

Plantation Pipeline Gasoline Pipe Line Release
Double Oak Mountain, AL
Preliminary Summary of Air Monitoring Results
August 31, 2014

Prepared by
Center for Toxicology and Environmental Health, L.L.C. (CTEH®)

Introduction

On August 23, 2014, Center for Toxicology and Environmental Health, LLC (CTEH®) was contacted by Plantation Pipe Line to initiate air monitoring in support of response activities following a gasoline pipeline release in Double Oak Mountain, AL. Site monitoring consisted of manually-logged real-time monitoring as well as remote-telemetry monitoring.

This submittal summarizes air monitoring data for August 30, 2014 15:00 to August 31, 2014 15:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged monitoring was conducted for benzene, percent of the Lower Explosive Limit (LEL), oxygen (O₂), and Volatile Organic Compounds (VOCs), with instruments such as RAESystems® MultiRAEs (MRs), and RAESystems® UltraRAEs. Table 1 summarizes data for manually-logged real-time readings in the Work Area.

Table 1: Work Area - Manually-Logged Real-Time Air Monitoring Summary¹
August 30, 2014 15:00 – August 31, 2014 15:00

Analyte	Instrument	Number of Readings	Number of Detections	Average of Detections	Concentration Range
Benzene	UltraRAE	21	9	0.81 ppm	0.1 - 2.45 ppm
LEL	MultiRAE Plus	13	0	NA	<1 %
O ₂	MultiRAE Plus	13	13	20.9 %	20.9 - 20.9 %
VOC	MultiRAE Plus	29	24	24.3 ppm	0.3 - 162.4 ppm

¹Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.

²Maximum detections preceded by the "<" symbol are considered non-detects at or above reporting limit value to the right.

Remote-telemetry Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Remote-telemetry monitoring was conducted for percent of the Lower Explosive Limit (LEL), oxygen (O₂), and Volatile Organic Compounds (VOCs) with RAESystems® AreaRAEs. Table 2 summarizes data for remote-telemetry data in the work area and Appendix B includes the remote-telemetry data graphs.

Table 2: Remote-telemetry Air Monitoring Summary¹
August 30, 2014 15:00 – August 31, 2014 15:00

Unit	Analyte	Number of Readings	Number of Detections	Average of Detections	Concentration Range
AR06	LEL	5651	9	5.3 %	2.4 - 9.9 %
	O ₂	5651	5651	20.9 %	20.9 - 20.9 %
	VOC	5651	3224	3.5 ppm	0.1 - 204.5 ppm
AR08	LEL	5359	0	NA	<1 %
	O ₂	5359	5359	20.9 %	20.9 - 20.9 %
	VOC	5359	4937	7.6 ppm	0.1 - 55 ppm
AR09	LEL	5639	0	NA	<1 %
	O ₂	5639	5639	20.7 %	20.4 - 20.9 %
	VOC	5639	5049	5.7 ppm	0.1 - 40.8 ppm
AR10	LEL	5616	2	2.2 %	1.4 - 3 %
	O ₂	5616	5616	20.9 %	20.6 - 20.9 %
	VOC	5616	5242	20.7 ppm	0.1 - 265.6 ppm

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Data Logging Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Data logging monitoring was conducted for percent of the Lower Explosive Limit (LEL), oxygen (O₂), and Volatile Organic Compounds (VOCs), with RAESystems® MultiRAEs (MRs). Table 3 summarizes data for data-logged readings in the Work Area and Appendix C includes the data logging data graphs.

Table 3: Work Area – Data Logged Air Monitoring Summary¹
August 29, 2014 08:32 – August 30, 2014 18:02

Unit	Analyte	Number of Readings	Number of Detections	Average of Detections	Concentration Range
Excavation Operations					
095-528061 8/30 09:26 - 8/30 16:54	LEL	1796	0	NA	<1 %
	O ₂	1796	1796	20.9 %	20.9 - 20.9 %
	VOC	1796	159	16.5 ppm	0.1 - 78 ppm
Vac Operations					
095-527231 8/30 10:22 - 8/30 16:37	LEL	1503	0	NA	<1 %
	O ₂	1503	1503	20.9 %	20.9 - 20.9 %
	VOC	1503	142	5.6 ppm	0.1 - 52.8 ppm
095-527887 8/30 08:33 - 8/30 09:38	LEL	256	64	3.3 %	0.2 - 34 %
	O ₂	256	256	20.9 %	20.4 - 20.9 %
	VOC	256	256	8.8 ppm	0.1 - 77.8 ppm
095-527929 8/30 09:53 - 8/30 17:36	LEL	1855	0	NA	<1 %
	O ₂	1855	1855	20.9 %	20.4 - 21.3 %
	VOC	1855	138	1.8 ppm	0.1 - 10.8 ppm
095-528024 8/30 10:02 - 8/30 11:34	LEL	372	0	NA	<1 %
	O ₂	372	372	21.4 %	21.1 - 21.8 %
	VOC	372	35	0.4 ppm	0.1 - 1.6 ppm
095-528039 8/30 08:57 - 8/30 18:02	LEL	2123	0	NA	<1 %
	O ₂	2123	2123	20.9 %	20.9 - 20.9 %
	VOC	2123	645	2.6 ppm	0.1 - 16.4 ppm

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Personal Sampling

In accordance with the Occupational Safety and Health Administration (OSHA) benzene standard 29 CFR 1910.1028, analytical air samples (3M 3520 organic vapor badges) were collected in the breathing space of representative workers to monitor personal exposures to selected petroleum mixture constituents during work activities. In accordance with the OSHA access to employee exposure and medical records standard 29 CFR 1910.1020, notification letters will be produced for delivery to employees sampled. All analytical samples were shipped to an off-site accredited laboratory for chemical analysis. A detailed list of personal sampling results from the work area is provided in Table 4.

Table 4: Personal Air Sampling Results¹
August 24, 2014 – August 27, 2014

Sample Date	Sample ID	Sample Duration	Benzene (ppm)	Ethyl Benzene (ppm)	Naphthalene (ppm)	N-Hexane (ppm)	Toluene (ppm)	Xylene (ppm)
8/24/2014	NT5436^	555	<0.03	<0.07	<0.32	0.1	0.1	<0.24
	NW7912^	379	<0.05	<0.1	<0.47	<0.1	<0.1	<0.34
	WA5387^	483	0.09	<0.08	<0.36	0.31	0.38	<0.27
	WA5458^	1440	0.05	<0.03	<0.12	0.14	0.18	0.14
	WB2699^	181	0.2	<0.2	<0.97	0.77	0.62	<0.72
	WB3172^	631	1.4*	5.1*	1.6*	4.9*	19*	27*
	WB3397^	628	0.16	0.09	<0.28	0.58	0.76	0.44
8/25/2014	NT5611	517	<0.03	<0.08	<0.34	<0.08	0.1	<0.25
	NT5675^	311	<0.06	<0.1	<0.57	<0.1	<0.1	<0.42
	NV5817	558	<0.03	<0.07	<0.32	<0.08	<0.07	<0.23
8/26/2014	WA5298	429	0.07	<0.1	<0.41	0.24	0.33	<0.3
	WB3173	452	0.05	<0.09	<0.39	0.22	0.27	<0.29
	WB3243	468	0.04	<0.09	<0.38	0.2	0.24	<0.28
	WP8037	609	<0.03	<0.07	<0.29	0.1	0.17	<0.21
	WP8117	616	0.04	<0.07	<0.29	0.19	0.31	<0.21
8/27/2014	WB3166	490	0.04	<0.08	<0.36	0.2	0.25	<0.27
	WP8181	435	<0.04	<0.09	<0.41	<0.1	0.2	<0.3
	WP8209	485	0.1	<0.08	<0.36	0.28	0.41	<0.27
	WP8240	537	0.05	<0.08	<0.33	0.1	0.23	<0.24

