

Final 2021 Ozone Season Summary for the Kansas City Region

Summary

The Air Quality Maintenance Area for the Greater Kansas City Region includes Wyandotte and Johnson Counties in Kansas; and Clay, Platte and Jackson Counties in Missouri. From March 1 – October 31, 2021 there were four Ozone Alerts issued, and monitors recorded seven days with eight-hour ozone concentrations exceeding the 70 part-per-billion (ppb) standard. 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	192	46	7	0
Forecasted	191	50	4	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

2021 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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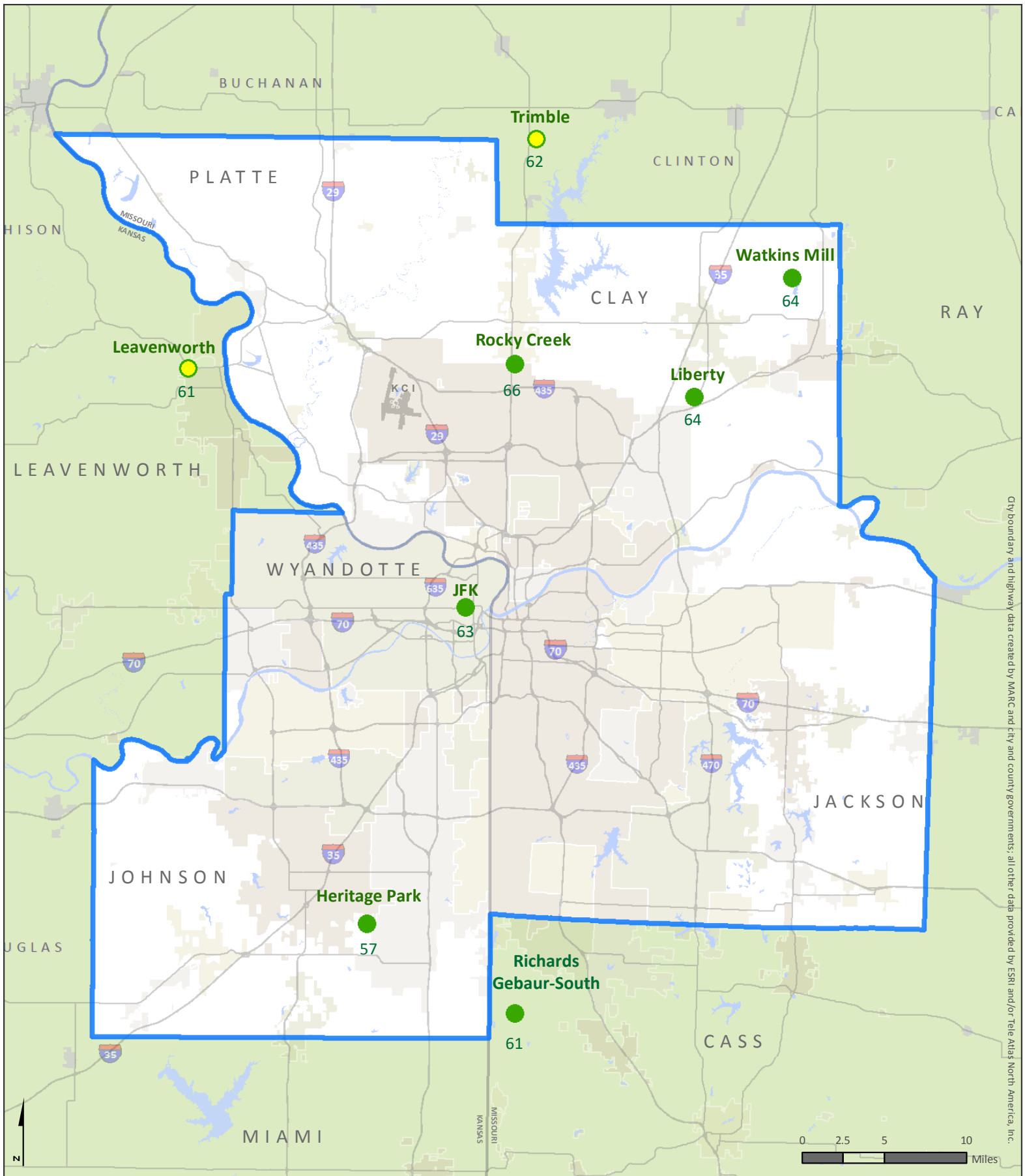
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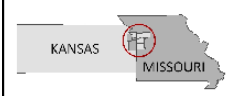
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Air Quality Monitoring Stations



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.

