

**Site Shutdown Demonstration:
 Baskett Air Monitoring Station (21-101-0014)**

The Kentucky Division for Air Quality (Division) is requesting approval from EPA for a complete discontinuation of the Baskett air monitoring station in Henderson, KY. The site is located on property owned by the Baskett Fire Department (FD). The Division is requesting to discontinue monitoring at that location due to expansion of the Baskett FD, scheduled to occur in March 2019. While the Baskett FD did originally offer alternate locations on their property, it was determined that those locations would be obstructed by tall trees. The Division did investigate the possibility of locating elsewhere in the Baskett community; however, no suitable location could be found. Additionally, the Division had previously investigated the possibility of moving the site to other surrounding communities in 2011-2012, but was unable to find a location. Henderson County is bordered by the Ohio River and much of the surrounding area is a forested floodplain. As required by 40 CFR 58.14, in order to request discontinuation of the site, the Division must conduct a data demonstration on the currently operating monitors to ensure that the site removal will not adversely impact the pollutant specific design criteria described in 40 CFR Part 58, Appendix D. This request is also required to be made available for a 30-day public comment period, prior to EPA approval.

Site Summary:

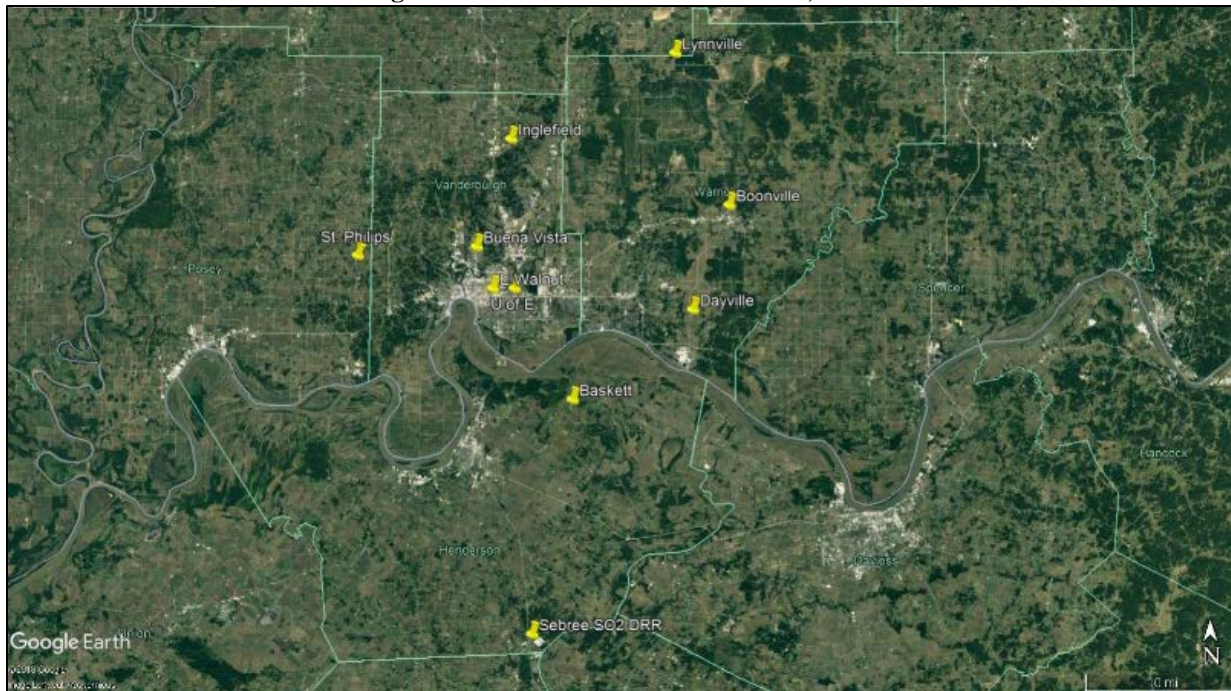
The Baskett air monitoring station was established on the grounds of the Baskett Fire Department (FD) on February 27, 1992. The site's current monitoring objective is to determine compliance with National Ambient Air Quality Standards (NAAQS). As outlined in the Division's 2018 Ambient Air Monitoring Network Plan, the Baskett site is equipped with the following:

Baskett Monitors

Monitor Type	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	SLAMS Maximum O ₃	UV photometry	Continuously March 1 – October 31
FRM PM _{2.5}	SLAMS	Gravimetric	24-hours every third day
PM _{2.5} Continuous	SPM AQI	Broadband Spectroscopy	Continuously
FRM PM ₁₀	SLAMS	Gravimetric	24-hours every sixth day
- PM ₁₀ Metals	SPM-Other	Determined from the PM ₁₀ sample using EPA method IO 3.5	Same as PM ₁₀
AEM Sulfur Dioxide	SLAMS PWEI	UV fluorescence	Continuously

The community of Baskett is located in Henderson County, KY, which is part of the Evansville, IN-KY core-based statistical area (CBSA). According to 2018 United States Census Bureau (USCB) population estimates, the CBSA has a population of 315,669. As a part of the Division's investigation into the potential effects of site discontinuation, Indiana's Department of Environmental Management (IDEM) was contacted to ensure that they did not object to the shutdown. IDEM agreed that site shutdown would not negatively affect their network.

Monitoring Sites Located within the Evansville, IN-KY CBSA



Pollutant Specific Analysis:

The following is a general summary of the required analysis for each monitored pollutant with regard to monitoring requirements, data analysis and relevant statistics of the most recent five years and overall impact of site removal. With the exception of ozone data, 2018 monitoring data has not been fully quality assured and uploaded to the EPA’s AQS database. As such, the Division has included five complete years (2013-2017), as well as available 2018 data in its analysis.

Sulfur Dioxide (SO₂):

- Monitoring requirements:
 - The population weighted emissions index (PWEI) calculation indicates that one SO₂ monitor is required for the CBSA.
 - There are three SO₂ monitors currently in operation in the CBSA, as such, with the removal of Baskett SO₂ monitor, the monitoring requirements will continue to be met.

Evansville, IN-KY SO₂ PWEI Calculations

State-County Code	Area Name	2018 USCB Population Estimate	County Level 2014 NEI SO ₂ Emissions in Tons	PWEI (10 ⁻⁶ person-tons/year)	# PWEI Monitors Required	# of SO ₂ Sites Present
18-129	Posey County, IN	25,595	12,949.29			
18-163	Vanderburgh County, IN	181,616	53,308.12			1
18-173	Warrick County, IN	62,530	10,160.73			
21-101	Henderson County, KY	45,928	4,769.36			2
Evansville IN-KY CBSA		315,669	27,932.68	8817	1	3

- NAAQS status:
 - SO₂ Primary NAAQS: 3-year average of the 99th percentile of the daily maximum 1-hour concentration not to exceed 75 ppb.
 - SO₂ Secondary NAAQS: 3-hour concentrations not to exceed .5 ppm (500 ppb) more than once per year.
 - There were no exceedances of either the primary or secondary SO₂ NAAQS at the site in 2013-2018.

Baskett SO₂ 3-Year Design Values

SO ₂	2013	2014	2015	2016	2017	2018*
1-hr 99 th percentile (ppb)	27	27	25	21	14	13
3-hr average	# of 3-hour observations > 500 ppb = 0					

* Incomplete data set.

- Statistical probability demonstration:
 - As part of the closure request, a probability test is required to determine the likelihood that the monitor will exceed 80% of the NAAQS using an average of the last five years of design values. 80% of the primary SO₂ NAAQS is 60 ppb.
 - Based upon 2013-2017 data, the calculation result was 28.1 ppb, demonstrating that the monitor is not likely to exceed the NAAQS in the future.