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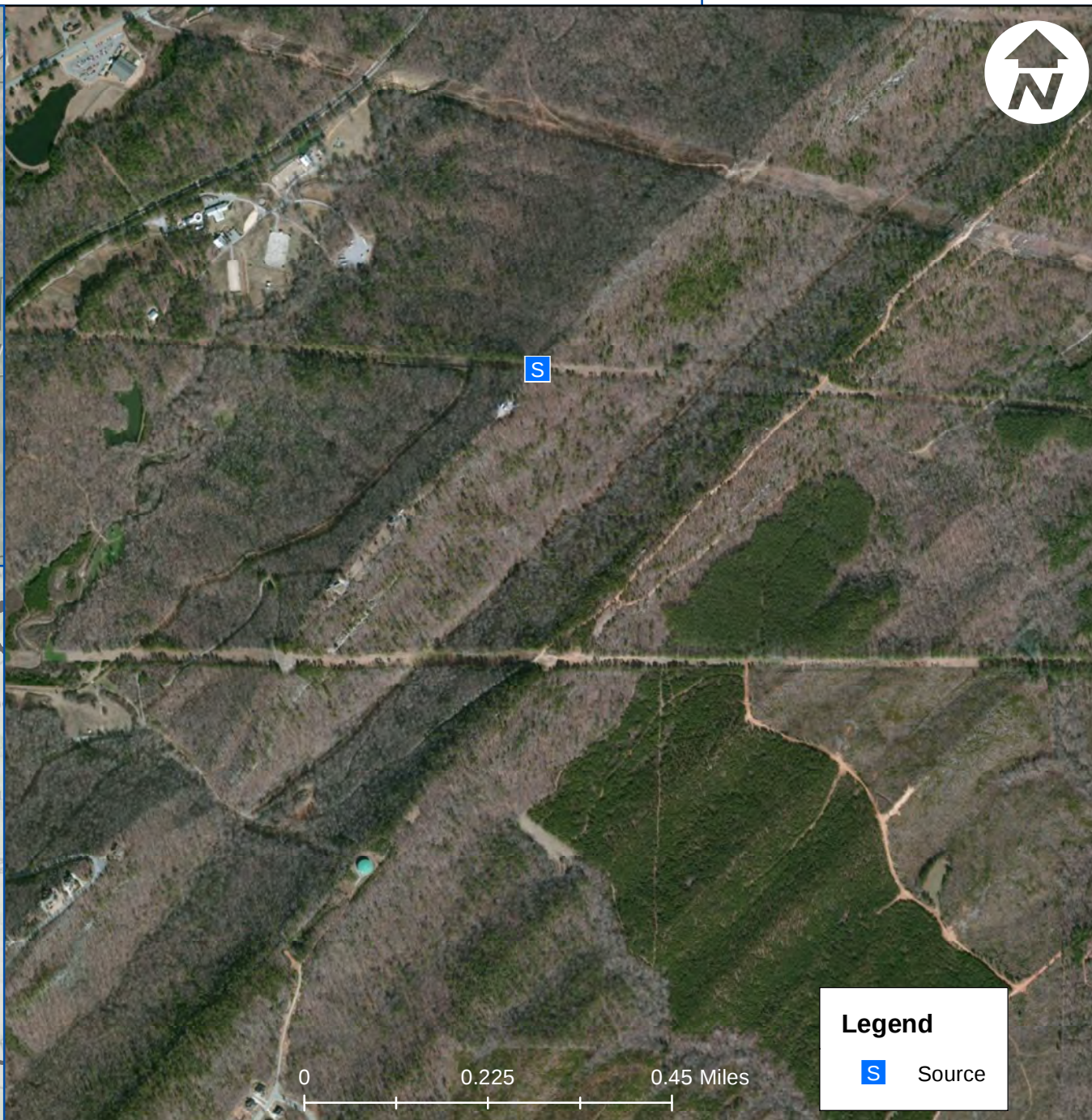
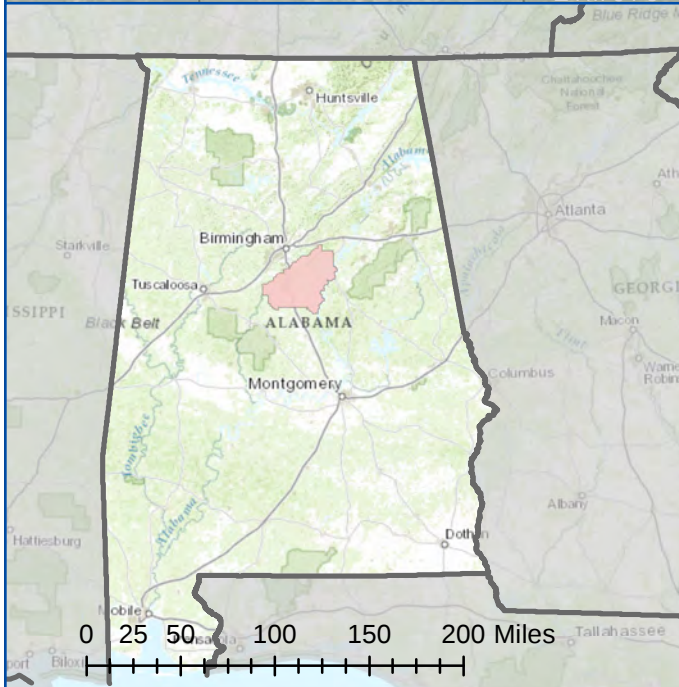
²Maximum detections preceded by the "<" symbol are considered non-detects at or above reporting limit value to the right.

* - Individual wearing this exposure badge tripped, resulting in the badge falling to the ground and breaking open near the released product.

For this reason, the result of this sample may be anomalous and not representative of the individual's exposure to these volatile organic compounds

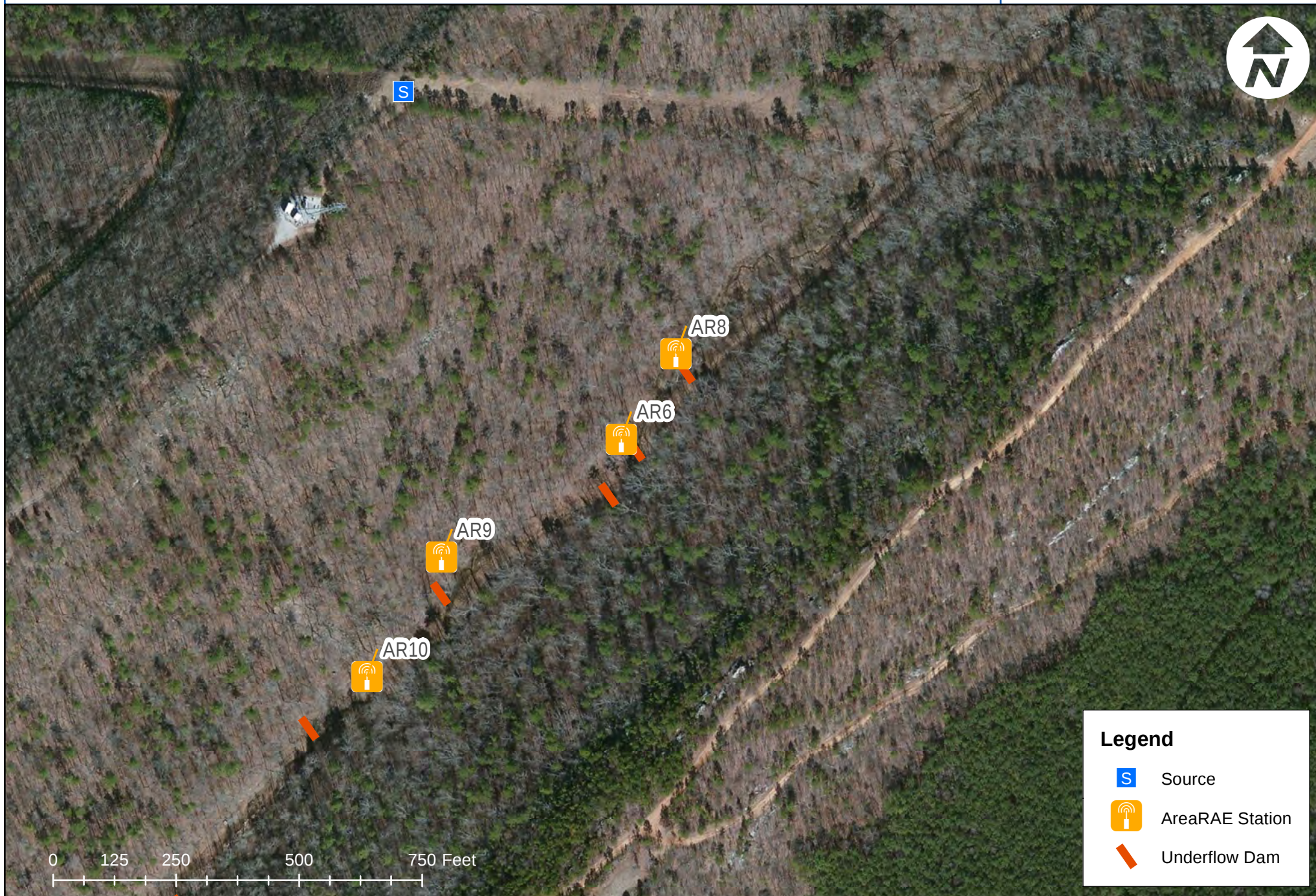
^ - Lab Results have level 2 validation through a third party validator.

