AIR QUALITY MONITORING STUDY

4th Community Meeting: August 11, 2020 at 6:30p – 8:00p via Zoom

City of Evanston™

RHP RISK MANAGEMENT Consulting Health Scientists

UIC UNIVERSITY OF ILLINOIS AT CHICAGO SCHOOL OF PUBLIC HEALTH

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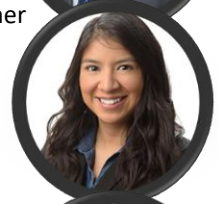

Jacqueline Coreno
Associate, Health Sciences
RHP Risk Management Inc.

Matt Oleszczak
Associate, Health Sciences
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Questions During Presentation

There are three ways to ask questions:

1. Type your question into the chat box on Zoom
2. Email sustainability@cityofevanston.org
3. Or, if you are on phone, to wait until the Q&A portion of the event and ask then

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MEETING AGENDA

1. **Welcome** 6:30 – 6:45pm
2. **Study Presentation** 6:45 – 7:30pm
3. **Questions & Answers** 7:30 – 8:00pm

TRANSFER STATION

Address: 1711 Church St., Evanston, IL

Owner and operator: Advanced Disposal

Waste accepted: Household waste and construction and demolition debris

Vehicles onsite: Private vehicles, construction and demolition contractor vehicles, trash trucks and 18-wheelers

Hours of operation: Monday – Friday, 6:30am–3:30pm; Saturday, 7–10am; Sunday, closed

PURPOSE & OBJECTIVE

Purpose of this meeting is to provide a summary of study findings, answer questions about the report, and discuss recommendations for next steps.

The Objective of the study was to measure for ambient air pollutants that we expected may be present based upon TEX recommendations.

Study Results and Raw Data were published publicly in early June and are available on the City of Evanston project webpage.

STUDY TIMELINE

- **Community Meeting 1:** May 2, 2019
- **Equipment Deployed:** May 8-15, 2019
- **Data Collection Began:** May 18, 2019
- **Community Meeting 2:** August 29, 2019
- **Community Meeting 3:** October 24, 2019
- **Data Collection Ends:** November 13, 2019
- **Study Report Released:** June 9, 2020
- **Community Meeting 4:** August 11, 2020

Final Community Meeting
August 11, 2020

City of Evanston Air Quality Monitoring Study

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Presentation Outline

- Review of Project Background
  - Site Locations, Study Parameters, and Monitoring Equipment
- Summary of Study Results
  - 6 Perspectives for Data Analysis
  - Weight of Evidence (WOE) Scoring
- Recommendations
- Next Steps

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Anticipated Results

Slide from Community Mtg #1
May 2, 2019

- Determination of ambient air concentrations for measured air pollutants (using AQMesh and MultiRAE Pro monitors) at four neighborhood sites and at the control site (e.g., maximum, minimum, mean, standard deviation of measured concentrations);
- Assessment of whether neighborhood-level concentrations are statistically significantly higher than those measured at the control site;
- Analysis of wind direction during the sampling period to gain insight into air monitoring sites upwind and downwind of the waste transfer station facility;
- Further analysis of data to explore whether there is increased air pollution burden on the community due to activities at the waste transfer station by evaluating air pollution data upwind and downwind of the facility; and
- Assessment of the impact of traffic-related variables (e.g., vehicle type, vehicle count) on local air quality by mining the data from the traffic study and local air monitoring study.

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The study will not result

Slide from Community Mtg #1
May 2, 2019

- Assessment of whether the local air quality is in compliance with USEPA's National Ambient Air Quality Standards (NAAQS);
- Assessment of performance of study monitors (sensors) against the USEPA-approved Federal Reference Monitors (FRMs) or Federal Equivalent Monitors (FEMs) used in EPA air monitoring stations across the country;
- Assessment of how local air quality measurements compare against air quality measurements obtained by IEPA at air monitoring stations across Cook County, IL using USEPA-approved air monitoring instruments;
- Assessment of the meaning and significance of local air quality measurements from public health or health risk perspectives; and
- Assessment of whether the waste transfer station facility is in compliance (or in violation of) with its operating permit requirements.

Site Locations

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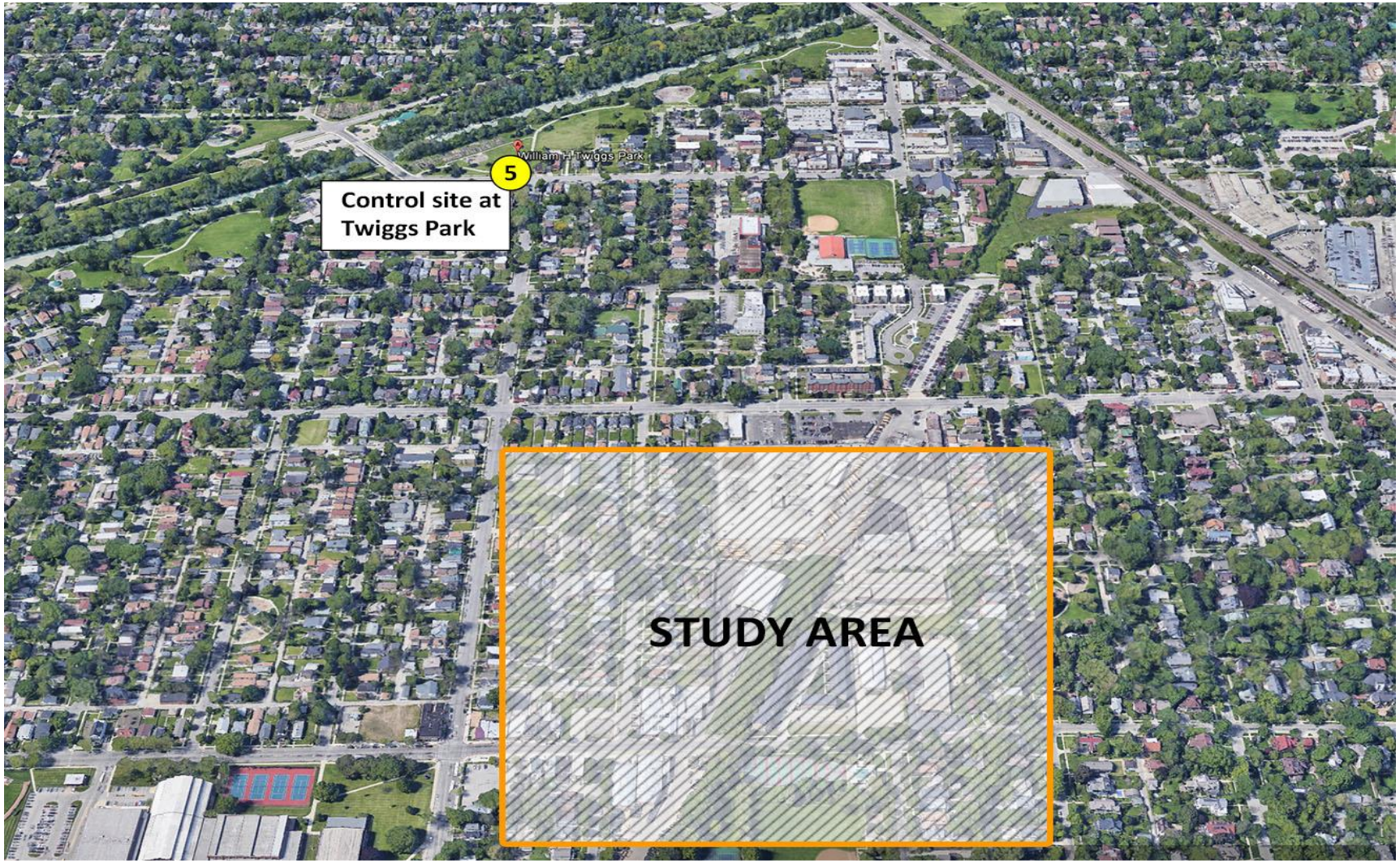
Study Area vs. Control



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Equipment – AQMesh

- **Small sensor** air quality monitor for measuring indoor and outdoor air quality.
- Use small sensor technology combined with data processing from extensive global comparisons with reference data.

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Equipment – AQMesh

AQMesh Air Quality Monitor [1]		
Parameter	**Range**	**Units**
Nitric oxide (NO)	0 to 4,000 ppb	ppb or µg/m^3
Nitrogen dioxide (NO_2)	0 to 4,000 ppb	ppb or µg/m^3
Ozone	0 to 1,800 ppb	ppb or µg/m^3
Enclosure Temperature	-20 to 100 °C	°C
Atmospheric Pressure	500 – 1,500 mb	mb
Relative Humidity	0-100%RH	%RH
Total Particulate[2]	< 30 µm	µg/m^3
PM2.5	0 to 500 µg/m^3	µg/m^3
PM10	0 to 1,000 µg/m^3	µg/m^3
Carbon Monoxide (CO)	0 to 6,000 ppb	ppb or µg/m^3
Sulfur dioxide (SO_2)	0 to 10,000 ppb	ppb or µg/m^3
Noise		
Frequency Response	**Accuracy**	**Level**
20Hz – 20kHz	± 1dB	35dB SPL to 100dB SPL

- Site 4 and site 5 (control site) were configured to also include wind-speed and wind-direction recording capabilities

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Equipment – MultiRAE Pro

- Industry-leading **wireless device** for monitoring chemical hazards and is the only multi-threat direct-read monitor with parts-per-billion precision.

MultiRAE Pro (Model PGM-6248) [3]		
Parameter	**Range**	**Units**
Hydrogen sulfide (H_2S)	0 to 100 ppm	ppm
Methyl mercaptan (CH_4S)	0 to 10 ppm	ppm
Formaldehyde (CH_2O)	0 to 10 ppm	ppm
Organic Solvents (VOC)	0 to 2000 ppb	ppb

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Traffic Study

- **Road tubes** were placed for 30-days.
- Traffic study:
  - **Speed**
  - **Vehicle class**
  - **Traffic volume by direction**
  - **Study area and nearby the control site**

Monitoring Equipment

1	2	3	4	5
				
Lyons St. West side of waste transfer station	Lyons St. Northeast side of waste transfer station	Private Property East side of waste transfer station	Church St. South side of waste transfer station	Control site Twiggs Park

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Methodology

May 17, 2019 — **Over 112 million data points collected** — **November 20, 2019**

6-Month Air Quality Study

Study Objectives

- measure ambient air concentrations of pollutants/parameters of interest identified by the TEX project team; and
- determine whether the measured concentrations for any of the target pollutants/parameters of interest demonstrate probable source-attribution to site operations at the waste transfer station.

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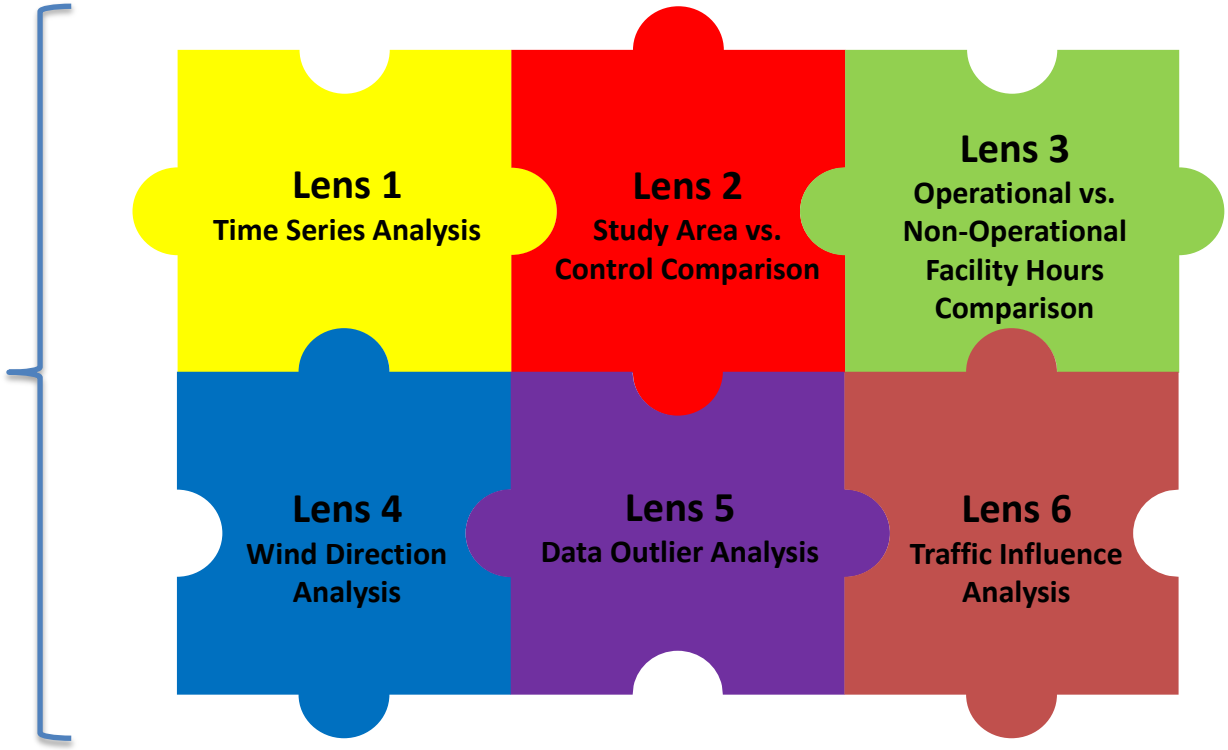
Results

- The data was organized six different ways and assessed from several perspectives to view the data through various “lenses”.

Weight of Evidence (WOE)



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Excluded Data

- Some data was purposefully excluded for analysis purposes.
- 15 reasons listed in report Appendix A.2
  - Fireworks, grilling, painting, tuckpointing, sensor failure, etc.
- 93% of data was included in analysis.

Reason #11 – Self-reported grilling at Church Street Village nearby Site 3

Reason #14 – Holiday fireworks

Reason #10 – Tuckpointing brick facade nearby Site 4 on Church St.

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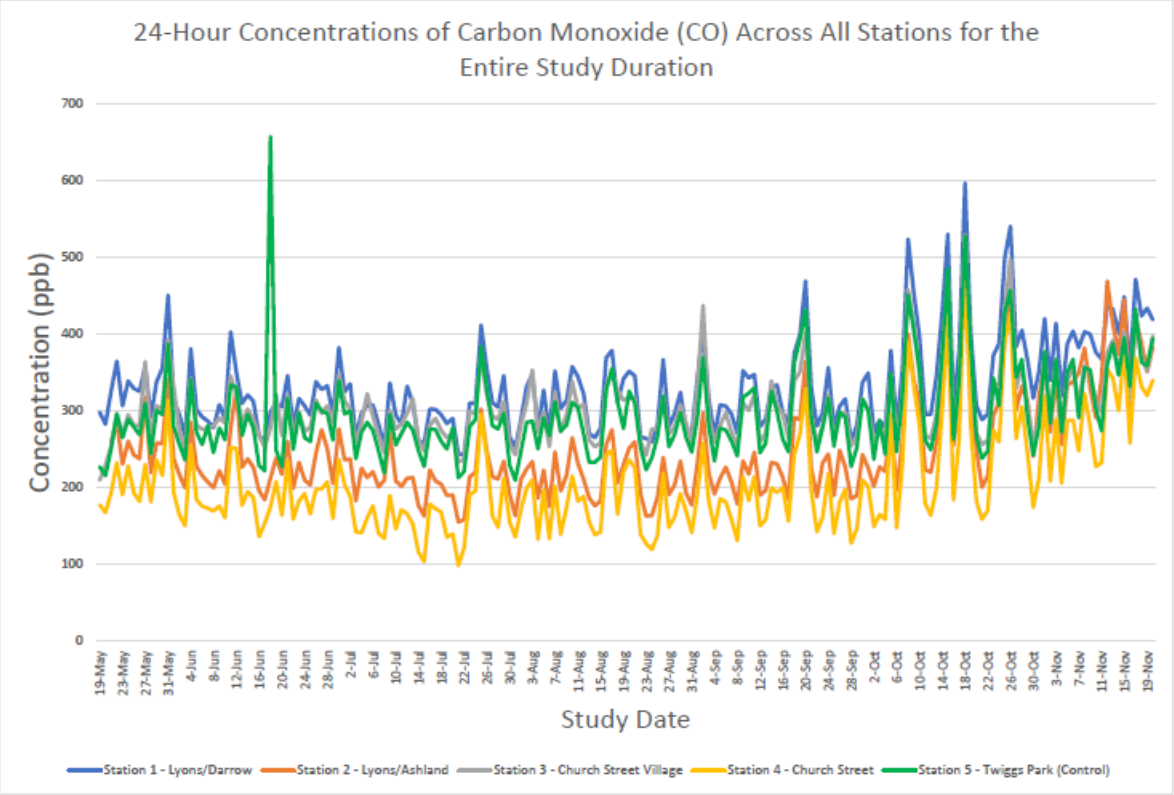
Lens 1 – Time Series Analysis

- A graph of the data showing the results on a timeline



Time series analysis involves analyzing time series data to extract meaningful characteristics.

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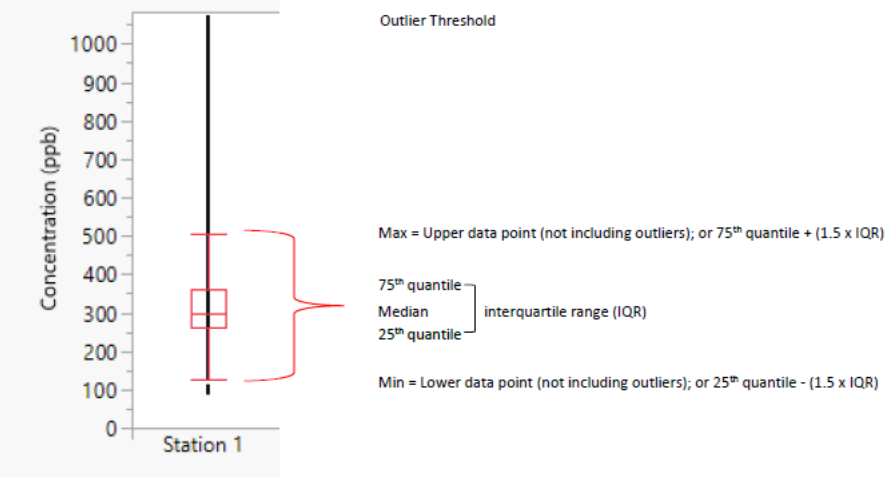
Lens 1 – Time Series Analysis

Box plot graphs for each parameter across the entire study duration were also generated for each of the five stations for comparative analysis.



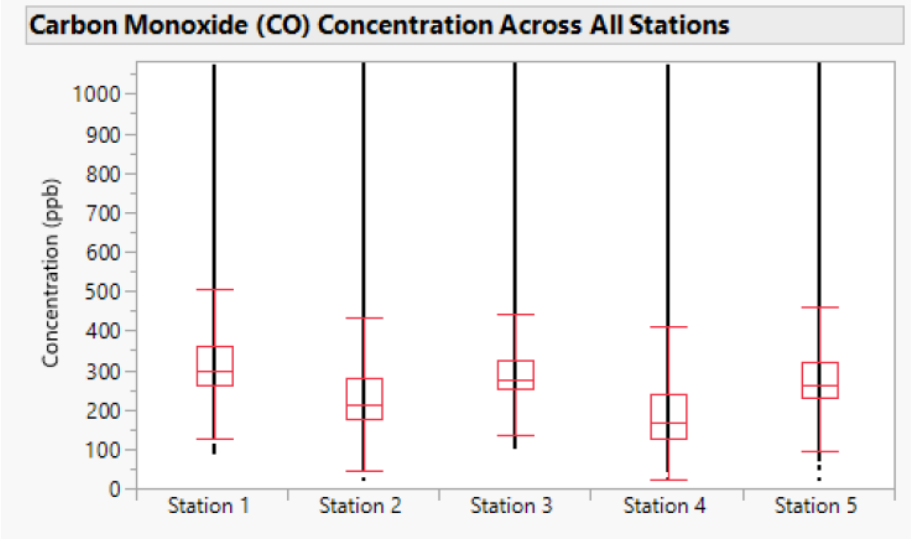


Figure 9: Box plots representing the carbon monoxide (CO) concentration at each station across the entire study duration. Threshold Max set at 1,082 ppb for data visualization.

Table 3: Carbon Monoxide (CO) (ppb)

Station	N	Min	Max	Std. Deviation	Median	Mean
Station 1	233,828	96	12,752	146	301	334
Station 2	230,083	25	10,691	151	217	250
Station 3	234,015	107	7,397	99	280	307
Station 4	233,912	25	10,448	147	172	207
Station 5	233,899	25	9,684	156	267	299

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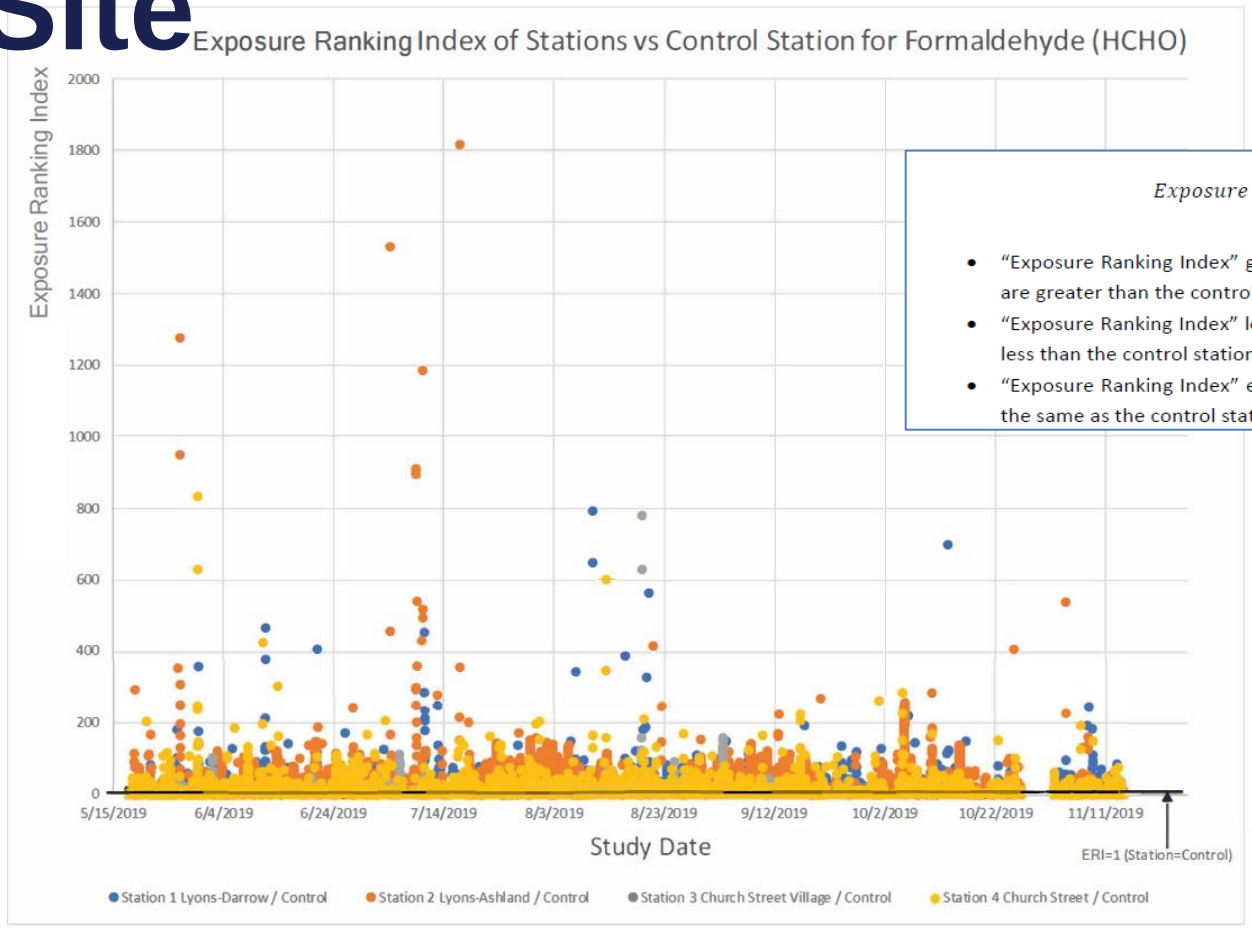
Lens 2 – Study Area vs. Control Site



$$Exposure\ Ranking\ Index = \frac{Station}{Control\ Station}$$

- "Exposure Ranking Index" greater than 1 indicates the results of the monitoring station are greater than the control station.
- "Exposure Ranking Index" less than 1 indicates the results of the monitoring station are less than the control station.
- "Exposure Ranking Index" equal to 1 indicates the results of the monitoring station are the same as the control station.

The comparison of concentrations measured at the study area monitoring stations vs. those at the control station.

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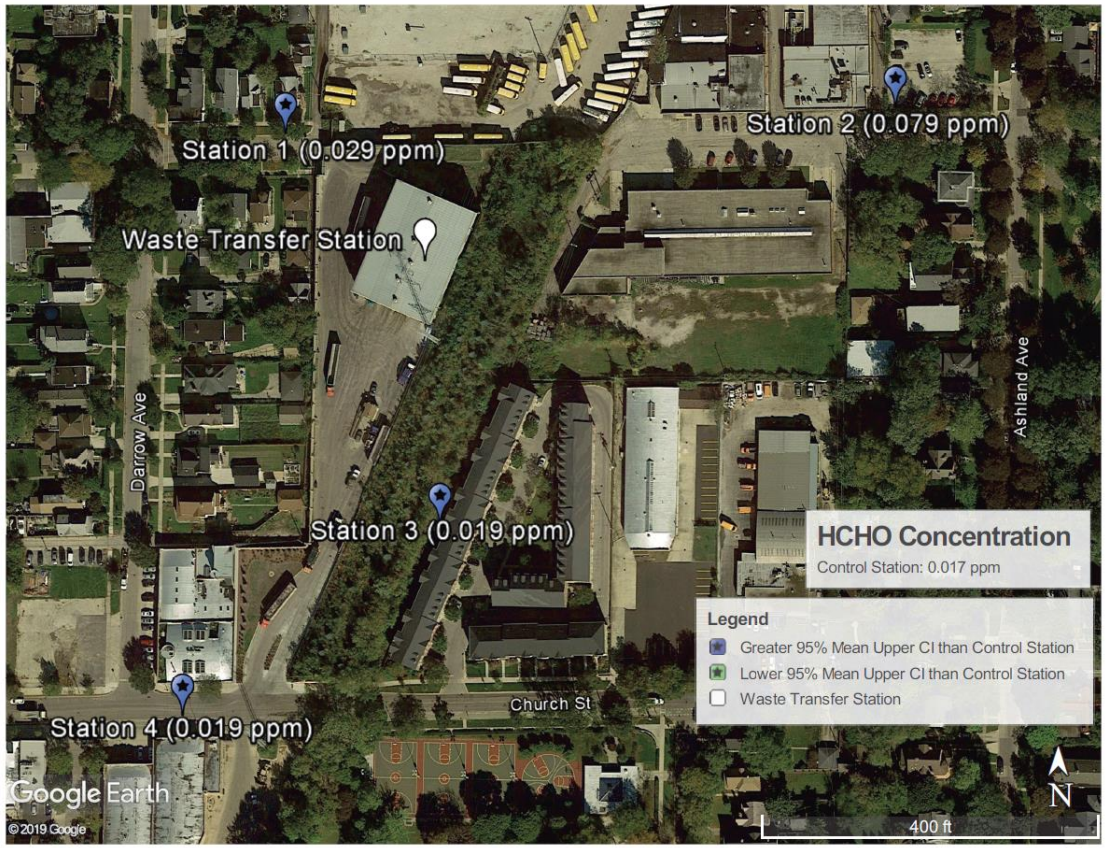
Lens 2 – Study Area vs. Control Site



Parameter	Lens 2: Study Area vs Control	Lens 2A: Exposure Ranking Index (ERI) Overall	Lens 2A: Percent Change	Lens 2B: Upper 95% Mean Confidence Limit
Formaldehyde (CH_2O)	Statistically significant difference. Mean greater than Control Station Mean	Elevated ER value at all Stations	Positive and above 20% at all Stations	**Station Level:** 1) .029 ppm 2) .079 ppm 3) .019 ppm 4) .019 ppm 5) .017 ppm

$$Percent\ Change = \frac{Station - Control\ Station}{Control\ Station}\ x\ 100$$

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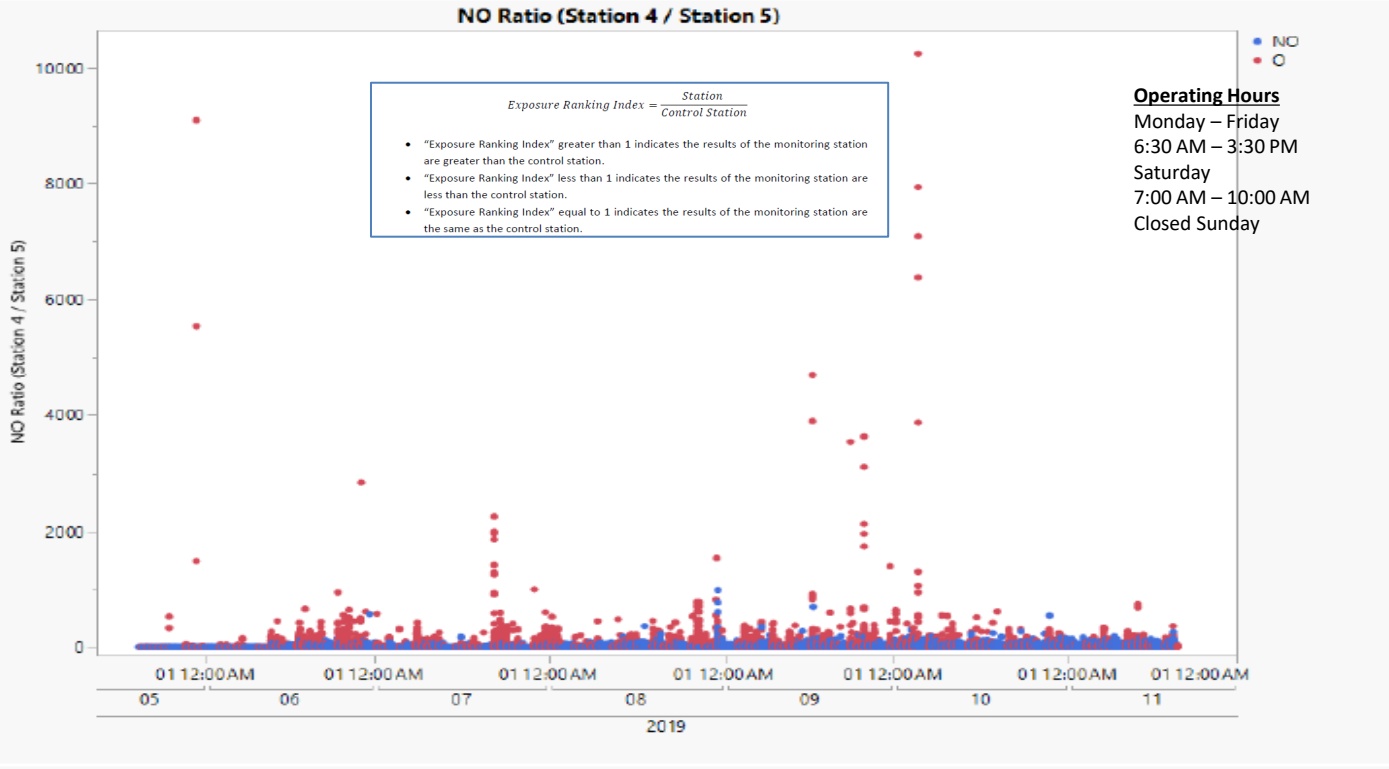
Lens 3 – Operational vs. Non-Operational Facility Hours Comparison

The comparison of concentrations measured during the operational hours of the waste transfer station vs. those measured during the non-operational facility hours



Lens 3: Operational vs. Non-Operational Hours	Lens 3A: ERI Operational vs. Non-Operational Hours
Statistically significant difference Mean operational is higher than non-operational mean	**Operational** Elevated Avg. ER at Station 1, Station 2, and Station 4. **Operational** Elevated and Higher Avg. ER than **Non-Operational** at Station 2 and Station 4 **Non-Operational** Elevated and Higher Avg. ER than **Operational** at Station 1

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Lens 4 – Wind Direction Analysis

At Station 4, an analysis was performed to determine whether the data collected "downwind" of the waste transfer station was statistically similar or different than values recorded when Station 4 was "not downwind" during facility operating hours only.

Carbon Monoxide (CO) (ppb)					
Station 4	N	Median	Mean	Std Dev.	1-Way Test, ChiSquare Approximation (Prob>ChiSq)
Downwind	7769	155.32	184.99	219.11	<.0001
Not Downwind	56853	187.57	227.59	185.53	

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Lens 5 – Data Outlier Analysis

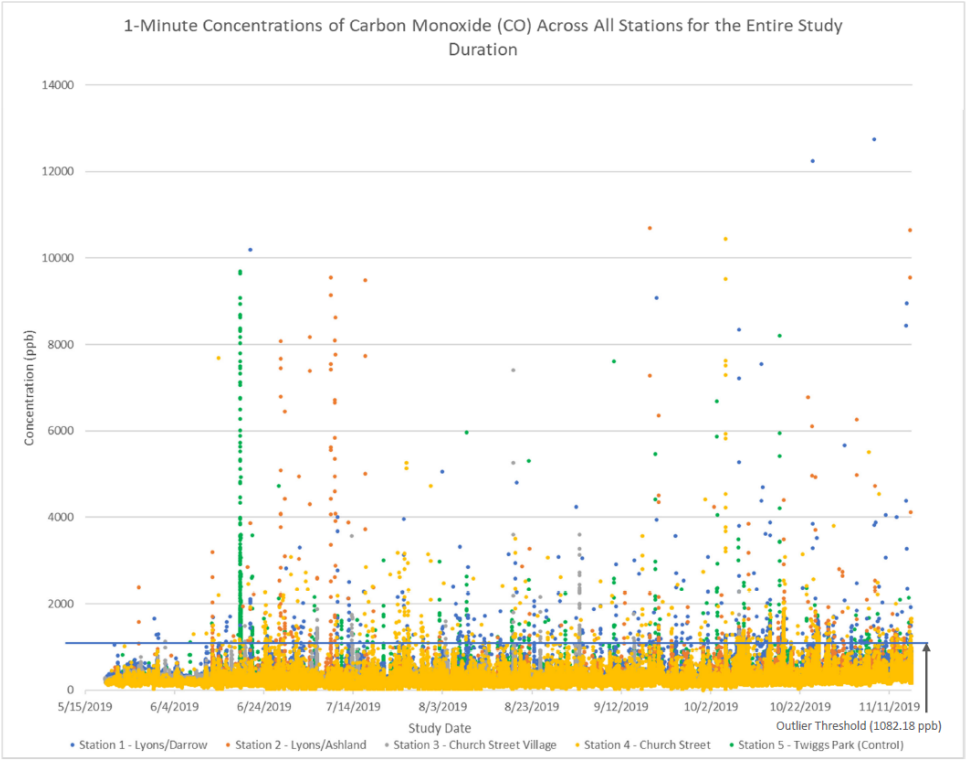
Examined the data set with a focus on the high concentration events (i.e., spikes/peaks) to understanding time periods associated with higher air pollutant concentrations in the study area.

CO		
	Quantile Range Outliers	
Station	High Threshold	Number of Outliers
Station 1	1082.18	1104
Station 2	1015.5	736
Station 3	892.41	997
Station 4	1037.94	957
Station 5	990.65	1137

Lens 4/5: Wind Direction and DW Outliers (Station 4)

Statistically Significant Difference. Higher Average Not Downwind

DW Outliers



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Lens 6 – Traffic Influence Analysis

- Assessment of impact of traffic-related emissions on local air quality.

Five (5) road-tube sites were selected to be nearby each of the 5 air monitoring stations.

Road tubes on Darrow Ave. near Monitoring Station 1.

Road tubes on Ashland Ave. near Monitoring Station 2.

Road tubes on Church St. (East) near Monitoring Station 3.

Road tubes on Church St. (West) near Monitoring Station 4.

Road tubes on Simpson St. near the control site at Twiggs Park (Monitoring Station 5).

Lens 6: Traffic Influence Analysis
Low Positive Correlation Total vehicle count at Station 5.

Sought to determine whether a positive or inverse effect on concentration was apparent as truck or all-vehicle traffic volume increased or decreased.

[1] Low positive correlation = 0.30 to 0.50

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Weight of Evidence (WOE)

Results Summary Table									
Parameter	**Lens 2: Study Area vs Control**	**Lens 2A: Exposure Ranking Index (ERI) Overall**	**Lens 2A: Percent Change**	**Lens 2B: Upper 95% Mean Confidence Limit**	**Lens 3: Operational vs. Non-Operational Hours**	**Lens 3A: ERI Operational vs. Non-Operational Hours**	**Lens 4/5: Wind Direction and DW Outliers (Station 4)**	**Lens 6: Traffic Influence Analysis**	**WOE Score**
Formaldehyde (CH_2O)	Statistically significant difference. Mean greater than Control Station Mean	Elevated ER value at all Stations	Positive and above 20% at all Stations	**Station Level:** 1) .029 ppm 2) .079 ppm 3) .019 ppm 4) .019 ppm 5) .017 ppm	Statistically significant difference Mean operational is higher than non-operational mean	**Operational** Elevated Avg. ER at all Stations. **Operational** Elevated and Higher Avg. ER than **Non-Operational** at all Stations	Statistically Significant Difference. Higher Average Not Downwind DW Outliers		+6
Volatile Organic Compounds (VOC)	Statistically significant difference. Mean greater than Control Station Mean			**Station Level:** 1) 9.92 ppb 2) 5.61 ppb 3) 6.79 ppb 4) 10.26 ppb 5) 6.79 ppb	Statistically significant difference Mean operational is higher than non-operational mean		Statistically Significant Difference. Higher Average Not Downwind DW Outliers		+3

+1 Point; -1 Point; 0 Points or no evidence (no color)

Possible site influence
positive score of +1 point was assigned.

No supporting information
no score was assigned (e.g., 0 points).

Less concern than those at the Control Station
negative score of -1 point was assigned.

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Weight of Evidence (WOE)

Table 2: WOE Scoring Table

Parameter	Lens									WOE Score Total
	2	2A ERI	2A %C	2B	3	3A	4	5	6	
Hydrogen Sulfide (H_2S)	0	0	0	+1	-1	0	-1	0	+1	0
Methyl Mercaptan (CH_3SH)	-1	0	0	+1	+1	0	-1	+1	0	+1
Formaldehyde (CH_2O)	+1	+1	+1	+1	+1	+1	-1	+1	0	+6
Volatile Organic Compounds (VOC)	+1	0	0	+1	+1	0	-1	+1	0	+3
Nitric Oxide (NO)	+1	+1	+1	+1	+1	+1	-1	+1	0	+6
Nitrogen Dioxide (NO_2)	+1	0	+1	+1	+1	0	-1	+1	0	+4
Ozone (O_3)	+1	-1	0	-1	+1	0	+1	-1	-1	-1
Particulate Matter ($PM_{2.5}$)	-1	-1	-1	-1	+1	-1	-1	+1	0	-4
Particulate Matter (PM_{10})	-1	-1	-1	-1	+1	-1	-1	+1	0	-4
Particulate Matter (PM_{TOTAL})	-1	-1	-1	-1	+1	-1	+1	+1	0	-2
Carbon Monoxide (CO)	+1	-1	0	+1	+1	-1	-1	+1	0	+1
Sulfur Dioxide (SO_2)	+1	0	0	+1	+1	0	+1	+1	0	+5
Noise (dB)	+1	0	0	+1	+1	0	0	0	-1	+2

Lens 2: Study Area vs Control
Lens 2A: Exposure Ranking Index (ERI)
Lens 2A: Percent Change (%C)
Lens 2B: Upper 95% Mean Confidence Limit

Lens 3: Operational vs, Non-Operational Hours
Lens 3A: ER Operational vs. Non-Operational Hours
Lens 4/5: Wind Direction and DW Outliers (Station 4)
Lens 6: Traffic Influence Analysis

Color key:

1st Tier Parameters
2nd Tier Parameters
Deprioritized Parameters

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Findings

Parameter	Weight of Evidence (WOE) Score Total	Prioritization
Formaldehyde (CH_2O)	+6	1st Tier Parameters
Nitric Oxide (NO)	+6	
Sulfur Dioxide (SO_2)	+5	2nd Tier Parameters
Nitrogen Dioxide (NO_2)	+4	
Volatile Organic Compounds (VOCs)	+3	
Noise (dB)	+2	
Carbon Monoxide (CO)	+1	
Methyl Mercaptan (CH_3SH)	+1	
Hydrogen Sulfide (H_2S)	0	Deprioritized Parameters
Ozone (O_3)	-1	
Particulate Matter (PM_{TOTAL})	-2	
Particulate Matter ($PM_{2.5}$)	-4	
Particulate Matter (PM_{10})	-4	

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Recommendations

1. Formaldehyde and nitric oxide are the air quality parameters of greatest interest and should be prioritized in any future work.
2. Sulfur dioxide, carbon monoxide, Volatile Organic Compounds, methyl mercaptan, nitrogen dioxide, and noise present lesser supporting evidence but may still warrant further investigation.
3. We recommend deprioritizing hydrogen sulfide, fine, and course particulate matter (PM2.5, PM10), and ozone parameters which appear to be related to regional air quality rather than local air quality.
4. To better understand whether the collected data represents harmful levels with the potential for adverse human health effects, follow-up studies should be conducted to validate and apply the existing data.
   - Co-location Studies (FRM/FEM)
   - Determination of Scaling Factors
   - VOC Speciation (e.g. toxic air pollutants listed in the Clean Air Act)

Discussion

1. Over 112 million data points collected → ”more testing” is not a top priority.

2. Focus on using the existing data in additional ways to answer questions that arise from this study.
   - Data validation → human health risk assessment (informs priorities for mitigation measures)
   - Comparative analysis to other data sets from the Chicagoland region (provides context)

3. The data analysis was structured to answer a specific set of questions.
   - There are other ways to evaluate the data.
   - There are many additional interesting and relevant questions that may be answered by the existing data set.
   - Support validation and further research on this data set.

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City's Next Steps

1. City staff are preparing a letter of request for assistance to the State and Federal Environmental Protection Agencies (EPA)
2. Letter of request for mobile formaldehyde monitoring equipment from Federal EPA
3. Explore assistance to have additional analysis completed on collected data

Questions and Answer Section

There are three ways to ask questions:

1. Type your question into the chat box on Zoom
2. Email sustainability@cityofevanston.org
3. Or, if you are on phone, to wait until the Q&A portion of the event and ask then

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Follow-up Contact Information

www.cityofevanston.org/transferstation

1. Meeting recording
2. Study report
3. Raw and prepared study data

Staff Contact:

Kumar Jensen, Chief Sustainability and Resilience Officer

kjensen@cityofevanston.org or 847-448-8199

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Supplemental pre-prepared slides

- Explanation of Censored Data
- Lens 1
  - Time series, by parameter, by station location.
  - Box plots, by parameter, by station location.
- Lens 2
  - CO and formaldehyde study area vs. control. NO ERI
- Lens 3 – $PM_{2.5}$ operational vs. non-operational
- Lens 4 – Wind direction H_2S, formaldehyde, NO
- Lens 5 – Data outliers H_2S, formaldehyde
- Lens 6 – Traffic analysis for CO

Censored Data

- It is not possible to measure “zero”
- When “nothing is measured”, using “zero” as a mathematical placeholder is a poor choice for performing statistical analyses.
- Generally accepted techniques exist.

“Just give him whatever he wants! He’s threatening to divide by zero!”

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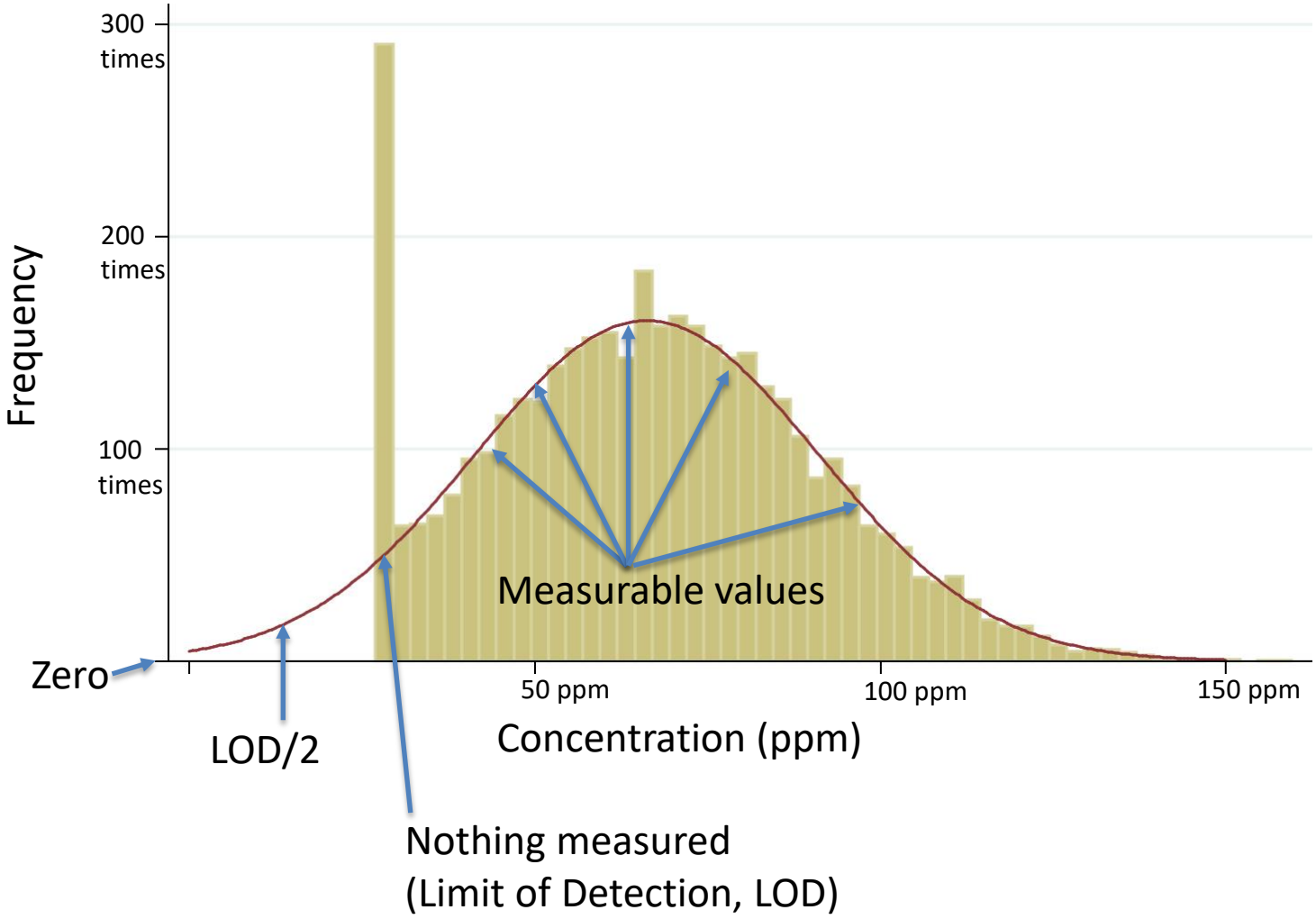
Censored Data

Illustrative example of concept.
Not actual project data.



