

## 2018 Ozone Season Final Summary for the Kansas City Region

### Summary

From March 1 – October 31, 2018, ten Ozone Alerts were issued, and eight-hour ozone concentrations exceeded the standard twelve times including one red level day. Table 1 shows the number of each type of daily forecast and the actual number of days in each category based upon subsequent monitor readings.

**Table 1. Forecast and Monitor Results**

	Green	Yellow	Orange	Red
Actual	175	58	11	1
Forecasted	162	73	10	0

### Implementation of the 2015 Ozone National Ambient Air Quality Standard

On October 1, 2015, the U.S. Environmental Protection Agency issued a revised national primary standard for ground-level ozone. The health-based standard of 70 ppb averaged over eight hours replaced the standard of 75 ppb. Under this rulemaking, EPA also provided an updated Air Quality Index (AQI) – a public information tool that associates colors and health messages with ranges of air pollutant concentrations – to reflect the standard. Table 2 shows the ozone concentrations associated with each AQI color under the 2015 standard.

**Table 2. Air Quality Index under the 2015 Ozone Standard**

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

### 2018 Monitor Map

Ozone measurements defining the air quality for the Greater Kansas City Air Quality Maintenance area were made at six monitors. Two additional nearby monitors at Trimble and Leavenworth provided useful forecasting information, and two distant monitors at Chanute and El Dorado offered some forecasting guidance on how pollution was moving into and out of our region. Map 1, on the next page, shows the location of all nearby monitors and their final design value for the season which will be discussed later in this document.

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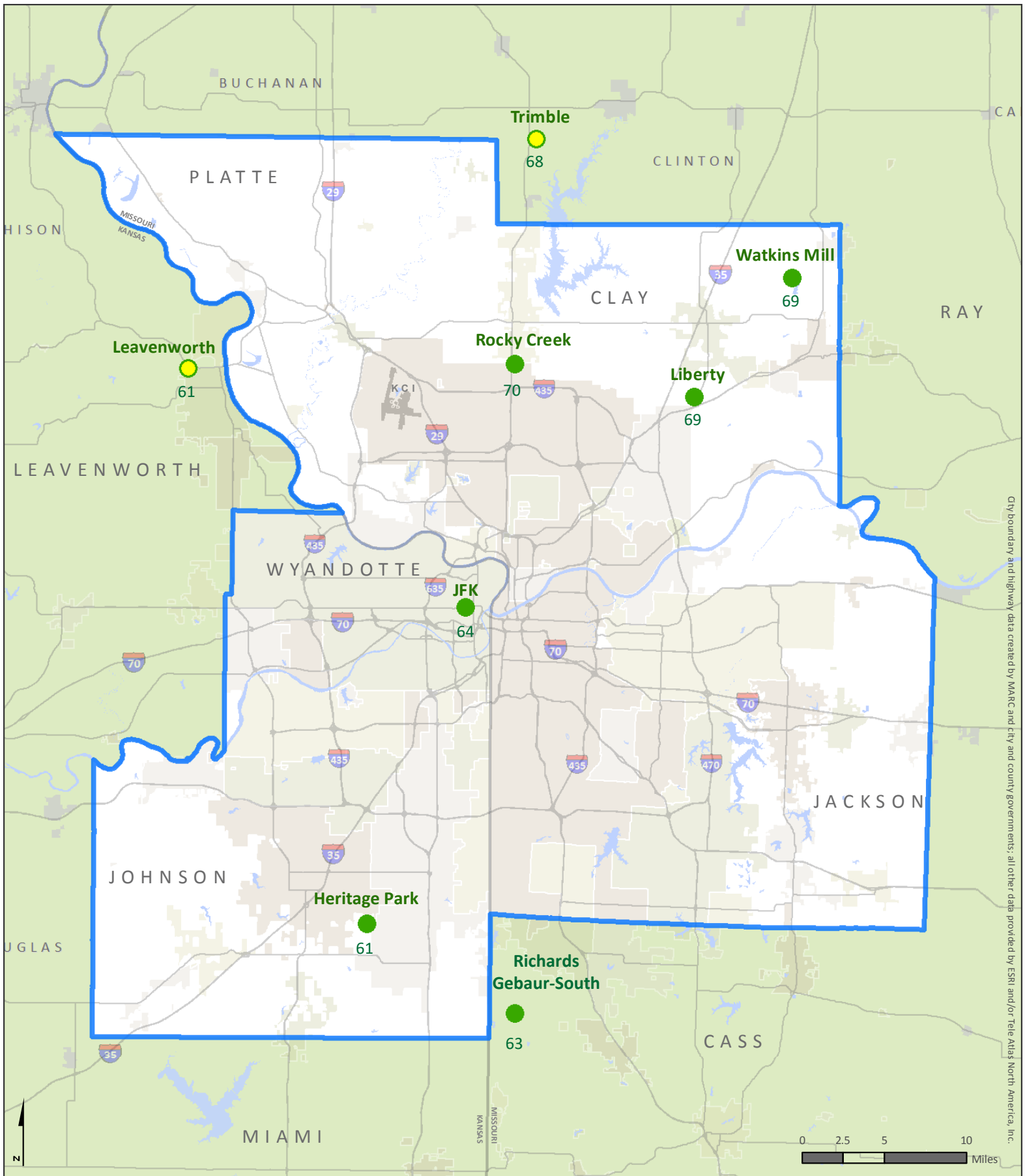
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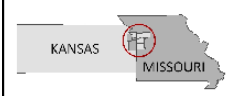
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# Air Quality Monitoring Stations



