November 24, 2020

Bob Rogers, P.E., Technical Manager
Shelby County Pollution Control
814 Jefferson Ave.
Memphis, TN 38105
Reference: Fourth Quarter 2020 TDEC /Performance Audits

Dear Mr. Rogers:

This report contains the results of performance audits conducted by personnel from Tennessee's Air Quality Assurance Program from the 12th of October thru the 15th of October, 2020. The audits were performed on various instruments at multiple monitoring locations throughout the Shelby County air monitoring network, including gaseous analyzers for O3, SO2, NO, NOx, NOy, CO and particle samplers for PM 10 and PM 2.5. Sites audited include Shelby Farms, Alabama, Frayser, Near Road, and Orgill.

During the fourth quarter Quality Assurance Performance Audits (QAPA), Tennessee Air Quality Assurance personnel audited each ozone analyzer with a level three standard (Teledyne 750U multi-gas calibrator) to determine the accuracy of the analyzer. Certified gas concentrations are delivered from the Teledyne 750U's verified mass flow controllers to determine the accuracy of NO2, CO, SO2, NOx and NOy analyzers. For gaseous analyzers, data logger time was verified by www.time.gov, and data logger temperature was verified using a transfer standard (Streamline Pro). The flow rate of each low volume particle sampler was checked against a specified design flow rate and a transfer standard (Streamline Pro). All TDEC QA equipment is verified against a certified standard to ensure its accuracy. These audits were conducted to ensure that each air monitor within the Shelby County network was operating within accepted criteria established by federal regulations and guidance documents. Acceptable limits of these performance audits are published in 40 Code of Federal Regulations (CFR) Part 58 and QA Handbook Volume II, which establish federal standards for Quality Assurance and Quality Control practices for ambient air monitoring. These acceptable limits should be considered in conjunction with your last approved Quality Assurance Plan.

Results from the fourth quarter, 2020 QAPAs, demonstrate that the Shelby County air monitoring network was operating within acceptable limits of federal regulations and quality assurance guidelines. All QAPA results were noted in the instrument logbooks and summarized in the following pages of this report. The next TDEC QAPAs will be scheduled with Judy Low before March 2021.

If we can be of any further assistance or should there be questions regarding this audit, please email me at Lance.Allen@tn.gov or call (615)687-7040.

Sincerely,

Lance Allen
Environmental Consultant
Quality Assurance Section

Reviewed by M.Oakes. Michelle Oakes (Dec 3, 2020 13:01 CST) Dec 3, 2020

cc: M. Oakes, APC; J. Low, Shelby County.

Air Pollution Control Division
Quality Assurance Performance Audit

Site: **Alabama**
Audit Quarter: **4Q 2020**
AQS #: **47-157-0024**
Auditor: **Lance Allen**
Pollutants: **PM 2.5 & PM 10**
Operators: **Betty Brown**

Instrument Model:	Thermo TEOM	PM 10	Aduit Equip:	Serial #
Serial Number:	1405A223701302		Streamline Pro	060504
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Main Flow:	3.00	3.00	0.0%	< ± 4.1%
Bypass Flow:	13.60	13.68	0.6%	< ± 4.1%
Total Flow:	16.11	16.66	3.4%	< ± 4.1%
Design Flow:	16.67	16.66	-0.1%	< ± 5.1%
Barometric Pressure:	750	748	-2.0	< ±10.1 mm
Ambient Temperature:	26.3	27.6	1.3	< ± 2.1 °C
8832 #A1567K Time:	13:41:41	13:41:00	-00:00:41	*< ±00:01:00 minutes
Leak Checks: Main		0.06 LPM		<± 0.15 LPM
Leak Checks: Auxiliary		0.01 LPM		<± 0.60 LPM

Instrument Model:	Thermo 2025i	PM 2.5	Aduit Equip:	Serial #
Serial Number:	20737		Streamline Pro	060504
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Standard Flow:	16.70	16.70	0.0%	< ± 4.1%
Design Flow:	16.67	16.70	0.2%	< ± 5.1%
Barometric Pressure:	750	753	3.0	< ±10.1 mm
Ambient Temperature:	27.3	27.3	0.0	< ± 2.1 °C
Filter Tempreature:	29.2	30.3	1.1	< ± 2.1 °C
Leak Check	AF=3 mmHg/min	AL=2 mmHg/min		≤ 25 mmHg/min.
Clock Time:	12:58:40	12:58:00	-00:00:40	< ± 00:01:00 minutes

Remarks:

1. The monitors audited showed satisfactory correlation with our audit standards.
2. All measured parameters were within acceptable limits.
3. PM 10 inlets and PM 2.5 cyclones were clean
4. The results were noted in the instrument logbooks and listed in this report.
5. Data logger <± one minute is a State recommendation. *

Recommendations:

1. None.

Any questions concerning the audits or any comments made in connection with the audits may be addressed to me at (615) 687-7040 or lance.allen@tn.gov.