Appendix A: Incident Maps



Legend

S Source



Legend

- S Source
-  AreaRAE Station
-  Underflow Dam

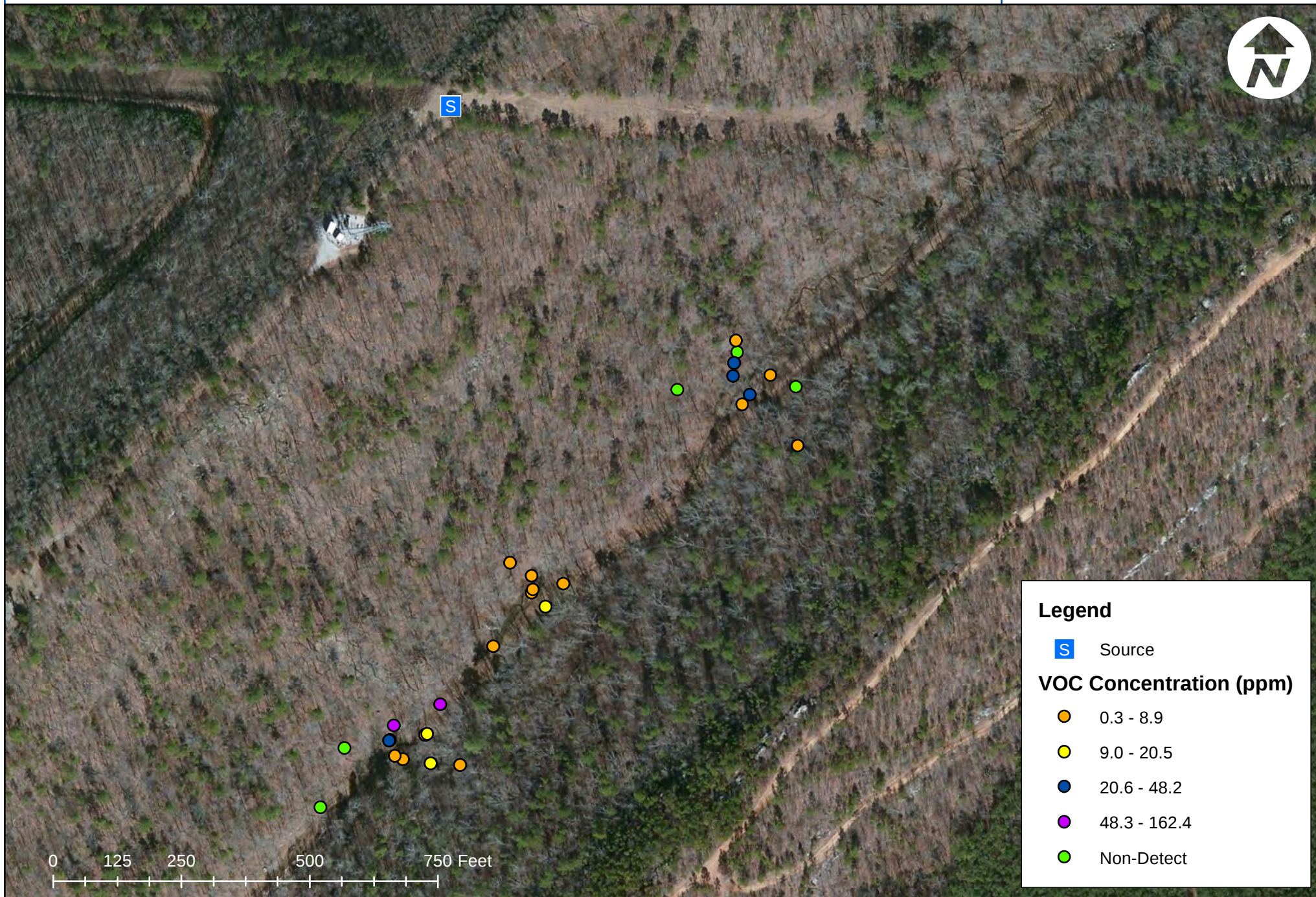


0 125 250 500 750 Feet

Legend

- S Source
- Real-Time Reading Location



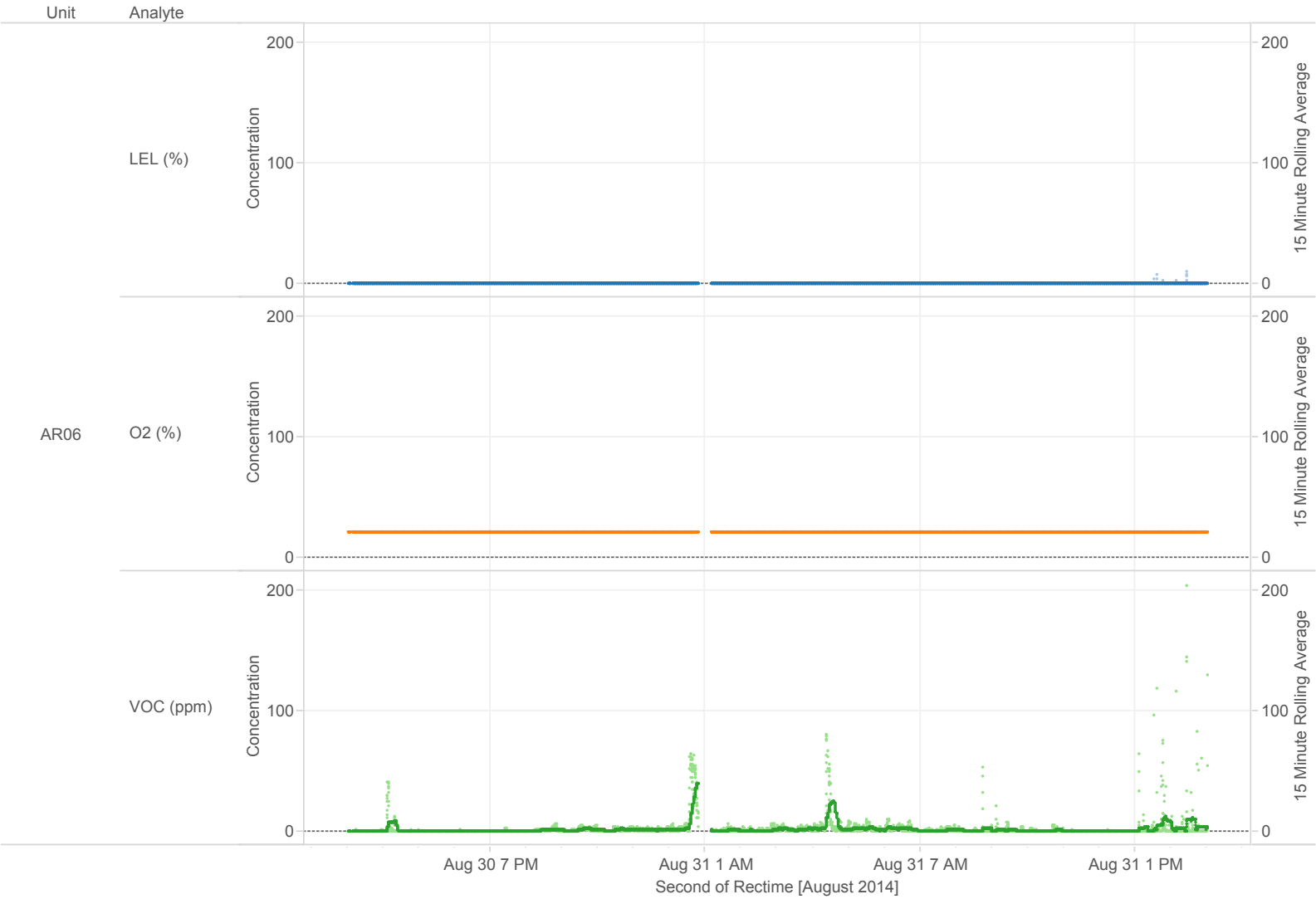


0 125 250 500 750 Feet

Appendix B:

