STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Jeremiah W. (Jay) Nixon, Governor • Harry D. Bozoian, Director

dnr.mo.gov

DEC 2 0 2016

Mr. Mark Hague
Regional Administrator
U. S. Environmental Protection Agency
11201 Renner Blvd.
Lenexa, KS 66219

Dear Mr. Hague:

Please find enclosed the 2016 Monitoring Network Plan Revision 1.

The 2016 Monitoring Network Plan Revision 1 fulfills the requirements of 40 CFR 58.10 (a) (1) for annual submittal of a plan to provide information on current SLAMS, other ambient air monitoring, and any proposed network changes for the upcoming year. The plan is required to be made available for public inspection at least 30 days prior to submission to the Environmental Protection Agency (EPA). On May 27, 2016 the Air Program posted the 2016 Monitoring Network Plan Revision 0 for public comment on our website. The 2016 Monitoring Network Plan Revision 1 was posted on November 15, 2016. The primary change in Revision 1 is the addition of the Labadie North and Southwest sites.

Public comments were received as part of the 30-day public inspection period of both revisions of the plan. All comments were received through the Missouri Department of Natural Resources email address cleanair@dnr.mo.gov. Hard copies of these comments are enclosed and we will make these comments available to the EPA electronically. No changes were made to the plan based on any comments received. Our responses to the comments received are included in the plan.

If you have questions regarding this letter or the enclosures, please contact Mr. Stephen Hall with the Department's Air Pollution Control Program at P.O. Box 176, Jefferson City, Missouri 65102 or by telephone at (573) 751-4817. Thank you.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kyra L. Moore
Director

KLM:pmd

Enclosures

c: Mr. Mike Jay, U.S. EPA Region VII
Ms. Tracey Casburn, U.S. EPA Region VII
Mr. Mike Davis, U.S. EPA Region VII
Mr. Leland Grooms, U.S. EPA Region VII

Missouri Department of Natural Resources
Air Pollution Control Program
2016 Monitoring Network Plan

November 15, 2016

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SUMMARY OF PROPOSED CHANGES

Missouri's Monitoring Network Plan discusses the following recent and proposed changes in detail in the sections below:

- Proposed discontinuation of lead monitoring at the Pevely North site.
- Reduction in lead sampling frequency from every third day to every sixth day at St. Joe State Park.
- Discontinuation of TSP lead sampling at the Blair Street NCore site; completed as proposed in the 2015 Monitoring Network Plan following finalization of the monitoring rule.
- Proposed discontinuation of lead monitoring at the Bills Creek site.
- Sulfur dioxide (SO_2) monitoring began in 2015 in the areas around the Labadie and Rush Island Energy Centers; these sites are classified as Industrial Monitoring Stations. An additional Industrial SO_2 Monitoring Station will be installed southwest of the Labadie Energy Center and begin operation by January 1, 2017, and an additional Industrial SO_2 Monitoring Station will be installed north of the Labadie Energy Center with a target date to begin operation by January 1, 2017.
- Industrial SO_2 monitoring is planned to begin by January 1, 2017 in the area around the Doe Run Buick Resource Recovery facility to meet the requirements of the SO_2 Data Requirements Rule (DRR).
- Industrial SO_2 monitoring is planned to begin by January 1, 2017 in the area around the Noranda Aluminum facility to meet the requirements of the SO_2 DRR.
- Proposed discontinuation of SO_2 monitoring at the South Charleston and James River South sites in Springfield.
- Changes in designation of primary and collocated $PM_{2.5}$ instruments at Blair Street and discontinuation of collocated FRM $PM_{2.5}$ sampler at Troost; these changes were in accordance with provisions in the finalized monitoring rule.
- A 1405-F FEM $PM_{2.5}$ instrument and collocated FRM sampler are being installed at the Ladue site.
- Discontinuation of the IMPROVE protocol sampling system at El Dorado Springs in January 2016 as a result of IMPROVE network evaluation and recommended changes.
- The $PM_{2.5}$ instrument at Missouri State University (MSU) in Springfield was relocated to the Hillcrest High School site because of development on the MSU site.
- Ozone monitoring will begin in March (instead of April) in 2017 as a result of the finalized monitoring rule.
- Evaluation of PM_{10} data from the 1405-DF FEM instruments continues; once these data are determined to be acceptable, modification of distribution of PM_{10} instruments at existing sites will be proposed.
- A collocated PM_{10} monitor was installed at the Carthage site in April 2016.
- The PM_{10} low volume samplers at Troost and St. Joseph Pump Station will be replaced with TEOM-1400ab FEM monitors.
- The photolytic nitrogen dioxide (NO_2) instrument that was being evaluated at Forest Park has been moved to Blair Street and is the primary instrument.