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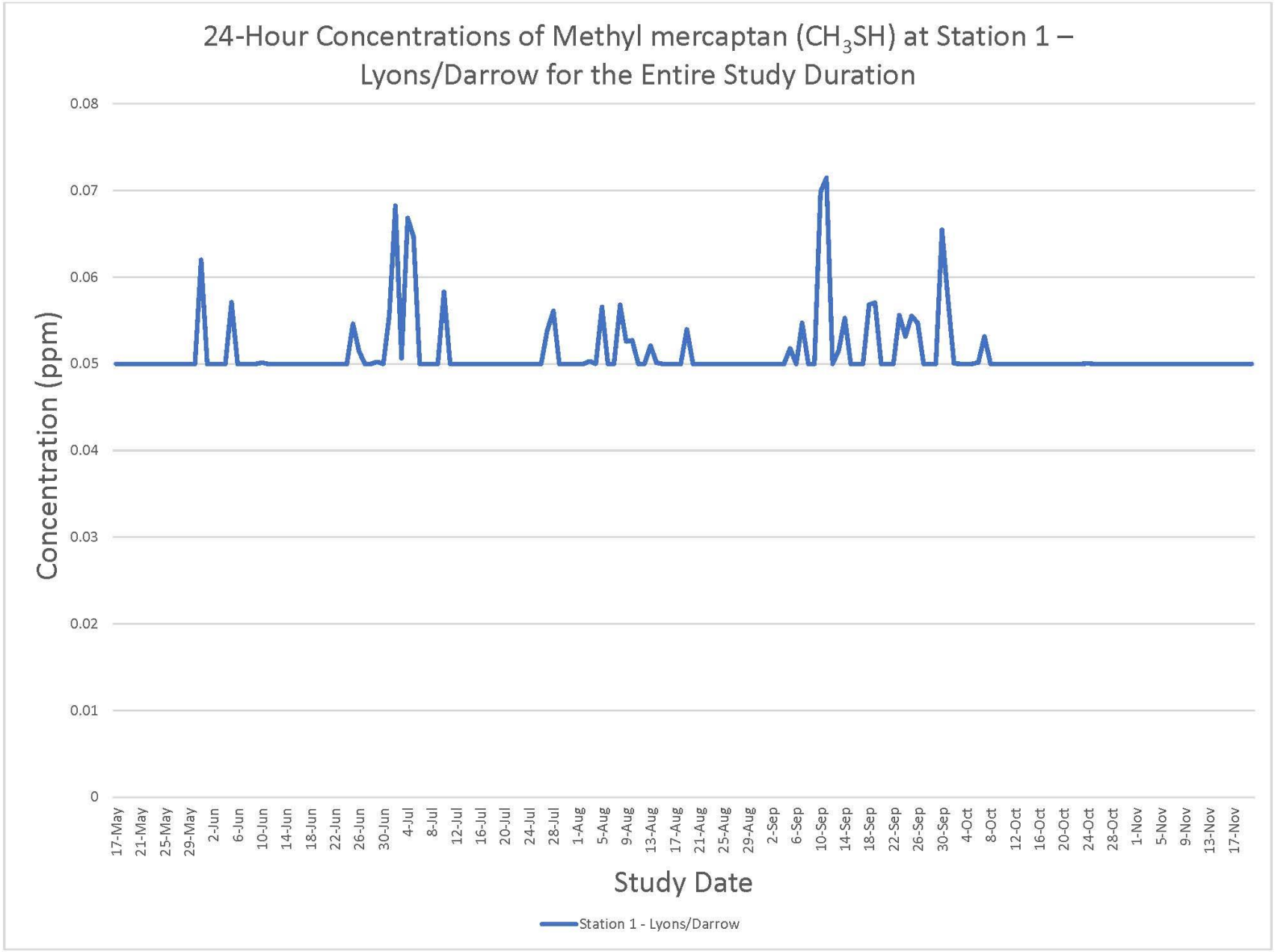
24-Hour Concentrations of Methyl mercaptan (CH_3SH) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ppm)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
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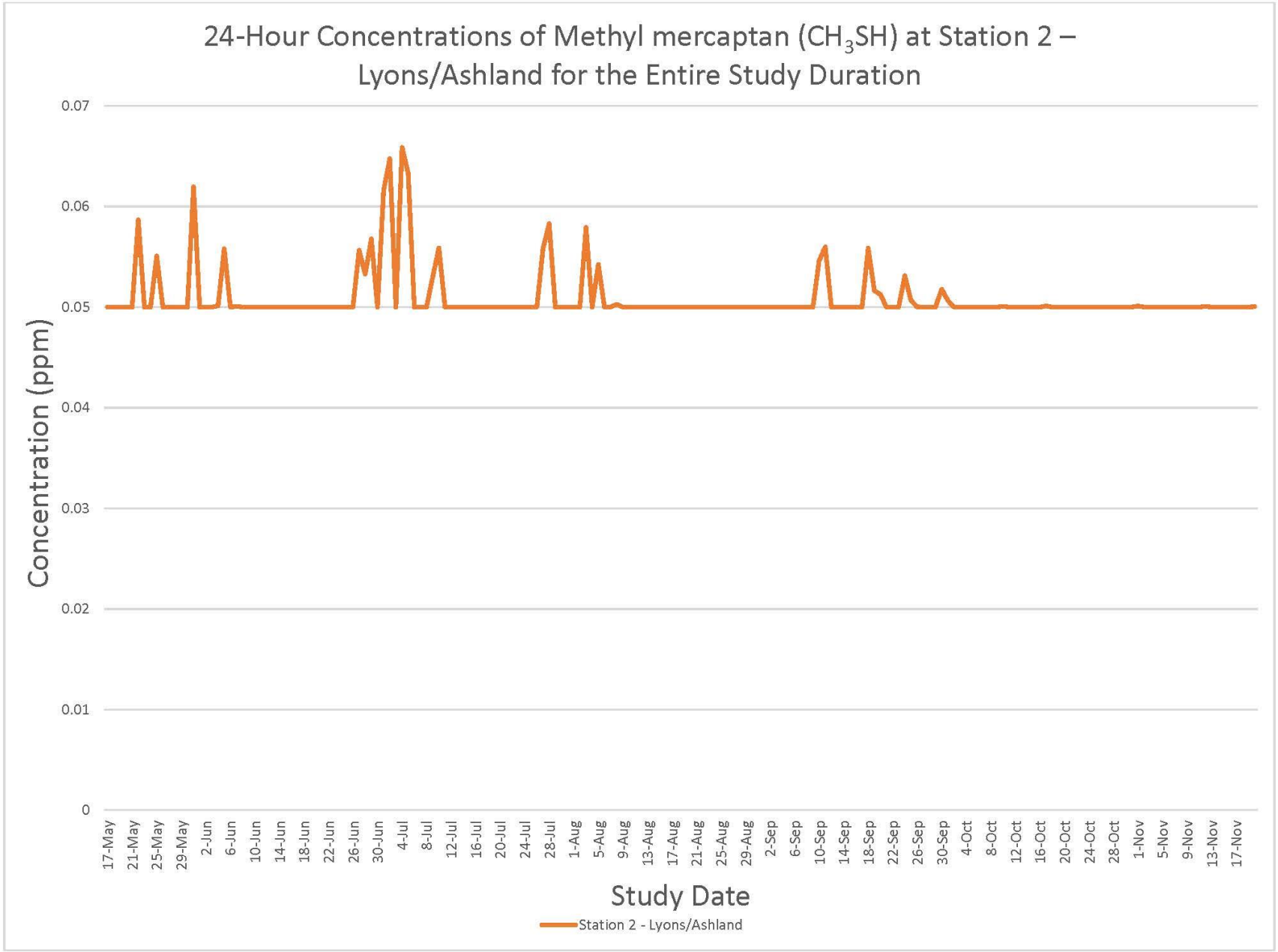
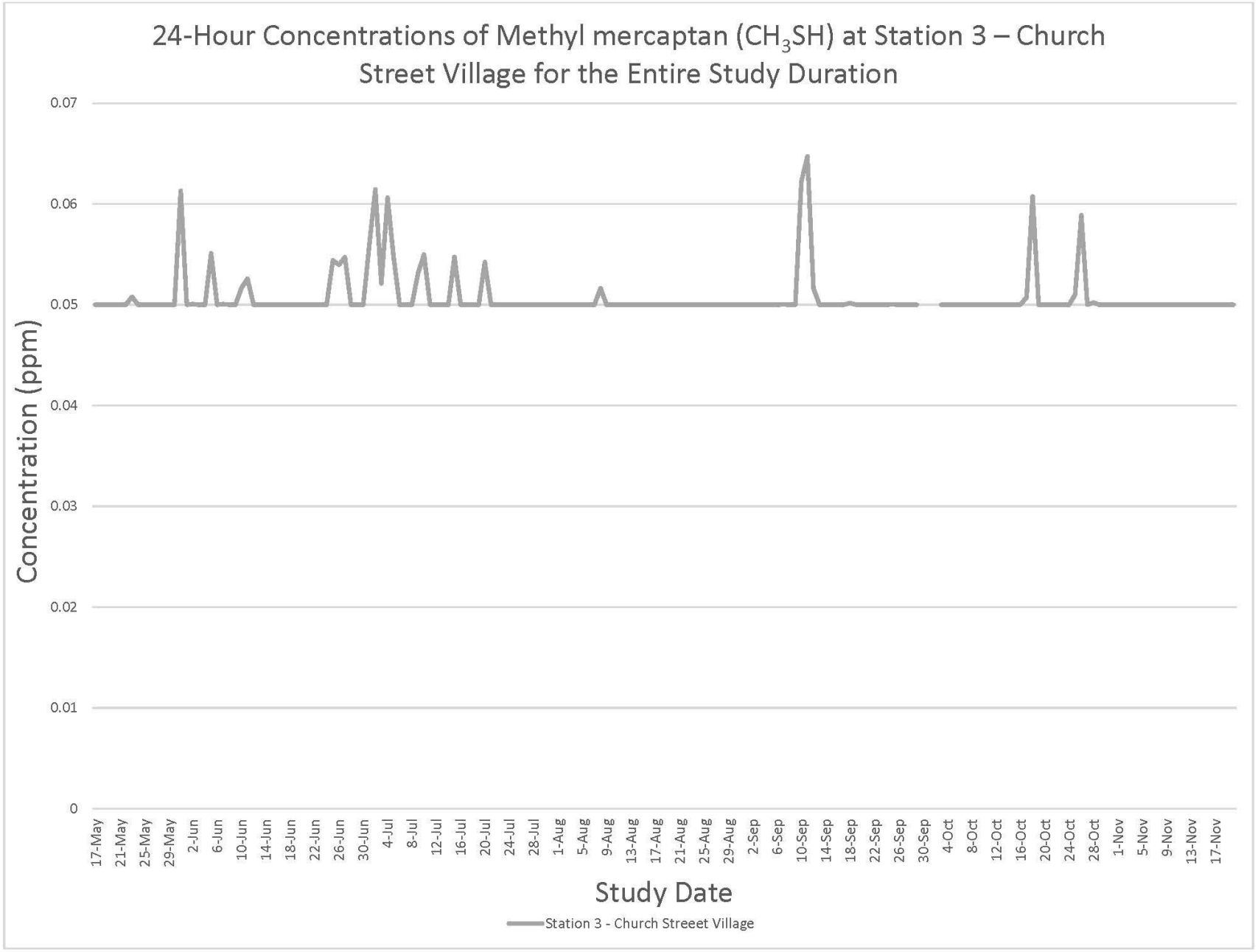
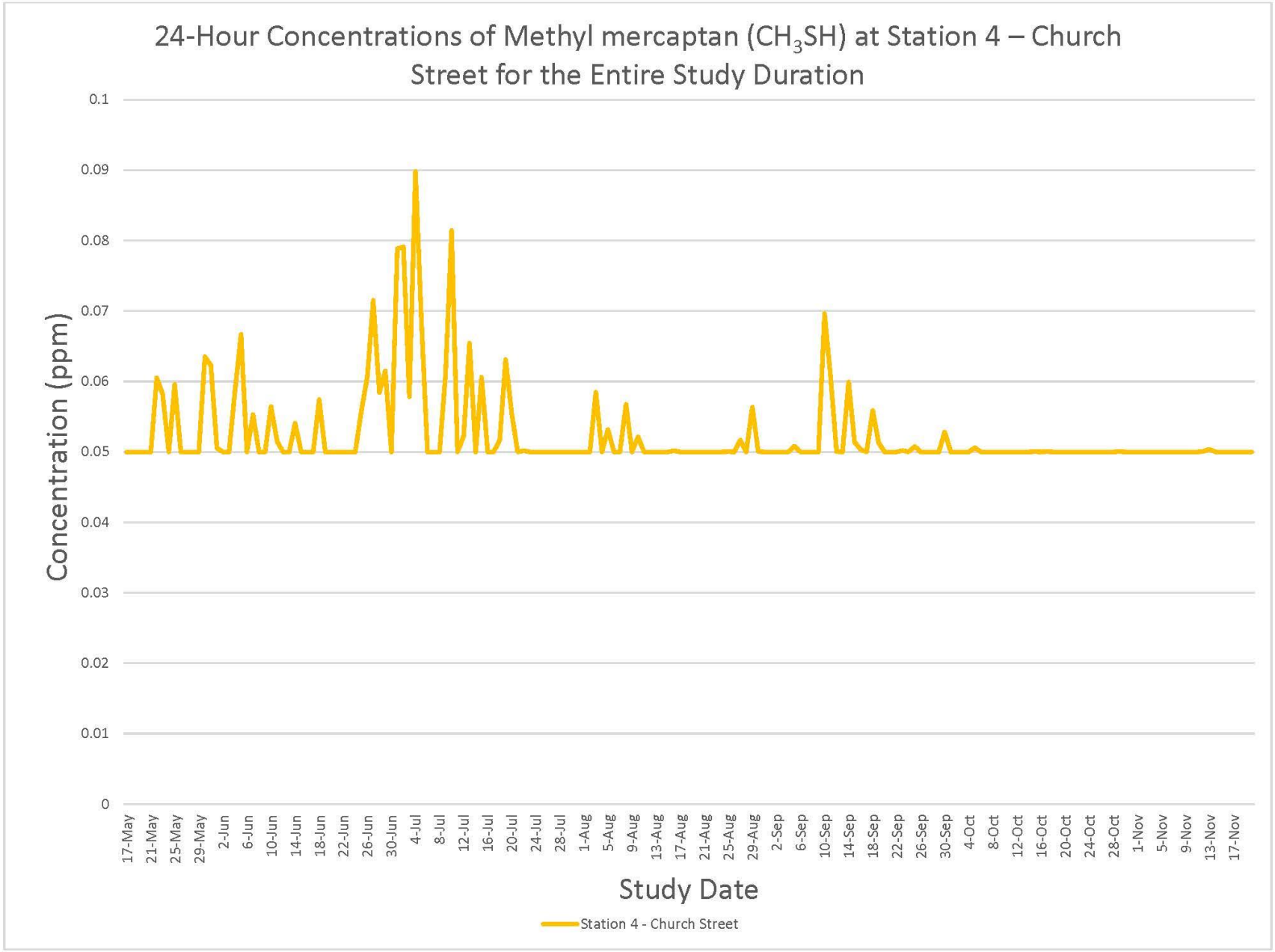
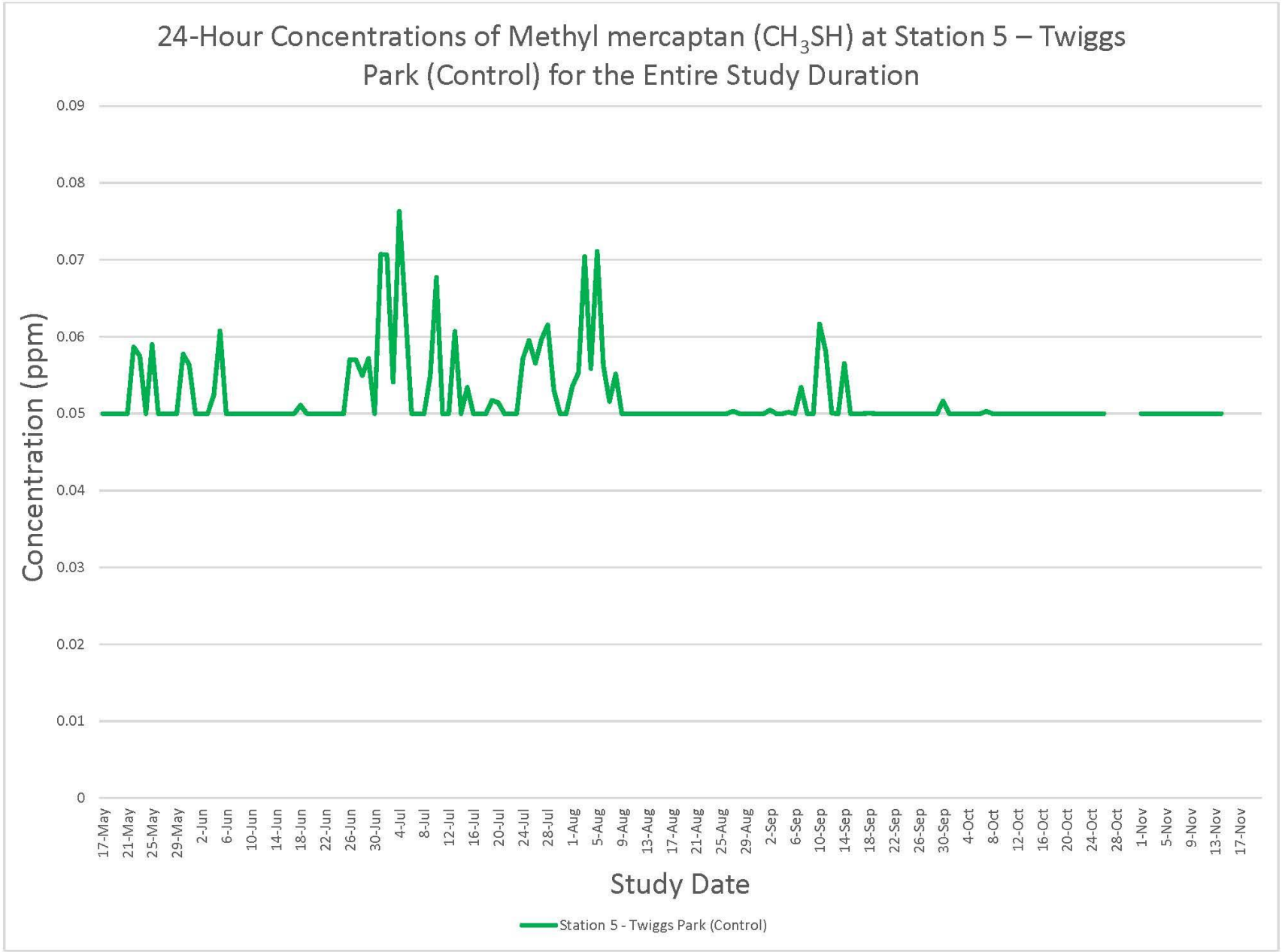
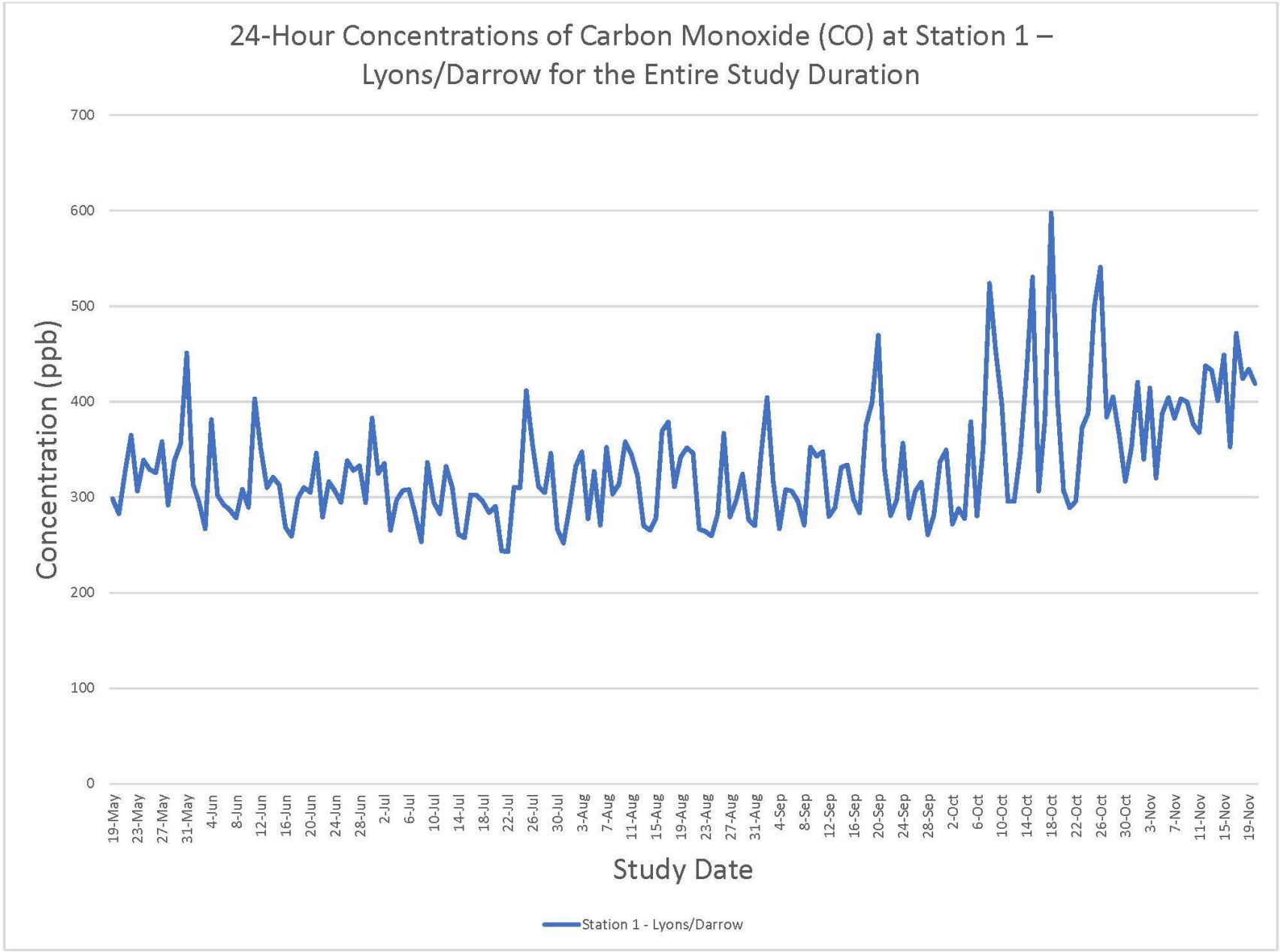
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 1 - Lyons/Darrow

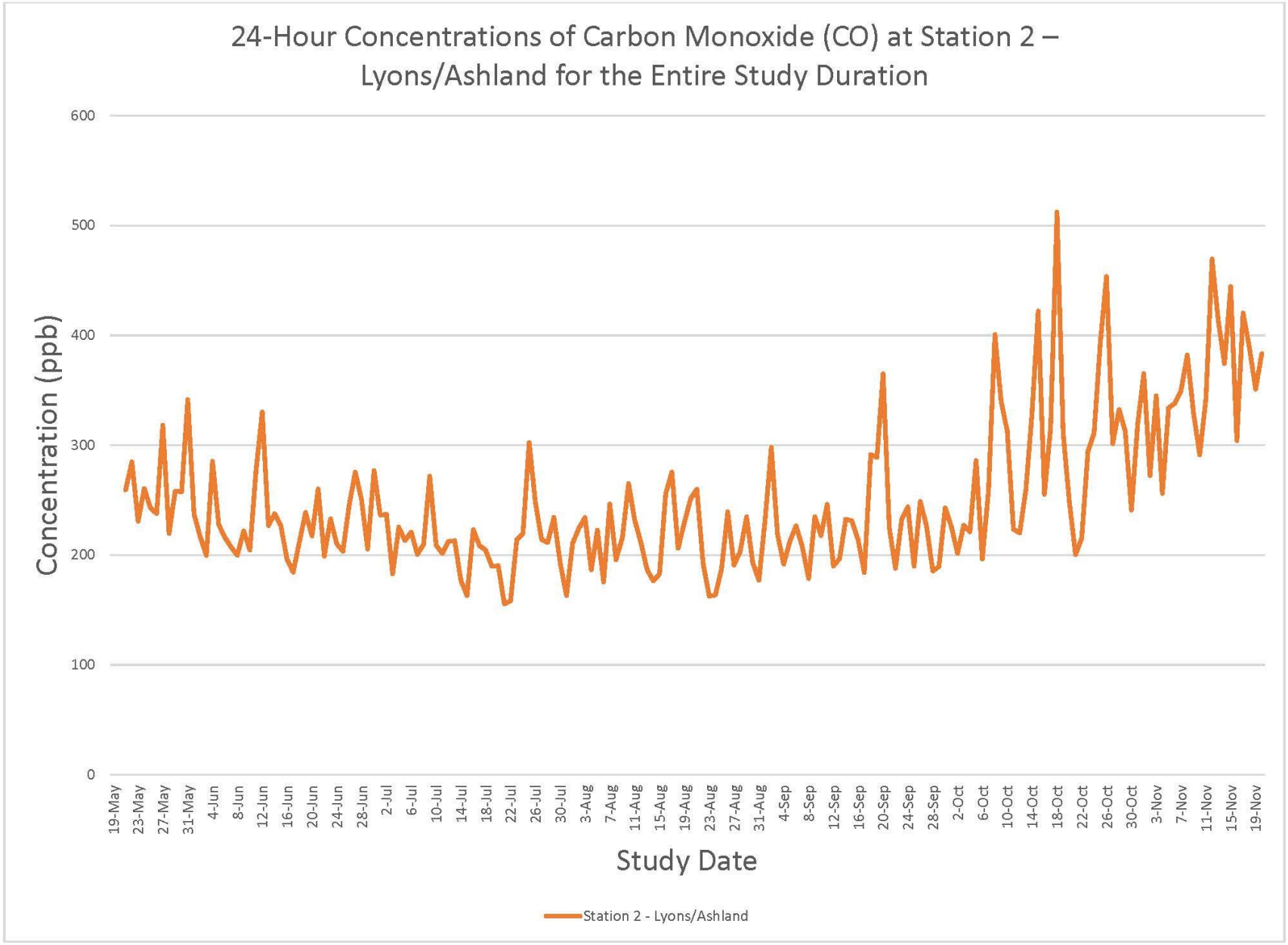

24-Hour Concentrations of Methyl mercaptan (CH_3SH) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ppm)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 2 - Lyons/Ashland

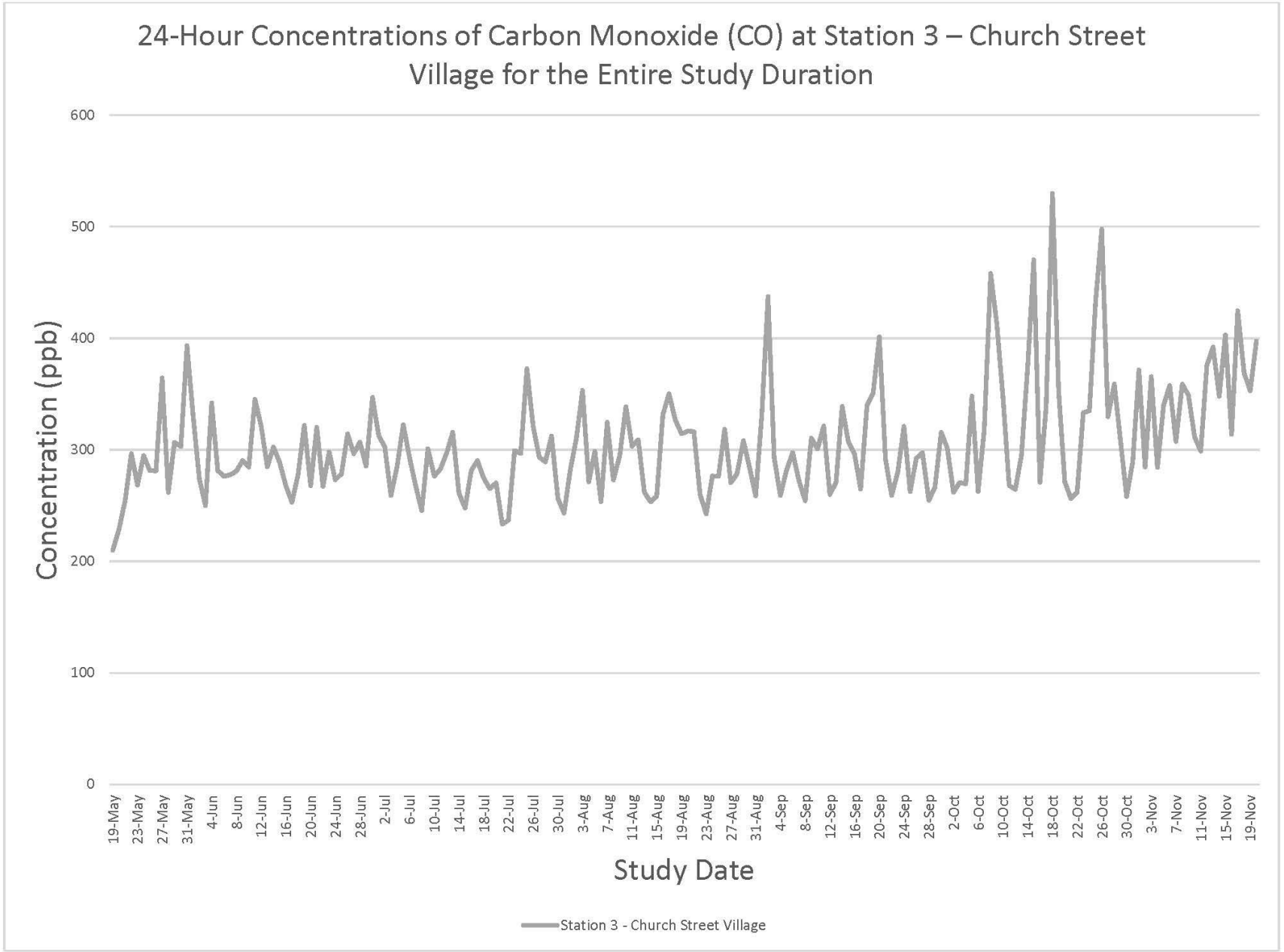

24-Hour Concentrations of Methyl mercaptan (CH_3SH) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ppm)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 3 - Church Streeet Village

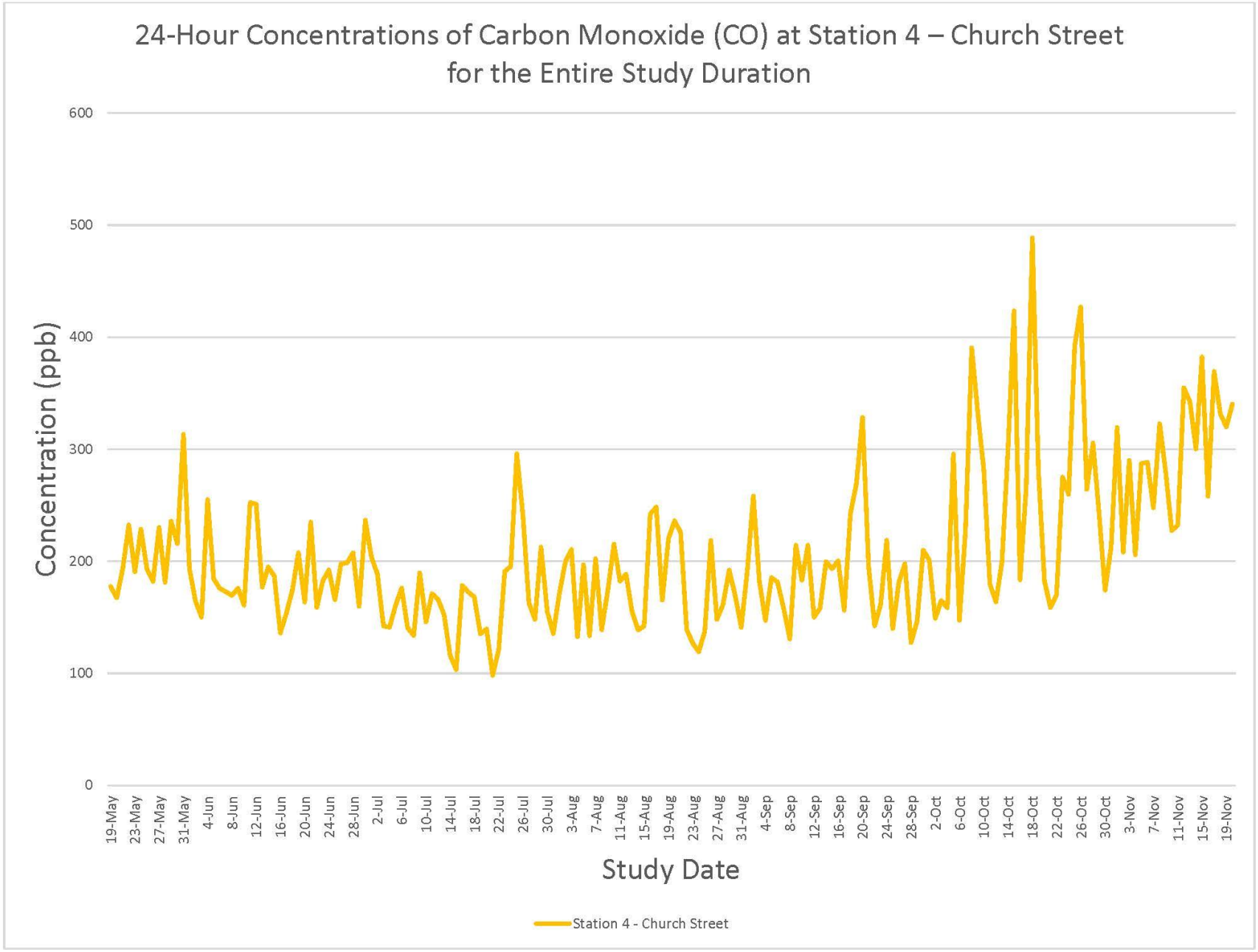

24-Hour Concentrations of Methyl mercaptan (CH_3SH) at Station 4 – Church Street for the Entire Study Duration
Concentration (ppm)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 4 - Church Street

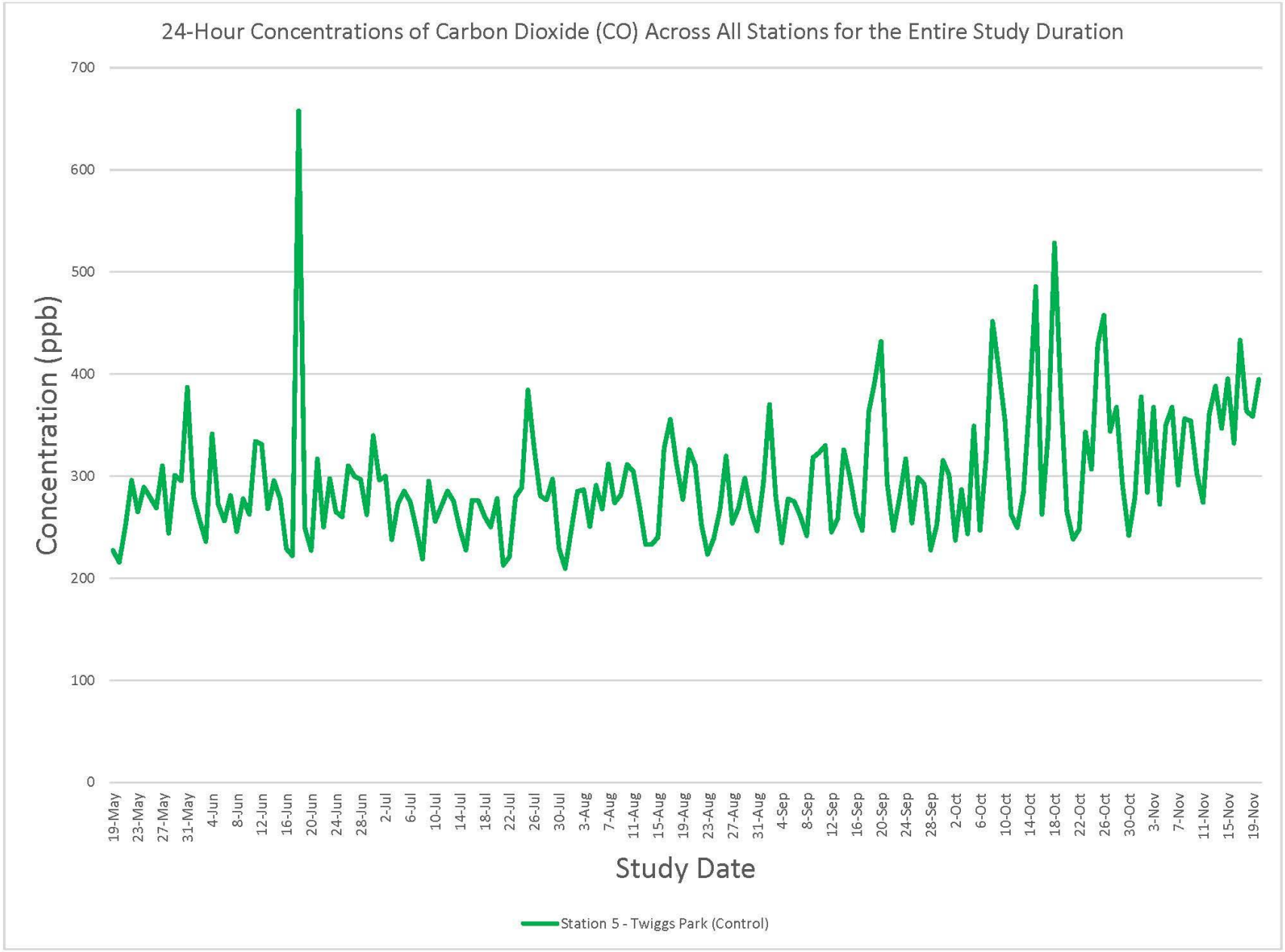

24-Hour Concentrations of Methyl mercaptan (CH_3SH) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ppm)
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 5 - Twiggs Park (Control)

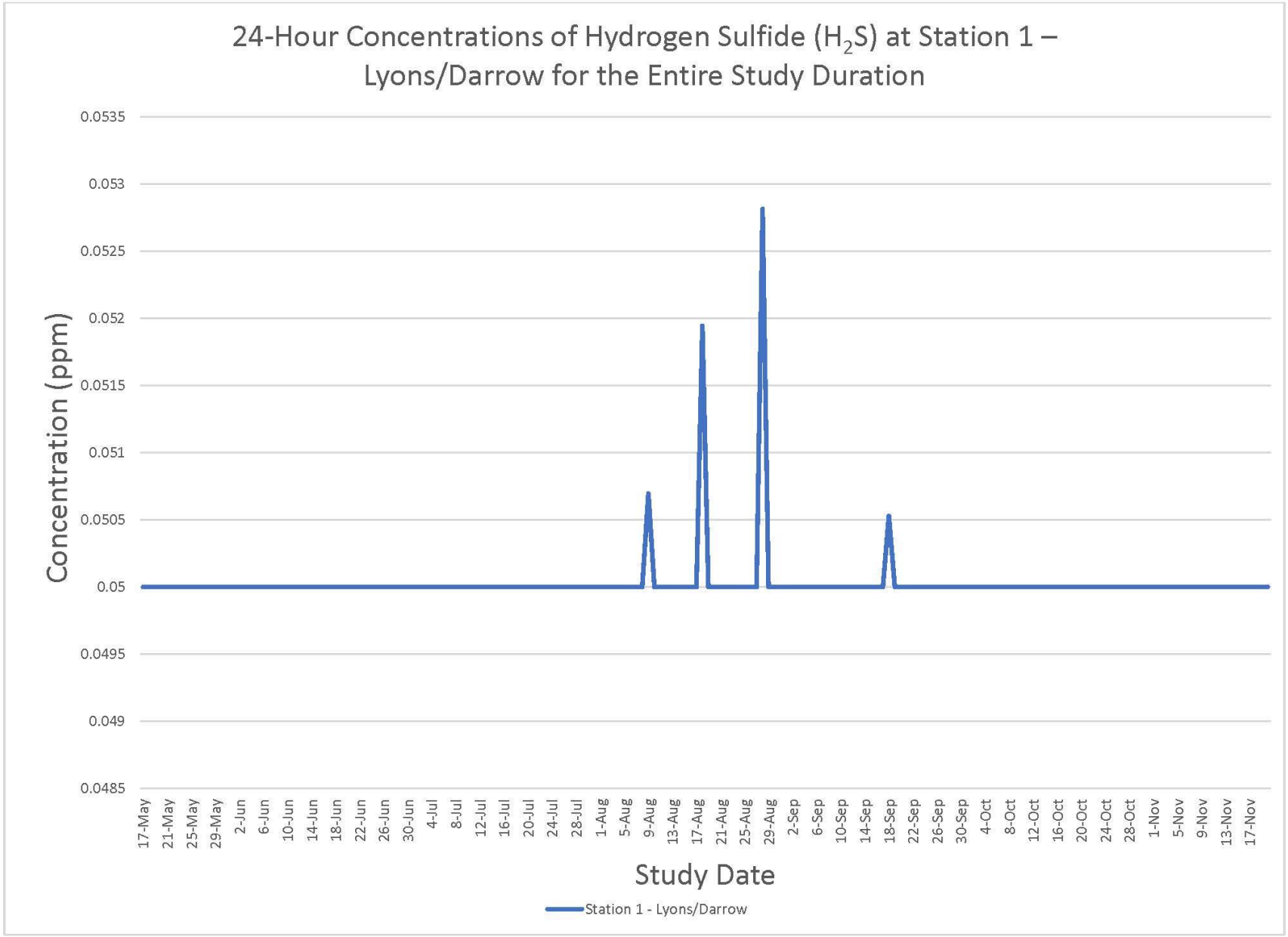

24-Hour Concentrations of Carbon Monoxide (CO) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ppb)
700
600
500
400
300
200
100
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 1 - Lyons/Darrow

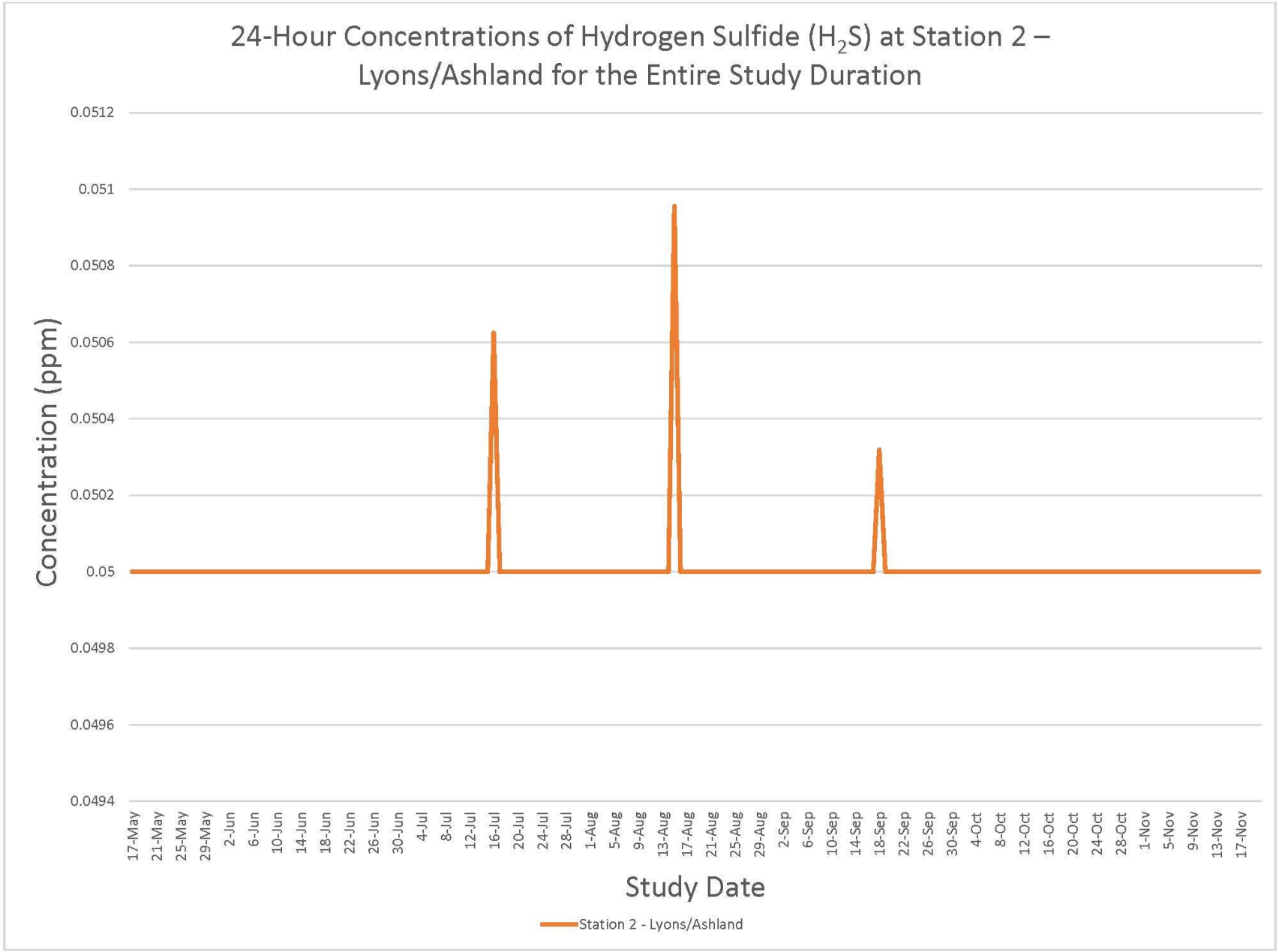

24-Hour Concentrations of Carbon Monoxide (CO) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ppb)
600
500
400
300
200
100
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 2 - Lyons/Ashland

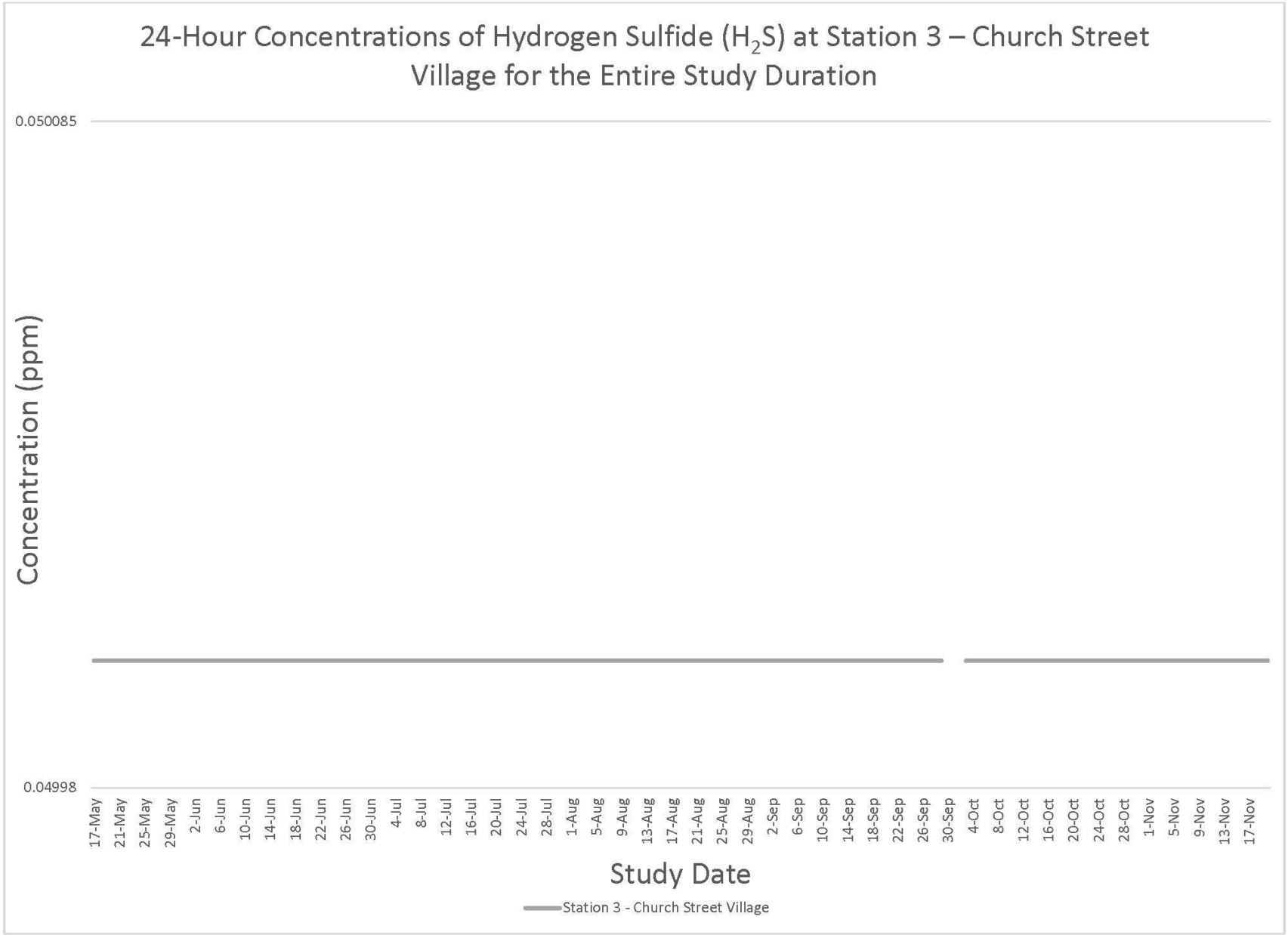

24-Hour Concentrations of Carbon Monoxide (CO) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ppb)
600
500
400
300
200
100
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 3 - Church Street Village

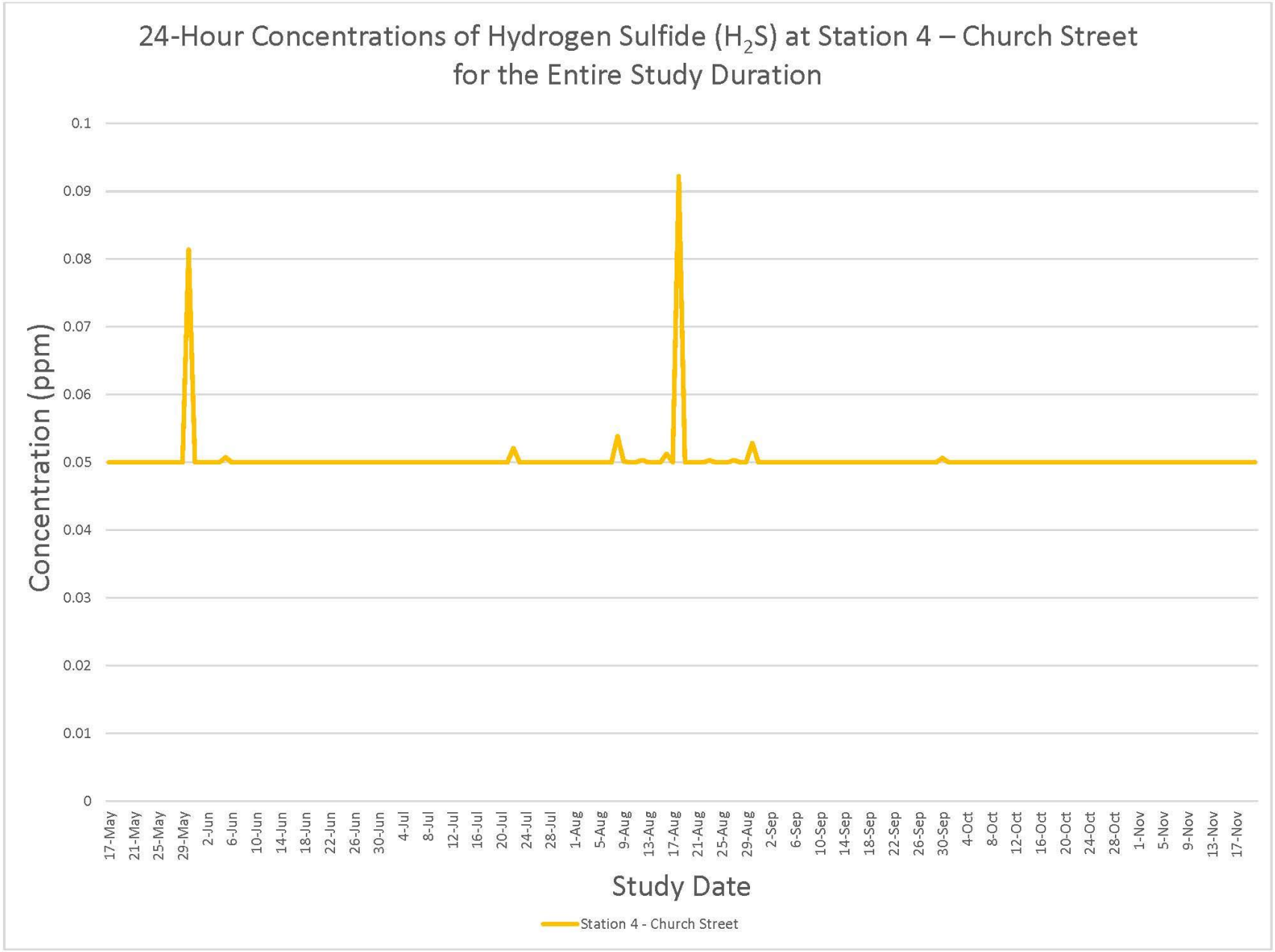

24-Hour Concentrations of Carbon Monoxide (CO) at Station 4 – Church Street for the Entire Study Duration
Concentration (ppb)
600
500
400
300
200
100
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 4 - Church Street

