Louisville Metro Air Pollution Control District
$PM_{2.5}$ Monitoring Report
April 2019

This report summarizes $PM_{2.5}$ data collected by Federal Reference Method (FRM) and Federal Equivalent Method (FEM) instruments. Measurements are reported as 24-hour averages in micro-grams per cubic meter ($\mu g/m^3$). The data are subject to further quality assurance checks and are not final.

$PM_{2.5}$ Monthly Data Summary for March 2019

	Maximum		Minimum		Sample	Monthly
Site Name	Conc.	Date	Conc.	Date	Recovery	Average
Firearms Training *	23.0	3/2/19	3.9	3/31/19	NA	11.1
Durrett Lane	23.5	3/2/19	3.6	3/26/19	NA	11.5
Cannons Lane	22.8	3/3/19	3.5	3/26/19	NA	10.4
Watson Lane	23.6	3/24/19	4.1	3/31/19	NA	11.5
Overall	23.6	3/24/19	3.5	3/26/19	NA	11.1

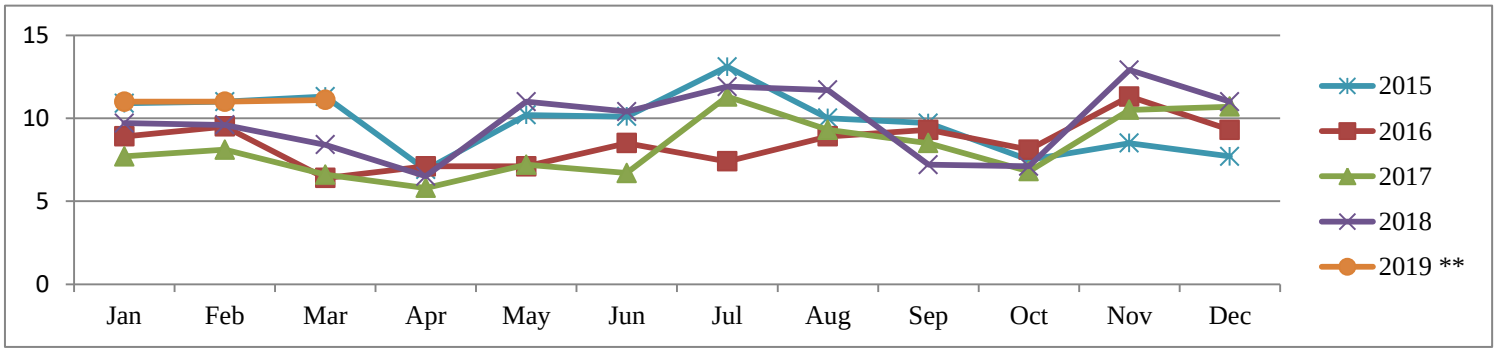
* Firearms Training replaced Southwick on 1/5/2018

$PM_{2.5}$ Monthly Averages Tracking Table for 2009-2019

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Months >Annual Standard
2009	14.6	11.1	11.3	9.3	10.3	13.9	13.1	12.6	12.1	8.9	13.8	12.9	**0**
2010	13.3	**16.3**	12.2	12.2	11.0	14.1	**16.0**	**16.4**	11.0	**17.0**	12.6	13.7	**4**
2011	**15.2**	10.6	9.7	8.6	12.1	14.1	**19.7**	**16.2**	11.5	9.0	7.6	9.9	**3**
2012	8.9	9.5	9.2	7.2	11.7	10.9	12.5	11.9	8.6	7.3	13.1	9.6	**0**
2013*	10.5	10.0	8.5	7.6	8.8	11.6	10.1	**12.7**	11.9	9.3	7.2	10.7	**0**
2014	7.5	**14.3**	11.7	9.6	10.7	**14.0**	**16.4**	**13.6**	9.9	7.9	9.8	**12.4**	**5**
2015	10.9	11.0	11.3	6.9	10.2	10.1	**13.1**	10.0	9.7	7.5	8.5	7.7	**1**
2016	8.9	9.5	6.4	7.1	7.1	8.5	7.4	8.9	9.3	8.1	11.3	9.3	**0**
2017	7.7	8.1	6.6	5.8	7.2	6.7	11.3	9.3	8.5	6.8	10.5	10.7	**0**
2018	9.7	9.6	8.4	6.5	11.0	10.4	11.9	11.7	7.2	7.1	**12.9**	11.0	**1**
2019 **	11.0	11.0	11.1										**0**
Average	11.3	11.7	11.2	9.4	11.7	13.4	15.5	15.4	12.1	9.8	11.0	11.2	

