



Verification of Continued Attainment in Limited Maintenance Areas (2022)

Air Quality Program

Washington State Department of Ecology
Olympia, Washington

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Related Information

2022 Ambient Air Monitoring Network Plan

[Publication 22-02-013](#)¹

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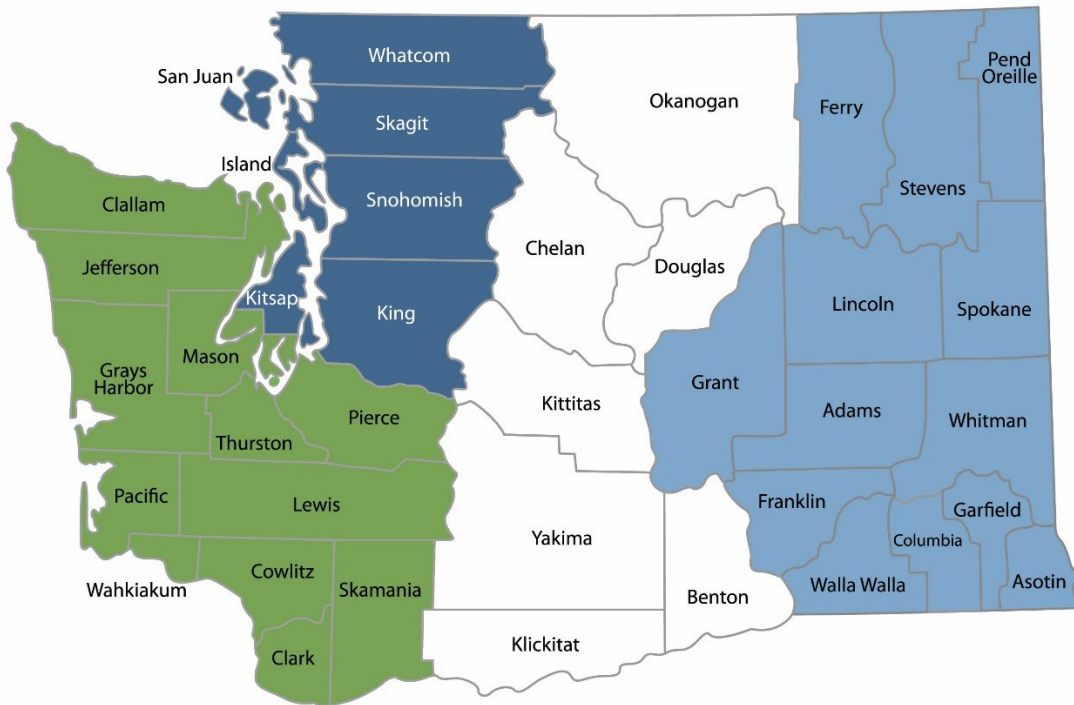
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Northwest Region
206-594-0000

Central Region
509-575-2490

Eastern Region
509-329-3400

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	P.O. Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	P.O. Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 West Alder Street Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 North Monroe Spokane, WA 99205	509-329-3400
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DEPARTMENT OF
ECOLOGY
State of Washington

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Executive Summary

This document summarizes the calculations for verification of continued attainment of National Ambient Air Quality Standards (NAAQS) in Washington’s Limited Maintenance Areas.

Maintenance Areas

Washington has six maintenance areas for criteria pollutants as of July 1, 2022. Only those areas that qualified for the Limited Maintenance Plan approach must submit verification documentation. These maintenance areas are marked with an (*). Maintenance areas demonstrate continued attainment of the NAAQS either through monitoring or through EPA-approved alternate methods. These methods are summarized in Table 1.

