Oregon DEQ Air Quality Monitoring 2022 Annual Report

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State of Oregon
DEQ Department of Environmental Quality

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List of Abbreviations and Acronyms	
Term	**Meaning**
AQI	Air Quality Index
BP	Barometric pressure
CAA	Clean Air Act
CO	Carbon monoxide
Comm	Community
DEQ	Department of Environmental Quality
DT	Differential temperature
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
HAP	Hazardous air pollutant
LRAPA	Lane Regional Air Protection Agency
NAAQS	National Ambient Air Quality Standard
NO_2	Nitrogen dioxide
O_3	Ozone
PB	Lead
PM	Particulate matter
PM_{10}	Particulate matter less than or equal to 10 micrometers (or microns) in diameter
$PM_{2.5}$	Particulate matter less than or equal to 2.5 micrometers (or microns) in diameter
$PM_{2.5}$ Estimate	Estimate of $PM_{2.5}$ from a light-scattering air monitoring method
$PM_{2.5}$ Spec	Speciation of $PM_{2.5}$, characterization of $PM_{2.5}$ chemical components
PPB	Parts per billion
PPM	Parts per million
RH	Relative humidity
SO_2	Sulfur dioxide
SR	Solar radiation
Temp	Temperature
USG	Unhealthy for sensitive groups
$\mu g/m^3$	Micrograms per cubic meter
VOC	Volatile organic compound
WF	Wildfire
WS/WD	Wind speed/wind direction

Executive Summary

Oregon's ambient air quality was quite good in 2022 as communities experienced fewer days of poor air quality and less severe impacts compared to recent years. Smaller and fewer wildfires explain most of this improvement, as wildfire smoke is the primary cause of air quality degradation. Unlike recent years, the 2022 fire season lasted through October due to warm and dry weather conditions. As a result, the Cedar Creek fire burned well into the month and communities in and near the southern Willamette Valley experienced poor air quality. Oakridge experienced the most severe impacts due to its proximity to the fire. Communities in southern Oregon also experienced significant impacts from wildfires burning in northern California.

In Oregon, $PM_{2.5}$, PM_{10} and ozone are pollutants of primary concern as they degrade air quality most frequently. Because of this, Oregon DEQ and the Lane Regional Air Protection Agency extensively monitor these pollutants. Carbon dioxide, nitrogen dioxide and sulfur dioxide are pollutants of secondary concern because they have had minimal impacts on air quality. DEQ monitors these pollutants in a few, select locations. All of these pollutants have trended downward, but $PM_{2.5}$ and ozone sometimes exceed national standards.

DEQ expanded its $PM_{2.5}$ monitoring network in 2022. McMinnville, Toledo and Woodburn received their first $PM_{2.5}$ monitors, and Salem received an additional $PM_{2.5}$ monitor.

Air quality data is available through EPA's AQS database (https://www.epa.gov/aqs) and DEQ's AQI website (https://aqi.oregon.gov). Oregon air quality data requests and questions can be emailed to aqm.questions@deq.oregon.gov.

Background

Passed by Congress in 1970, the Clean Air Act established National Ambient Air Quality Standards for six pollutants and required states to adopt enforceable plans to meet and maintain these standards. The six pollutants are collectively known as “criteria pollutants” and are as follows: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter and sulfur dioxide. In 1976, the EPA created the Air Quality Index to communicate air quality information to the public. It associates concentrations of each criteria pollutant in ambient air (outdoor air) to six categories of health risks.

Oregon DEQ is responsible for implementing the CAA and maintaining compliance within the state. In Lane County, LRAPA is the local air authority responsible for monitoring the air and administering programs that protect and improve its quality. DEQ serves as the primary quality assurance organization with oversight of LRAPA’s activities. Since the inception of the CAA, DEQ and LRAPA have implemented air quality improvement programs, and have observed steady decreases in concentrations for all criteria pollutants in the ambient air. However, $PM_{2.5}$, PM_{10} and ozone remain as pollutants of primary concern.

Both $PM_{2.5}$ and PM_{10} are specific categories of particulate matter pollution. “Particulate matter” describes a mixture of solid particles and liquid droplets found in the air. PM_{10} includes all particulate matter less than or equal to 10 micrometers (or microns) in diameter; $PM_{2.5}$ includes all particulate matter less than or equal to 2.5 micrometers (or microns) in diameter. Particulate matter can be emitted directly from a source or produced as byproduct of chemical reactions with sulfur dioxide and nitrogen dioxide. Common particulate matter sources include smoke from wildfires, exhaust internal combustion engines, and dust from agriculture fields. In Oregon, PM pollution frequently comes from large wildfires in the summer months and wood-burning stoves in the winter months.

Ozone, otherwise known as “smog,” is a chemical compound that has different impacts depending on its location in the atmosphere. At high altitudes, ozone protects living organisms from ultraviolet radiation, but at ground level, ozone can negatively affect human health. Ground-level ozone is formed through a chemical reaction of nitrogen dioxide and volatile organic compounds under high temperatures and in the presence of sunlight. Elevated ground-level ozone concentrations are often observed during the summer months.

Concentrations of carbon monoxide, nitrogen dioxide and sulfur dioxide in ambient air have significantly decreased but are still monitored. These chemical compounds primarily come from burning fossil fuels through internal combustion engines in cars, trucks, off-road vehicles, construction equipment and machinery. Industrial facilities may also emit these compounds.

The presence of lead in the ambient air has decreased so much that EPA has waived the lead monitoring requirement for DEQ since 2003. Lead is a chemical that was primarily emitted from internal combustion engines burning fuel that contained lead. Removing it from fuel is the principal reason for the reduction of lead. It is also emitted from ore and metals processing plants, lead smelters and some industrial facilities.

Ambient Air Monitoring Network

Together, DEQ and LRAPA operate and maintain an extensive ambient air monitoring network across Oregon. The pollutants monitored at each site vary based on CAA requirements and available resources within each agency.

In 2022, the ambient air monitoring network consisted of 74 sites. Nearly all sites monitor for $PM_{2.5}$, but only a handful of sites monitor for additional pollutants. Figure 1 shows a map of all the ambient air monitoring sites and Table 1 lists the number of sites for each criteria pollutant. More information about the ambient air monitoring network can be found in Appendix 1: Ambient Air Monitoring Network Data.

Figure 1: Ambient Air Monitoring in Oregon in 2022

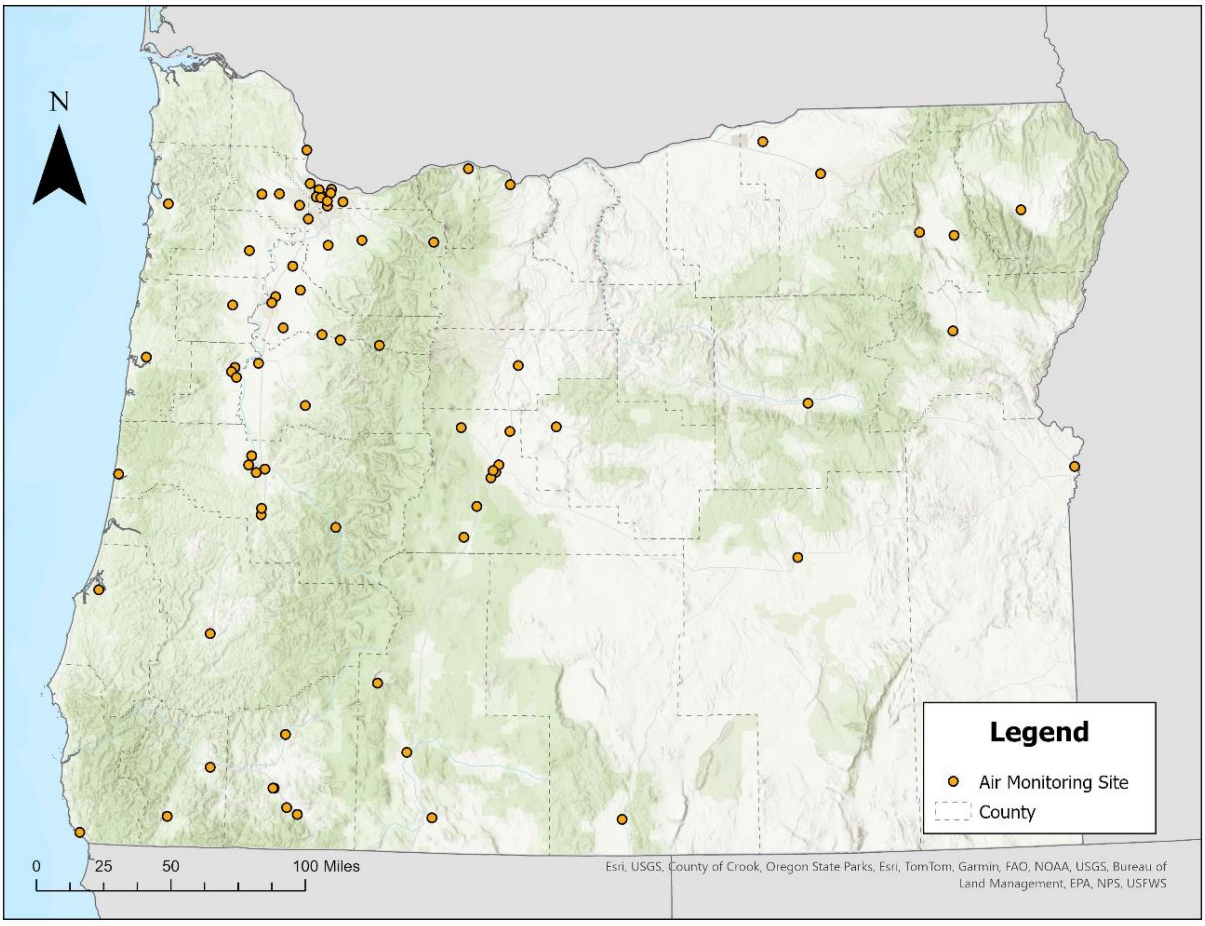


Table 1: Number of Monitoring Sites by Pollutant

Pollutant	Number of Monitoring Sites
$PM_{2.5}$	73
PM_{10}	7
Ozone	10
Carbon Monoxide	2
Nitrogen Dioxide	2
Sulfur Dioxide	1

The monitoring network has two tiers of monitors: regulatory and informational. Regulatory monitors are instruments EPA has designated as “Federal Reference Method” or “Federal Equivalent Method” monitors. These higher-grade instruments must meet EPA data quality standards and must be operated in accordance with EPA regulations. The EPA accepts data from these monitors to make regulatory determinations about air quality.

DEQ also collects data from informational monitors. EPA has not designated these instruments as an FRM or FEM. While EPA does not use data from informational monitors to make regulatory determinations about air quality, the data is still useful to DEQ and LRAPA. Both agencies will use data from these monitors (and regulatory monitors) to inform air quality management programs, issue advisories, and provide more data and information to the public.

National Ambient Air Quality Standards

With the passage of the CAA, EPA established methodologies and thresholds to assess air quality quantitatively and uniformly. These are collectively known as the National Ambient Air Quality Standards. Because of the unique characteristics and impacts of each criteria pollutant, each one has its own NAAQS. The NAAQS are reviewed periodically, and revised when needed as more knowledge about pollutants and their public health impacts are obtained through scientific research. The NAAQS for 2022 are listed in Table 2.

Table 2: National Ambient Air Quality Standards

Pollutant	Averaging Time	Form	Level	
			Primary	*Secondary*
Carbon Monoxide	1 hour	Not to be exceeded more than once per year, averaged over two years	35 ppm	N/A
	8 hours		9 ppm	N/A
Lead	3 months	Rolling three-month average	0.15 µg/m^3	0.15 µg/m^3
Nitrogen Dioxide	1 hour	Annual 98th percentile of daily maximums of one-hour concentrations, averaged over three years	100 ppb	N/A
	1 year	Annual mean of one-hour concentrations	53 ppb	53 ppb
Ozone	8 hours	Annual fourth-highest daily maximum eight-hour concentration, averaged over three years	0.070 ppm	0.070 ppm
$PM_{2.5}$	24 hours	Annual 98th percentile of daily concentrations, averaged over three years	35 µg/m^3	35 µg/m^3
	1 year	Annual mean of quarterly means, averaged over three years	12.0 µg/m^3	15.0 µg/m^3
PM_{10}	24 hours	Not to be exceeded more than once per year, averaged over three years	150 µg/m^3	150 µg/m^3
Sulfur Dioxide	1 hour	Annual 99th percentile of daily maximums of one-hour concentrations, averaged over three years	75 ppb	N/A
	3 hours	Not to be exceeded more than once per year	N/A	0.5 ppm

In Table 2, the NAAQS averaging time lists the time period of a pollutant concentration. Because air quality monitors can report pollutant concentration values over many different time periods, the averaging time sets a uniform time to evaluate data. For example, $PM_{2.5}$ monitors may report $PM_{2.5}$ concentrations every hour, every three hours, or every 24 hours. If the monitor

reports hourly concentrations, then all 24 individual hourly concentrations must be averaged together to obtain one value. This is also known as a daily average concentration.

The NAAQS form lists how to evaluate an averaged pollutant concentration value. Using $PM_{2.5}$ again, several steps must be performed. First, one must find the daily average concentration for each day of one year. Next, one must find the reported value for which at least 98% of the daily data will be less than that value. These two steps then must be performed for the two previous years. Lastly, the 98^{th} percentiles for the three years are averaged together. The resulting value from the calculation specified in the form is known as a "design value". In this case, it is called the 24-hour or daily $PM_{2.5}$ design value.

The NAAQS level lists the maximum design value for compliance with the CAA. With $PM_{2.5}$, if the 24-hour design value of a monitoring area is less than or equal to 35 $\mu g/m^3$, it is compliant with the CAA. However, if the design value is greater than 35 $\mu g/m^3$, the monitoring area will be out of compliance. Many NAAQS also have a primary and secondary level. The goal of the primary levels is to protect public health and the goal of the secondary levels is to protect the public welfare, e.g. protection against crop damage and decreased visibility. This report only considers the primary levels as they are more stringent than the secondary levels.

In early 2023, EPA announced its decision to revise the primary $PM_{2.5}$ annual standard from 12.0 $\mu g/m^3$ to a value within the range of 9.0 to 10.0 $\mu g/m^3$. The revised standard is expected to be announced in 2024. More information about the NAAQS can be found on EPA's website (https://www.epa.gov/criteria-air-pollutants/naaqs-table).

2022 NAAQS Design Values

A design value is a metric used to assess air quality and determine whether a monitoring area is meeting a NAAQS. It is calculated by evaluating pollutant concentrations according to the averaging time and form specified in the NAAQS table (See Table 2: National Ambient Air Quality Standards). If the design value of a particular pollutant is less than or equal to its respective NAAQS level, the monitoring area meets or attains that NAAQS. If it is greater than the NAAQS level, it does not meet or does not attain that NAAQS.

While DEQ is presenting design value data in this report, only EPA can make regulatory determinations about whether a monitoring area is meeting a NAAQS. The design value data presented below is only for informational purposes and does not constitute a regulatory determination by EPA. Any such determinations must go through the EPA rule-making process, which allows for public notice and comment.

Below are tables listing the design values for monitoring areas by pollutant for 2022. Historical data from individual regulatory monitors are listed in Appendix 2: NAAQS Historical Data by pollutant and by monitoring area. More information about design values can be found on EPA's website (https://www.epa.gov/air-trends/air-quality-design-values).

$PM_{2.5}$

The daily $PM_{2.5}$ design value standard is an annual 98th percentile of daily averaged $PM_{2.5}$ concentrations, averaged over three years, and set to a level of 35 µg/m^3. The annual $PM_{2.5}$ design value standard is an annual average of quarterly averages of daily averaged $PM_{2.5}$ concentrations, averaged over three years, and set to a level of 12.0 µg/m^3.

$PM_{2.5}$ design values are presented in two categories: 1) values from regulatory monitors, and 2) values from informational monitors. EPA only uses design value data from regulatory monitors to make regulatory determinations about air quality. DEQ and LRAPA use design value data from regulatory and informational monitors to inform air quality management programs, issue advisories and provide more data and information to the public.

Additionally, because wildfire smoke can significantly impact ambient $PM_{2.5}$ concentrations, design values are calculated with and without data impacted by wildfire (WF) smoke. To be classified as wildfire data, data must be recorded during wildfire season (generally July 1 through September 30) and have a daily averaged $PM_{2.5}$ concentration greater than 25 µg/m^3. By removing data impacted by wildfire, design values show the significant impacts of wildfire smoke, reflect a value more representative of the design value time period and reveal the impact of local air quality improvement programs. The EPA may formally exclude data impacted by wildfire from design value calculations by designating wildfires as exceptional events. More information about exceptional events can be found on EPA's website (https://www.epa.gov/air-quality-analysis/treatment-air-quality-monitoring-data-influenced-exceptional-events).

Table 3: 2020-2022 $PM_{2.5}$ Design Values

Monitoring Area	Three-Year Average of 98th Percentiles with WF, µg/m³	Three-Year Average of 98th Percentiles without WF, µg/m³	Three-Year Average of Annual Averages with WF, µg/m³	Three-Year Average of Annual Averages without WF, µg/m³
From Regulatory Monitors				
Burns	45	27	10.8	9.3
Cottage Grove	24	18	9.1	6.0
Eugene Metro	96	23	10.1	7.2
Grants Pass	37	24	12.2	7.9
Klamath Falls	46	26	15.6	8.6
Lakeview	47	28	9.8	7.9
Medford	72	23	13.5	9.4
Oakridge	169	24	14.7	7.2
Portland Metro	24	20	8.1	7.1
Prineville	61	21	10.0	6.9
From Informational Monitors				
Albany	80	18	8.1	5.6
Ashland	89	18	10.5	5.8
Baker City	31	19	7.9	6.9
Bend	92	20	9.8	5.7
Cave Junction	74	23	12.8	8.2
Corvallis	63	15	7.1	5.2
Enterprise	37	18	7.9	6.3
John Day	42	27	11.3	9.9
La Grande	42	18	7.4	6.0
Pendleton	54	19	8.3	6.0
Roseburg	73	20	10.3	7.1
Salem Metro	94	20	8.7	6.4
Sisters	77	17	8.9	5.3
Sweet Home	72	16	9.0	6.2
The Dalles	23	18	6.9	5.5

Figure 2: 2020-2022 Three-Year Average of $PM_{2.5}$ 98th Percentiles from Regulatory Monitors

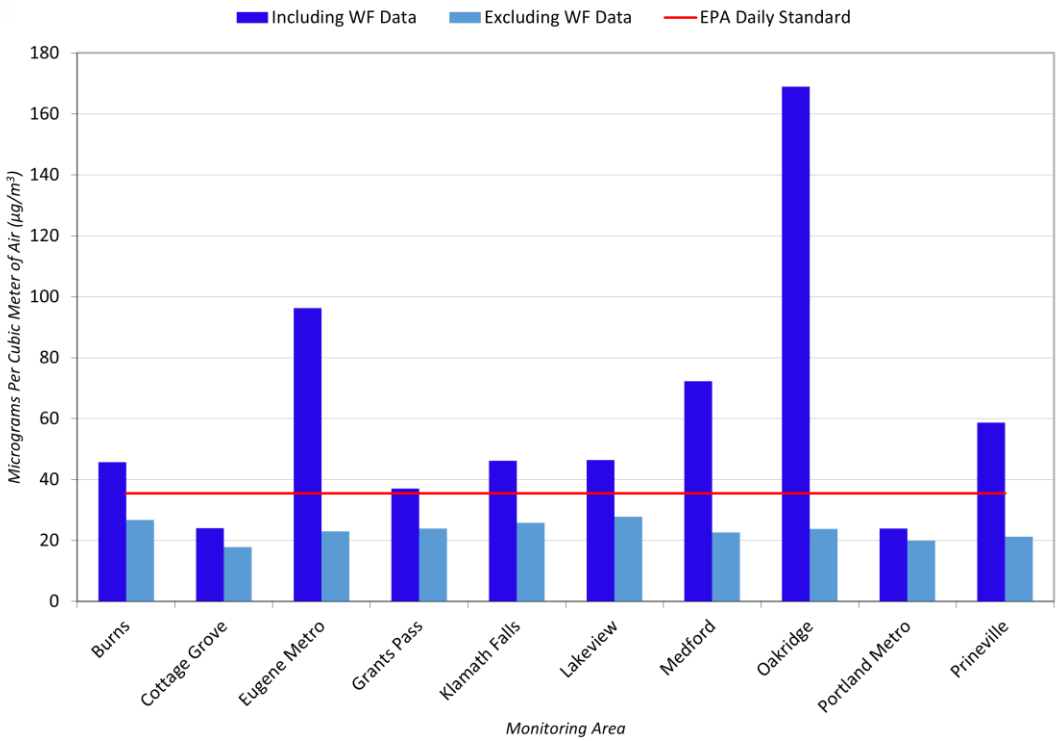


Figure 3: 2020-2022 Three-Year Average of $PM_{2.5}$ 98th Percentiles from Informational Monitors

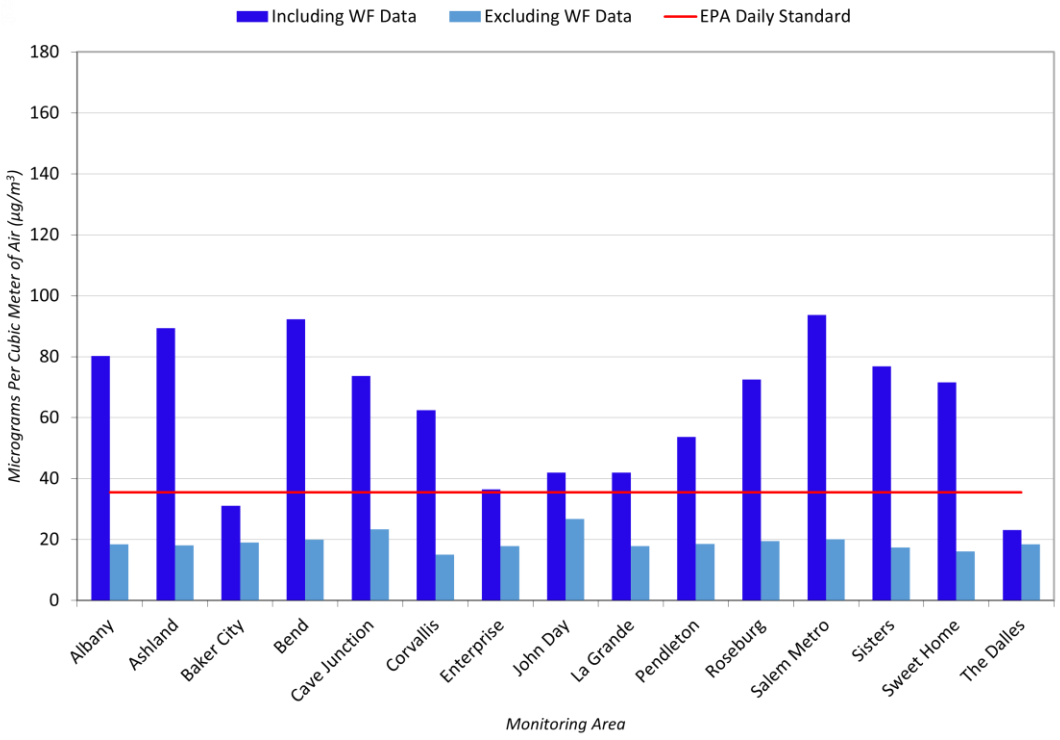


Figure 4: 2020-2022 Three-Year Averages of $PM_{2.5}$ Annual Averages from Regulatory Monitors

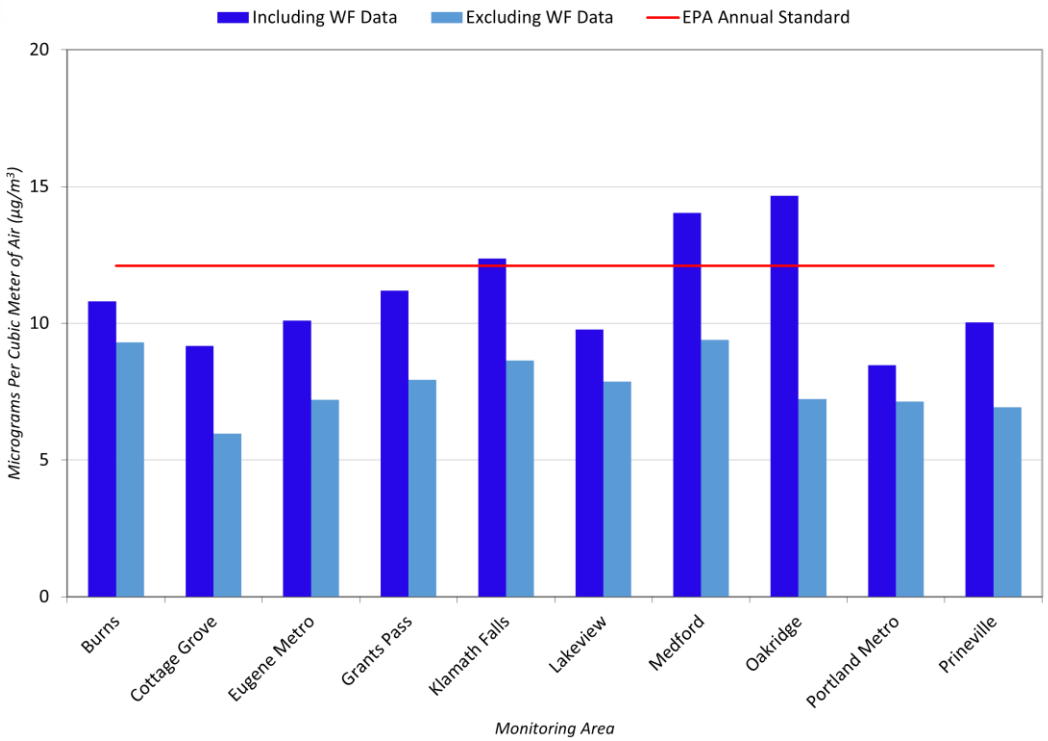
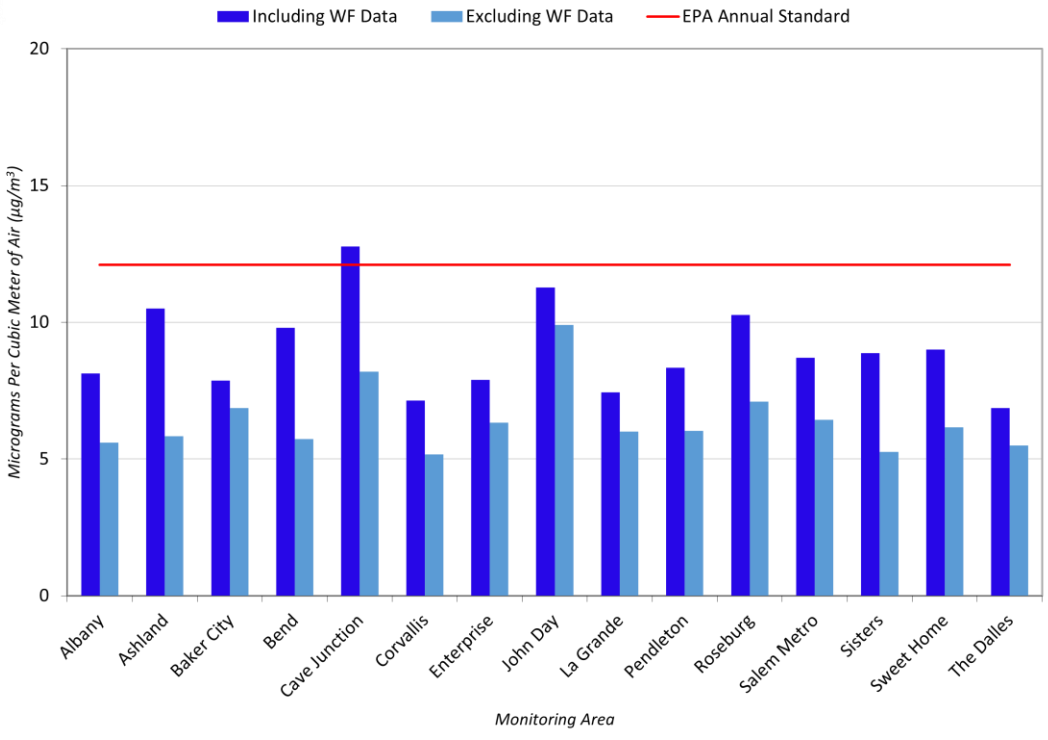


Figure 5: 2020-2022 Three-Year Averages of $PM_{2.5}$ Annual Averages from Informational Monitors



PM_{10}

The PM_{10} design value standard is an estimate of the number of daily averaged PM_{10} concentrations greater than 150 µg/m^3, averaged over three years, and set to a level of 1 exceedance. In other words, a monitoring area is allowed one day on average over three years, in which the daily concentration is greater than 150 µg/m^3 and remain compliant with the CAA.

Table 4: 2020-2022 PM_{10} NAAQS Design Values

Monitoring Area	Three-Year Average of Estimated Exceedances
Eugene Metro	3.3
La Grande	0
Lakeview	3.2
Medford	0
Oakridge	7.7
Portland Metro	0

Ozone

The ozone design value standard is an annual fourth-highest daily maximum of averaged eight-hour ozone concentrations, averaged over three years, and set to a level of 0.070 ppm.

Table 5: 2020-2022 Ozone NAAQS Design Values

Monitoring Area	Three-Year Average of Fourth-Highest Daily Maximums, ppm
Eugene Metro	0.058
Hermiston	0.060
Medford	0.064
Portland Metro	0.067
Salem Metro	0.063

Carbon Monoxide

The one-hour carbon monoxide design value standard is an annual second-highest maximum one-hour carbon monoxide concentration, with the maximum value selected over two years, and set to a level of 35 ppm. The eight-hour carbon monoxide design value standard is an annual second-highest maximum non-overlapping eight-hour averaged carbon monoxide concentration, with the maximum value selected over two years, and set to a level of 9 ppm.

Table 6: 2021-2022 Carbon Monoxide NAAQS Design Values

Monitoring Area	Two-Year Maximum of Second-Highest One-Hour Concentrations, ppm	Two-Year Maximum of Second-Highest Averages, ppm
Portland Metro	2.1	1.5

Nitrogen Dioxide

The daily nitrogen dioxide design value standard is an annual 98th percentile of daily maximums of one-hour nitrogen dioxide concentrations, averaged over three years, and set to a level of 100 ppb. The annual nitrogen dioxide design value standard is an annual average of daily maximums of one-hour nitrogen dioxide concentrations, averaged over three years, and set to a level of 53 ppb.

Table 7: 2020-2022 Nitrogen Dioxide NAAQS Design Values

Monitoring Area	Three-Year Average of 98th Percentiles, ppb	Annual Average, ppb
Portland Metro	30	10

Sulfur Dioxide

The sulfur dioxide design value standard is an annual 99th percentile of daily maximums of one-hour sulfur dioxide concentrations, averaged over three years, and set to a level of 75 ppb.

Table 8: 2020-2022 Sulfur Dioxide NAAQS Design Value

Monitoring Area	Three-Year Average of 99th Percentiles, ppb
Portland Metro	3

2022 NAAQS Exceedances

An “exceedance” is another metric used to assess air quality, but unlike a design value, it is only an informational metric, and it only examines one year of data. An exceedance is defined as a single occurrence of a measured pollutant concentration that is greater than its NAAQS level and averaged according to its NAAQS averaging time. If the averaging time is less than 24 hours, only the daily maximum averaged concentration determines whether a monitoring area exceeded a NAAQS level.

Below are tables listing the exceedances for monitoring areas by pollutant for 2022. Historical exceedances from individual regulatory monitors are listed in Appendix 2: NAAQS Historical Data by pollutant and by monitoring area.

$PM_{2.5}$

The $PM_{2.5}$ exceedance level is a daily averaged $PM_{2.5}$ concentration of 35 $\mu g/m^3$.

Given the significance of $PM_{2.5}$ pollution in Oregon, it is helpful to also assess air quality by calculating the $PM_{2.5}$ NAAQS design value, but only for one year. The same thresholds of 35 $\mu g/m^3$ and 12.0 $\mu g/m^3$ are used for the 98^{th} percentile and annual average.

$PM_{2.5}$ exceedances are presented in two categories: 1) values from regulatory monitors, and 2) values from informational monitors. DEQ and LRAPA use exceedance data from regulatory and informational monitors to inform air quality management programs, issue advisories and provide more data and information to the public.

Additionally, because wildfire smoke can significantly impact ambient $PM_{2.5}$ concentrations, exceedances are counted with and without data impacted by wildfire (WF) smoke. To be classified as such, data must be recorded during wildfire season (generally July through September) and have a daily averaged $PM_{2.5}$ concentration greater than 25 $\mu g/m^3$. By removing data impacted by wildfire, the number of exceedances show the impacts of wildfire smoke and the impact of local air quality improvement programs.

Table 9: 2022 $PM_{2.5}$ Exceedances

Monitoring Area	98th Percentile with WF, µg/m³	98th Percentile without WF, µg/m³	Days Above Daily Level with WF	Days Above Daily Level without WF	Annual Average with WF, µg/m³	Annual Average without WF, µg/m³
From Regulatory Monitors						
Burns	29	28	3	1	9.2	8.5
Cottage Grove	35	22	8	0	7.9	6.8
Eugene Metro	35	25	7	2	8.7	7.8
Grants Pass	28	24	2	0	9.5	8.2
Klamath Falls	31	24	3	2	10	7.9
Lakeview	35	34	2	1	8.2	7.2
Medford	33	28	2	0	10.1	8.8
Oakridge	247	26	37	0	23.2	8.2
Portland Metro	30	24	2	1	7.5	7.3
Prineville	25	24	0	0	6.6	6.2
From Informational Monitors						
Albany	25	21	2	0	6.4	6.0
Ashland	32	18	6	0	6.4	5.5
Baker City	27	20	3	1	7.4	7.1
Bend	29	22	5	0	6.9	6.1
Cave Junction	45	34	14	6	11.0	9.4
Corvallis	16	16	2	0	5.7	5.6
Enterprise	34	17	7	0	7.6	6.2
John Day	29	28	1	0	10.3	9.7
La Grande	24	17	5	2	6.8	6.4
Pendleton	24	20	3	0	6.7	6.4
Roseburg	41	24	8	0	9.2	8.0
Salem Metro	31	25	4	1	7.5	7.0
Sisters	20	18	4	1	5.5	5.1
Sweet Home	20	17	0	0	6.4	6.2
The Dalles	19	19	1	0	5.2	5.1

Figure 6: 2022 $PM_{2.5}$ 98th Percentiles from Regulatory Monitors

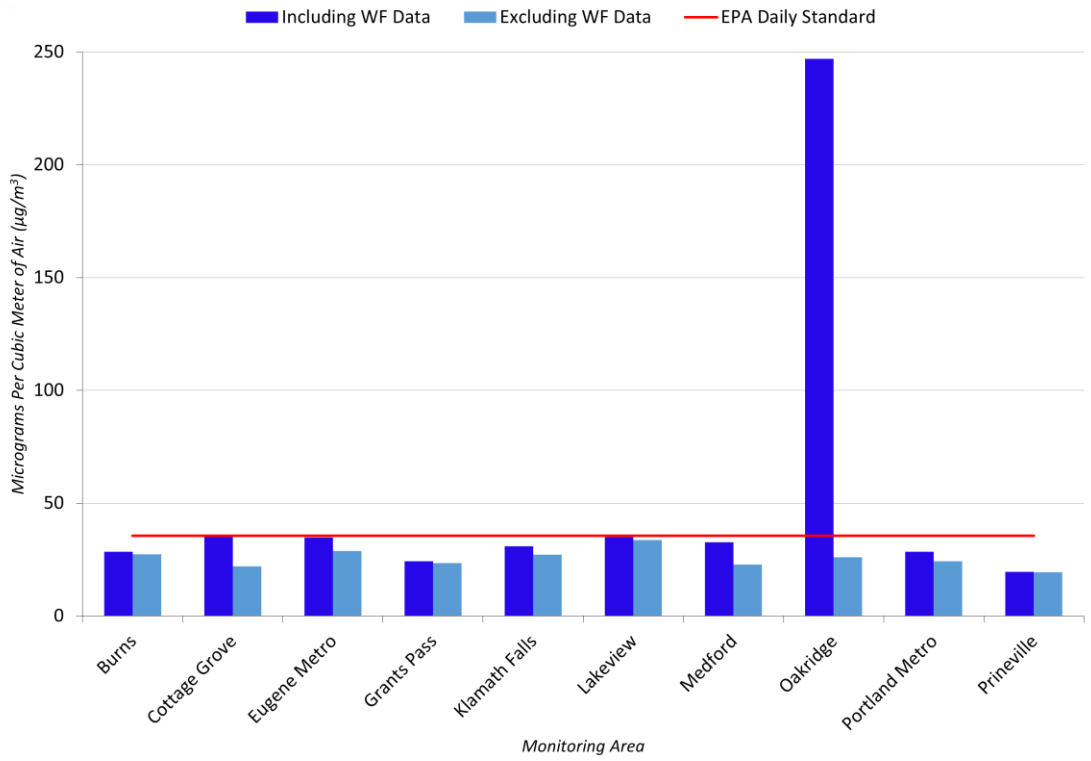


Figure 7: 2022 $PM_{2.5}$ 98th Percentiles from Informational Monitors

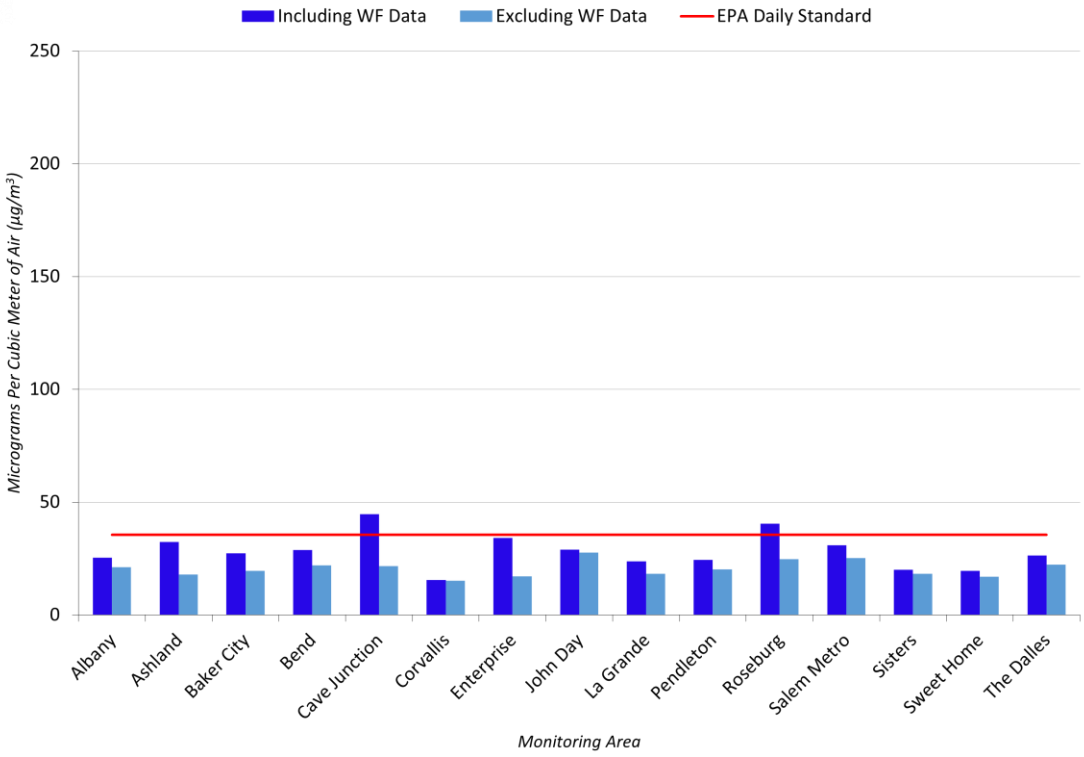
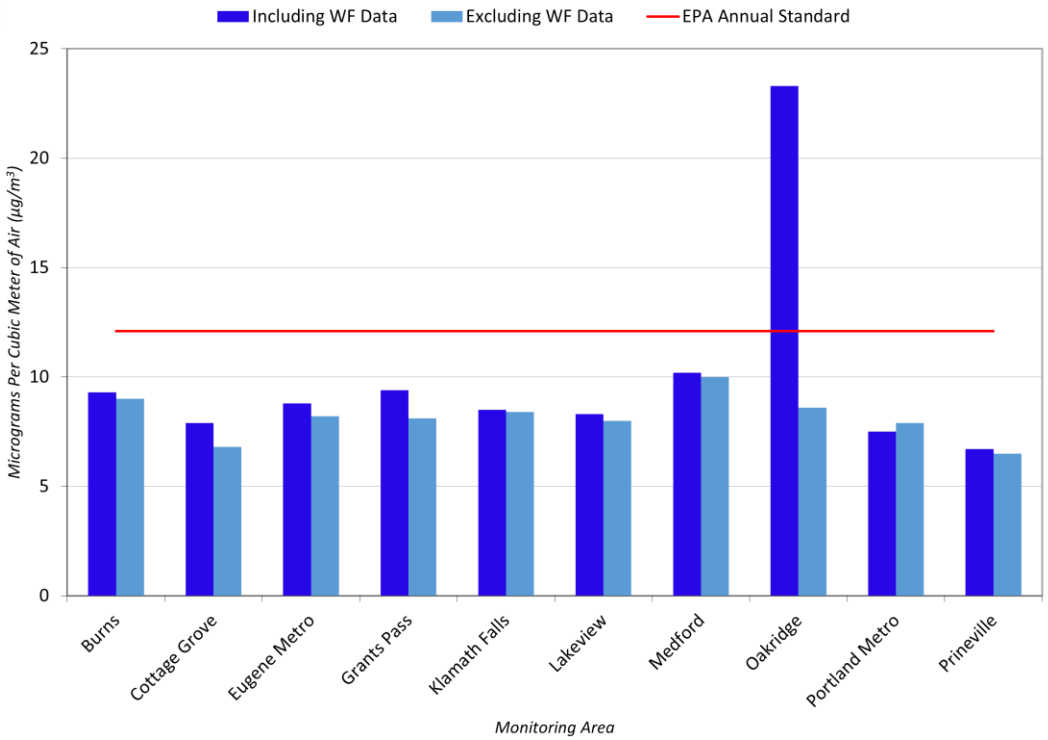


Figure 8: 2022 $PM_{2.5}$ Annual Averages from Regulatory Monitors



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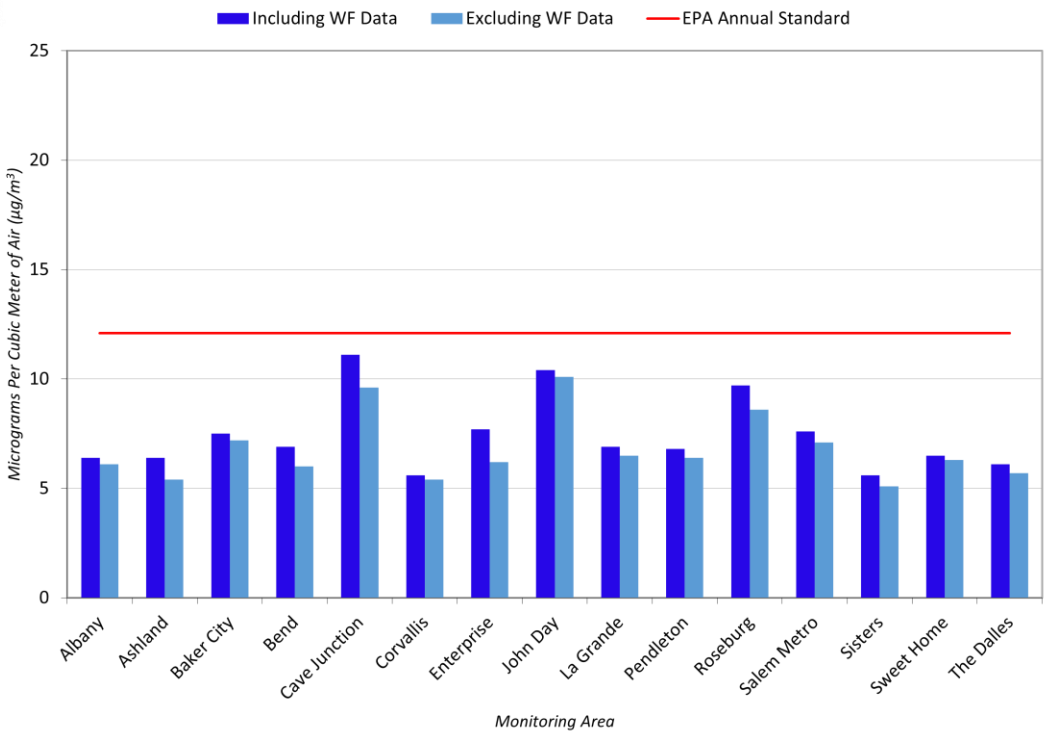


PM_{10}

The PM_{10} exceedance level is a daily averaged PM_{10} concentration of 150 µg/m^3.

Table 10: 2022 PM_{10} Exceedances

Monitoring Area	Maximum Daily Average, µg/m^3	Number of Days Above Daily Level
Eugene Metro	85	0
La Grande	45	0
Lakeview	55	0
Medford	86	0
Oakridge	363	19
Portland Metro	89	0

Ozone

The ozone exceedance level is a daily maximum averaged eight-hour ozone concentration of 0.070 ppm.

Table 11: 2022 Ozone Exceedances

Monitoring Area	Maximum Daily Eight-Hour Average, ppm	Number of Days Above Eight-Hour Level
Eugene Metro	0.067	0
Hermiston	0.067	0
Medford	0.071	1
Portland Metro	0.080	2
Salem Metro	0.074	3

Carbon Monoxide

The carbon monoxide exceedance level is either a daily maximum one-hour carbon monoxide concentration of 35 ppm, or a daily maximum non-overlapping eight-hour averaged carbon monoxide concentration of 9 ppm.

Table 12: 2022 Carbon Monoxide Exceedances

Monitoring Area	Maximum Daily One-Hour Concentration, ppm	Number of Days Above One-Hour Level	Maximum Daily Eight-Hour Average, ppm	Number of Days Above Eight-Hour Level
Portland Metro	2.2	0	1.7	0

Nitrogen Dioxide

The nitrogen dioxide exceedance level is a daily maximum one-hour nitrogen dioxide concentration of 100 ppb.

Table 13: 2022 Nitrogen Dioxide Exceedances

Monitoring Area	Maximum Daily One-Hour Concentration, ppb	Number of Days Above One-Hour Level
Portland Metro	36	0

Sulfur Dioxide

The sulfur dioxide exceedance level is a daily maximum one-hour sulfur dioxide concentration of 75 ppb.

Table 14: 2022 Sulfur Dioxide Exceedances

Monitoring Area	Maximum Daily One-Hour Concentration, ppb	Number of Days Above One-Hour Level
Portland Metro	3	0

Air Quality Trends

Air quality trend graphs are a visual tool to show how pollutant concentrations have changed over a long timeframe and the impact of air quality management programs from EPA, DEQ and LRAPA. The trend data plotted is the NAAQS averaging time and form of a pollutant for each year.

$PM_{2.5}$

$PM_{2.5}$ has generally trended below the daily and annual $PM_{2.5}$ NAAQS, but smoke from large wildfires will often cause a monitoring area to exceed them. The figures below show annual 98th percentile of daily averaged $PM_{2.5}$ concentrations and annual averages of quarterly averages of daily averaged $PM_{2.5}$ concentrations. The 98th percentile and annual averages are also plotted with and without data impacted by wildfire smoke.