*The new $PM_{2.5}$ standard of 12 $\mu g/m^3$ became effective on March 18, 2013 ** 2019 Data from continuous FEM Instruments

$PM_{2.5}$ Monthly Averages 5-Year Trend



National Ambient Air Quality Standards (NAAQS):
National Ambient Air Quality Standards consist of primary and secondary standards. The primary standards define levels of air quality which EPA judges are necessary, with an adequate margin of safety, to protect the public health. The secondary standards define levels of air quality which EPA judges necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. For $PM_{2.5}$ the levels of the primary and secondary standards are the same.

National Ambient Air Quality Standard for $PM_{2.5}$ - Annual Standard:
The annual standard is designed to provide an appropriate level of protection from long-term exposure to $PM_{2.5}$. The standard is met when the annual design value is less than or equal to 12 µg/m^3. The standard changed from 15 µg/m^3 to 12 µg/m^3 on March 18, 2013. The annual design value is calculated by averaging the annual means of 3 consecutive complete years of air quality data. The table below compares data collected from 2013 through year-to-date 2019 to the $PM_{2.5}$ annual standard.

$PM_{2.5}$ Annual Means and Annual Design Values

	Annual Means µg/m^3							Annual Design Values				
Site Name	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2013-2015**	**2014-2016**	**2015-2017**	**2016-2018**	**2017-2019**
Firearms Tr*	12.3	11.2	10.4	8.3	8.3	9.5	11.6	11.3	10.0	9.0	8.7	9.8
Durrett Lane	10.2	12.0	10.0	9.2	8.9	10.2	11.3	10.7	**10.4**	**9.4**	**9.4**	**10.1**
Cannons Lane	11.1	11.0	9.5	7.9	7.9	9.1	10.4	10.5	9.5	8.4	8.3	9.1
Watson Lane	12.5	12.2	10.4	8.4	8.1	10.5	10.8	**11.7**	10.3	9.0	9.0	9.8

Bold: Design value for Louisville * Firearms Training replaced Southwick in 2018

National Ambient Air Quality Standard for $PM_{2.5}$ - 24-Hour (Daily) Standard:
The 24-hour standard is designed to provide an appropriate level of protection from short-term exposure to $PM_{2.5}$. The standard is met when the 24-hour design value is less than or equal to 35 µg/m^3. The design value is based on 3 consecutive complete years of air quality data and is calculated by taking the average of the 98th percentile value for each of the 3 years. The 98th percentile value is the 24-hour average out of a year of $PM_{2.5}$ monitoring data below which 98 percent of all 24-hour averages fall. The table below compares data collected from 2013 through year-to-date 2019 to the 24-hour standard for $PM_{2.5}$.

$PM_{2.5}$ Annual 98th Percentiles and 24-Hour Design Values

	Annual 98th Percentile Value µg/m^3							24-Hour Design Values				
Site Name	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2013-2015**	**2014-2016**	**2015-2017**	**2016-2018**	**2017-2019**
Firearms Tr*	24.0	24.3	22.3	17.0	17.8	23.0	21.6	23.5	21.2	19.0	19.3	20.8
Durrett Lane	20.6	26.0	22.1	18.7	20.7	24.7	23.3	22.9	**22.3**	**20.5**	**21.4**	**22.9**
Cannons Lane	22.5	23.9	21.7	18.7	17.2	22.2	22.6	22.7	21.4	19.2	19.4	20.7
Watson Lane	23.8	26.2	22.8	16.2	17.7	24.3	21.4	**24.3**	21.7	18.9	19.4	21.1