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



## 2018 Ozone Data & SkyCasts

Table 3 lists the number of days each monitor recorded eight-hour peak values exceeding the 70 ppb standard. As the ozone season progressed, the chart began to highlight the commonly seen general tendency of the highest areas of pollution to occur at the monitors north and east of the Greater Kansas City metropolitan area.

### Table 3. Total Days of Exceedance

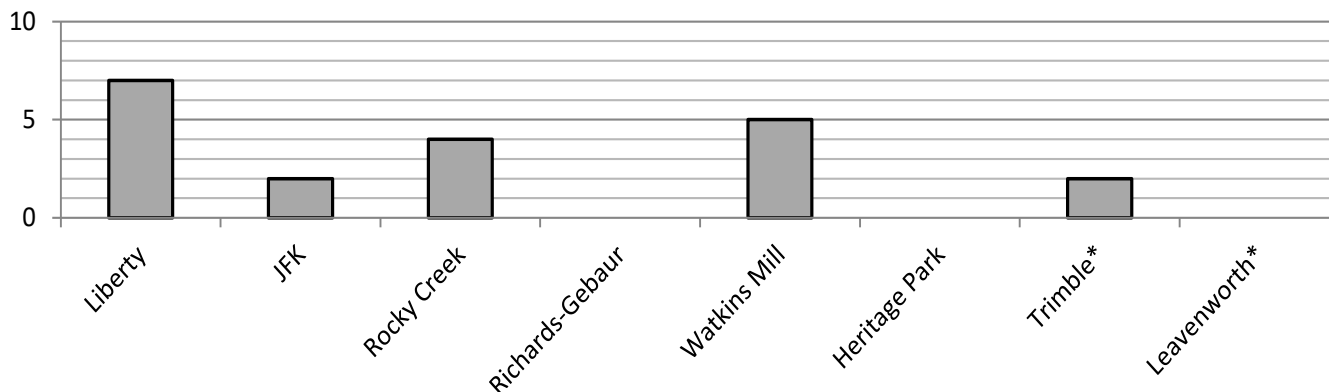


Table 4 focused in on those days where area monitors recorded eight-hour peak values exceeding the 70 ppb standard and the dates on which the exceedances occurred. This table shows both pollution levels and the pervasiveness of exceedances in the region on any relevant given day.

