

**Louisville Metro Air Pollution Control District**  
**PM<sub>2.5</sub> Monitoring Report**  
**August 2014**

This report summarizes PM<sub>2.5</sub> data collected by Federal Reference Method (FRM) samplers. Measurements are reported as 24-hour averages in micro-grams per cubic meter (µg/m<sup>3</sup>). The data are subject to further quality assurance checks and are not final.

**PM<sub>2.5</sub> Monthly Data Summary for July 2014**

Site Name	Maximum		Minimum		Sample	Monthly
	Conc.	Date	Conc.	Date	Recovery	Average
Southwick	43.6	7/4/14	4.5	6/13/14	**	18.2
*Durrett Lane	50.0	7/4/14	5.6	7/22/14	**	19.0
Cannons Lane	25.7	7/14/14	4.3	7/16/14	**	14.7
Watson Lane	34.8	7/4/14	4.7	7/16/14	**	18.6
Overall	50.0	7/4/14	4.3	7/16/14	**	17.6

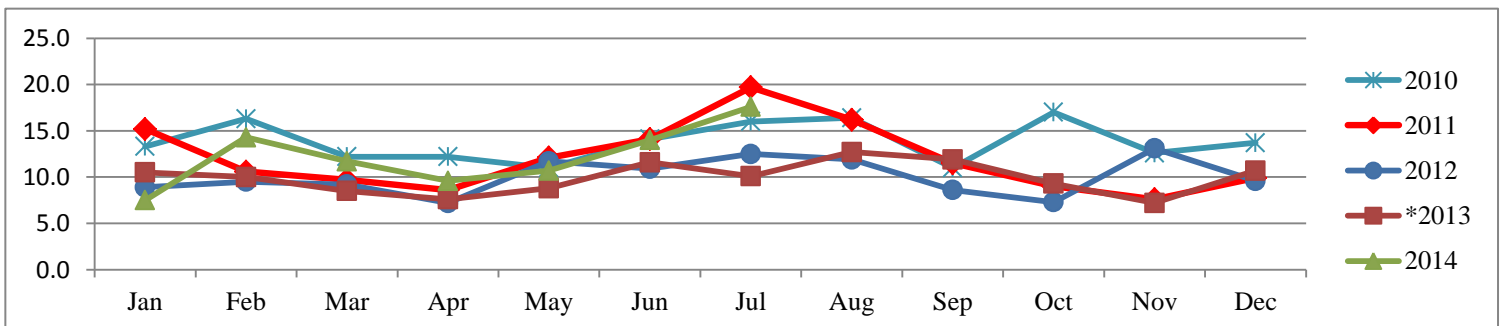
\*Durrett Lane replaced Wyandotte on 1/1/2014 \*\*Contract lab has not finished weighing some filters

**PM<sub>2.5</sub> Monthly Averages Tracking Table for 2004-2014**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Months >Annual Standard
2004	10.5	15.7	10.1	11.3	13.4	15.9	17.1	18.4	17.6	13.8	11.1	11.1	5
2005	11.7	17.1	14.3	13.1	14.9	19.6	20.2	19.8	24.1	16.1	12.6	15.5	7
2006	10.3	13.0	12.5	12.6	11.9	18.1	23.9	22.5	13.6	10.1	13.6	11.1	3
2007	9.3	12.2	14.9	11.2	18.4	19.9	18.3	22.8	16.9	11.1	12.5	14.1	5
2008	11.8	12.0	11.9	11.6	12.1	11.8	18.1	17.1	17.6	10.6	14.3	9.4	3
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	1
2014	7.5	14.3	11.7	9.6	10.7	14.0	17.6						3
Average	11.2	13.1	11.5	10.4	12.3	14.9	16.9	17.0	14.5	11.3	11.8	11.8	

\*The new PM<sub>2.5</sub> standard of 12 µg/m<sup>3</sup> became effective on March 18, 2013

**PM<sub>2.5</sub> 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<sub>2.5</sub> the levels of the primary and secondary standards are the same.

