.00002 -0.00336 **Slope Intercept DAS 1: DAS 2:** 1/23/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.58 0.83 UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Mid Range 19.43 19.43 0.000020.3 \mathbf{C} 0.83 0.0000 C Temp Mid Range 20.27 20.27 19.9 -0.34 primary Sensor Component Shield **Condition** Clean Status pass Status pass **Sensor Component** Blower **Condition** N/A Condition Not properly sited Status Fail **Sensor Component** Properly Sited Sensor Component System Memo Status pass **Condition**

Shelter Temperature Data For Mfg **Serial Number Tag Site Technician** Site Visit Date Parameter **Owner ID** ARS DEV412 Martin Valvur 11/20/2023 Shelter Temperature none 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** 1.03 1.32 01229 **Tfer ID** 1.00002 -0.00336 **Slope** Intercept 1/23/2023 1.00000 **Cert Date** CorrCoff

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference	
primary	Temp Mid Range	21.98	21.98	0.000	21.1	C	-0.85	
primary	Temp Mid Range	21.54	21.54	0.000	20.6	C	-0.93	
primary	Temp Mid Range	22.75	22.75	0.000	21.4	С	-1.32	
Sensor Component System Memo			Condition	Status pass				

Field Systems Comments

1 Parameter: SiteOpsProcComm

Dry deposition samples are not collected at this site.

2 Parameter: MetSensorComme

The temperature and humidity combination sensor is mounted in a non-aspirated shield on the south side of the tower. The sensor cannot be submerged and therefore was only challenged in air side-by-side with the RTD standard. Audit results are not comparable with other submergible sensors.

3 Parameter: PollAnalyzerCom

The sample tubing is not secured to the sample tower.

Field Systems 1	Data Form		F-02058-1500-S1-rev002
Site ID DEV412	Technician Martin Valvur	Site Visit Date 11/2	20/2023
Site Sponsor (agency)	NPS	USGS Map	
Operating Group	NPS	Map Scale	
AQS#		Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer		QAPP Latitude	
Deposition Measuremen	nt	QAPP Longitude	
Land Use		QAPP Elevation Meters	
Terrain		QAPP Declination	
Conforms to MLM		QAPP Declination Date	
Site Telephone	(760) 786-2497	Audit Latitude	36.508819
Site Address 1	PO Box 579	Audit Longitude	-116.847697
Site Address 2	Hwy 190	Audit Elevation	131
County	Inyo	Audit Declination	13.3
City, State	Death Valley, CA	Present	
Zip Code	92328	Fire Extinguisher	New July 2010
Time Zone	Pacific	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Steps	
Shelter Working Room	Make Mo	odel	Shelter Size
Shelter Clean	✓ Notes		
Site OK	V Notes		
rigl Hiç Co	om Las Vegas take route 160 west to Pahrum nt onto route 127 toward Death Valley. In De ghway 190. Continue to the park. Approxima w Creek and the park administratin offices. I aring left and continuing uphill. The site is pa	ath Valley Junction, just past stely 3 miles past the Furnace Fake the first left and continue	the Amargosa Theater, turn left onto Creek Ranch, turn right at the sign for up the hill past the park housing,

F-02058-1500-S3-rev002 **Field Systems Data Form** Technician Martin Valvur Site Visit Date 11/20/2023 Site ID DEV412 ✓ 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) **~** Are the tower and sensors plumb? Ш south 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 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 and humidity combination sensor is mounted in a non-aspirated shield on the south side of the tower. The sensor cannot be

submerged and therefore was only challenged in air side-by-side with the RTD standard. Audit results are not comparable with other submergible sensors.

Fi	eld Systems Data Form	F-02058-1500-S4-rev002
Site	DEV412 Technician Martin Valvur	Site Visit Date 11/20/2023
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:	ssary) regarding conditions listed above, or any other features,

Field Systems Data Form F-02058-1500-S5-rev002 DEV412 Technician | Martin Valvur Site Visit Date 11/20/2023 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 12 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? N/A 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 sample tubing is not secured to the sample tower.

Field Systems Data Form F-02058-1500-S6-rev002 Site ID DEV412 Technician | Martin Valvur Site Visit Date 11/20/2023 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 shelter 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? **V ✓** Is the sample tower stable and grounded? **V** 11 Tower comments? sample tower not 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:

Field Systems Data Form F-02058-1500-S7-rev002 DEV412 Technician | Martin Valvur Site Visit Date 11/20/2023 Site ID **Documentation** Does the site have the required instrument and equipment manuals? N/A Yes No No N/A Yes **V V** Wind speed sensor Data logger П **V V** Wind direction sensor Data logger ✓ **V Temperature sensor** Strip chart recorder **V V** Relative humidity sensor Computer **V** Solar radiation sensor **V** Modem П **V V Printer** Surface wetness sensor **V V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump **V** П **Humidity sensor translator Surge protector** П **V** П **UPS Solar radiation translator ~ V** Tipping bucket rain gauge **Lightning protection device** ~ \checkmark **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** Dataview **SSRF V** 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 DEV412 Technician Martin Valvur Site Visit Date 11/20/2023 Site ID Site operation procedures N/A Has the site operator attended a formal CASTNET training ✓ course? If yes, when and who instructed? N/A 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** 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? **OC Check Performed** Compliant Frequency **Multi-point Calibrations V V** Semiannually **V V Automatic Zero/Span Tests** Daily **V V** Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests Manual Precision Level Test V Analyzer Diagnostics Tests ✓ ~** Every 2 weeks **In-line Filter Replacement (at inlet) V V** N/A In-line Filter Replacement (at analyze **V V** Weekly Sample Line Check for Dirt/Water **~ V** Weekly **Zero Air Desiccant Check** 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?
- 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-rev00				
Site ID DEV412 Technician Martin Valvur			Site Visit Date 11/20/2023				
Site operation procedures							
1 Is the filter pack being changed every	y Tuesday as scheduled?		N/A				
2 Are the Site Status Report Forms be correctly?	ing completed and filed	✓ N	N/A				
3 Are data downloads and backups be scheduled?	ing performed as	V	N/A				
4 Are general observations being made	e and recorded? How?	V	Dataview				
5 Are site supplies on-hand and replen fashion?	ished in a timely	✓					
6 Are sample flow rates recorded? How	w?	✓	N/A				
7 Are samples sent to the lab on a regularishion?	llar schedule in a timely	✓ N	N/A				
8 Are filters protected from contamina and shipping? How?	tion during handling	V	N/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	✓ 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 (photo natural or man-made, that may affect the			regarding conditions listed above, or any other features,				

Dry deposition samples are not collected at this site.

Field Systems Data Form

F-02058-1500-S10-rev002

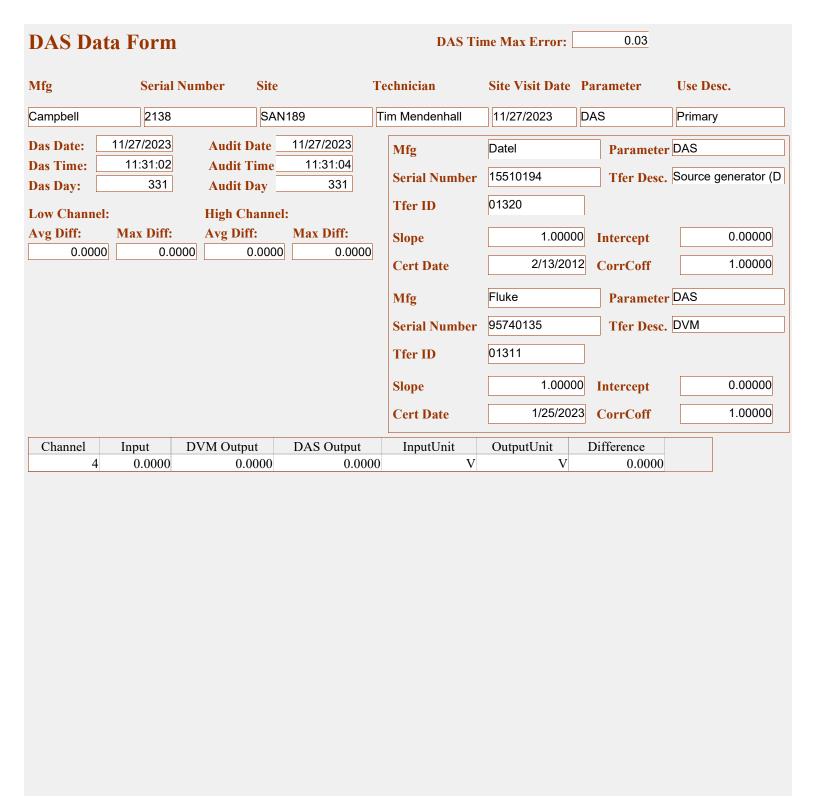
Site ID DEV412 Technician Martin Valvur Site Visit Date 11/20/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	panasonic	CF-53	2ULCUTM	none
DAS	Environmental Sys Corp	8864	C2950	None
Met tower	Glen Martin Engineering	unknown	none	none
Modem	Hughesnet	HN9000	unknown	none
Ozone	ThermoElectron Inc	49i A3NAA	1201557776	none
Ozone Standard	ThermoElectron Inc	49CPS	66830-354	90716
Sample Tower	Aluma Tower	FOT-10	218298EE3	none
Shelter Temperature	ARS	unknown	none	none
Temperature	Vaisala	HMP45AC	F0940121	none
Zero air pump	Werther International	C 70/4	000915005	none

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SAN	189-Tim M	endenhall-11/27/2023				
1	11/27/2023	Computer	Dell	07019	Inspiron 15	GK2MC12
2	11/27/2023	DAS	Campbell	000360	CR3000	2138
3	11/27/2023	Elevation	Elevation	None	1	None
4	11/27/2023	Filter pack flow pump	Thomas	06019	107CAB18	050400022576
5	11/27/2023	Flow Rate	Apex	000861	AXMC105LPMDPCV	illegible
6	11/27/2023	Flow Rate	Apex	000527	AXMC105LPMDPCV	48100
7	11/27/2023	Infrastructure	Infrastructure	none	none	none
8	11/27/2023	Modem	Digi	07133	LR54	unknown
9	11/27/2023	Ozone	ThermoElectron Inc	000685	49i A1NAA	1030244789
10	11/27/2023	Ozone Standard	ThermoElectron Inc	000434	49i A3NAA	CM08200010
11	11/27/2023	Sample Tower	Aluma Tower	000207	В	none
12	11/27/2023	Shelter Temperature	Campbell	none	107-L	223461
13	11/27/2023	Temperature	RM Young	06537	41342VC	14798
14	11/27/2023	Zero air pump	Werther International	06875	C 70/4	000814272



Flow Data Form **Technician** Mfg Serial Number Tag Site Site Visit Date Parameter **Owner ID** 000527 Apex 48100 **SAN189** Tim Mendenhall 11/27/2023 Flow Rate Mfg BIOS **Parameter** Flow Rate Tfer Desc. BIOS 220-H 148613 **Serial Number** Tfer ID 01421 **Slope** 1.00000 **Intercept** 0.00000 2/23/2023 1.00000 **Cert Date CorrCoff** 0 **DAS 1: DAS 2:** Cal Factor Zero 1 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 0.99% 1.32% 3.1 **Rotometer Reading:** OutputSignal Output S E InputUnit OutputSignal PctDifference Desc. Test type Input I/m Input Corr MfcDisp. primary pump off 0.0000.0000.00 0.0000.001/m1/m 0.02 0.000 0.03 1/mleak check 0.000 0.0001/mprimary 2.99 -0.33% 3.011 3.010 0.000 3.00 1/m1/mprimary test pt 1 2.99 0.000 1/m-1.32% primary test pt 2 3.039 3.040 3.00 1/m2.99 -1.32% test pt 3 3.040 3.040 0.0003.00 1/m1/mprimary Status pass Sensor Component Leak Test Condition **Condition** Good **Sensor Component** Tubing Condition Status pass Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Condition Clean and dry Status pass Sensor Component Moisture Present Condition No moisture present Status pass Sensor Component Filter Distance Condition 3.0 cm Status pass Sensor Component Filter Depth Condition 4.0 cm Status pass Status pass **Sensor Component** Filter Azimuth Condition 270 deg Sensor Component System Memo Status pass Condition