### Table 4. Eight-Hour Ozone Exceedances March 1 – October 31, 2018

Daily Maximum 8-Hour Value (ppb)								
Date	Liberty	JFK	Rocky Creek	Richards-Gebaur	Watkins Mill	Heritage Park	Trimble*	Leavenworth*
5/10					71			
5/29			73					
5/30	71							
6/1			72					
6/5	78				77			
6/6	73		84				83	
6/8	74				72			
7/9	76	79						
7/10		94						
7/12			80				74	
8/2	74				72			
8/6	73				77			

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

## Kansas City Ozone Design Values, 2010 – 2018

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. Under the 2015 eight-hour standard, *violations* occur when that three-year rolling average is 71 ppb or higher. Given the nature of its importance, this current critical value – called the “Design Value,” is shown on Map 1 along with the region’s ozone monitors.

Table 5 displays the critical fourth highest ozone value for 2018 at each monitoring site. If any of these monitors had reached or exceeded this value during the 2018 ozone season, it would have triggered a violation. This critical value accounts for the previous two years used in the rolling average. Fortunately, we do not have a violating monitor at the end of the 2018 season pending final quality assurance/quality control of the data.

**Table 5. 2018 Fourth-High Values That Would Have Triggered a Violation**  
(70-ppb is the current standard)

Missouri	8-Hr Value (ppb)	Kansas	8-Hr Value (ppb)
<i>Design Value</i>	70	<i>Design Value</i>	70
Liberty	78	JFK (KCK)	88
Watkins Mill	78	Heritage Park	96
Rocky Creek	74	Leavenworth	92
Richards Gebauer	89		
Trimble	78		

Figure 1 shows the trend of design values, or three-year averages of the fourth-high eight-hour readings, from 1999 to 2018.