Figure 10: Albany $PM_{2.5}$ Trends

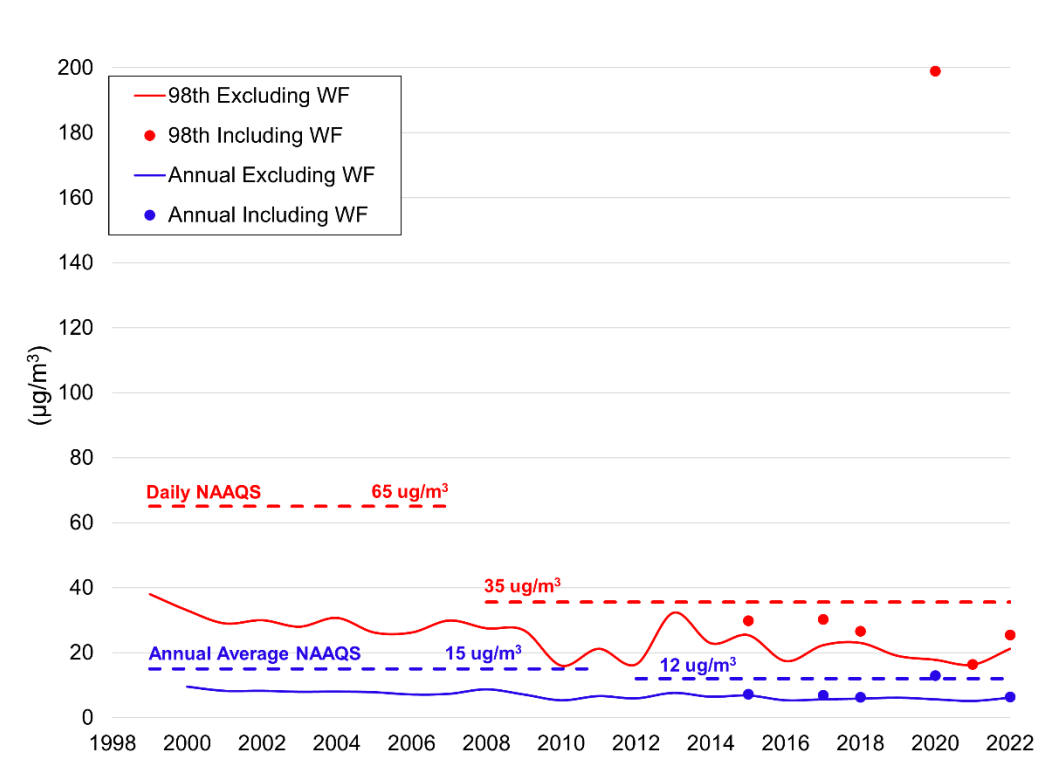


Figure 11: Ashland $PM_{2.5}$ Trends

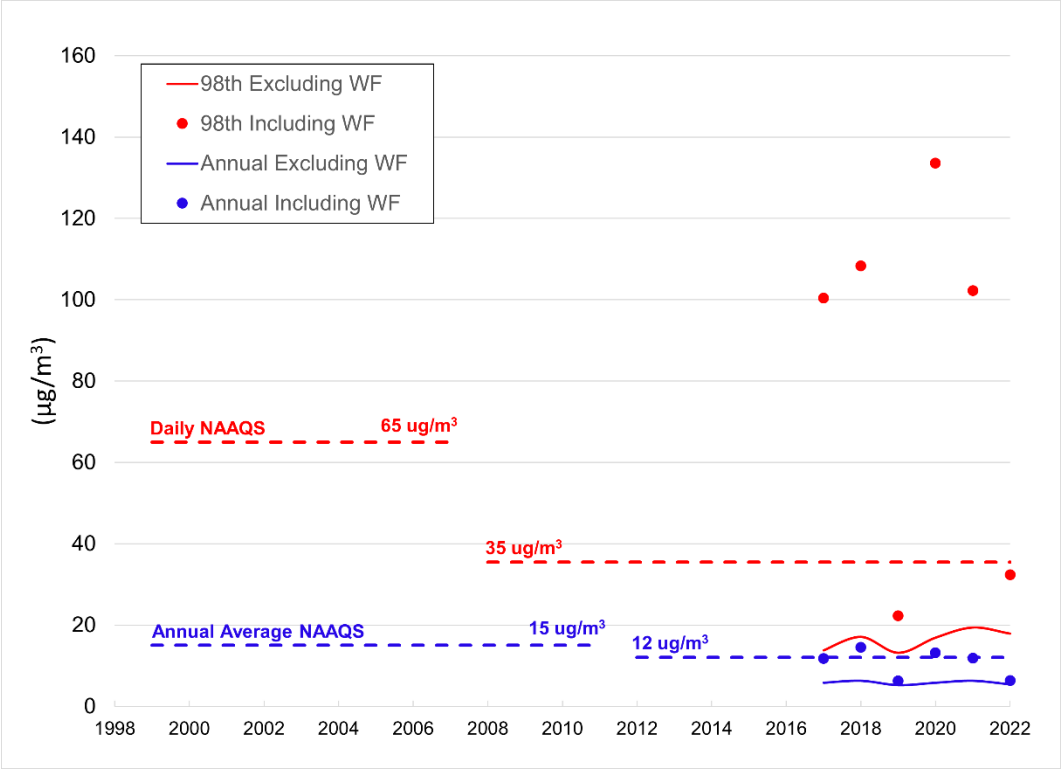


Figure 12: Baker City $PM_{2.5}$ Trends

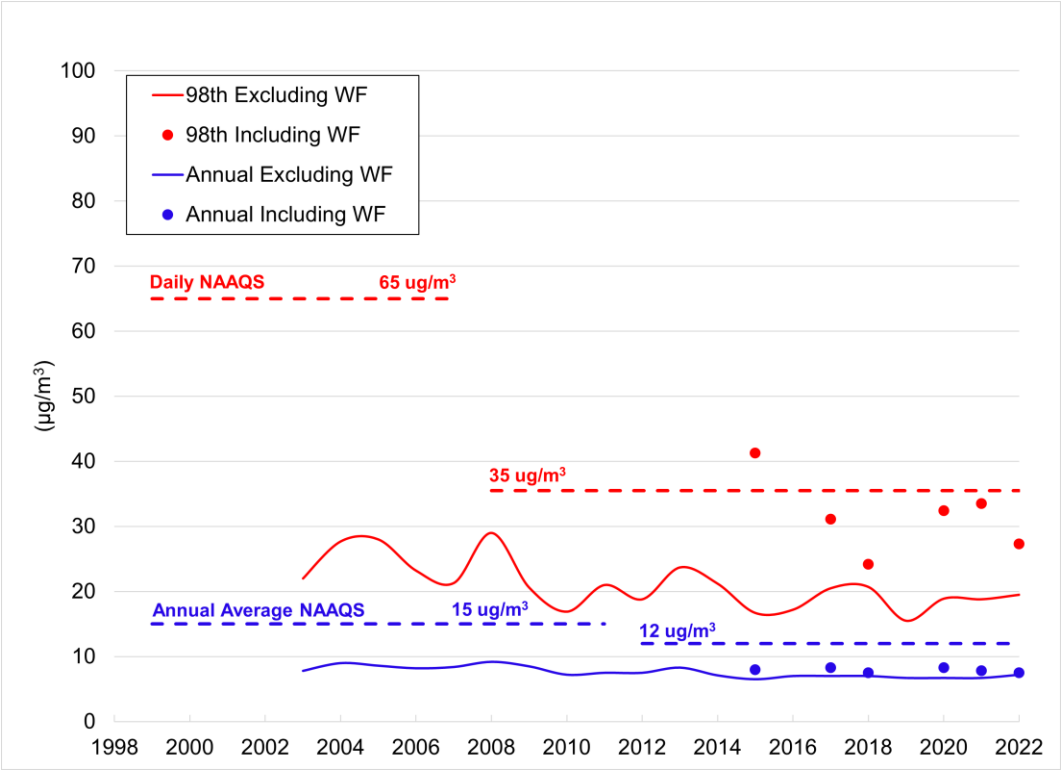


Figure 13: Bend $PM_{2.5}$ Trends

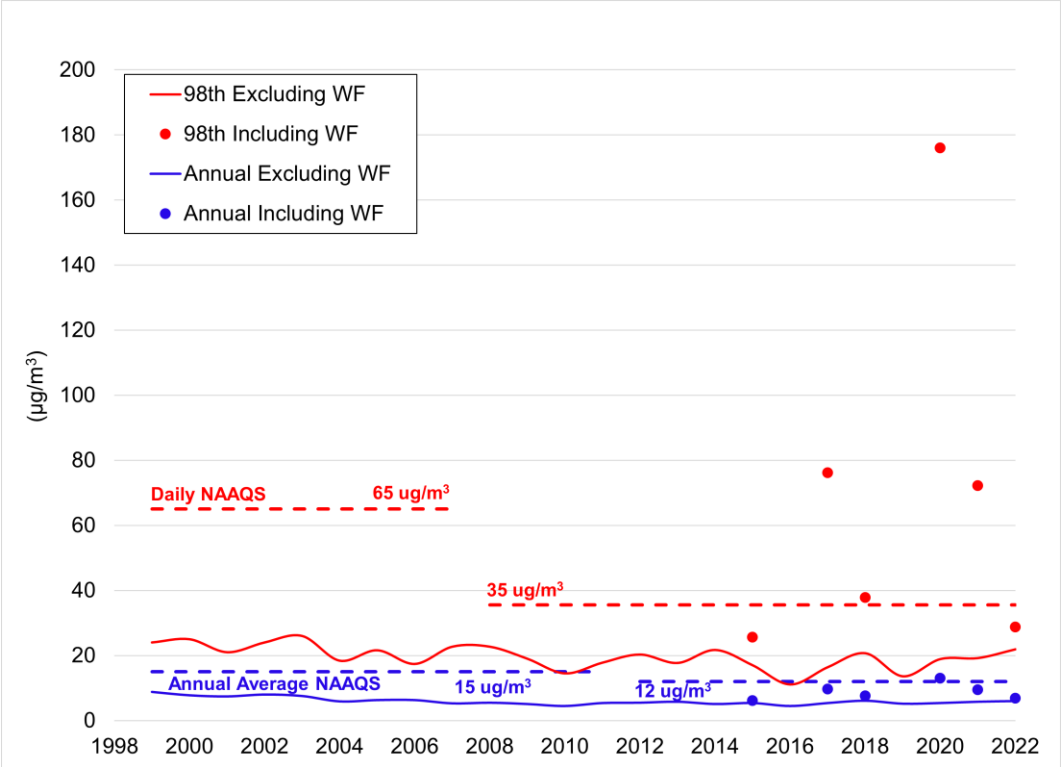


Figure 14: Burns $PM_{2.5}$ Trends

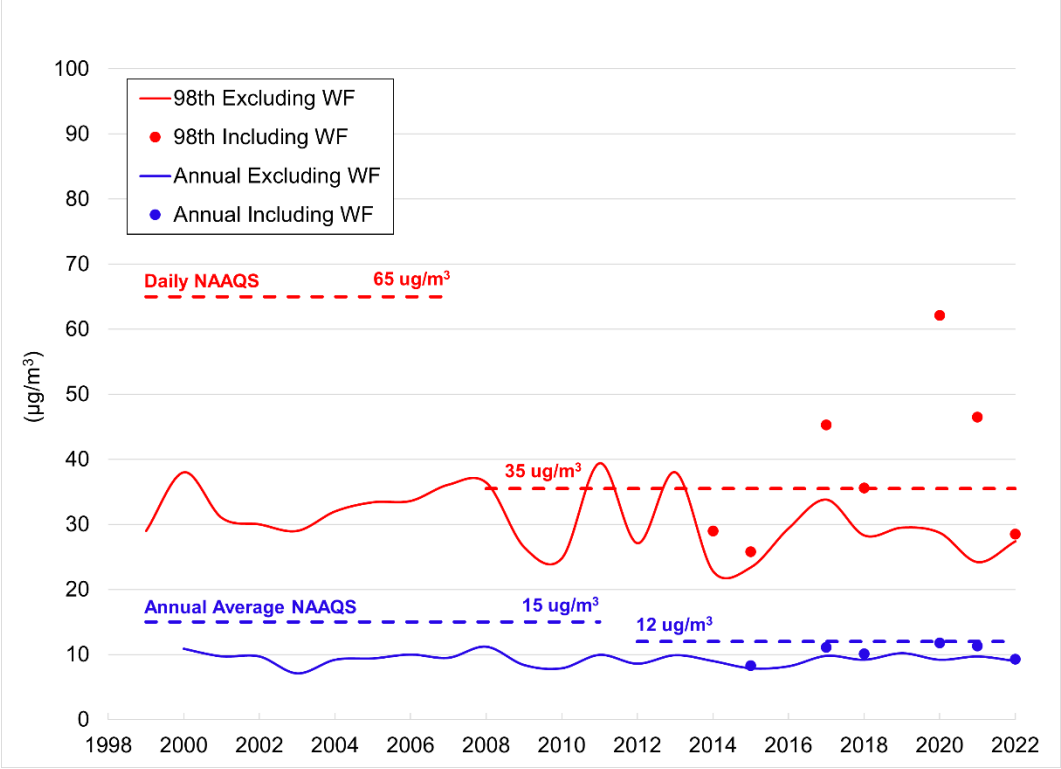


Figure 15: Cave Junction $PM_{2.5}$ Trends

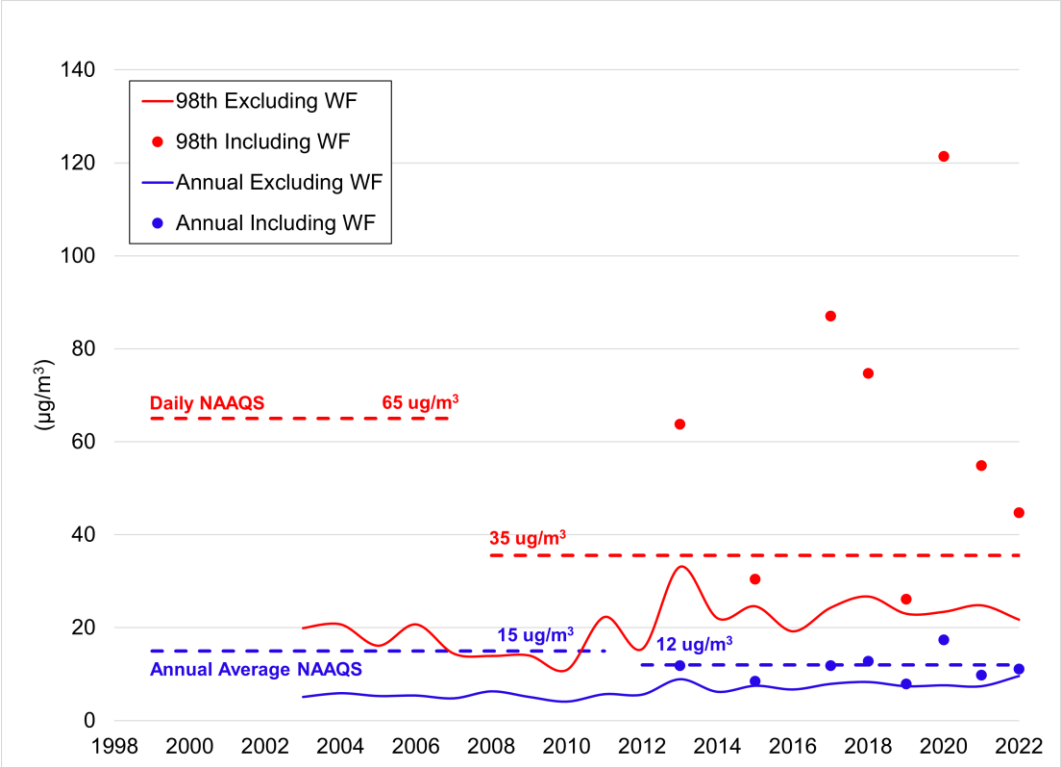


Figure 16: Corvallis $PM_{2.5}$ Trends

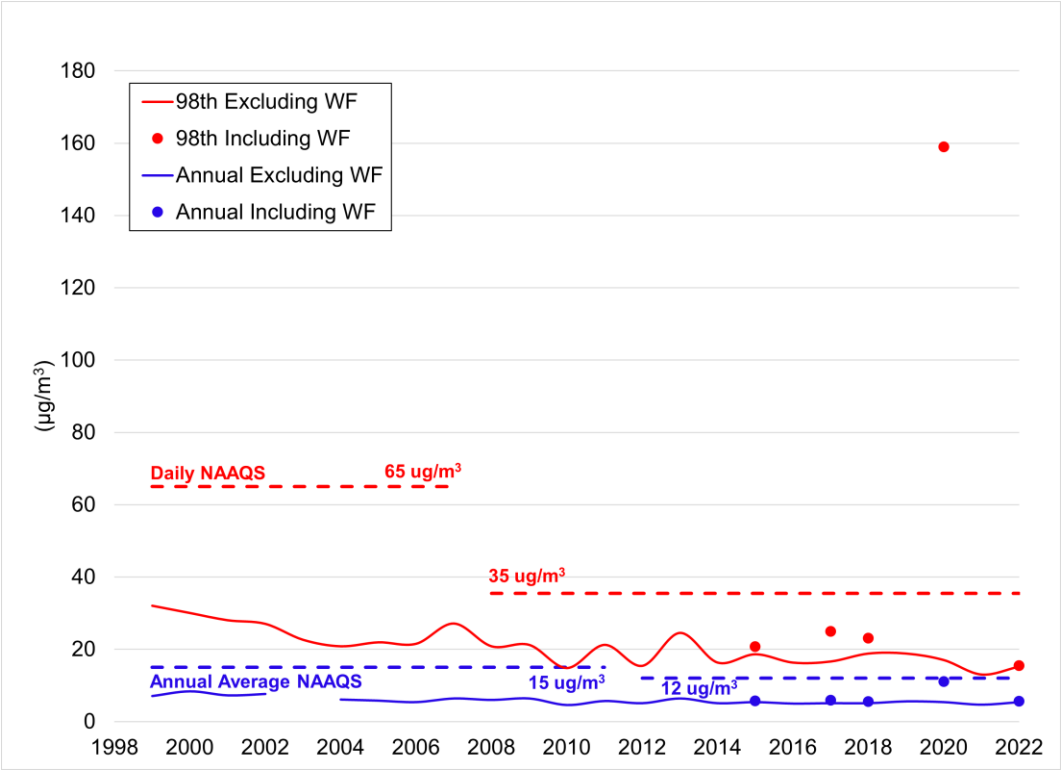


Figure 17: Cottage Grove $PM_{2.5}$ Trends

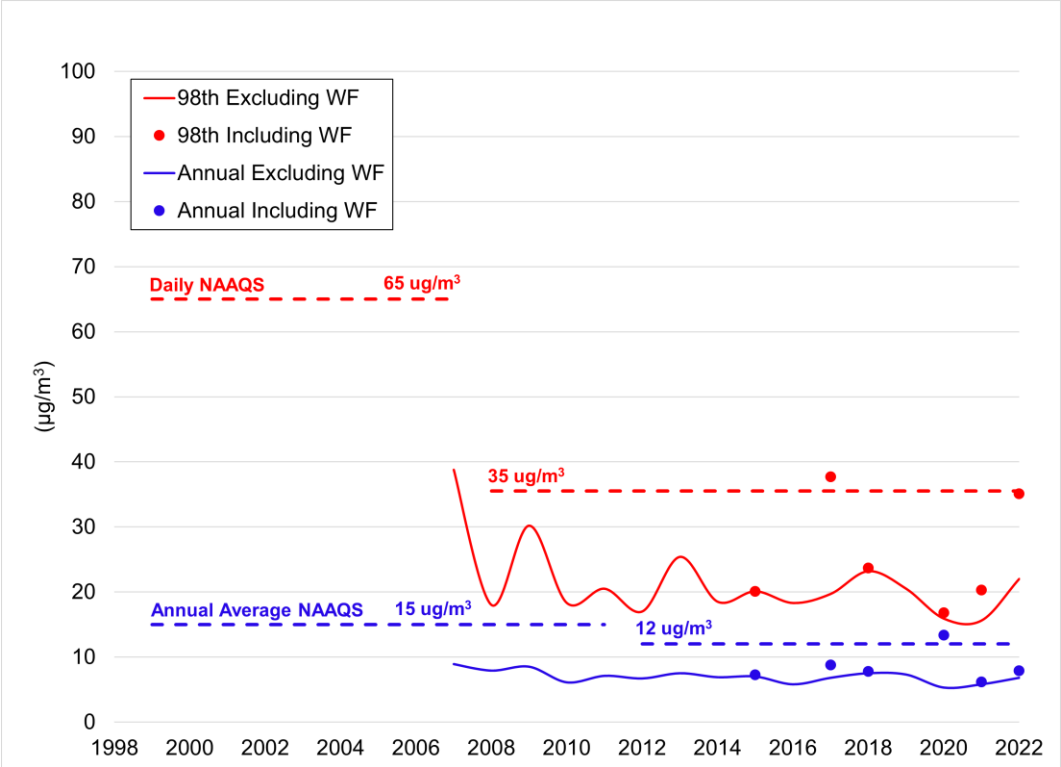


Figure 18: Enterprise $PM_{2.5}$ Trends

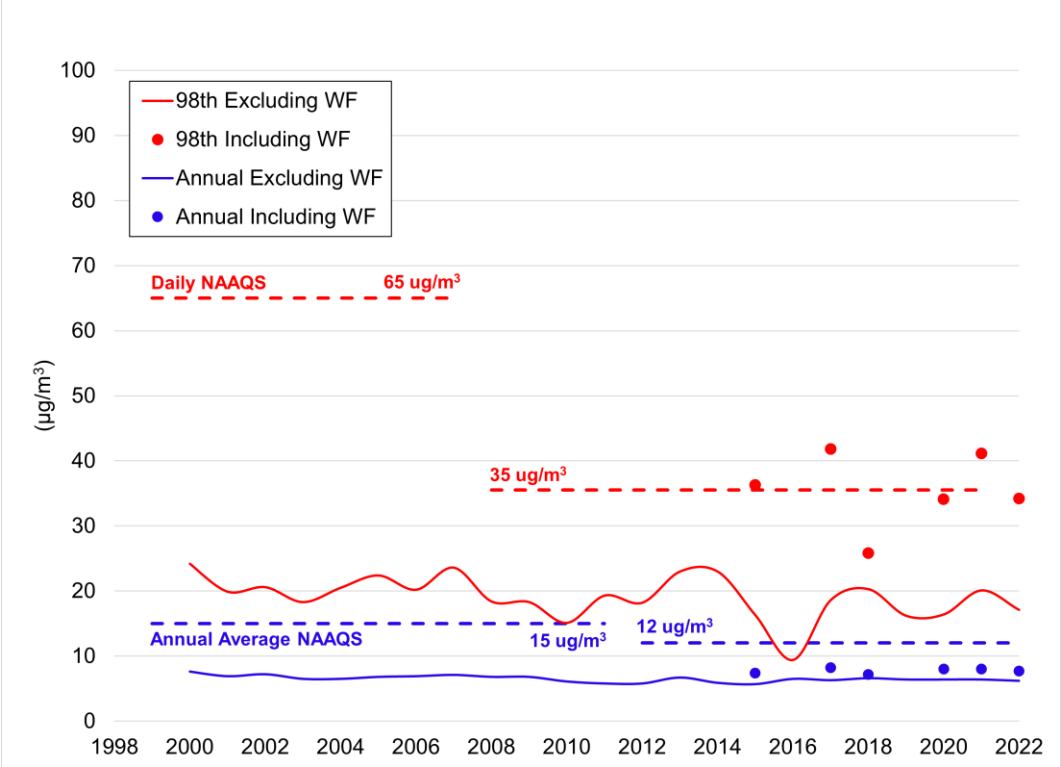


Figure 19: Eugene Metro $PM_{2.5}$ Trends

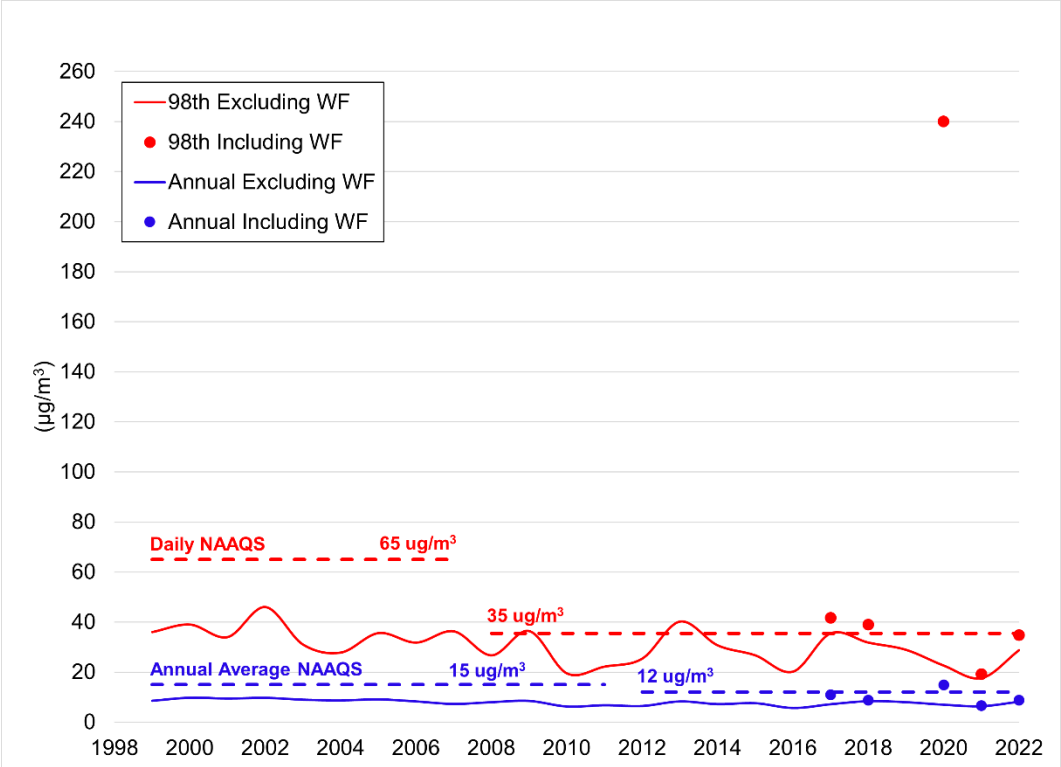


Figure 20: Grants Pass $PM_{2.5}$ Trends

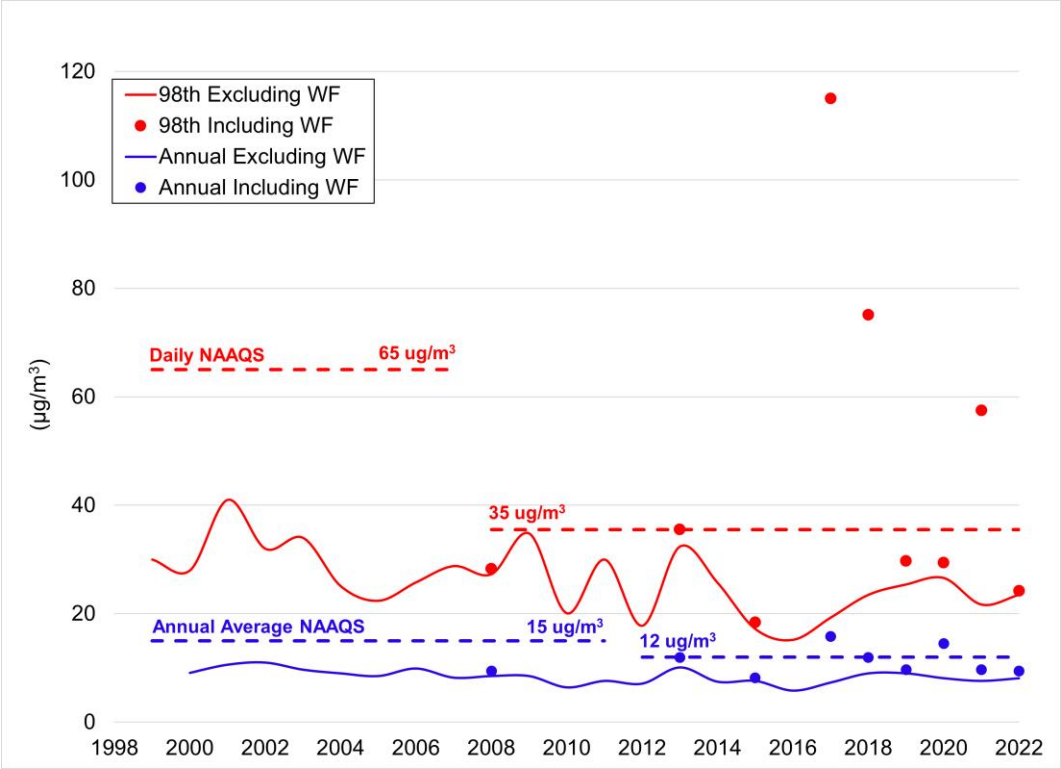


Figure 21: John Day $PM_{2.5}$ Trends

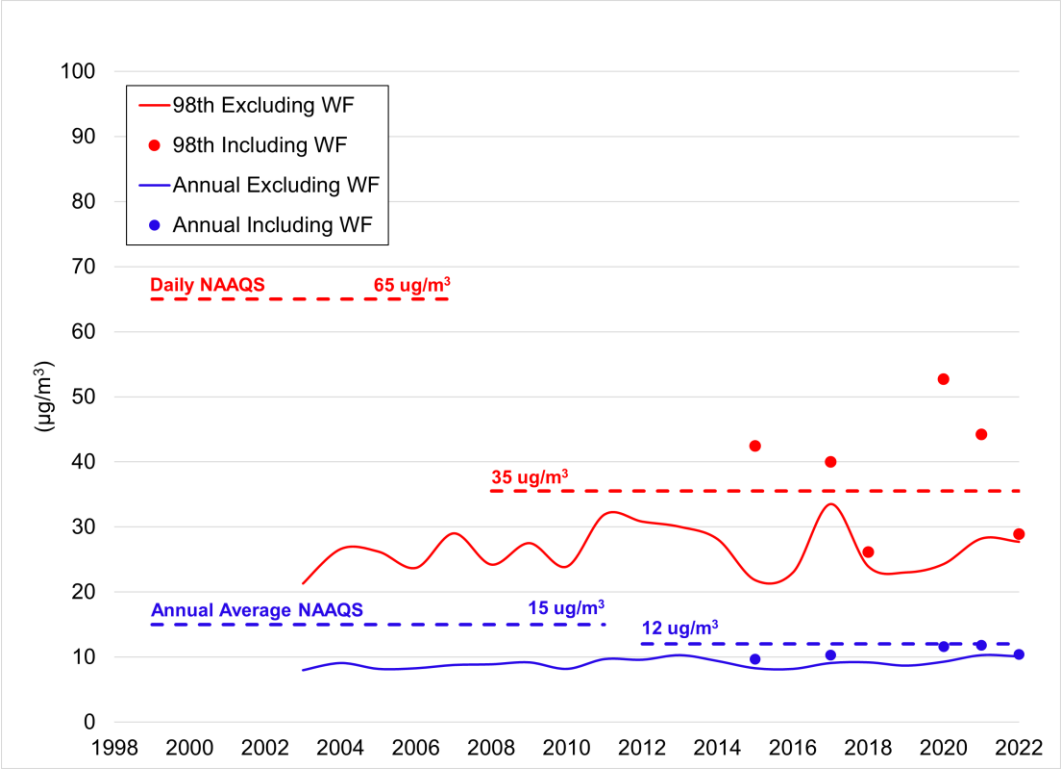


Figure 22: Klamath Falls $PM_{2.5}$ Trends

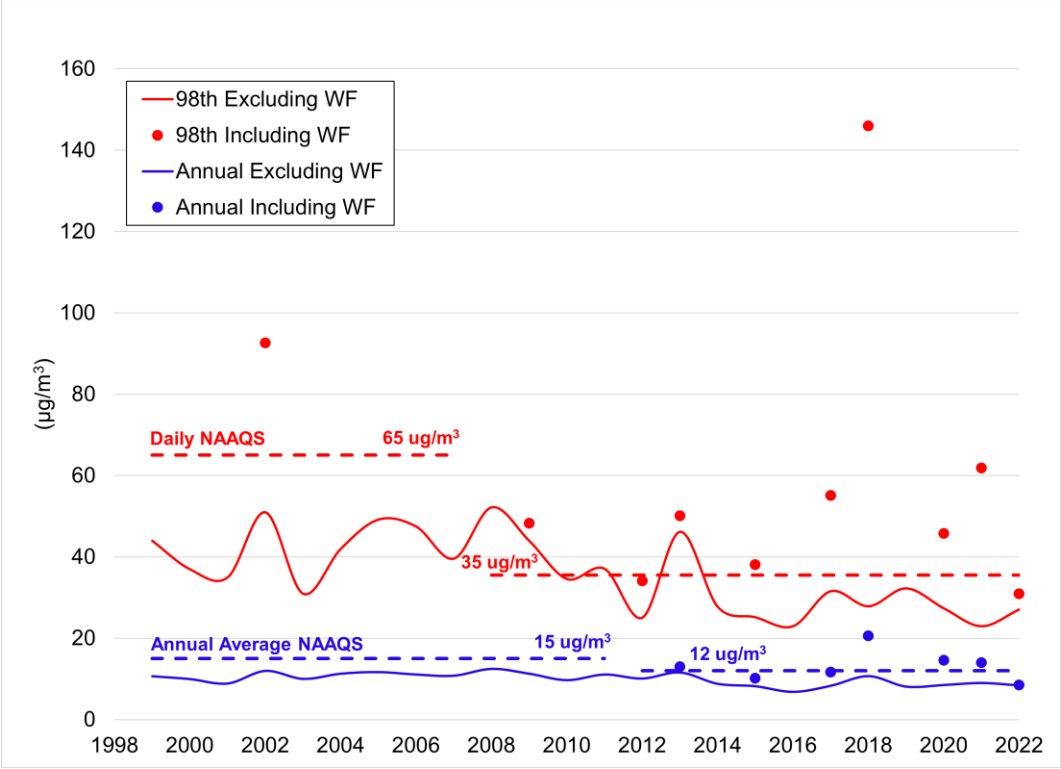


Figure 23: La Grande $PM_{2.5}$ Trends

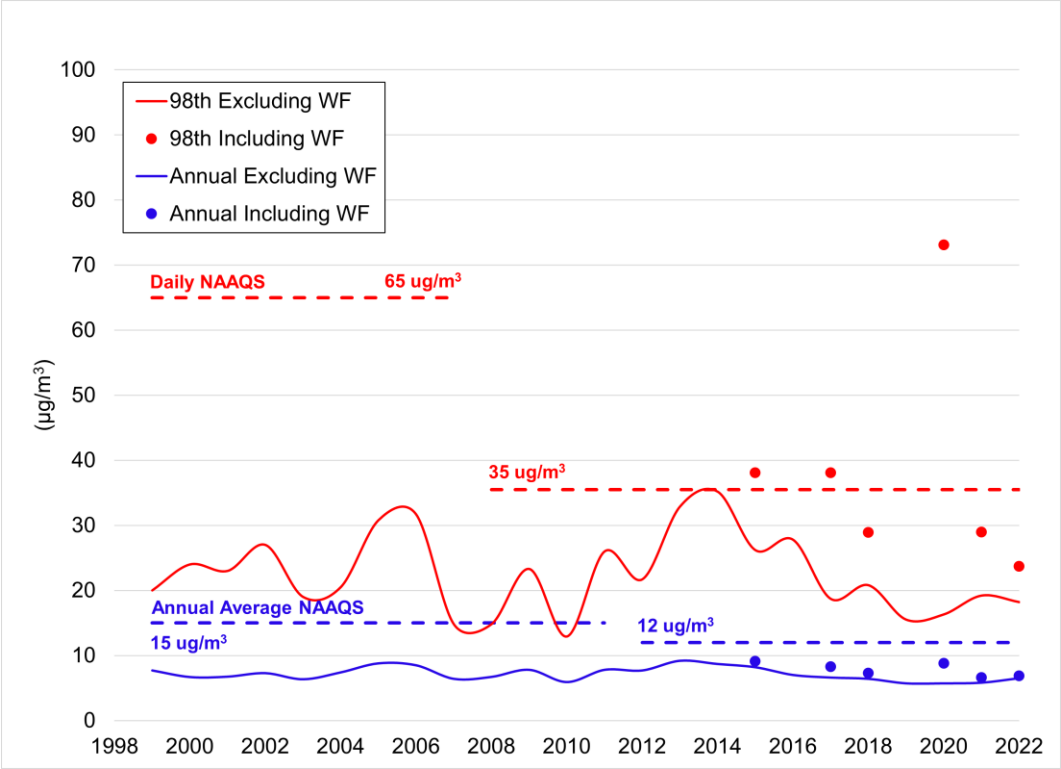


Figure 24: Lakeview $PM_{2.5}$ Trends

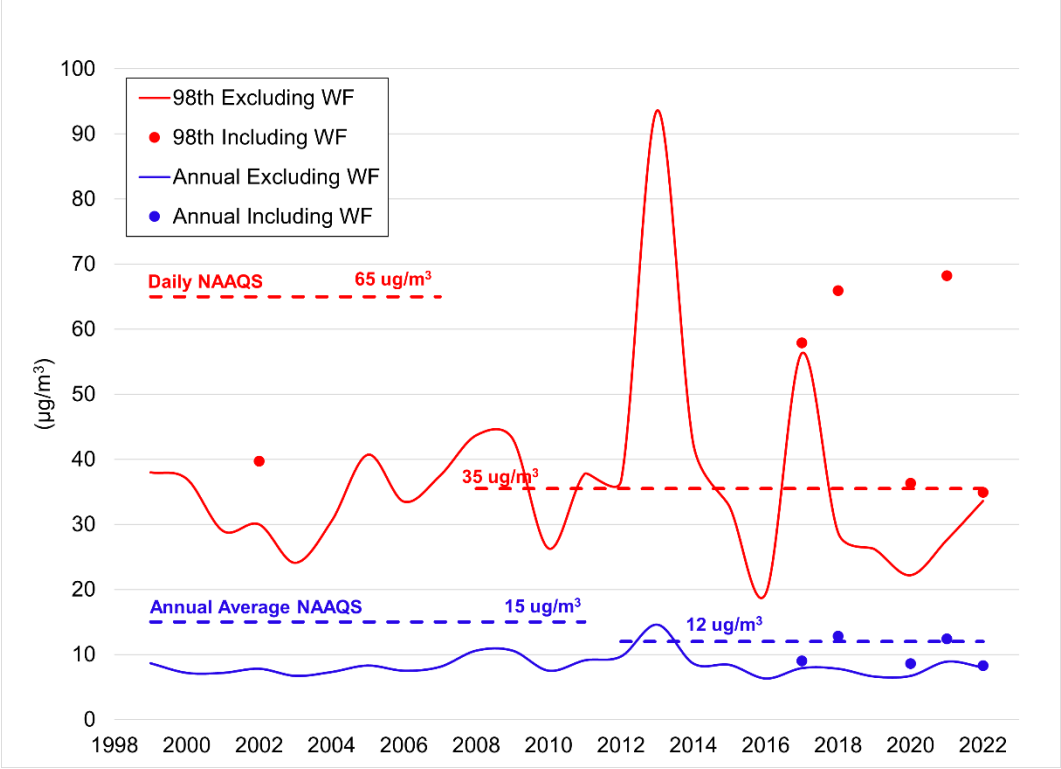


Figure 25: Medford $PM_{2.5}$ Trends

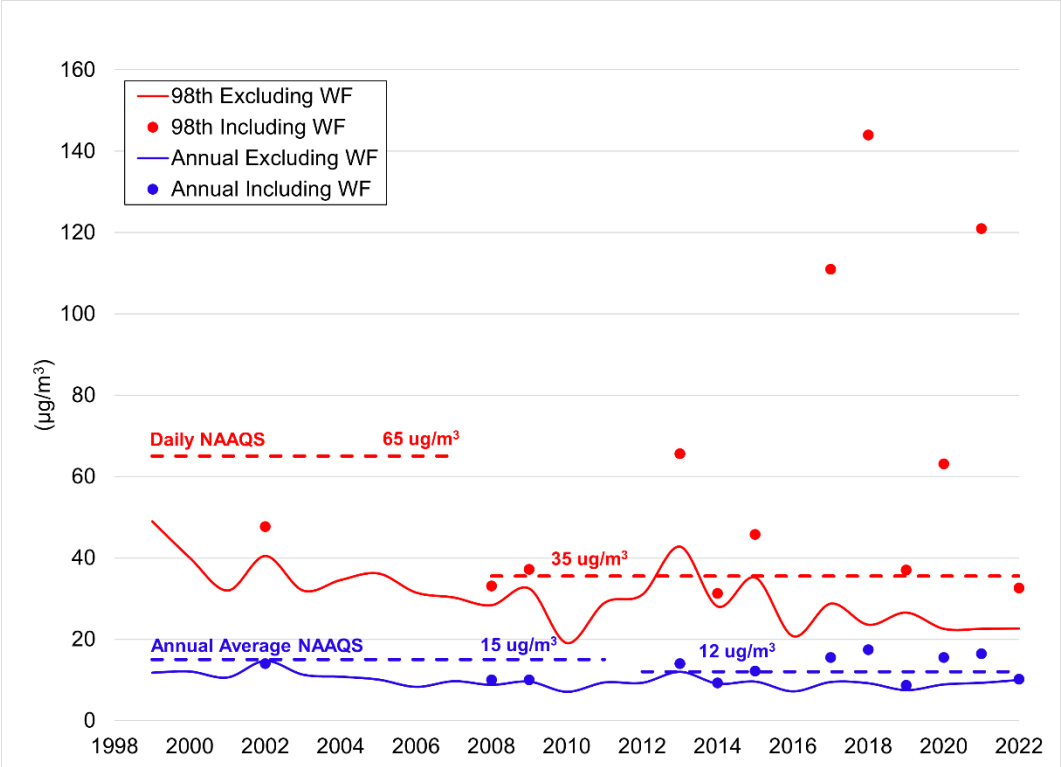


Figure 26: Oakridge $PM_{2.5}$ Trends

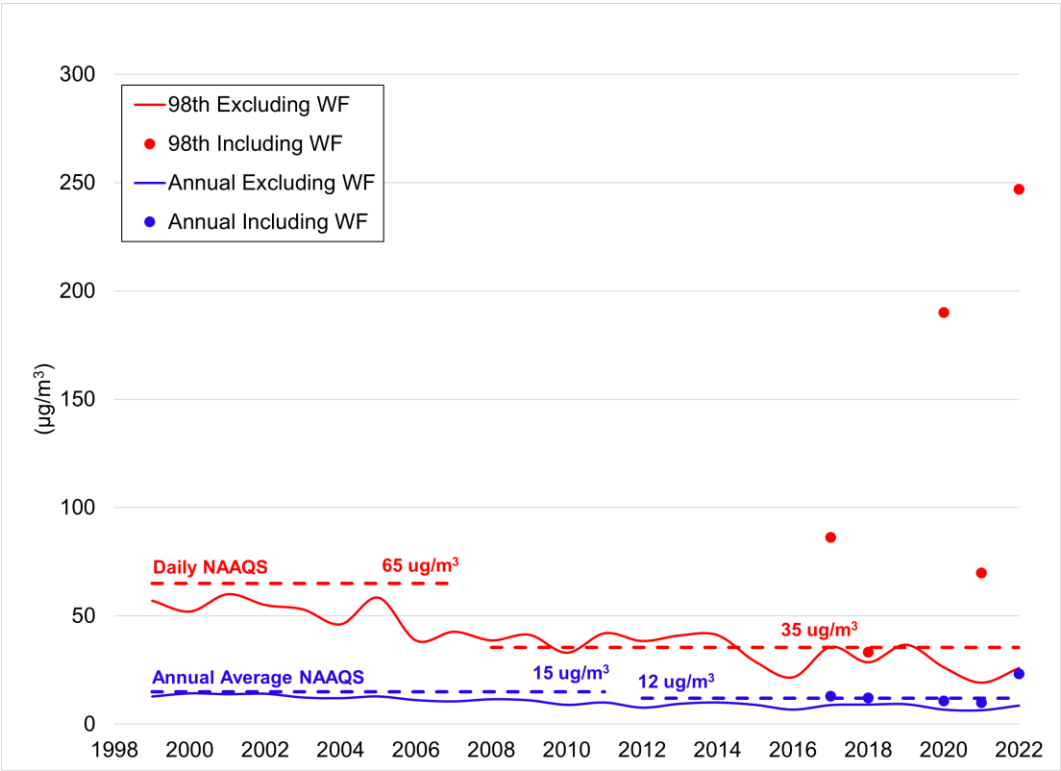


Figure 27: Pendleton $PM_{2.5}$ Trends

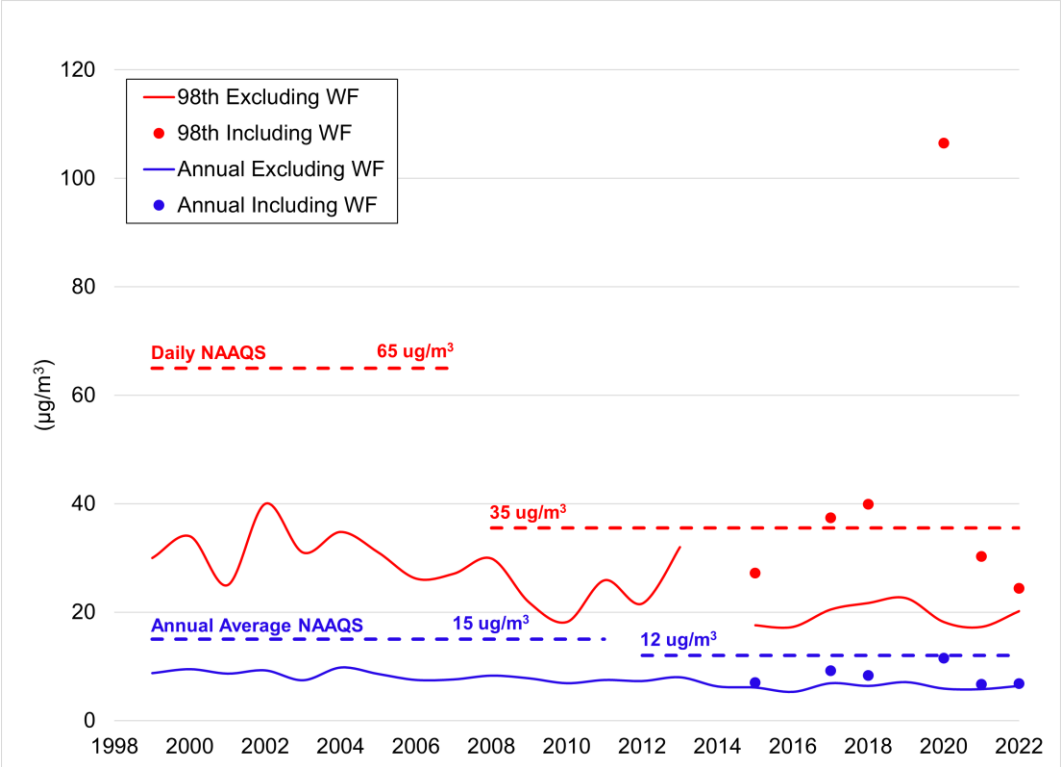


Figure 28: Portland Metro $PM_{2.5}$ Trends

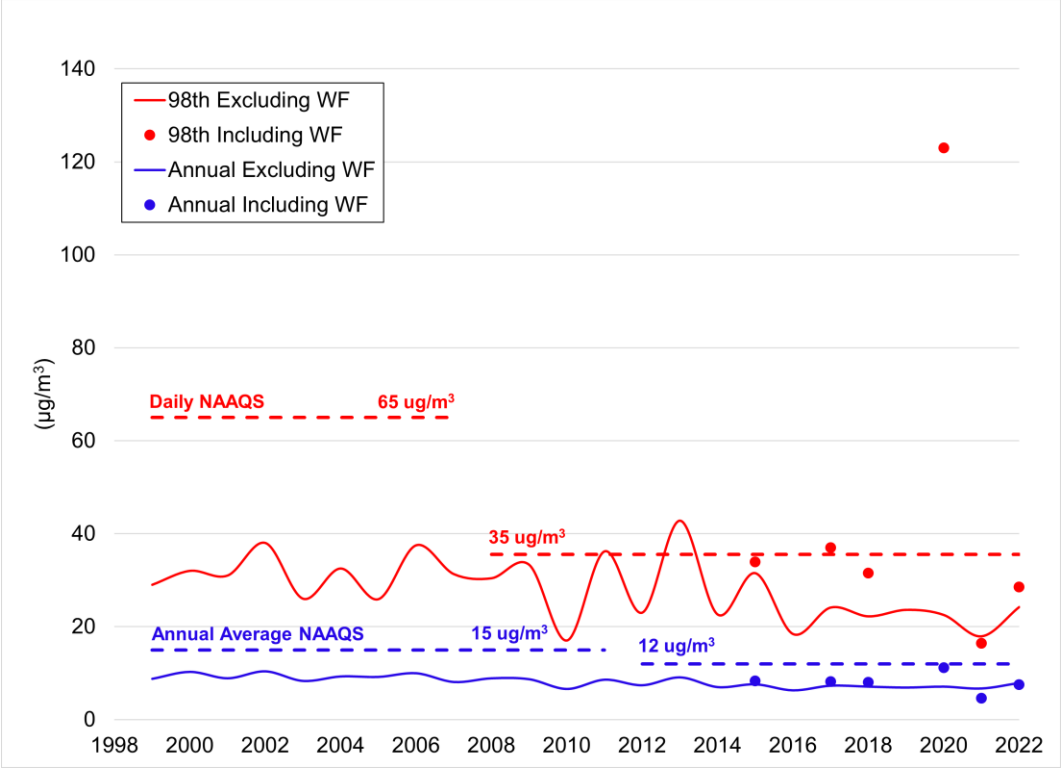


Figure 29: Prineville $PM_{2.5}$ Trends

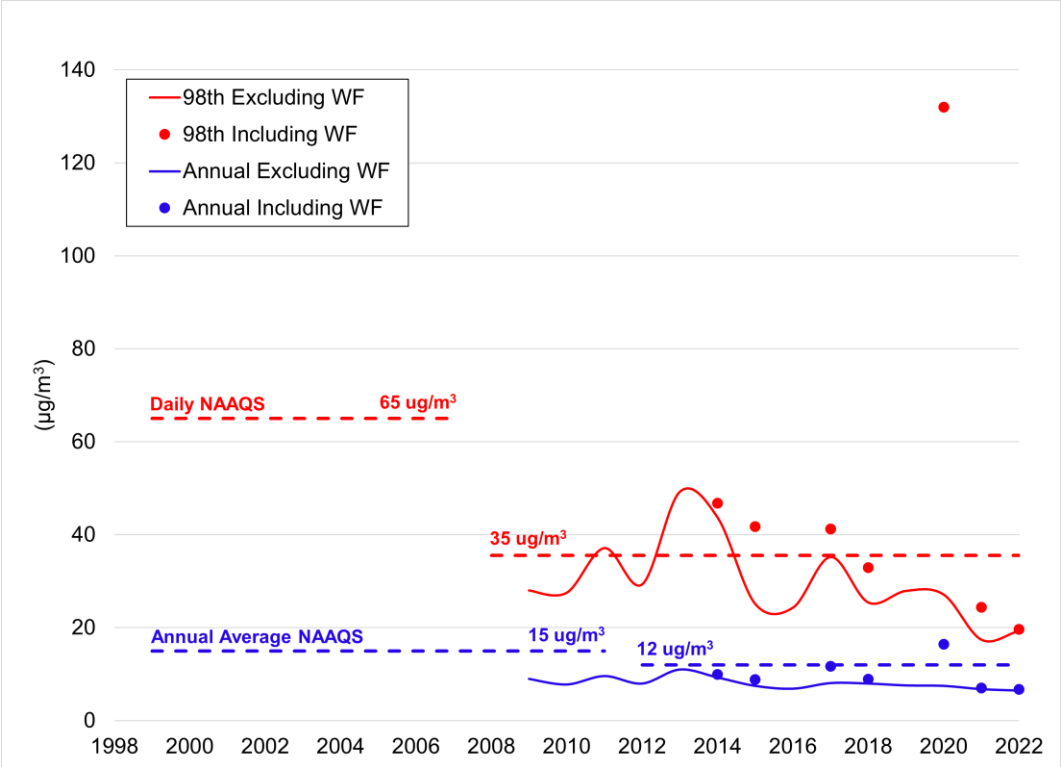


Figure 30: Roseburg $PM_{2.5}$ Trends

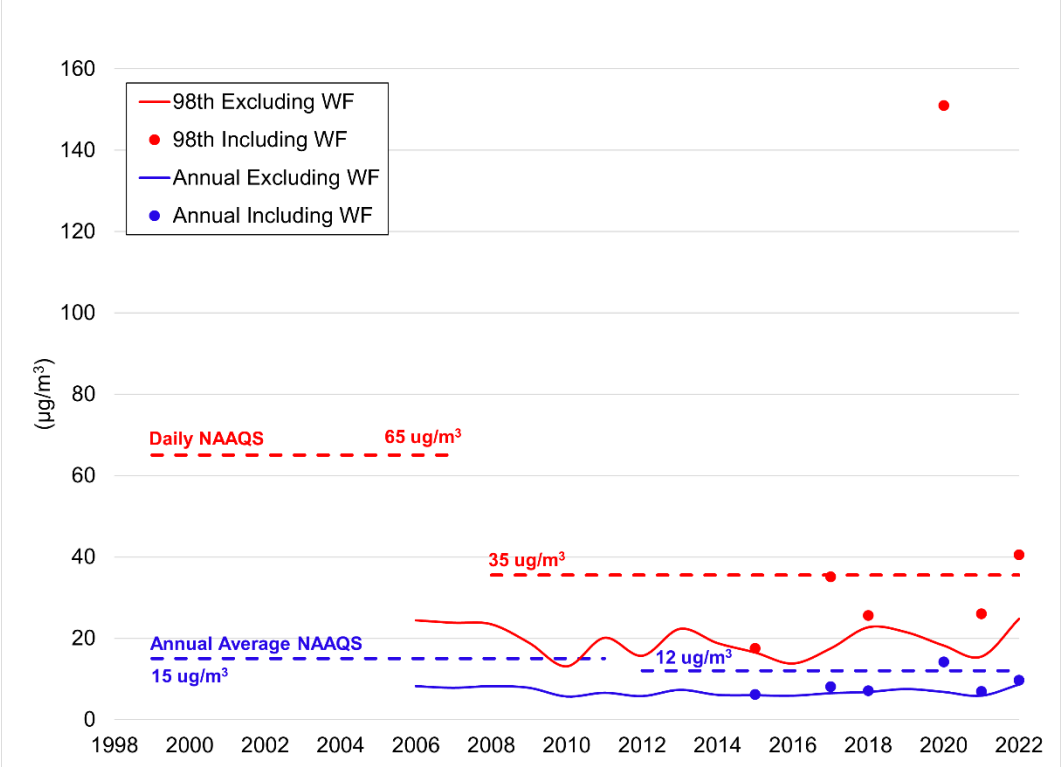


Figure 31: Salem Metro $PM_{2.5}$ Trends

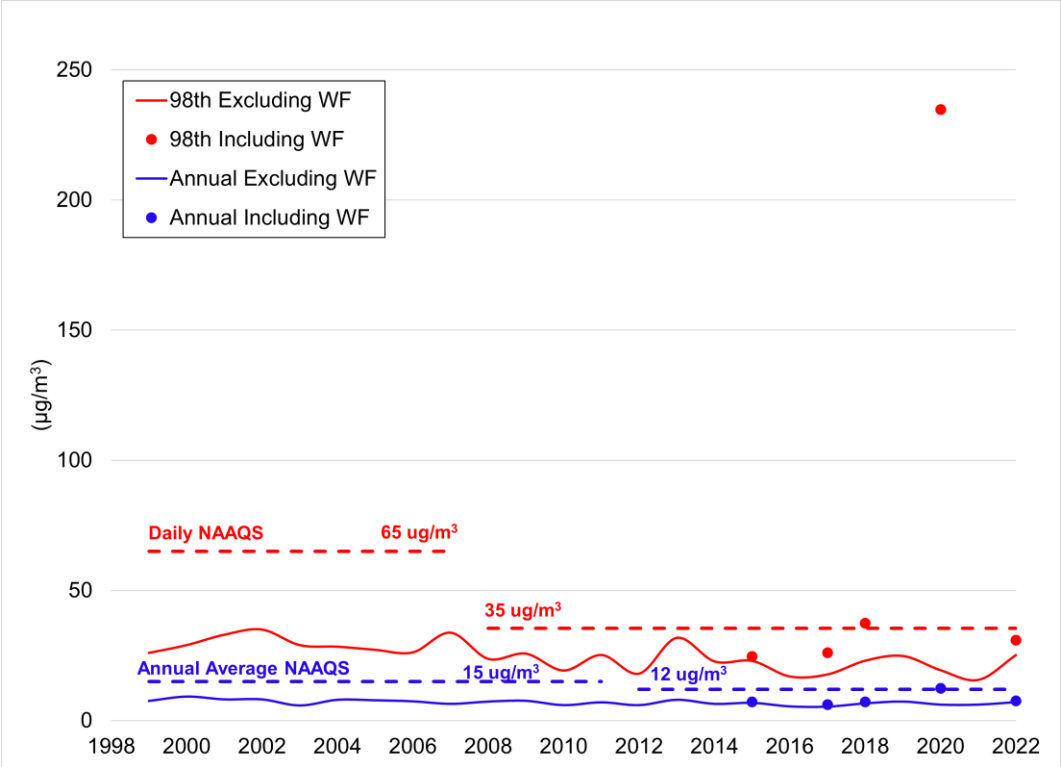


Figure 32: Sisters $PM_{2.5}$ Trends

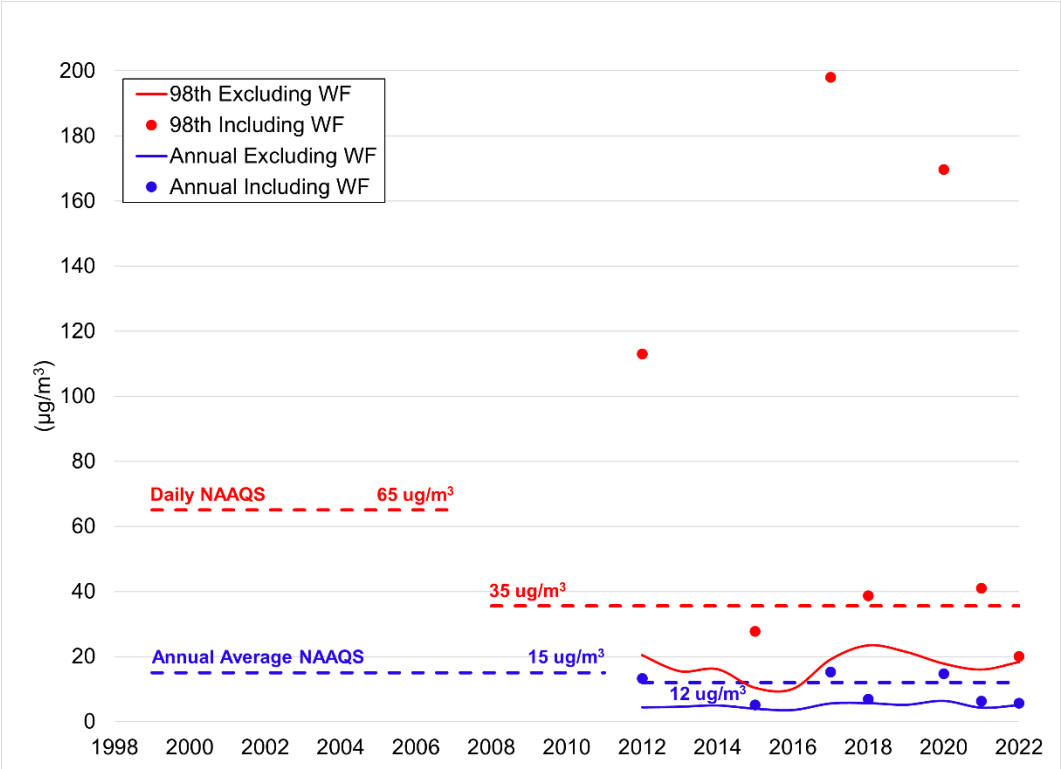


Figure 33: Sweet Home $PM_{2.5}$ Trends

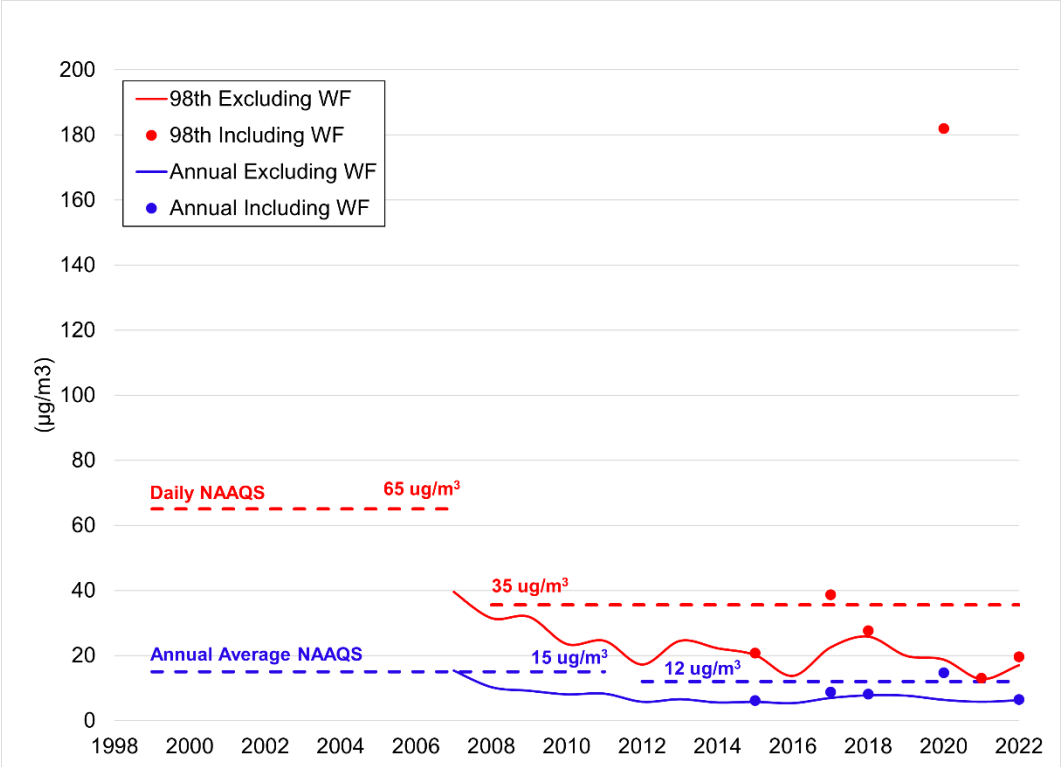
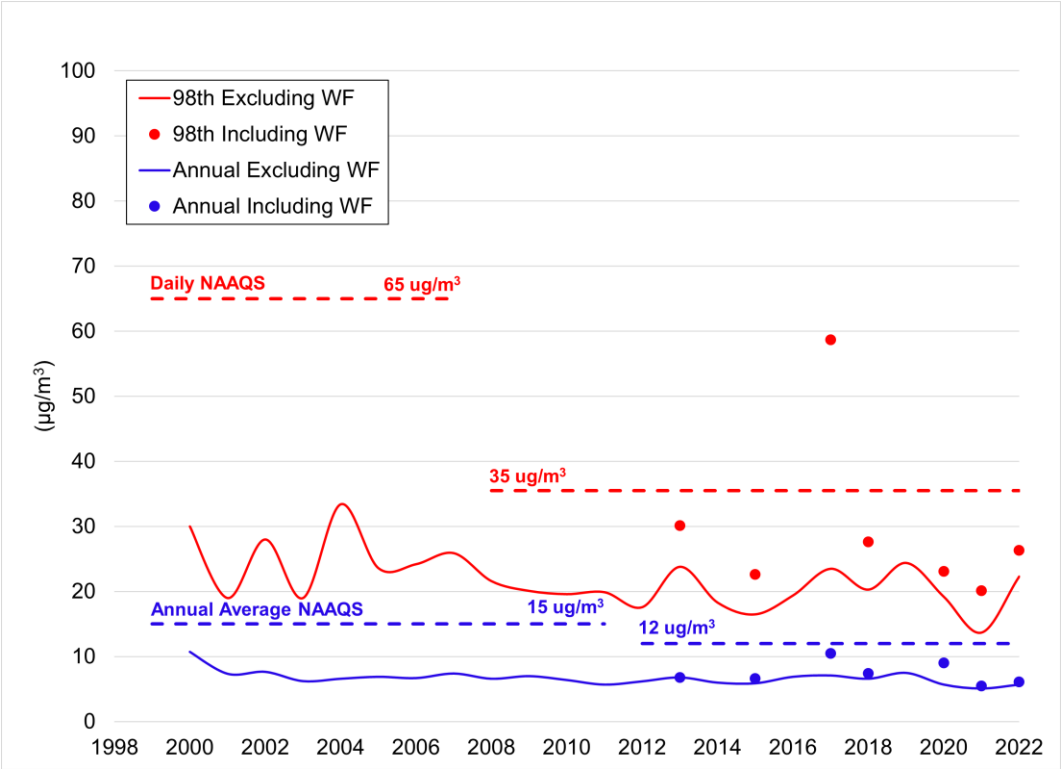


Figure 34: The Dalles $PM_{2.5}$ Trends



PM_{10}

PM_{10} has trended below the daily PM_{10} NAAQS for many years, but the Eugene metro in 2020 and Oakridge in 2022 exceeded it due to wildfire smoke. The figures below show annual second-highest daily averaged PM_{10} concentrations.

Figure 35: PM_{10} Trends

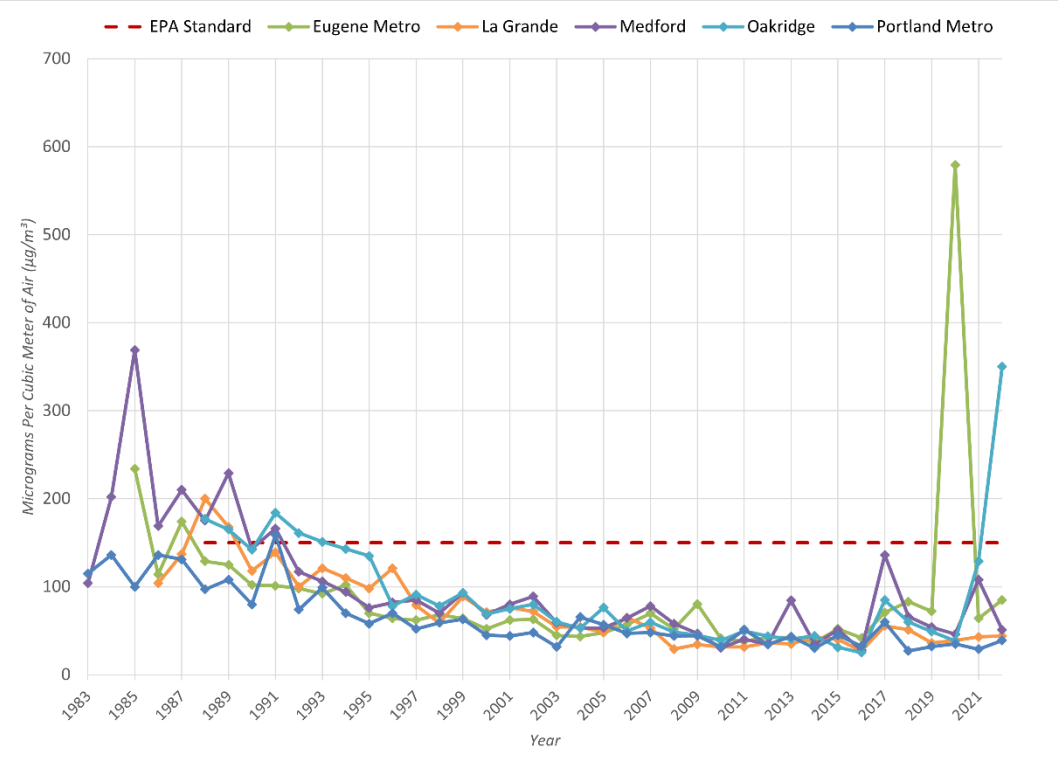
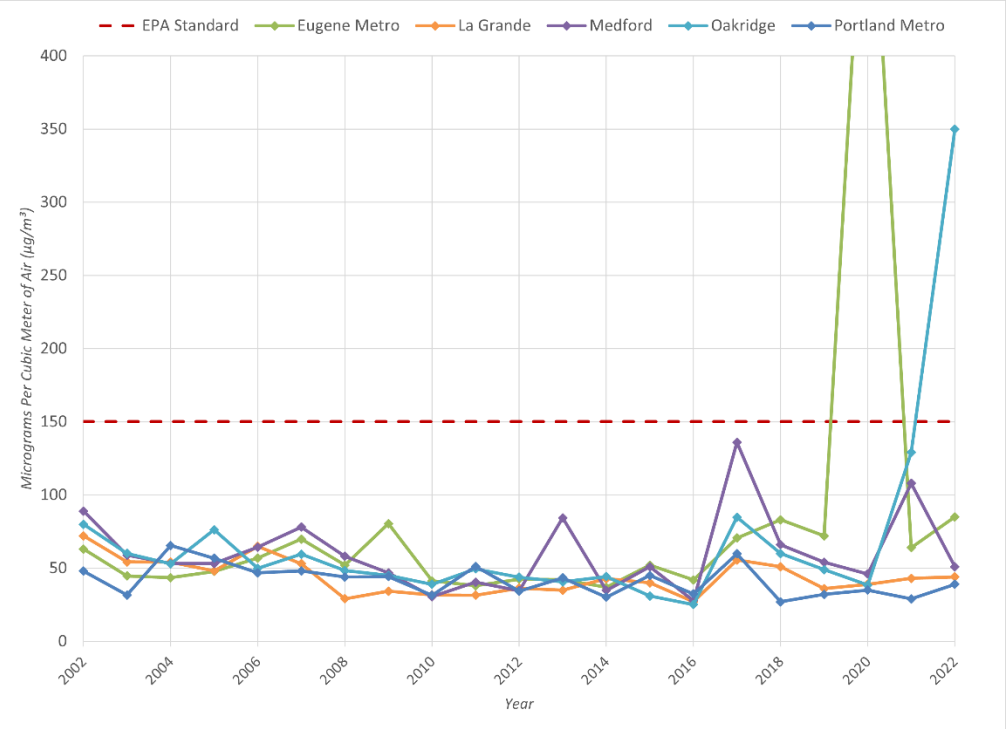


Figure 36: Close-up of PM_{10} Trends



Ozone

Ozone continues to trend very close to the eight-hour ozone NAAQS and many monitoring areas have experienced an increase in ground-level ozone concentrations. The figures below show annual fourth-highest daily maximums of averaged eight-hour ozone concentrations.

Figure 37: Ozone Trends

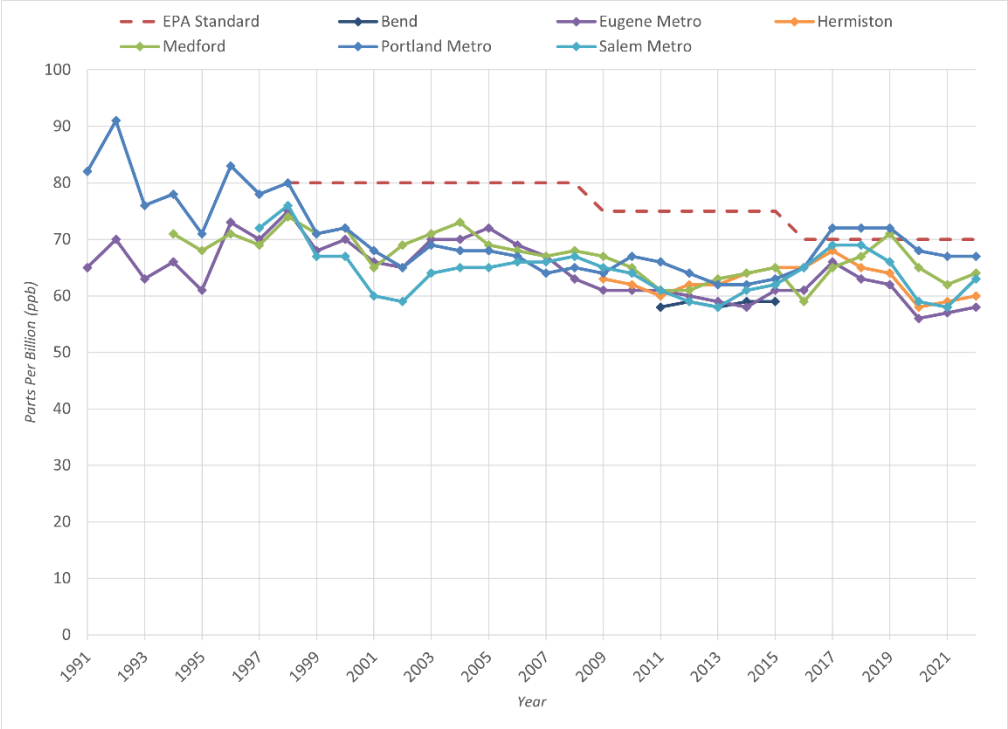
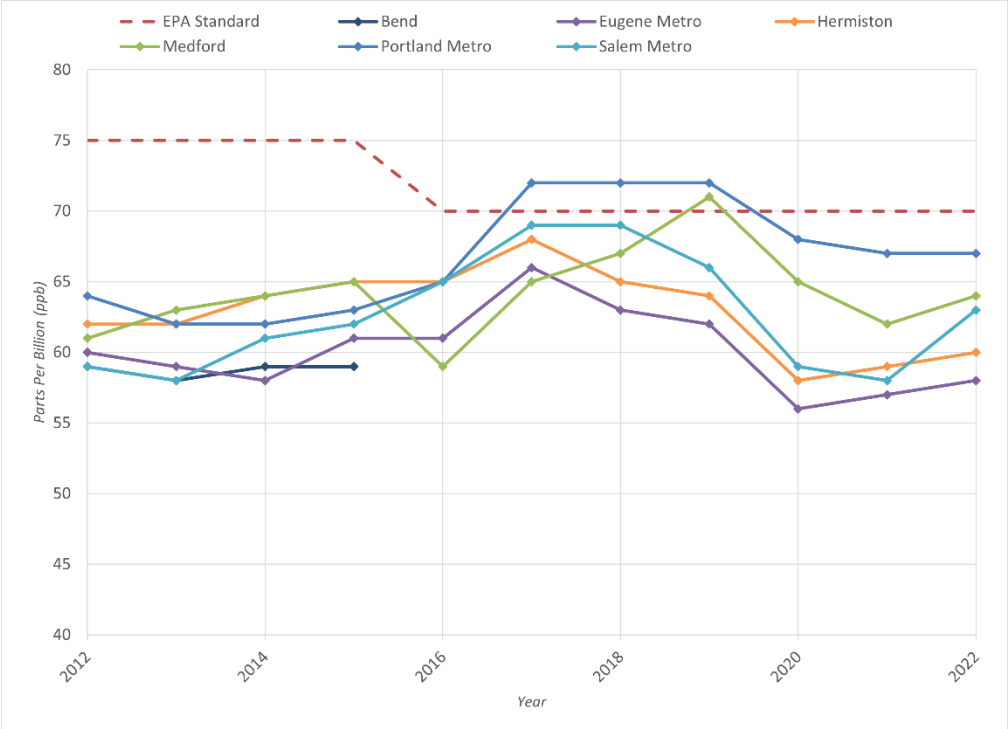


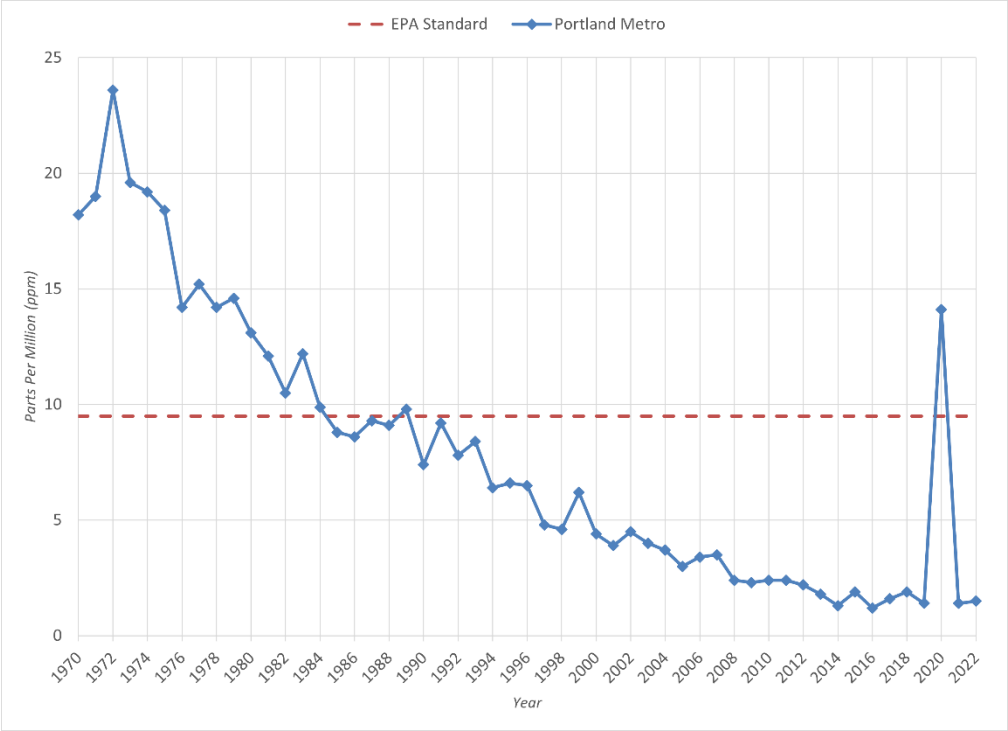
Figure 38: Close-up of Ozone Trends



Carbon Monoxide

Carbon monoxide continues to trend below the eight-hour carbon monoxide NAAQS. In the Portland metro in 2020, however, carbon monoxide exceeded it due to wildfire smoke. The figure below shows annual second-highest daily maximum of averaged eight-hour carbon monoxide concentrations.

Figure 39: Carbon Monoxide Trend



Nitrogen Dioxide

Nitrogen dioxide continues to trend below the nitrogen dioxide hourly and annual NAAQS. The figures below show annual 98th percentiles of daily maximums of one-hour concentrations and annual average of one-hour nitrogen dioxide concentrations.

Figure 40: Hourly Nitrogen Dioxide Trends

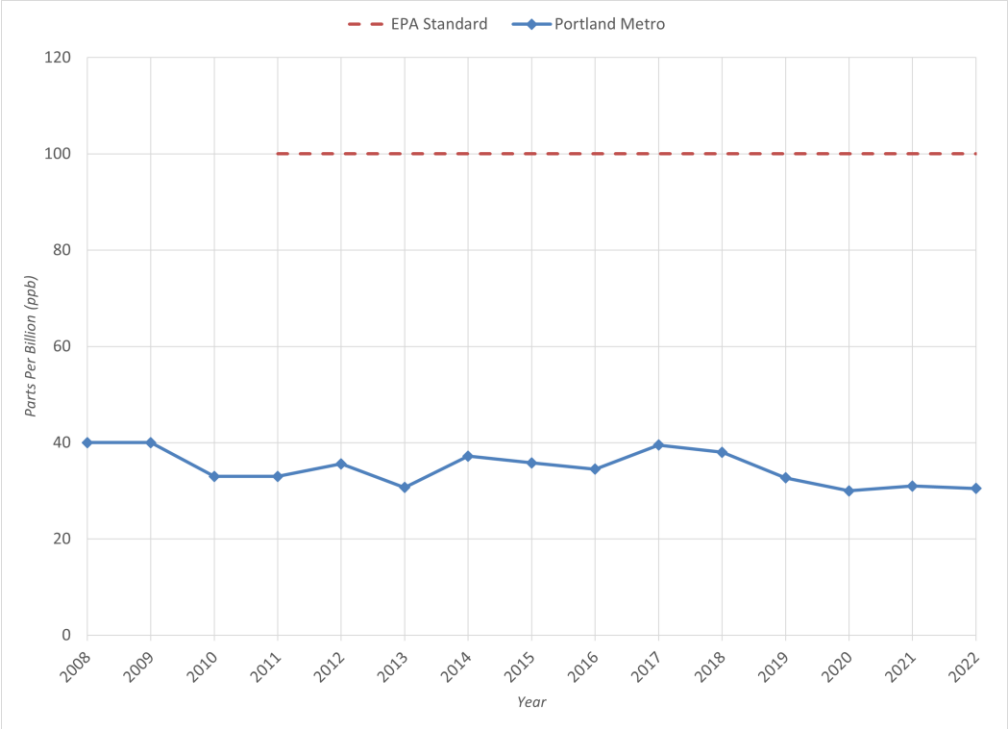
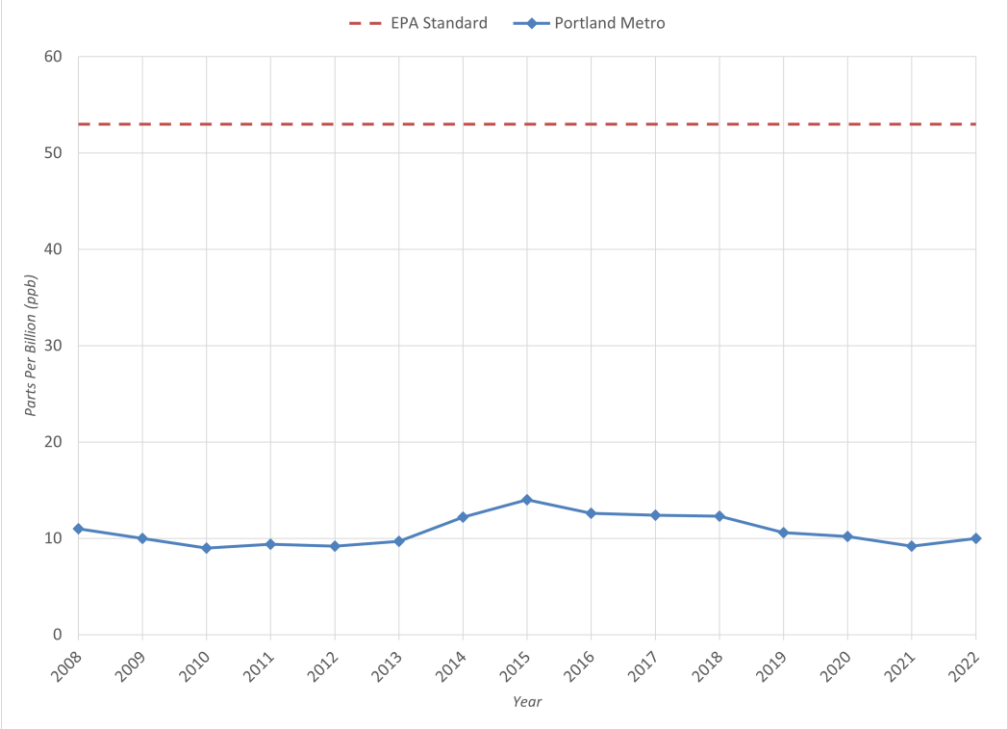


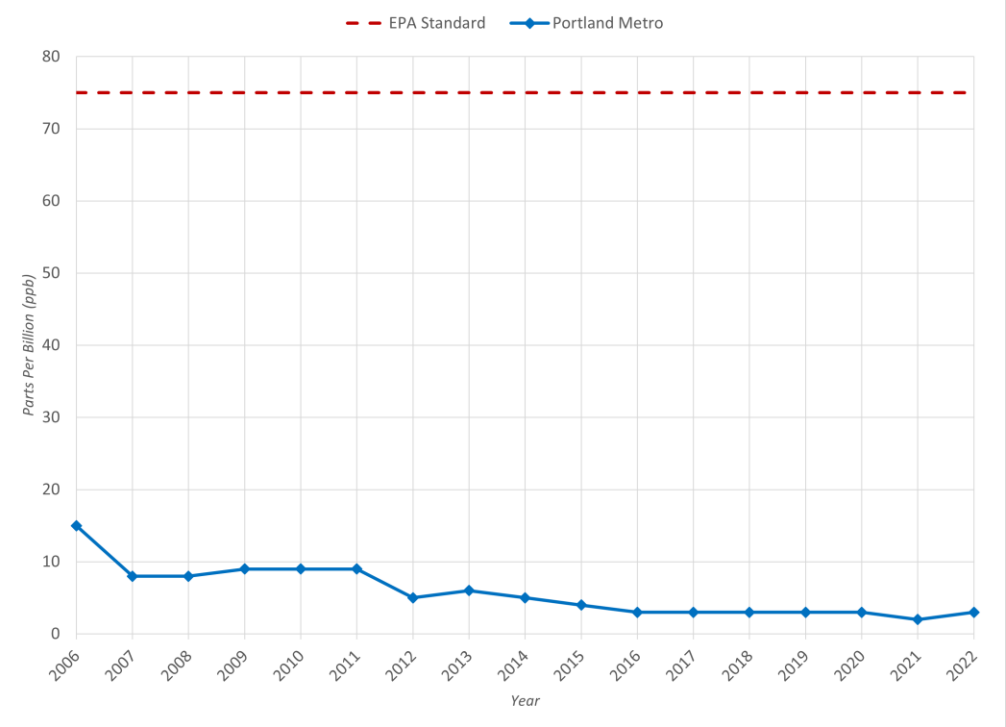
Figure 41: Annual Nitrogen Dioxide Trends



Sulfur Dioxide

Sulfur dioxide continues to trend well below the hourly sulfur dioxide NAAQS. The figure below shows annual 99th percentiles of daily maximums of one-hour sulfur dioxide concentrations.

Figure 42: Sulfur Dioxide Trend



2022 Air Quality Index

As part of the CAA, EPA created the "Air Quality Index" to communicate air quality information to the public. It uses a numerical scale used to describe air quality in a monitoring area and divides it into five categories of health risk based on pollutant concentrations in the ambient air. An AQI value is calculated for each criteria pollutant monitored and the highest value is selected to describe the health risk for the entire monitoring area. In Oregon, pollutants that primarily drive the AQI are ozone and $PM_{2.5}$. The table below shows the relationships between AQI categories, AQI values, pollutant concentrations and air quality descriptions. The AQI ranges may also change if the $PM_{2.5}$ NAAQS is revised in 2024. More technical information about the AQI is available through AirNow's website (https://www.airnow.gov/aqi/aqi-basics/).