Bold: Design value for Louisville * Firearms Training replaced Southwick in 2018

Louisville Metro Air Pollution Control District

8-Hour Ozone Monitoring Report

April 2019

This report summarizes ozone data collected by Automated Equivalent Method (AEM) ozone analyzers located within the Louisville Metropolitian Statistical Area. Measurements are reported as 8-hour averages in parts-per-billion (ppb). The data are subject to further quality assurance checks and are not final.

2018 8-Hour Ozone Maximum Values and Exceedances through April 11th

Date	# of 8-Hour Exceeds	# of Days Exceeds	Charlestown Clark County IN	New Albany Floyd County IN	Carrithers Jefferson County KY	Watson Lane Jefferson County KY	Cannons Lane Jefferson County KY	Buckner Oldham County KY	Shepherdsville Bullitt County KY
03/28/19	0	0	54.8	53.5	57.3	54.6	55.5	55.8	57.6
04/04/19	0	0	60.0	56.2	58.8	57.1	59.7	57.8	57.2
Total Exceeds	0	0	0	0	0	0	0	0	0
Truncated 4th Maximum									

Values in **BOLD/RED** exceed the level of the 2016 ozone standard of 70 ppb (parts-per-billion)

NA - Indicates data were not available.

8-Hour Ozone Exceedances:

The National Ambient Air Quality Standard for ozone is measured as an 8-hour average. An ozone exceedance occurs when the highest 8-hour average for each day is greater than the NAAQS. The NAAQS was lowered from 80 ppb to 75 ppb in 2007 and from 75 ppb to 70 ppb in 2016. The data below lists the number of exceedances based on the NAAQS at the time the data was collected.

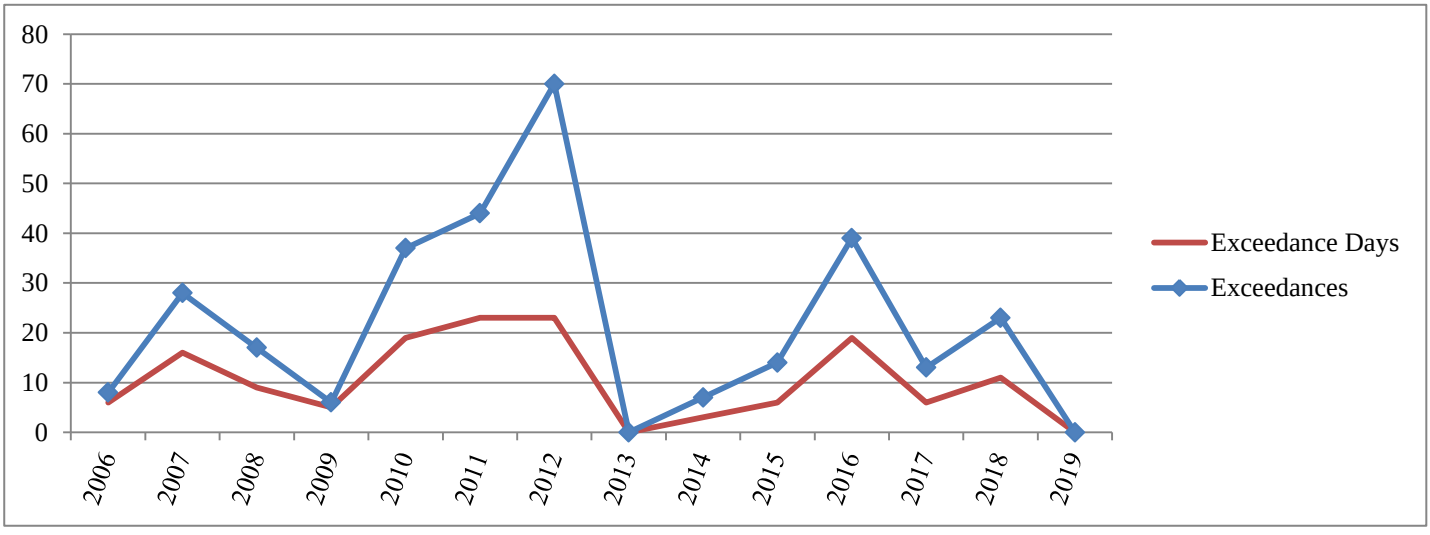
2006-2019 8-Hour Ozone Exceedance Summary through April 11th