- The Foley monitoring site will be moved from its current location for logistical reasons. It will be relocated to a nearby site within less than 4 kilometers of the current site and representative of the same air mass.

HOW TO MAKE PUBLIC COMMENTS CONCERNING THIS PLAN

The Monitoring Network Plan, Revision 0 was originally posted for comment on May 27, 2016 and comments accepted through June 28, 2016. Comments received and response to comments are included as Appendix 6 to this revised plan. This revised Monitoring Network Plan (Revision 1) has been revised only to include two additional SO_2 monitoring stations southwest and north of the Labadie Energy Center and to provide information currently available on the required relocation of the Foley monitoring station. Comments concerning this revision to the Monitoring Network Plan may be sent electronically to: cleanair@dnr.mo.gov or in writing to the following address and must be received by close of business December 15, 2016:

Missouri Department of Natural Resources
Air Pollution Control Program
Air Quality Analysis Section/Air Monitoring Unit
P.O. Box 176
Jefferson City, MO 65102

INTRODUCTION

The Missouri Department of Natural Resources operates an extensive network of ambient air monitors to comply with the Clean Air Act and its amendments. The Ambient Air Quality Monitoring Network for the State of Missouri consists of State and Local Air Monitoring Stations (SLAMS), Special Purpose Monitoring (SPM) Stations, and National Core (NCore) monitoring consistent with requirements in federal regulation 40 CFR 58.

40 CFR 58.10 requires that states submit to EPA an annual monitoring network plan including any proposed network changes. 40 CFR 58.14 states that the monitoring network plan submitted one year after a network assessment should also meet the requirements for a network modification plan. A network assessment was completed in 2015; therefore, this document is intended to meet the requirements for a network modification plan as well as the requirement for an annual monitoring network plan. 40 CFR 58.10 also requires that the plan include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of 40 CFR 58 where applicable. All of the monitors in the Missouri air monitoring network, including those operated by the State and those operated by industries under State review meet the applicable requirements of 40 CFR 58. With regard to state and local air monitoring station changes, approval by the Environmental Protection Agency Regional Administrator is required.

The plan must contain the following information for each monitoring station in the network; most of this information is listed for each site in Appendix 1; number 5 is addressed in the body of this document:

1. The Air Quality System site identification number for existing stations.
2. The location, including the street address and geographical coordinates, for each monitoring station.
3. The sampling and analysis method used for each measured parameter.
4. The operating schedule for each monitor.
5. Any proposal to remove or move a monitoring station within a period of eighteen months following the plan submittal.
6. The monitoring objective and spatial scale of representativeness for each monitor.
7. The identification of any sites that are or are not suitable for comparison against the annual $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS).
8. The metropolitan statistical area, core-based statistical area, combined statistical area or other area represented by the monitor.

Network Design

Federal regulation (40 CFR Part 58) establishes the design criteria for the ambient air monitoring network. The network is designed to meet three general objectives:

- Provide air pollution data to the public in a timely manner.
- Support compliance with ambient air quality standards and emissions strategy development.
- Support air pollution research studies.

Specific objectives for the monitoring sites are to determine the highest pollution concentrations in an area, to measure typical concentrations in areas of high population density, to determine the impact of significant sources or source categories, to determine general background levels and to determine the extent of regional pollutant transport among populated areas. Minimum site requirements are provided for ozone, sulfur dioxide, CO, NO_2, PM_{10} and $PM_{2.5}$ based on Core Based Statistical Area (CBSA) population.

Appendix E to Part 58 establishes the specific requirements for monitor/probe siting to ensure the ambient data represents the stated objectives and spatial scale. The requirements are pollutant/scale specific and involve horizontal/vertical placement. Periodically, department staff visit and evaluate each monitoring site to ensure that each site continues to meet the requirements of 40 CFR 58 Appendix E. Any issues related to probe siting, such as growth of trees or other vegetation, are addressed by taking appropriate action following the site visits. Documentation of these reviews is maintained on file. Additional details concerning the sites may be found in Appendix 1.

