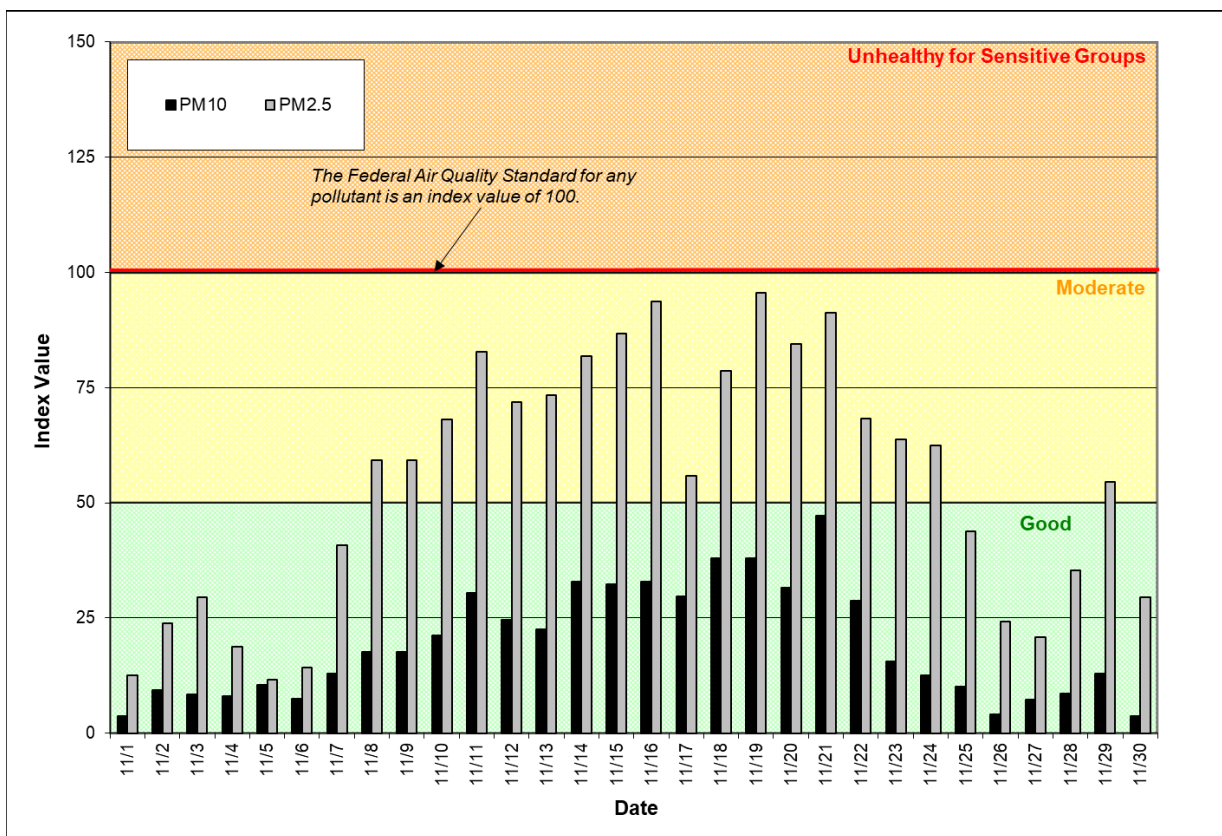


## Spokane Regional Clean Air Agency Air Quality Report - November 2022

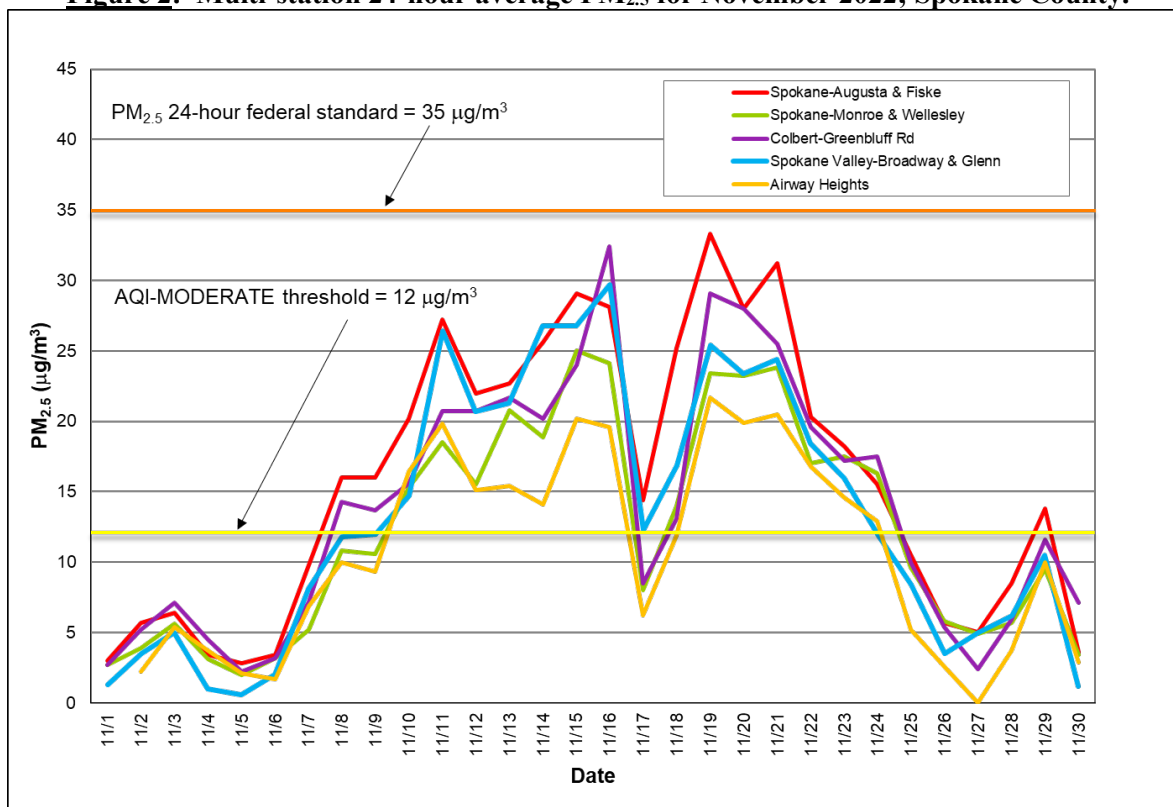
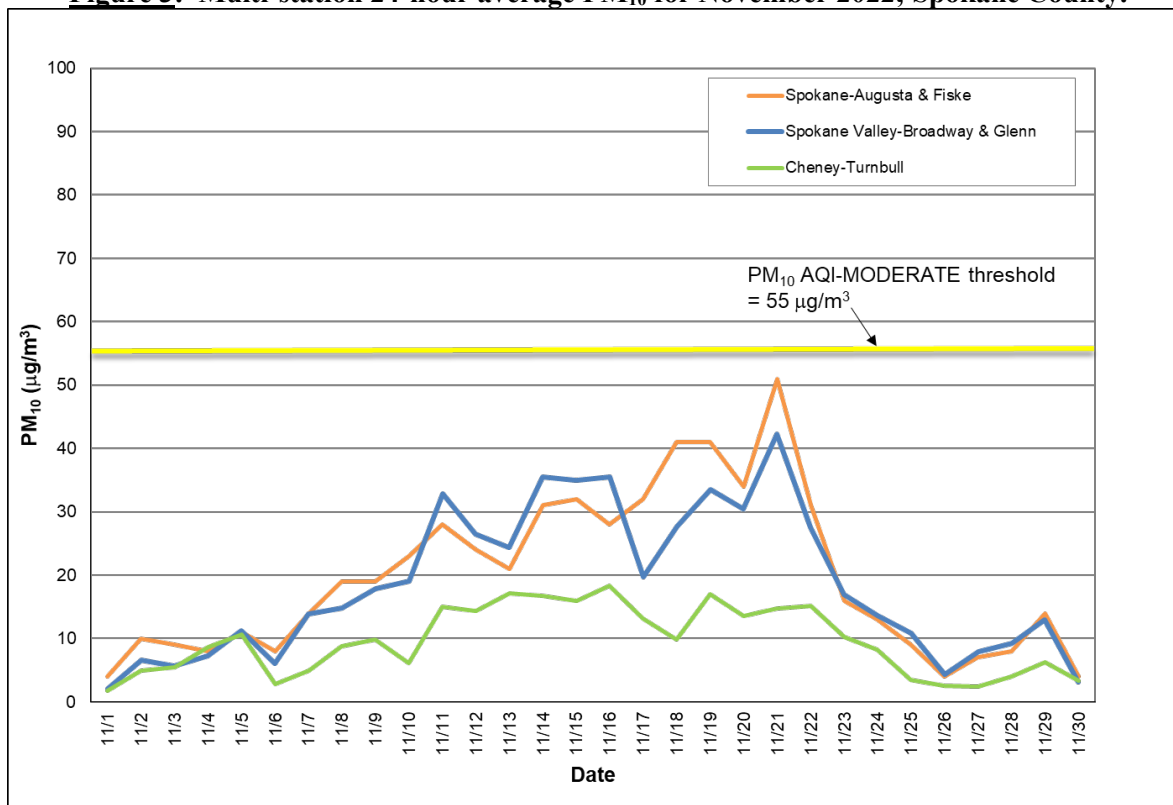
The Air Quality Index (AQI) was in the MODERATE category from November 7<sup>th</sup> through November 24<sup>th</sup>, nearly meeting the threshold for UNHEALTHY for SENSITIVE GROUPS (AQI = 101 to 150) on the 16<sup>th</sup>, 19<sup>th</sup>, and 21<sup>st</sup> with AQIs of 94, 96, and 91, respectively (Figure 1). There was a total of 12 AQI-GOOD days and 18 MODERATE days (Table 1). All of the MODERATE-category daily AQIs were attributable an elevation of fine particle pollution (PM<sub>2.5</sub>) under stable atmospheric conditions. The National Weather Service issued an Air Stagnation Advisory for November 18<sup>th</sup>-21<sup>st</sup> and the Spokane Regional Clean Air Agency issued a Stage 1 Impaired Air Quality burn ban at 8:00 AM on Saturday the 19<sup>th</sup>. The burn ban was lifted at 9:00 AM on Tuesday the 22<sup>nd</sup> with the arrival of a storm system and improved atmospheric ventilation and air quality. The 96 AQI (maximum for November) was recorded at the Spokane-Augusta Ave monitoring station (Figure 2, Table 2).

