

2023 Ozone Season Summary for the Kansas City Region

Summary

From March 1 – June 25, 2023, in the Kansas City region there were nine Ozone Alerts, and the eight-hour ozone concentrations has exceeded the 70 part-per-billion (ppb) standard within our Air Quality Maintenance Area twelve times including one Red level day. Table 1 shows both the number of each type of forecast and the actual number of days within each category.

Table 1. Forecast and Monitor Results

	Green	Yellow	Orange	Red
Actual	66	39	11	1
Forecasted	75	33	9	0

2015 Ozone National Ambient Air Quality Standard

On October 1, 2015, the U.S. Environmental Protection Agency issued the current national standard for ground-level ozone: 70 ppb averaged over eight hours. To promote public awareness, EPA has created the Air Quality Index (AQI); a tool that associates colors and health messages with ranges of various air pollutant concentrations. Table 2 shows the ozone concentrations associated with each AQI color.

Table 2. Air Quality Index under the 2015 Ozone Standard

Category	AQI Value	2015 8-hour ozone (ppb)
Good (Green)	0 – 50	0 – 54
Moderate (Yellow)	51 – 100	55 – 70
Unhealthy for Sensitive Groups (Orange)	101 – 150	71 – 85
Unhealthy (Red)	151 – 200	86 – 105
Very Unhealthy (Purple)	201 – 300	106 – 200
Hazardous (Maroon)	301 – 500	> 200

2023 Monitor Map

Ozone measurements defining the air quality for the Greater Kansas City Air Quality Maintenance area are made at six monitors. Two additional nearby monitors at Trimble and Leavenworth provide useful forecasting information, and two distant monitors at Chanute and El Dorado offer some forecasting guidance on how pollution is moving into and out of our region. Map 1, on the next page, shows the location of all nearby monitors and their current design value.

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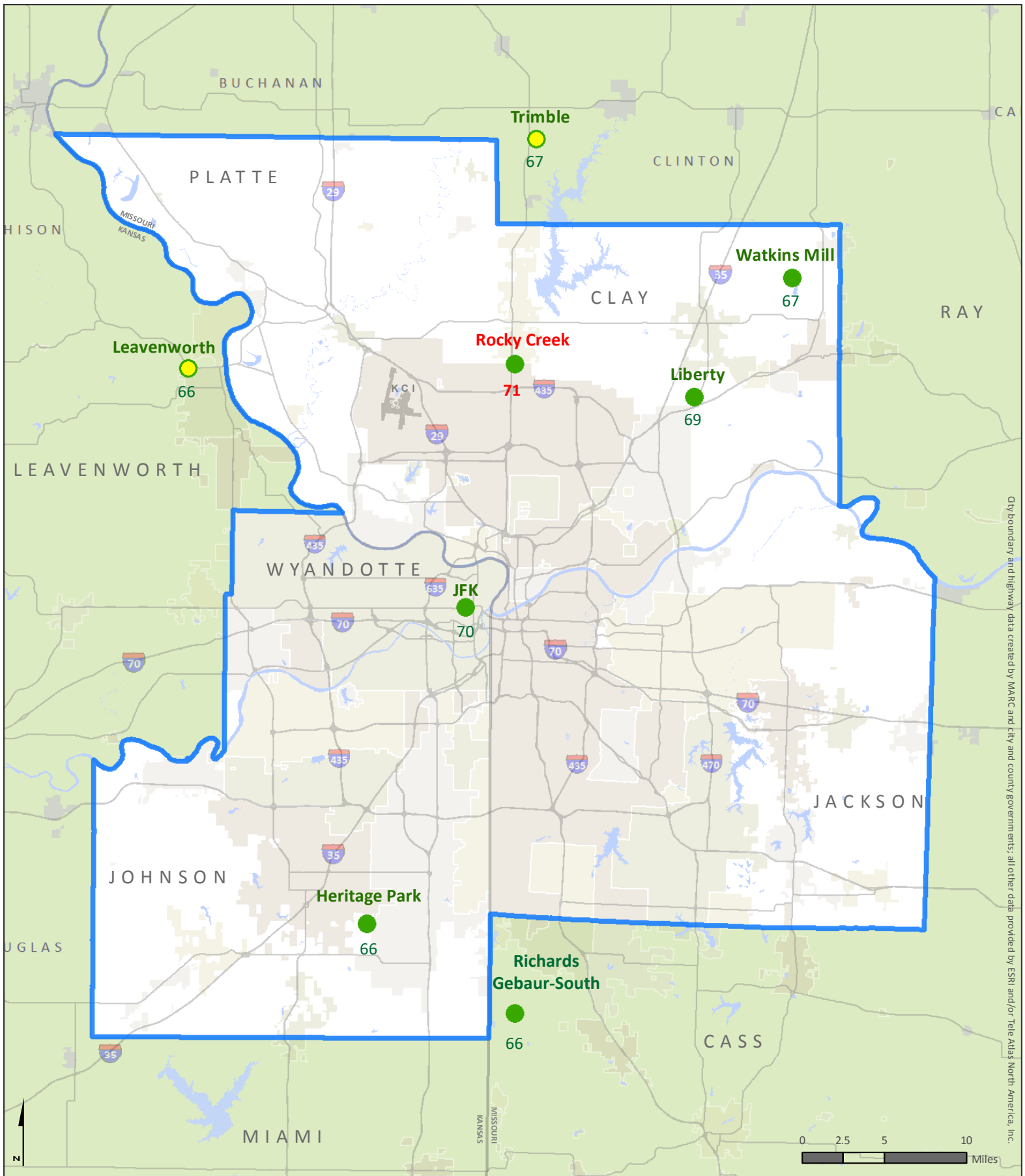
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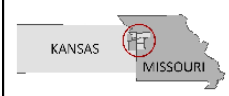
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Air Quality Monitoring Stations