There is only one $PM_{2.5}$ monitor in Missouri that is not applicable for comparison to the annual NAAQS. The Branch Street site is a middle-scale site focused on a group of sources in the industrial riverfront area and is not representative of neighborhood or larger spatial scale for

$PM_{2.5}$ monitoring. The $PM_{2.5}$ monitors deployed to collocate with the near-roadway NO_2 monitors are micro-scale monitors, but EPA has indicated in 40 CFR 58 Appendix D, 4.7.1(c)(2) that "…In many situations, monitoring sites that are representative of microscale or middle-scale impacts are not unique and are representative of many similar situations. This can occur along traffic corridors or other locations in a residential district. In this case, one location is representative of a number of small scale sites and is appropriate for evaluation of long-term or chronic effects." these monitors may be considered by EPA to be representative of larger areas near roadways and comparable to the annual $PM_{2.5}$ NAAQS consistent with 40 CFR 58.30.

Unanticipated Network Modifications

Changes to the monitoring network may occur outside the annual monitoring network planning process due to unforeseen circumstances resulting from severe weather, natural events, changes in property ownership, or other situations that occur after the monitoring plan has been posted for public inspection and approved by the EPA Regional Administrator. Any changes to the network that result due to conditions outside the state's logistical control and not included in the current monitoring network plan will be communicated in writing to EPA Region VII staff and identified in the subsequent annual monitoring network plan.

Special Purpose Monitors (SPM)

Consistent with 40 CFR 58.20 (a) "An SPM is defined as any monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor in its annual monitoring network plan and in AQS, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types. "

Special purpose monitors may be established for many different purposes, including but not limited to, NAAQS compliance evaluation, air quality research and characterization, air quality investigation, and monitoring method evaluation.

The department includes SPMs in the annual monitoring network plan required by §58.10. The department installs and approves the installation of these monitors consistent with 40 CFR 58.20 (f). In addition, the department removes, or allows removal of these monitors, following federal guidelines. There is more description of each SPM later in the document. The Missouri Monitoring Network Description, Appendix 1, identifies which monitors are SPM and which are SLAMS.

Industrial Monitors

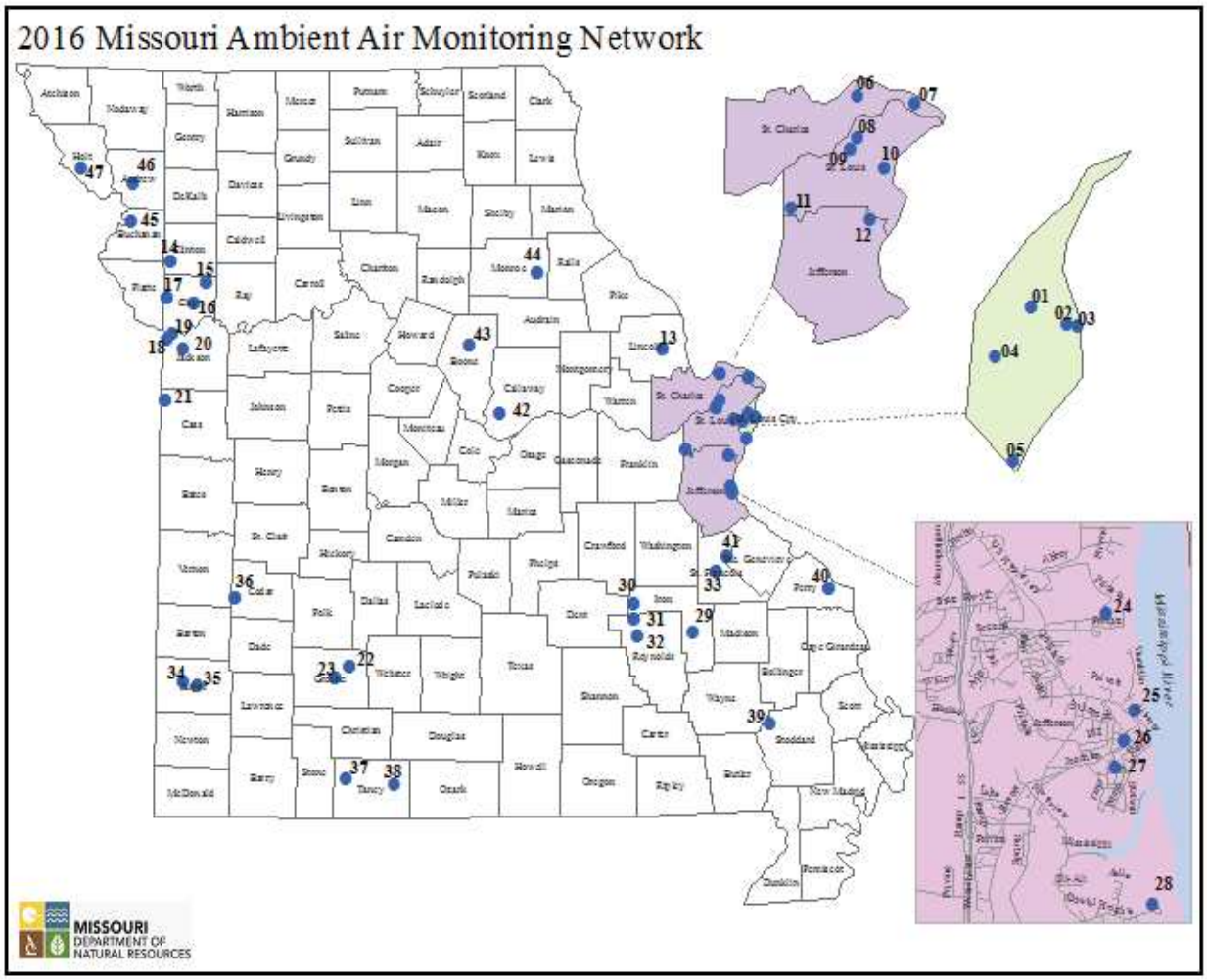
Ambient air monitoring sites classified as Industrial in this plan indicate that the ambient air monitoring at that site is being conducted by the industrial source or its contractor under an approved industrial monitoring Quality Assurance Project Plan (QAPP) and departmental Quality Management Plan (QMP). Department staff conducts quality assurance audits of these monitoring sites consistent with the approved QAPP.