Tim Mendenhall

SAN189

illegible

Apex

11/27/2023

Flow Rate

000861

Ozone Data Form

Mfg		Serial Numb	er Tag	Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1030244789		SAN18	9	Tir	m Mendenhall	11/27/2023	Ozone		000685
Slope: Intercept		1.00318 Slop	oe: ercept		0.00000	Ξ Ι	Mfg Serial Number	ThermoElectron			er ozone c. Ozone primary stan
CorrCoff:			rCoff:		0.00000				11	er Des	C. Ozone primary stair
							Tfer ID	01114			
DAS 1:		D	AS 2:				Slope	0.997	30 Inter	rcept	0.29920
		lax % Dif A	Avg %	Diff A	Max %	% Dif	Cert Date	4/25/20	23 Cori	·Coff	1.00000
0.0	0%	0.0%					Cert Date	1720720	Com	Con	1.00000
UseDescr	iption	ConcGroup	Tfe	r Raw	Tf	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	-	1		.49		0.19	0.36	ppb			0.17
prima	-	2	_	5.28		16.02	15.95	ppb			-0.07
prima		3		5.51		35.30	35.15	ppb		-0.43	
prima	•	4	_	5.82		65.69	66.05	ppb		0.55	
prima	ry	5	11	1.48	1	11.47	111.80	ppb		0.3	
	•	Audit Press					724.5 mmHg		Status		
Sensor C	ompone	nt 26.6 degree	unobst	tructed r	ule	Condition	on True		Status	pass	
Sensor C	ompone	Tree dewlin	ie >10m	or belov	w inlet	Condition	True		Status	pass	
Sensor C	ompone	ADT 1000-	10000 v	ehicles f	urther t	Condition	On True		Status	pass	
Sensor C	ompone	ADT <1000	vehicle	s further	than 5	Condition	on True		Status	pass	
Sensor C	ompone	Sample Tra	iin			Condition	Good		Status	pass	
Sensor C	ompone	Inlet Filter (Conditio	n		Condition	On Clean		Status	pass	
Sensor C	ompone	Offset				Condition	on -0.5		Status	pass	
Sensor C	ompone	Span				Condition	on 1.052		Status	pass	
Sensor C	ompone	Zero Voltag	je			Condition	on N/A		Status	pass	
Sensor C	ompone	rullscale V	oltage			Condition	on N/A		Status	pass	
Sensor C	ompone	cell A Freq				Condition	78.4 kHz		Status	pass	
Sensor C	ompone	Cell A Nois	е			Condition	0.8 ppb		Status	pass	
Sensor C	ompone	Cell A Flow	,			Condition	on 0.72 lpm		Status	pass	
Sensor C	ompone	Cell A Pres	sure			Condition	on 698.6 mmHg		Status	pass	
Sensor C	ompone	Cell A Tmp				Condition	on 34.3 C		Status	pass	
Sensor C	ompone	Cell B Freq				Condition	on 107.8 kHz		Status	pass	
Sensor C	omponei	Cell B Nois	е			Condition	1.1 ppb		Status	pass	
Sensor C	ompone	Cell B Flow				Condition	0.72 lpm		Status	pass	
Sensor C	ompone	Cell B Pres	sure			Condition	698.0 mmHg		Status	pass	
Sensor C	ompone	Nafion drye	r installe	ed		Condition	on False		Status	pass	
Sensor C	ompone	System Me	mo			Condition	on		Status	pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg RM Young 14798 SAN189 11/27/2023 Temperature 06537 Tim Mendenhall Mfg Extech Parameter Temperature Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 0.08161 **Slope** 1.01172 **Intercept DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.28 0.50 UseDesc. InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference Test type primary Temp Low Range 0.16 0.08 0.0000.2 \mathbf{C} 0.12 C Temp Mid Range 25.64 25.26 0.000 25.1 -0.21 primary 42.34 0.000C primary Temp High Range 41.77 41.3 -0.5 Status pass Sensor Component | Shield **Condition** Clean **Sensor Component** Blower **Condition** N/A Status pass **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** 223461 SAN189 11/27/2023 Shelter Temperature Campbell Tim Mendenhall none **DAS 1: DAS 2:** Extech Parameter Shelter Temperature Mfg Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD H232679 **Serial Number** 0.64 0.80 01228 **Tfer ID** 1.01172 0.08161 **Slope** Intercept 2/17/2023 1.00000 **Cert Date** CorrCoff

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	21.00	20.68	0.000	21.4	C	0.76
primary	Temp Mid Range	26.88	26.49	0.000	25.7	C	-0.8
primary	Temp Mid Range	26.09	25.71	0.000	25.3	C	-0.37
Sensor Con	nponent System Memo)	Condition		Status	pass	

Infrastructure Data For

Site ID SAN189 Technician Tim Mendenhall Site Visit Date 11/27/2023

Shelter Make	Shelter Model	Shelter Size	
Shelter One	E8109-26012	720 cuft	

Sensor Component	Sample Tower Type	Condition	Туре В	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	Moisture Trap Type	Condition	Filter	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	1/4 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass
Sensor Component	System Memo	Condition		Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard Problem
Temperature	SAN189	Tim Mendenhall	11/27/2023	System Memo	RM Young	2887	
mi ' 1 11		C					

The sensor signal cables are showing signs of wear.

Field Systems Comments

1 Parameter: DasComments

The met tower is not currently in use and it is somewhat unstable.

2 Parameter: SiteOpsProcedures

The site operator was not available during the audit visit due to illness.

3 Parameter: DocumentationCo

The site operator reported that all instrument manuals are kept at the office.

4 Parameter: ShelterCleanNotes

The shelter is in very good condition.

Field Systems Data Form F-02058-1500-S1-rev002 Site Visit Date 11/27/2023 SAN189 Technician Tim Mendenhall Site ID Santee **USGS Map EPA Site Sponsor (agency)** Map Scale Santee Sioux Nation **Operating Group Map Date** 31-107-9991 AQS# R.M. Young **Meteorological Type** Ozone, SO2, NOx, CO Air Pollutant Analyzer **QAPP** Latitude dry **QAPP** Longitude **Deposition Measurement** 429 **Land Use** range **QAPP Elevation Meters** Terrain rolling **QAPP Declination** Yes 6/21/2018 Conforms to MLM **OAPP Declination Date** (402) 857-2546 42.829154 **Site Telephone Audit Latitude** SR S54D -97.854128 Site Address 1 **Audit Longitude** Santee Sioux Indian Reservation 434 Site Address 2 **Audit Elevation** Knox 5.0 **County Audit Declination** Niobrara, NE City, State **Present** Fire Extinguisher 68760 No inspection date Zip Code Central 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** E8109-26012 Shelter One **Shelter Size** 720 cuft **✓** Notes The shelter is in very good condition. Shelter Clean **✓** Notes Site OK From Yankton, South Dakota go south on route 81. Turn right (south) at the intersection of route 12 and continue **Driving Directions** approximately 26 miles. Just past the casino and gas station, turn right (north) onto SR 54 toward Santee. Continue

approximately 6.5 miles. The site will be visible through the farm gate on the left at the top of a hill just before

reaching Santee.

Field Systems Data Form F-02058-1500-S3-rev002 SAN189 Technician Tim Mendenhall Site Visit Date 11/27/2023 Site ID ✓ 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? sensor mounted on south side of tower 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

✓ N/A

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

10 Is the surface wetness sensor sited with the grid surface

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

11 Is it inclined approximately 30 degrees?

facing north?

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Site	SAN189 Technician Tim Mendenhall		Site Visit Date 11/27/2023
1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	V	emperature only
2	Are all the meteorological sensors operational online, and reporting data?	✓	emperature only
3	Are the shields for the temperature and RH sensors clean?	✓	
4	Are the aspirated motors working?	✓	I/A
5	Is the solar radiation sensor's lens clean and free of scratches?	V	J/A
6	Is the surface wetness sensor grid clean and undamaged?	V	I/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	V	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:	ary) ı	regarding conditions listed above, or any other features,

	eld Systems Data Form		F-02058-1500-S5-rev0
te	ID SAN189 Technician Tim Mendenha	I	Site Visit Date 11/27/2023
	Siting Criteria: Are the pollutant analyzers and deposition of	quipr	nent 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?	, v	
	Pollutant analyzers and deposition equipment operations an	d mai	intenance
	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 16 meters
	Describe dry dep sample tube.		1/4 teflon by 16 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?	✓	
	Is there a rotometer in the dry deposition filter line, and is it clean?	V	

Field Systems Data Form F-02058-1500-S6-rev002 SAN189 Technician Tim Mendenhall Site Visit Date 11/27/2023 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) Temperature 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** Is the sample tower stable and grounded? **V** 11 Tower comments? sample tower not 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:

The met tower is not currently in use and it is somewhat unstable.

Field Systems Data Form SAN189 Technician Tim Mendenhall Site Visit Date 11/27/2023 Site ID **Documentation** Does the site have the required instrument and equipment manuals? Yes No N/A 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** Relative humidity sensor Computer **V** Solar radiation sensor **V** Modem П **V V Printer** Surface wetness sensor ✓ **V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump **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 2018 **HASP V** 2018 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? ✓ Are the Site Status Report Forms being completed and **V** 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:

The site operator reported that all instrument manuals are kept at the office.

F-02058-1500-S7-rev002

Field Systems Data Form F-02058-1500-S8-rev002 SAN189 Technician Tim Mendenhall Site Visit Date 11/27/2023 Site ID Site operation procedures Trained by the previous operator / and DEP staff Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET Trained by the current 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** 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 Manual Zero/Span Tests **V V** Daily **Automatic Precision Level Tests Manual Precision Level Test V V** Weekly **Analyzer Diagnostics Tests ~** Every 2 weeks **In-line Filter Replacement (at inlet) V** N/A In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **V ~** 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

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, logbook, call-in

The site operator was not available during the audit visit due to illness.

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

complete sample train including all filters?

reported? If yes, how?

FI	ela Sy	stems Data For	m				F-02058-13	000-89-rev002	
Sit	e ID	SAN189	Technic	ian Tim Mend	lenhall	Site Visit Date	11/27/2023		
	Site ope	ration procedures							
1	Is the fi	lter pack being changed o	every Tu	esday as sched	duled? ✓	Filter changed morir	nings		
2	Are the correctl	Site Status Report Form y?	s being c	ompleted and	filed 🗹				
3	Are dat	a downloads and backuped?	s being p	erformed as		No longer required			
4	Are gen	eral observations being n	nade and	l recorded? H	ow?	SSRF, logbook, call-in			
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 samples sent to the lab on a regular schedule in a timely fashion?								
8		ers protected from contaroping? How?	nination	during handli	ing 🔽	One set of gloves only			
9		site conditions reported to ons manager or staff?	regularly	to the field	✓				
QC	Check P	erformed		Frequency			Compliant		
1	Multi-poi	nt MFC Calibrations	✓	Semiannually			✓		
]	Flow Syst	em Leak Checks	✓	Weekly			✓		
]	Filter Pac	k Inspection							
]	Flow Rate	Setting Checks	✓	Weekly			✓		
•	Visual Ch	eck of Flow Rate Rotome	eter 🔽	Weekly		V			
]	In-line Fil	ter Inspection/Replaceme	ent 🔽	Semiannually			✓		
\$	Sample Li	ine Check for Dirt/Water	✓	Weekly			\checkmark		
		ndditional explanation (pl an-made, that may affect) regarding condition	ons listed above, or a	ny other features,	