Remote-telemetry Air Monitoring Graphs

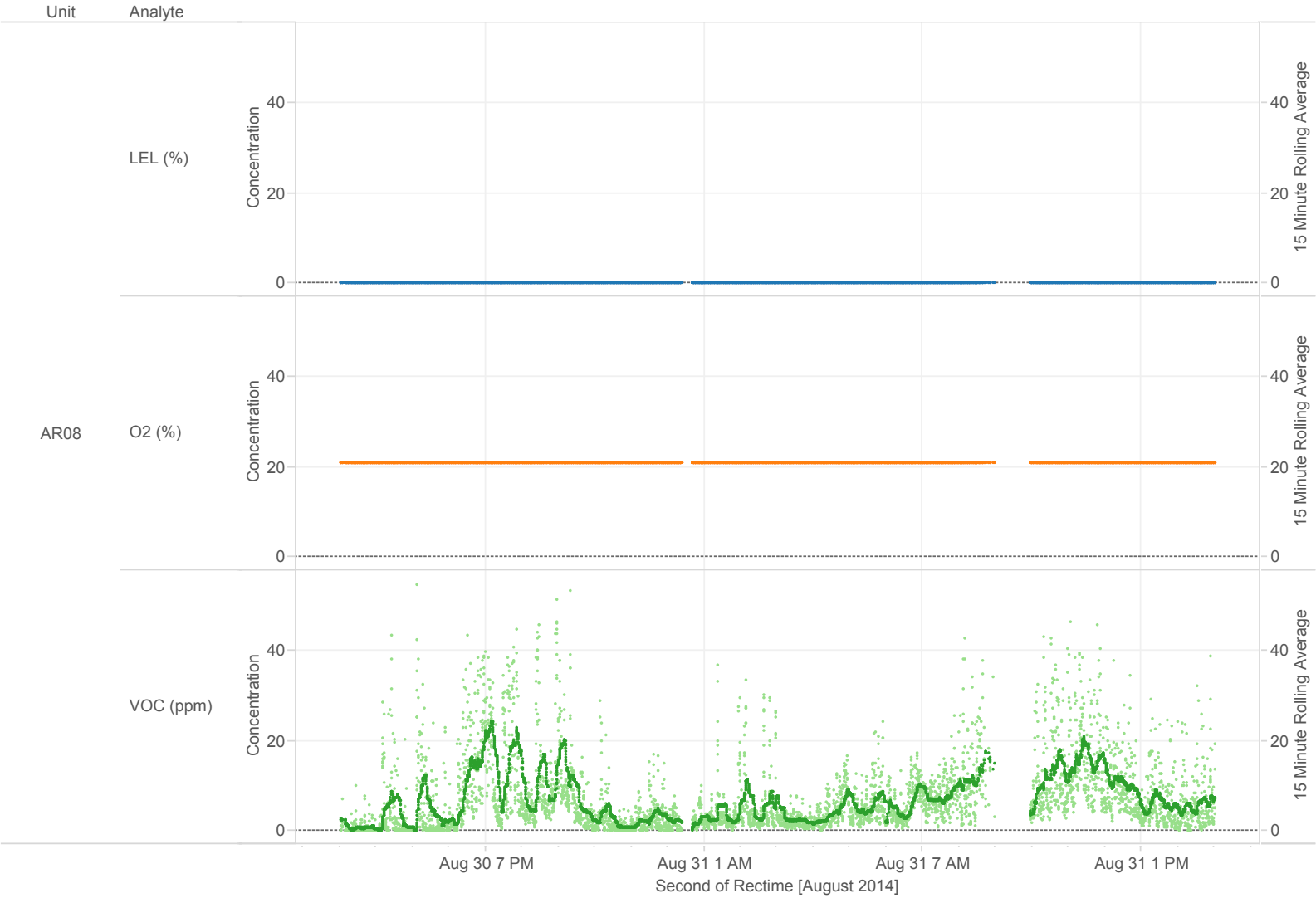
Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/30/2014 15:00 - 8/31/2014 15:00



Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

- Analyte**
- LEL (%), 15 Minute Rolling Average
 - LEL (%), Concentration
 - O2 (%), 15 Minute Rolling Average
 - O2 (%), Concentration
 - VOC (ppm), 15 Minute Rolling Average
 - VOC (ppm), Concentration

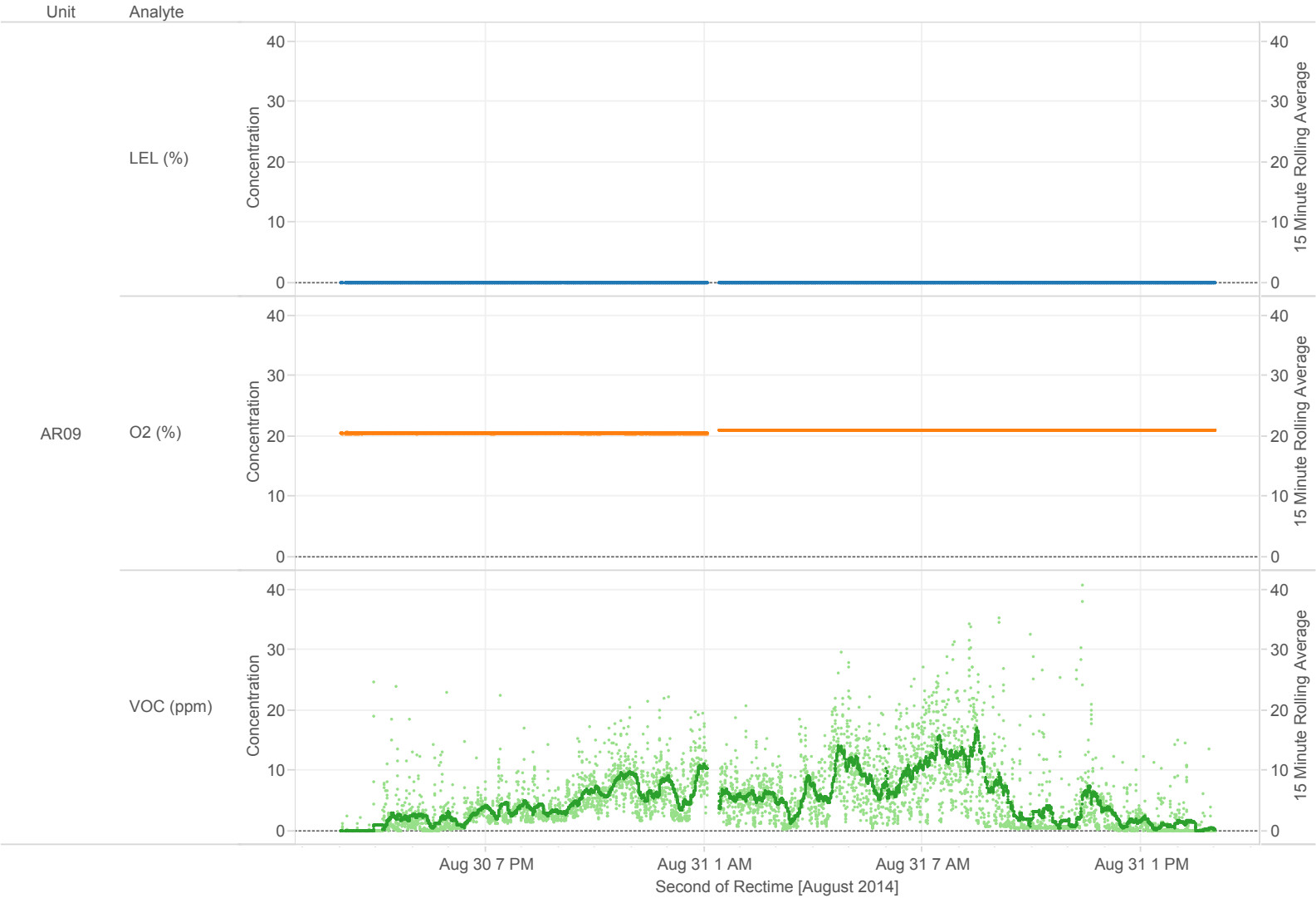
Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/30/2014 15:00 - 8/31/2014 15:00



Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

- Analyte**
- LEL (%), 15 Minute Rolling Average
 - LEL (%), Concentration
 - O2 (%), 15 Minute Rolling Average
 - O2 (%), Concentration
 - VOC (ppm), 15 Minute Rolling Average
 - VOC (ppm), Concentration