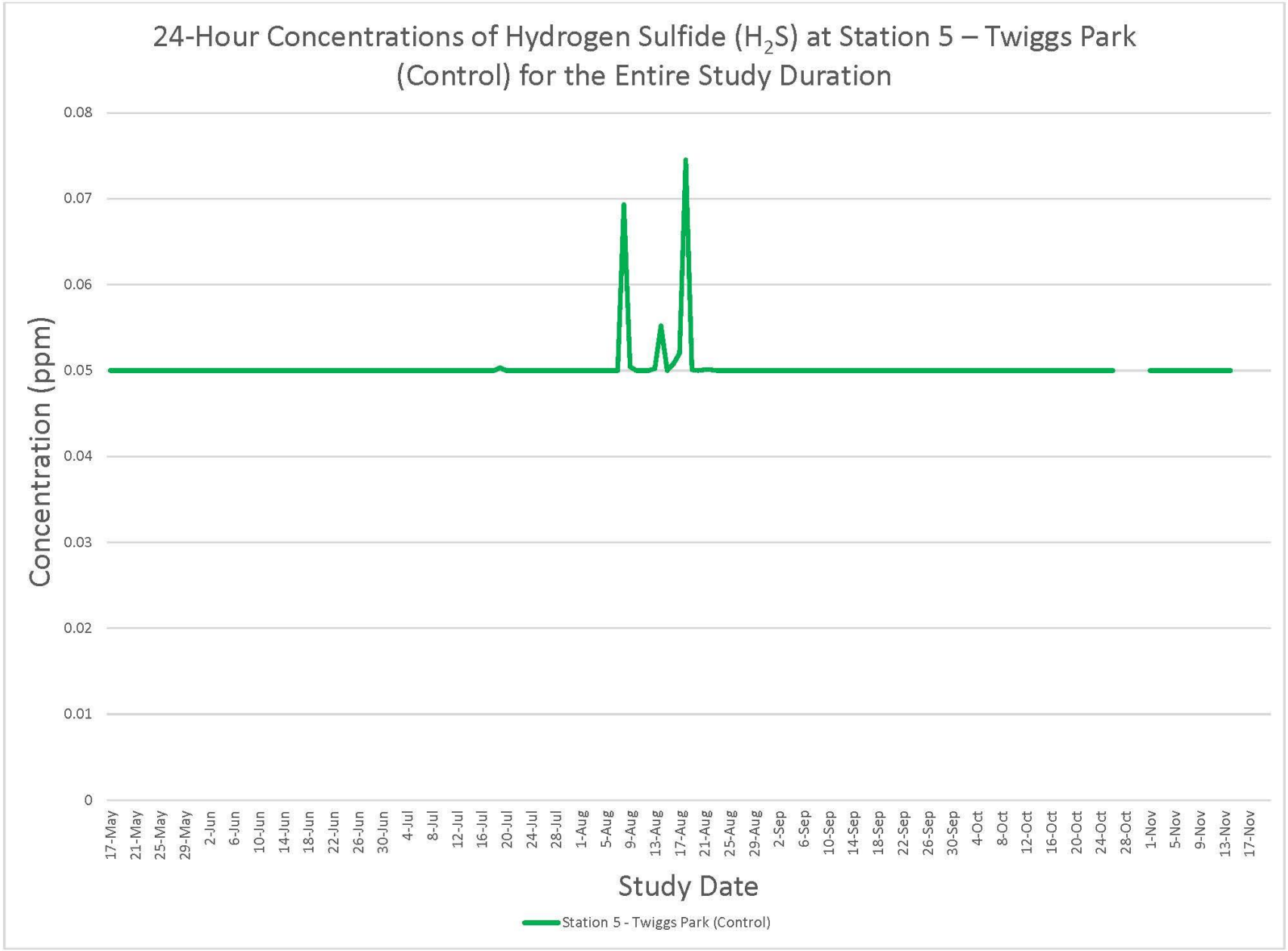

24-Hour Concentrations of Carbon Dioxide (CO) Across All Stations for the Entire Study Duration
Concentration (ppb)
700
600
500
400
300
200
100
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 5 - Twiggs Park (Control)

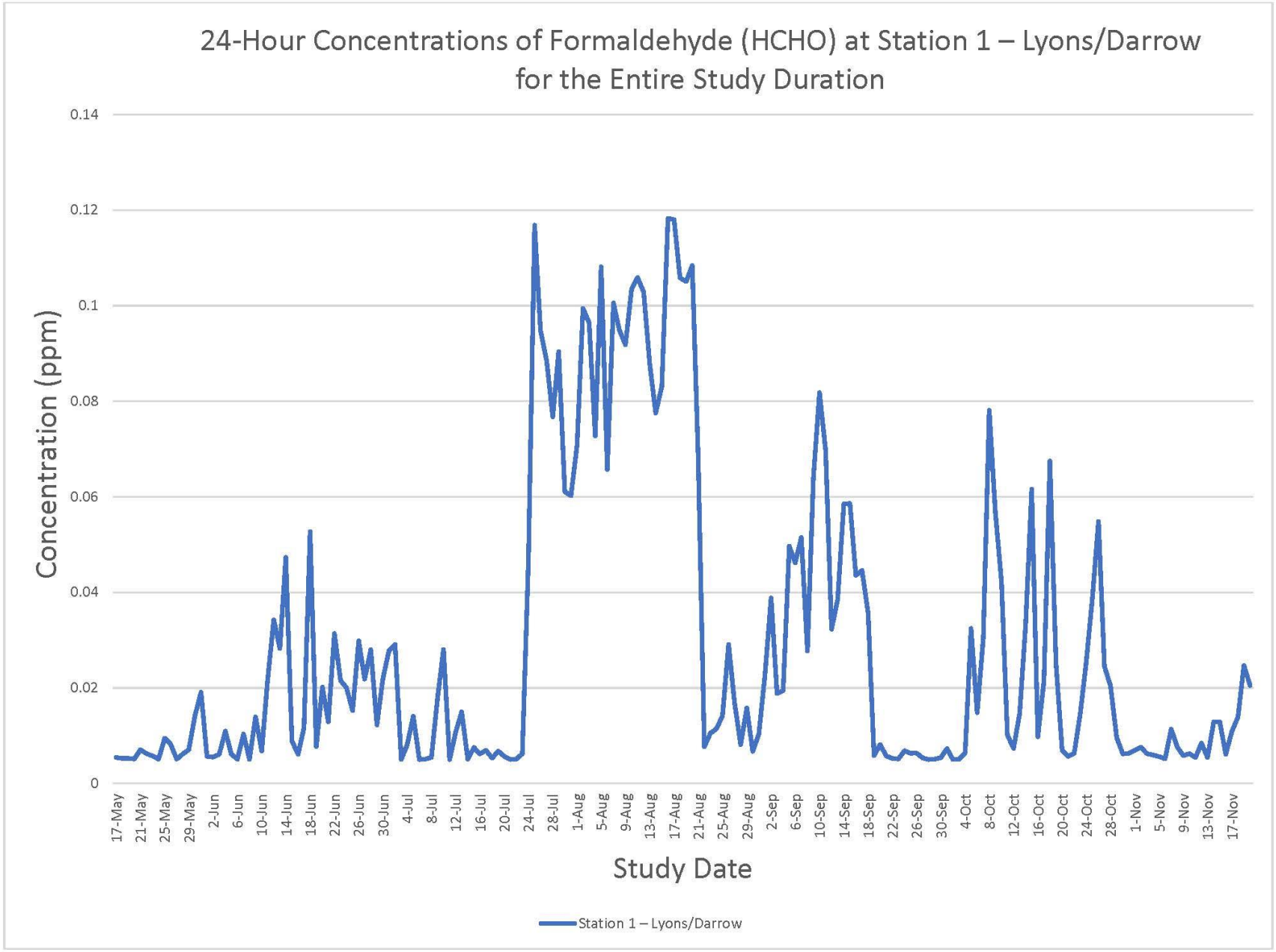

24-Hour Concentrations of Hydrogen Sulfide (H_2S) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ppm)
0.0535
0.053
0.0525
0.052
0.0515
0.051
0.0505
0.05
0.0495
0.049
0.0485
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 1 - Lyons/Darrow

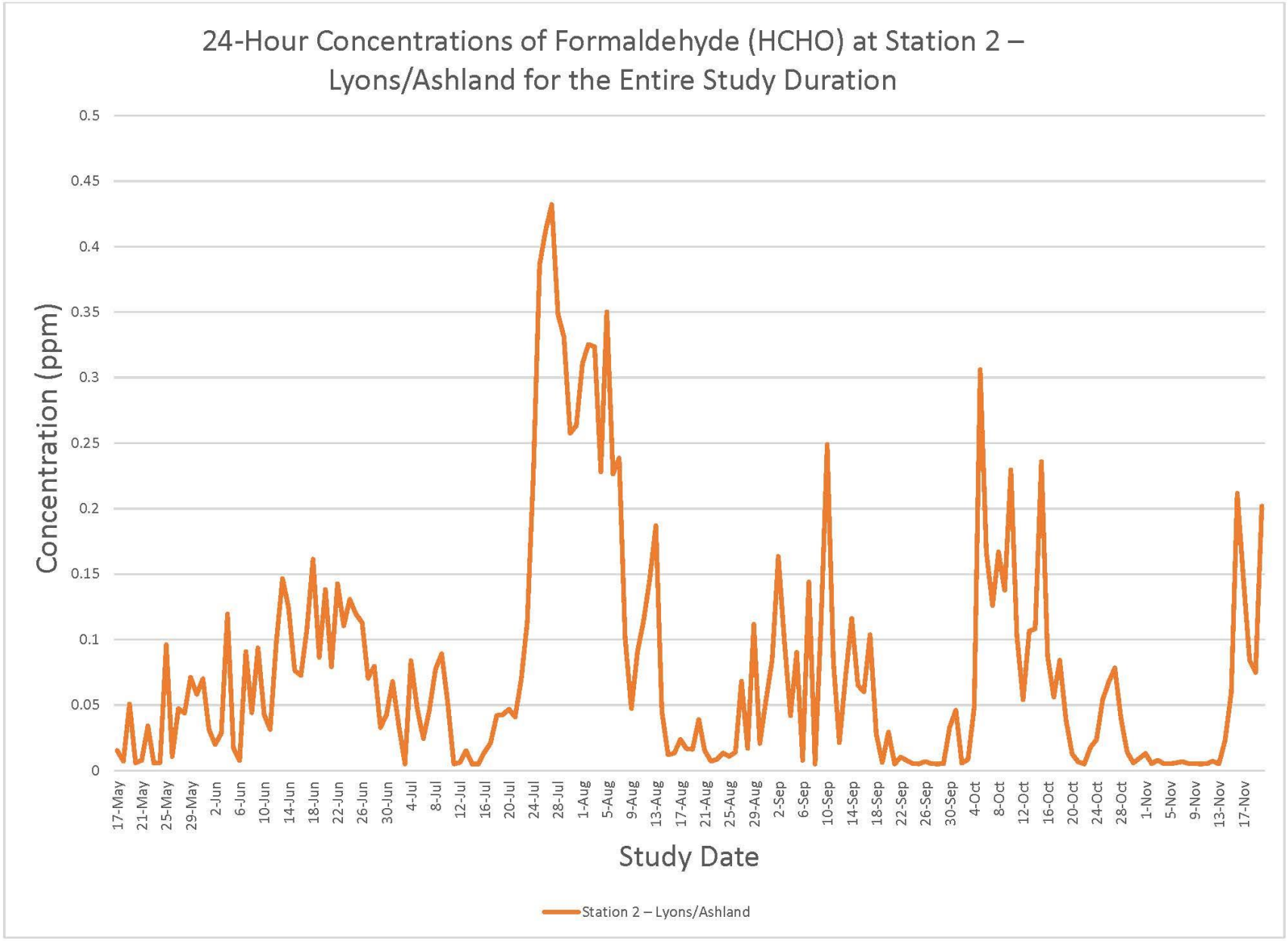

24-Hour Concentrations of Hydrogen Sulfide (H_2S) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ppm)
0.0512
0.051
0.0508
0.0506
0.0504
0.0502
0.05
0.0498
0.0496
0.0494
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 2 - Lyons/Ashland

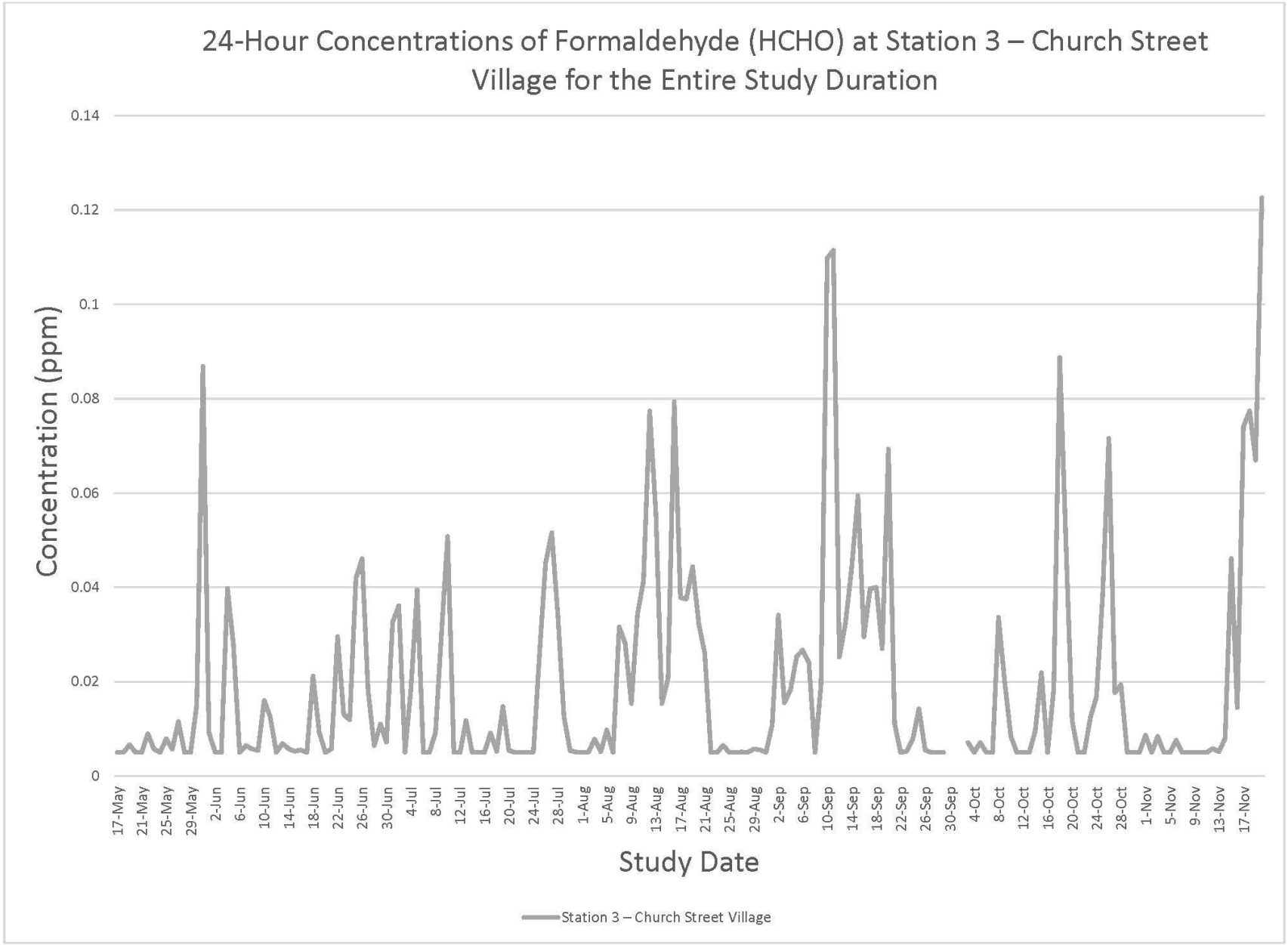

24-Hour Concentrations of Hydrogen Sulfide (H_2S) at Station 3 – Church Street Village for the Entire Study Duration
0.050085
0.04998
Concentration (ppm)
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 3 - Church Street Village

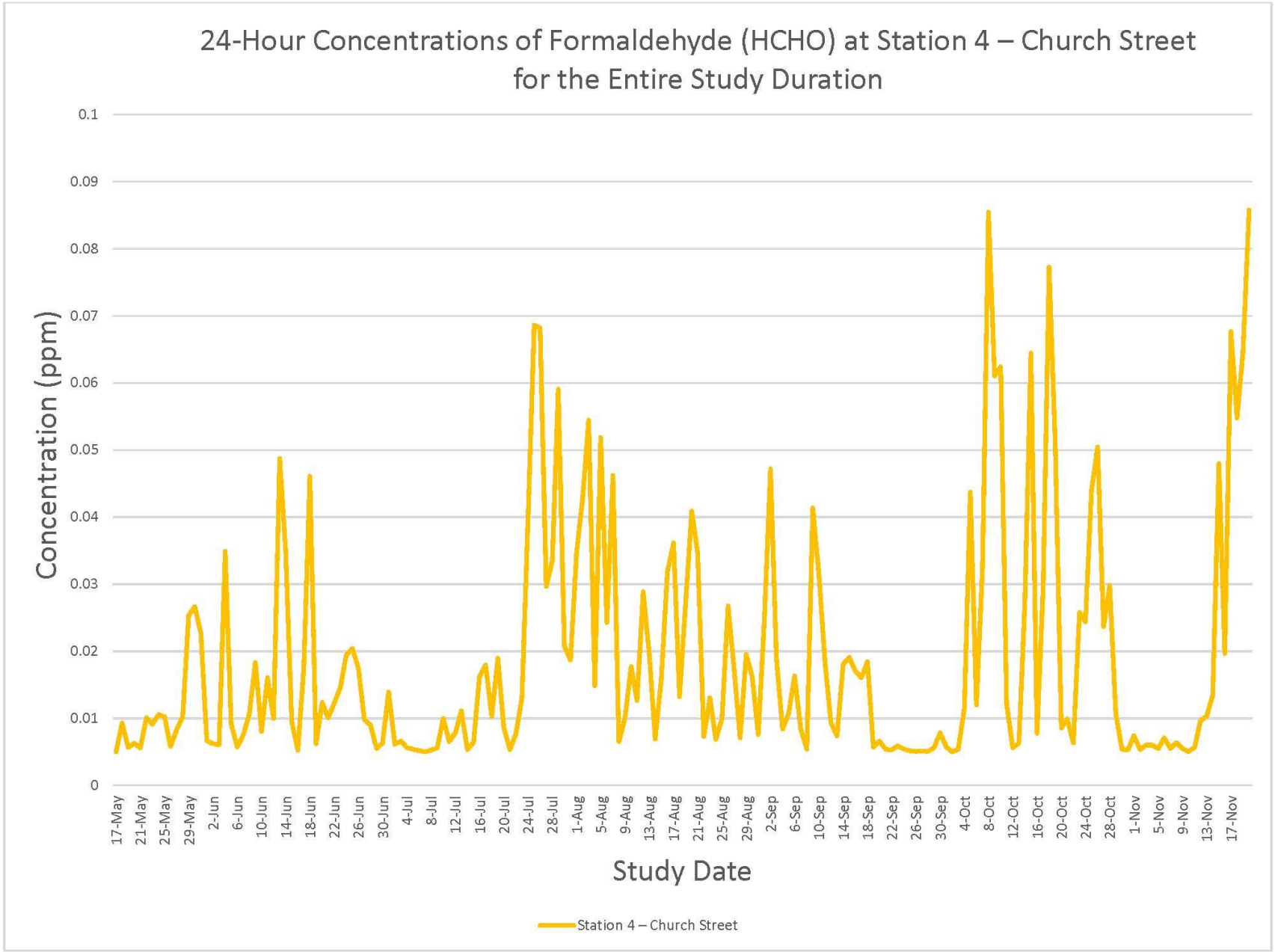

24-Hour Concentrations of Hydrogen Sulfide (H_2S) at Station 4 – Church Street for the Entire Study Duration
Concentration (ppm)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 4 - Church Street

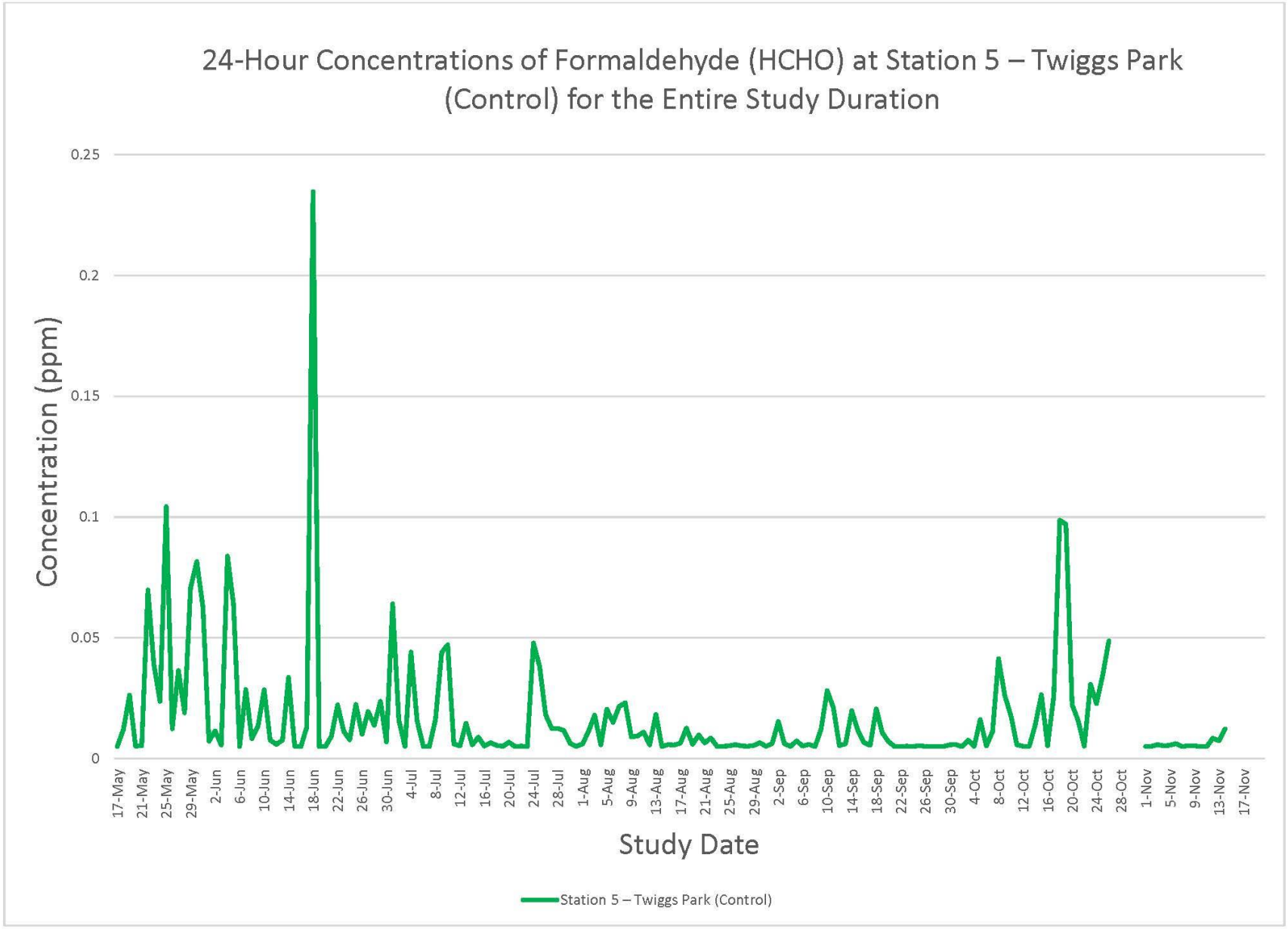

24-Hour Concentrations of Hydrogen Sulfide (H_2S) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ppm)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 5 - Twiggs Park (Control)

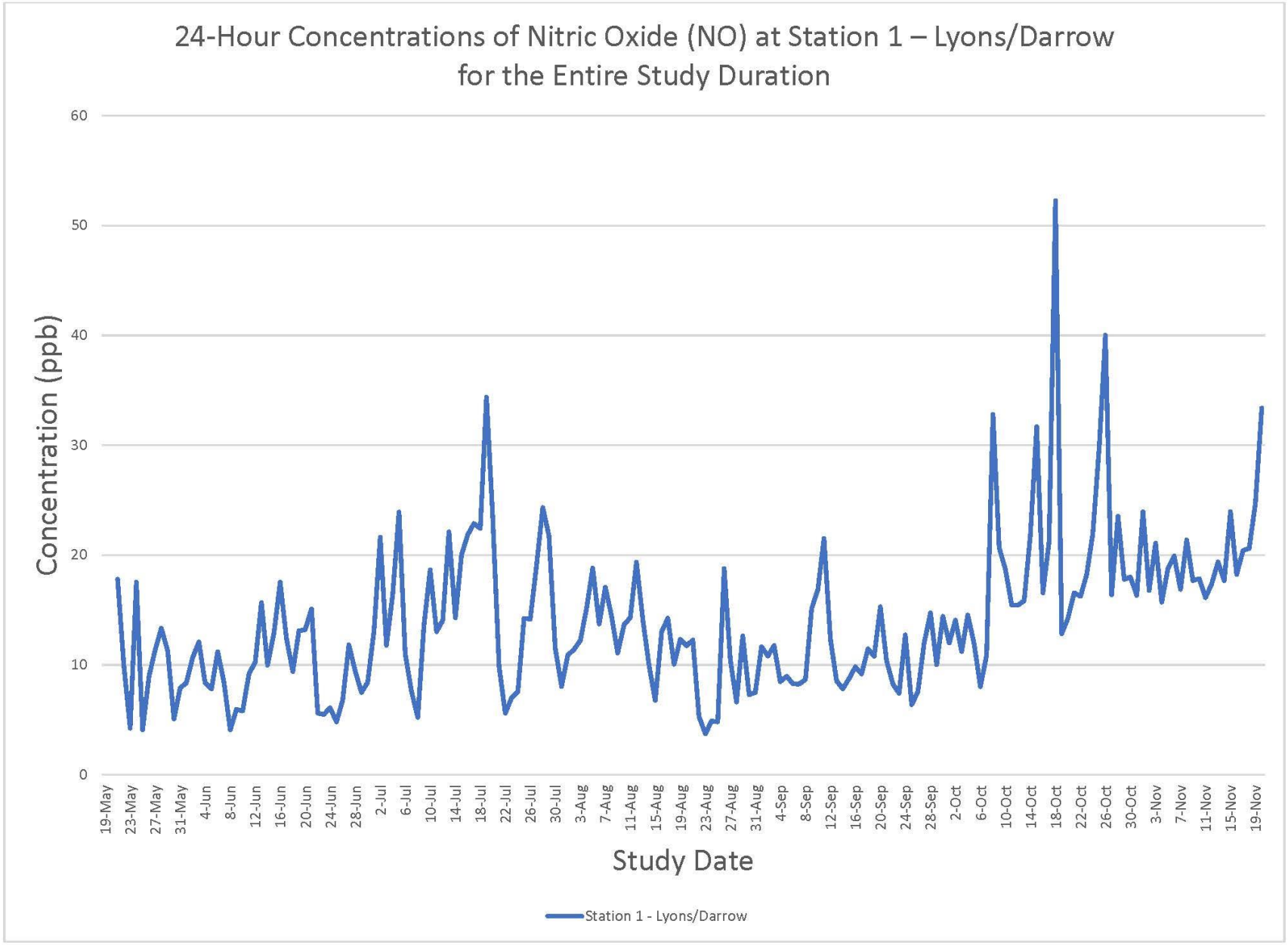

24-Hour Concentrations of Formaldehyde (HCHO) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ppm)
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 1 – Lyons/Darrow

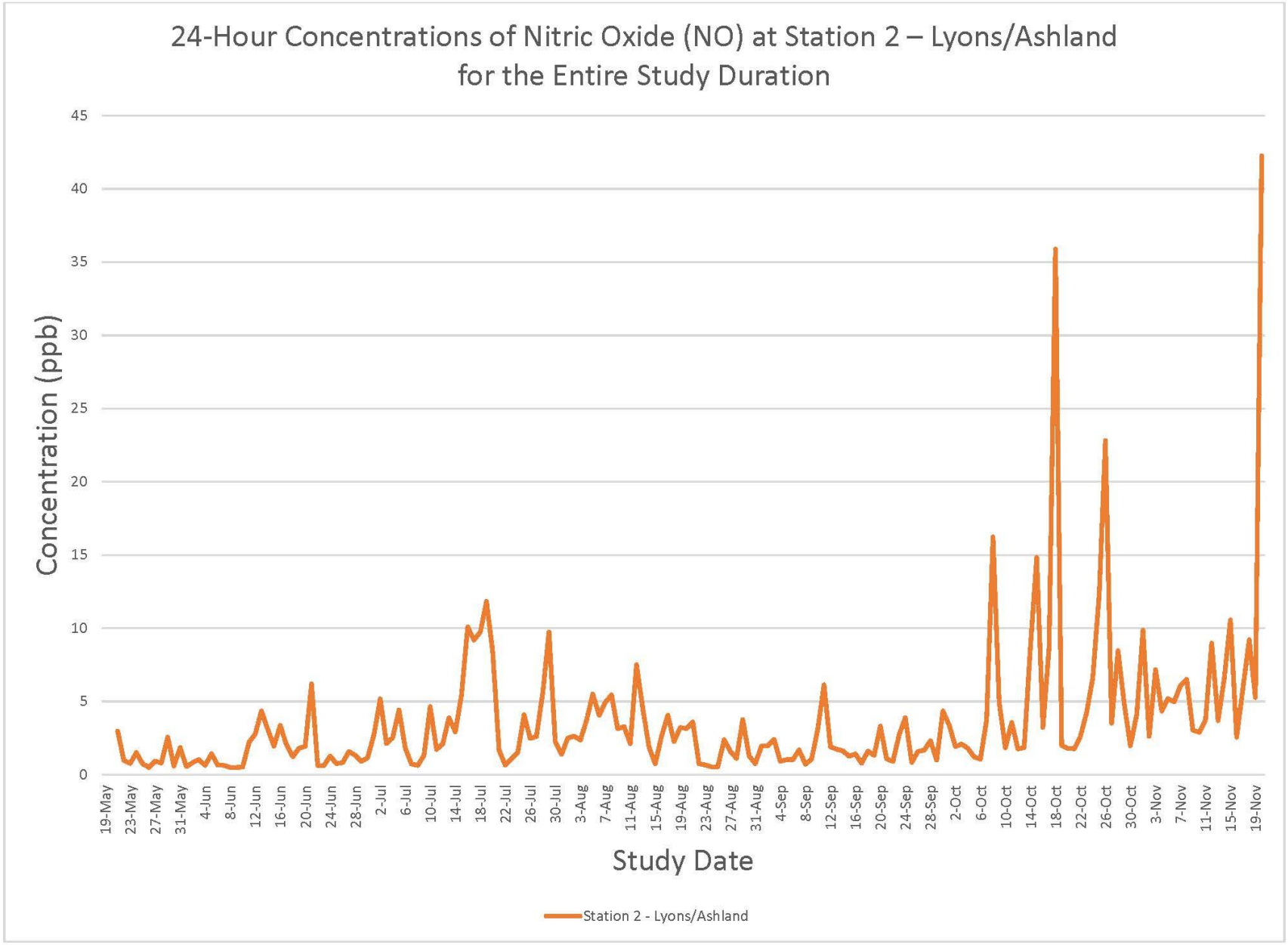

24-Hour Concentrations of Formaldehyde (HCHO) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ppm)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 2 – Lyons/Ashland

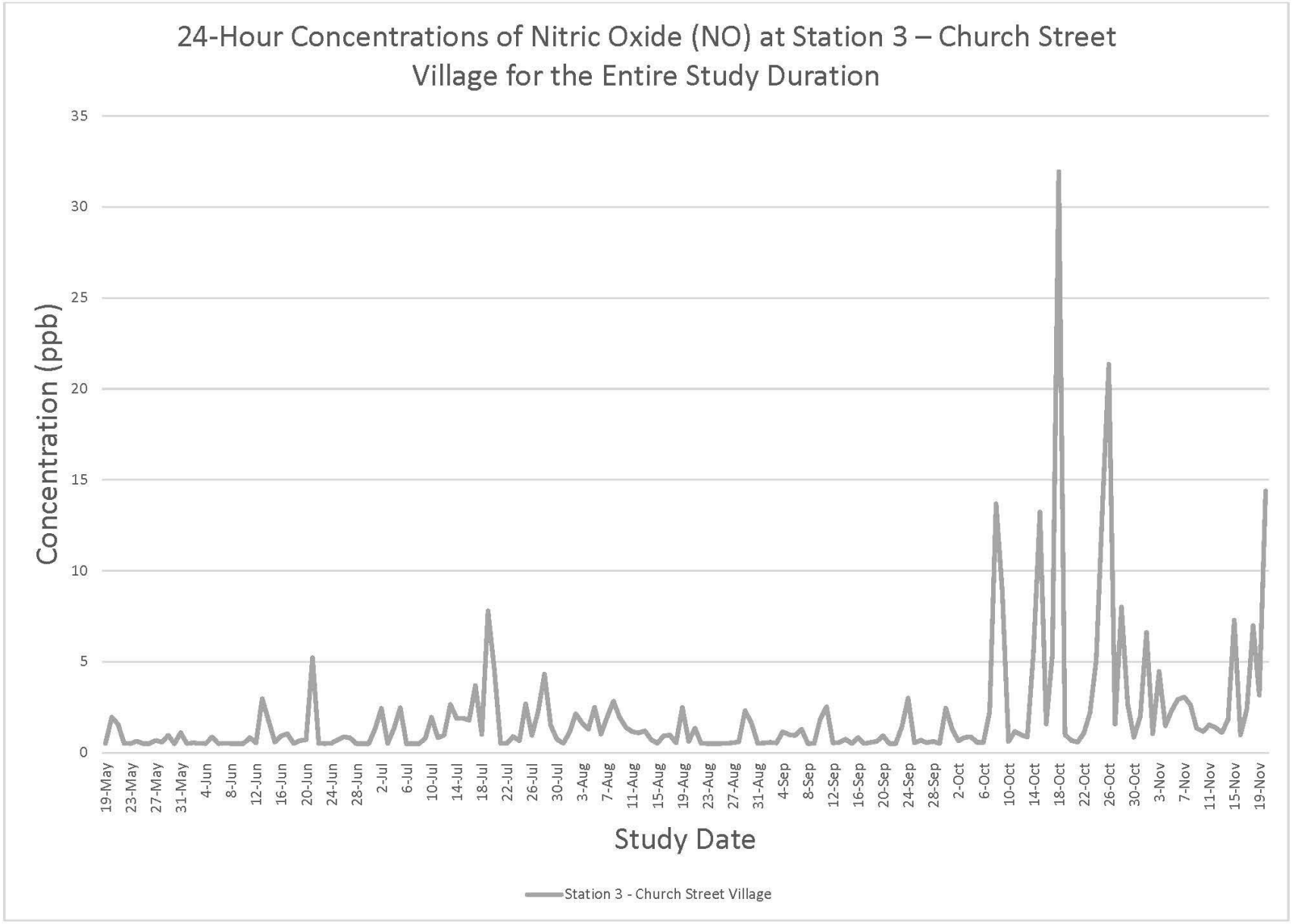

24-Hour Concentrations of Formaldehyde (HCHO) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ppm)
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 3 – Church Street Village

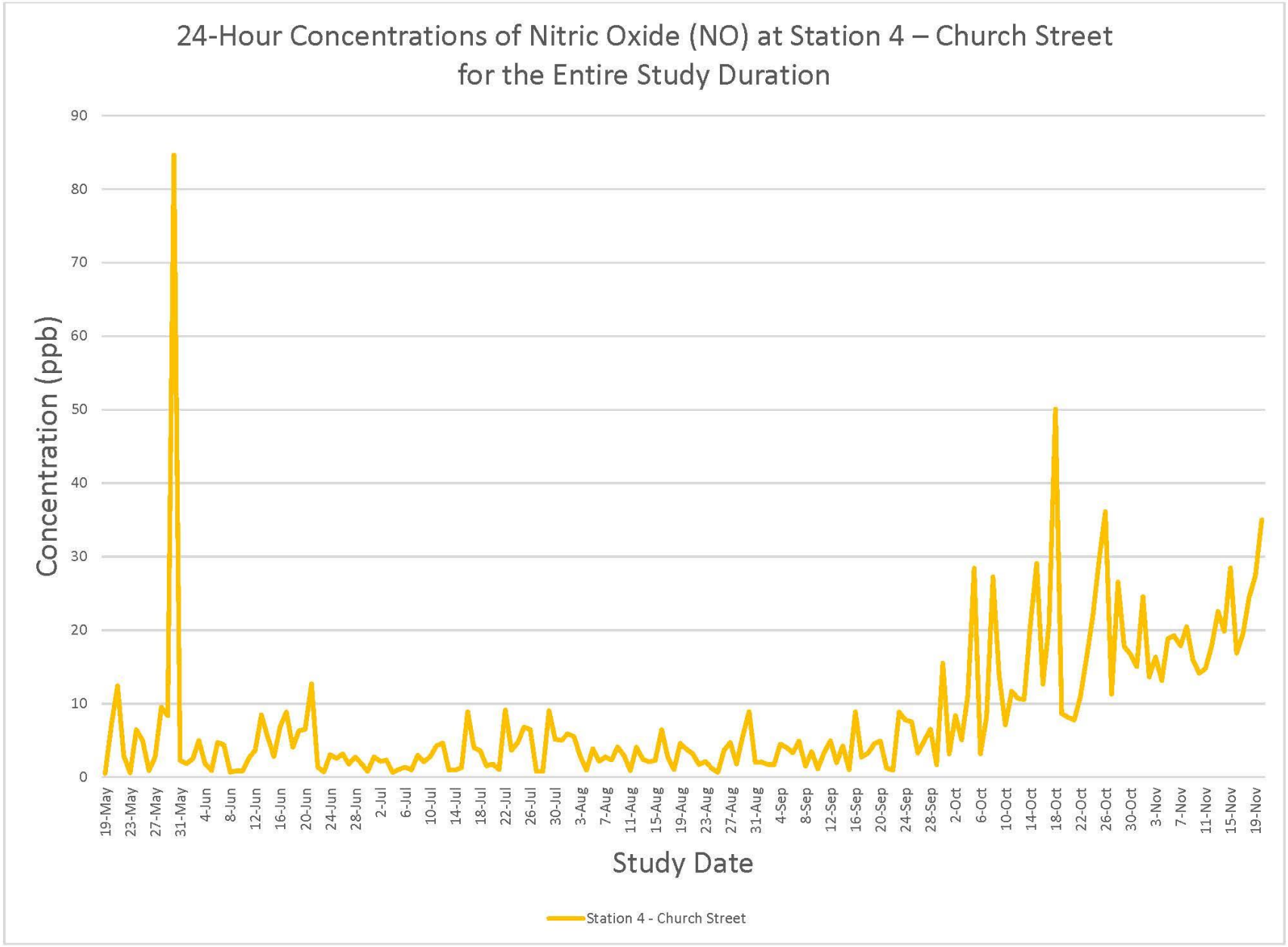

24-Hour Concentrations of Formaldehyde (HCHO) at Station 4 – Church Street for the Entire Study Duration
Concentration (ppm)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 4 – Church Street

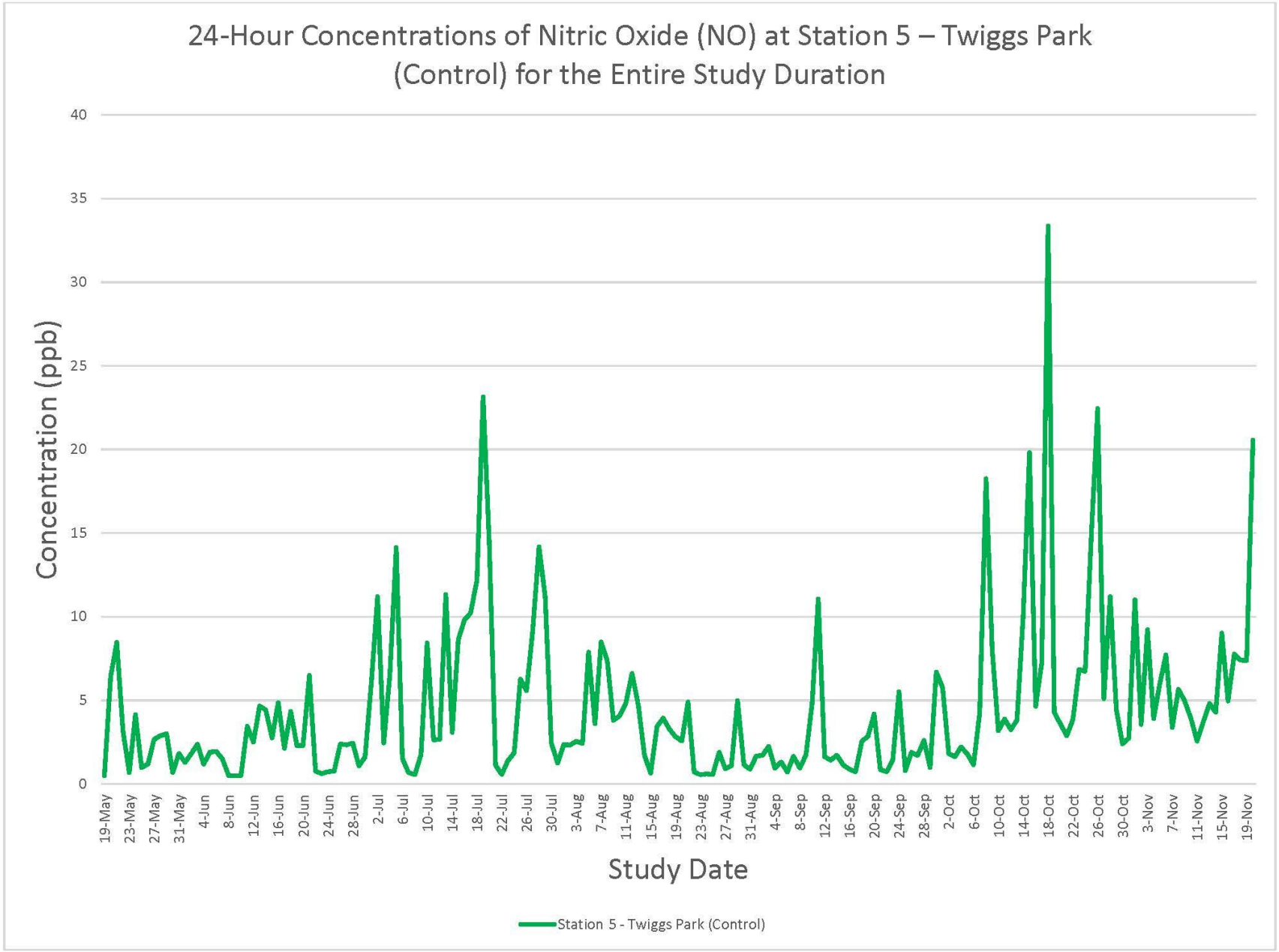

24-Hour Concentrations of Formaldehyde (HCHO) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ppm)
0.25
0.2
0.15
0.1
0.05
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 5 – Twiggs Park (Control)

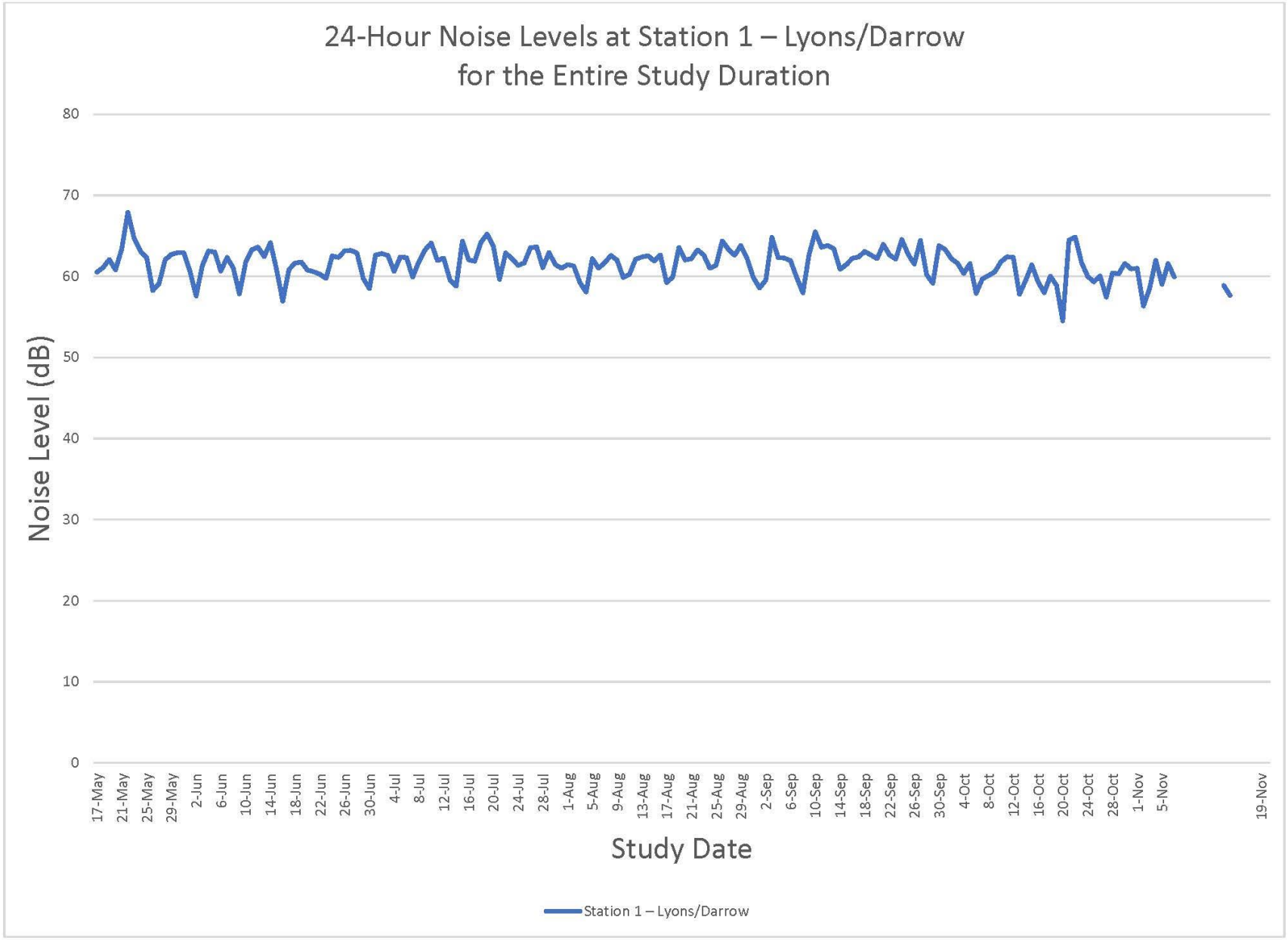

24-Hour Concentrations of Nitric Oxide (NO) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ppb)
60
50
40
30
20
10
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 1 - Lyons/Darrow

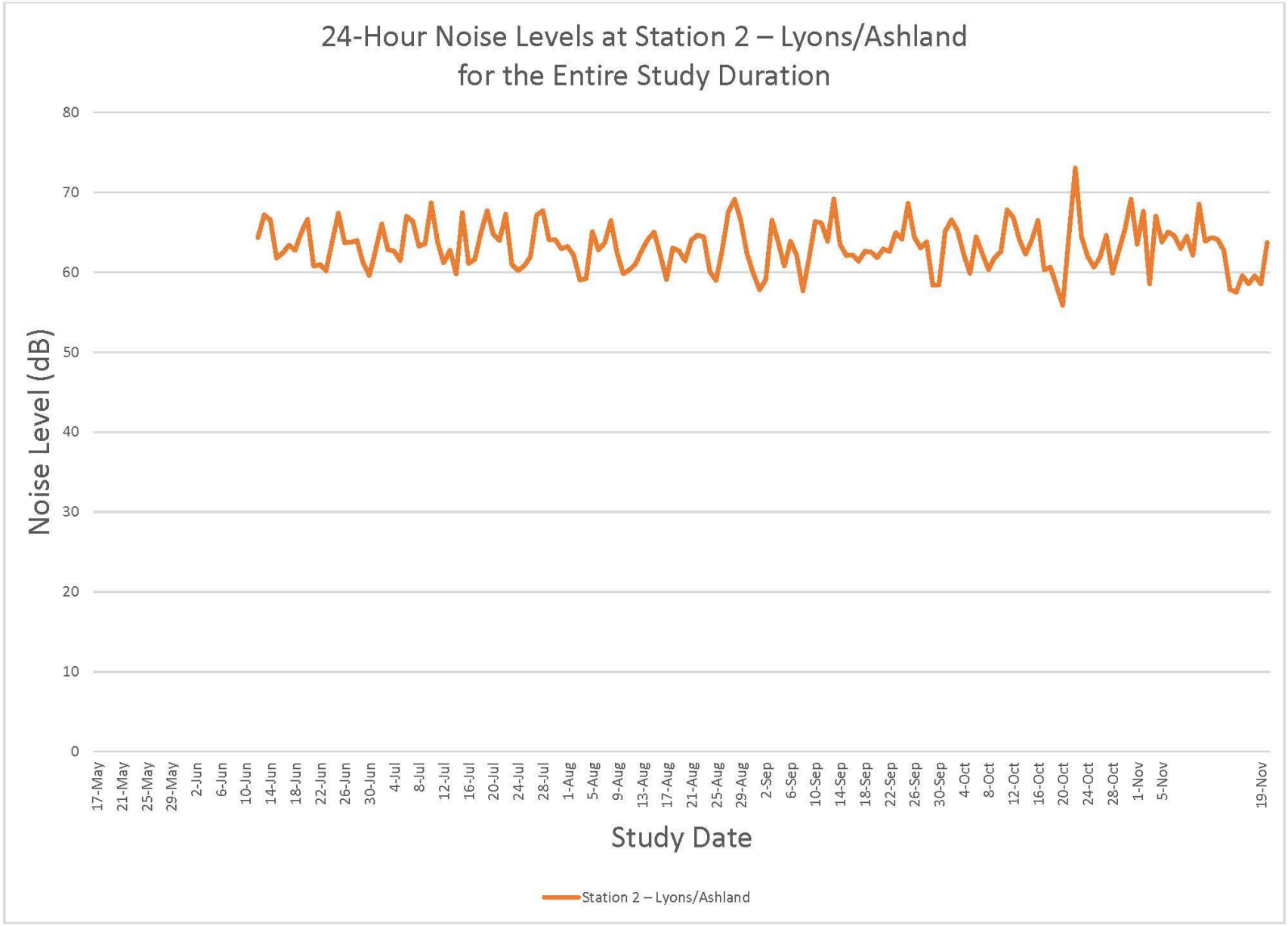

24-Hour Concentrations of Nitric Oxide (NO) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ppb)
0
5
10
15
20
25
30
35
40
45
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 2 - Lyons/Ashland