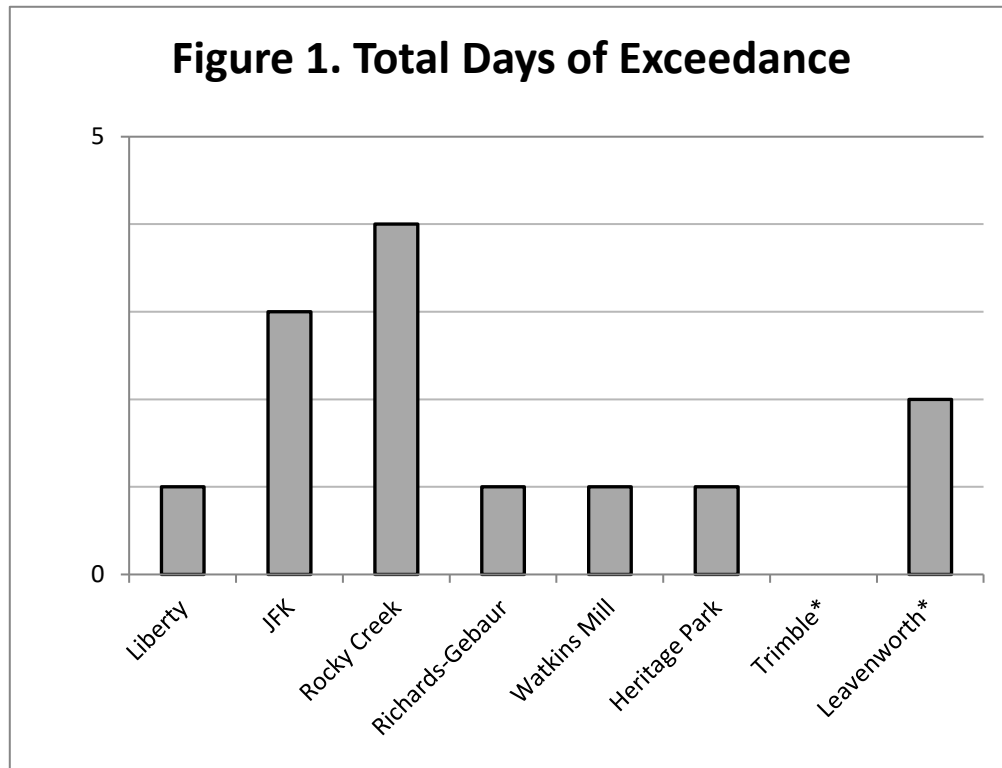
 Air Quality Maintenance Area

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



2021 Ozone Data & SkyCasts

Figure 1 below lists the number of days each monitor recorded eight-hour peak values exceeding the 70ppb standard.



Appendix A, at the end of this report, summarizes the SkyCasts and highest daily eight-hour monitor ozone readings for the 2021 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 55ppb—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 70ppb 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, 2012 – 2021