For decades Missouri has overseen ambient air monitoring sites operated by industrial sources for NAAQS compliance. The department has incorporated these Industrial sites in the annual Monitoring Network Plans. Currently, industrial monitoring for some lead and SO_2 sites is incorporated in the ambient air monitoring network.

Some industrial monitoring sites in the lead network are classified in AQS as non-regulatory due to the sites having transitioned to non-ambient status. However, the department has required continued monitoring at these locations in agreements with the industrial source for trends analysis or other purposes.

2016 AMBIENT AIR MONITORING NETWORK, STATE SITES

The 2016 statewide monitoring network is shown below in the map and table.



Legend (State's Monitoring Network)

St. Louis Area

Site#	Site Name	Parameter Monitored
01	Margaretta	PM_{10}, SO_2, NO_2, NO_x, NO, IT
02	Blair Street	PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, $PM_{2.5}$(Spec), PMCoarse, O_3, SO_2, NO_2, NO_y, NO_x, NO, CO, Carbonyls, PAHs, VOCs, Air Toxics, Carbons, PM_{10} Metals, WS, WD, OT, IT, SR, BP, RH
03	Branch Street	PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, WS, WD, OT, IT, BP, RH
04	Forest Park	$PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, NO_2, NO_x, NO, CO, BC, WS, WD, OT, IT, SR, BP, RH, Prec
05	South Broadway	PM10, PM10-LC, PM2.5, PMCoarse, IT, BP, RH
06	Orchard Farm	O3, IT
07	West Alton	O3, WS, WD, OT, IT, SR
08	Rider Trail I-70	NO2, Nox, NO, WS, WD, OT, IT, SR, Prec, SO2 (RES)
09	Maryland Heights	O3, IT
10	Ladue	PM2.5, WS, WD, OT, IT, BP, RH
11	Pacific	O3, WS, WD, OT, IT
12	Arnold West	PM10, PM10-LC, PM2.5, PM2.5(Spec), IT PMCoarse, O3, WS, WD OT, IT, BP, RH
13	Foley*	O3, WS, WD, IT