### National Ambient Air Quality Standard for PM<sub>2.5</sub> - Annual Standard:

The annual standard is designed to provide an appropriate level of protection from long-term exposure to PM<sub>2.5</sub>. The standard is met when the annual design value is less than or equal to 12 µg/m<sup>3</sup>. The standard changed from 15 µg/m<sup>3</sup> to 12 µg/m<sup>3</sup> 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 2008 through year-to-date 2014 to the PM<sub>2.5</sub> annual standard.

**PM<sub>2.5</sub> Annual Means and Annual Design Values**

Site Name	Annual Means µg/m <sup>3</sup>							Annual Design Values				
	2008	2009	2010	2011	2012	2013	2014	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014
Southwick	13.2	12.2	13.5	12.1	9.6	10.0	11.6	13.0	12.6	11.7	10.6	10.4
Durrett Lane*	13.4	12.5	13.8	12.3	10.3	10.2	12.7	<b>13.2</b>	<b>12.9</b>	12.1	<b>10.9</b>	<b>11.1</b>
Cannons Lane**	13.4	11.7	13.3	11.5	9.9	9.6	10.8	12.8	12.1	11.6	10.3	10.1
Watson Lane	12.8	11.6	14.8	11.9	10.3	9.9	13.1	13.1	12.8	<b>12.3</b>	10.7	<b>11.1</b>

**Bold:** Design value for Louisville

\*Durrett Lane replaced Wyandotte in 2014

\*\* Cannons Lane replaced Barret in 2009

### National Ambient Air Quality Standard for PM<sub>2.5</sub> - 24-Hour (Daily) Standard:

The 24-hour standard is designed to provide an appropriate level of protection from short-term exposure to PM<sub>2.5</sub>. The standard is met when the 24-hour design value is less than or equal to 35 µg/m<sup>3</sup>. The design value is based on 3 consecutive complete years of air quality data and is calculated by taking the average of the 98<sup>th</sup> percentile value for each of the 3 years. The 98<sup>th</sup> percentile value is the 24-hour average out of a year of PM<sub>2.5</sub> monitoring data below which 98 percent of all 24-hour averages fall. The table below compares data collected from 2008 through year-to-date 2014 to the 24-hour standard for PM<sub>2.5</sub>.

**PM<sub>2.5</sub> Annual 98<sup>th</sup> Percentiles and 24-Hour Design Values**

Site Name	Annual 98 <sup>th</sup> Percentile Value µg/m <sup>3</sup>							24-Hour Design Values				
	2008	2009	2010	2011	2012	2013	2014	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014
Southwick	28.7	26.5	33.1	29.6	19.4	19.6	24.4	<b>29.4</b>	<b>29.7</b>	<b>27.4</b>	22.9	21.1
Durrett Lane*	29.5	25.7	28.8	26.8	22.1	20.6	27.6	28.0	27.1	25.9	23.2	23.4
Cannons Lane**	30.7	24.1	25.8	26.8	19.5	20.0	25.0	26.9	25.6	24.0	22.1	21.5
Watson Lane	28.6	24.7	26.1	31.3	20.6	19.8	33.6	26.5	27.4	26.0	<b>23.9</b>	<b>24.7</b>

**Bold:** Design value for Louisville

\*Durrett Lane replaced Wyandotte in 2014

\*\* Cannons Lane replaced Barret in 2009

**Louisville Metro Air Pollution Control District**  
**8-Hour Ozone Monitoring Report**  
**August 2014**

This report summarizes ozone data collected by Automated Equivalent Method (AEM) ozone analyzers located within the Louisville Metropolitan 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.

**2014 8-Hour Ozone Maximum Values and Exceedances through July 31<sup>st</sup>**

Date	# of 8-Hour Exceeds	# of Days Exceeds	Charlestown Clark County IN	New Albany Floyd County IN	Bates Elem. Jefferson County KY	Watson Lane Jefferson County KY	Cannons Lane Jefferson County KY	Buckner Oldham County KY	Shepherdsville Bullitt County KY
03/11/14	0	0	46	46	54	51	52	53	55
03/21/14	0	0	43	37	54	54	54	53	54
04/20/14	0	0	69	69	65	64	67	61	62
05/04/14	0	0	67	59	61	64	62	55	61
05/05/14	0	0	71	65	64	50	63	64	65
05/06/14	0	0	56	61	65	60	66	63	63
06/06/14	0	0	60	66	52	64	67	57	55
06/07/14	0	0	62	65	52	58	62	65	57
06/26/14	0	0	57	54	68	34	68	52	58
06/27/14	0	0	63	64	58	33	68	58	62
07/11/14	3	1	<b>78</b>	<b>76</b>	47	67	<b>93</b>	71	57
07/22/14	0	0	60	50	32	37	58	63	41
<b>Total Exceeds</b>	3	1	1	1	0	0	1	0	0
<b>4th Maximum</b>			67	65	64	64	67	63	62

Values in **BOLD/RED** exceed the level of the 2008 ozone standard of 75 ppb (parts-per-billion)

"-" Indicates no data was available.