City boundary and highway data created by MARC and city and county governments; all other data provided by ESRI and/or Tele Atlas North America, Inc.



- in area monitor
 - out of area monitor
- Number = current Design Value.

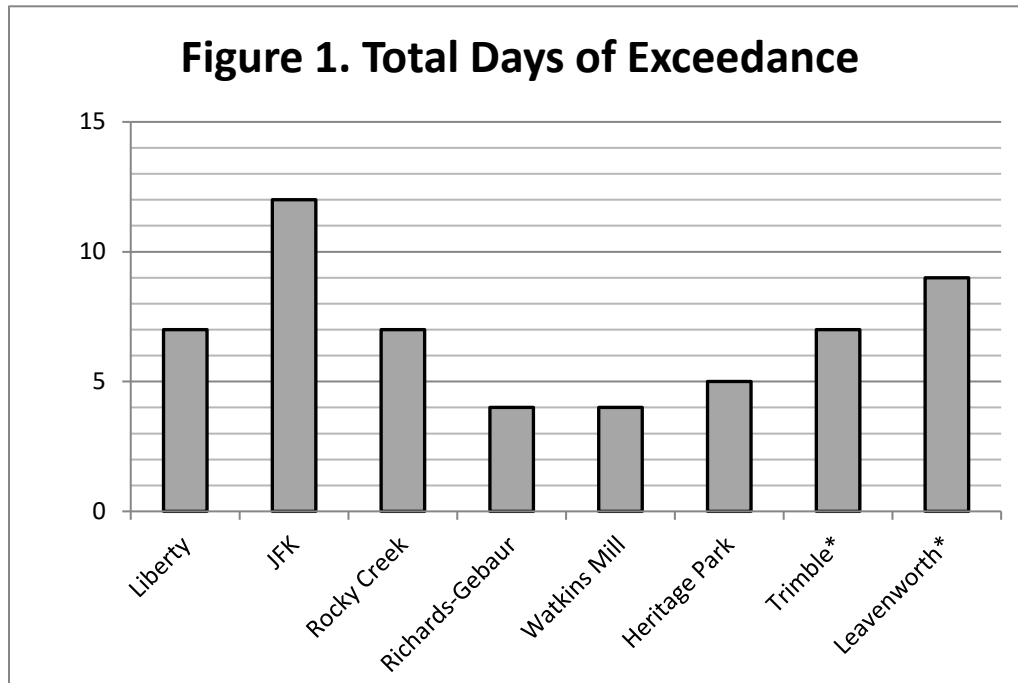
Air Quality Maintenance Area

Note: Monitor stations not shown above - El Dorado Springs & Chanute



2023 Ozone Data & SkyCasts

Figure 1 below will list the number of days each monitor records eight-hour peak values exceeding the 70 ppb standard. The figure highlights the general tendency of the highest areas of pollution to occur at the downtown monitor and monitors in the northern portion of the Greater Kansas City metropolitan area. Ozone this season has been dominated by local production from the most populous and industrial areas.



Appendix A, at the end of this report, summarizes the SkyCasts and highest daily eight-hour monitor ozone readings for the 2023 ozone season. It includes all days that were forecasted to be a Yellow or Ozone Alert day *or* had a maximum eight-hour ozone reading greater than or equal to 55 ppb. *Green SkyCast days with maximum eight-hour ozone values less than 55 ppb—days that were accurately forecasted to be green—will not be listed.*