Year	Charles-town	New Albany	Bates & Carri-thers	Watson	WLKY& Cannons Lane	Buckner	Shepherds-ville	Louisville MSA Total		Jefferson County Total	
								Exceedances	Days	Exceedances	Days
2006	3	1	0	1	0	3	0	8	6	1	1
2007	8	3	8	4	2	3	0	28	16	14	11
2008	3	3	2	2	1	4	2	17	9	5	5
2009	0	0	2	4	0	0	0	6	5	6	5
2010	4	2	3	3	15	8	2	37	19	21	15
2011	6	5	6	5	8	13	1	44	23	19	14
2012	8	13	7	11	13	14	4	70	23	31	17
2013	0	0	0	0	0	0	0	0	0	0	0
2014	1	2	0	2	2	0	0	7	3	4	3
2015	3	0	4	1	4	2	0	14	6	9	5
2016	7	6	5	3	14	3	1	39	19	22	16
2017	1	5	1	1	4	1	0	13	6	6	4
2018	4	5	3	2	6	1	2	23	11	11	8
2019	0	0	0	0	0	0	0	0	0	0	0

* Cannons Lane replaced WLKY in 2010. Data through 2009 are from WLKY.

* Carrithers replaced Bates in 2018. Data through 2017 are from Bates.

Historical Graph of 8-Hour Ozone Exceedances



National Ambient Air Quality Standard for Ozone - 8-Hour Standard:

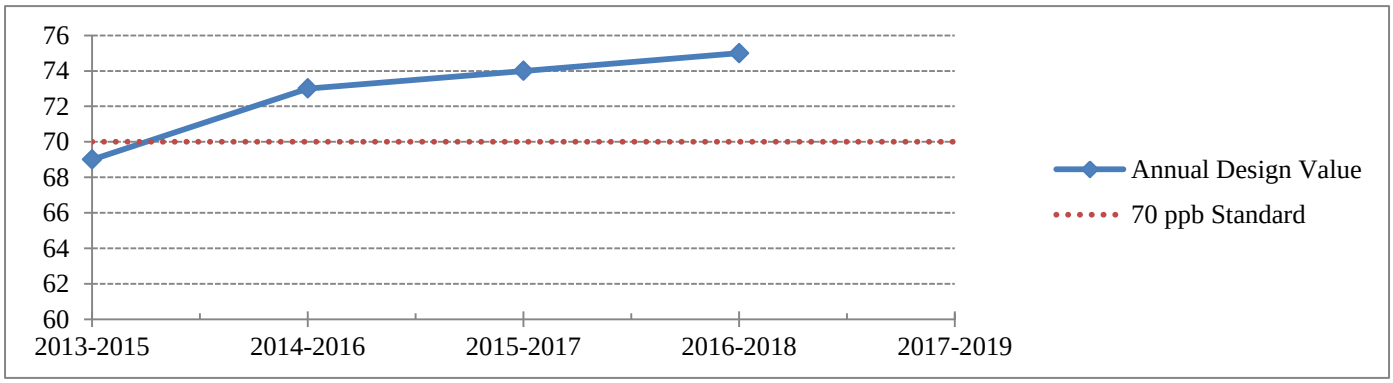
Attainment of the 8-hour standard for ozone at an individual monitor is achieved when the three-year average of the annual fourth-highest daily maximum (4th maximum) 8-hour average ozone concentration is less than 71 ppb. This three-year average is the design value for that monitor. The Louisville MSA row represents the largest 4th maximum and design value* for all monitors within the MSA.