The maximum daily AQI based on PM<sub>10</sub> was 47 (MODERATE air quality, 24-hour average PM<sub>10</sub> mass concentration = 51 µg/m<sup>3</sup>), recorded at Spokane-Augusta & Fiske on the 21<sup>st</sup> (Figure 3).

**Figure 1: Air Quality Index (AQI) values for November 2022.** The data represent the maximum AQI values across all monitoring stations within Spokane County.



The Washington State Department of Ecology operates PM<sub>2.5</sub> sensors at Greenbluff and Turnbull ozone monitoring stations. PM<sub>2.5</sub> data for those locations are reported on Spokane Regional Clean Air Agency's Current Air Quality webpage (<https://spokanecleanair.org/air-quality/current-air-quality/>), EPA-AirNow ([www.airnow.gov](http://www.airnow.gov)) and the AirNow Fire and Smoke map (<https://fire.airnow.gov/>), and the Washington State Department of Ecology's air quality map (<https://enviwa.ecology.wa.gov/home/map>). Those data are included in Appendix 3 but not elsewhere in this report because of greater data uncertainty (less accurate, lower quality) with the use of low-cost sensors compared to the Agency's regulatory-grade monitors.

**Figure 2: Multi-station 24-hour average PM<sub>2.5</sub> for November 2022; Spokane County.****Figure 3: Multi-station 24-hour average PM<sub>10</sub> for November 2022; Spokane County.**

See Appendix 1 of this report for information about federal air quality standards, Appendix 2 for a description of the AQI, or Appendix 3 for a summary of daily PM<sub>2.5</sub> and PM<sub>10</sub> mass concentrations and AQIs across the Spokane-area ambient air monitoring network. Current and historical ambient air quality data can also be obtained from the Washington State Department of Ecology's air monitoring data website, <https://fortress.wa.gov/ecy/enviwa/Default.htm>.

Table 1 summarizes the daily AQIs by category for the month and year-to-date and Tables 2 and 3 contain the maximum AQI values for each pollutant for the month and for the year, respectively.