Following the daily maximum data, Appendix B focuses in on those days where area monitors recorded eight-hour peak values exceeding the 70 ppb standard and the dates on which the exceedances occurred. This table shows both pollution levels and the pervasiveness of exceedances in the region on that given day.

Kansas City Ozone Design Values, 2013 – 2023

An exceedance of the eight-hour ozone standard at a monitored location does not necessarily result in a violating monitor. Compliance with the eight-hour ozone standard is based on the *three-year average of the fourth-highest ozone reading* from each monitor. Given the nature of its importance, this critical value – called the “Design Value,” is shown on Map 1 along with the region’s ozone monitors. Appendix C contains both the fourth-high eight-hour readings as well as the design values for 2013 – 2023. Table 3 on the following page displays the fourth-high eight-hour readings that would cause a violation of the design value during 2023.

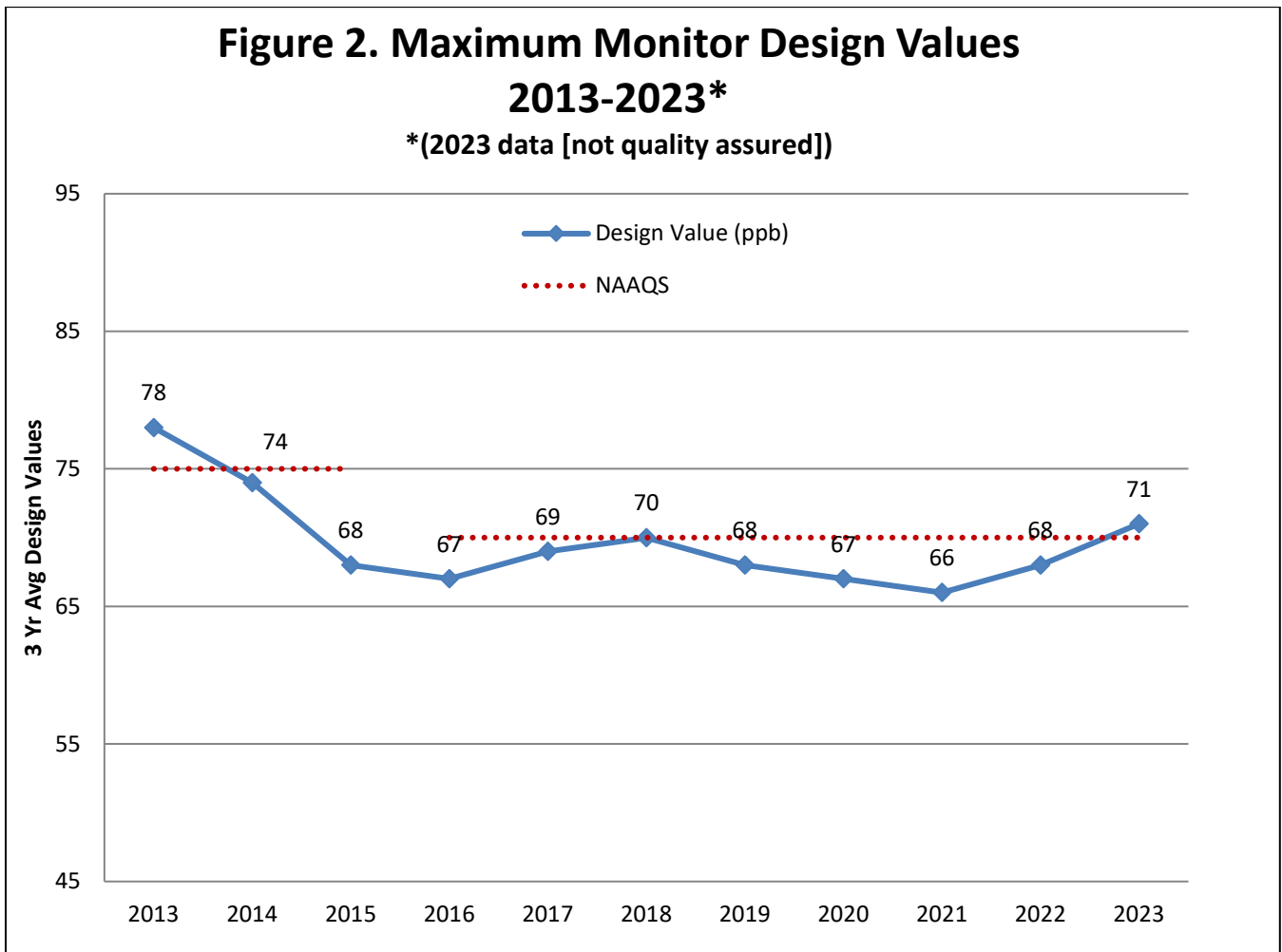
**Table 3. 2023 Fourth-High Values That Would Trigger a Violation
(70-ppb is the current standard)**