24-Hour Concentrations of Nitric Oxide (NO) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ppb)
35
30
25
20
15
10
5
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 3 - Church Street Village


24-Hour Concentrations of Nitric Oxide (NO) at Station 4 – Church Street for the Entire Study Duration
Concentration (ppb)
90
80
70
60
50
40
30
20
10
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 4 - Church Street


24-Hour Concentrations of Nitric Oxide (NO) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ppb)
40
35
30
25
20
15
10
5
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 5 - Twiggs Park (Control)


24-Hour Noise Levels at Station 1 – Lyons/Darrow
for the Entire Study Duration
Noise Level (dB)
80
70
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
19-Nov
Study Date
Station 1 – Lyons/Darrow


24-Hour Noise Levels at Station 2 – Lyons/Ashland
for the Entire Study Duration
Noise Level (dB)
80
70
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
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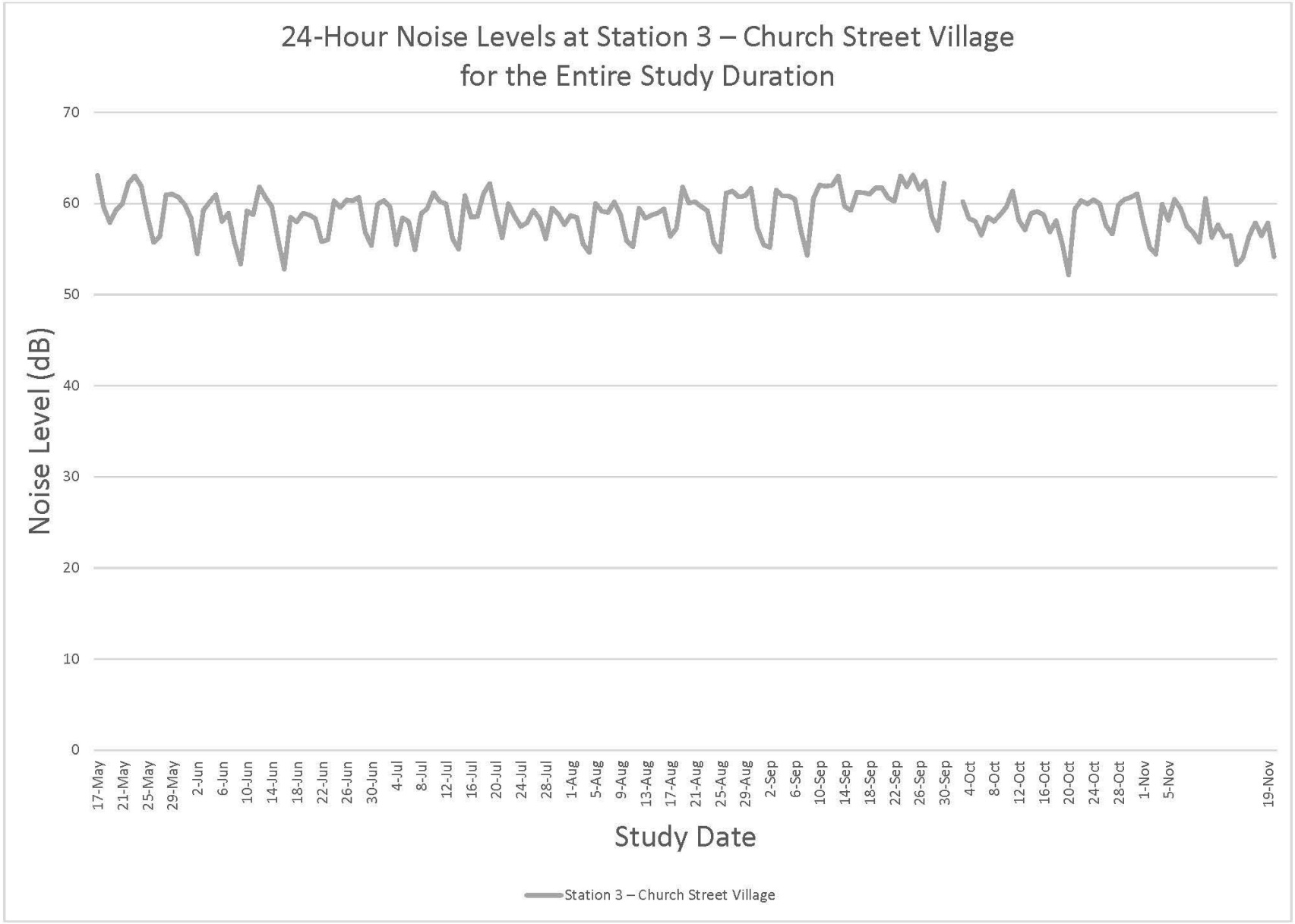
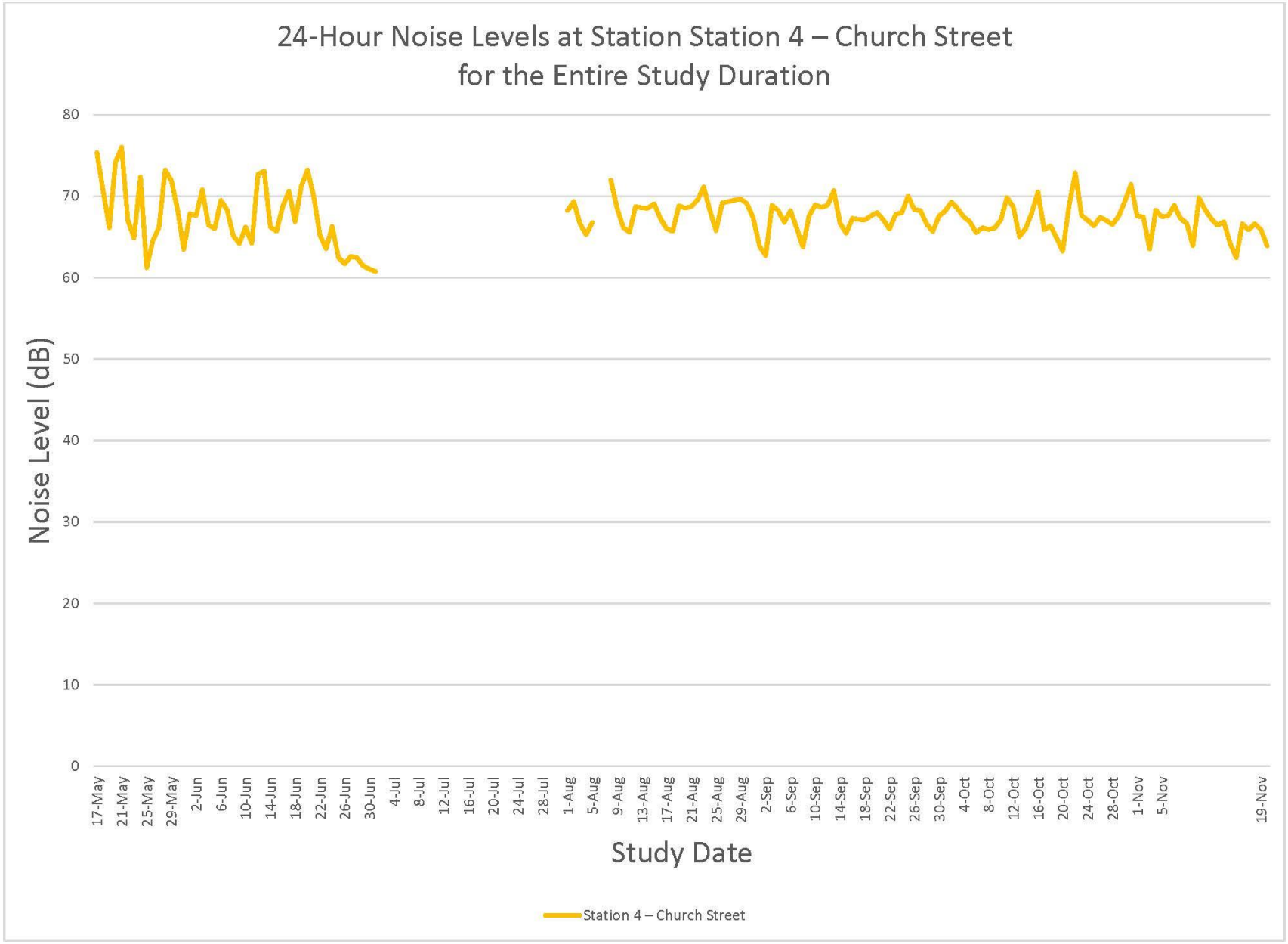
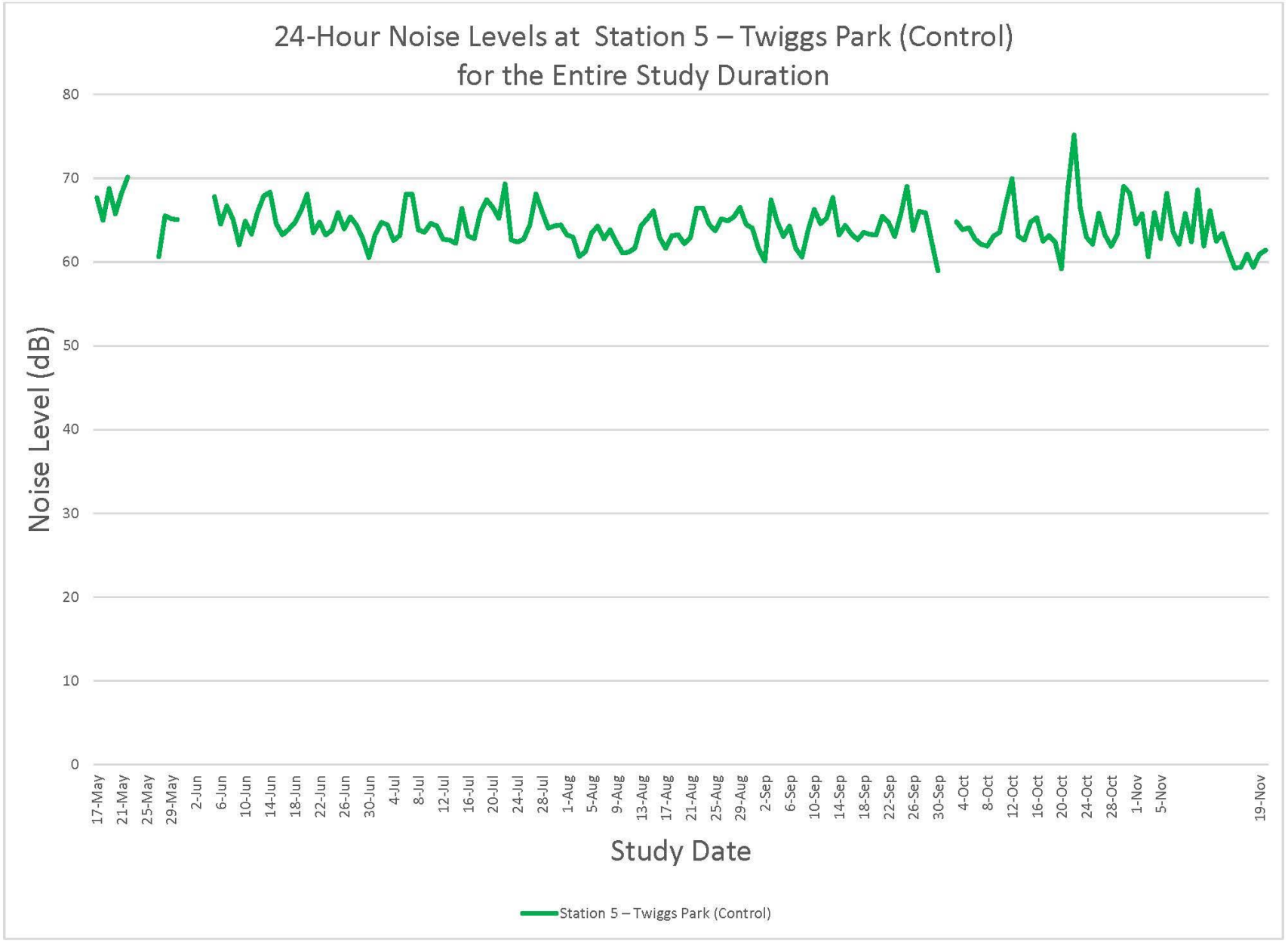
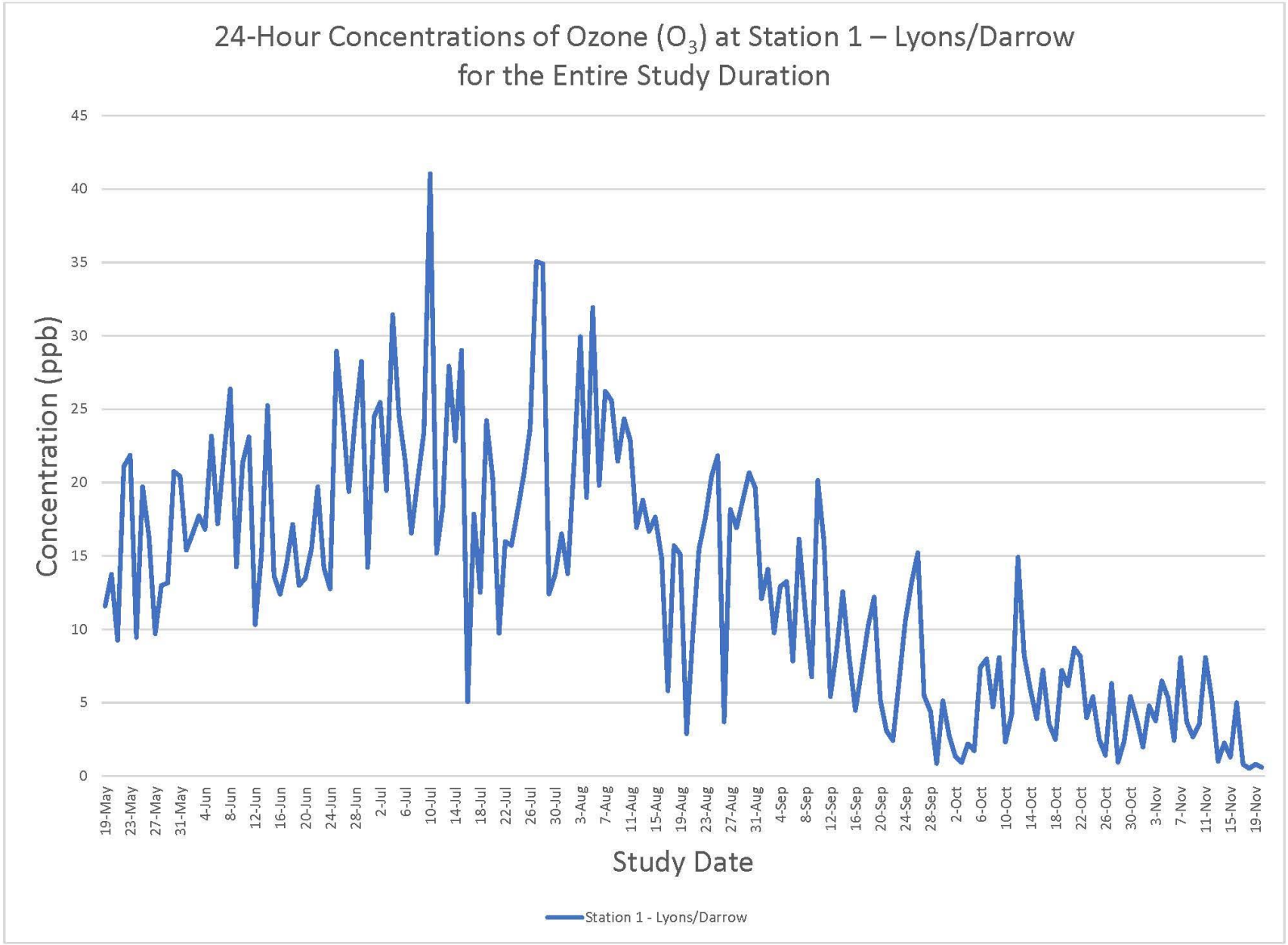
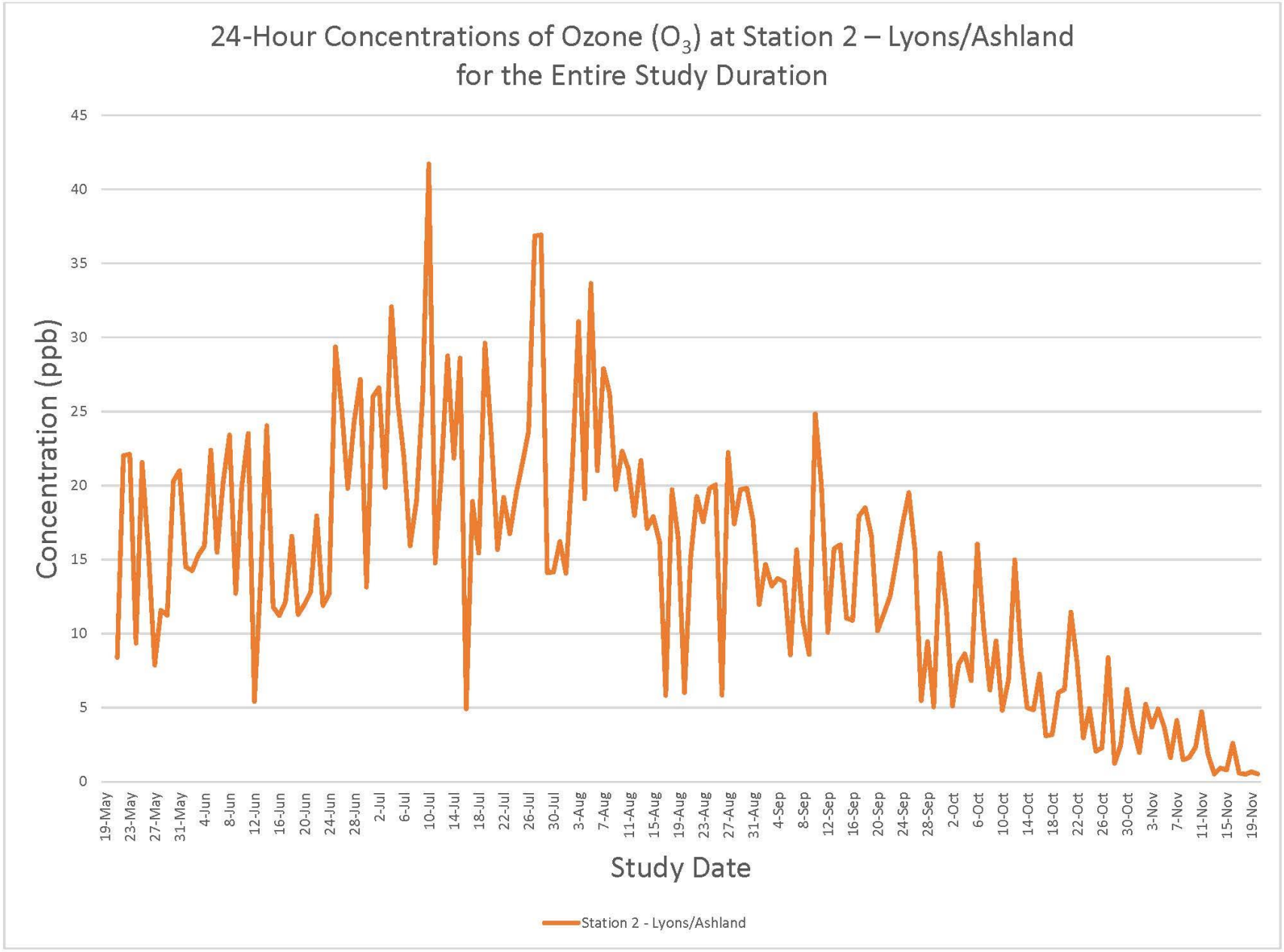
1-Nov
5-Nov
19-Nov
Study Date
Station 2 – Lyons/Ashland

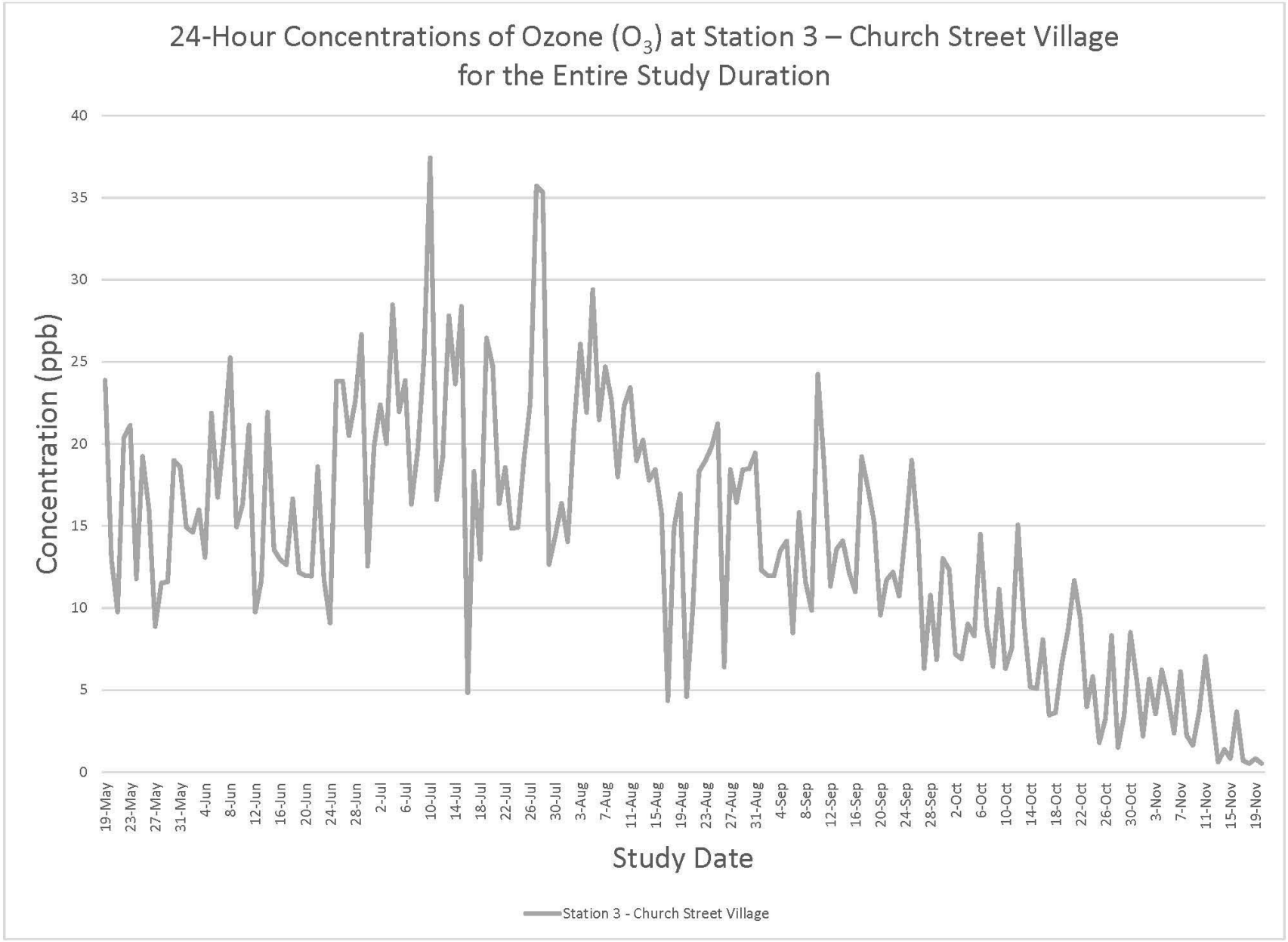

24-Hour Noise Levels at Station 3 – Church Street Village
for the Entire Study Duration
Noise Level (dB)
70
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
19-Nov
Study Date
Station 3 – Church Street Village

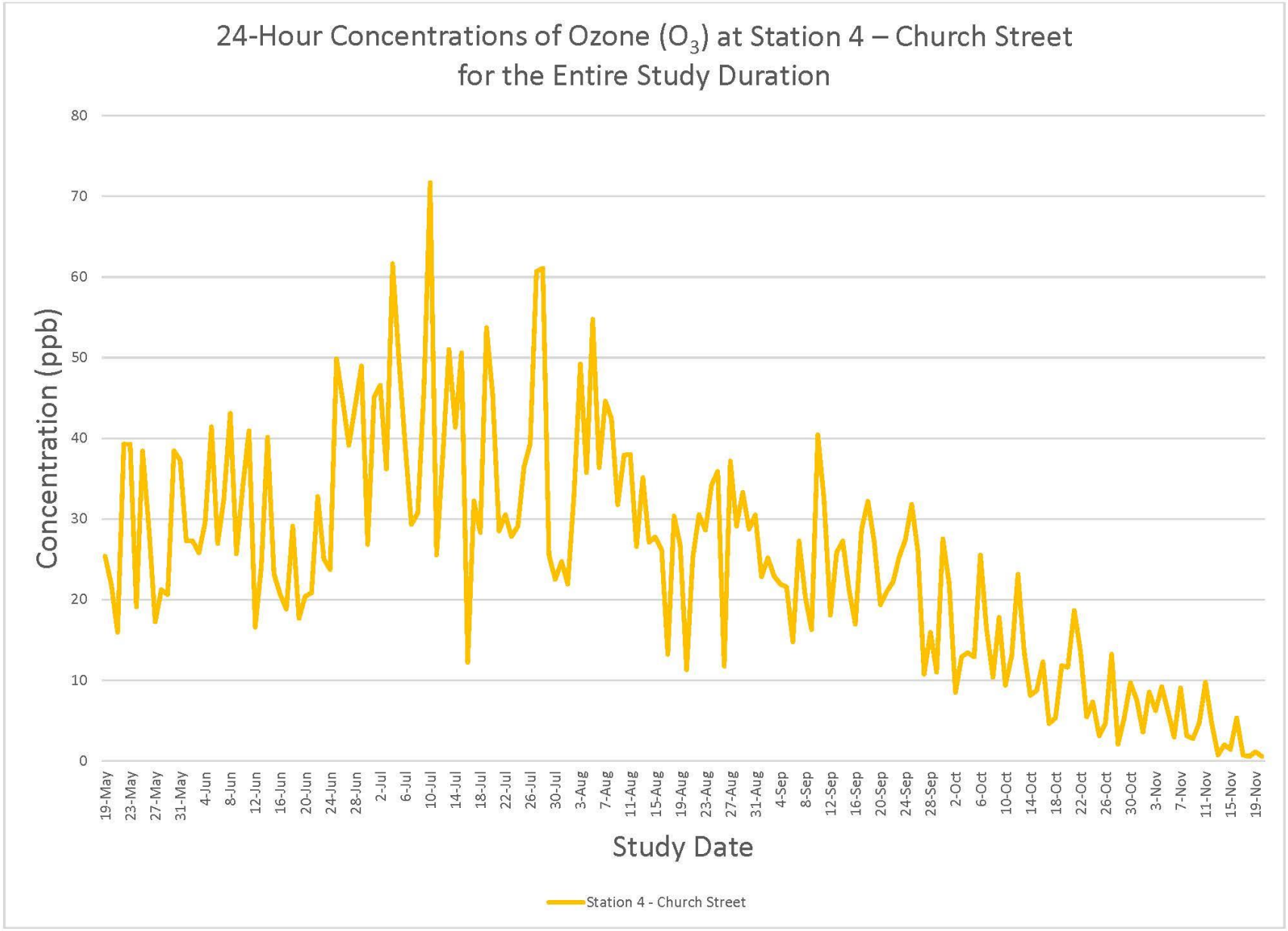

24-Hour Noise Levels at Station Station 4 – Church Street
for the Entire Study Duration
Noise Level (dB)
80
70
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
19-Nov
Study Date
Station 4 – Church Street

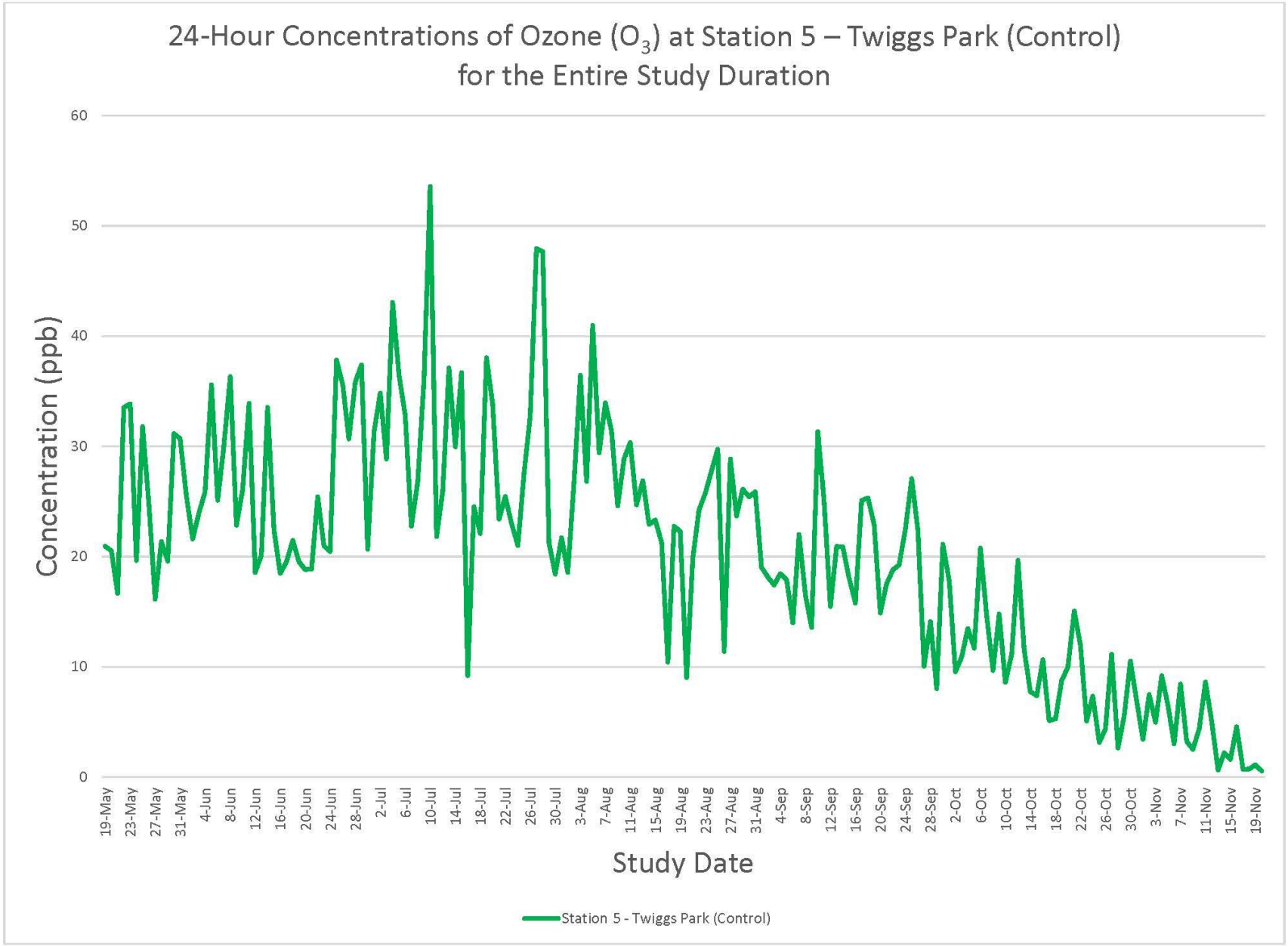

24-Hour Noise Levels at Station 5 – Twiggs Park (Control)
for the Entire Study Duration
Noise Level (dB)
80
70
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
19-Nov
Study Date
Station 5 – Twiggs Park (Control)

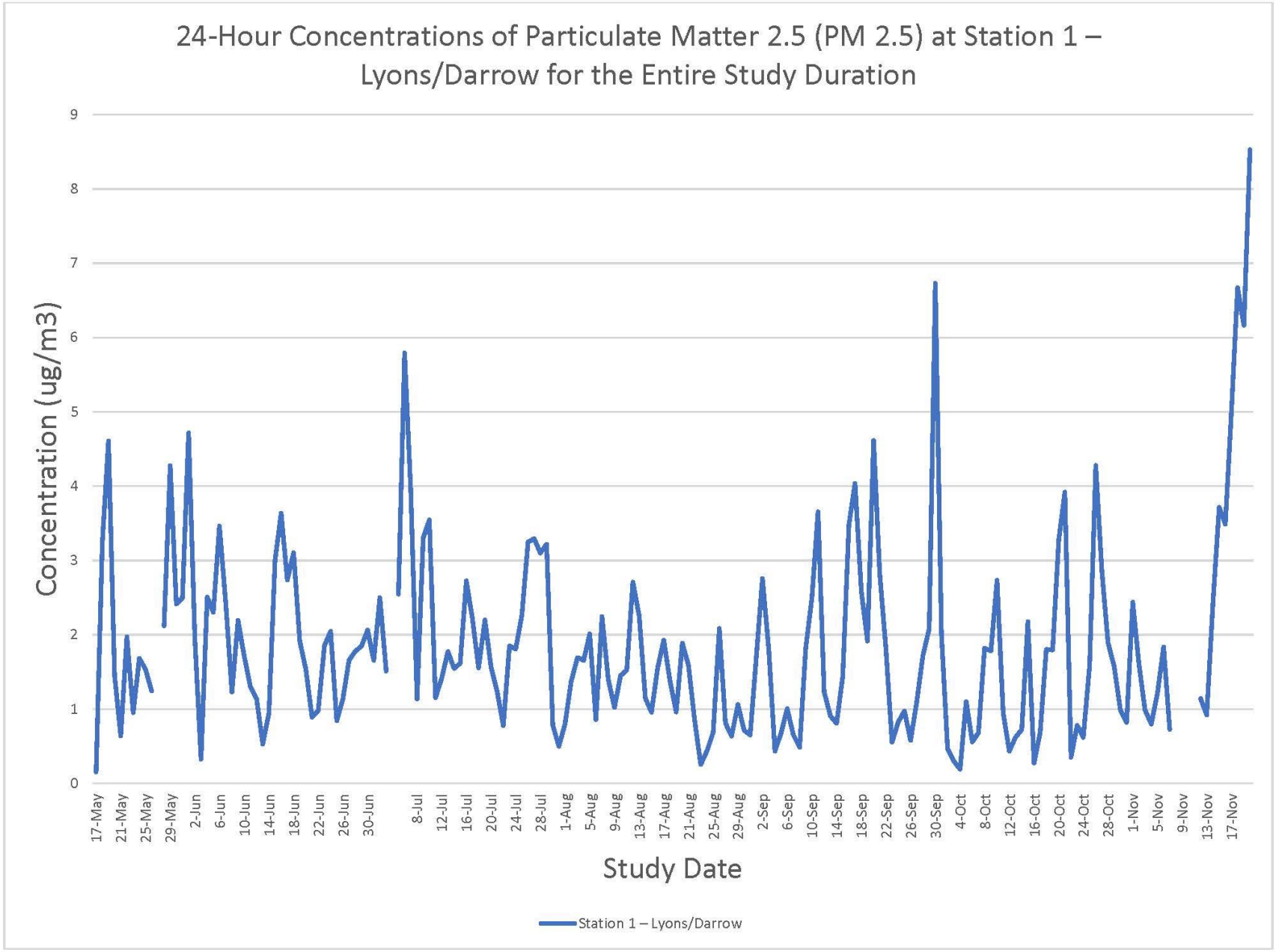

24-Hour Concentrations of Ozone (O_3) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ppb)
45
40
35
30
25
20
15
10
5
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 1 - Lyons/Darrow

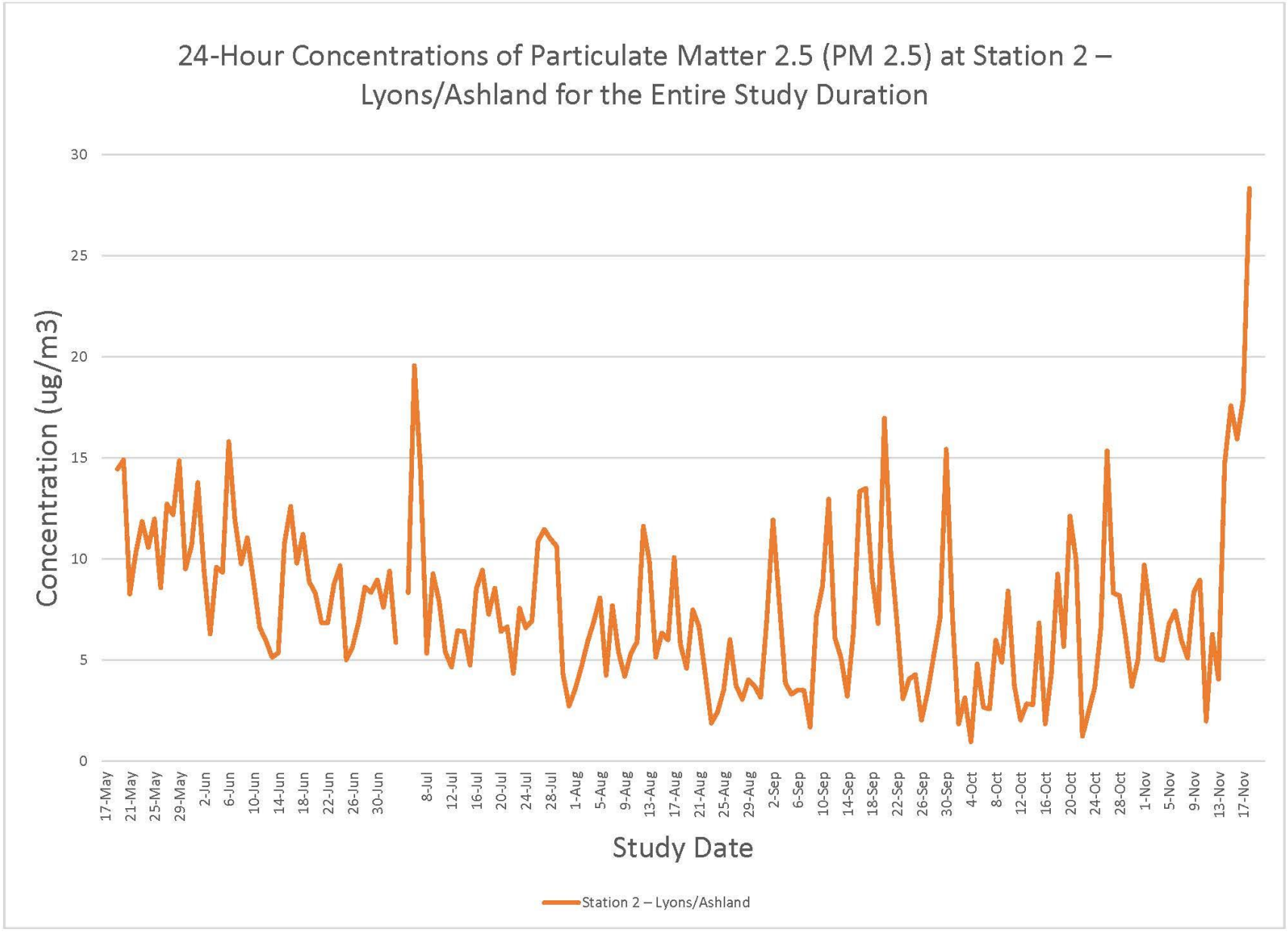

24-Hour Concentrations of Ozone (O_3) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ppb)
45
40
35
30
25
20
15
10
5
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 2 - Lyons/Ashland

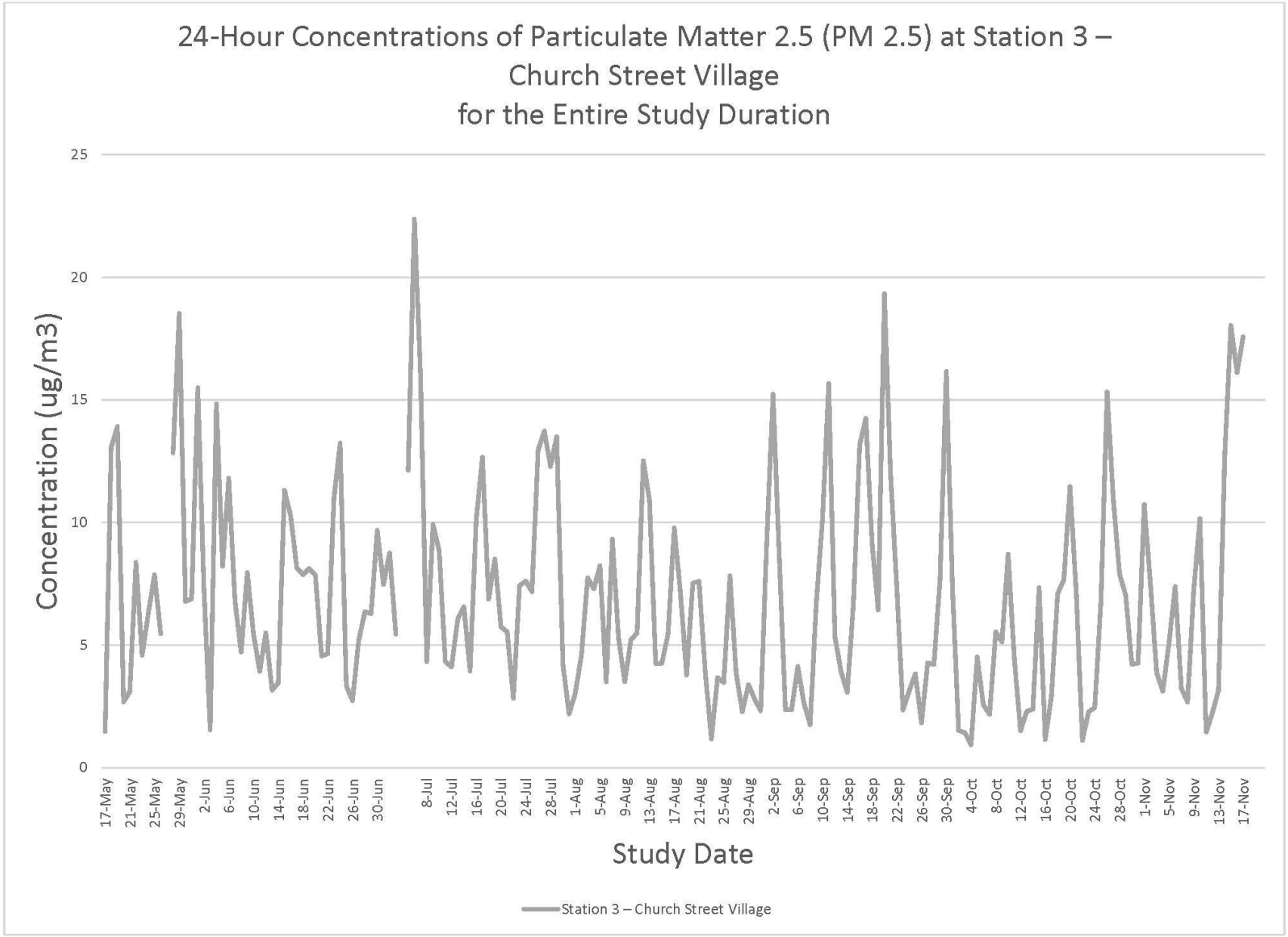

24-Hour Concentrations of Ozone (O_3) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ppb)
40
35
30
25
20
15
10
5
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 3 - Church Street Village

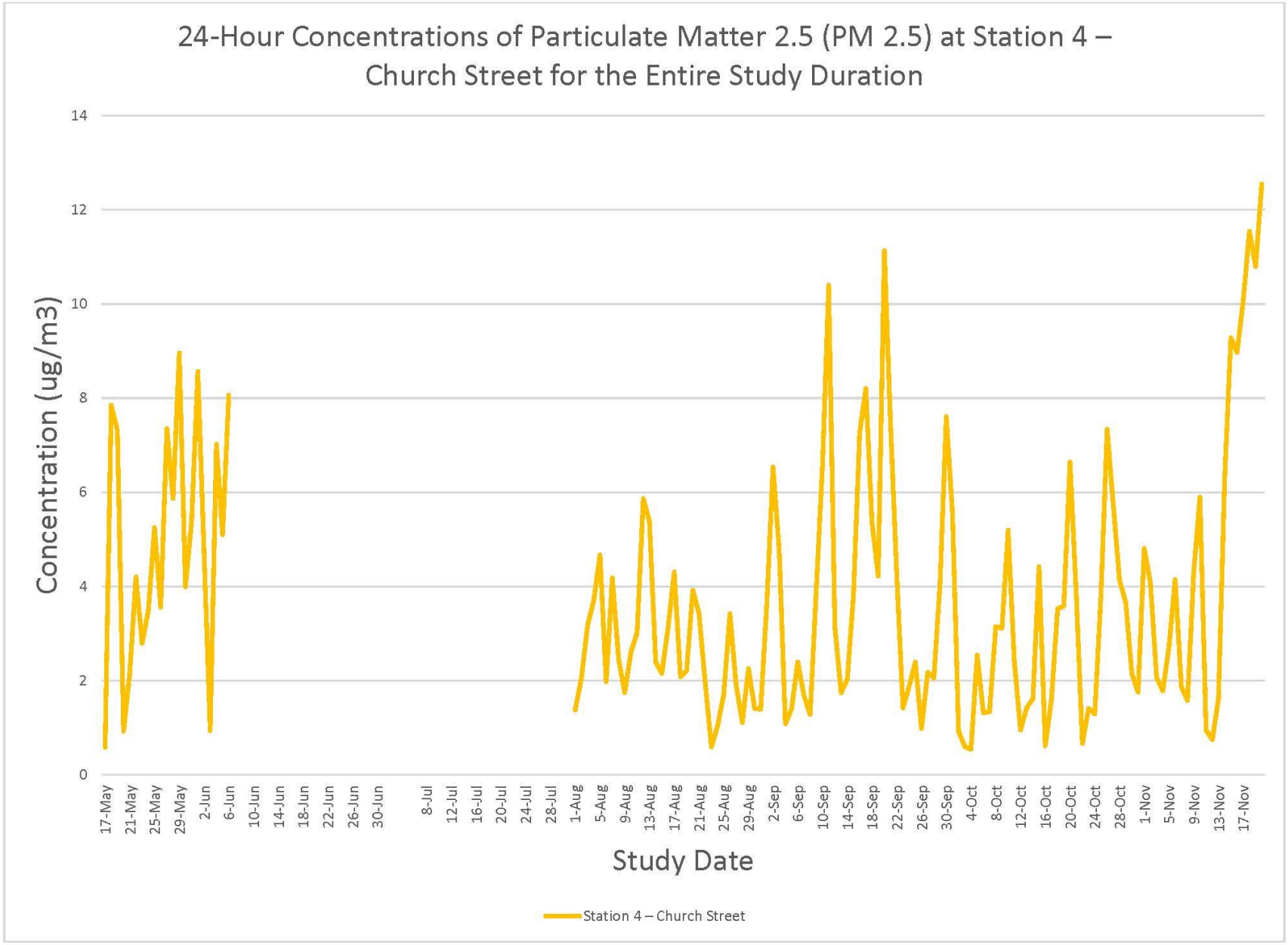

24-Hour Concentrations of Ozone (O_3) at Station 4 – Church Street for the Entire Study Duration
Concentration (ppb)
80
70
60
50
40
30
20
10
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 4 - Church Street

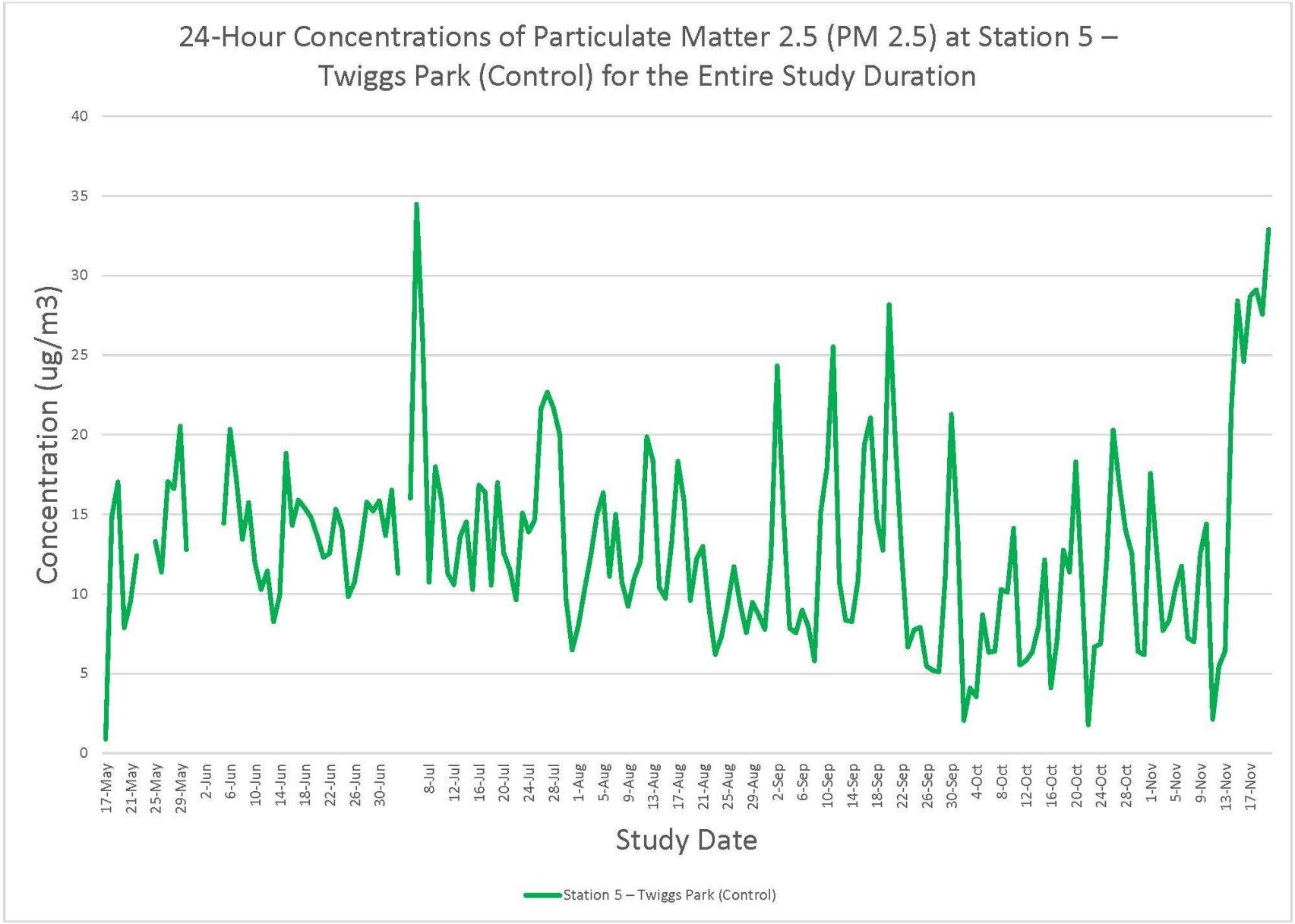

24-Hour Concentrations of Ozone (O_3) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ppb)
60
50
40
30
20
10
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 5 - Twiggs Park (Control)