**Table 1: AQI summary as of November 30, 2022**

Category	Number of days in November	Number of days this year to date
Good (0-50)	12	246
Moderate (51-100)	18	82
Unhealthy for Sensitive Groups (101-150)	0	3
Unhealthy (151-200)	0	3
Very Unhealthy (201-300)	0	0
Hazardous (>300)	0	0

**Table 2: Maximum AQI values and pollutant concentrations for this reporting period.**

Pollutant	AQI		Location	Date
PM <sub>10</sub>	47 (conc. = 51 µg/m <sup>3</sup> )	Good	Spokane-Augusta & Fiske	11/21
PM <sub>2.5</sub>	96 (conc. = 33.3 µg/m <sup>3</sup> )	Moderate	Spokane-Augusta & Fiske	11/19

**Table 3: Maximum AQI values and pollutant concentrations this year.**

Pollutant	AQI		Location	Date
O <sub>3</sub>	77 (conc. = 0.063 ppm)	Moderate	Greenbluff	9/1
PM <sub>10</sub>	94 (conc. = 142 µg/m <sup>3</sup> )	Moderate	Spokane Valley-Broadway & Glenn	9/12
PM <sub>2.5</sub>	176 (conc. = 103.5 µg/m <sup>3</sup> )	Unhealthy	Spokane Valley-Broadway & Glenn	9/12

## Appendix 1 – National Ambient Air Quality Standards

The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants, carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), ground-level ozone (O<sub>3</sub>) and sulfur dioxide (SO<sub>2</sub>; Table A-1). These are known as “criteria” pollutants because the US EPA established regulatory limits to concentrations in ambient air using human health or environmentally based criteria. Carbon monoxide, particulate matter and ozone are monitored in Spokane County by the Spokane Regional Clean Air Agency (SRCAA) and the Washington State Department of Ecology (Ecology).

**Table A-1: National Ambient Air Quality Standards**

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
<a href="#">Carbon Monoxide (CO)</a>		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
<a href="#">Lead (Pb)</a>		primary and secondary	Rolling 3 month period	0.15 µg/m <sup>3</sup> <a href="#">(1)</a>	Not to be exceeded
<a href="#">Nitrogen Dioxide (NO<sub>2</sub>)</a>		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb <a href="#">(2)</a>	Annual Mean
<a href="#">Ozone (O<sub>3</sub>)</a>		primary and secondary	8 hours	0.070 ppm <a href="#">(3)</a>	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
<a href="#">Particle Pollution (PM)</a>	PM <sub>2.5</sub>	primary	1 year	12.0 µg/m <sup>3</sup>	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m <sup>3</sup>	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m <sup>3</sup>	98th percentile, averaged over 3 years
	PM <sub>10</sub>	primary and secondary	24 hours	150 µg/m <sup>3</sup>	Not to be exceeded more than once per year on average over 3 years
<a href="#">Sulfur Dioxide (SO<sub>2</sub>)</a>		primary	1 hour	75 ppb <a href="#">(4)</a>	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m<sup>3</sup> as a calendar quarter average) also remain in effect.

(2) The level of the annual NO<sub>2</sub> standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O<sub>3</sub> standards additionally remain in effect in some areas. Revocation of the previous (2008) O<sub>3</sub> standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO<sub>2</sub> standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO<sub>2</sub> standards or is not meeting the requirements of a SIP call under the previous SO<sub>2</sub> standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

## Appendix 2 – Air Quality Index

The Air Quality Index (AQI) is EPA's color-coded tool for communicating daily air quality to the public and can be calculated for any of the criteria pollutants except lead, provided monitoring data are available. An index value above 100 indicates that the concentration of a criteria pollutant exceeded the limit established in the NAAQS. Categories of the AQI are "Good" (green, 0-50), "Moderate" (yellow, 51-100), "Unhealthy for Sensitive Groups" (USG; orange, 101-150), "Unhealthy" (red, 151-200), "Very Unhealthy" (purple, 201-300) and "Hazardous" (maroon, 301-500; Table A-2).