Table 1. Current Washington maintenance areas and methods of demonstrating NAAQS attainment

Maintenance Area (Pollutant)	End of Maintenance Period	NAAQS Attainment Method
Wallula (PM ₁₀)	9/26/2025	Kennewick-Metaline PM ₁₀ monitor (530050002) until 2017; Burbank-Maple St PM ₁₀ monitor (530710006) as of January 1, 2018
Spokane (PM ₁₀)*	8/30/2025	Spokane-Augusta PM ₁₀ monitor (530630021) until March 2021; Spokane-E Broadway Ave PM ₁₀ monitor (530630017) as of April 1, 2021
Yakima (PM ₁₀)	3/10/2025	Yakima-4 th Ave S PM ₁₀ monitor (530770009)
Tacoma (PM _{2.5})	3/12/2035	Tacoma-L St PM _{2.5} monitor (530530029)
Yakima (CO)	12/31/2022	Modeled CO vehicle emissions
Spokane (CO)*	8/30/2025	Modeled onroad, nonroad and residential wood combustion CO emissions

* indicates Limited Maintenance Areas where submission of verification documentation is required.

Several past maintenance areas recently reached the end of their 20-year maintenance periods: Seattle PM₁₀ (May 14, 2021), Tacoma PM₁₀ (May 14, 2021), Kent PM₁₀ (May 14, 2021) and Thurston County PM₁₀ (December 4, 2020). Submission of verification documentation is no longer required for these maintenance areas.

Spokane County PM₁₀ Maintenance Area

The design values for the Spokane County Maintenance Area are based on FEM PM₁₀ monitoring data from the Spokane-Augusta (530630021) and Spokane-Broadway (530630017) monitoring sites in Spokane, Washington. Spokane-Broadway became the designated PM₁₀ monitor for the Spokane County PM₁₀ maintenance area on April 1, 2021. The PM₁₀ data from the Spokane-Augusta and Spokane-Broadway sites were combined for the purpose of National Ambient Air Quality Standard (NAAQS) compliance and limited maintenance plan (LMP) eligibility in this document.

In 2017, 2018, 2020, and 2021, the western United States and Canada experienced severe wildfire seasons, resulting in significant wildfire smoke impacts that caused:

- Twelve PM₁₀ exceedances on September 4, 5, 6, and 7, 2017; August 19 and 20, 2018; and September 12, 13, 14, 15, 16, and 18, 2020. The exceedances affected the LMP design value and the NAAQS design value.
- Eight elevated PM₁₀ concentrations on September 8, 2017; August 14, 15, and 23, 2018; September 17, 2020; and August 2, 12, and 13, 2021. These concentrations are eligible for exclusion from LMP design value calculations following the guidance in the EPA memorandum “Additional Methods, Determinations, and Analyses to Modify Air Quality Data Beyond Exceptional Events.”³
- Two elevated PM₁₀ concentrations, August 13 and 16, 2018, were initially flagged but are not eligible for exclusion.

Ecology placed informational flags (“i-flags”) in EPA’s Air Quality System (AQS) database on all hourly PM₁₀ concentrations on the days listed above. Documentation supporting the exclusion of these values as exceptional events is provided in the “Consolidated 2018 Request for Exceptional Event Informational Flagging Memo” and “Informational Flagging Request for Wildfire Affected PM₁₀ and PM_{2.5} Exceedances in 2017” in the Appendix of Verification of Continued Attainment in Limited Maintenance Areas (2019), available from Ecology’s website at <https://fortress.wa.gov/ecy/publications/SummaryPages/1902015.html>, in the Ecology memorandum “2020 Informational Flagging Request for Wildfire-Affected PM_{2.5}, Wildfire- and High Wind-Affected PM₁₀,” and the Spokane Regional Clean Air Agency flagging memo dated February 2, 2022, included in the Appendix of this document.

The LMP 5-year design value and NAAQS 3-year design value are shown with and without the Ecology i-flagged elevated PM₁₀ days.

LMP Design Value

³ *Additional Methods, Determinations, and Analyses to Modify Air Quality Data Beyond Exceptional Events* [Memorandum]. Research Triangle Park, NC: Environmental Protection Agency. Retrieved from https://www.epa.gov/sites/production/files/2019-04/documents/clarification_memo_on_data_modification_methods.pdf.