Baskett Probability of Exceeding Primary SO₂ NAAQS

Years	Average of 3-Year Design Values (ppb)	Standard Deviation (ppb)	90% Upper Confidence Interval (ppb)	80% of NAAQS (ppb)
2013-2017	22.8	5.5	28.1	60
2013-2018*	21.2	6.3	26.4	

*Incomplete dataset.

Particulate Matter (PM_{2.5}):

- Monitoring requirements:
 - The number of PM_{2.5} monitors required for the CBSA is one.
 - There are four PM_{2.5} monitors currently in operation in the CBSA, as such, with the removal of Baskett monitor, monitoring requirements will continue to be met.

Evansville, IN-KY PM_{2.5} Minimum Monitoring Requirements

State-County Code	Area Name	2018 USCB Population Estimate	2015-2017 Maximum 3-Year Design Value by County (µg/m ³)		2016-2018* Maximum 3-Year Design Value by County (µg/m ³)		# PM _{2.5} Sites Present
			Annual	Daily	Annual	Daily	
18-129	Posey County, IN	25,595					0
18-163	Vanderburgh County, IN	181,616	9.3	19	9.1	19	3
18-173	Warrick County, IN	62,530					0
21-101	Henderson County, KY	45,928	8.9	18	8.6	18	1
Evansville IN-KY CBSA		315,669	Number of sites required = 1				4

- NAAQS status:
 - PM_{2.5} Primary NAAQS:
 - 3-year average of the annual weighted mean not to exceed 12.0 µg/m³
 - 3-year average of the 98th percentile of 24-hour concentration not to exceed 35 µg/m³.
 - PM_{2.5} Secondary NAAQS:
 - 3-year average of the annual weighted mean not to exceed 15.0 µg/m³
 - 3-year average of the 98th percentile of 34-hour concentrations not to exceed 35 µg/m³
 - There were no exceedances of either the primary or secondary NAAQS at the Baskett site based upon 3-year design values in 2013-2018.

Baskett PM_{2.5} 3-Year Design Values

Standard	2013	2014	2015	2016	2017	2018*
Annual 98 th Percentile (µg/m ³)	23	22	22	21	18	18
Annual Weighted Mean (µg/m ³)	10.7	10.6	10.3	9.6	8.9	8.6

*Incomplete dataset.

- Statistical demonstration:
 - As part of the closure request, a probability test is required to determine the likelihood that the monitor will exceed 80% of the NAAQS using an average of the last 5 years of design values. 80% of the current PM_{2.5} primary and secondary NAAQS is 9.6 µg/m³ for the annual mean and 28 µg/m³ for the 98th percentile.
 - The calculation results were 10.5 µg/m³ based upon annual means and 22.6 µg/m³ based upon 98th percentiles. Based upon 98th percentiles, the results indicate that the monitor is not likely to violate the NAAQS in the future. With regards to the annual mean, the results indicate that there is a statistical probability that the monitor would exceed the NAAQS in the future. However, the PM_{2.5} monitor has been consistently trending lower over the last 5 years and the site also reads as one of the lower PM_{2.5} monitors in the CBSA. Therefore, the Division asserts that the other PM monitors in the CBSA are sufficient.

Baskett Probability of Exceeding Primary PM_{2.5} NAAQS

Years	Average of 3-Year Design Values (µg/m ³)	Standard Deviation (µg/m ³)	90% Upper Confidence Interval (µg/m ³)	80% of NAAQS (µg/m ³)
Annual 98th Percentiles				
2013-2017	20.4	2.3	22.6	28
2013-2018*	20.0	2.3	21.9	
Annual Means				
2013-2017	9.6	0.9	10.5	9.6
2013-2018*	9.5	0.9	10.2	

*Incomplete dataset.

Particulate Matter (PM₁₀):

- Monitoring requirements:
 - The number of required PM₁₀ monitors is 0-1.
 - There are two PM₁₀ monitors currently in operation in the CBSA, as such, with the removal of the Baskett monitor, monitoring requirements will continue to be met.