8-Hour Ozone 4th Maximums and Design Values through April 11th

	4th Maximums							8-Hour Design Values				
Site Name	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2013-2015**	**2014-2016**	**2015-2017**	**2016-2018**	**2017-2019**
Charlestown	67	66	74	73	68	71		**69**	71	71	70	
New Albany	68	66	67	73	74	73		67	68	71	73	
Bates/Carrithers	64	65	71	73	65	70		66	69	69	69	
Watson Lane	65	69	69	70	66	69		67	69	68	68	
Cannons Lane	64	68	76	76	72	77		**69**	**73**	**74**	**75**	
Buckner	64	68	73	69	64	69		68	70	68	67	
Shepherdsville	64	65	67	67	63	68		65	66	65	66	
Louisville MSA	68	69	76	76	74	77	#N/A	69	73	74	75	#N/A

* Design Value calculations are approximations based on preliminary summary data and may differ from official design value calculations

8-Hour Ozone Design Value Trend Chart



Louisville Metro Air Pollution Control District
Air Monitoring Report for Sulfur Dioxide (SO_2)
April 2019

On June 2, 2010, EPA strengthened the primary National Ambient Air Quality Standard for SO_2. Specifically, EPA replaced the existing annual (30 ppb) and 24-hour (140 ppb) primary standards with a new 1-hour standard set at 75 ppb. The 1-hour standard was set to better protect public health by reducing exposure to high short-term concentrations of SO_2. The new standard took effect August 23, 2010.

Exceedances of the 1-Hour SO_2 Standard:

An exceedance occurs when a measured 1-hour average is greater than 75 ppb. Since up to twenty-four 1-hour averages are recorded each day, multiple exceedances may occur in one day. However, only the maximum 1-hour average (Daily Max) for each day is used in determining if the area is in compliance with the standard. The table below indicates the number of exceedances and the daily maximums reported thus far this year. The data are subject to further quality assurance checks and are not final.

SO_2 Daily Maximums and Exceedances through March 31st

	Fire Arms Training		Watson Lane Elementary		Cannons Lane NCore		New Albany Indiana	
Date	Exceeds	Daily Max	Exceeds	Daily Max	Exceeds	Daily Max	Exceeds	Daily Max
01/08/19		2.0		6.0		2.4		0.8
01/31/19		4.0		1.6		3.9		22.4
02/09/19		4.6		2.5		1.4		4.0
02/14/19		1.6		4.1		1.4		2.2
02/25/19		1.1		1.9		1.4		9.6
02/27/19		2.1		2.3		5.5		2.2
03/07/19		2.2		1.3		6.2		3.2
03/15/19		2.3		0.5		1.2		1.1
03/30/19		1.5		6.8		3.1		1.2
Totals/Max	0	4.6	0	6.8	0	6.2	0	22.4
99th Percentile		4.6		6.8		6.2		22.4

NA - Indicates data were not available

Attainment of the SO_2 Standard:

Attainment of the new standard is achieved when the 3-year average of the 99th percentile annual distribution of the daily maxima is less than or equal to 75 ppb. Since this value can be calculated from historical data, the chart below indicates those values based on 2013-2019 data.

SO_2 Annual 99th Percentiles and Annual Design Values

	Annual 99th Percentiles (ppb)							Annual Design Values				
Site Name	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2013-2015**	**2014-2016**	**2015-2017**	**2016-2018**	2017-2019
Watson Lane	93	149	54	26	13	16	7	99	76	31	18	12
Fire Arms	37	42	25	16	8	10	5	35	28	16	11	7
Cannons Lane	27	29	19	8	7	7	6	25	19	11	7	7
New Albany	21	44	26	11	5	6	22	30	27	14	7	11

* Design Value calculations are approximations based on preliminary summary data and may differ from official design value calculations