Table 15: Detailed AQI Information

Health Category	AQI	$PM_{2.5}$ Daily Averaged Concentration, $\mu g/m^3$	Ozone Eight-Hour Averaged Concentration, ppm	Health Risk Description of Air Quality
Good	0 – 50	0.0 – 12.0	0.000 – 0.054	Air quality is satisfactory, and air pollution poses little or no risk
Moderate	51 – 100	12.1 – 35.4	0.055 – 0.070	Air quality is acceptable. However, there may be a risk for some people, particularly those very sensitive to air pollution.
Unhealthy for Sensitive Groups	101 – 150	35.5 – 55.4	0.071 – 0.085	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Unhealthy	151 – 200	55.5 – 150.4	0.086 – 0.105	Members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 – 300	150.5 – 250.4	0.106 – 0.200	Health alert. The risk of health effects is increased for everyone.
Hazardous	301+	250.5 – 500.4	0.200+	Health warning of emergency conditions. everyone is more likely to be affected.

AQI Summary

DEQ and LRAPA monitor air quality in 60 cities and areas throughout the state. Most sites monitor all year, but a handful only monitor during summer. The table lists all the monitoring locations in Oregon, the number of days in each AQI health category, how many days were missed (often due to equipment failure) and how many days were expected to be monitored. Historical AQI summary data can be found in Appendix 3: AQI Historical Data.

Table 16: 2022 AQI Summary

Locations	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing days	Expected Days	Comment
Albany	315	48	2	0	0	0	0	365	
Ashland	330	29	3	3	0	0	0	365	
Baker City	318	44	3	0	0	0	1	365	
Beaverton	330	33	0	2	0	0	0	365	
Bend	310	50	3	1	1	0	0	365	Four sites
Brookings	160	8	0	0	0	0	197	365	
Burns	273	90	2	0	0	0	0	365	
Carus	308	50	3	2	0	0	2	365	
Cave Junction	257	93	10	4	0	0	1	365	
Chiloquin	326	13	0	1	0	0	25	365	
Coos Bay	338	17	1	0	0	0	9	365	
Corvallis	325	29	0	0	0	0	11	365	
Cottage Grove	306	49	4	3	0	0	3	365	
Cove	338	23	3	1	0	0	0	365	
Crater Lake	92	14	0	1	0	0	2	109	June 14 – Sept 30
Dallas	327	28	1	0	0	0	9	365	
Detroit	319	7	2	0	0	0	37	365	
Enterprise	297	32	3	4	0	0	29	365	
Estacada	309	51	0	0	0	0	5	365	
Eugene	277	79	6	3	0	0	0	365	Five sites
Florence	346	9	0	0	0	0	10	365	
Forest Grove	316	40	2	0	0	0	7	365	
Government Camp	55	0	1	0	0	0	6	62	Aug 4 – Oct 4
Grants Pass	265	95	1	4	0	0	0	365	
Gresham	316	39	1	2	0	0	7	365	

Locations	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing days	Expected Days	Comment
Hermiston	298	62	3	0	0	0	2	365	
Hillsboro	305	58	2	0	0	0	0	365	
Hood River	323	30	0	0	0	0	12	365	
John Day	243	121	1	0	0	0	0	365	
Klamath Falls	278	85	1	1	0	0	0	365	
La Grande	315	37	4	0	0	0	9	365	
La Pine	239	90	6	7	1	0	22	365	
Lakeview	306	55	4	0	0	0	0	365	
Lyons	306	55	2	0	0	0	2	365	
Madras	304	60	1	0	0	0	0	365	
McMinnville	57	32	1	1	0	0	0	93	Installed Sept 29
Medford	268	89	6	2	0	0	0	365	
Mill City	245	71	4	0	0	0	45	365	
Oakridge	249	79	3	16	11	7	0	365	
Ontario	272	52	2	1	0	0	38	365	
Pendleton	316	46	3	0	0	0	0	365	
Portland	273	85	5	2	0	0	0	365	Nine sites
Prineville	320	37	2	0	0	0	6	365	
Redmond	343	17	1	0	0	0	4	365	
Roseburg	237	79	6	2	0	0	41	365	
Salem	278	79	6	2	0	0	0	365	Two sites
Sauvie Island	325	33	1	2	0	0	4	365	
Shady Cove	336	27	2	0	0	0	0	365	
Silverton	317	46	1	1	0	0	0	365	
Sisters	337	24	1	3	0	0	0	365	
Springfield	339	23	1	0	0	0	2	365	
Sunriver	321	19	3	3	0	0	19	365	
Sweet Home	327	35	0	0	0	0	3	365	
Talent	328	31	5	1	0	0	0	365	
The Dalles	319	26	0	0	0	0	20	365	
Tillamook	287	5	0	0	0	0	73	365	Site moved
Toledo	241	8	0	0	0	0	4	254	Installed April 22

Locations	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing days	Expected Days	Comment
Tualatin	296	66	2	1	0	0	0	365	
Turner	294	64	4	0	0	0	3	365	
Woodburn	225	34	1	1	0	0	20	281	Installed March 25

AQI Graphs

The AQI graphs below show the AQI value for each day for each monitoring city in Oregon. The AQI calculation uses $PM_{2.5}$ data for most locations, and uses both $PM_{2.5}$ and ozone at the following locations: Carus, Eugene, Hermiston, Medford, Portland, Salem, Sauvie Island, Talent, Tualatin and Turner. Within each graph is a table of AQI health categories, the number of days within each category, and the number of wildfire days within each category. A wildfire day is any day from July 1 to October 31 when the daily averaged $PM_{2.5}$ concentration was 25.0 µg/m^3 or greater.