Evansville, IN-KY PM₁₀ Minimum Monitoring Requirements

State-County Code	Area Name	2018 USCB Population Estimate	Maximum Annual 24-Hour Concentration by County (µg/m ³)						2018 # PM ₁₀ Sites Present
			2013	2014	2015	2016	2017	2018*	
18-129	Posey County, IN	25,595							0
18-163	Vanderburgh County, IN	181,616	30	41	42	33	30	38	1
18-173	Warrick County, IN	62,530							0
21-101	Henderson County, KY	45,928	27	36	50	34	55	28	1
Evansville, IN-KY CBSA		315,669	Number of PM₁₀ Sites Required in CBSA= 0-1						2

* Incomplete dataset

- NAAQS status:
 - PM₁₀ Primary and Secondary NAAQS: Expected number of days with a maximum 24-hour concentration greater than 150 µg/m³ must be less than or equal to one, on average over three years.
 - There were no exceedances of the NAAQS in 2013-2018.

Baskett PM₁₀ Annual Design Values

Annual Maximum 24-Hour Concentration (µg/m ³)	2013	2014	2015	2016	2017	2018*
	27	36	50	34	55	28

* Incomplete dataset

- Statistical demonstration:
 - As part of the closure request, a probability test is required to determine the likelihood that the monitor will exceed 80% of the NAAQS using an average of the last 5 years of design values. 80% of the current PM₁₀ NAAQS is 120 µg/m³.
 - The calculation result was 51.5 µg/m³, indicating that the monitor is not likely to exceed the NAAQS in the future.

Baskett Probability of Exceeding Primary PM₁₀ NAAQS

Years	Average Annual Design Value (µg/m ³)	Standard Deviation (µg/m ³)	90% Upper Confidence Interval (µg/m ³)	80% of NAAQS (µg/m ³)
2013-2017	40.4	11.6	51.5	120
2013-2018*	38.3	11.6	47.8	

* Incomplete dataset

Ozone:

- Monitoring requirements:
 - The number of required ozone monitors is one.
 - There are seven ozone monitors currently in operation in the CBSA, as such, with the removal of the Baskett monitor, monitoring requirements will continue to be met.

Evansville, IN-KY Ozone Minimum Monitoring Requirements

State-County Code	Area Name	LSAD	2018 USCB Population Estimate	Maximum 3-Year 8-hour Design Value by County (ppm)	2018 # Ozone Sites Present
18-129	Posey County, IN	County	25,595	0.067	1
18-163	Vanderburgh County, IN	County	181,616	0.068	2
18-173	Warrick County, IN	County	62,530	0.069*	3
21-101	Henderson County, KY	County	45,928	0.068	1
Evansville IN-KY CBSA			315,669	Number of monitors required= 1	7

* Data not available from one monitor in the county, site ID 18-173-0009

- NAAQS status:
 - The primary and secondary NAAQS: 3-year average of the 4th highest daily maximum 8-hr concentration not to exceed 0.070 ppm. (2015 standard)

Baskett Ozone 3-Year Design Values (ppm)

2014	2015	2016	2017	2018
0.074	0.067	0.069	0.068	0.068

- Statistical demonstration:
 - As part of the closure request, a probability test is required to determine the likelihood that the monitor will exceed 80% of the NAAQS using an average of the last 5 years of design values.
 - 80% of the current ozone NAAQS is 0.056 ppm, the calculation result was 0.071 ppm, indicating there is a statistical probability that the monitor would exceed the NAAQS in the future.
 - Considering that there are six additional ozone monitors in the CBSA and that Baskett is not the highest reading monitor, KDAQ asserts that the remaining monitors are sufficient to continue to represent ozone concentrations in the CBSA. Thus, removal of the Baskett ozone monitor would not cause an adverse effect to the monitoring network.

Baskett Probability of Exceeding Ozone NAAQS

Years	Average of 3-Year Design Values (ppm)	Standard Deviation (ppm)	90% Upper Confidence Interval (ppm)	80% of NAAQS (ppm)
2014-2018	0.069	0.0027	0.0716	0.056