Missouri	8-Hr Value (ppb)	Kansas	8-Hr Value (ppb)
<i>Design Value Level</i>	70	<i>NAAQS Level</i>	70
Liberty	80	JFK (KCK)	79
Watkins Mill	82	Heritage Park	86
Rocky Creek	73	Leavenworth	89
Richards Gebauer	87		
Trimble	85		

*This is the current NAAQS level under the 2015 eight-hour standard

** Bolded monitor has tentatively reached a value that would trigger a critical design value violation.

Under the 2015 eight-hour standard, *violations* will occur when the three-year average is 71 ppb or higher. Figure 2 shows the trendline of design values, or three-year averages of the fourth-high eight-hour readings, from 2013 to 2023.



**Appendix A. Summary of 2023 SkyCasts and Daily Maximum Eight-hour Ozone Values
March 1 – June 25, 2023**

Date	Daily Max 8-Hr Value (ppb)*	Monitor(s) Recording Max Value	SkyCast	Date	Daily Max 8-Hr Value (ppb)*	Monitor(s) Recording Max Value	SkyCast
March				5/21	62	Rocky Creek	Green
3/1	56	Watkins Mill, Rocky Creek	Green	5/22	68	Rocky Creek	Green
April				5/23	60	JFK	Yellow
4/2	59	Watkins Mill	Green	5/24	63	Watkins Mill, Rocky Creek	Yellow
4/8	54	Watkins Mill	Yellow	5/25	77	JFK	Yellow
4/11	56	Watkins Mill	Green	5/26	63	Heritage Park, JFK	Green
4/13	55	Rocky Creek	Yellow	5/27	66	JFK	Green
4/14	60	Rocky Creek	Yellow	5/28	66	Watkins Mill, JFK	Orange
4/17	55	Rocky Creek	Green	5/29	70	Rocky Creek	Yellow
4/18	63	Rocky Creek	Yellow	5/30	63	Rocky Creek	Yellow
4/19	47	Rocky Creek	Yellow	5/31	52	Rocky Creek, JFK	Yellow
4/25	55	Rocky Creek	Green	June			
4/27	58	Rocky Creek	Green	6/1	63	Rocky Creek	Yellow
4/28	50	Richards Gebauer, JFK	Yellow	6/2	56	JFK	Yellow
May				6/3	77	JFK	Yellow
5/3	59	JFK	Green	6/4	76	JFK	Yellow
5/4	59	Watkins Mill	Green	6/5	71	JFK	Orange
5/6	56	Rocky Creek, Heritage Park, Liberty, JFK	Yellow	6/6	92	JFK	Orange
5/7	64	Watkins Mill	Green	6/7	77	JFK	Orange
5/8	66	Heritage Park	Yellow	6/8	61	JFK	Yellow
5/9	55	Rocky Creek, JFK	Yellow	6/9	74	JFK	Yellow
5/10	59	Rocky Creek	Green	6/10	56	Richards Gebauer, Heritage Park	Yellow
5/13	65	Watkins Mill, Rocky Creek	Yellow	6/11	51	Richards Gebauer, Liberty, JFK	Yellow
5/14	52	Rocky Creek	Yellow	6/13	62	JFK	Yellow
5/17	70	JFK	Yellow	6/14	75	JFK	Yellow
5/18	62	Watkins Mill, Liberty	Yellow	6/15	84	JFK	Orange