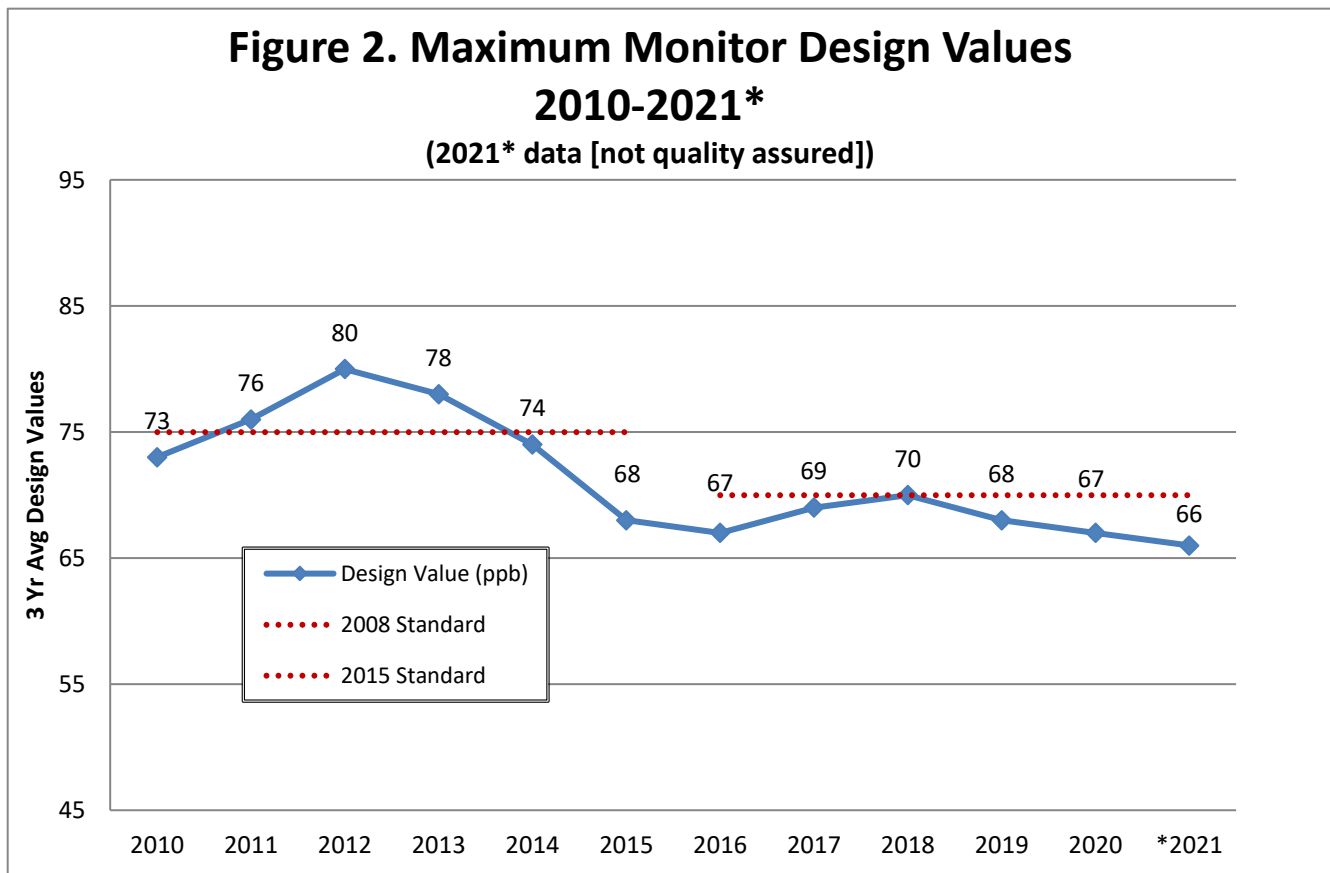
An exceedance of the eight-hour ozone standard at a monitored location does not necessarily result in a violating monitor. Compliance with the eight-hour ozone standard is based on the *three-year average of the fourth-highest ozone reading* from each monitor. Given the nature of its importance, this critical value – called the “Design Value,” is shown on Map 1 along with the region’s ozone monitors. Table 3 on the following page displays the critical fourth-high eight-hour readings that would have caused a violation of the design value during 2021. For reference of recent historical trends, Appendix C contains both the fourth-high eight-hour readings as well as the design values for 2012 – 2021.

**Table 3. 2021 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	85	JFK (KCK)	92
Watkins Mill	85	Heritage Park	104
Rocky Creek	86	Leavenworth	93
Richards Gebauer	91		
Trimble	88		

*This is the current NAAQS level under the 2015 eight-hour standard
Readings in **bold** represent Fourth-High Values at or above selected Design Value Levels.

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 2010 to 2021.