Figure 43: 2022 Albany AQI

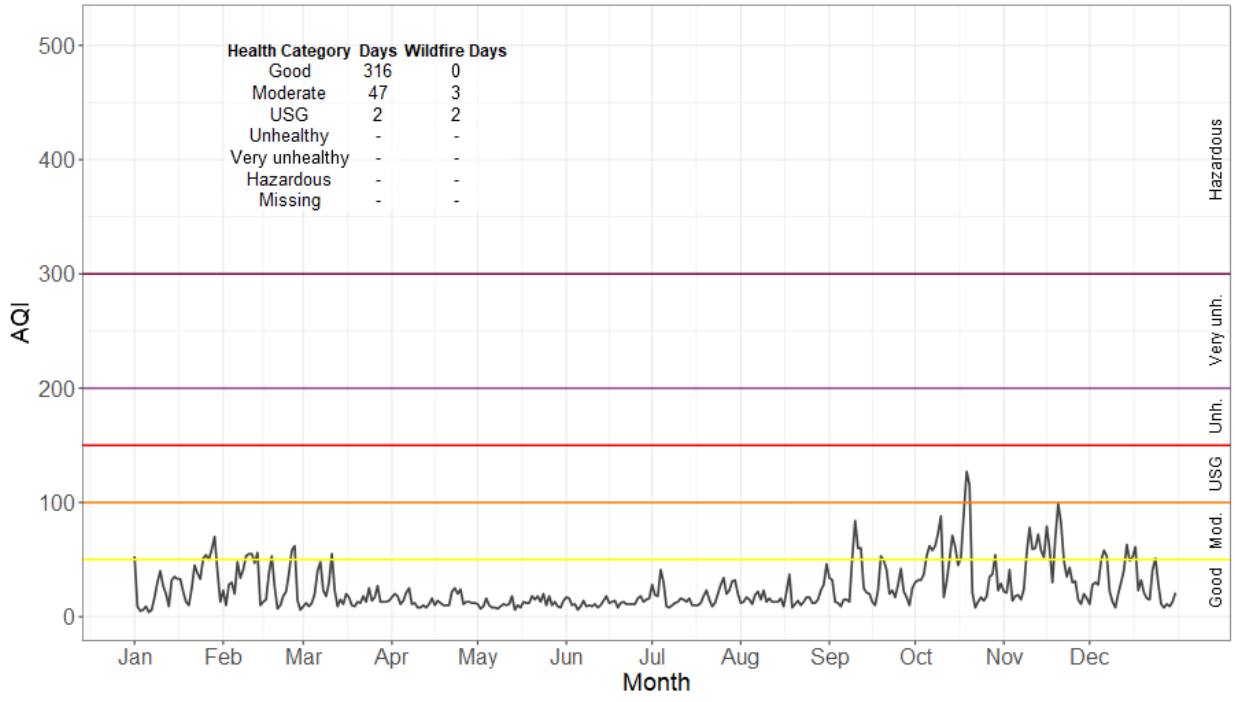


Figure 44: 2022 Ashland AQI

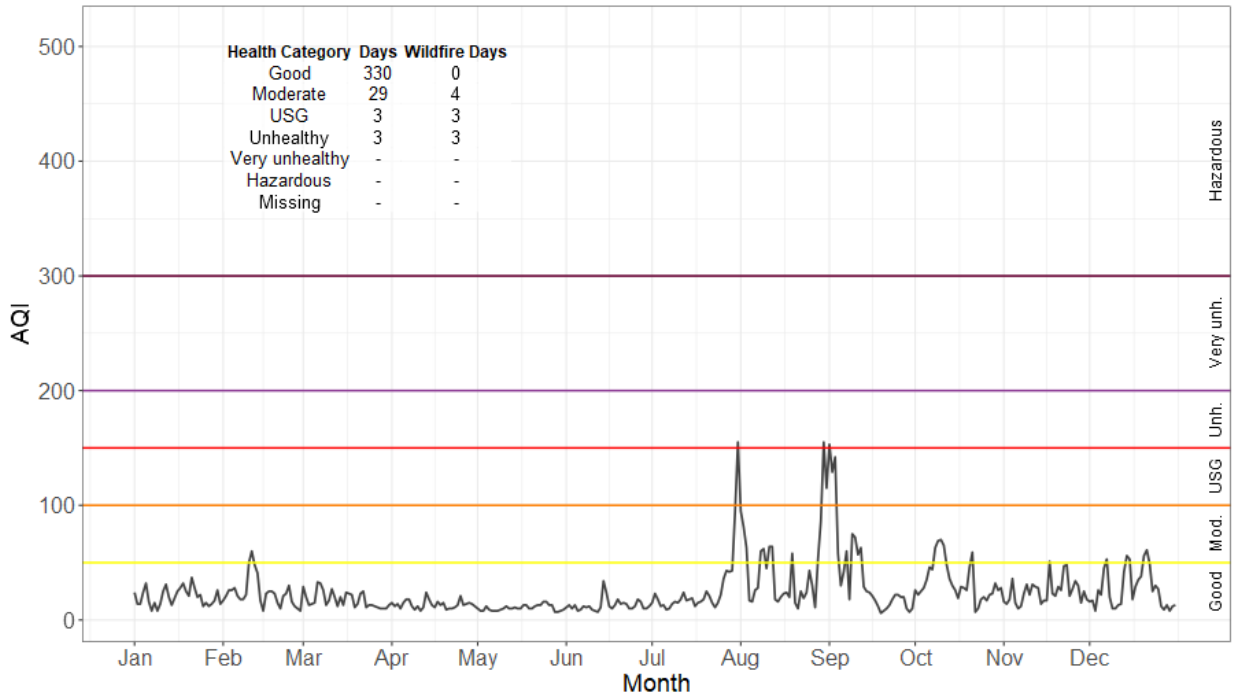


Figure 45: 2022 Baker City AQI

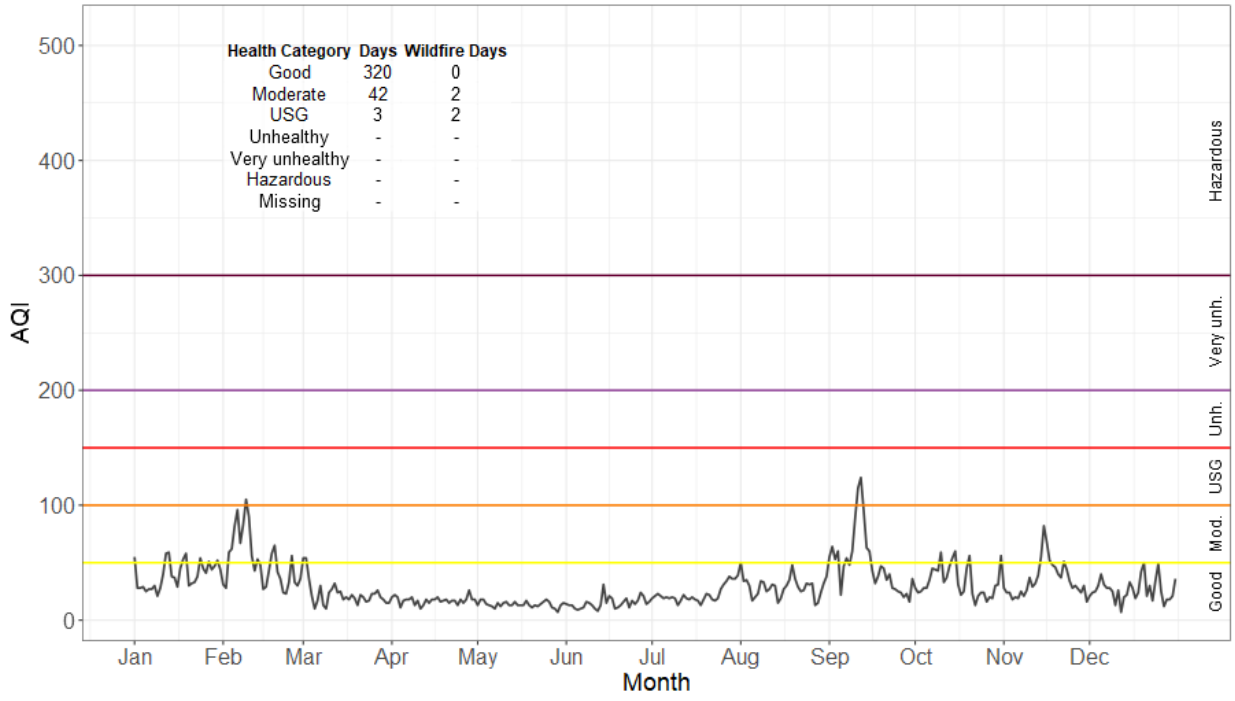


Figure 46: 2022 Beaverton AQI

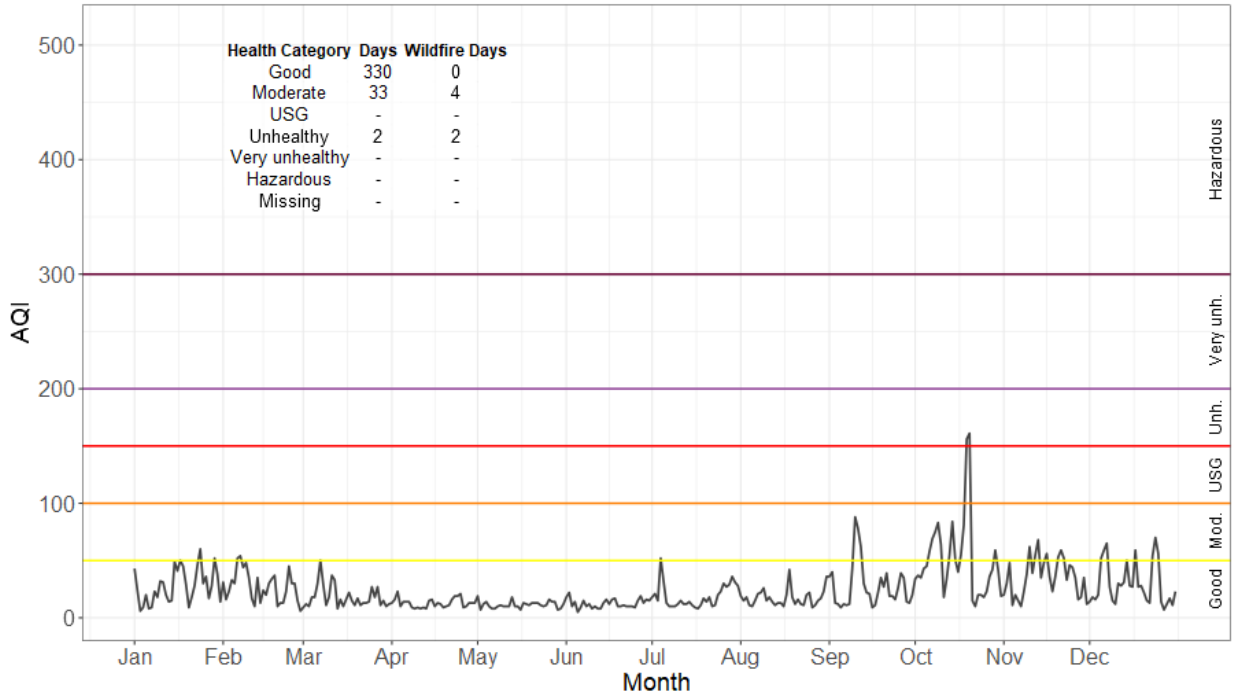


Figure 47: 2022 Bend AQI

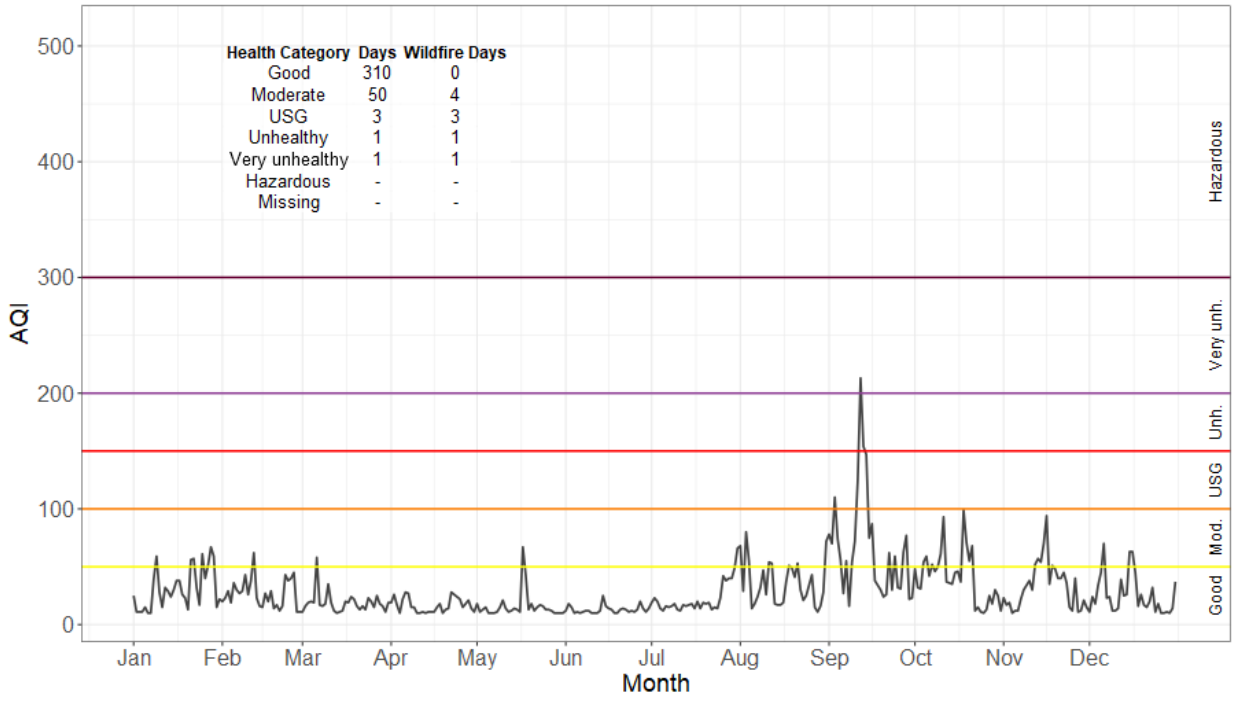


Figure 48: 2022 Brookings AQI

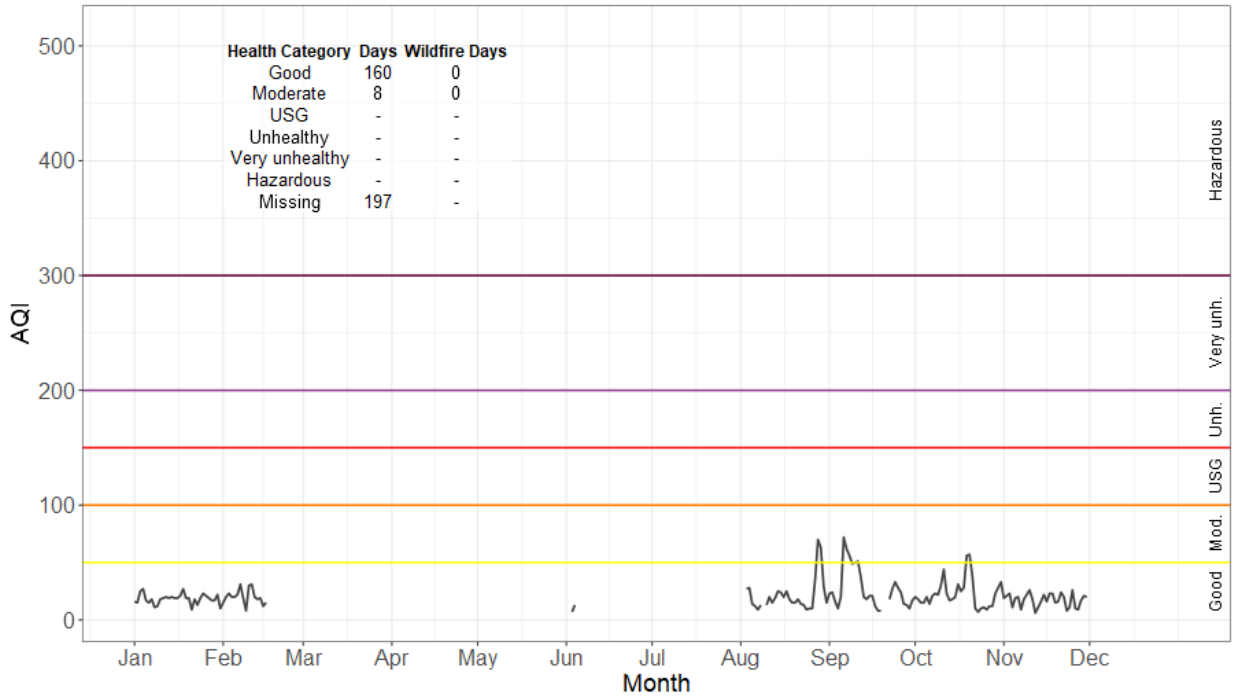


Figure 49: 2022 Burns AQI

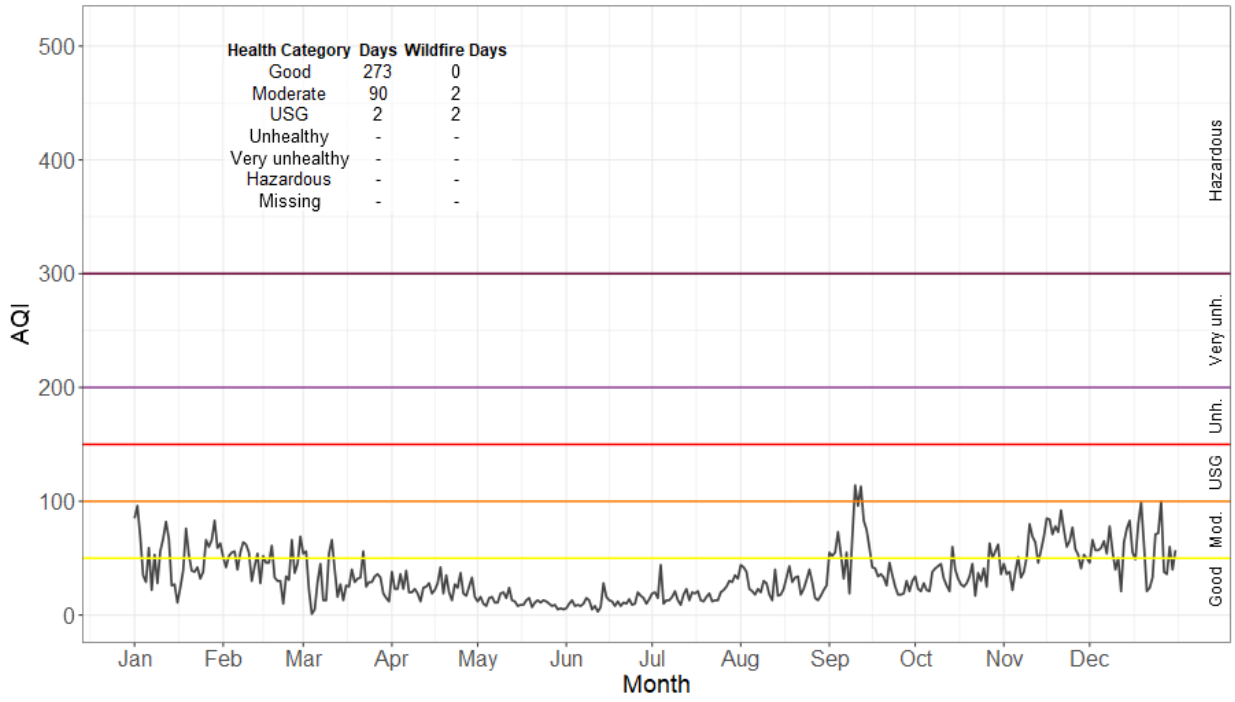


Figure 50: 2022 Carus AQI

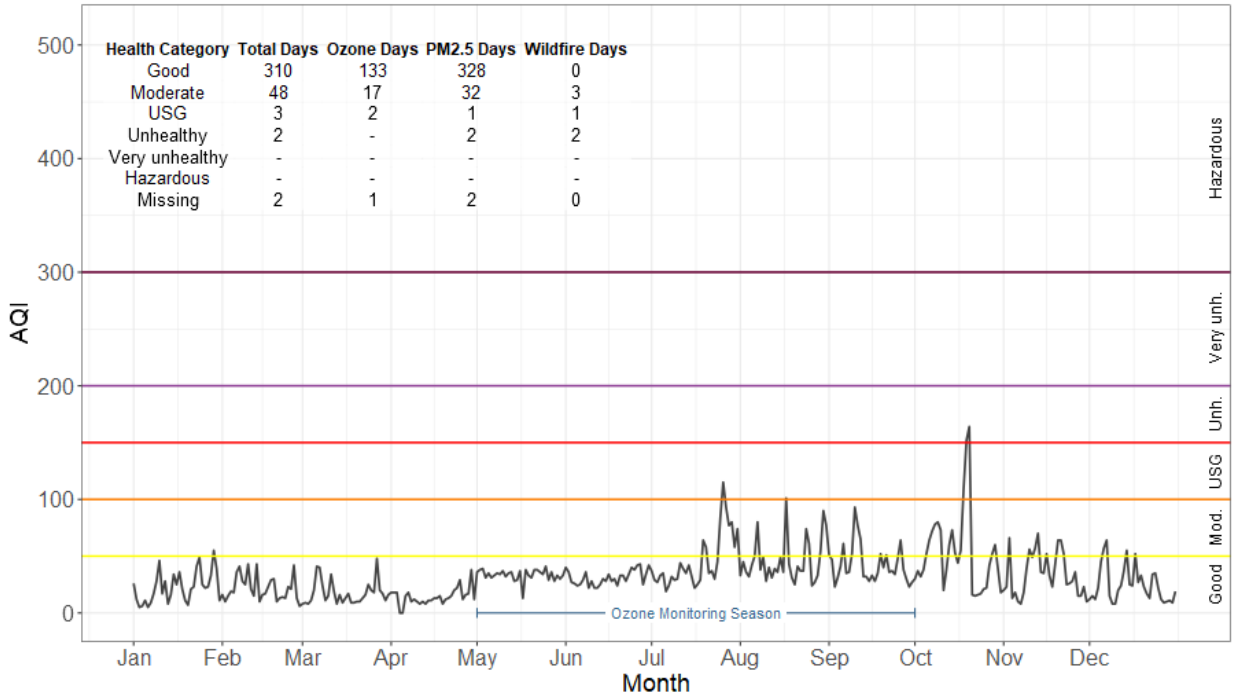


Figure 51: 2022 Cave Junction AQI

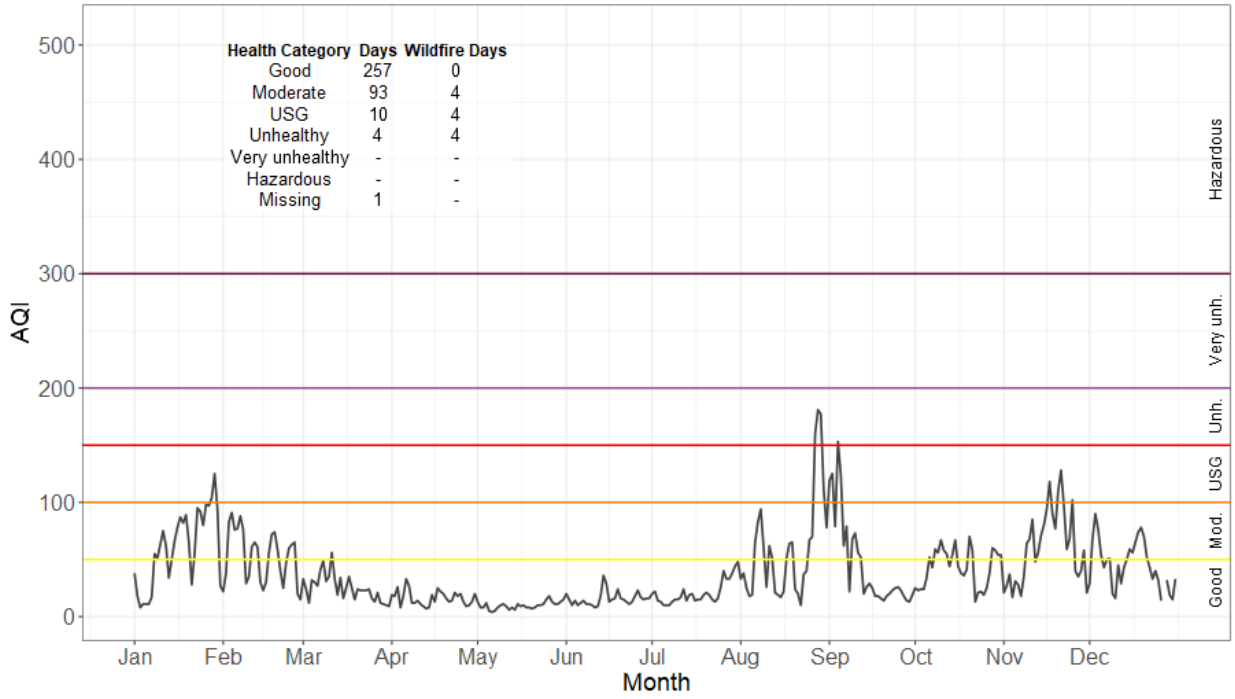


Figure 52: 2022 Chiloquin AQI

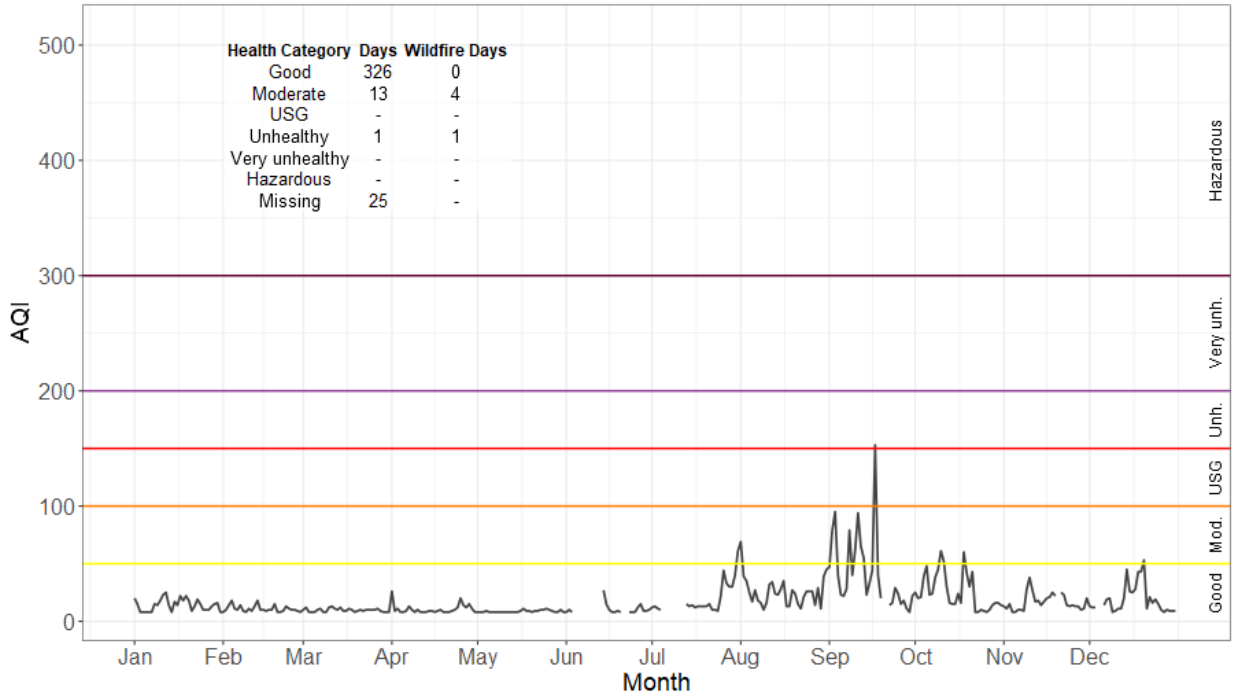


Figure 53: 2022 Coos Bay AQI

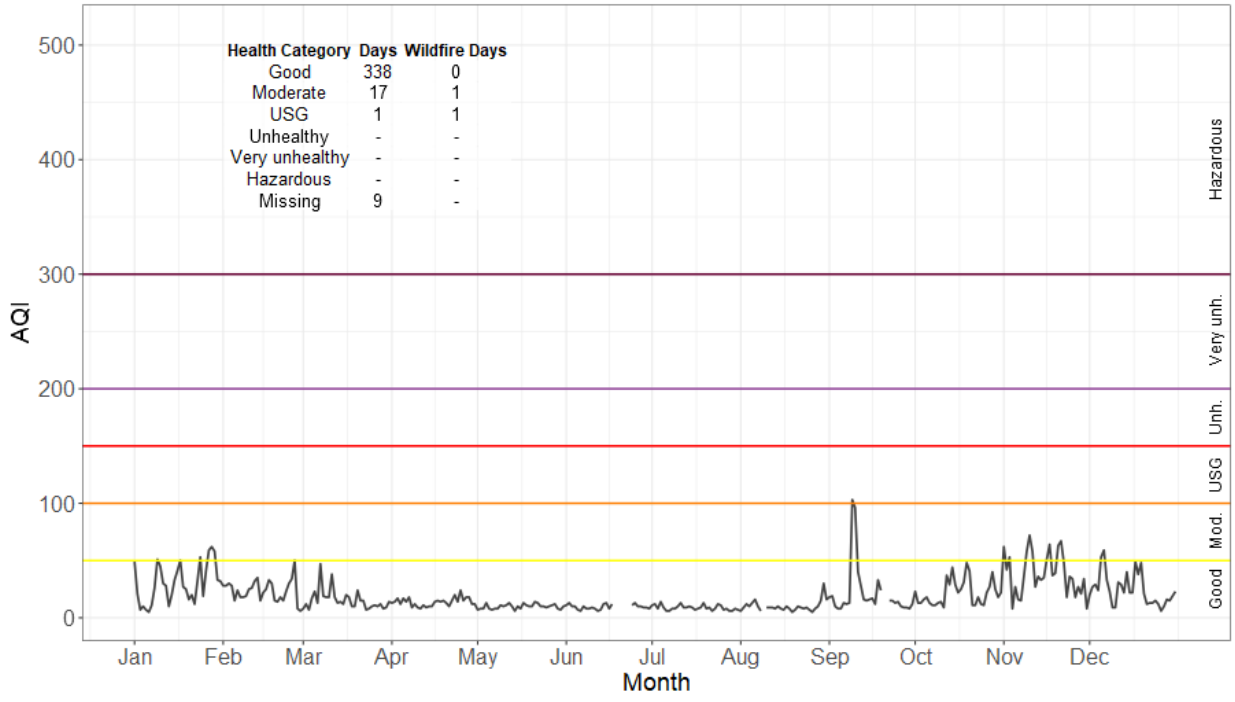


Figure 54: 2022 Corvallis AQI

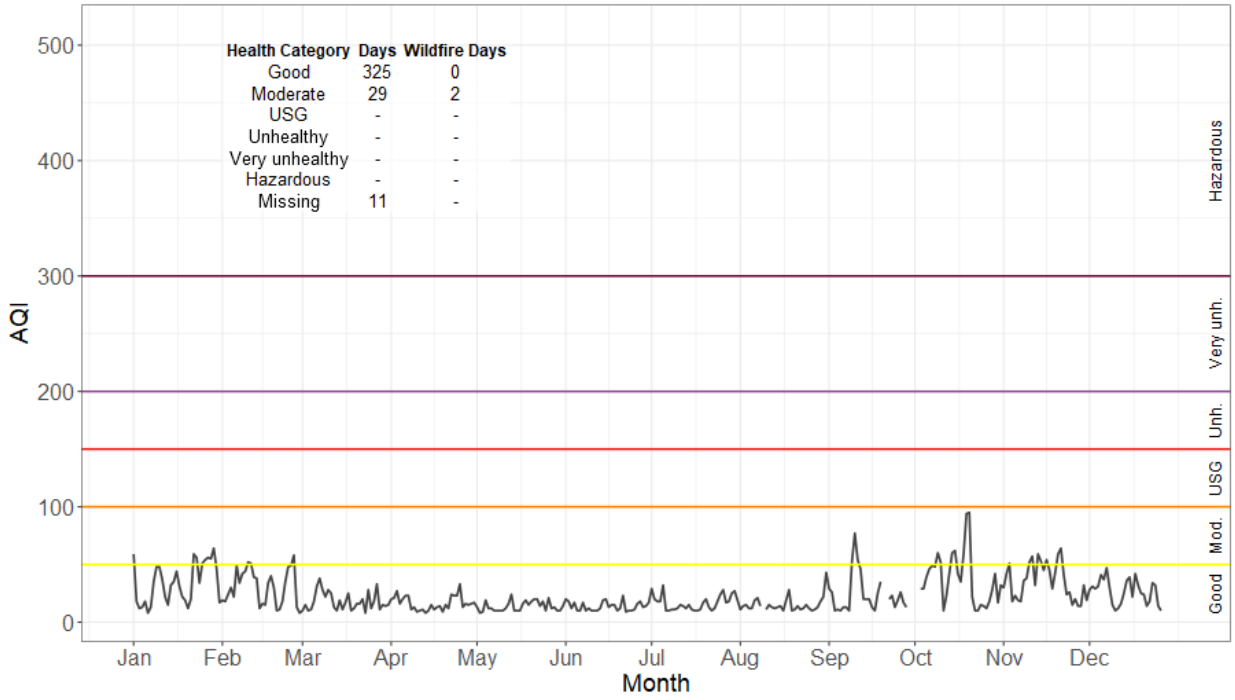


Figure 55: 2022 Cottage Grove AQI

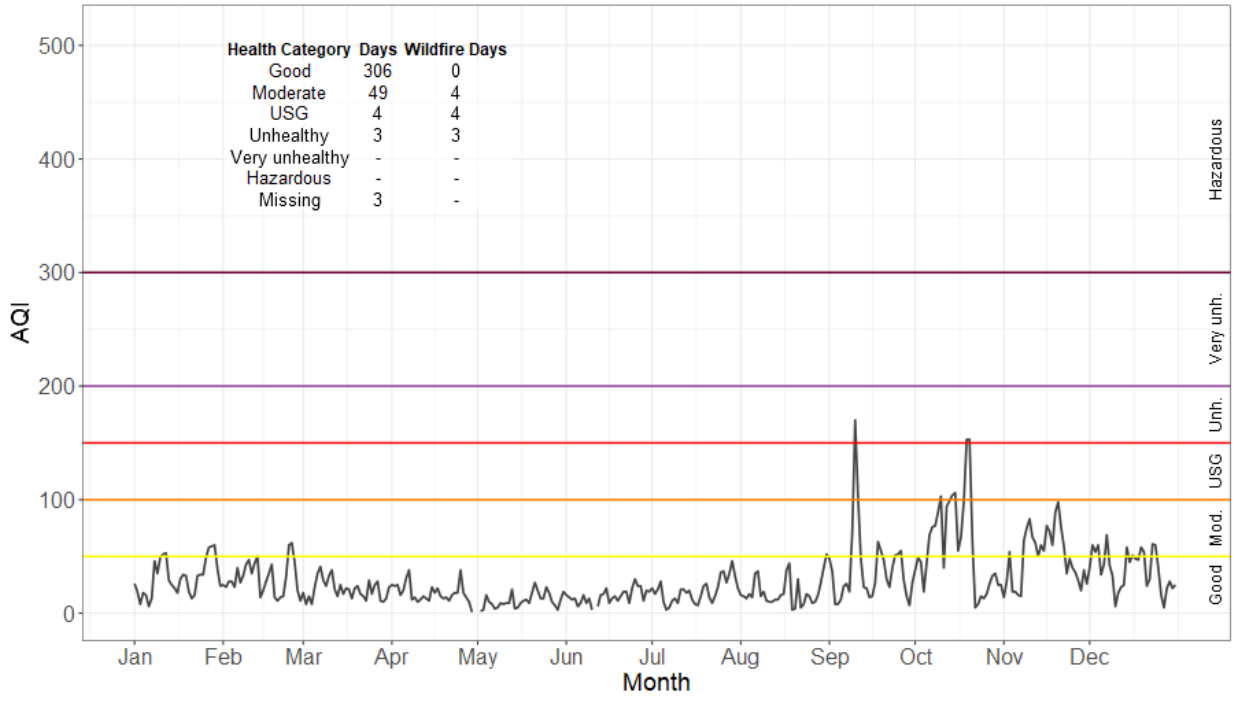


Figure 56: 2022 Cove AQI

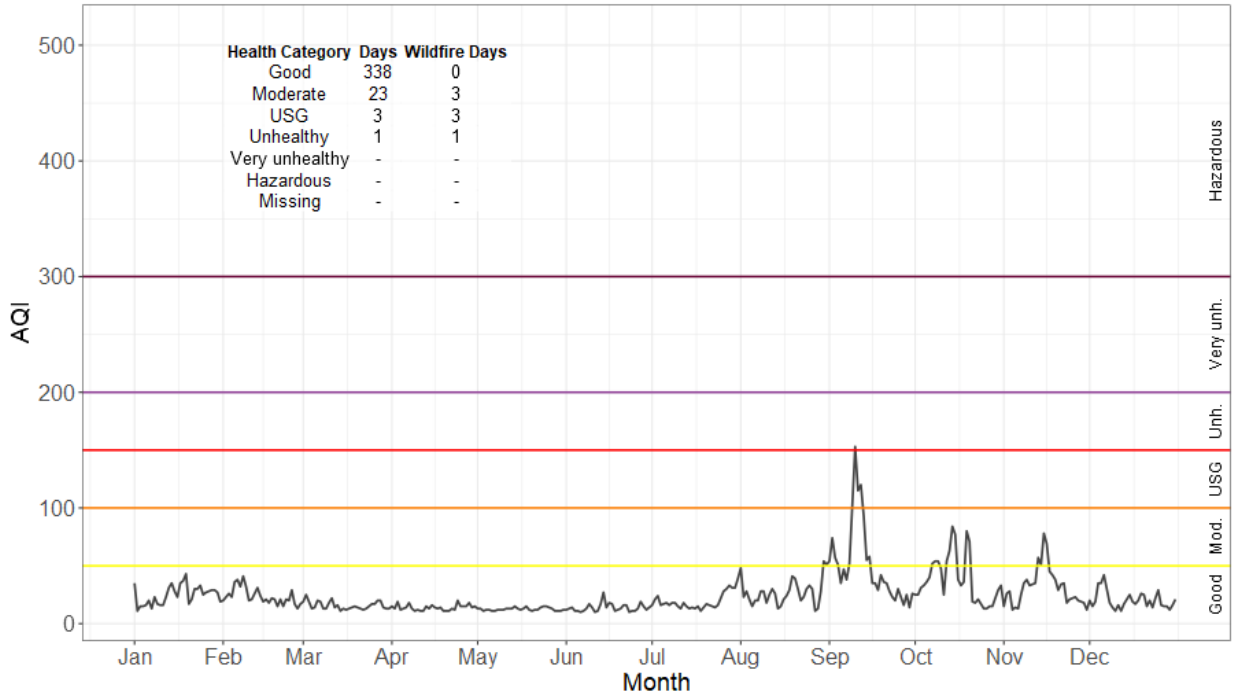


Figure 57: 2022 Crater Lake AQI

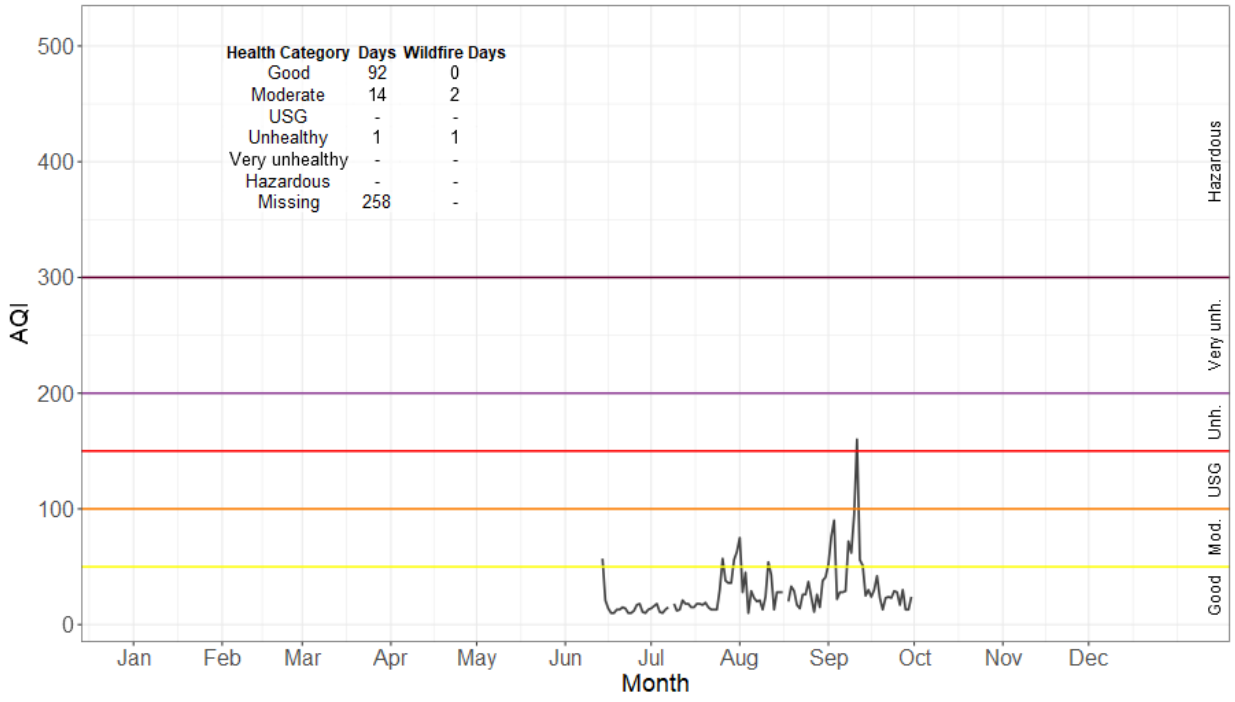


Figure 58: 2022 Dallas AQI

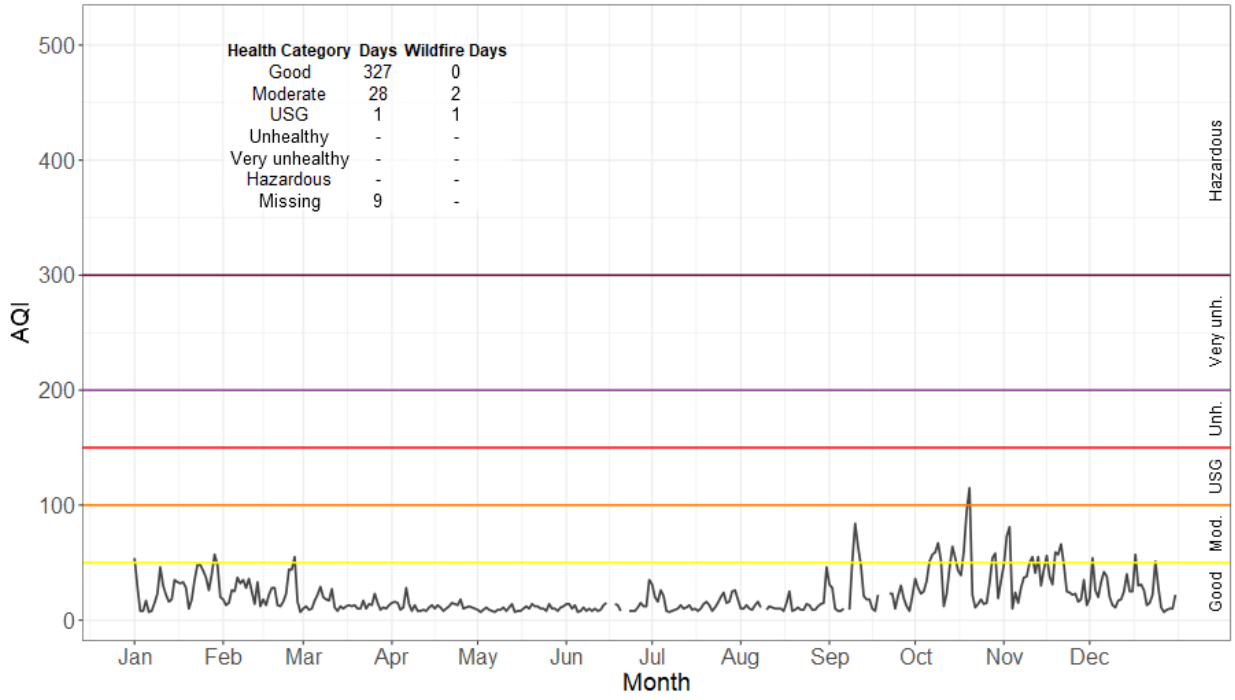


Figure 59: 2022 Detroit AQI

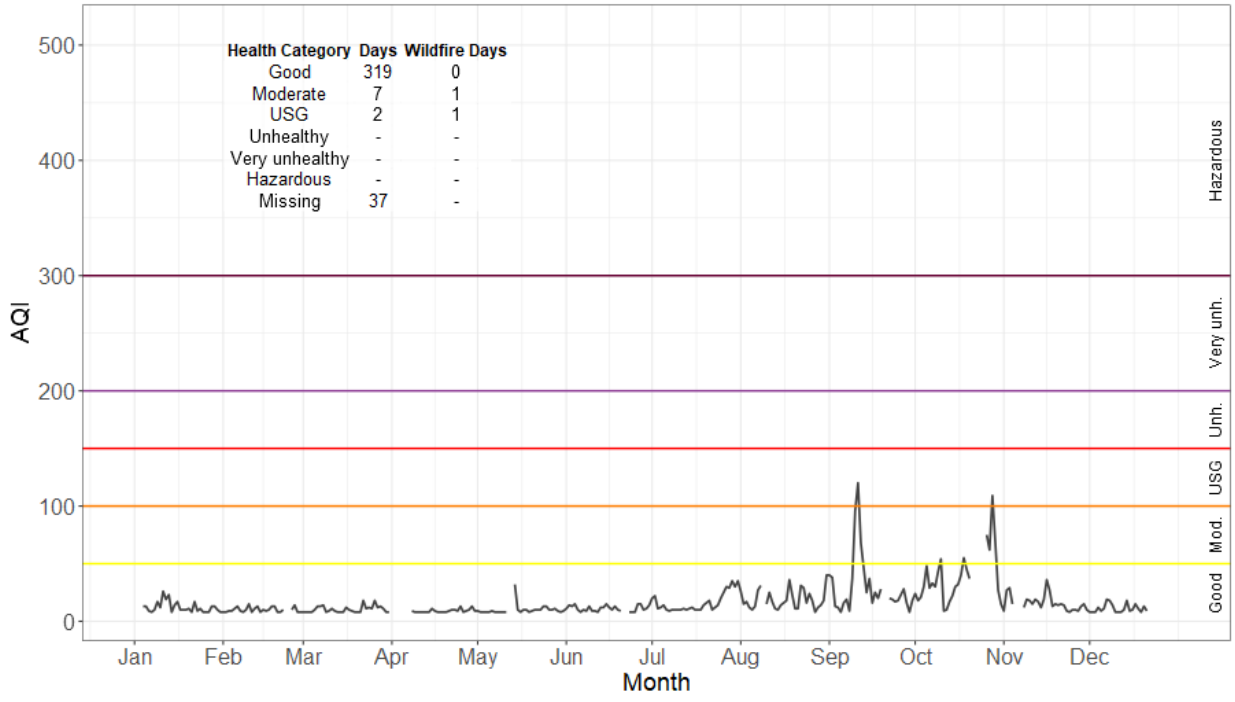


Figure 60: 2022 Enterprise AQI

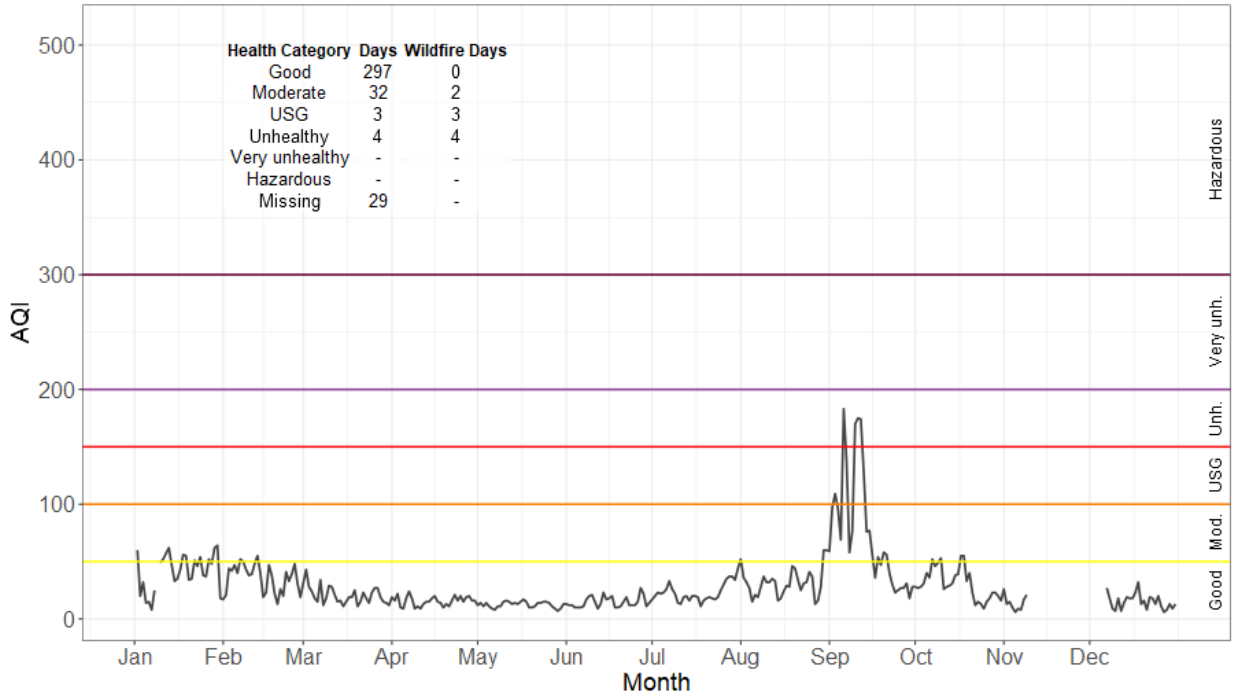


Figure 61: 2022 Estacada AQI

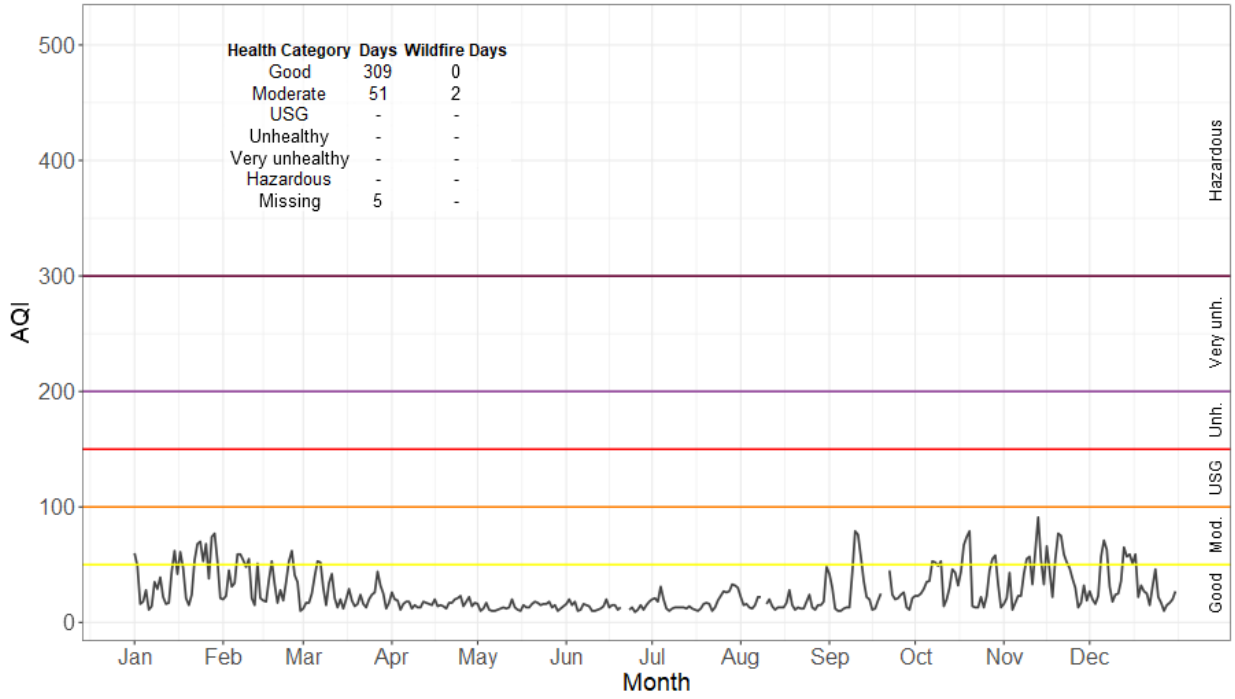


Figure 62: 2022 Eugene AQI

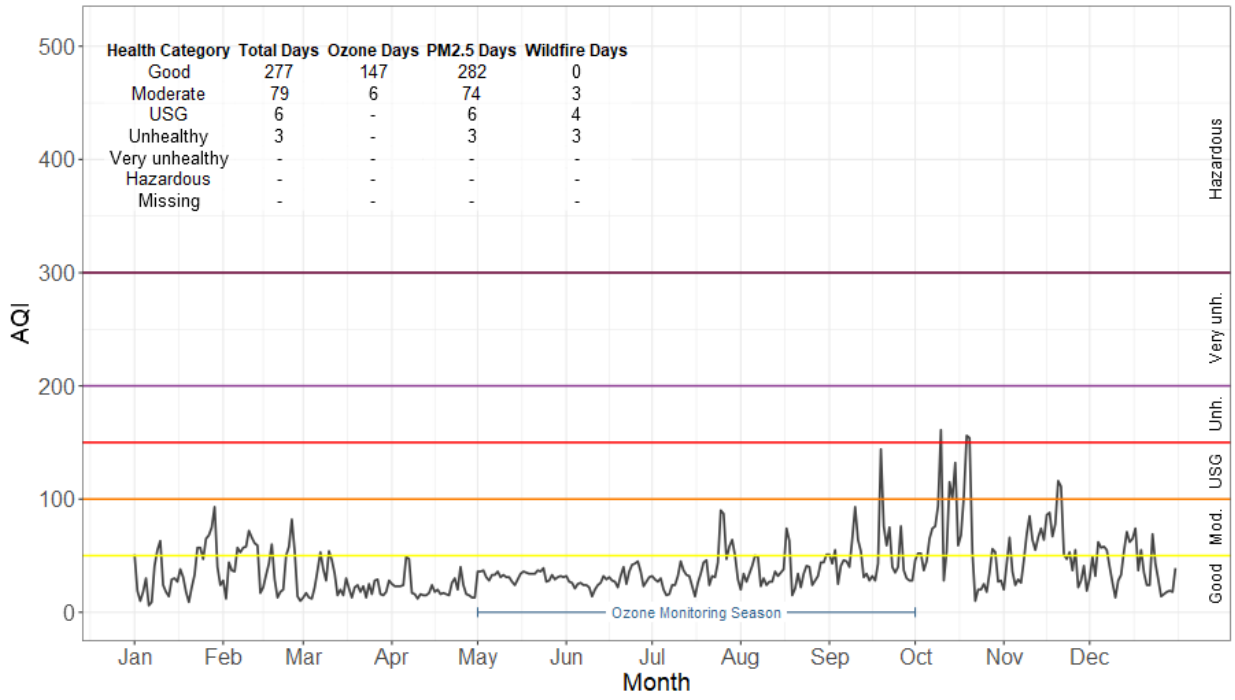


Figure 63: 2022 Florence AQI

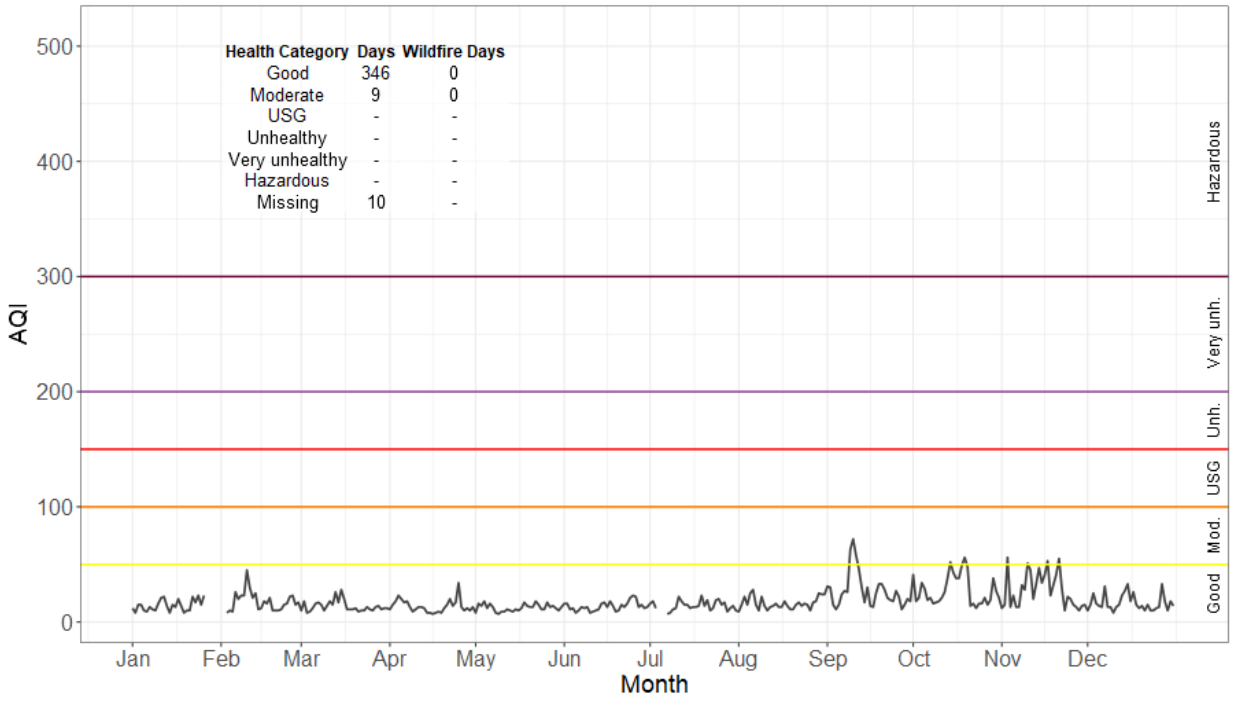


Figure 64: 2022 Forest Grove AQI

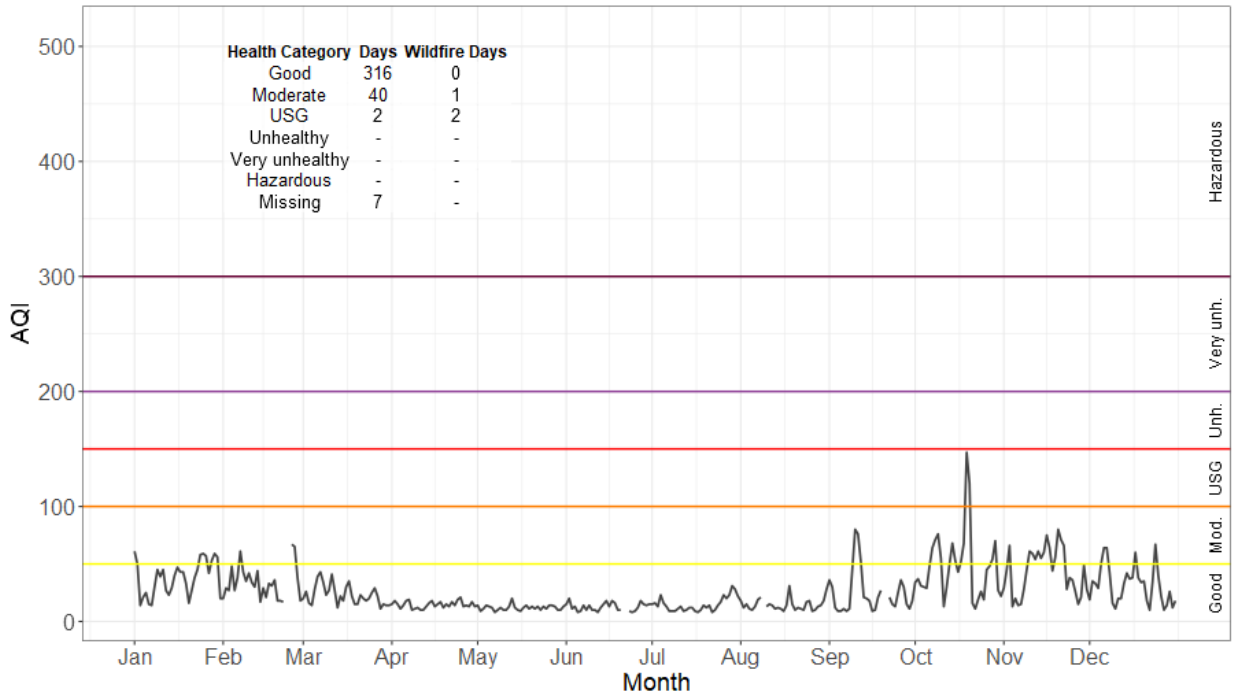


Figure 65: 2022 Government Camp AQI

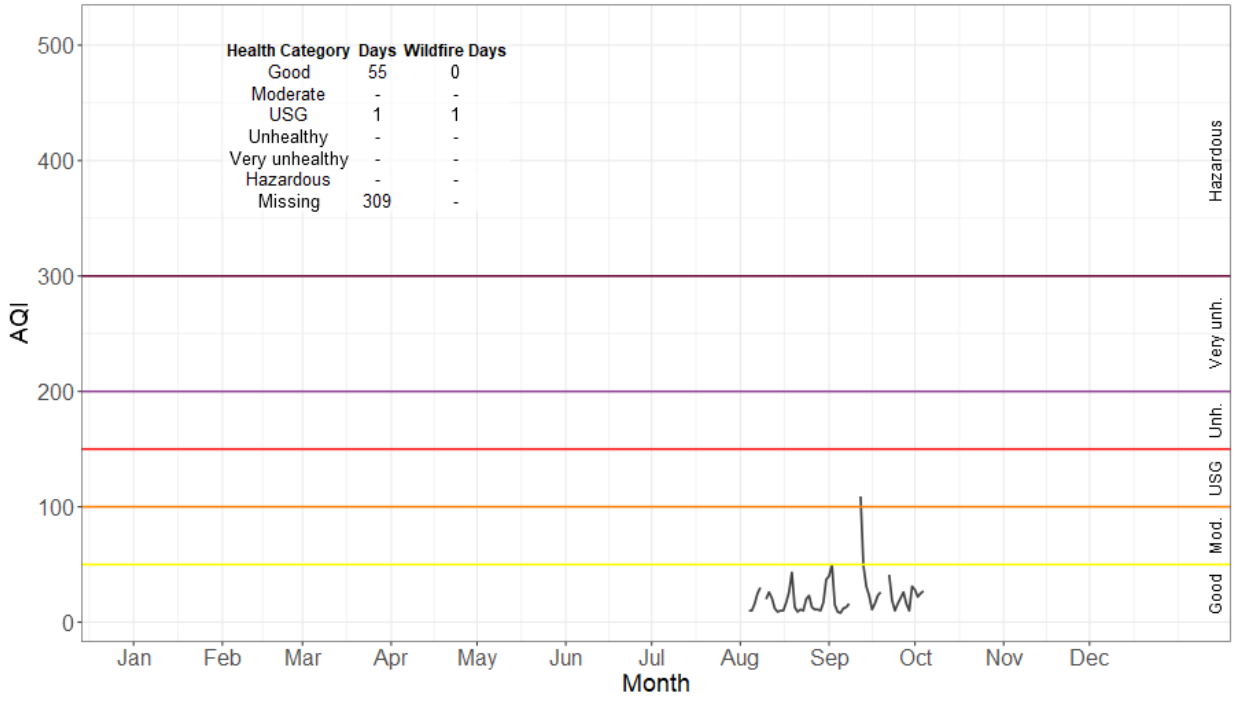


Figure 66: 2022 Grants Pass AQI

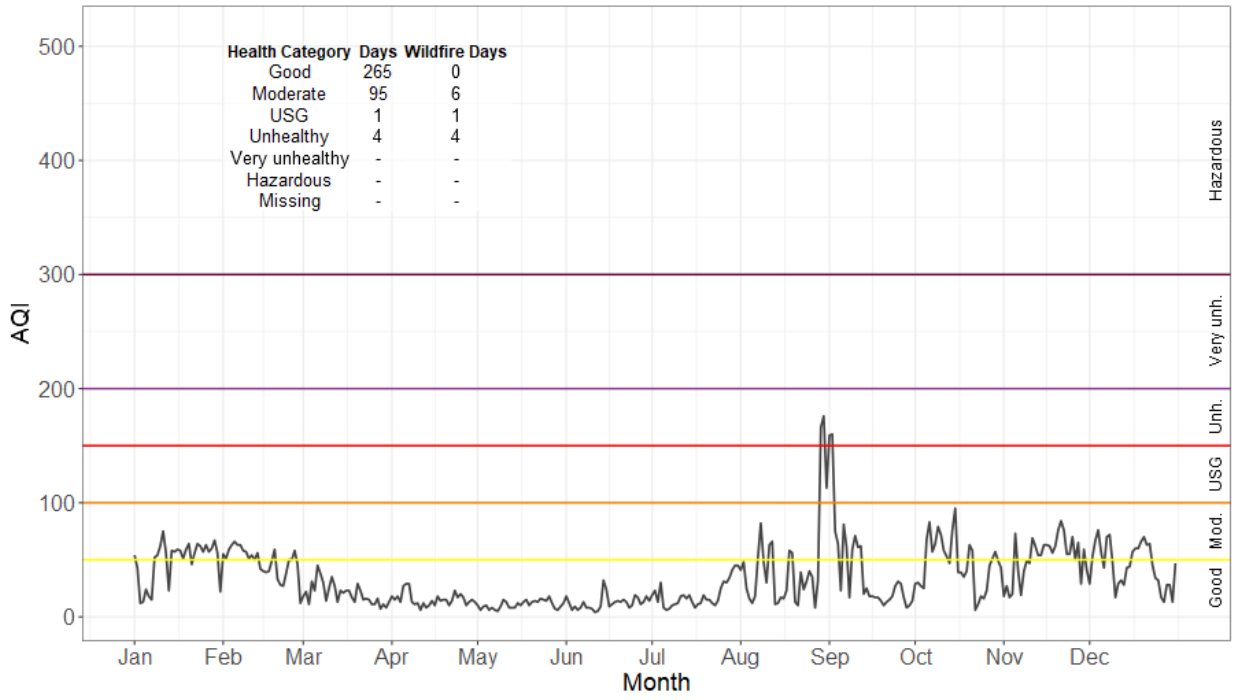


Figure 67: 2022 Gresham AQI

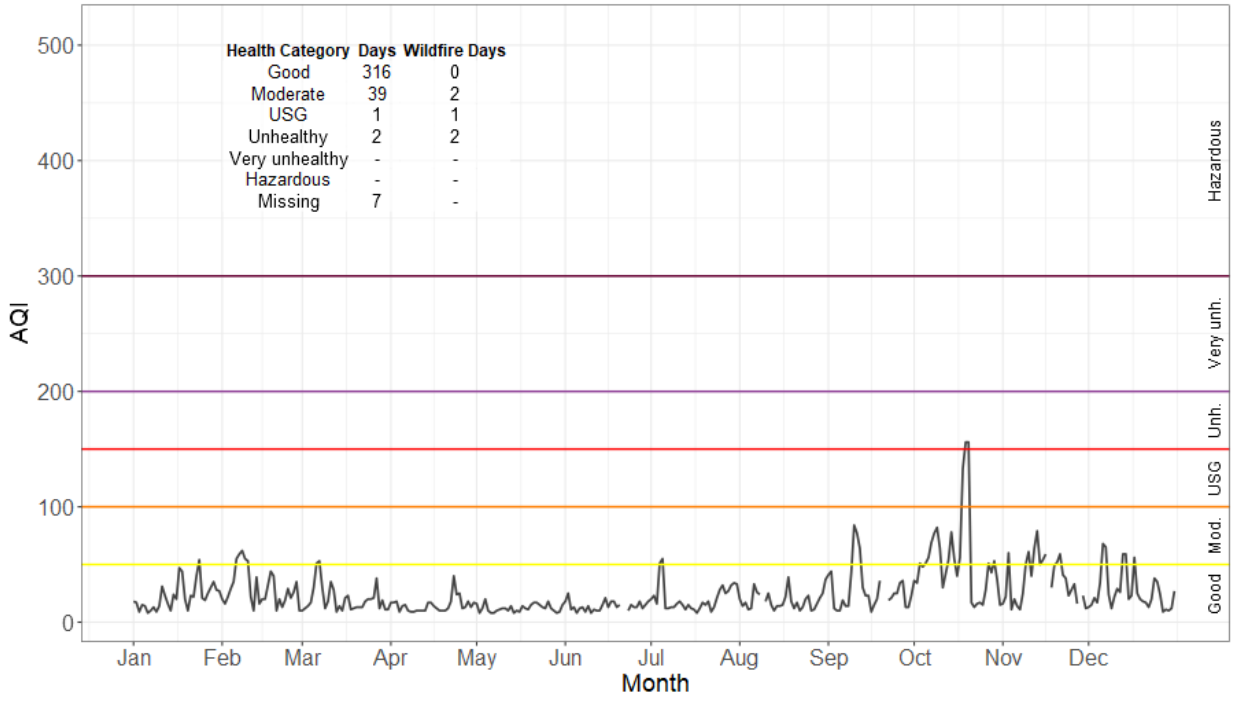


Figure 68: 2022 Hermiston AQI

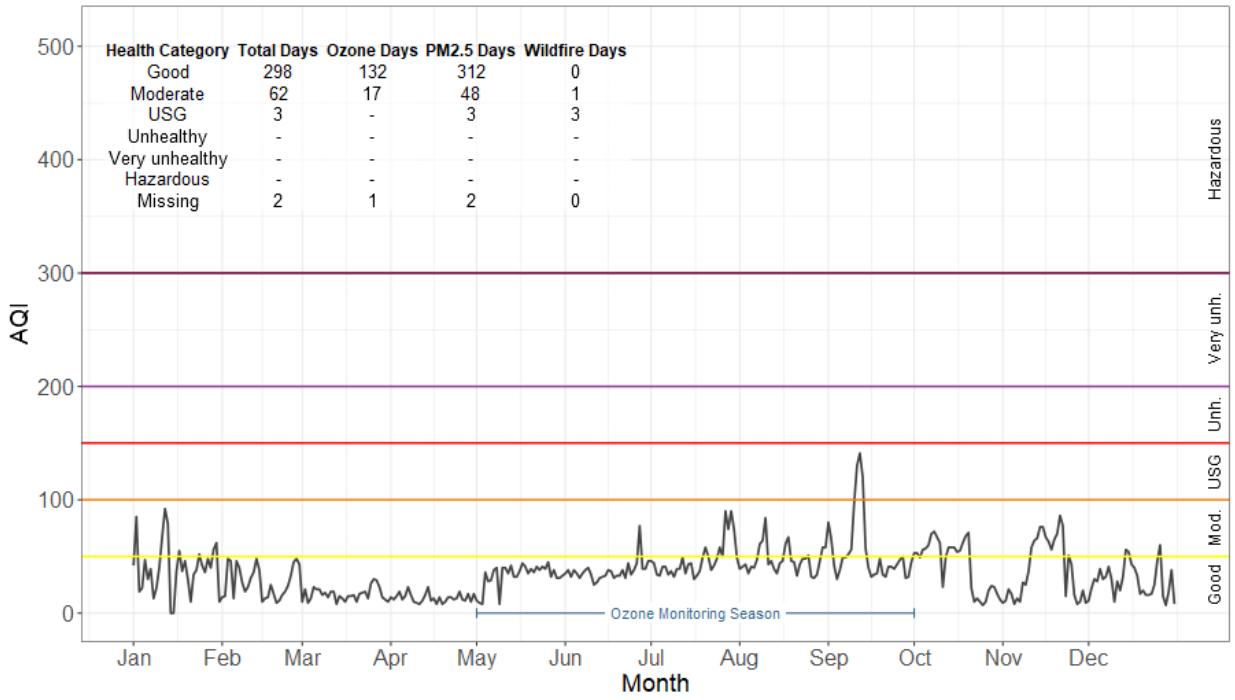


Figure 69: 2022 Hillsboro AQI

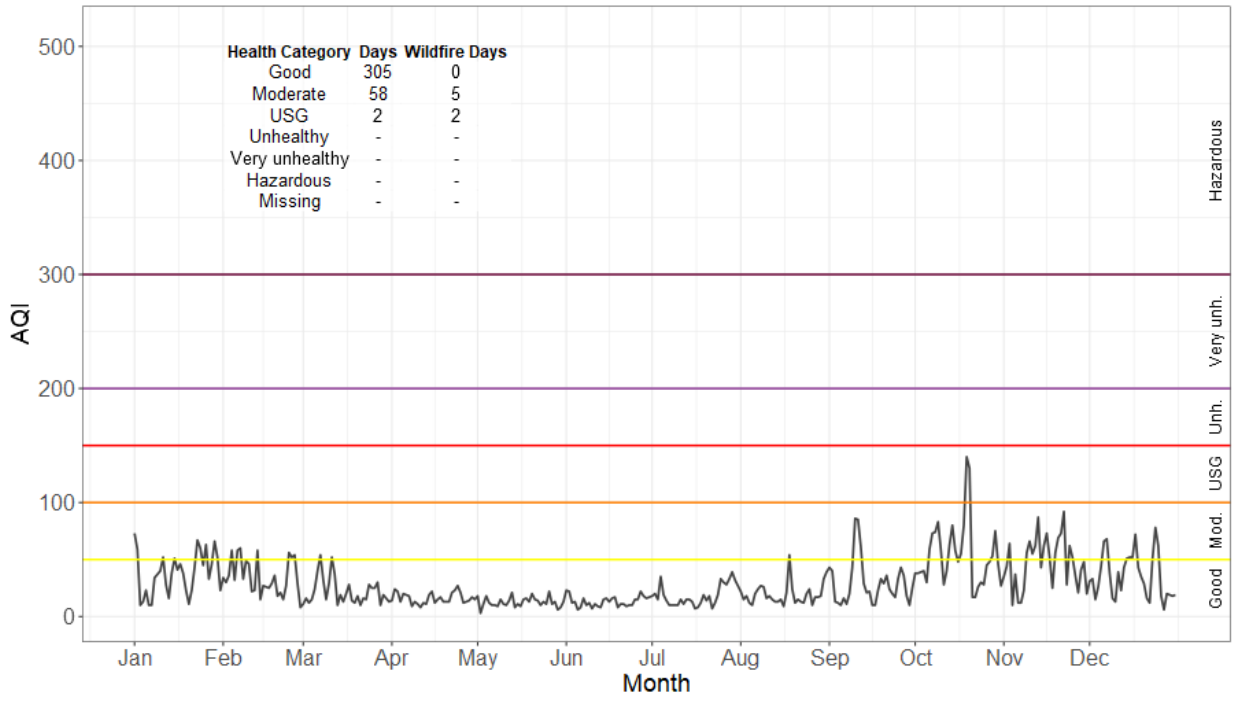


Figure 70: 2022 Hood River AQI

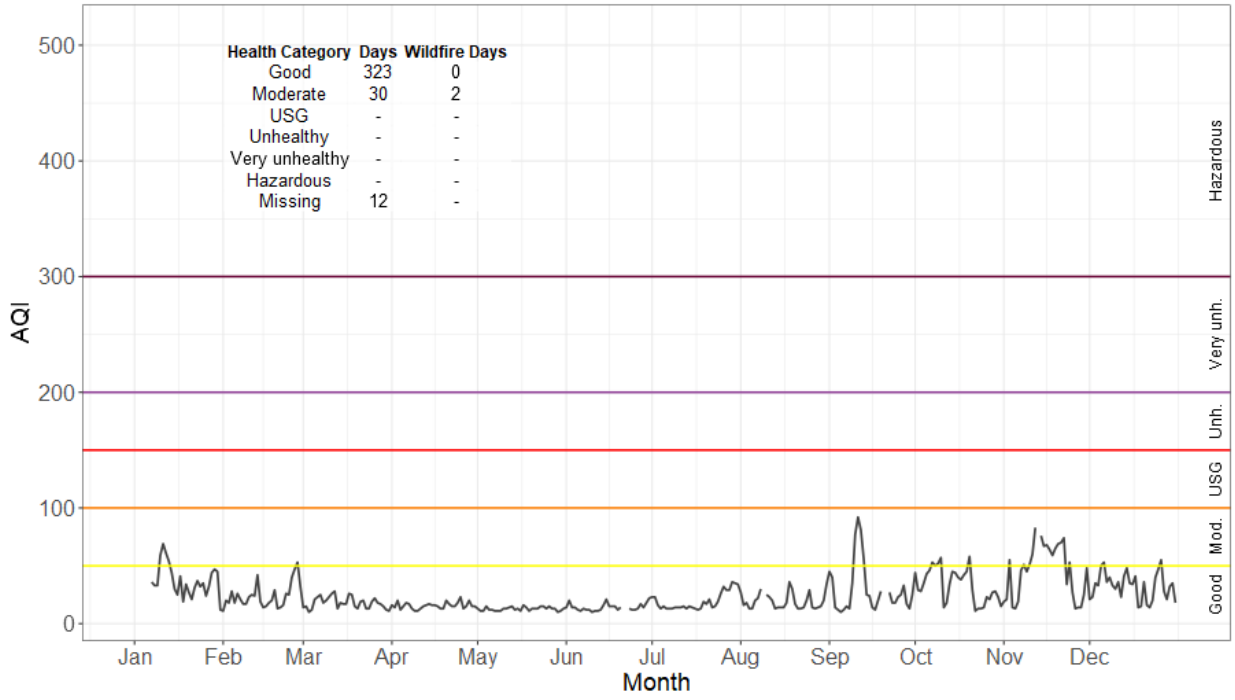


Figure 71: 2022 John Day AQI

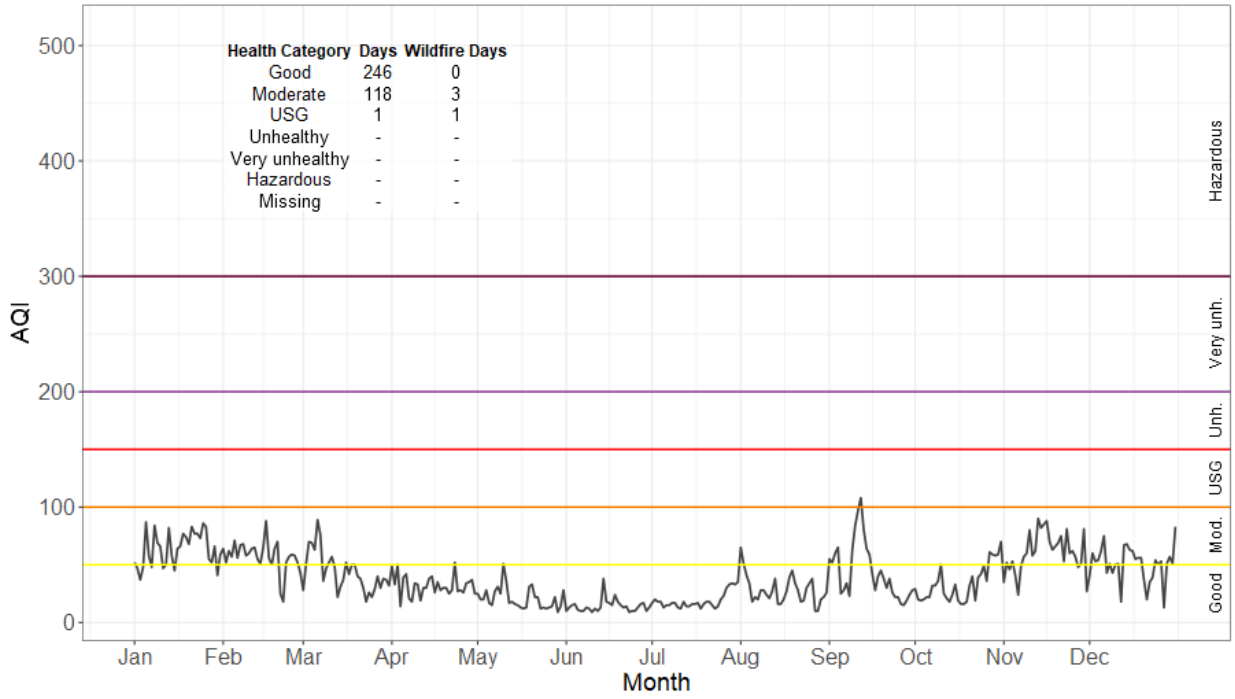


Figure 72: 2022 Klamath Falls AQI

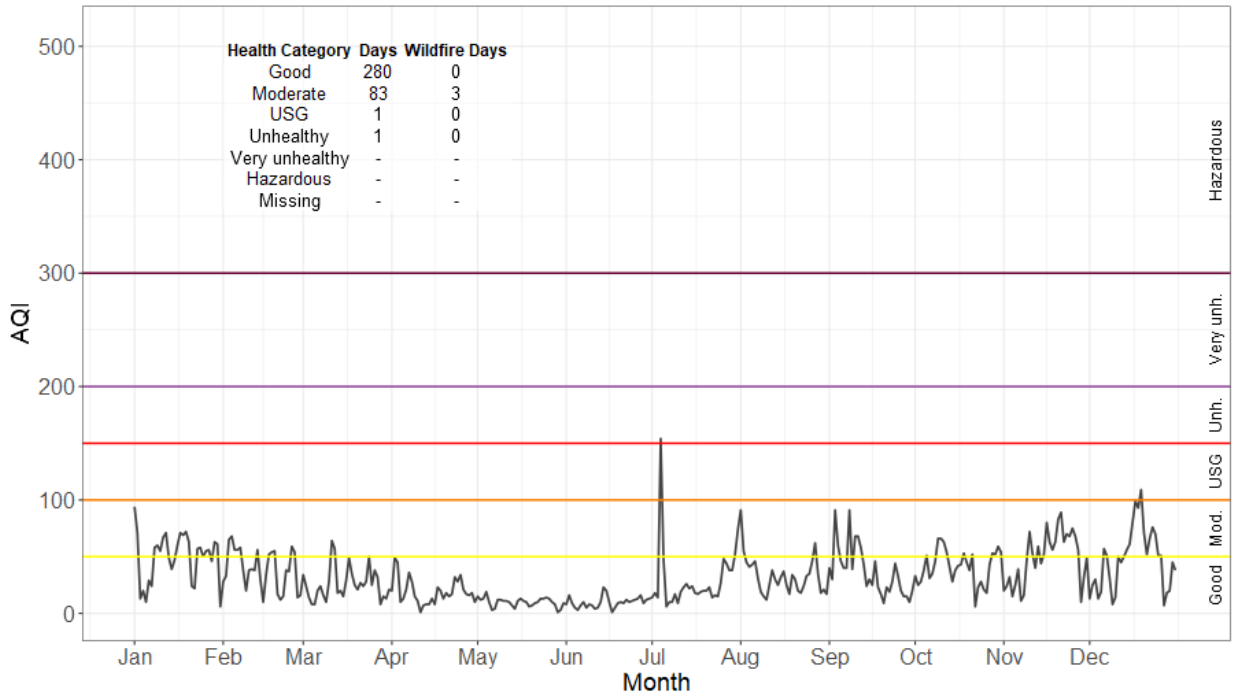


Figure 73: 2022 La Grande AQI

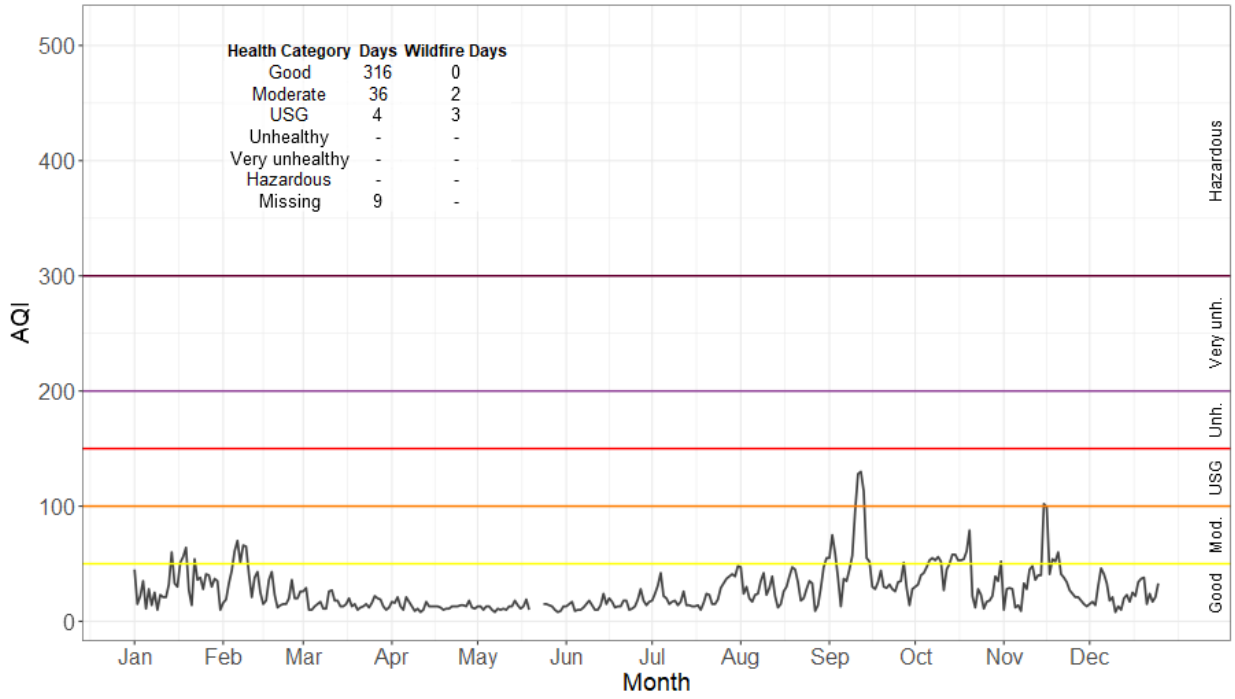


Figure 74: 2022 La Pine AQI

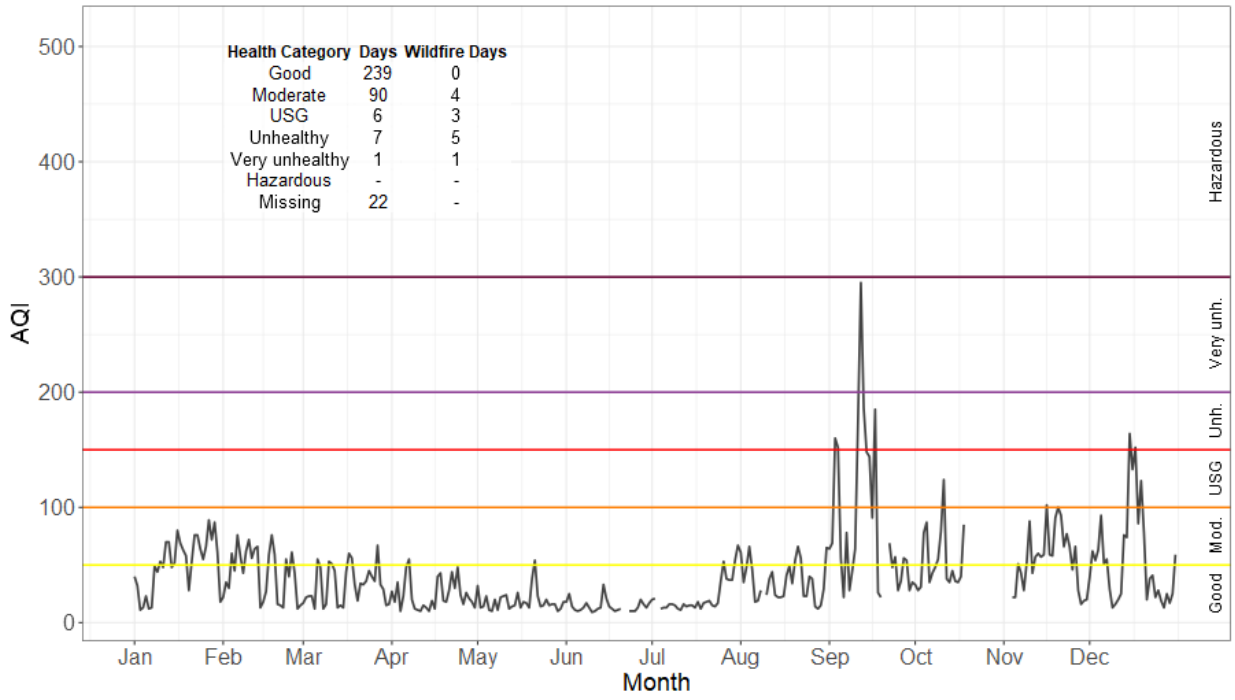


Figure 75: 2022 Lakeview AQI

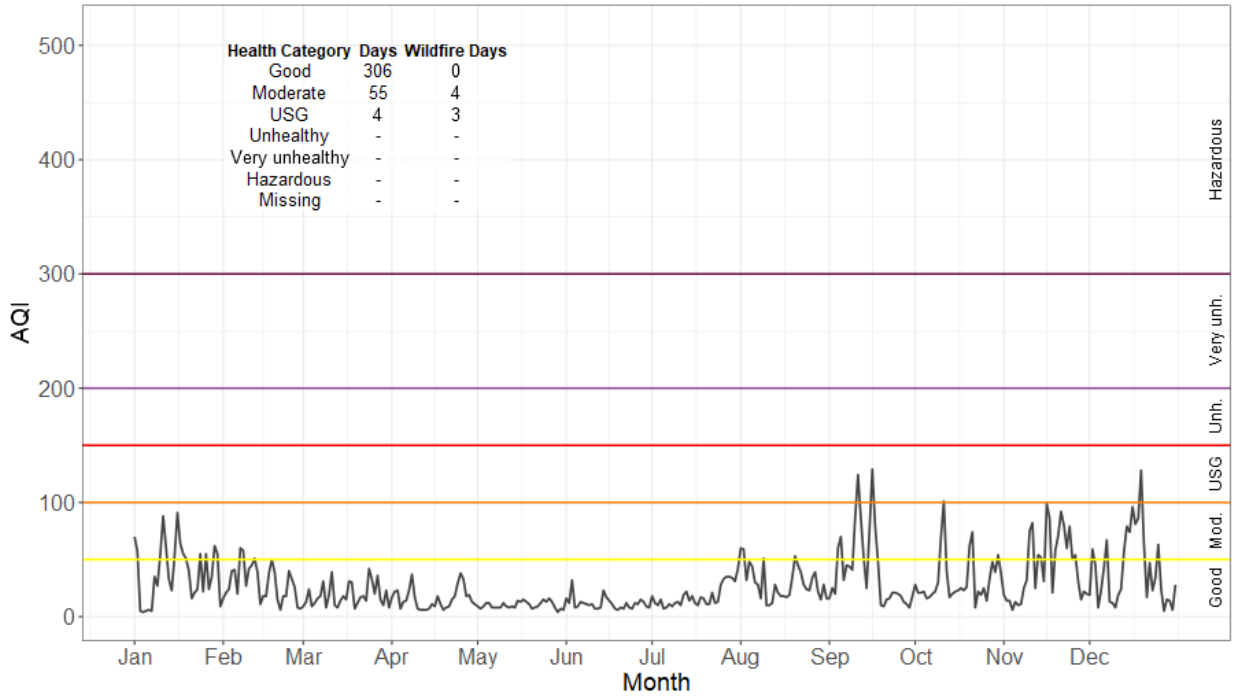


Figure 76: 2022 Lyons AQI

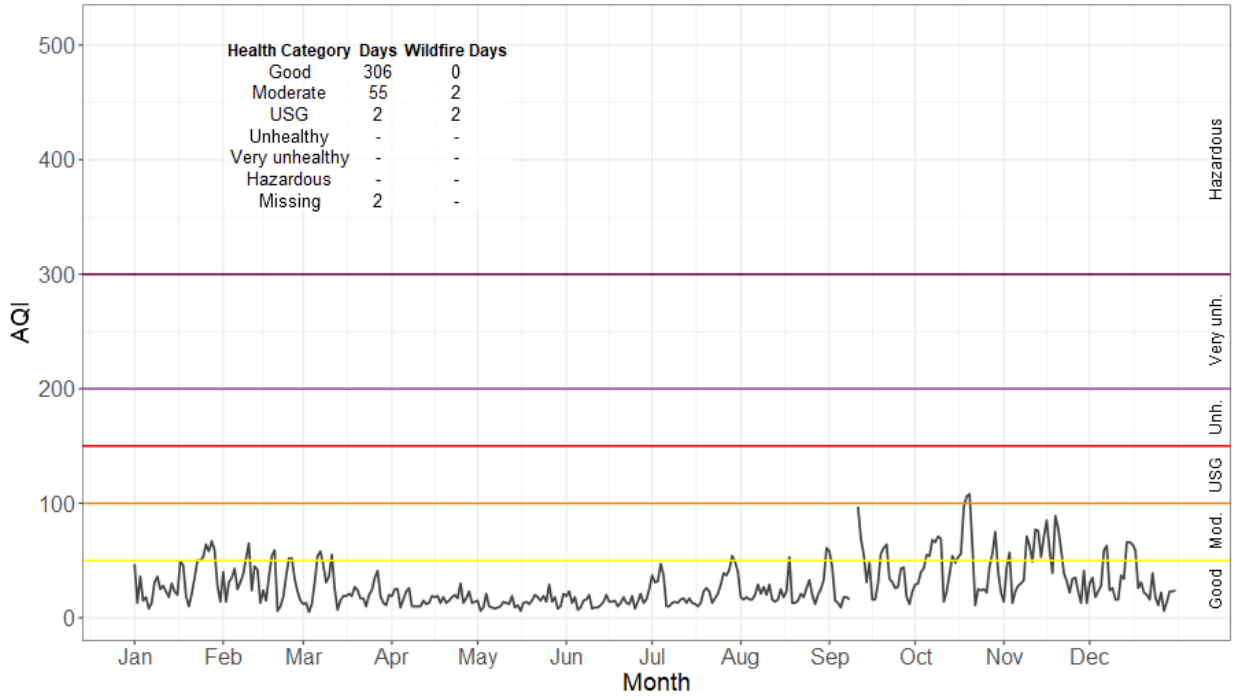


Figure 77: 2022 Madras AQI

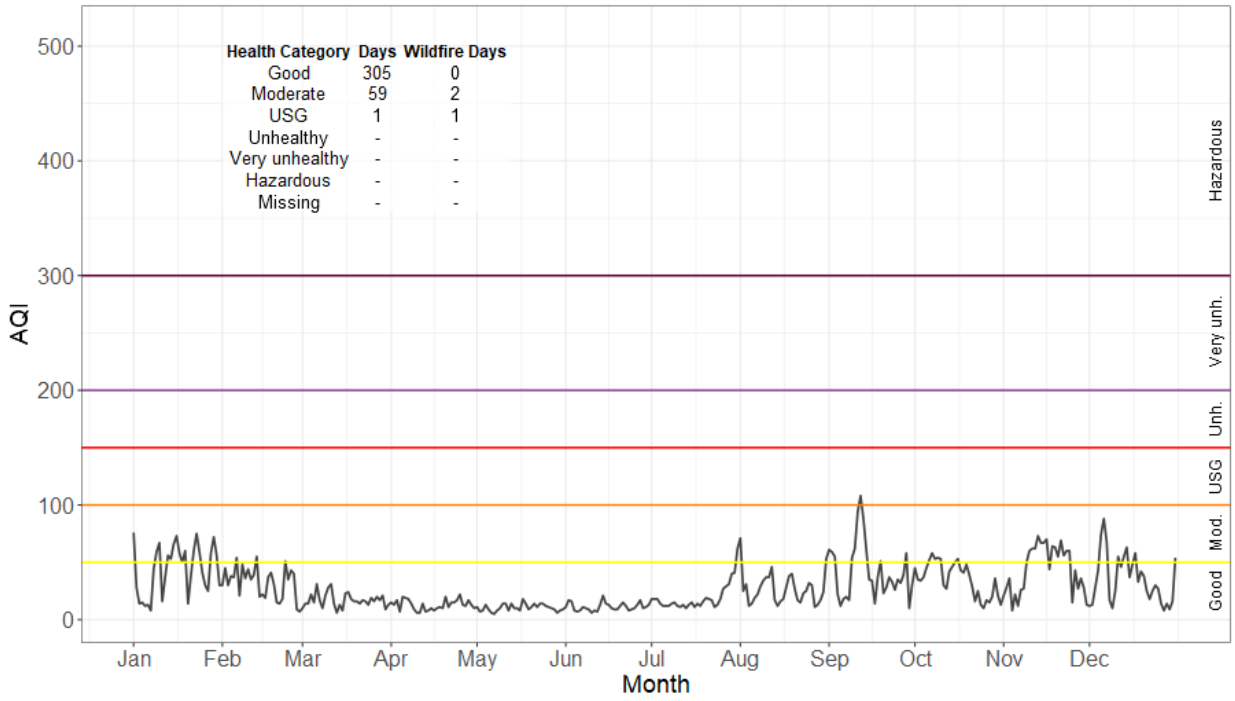


Figure 78: 2022 McMinnville AQI

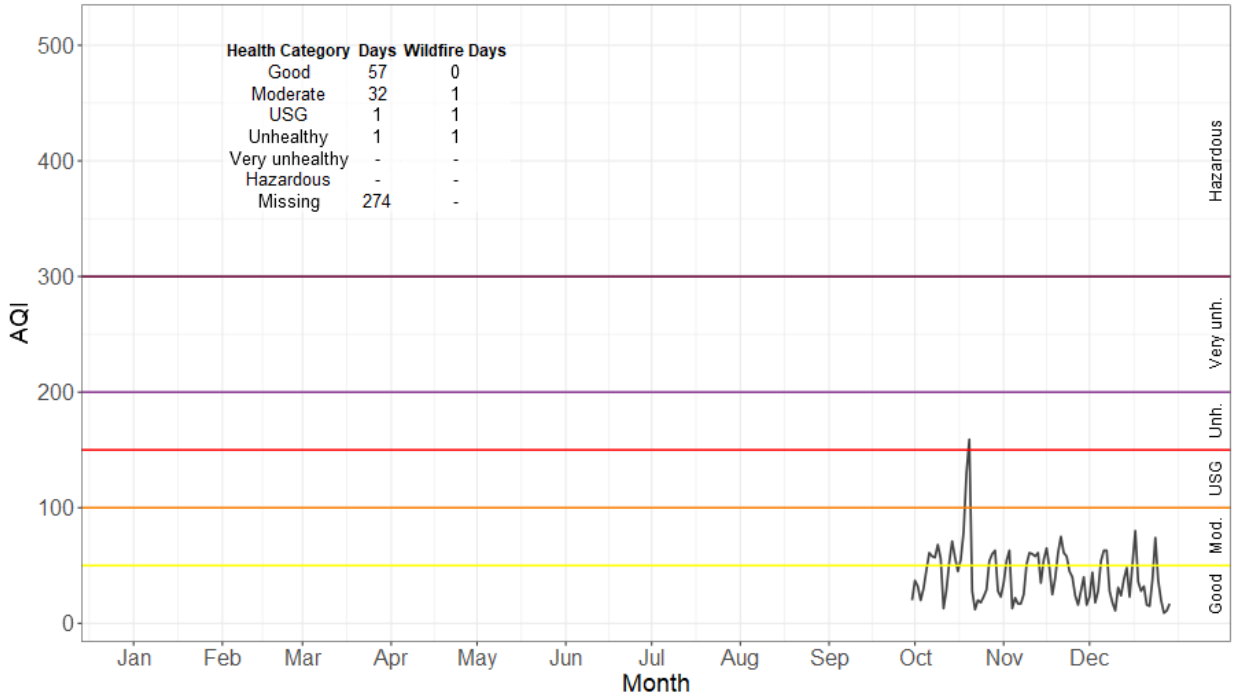


Figure 79: 2022 Medford AQI

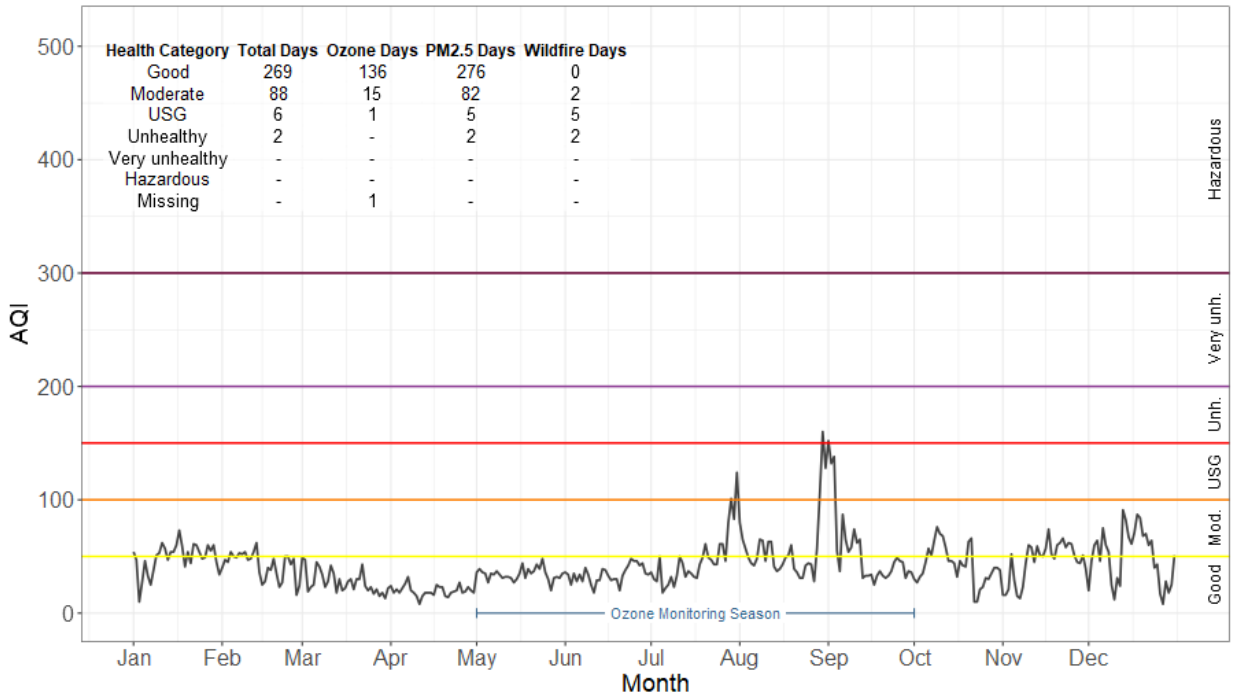


Figure 80: 2022 Mill City AQI

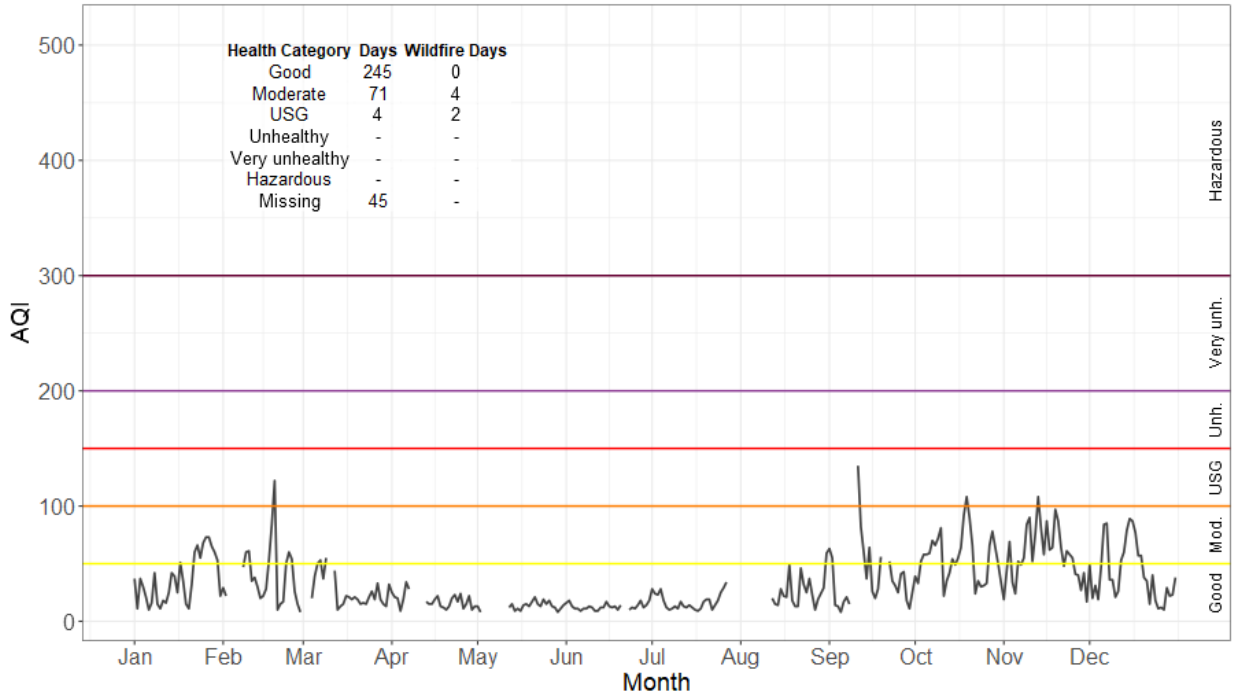


Figure 81: 2022 Oakridge AQI

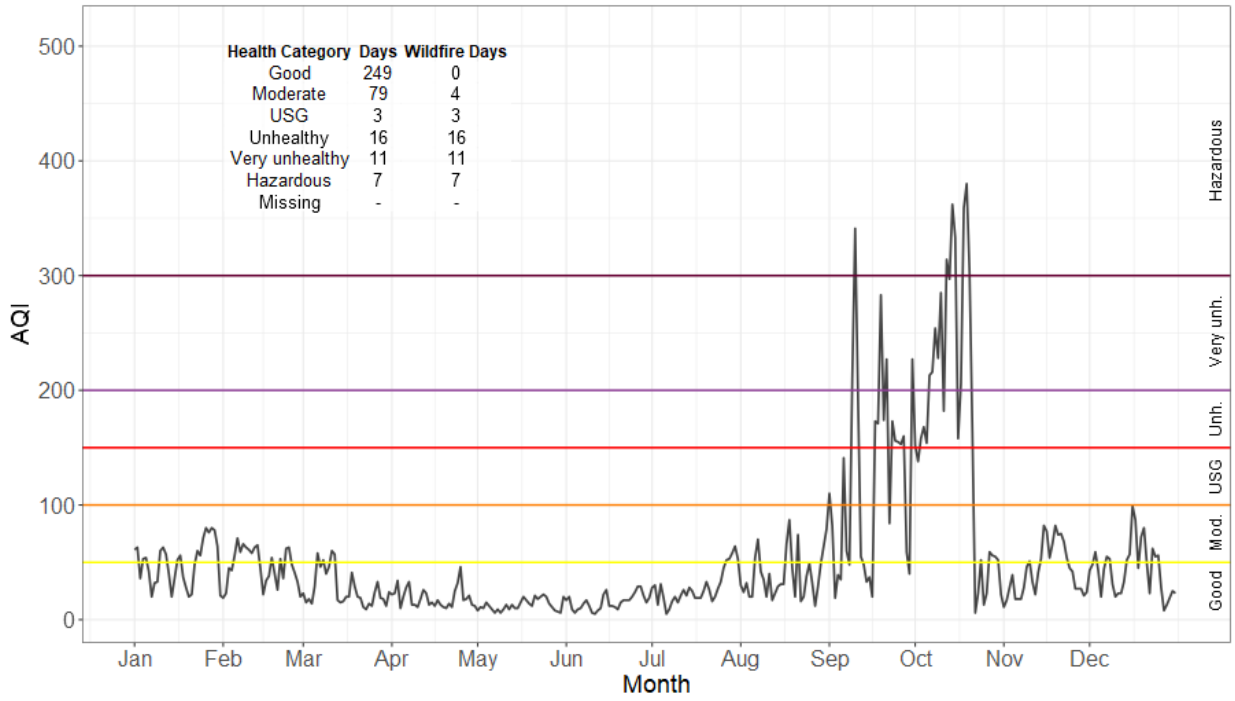


Figure 82: 2022 Ontario AQI

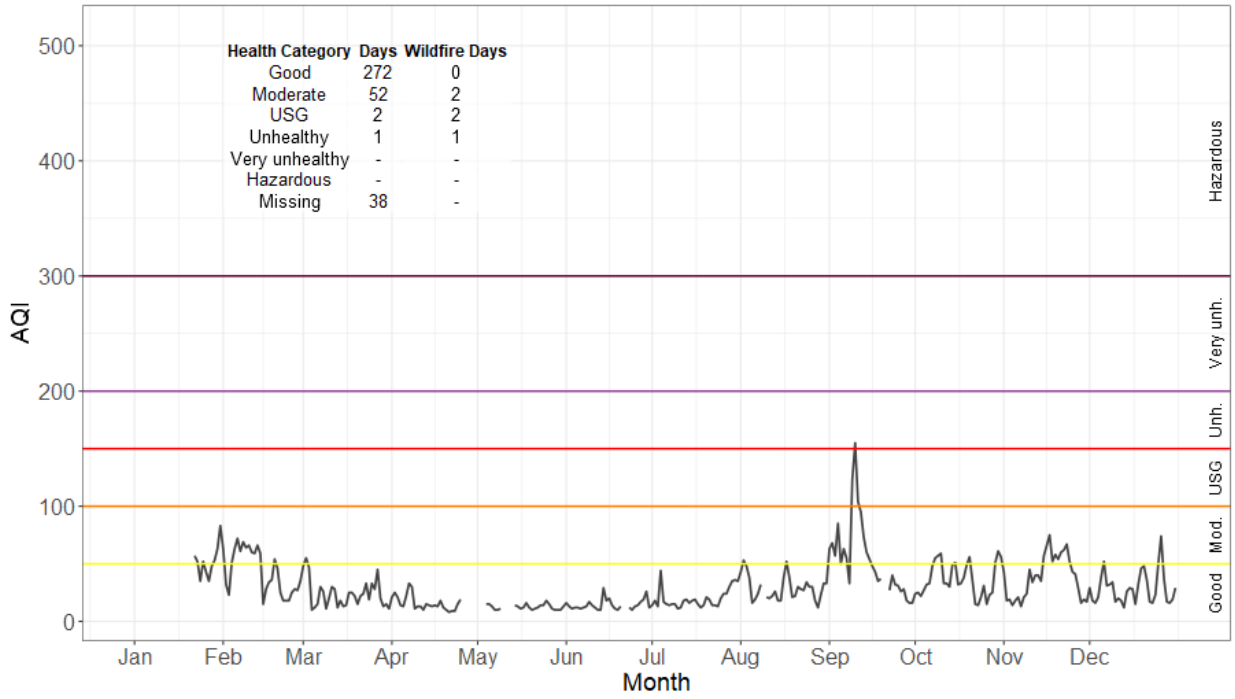


Figure 83: 2022 Pendleton AQI

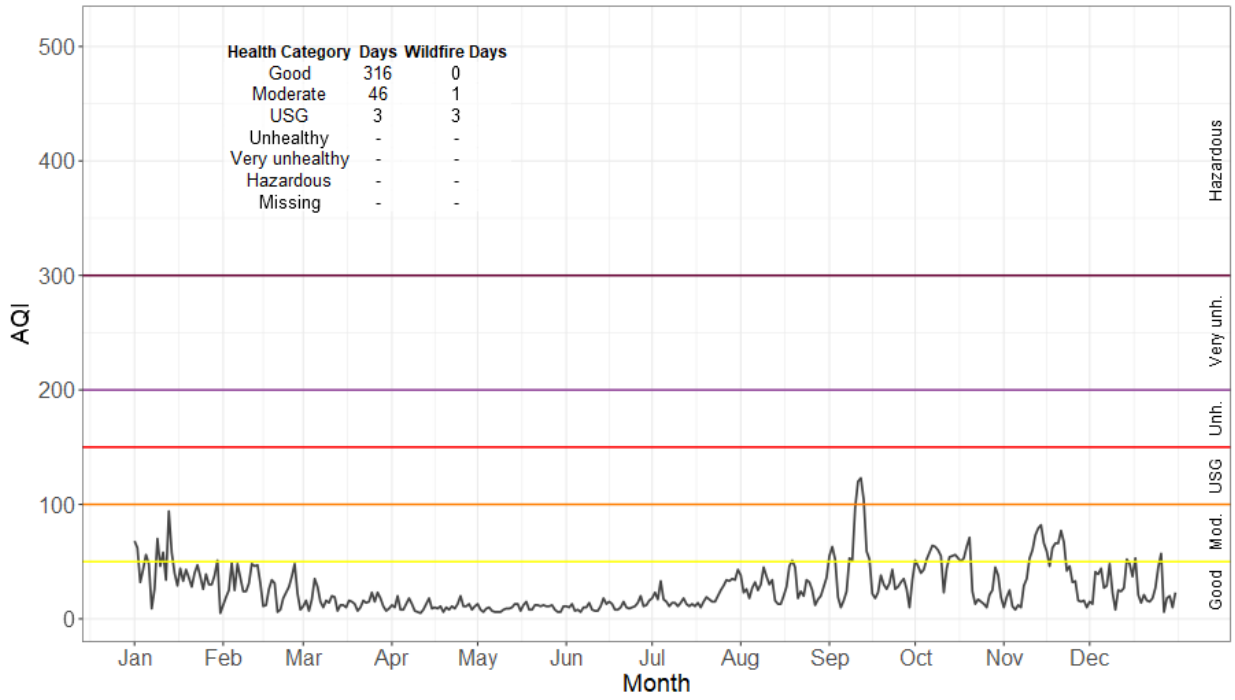


Figure 84: 2022 Portland AQI

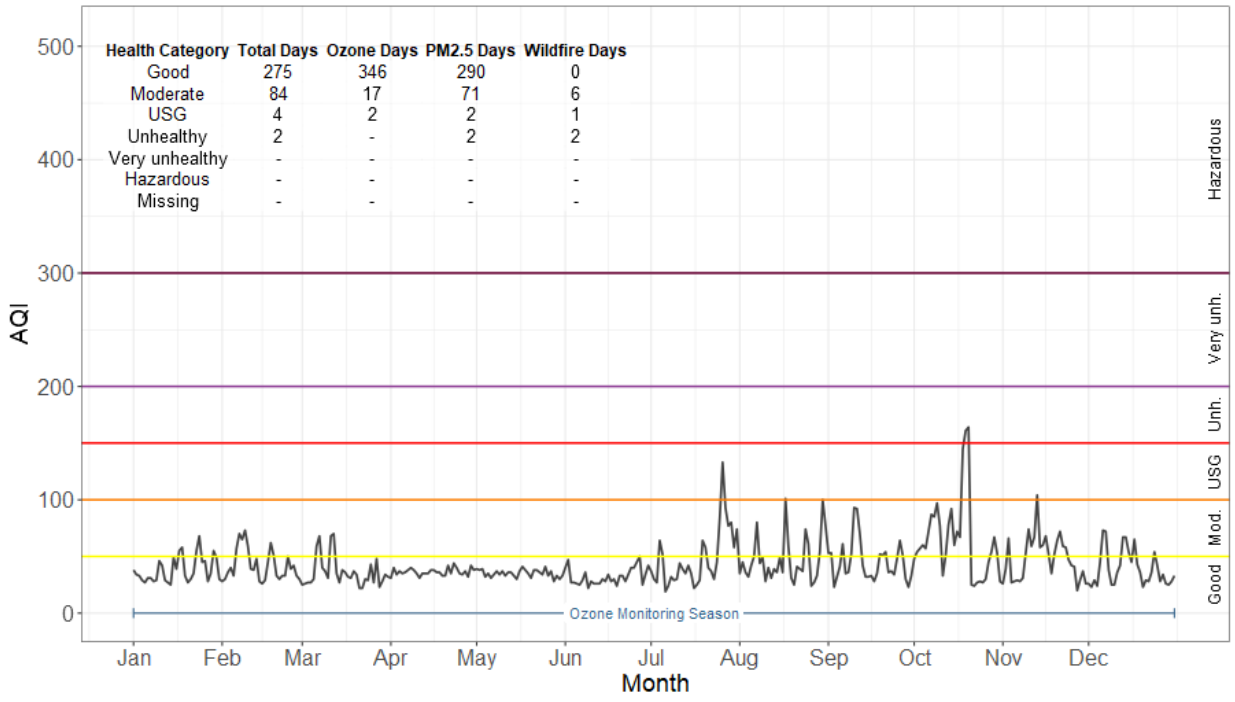


Figure 85: 2022 Prineville AQI

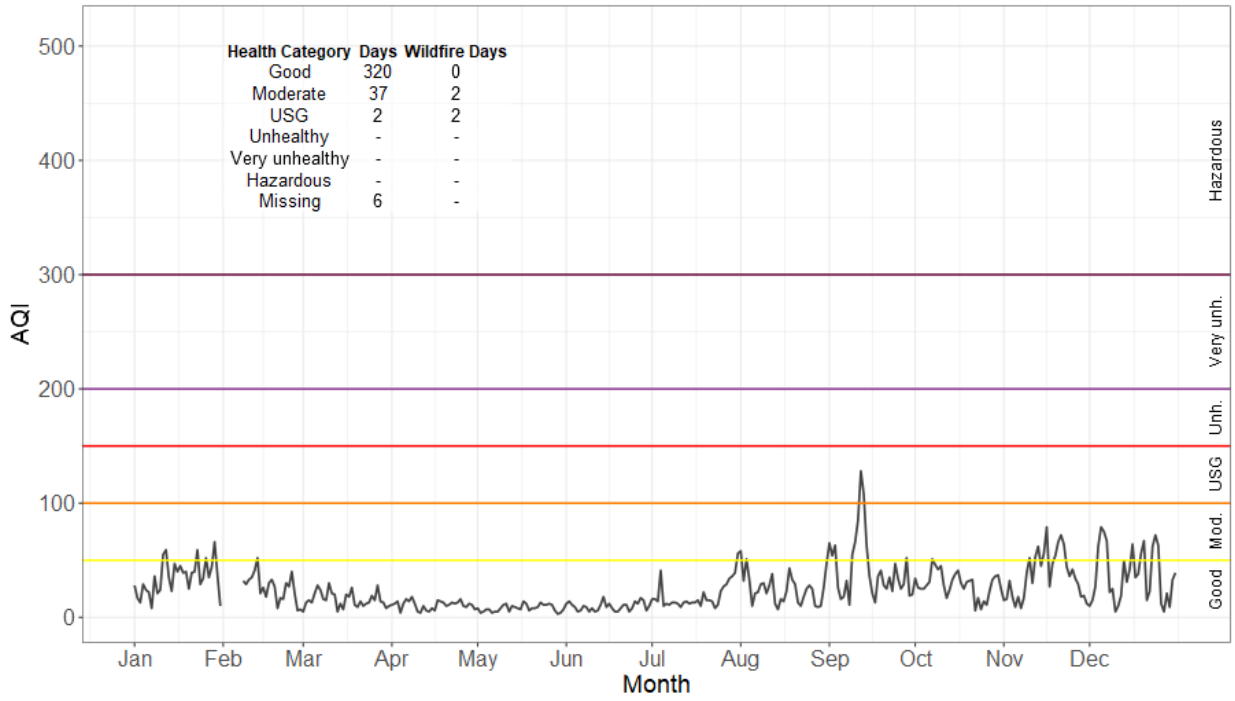


Figure 86: 2022 Redmond AQI

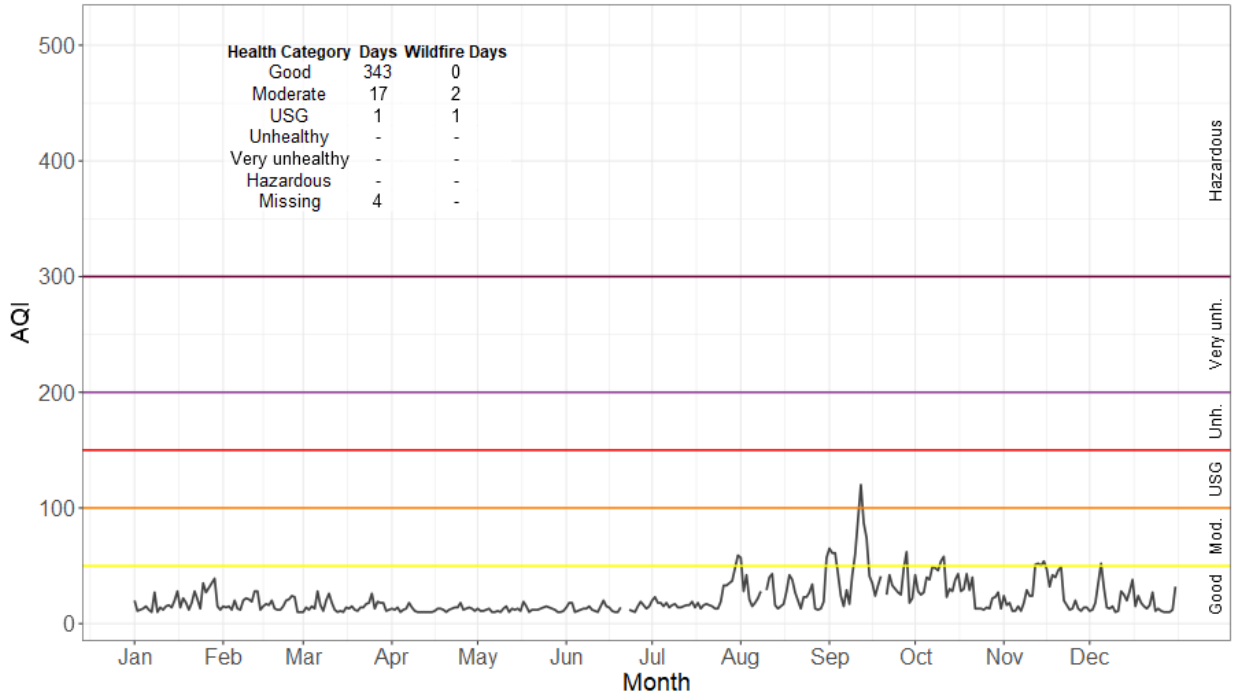


Figure 87: 2022 Roseburg AQI

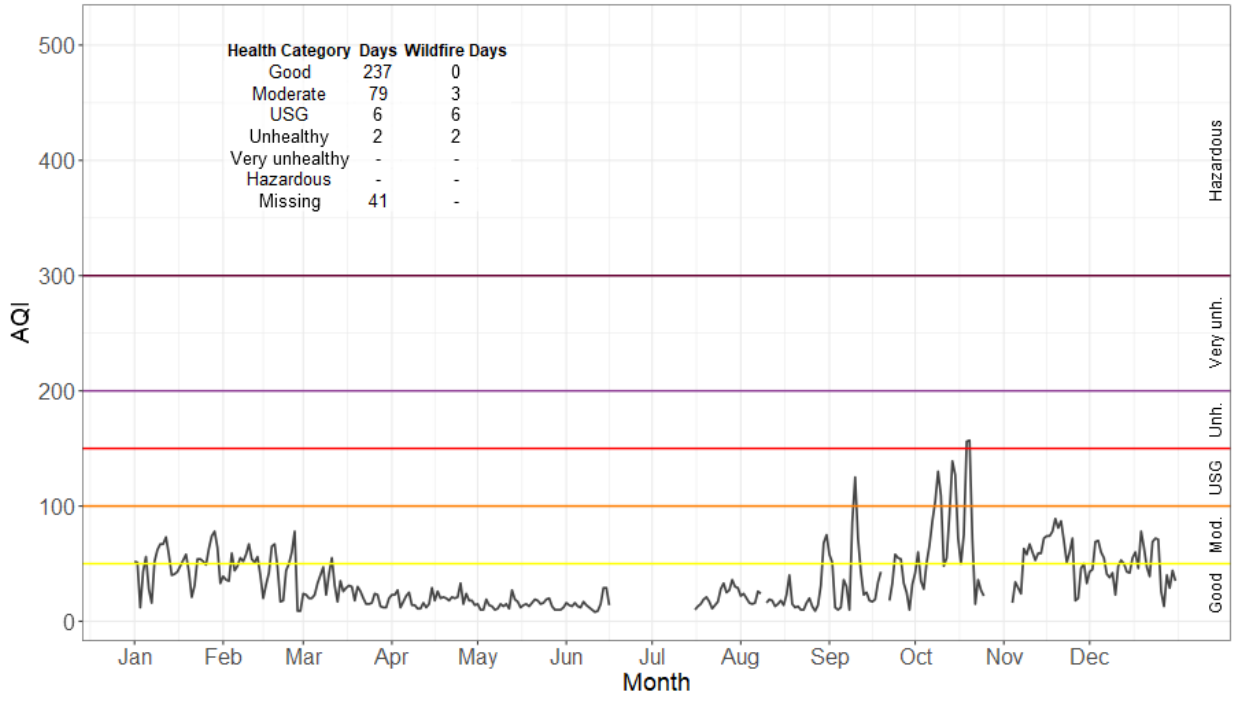


Figure 88: 2022 Salem AQI

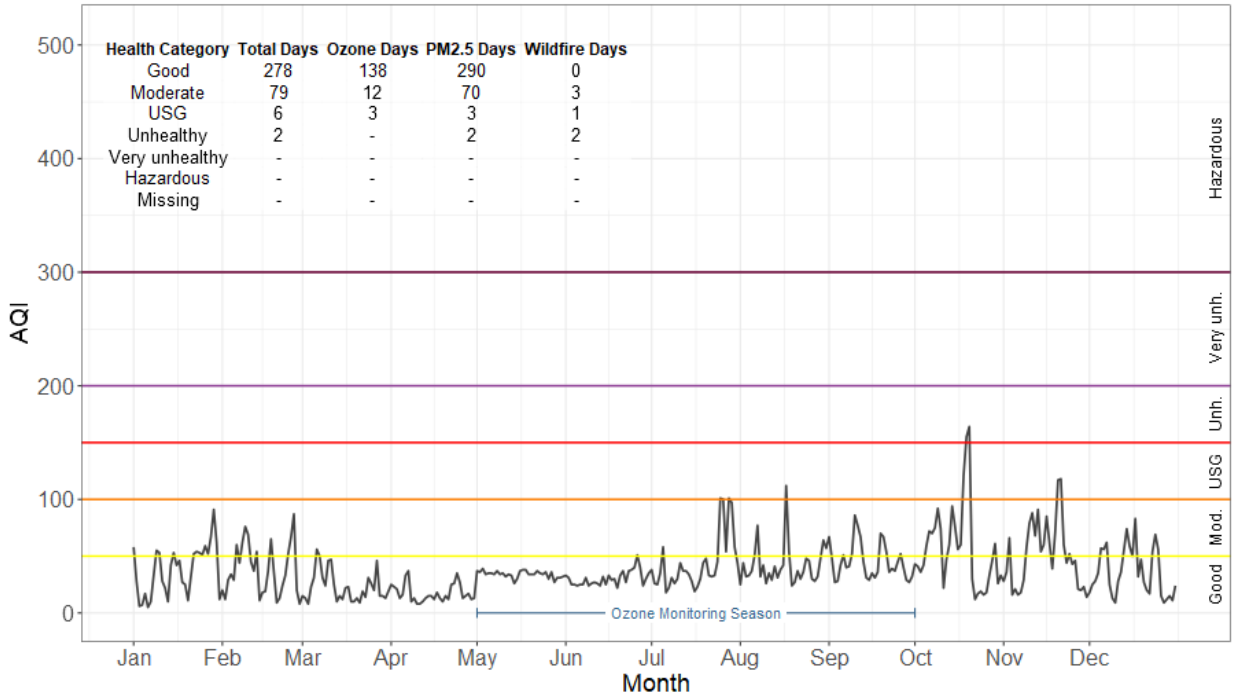


Figure 89: 2022 Sauvie Island AQI

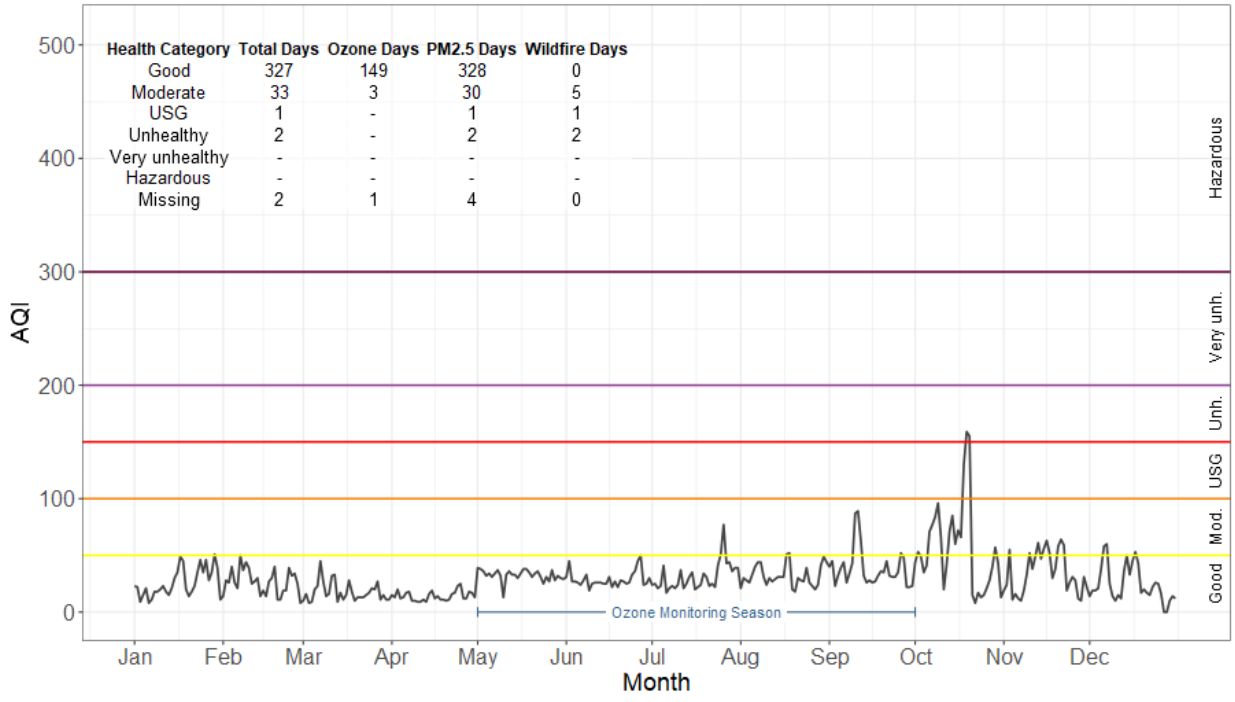


Figure 90: 2022 Shady Cove AQI

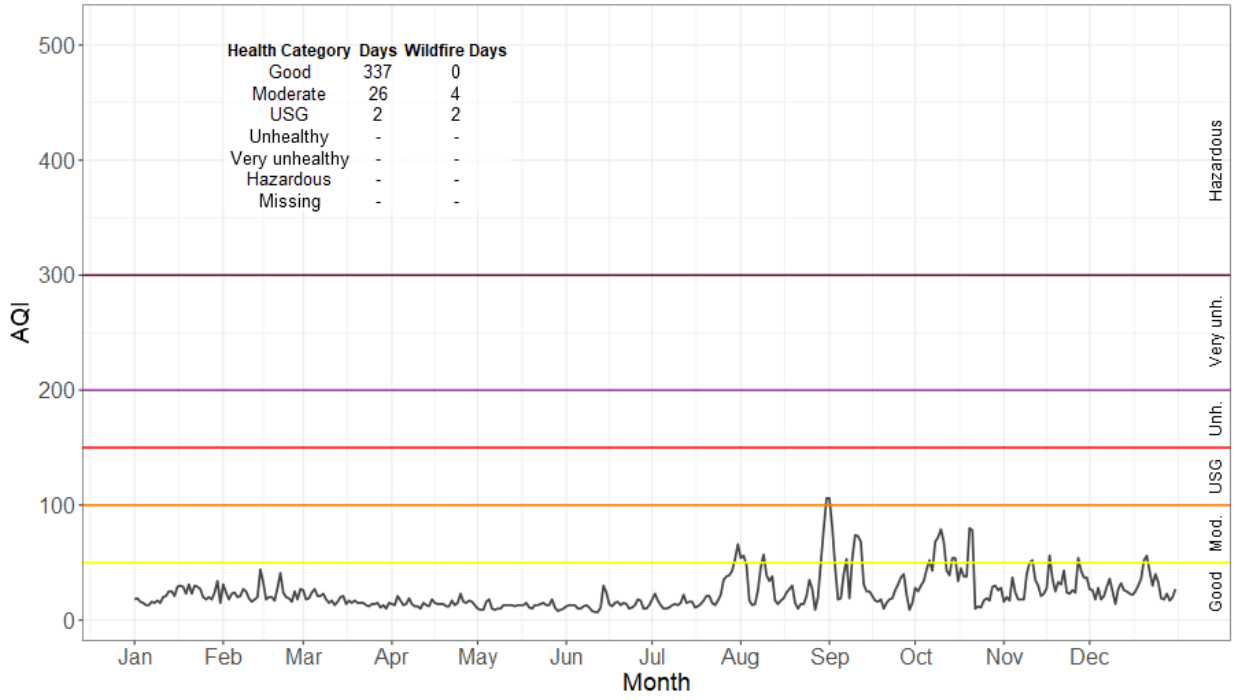


Figure 91: 2022 Silverton AQI

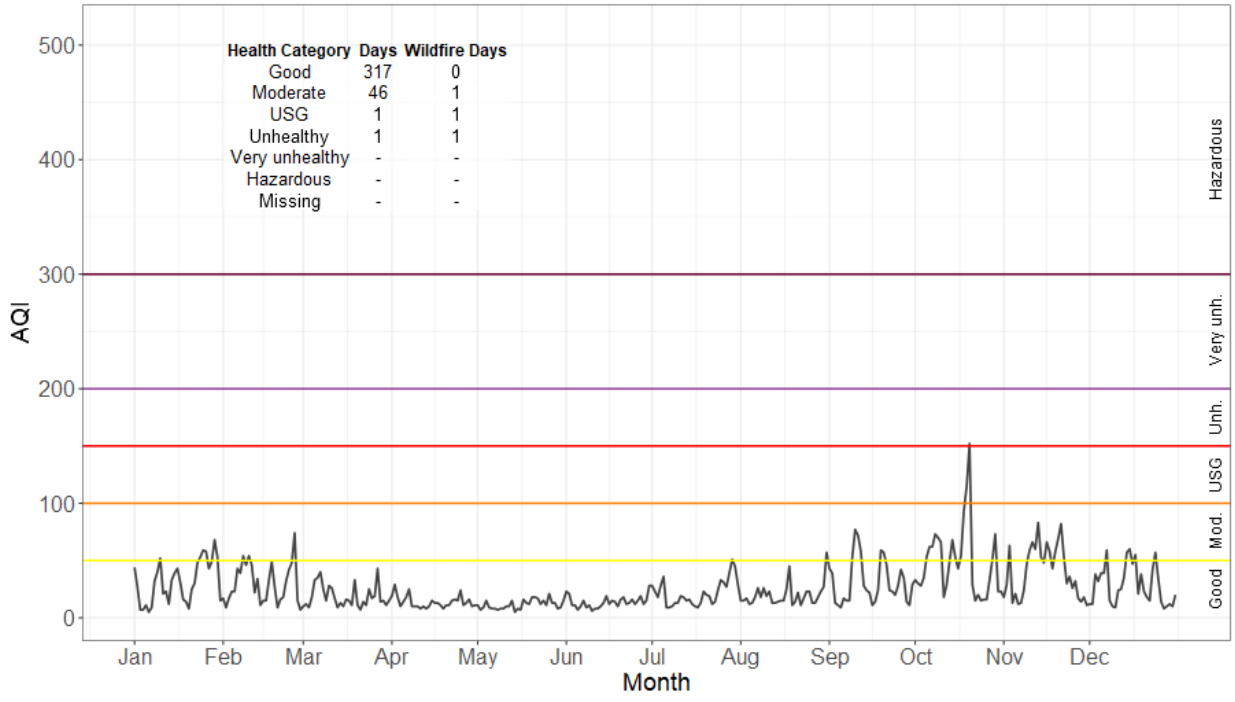