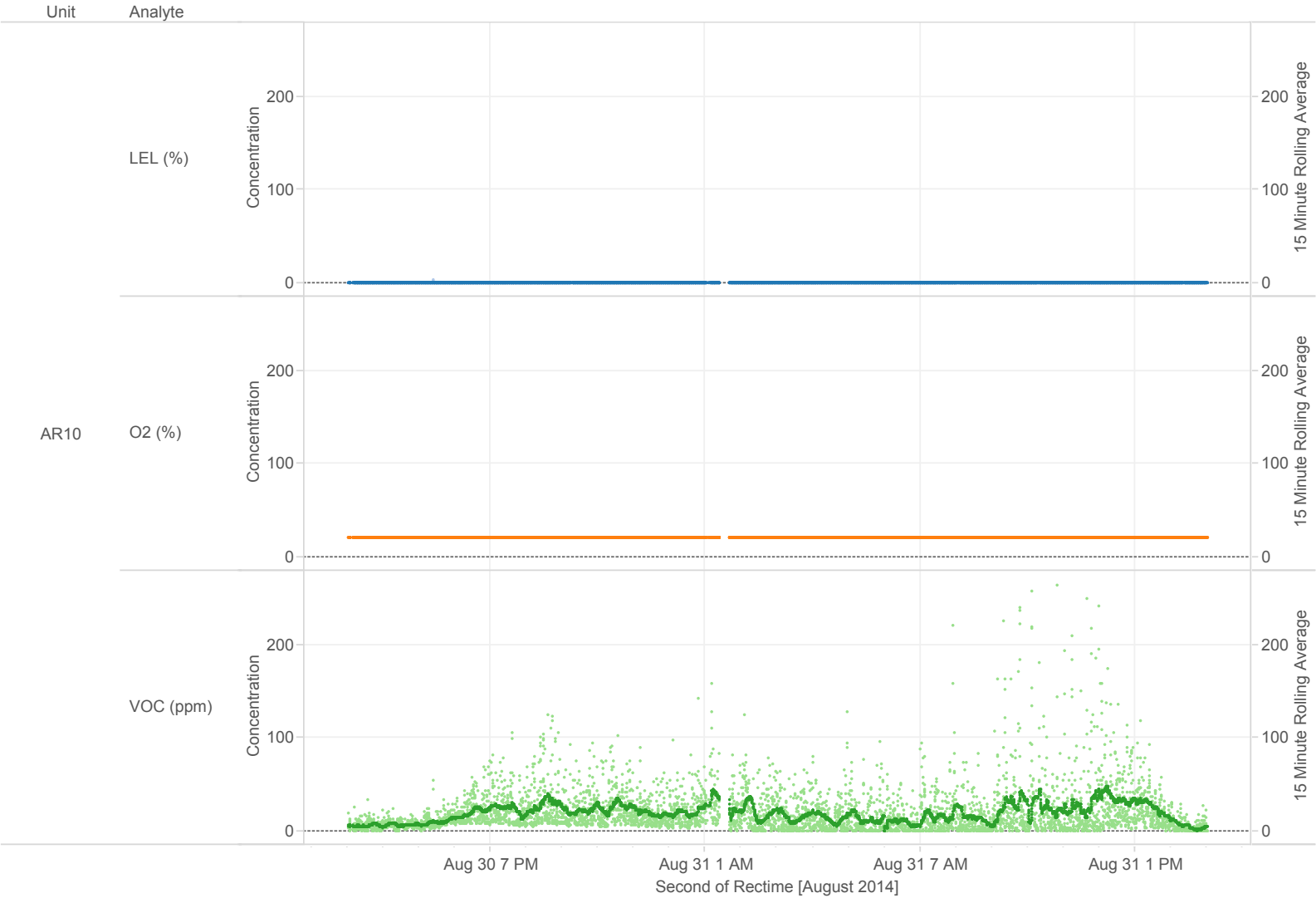
Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/30/2014 15:00 - 8/31/2014 15:00



Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

- Analyte**
- LEL (%), 15 Minute Rolling Average
 - LEL (%), Concentration
 - O2 (%), 15 Minute Rolling Average
 - O2 (%), Concentration
 - VOC (ppm), 15 Minute Rolling Average
 - VOC (ppm), Concentration

Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/30/2014 15:00 - 8/31/2014 15:00



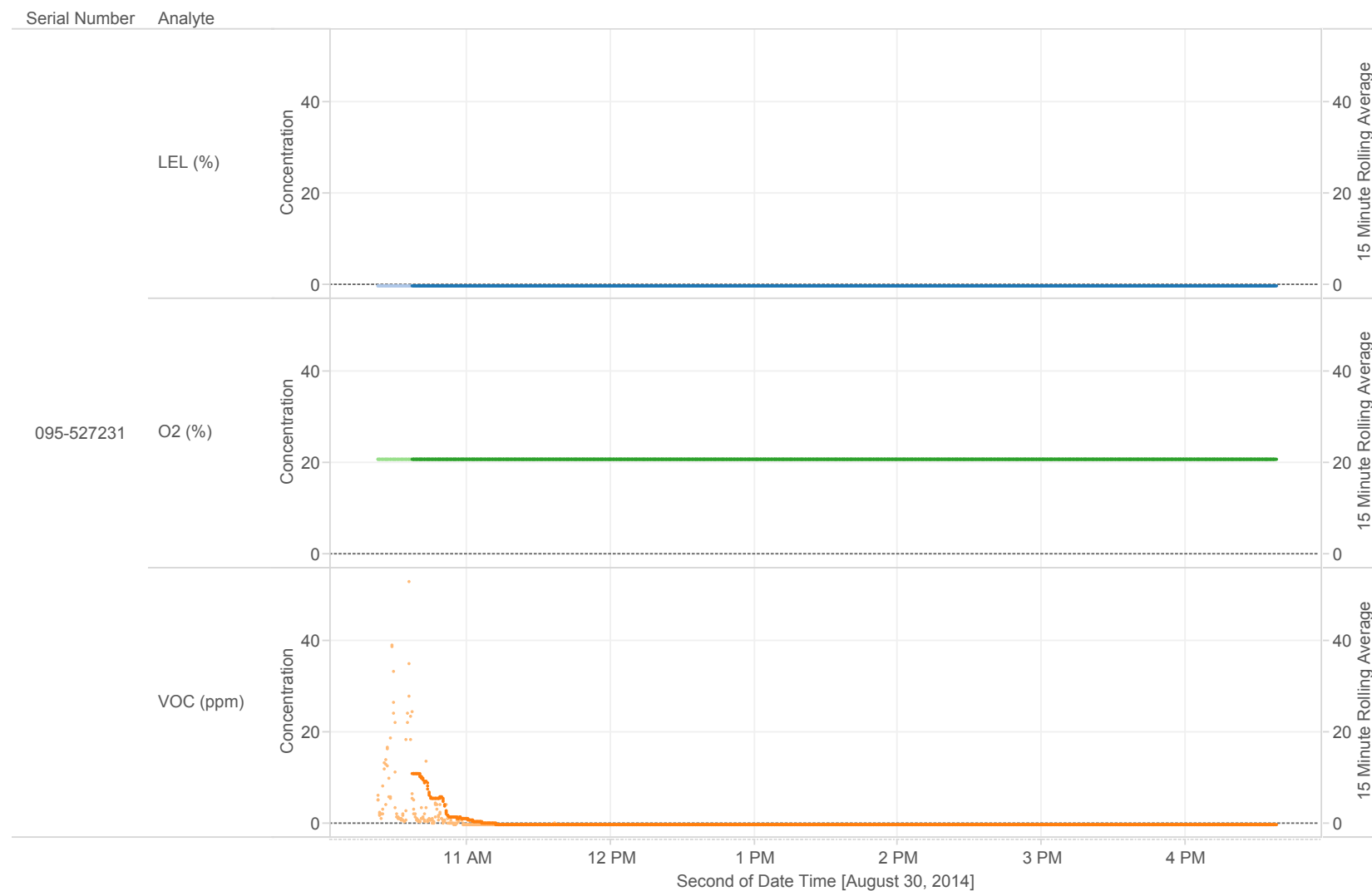
Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

- Analyte**
- LEL (%), 15 Minute Rolling Average
 - LEL (%), Concentration
 - O2 (%), 15 Minute Rolling Average
 - O2 (%), Concentration
 - VOC (ppm), 15 Minute Rolling Average
 - VOC (ppm), Concentration

Appendix C:

Data Logging Air Monitoring Graphs

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/30/2014 08:33 - 8/30/2014 18:02