24-Hour Concentrations of Particulate Matter 2.5 (PM 2.5) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ug/m3)
0
1
2
3
4
5
6
7
8
9
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 1 – Lyons/Darrow


24-Hour Concentrations of Particulate Matter 2.5 (PM 2.5) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ug/m3)
30
25
20
15
10
5
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 2 – Lyons/Ashland


24-Hour Concentrations of Particulate Matter 2.5 (PM 2.5) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ug/m3)
0
5
10
15
20
25
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 3 – Church Street Village


24-Hour Concentrations of Particulate Matter 2.5 (PM 2.5) at Station 4 – Church Street for the Entire Study Duration
Concentration (ug/m3)
0
2
4
6
8
10
12
14
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 4 – Church Street


24-Hour Concentrations of Particulate Matter 2.5 (PM 2.5) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ug/m3)
0
5
10
15
20
25
30
35
40
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
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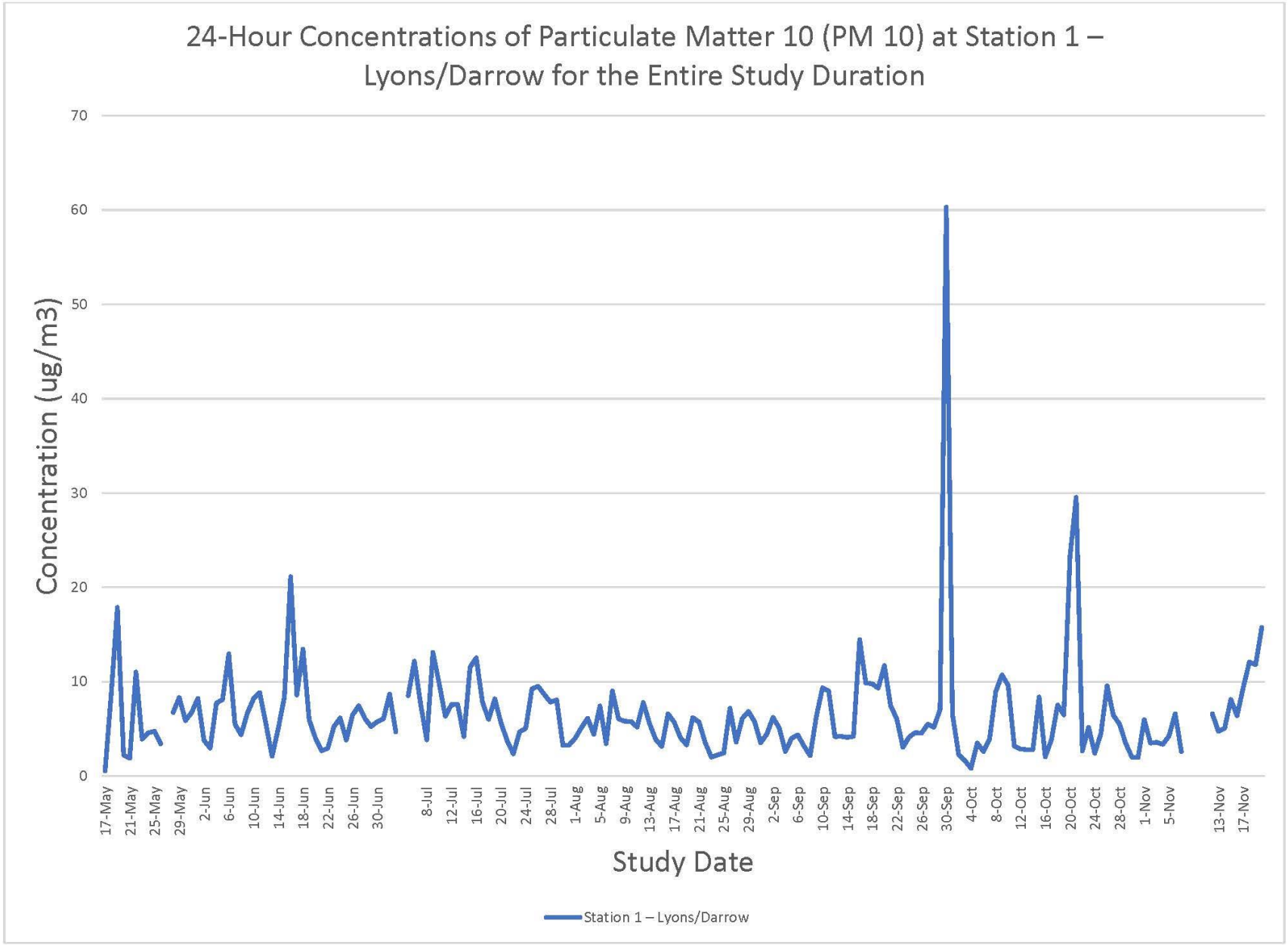
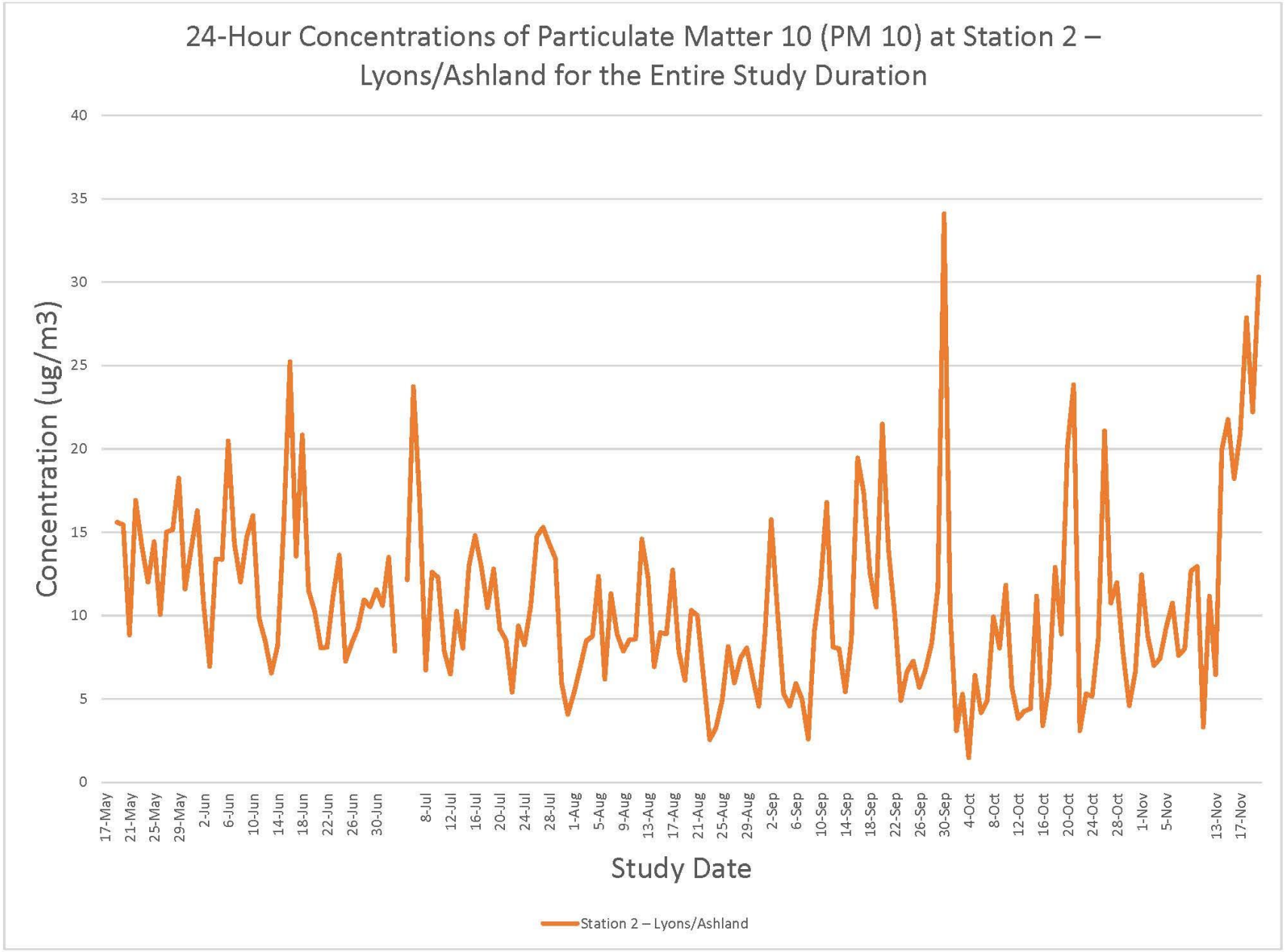
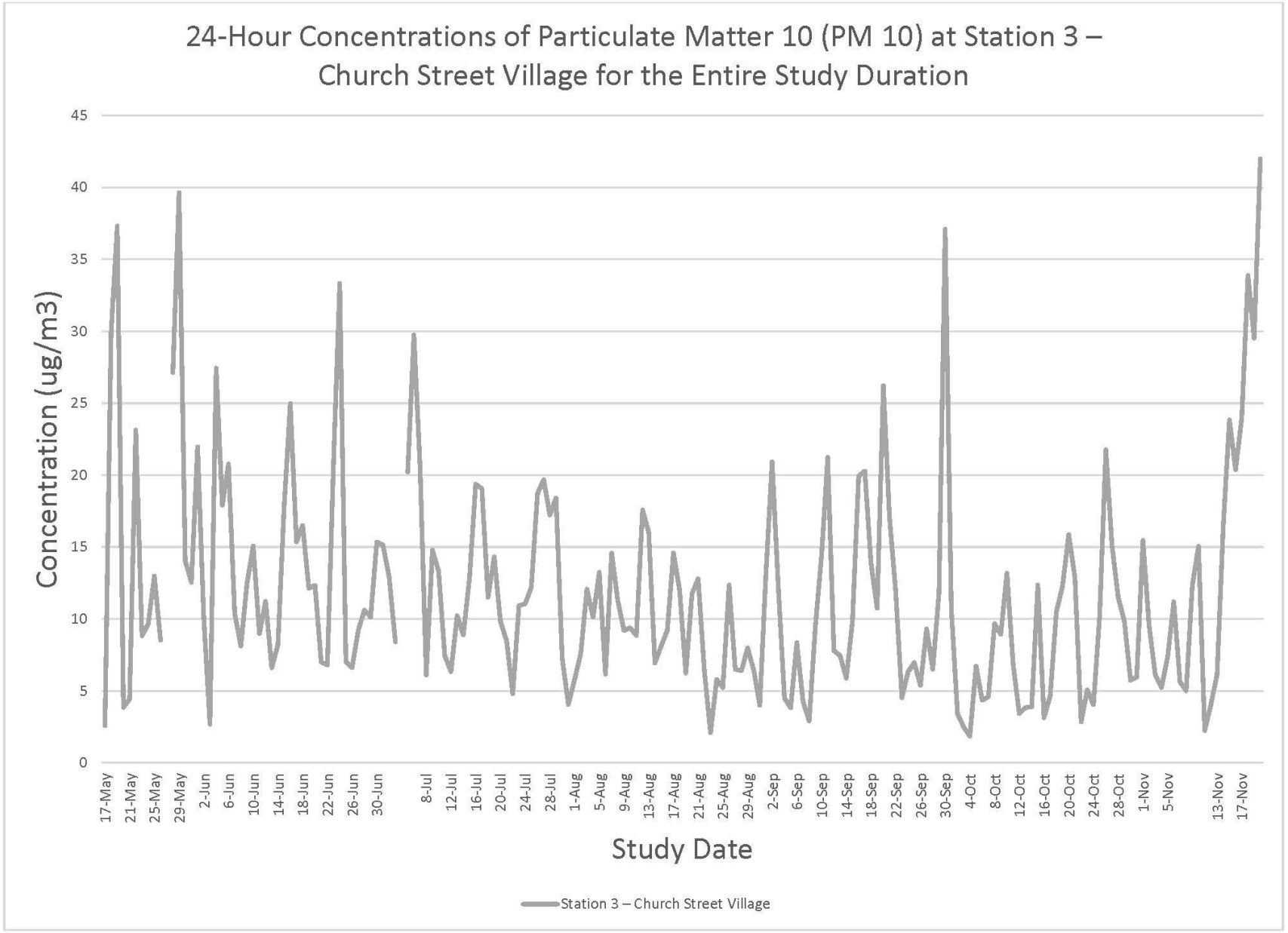
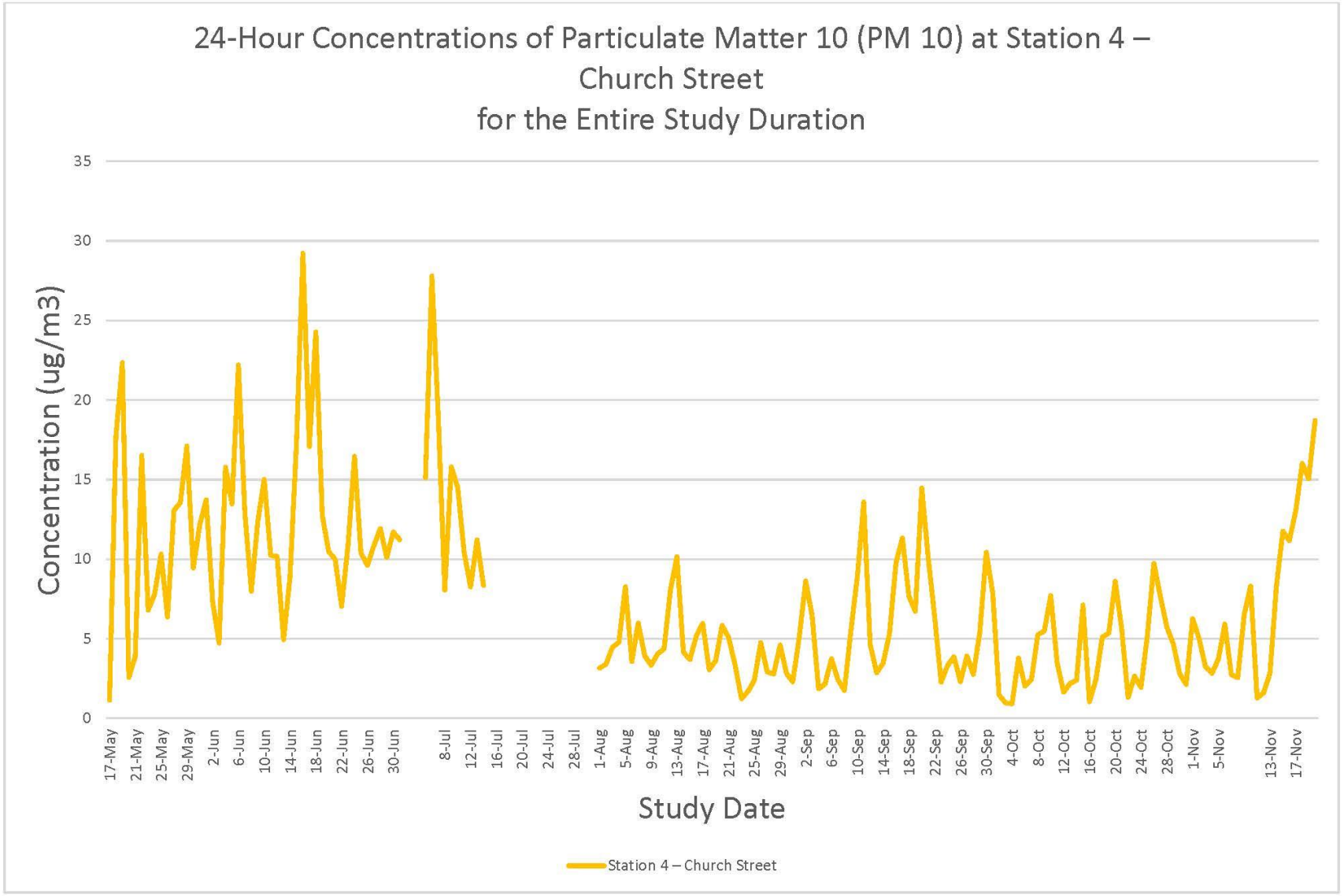
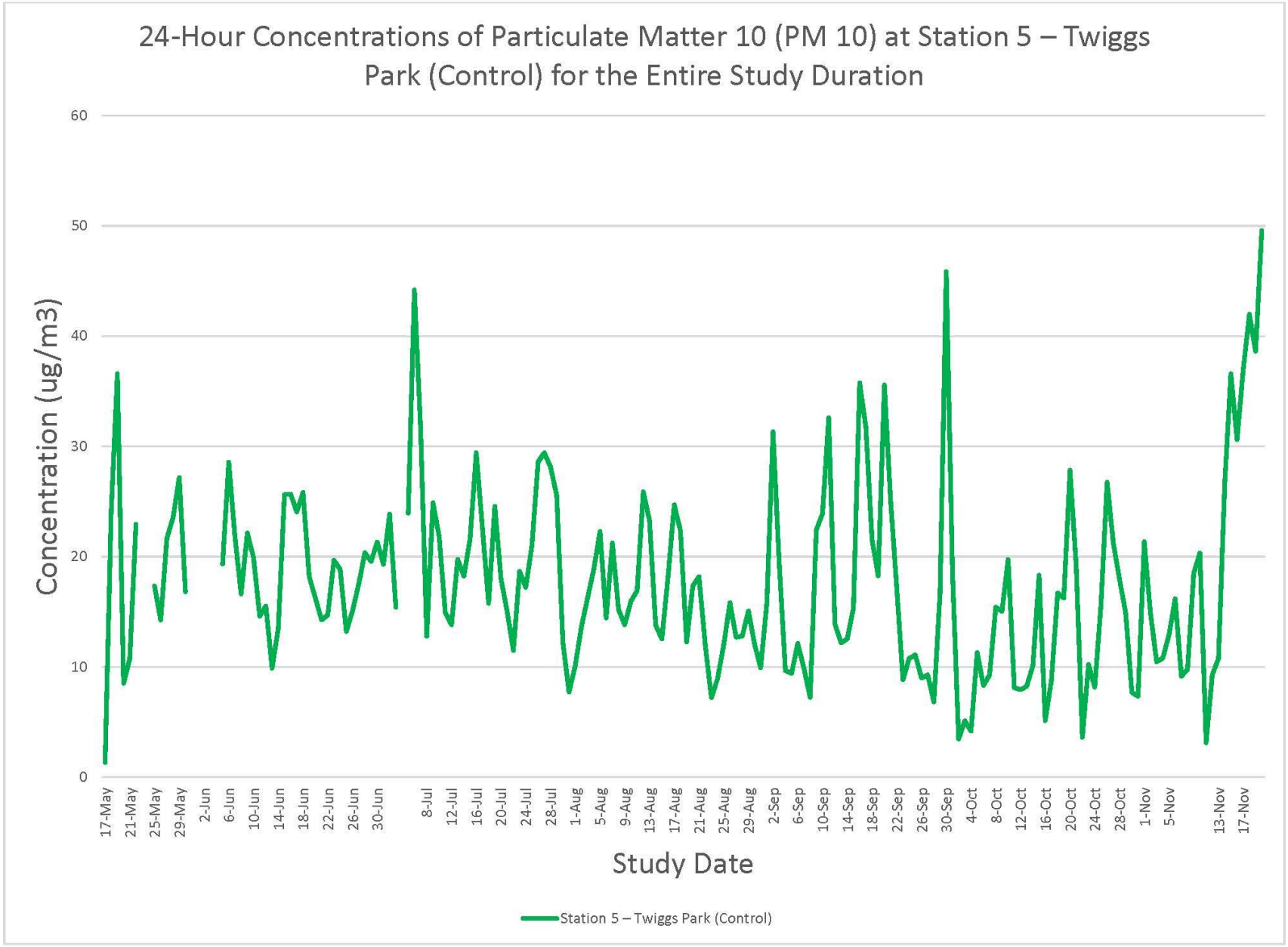
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 5 – Twiggs Park (Control)

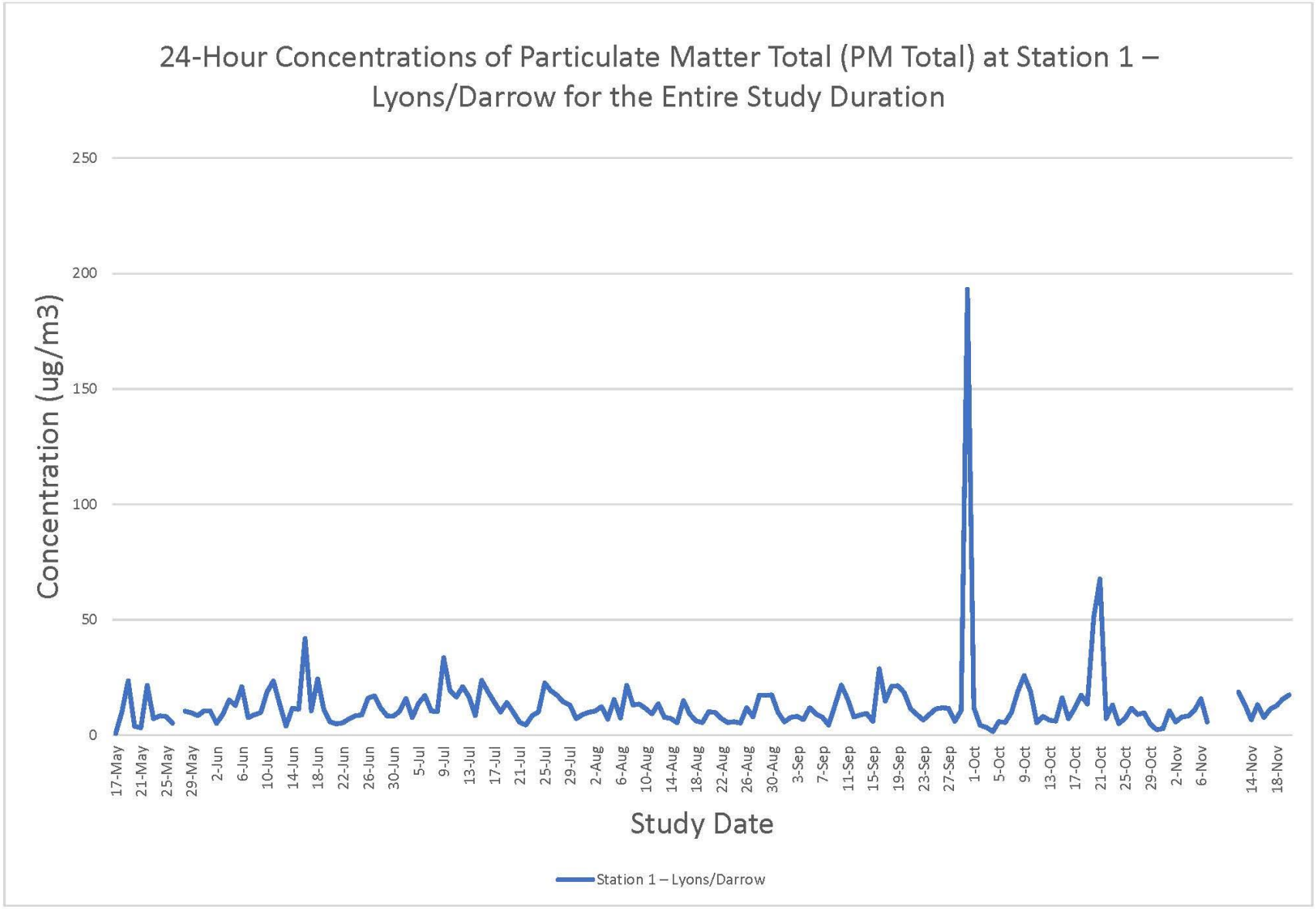

24-Hour Concentrations of Particulate Matter 10 (PM 10) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ug/m3)
70
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
13-Nov
17-Nov
Study Date
Station 1 – Lyons/Darrow

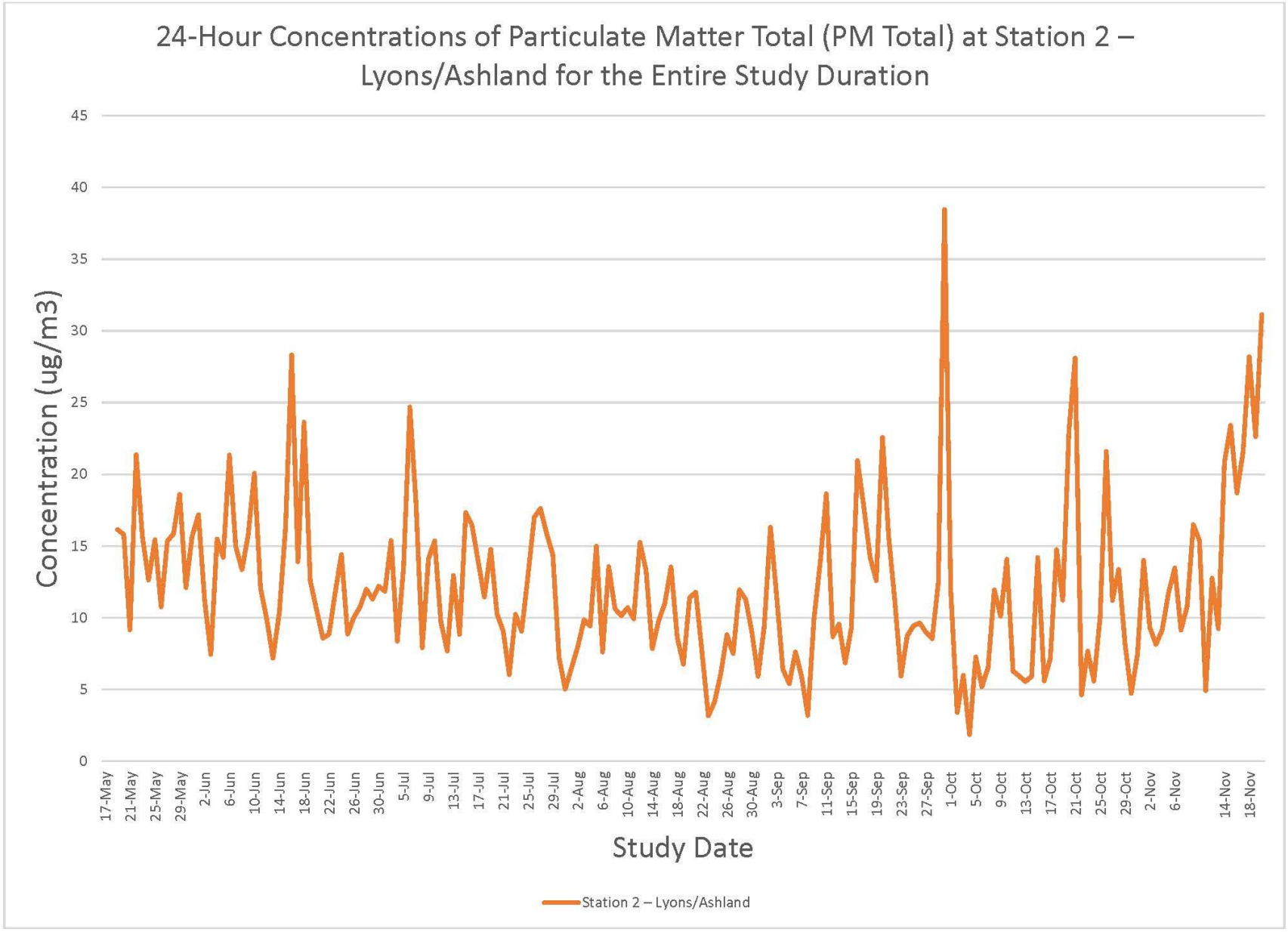

24-Hour Concentrations of Particulate Matter 10 (PM 10) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ug/m3)
0
5
10
15
20
25
30
35
40
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
13-Nov
17-Nov
Study Date
Station 2 – Lyons/Ashland

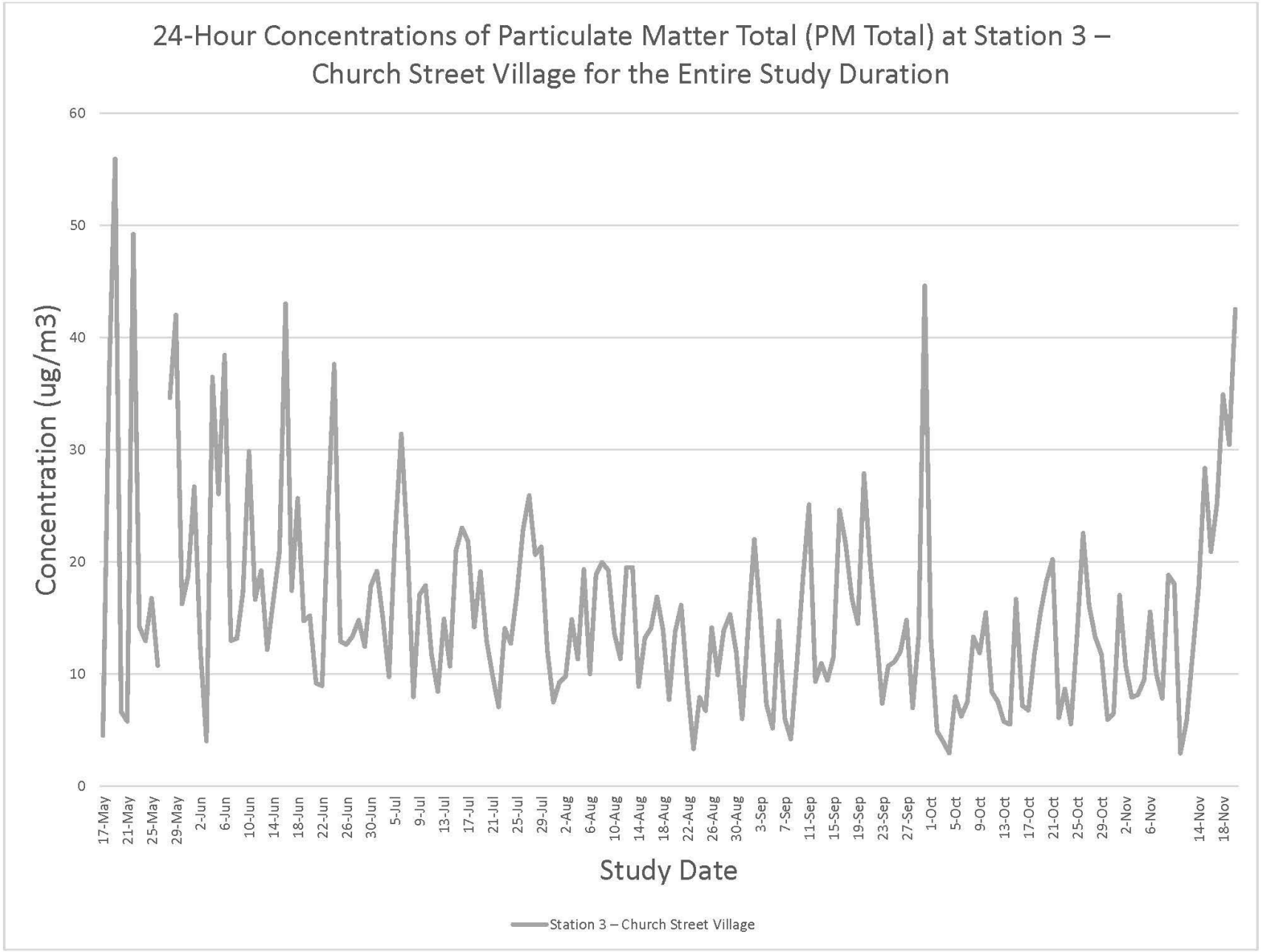

24-Hour Concentrations of Particulate Matter 10 (PM 10) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ug/m3)
0
5
10
15
20
25
30
35
40
45
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
13-Nov
17-Nov
Study Date
Station 3 – Church Street Village

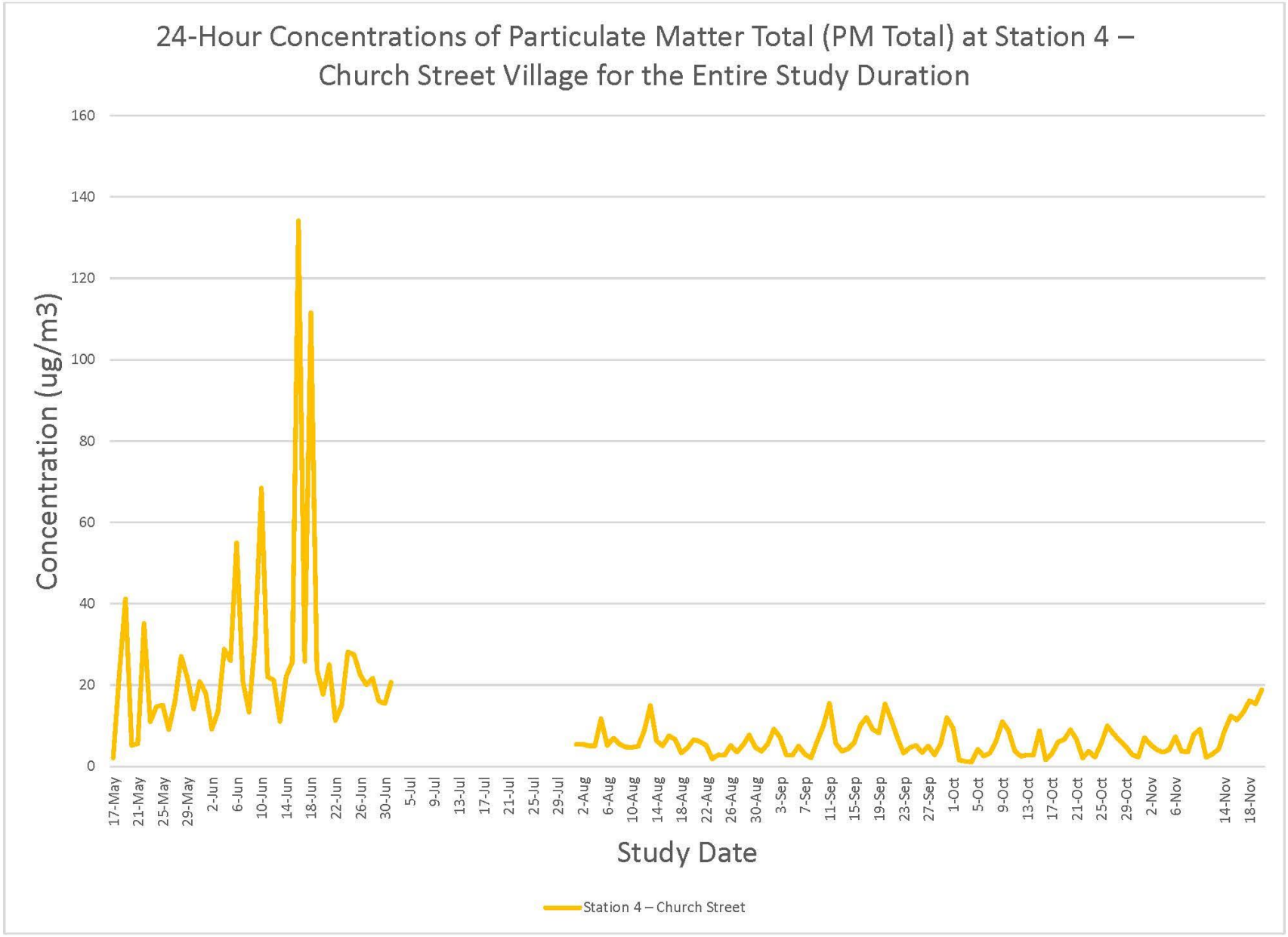

24-Hour Concentrations of Particulate Matter 10 (PM 10) at Station 4 – Church Street
for the Entire Study Duration
Concentration (ug/m3)
35
30
25
20
15
10
5
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
13-Nov
17-Nov
Study Date
Station 4 – Church Street

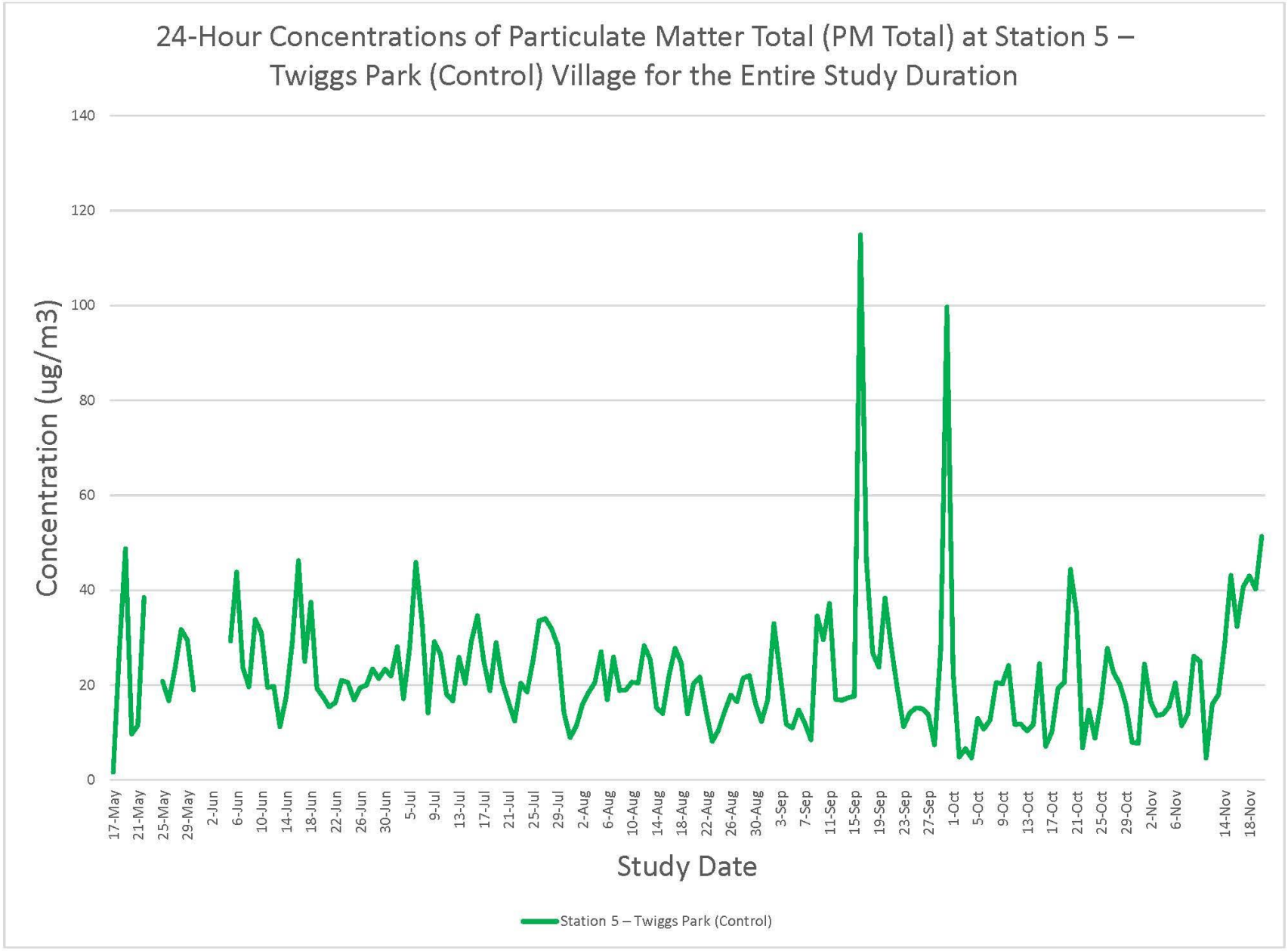

24-Hour Concentrations of Particulate Matter 10 (PM 10) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ug/m3)
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
13-Nov
17-Nov
Study Date
Station 5 – Twiggs Park (Control)

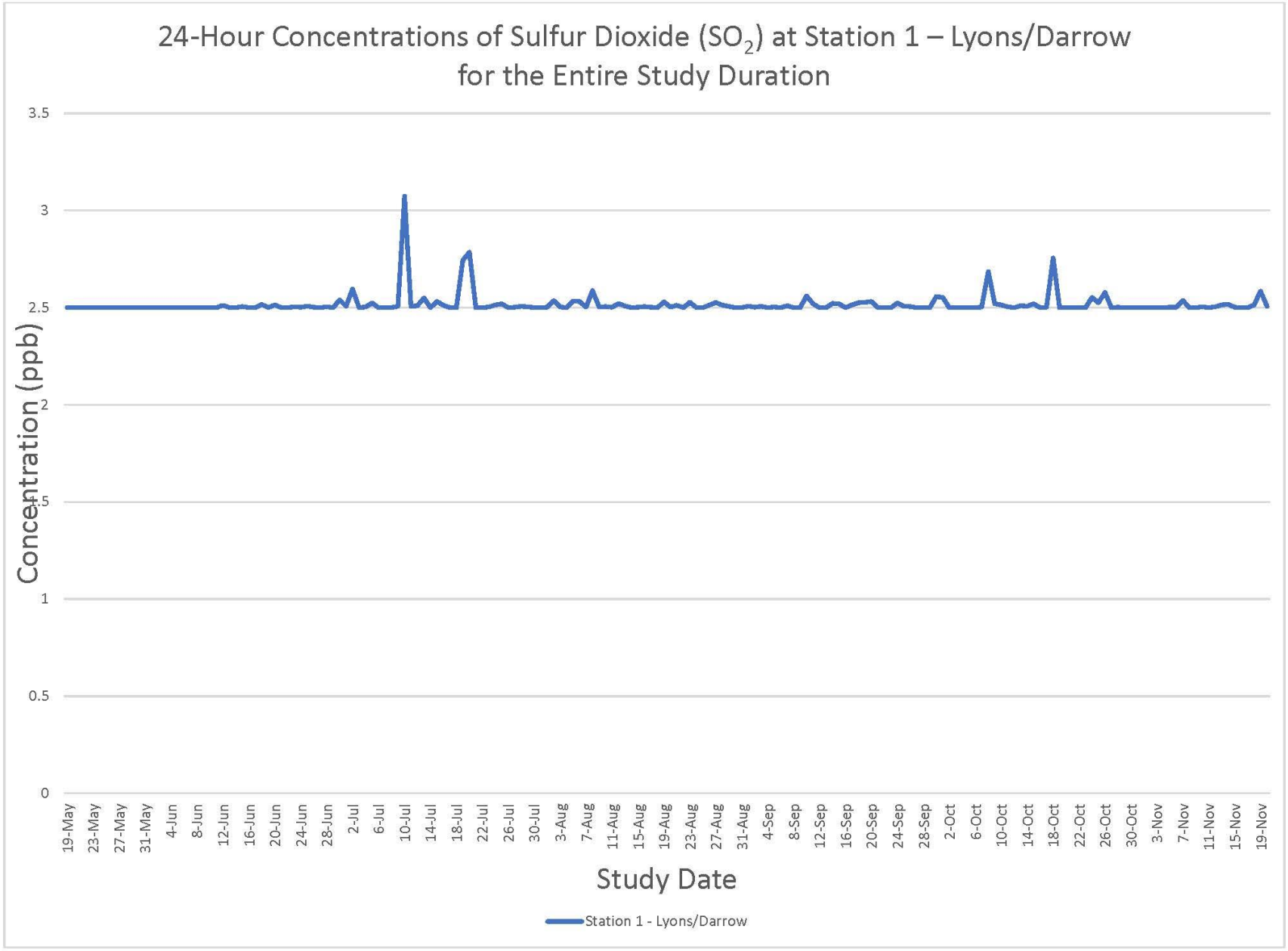

24-Hour Concentrations of Particulate Matter Total (PM Total) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ug/m3)
250
200
150
100
50
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
5-Jul
9-Jul
13-Jul
17-Jul
21-Jul
25-Jul
29-Jul
2-Aug
6-Aug
10-Aug
14-Aug
18-Aug
22-Aug
26-Aug
30-Aug
3-Sep
7-Sep
11-Sep
15-Sep
19-Sep
23-Sep
27-Sep
1-Oct
5-Oct
9-Oct
13-Oct
17-Oct
21-Oct
25-Oct
29-Oct
2-Nov
6-Nov
14-Nov
18-Nov
Study Date
Station 1 – Lyons/Darrow

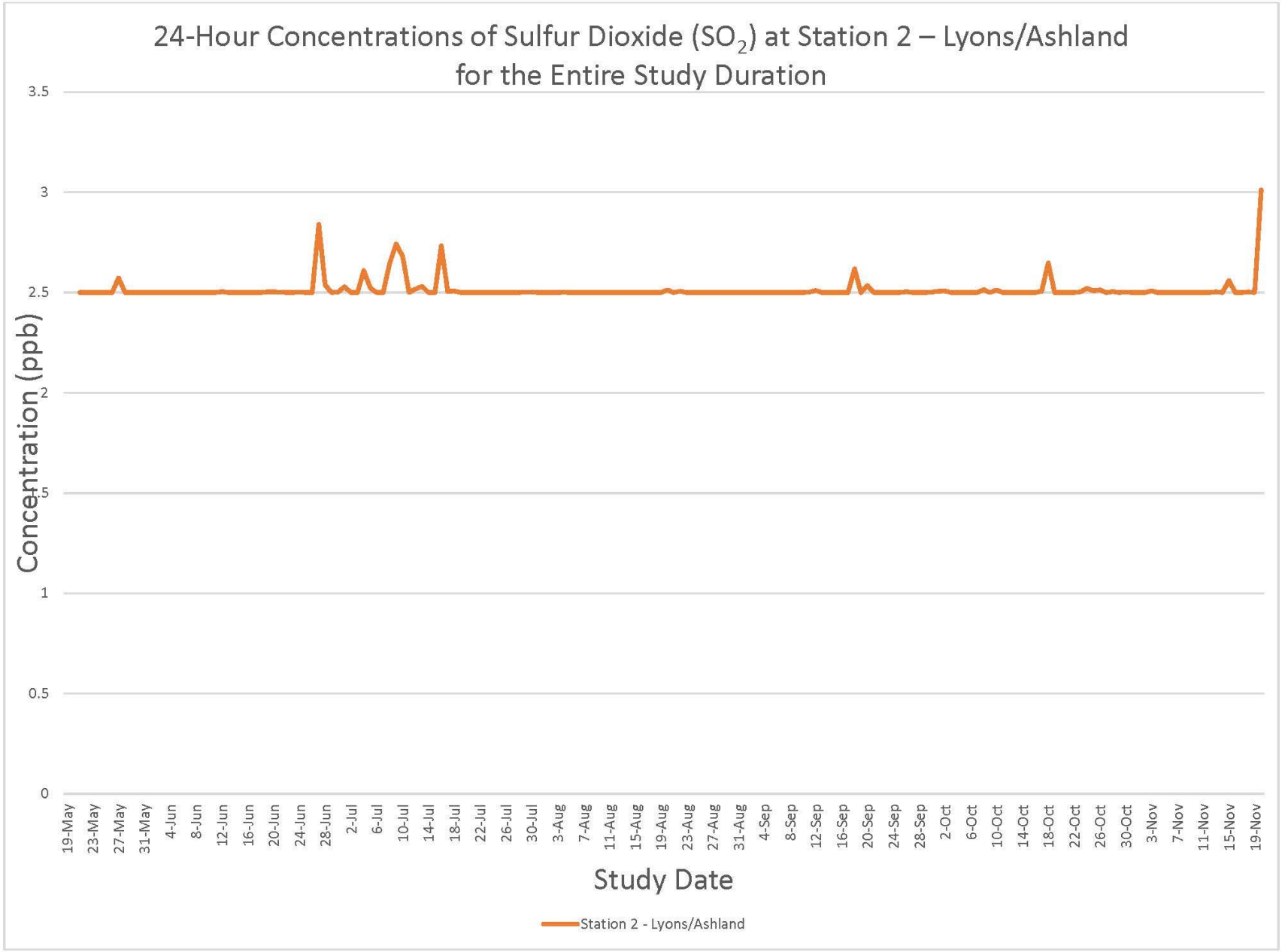

24-Hour Concentrations of Particulate Matter Total (PM Total) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ug/m3)
45
40
35
30
25
20
15
10
5
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
5-Jul
9-Jul
13-Jul
17-Jul
21-Jul
25-Jul
29-Jul
2-Aug
6-Aug
10-Aug
14-Aug
18-Aug
22-Aug
26-Aug
30-Aug
3-Sep
7-Sep
11-Sep
15-Sep
19-Sep
23-Sep
27-Sep
1-Oct
5-Oct
9-Oct
13-Oct
17-Oct
21-Oct
25-Oct
29-Oct
2-Nov
6-Nov
14-Nov
18-Nov
Study Date
Station 2 – Lyons/Ashland