Sincerely,

Lance Allen
Environmental Consultant
Quality Assurance Section
Report Date: 11/12/2020

Air Pollution Control Division
Quality Assurance Performance Audit

Site: **Frayser**
Audit Quarter **4Q 2020**
AQS #: **47-157-0021**
Auditor: **Lance Allen**
Pollutant: **O3**
Operator: **Betty Brown**

Instrument Model:	T400	O3		Audit Equipment:	Serial #
Serial Number:	1304			Teledyne 750U	112
Data Logger Model:	ESC 8832			Teledyne 751H	182
Data Logger Serial Number:	A1571			Streamline Pro	060504
Audit date:	10/15/2020				
Ozone Set Point	Audit Value	Monitor Response	Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5000	0	0	0	< ± 3.1 ppb	Zero
85 ppb	85	82	-3.5%	< ± 15.1 %	5
65 ppb	65	63	-3.1%	< ± 15.1 %	4
35 ppb	35	35	0.0%	< ± 15.1 %	3
15 ppb	15	15	0.0	< ± 1.5 ppb	2
0/5000	0	0	0	< ± 3.1 ppb	Zero
Data logger time	11:56:00	11:56:00	-00:00:00	*< ± 00:01:00 minute	
Data logger temperature	25.7	24.4	-1.3	< ± 2.1°C	

Remarks:
1. The monitor audited showed satisfactory correlation with our audit standard.
2. All measured parameters were within acceptable ranges.
3. The above results were also noted in the instrument logbook.
4. Data logger's <± one minute is a State recommendation. *

Recommendations:
1. None.

Any questions concerning the audits or any comments made in connection with the audits may be addressed to me at (615) 687-7040 or lance.allen@tn.gov.

Sincerely,

Lance Allen
Environmental Consultant
Quality Assurance Section
Report Date: 11/13/2020

Air Pollution Control Division
Quality Assurance Performance Audit

Site: **NCORE Gases**
Audit Quarter: **4Q 2020**
AQS #: **47-157-0075**
Auditor: **Lance Allen**
Pollutants: **O3, CO, SO2, NO2**
Site Operator: **Young Cai**

				Audit Equipment:	Serial #
Instrument Model:	Teledyne T400	O3		Teledyne 750U	112
Serial Number:	3521			Teledyne 751H	182
Data Logger Model:	ESC 8832			Streamline Pro	060504
Data Logger Serial Number:	A1578K				
Audit date:	10/13/2020				
Ozone Set Point	Audit Value	Monitor Response	Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5000	0	0	0	< ± 3.1 ppb	Zero
85 ppb	85	86	1.2%	< ± 15.1 %	5
55 ppb	65	66	1.5%	< ± 15.1 %	4
35 ppb	35	36	2.9%	< ± 15.1 %	3
15 ppb	15	16	6.7%	< ± 15.1 %	2
0/5000	0	0	0	< ± 3.1 ppb	Zero
Data logger time	7:46:10	7:46:00	-00:00:10	*< ± 00:01:00 minute	
Data logger temperature	26.2	26.4	0.2	< ± 2.1°C	

				Audit Equipment:	Serial #
Instrument Model:	Teledyne 100EU	SO2		Teledyne 750U	112
Serial Number:	135			Teledyne 751H	182
Audit date:	10/12/2020			Tank	CLM005225
SO2 Concentration	Audit Value	Monitor Response	Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/15000	0	0	0	< ± 3.1 ppb	Zero
Auto	30	29	-3.3%	< ± 15.1 %	5
Auto	15	15	0.0%	< ± 15.1 %	4
Auto	6	6	0.0%	< ± 15.1 %	3
Auto	1	1.7	0.70	< ± 1.5ppb	1
0/15000	0	0	0	< ± 3.1 ppb	Zero