### 8-Hour Ozone Exceedances:

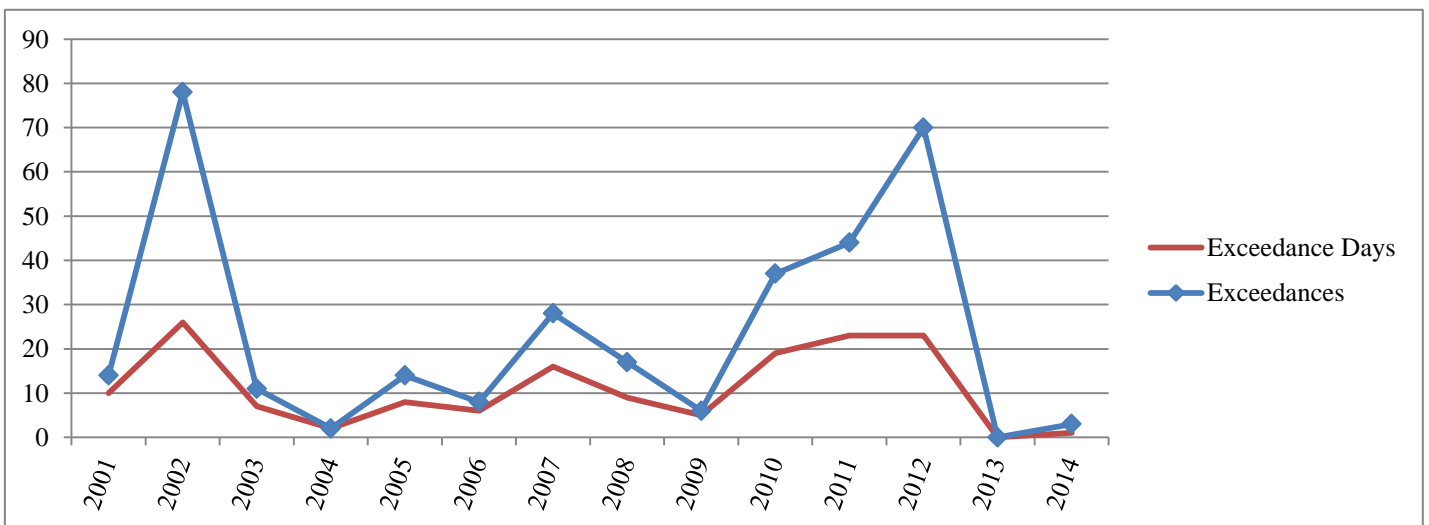
The National Ambient Air Quality Standard for ozone is measured as an 8-hour average. An ozone exceedance occurs when the highest 8-hour average for each day is greater than the NAAQS. For 2000-2007 the NAAQS was 80 ppb and the exceedances reported for that time period are based on that standard. In 2008 the NAAQS was changed to 75 ppb and the exceedances (8-hour average >75 ppb) reported are based on the new standard.

**2001-2014 8-Hour Ozone Exceedance Summary through July 31<sup>st</sup>**

Year	Charleston	New Albany	Bates	Watson	*WLKY & Cannons Lane	Buckner	Shepherdsville	Louisville MSA Total		Jefferson County Total	
								Exceedances	Days	Exceedances	Days
2001	4	0	2	1	1	4	2	14	10	4	3
2002	17	13	4	15	7	12	10	78	26	26	19
2003	4	4	1	0	0	2	0	11	7	1	1
2004	0	0	1	0	0	0	1	2	2	1	1
2005	3	2	0	4	1	4	0	14	8	5	4
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	1	0	0	1	0	0	3	1	1	1

\* Cannons Lane replaced WLKY in 2010. 2004-2009 data are from WLKY.