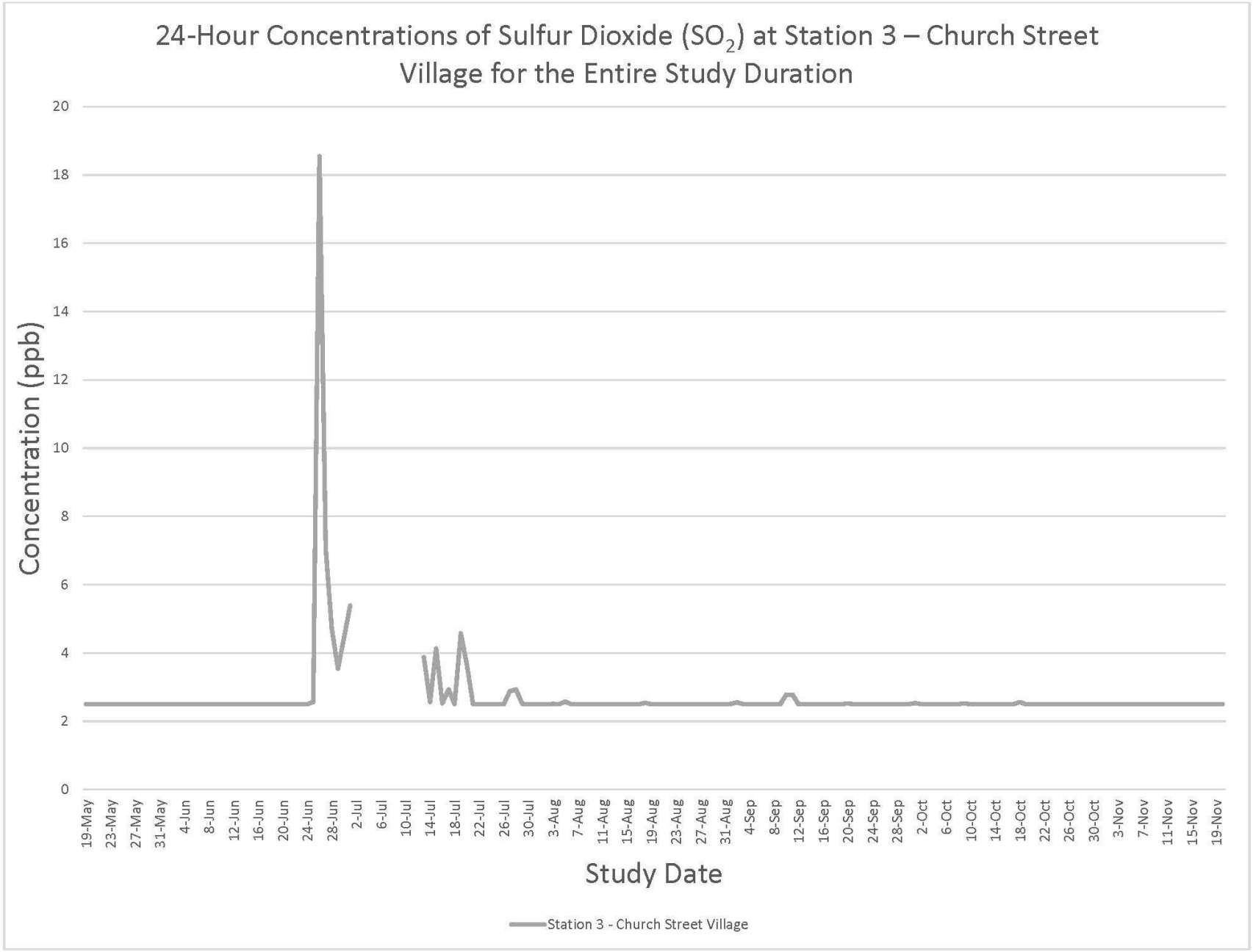

24-Hour Concentrations of Particulate Matter Total (PM Total) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ug/m3)
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
5-Jul
9-Jul
13-Jul
17-Jul
21-Jul
25-Jul
29-Jul
2-Aug
6-Aug
10-Aug
14-Aug
18-Aug
22-Aug
26-Aug
30-Aug
3-Sep
7-Sep
11-Sep
15-Sep
19-Sep
23-Sep
27-Sep
1-Oct
5-Oct
9-Oct
13-Oct
17-Oct
21-Oct
25-Oct
29-Oct
2-Nov
6-Nov
14-Nov
18-Nov
Study Date
Station 3 – Church Street Village

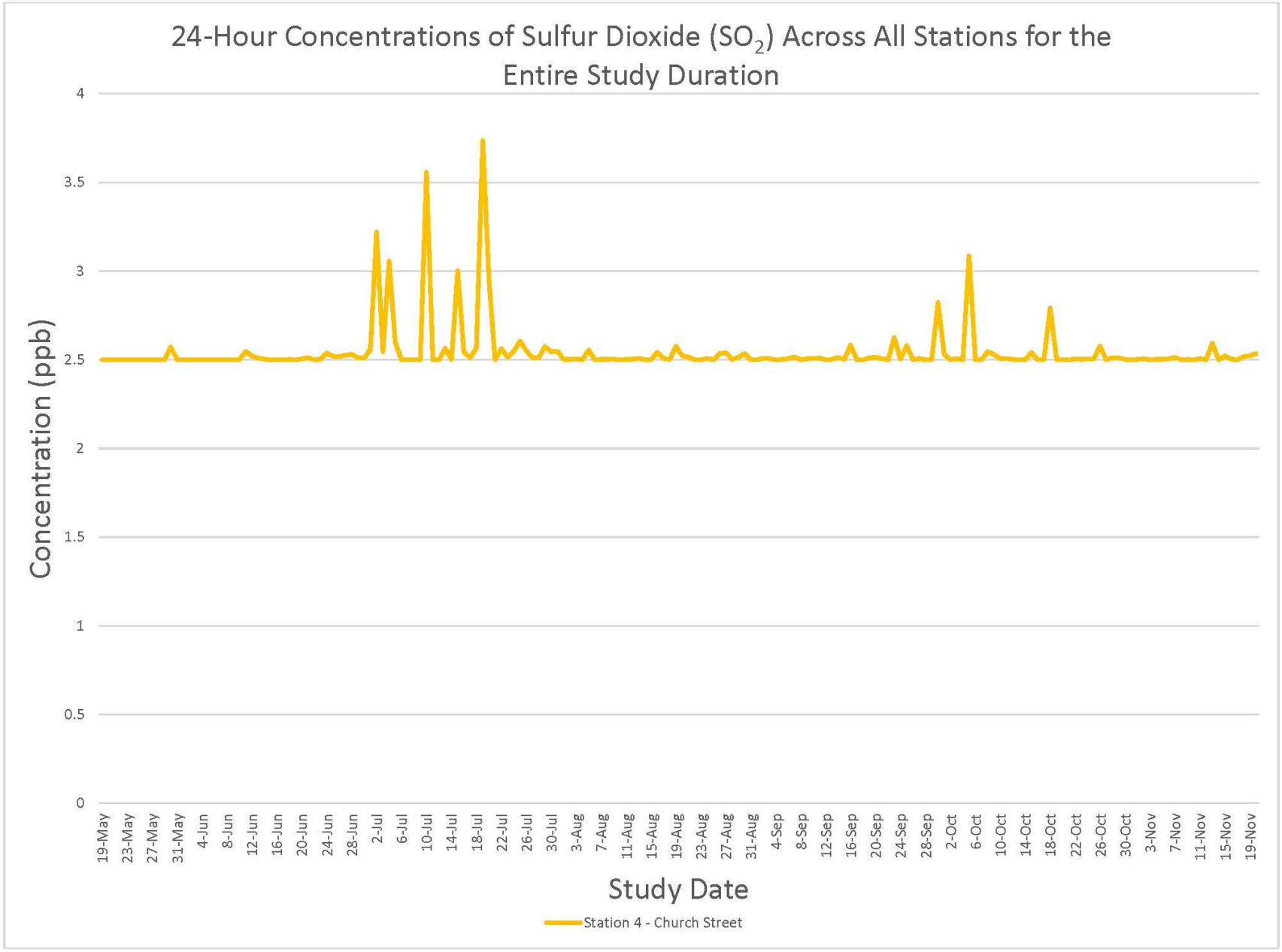

24-Hour Concentrations of Particulate Matter Total (PM Total) at Station 4 – Church Street Village for the Entire Study Duration
Concentration (ug/m3)
160
140
120
100
80
60
40
20
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
5-Jul
9-Jul
13-Jul
17-Jul
21-Jul
25-Jul
29-Jul
2-Aug
6-Aug
10-Aug
14-Aug
18-Aug
22-Aug
26-Aug
30-Aug
3-Sep
7-Sep
11-Sep
15-Sep
19-Sep
23-Sep
27-Sep
1-Oct
5-Oct
9-Oct
13-Oct
17-Oct
21-Oct
25-Oct
29-Oct
2-Nov
6-Nov
14-Nov
18-Nov
Study Date
Station 4 – Church Street

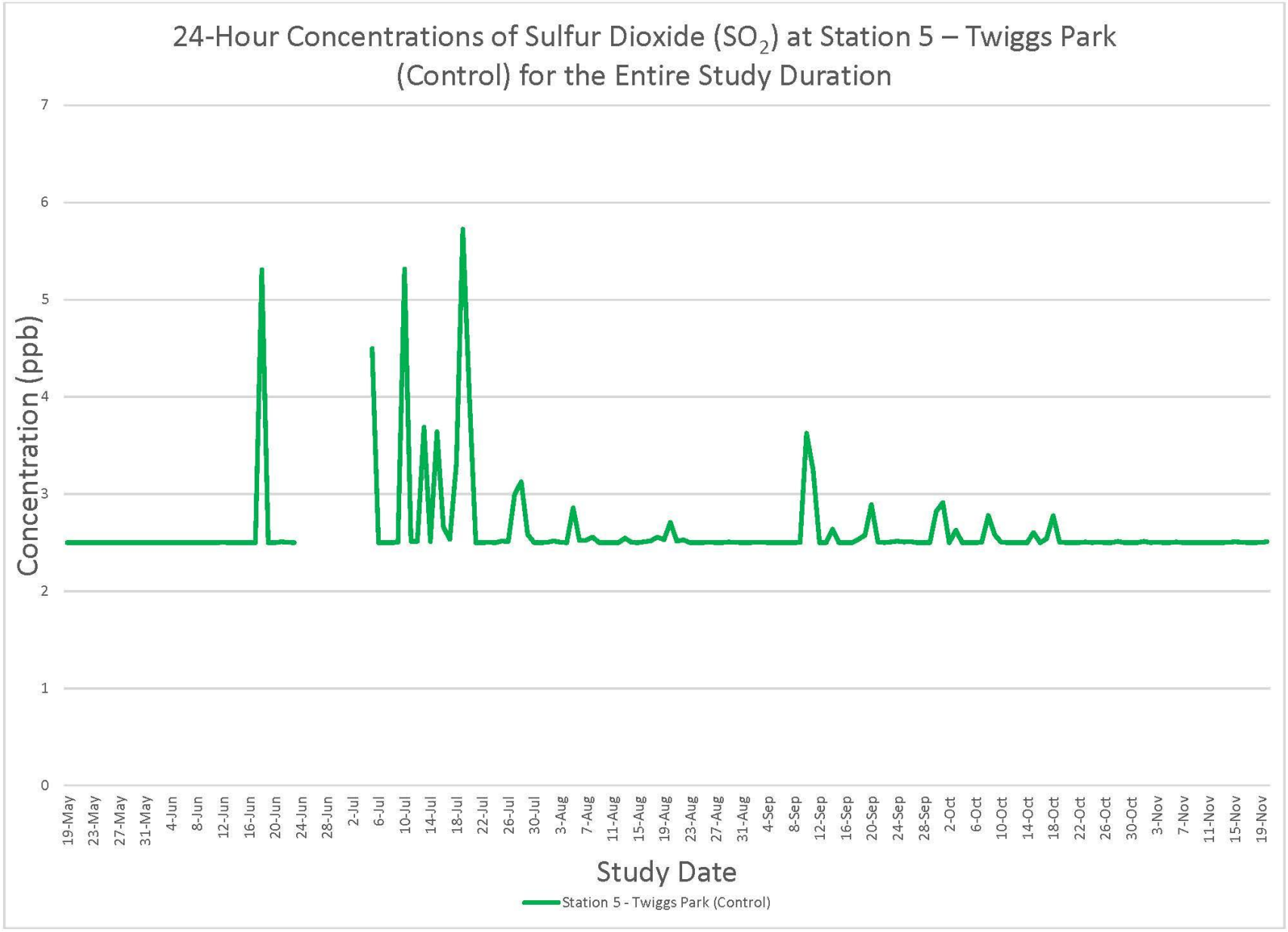

24-Hour Concentrations of Particulate Matter Total (PM Total) at Station 5 – Twiggs Park (Control) Village for the Entire Study Duration
Concentration (ug/m3)
140
120
100
80
60
40
20
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
5-Jul
9-Jul
13-Jul
17-Jul
21-Jul
25-Jul
29-Jul
2-Aug
6-Aug
10-Aug
14-Aug
18-Aug
22-Aug
26-Aug
30-Aug
3-Sep
7-Sep
11-Sep
15-Sep
19-Sep
23-Sep
27-Sep
1-Oct
5-Oct
9-Oct
13-Oct
17-Oct
21-Oct
25-Oct
29-Oct
2-Nov
6-Nov
14-Nov
18-Nov
Study Date
Station 5 – Twiggs Park (Control)

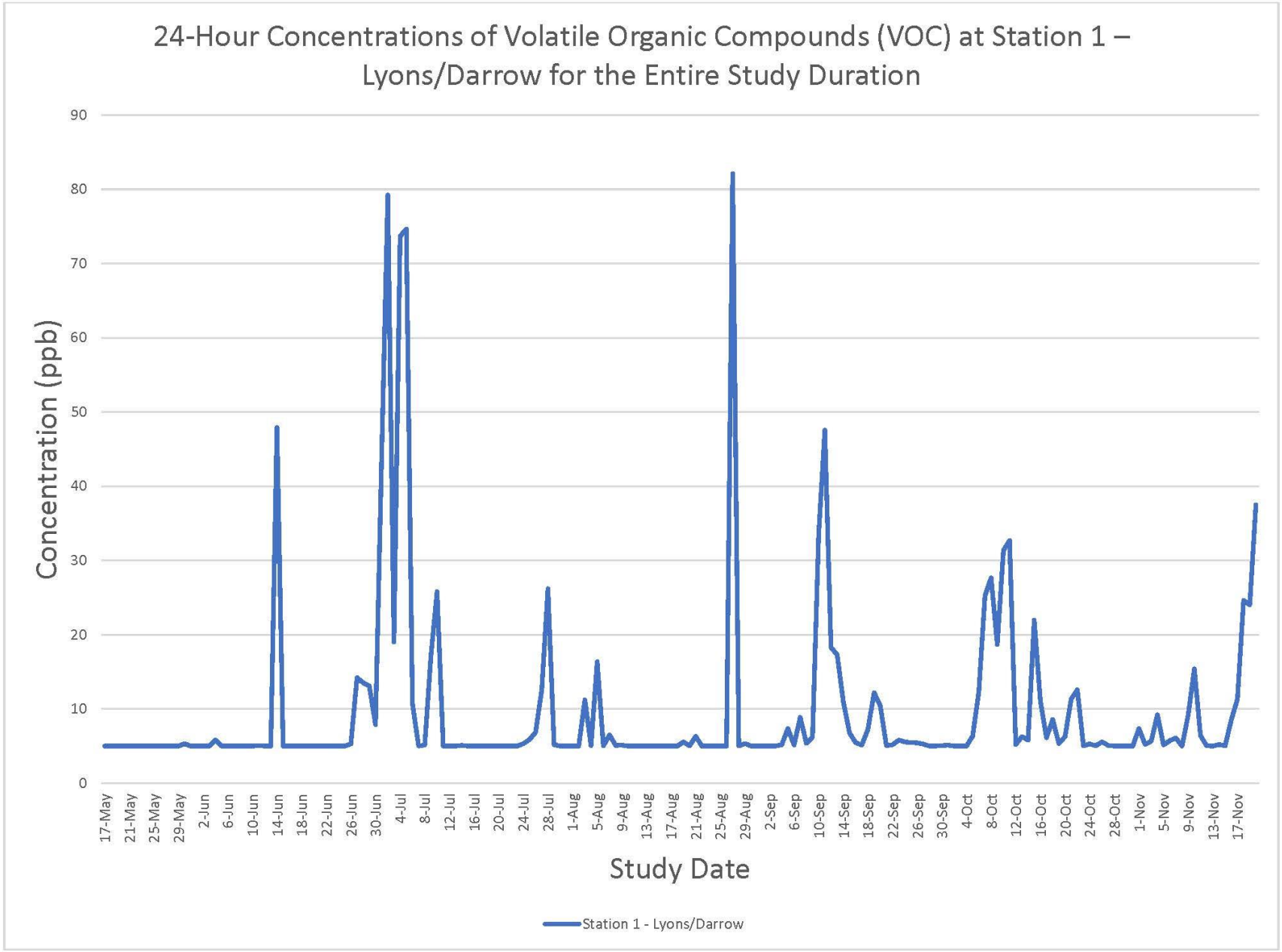

24-Hour Concentrations of Sulfur Dioxide (SO_2) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ppb)
3.5
3
2.5
2
1.5
1
0.5
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 1 - Lyons/Darrow

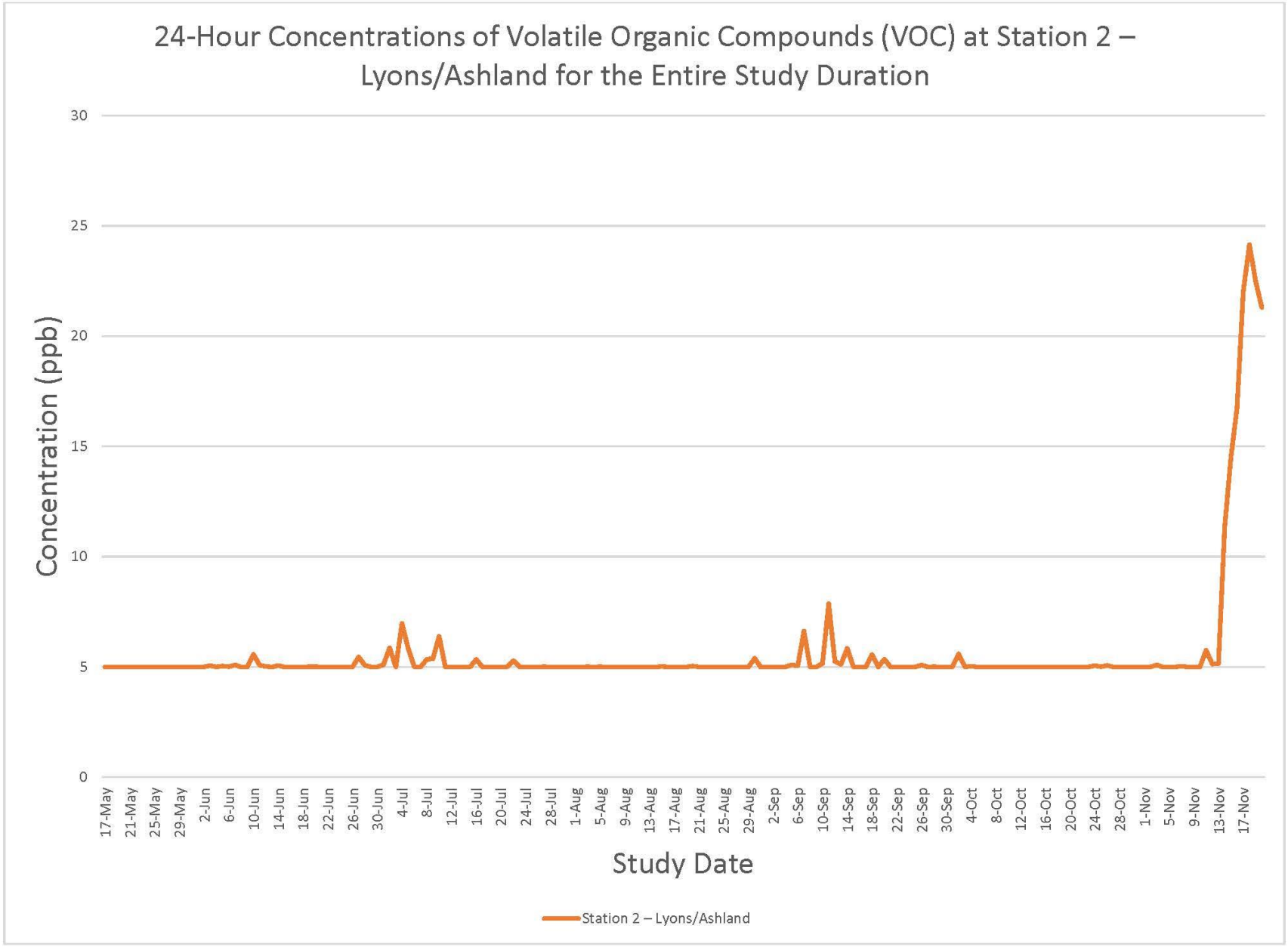

24-Hour Concentrations of Sulfur Dioxide (SO_2) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ppb)
3.5
3
2.5
2
1.5
1
0.5
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 2 - Lyons/Ashland

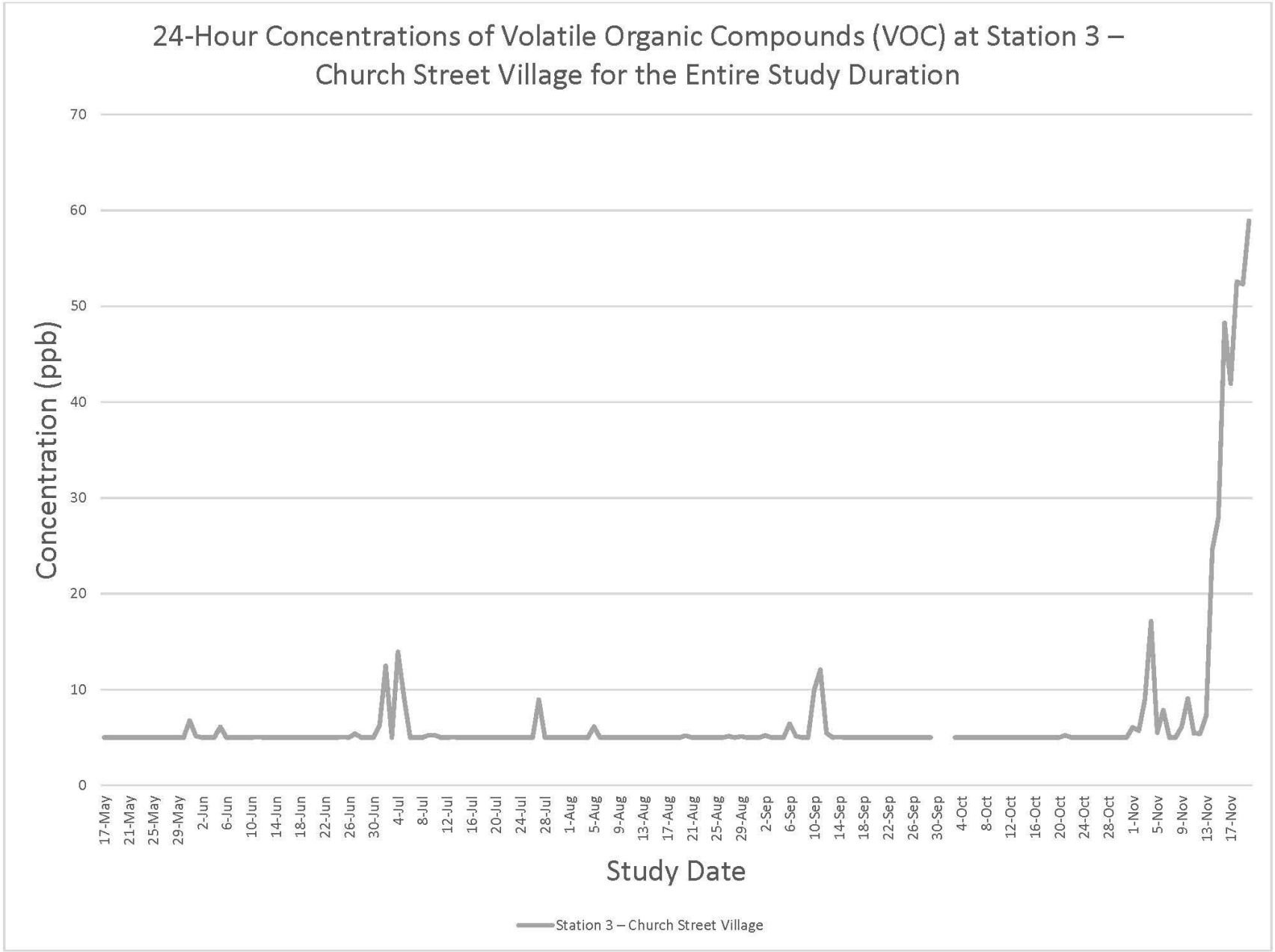

24-Hour Concentrations of Sulfur Dioxide (SO_2) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ppb)
0
2
4
6
8
10
12
14
16
18
20
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 3 - Church Street Village

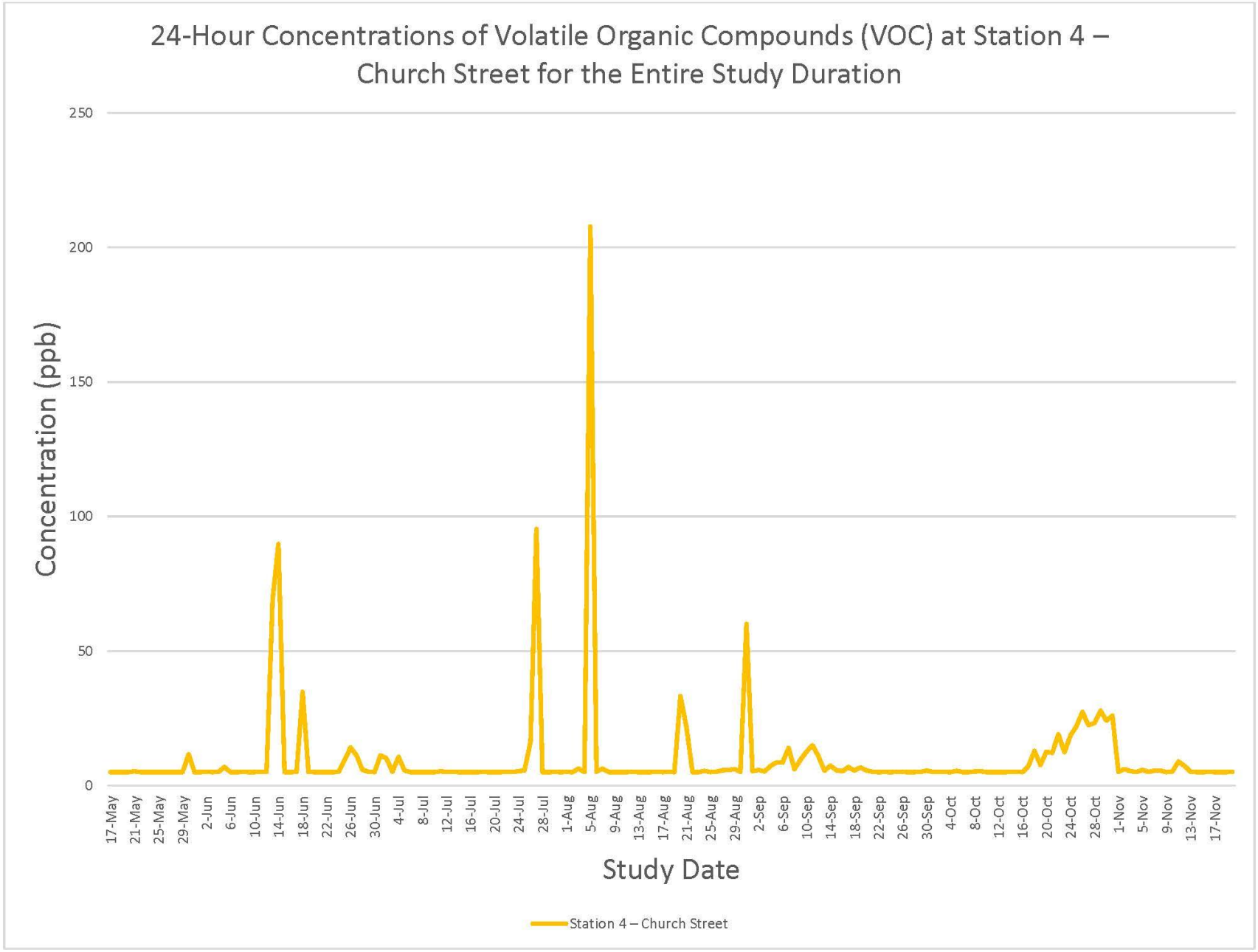

24-Hour Concentrations of Sulfur Dioxide (SO_2) Across All Stations for the Entire Study Duration
Concentration (ppb)
4
3.5
3
2.5
2
1.5
1
0.5
0
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 4 - Church Street

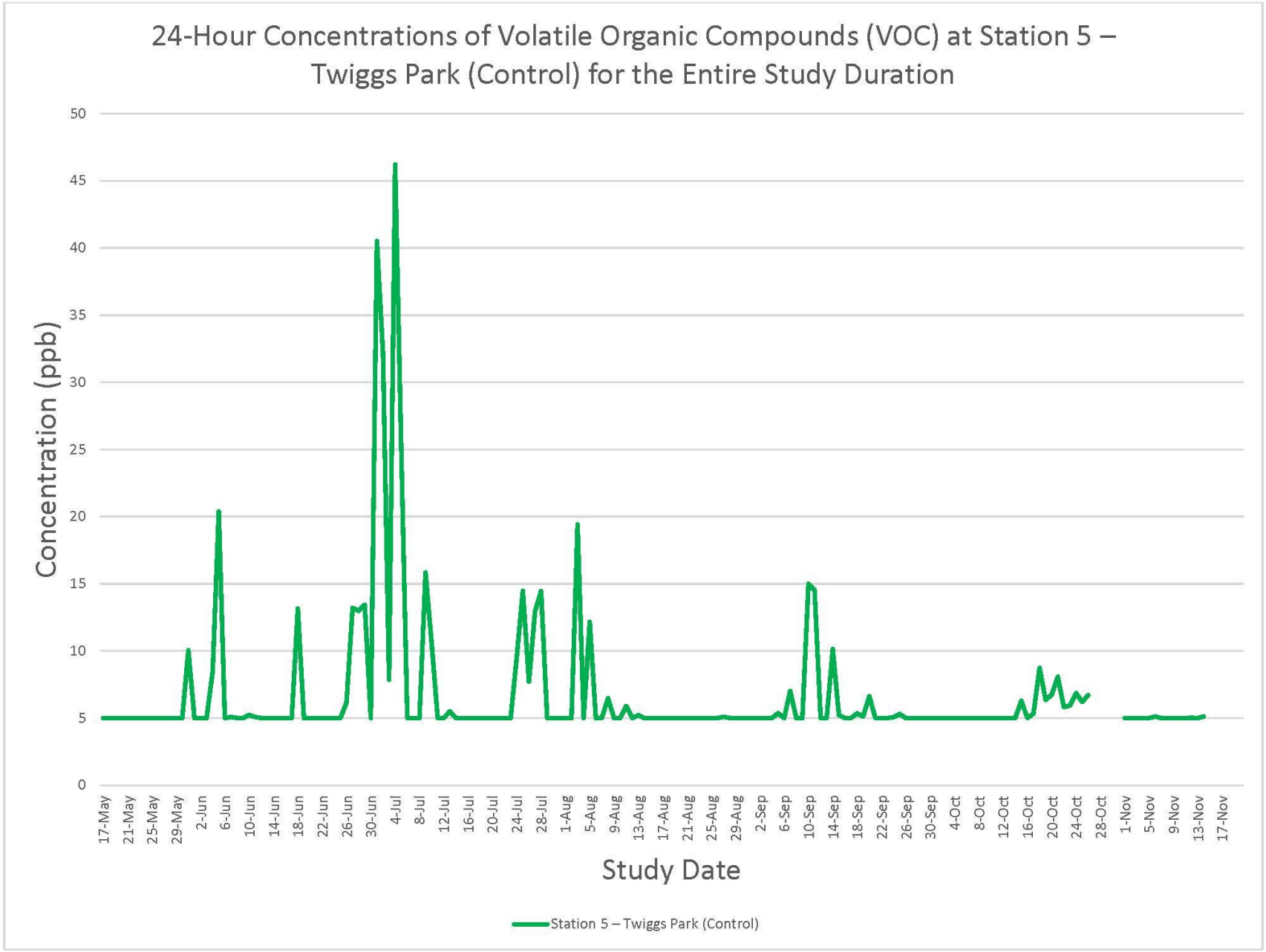

24-Hour Concentrations of Sulfur Dioxide (SO_2) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ppb)
0
1
2
3
4
5
6
7
19-May
23-May
27-May
31-May
4-Jun
8-Jun
12-Jun
16-Jun
20-Jun
24-Jun
28-Jun
2-Jul
6-Jul
10-Jul
14-Jul
18-Jul
22-Jul
26-Jul
30-Jul
3-Aug
7-Aug
11-Aug
15-Aug
19-Aug
23-Aug
27-Aug
31-Aug
4-Sep
8-Sep
12-Sep
16-Sep
20-Sep
24-Sep
28-Sep
2-Oct
6-Oct
10-Oct
14-Oct
18-Oct
22-Oct
26-Oct
30-Oct
3-Nov
7-Nov
11-Nov
15-Nov
19-Nov
Study Date
Station 5 - Twiggs Park (Control)

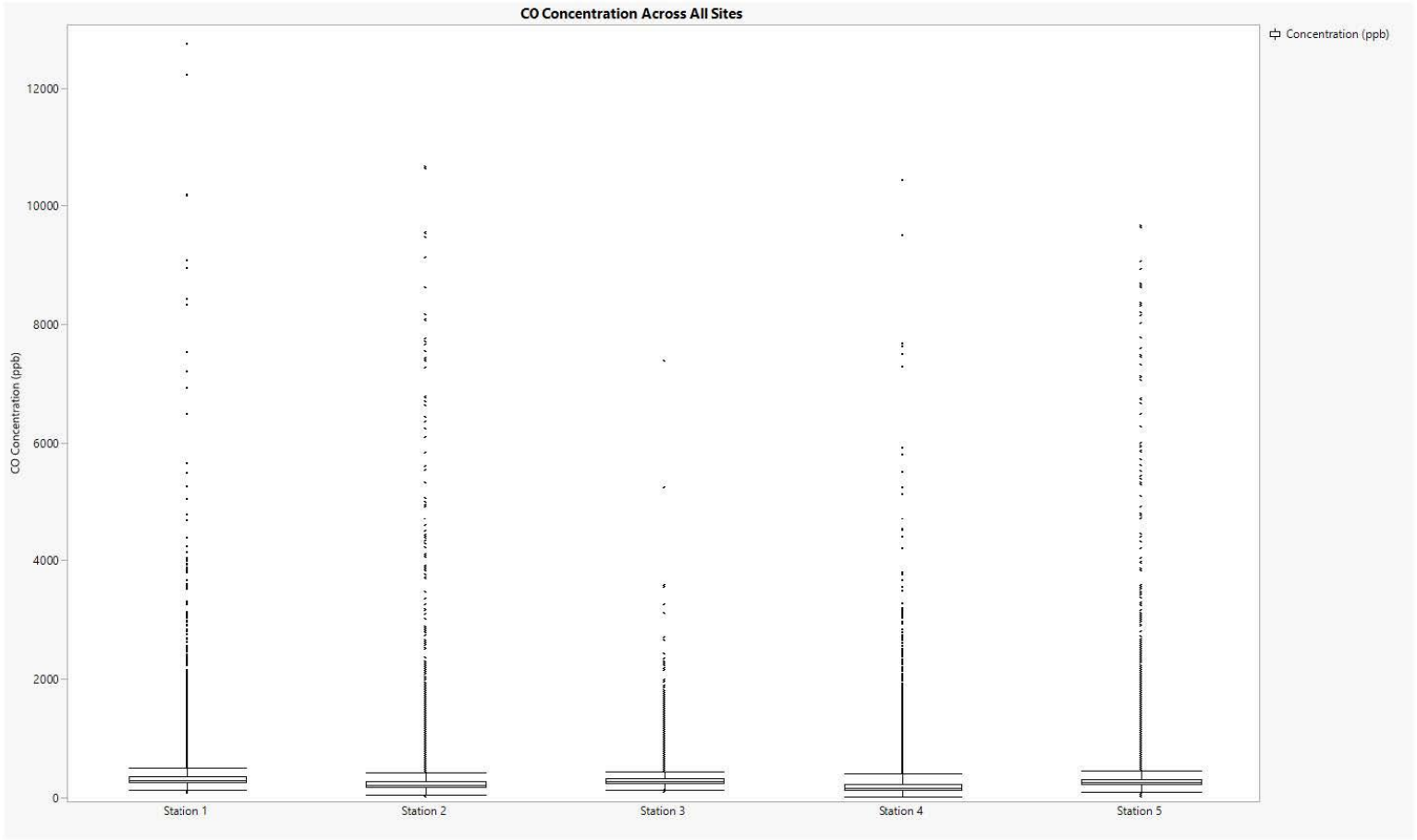

24-Hour Concentrations of Volatile Organic Compounds (VOC) at Station 1 – Lyons/Darrow for the Entire Study Duration
Concentration (ppb)
90
80
70
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 1 - Lyons/Darrow

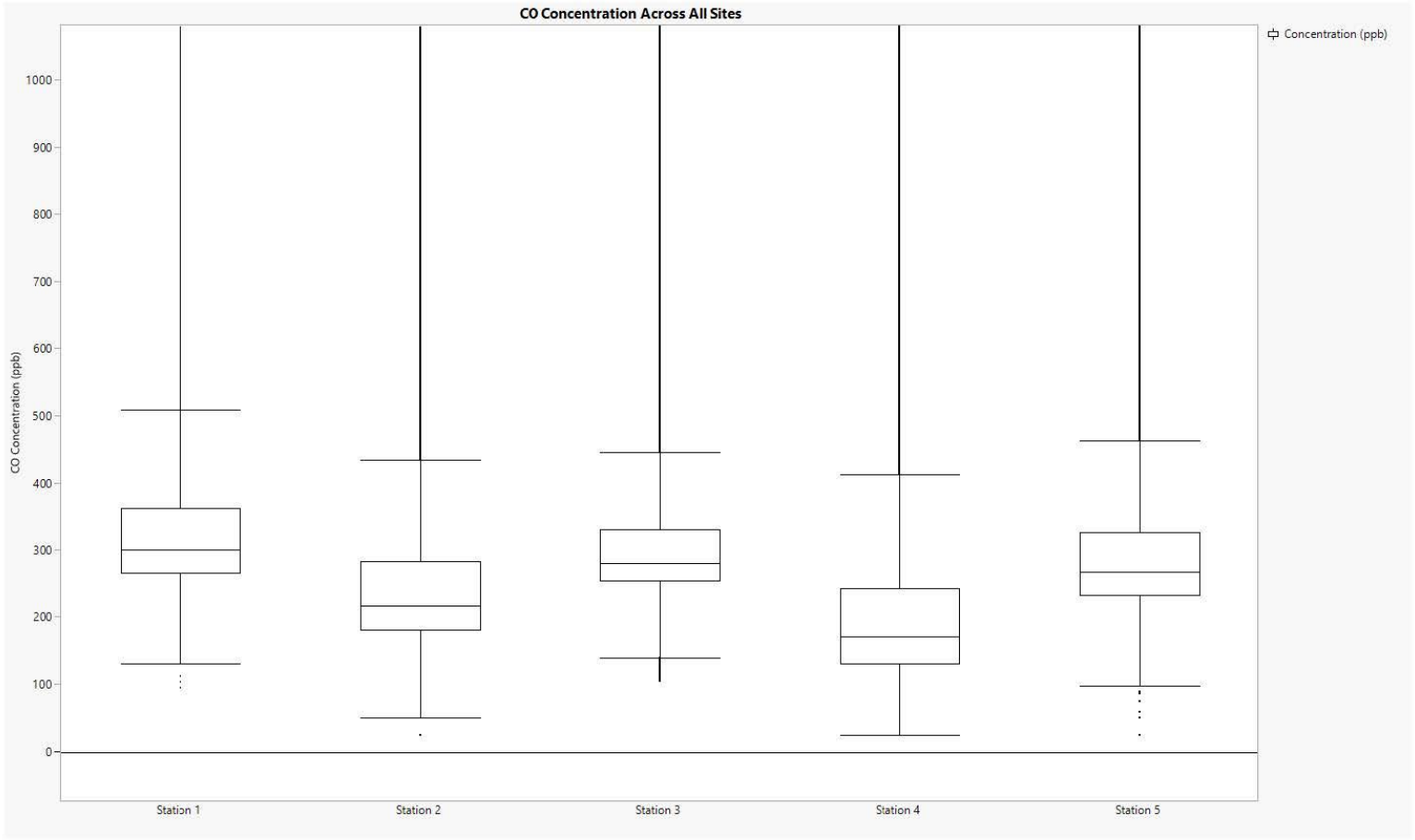

24-Hour Concentrations of Volatile Organic Compounds (VOC) at Station 2 – Lyons/Ashland for the Entire Study Duration
Concentration (ppb)
30
25
20
15
10
5
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 2 – Lyons/Ashland


24-Hour Concentrations of Volatile Organic Compounds (VOC) at Station 3 – Church Street Village for the Entire Study Duration
Concentration (ppb)
70
60
50
40
30
20
10
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 3 – Church Street Village

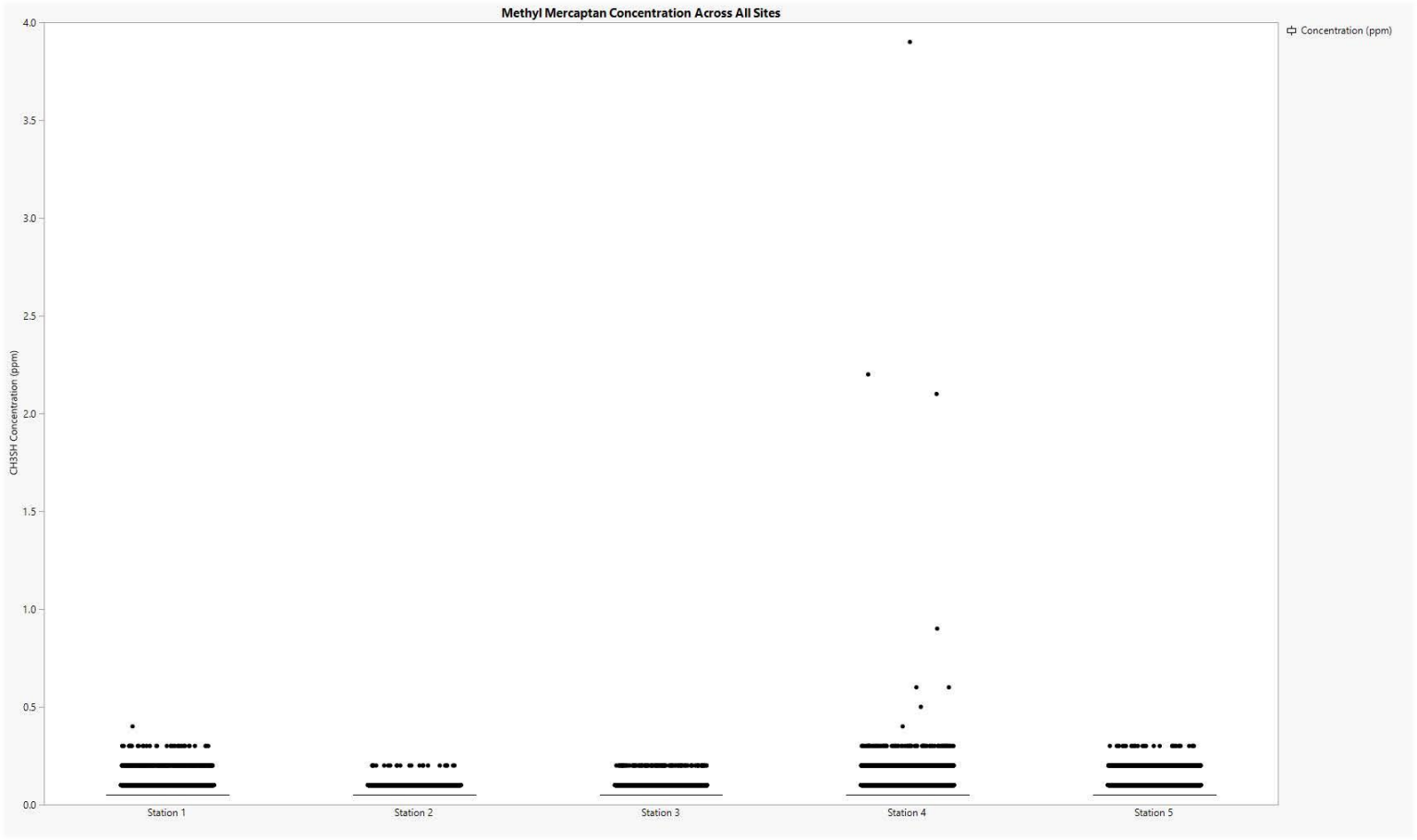

24-Hour Concentrations of Volatile Organic Compounds (VOC) at Station 4 – Church Street for the Entire Study Duration
Concentration (ppb)
250
200
150
100
50
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 4 – Church Street

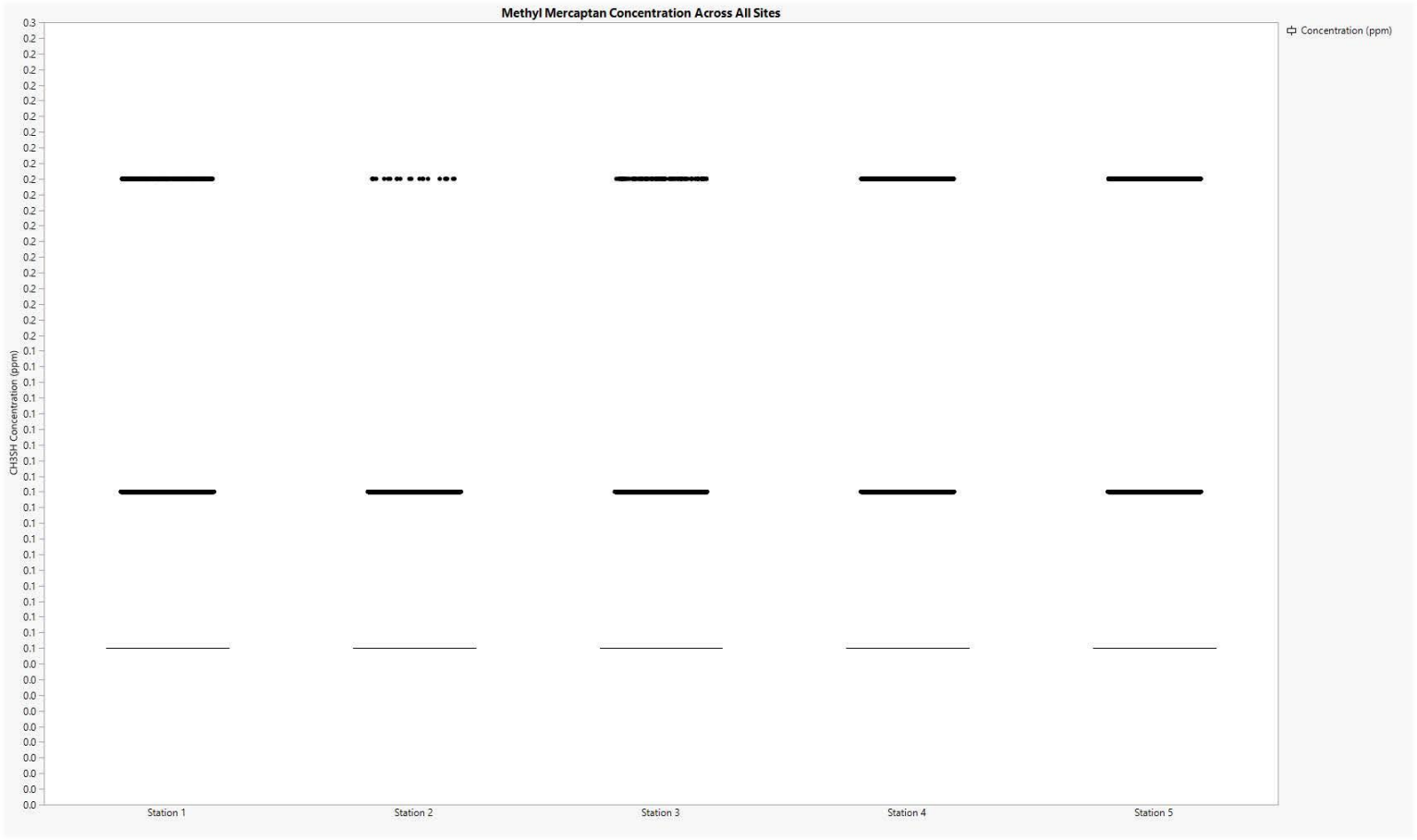

24-Hour Concentrations of Volatile Organic Compounds (VOC) at Station 5 – Twiggs Park (Control) for the Entire Study Duration
Concentration (ppb)
50
45
40
35
30
25
20
15
10
5
0
17-May
21-May
25-May
29-May
2-Jun
6-Jun
10-Jun
14-Jun
18-Jun
22-Jun
26-Jun
30-Jun
4-Jul
8-Jul
12-Jul
16-Jul
20-Jul
24-Jul
28-Jul
1-Aug
5-Aug
9-Aug
13-Aug
17-Aug
21-Aug
25-Aug
29-Aug
2-Sep
6-Sep
10-Sep
14-Sep
18-Sep
22-Sep
26-Sep
30-Sep
4-Oct
8-Oct
12-Oct
16-Oct
20-Oct
24-Oct
28-Oct
1-Nov
5-Nov
9-Nov
13-Nov
17-Nov
Study Date
Station 5 – Twiggs Park (Control)


CO Concentration Across All Sites
Concentration (ppb)
CO Concentration (ppb)
12000
10000
8000
6000
4000
2000
0
Station 1
Station 2
Station 3
Station 4
Station 5