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID

SAN189

Technician Tim Mendenhall

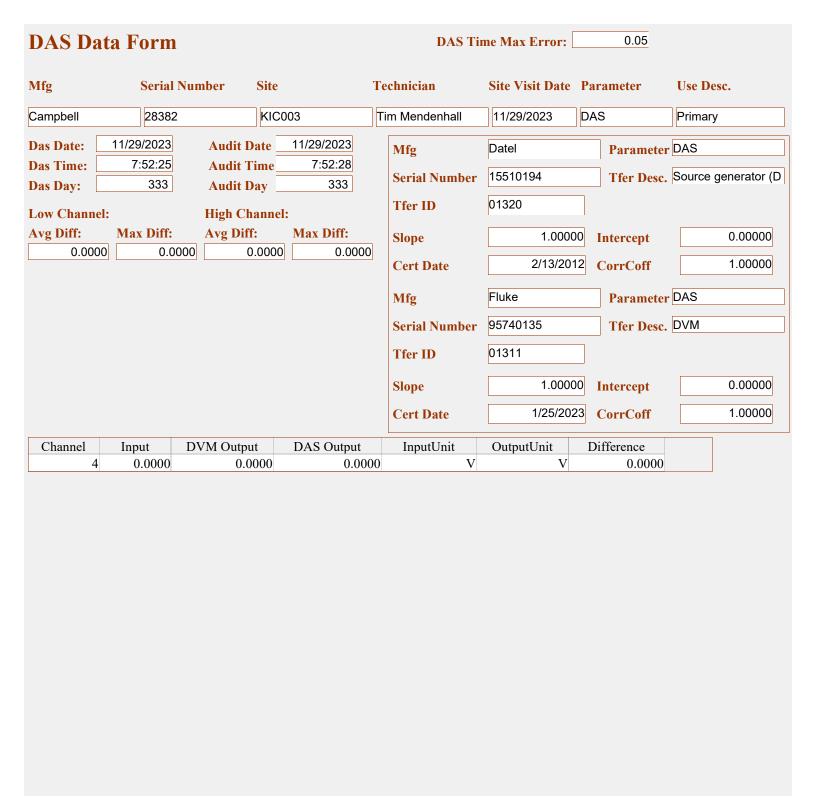
Site Visit Date 11/27/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	GK2MC12	07019
DAS	Campbell	CR3000	2138	000360
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	050400022576	06019
Flow Rate	Apex	AXMC105LPMDPC	48100	000527
Flow Rate	Apex	AXMC105LPMDPC	illegible	000861
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07133
Ozone	ThermoElectron Inc	49i A1NAA	1030244789	000685
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200010	000434
Sample Tower	Aluma Tower	В	none	000207
Shelter Temperature	Campbell	107-L	223461	none
Temperature	RM Young	41342VC	14798	06537
Zero air pump	Werther International	C 70/4	000814272	06875

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
KIC	003-Tim M	endenhall-11/29/2023				
1	11/29/2023	DAS	Campbell	000816	CR850	28382
2	11/29/2023	Flow Rate	Apex	000668	MC-5SLPM-D	54765
3	11/29/2023	Modem	Sierra wireless	06996	unknown	unknown
4	11/29/2023	Sample Tower	Aluma Tower	000814	В	none
5	11/29/2023	Temperature	RM Young	06112	41342	10176



Flow Data Form **Technician Owner ID** Mfg **Serial Number Tag Site** Site Visit Date Parameter KIC003 000668 Apex 54765 Tim Mendenhall 11/29/2023 Flow Rate Mfg BIOS Parameter Flow Rate 148613 Tfer Desc. BIOS 220-H **Serial Number** 01421 Tfer ID 0.00000 **Slope** 1.00000 **Intercept** 2/23/2023 1.00000 CorrCoff **Cert Date** -0.012 **DAS 2: DAS 1:** Cal Factor Zero 0.992 A Avg % Diff: A Max % Dif A Avg % Diff A Max % Dif **Cal Factor Full Scale** 2.28% 2.74% **Rotometer Reading:** OutputSignal Output S E InputUnit OutputSignall PctDifference Desc. Test type Input l/m Input Corr MfcDisp. primary pump off 0.0000.0000.000.000-0.01 1/m1/mleak check 0.000 0.32 0.0000.31 1/ml/m0.000primary 3.00 0.000 2.99 1/m 2.40% test pt 1 2.925 2.920 1/mprimary 2.922 2.920 3.00 0.000 3.00 1/m1/m2.74% primary test pt 2 3.00 0.000 l/m1.69% test pt 3 2.948 2.950 3.00 1/mprimary Condition 0.30 lpm Status Fail Sensor Component Leak Test Status pass **Sensor Component** Tubing Condition **Condition** Good Sensor Component Filter Position **Condition** Good Status pass Sensor Component Rotometer Condition Status Fail **Condition** Dirty Sensor Component Moisture Present Condition See comments Status pass Sensor Component Filter Distance Condition 4.5 cm Status pass

Condition 1.5 cm

Condition 90 deg

Condition

Status pass

Status pass

Status pass

Sensor Component Filter Depth

Sensor Component Filter Azimuth

Sensor Component System Memo

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg RM Young 10176 KIC003 11/29/2023 Temperature 06112 Tim Mendenhall Mfg Extech Parameter Temperature Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 0.08161 **Slope** 1.01172 **Intercept DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.08 0.21 UseDesc. Test type InputTmpRaw InputTmpCorr. OutputTmpSignal OutputSignalEng OSE Unit Difference primary Temp Low Range 0.05 -0.03 0.0000.0 \mathbf{C} -0.01 C Temp Mid Range 24.41 24.05 0.000 24.0 -0.02 primary 45.01 0.000 C primary Temp High Range 44.41 44.2 -0.21**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**

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	l Problem
Flow Rate	KIC003	Tim Mendenhall	11/29/2023	Rotometer Condit	Apex	4793		

The rotometer ball is stuck and not floating due to either dirt or moisture inside the rotometer.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operation is currently suspended until funding is available.

2 Parameter: DocumentationCo

Currently there is no logbook provided by WSP but that maybe due to suspension of site operation since July.

3 Parameter: SitingCriteriaCom

The site is located across the street from the community school in the town of Powhattan.

4 Parameter: ShelterCleanNotes

Small footprint site with no shelter.

F-02058-1500-S1-rev002 Field Systems Data Form KIC003 Technician Tim Mendenhall Site Visit Date 11/29/2023 Site ID **USGS Map** EPA Site Sponsor (agency) **Map Scale** Kickapoo Tribe **Operating Group Map Date** AQS# R.M. Young **Meteorological Type Air Pollutant Analyzer QAPP** Latitude **Deposition Measurement QAPP** Longitude **Land Use QAPP Elevation Meters Terrain QAPP Declination OAPP Declination Date** Conforms to MLM 39.76102 **Site Telephone Audit Latitude** -95.63599 Site Address 1 **Audit Longitude** 367 Site Address 2 **Audit Elevation** Brown **Audit Declination County** City, State Powhattan, KS **Present** Fire Extinguisher 66527 **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 no shelter. **Shelter Clean ✓** Notes Site OK

Driving Directions

Fi	eld Systems Data Form	F-02058-1500-S3-rev002				
Site	EID KIC003 Technician Tim Mendenhall	Site Visit Date 11/29/2023				
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?	sensor on south side of tower				
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?	t? ✓ 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				

✓ 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?

Fi	eld Systems Data Form		F-02058-1500-S4-rev002
Sito	Technician Tim Mendenhall		Site Visit Date 11/29/2023
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,

Fi	eld Sy	stems Data Fo	orm		F-02058-1500-S5-rev002					
Sit	e ID	KIC003	Technician T	im Mendenhall		Site Visit Date 11/29/2023				
	Siting C	Criteria: Are the pollut	ant analyzers and	d deposition equ	<u>ıipr</u>	ipment sited in accordance with 40 CFR 58, Appendix E				
1		sample inlets have at le	east a 270 degree	arc of	✓					
2	Are the	sample inlets 3 - 15 m	eters above the g	round?	✓					
3	Are the and 20	sample inlets > 1 metemeters from trees?	r from any majo	r obstruction,	✓					
	Pollutai	nt analyzers and depos	ition equipment (operations and	mai	naintenance				
1		analyzers and equipme on and well maintained		n good	✓	N/A				
2		analyzers and monitoning data?	rs operational, on	ı-line, and	✓	N/A				
3	Describ	e ozone sample tube.				N/A				
4	Describ	e dry dep sample tube				3/8 teflon by 10 meters				
5		ine filters used in the colocation)	ozone sample line	? (if yes	✓	N/A				
6	Are san	nple lines clean, free of tions?	kinks, moisture,	and	✓					
7	Is the ze	ero air supply desiccan	t unsaturated?		✓	N/A				
8	Are the	re moisture traps in th	e sample lines?		✓					
9	Is there clean?	a rotometer in the dry	deposition filter	line, and is it	✓	rotometer is stuck at 0.0 lpm				

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	KIC003	Technician	Tim Mendenhall		Site Vis	it Date 11/29/202	3	
	DAS, se	nsor translators, and p	oeripheral equip	ment operation	<u>18 ai</u>	nd maintena	<u>nce</u>		
1		OAS instruments appeintained?	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	✓				
4	Are the signal connections protected from the weather and well maintained?				✓				
5	Are the	signal leads connected	to the correct D	OAS channel?	✓				
6	Are the grounde	DAS, sensor translato	rs, and shelter p	roperly	✓				
7	Does the	e instrument shelter ha	ive a stable pow	er source?	✓	GFI breaker	tripped		
8	Is the in	strument shelter temp	erature controll	ed?	✓	N/A			
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	grounded?			<u> </u>		<u> </u>	
11	Tower o	omments?							
		additional explanation nan-made, that may af				y) regardin	g conditions listed	l above, or a	any other features,

Field Systems Data Form KIC003 Technician Tim Mendenhall Site Visit Date 11/29/2023 Site ID **Documentation** Does the site have the required instrument and equipment manuals? Yes No N/A 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** Solar radiation sensor **V** Modem 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** Surge protector П **V ~ UPS Solar radiation translator ~ V** Tipping bucket rain gauge Lightning protection device **V V** Shelter heater Ozone analyzer **✓ 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** Not present **SSRF V V** Site Ops Manual Oct 2018 **V HASP V** Oct 2018 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? Are the Site Status Report Forms being completed and **V** current? Are the chain-of-custody forms properly used to document **✓** 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:

Currently there is no logbook provided by WSP but that maybe due to suspension of site operation since July.

F-02058-1500-S7-rev002

Field Systems Data Form F-02058-1500-S8-rev002 KIC003 Technician Tim Mendenhall Site Visit Date 11/29/2023 Site ID Site operation procedures no current 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** 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? **OC Check Performed** Compliant 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 V** 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 ✓** N/A Do multi-point calibration gases go through the complete sample train including all filters?

N/A

✓ N/A

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

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

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

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

complete sample train including all filters?

reported? If yes, how?

Fi	eld Systems Data Form					F-02058-15	500-S9-rev002	
Site	EID KIC003 Tec	hnician	Tim Mendenhall		Site Visit Date	11/29/2023		
	Site operation procedures							
1	Is the filter pack being changed ever	y Tuesda	ay as scheduled?		not operational			
2	Are the Site Status Report Forms be correctly?	ing com	pleted and filed	✓				
3	Are data downloads and backups be scheduled?	ing perf	ormed as		No longer required	l		
4	Are general observations being made	e and re	corded? How?	✓	SSRF, logbook, ca	all-in		
5	Are site supplies on-hand and replen fashion?	a timely	✓					
6	Are sample flow rates recorded? Ho		✓	SSRF, logbook, call-in				
7	Are samples sent to the lab on a regularism?	ılar sche	dule in a timely	✓				
8	Are filters protected from contamina and shipping? How?	ation du	ring handling	✓	Clean gloves on and off			
9	Are the site conditions reported regularizations manager or staff?	ılarly to	the field	✓				
QC	Check Performed	Fre	quency			Compliant		
N	Aulti-point MFC Calibrations	✓ Sem	niannually			✓		
F	low System Leak Checks	✓ Wee	ekly			✓		
F	ilter Pack Inspection							
F	Flow Rate Setting Checks Weekly					✓		
V	isual Check of Flow Rate Rotometer	✓ Wee	ekly			✓		
I	n-line Filter Inspection/Replacement	✓ As r	needed			✓		
S	ample Line Check for Dirt/Water	✓ Wee	ekly			✓		
	ide any additional explanation (photo) regarding condi	tions listed above, or a	ny other features,	

The site operation is currently suspended until funding is available.