Figure 92: 2022 Sisters AQI

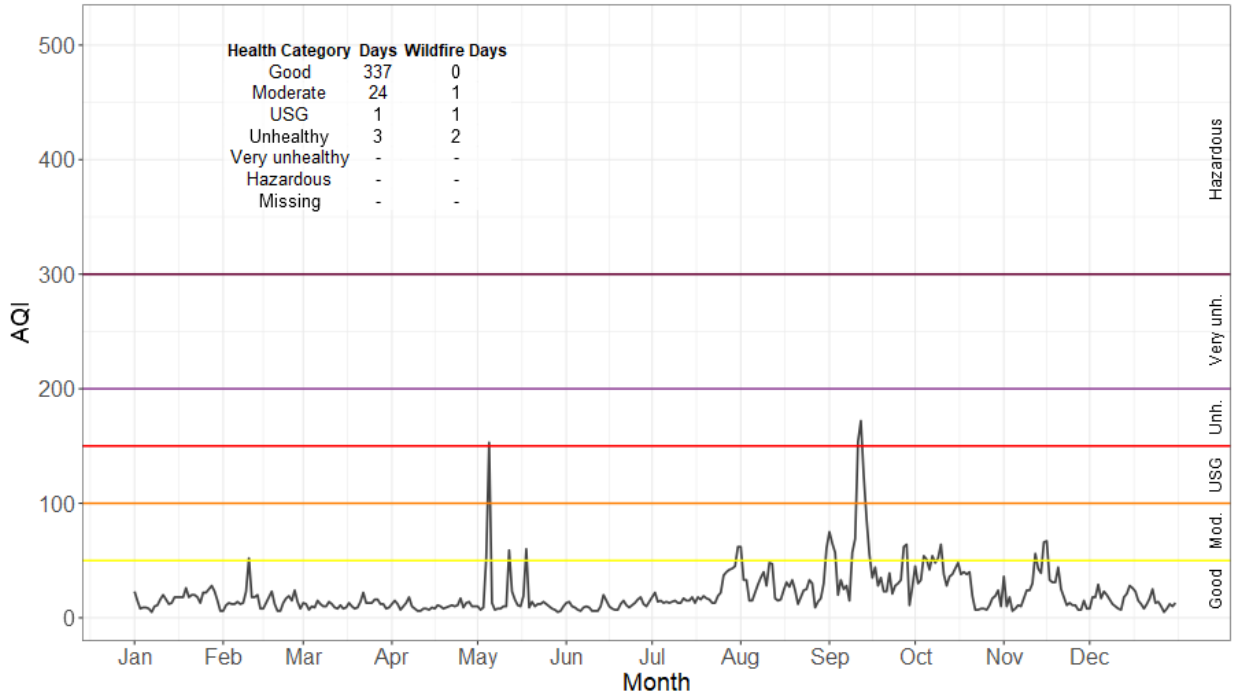


Figure 93: 2022 Springfield AQI

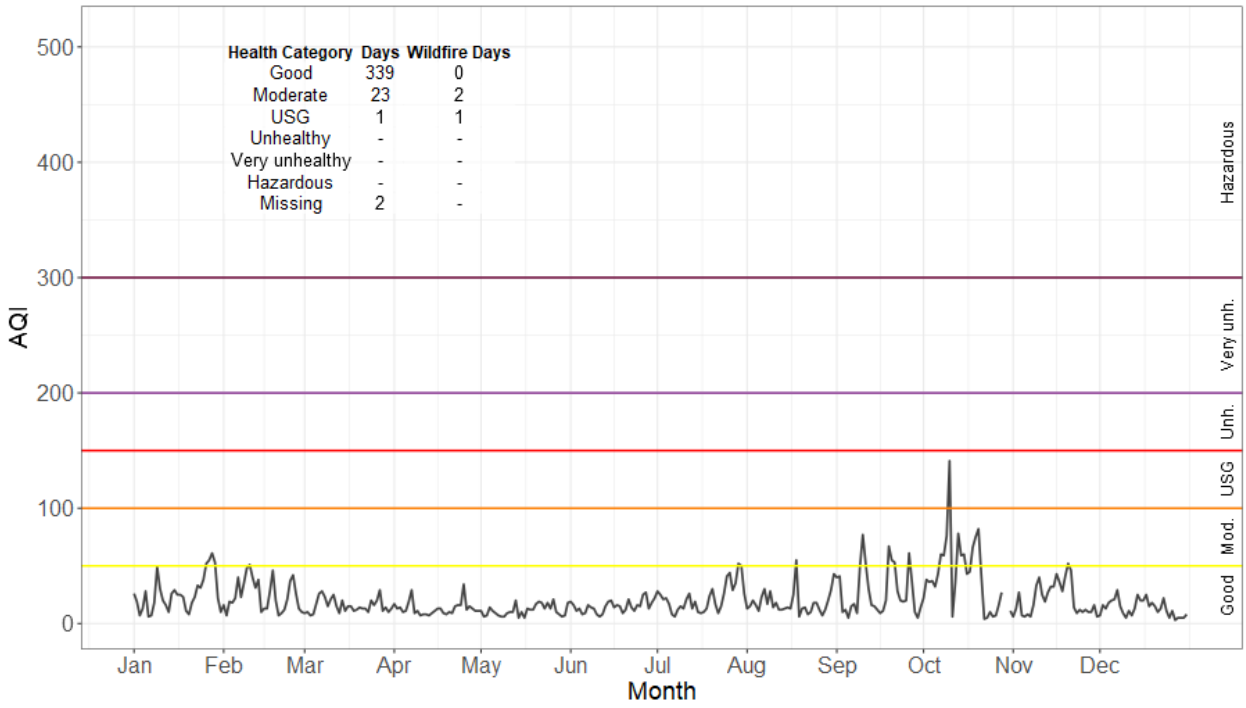


Figure 94: 2022 Sunriver AQI

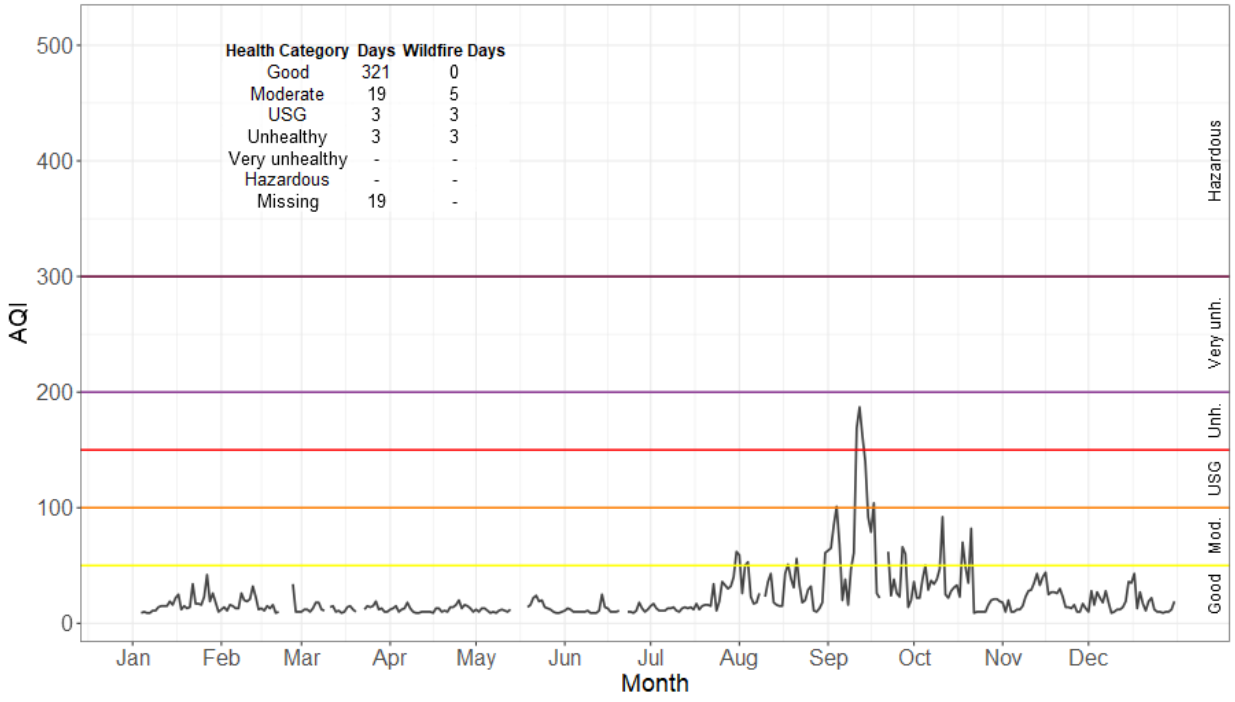


Figure 95: 2022 Sweet Home AQI

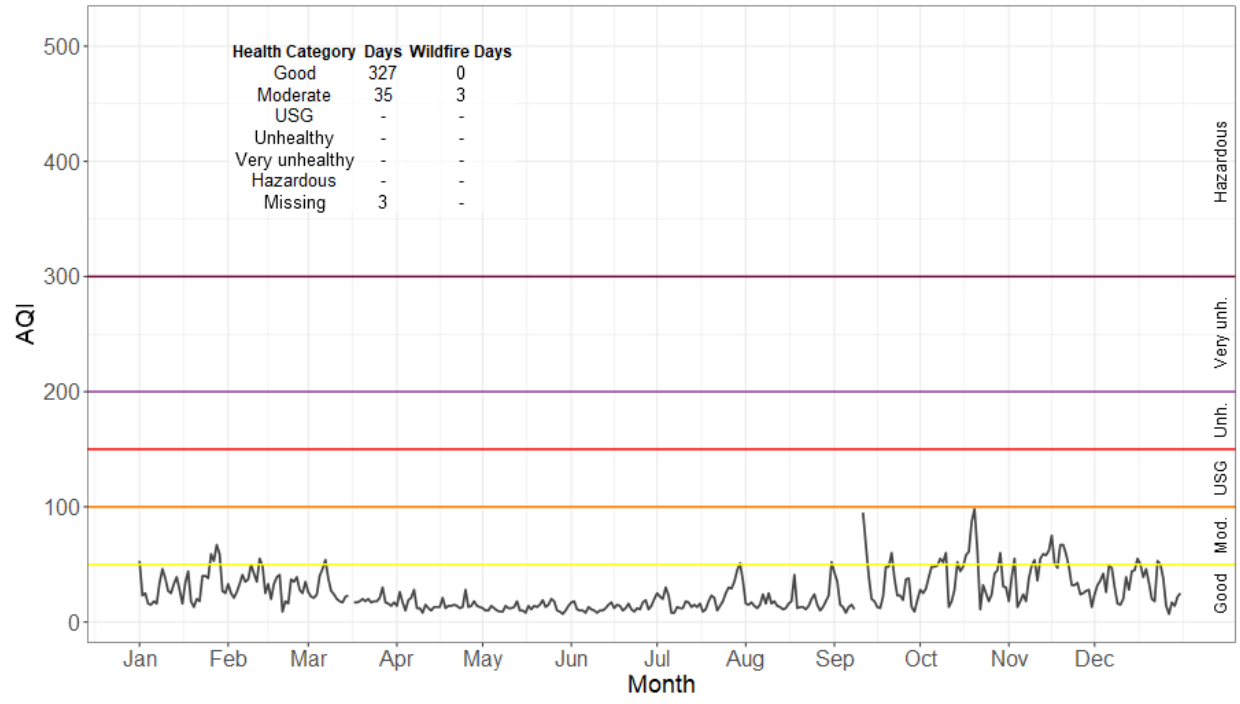


Figure 96: 2022 Talent AQI

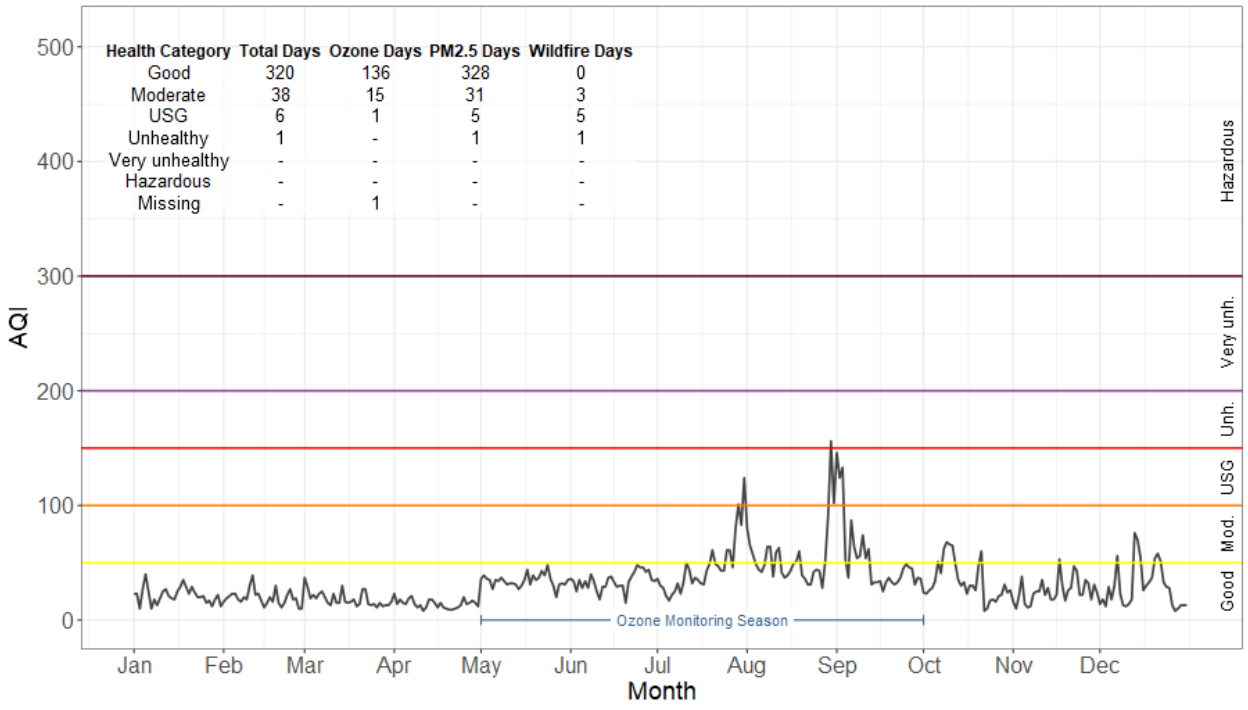


Figure 97: 2022 The Dalles AQI

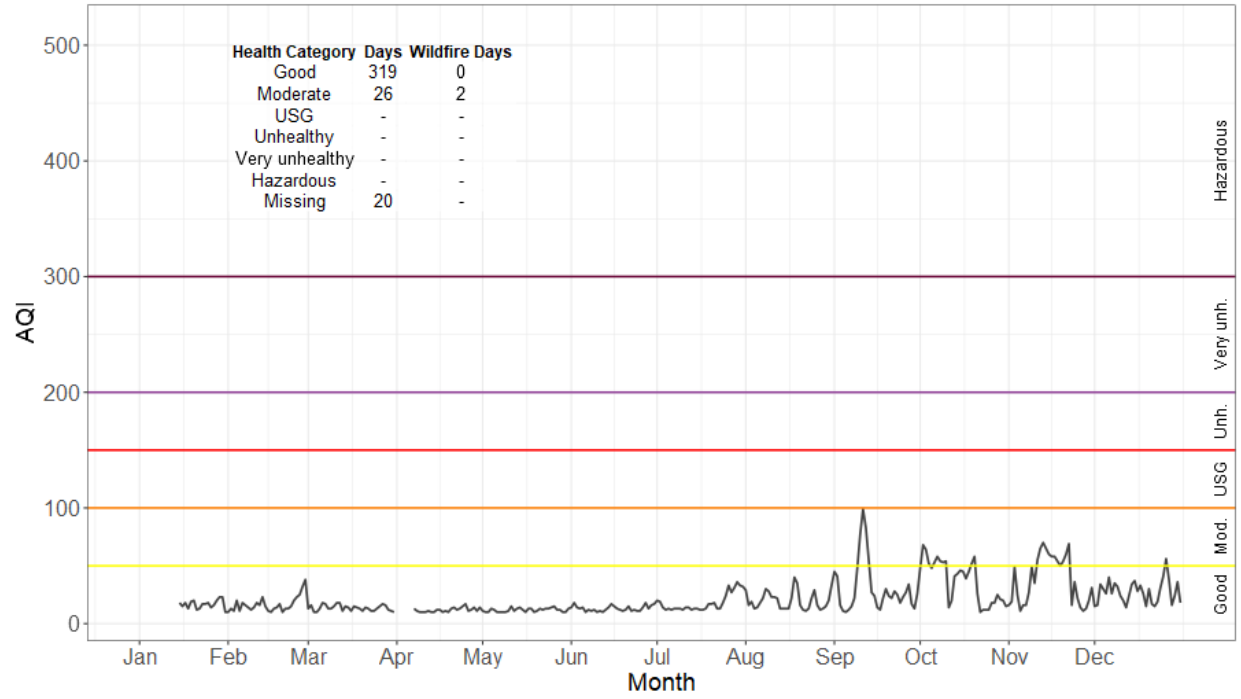


Figure 98: 2022 Tillamook AQI

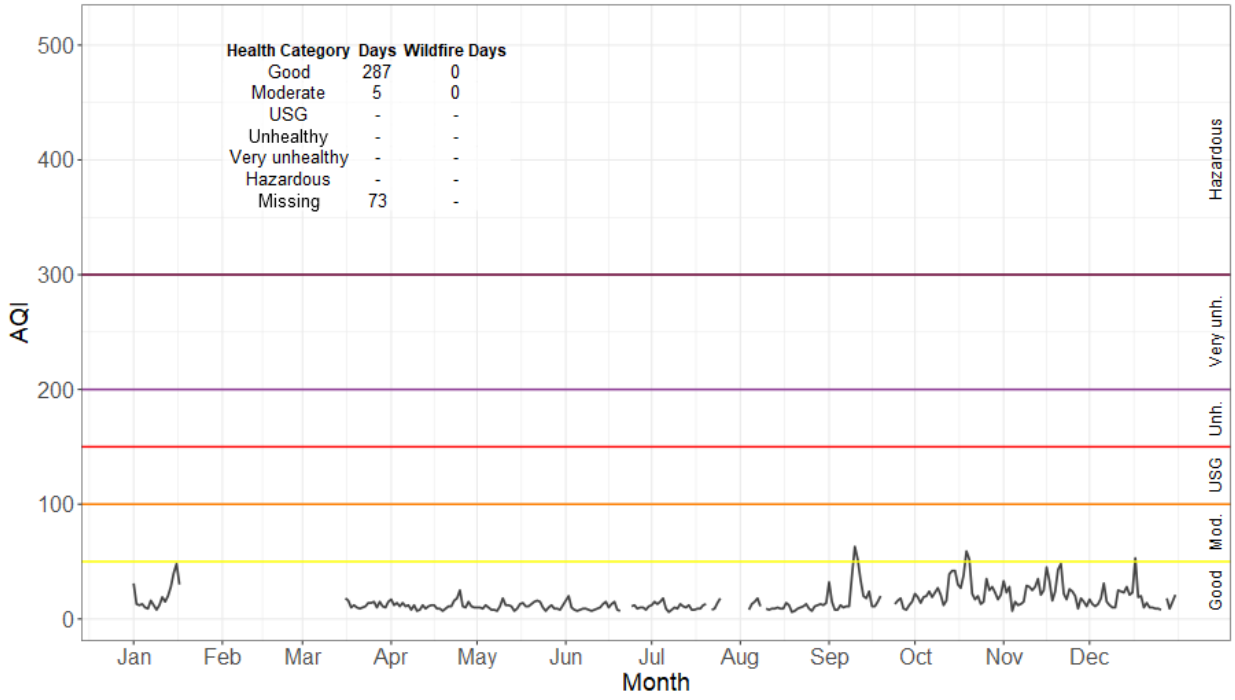


Figure 99: 2022 Toledo AQI

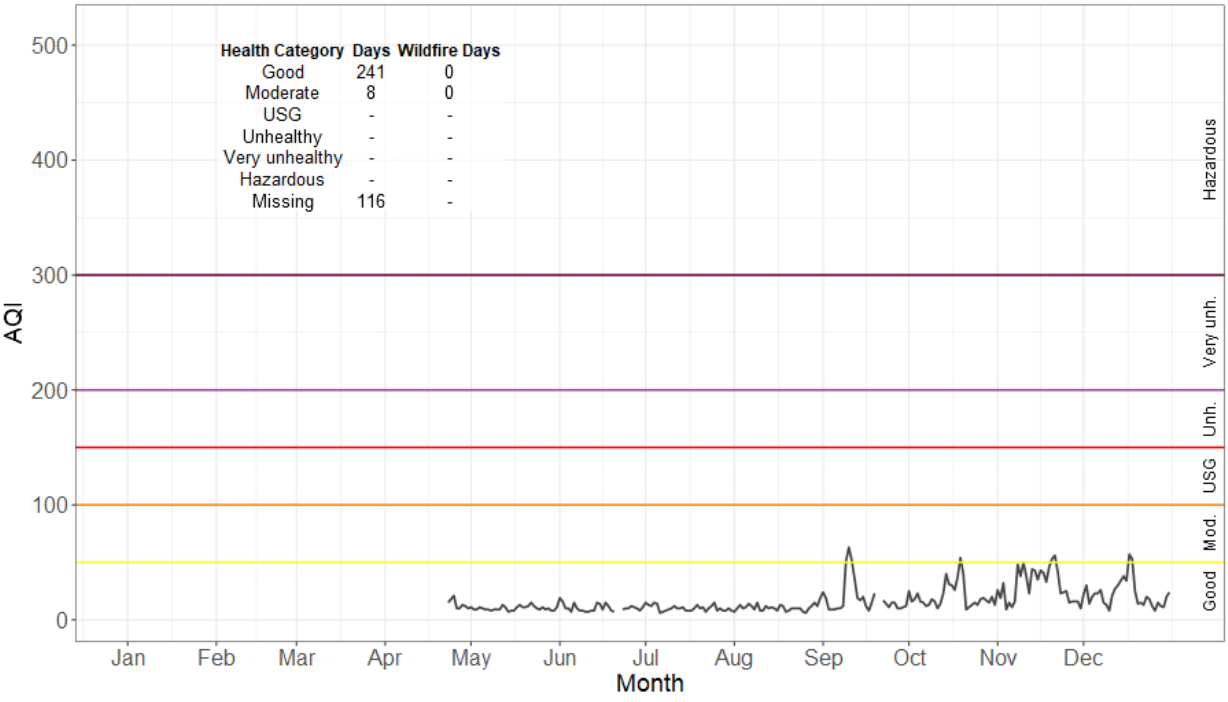


Figure 100: 2022 Tualatin AQI

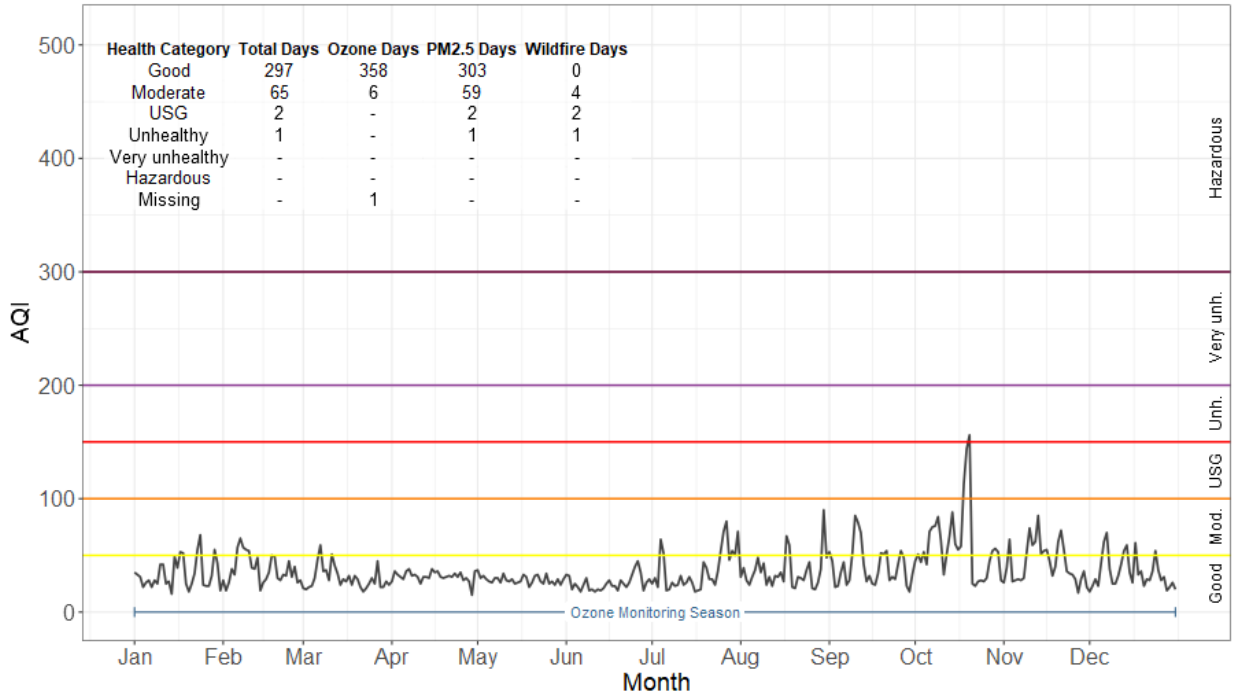


Figure 101: 2022 Turner AQI

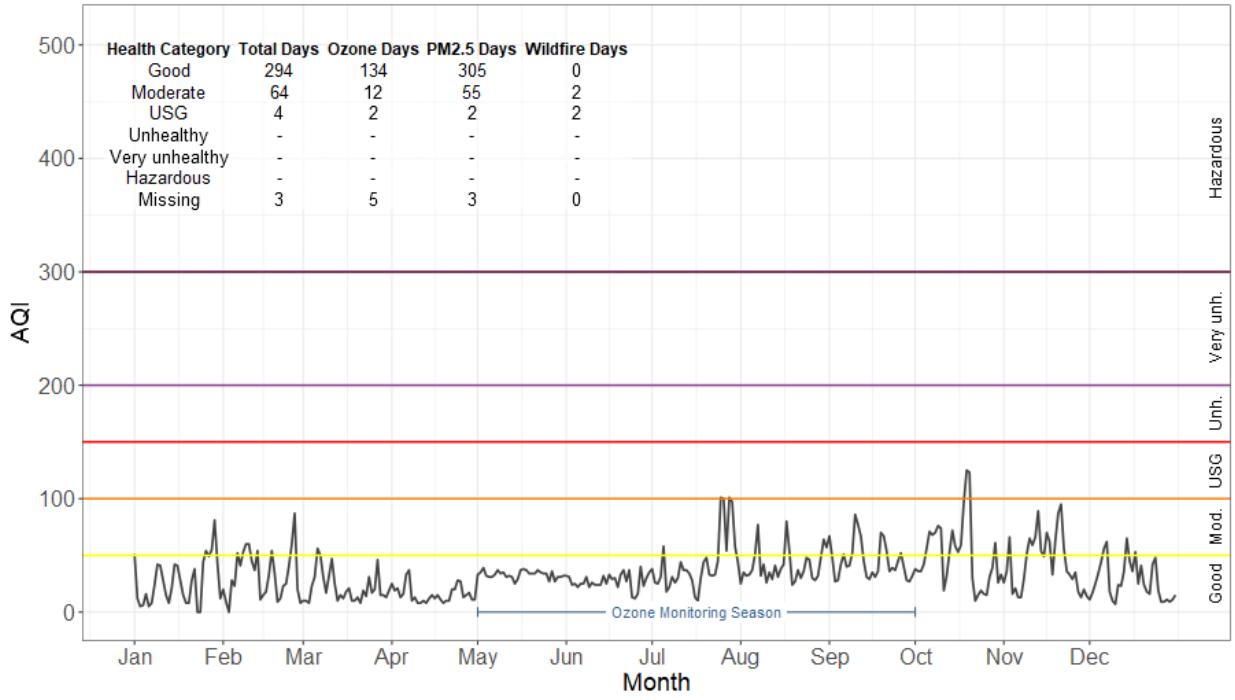
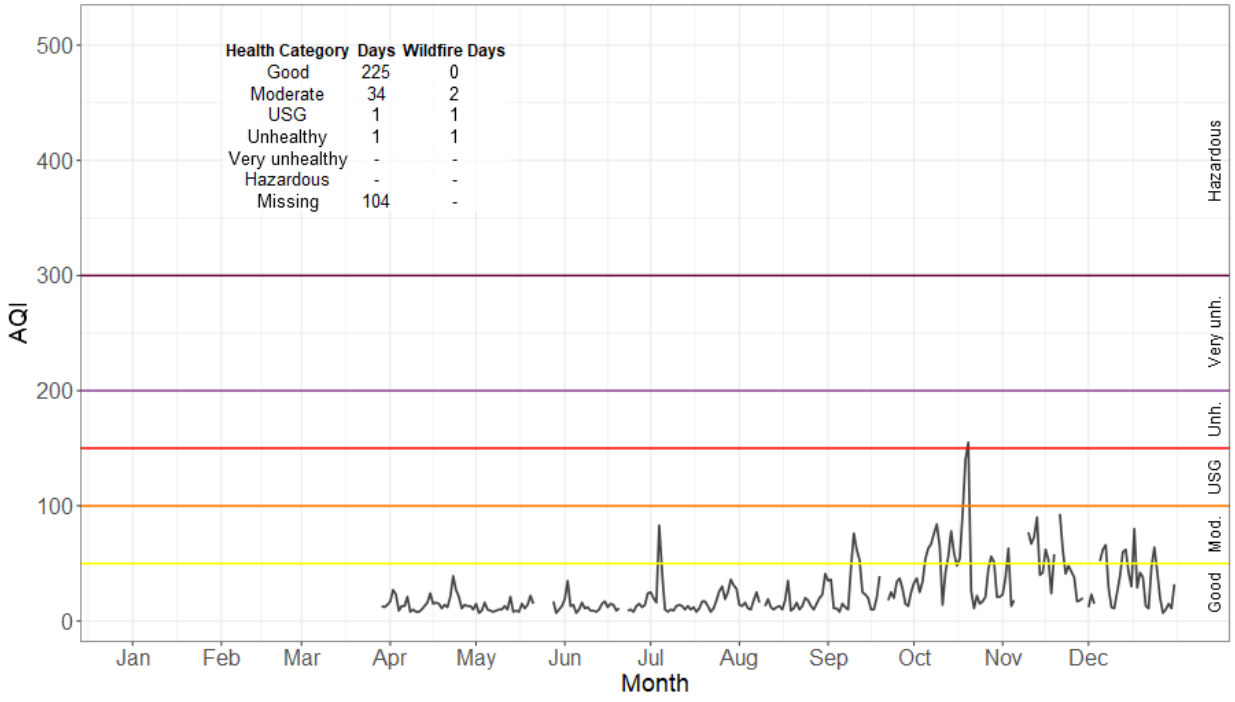


Figure 102: 2022 Woodburn AQI



Appendix 1: Ambient Air Monitoring Network Data

DEQ and LRAPA operate complex ambient air monitor networks and the parameters monitored can vary. The tables below list the identification information, parameters monitored, monitoring area information, monitoring methods and location of all sites in the network. Some network data is available on DEQ's AQI website (https://aqi.oregon.gov). DEQ can also provide data upon request; email requests to aqm.questions@deq.oregon.gov.

Site Information

Site City	Site Name	DEQ Site Code	EPA Site Number	Sulfur Dioxide	Carbon Monoxide	Nitrogen Dioxide	Ozone	$PM_{2.5}$	$PM_{2.5}$ Est	$PM_{2.5}$ Spec	PM_{10}	Hazardous Air Pollutants	Lead	Wind Speed/Direction	Temperature	Differential Temperature	Barometric Pressure	Relative Humidity	Solar Radiation
Albany	Calapooia School	ACS	410430009						X										
Ashland	Fire Department	AFD	410290203						X										
Baker City	US Forest Service	BFS	410010004						X										
Beaverton	Highland Park School	BHP	410670111						X										
Bend	High School	BEE	410170123						X			X					X		
Bend	Pine Ridge Elementary	BPR	410170116						X										
Bend	Ponderosa Elementary	BPE	410170115						X										
Bend	Pump Station	BPS	410170120						X										
Bend	Road Department	BRD	410140121											X	X		X	X	X
Brookings	Oregon Dept. of Forestry	BDF	410150002						X										
Burns	Washington Street	BWS	410250003					X	X					X	X		X		

Site City	Site Name	DEQ Site Code	EPA Site Number	Sulfur Dioxide	Carbon Monoxide	Nitrogen Dioxide	Ozone	$PM_{2.5}$	$PM_{2.5}$ Est	$PM_{2.5}$ Spec	PM_{10}	Hazardous Air Pollutants	Lead	Wind Speed/Direction	Temperature	Differential Temperature	Barometric Pressure	Relative Humidity	Solar Radiation
Carus	Spangler Road	SPR	410050004				X		X					X	X		X		
Cave Junction	US Forest Service Office	CJFS	410330036						X										
Chiloquin	Duke Drive	CDD	410352040						X										
Coos Bay	Marshfield High School	CBM	410110003						X										
Corvallis	Fire Department #3	CCB	410030013						X										
Corvallis	EPA ORD Office	CJT	410030014						X										
Cottage Grove	City Shops	CGC	410399004					X	X										
Cove	City Hall	CCH	410610120						X					X					
Crater Lake	Lodge at Rim	CLR	410351002						X										
Dallas	LeCreole Middle School	DLM	410530004						X										
Detroit	US Forest Service Office	DFS	410470123						X										
Enterprise	US Forest Service Office	EFS	410630001						X										
Estacada	Clackamas River School	ECR	410050011						X										
Eugene	Amazon Park	EAP	410390060				X	X	X					X					
Eugene	Highway 99	E99	410390059					X	X		X								
Eugene	Wilkes Drive	EWD	410390101						X					X	X		X		X
Florence	Oregon Dept. of Forestry	FDF	410390100						X										