Instrument Model:	Teledyne 300EU	CO		Audit Equipment:	Serial #
Serial Number:	246			Teledyne 750U	112
Audit date:	10/13/2020			Teledyne 751H	182
				Tank	CLM005225
CO Concentration	Audit Value	Monitor Response	Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5000	0	-10	-10	< ± .1 ppm	Zero
90/5	3566	3605	1.1%	< ± 15.1 %	5
50/5	1997	2006	0.5%	< ± 15.1 %	4
15/5	603	610	1.2%	< ± 15.1 %	3
0/5000	0	-5	-5	< ± .1 ppm	Zero

Instrument Model:	Teledyne T200U	NO2		Audit Equipment:	Serial #
Serial Number:	209			Teledyne 750U	112
Audit date:	10/13/2020			Teledyne 751H	182
				Tank	CLM005225
NO Concentration	Audit Value	Monitor Response	Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5	0	-1	-1	< ± 3.1 ppb	Zero
GPT 825mv 90/5	145	149	2.8%	< ± 15.1 %	7
GPT 675mv 50/5	64	61	-4.7%	< ± 15.1 %	6
GPT 600mv 30/5	33	31	-6.1%	< ± 15.1 %	5
0/5	0	-1	-1	< ± 3.1 ppb	Zero

Instrument Model:	Teledyne T200U	NO		Audit Equipment:	Serial #
Serial Number:	209			Teledyne 750U	112
Audit date:	10/13/2020			Teledyne 751H	182
				Tank	CLM005225
NO Concentration	Audit Value	Monitor Response	Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/10000	0	0	0	< ± 3.1 ppb	Zero
90/10000	194	201	3.6%	< ± 15.1 %	
50/10000	109	116	6.4%	< ± 15.1 %	
30/10000	65	69	6.2%	< ± 15.1 %	
10/10000	32	35	9.4%	< ± 15.1 %	
0/10000	0	0	0	< ± 3.1 ppb	Zero

Instrument Model:	Teledyne T200U	NO-x		Audit Equipment:	Serial #
Serial Number:	209			Teledyne 750U	112
Audit date:	10/13/2020			Teledyne 751H	182
				Tank	CLM005225
NO Concentration	Audit Value	Monitor Response	Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5	0	0	0	< ± 3.1 ppb	Zero
90/5	194	201	3.6%	< ± 15.1 %	
50/5	109	113	3.7%	< ± 15.1 %	
30/5	65	67	3.1%	< ± 15.1 %	
15/5	32	34	6.3%	< ± 15.1 %	
0/5	0	0	0	< ± 3.1 ppb	Zero

Convertor Efficiency:
NO2 Cal 1pt – (PT1NOy-GPT1NOy)/NO2 Cal 1pt*100=.145-(.201-.200)/.145*100=99.3%
NO2 Cal 2pt– (PT2NOy-GPT2NOy)/NO2 Cal 2pt*100=.064-(.113-.111)/.064*100=96.8%
NO2 Cal 3pt– (PT3NOy-GPT3NOy)/NO2 Cal 3pt*100=.033-(.067-.066)/.033*100=96.9%
Sum of 3/ 3*100=97.6%

Remarks:

1. The monitor audited showed satisfactory correlation with our audit standard.
2. All measured parameters were within acceptable ranges.
3. The results were noted in the instrument logbooks and listed in this report.
4. The acceptable range of < ± 1 minute for data loggers is a State recommendation. *

Recommendations:

1. None.

Any questions concerning the audits or any comments made in connection with the audits may be addressed to me at (615) 687-7040 or lance.allen@tn.gov.

Sincerely,

Lance Allen
Environmental Consultant
Quality Assurance Section

Report Date: 11/17/2020

Department of Environment & Conservation

Air Pollution Control Division
Quality Assurance Performance Audit

Site: **NCORE PMs**
Audit Quarter: **4Q 2020**
AQS #: **47-157-0075**
Auditor: **Lance Allen**
Pollutants: **PM 10 & PM 2.5**
Operators: **Betty Brown**

Instrument Model:	TEOM 1400a	PM 2.5	Audit Equip:	Serial #
Serial Number:	23103		Streamline Pro	060504
Audit Date:	10/13/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Main Flow:	3.04	3.00	-1.3%	<± 4.1%
Bypass Flow:	13.66	13.65	-0.1%	<± 4.1%
Total Flow:	16.64	16.65	0.1%	<± 4.1%
Design Flow:	16.67	16.65	-0.1%	<± 5.1%
Barometric Pressure:	751	753	2.0	<±10.1 mm
Ambient Temperature:	24.8	26.1	1.3	<± 2.1 °C
Clock Time:	7:46:10	7:46:00	-00:00:10	<± 00:05:00 minutes
Leak Check: Main	NOV=.01	0.06 LPM		<± 0.15 LPM
Leak Check: Auxiliary	NOV=.09	0.21 LPM		<± 0.60 LPM