**Historical Graph of 8-Hour Ozone Exceedances**



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

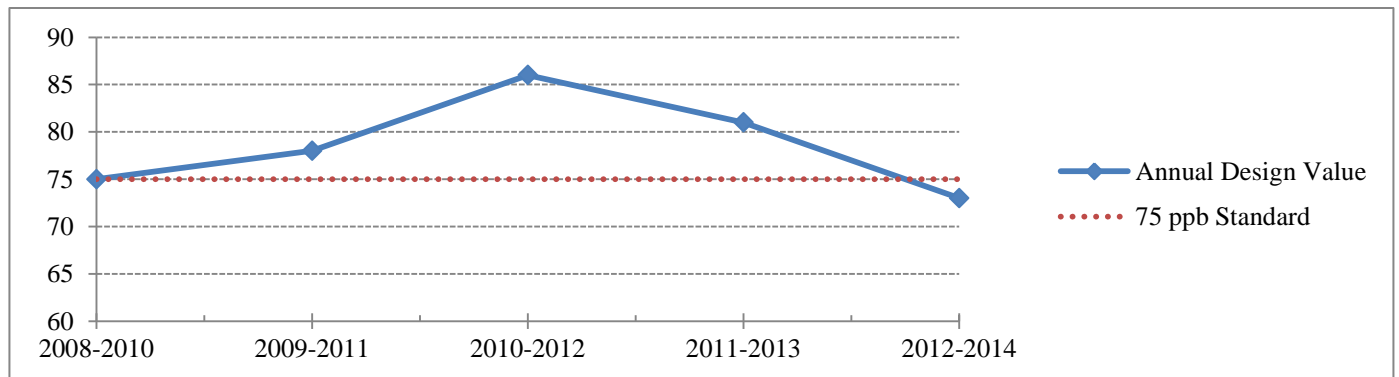
Attainment of the 8-hour standard for ozone at an individual monitor is achieved when the three-year average of the annual fourth-highest daily maximum (4<sup>th</sup> maximum) 8-hour average ozone concentration is less than 76 ppb. This three-year average is the design value for that monitor. The Louisville MSA row represents the largest 4<sup>th</sup> maximum and design value for all monitors within the MSA.

### 8-Hour Ozone 4<sup>th</sup> Maximums and Design Values through July 31<sup>st</sup>

Site Name	4 <sup>th</sup> Maximums							8-Hour Design Values				
	2008	2009	2010	2011	2012	2013	2014	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014
Charlestown	75	67	75	82	87	67	67	72	74	81	78	73
New Albany	75	63	72	80	87	67	65	70	71	79	78	73
Bates	72	68	75	81	86	63	64	71	74	80	76	71
Watson Lane	75	78	73	82	81	65	64	<b>75</b>	77	78	76	70
*Cannons Lane	68	65	85	82	90	64	67	72	77	85	78	<b>73</b>
Buckner	77	68	77	90	92	63	63	74	<b>78</b>	<b>86</b>	<b>81</b>	72
Shepherdsville	69	64	74	72	80	64	62	69	70	75	72	68
Louisville MSA	77	78	85	90	92	67	67	75	78	86	81	73

\* Cannons Lane replaced WLKY in 2010. 2007-2009 data are from WLKY.

### 8-Hour Ozone Design Value Trend Chart



**Louisville Metro Air Pollution Control District**  
**Air Monitoring Report for Sulfur Dioxide (SO<sub>2</sub>)**  
**August 2014**

On June 2, 2010, EPA strengthened the primary National Ambient Air Quality Standard for SO<sub>2</sub>. 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<sub>2</sub>. The new standard took effect August 23, 2010.