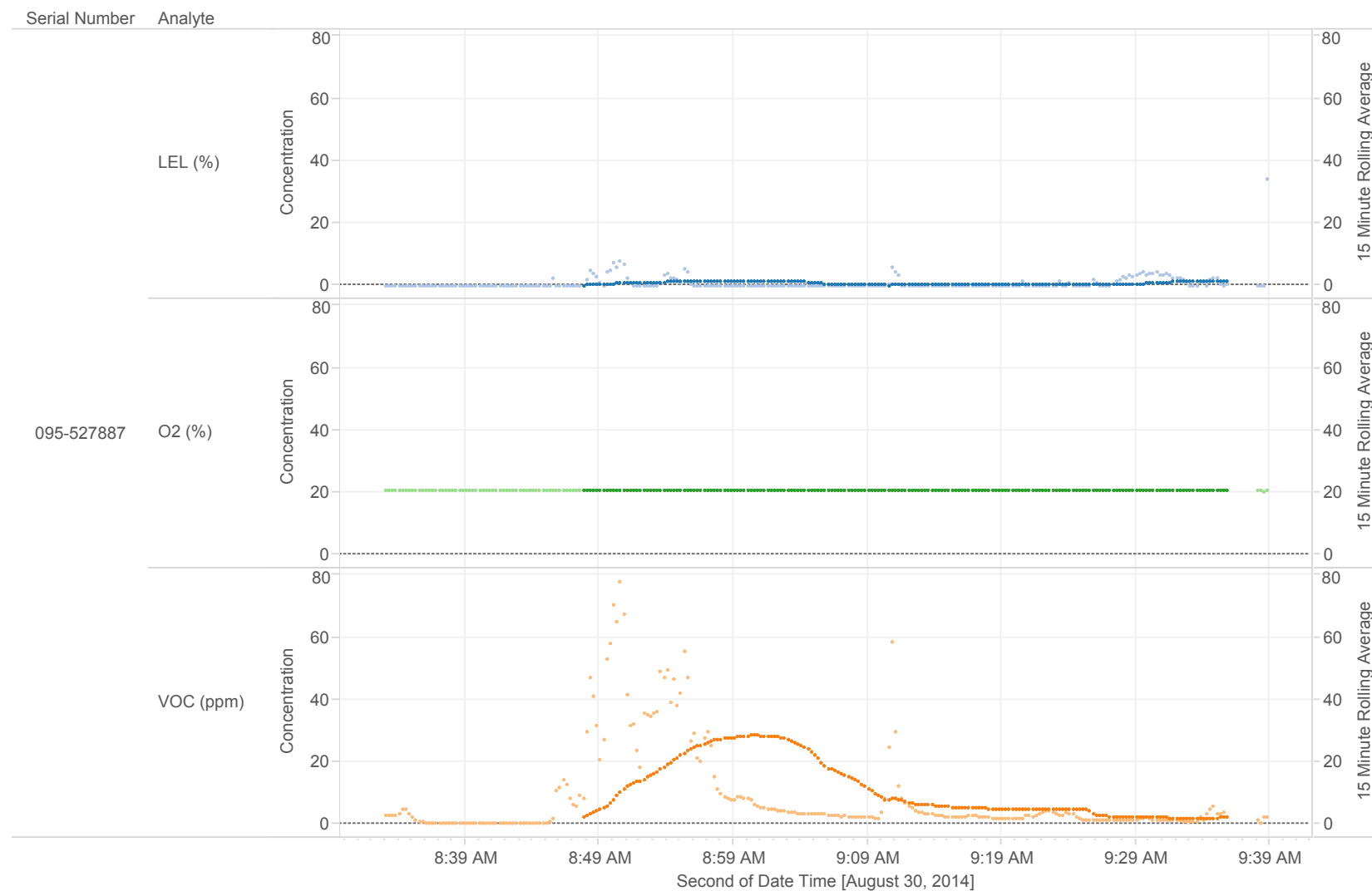


Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Analyte

- LEL (%), 15 Minute Rolling Average
- LEL (%), Concentration
- O2 (%), 15 Minute Rolling Average
- O2 (%), Concentration
- VOC (ppm), 15 Minute Rolling Average
- VOC (ppm), Concentration

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/30/2014 08:33 - 8/30/2014 18:02

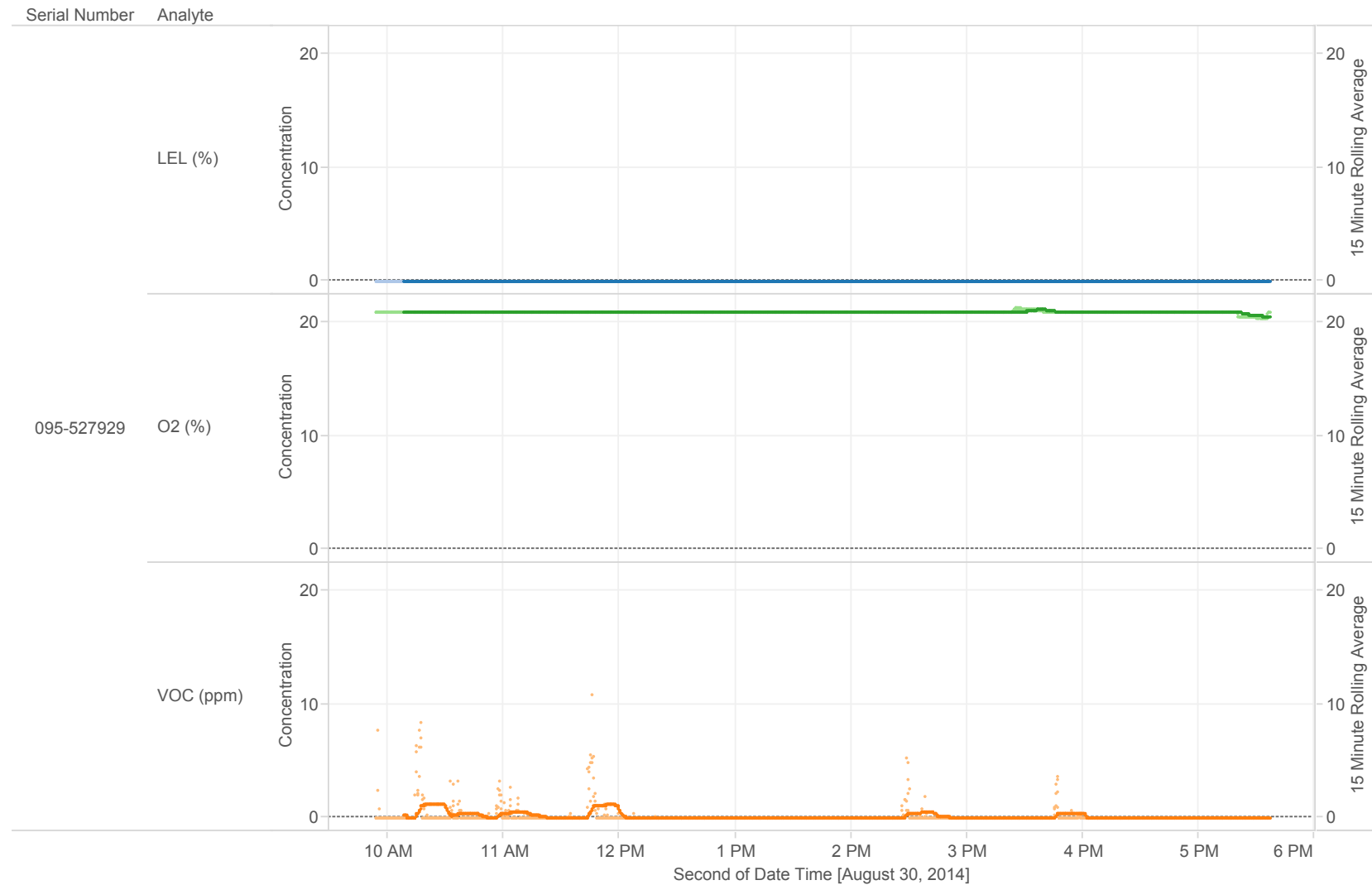


Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Analyte

- LEL (%), 15 Minute Rolling Average
- LEL (%), Concentration
- O2 (%), 15 Minute Rolling Average
- O2 (%), Concentration
- VOC (ppm), 15 Minute Rolling Average
- VOC (ppm), Concentration

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/30/2014 08:33 - 8/30/2014 18:02