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID KIC003 Technician Tim Mendenhall Site Visit Date 11/29/2023

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR850	28382	000816
Flow Rate	Apex	MC-5SLPM-D	54765	000668
Modem	Sierra wireless	unknown	unknown	06996
Sample Tower	Aluma Tower	В	none	000814
Temperature	RM Young	41342	10176	06112

Site Inventory by Site Visit

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
SPD.	111 - Martin	valvur-12/05/2023				
1	12/5/2023	DAS	Campbell	000405	CR3000	2622
2	12/5/2023	Ozone	ThermoElectron Inc	000615	49i A1NAA	1009241787
3	12/5/2023	Ozone Standard	ThermoElectron Inc	000435	49i A3NAA	CM08200011
4	12/5/2023	Zero air pump	Werther International	06912	C 70/4	000829177

Ozone Data Form

Mfg	Serial Numbe	r Ta Site		Te	chnician	Site Visit Date	Paramo	eter	Owner I	D
ThermoElectron Inc	1009241787	SPD111		Ма	artin Valvur	12/05/2023	Ozone		000615	
Intercept -0		rcept	0.00000		Mfg Serial Number	ThermoElectron			r ozone Ozone primary	/ stan
Corrcon	.55555 COM	Con	7.00000		Tfer ID	01116				
DAS 1:	D A	AS 2:			Slope	1.0065	54 Inte	rcept	-0.03	8885
A Avg % Diff: A M		Avg %Diff A	Max % D	i	Cert Date	9/19/202	_	rCoff	1.00	0000
0.0%	0.0%				Cert Date	0/10/20	-o Com	Con	1.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
UseDescription	ConcGroup	Tfer Raw	Tfer C	orr	Site	Site Unit	RelPer	Dif	AbsDif	
primary	1	0.25	0.34		-0.34	ppb			-0.68	
primary	2	14.14	14.0		13.45	ppb			-0.6	
primary	3	34.11	33.7		33.22	ppb		-1.61		
primary	4	62.01	61.2		60.16	ppb		-1.86		
primary	5	112.41	111.0		110.20	ppb		-0.74		
Sensor Componen					722 mmHg		Status			
Sensor Componen	26.6 degree	unobstructed ru	le Co	nditio	True		Status	pass		
Sensor Componen	Tree dewline	e >10m or below	inlet Co	nditio	True		Status	pass		
Sensor Componen	ADT 1000-1	0000 vehicles fu	rther Co	nditio	True		Status	pass		
Sensor Componen	ADT <1000	vehicles further	than Co	nditio	True		Status	pass		
Sensor Componen	Sample Trai	n	Co	nditio	Good		Status	pass		
Sensor Componen	Inlet Filter C	ondition	Co	ondition Clean			Status	pass		
Sensor Componen	Offset		Co	nditio	on -0.1		Status	pass		
Sensor Componen	Span		Co	nditio	n 1.002		Status pass			
Sensor Componen	Zero Voltage	9	Co	nditio	n N/A		Status	pass		
Sensor Componen	Fullscale Vo	Itage	Co	nditio	n N/A		Status	pass		
Sensor Componen	Cell A Freq.		Co	nditio	93.9 kHz		Status	pass		
Sensor Componen	Cell A Noise		Co	nditio	1.0 ppb		Status	pass		
Sensor Componen	Cell A Flow		Co	nditio	0.69 lpm		Status	pass		
Sensor Componen	Cell A Press	ure	Co	nditio	705.4 mmHg		Status	pass		
Sensor Componen	Cell A Tmp.		Co	nditio	30.8 C		Status	pass		
Sensor Componen	Cell B Freq.		Co	nditio	91.0 kHz		Status	pass		
Sensor Componen	Cell B Noise		Co	nditio	0.8 ppb		Status	pass		
Sensor Componen	Cell B Flow		Co	nditio	0.70 lpm		Status	pass		
Sensor Componen	Cell B Press	ure	Co	nditio	705.1 mmHg		Status	pass		
Sensor Componen	Nafion dryer	installed	Co	nditio	False		Status	pass		
Sensor Componen	System Men	no	Co	nditio	on		Status	pass		

Site Inventory by Site Visit

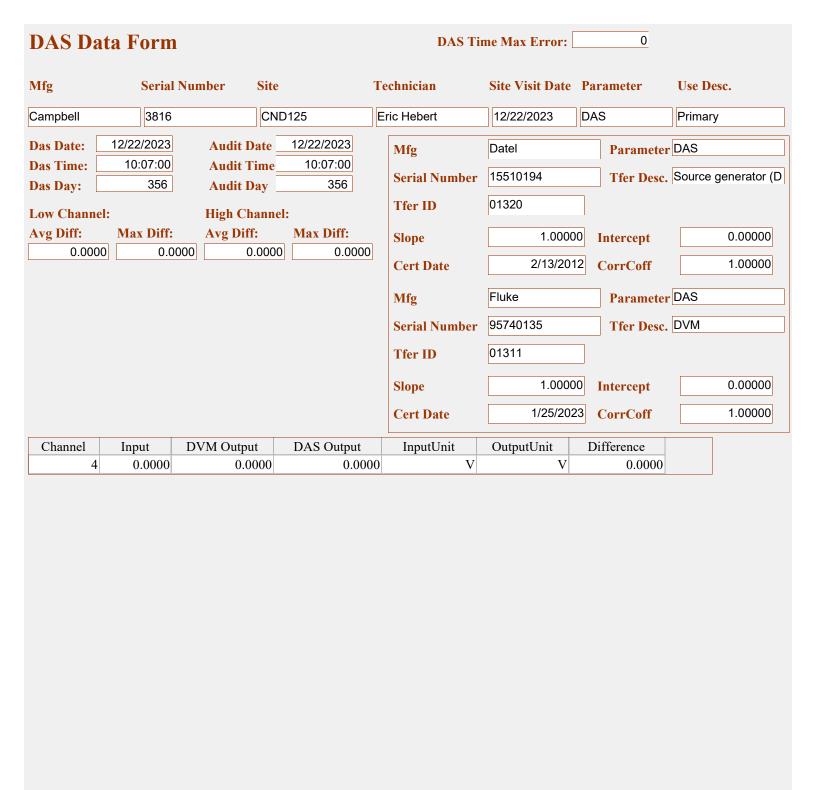
Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SND	152-Martir	ı Valvur-12/06/2023				
1	12/6/2023	DAS	Campbell	000357	CR3000	2135
2	12/6/2023	Ozone	ThermoElectron Inc	000743	49i A1NAA	1105347321
3	12/6/2023	Ozone Standard	ThermoElectron Inc	000704	49i A3NAA	1030244816
4	12/6/2023	Zero air pump	Werther International	06878	C 70/4	000815254

Ozone Data Form

	1105347321							eter	Owner ID
Slope: 1.0		SND152	2	Ma	artin Valvur	12/06/2023	Ozone		000743
Intercept -0.7		ccept	0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID	ThermoElectron CM23147126 01116			ozone Ozone primary stan
DAS 1: A Avg % Diff: A Ma: 0.0%		AS 2: Avg %Diff A	Max %	o Dif	Slope Cert Date	1.0065 9/19/202		rcept ·Coff	-0.03885
UseDescription C	ConcGroup	Tfer Raw		r Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary	1	0.06).15	-0.25	ppb			-0.4
primary	2	14.87		4.77	13.69	ppb			-1.08
primary	3	32.83		2.49	32.56	ppb		0.22	
primary	4	61.74		1.02	61.83	ppb		1.32	
primary	5	112.62		1.23	112.70	ppb		1.31	
Sensor Component	Audit Pressu	ıre		Condition	730 mmHg		Status	pass	
Sensor Component	26.6 degree	unobstructed ru	ıle	Condition	On True		Status	pass	
Sensor Component	Tree dewline	e >10m or below	/ inlet	Condition	on True		Status	pass	
Sensor Component	ADT 1000-1	0000 vehicles fu	urther t	Conditio	on True		Status	pass	
Sensor Component ADT <1000 vehicles further than 5			than 5	Condition	on True		Status	pass	
Sensor Component	Sample Trai	n		Condition	Good		Status	pass	
Sensor Component	Inlet Filter C	ondition		Conditio	On Clean		Status	pass	
Sensor Component	Offset			Condition -0.5			Status	pass	
Sensor Component	Span			Conditio	ondition 1.034			pass	
Sensor Component	Zero Voltage	9		Condition	on N/A		Status	pass	
Sensor Component	Fullscale Vo	Itage		Condition	on N/A		Status	pass	
Sensor Component	Cell A Freq.			Condition	on 96.2 kHz		Status	pass	
Sensor Component	Cell A Noise			Conditio	on 0.4 ppb		Status	pass	
Sensor Component	Cell A Flow			Condition	0.65 lpm		Status	pass	
Sensor Component	Cell A Press	ure		Condition	708.8 mmHg		Status	pass	
Sensor Component	Cell A Tmp.			Conditio	on 35.2 C		Status	pass	
Sensor Component	Cell B Freq.			Condition	0 n 91.8 kHz		Status	pass	
Sensor Component	Cell B Noise			Condition	0.6 ppb		Status	pass	
Sensor Component	Cell B Flow			Condition	0.66 lpm		Status	pass	
Sensor Component	Cell B Press	ure		Conditio	ndition 708.5 mmHg			pass	
Sensor Component	Nafion dryer	installed		Conditio	on True		Status	pass	_
Sensor Component	System Men	no		Conditio	on		Status	pass	

Site Inventory by Site Visit

		Parameter	Mfg	Owner ID	Model Number	Serial Number
CND	125-Eric H	Tebert-12/22/2023				
1	12/22/2023	Computer	Dell	07015	Inspiron 15	BQ3MC12
2	12/22/2023	DAS	Campbell	000499	CR3000	3816
3	12/22/2023	Elevation	Elevation	None	1	None
4	12/22/2023	Filter pack flow pump	Thomas	01235	107CA18	illegible
5	12/22/2023	Flow Rate	Apex	000859	AXMC105LPMDPCV	illegible
6	12/22/2023	Infrastructure	Infrastructure	none	none	none
7	12/22/2023	Modem	Digi	07122	LR54	Illegible
8	12/22/2023	Ozone	ThermoElectron Inc	000614	49i A1NAA	1009241794
9	12/22/2023	Ozone Standard	ThermoElectron Inc	000376	49i A3NAA	0726124693
10	12/22/2023	Sample Tower	Aluma Tower	03495	Α	none
11	12/22/2023	Shelter Temperature	Campbell	none	107-L	none
12	12/22/2023	Siting Criteria	Siting Criteria	None	1	None
13	12/22/2023	Temperature	RM Young	06402	41342VC	14035
14	12/22/2023	Zero air pump	Werther International	06868	C 70/4	000814284