Readings in **bold** represent eight-hour peak concentrations above the 70 ppb standard.

*The 2023 eight-hour monitored ozone readings have not been quality assured and may contain errors.

Date	Daily Max 8-Hr Value (ppb)*	Monitor(s) Recording Max Value	SkyCast	Date	Daily Max 8-Hr Value (ppb)*	Monitor(s) Recording Max Value	SkyCast
6/16	72	JFK	Orange	6/21	76	JFK	Orange
6/17	62	Rocky Creek	Yellow	6/22	66	JFK	Yellow
6/18	59	JFK	Green	6/23	70	Rocky Creek	Yellow
6/19	69	JFK	Orange	6/24	52	Heritage Park, Liberty	Yellow
6/20	76	JFK	Orange	6/25	55	Heritage Park, JFK	Green

Readings in **bold** represent eight-hour peak concentrations above the 70 ppb standard.

*The 2023 eight-hour monitored ozone readings have not been quality assured and may contain errors.

**Appendix B. Eight-Hour Ozone Exceedances
March 1 – June 25, 2023**

Daily Maximum 8-Hour Value (ppb)								
Date	Liberty	JFK	Rocky Creek	Richards-Gebaur	Watkins Mill	Heritage Park	Trimble*	Leavenworth*
5/24								74
5/25	74	77	76	73	71	73	76	79
5/27								74
5/28								73
5/29							71	
6/3	74	77	74		74		76	74
6/4	71	76	72	75		75	73	
6/5		71					71	
6/6	76	92	75	83	75	91	78	72
6/7		77		74		73	71	73
6/9	71	74	71					79
6/14	73	75	74					
6/15	80	84	77		71			71
6/16		72						
6/20		76						
6/21		76				72		

Red exceedances shown in **bold** font.

*The Trimble and Leavenworth monitors are outside the maintenance area boundary but are used to verify SkyCast ozone forecasts due to their proximity to the boundary.

Appendix C. Fourth-High Readings and Design Values, 2016-2023

	<u>Fourth-High Eight-Hour Values</u>								<u>Design Values</u>						
<i>Missouri</i>	16	17	18	19	20	21	22	23		16-18	17-19	18-20	19-21	20-22	21-23
Liberty	66	69	74	63	65	64	69	74		69	68	67	64	66	69
Watkins Mill	66	69	72	63	65	65	66	71		69	68	66	64	65	67
Rocky Creek	69	70	72	62	65	71	69	74		70	68	66	66	68	71
Richards Gebauer	61	63	66	64	58	63	63			63	64	62	61	61	
Trimble	69	66	69	62	63	63	65	73		68	65	64	62	63	67
<i>Kansas</i>															
JFK (KCK)	64	61	69	58	63	70	64	77		64	62	63	63	65	70
Heritage Park	58	59	66	54	55	64	63	73		61	59	58	57	60	66
Leavenworth	62	59	64	61	59	63	61	74		61	61	61	61	61	66

*The 2023 eight-hour monitored ozone readings have not been quality assured and may contain errors. Readings in **bold** represent design values above the 70 ppb standard.