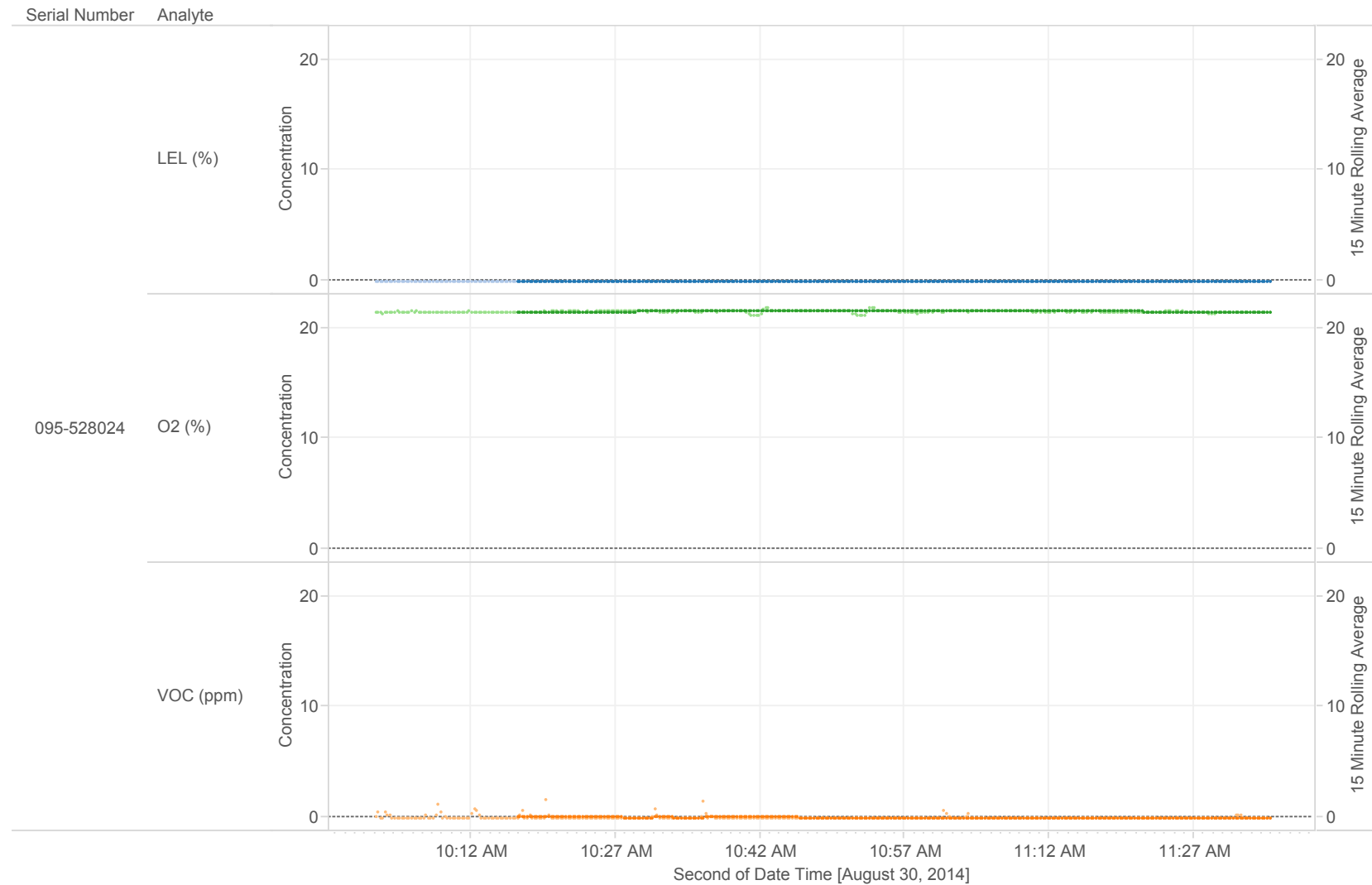


Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Analyte

- LEL (%), 15 Minute Rolling Average
- LEL (%), Concentration
- O2 (%), 15 Minute Rolling Average
- O2 (%), Concentration
- VOC (ppm), 15 Minute Rolling Average
- VOC (ppm), Concentration

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/30/2014 08:33 - 8/30/2014 18:02

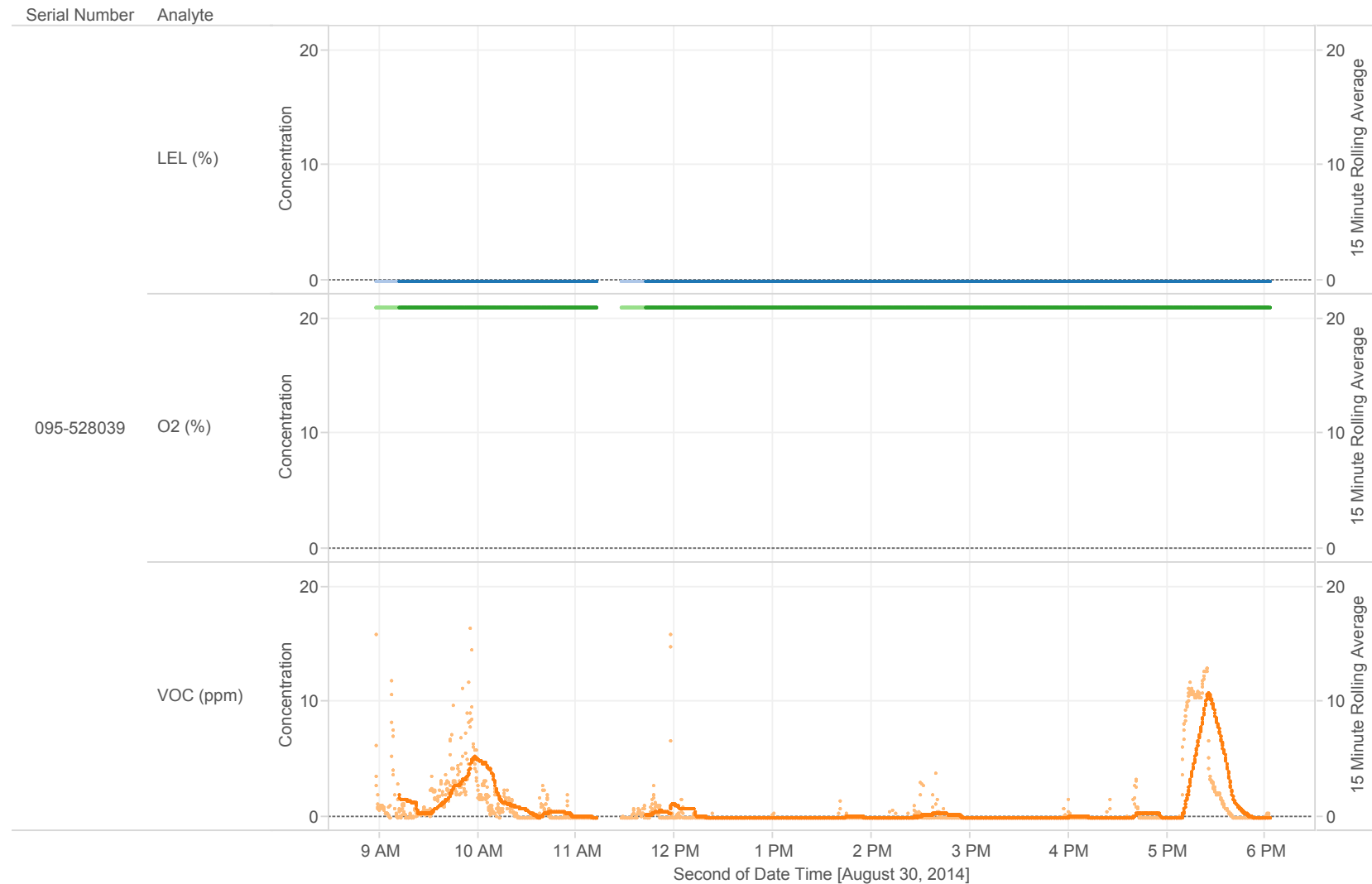


Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Analyte

- LEL (%), 15 Minute Rolling Average
- LEL (%), Concentration
- O2 (%), 15 Minute Rolling Average
- O2 (%), Concentration
- VOC (ppm), 15 Minute Rolling Average
- VOC (ppm), Concentration

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/30/2014 08:33 - 8/30/2014 18:02