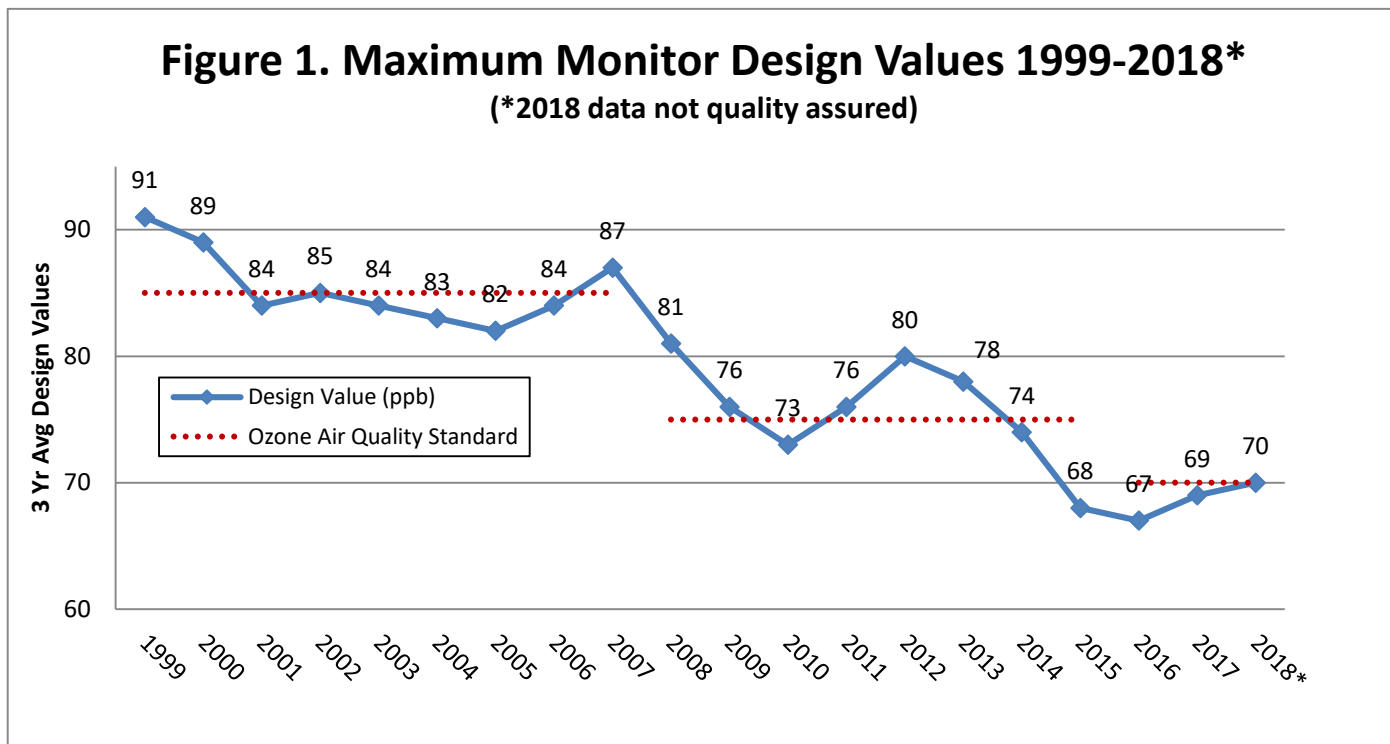


Table 6 shows both the actual fourth-high eight-hour readings over the last eight years as well as the final design values for years 2010 – 2018.

**Table 6. Fourth-High Readings and Design Values, 2010-2018**

	<u>Fourth-High Eight-Hour Values</u>								<u>Design Values</u>						
<i>Missouri</i>	11	12	13	14	15	16	17	18*	11-13	12-14	13-15	14-16	15-17	16-18*	
Liberty	79	84	67	65	62	66	69	74	<b>76</b>	72	64	64	65	69	
Watkins Mill	80	86	67	67	64	66	69	72	<b>77</b>	73	66	65	66	69	
Rocky Creek	78	86	71	66	68	69	70	72	<b>78</b>	74	68	67	69	70	
Richards-Gebauer	71	78	64	65	65	61	63	66	71	69	64	63	63	63	
Trimble	79	85	71	64	67	69	66	69	<b>78</b>	73	67	66	67	68	
<i>Kansas</i>															
JFK (KCK)	62	82	66	63	63	64	61	69	70	70	64	63	62	64	
Heritage Park	73	84	64	62	62	58	59	66	73	70	62	60	59	61	
Leavenworth	74	80	66	68	59	62	59	64	73	71	64	63	60	61	

\*The 2018 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.

Table 7 summarizes the SkyCasts and highest daily eight-hour monitor ozone readings throughout the 2018 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—are not listed.*

**Table 7. Summary of 2018 SkyCasts and Daily Maximum Eight-hour Ozone Values  
March 1 – October 31, 2018**

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
<b>March</b>				4/23	61	Liberty, Heritage Park, Richards Gebauer	Yellow
3/15	65	Liberty, Rocky Creek, Richards Gebauer	Green	4/24	69	Richards Gebauer	Yellow
<b>April</b>				4/26	58	Liberty	Green
4/5	60	Rocky Creek	Green	4/27	54	Liberty, JFK	Yellow
4/10	47	Rocky Creek	Yellow	4/30	63	Liberty	Yellow
4/11	64	Rocky Creek	Green	<b>May</b>			
4/12	60	Rocky Creek	Yellow	5/1	49	Rocky Creek	Yellow
4/16	55	Richards Gebauer	Green	5/4	58	Richards Gebauer	Green
4/20	56	Liberty, Rocky Creek	Yellow	5/5	62	Watkins Mill	Yellow
4/21	56	Liberty	Green	5/6	61	Richards Gebauer	Yellow

\*The 2018 eight-hour monitored ozone readings have not been quality assured and may contain errors.