Instrument Model:	Thermo 2025i	PM 10	Audit Equip:	Serial #
Serial Number:	20353	POC 1	Streamline Pro	060504
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Flow:	16.4	16.66	1.6%	<± 4.1%
Design Flow:	16.67	16.66	-0.1%	<±5.1%
Barometric Pressure:	753	758	5.0	<± 10.1mm
Ambient Temperature:	18.4	19.1	0.7	<± 2.1°C
Filter Tempreature:	17.8	17.5	-0.3	<± 2.1°C
Leak Check	AF=16mmHg/min	AL=12mmHg/min		≤ 25 mmHg/min.
Clock Time:	8:29:05	8:29:00	-00:00:05	<± 00:01:00 minutes

TN Department of Environment & Conservation

Instrument Model:	Thermo 2025	PM 10	Audit Equip:	Serial #
Serial Number:	21908	POC 2	Streamline Pro	060504
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Flow:	16.65	16.67	0.1%	<± 4.1%
Design Flow:	16.67	16.67	0.0%	<±5.1%
Barometric Pressure:	754	753	-1.0	<± 10.1mm
Ambient Temperature:	18.7	19.4	0.7	<± 2.1°C
Filter Tempreature:	14.3	16.2	1.9	<± 2.1°C
Compartment Tempreature:	17.8	18.8	1.0	<± 2.1°C
Leak Check	AL=9mmHg/min	AL=8mmHg/min		≤ 25 mmHg/min.
Clock Time:	7:57:00	7:57:06	-00:00:06	<± 00:01:00 minutes

Instrument Model:	R&P 2025	PM 2.5	Audit Equip:	Serial #
Serial Number:	21802	POC 1	Streamline Pro	060504
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Flow:	16.63	16.71	0.5%	<± 4.1%
Design Flow:	16.67	16.71	0.2%	<±5.1%
Barometric Pressure:	753	754	1.0	<± 10.1mm
Ambient Temperature:	21.3	21.0	-0.3	<± 2.1°C
Compartment Temperature:	26.6	28.3	1.7	<± 2.1°C
Filter Tempreature:	21.7	22.4	0.7	<±2.1 °C
Leak Check:	AF=3mmHg/min	AL=3mmHg/min		≤ 25 mmHg/min.
Clock Time:	9:01:05	9:01:00	-00:00:05	<± 00:01:00 minutes

Instrument Model:	R&P 2025	PM 2.5	Audit Equip:	Serial #
Serial Number:	20921	POC 2	Streamline Pro	060504
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Flow:	16.47	16.62	0.9%	<± 4.1%
Design Flow:	16.67	16.62	-0.3%	<±5.1%
Barometric Pressure:	753	761	8.0	<± 10.1mm
Ambient Temperature:	22.0	21.3	-0.7	<± 2.1°C
Compartment Temperature:	22.1	22.4	0.3	<± 2.1°C
Filter Tempreature:	20.3	20.3	0.0	<±2.1 °C
Leak Check	AF=4mmHg/min	AL=4mmHg/min		≤ 25 mmHg/min.
Clock Time:	9:27:00	9:27:10	00:00:10	<± 00:01:00 minutes

Instrument Model:	URG	SPEC	Audit Equip:	Serial #
Serial Number:	30794/3N-B0742/3N-B0592		TriCal	162
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Flow	22.21	21.94	-1.2%	± 10.1%
Barometric Pressure:	753.0	753.2	0.2	± 10.1 mm
Ambient Temperature:	23.6	23.7	0.1	± 2.1 °C
Clock Time:	10:38:00	10:38:05	00:00:05	± 00:05:00 minutes
Leak Check	Max 666 mm/hg	Min 647 mm/hg	19 mm/hg	<225mm/hg