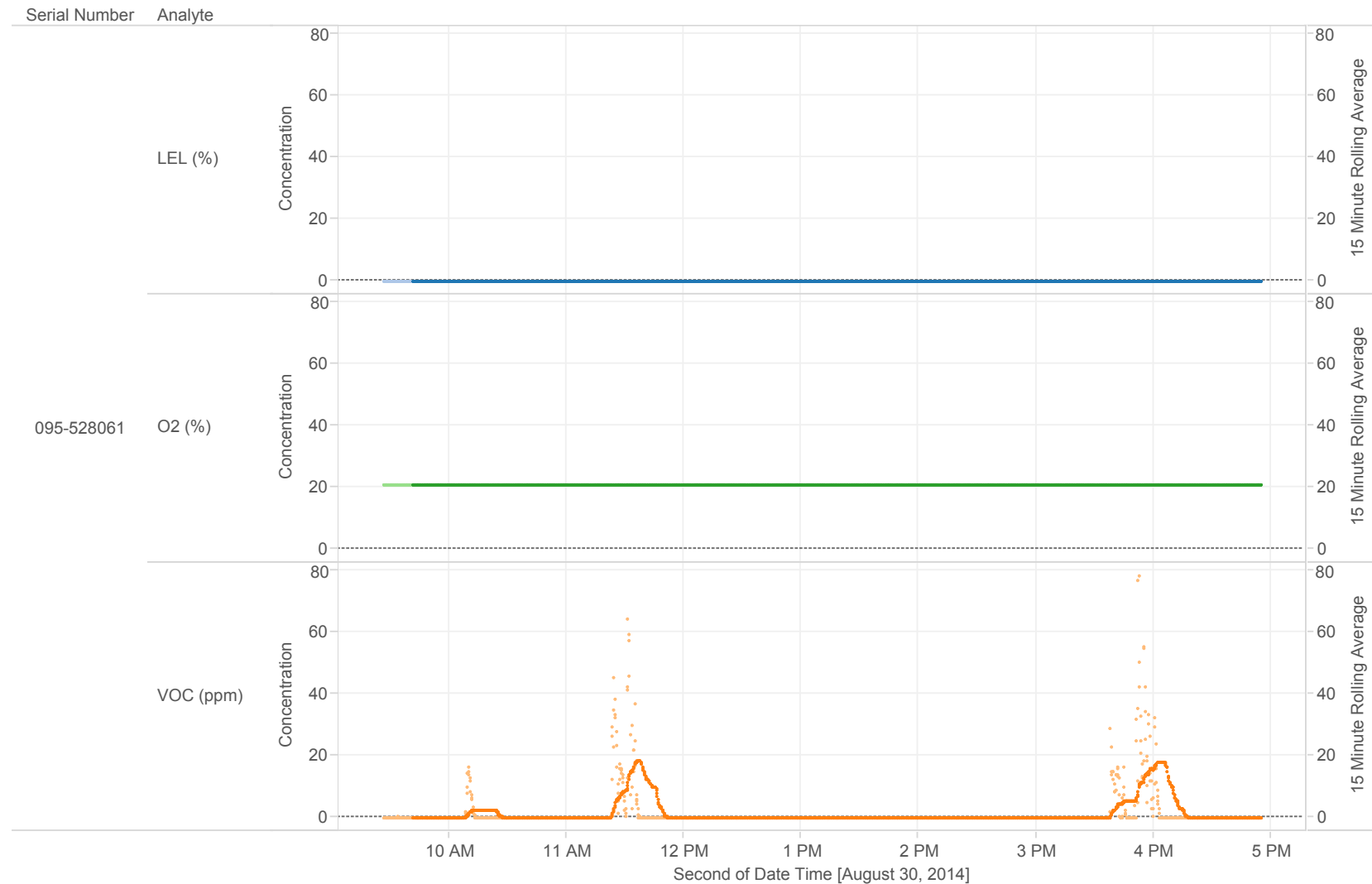


Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Analyte

- LEL (%), 15 Minute Rolling Average
- LEL (%), Concentration
- O2 (%), 15 Minute Rolling Average
- O2 (%), Concentration
- VOC (ppm), 15 Minute Rolling Average
- VOC (ppm), Concentration

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/30/2014 08:33 - 8/30/2014 18:02



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Analyte

- LEL (%), 15 Minute Rolling Average
- LEL (%), Concentration
- O2 (%), 15 Minute Rolling Average
- O2 (%), Concentration
- VOC (ppm), 15 Minute Rolling Average
- VOC (ppm), Concentration

Appendix D: Calibration Logs

Calibration Log

Date	Time	Instrument	Serial Number	Cal Gas	Concentration	Lot Number	Expiration/Exp. Date	Calibrated By
8/30	2530	WHA Rac	540-050212	Reactive	5ppm	9515344	4/14	ATC
8/31	0032	HEOB	242-501113	CO	10ppm	9515344	8/17	ATC
1	0102	AREOL	242-501114					
1	0120	AREOL	242-501104					
1	0132	AREOL	242-501111					
8/12	0224	WRA	015-528059					
1	0453	PPB Rac	544-401471	ISO	10ppm	942241	12/15	ATC
1	1	1	544-401454	1	1	1	1	1
1	0536	WHA Rac	544-002024	Reactive	5ppm	9515344	4/14	ATC
1	0600	WRA	015-528055	CO	10ppm	9515344	8/17	ATC
1			015-528059	CO	10ppm	9515344	8/17	ATC
1			015-528054	CO	10ppm	9515344	8/17	ATC
1			015-528053	CO	10ppm	9515344	8/17	ATC
1			015-528052	CO	10ppm	9515344	8/17	ATC
1			015-528051	CO	10ppm	9515344	8/17	ATC
1			015-528050	CO	10ppm	9515344	8/17	ATC
1			015-528049	CO	10ppm	9515344	8/17	ATC
1			015-528048	CO	10ppm	9515344	8/17	ATC
1			015-528047	CO	10ppm	9515344	8/17	ATC
1			015-528046	CO	10ppm	9515344	8/17	ATC
1			015-528045	CO	10ppm	9515344	8/17	ATC
1			015-528044	CO	10ppm	9515344	8/17	ATC
1			015-528043	CO	10ppm	9515344	8/17	ATC
1			015-528042	CO	10ppm	9515344	8/17	ATC
1			015-528041	CO	10ppm	9515344	8/17	ATC
1			015-528040	CO	10ppm	9515344	8/17	ATC
1			015-528039	CO	10ppm	9515344	8/17	ATC
1			015-528038	CO	10ppm	9515344	8/17	ATC
1			015-528037	CO	10ppm	9515344	8/17	ATC
1			015-528036	CO	10ppm	9515344	8/17	ATC
1			015-528035	CO	10ppm	9515344	8/17	ATC
1			015-528034	CO	10ppm	9515344	8/17	ATC
1			015-528033	CO	10ppm	9515344	8/17	ATC
1			015-528032	CO	10ppm	9515344	8/17	ATC
1			015-528031	CO	10ppm	9515344	8/17	ATC
1			015-528030	CO	10ppm	9515344	8/17	ATC
1			015-528029	CO	10ppm	9515344	8/17	ATC
1			015-528028	CO	10ppm	9515344	8/17	ATC
1			015-528027	CO	10ppm	9515344	8/17	ATC
1			015-528026	CO	10ppm	9515344	8/17	ATC
1			015-528025	CO	10ppm	9515344	8/17	ATC
1			015-528024	CO	10ppm	9515344	8/17	ATC
1			015-528023	CO	10ppm	9515344	8/17	ATC
1			015-528022	CO	10ppm	9515344	8/17	ATC
1			015-528021	CO	10ppm	9515344	8/17	ATC
1			015-528020	CO	10ppm	9515344	8/17	ATC
1			015-528019	CO	10ppm	9515344	8/17	ATC
1			015-528018	CO	10ppm	9515344	8/17	ATC
1			015-528017	CO	10ppm	9515344	8/17	ATC
1			015-528016	CO	10ppm	9515344	8/17	ATC
1			015-528015	CO	10ppm	9515344	8/17	ATC
1			015-528014	CO	10ppm	9515344	8/17	ATC
1			015-528013	CO	10ppm	9515344	8/17	ATC
1			015-528012	CO	10ppm	9515344	8/17	ATC
1			015-528011	CO	10ppm	9515344	8/17	ATC
1			015-528010	CO	10ppm	9515344	8/17	ATC
1			015-528009	CO	10ppm	9515344	8/17	ATC
1			015-528008	CO	10ppm	9515344	8/17	ATC
1			015-528007	CO	10ppm	9515344	8/17	ATC
1			015-528006	CO	10ppm	9515344	8/17	ATC
1			015-528005	CO	10ppm	9515344	8/17	ATC
1			015-528004	CO	10ppm	9515344	8/17	ATC
1			015-528003	CO	10ppm	9515344	8/17	ATC
1			015-528002	CO	10ppm	9515344	8/17	ATC
1			015-528001	CO	10ppm	9515344	8/17	ATC
1			015-528000	CO	10ppm	9515344	8/17	ATC

Project# 104408 Date 8/14/08

Client Rasmussen Location Pelkham, AL