**Table A-2: Air pollutant breakpoints for the Air Quality Index.**

Air Quality Index Levels of Health Concern	Color Code	Index Numerical Value	Breakpoints				Health Effects
			O <sub>3</sub> (ppm) 8-hour	PM <sub>2.5</sub> (µg/m <sup>3</sup> ) 24-hour	PM <sub>10</sub> (µg/m <sup>3</sup> ) 24-hour	CO (ppm) 8-hour	
<b>Good</b>	Green	0-50	0.000-0.054	0.0-12.0	0-54	0.0-4.4	Air quality is considered satisfactory and air pollution poses little or no risk.
<b>Moderate</b>	Yellow	51-100	0.055-0.070	12.1-35.4	55-154	4.5-9.4	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
<b>Unhealthy for Sensitive Groups</b>	Orange	101-150	0.071-0.085	35.5-55.4	155-254	9.5-12.4	People especially sensitive to air pollution may experience health effects. The general public is not likely to be affected. An AQI in this category or above indicates that air pollution exceeds levels acceptable under federal air quality standards.
<b>Unhealthy</b>	Red	151-200	0.086-0.105	55.5-150.4	255-354	12.5-15.4	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
<b>Very Unhealthy</b>	Purple	201-300	0.106-0.200	150.5-250.4	355-424	15.5-30.4	Health alert: everyone may experience more serious health effects.
<b>Hazardous</b>	Maroon	>300	0.201 to the Significant Harm Level* (0.600 ppm, 2 hour average)	250.5+	425+	30.5+	Health warnings of emergency conditions. The entire population is more likely to be affected.

\*The significant harm level (SHL) is set at a level that represents imminent and substantial endangerment to public health.

## Appendix 3

**Table A3-1: Summary air quality data for November for air monitoring stations in Spokane County.** Particulate matter mass concentration is reported as 24-hour averages in micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ). See Appendix 2 for an explanation of the Air Quality Index. The  $\text{PM}_{2.5}$  monitor at Airway Heights was offline for annual maintenance on November 1 (was begun in October). Turnbull and Greenbluff  $\text{PM}_{2.5}$  sensor data are reported here but not elsewhere in the report because of greater data uncertainty with use of low-cost sensors.

Date	Pollutant Concentration									
	$\text{PM}_{2.5}$ ( $\mu\text{g}/\text{m}^3$ )							$\text{PM}_{10}$ ( $\mu\text{g}/\text{m}^3$ )		
	24-Hour Avg							24-Hour Avg		
	$\text{PM}_{2.5}$ - Airway Heights, 12th & Lawson	$\text{PM}_{2.5}$ - Colbert, E Greenbluff Rd	$\text{PM}_{2.5}$ - Spokane, Augusta & Fiske	$\text{PM}_{2.5}$ - Spokane Valley, Broadway & Glenn	$\text{PM}_{2.5}$ - Spokane, Monroe & Wellesley	$\text{PM}_{2.5}$ - Turnbull NWR (temporary sensor)	$\text{PM}_{2.5}$ - Greenbluff (temporary sensor)	$\text{PM}_{10}$ - Turnbull NWR BAM	$\text{PM}_{10}$ - Spokane, Augusta & Fiske	$\text{PM}_{10}$ - Spokane Valley, Broadway & Glenn
11/1		2.7	3.0	1.3	2.7	0.5	1.2	2	4	2
11/2	2.2	5.2	5.7	3.5	3.9	1.9	3.4	5	10	7
11/3	5.4	7.1	6.4	5.0	5.6	3.8	5.7	6	9	6
11/4	3.7	4.5	3.4	1.0	3.1	0.5	4.6	9	8	7
11/5	2.1	2.2	2.8	0.6	2.0	0.2	0.4	11	11	11
11/6	1.7	3.2	3.4	2.0	3.2	0.7	0.9	3	8	6
11/7	6.9	7.2	9.8	8.1	5.2	2.7	4.9	5	14	14
11/8	10.0	14.3	16.0	11.8	10.8	5.0	7.3	9	19	15
11/9	9.3	13.7	16.0	12.0	10.6	5.3	8.1	10	19	18
11/10	16.4	15.6	20.2	14.7	15.3	4.1	12.6	6	23	19
11/11	19.8	20.7	27.2	26.4	18.5	11.1	20.5	15	28	33
11/12	15.1	20.7	22.0	20.7	15.5	11.7	17.3	14	24	27
11/13	15.4	21.7	22.7	21.3	20.8	16.2	21.7	17	21	24
11/14	14.1	20.2	25.6	26.8	18.9	14.0	18.4	17	31	36
11/15	20.2	24.0	29.1	26.8	25.0	13.7	22.2	16	32	35
11/16	19.6	32.4	28.1	29.7	24.1	16.7	30.6	18	28	36
11/17	6.2	8.5	14.4	12.3	8.0	6.1	4.8	13	32	20
11/18	11.9	13.1	25.2	16.9	14.0	3.7	15.5	10	41	28
11/19	21.7	29.1	33.3	25.4	23.4	10.7	34.3	17	41	34
11/20	19.9	28.0	28.0	23.4	23.2	12.3	23.2	14	34	31
11/21	20.5	25.5	31.2	24.4	23.8	9.1	22.0	15	51	42
11/22	16.8	19.6	20.3	18.4	17.0	9.7	13.9	15	31	28
11/23	14.6	17.2	18.2	16.0	17.5	14.5	22.9	10	16	17
11/24	12.9	17.5	15.5	12.0	16.3	10.4	19.2	8	13	14
11/25	5.2	10	10.5	8.4	9.6	4.4	12.8	4	9	11
11/26	2.6	5.4	5.7	3.5	5.8	4.1	7.5	3	4	4
11/27	0.0	2.4	5.0	5.0	4.9	0.7	1.4	2	7	8
11/28	3.7	5.9	8.5	6.2	5.7	2.5	4.7	4	8	9
11/29	10.0	11.6	13.8	10.5	9.5	4.1	7.6	6	14	13
11/30	2.9	7.1	3.6	1.2	3.4	0.6	2.4	3	4	3
AVG	10.7	13.9	15.8	13.2	12.2	6.7	12.4	10	20	18
MAX	21.7	32.4	33.3	29.7	25	16.7	34.3	18.4	51	42.3