Flow Data Form

fg	Serial Nun	nber Ta S	site	Tec	hnician	Site Visit D	oate Paran	1eter	Owner ID	
рех	illegible		CND125	Erio	Hebert	12/22/2023	Flow F	Rate	000859	
					Mfg	BIOS	P	arameter Fl	ow Rate	
				:	Serial Number	148613	Т	Tfer Desc. BIOS 220-H		
		,	Tfer ID	01421						
					Clono	1	00000 Int	ercept	0.0000	
				,	Slope 1.0000			ercept		
				•	Cert Date	2/23	3/2023 Co	rrCoff	1.0000	
AS 1:		DAS 2:			Cal Factor Z	ero	0.0	01		
Avg % Diff:	A Max % Di	A Avg %I	Diff A Max	% Di	Cal Factor F	ull Scale	0.9	98		
4.26%	4.46%				Rotometer R	eading:	1	.5		
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	ll PctDifference	
primary	pump off	0.000	0.000	-0.04	0.000	-0.02	l/m	l/m		
primary	leak check	0.000	0.000	-0.02	0.000	-0.18	1/m	l/m		
primary	test pt 1	1.566	1.570	1.54	0.000	1.50	1/m	l/m	-4.46%	
primary	test pt 2	1.565	1.560	1.54	0.000	1.50	1/m	l/m	-3.85%	
primary	test pt 3	1.566	1.570	1.54	0.000	1.50	l/m	1/m	-4.46%	
Sensor Compo	onent Leak Tes	st		Condition	1		Status	pass		
Sensor Comp	onent Tubing C	ondition		Condition	Good		Status pass			
Sensor Comp	onent Filter Pos	sition		Condition	Good		Status	pass		
Sensor Compo	onent Rotomete	er Condition		Condition	Clean and dry		Status	pass		
Sensor Comp	onent Moisture	Present		Condition	No moisture pr	esent	Status	pass		
Sensor Compo	onent Filter Dis	tance		Condition	5.0 cm		Status	pass		
Sensor Compo	onent Filter Dep	oth		Condition	1.5 cm		Status	pass		
Sensor Compo	onent Filter Azi	muth Condit			100 deg	Status	pass			
Sensor Component System Memo				Condition	1		Status	pass		

Ozone Data Form

Mfg		Serial Numb	er Tag	Site		Tee	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1009241794		CND12	25	Er	ic Hebert	12/22/2023	Ozone		000614
Slope: Intercept		1.01683 Slo j 0.04086 Int	oe: ercept		0.00000	Ξ Ι	Mfg ThermoElectro Serial Number 1180030022				er ozone c. Ozone primary stan
CorrCoff:	1	1.00000 Cor	rCoff:		0.00000)		01114		cr Des	
							Tfer ID	01114			
DAS 1:			AS 2:	-			Slope	0.997	30 Inter	rcept	0.29920
	Oiff: A M	0.0%	Avg %	Diff A	Max ⁹	% Dif	Cert Date	4/25/20	23 Cori	·Coff	1.00000
0.0	J 70	0.0%									
UseDescri	•	ConcGroup		r Raw		er Corr	Site	Site Unit	RelPer	Dif	AbsDif
primai	•	1		.46		0.16	0.23	ppb			0.07
primai	•	2		5.72 7.15		15.46	15.58 37.39	ppb		1.21	0.12
primai	•	3	_			36.94 58.74		ppb		1.21	
primai	•	5		8.87			70.03	ppb		1.86	
prima				8.29	<u>I</u>	08.27	110.00 on 753.7 mmHg	ppb	64-4	1.59	
	•	Audit Press							Status		
Sensor C	ompone	at 26.6 degree	e unobst	tructed r	ule	Condition	True		Status	pass	
Sensor C	ompone	Tree dewlin	ie >10m	or belov	w inlet	Condition	7rue		Status	pass	
Sensor C	ompone	ADT 1000-	10000 v	ehicles f	urther t	Condition	7rue		Status	pass	
Sensor C	ompone	ADT <1000	vehicle	s further	than 5	Condition	on True		Status	pass	
Sensor C	ompone	Sample Tra	iin			Condition	Good		Status	pass	
Sensor C	ompone	Inlet Filter (Conditio	n		Condition	on Dirty		Status	Fail	
Sensor C	ompone	Offset				Condition	on -0.20		Status	pass	
Sensor C	ompone	Span				Condition	on 1.038		Status	pass	
Sensor C	ompone	Zero Voltag	je			Condition	on N/A		Status	pass	
Sensor C	ompone	Fullscale V	oltage			Condition	on N/A		Status	pass	
Sensor C	ompone	Cell A Freq				Conditio	on 107.8 kHz		Status	pass	
Sensor C	ompone	Cell A Nois	е			Condition	on 1.0 ppb		Status	pass	
Sensor C	ompone	Cell A Flow	,			Conditio	on 0.72 lpm		Status	pass	
Sensor C	ompone	Cell A Pres	sure			Condition	722.2 mmHg		Status	pass	
Sensor C	ompone	Cell A Tmp				Conditio	on 36.5 C		Status	pass	
Sensor C	ompone	cell B Freq				Condition	on 94.6 kHz		Status	pass	
Sensor C	ompone	Cell B Nois	е			Condition	0.8 ppb		Status	pass	
Sensor C	ompone	Cell B Flow				Condition	0.71 lpm		Status	pass	
Sensor C	omponei	Cell B Pres	sure			Condition	721.6 mmHg		Status	pass	
Sensor C	ompone	Nafion drye	r installe	ed		Conditio	On True		Status	pass	
Sensor C	ompone	System Me	mo			Condition	on		Status	pass	

Temperature Data Form Serial Number Ta Site **Technician** Site Visit Date Parameter **Owner ID** Mfg 06402 RM Young 14035 CND125 Eric Hebert 12/22/2023 Temperature Parameter Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 0.08161 **Slope** 1.01172 Intercept **DAS 1: DAS 2:** 2/17/2023 1.00000 Abs Avg Err Abs Max Err Abs Avg Err Abs Max Err **Cert Date** CorrCoff 0.04 0.05 OutputTmpSignal | OutputSignalEng | OSE Unit | Difference UseDesc. Test type InputTmpRaw InputTmpCorr. primary Temp Low Range 0.23 0.15 0.0000.2 C 0.05 21.97 0.000 21.7 C 0.03 Temp Mid Range 21.63 primary 46.23 46.2 C -0.03 primary Temp High Range 46.85 0.000Condition Moderately clean Sensor Component | Shield Status pass Status pass Sensor Component Blower **Condition** N/A Condition Properly sited Status pass **Sensor Component** Properly Sited Sensor Component | System Memo Status pass Condition

Shelter Temperature Data For Mfg Serial Number Ta Site **Technician** Site Visit Date Parameter **Owner ID** 12/22/2023 Shelter Temperature Campbell CND125 Eric Hebert none none **DAS 1: DAS 2:** Mfg Extech Parameter Shelter Temperatur Abs Avg Err Abs Max Err Abs Avg Err **Abs Max Err** Tfer Desc. RTD H232679 **Serial Number** 0.12 0.23 01228 Tfer ID 1.01172 0.08161 **Slope** Intercept 2/17/2023 1.00000 CorrCoff**Cert Date**

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference	
primary	Temp Mid Range	27.51	27.11	0.000	27.0	C	-0.07	
primary	Temp Mid Range	29.18	28.76	0.000	28.5	С	-0.23	
primary	Temp Mid Range	28.51	28.10	0.000	28.1	С	-0.05	
Sensor Com	nponent System Memo		Condition Status			pass		

Infrastructure Data For

Sit	te ID	CND125	Technician	Eric Hebert	Site Visit	Date 12/22/	2023	
	Shelter Ma	ake	Shelter Model	S	Shelter Size			
	Ekto	N 100 A 1 10 12 12 12 13 14 12 13 13 13 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15	8810	6	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	Moisture Trap Type	Condition	Glass bottle and filter	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	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass
Sensor Component	System Memo	Condition		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: SitingCriteriaCom

The land owner maintains a pine tree forest on the property within 50 meters of the site. The trees were planted just before the site was installed in 1990 and may or may not be harvested in the future.

2 Parameter: ShelterCleanNotes

The shelter is well clean and well organized. There are signs of insect infestation on floor.

3 Parameter: PollAnalyzerCom

Ozone sample train has inline dryer.

4 Parameter: MetOpMaintCom

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

Field Systems Da	ata Form	F-02058-1500-S1-rev002					
Site ID CND125	Technician Eric Hebert	Site Visit Date 12/2	2/2023				
Site Sponsor (agency)	EPA	USGS Map					
Operating Group	private	Map Scale					
AQS#	37-123-9991	Map Date					
Meteorological Type	Claytronic						
Air Pollutant Analyzer	Ozone	QAPP Latitude					
Deposition Measurement	dry, Hg, PM2.5, PM10	QAPP Longitude					
Land Use	woodland	QAPP Elevation Meters					
Terrain	rolling	QAPP Declination					
Conforms to MLM	Marginally	QAPP Declination Date					
Site Telephone		Audit Latitude	35.26333				
Site Address 1	136 Perry Drive	Audit Longitude	-79.83754				
Site Address 2		Audit Elevation	172				
County	Montgomery	Audit Declination	-8				
City, State	Candor, NC	Present					
Zip Code	27229	Fire Extinguisher 🗹	New in 2015				
Time Zone	Eastern	First Aid Kit					
Primary Operator		Safety Glasses					
Primary Op. Phone #		Safety Hard Hat					
Primary Op. E-mail		Climbing Belt					
Backup Operator		Security Fence					
Backup Op. Phone #		Secure Shelter					
Backup Op. E-mail		Stable Entry Step 🗹					
Shelter Working Room ✓		odel 8810	Shelter Size 640 cuft				
		vell organized. There are signs	of insect infestation on floor.				
	Notes						
Priving Directions From Greensboro take Hwy 220 (future I-73) south to Candor. Exit at 211 west to Candor. At the traffic light turn left (south) onto 220 south and 731 west. Continue approximately 1.3 miles which will take you out of town. Bear right onto 731 west at the split. Take an immediate right onto McCallum Rd. (there is a sign for E-KU-SUMEE at the intersection). Continue approximately 5.4 miles to Perry Drive which is on the left. Turn left onto the gravel road and follow it to the end. The site is behind the house, drive around the grapevines on the left.							

Fie	eld Systems Data Form		F-02058-1500-S3-rev002
Site	CND125 Technician Eric Hebert		Site Visit Date 12/22/2023
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:

11 Is it inclined approximately 30 degrees?

Fic	eld Sy	ystems Data	Form			F-02058-1500-S4-rev002
Site	e ID	CND125	Techni	Eric Hebert		Site Visit Date 12/22/2023
1		the meterological so on, and well maint		to be intact, in good	✓	
2		the meteorological	l sensors opera	tional online, and	✓	
3	Are the	e shields for the ten	nperature and	RH sensors clean?	✓	
4	Are the	e aspirated motors	working?		✓	N/A
5	Is the s scratch	olar radiation sens	sor's lens clean	and free of	✓	N/A
6	Is the s	urface wetness sen	sor grid clean	and undamaged?	✓	N/A
7		e sensor signal and on, and well maint		intact, in good	✓	N/A
8		e sensor signal and ne elements and we		onnections protected	✓	N/A
				nph or sketch if necess nitoring parameters:	sary)) regarding conditions listed above, or any other features,
The t	temperat	ure sensor is mount	ed on the samp	le tower in a naturally a	aspira	ated shield.

Field Systems Data Form F-02058-1500-S5-rev002 CND125 Technician Eric Hebert Site Visit Date 12/22/2023 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 12 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? **~** 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:

Ozone sample train has inline dryer.

Field Systems Data Form

F-02058-1500-S6-rev002

Site	e ID	CND125	Technician	Eric Hebert		Site Vis	sit Date 12/22/	2023		
	DAS, se	nsor translators, and	peripheral equip	oment operation	ıs an	d maintena	ance			
1	Do the I	OAS instruments appe	ar to be in good	condition and	✓					
2		he components of the backup, etc)	DAS operationa	al? (printers,	✓					
3		nalyzer and sensor sig g protection circuitry		hrough	>	Temperatur	e only			
4		signal connections prointained?	otected from the	weather and	✓					
5	Are the	Are the signal leads connected to the correct DAS channel								
6	Are the DAS, sensor translators, and shelter properly grounded?									
7	Does the instrument shelter have a stable power source?									
8	Is the instrument shelter temperature controlled?			led?	>					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded		
10	Is the sa	mple tower stable and	l grounded?			<u> </u>				
11	Tower c	omments?								
		additional explanatio nan-made, that may af				y) regardin	g conditions li	sted above, or a	any other features,	
	F									

Field Systems Data Form F-02058-1500-S7-rev002 CND125 Technician Eric Hebert Site Visit Date 12/22/2023 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** Relative humidity sensor Computer **V** Solar radiation sensor **V** Modem П **V V** Printer Surface wetness sensor **V V** Wind sensor translator Zero air pump **V** Temperature translator **V** Filter flow pump **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** May 2019 **✓ V HASP** May 2019 **✓** Field Ops Manual May 2019 **V Calibration Reports V ✓** Ozone z/s/p Control Charts Preventive maintenance schedule 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 **✓** 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 CND125 Technician Eric Hebert Site Visit Date 12/22/2023 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 **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** 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? **OC 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** As needed **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** Weekly Sample Line Check for Dirt/Water **~ V** Weekly **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:

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?