A 5-year PM₁₀ design value below 98 µg/m³ demonstrates that the Spokane County Maintenance Area continues to qualify for the LMP approach. With the wildfire smoke exceedances and high concentration data removed, Spokane’s design value is eligible for the LMP option.

Table 2. Spokane County Maintenance Area LMP Design Values

	2017-2021 LMP Design Value (DV)
DV with i-flagged data	224 µg/m ³
DV without i-flagged data	92 µg/m ³

NAAQS Design Value

A 3-year PM₁₀ design value at or below 1.0 expected exceedances demonstrates compliance with the PM₁₀ NAAQS. The design value is the expected number of annual 24-hour exceedances of 150 µg/m³, averaged over 3 years. The NAAQS design value is shown with and without the eight Ecology i-flagged PM₁₀ exceedances.

Table 3. Spokane County Maintenance Area NAAQS Design Values

	2019-2021 NAAQS Design Value (DV)
DV with i-flagged data	2.0 expected exceedances
DV without i-flagged data	0.0 expected exceedances

The 2017, 2018, and 2020 wildfire smoke impacts generated at total of eight PM₁₀ exceedances. There were no PM₁₀ exceedances associated with wildfire smoke events in 2021. The Spokane County PM₁₀ contingency measures in the LMP are for road dust, windblown dust, and solid fuel burning devices. The contingency measures do not address wildfire air quality impacts; therefore they have not been implemented.

Spokane County CO Maintenance Area

EPA approved an alternate method of verification of attainment of the CO NAAQS and qualification for the limited maintenance plan option under 40 CFR 58.14(C) (Federal Register # 81 FR 45417; July 14, 2016). Under this alternative, EPA considers the limited maintenance plan criteria met and continued verification of attainment of the CO NAAQS if the total of the three predominant CO emission source categories calculated as part of the triennial emissions inventory (onroad mobile, nonroad, and residential wood combustion) remain below the corresponding total of the 2002 emission inventory source categories approved at the time the Spokane-area was redesignated to attainment. SRCAA and Ecology will compare future year 2017, 2020 and 2023 triennial emission analysis results to the baseline 2002.

Verification of Attainment

Total emissions for the 2017 evaluation year were compared to the 2002 attainment year emissions. The 2017 evaluation year was lower than the attainment year; therefore, the

Spokane CO maintenance area continues to qualify for the limited maintenance plan option and continued verification of attainment of the CO NAAQS. SRCAA and Ecology’s next analysis will be with the 2020 triennial emissions inventory. The public release of the 2020 NEI is expected March 31, 2023. As soon as the updated NEI is available, the comparison will be calculated and included in the annual design value memo.

Table 4. Spokane CO maintenance area total emissions (tons per year)

	Onroad	Nonroad	Residential Wood Combustion	Total
2002	48,878	23,795	7,199	80,872
2017	18,678	12,586	8,260	39,524

Wallula PM₁₀ Maintenance Area

The Wallula Maintenance Plan is not a Limited Maintenance Plan. Ecology submitted the Second Ten-Year Maintenance Plan for Particulate Matter (PM₁₀) for Wallula to EPA November 22, 2019, which was approved on June 1, 2020. Continued attainment of the PM₁₀ standard is demonstrated by the Burbank-Maple Street monitor as of January 2018. Please see the 2022 Ambient Air Monitoring Network Plan for the Wallula Maintenance Area compliance status.

Appendix A. Maintenance Plan and Flagging Correspondence



Date: February 14, 2022
To: Jill Schulte, Beth Friedman, Sean Lundblad
CC: Laurie Hulse-Moyer, Jason Alberich, Scott Windsor, Mark Rowe
From: Margee Chambers *Margee Chambers*
Subject: Spokane County PM₁₀ and CO Design Values for Air Monitoring Network Report

PM₁₀ Design Values

Included in this memo are the 5-year and 3-year design values for the PM₁₀ Spokane County Maintenance Area, in Spokane, Washington. The design values are based on FRM and FEM 24-hour PM₁₀ monitoring data from the Augusta Avenue site (530630021) and the Broadway Avenue site (530630017), which became the regulatory site, replacing the August site, in Spokane, Washington. The PM₁₀ data for Augusta and Broadway will be merged and treated as a single site for the purpose of National Ambient Air Quality Standard (NAAQS) compliance and limited maintenance plan (LMP) eligibility.