Site City	Site Name	DEQ Site Code	EPA Site Number	Sulfur Dioxide	Carbon Monoxide	Nitrogen Dioxide	Ozone	$PM_{2.5}$	$PM_{2.5}$ Est	$PM_{2.5}$ Spec	PM_{10}	Hazardous Air Pollutants	Lead	Wind Speed/Direction	Temperature	Differential Temperature	Barometric Pressure	Relative Humidity	Solar Radiation
Forest Grove	Pacific University	FGP	410670006						X										
Government Camp	Multorpor	MUL	410050102						X										
Grants Pass	Parkside School	GPP	410330114					X	X					X	X		X		
Gresham	Centennial High School	GCH	410510031						X										
Hermiston	Municipal Airport	HMA	410591003				X		X					X	X				
Hillsboro	Hare Field	HHF	410670004					X	X			X	X				X		
Hood River	Westside Fire Department #2	HRF	410270001						X										
John Day	Davidson Street	JDD	410230002						X										
Klamath Falls	Peterson School	KFP	410350004					X	X					X	X	X	X		
La Grande	N Hall Avenue and E N Street	LHN	410610123						X		X	X	X	X	X		X	X	
La Pine	Rural Fire Station #103	LFD	410172002						X										
Lakeview	Center and M Streets	LCM	410370001					X	X		X			X	X		X		
Lyons	Mari-Linn School	LMS	410432003						X										
Madras	Westside School	MWS	410310007						X										
McMinnville	High School	MHS	410711003																
Medford	Rossanley Drive	MTV	410291002											X	X		X	X	X
Medford	Welch/Jackson Streets	MWJ	410292129					X	X		X	X							

Site City	Site Name	DEQ Site Code	EPA Site Number	Sulfur Dioxide	Carbon Monoxide	Nitrogen Dioxide	Ozone	$PM_{2.5}$	$PM_{2.5}$ Est	$PM_{2.5}$ Spec	PM_{10}	Hazardous Air Pollutants	Lead	Wind Speed/Direction	Temperature	Differential Temperature	Barometric Pressure	Relative Humidity	Solar Radiation
Mill City	High School	MCS	410430104						X										
Oakridge	Willamette Activity Center	WAC	410392013					X	X		X			X	X		X		X
Ontario	May Roberts School	OMR	410450001						X										
Pendleton	McKay Creek	PMC	410590121						X								X		
Portland	Helensview School/Cully	PCH	410512011						X					X					
Portland	Humboldt School	PHS	410512010						X		X	X	X						
Portland	Jefferson High School	PJH	410511191											X					
Portland	Lane Middle School	PLM	410510032						X										
Portland	Lincoln High School	PLH	410510034						X										
Portland	McDaniel High School	PMS	410510039						X										
Portland	Roosevelt High School	PRH	410510003						X										
Portland	Sauvie Island	SIS	410090004				X		X					X	X				
Portland	SE 12th Ave and Main St	PTM	410510035						X										
Portland	SE 57th Ave & Lafayette St	SEL	410510080	X	X	X	X	X	X	X	X		X	X			X		
Prineville	Davidson Park	PDP	410130100					X	X					X	X		X	X	X
Redmond	High School	RHS	410171001						X										
Roseburg	Douglas County Fire	RFD	410190004						X										

Site City	Site Name	DEQ Site Code	EPA Site Number	Sulfur Dioxide	Carbon Monoxide	Nitrogen Dioxide	Ozone	$PM_{2.5}$	$PM_{2.5}$ Est	$PM_{2.5}$ Spec	PM_{10}	Hazardous Air Pollutants	Lead	Wind Speed/Direction	Temperature	Differential Temperature	Barometric Pressure	Relative Humidity	Solar Radiation
Saginaw	Delight Valley Road	SAG	410391007				X												
Salem	Chemeketa Comm College	SCC	410470022						X										
Salem	State Hospital	SSH	410470041				X		X										
Shady Cove	Shady Cove Schools	SCS	410290019						X										
Silverton	James St and Western St	SJW	410470007						X					X					
Sisters	US Forest Service Office	SFS	410170004						X								X		
Springfield	City Hall	SCH	410391009						X					X					
Sunriver	Three Rivers Elementary	SRE	410170117						X										
Sweet Home	Fire Department	SFD	410432002						X										
Talent	Rapp Lane	TAL	410290201				X		X										
The Dalles	Cherry Heights	TDC	410650007						X										
Tillamook	Junior High School	TJH	410570001						X										