**Table A3-2: Summary air quality data for November for air monitoring stations in Spokane County.** Particulate matter mass concentration is reported as 24-hour averages in micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ). See Appendix 2 for an explanation of the Air Quality Index.

Air Quality Index (AQI)											
Date	PM <sub>2.5</sub>							PM <sub>10</sub>			MAXIMUM
	PM <sub>2.5</sub> - Airway Heights, 12th & Lawson	PM <sub>2.5</sub> - Colbert, E Greenbluff Rd	PM <sub>2.5</sub> - Spokane - Augusta & Fiske	PM <sub>2.5</sub> - Spokane Valley, Broadway & Glenn	PM <sub>2.5</sub> - Spokane, Monroe & Wellesley	PM <sub>2.5</sub> - Turnbull NWR (temporary sensor)	PM <sub>2.5</sub> - Greenbluff (temporary sensor)	PM <sub>10</sub> - Turnbull NWR	PM <sub>10</sub> - Spokane, Augusta & Fiske	PM <sub>10</sub> - Spokane Valley, Broadway & Glenn	
11/1		11	13	5	11	2	5	2	4	2	13
11/2	9	22	24	15	16	8	14	5	9	6	24
11/3	23	30	27	21	23	16	24	5	8	5	30
11/4	15	19	14	4	13	2	19	8	7	7	19
11/5	9	9	12	3	8	1	2	10	10	10	12
11/6	7	13	14	8	13	3	4	3	7	6	14
11/7	29	30	41	34	22	11	20	5	13	13	41
11/8	42	56	59	49	45	21	30	8	18	14	59
11/9	39	54	59	50	44	22	34	9	18	17	59
11/10	60	58	68	56	58	17	52	6	21	18	68
11/11	67	69	83	81	64	46	69	14	26	30	83
11/12	57	69	72	69	58	49	62	13	22	25	72
11/13	58	71	73	70	69	60	71	16	19	23	73
11/14	55	68	79	82	65	55	64	15	29	33	82
11/15	68	76	87	82	78	54	72	15	30	32	87
11/16	67	94	85	88	76	61	90	17	26	33	94
11/17	26	35	56	51	33	26	20	12	30	18	56
11/18	50	53	79	61	55	16	58	9	38	26	79
11/19	71	87	96	79	75	45	98	16	38	31	98
11/20	67	84	84	75	74	51	74	13	31	28	84
11/21	69	79	91	77	76	38	72	14	47	39	91
11/22	61	67	68	64	61	40	55	14	29	25	68
11/23	56	62	64	59	62	56	74	9	15	16	74
11/24	53	62	58	50	60	43	66	8	12	13	66
11/25	22	42	44	35	40	18	52	3	8	10	52
11/26	11	23	24	15	24	17	31	2	4	4	31
11/27	0	10	21	21	20	3	6	2	6	7	21
11/28	15	25	35	26	24	11	19	4	7	9	35
11/29	42	48	55	44	40	17	32	6	13	12	55
11/30	12	30	15	5	14	2	10	3	4	3	30
AVG	40	49	53	46	44	27	43	9	18	17	56
MAX	71	94	96	88	78	61	98	17	47	39	98