In 2017, 2018, 2020 and 2021, the western United States experienced severe wildfire seasons, resulting in significant wildfire smoke impacts that caused:

- Twelve PM₁₀ exceedances on September 4, 5, 6, and 7, 2017; August 19 and 20, 2018; September 12, 13, 14, 15, 16, and 18, 2020. The exceedances affect the LMP design value and the NAAQS design value.
- Eight PM₁₀ elevated concentrations September 8, 2017; August 14, 15, and 23, 2018; September 17, 2020; and August 2, 12, and 13, 2021, that are eligible for exclusion because they have regulatory significance for the area to meet the LMP design value.
- Note for tracking purposes: Spokane Clean Air had asked Ecology to i-flag two PM₁₀ elevated concentrations days, August 13 and 16, 2018. We discovered that the concentration levels were not eligible for exclusion, therefore not excluded in the DV calculations.

LMP Critical Design Value:

A 5-year PM₁₀ critical design value below 98 µg/m³ demonstrates that the Spokane County Maintenance Area continues to qualify for the LMP approach. The LMP critical design value is shown with and without the twelve Ecology i-flagged PM₁₀ exceedance data and eight PM₁₀ high concentration data from 2017-2021. With the wildfire smoke exceedances and high concentration data removed, Spokane's design value is eligible for the LMP option.

	2017-2021 LMP Design Value (DV)
DV with i-flagged data	224 $\mu\text{g}/\text{m}^3$
DV without i-flagged data ¹	92 $\mu\text{g}/\text{m}^3$

NAAQS Design Value:

A 3-year PM_{10} design value at or below 1.0 demonstrates compliance with the PM_{10} NAAQS. The design value is the number of 24-hour exceedances of 150 $\mu\text{g}/\text{m}^3$, averaged over three years. The NAAQS design value is shown with and without the six Ecology i-flagged PM_{10} exceedance data from 2019-2021. With the wildfire smoke exceedance days removed, Spokane's design value is in-compliance.

	2019-2021 NAAQS Design Value (DV)
DV with i-flagged data	2.0
DV without i-flagged data ²	0.0

Please note that the 2020 wildfire smoke impacts generated a total of 6 PM_{10} exceedances. The 2021 wildfire smoke impacts did not have PM_{10} exceedances. The Spokane County PM_{10} LMP contingency measures in the LMP are for road dust, windblown dust, and solid fuel burning devices. The contingency measures do not address wildfire air quality impacts; therefore, they have not been implemented.

CO Design Value

EPA approved an alternate method of verification of attainment of the CO NAAQS and qualification for the limited maintenance plan option under 40 CFR 58.14(C) (Federal Register # 81 FR 45417; July 14, 2016). Under this alternative, EPA considers the limited maintenance plan criteria met and continued verification of attainment of the CO NAAQS if the total of the three predominate CO emission source categories calculated as part of the triennial emissions inventory (onroad mobile, nonroad, and residential wood combustion) remain below the corresponding total of the 2002 emission inventory source categories approved at the time the Spokane-area was redesignated to attainment. SRCAA and Ecology will compare future year 2017, 2020 and 2023 triennial emission analysis results to the baseline 2002.

¹ 12 PM_{10} exceedances and 8 PM_{10} elevated concentrations that were i-flagged

² 6 Ecology i-flagged PM_{10} exceedance data

Verification of Attainment:

Total emissions for the 2017 evaluation year were compared to the 2002 attainment year emissions. The 2017 evaluation year was lower than the attainment year; therefore, the Spokane CO maintenance area continues to qualify for the limited maintenance plan option and continued verification of attainment of the CO NAAQS. SRCAA and Ecology's next analysis will be with the 2020 triennial emissions inventory. The public release of the 2020 NEI is expected March 31, 2023. As soon as the updated NEI is available, the comparison will be calculated and included in the annual design value memo.