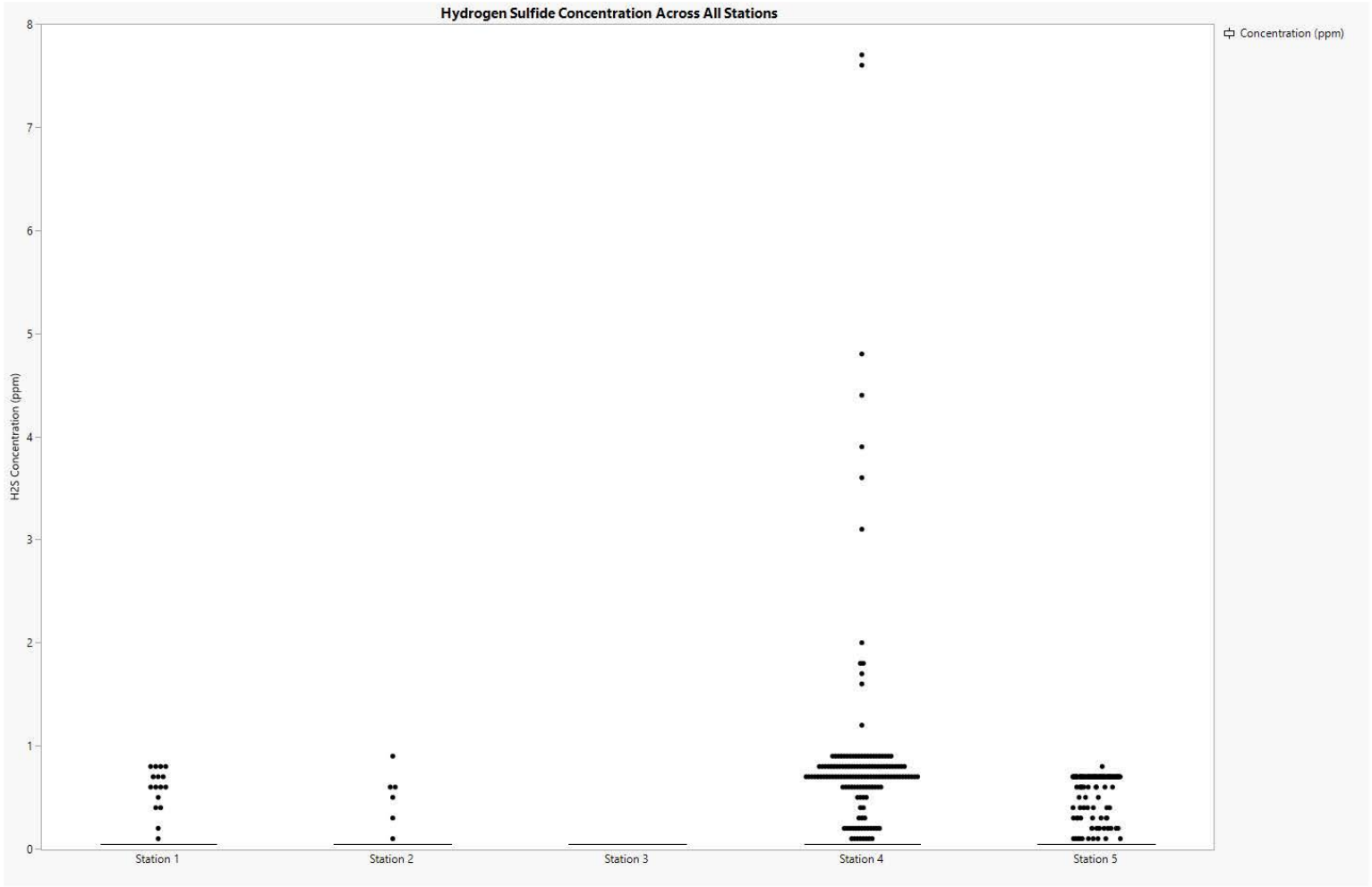


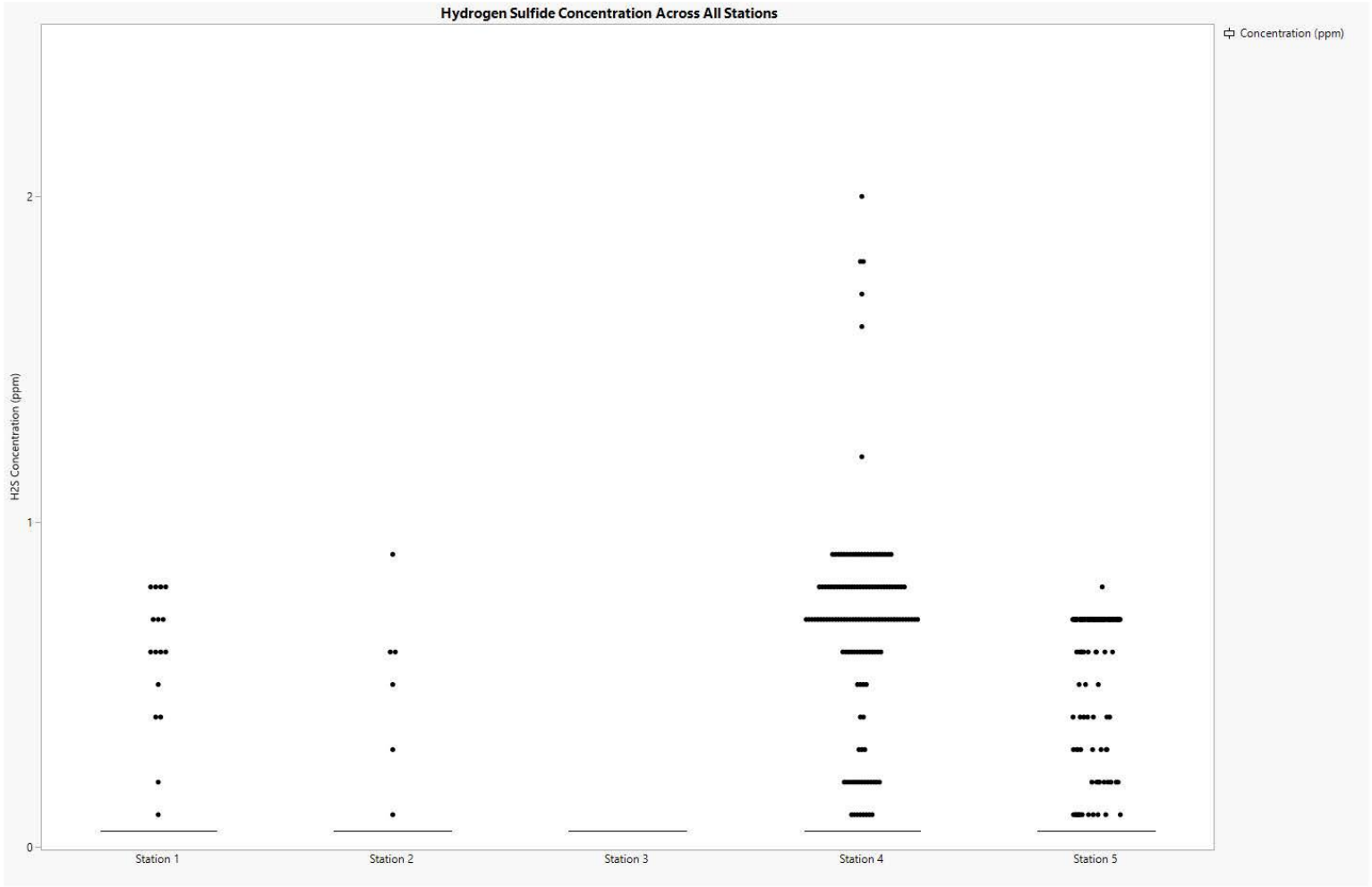
Threshold Max: 1082.18


Methyl Mercaptan Concentration Across All Sites
CH3SH Concentration (ppm)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Station 1
Station 2
Station 3
Station 4
Station 5
Concentration (ppm)

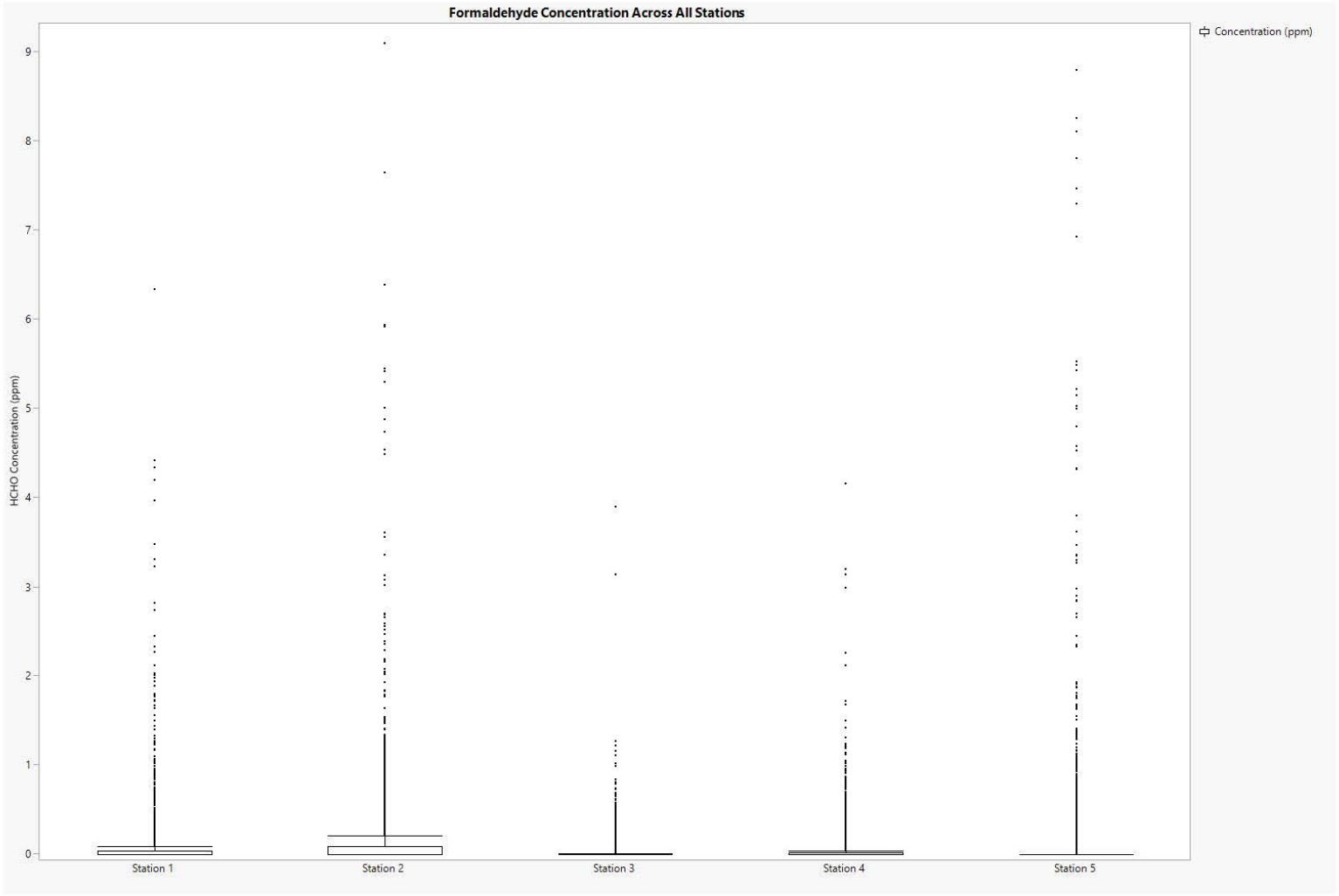


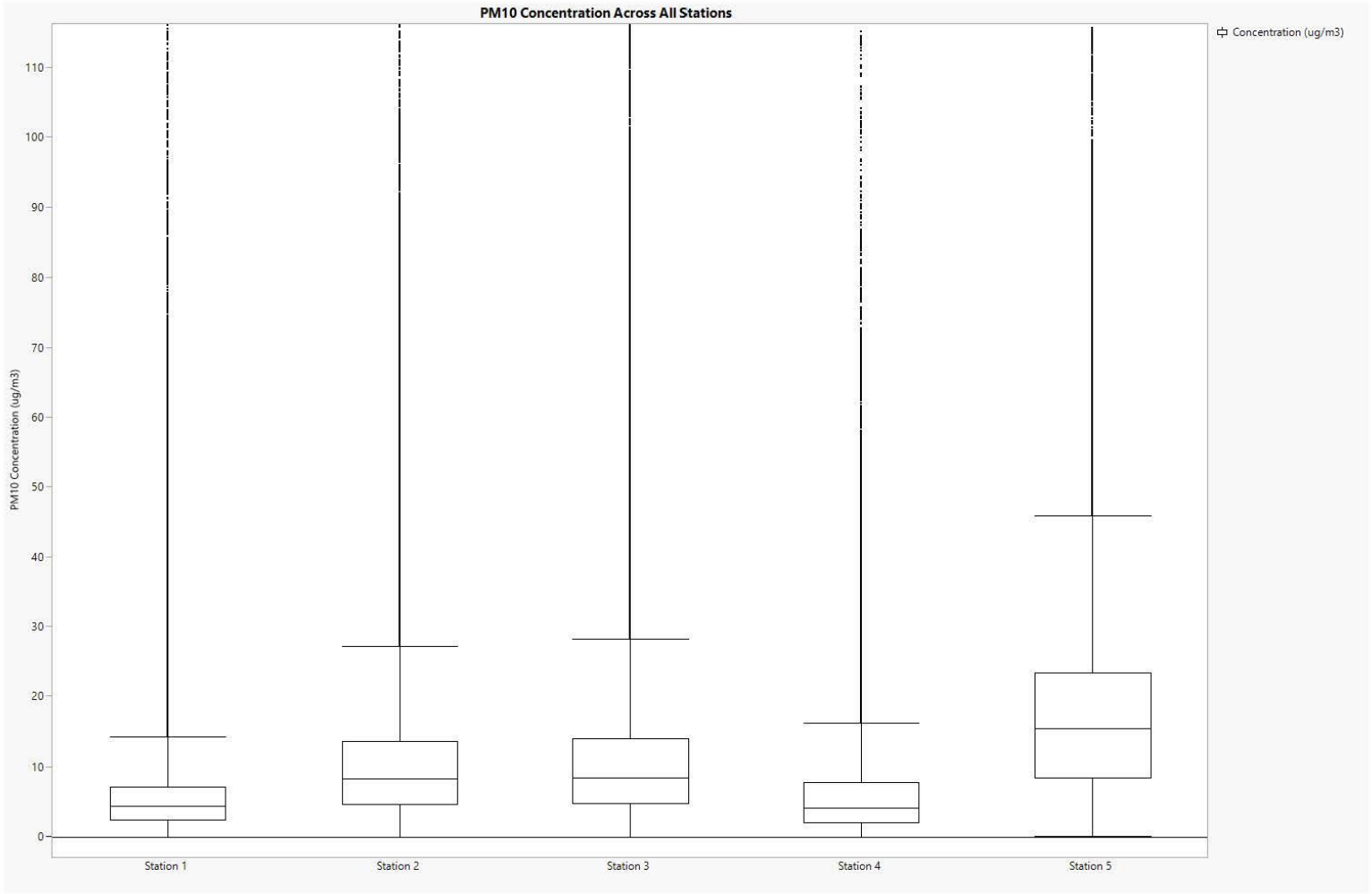
Threshold Max: 0.25


Hydrogen Sulfide Concentration Across All Stations
Concentration (ppm)
H2S Concentration (ppm)
0
1
2
3
4
5
6
7
8
Station 1
Station 2
Station 3
Station 4
Station 5

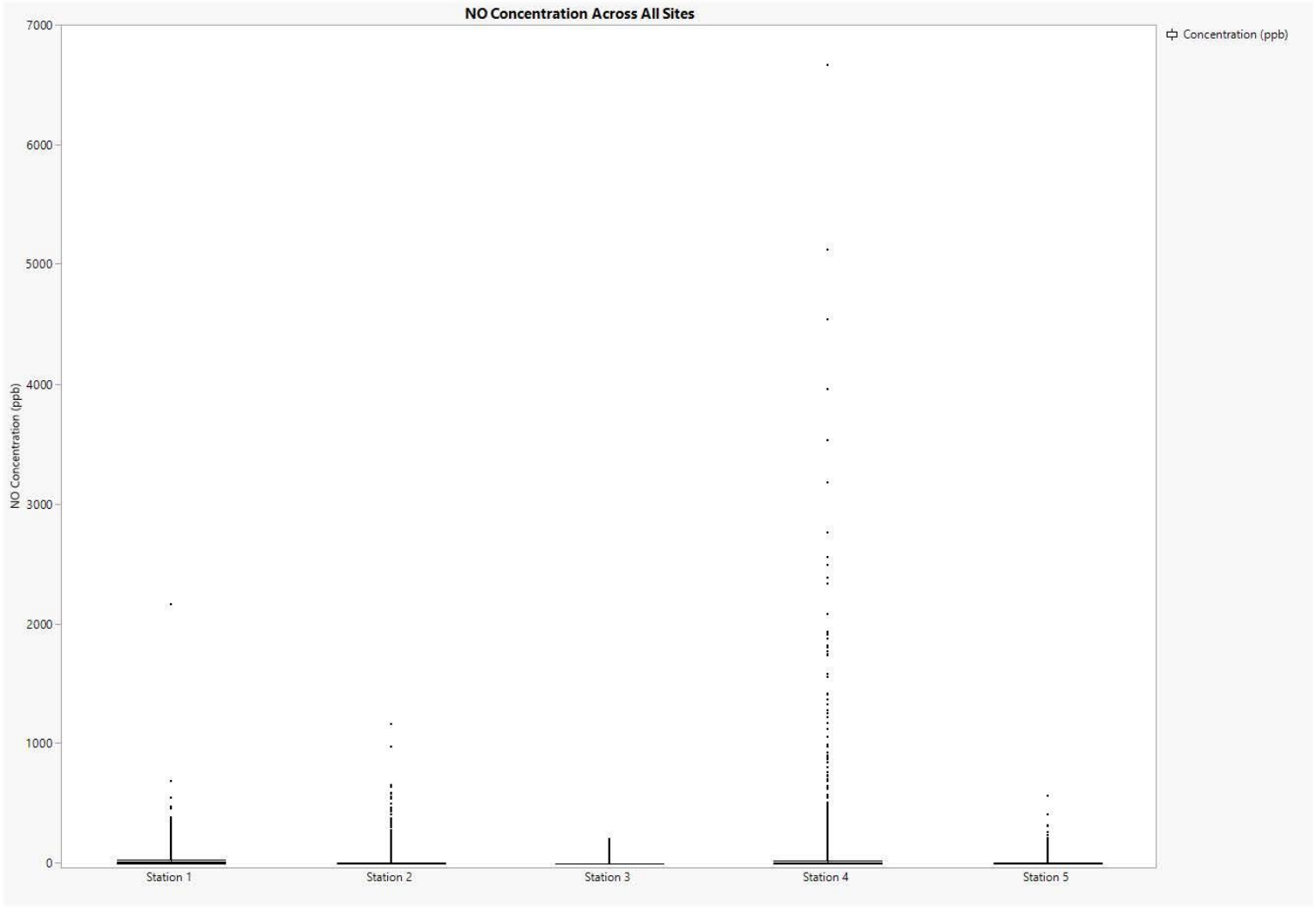


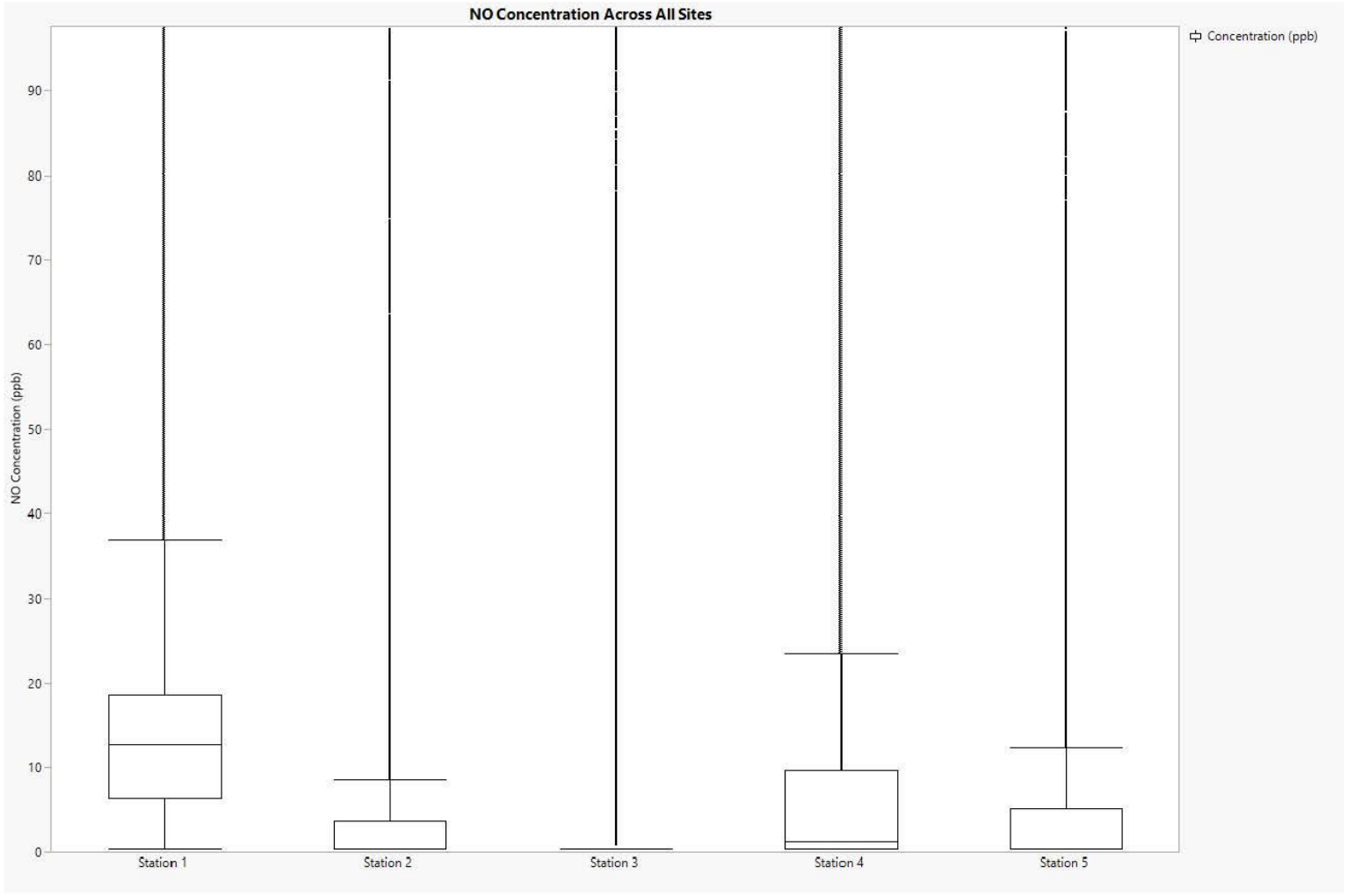
Threshold Max: 2.53


Formaldehyde Concentration Across All Stations
Concentration (ppm)
HCHO Concentration (ppm)
0
1
2
3
4
5
6
7
8
9
Station 1
Station 2
Station 3
Station 4
Station 5

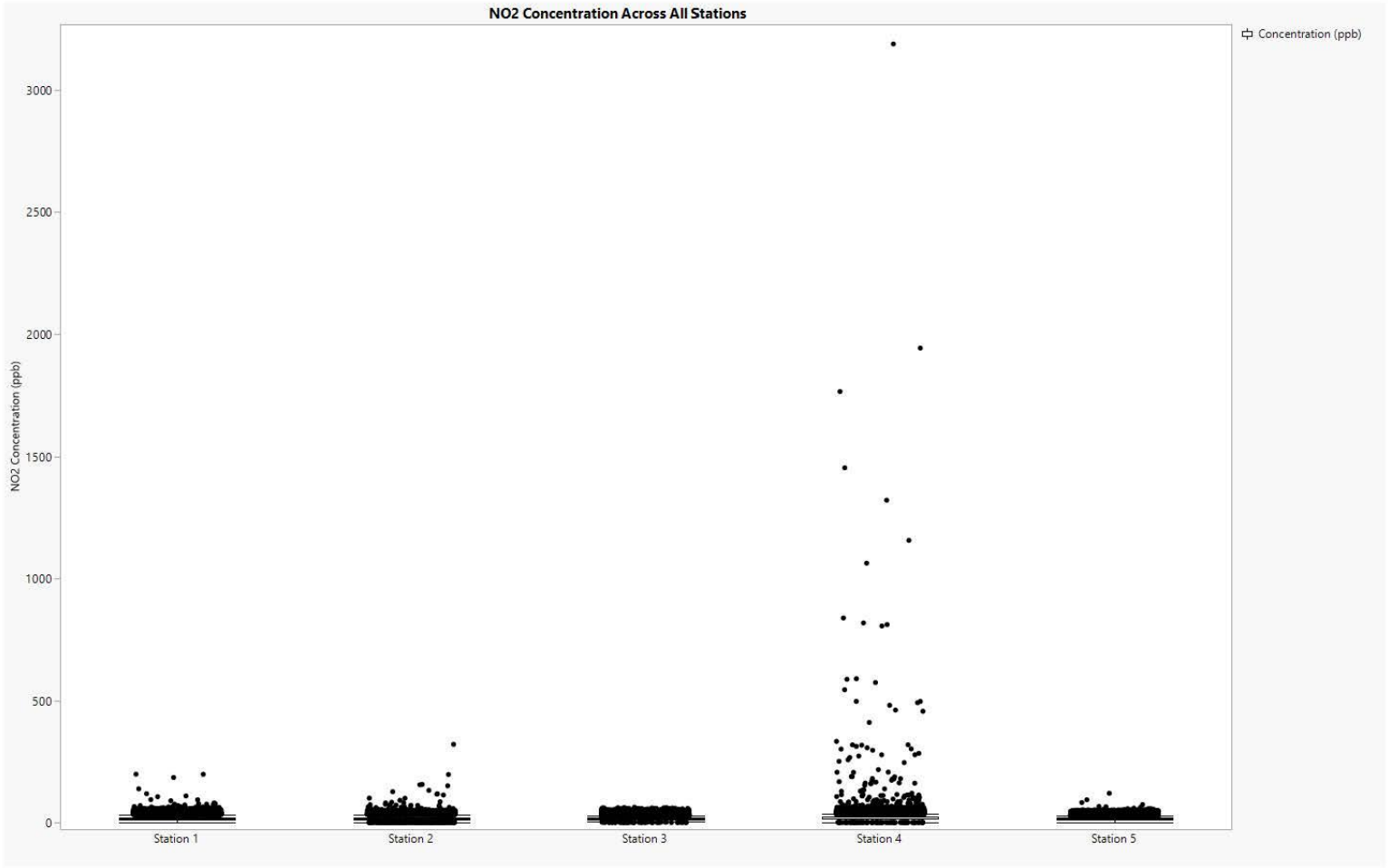


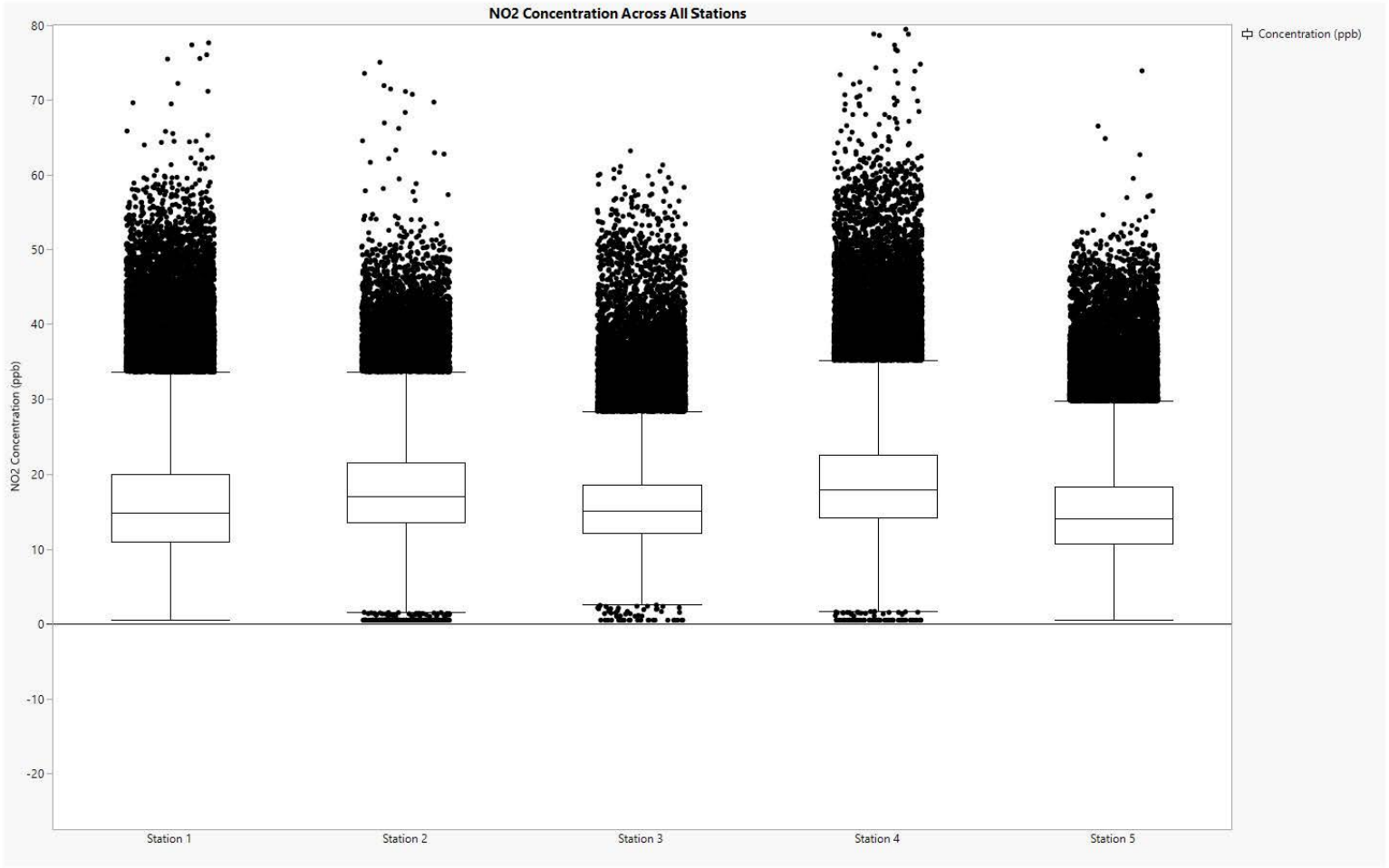
Threshold Max: 116.29 ug/m3


NO Concentration Across All Sites
Concentration (ppb)
NO Concentration (ppb)
7000
6000
5000
4000
3000
2000
1000
0
Station 1
Station 2
Station 3
Station 4
Station 5

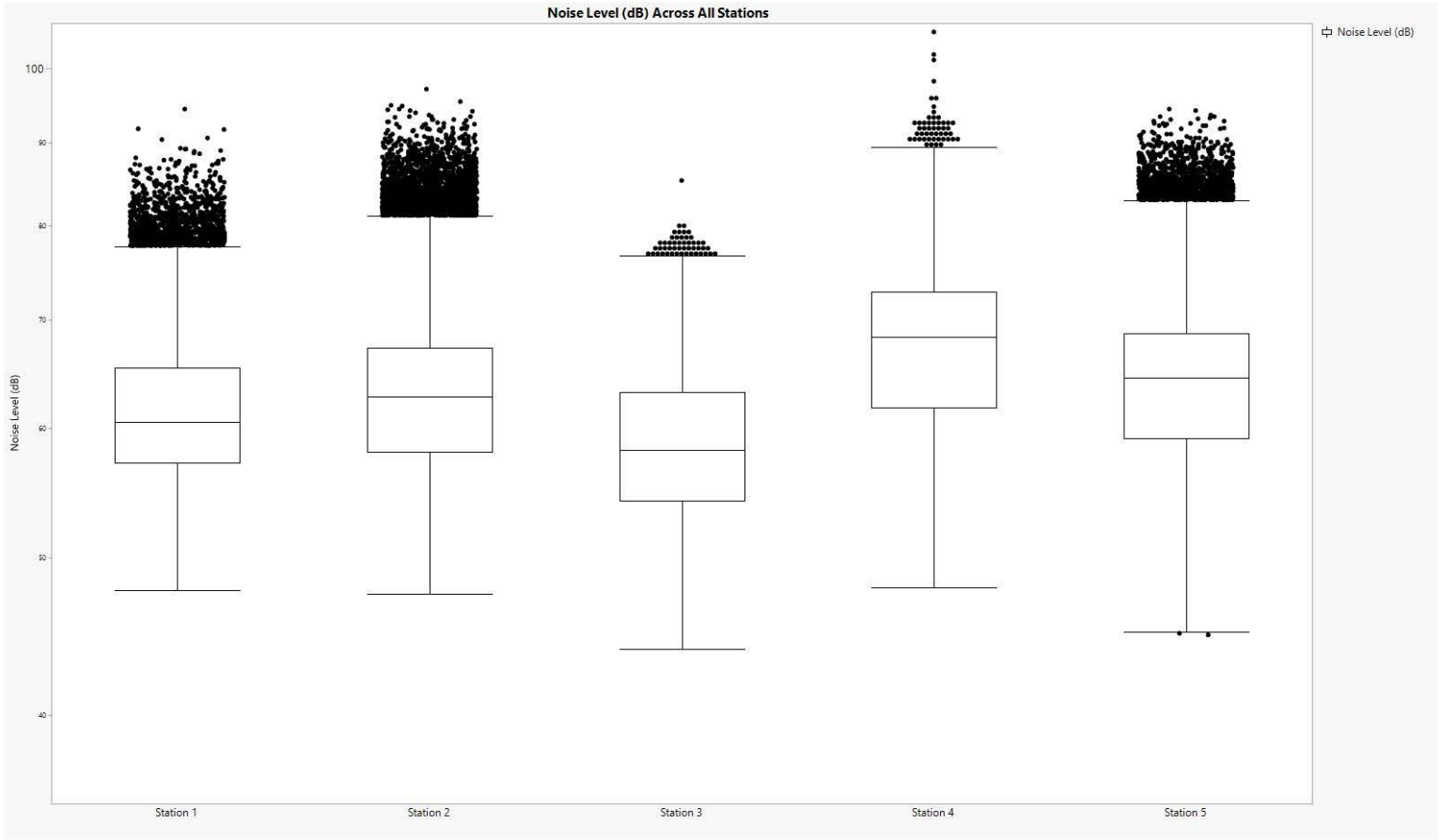


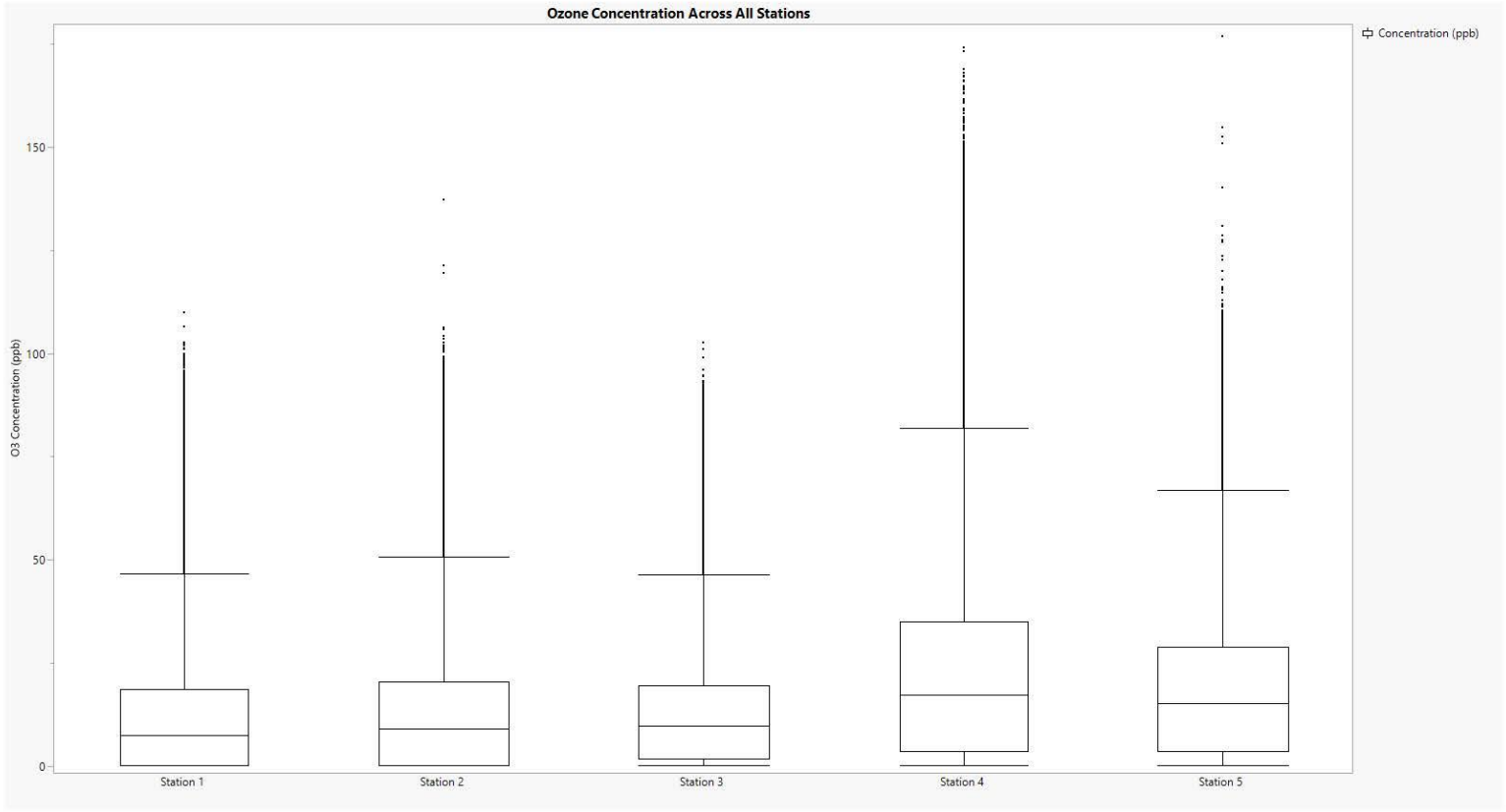
Threshold Max: 97.62

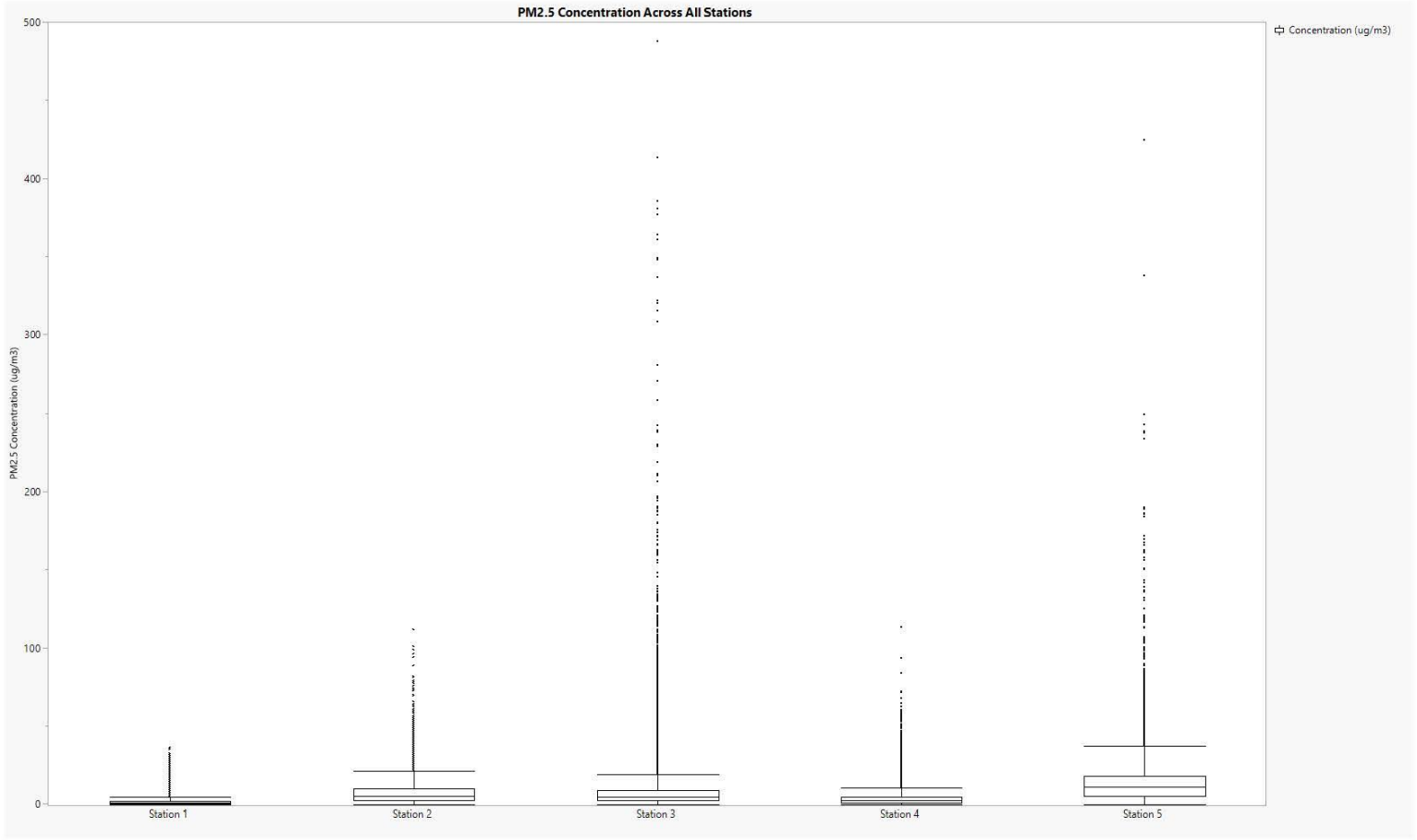

NO2 Concentration Across All Stations
Concentration (ppb)
NO2 Concentration (ppb)
3000
2500
2000
1500
1000
500
0
Station 1
Station 2
Station 3
Station 4
Station 5

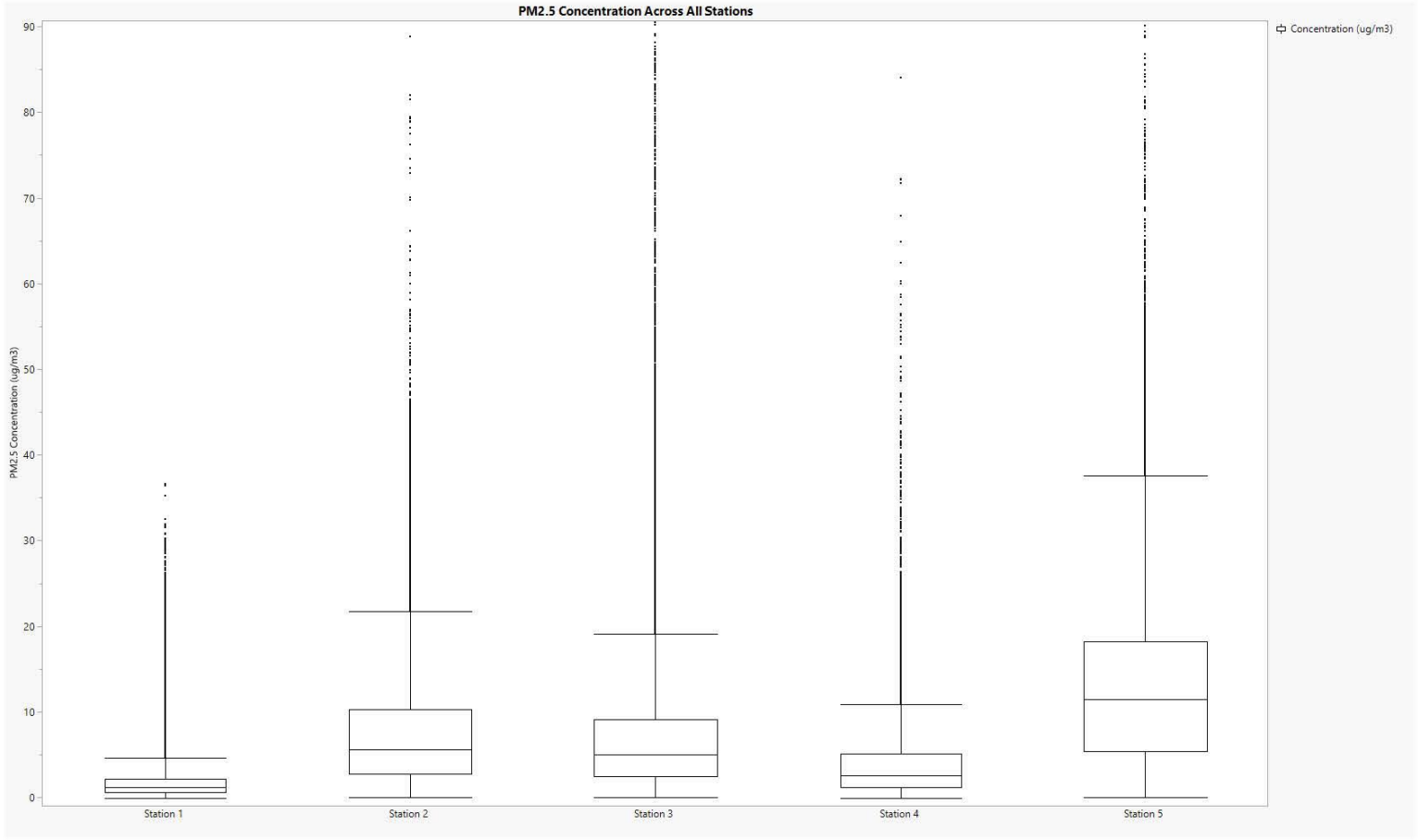


Threshold Max: 80.08 ppb

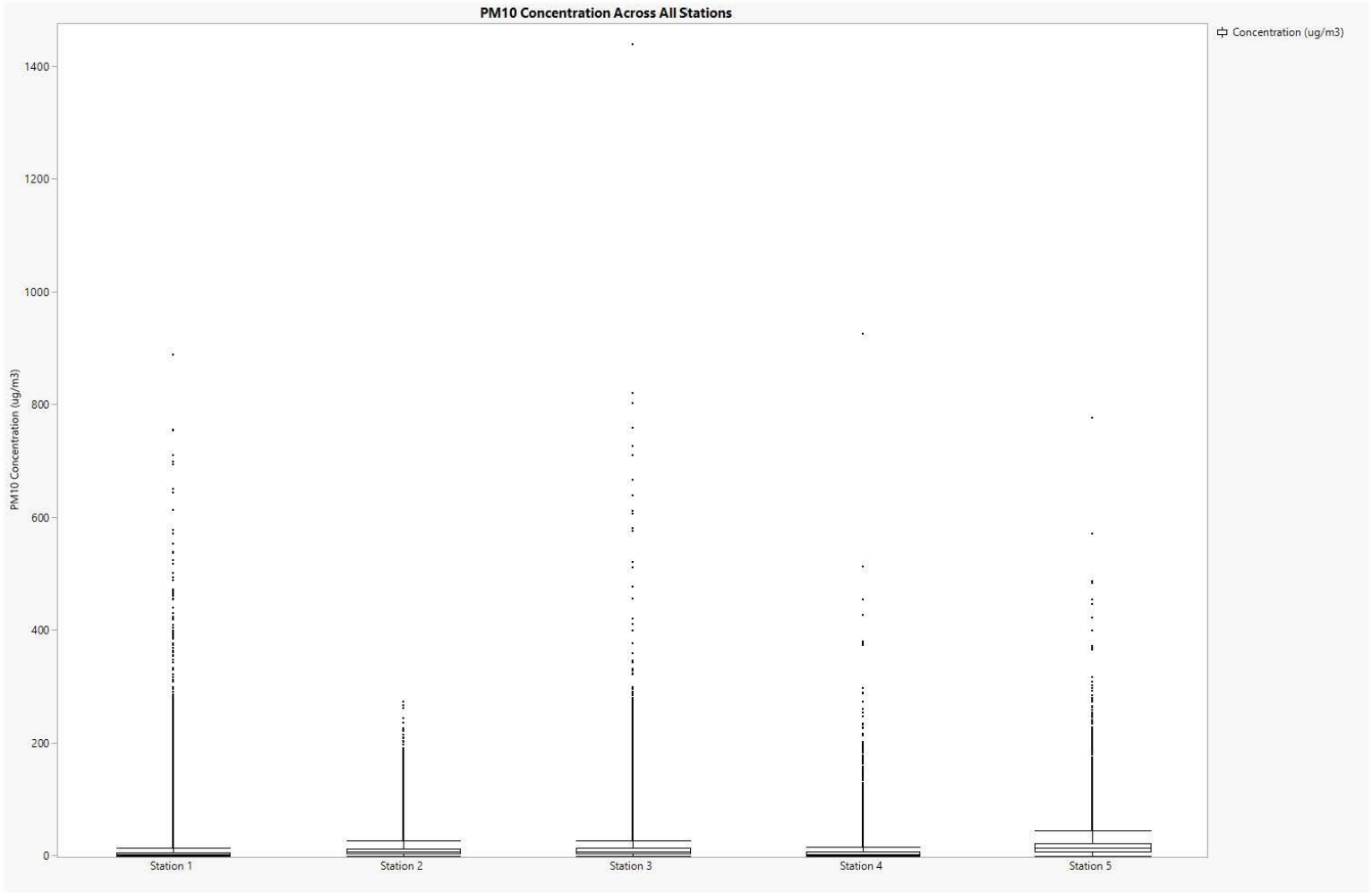

Noise Level (dB) Across All Stations
Noise Level (dB)
100
90
80
70
60
50
40
Noise Level (dB)
Station 1
Station 2
Station 3
Station 4
Station 5