**Table 3. (Cont.) Summary of 2018 SkyCasts and Daily Maximum Eight-hour Ozone Values  
March 1 – October 31, 2018**

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
5/7	66	JFK	Yellow	6/23	51	JFK, Richards Gebauer	Yellow
5/8	63	Watkins Mill, Richards Gebauer	Yellow	6/25	58	Rocky Creek	Green
5/9	60	JFK	Yellow	6/27	57	JFK	<b>Orange</b>
5/10	<b>71</b>	Watkins Mill	Yellow	6/28	65	Watkins Mill	Yellow
5/11	51	Watkins Mill, Rocky Creek	Yellow	6/29	49	Watkins Mill	Yellow
5/14	47	Rocky Creek	Yellow	<b>July</b>			
5/15	56	Richards Gebauer	Green	7/2	54	JFK	Yellow
5/16	55	Richards Gebauer	Yellow	7/3	58	Rocky Creek	Yellow
5/17	63	JFK	Yellow	7/4	50	Rocky Creek	Yellow
5/18	67	JFK	<b>Orange</b>	7/5	46	JFK, Richards Gebauer	Yellow
5/21	47	Richards Gebauer	Green	7/6	53	Heritage Park	Yellow
5/22	63	Rocky Creek, JFK	Yellow	7/8	58	Rocky Creek	Yellow
5/23	55	Rocky Creek	Yellow	7/9	<b>79</b>	JFK	<b>Orange</b>
5/24	50	Rocky Creek	Yellow	7/10	<b>94</b>	JFK	<b>Orange</b>
5/25	67	Liberty	Yellow	7/11	61	Rocky Creek	<b>Orange</b>
5/26	66	Liberty	Yellow	7/12	<b>80</b>	Rocky Creek	Yellow
5/27	67	Liberty	Yellow	7/13	64	Watkins Mill	Yellow
5/28	64	JFK	Yellow	7/14	55	Liberty	Green
5/29	<b>73</b>	Rocky Creek	Yellow	7/15	62	Richards Gebauer	Yellow
				7/16	67	Heritage Park	Yellow
5/30	<b>71</b>	Liberty	Yellow	7/17	39	Rocky Creek	Yellow
5/31	66	Liberty	<b>Orange</b>	7/19	56	Rocky Creek	Yellow
<b>June</b>				7/20	51	Liberty, Watkins Mill, Richards Gebauer	Yellow
6/1	<b>72</b>	Rocky Creek	<b>Orange</b>	7/22	59	Richards Gebauer	Yellow
6/2	55	Liberty	Green	7/23	59	Richards Gebauer	Yellow
6/4	52	Richards Gebauer	Yellow	7/24	54	Richards Gebauer	Yellow
6/5	<b>78</b>	Liberty	Yellow	7/25	59	Rocky Creek	Yellow
6/6	<b>84</b>	Rocky Creek	<b>Orange</b>	<b>August</b>			
6/7	56	Liberty	Yellow	8/1	58	JFK	Yellow
6/8	<b>74</b>	Liberty	Yellow	8/2	<b>74</b>	Liberty	Yellow
6/9	56	Liberty	<b>Orange</b>	8/3	70	Watkins Mill	Yellow
6/10	52	Liberty	Yellow	8/4	61	Rocky Creek	Yellow
6/12	58	Liberty	Yellow	8/5	59	Rocky Creek	Yellow
6/14	56	Liberty	Yellow	8/6	<b>77</b>	Watkins Mill	Yellow

\*The 2018 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 or Ozone Alert forecasts.

**Table 3. (Cont.) Summary of 2018 SkyCasts and Daily Maximum Eight-hour Ozone Values  
March 1 – October 31, 2018**

<b>Date</b>	<b>Daily Max 8-Hr Value (ppb)*</b>	<b>Monitor(s) Recording Max Value</b>	<b>SkyCast</b>	<b>Date</b>	<b>Daily Max 8-Hr Value (ppb)*</b>	<b>Monitor(s) Recording Max Value</b>	<b>SkyCast</b>
8/7	57	JFK	Green	<b>September</b>			
8/8	67	Liberty	Yellow	9/10	56	Rocky Creek	Green
8/9	65	Liberty	<b>Orange</b>	9/12	44	Rocky Creek	Yellow
8/10	68	Richards Gebauer	Yellow	9/14	46	Rocky Creek	Yellow
8/11	54	JFK	Yellow	9/15	43	JFK	Yellow
8/12	54	Rocky Creek	Yellow	9/16	59	Rocky Creek	Green
8/13	48	Rocky Creek	Yellow	9/17	60	Liberty	Yellow
8/16	48	JFK	Yellow	9/18	48	Liberty, Watkins Mill	Yellow
8/18	61	Heritage Park, JFK	Yellow	9/19	49	Liberty	Yellow
8/24	54	Watkins Mill	Yellow				
8/25	51	Watkins Mill	Yellow				

\*The 2018 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 or Ozone Alert forecasts.