Spokane County CO Emissions in Tons per Year

Year	Onroad	Nonroad	Residential Wood Combustion	Total
2002	49,878 tons/yr	23,795 tons/yr	7,199 tons/yr	80,872 tons/yr
2017	18,678 tons/yr	12,586 tons/yr	8,260 tons/yr	39,524 tons/yr

DEPARTMENT OF ECOLOGY
Air Quality Program

May 7, 2021

TO: Beth Friedman

FROM: Jacob Berkey

CC: Ecology: Martha Hankins, Jason Alberich, Laurie Hulse-Moyer, Farren Herron-Thorpe, Jill Schulte and Melanie Forster
Benton Clean Air Agency: Robin Priddy
Northwest Clean Air Agency: Agata McIntyre, Lyn Tober
Olympic Regional Clean Air Agency: Allie Feldt
Puget Sound Clean Air Agency: Kathy Strange, Betsy Wheelock
Southwest Clean Air Agency: Crystal Moore
Spokane Clean Air Agency: Margee Chambers
Yakima Clean Air Agency: Keith Hurley and Hasan Tahat

SUBJECT: 2020 Informational flagging request for Wildfire affected PM2.5, Wildfire and high wind affected PM 10.

The Exceptional Event Rule (EER) provides two data qualifier codes:

- Request Exclusion flags (R).
- Informational Only Flags (I).

Agencies use I flags for informational data and R flags for data points intended for an Air Quality System (AQS) exclusion request. I flags are initially used to identify values believed to have been affected by an event, yet may not be ready for exceptional events demonstration or exclusion request.

During September 7 through 19 2020, the State of Washington experienced significant wildfire smoke events, which blanketed the state and resulted in exceedances of PM2.5 and PM10. The contributing wildfires were in California, and Oregon, with additional wildfires burning here in Washington. Yakima County experienced additional wildfire smoke impact from September 2 through September 4.

For more information about these events, see the Washington State Smoke Blog:
<https://wasmoke.blogspot.com/2020/09/smoky-siege-look-back-at-smoke-storm-of.html>

Kennewick experienced three days in October related to high-wind dust. These occurred on October 16, 18, and 30, 2020. Our monitoring data at Kennewick shows these events. Here are the recorded maximum wind speeds for those dates:

10/16/2020: 32.1 mph

10/18/2020: 36.9 mph

10/30/2020: 31.1 mph

- This link from Department of Ecology shows our outreach efforts in regards to the wind event: <https://twitter.com/ecyspokane/status/1322295179928170496>
- This link is outreach from the National Weather Service regarding the event: <https://twitter.com/NWSPendleton/status/1322124202246361090>
- To track daily conditions during the time of the wind event check here: <http://mesonet.agron.iastate.edu/wx/afos/list.phtml?source=OTX&year=2020&month=10&day=7&drange=yes&year2=2020&month2=10&day2=23&view=prod&order=asc>
 - October 16: <http://mesonet.agron.iastate.edu/wx/afos/p.php?pil=AFDOTX&e=202010162318>
 - October 18: <http://mesonet.agron.iastate.edu/wx/afos/p.php?pil=AFDOTX&e=202010180505>
 - October 30: <http://mesonet.agron.iastate.edu/wx/afos/p.php?pil=AFDOTX&e=202010301805>

To meet the EER requirements, Ecology's Air Quality Program Policy and Planning Section requests you to place an I flag on all data in AQS associated with the wildfire and high wind affected PM2.5 and PM10 data during 2020.