Instrument Model:	SASS	SPEC	Audit Equip:	Serial #
Serial Number:	K16485/K17956		Streamline	060504
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Barometric Pressure:	752	759	7	<± 10.1 mm
Ambient Temperature:	21.7	22.5	0.8	<± 2.1 °C
Sample Flow Ch 1	6.48	6.7	3.4%	<± 10.1%
Sample Flow Ch 2	6.71	6.7	-0.1%	<± 10.1%
Sample Flow Ch 5	6.50	6.7	3.1%	<± 10.1%
Sample Flow Ch 6	6.64	6.6	-0.6%	<± 10.1%
Filter Temperature Ch 1	23.0	23.6	0.6	<± 2.1 °C
Filter Temperature Ch 2	22.9	23.4	0.5	<± 2.1 °C
Filter Temperature Ch 5	23.1	23.1	0	<± 2.1 °C
Filter Temperature Ch 6	23.3	23.4	0.1	<± 2.1 °C
Leak Check Ch 1		0.0		<±0.1LPM
Leak Check Ch 2		0.0		<±0.1LPM
Leak Check Ch 5		0.1		<±0.1LPM
Leak Check Ch 6		0.0		<±0.1LPM
Clock Time:	9:54:00	9:54:11	00:00:11	<± 00:05:00 minutes

Remarks:

1. The monitors audited showed satisfactory correlation with our audit standards.
2. All measured parameters were within acceptable ranges.
3. All PM 10 inlets and PM 2.5 cyclones were clean.
4. The results were noted in the instrument logbooks and listed in this report.

Recommendations:

1. None.

Any questions concerning the audits or any comments made in connection with the audits may be addressed to me at (615) 687-7040 or lance.allen@tn.gov.

Sincerely,

Lance Allen
Environmental Consultant
Quality Assurance Section

Report Date: 11/19/2020

Air Pollution Control Division
Quality Assurance Performance Audit

Site: **Near Road**
Audit Quarter: **4Q 2020**
AQS #: **47-157-0100**
Auditor: **Lance Allen**
Pollutants: **CO, NO2, PM2.5**
Operator: **Young Cai**

Instrument Model:	Teledyne T300	CO		Audit Equip	Serial #
Serial Number:	174			Teledyne 750U	112
Data Logger Model:	ESC 8832			Teledyne 751H	182
Data Logger Serial Number:	A4830K			Tank	CLM 005225
Audit date:	10/12/2020			Streamline Pro	060504
Ozone/Gas/Dilution Setting	Audit Value	Monitor Response	% Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5	0	-15	-15	< ± 0.1ppm	Zero
90/5	3566	3481	-2.4%	< ± 15.1 %	5
50/5	1997	1929	-3.4%	< ±15.1 %	4
30/5	1202	1160	-3.5%	< ±15.1 %	4
15/5	603	562	-6.8%	< ±15.1 %	3
0/5	0	-25	-25	< ± 0.1ppm	Zero
Data logger time	10:22:00	10:22:00	-00:00:00	*<± 1 Min	
Data logger temperature	25.1	25.5	0.4	<±2.1°C	

Instrument Model:	Teledyne T200	NO2		Audit Equip	Serial #
Serial Number:	182			Teledyne 750U	112
Audit date:	10/12/2020			Teledyne 751H	182
				Tank	CLM005225
Ozone/Gas/Dilution Setting	Audit Value	Monitor Response	% Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5	0	0	0	< ± 3.1 ppb	Zero
825mv-90/5	148	155	4.7%	< ± 15.1 %	7
675mv-50/5	62	65	4.8%	< ± 15.1 %	6
600mv-30/5	34	33	-2.9%	< ± 15.1 %	5
0/5	0	0	0	< ± 3.1 ppb	Zero

Instrument Model:	Teldyne T200U	NOx		Audit Equip	Serial #
Serial Number:	182			Teledyne 750U	112
Audit date:	10/12/2020			Teledyne 751H	182
				Tank	CLM005225
Ozone/Gas/Dilution Setting	Audit Value	Monitor Response	% Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5	0	0	0	< ± 3.1 ppb	Zero
90/5	194	205	5.7%	< ± 15.1 %	
50/5	109	115	5.5%	< ± 15.1 %	
30/5	65	69	6.2%	< ± 15.1 %	
10/5	32	35	9.4%	< ± 15.1 %	
0/5	0	0	0	< ± 3.1 ppb	Zero