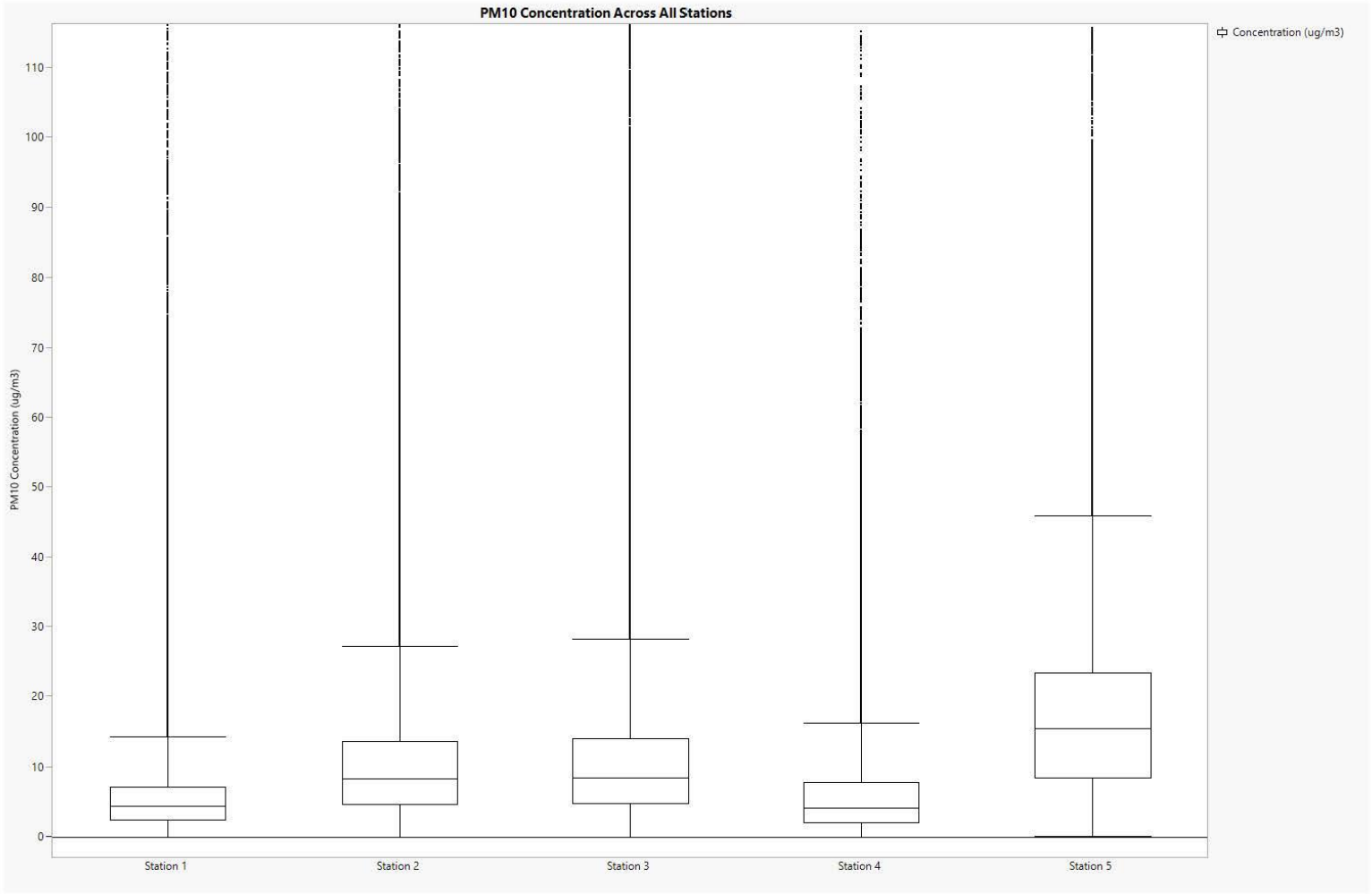

Ozone Concentration Across All Stations
Concentration (ppb)
O3 Concentration (ppb)
150
100
50
0
Station 1
Station 2
Station 3
Station 4
Station 5


PM2.5 Concentration Across All Stations
Concentration (ug/m3)
PM2.5 Concentration (ug/m3)
500
400
300
200
100
0
Station 1
Station 2
Station 3
Station 4
Station 5

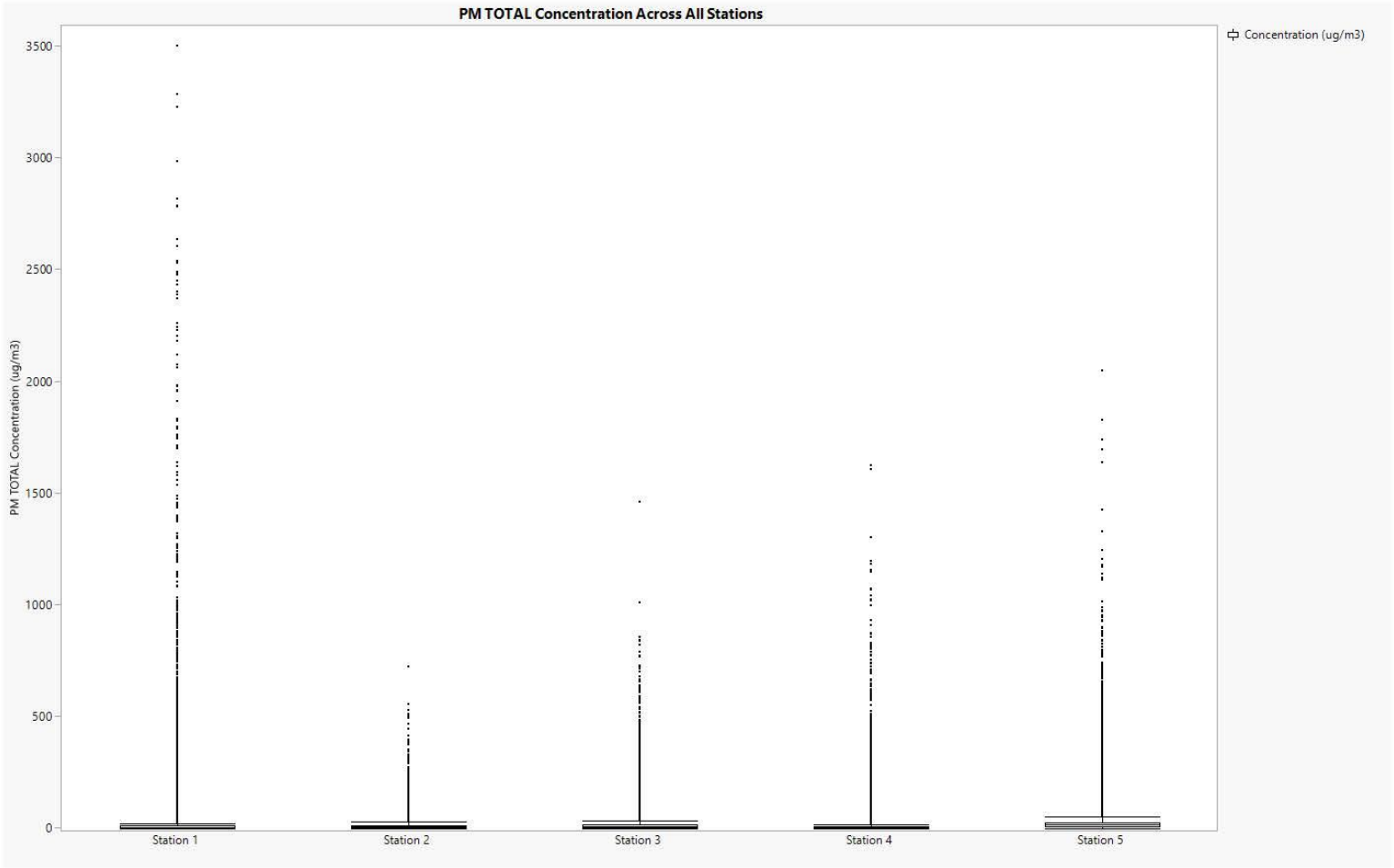


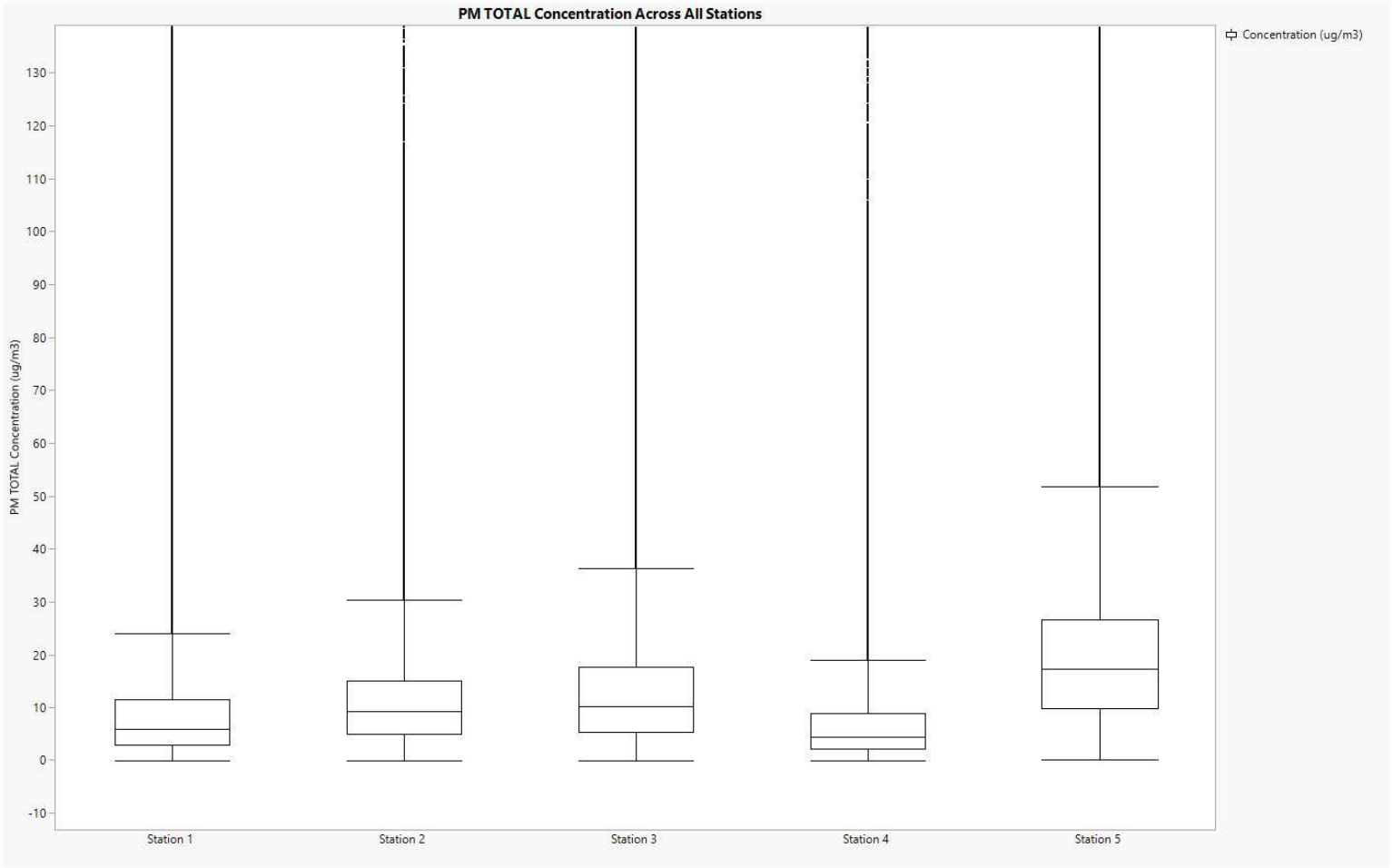
Threshold Max: 90.72 ug/m3


PM10 Concentration Across All Stations
Concentration (ug/m3)
PM10 Concentration (ug/m3)
0
200
400
600
800
1000
1200
1400
Station 1
Station 2
Station 3
Station 4
Station 5

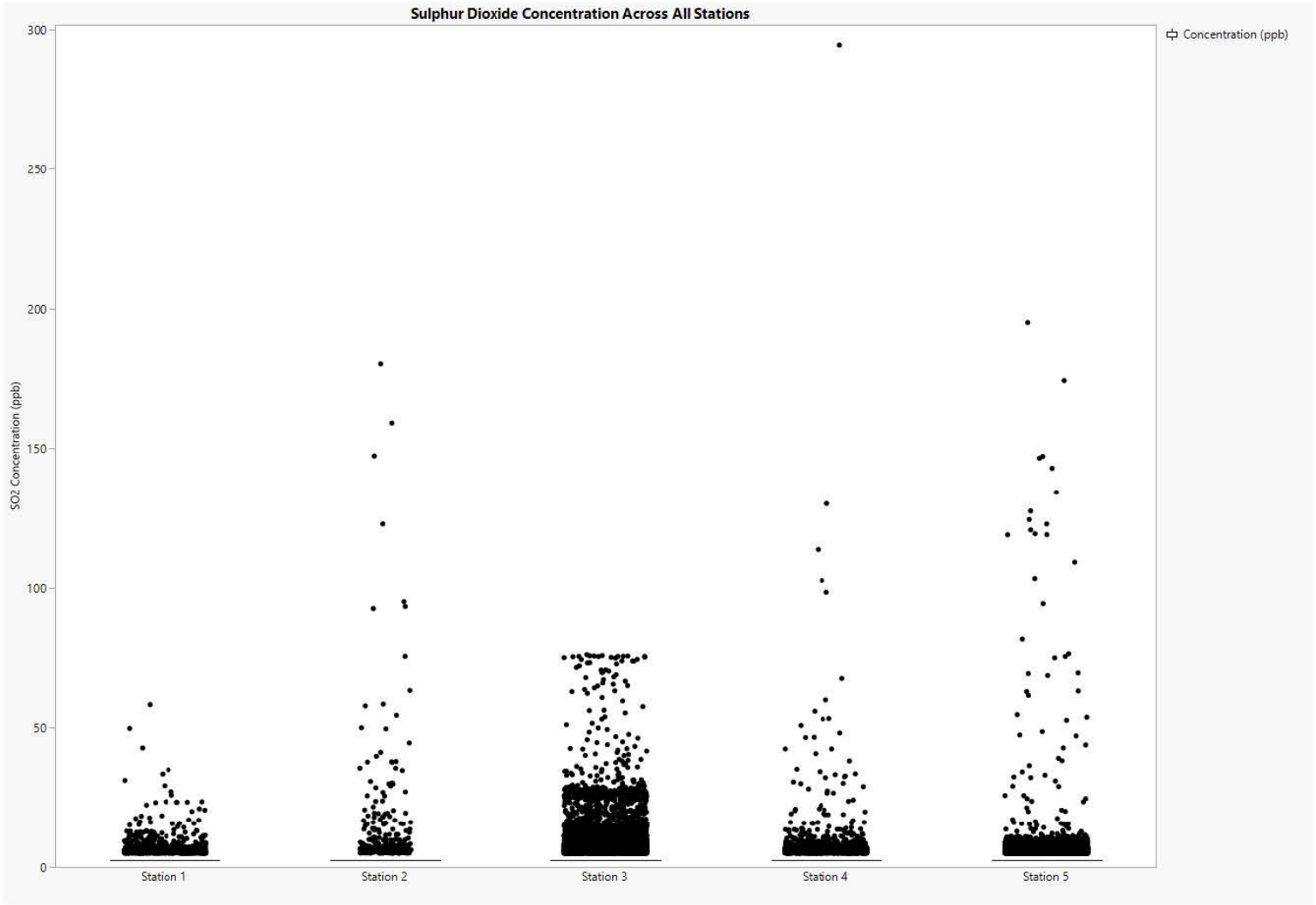


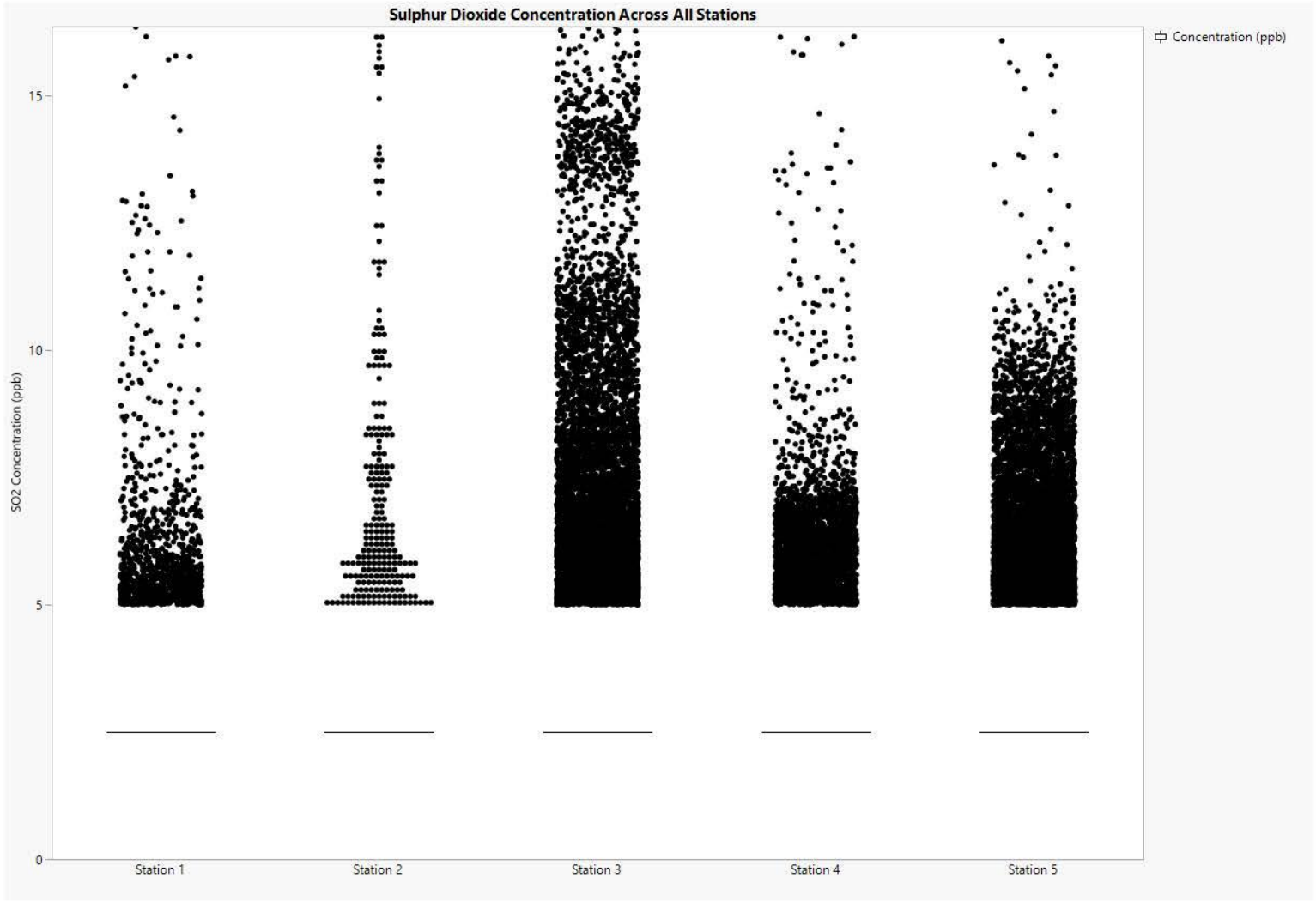
Threshold Max: 116.29 ug/m3


PM TOTAL Concentration Across All Stations
Concentration (ug/m3)
PM TOTAL Concentration (ug/m3)
3500
3000
2500
2000
1500
1000
500
0
Station 1
Station 2
Station 3
Station 4
Station 5

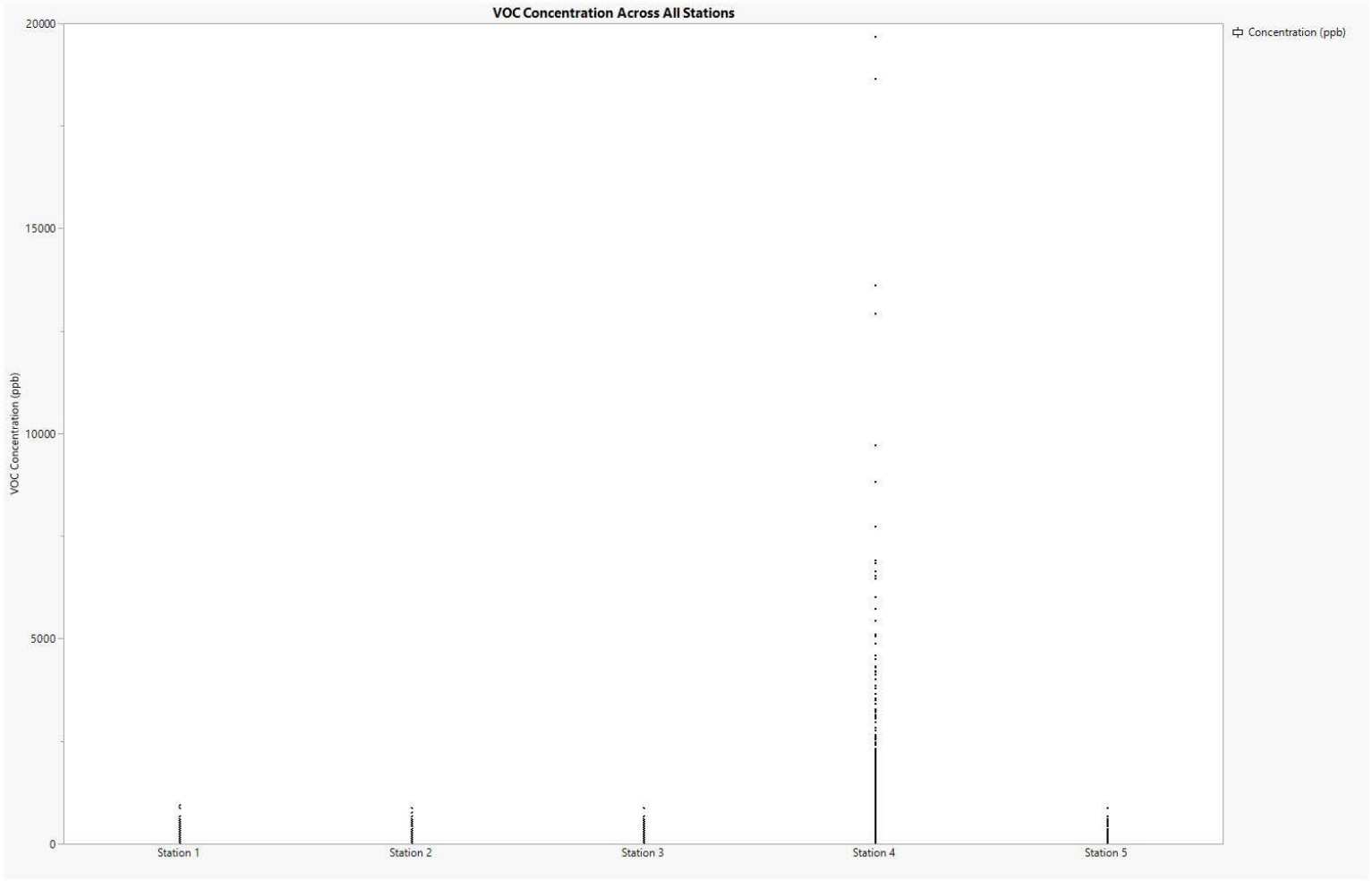


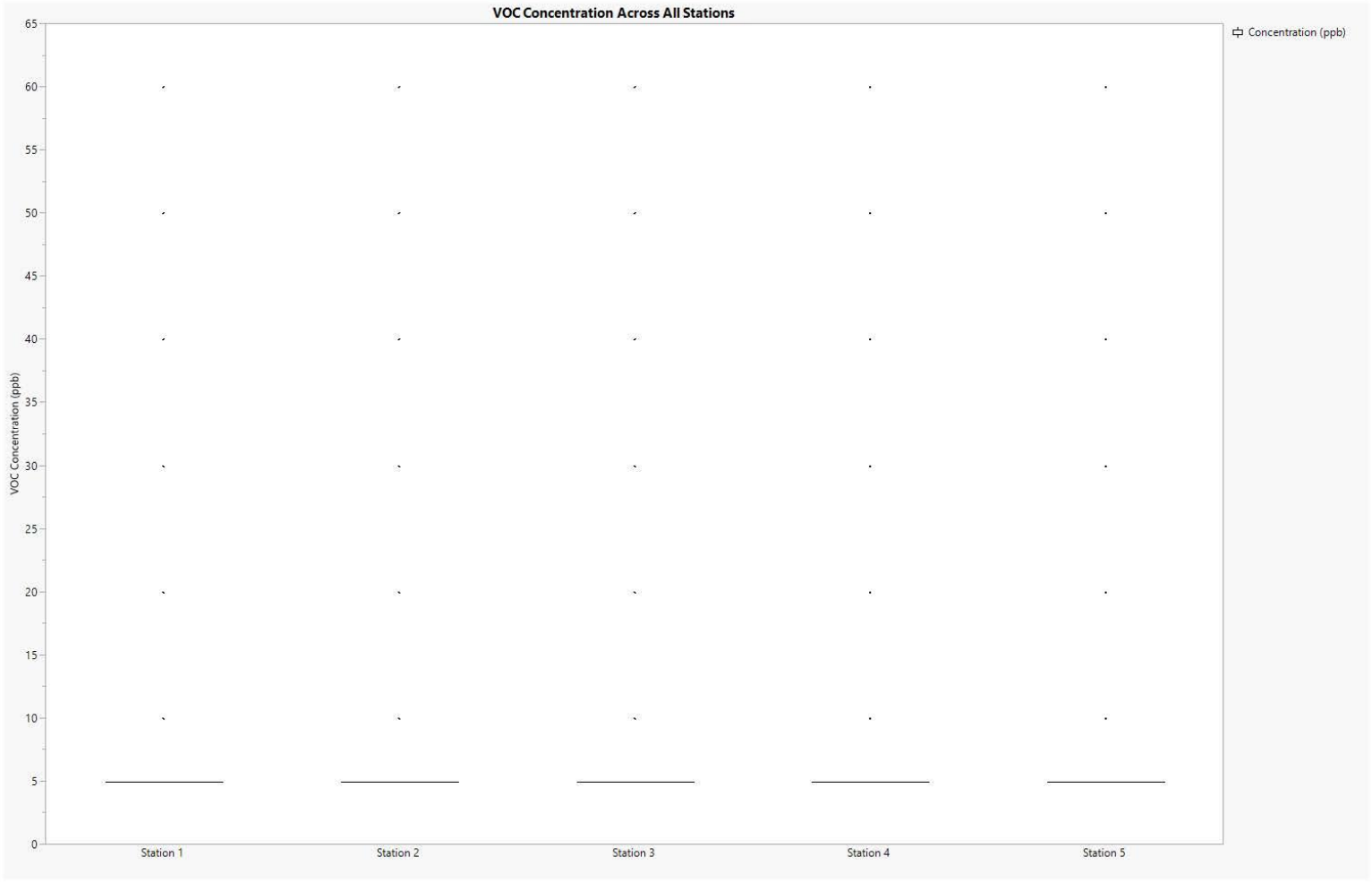
Threshold Max: 138.98 ug/m3


Sulphur Dioxide Concentration Across All Stations
Concentration (ppb)
SO2 Concentration (ppb)
300
250
200
150
100
50
0
Station 1
Station 2
Station 3
Station 4
Station 5



Threshold Max: 16.36 ppb


VOC Concentration Across All Stations
Concentration (ppb)
VOC Concentration (ppb)
20000
15000
10000
5000
0
Station 1
Station 2
Station 3
Station 4
Station 5

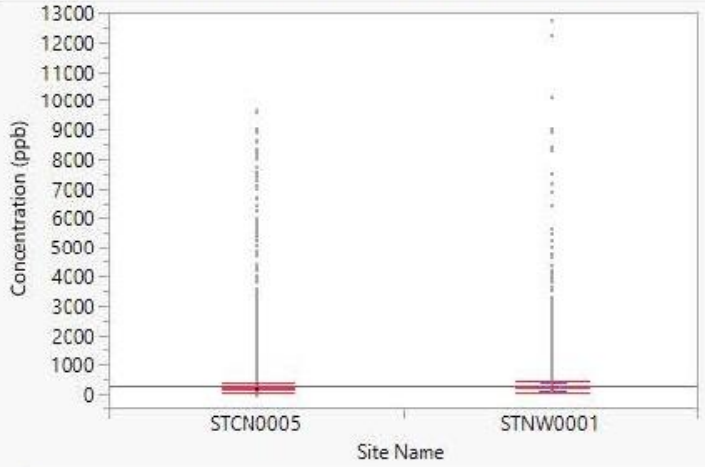


Threshold Max: 65 ppb

LENS 2 - Supplemental

Carbon Monoxide (CO) Control Site Comparisons

Oneway Analysis of Concentration (ppb) By Site Name



Quantiles

Level	Minimum	10%	25%	Median	75%	90%	Maximum
STCN0005	25	212.97	233.98	267.37	326.09	407.39	9684.15
STNW0001	96.42	242.139	266.82	301.01	364.15	452.15	12752.04

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
STCN0005	233899	299.43422	155.93361	0.3224227	298.80228	300.06616
STNW0001	233828	334.59846	146.26039	0.3024673	334.00563	335.19129

Wilcoxon / Kruskal-Wallis Tests (Rank Sums)

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
STCN0005	233899	4.7e+10	5.5e+10	200118	-170.96
STNW0001	233828	6.3e+10	5.5e+10	267620	170.956

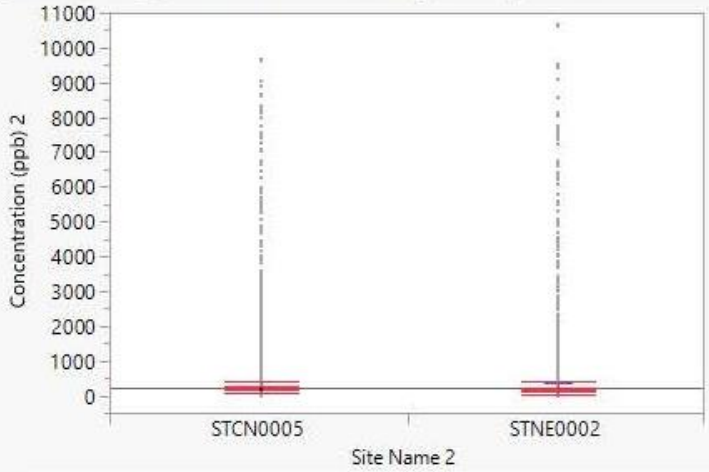
2-Sample Test, Normal Approximation

S	Z	Prob>|Z|
6.258e+10	170.9555	<.0001*

1-Way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
29225.799	1	<.0001*

Oneway Analysis of Concentration (ppb) 2 By Site Name 2



Quantiles

Level	Minimum	10%	25%	Median	75%	90%	Maximum
STCN0005	25	212.97	233.98	267.37	326.09	407.39	9684.15
STNE0002	25	156.36	182	217.91	283.58	371.146	10691.45

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
STCN0005	233899	299.43422	155.93361	0.3224227	298.80228	300.06616
STNE0002	230083	250.2219	151.47144	0.3157828	249.60297	250.84083

Wilcoxon / Kruskal-Wallis Tests (Rank Sums)

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
STCN0005	233899	6.5e+10	5.4e+10	277550	233.605
STNE0002	230083	4.3e+10	5.3e+10	185677	-233.61

2-Sample Test, Normal Approximation

S	Z	Prob>|Z|
4.272e+10	-233.605	<.0001*

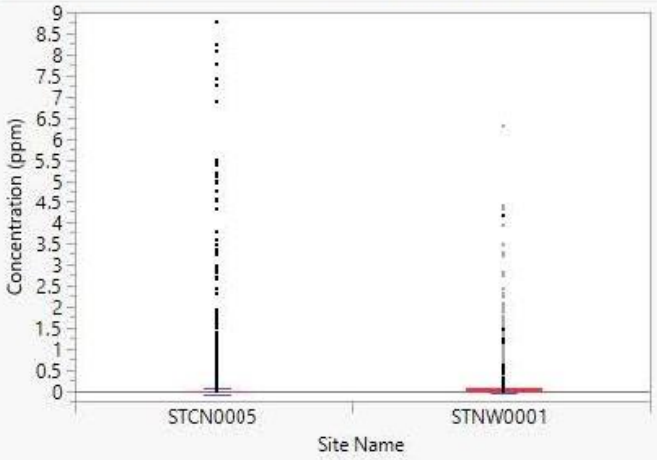
1-Way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
54571.406	1	<.0001*

LENS 2 - Supplemental

Formaldehyde (HCHO) Control Site Comparisons

Oneway Analysis of Concentration (ppm) By Site Name



Quantiles

Level	Minimum	10%	25%	Median	75%	90%	Maximum
STCN0005	0.005	0.005	0.005	0.005	0.005	0.04	8.8
STNW0001	0.005	0.005	0.005	0.005	0.04	0.09	5.34

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
STCN0005	249085	0.0171845	0.0735285	0.0001473	0.0168958	0.0174733
STNW0001	268087	0.0290571	0.0526457	0.0001017	0.0288578	0.0292564

Wilcoxon / Kruskal-Wallis Tests (Rank Sums)

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
STCN0005	249085	5.8e+10	6.4e+10	230858	-157.76
STNW0001	268087	7.6e+10	6.9e+10	284349	157.761

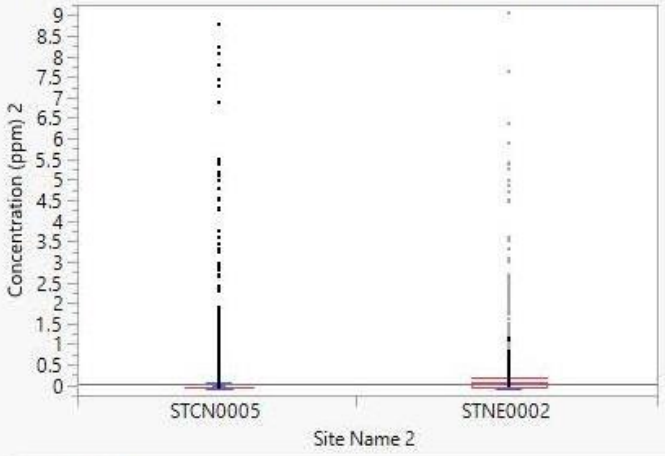
2-Sample Test, Normal Approximation

S	Z	Prob>|Z|
5.75e+10	-157.761	<.0001*

1-Way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
24888.449	1	<.0001*

Oneway Analysis of Concentration (ppm) 2 By Site Name 2



Quantiles

Level	Minimum	10%	25%	Median	75%	90%	Maximum
STCN0005	0.005	0.005	0.005	0.005	0.005	0.04	8.8
STNE0002	0.005	0.005	0.005	0.005	0.09	0.25	9.1

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
STCN0005	249085	0.0171845	0.0735285	0.0001473	0.0168958	0.0174733
STNE0002	268579	0.078816	0.1438212	0.0002775	0.078272	0.0793599

Wilcoxon / Kruskal-Wallis Tests (Rank Sums)

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
STCN0005	249085	5.3e+10	6.4e+10	214034	-242.47
STNE0002	268579	8.1e+10	7e+10	300380	242.473

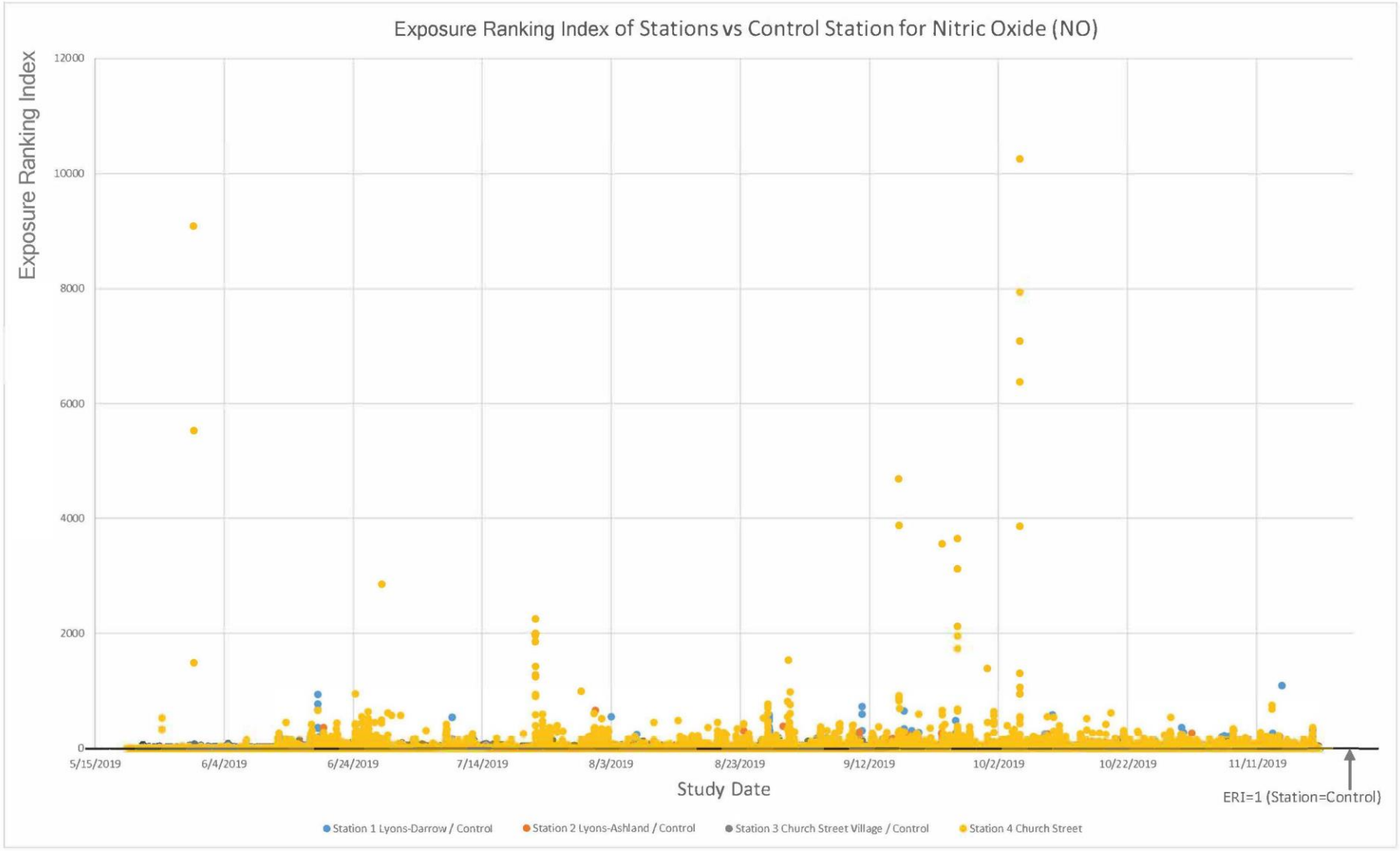
2-Sample Test, Normal Approximation

S	Z	Prob>|Z|
5.331e+10	-242.473	<.0001*

1-Way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
58793.113	1	<.0001*

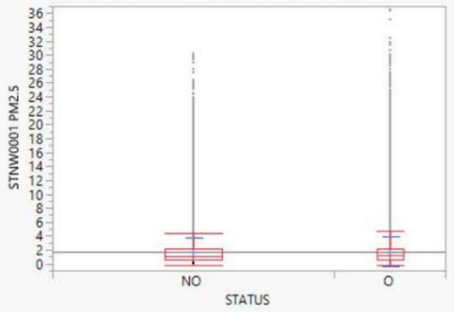
LENS 2 - Supplemental



LENS 3 - Supplemental

Operational vs Non-Operational Concentration of Particulate Matter 2.5 (ug/m^3)

Oneway Analysis of STNW0001 PM2.5 By STATUS



Quantiles

Level	Minimum	10%	25%	Median	75%	90%	Maximum
NO	0.01	0.38	0.71	1.29	2.27	3.67	30.33
O	0.02	0.36	0.7	1.32	2.39	3.99	36.65

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
NO	183362	1.8536746	1.9798218	0.0046235	1.8446127	1.8627366
O	72707	1.9113693	2.0818564	0.0077208	1.8962366	1.9265021

Wilcoxon / Kruskal-Wallis Tests (Rank Sums)

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
NO	183362	2.3e+10	2.3e+10	127546	-5.313
O	72707	9.4e+9	9.31e+9	129267	5.313

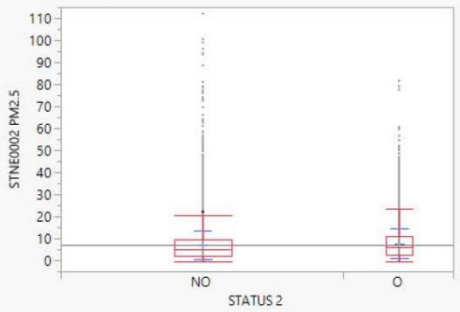
2-Sample Test, Normal Approximation

S	Z	Prob>|Z|
9.3987e+9	5.31281	<.0001*

1-Way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
28.2259	1	<.0001*

Oneway Analysis of STNE0002 PM2.5 By STATUS 2



Quantiles

Level	Minimum	10%	25%	Median	75%	90%	Maximum
NO	0.07	1.42	2.72	5.54	10.03	15.86	112.28
O	0.14	1.57	3.14	6.25	11.42	17.5	82.07

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
NO	186563	7.3758772	6.4322188	0.0148918	7.3466895	7.4050648
O	73073	8.1966182	6.8708044	0.0254173	8.1468004	8.246436

Wilcoxon / Kruskal-Wallis Tests (Rank Sums)

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
NO	186563	2.4e+10	2.4e+10	127087	-29.671
O	73073	1e+10	9.49e+9	136792	29.671

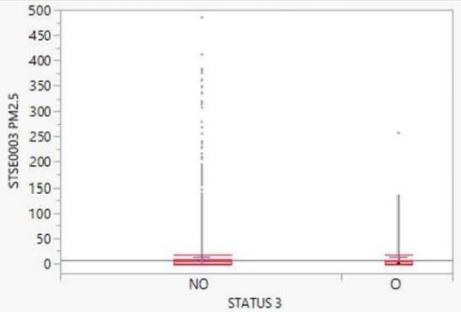
2-Sample Test, Normal Approximation

S	Z	Prob>|Z|
9.9958e+9	29.67074	<.0001*

1-Way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
880.3531	1	<.0001*

Oneway Analysis of STSE0003 PM2.5 By STATUS 3



Quantiles

Level	Minimum	10%	25%	Median	75%	90%	Maximum
NO	0.06	1.29	2.51	5.07	9.42	15.36	488.04
O	0.15	1.42	2.7	5.01	8.92	15.06	258.54

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
NO	186088	7.1820006	8.1850796	0.0189742	7.1448115	7.2191896
O	73595	7.0498303	7.4477562	0.0274537	6.9960211	7.1036395

Wilcoxon / Kruskal-Wallis Tests (Rank Sums)

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
NO	186088	2.4e+10	2.4e+10	129804	-0.411
O	73595	9.56e+9	9.56e+9	129938	0.411

2-Sample Test, Normal Approximation

S	Z	Prob>|Z|
9.5628e+9	0.41082	0.6812

1-Way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
0.1688	1	0.6812

STNW0001: Station 1 – Lyons/Darrow STNE0002: Station 2 – Lyons/Ashland STSE0003: Station 3 – Church Street Village

STSW0004: Station 4 – Church Street STCN0005: Station 5 – Twiggs Park (Control)

LENS 4 - Supplemental

Appendix A.6 – Lens 4: Wind Direction Analysis

Hydrogen Sulfide (H_2S) (ppm)					
Station 4	N	Median	Mean	Std Dev.	1-Way Test, ChiSquare Approximation (Prob>ChiSq)
Downwind	7620	0.05	0.051	0.086	0.2418
Not Downwind	55770	0.05	0.050	0.010	
Formaldehyde (HCHO) (ppm)					
Station 4	N	Median	Mean	Std Dev.	1-Way Test, ChiSquare Approximation (Prob>ChiSq)
Downwind	7620	0.005	0.025	0.063	0.0017
Not Downwind	55770	0.005	0.026	0.045	
Nitric Oxide (NO) (ppb)					
Station 4	N	Median	Mean	Std Dev.	1-Way Test, ChiSquare Approximation (Prob>ChiSq)
Downwind	7770	1.55	13.34	87.65	<.0001
Not Downwind	56857	2.76	15.31	61.39	

LENS 5 - Supplemental

Hydrogen Sulfide (H_2S) Outliers

Explore Outliers

Quantile Range Outliers

Outliers are values Q times the interquantile range past the lower and upper quantiles.

Tail Quantile 0.1

Q 3

☐ Restrict search to integers

☐ Show only columns with outliers

Rescan

Close

Select columns and choose an action.

Select Rows | Color Cells

Exclude Rows | Color Rows

Add to Missing Value Codes

Change to Missing

Some quantiles were stretched to avoid a large group at the median.

Column	10% Quantile	90% Quantile	Low Threshold	High Threshold	Number of Outliers	Outliers (Count)
STNW0001	0.05	0.05	0.05	0.05	16	0.1 0.2 0.4(2) 0.5 0.6(4) 0.7(3) 0.8(4)
STNE0002	0.05	0.05	0.05	0.05	6	0.1 0.3 0.5 0.6(2) 0.9
STSE0003	0.05	0.05	0.05	0.05	0	
STSW0004	0.05	0.61043	-1.6313	2.29172	7	3.1 3.6 3.9 4.4 4.8 7.6 7.7
STCN0005	0.05	0.67008	-1.8102	2.53031	0	

Formaldehyde (HCHO) Outliers

Explore Outliers

Quantile Range Outliers

Outliers are values Q times the interquantile range past the lower and upper quantiles.

Tail Quantile 0.1

Q 3

☐ Restrict search to integers

☐ Show only columns with outliers

Rescan

Close

Select columns and choose an action.

Select Rows | Color Cells

Exclude Rows | Color Rows

Add to Missing Value Codes

Change to Missing

Some quantiles were stretched to avoid a large group at the median.

Column	10% Quantile	90% Quantile	Low Threshold	High Threshold	Number of Outliers	Outliers (Count)
STNW0001	0.005	0.09	-0.25	0.345	283	0.35(18) 0.36(13) 0.37(10) 0.38(8) 0.39(13) 0.4(9) 0.41(10) 0.42(9) 0.43(8) 0.44(8) 0.45(4) 0.46(8) 0.47(6) 0.48(7) 0.49(7) 0.5(5) 0.51(3) 0.52(2) 0.55(5) 0.56(4) ...
STNE0002	0.005	0.25	-0.73	0.985	240	0.99(18) 1(12) 1.01(7) 1.02(4) 1.03(3) 1.04(2) 1.05(3) 1.06(3) 1.07(2) 1.08(5) 1.09(4) 1.1(5) 1.11(3) 1.12(3) 1.13(5) 1.14(4) 1.15(5) 1.16(10) 1.17(7) 1.18(6) ...
STSE0003	0.005	0.06	-0.16	0.225	1174	0.23(122) 0.24(85) 0.25(113) 0.26(136) 0.27(143) 0.28(112) 0.29(143) 0.3(84) 0.31(41) 0.32(22) 0.33(5) 0.34(13) 0.35(28) 0.36(22) 0.37(5) 0.38(4) 0.39(5) 0.4(4) 0.41(12) 0.42(6) ...
STSW0004	0.005	0.05	-0.13	0.185	1693	0.19(291) 0.2(257) 0.21(186) 0.22(144) 0.23(106) 0.24(80) 0.25(67) 0.26(49) 0.27(51) 0.28(49) 0.29(22) 0.3(35) 0.31(25) 0.32(32) 0.33(15) 0.34(26) 0.35(19) 0.36(15) 0.37(19) 0.38(12) ...
STCN0005	0.005	0.04	-0.1	0.145	5190	0.15(712) 0.16(615) 0.17(415) 0.18(323) 0.19(358) 0.2(407) 0.21(306) 0.22(222) 0.23(265) 0.24(169) 0.25(150) 0.26(137) 0.27(106) 0.28(91) 0.29(79) 0.3(43) 0.31(60) 0.32(55) 0.33(61) 0.34(72) ...

LENS 6 - Supplemental

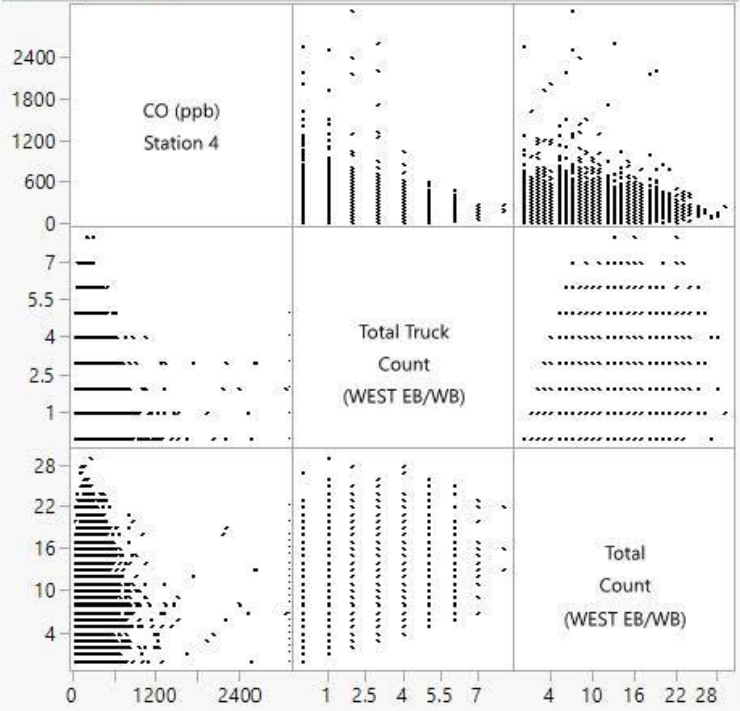
Multivariate

Correlations

	CO (ppb) Station 4	Total Truck Count (WEST EB/WB)	Total Count (WEST EB/WB)
CO (ppb) Station 4	1.0000	-0.0340	-0.0772
Total Truck Count (WEST EB/WB)	-0.0340	1.0000	0.5878
Total Count (WEST EB/WB)	-0.0772	0.5878	1.0000

The correlations are estimated by Row-wise method.

Scatterplot Matrix



Nonparametric: Spearman's ρ

Variable	by Variable	Spearman ρ	Prob>|ρ|
Total Truck Count (WEST EB/WB)	CO (ppb) Station 4	-0.0739	<.0001*
Total Count (WEST EB/WB)	CO (ppb) Station 4	-0.1291	<.0001*
Total Count (WEST EB/WB)	Total Truck Count (WEST EB/WB)	0.6189	<.0001*