Date: February 2, 2022
To: Jacob Berkey, Jill Schulte, Beth Friedman
From: Margee Chambers *Margee Chambers*
CC: Ecology: Jason Albrecht
Spokane Clean Air: Scott Windsor, Mark Rowe
Re: Request for Exceptional Event informational flagging for:
PM_{2.5} exceedances July 31 and August 1, 2, 3, 12, 13, and 14, 2021 (7 days)
Ozone exceedances July 13, 14 and 31, 2021 (3 days)
Elevated PM₁₀ concentrations August 2, 12, and 13, 2021 (3 days)

EPA's Exceptional Event Rule (EER) provides a process for excluding qualifying exceedances from calculations when determining compliance with National Ambient Air Quality Standards (NAAQS). The first step in the process is informational flagging of the data in the monitoring record and entering an event description.

Spokane Regional Clean Air Agency (Spokane Clean Air) requests that the Washington State Department of Ecology (Ecology) place an informational flag on elevated PM_{2.5}, PM₁₀ and Ozone concentrations recorded at the Spokane - Broadway Avenue, Greenbluff, and Turnbull monitoring sites as exceptional events and enter a description into the U.S. Environmental Protection Agency's (EPA) Air Quality System (AQS).

The elevated concentrations occurred during a period of severe wildfire smoke impacts, where winds transported smoke from regional wildfires in California, Oregon, and Washington.

Exceedances of the 24-hour PM_{2.5} standard:

Spokane – Broadway Avenue Site (AQS# 530630017) Please note that Broadway became a regulatory monitoring site for PM_{2.5} on January 1, 2021. The Augusta site is no longer the regulatory monitoring site.

- 7/31/2021: 53.6 µg m-3
- 8/1/2021: 57.6 µg m-3
- 8/2/2021: 96.4 µg m-3
- 8/3/2021: 72.7 µg m-3
- 8/12/2021: 78.9 µg m-3
- 8/13/2021: 117.7 µg m-3
- 8/14/2021: 67.7 µg m-3

Exceedances of the 8-hour Ozone standard:

Spokane – Greenbluff Site (AQS# 530630046)

- 7/13/2021: 76 ppb
- 7/14/2021: 73 ppb

Spokane – Turnbull Site (AQS# 530630001)

- 7/31/21: 71 ppb

Spokane Clean Air requests that Ecology i-flag concentration data believed to have been significantly affected by the 2021 wildfire smoke exceptional events, but not exceeding the standard. EPAs [Harnett memo](#) states agencies can exclude PM₁₀ concentrations between 98-155 µg/m³ threshold in determining eligibility for the PM₁₀ LMP option.

Elevated 24-hour PM₁₀ concentrations:

Spokane – Broadway Avenue Site (AQS# 530630017) Please note that Broadway became a regulatory monitoring site for PM₁₀ on April 1, 2021. The Augusta site is no longer the regulatory monitoring site.

- 8/2/2021: 112.7 µg m-3
- 8/12/2021: 100.6 µg m-3
- 8/13/2021: 144.6 µg m-3

Flagging Request: Please place exceptional event informational flags on July 31, August 1, 2, 3, 12, 13,14, 2021 at the Spokane - Broadway Avenue PM_{2.5} site (AQS site ID #530630017); on July 13, 14, 2021 at the Spokane-Greenbluff site, (AQS site ID #530630046); on July 31, 2021 at the Spokane – Turnbull site (AQS site ID #530630001); and on August 2, 12, 13, 2021 for the Spokane – Broadway PM₁₀ site (AQS site ID #530630017). Please use the code “I-Informational” and enter the event description shown below:

Preliminary review of data suggests that regional wildfires in CA, OR, and WA, winds transporting smoke into Spokane County air shed, contributed to elevated levels of PM_{2.5}, PM₁₀, and ozone concentrations in Spokane County.

Spokane Clean Air pulled together supporting information (Attachment A) about the wildfire smoke events that is available upon request.

- Air Quality Alerts and National Weather Service forecasts
- Spokane Regional Clean Air Agency Augusta air quality monitor graphs and communication / outreach
- Airnow AQI map and smoke map
- GOES West and NASA World View satellite images
- Cliff Mass Wx Blogs