SO_2 Redesignation Request and Maintenance Plan

Appendix A

Monitored Data

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Monitored Data

This appendix includes monitored SO_2 concentrations for sites in the Allegheny, PA NAA (Liberty and North Braddock). Data are based on the official records as downloaded from EPA's AQS database.

Monitored data are given as follows:

- Table of SO_2 99th Percentile Daily Maximum 1-Hour Concentrations, 2008-2022 (in ppb)
  - By year

- Table of SO_2 Design Value Concentrations, 2010-2022 (in ppb)
  - By 3-year period (last year of period shown)
  - For North Braddock, the first two design values (in 2014 and 2015) include less than three years of data

SO_2 99th Percentile Daily Maximum 1-Hour Concentrations, 2008-2022 (Yearly), in ppb

Site Name	AQS Code	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Liberty	420030064	111	131	141	153	117	81	105	112	64	116	130	80	44	54	69
North Braddock	420031301	--	--	--	--	--	--	89	52	51	63	68	59	65	50	53

SO_2 Design Value Concentrations, 2010-2022 (3-Year Periods), in ppb

Site Name	AQS Code	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Liberty	420030064	128	142	137	117	101	99	94	97	103	109	85	59	56
North Braddock	420031301	--	--	--	--	89	71	64	55	61	63	64	58	56

Notes:

- Data for 2022 have not yet been certified by EPA. ACHD requested certification of the 2022 data on April 14, 2023. (This appendix may be updated accordingly prior to final submittal to EPA to include AQS Quicklook Criteria Parameters (AMP450) and Design Value (AMP480) reports.)

- Data for Avalon (420030002), Lawrenceville (420030008), and South Fayette (420030067), which are sites located outside the Allegheny, PA NAA, have not been included in this appendix.

- An additional new SO_2 site within the Allegheny, PA NAA has been proposed at Clairton (420033007), which is a current site for $PM_{2.5}$.

- Official monitored concentrations can also be found at EPA's AirData site: https://www.epa.gov/outdoor-air-quality-data.

Monitored concentrations and corresponding meteorological statistics as mentioned in Section 5.4 of the main document are also given below.

The table below shows the Liberty 99th percentile daily maximum 1-hour SO_2 concentrations along with surface inversion frequency, average temperature, and total precipitation, by year, for 2008-2022.

Yearly Liberty SO_2 Concentrations and Meteorological Parameters, 2008-2022

Year	Liberty 99th Percentile SO_2 Conc. (ppb)	Frequency of Inversions (%)	Average Temperature (°F)	Total Precipitation (inches)
2008	111	44%	50.9	39.7
2009	131	43%	51.0	32.8
2010	141	48%	51.9	37.9
2011	153	37%	52.8	44.2
2012	117	44%	54.2	41.7
2013	81	36%	51.5	36.7
2014	105	40%	50.0	36.8
2015	112	45%	52.5	40.6
2016	64	46%	54.2	35.0
2017	116	56%	53.6	42.2
2018	130	40%	52.3	57.8
2019	80	44%	52.4	52.5
2020	44	42%	53.3	39.3
2021	54	42%	53.2	40.5
2022	69	39%	51.6	42.6
Average	*101*	*43%*	*52.4*	*41.4*

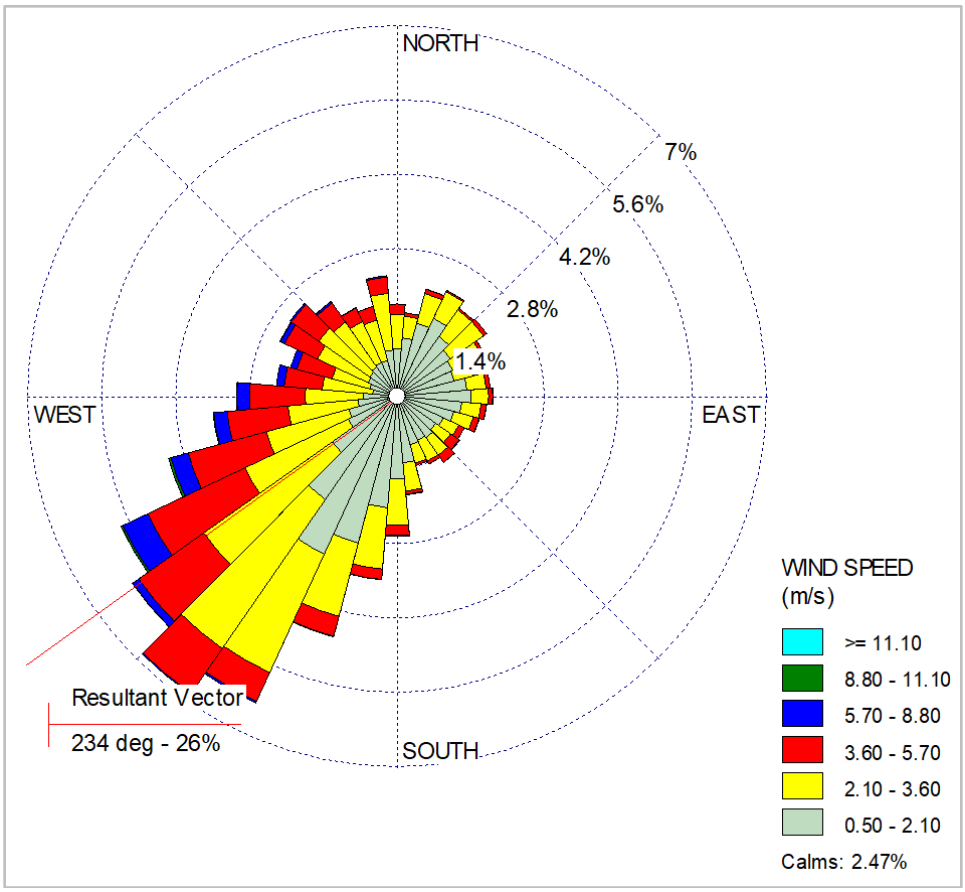
Notes:

- Temperature and precipitation statistics were taken from the National Weather Service (NWS) web site for Pittsburgh: https://www.weather.gov/pbz/.
- Inversion statistics for the Pittsburgh NWS location were taken from the University of Wyoming web site: http://weather.uwyo.edu/upperair/sounding.html.
- The frequency of temperature inversions was determined by number of days per year with morning (12Z) upper air readings showing a surface inversion of 1.0 °C or greater.

During the monitored attainment timeframe of 2019-2022, inversion frequencies were near average, and winds were typical at Liberty (see the wind rose below). Temperature and precipitation were both above and below average during the timeframe of 2019-2022. The overall meteorological conditions during the 4-year period would not have been unusually favorable for low monitored SO_2 concentrations. Attainment of the NAAQS has been achieved due to emissions controls that have been implemented since mid-2016. Without breakdowns of equipment in 2017-2019, concentrations may have been near or below the NAAQS for all years from 2016 through 2022.

The figure below shows the Liberty wind rose during the monitored attainment timeframe of 2019-2022. This wind rose is similar to other wind roses for Liberty (see the SO_2 attainment demonstration SIP (ACHD, 2017) and other ACHD documents).

Liberty Wind Rose, 2019-2022



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