✓

✓

SSRF, logbook, call-in

Fi	eld Sy	stems Data Form			F-02058-1500-S9-rev002						
Site	e ID	CND125 Tec	hniciar	Eric Hebert		Site Visit Date	12/22/2023				
	Site ope	eration procedures									
1	Is the fi	lter pack being changed ever	y Tueso	day as scheduled	? ✓	Filter changed morr	nings				
2	Are the	Site Status Report Forms be y?	ing con	npleted and filed	✓						
3	Are dat	a downloads and backups beed?	ing per	formed as		No longer required					
4	Are general observations being made and recorded? How					SSRF, logbook					
5	fashion?										
6	Are sample flow rates recorded? How?				✓	SSRF, logbook, call	l-in				
7	Are san	nples sent to the lab on a reg ?	ılar sch	edule in a timely	~						
8		ers protected from contamination pping? How?	ation du	ıring handling	✓	Clean gloves on and	d off				
9		site conditions reported regu ons manager or staff?	ılarly to	the field	✓						
QC	Check P	erformed	Fr	equency			Compliant				
N	Multi-poi	nt MFC Calibrations	✓ Se	miannually			✓				
I	Flow Syst	em Leak Checks	✓ We	eekly			✓				
I	Filter Pac	k Inspection									
I	Flow Rate Setting Checks Weekly					✓					
1	Visual Check of Flow Rate Rotometer Weekly					✓					
I	In-line Filter Inspection/Replacement Semiannually			✓							
S	Sample Line Check for Dirt/Water ✓ Weekly			eekly			\checkmark				
		additional explanation (photo an-made, that may affect the				y) regarding conditi	ons listed above, or	any other features,			

Field Systems Data Form

F-02058-1500-S10-rev002

Site ID

CND125

Technician Eric Hebert

S

Site Visit Date 12/22/2023

Site Visit Sensors

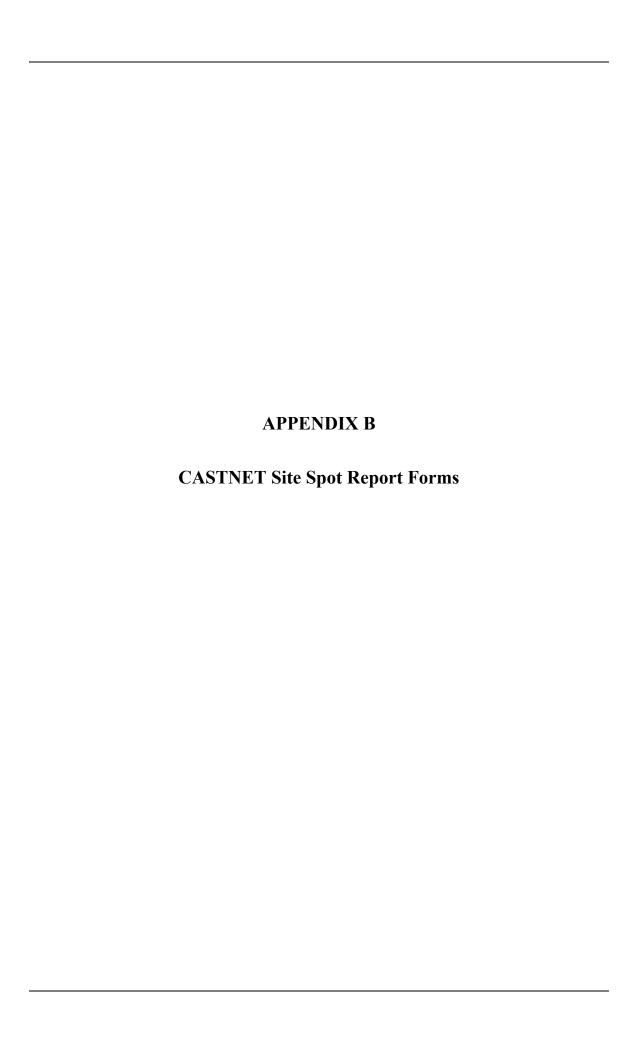
Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	BQ3MC12	07015
DAS	Campbell	CR3000	3816	000499
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18	illegible	01235
Flow Rate	Apex	AXMC105LPMDPC	illegible	000859
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	Illegible	07122
Ozone	ThermoElectron Inc	49i A1NAA	1009241794	000614
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124693	000376
Sample Tower	Aluma Tower	A	none	03495
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VC	14035	06402
Zero air pump	Werther International	C 70/4	000814284	06868

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
COV	W137-Eric I	Hebert-12/26/2023				
1	12/26/2023	DAS	Campbell	000401	CR3000	2529
2	12/26/2023	Ozone	ThermoElectron Inc	000684	49i A1NAA	103244795
3	12/26/2023	Ozone Standard	ThermoElectron Inc	000441	49i A3NAA	CM08200017
4	12/26/2023	Zero air pump	Werther International	06940	C 70/4	000821897

Ozone Data Form

Mfg		Serial Numbe	r Tag Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	103244795	COW1:	37	Er	ic Hebert	12/26/2023	Ozone		000684
Slope: [Intercept [CorrCoff: [-(rcept	0.00000)	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114			r ozone Ozone primary stan
DAS 1:		D.	AS 2:							
	iff· A M		Avg %Diff A	May ⁰	% Dif	Slope	0.9973	30 Inter	cept	0.29920
)%	0.0%	Avg /uDin F	X IVIAX	70 DII	Cert Date	4/25/202	23 Corr	Coff	1.00000
UseDescri	ption	ConcGroup	Tfer Raw	Tf	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
primar	y	1	0.36		0.06	-0.54	ppb			-0.6
primar	y	2	14.96		14.69	13.74	ppb			-0.95
primar	y	3	35.95		35.74	34.44	ppb		-3.7	
primar	•	4	70.08		69.96	67.40	ppb		-3.73	
primar	•	5	110.43		10.41	107.00	ppb		-3.14	
-	•	nt Audit Pressu				on 678.4 mmHg	11	Status		
Sensor Co	ompone	nt 26.6 degree	unobstructed r	ule	Conditi	on True		Status	pass	
Sensor Co	omponei	nt Tree dewline	e >10m or belov	w inlet	Conditi	on True		Status	pass	
Sensor Co	omponei	nt ADT 1000-1	0000 vehicles f	urther t	Conditi	on True		Status	pass	
Sensor Co	ompone	nt ADT <1000	vehicles further	than 5	Conditi	on True		Status	pass	
Sensor Co	omponei	nt Sample Trai	n		Conditi	on Good		Status	pass	
		nt Inlet Filter C				on Clean		Status	pass	
Sensor Co					Condition	on -0.30		Status	pass	
Sensor Co	omponei	nt Span				on 1.015		Status	pass	
Sensor Co	omponei	nt Zero Voltage	e		Condition			Status	pass	
Sensor Co	omponei	nt Fullscale Vo	ltage		Conditi			Status	pass	
Sensor Co	omponei	nt Cell A Freq.			Conditi	on 101.6 kHz		Status	pass	
		nt Cell A Noise				Not tested		Status		
Sensor Co	ompone	Cell A Flow				0.68 lpm		Status		
		Cell A Press	sure		Condition	0n 637.4 mmHg		Status		
		Cell A Tmp.			Condition	on 33.4 C		Status	pass	
Sensor Co	ompone	Cell B Freq.				on 95.2 kHz		Status		
Sensor Co	ompone	Cell B Noise	•		Condition	Not tested		Status	pass	
Sensor Co	ompone	Cell B Flow				0.67 lpm		Status	pass	
Sensor Co	ompone	Cell B Press	sure		Condition	0n 638.0 mmHg		Status	pass	
	Sensor Component Nafion dryer installed			Condition	ondition True			pass		
	_	nt System Mer			Condition			Status		
	-									



Data Compiled: 11/5/2023 19:04:30

SiteVisitDate Site Technician

10/20/2023 ANA115 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99806	unitless	P
2	Ozone Intercept	P	0	5	4	-0.18415	ppb	P
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
4	Ozone % difference avg	P	7	10	4	0.7	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.12	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.13	daa	P

Data Compiled: 1/16/2024 11:28:00 AM

SiteVisitDate Site Technician

11/09/2023 BAS601 Tim Mendenhall

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97330	unitless	P
2	Ozone Intercept	P	0	5	4	-1.05805	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99991	unitless	P
4	Ozone % difference avg	P	7	10	4	5.4	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.91	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-1.25	daa	P

Data Compiled: 1/15/2024 6:12:10 PM

SiteVisitDate Site Technician

11/15/2023 BFT142 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	18	0.41	c	P
2	Temperature max error	P	4	0.5	18	0.70	c	Fail
3	Ozone Slope	P	0	1.1	4	0.97877	unitless	P
4	Ozone Intercept	P	0	5	4	-0.06249	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	2.4	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.00	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.44	ppb	P
9	Flow Rate average % difference	P	10	5	5	0.00	%	P
10	Flow Rate max % difference	P	10	5	5	0.00	%	P
11	DAS Voltage average error	P	4	0.003	13	0.0000	V	P
12	Shelter Temperature average error	P	5	2	24	0.17	c	P
13	Shelter Temperature max error	P	5	2	24	0.28	c	P

11/15/2023

BFT142

Eric Hebert

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 SSRF forms are not competed on the day of filter installation. The logbook entries are not up to date.

2 Parameter: DasComments

The new sample tower is not attached to the shelter. The sample tower is not grounded.

3 Parameter: SitingCriteriaCom

The site is surrounded by a corn/soy bean field, within a large-scale commercial agriculture operation.

4 Parameter: ShelterCleanNotes

One shelter light is functioning properly. The shelter is in poor condition due to being flooded during hurricanes. The floor has been repaired.

5 Parameter: MetOpMaintCom

The meteorological tower has been removed and the temperature sensor is installed in a naturally aspirated shield on the sample tower.

Data Compiled: 1/12/2024 12:03:32 PM

SiteVisitDate Site Technician

11/07/2023 BUF603 Tim Mendenhall

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	0.42	c	P
3	Flow Rate average % difference	P	10	5	9	1.24	%	P
4	Flow Rate max % difference	P	10	5	9	1.35	%	P
5	DAS Voltage average error	P	4	0.003	1	0.0000	V	P

11/07/2023

BUF603

Tim Mendenhall

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator does not use gloves, however, he uses the filter bag when handling the filter.

2 Parameter: DasComments

The NEMA enclosure has a cooling fan.

3 Parameter: DocumentationCo

A disc with the current QAPP has been received and is kept at the site operator's office. The site operator completes and files a hardcopy checklist and logbook developed by ARS for BLM each week.

4 Parameter: ShelterCleanNotes

NEMA enclosure, 120 VAC power

5 Parameter: PollAnalyzerCom

The dry deposition filter pack enclosure is not the standard "pot" size that is used at the other CASTNET sites. The diameter of the enclosure is much smaller and the filter is mounted much deeper inside the opening. The geometry of the filter pack and enclosure is likely to impact particle collection efficiency.

6 Parameter: MetSensorComme

The temperature is measured at 2.5 meters above the ground. The top section of the tower is not perfectly plumb and guy wire tension could be applied to improve position.

7 Parameter: MetOpMaintCom

Some signal cables are showing signs of wear.