**Exceedances of the 1-Hour SO<sub>2</sub> 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<sub>2</sub> Daily Maximums and Exceedances 2014 through July 31<sup>st</sup>**

Date	Fire Arms Training		Watson Lane Elementary		Cannons Lane NCore		New Albany Indiana	
	Exceeds	Daily Max	Exceeds	Daily Max	Exceeds	Daily Max	Exceeds	Daily Max
01/12/14		21.2		8.3		21.1		24.2
01/13/14		31.6		2.3		1.2		11.1
01/29/14		4.0		51.7		8.5		4.6
01/31/14		1.8		2.0		0.8		43.8
02/11/14		11.7		21.9		36.3		12.4
02/13/14		50.8		69.9		23.9		18.8
02/19/14		6.0		7.7		8.4		25.3
02/22/14		20.3	1	<b>79.1</b>		16.7		12.3
03/05/14		31.0		23.4		31.5		19.4
03/07/14		41.6		62.8		16.1		35.3
03/11/14		19.4	1	<b>94.4</b>		18.4		7.2
03/14/14		21.0	1	<b>78.1</b>		14.2		10.2
04/11/14		15.4		47.6		11.1		11.0
04/21/14		41.7		26.0		22.1		10.6
04/26/14		24.9		28.8		23.0		4.3
04/29/14		9.6		20.4		1.7		27.2
05/05/14		25.8	1	<b>91.4</b>		21.6		20.9
05/06/14		12.9	1	<b>124.4</b>		8.6		20.9
05/08/14		12.2	1	<b>97.8</b>		1.9		39.4
05/11/14		10.3		2.8		3.4		62.5
05/13/14		8.3	1	<b>77.6</b>		3.0		8.7

"-" Indicates no data was available.

**Louisville Metro Air Pollution Control District  
Air Monitoring Report for Sulfur Dioxide (SO<sub>2</sub>)  
August 2014**

**Continuation of SO<sub>2</sub> Daily Maximums and Exceedances through July 31<sup>st</sup>**

Date	Fire Arms Training		Watson Lane Elementary		Cannons Lane NCore		New Albany Indiana	
	Exceeds	Daily Max	Exceeds	Daily Max	Exceeds	Daily Max	Exceeds	Daily Max
5/20/2014		23.5	1	<b>82.8</b>		6.9		3.6
5/21/2014		12.5	1	<b>97.2</b>		10.9		6.2
5/27/2014		33.8		52.6		7.5		11.8
6/3/2014		10.1	1	<b>115.0</b>		3.9		0.8
6/4/2014		12.6	1	<b>97.9</b>		8.9		3.1
6/15/2014		12.8	1	<b>99.3</b>		1.4		8.2
6/16/2014		9.6	1	<b>88.1</b>		14.3		20.4
6/17/2014		15.3	1	<b>120.7</b>		15.7		5.7
6/18/2014		11.4	1	<b>111.9</b>		9.6		1.6
6/22/2014		6.2	1	<b>155.2</b>		9.3		12.5
6/23/2014		36.7		4.1		3.7		*
07/01/14		7.4		33.2		31.0		6.1
07/06/14		30.7		22.2		12.7		30.1
07/08/14		8.9	1	<b>150.2</b>		20.5		1.8
07/09/14		17.6	1	<b>148.6</b>		12.4		23.4
07/12/14		14.1	1	<b>114.0</b>		12.6		5.9
07/13/14		3.5	1	<b>111.2</b>		10.1		2.9
07/22/14		21.1	1	<b>92.6</b>		15.1		9.4
07/25/14		7.4	1	<b>81.5</b>		11.2		4.8
Totals/Max	0	50.8	22	<b>155.2</b>	0	36.3	0	62.5
99 <sup>th</sup> Percentile		41.6		148.6		31.0		39.4

\*data not available

**Attainment of the SO<sub>2</sub> Standard:**

Attainment of the new standard is achieved when the 3-year average of the 99<sup>th</sup> 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 2007-2013 data.

**SO<sub>2</sub> Annual 99<sup>th</sup> Percentiles and Annual Design Values**

Site Name	Annual 99 <sup>th</sup> Percentiles (ppb)							Annual Design Values				
	2008	2009	2010	2011	2012	2013	2014	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014
Watson Lane	113	116	107	114	147	117	149	112.0	112.3	122.7	126.0	137.5
Fire Arms	122	96	100	35	39	32	42	106.0	76.8	57.8	35.2	37.5
*Cannons Lane	-	-	45	51	31	27	31	45.0	47.8	42.2	36.2	29.7
New Albany	138	125	123	33	29	24	39	128.7	93.5	61.5	28.5	30.8

\*Sampling at Cannons Lane began 05-26-2010