**Appendix A. Summary of 2021 SkyCasts and Daily Maximum Eight-hour Ozone Values
March 1 – October 31, 2021**

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				6/15	76	JFK	Yellow
3/4	61	Rocky Creek	Green	6/16	73	Rocky Creek	Orange
3/8	55	Watkins Mill	Green	6/17	61	Liberty	Yellow
3/9	55	Watkins Mill	Green	6/18	64	Liberty	Orange
3/28	49	Heritage Park, Richards Gebauer	Yellow	6/19	64	Liberty	Yellow
April				6/20	57	Rocky Creek	Yellow
4/2	56	Heritage Park, Rocky Creek, Richards Gebauer	Green	6/22	57	Liberty	Green
4/3	68	Watkins Mill	Green	6/23	53	Rocky Creek	Yellow
4/4	55	Rocky Creek, Watkins Mill	Green	July			
4/5	45	Heritage Park, Rocky Creek	Yellow	7/2	57	Heritage Park	Green
4/11	61	Richards Gebauer	Green	7/3	56	Heritage Park	Yellow
4/26	57	Rocky Creek	Yellow	7/4	61	Liberty	Yellow
4/30	57	Watkins Mill	Green	7/5	62	Rocky Creek	Yellow
May				7/6	65	Rocky Creek	Yellow
5/1	55	Watkins Mill	Yellow	7/8	64	Heritage Park	Green
June				7/9	50	Rocky Creek	Yellow
6/2	57	Richards Gebauer	Green	7/13	61	Rocky Creek	Yellow
6/3	62	Liberty	Yellow	7/16	55	JFK	Green
6/4	60	Rocky Creek	Yellow	7/20	57	Heritage Park	Yellow
6/5	55	Rocky Creek	Yellow	7/21	74	JFK	Yellow
6/6	42	Rocky Creek	Yellow	7/22	61	Rocky Creek	Yellow
6/8	44	JFK	Yellow	7/23	68	Rocky Creek	Yellow
6/9	52	JFK	Yellow	7/24	47	Watkins Mill, Liberty	Yellow
6/10	59	Rocky Creek	Yellow	7/26	59	JFK	Yellow
6/11	47	Rocky Creek	Yellow	7/27	77	JFK	Yellow
6/12	64	Heritage Park, Richards Gebauer	Yellow	7/28	78	Liberty	Orange
6/13	61	Heritage Park, Richards Gebauer	Yellow	7/29	57	JFK	Orange
6/14	72	Rocky Creek, Richards Gebauer	Yellow	7/30	61	JFK	Yellow

*The 2021 eight-hour monitored ozone readings have not been quality assured and may contain errors. Readings in **bold** represent eight-hour peak concentrations above the 70 ppb standard.

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
August				September			
8/2	55	Heritage Park	Yellow	9/10	56	Watkins Mill, Liberty	Green
8/4	54	Rocky Creek	Yellow	9/13	59	Rocky Creek	Yellow
8/6	65	Rocky Creek	Yellow	9/17	51	Heritage Park, JFK	Yellow
8/7	55	Rocky Creek	Green	9/18	53	JFK	Yellow
8/9	48	Rocky Creek, Liberty	Yellow	9/26	57	Rocky Creek	Green
8/13	43	JFK	Yellow	9/27	58	Watkins Mill, Liberty	Yellow
8/16	45	JFK	Yellow	9/28	71	Rocky Creek	Yellow
8/23	44	Rocky Creek, Watkins Mill, Liberty	Yellow	October			
8/26	60	Rocky Creek	Yellow	10/8	62	Rocky Creek	Yellow
8/27	51	Rocky Creek	Yellow	10/9	59	Rocky Creek	Green
8/30	41	JFK	Yellow				

*The 2021 eight-hour monitored ozone readings have not been quality assured and may contain errors. Readings in **bold** represent eight-hour peak concentrations above the 70 ppb standard.

**Appendix B. Eight-Hour Ozone Exceedances
March 1 – October 31, 2021**

Daily Maximum 8-Hour Value (ppb)								
Date	Liberty	JFK	Rocky Creek	Richards-Gebaur	Watkins Mill	Heritage Park	Trimble*	Leavenworth*
14-Jun			72	72		71		
15-Jun		76						78
16-Jun			73					72
21-Jul		74						
27-Jul		77						
28-Jul	78		75		73			
28-Sep			71					

*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, 2012-2021

	<u>Fourth-High Eight-Hour Values</u>							<u>Design Values</u>					
<i>Missouri</i>	15	16	17	18	19	20	*21		15-17	16-18	17-19	18-20	*19-21
Liberty	62	66	69	74	63	65	64		65	69	68	66	64
Watkins Mill	64	66	69	72	63	65	65		66	69	68	64	64
Rocky Creek	68	69	70	72	62	65	71		69	70	68	66	66
Richards Gebauer	65	61	63	66	64	58	63		63	63	64	62	61
Trimble	67	69	66	69	62	63	63		67	68	65	64	62
<i>Kansas</i>													
JFK (KCK)	63	64	61	69	58	63	70		62	64	63	63	63
Heritage Park	62	58	59	66	54	55	64		59	61	59	58	57
Leavenworth	59	62	59	64	61	59	63		60	61	61	61	61

*The 2021 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.