Toledo	NE Hwy 20 and NW A St	TPS	410410004						X										
Tualatin	Bradbury Court	TBC	410670005		X	X	X	X	X					X	X		X	X	
Turner	Cascade Junior High	CJH	410470004				X		X					X	X				
Woodburn	Chemeketa Comm College	WCC	410470023						X										

Monitoring Area Information

A monitoring area often coincides with city boundaries, but a monitoring area may also cover multiple cities for larger metropolitan areas or cities very close to each other. For monitoring areas with multiple sites, the tables below list which sites are used to monitor for each criteria pollutant by DEQ site code. Regulatory monitor site codes are **bolded**.

Monitoring Areas with Regulatory and Informational Monitors						
Monitoring Area	**$PM_{2.5}$**	**PM_{10}**	**Ozone**	**Carbon Monoxide**	**Nitrogen Dioxide**	**Sulfur Dioxide**
Bend	BEE, BPE, BPR, BPS					
Corvallis	CCB, CJT					
Eugene Metro	**E99**, **EAP**, EWD, SCH	**E99**	**EAP**, **SAG**			
Medford	**MWJ**	**MWJ**	**TAL**			
Portland Metro	**HHF**, PCH, PHS, PLH, PLM, PMS, PRH, PTM, **SEL**, **TBC**	**PHS**, **SEL**	**SEL**, **SIS**, **SPR**, **TBC**	**SEL**, **TBC**	**SEL**, **TBC**	**SEL**
Salem	CJH, SCC, SSH		CJH, SSH			

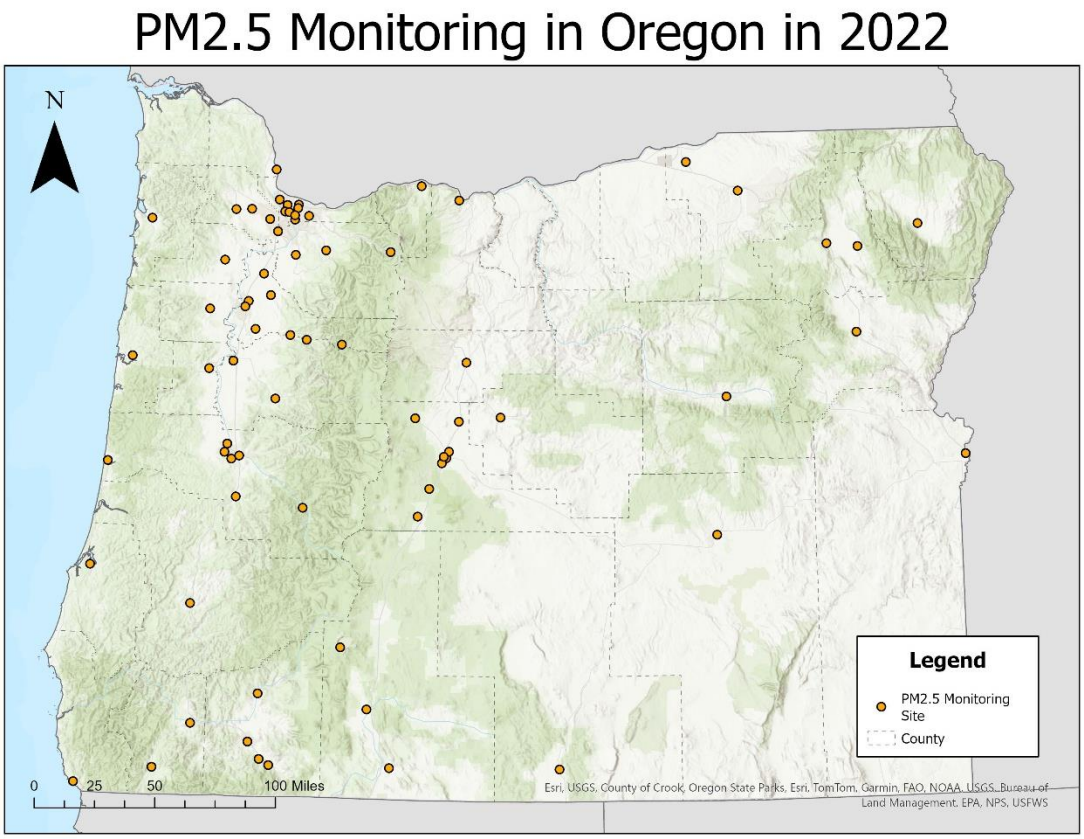
Monitoring Methods

Multiple monitors can measure pollutant concentrations in ambient air, but EPA requires that DEQ only use certain monitors to support regulatory determinations. Monitors approved by EPA are called a Federal Reference Method monitor or Federal Equivalent Method monitor. More information about approved federal methods can be found on EPA's website (https://www.epa.gov/amtic/air-monitoring-methods-criteria-pollutants).

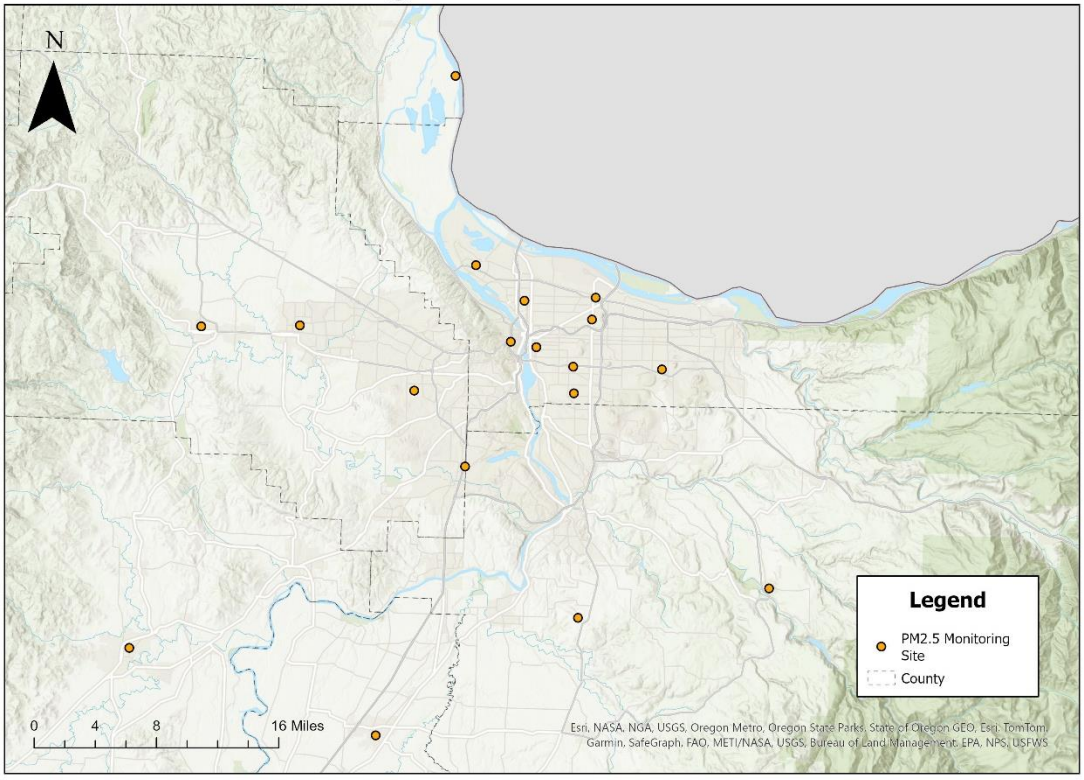
Air Monitoring Methods		
Pollutant	**Method Code**	**Method Description**
$PM_{2.5}$	117, 118, 145	Low-volume filter sampler and pre- and post-sampling weighing
	209	FEM beta attenuation
PM_{10}	127	Low-volume filter sampler and pre- and post-sampling weighing
	141	High-volume filter sampler and pre- and post-sampling weighing
	122	FEM beta attenuation
Ozone	087	Ultraviolet photometry
NO_2	200	Chemiluminescence analyzer with photolytic conversion
SO_2	100	Ultraviolet fluorescence spectrometer trace SO_2 analyzer
CO	093	Nondispersive infrared trace CO analyzer
$PM_{2.5}$ Est	027/145, 791/145	Light scattering correlated with $PM_{2.5}$ filter sampling

Monitoring Network Maps

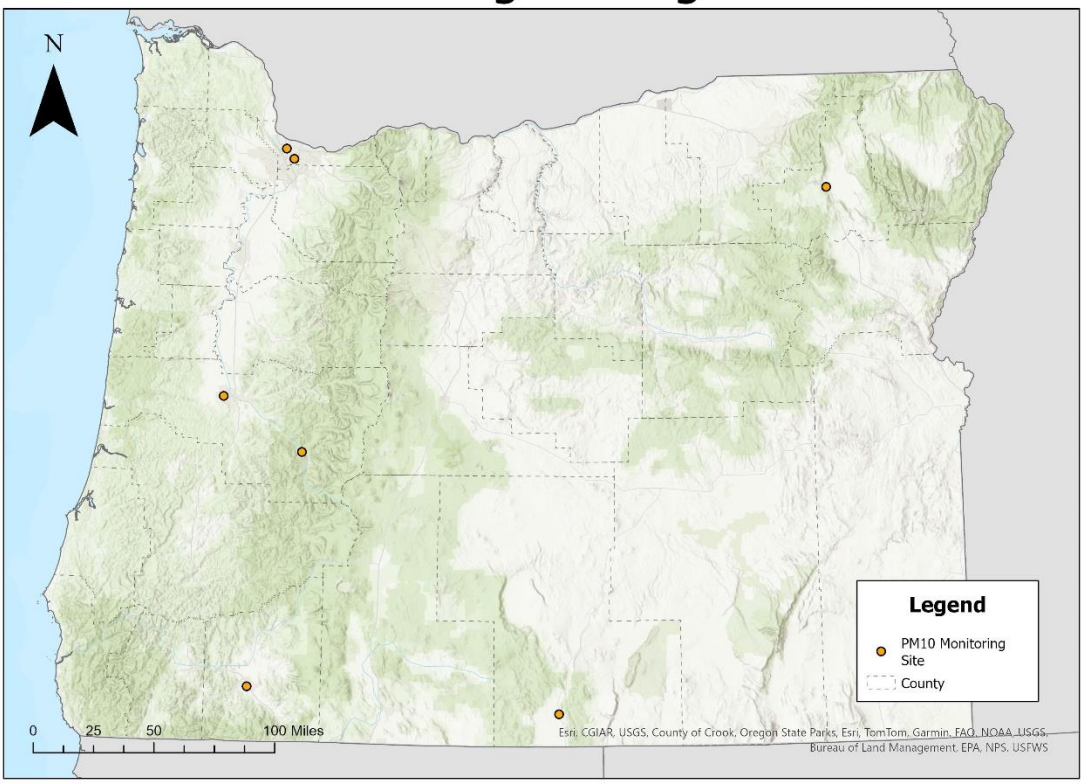
Below are maps of monitoring networks for each criteria pollutant monitored in Oregon.



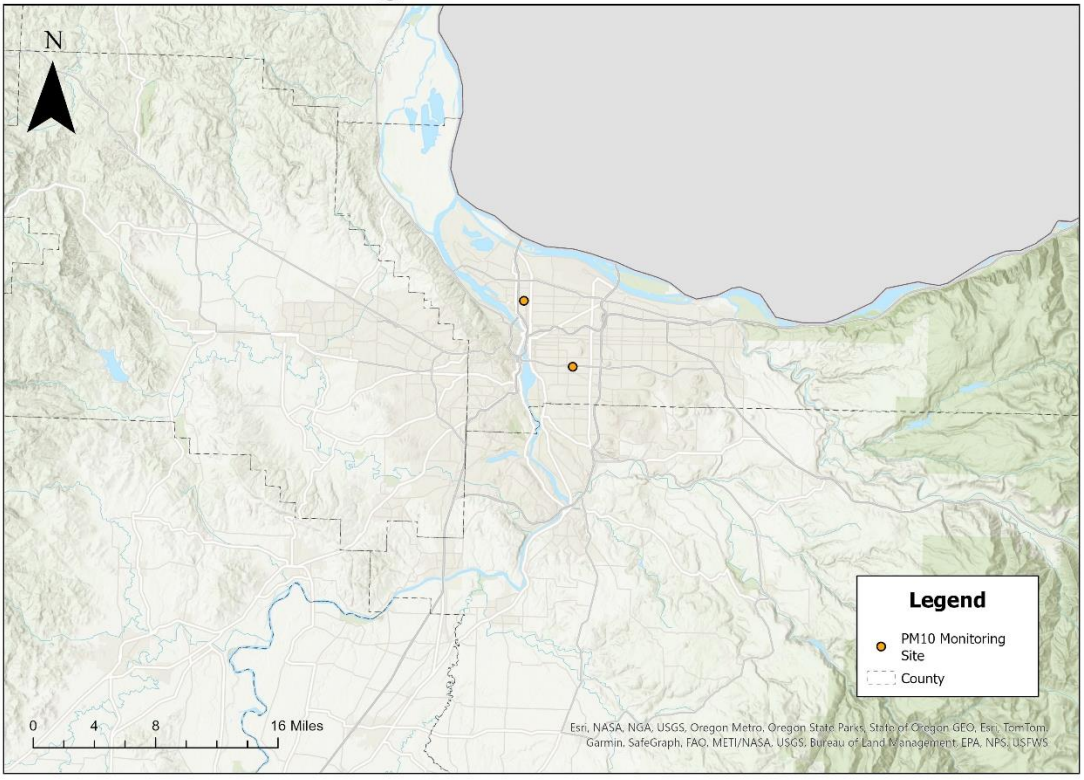
PM2.5 Monitoring in the Portland Area in 2022



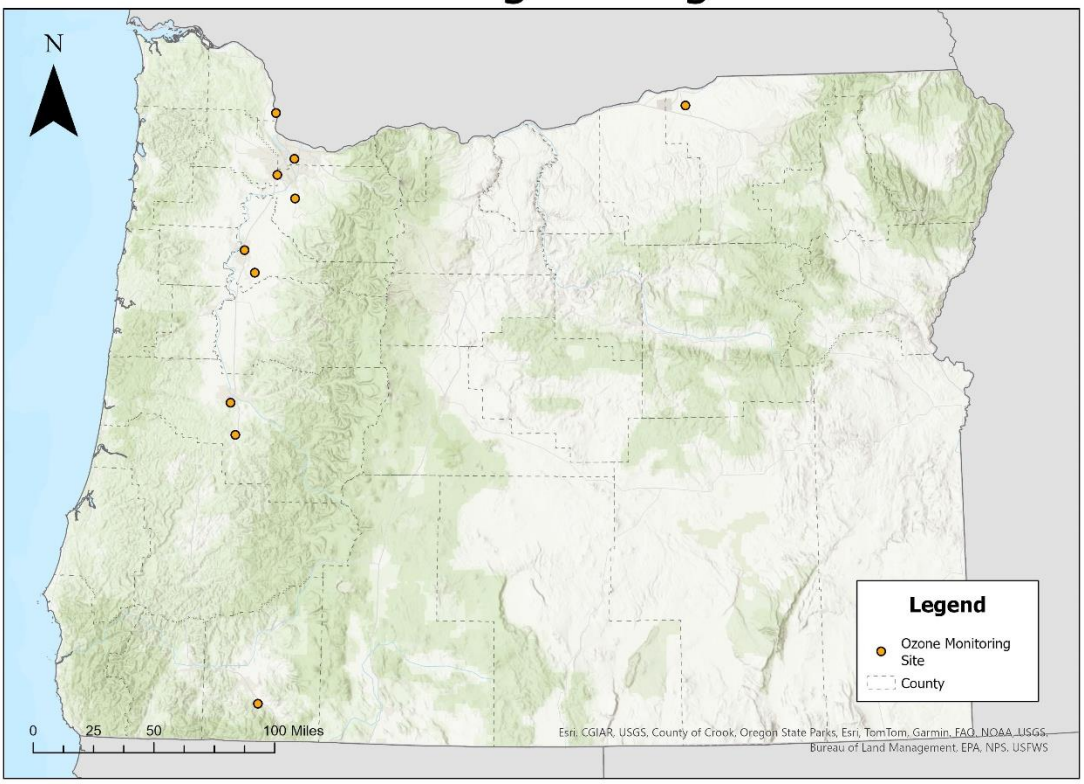
PM10 Monitoring in Oregon in 2022



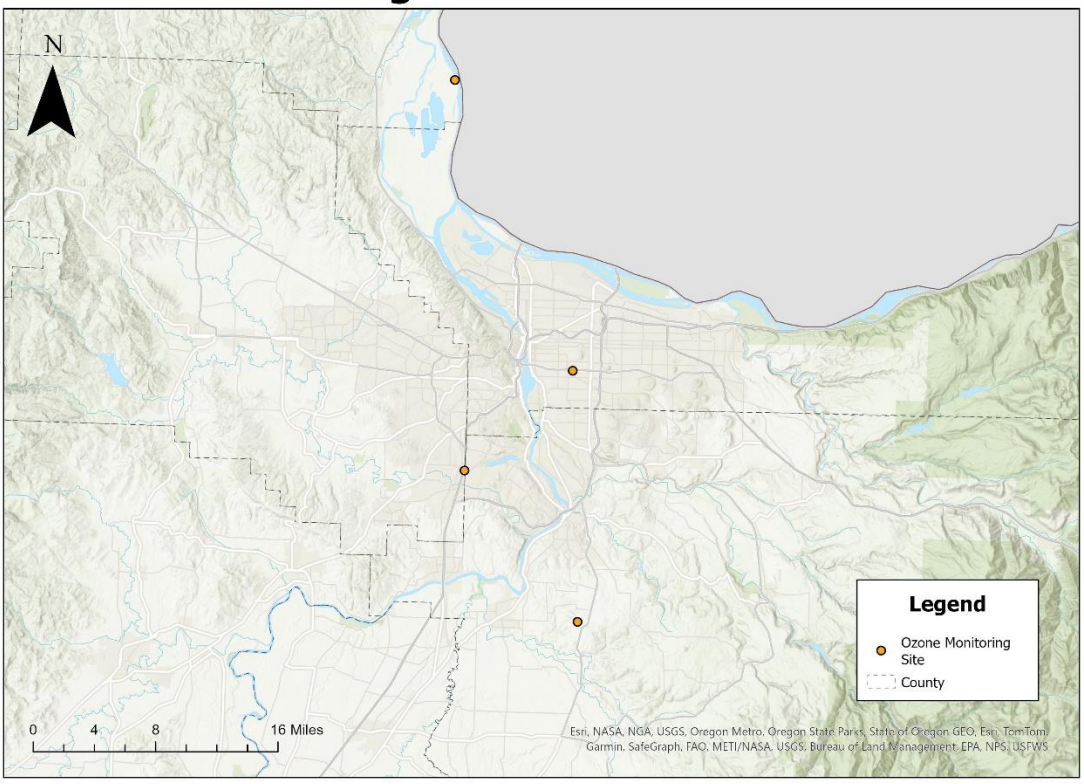
PM10 Monitoring in the Portland Area in 2022



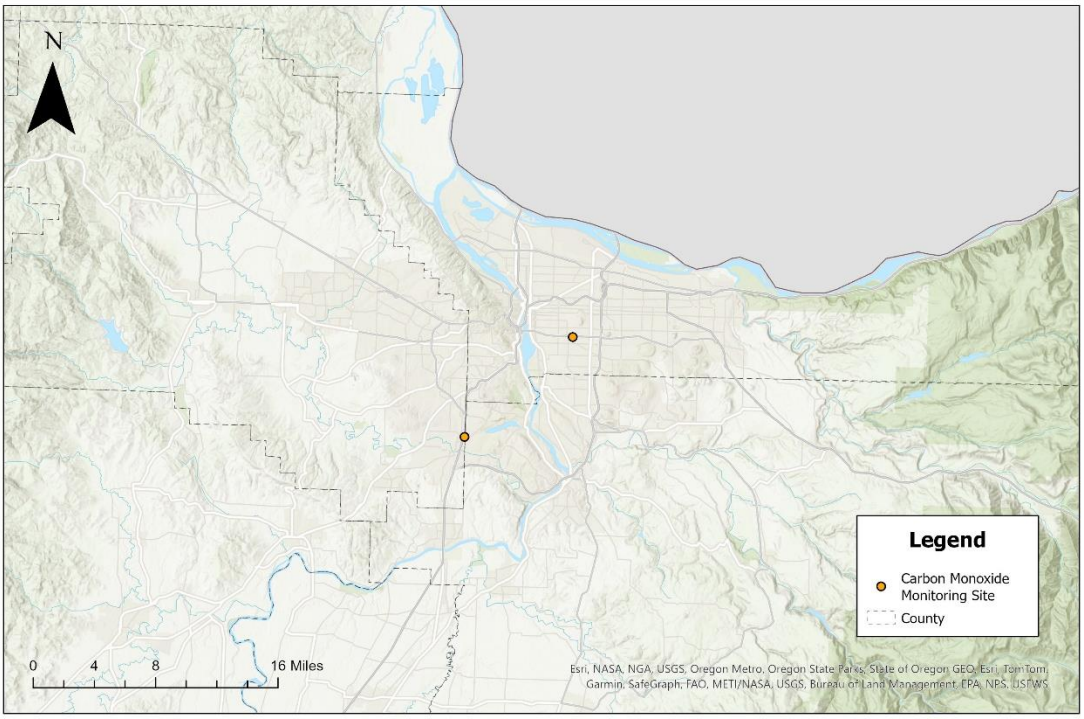
Ozone Monitoring in Oregon in 2022



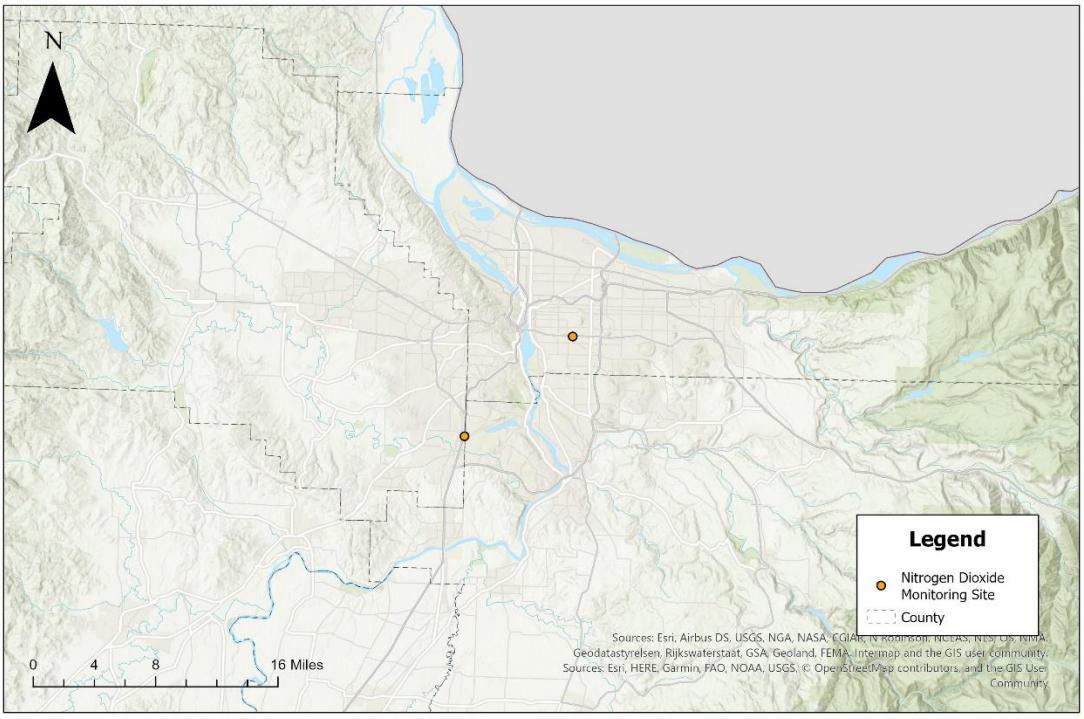
Ozone Monitoring in the Portland Area in 2022



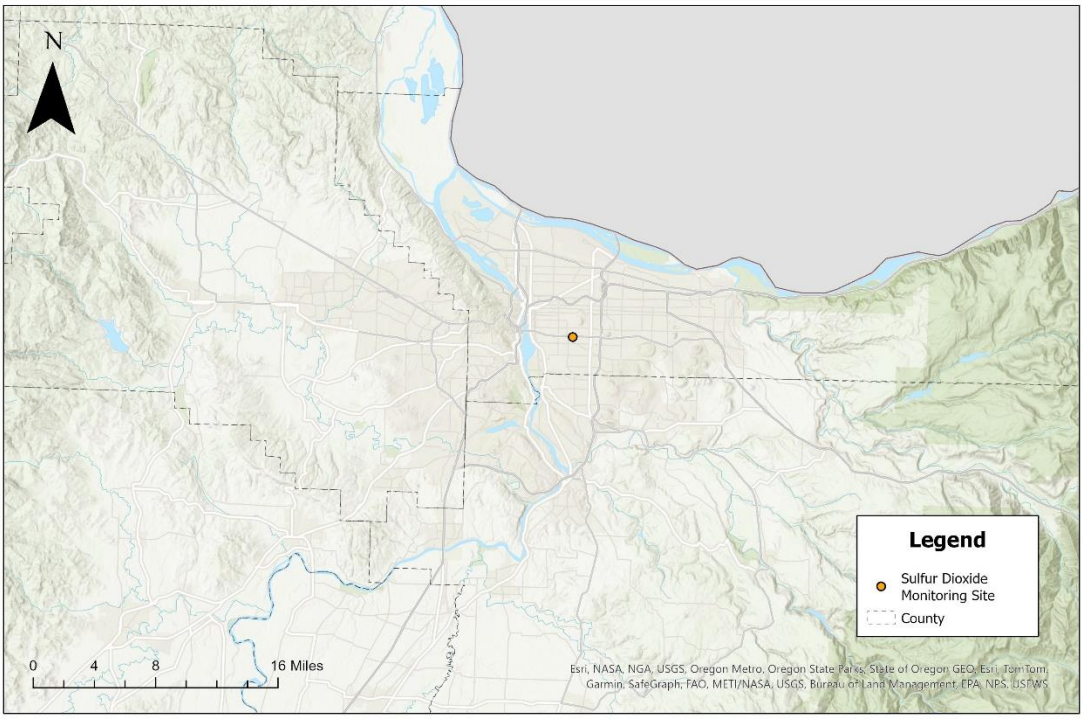
Carbon Monoxide Monitoring in the Portland Area in 2022



Nitrogen Dioxide Monitoring in the Portland Area in 2022



Sulfur Dioxide Monitoring in the Portland Area in 2022



Appendix 2: NAAQS Historical Data

Data listed below are from regulatory monitors for the past 10 years. EPA stores air quality data from regulatory monitors and some informational monitors in its Air Quality System database. More information about this database and how to retrieve data can be found on EPA's website (https://www.epa.gov/aqs). DEQ can also provide data upon request; email requests to aqm.questions@deq.oregon.gov.