Instrument Model:	Teledyne T200U	NO		Audit Equip	Serial #
Serial Number:	182			Teledyne 750U	112
Audit date:	10/12/2020			Teledyne 751H	182
				Tank	CLM005225
Ozone/Gas/Dilution Setting	Audit Value	Monitor Response	% Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5	0	0	0	< ± 3.1 ppb	Zero
90/5	194	205	5.7%	< ± 15.1 %	
50/5	109	115	5.5%	< ± 15.1 %	
30/5	65	69	6.2%	< ± 15.1 %	
10/5	32	35	9.4%	< ± 15.1 %	
0/5	0	0	0	< ± 3.1 ppb	Zero

Convertor Efficiency:
NO2 Cal 1pt –(PT1NOy-GPT1NOy)/NO2 Cal 1pt*100=.148-(.205-.205)/.148*100=100.0%
NO2 Cal 2pt– (PT2NOy-GPT2NOy)/NO2 Cal 2pt*100=.062-(.115-.114)/.062*100=98.3%
NO2 Cal 3pt– (PT3NOy-GPT3NOy)/NO2 Cal 3pt*100=.034-(.069-.068)/.034*100=97.0%
Sum of 3/ 3*100=98.4%

Instrument Model:	Thermo 2025i	PM 2.5	Audit Equip:	Serial #
Serial Number:	20740		Streamline Pro	060504
Audit Date:	10/14/2020			
Measured Parameter	Audit Value	Monitor Response	Difference	Acceptable Range
Transfer Flow/LPM	16.65	16.67	0.1%	< ± 4.1%
Design Flow/LPM	16.67	16.67	0.0%	< ±5.1%
Barometric Pressure:	751	751	0.0	< ± 10.1mm
Ambient Temperature:	25.5	25.5	0.0	< ± 2.1°C
Filter Tempreature:	26.7	26.2	-0.5	< ± 2.1°C
Leak Check	AF=5mmHg/min	AL=5mmHg/min		≤ 25 mmHg/min.
Clock Time:	12:20:10	12:20:00	00:00:10	< ± 00:01:00 minutes

Remarks:

1. The monitors audited showed satisfactory correlation with our audit standards.
2. All measured parameters were within acceptable ranges.
3. The results were noted in the instrument logbooks and listed in this report.
4. The PM 10 inlet and PM 2.5 cyclone were clean.
5. Data logger's <± one minute is a State recommendation. *

Recommendations:

1. None.

Any questions concerning the audits or any comments made in connection with the audits may be addressed to me at (615) 687-7040 or lance.allen@tn.gov.
Sincerely,

Lance Allen
Environmental Consultant
Quality Assurance Section

Report Date: 11/19/2020

Tank CLM005225 Concentrations: CO=201.7/NO=11.02/NOx=11.02/SO2=13.16.

Air Pollution Control Division
Quality Assurance Performance Audit

Site: **Orgill**
Audit Quarter: **4Q 2020**
AQS #: **47-157-1004**
Auditor: **Lance Allen**
Pollutant: **O3**
Operator: **Young Cai**

Instrument Model:	Teledyne T400	O3		Audit Equip:	Serial #
Serial Number:	1138			Teledyne 750U	112
Data Logger Model:	ESC 8832			Teledyne 751H	182
Data Logger Serial Number:	A1570			Streamline Pro	060504
Audit date:	10/15/2020				
Ozone Set Point	Audit Value	Monitor Response	Difference	Acceptable Range	Audit Level
	ppb	ppb			
0/5000	0	0	0	< ± 3.1 ppb	Zero
85 ppb	85	83	-2.4%	< ± 15.1 %	5
65 ppb	65	64	-1.5%	< ± 15.1 %	4
35 ppb	35	35	0.0%	< ± 15.1 %	3
15 ppb	15	15	0.0%	< ± 15.1 %	2
0/5000	0	0	0	< ± 3.1 ppb	Zero
Data logger time	8:57:00	8:57:00	-00:00:00	*< ± 00:01:00 minute	
Data logger temperature	26.4	25.7	-0.7	< ± 2.1°C	

Remarks:
1. The monitor audited showed satisfactory correlation with our audit standard.
2. All other measured parameters were within acceptable limits.
3. The results were noted in the instrument logbooks and listed in this report.

Recommendations:
1. None.

Any questions concerning the audits or any comments made in connection with the audits may be addressed to me at (615) 687-7040 or lance.allen@tn.gov.

Sincerely,

Lance Allen
Environmental Consultant
Quality Assurance Section
Report Date: 11/19/2020

To: B. Rogers, SCAPC
cc: J. Low, SCAPC; APC; M. Oakes, APC.