Data Compiled:

11/5/2023 20:03:18

SiteVisitDate Site Technician

10/23/2023 CAV436 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.69	c	Fail
2	Temperature2meter max error	P	5	0.5	3	0.74	c	Fail
3	Ozone Slope	P	0	1.1	4	0.97980	unitless	P
4	Ozone Intercept	P	0	5	4	-0.77048	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	4.6	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-0.78	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-1.22	ppb	P
9	DAS Voltage average error	P	4	0.003	3	0.0000	V	P
10	Shelter Temperature average error	P	5	2	9	0.32	c	P
11	Shelter Temperature max error	P	5	2	9	0.69	c	P

SiteVisitDate Site Technician

10/23/2023

CAV436

Martin Valvur

Field Systems Comments

1 Parameter: SiteOpsProcComm

Dry deposition samples are not collected at this site.

2 Parameter: DocumentationCo

The site is visited every other Tuesday.

3 Parameter: MetSensorComme

The 2-meter temperature sensor is mounted one meter above the building roof and facing south. The building is likely to impact the accuracy of the measurements.

Data Compiled:

10/24/2023

11/5/2023 20:13:22

Martin Valvur

SiteVisitDate Site Technician

Records with valid pass/fail criteria

CHA467

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98591	unitless	P
2	Ozone Intercept	P	0	5	4	0.08656	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99990	unitless	P
4	Ozone % difference avg	P	7	10	4	2.4	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.95	ppb	P
6	Ozone Absolute Difference 92	P	7	1.5	1	-0.74	nnh	P

Data Compiled: 1/16/2024 11:20:34 AM

SiteVisitDate Site Technician

12/22/2023 CND125 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	18	0.04	c	P
2	Temperature max error	P	4	0.5	18	0.05	c	P
3	Ozone Slope	P	0	1.1	4	1.01683	unitless	P
4	Ozone Intercept	P	0	5	4	-0.04086	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	1.4	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.07	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	0.12	ppb	P
9	Flow Rate average % difference	P	10	5	3	4.25	%	P
10	Flow Rate max % difference	P	10	5	3	4.46	%	P
11	DAS Voltage average error	P	4	0.003	14	0.0000	V	P
12	Shelter Temperature average error	P	5	2	24	0.12	c	P
13	Shelter Temperature max error	P	5	2	24	0.23	c	P

SiteVisitDate	Site	Technician

12/22/2023

CND125

Eric Hebert

Field Systems Comments

1 Parameter: SitingCriteriaCom

The land owner maintains a pine tree forest on the property within 50 meters of the site. The trees were planted just before the site was installed in 1990 and may or may not be harvested in the future.

2 Parameter: ShelterCleanNotes

The shelter is well clean and well organized. There are signs of insect infestation on floor.

3 Parameter: PollAnalyzerCom

Ozone sample train has inline dryer.

4 Parameter: MetOpMaintCom

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

Data Compiled: 1/16/2024 11:29:17 AM

SiteVisitDate Site Technician

12/26/2023 COW137 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97363	unitless	P
2	Ozone Intercept	P	0	5	4	-0.54646	ppb	P
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
4	Ozone % difference avg	P	7	10	4	4.2	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.6	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.95	ppb	P

Data Compiled: 1/16/2024 11:30:22 AM

SiteVisitDate Site Technician

11/08/2023 CTH110 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.98097	unitless	P
2	Ozone Intercept	P	0	5	4	0.09209	ppb	P
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
4	Ozone % difference avg	P	7	10	4	1.8	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.12	ppb	P
6	Ozone Absolute Difference 92	P	7	1.5	1	-0.39	daa	p

Data Compiled:

10/11/2023

11/5/2023 15:47:42

Martin Valvur

SiteVisitDate Site Technician

Records with valid pass/fail criteria

DEN417

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.0253	unitless	P
2	Ozone Intercept	P	0	5	4	0.11634	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
4	Ozone % difference avg	P	7	10	4	2.6	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.34	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	0.49	daa	P

Data Compiled: 1/16/2024 8:13:43 AM

SiteVisitDate Site Technician

11/20/2023 DEV412 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	2	0.59	c	Fail
2	Temperature max error	P	4	0.5	2	0.83	c	Fail
3	Ozone Slope	P	0	1.1	4	1.00126	unitless	P
4	Ozone Intercept	P	0	5	4	-1.02788	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
6	Ozone % difference avg	P	7	10	4	3.3	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-0.86	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-1.04	ppb	P
9	DAS Voltage average error	P	4	0.003	1	0.0000	V	P
10	Shelter Temperature average error	P	5	2	6	1.03	c	P
11	Shelter Temperature max error	P	5	2	6	1.32	c	P

SiteVisitDate Site Technician

11/20/2023

DEV412

Martin Valvur

Field Systems Comments

1 Parameter: SiteOpsProcComm

Dry deposition samples are not collected at this site.

2 Parameter: PollAnalyzerCom

The sample tubing is not secured to the sample tower.

3 Parameter: MetSensorComme

The temperature and humidity combination sensor is mounted in a non-aspirated shield on the south side of the tower. The sensor cannot be submerged and therefore was only challenged in air side-by-side with the RTD standard. Audit results are not comparable with other submergible sensors.

Data Compiled: 1/16/2024 11:31:48 AM

SiteVisitDate Site Technician

11/14/2023 DUK008 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.01197	unitless	P
2	Ozone Intercept	P	0	5	4	-0.0393	ppb	P
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
4	Ozone % difference avg	P	7	10	4	0.9	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.12	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	0.13	daa	P

Data Compiled:

11/5/2023 17:22:52

SiteVisitDate Site Technician

10/18/2023 GLR468 Tim Mendenhall

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.21	c	P
2	Temperature2meter max error	P	5	0.5	3	0.24	c	P
3	Ozone Slope	P	0	1.1	4	0.99776	unitless	P
4	Ozone Intercept	P	0	5	4	-0.82253	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	2.8	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-0.69	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.9	ppb	P
9	Flow Rate average % difference	P	10	5	8	0.22	%	P
10	Flow Rate max % difference	P	10	5	8	0.33	%	P
11	DAS Voltage average error	P	4	0.003	4	0.0000	V	P
12	Shelter Temperature average error	P	5	2	24	0.63	c	P
13	Shelter Temperature max error	P	5	2	24	0.70	c	P

SiteVisitDate	Site	Technician
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10/18/2023

GLR468

Tim Mendenhall

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator uses the filter bad as a glove.

2 Parameter: SitingCriteriaCom

The site is located in a small clearing within 100 meters of a horse stable. There is a plywood and aluminum processing plant within 20 km of the site.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition. Evidence of repairs to roof leaks attempted. The floor has been repaired since the previous audit visit.

Data Compiled: 1/16/2024 11:32:52 AM

SiteVisitDate Site Technician

11/06/2023 GRB411 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.01129	unitless	P
2	Ozone Intercept	P	0	5	4	-0.87381	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
4	Ozone % difference avg	P	7	10	4	1.4	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-1.01	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.58	daa	P

Data Compiled:

11/5/2023 20:21:26

SiteVisitDate Site **Technician** Martin Valvur

10/25/2023 GRC474

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.97456	unitless	P
2	Ozone Intercept	P	0	5	4	-0.7612	ppb	P
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
4	Ozone % difference avg	P	7	10	4	4.7	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.88	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.99	ppb	P

Data Compiled: 11/5/2023 18:51:44

SiteVisitDate Site Technician

10/19/2023 HOX148 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.01508	unitless	P
2	Ozone Intercept	P	0	5	4	0.46876	ppb	P
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
4	Ozone % difference avg	P	7	10	4	3.0	%	P
5	Ozone Absolute Difference g1	P	7	3	1	0.46	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	0.86	daa	P

Data Compiled: 1/16/2024 9:07:23 AM

SiteVisitDate Site Technician

11/29/2023 KIC003 Tim Mendenhall

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	15	0.08	c	P
2	Temperature max error	P	4	0.5	15	0.21	c	P
3	Flow Rate average % difference	P	10	5	2	2.28	%	P
4	Flow Rate max % difference	P	10	5	2	2.74	%	P
5	DAS Voltage average error	P	4	0.003	5	0.0000	V	P

11/29/2023

KIC003

Tim Mendenhall

Field Performance Comments

1 Parameter: Flow Rate SensorComponent: Rotometer Conditi CommentCode: 203

The rotometer ball is stuck and not floating due to either dirt or moisture inside the rotometer.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operation is currently suspended until funding is available.

2 Parameter: DocumentationCo

Currently there is no logbook provided by WSP but that maybe due to suspension of site operation since July.

3 Parameter: SitingCriteriaCom

The site is located across the street from the community school in the town of Powhattan.

4 Parameter: ShelterCleanNotes

Small footprint site with no shelter.

Data Compiled:

11/5/2023 12:25:01

SiteVisitDate Site Technician

10/10/2023 KNZ184 Tim Mendenhall

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	9	0.05	c	P
2	Temperature max error	P	4	0.5	9	0.14	c	P
3	Flow Rate average % difference	P	10	5	2	0.78	%	P
4	Flow Rate max % difference	P	10	5	2	1.35	%	P
5	DAS Voltage average error	P	4	0.003	9	0.0000	V	P
6	Shelter Temperature average error	P	5	2	24	0.13	c	P
7	Shelter Temperature max error	P	5	2	24	0.38	c	P

SiteVisitDate	Site	Technician
JILE V ISILDALE	JILE	I ECITIFICIAL

10/10/2023

KNZ184

Tim Mendenhall

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: SitingCriteriaCom

The site is located at a Long Term Ecological Research site operated by KSU.

2 Parameter: ShelterCleanNotes

The shelter is very clean, neat an well organized. Although patched, he shelter floor is deteriorated and in poor condition.

3 Parameter: MetSensorComme

The temperature sensor is mounted on the north side of the sample tower.

Data Compiled: 1/15/2024 5:43:43 PM

SiteVisitDate Site Technician

11/14/2023 LAV410 Martin Valvur

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	0.33	c	P
3	Ozone Slope	P	0	1.1	4	0.97678	unitless	P
4	Ozone Intercept	P	0	5	4	0.41499	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
6	Ozone % difference avg	P	7	10	4	1.8	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.72	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	0.17	ppb	P
9	Flow Rate average % difference	P	10	5	12	1.28	%	P
10	Flow Rate max % difference	P	10	5	12	1.6	%	P
11	DAS Voltage average error	P	4	0.003	10	0.0000	V	P
12	Shelter Temperature average error	P	5	2	6	0.59	c	P
13	Shelter Temperature max error	P	5	2	6	0.62	c	P

SiteVisitDate	Site	Technician

11/14/2023

LAV410

Martin Valvur

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone inlet filter is changed and the sample line conditioned every two weeks or as needed.

2 Parameter: SitingCriteriaCom

The site is located at the end of a park service facility parking lot, in a fire station. The tree line is near the building, but the prevailing wind direction is from the clearing. Tree height above the sample inlet is not twice as far away as it is high above the inlet.

3 Parameter: ShelterCleanNotes

The inside equipment is located in room within the fire station, clean, neat, and organized.

4 Parameter: PollAnalyzerCom

Trees violate the ozone sample inlet siting criteria.

Data Compiled: 1/15/2024 5:19:11 PM

SiteVisitDate Site Technician

11/11/2023 NIC001 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	18	0.06	c	P
2	Temperature max error	P	4	0.5	18	0.09	c	P
3	Flow Rate average % difference	P	10	5	8	0.00	%	P
4	Flow Rate max % difference	P	10	5	8	0.00	%	P
5	DAS Voltage average error	P	4	0.003	6	0.0000	V	P

SiteVisitDate	Site	Technician	

11/11/2023

NIC001

Eric Hebert

Field Systems Comments

1 Parameter: DasComments

Single tower with filter pack mounted at 10 meters and temperature mounted at 9 meters. The tower is difficult to lower due to the lower section contacting the chain-link fence. This could be a potential safety hazard. It is recommended that a solution be investigated.

2 Parameter: DocumentationCo

There is no logbook onsite to record information regarding site status or filter information.