$PM_{2.5}$

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, µg/m³ (date)	Days Above NAAQS Level	Annual Mean, µg/m³	98th Percentile, µg/m³
Burns	2013	119/122	39 (12/12)	4	9.9	38
Washington Street	2014[h]	119/122	61(08/06)	2	9.0	29
BWS	2015[h]	360/365	46 (08/29)	2	8.3	26
410250003	2016	118/122	30 (11/17)	0	8.2	29
	2017[h]	122/122	90 (09/07)	5	11.1	45
	2017*	119/122	52 (01/16)	2	9.8	34
	2018[h]	116/122	88 (08/21)	3	10.1	36
	2018*	115/122	36 (12/16)	2	9.2	28
	2019	350/365	48 (02/01)	5	10.2	30
	2020[h]	352/366	254 (09/12)	11	11.8	65
	2020*	342/366	38 (12/08)	1	9.2	30
	2021[h]	344/365	104 (09/09)	9	11.3	47
	2021*	330/365	29 (12/19)	0	9.7	24
	2022[h]	365/365	41 (09/10)	3	9.3	29
	2022*	342/365	35 (12/26)	1	9	27
Cottage Grove	2013	120/122	38 (12/09)	1	7.5	25
City Shops	2014	124/122	34 (11/19)	0	6.9	21
CGS	2015[h]	118/121	40 (08/22)	1	7.3	20
410399004	2016	121/122	26 (01/01)	0	5.8	18
	2017[h]	117/122	116 (09/04)	3	8.8	38
	2017*	111/122	28 (01/16)	0	6.8	20
	2018[h]	123/122	44 (08/21)	1	7.8	24
	2018*	122/122	26 (12/07)	0	7.5	23
	2019	120/121	29 (12/11)	0	7.3	21
	2020[h]	121/122	499 (09/12)	2	13.4	17
	2020*	119/122	17 (10/27)	0	6.5	16
	2021[h]	357/365	45 (09/07)	1	6.2	20
	2021*	351/365	26 (07/04)	0	5.8	16
	2022[h]	362/365	93 (09/10)	7	7.9	35
	2022*	348/365	35 (11/20)	0	6.8	22

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, µg/m³ (date)	Days Above NAAQS Level	Annual Mean, µg/m³	98th Percentile, µg/m³
Eugene Metro	2013	122/122	52 (12/09)	4	7.8	39
Amazon Park	2014	123/122	36 (01/26)	1	7.2	31
EAP	2015[P]	121/121	55 (08/22)	2	7.4	27
410390060	2016	122/122	38 (01/01)	2	5.4	20
	2017[P]	119/122	145 (09/04)	9	9.0	42
	2017*	115/122	42 (01/06)	6	6.9	37
	2018[P]	121/122	40 (08/21)	1	7.5	32
	2018*	120/122	34 (12/07)	0	7.2	29
	2019	120/121	30 (11/23)	0	7.3	25
	2020[P]	121/122	528 (09/12)	4	14.9	240
	2020*	118/122	26 (12/05)	0	6.2	17
	2021	120/122	22 (09/04)	0	5.5	14
	2022[P]	362/365	75 (10/10)	7	8.2	35
	2022*	352/365	32 (11/20)	0	7.2	23
Eugene Metro	2013	122/122	55 (12/09)	4	8.3	40
Highway 99	2014	120/122	44 (01/26)	2	7.2	31
E99	2015[P]	122/121	55 (08/22)	2	8.0	27
410390059	2016	119/122	18 (01/04)	0	5.7	16
	2017[P]	120/122	330 (09/04)	4	10.9	43
	2017*	118/122	43 (01/16)	2	7.2	32
	2018[P]	122/122	46 (11/13)	3	8.7	39
	2018*	121/122	46 (11/13)	2	8.4	32
	2019	121/121	31 (01/12)	0	8.0	29
	2020[P]	121/122	454 (09/12)	3	14.9	218
	2020*	118/122	31 (11/02)	0	7.0	23
	2021[P]	360/365	37 (09/03)	1	6.6	19
	2021*	357/365	32 (01/20)	0	6.4	18
	2022[P]	361/365	70 (10/10)	6	8.8	32
	2022*	349/365	42 (11/20)	2	8.2	29
Grants Pass	2013[P]	61/61	90 (08/02)	2	11.9	36
Parkside School	2013*	59/61	36 (11/24)	1	10.1	32
GPP	2014	61/61	43 (11/19)	0	7.4	26
410330114	2015[P]	57/60	24 (08/28)	0	8.2	18
	2016	61/61	17 (12/20)	0	5.8	15
	2017[P]	58/61	283 (09/04)	4	15.8	115
	2017*	54/61	24 (01/01)	0	7.4	19
	2018[P]	61/61	99 (08/06)	1	11.9	75
	2018*	58/61	31 (11/16)	0	9.0	24
	2019[P]	59/60	46 (07/26)	1	9.7	30
	2019*	60/61	30 (01/15)	0	9.0	25

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, µg/m³ (date)	Days Above NAAQS Level	Annual Mean, µg/m³	98th Percentile, µg/m³
	2020[P]	60/61	395 (09/12)	1	14.5	29
	2020*	59/61	29 (10/06)	0	8.1	27
	2021[P]	54/61	81 (09/07)	2	9.7	58
	2021*	52/61	29 (11/18)	0	7.6	22
	2022[P]	109/122	103 (08/30)	2	9.4	24
	2022*	109/122	24 (12/04)	0	8.1	24
Klamath Falls	2013*	112/122	50 (01/16)	7	11.6	46
Peterson School	2014	118/122	31 (08/03)	0	8.8	30
KFP	2015[P]	112/121	85 (08/01)	4	10.2	44
410350004	2015*	108/121	38 (11/29)	1	8.2	25
	2016	118/122	29 (12/08)	0	6.8	23
	2017[P]	122/122	102 (09/04)	3	11.7	55
	2017*	115/122	32 (12/12)	0	8.5	32
	2018[P]	117/122	156 (08/03)	12	20.6	146
	2018*	103/122	28 (12/13)	0	10.7	22
	2019	63/63	27 (10/12)	0	10.5	25
	2020[P]	61/61	300 (09/12)	3	14.6	46
	2020*	57/61	29 (11/29)	0	8.5	25
	2021[P]	59/61	132 (08/14)	4	13.7	62
	2021*	55/61	24 (11/24)	0	9.0	23
	2022[P]	358/365	60 (07/04)	3	8.5	31
	2022*	357/365	43 (12/19)	2	8.4	26
Lakeview	2013	121/122	104 (01/19)	14	14.6	94
Center and M Streets	2014	120/122	47 (01/20)	6	8.6	42
LCM	2015	115/121	45 (11/29)	2	8.4	33
410370001	2016	106/122	70 (12/29)	2	6.3	19
	2017[P]	108/122	64 (12/12)	8	11.0	58
	2017*	107/122	64 (12/12)	7	8.3	56
	2018[P]	101/122	112 (07/31)	9	12.8	66
	2018*	91/122	30 (11/13)	0	7.8	29
	2019	102/122	28 (01/27)	0	6.6	23
	2020[P]	110/122	67 (09/15)	3	8.2	36
	2020*	106/122	26 (12/08)	0	6.7	22
	2021[P]	95/122	87 (08/26)	8	13.8	68
	2021*	84/122	30 (12/21)	0	8.9	28
	2022[P]	108/122	47 (12/19)	2	8.5	35
	2022*	107/122	47 (12/19)	1	8.0	34

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, µg/m³ (date)	Days Above NAAQS Level	Annual Mean, µg/m³	98th Percentile, µg/m³
Medford	2013[P]	121/122	157 (07/30)	10	14.2	66
Grant Ave and Belmont St	2013*	118/122	66 (12/12)	7	12.0	43
MGB	2014[P]	121/122	39 (01/02)	2	9.3	31
410290133	2014*	120/122	39 (01/02)	1	9.1	28
	2015[P]	119/121	112 (08/01)	7	12.1	46
	2015*	115/121	36 (11/23)	3	9.6	35
	2016	120/122	25 (12/17)	0	7.2	21
	2017[P]	117/122	151 (09/04)	9	15.5	111
	2017*	110/122	37 (12/15)	2	10.2	29
Medford	2018[P]	120/122	180 (08/09)	3	17.4	144
Welch & Jackson Streets	2018*	105/122	26 (01/14)	0	9.2	24
MWJ	2019[P]	117/119	105 (07/26)	3	8.7	37
410292129	2019*	119/121	37 (01/03)	1	7.5	27
	2020[P]	120/122	526 (09/12)	4	15.5	63
	2020*	112/122	25 (12/05)	0	8.9	23
	2021[P]	93/122	141 (08/14)	8	16.4	121
	2021*	83/122	23 (09/16)	0	9.3	23
	2022[P]	97/122	73 (08/30)	2	10	33
	2022*	97/122	31 (12/13)	0	10	23
Oakridge	2013	120/122	55 (12/09)	5	9.8	41
Willamette Activity Center	2014	122/122	46 (01/05)	5	10.0	41
WAC	2015	121/121	39 (11/29)	1	8.9	29
410392013	2016	120/122	31 (12/08)	0	6.7	22
	2017[P]	125/122	200 (09/04)	9	13.0	86
	2017*	119/122	42 (12/12)	3	8.8	36
	2018[P]	114/122	62 (08/21)	2	12.2	33
	2018*	112/122	35 (02/13)	1	9.0	29
	2019	354/365	42 (01/12)	3	9.2	37
	2020[P]	340/366	577 (09/12)	3	14.9	190
	2020*	329/366	39 (12/03)	1	6.7	26
	2021[P]	361/365	134 (09/07)	19	10.0	70
	2021*	332/365	24 (08/06)	0	6.4	19
	2022[P]	358/265	330 (10/19)	37	23.3	247
	2022*	321/365	35 (12/16)	0	8.6	26

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, µg/m³ (date)	Days Above NAAQS Level	Annual Mean, µg/m³	98th Percentile, µg/m³
Portland Metro	2013	119/122	55 (12/12)	5	9.1	43
Hillsboro Hare Field	2014	117/122	37 (01/26)	1	7.0	23
HHF	2015⚑	120/121	58 (08/22)	1	8.3	34
410670004	2015*	119/121	34 (11/29)	0	7.6	32
	2016	120/122	21 (12/17)	0	5.9	18
	2017⚑	119/122	40 (08/02)	2	8.2	33
	2017*	115/122	36 (01/13)	1	7.3	24
	2018⚑	116/122	52 (08/21)	2	8.0	32
	2018*	114/122	32 (11/13)	0	7.2	22
	2019	114/121	36 (12/05)	1	6.7	24
	2020⚑	117/122	297 (09/15)	3	10.9	30
	2020*	114/122	28 (11/02)	0	6.1	18
	2021	120/122	24 (10/16)	0	5.1	15
	2022⚑	118/122	47 (10/20)	2	7.9	29
	2022*	115/122	32 (11/22)	0	7.3	23
Portland Metro	2013	120/122	42 (11/30)	3	8.7	36
SE Lafayette St & 57th Ave	2014	120/122	30 (02/10)	0	6.3	15
SEL	2015⚑	121/121	56 (08/22)	1	7.2	29
410510080	2015*	120/121	30 (11/23)	0	6.8	24
	2016	122/122	28 (12/26)	0	5.6	14
	2017⚑	119/122	53 (09/16)	2	7.9	34
	2017*	115/122	24 (12/21)	0	6.8	22
	2018⚑	120/122	48 (08/21)	2	7.4	20
	2018*	118/122	20 (11/13)	0	6.8	17
	2019	121/121	30 (11/23)	0	6.5	20
	2020⚑	120/122	334 (09/15)	2	10.7	31
	2020*	118/122	31 (11/02)	0	7.1	23
	2021	117/122	23 (10/16)	0	6.1	16
	2022⚑	119/122	75 (10/20)	2	8.0	27
	2022*	116/122	37 (11/13)	0	7.1	22

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, µg/m³ (date)	Days Above NAAQS Level	Annual Mean, µg/m³	98th Percentile, µg/m³
Portland Metro	2016	108/122	22 (10/12)	0	6.3	18
Tualatin Bradbury Court	2017⚑	118/122	50 (09/16)	3	7.9	36
TBC	2017*	115/122	24 (12/15)	0	6.9	20
410670005	2018⚑	121/122	47 (08/21)	2	7.7	19
	2018*	119/122	19 (11/13)	0	7.1	17
	2019	120/121	32 (11/23)	0	6.8	21
	2020⚑	119/122	373 (09/15)	2	11.2	28
	2020*	117/122	28 (11/02)	0	6.8	18
	2021	98/122	20 (03/02)	0	6.7	18
	2022⚑	113/122	66 (10/20)	1	8.6	28
	2022*	111/122	28 (11/13)	0	7.9	24
Prineville	2013	122/122	56 (12/27)	4	11.0	49
Davidson Park	2014⚑	119/122	69 (07/19)	4	9.9	47
PDP	2014*	118/122	48 (01/17)	3	9.4	44
410130100	2015⚑	108/121	83 (08/13)	3	8.9	42
	2015*	104/121	42 (01/06)	2	7.5	25
	2016	116/122	41 (12/17)	1	6.9	24
	2017⚑	112/122	106 (09/07)	8	11.7	58
	2017*	107/122	50 (12/15)	4	8.5	35
	2018⚑	113/122	60 (08/21)	2	8.9	33
	2018*	110/122	33 (10/17)	0	8.0	25
	2019	116/121	33 (09/06)	0	7.6	28
	2020⚑	115/122	593 (09/12)	3	16.4	132
	2020*	112/122	30 (12/29)	0	7.5	27
	2021⚑	106/122	54 (09/04)	2	7.3	24
	2021*	104/122	24 (09/07)	0	6.8	17
	2022⚑	115/122	28 (09/11)	0	6.7	20
	2022*	114/122	25 (11/16)	0	6.5	19

⚑*Wildfire data included*

** Wildfire data removed*

PM_{10}

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, µg/m³ (date)	Days Above NAAQS Level	Second-Highest Daily Max, µg/m³ (date)
Eugene Metro	2013	60/61	59 (08/20)	0	42 (11/24)
Highway 99	2014	61/61	46 (11/19)	0	37 (09/08)
E99	2015⚐	60/60	97 (08/22)	0	53 (07/29)
410390059	2016	60/61	57 (08/22)	0	42 (09/13)
	2017⚐	355/365	239 (09/04)	3	226 (09/03)
	2018⚐	339/365	134 (08/21)	0	83 (08/20)
	2019	354/365	77 (08/26)	0	31 (08/27)
	2020⚐	356/366	588 (09/13)	10	579 (09/12)
	2020*	344/366	59 (08/14)	0	58 (09/02)
	2021	359/365	66 (09/03)	0	64 (08/04)
	2022⚐	361/365	85 (10/10)	0	85 (10/20)
La Grande	2013	62/61	76 (01/22)	0	35 (12/06)
Ash Street	2014	60/61	50 (11/19)	0	43 (11/13)
LAS	2015⚐	60/60	69 (08/22)	0	41 (08/28)
410610119	2016	45/61	45 (11/02)	0	27 (12/20)
La Grande	2017⚐	56/61	64 (08/11)	0	55 (08/05)
N Hall Street and E N Ave	2018⚐	61/61	54 (07/14)	0	51 (08/06)
LHN	2019	61/61	48 (03/16)	0	36 (11/05)
410610123	2020	58/61	49 (08/25)	0	39 (02/21)
	2021	58/61	82 (08/14)	0	43 (08/20)
	2022	56/61	67 (10/20)	0	44 (09/02)
Medford	2012⚐	44/61	37 (01/28)	0	36 (08/13)
Grant Ave and Belmont St	2013⚐	58/61	91 (08/08)	0	84 (08/14)
MGB	2014	54/61	41 (01/05)	0	35 (12/31)
410290133	2015⚐	57/60	61 (08/22)	0	52 (08/28)
Medford	2016	53/61	33 (12/20)	0	28 (01/07)
Welch & Jackson Streets	2017⚐	58/61	175 (09/04)	1	136 (08/29)
MWJ	2017*	53/61	47 (01/31)	0	39 12/09)
410292129	2018⚐	55/61	99 (07/25)	0	66 07/19)
	2019⚐	58/61	118 (07/26)	0	54 (01/03)
	2020⚐	60/61	62 (10/06)	0	46 (09/18)
	2021⚐	58/61	154 (08/14)	1	108 (09/07)
	2022⚐	51/61	86 (09/02)	0	51 (10/20)

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, µg/m³ (date)	Days Above NAAQS Level	Second-Highest Daily Max, µg/m³ (date)
Oakridge	2013	61/61	53 (12/30)	0	41 (01/22)
Willamette Activity Center	2014	61/61	55 (01/05)	0	43 (08/27)
WAC	2015	60/60	37 (02/17)	0	32 (02/23)
410392013	2016	60/61	30 (12/08)	0	25 (02/24)
	2017*	336/365	55 (12/07)	0	44 (12/13)
	2017⚐	352/365	210 (09/04)	4	173 (09/05)
	2018⚐	354/365	76 (08/21)	0	60 (08/22)
	2019	354/365	53 (05/04)	0	49 (06/14)
	2020⚐	351/366	592 (09/12)	8	424 (09/13)
	2020*	341/366	40 (12/03)	0	38 (02/20)
	2021⚐	352/365	157 (09/07)	1	129 (08/14)
	2022⚐	348/365	363 (10/19)	19	350 (09/10)
Portland Metro	2017⚐	57/61	90 (09/16)	0	62 (09/04)
Gresham Learning Center	2017*	54/61	34 (12/21)	0	34 (01/07)
GLC, 410512008					
Portland Metro	2019	56/61	35 (12/05)	0	32 (07/14)
Hillsboro Hare Field					
HHF, 410670004					
Portland Metro	2017⚐	46/61	52 (09/16)	0	29 (08/29)
Humboldt School	2018	61/61	29 (02/07)	0	27 (10/17)
PHS	2019	61/61	29 (11/23)	0	28 (12/05)
410512010	2020	58/61	21 (12/29)	0	20 (02/03)
	2021	59/61	27 (03/17)	0	25 (10/19)
	2022⚐	60/61	89 (10/20)	0	39 (10/14)
Portland Metro	2013	61/61	43 (11/30)	0	40 (12/12)
North Roselawn	2014	60/61	18 (09/14)	0	17 (11/19)
PNR, 410510246	2015⚐	58/60	73 (08/22)	0	45 (11/24)
Portland Metro	2013	120/122	44 (12/12)	0	43 (12/12)
SE Lafayette St & 57th Ave	2014	120/122	37 (02/10)	0	30 (09/11)
SEL	2015⚐	119/121	68 (08/22)	0	33 (11/24)
410510080	2016	119/122	34 (08/19)	0	32 (12/26)
	2017⚐	120/122	70 (09/16)	0	59 (08/02)
	2018⚐	117/122	54 (08/15)	0	27 (02/07)
	2019	119/122	33 (11/23)	0	29 (12/05)
	2020	119/122	35 (09/09)	0	35 (11/02)
	2021	116/122	32 (03/17)	0	29 (03/02)
	2022⚐	118/122	83 (10/20)	0	39 (09/11)

⚐*Wildfire data included, * Wildfire data removed*

Ozone

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, ppb (date)	Days Above NAAQS Level	Fourth-Highest Maximum, ppb (date)
Eugene Metro	2013	153/153	57 (07/09)	0	53 (05/03)
Amazon Park	2014	153/153	61 (07/15)	0	58 (08/26)
EAP	2015[P]	152/153	78 (07/02)	1	68 (07/30)
410390060	2016	153/153	64 (08/19)	0	57 (08/13)
	2017[P]	153/153	91 (08/02)	3	70 (08/08)
	2018[P]	148/153	65 (07/25)	0	60 (08/21)
	2019	153/153	62 (08/27)	0	54 (05/10)
	2020	142/153	66 (08/15)	0	55 (07/27)
	2021	153/153	71 (08/13)	1	62 (08/12)
	2022	152/153	67 (07/25)	0	59 (07/29)
Eugene Metro	2013	153/153	59 (07/09)	0	56 (07/26)
Saginaw	2014	153/153	62 (07/15)	0	58 (08/01)
SAG	2015	153/153	80 (07/02)	1	71 (08/19)
410391007	2016	153/153	63 (08/19)	0	56 (07/28)
	2017[P]	153/153	91 (08/02)	4	73 (08/01)
	2018[P]	153/153	68 (07/25)	0	60 (07/12)
	2019	153/153	65 (08/27)	0	55 (07/25)
	2020	139/153	62 (08/15)	0	52 (08/14)
	2021	153/153	68 (07/30)	0	59 (08/13)
	2022	149/153	62 (07/25)	0	56 (07/26)
Hermiston	2013	151/153	66 (07/19)	0	62 (05/07)
Municipal Airport	2014	146/153	67 (07/12)	0	64 (08/03)
HMA	2015	151/153	73 (07/03)	0	70 (08/19)
410591003	2016	137/153	74 (06/07)	1	63 (07/14)
	2017[P]	153/153	80 (08/08)	7	73 (08/09)
	2018[P]	97/153	66 (07/13)	0	60 (05/22)
	2019	152/153	65 (08/06)	0	59 (06/01)
	2020	141/153	60 (07/30)	0	56 (09/10)
	2021	153/153	74 (08/04)	1	66 (08/15)
	2022	148/153	67 (07/27)	0	64 (09/01)

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, ppb (date)	Days Above NAAQS Level	Fourth-Highest Maximum, ppb (date)
Medford	2013	149/153	70 (07/09)	0	67 (08/06)
Talent Rapp Lane	2014	152/153	64 (07/16)	0	59 (07/10)
TAL	2015[P]	140/153	86 (08/01)	1	69 (07/03)
410290201	2016	131/153	50 (05/13)	0	49 (05/11)
	2017[P]	150/153	83 (08/02)	5	78 (08/03)
	2018[P]	153/153	76 (07/23)	6	74 (07/24)
	2019[P]	153/153	80 (07/26)	1	62 (06/15)
	2020	146/153	67 (09/15)	0	60 (09/06)
	2021	153/153	78 (08/13)	2	69 (09/04)
	2022	151/153	71 (07/29)	1	66 (09/06)
Portland Metro	2013	153/153	65 (09/11)	0	59 (05/06)
Carus Spangler Road	2014	153/153	72 (08/11)	0	62 (09/14)
SPR	2015	147/153	73 (08/18)	0	69 (07/30)
410050004	2016	153/153	63 (08/19)	0	64 (07/28)
	2017[P]	147/153	116 (08/03)	8	83 (08/28)
	2018[P]	149/153	76 (08/22)	3	70 (08/07)
	2019	152/153	71 (08/28)	1	65 (08/05)
	2020	139/153	77 (08/15)	3	70 (07/30)
	2021	149/153	90 (08/12)	1	62 (06/26)
	2022	151/153	75 (07/26)	2	67 (08/30)
Portland Metro	2013	150/153	52 (08/21)	0	47 (05/04)
Sauvie Island	2014	153/153	56 (05/01)	0	50 (05/13)
SIS	2015	150/153	63 (07/30)	0	58 (07/01)
410090004	2016	152/153	58 (08/18)	0	51 (08/12)
	2017[P]	149/153	86 (08/02)	2	64 (08/04)
	2018[P]	152/153	55 (08/21)	0	53 (08/08)
	2019	150/153	65 (06/12)	0	51 (08/04)
	2020	144/153	57 (07/30)	0	51 (05/27)
	2021	153/153	58 (07/30)	0	55 (07/31)
	2022	150/153	63 (07/26)	0	54 (06/27)
Portland Metro	2013	359/365	58 (06/30)	0	53 (05/06)
SE Lafayette St & 57th Ave	2014	364/365	75 (08/11)	0	55 (05/01)
SEL	2015	363/365	62 (08/18)	0	57 (08/01)
410510080	2016	357/366	60 (08/12)	0	55 (08/12)
	2017[P]	317/365	87 (08/02)	1	68 (08/09)
	2018[P]	353/365	76 (08/08)	2	67 (07/15)
	2019	330/365	66 (08/28)	0	58 (07/21)
	2020	355/366	75 (07/27)	1	59 (07/30)
	2021	363/365	72 (08/13)	1	61 (06/30)
	2022	359/365	80 (07/26)	1	56 (08/07)

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, ppb (date)	Days Above NAAQS Level	Fourth-Highest Maximum, ppb (date)
Portland Metro	2014	231/365	72 (08/11)	1	53 (09/07)
Tualatin Bradbury Court	2015	361/365	67 (08/23)	0	52 (07/04)
TBC	2016	355/366	57 (06/05)	0	48 (04/18)
410670005	2017⚑	315/365	85 (08/03)	4	71 (08/02)
	2018⚑	336/365	56 (07/15)	0	54 (08/15)
	2019	152/153	65 (08/28)	0	50 (05/11)
	2020	140/153	76 (07/27)	1	59 (07/30)
	2021	362/365	70 (08/13)	0	56 (08/14)
	2022	153/153	67 (08/30)	0	61 (07/31)
Salem Metro	2018⚑	109/153	58 (07/16)	0	55 (07/15)
State Hospital	2019	151/153	64 (08/28)	0	52 (08/27)
SSH	2020	142/153	68 (07/27)	0	53 (07/26)
410470041	2021	145/153	63 (07/31)	0	59 (07/30)
	2022	147/153	74 (08/17)	1	64 (07/29)
Salem Metro	2013	150/153	62 (08/21)	0	55 (05/10)
Turner Cascade Jr High	2014	145/153	81 (09/15)	1	62 (07/12)
CJH	2015	153/153	78 (08/18)	1	65 (06/27)
410470004	2016	150/153	69 (08/18)	0	65 (08/12)
	2017⚑	152/153	85 (08/03)	6	78 (08/28)
	2018⚑	150/153	70 (08/14)	0	66 (07/25)
	2019	149/153	66 (08/28)	0	55 (08/27)
	2020	142/153	63 (05/28)	0	57 (07/30)
	2021	151/153	69 (07/30)	0	64 (08/05)
	2022	147/153	71 (07/25)	2	69 (07/29)

⚑*Wildfire smoke may have caused elevated ozone concentrations*

Carbon Monoxide

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, ppm	Days Above NAAQS Level	Second-Highest Maximum, ppm
Portland Metro	2013	337/365	2.0	0	1.8
SE Lafayette St & 57th Ave	2014	356/365	1.3	0	1.3
SEL	2015	365/365	2.0	0	1.9
410510080	2016	311/366	1.5	0	1.5
	2017	215/365	1.7	0	1.6
	2018	361/365	1.6	0	1.6
	2019	244/365	1.6	0	1.4
	2020⚐	360/366	14.2	3	14.1
	2020*	351/366	1.5	0	1.4
	2021	358/365	1.7	0	1.4
	2022	362/365	1.7	0	1.5
Portland Metro	2015	336/365	1.3	0	1.3
Tualatin Bradbury Court	2016	317/366	1.3	0	1.3
TBC	2017	296/365	1.4	0	1.3
410670005	2018	325/365	1.0	0	1.0
	2019	355/365	1.0	0	1.0
	2020⚐	337/366	14.3	3	12.9
	2020*	328/366	1.0	0	0.9
	2021	349/365	1.0	0	0.9
	2022	364/365	1.1	0	0.9

⚐*Wildfire data included*

* *Wildfire data removed*

Nitrogen Dioxide

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, ppb	Days Above NAAQS Level	Annual Mean, ppb	98th Percentile, ppb
Portland Metro	2013	351/365	38	0	10	33
SE Lafayette St & 57th Ave	2014	340/365	40	0	8	35
SEL	2015	365/365	47	0	9	36
410510080	2016	366/366	41	0	9	34
	2017	346/365	53	0	9	40
	2018	337/365	47	0	9	35
	2019	352/365	43	0	8	32
	2020	354/366	35	0	6	30
	2021	350/365	36	0	7	31
	2022	350/365	36	0	7	30
Portland Metro	2014	231/238	19	0	21	39
Tualatin Bradbury Court	2015	332/365	41	0	14	36
TBC	2016	363/366	38	0	13	35
410670005	2017	361/365	49	0	12	38
	2018	341/365	44	0	12	38
	2019	326/365	41	0	11	33
	2020	342/366	42	0	10	30
	2021	348/365	38	0	9	30
	2022	357/365	34	0	10	31

Sulfur Dioxide

Monitoring Area DEQ Site Name DEQ Site Code EPA Site Number	Year	Sample Days: Actual/ Expected	Daily Maximum, ppb	Days Above NAAQS Level	99th Percentile, ppb
Portland Metro	2013	342/365	6	0	5
SE Lafayette St & 57th Ave	2014	343/365	4	0	3
SEL	2015	359/365	8	0	4
410510080	2016	353/366	3	0	3
	2017	332/365	4	0	3
	2018	331/365	3	0	3
	2019	345/365	3	0	3
	2020	351/366	2	0	2
	2021	355/365	3	0	3
	2022	350/365	3	0	3

Appendix 3: AQI Historical Data

AQI data listed below are from regulatory and informational monitors for the past 10 years. AQI values are calculated from $PM_{2.5}$ pollutant concentrations in all the monitoring areas listed below. Select monitoring areas monitor for additional pollutants, which factor into AQI calculations. Those areas are annotated accordingly:

*Ozone monitoring only

**$PM_{2.5}$ and ozone monitoring

***$PM_{2.5}$, ozone, carbon monoxide, nitrogen oxide and sulfur dioxide monitoring

AQI data is available from regulatory and some informational monitors through EPA's AQS database (https://www.epa.gov/aqs). Current hourly AQI data is available from all monitors through DEQ's AQI map (https://aqi.oregon.gov). Some historical pollutant concentration data from all monitors is also available. DEQ can also provide data upon request; email requests to aqm.questions@deq.oregon.gov.

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Albany	2013	305	56	4	0	0	0	0	365
	2014	335	28	2	0	0	0	0	365
	2015	305	43	2	3	0	0	12	365
	2016	343	23	0	0	0	0	0	366
	2017	320	39	3	3	0	0	0	365
	2018	328	34	3	0	0	0	0	365
	2019	322	43	0	0	0	0	0	365
	2020	325	30	0	1	6	4	0	366
	2021	346	19	0	0	0	0	0	365
	2022	315	48	2	0	0	0	0	365
Ashland	2016	163	8	0	0	0	0	0	171
	2017	300	43	7	11	1	2	1	365
	2018	300	26	11	20	4	0	4	365
	2019	351	9	1	4	0	0	0	365
	2020	322	32	1	4	3	4	0	366
	2021	303	32	11	19	0	0	0	365
	2022	330	29	3	3	0	0	0	365

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Baker City	2013	302	63	0	0	0	0	0	365
	2014	317	48	0	0	0	0	0	365
	2015	326	29	8	2	0	0	0	365
	2016	339	27	0	0	0	0	0	366
	2017	307	52	3	3	0	0	0	365
	2018	313	35	1	1	0	0	15	365
	2019	328	32	0	0	0	0	5	365
	2020	327	32	2	5	0	0	0	366
	2021	312	47	1	4	0	0	1	365
	2022	318	44	3	0	0	0	1	365
Beaverton	2013	307	53	5	0	0	0	0	365
	2014	349	16	0	0	0	0	0	365
	2015	338	24	1	1	0	0	1	365
	2016	357	9	0	0	0	0	0	366
	2017	334	23	7	0	0	0	1	365
	2018	328	28	6	0	0	0	3	365
	2019	345	17	0	0	0	0	3	365
	2020	343	14	1	1	4	3	0	366
	2021	354	8	0	0	0	0	3	365
	2022	330	33	0	2	0	0	0	365
Bend	2013	332	33	0	0	0	0	0	365
	2014	335	29	1	0	0	0	0	365
	2015	329	33	2	1	0	0	0	365
	2016	335	5	1	0	0	0	25	366
	2017	291	48	4	8	3	0	11	365
	2018	307	47	5	4	0	0	2	365
	2019	345	13	0	0	0	0	7	365
	2020	320	33	5	0	2	6	0	366
	2021	314	27	9	8	1	1	5	365
	2022	310	50	3	1	1	0	0	365
Brookings	2020	109	8	1	4	0	0	34	156
	2021	216	2	1	0	0	0	146	365
	2022	160	8	0	0	0	0	197	365

Appendix 3: AQI Historical Data

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Burns	2013	266	89	8	0	0	0	2	365
	2014	277	83	3	2	0	0	0	365
	2015	282	80	3	0	0	0	0	365
	2016	279	77	1	0	0	0	8	366
	2017	248	109	6	2	0	0	9	365
	2018	251	104	1	2	0	0	7	365
	2019	265	95	5	0	0	0	0	365
	2020	251	102	2	8	0	1	2	366
	2021	258	98	5	4	0	0	0	365
	2022	273	90	2	0	0	0	0	365
Carus**	2013	92	0	0	0	0	0	0	92
	2014	88	2	1	1	0	0	0	92
	2015	88	2	0	2	0	0	0	92
	2017	89	12	4	2	0	0	0	107
	2018	70	9	2	0	0	0	0	81
	2019	153	0	0	0	0	0	0	153
	2020	223	12	0	0	1	2	7	245
	2021	341	11	0	0	0	0	13	365
	2022	328	32	1	2	0	0	2	365
Cave Junction	2013	267	83	6	7	1	1	0	365
	2014	327	38	0	0	0	0	0	365
	2015	275	71	3	1	0	0	15	365
	2016	337	29	0	0	0	0	0	366
	2017	273	75	4	7	4	0	2	365
	2018	261	71	18	15	0	0	0	365
	2019	293	69	3	0	0	0	0	365
	2020	282	59	5	12	0	7	1	366
	2021	297	52	10	6	0	0	0	365
	2022	257	93	10	4	0	0	1	365
Chiloquin	2019	99	16	2	2	0	0	4	123
	2020	236	17	2	4	4	0	103	366
	2021	113	28	6	22	5	0	191	365
	2022	326	13	0	1	0	0	25	365

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Corvallis	2013	302	52	1	0	0	0	10	365
	2014	344	19	1	0	0	0	1	365
	2015	333	30	1	1	0	0	0	365
	2016	185	9	0	0	0	0	172	366
	2017	319	36	2	0	0	0	8	365
	2018	340	23	2	0	0	0	0	365
	2019	332	33	0	0	0	0	0	365
	2020	330	25	0	3	5	3	0	366
	2021	338	1	0	0	0	0	26	365
	2022	326	27	2	0	0	0	10	365
Coos Bay	2020	323	13	1	6	0	0	23	366
	2021	283	4	0	0	0	0	78	365
	2022	338	17	1	0	0	0	9	365
Cottage Grove	2013	296	65	3	0	0	0	1	365
	2014	323	40	1	1	0	0	0	365
	2015	329	34	1	1	0	0	0	365
	2016	346	20	0	0	0	0	0	366
	2017	295	60	3	7	0	0	0	365
	2018	318	45	1	0	0	0	1	365
	2019	311	53	0	0	0	0	1	365
	2020	314	42	0	1	2	7	0	366
	2021	339	23	1	0	0	0	2	365
	2022	306	49	4	3	0	0	3	365
Cove	2013	68	5	0	0	0	0	19	92
	2014	68	7	0	0	0	0	2	77
	2015	64	14	2	4	0	0	0	84
	2017	39	24	7	3	0	0	0	73
	2018	32	11	1	1	0	0	0	45
	2019	66	2	0	0	0	0	38	106
	2020	108	23	2	6	2	0	5	146
	2021	298	31	5	2	0	0	29	365
	2022	338	23	3	1	0	0	0	365

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Crater Lake	2013	71	15	4	2	0	0	0	92
	2014	104	16	2	0	0	0	0	122
	2015	54	17	9	0	0	0	0	80
	2019	102	1	0	0	0	0	4	107
	2020	43	15	4	4	1	0	5	72
	2021	32	24	15	21	0	0	0	92
	2022	92	14	0	1	0	0	3	110
Dallas	2021	329	3	0	0	0	0	33	365
	2022	327	28	1	0	0	0	9	365
Detroit	2019	83	0	0	0	0	0	0	83
	2020	81	4	0	0	0	0	2	87
	2021	142	19	7	10	1	0	186	365
	2022	319	7	2	0	0	0	37	365
Enterprise	2013	323	41	0	0	0	0	1	365
	2014	329	33	3	0	0	0	0	365
	2015	322	34	3	5	0	0	1	365
	2016	318	31	0	0	0	0	17	366
	2017	291	50	6	3	0	0	15	365
	2018	272	46	2	0	0	0	45	365
	2019	333	29	1	0	0	0	2	365
	2020	323	36	0	7	0	0	0	366
	2021	311	43	6	4	0	0	1	365
	2022	297	32	3	4	0	0	29	365
Estacada	2021	307	36	1	0	0	0	21	365
	2022	309	51	0	0	0	0	5	365
Eugene**	2013	282	69	0	1	0	0	0	365
	2014	301	59	5	0	0	0	0	365
	2015	282	77	4	2	0	0	0	365
	2016	335	30	0	0	0	0	1	366
	2017	290	57	10	5	2	1	0	365
	2018	290	69	6	0	0	0	0	365
	2019	292	71	2	0	0	0	0	365
	2020	289	66	1	0	2	8	0	366
	2021	317	46	2	0	0	0	0	365
	2022	277	79	6	3	0	0	0	365

Appendix 3: AQI Historical Data

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Florence	2019	262	4	0	0	0	0	0	266
	2020	350	7	1	5	0	2	1	366
	2021	363	0	0	0	0	0	2	365
	2022	346	9	0	0	0	0	10	365
Forest Grove	2019	141	39	0	0	0	0	5	185
	2020	317	23	0	3	4	1	18	366
	2021	340	14	0	0	0	0	11	365
	2022	316	40	2	0	0	0	7	365
Government Camp	2013	76	1	0	0	0	0	0	77
	2014	95	4	0	0	0	0	4	103
	2015	65	8	0	2	0	0	0	75
	2017	19	12	4	1	0	0	0	36
	2018	55	15	2	1	0	0	0	73
	2019	93	0	0	0	0	0	2	95
	2020	69	2	0	2	1	1	7	82
	2021	103	10	3	3	0	0	4	123
	2022	55	0	1	0	0	0	6	62
Grants Pass	2013	262	91	2	6	2	1	1	365
	2014	323	40	2	0	0	0	0	365
	2015	307	55	2	1	0	0	0	365
	2016	322	39	0	0	0	0	5	366
	2017	265	81	2	9	4	1	3	365
	2018	252	85	9	14	0	0	5	365
	2019	264	55	3	2	0	0	41	365
	2020	285	44	2	6	1	4	24	366
	2021	303	47	6	8	0	0	1	365
	2022	265	95	1	4	0	0	0	365
Gresham	2020	139	10	1	2	2	4	18	176
	2021	314	20	0	0	0	0	31	365
	2022	316	39	1	2	0	0	7	365
Hermiston*	2013	140	11	0	0	0	0	2	153
	2014	132	11	0	0	0	0	10	153
	2015	133	18	0	0	0	0	2	153
	2016	115	19	1	0	0	0	18	153
	2017	103	43	6	1	0	0	0	153

Appendix 3: AQI Historical Data

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Hermiston**	2018	90	7	0	0	0	0	56	153
	2019	143	11	0	0	0	0	1	155
	2020	214	23	0	0	0	1	12	245
	2021	302	54	4	2	0	0	3	365
	2022	298	62	3	0	0	0	2	365
Hillsboro	2013	281	71	8	1	0	0	4	365
	2014	324	40	1	0	0	0	0	365
	2015	309	54	1	1	0	0	0	365
	2016	331	33	0	0	0	0	2	366
	2017	298	60	5	0	0	0	2	365
	2018	306	51	6	0	0	0	2	365
	2019	316	46	1	0	0	0	2	365
	2020	328	29	0	2	2	3	1	366
	2021	341	24	0	0	0	0	0	365
	2022	305	58	2	0	0	0	0	365
Hood River	2020	99	20	0	1	5	2	12	139
	2021	335	18	1	1	0	0	10	365
	2022	323	30	0	0	0	0	12	365
John Day	2013	221	127	3	0	0	0	14	365
	2014	266	91	1	1	0	0	6	365
	2015	279	75	4	5	0	0	2	365
	2016	285	56	0	0	0	0	25	366
	2017	257	89	9	3	0	0	7	365
	2018	251	104	1	2	0	0	7	365
	2019	255	93	1	0	0	0	16	365
	2020	248	109	1	5	1	1	1	366
	2021	236	119	5	5	0	0	0	365
	2022	243	121	1	0	0	0	0	365
Klamath Falls	2013	220	118	21	3	0	0	3	365
	2014	274	89	2	0	0	0	0	365
	2015	263	92	8	2	0	0	0	365
	2016	292	71	0	0	0	0	3	366
	2017	246	93	13	8	1	0	4	365
	2018	219	105	11	25	3	0	2	365
	2019	287	78	0	0	0	0	0	365

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
	2020	264	75	12	3	1	1	10	366
	2021	241	86	14	24	0	0	0	365
	2022	278	85	1	1	0	0	0	365
La Grande	2013	286	73	6	0	0	0	0	365
	2014	291	66	6	0	0	0	2	365
	2015	285	59	8	3	0	0	10	365
	2016	329	35	0	0	0	0	2	366
	2017	308	49	5	3	0	0	0	365
	2018	322	35	5	1	0	0	2	365
	2019	344	19	0	0	0	0	2	365
	2020	334	23	1	5	3	0	0	366
	2021	321	33	2	2	0	0	7	365
	2022	315	37	4	0	0	0	9	365
La Pine	2020	103	45	2	1	6	1	39	197
	2021	186	51	7	8	6	2	105	365
	2022	239	90	6	7	1	0	22	365
Lakeview	2013	262	63	18	20	0	0	2	365
	2014	302	48	12	1	0	0	2	365
	2015	294	68	3	0	0	0	0	365
	2016	318	41	0	1	0	0	6	366
	2017	288	57	17	1	0	0	2	365
	2018	277	59	13	9	0	0	7	365
	2019	311	51	1	0	0	0	2	365
	2020	293	55	13	4	0	0	1	366
	2021	278	64	17	6	0	0	0	365
	2022	306	55	4	0	0	0	0	365
Lyons	2019	138	50	2	0	0	0	3	193
	2020	283	58	0	1	0	6	18	366
	2021	321	39	1	0	0	0	4	365
	2022	306	55	2	0	0	0	2	365
Madras	2013	76	16	0	0	0	0	0	92
	2014	61	19	0	2	0	0	0	82
	2015	75	13	3	1	0	0	0	92
	2016	119	1	0	0	0	0	2	122
	2017	58	25	5	3	1	0	0	92

Appendix 3: AQI Historical Data

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
	2018	132	46	5	1	0	0	0	184
	2019	290	73	2	0	0	0	0	365
	2020	297	53	3	0	3	5	5	366
	2021	316	43	4	2	0	0	0	365
	2022	304	60	1	0	0	0	0	365
McMinnville	2022	57	32	1	1	0	0	2	93
Medford**	2013	222	126	10	5	2	0	0	365
	2014	276	88	1	0	0	0	0	365
	2015	248	99	11	7	0	0	0	365
	2016	312	54	0	0	0	0	0	366
	2017	238	98	14	9	5	1	0	365
	2018	232	87	8	22	3	0	13	365
	2019	295	63	3	4	0	0	0	365
	2020	270	83	2	4	3	4	0	366
	2021	253	83	10	19	0	0	0	365
	2022	268	89	6	2	0	0	0	365
Mill City	2019	77	0	0	0	0	0	0	77
	2020	136	31	2	1	0	7	25	204
	2021	293	36	1	0	0	0	36	365
	2022	245	71	4	0	0	0	45	365
Oakridge	2013	272	80	13	0	0	0	0	365
	2014	277	75	13	0	0	0	0	365
	2015	286	71	6	1	0	0	1	365
	2016	330	36	0	0	0	0	0	366
	2017	267	74	13	8	2	0	1	365
	2018	286	74	2	1	0	0	2	365
	2019	283	73	4	0	0	0	5	365
	2020	297	57	3	1	4	4	0	366
	2021	302	42	10	9	0	0	2	365
	2022	249	79	3	16	11	7	0	365

Appendix 3: AQI Historical Data

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Ontario	2020	62	59	1	6	0	0	12	140
	2021	272	53	4	0	0	0	36	365
	2022	272	52	2	1	0	0	38	365
Pendleton	2013	298	58	6	0	0	0	3	365
	2014	312	40	0	0	0	0	13	365
	2015	312	47	2	2	0	0	2	365
	2016	341	25	0	0	0	0	0	366
	2017	279	74	7	2	1	0	2	365
	2018	276	40	5	3	1	0	40	365
	2019	298	60	1	0	0	0	6	365
	2020	324	34	0	1	3	4	0	366
	2021	323	35	3	2	0	0	2	365
	2022	316	46	3	0	0	0	0	365
Portland***	2013	282	77	5	0	0	0	1	365
	2014	332	32	1	0	0	0	0	365
	2015	305	58	0	2	0	0	0	365
	2016	340	26	0	0	0	0	0	366
	2017	309	41	9	5	1	0	0	365
	2018	301	54	9	1	0	0	0	365
	2019	320	44	1	0	0	0	0	365
	2020	305	50	3	0	2	6	0	366
	2021	304	60	0	1	0	0	0	365
	2022	273	85	5	2	0	0	0	365
Prineville	2013	255	97	11	2	0	0	0	365
	2014	289	66	4	6	0	0	0	365
	2015	290	63	6	2	0	0	4	365
	2016	288	59	1	0	0	0	18	366
	2017	260	81	8	8	0	0	8	365
	2018	289	71	3	2	0	0	0	365
	2019	296	69	0	0	0	0	0	365
	2020	297	61	0	2	3	3	0	366
	2021	311	45	7	2	0	0	0	365
	2022	320	37	2	0	0	0	6	365

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Redmond	2020	325	18	0	0	3	5	15	365
	2021	322	22	5	5	1	0	10	365
	2022	343	17	1	0	0	0	4	365
Roseburg	2013	301	64	0	0	0	0	0	365
	2014	330	34	0	0	0	0	1	365
	2015	326	35	1	0	0	0	3	365
	2016	314	14	0	0	0	0	27	366
	2017	303	49	4	3	0	0	6	365
	2018	293	43	2	0	0	0	27	365
	2019	288	59	0	0	0	0	18	365
	2020	313	43	1	1	2	6	0	366
	2021	339	21	3	2	0	0	0	365
	2022	237	79	6	2	0	0	41	365
Salem**	2013	283	71	5	0	0	0	6	365
	2014	322	42	1	0	0	0	0	365
	2015	311	51	1	2	0	0	0	365
	2016	326	35	0	0	0	0	5	366
	2017	301	53	6	2	0	0	3	365
	2018	294	37	7	1	0	0	26	365
	2019	300	56	0	0	0	0	9	365
	2020	303	53	0	1	1	8	0	366
	2021	317	45	0	0	0	0	3	365
	2022	278	79	6	2	0	0	0	365
Sauvie Island**	2013	322	39	0	0	0	0	4	365
	2014	353	9	0	0	0	0	3	365
	2015	307	17	1	0	0	0	40	365
	2016	344	3	0	0	0	0	19	366
	2017	323	19	3	1	0	0	19	365
	2018	342	17	4	0	0	0	2	365
	2019	358	5	0	0	0	0	2	365
	2020	341	11	1	4	4	0	4	366
	2021	339	6	0	0	0	0	20	365
	2022	328	30	1	2	0	0	4	365

Appendix 3: AQI Historical Data

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Shady Cove	2013	308	46	4	5	0	0	2	365
	2014	341	20	1	0	0	0	3	365
	2015	333	15	9	6	1	1	0	365
	2016	346	5	0	0	0	0	15	366
	2017	294	32	9	11	1	0	18	365
	2018	303	25	9	27	1	0	0	365
	2019	358	7	0	0	0	0	0	365
	2020	329	23	1	4	1	1	7	366
	2021	300	30	6	24	5	0	0	365
	2022	336	27	2	0	0	0	0	365
Silverton	2013	91	1	0	0	0	0	0	92
	2014	86	5	0	1	0	0	0	92
	2015	85	3	0	2	0	0	2	92
	2017	75	13	4	0	0	0	0	92
	2018	78	9	3	0	0	0	0	90
	2019	110	0	0	0	0	0	0	110
	2020	180	23	1	1	1	6	2	214
	2021	342	21	0	0	0	0	2	365
	2022	317	46	1	1	0	0	0	365
Sisters	2013	348	16	0	0	0	0	1	365
	2014	350	15	0	0	0	0	0	365
	2015	332	31	0	2	0	0	0	365
	2016	346	1	0	0	0	0	19	366
	2017	286	29	2	15	8	0	22	365
	2018	317	33	7	3	0	0	5	365
	2019	351	9	4	1	0	0	0	365
	2020	307	25	3	1	1	7	22	366
	2021	332	23	4	5	1	0	0	365
	2022	337	24	1	3	0	0	0	365

Appendix 3: AQI Historical Data

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
Springfield	2013	326	39	0	0	0	0	0	365
	2014	343	22	0	0	0	0	0	365
	2015	352	9	0	2	0	0	2	365
	2016	356	4	0	0	0	0	6	366
	2017	324	25	8	3	3		2	365
	2018	317	43	1	0	0	0	4	365
	2019	323	38	0	0	0	0	4	365
	2020	325	31	0	1	4	5	0	366
	2021	337	23	2	0	0	0	3	365
	2022	339	23	1	0	0	0	2	365
Sunriver	2021	58	0	0	0	0	0	0	58
	2022	321	19	3	3	0	0	19	365
Sweet Home	2013	284	70	5	0	0	0	6	365
	2014	336	27	0	0	0	0	2	365
	2015	332	31	0	2	0	0	0	365
	2016	346	19	0	0	0	0	1	366
	2017	299	57	4	5	0	0	0	365
	2018	299	65	1	0	0	0	0	365
	2019	297	68	0	0	0	0	0	365
	2020	320	36	1	1	2	6	0	366
	2021	353	12	0	0	0	0	0	365
	2022	327	35	0	0	0	0	3	365
Talent*	2013	121	27	0	0	0	0	2	153
	2014	139	13	0	0	0	0	1	153
	2015	110	29	1	1	0	0	2	153
	2016	133	0	0	0	0	0	20	153
	2017	111	36	5	0	0	0	1	153
	2018	111	36	6	0	0	0	0	153
Talent**	2019	145	2	2	3	0	0	1	153
	2020	213	25	1	4	2	1	6	252
	2021	305	32	13	15	0	0	0	365
	2022	328	31	5	1	0	0	0	365

Appendix 3: AQI Historical Data

Monitoring Area	Year	Good	Moderate	USG	Unhealthy	Very Unhealthy	Hazardous	Missing Days	Expected Days
The Dalles	2013	322	35	3	1	0	0	4	365
	2014	331	33	1	0	0	0	0	365
	2015	326	30	0	2	0	0	7	365
	2016	319	31	0	0	0	0	16	366
	2017	287	59	6	8	1	0	4	365
	2018	293	33	4	2	0	0	33	365
	2019	297	53	0	0	0	0	15	365
	2020	323	31	0	0	3	4	5	366
	2021	305	12	1	1	0	0	46	365
	2022	319	26	0	0	0	0	20	365
Tillamook	2020	144	5	2	4	0	0	13	168
	2021	335	0	0	0	0	0	30	365
	2022	287	5	0	0	0	0	73	365
Toledo	2022	241	8	0	0	0	0	4	254
Tualatin*	2014	233	2	1	0	0	0	9	245
Tualatin**	2015	361	2	0	0	0	0	2	365
	2016	357	1	0	0	0	0	8	366
	2017	311	14	4	0	0	0	36	365
	2018	323	28	6	0	0	0	8	365
	2019	329	36	0	0	0	0	0	365
	2020	317	33	1	0	3	5	7	366
	2021	331	33	0	0	0	0	1	365
	2022	296	66	2	1	0	0	0	365
Turner*	2013	143	6	0	0	0	0	4	153
	2014	128	15	1	0	0	0	9	153
	2015	136	15	1	0	0	0	1	153
	2016	139	11	0	0	0	0	3	153
	2017	130	16	6	0	0	0	1	153
	2018	135	14	0	0	0	0	4	153
Turner**	2019	138	4	0	0	0	0	11	153
	2020	206	29	0	1	1	6	3	246
	2021	331	28	0	0	0	0	6	365
	2022	294	64	4	0	0	0	3	365
Woodburn	2022	225	34	1	1	0	0	20	281

Appendix 4: Ambient Air Data Quality

It is a policy of DEQ that all data will be of sufficient quality to support the regulatory decisions. The minimum quality assurance requirements set by EPA are consistently met or exceeded by DEQ. The continued assurance of data quality requires carrying out the two complimentary tasks.

Quality Control

DEQ operates its ambient air monitoring program according the “Quality Assurance Project Plan: Air Quality Monitoring for the Measurement of Criteria Air Pollutants” (April 2018, DEQ09-LAB-0004-QAPP Version 2.0). The QAPP is designed to help DEQ produce high quality data in a consistent manner. It incorporates Federal Reference Methods or Federal Equivalent Methods when applicable. To produce high quality data in a consistent manner from air monitoring equipment, DEQ performs scheduled maintenance, audits and calibrations. When calibrating equipment, DEQ uses standards from the National Institute of Standards Technology. By adhering to quality control procedures, DEQ creates high quality data that is used by staff, partners, EPA and the public.

Quality Assessment

DEQ evaluates data quality in several ways. At a minimum, DEQ conducts a quarterly network-wide audit in which DEQ visits each monitoring site to assess the site location, verify adherence to procedures, and ensure proper documentation. Data quality is assessed in terms of precision, accuracy, and completeness. Data precision—the ability to obtain the same reading multiple times—is verified by routinely auditing monitor performance. Data accuracy—the ability to measure the "true" value—is verified by measurement of a known control sample or by replicate measurements with other monitors. Data completeness is a measurement of the amount of data captured relative to the amount that was intended to be collected. DEQ must also participate in EPA quality assurance programs.

If you have further questions about data or data quality assurance, contact DEQ at aqm.questions@deq.oregon.gov.