3 Parameter: ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.

Data Compiled:

11/5/2023 20:29:07

 SiteVisitDate
 Site
 Technician

 10/26/2023
 PET427
 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.95667	unitless	P
2	Ozone Intercept	P	0	5	4	0.46781	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99977	unitless	P
4	Ozone % difference avg	P	7	10	4	5.1	%	P
5	Ozone Absolute Difference g1	P	7	3	1	1.83	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-1.31	ppb	P

Data Compiled:

11/5/2023 21:40:57

SiteVisitDate Site Technician

10/31/2023 PND165 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	21	0.06	c	P
2	Temperature max error	P	4	0.5	21	0.08	c	P
3	Ozone Slope	P	0	1.1	4	1.00609	unitless	P
4	Ozone Intercept	P	0	5	4	-2.68838	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99974	unitless	P
6	Ozone % difference avg	P	7	10	4	4.8	%	P
7	Ozone Absolute Difference g1	P	7	3	1	-4.14	ppb	Fail
8	Ozone Absolute Difference g2	P	7	1.5	1	-1.34	ppb	P
9	Flow Rate average % difference	P	10	5	3	0.29	%	P
10	Flow Rate max % difference	P	10	5	3	0.33	%	P
11	DAS Voltage average error	P	4	0.003	14	0.0000	V	P
12	Shelter Temperature average error	P	5	2	24	0.43	c	P
13	Shelter Temperature max error	P	5	2	24	0.82	c	P

SiteVisitDate	Site	Technician

10/31/2023

PND165

Martin Valvur

Field Systems Comments

1 Parameter: SitingCriteriaCom

Construction at the bottom of the hill and entrance to the site access road has been completed.

2 Parameter: ShelterCleanNotes

The floor tiles are loose and breaking into pieces.

Data Compiled: 1/16/2024 8:40:18 AM

SiteVisitDate Site Technician

11/27/2023 SAN189 Tim Mendenhall

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	21	0.28	c	P
2	Temperature max error	P	4	0.5	21	0.50	c	P
3	Ozone Slope	P	0	1.1	4	1.00318	unitless	P
4	Ozone Intercept	P	0	5	4	-0.01756	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
6	Ozone % difference avg	P	7	10	4	0.4	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.17	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	-0.07	ppb	P
9	Flow Rate average % difference	P	10	5	6	0.99	%	P
10	Flow Rate max % difference	P	10	5	6	1.32	%	P
11	DAS Voltage average error	P	4	0.003	13	0.0000	V	P
12	Shelter Temperature average error	P	5	2	24	0.64	c	P
13	Shelter Temperature max error	P	5	2	24	0.80	c	P

11/27/2023

SAN189

Tim Mendenhall

Field Performance Comments

1 Parameter: Temperature SensorComponent: System Memo CommentCode: 4

The sensor signal cables are showing signs of wear.

Field Systems Comments

1 Parameter: DasComments

The met tower is not currently in use and it is somewhat unstable.

2 Parameter: SiteOpsProcedures

The site operator was not available during the audit visit due to illness.

3 Parameter: DocumentationCo

The site operator reported that all instrument manuals are kept at the office.

4 Parameter: ShelterCleanNotes

The shelter is in very good condition.

Data Compiled: 1/15/2024 2:02:24 PM

SiteVisitDate Site Technician

11/06/2023 SHE604 Tim Mendenhall

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.11	c	P
2	Temperature2meter max error	P	5	0.5	3	0.17	c	P
3	Flow Rate average % difference	P	10	5	2	0.89	%	P
4	Flow Rate max % difference	P	10	5	2	1.64	%	P
5	DAS Voltage average error	P	4	0.003	1	0.0000	V	P

11/06/2023

SHE604

Tim Mendenhall

Field Systems Comments

1 Parameter: DasComments

The site power source is solar and wind with battery storage. The NEMA enclosure has a cooling fan and heat for the 2B ozone monitor.

2 Parameter: SiteOpsProcedures

observations of current meteorological measurements are recorded on a hardcopy checklist for ARS and not on the SSRF.

3 Parameter: DocumentationCo

The site operator is supplied with a disc containing the QAPP, operating procedures, and HASP which is kept at his office. A hard copy BLM check list developed by ARS is completed and sent to ARS each week. Standard CASTNET SSRF forms are being used now.

4 Parameter: SitingCriteriaCom

The site is located in range land. There is an active rail line with coal trains within one kilometer of the site.

5 Parameter: ShelterCleanNotes

NEMA enclosure, wind and solar power

6 Parameter: PollAnalyzerCom

The dry deposition filter pack enclosure is not the standard "pot" size as at the other CASTNET sites. The diameter is much smaller. It is not clear if this will impact particle collection efficiency. The filter is not plumb inside the enclosure and there is a section of tygon tubing between the pump and MFC.

7 Parameter: MetSensorComme

The site is a small footprint solar powered site that has been operating as part of the WARMS network for more than 10 years. Objects violate the 45 degree rule for the tipping bucket rain gage. The temperature and RH are being measured at 2.5 meters above the ground. The upper section of the tower is not plumb. The guy wires could be adjusted to correct.

Data Compiled: 1/16/2024 11:34:04 AM

SiteVisitDate Site Technician

12/06/2023 SND152 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.02085	unitless	P
2	Ozone Intercept	P	0	5	4	-0.74215	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99996	unitless	P
4	Ozone % difference avg	P	7	10	4	2.5	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.4	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-1.08	ppb	P

Data Compiled: 1/16/2024 11:35:10 AM

SiteVisitDate Site Technician

12/05/2023 SPD111 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	0.99728	unitless	P
2	Ozone Intercept	P	0	5	4	-0.63396	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
4	Ozone % difference avg	P	7	10	4	2.1	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.68	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.6	daa	P

Data Compiled:

11/5/2023 21:12:10

SiteVisitDate Site Technician

10/29/2023 STK138 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	21	0.08	c	P
2	Temperature max error	P	4	0.5	21	0.11	c	P
3	Ozone Slope	P	0	1.1	4	1.01627	unitless	P
4	Ozone Intercept	P	0	5	4	0.16439	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	1.9	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.31	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	0.38	ppb	P
9	Flow Rate average % difference	P	10	5	6	0.90	%	P
10	Flow Rate max % difference	P	10	5	6	1.35	%	P
11	DAS Voltage average error	P	4	0.003	14	0.0000	V	P
12	Shelter Temperature average error	P	5	2	24	0.65	c	P
13	Shelter Temperature max error	P	5	2	24	1.54	c	P

SiteVisitDate	Site	Technician

10/29/2023

STK138

Eric Hebert

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is completing the SSRF information on the day the filter is removed rather than when installed. He is also indicating on the form that the ozone inlet filter is changed every week.

2 Parameter: DasComments

The sample tower is original and is in poor condition. The lower section has been cut to allow the upper section to fold down completely.

3 Parameter: SiteOpsProcedures

The ozone sample train is leak tested every 2 weeks.

4 Parameter: SitingCriteriaCom

The site is located in a corn field on a cattle farm. Corn is planted within 10 meters.

5 Parameter: ShelterCleanNotes

There are signs of leaks on the walls and floor rot. The shelter has continued to deteriorate since the previous audit visit.





Data Compiled:

11/5/2023 22:26:11

SiteVisitDate Site Technician

10/13/2023 THR422 Tim Mendenhall

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.27	c	P
2	Temperature2meter max error	P	5	0.5	3	0.39	c	P
3	Flow Rate average % difference	P	10	5	2	50.33	%	Fail
4	Flow Rate max % difference	P	10	5	2	50.5	%	Fail
5	DAS Voltage average error	P	4	0.003	11	0.0000	V	P
6	Shelter Temperature average error	P	5	2	27	0.59	c	P
7	Shelter Temperature max error	P	5	2	27	0.80	c	P

10/13/2023

THR422

Tim Mendenhall

Field Systems Comments

1 Parameter: SiteOpsProcComm

Gloves are not used to handle the filter pack. The filter bag is used as a glove.

2 Parameter: DasComments

The met tower is no longer in use.

3 Parameter: SiteOpsProcedures

The ozone sample train does not have a means to introduce test gas at the sample inlet. Results of routine zero, span, precision, and any multipoint calibration checks are maintained by the state personnel who perform the tests. The two inlet filters in the sample train are creating a large pressure drop.

4 Parameter: SitingCriteriaCom

The site is located 200 meters from an interstate rest area, and 300 meters from interstate 94. The rest area can have parked and idling vehicles for extended periods.

5 Parameter: ShelterCleanNotes

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

6 Parameter: PollAnalyzerCom

The ozone monitor is operated by the state of North Dakota. There is approximately 1.5 meters of tygon tubing attached to the 3/8 filter pack flow tubing. The data logger was recording the flow rate as 1.5 lpm while the rotometer and the audit standard device were measuring approximately 3 lpm.

7 Parameter: MetSensorComme

The 2-meter temperature sensor is mounted on south side of the sample tower, which is attached to the site shelter. The sensor is 4.1 meters above ground and close to the shelter.

Data Compiled: 11/5/2023 18:37:20

SiteVisitDate Site Technician

10/19/2023 UVL124 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.00788	unitless	P
2	Ozone Intercept	P	0	5	4	-0.41443	ppb	P
3	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
4	Ozone % difference avg	P	7	10	4	1.3	%	P
5	Ozone Absolute Difference g1	P	7	3	1	-0.02	ppb	P
6	Ozone Absolute Difference g2	P	7	1.5	1	-0.53	daa	P

Data Compiled:

11/5/2023 13:07:28

SiteVisitDate Site Technician

10/10/2023 VOY413 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.41	c	P
2	Temperature2meter max error	P	5	0.5	3	0.58	c	Fail
3	Ozone Slope	P	0	1.1	4	1.01225	unitless	P
4	Ozone Intercept	P	0	5	4	0.10569	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
6	Ozone % difference avg	P	7	10	4	1.2	%	P
7	Ozone Absolute Difference g1	P	7	3	1	0.37	ppb	P
8	Ozone Absolute Difference g2	P	7	1.5	1	0.22	ppb	P
9	Flow Rate average % difference	P	10	5	4	1.93	%	P
10	Flow Rate max % difference	P	10	5	4	2.05	%	P
11	DAS Voltage average error	P	4	0.003	13	0.0000	V	P
12	Shelter Temperature average error	P	5	2	18	0.97	c	P
13	Shelter Temperature max error	P	5	2	18	1.92	c	P

10/10/2023

VOY413

Technician
Eric Hebert

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator handles the filter barehanded.

2 Parameter: DasComments

The sample tower itself is not grounded, however it is bolted to the shelter which is grounded. The roof leak above the instrument rack may have been repaired, it is dry at this time.

3 Parameter: SitingCriteriaCom

The site is located at the top of a hill in a forest. There are trees surrounding the site which are below the tower height, but within 10 m of the inlet.

4 Parameter: ShelterCleanNotes

The shelter is in fair condition, and is neat and well organized.

5 Parameter: PollAnalyzerCom

There are no trees violating the 22.5 degree cone above the ozone sample inlet. However, there is a communication tower which is above the 22.5 degree threshold.

Data Compiled: 1/15/2024 4:50:43 PM

SiteVisitDate Site Technician

11/09/2023 WFM105 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	21	0.10	c	P
2	Temperature max error	P	4	0.5	21	0.25	c	P
3	Flow Rate average % difference	P	10	5	2	1.12	%	P
4	Flow Rate max % difference	P	10	5	2	1.35	%	P
5	DAS Voltage average error	P	4	0.003	6	0.0000	V	P

11/09/2023

WFM105

Eric Hebert

Field Systems Comments

1 Parameter: SiteOpsProcComm

The observation section of the SSRF is completed the day the filer is removed and not the day of installation.

2 Parameter: DasComments

Single tower, with filter pack at 10 meters and temperature at 9 meters.

3 Parameter: DocumentationCo

The site operator takes notes in his own field notebook, there is no site logbook.

4 Parameter: SitingCriteriaCom

The site is located at the Atmospheric Science Research Center (ASRC) operated by the NY University (SUNY) system.

5 Parameter: ShelterCleanNotes

Small footprint site with no shelter. Equipment housed in enclosure on sample tower.