Kansas City Area

Site#	Site Name	Parameter Monitored
14	Trimble	O3, IT
15	Watkins Mill	O3, IT
16	Liberty	PM10-LC PM2.5, PMCoarse, O3, WS, WD, OT, IT, SR, BP, RH
17	Rocky Creek	O3, IT
18	Troost	PM10, PM2.5, SO2, NO2, Nox, OT, IT
19	Front Street	PM10
20	Blue Ridge I-70	PM10-LC, PM2.5, PMCoarse, NO2, Nox, NO, CO, BC, WS, WD, OT, IT, SR, BP, RH, Prec
21	Richards Gebaur-South	PM10-LC, PM2.5, PMCoarse, O3, WS, WD, OT, IT, BP, RH

Springfield Area

Site#	Site Name	Parameter Monitored
22	Fellows Lake	O_3, IT
23	Hillcrest High School	O_3, PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, OT, IT, BP, RH

Herculaneum Area

Site#	Site Name	Parameter Monitored
24	Pevely	Pb
25	Sherman	Pb
26	Dunklin High School	Pb
27	Mott Street	Pb
28	Ursuline North	Pb

New Lead Belt Area

Site#	Site Name	Parameter Monitored
29	Glover	Pb
30	Buick NE	Pb, SO2, WS, WD, IT
31	Oates	Pb
32	Fletcher	Pb
33	St. Joe State Park	Pb

Outstate Area

Site#	Site Name	Parameter Monitored
34	Alba	O3, IT
35	Carthage	PM10, WS, WD, IT
36	El Dorado Springs	PM10-LC, PM2.5, PMCoarse, O3, WS, WD, OT, IT, BP, RH
37	Branson	O3, WS, WD, IT
38	Hercules Glades	PM2.5 (Spec)-IMPROVE
39	Mingo	PM2.5 (Spec)-IMPROVE
40	Farrar	O3, IT
41	Bonne Terre	O3
42	New Bloomfield	O3, IT
43	Finger Lakes	O3, IT
44	Mark Twain State Park	PM10, SO2, NO2, Nox, NO, O3, WS, WD, IT
45	St. Joseph Pump Station	PM10, PM10-LC, PM2.5, PMCoarse WS, WD, OT, IT, RH
46	Savannah	O3, WS, WD, IT
47	Forest City, Exide	Pb

*To be relocated

Acronym

PM_{10}	Particulate Matter (Diameter size ≤10 micrometer
PM10-LC	PM10 Local Condition
PM2.5	Particulate Matter (Diameter size ≤2.5 micrometer)
PMCoarse	Particulate Matter (Diameter size between 2.5 and 10 micrometer)
Spec	Speciation
SO2	Sulfur Dioxide
NO2	Nitrogen Dioxide
NO	Nitric Oxide
NOy	Reactive Oxides of Nitrogen
NOx	Oxides of Nitrogen
CO	Carbon Monoxide
Pb	Lead (High Volume)
BC	Black Carbon
Prec	Precipitation
WS	Resultant Wind Speed
WD	Resultant Wind Direction
OT	Outside Temperature
IT	Inside Temperature
SR	Solar Radiation
BP	Barometer Pressure
RH	Relative Humidity
IMPROVE	Interagency Monitoring of Protected Visual Environment (Regional Haze)
RES	Research

Notes:

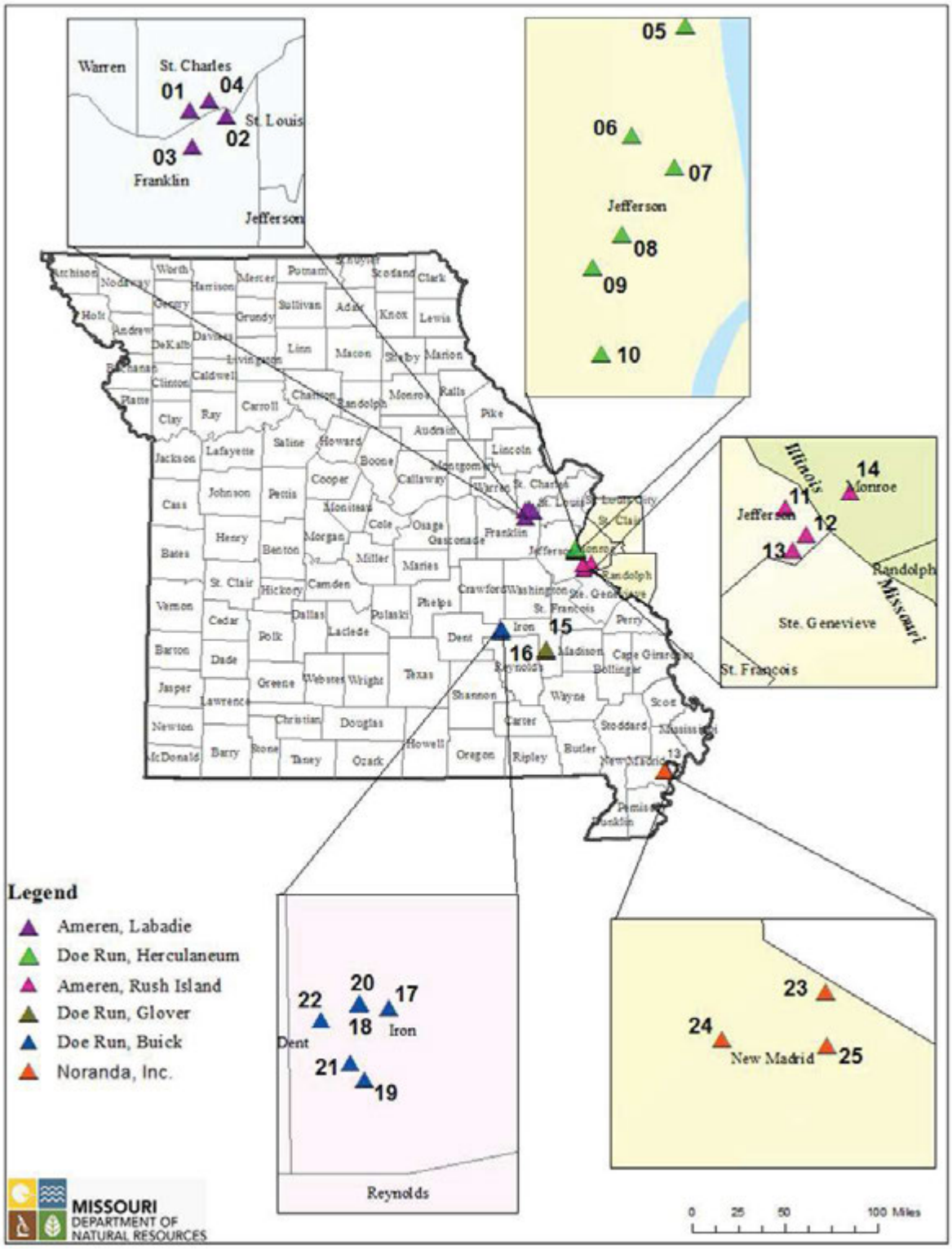
a. The acronym $PM_{10\text{-}LC}$ is also commonly referred to as PM_{10c} when collected with a low volume sampler consistent with appendix O to Part 50. $PM_{10\text{-}LC}$ means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers where the concentration is reported at local conditions of ambient temperature and barometric pressure. $PM_{10\text{-}LC}$ is used in this document to describe any continuous or filter based PM_{10} low volume measurement concentration that is reported at local conditions of ambient temperature and barometric pressure.

b. PM_{10} means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers where the concentration is adjusted to EPA reference conditions of ambient temperature and barometric pressure (25 °C and 760 millimeters of mercury or STP).

c. PMcoarse is also frequently referred to as $PM_{10\text{-}2.5}$.

2016 AMBIENT AIR MONITORING NETWORK, INDUSTRIAL SITES

Monitoring sites operated by industries are shown in the following map and listed in the following table.



Legend (Industry Monitoring Network)

Ameren, Labodie Energy Center

Site#	Site Name	Parameter Monitored
01	Northwest	SO2, (WS, VWS, WD, OT, σ_θ, σ_σ)^
02	Valley	SO2, (WS, VWS, WD, OT, SR, BP, RH, Prec, σ_θ, σ_σ)^
03	Southwest	SO2
04	North	SO2

Doe Run, Herculaneum

Site#	Site Name	Parameter Monitored
05	Sherman	Pb
06	Dunklin	Pb
07	Broadway	(WS, WD, OT, SR, BP, RH, Prec, σ_σ)^*
08	Mott Street	Pb
09	North Cross	Pb
10	Church Street*	Pb

Ameren, Rush Island Energy Center

Site#	Site Name	Parameter Monitored
11	Weaver-AA	SO2
12	Johnson Tall Tower	(WS, VWS, WD, OT, σ_θ, σ_σ)^
13	Natchez	SO2
14	Fults, IL	SO2, (WS, VWS, WD, OT, SR, BP, RH, Prec, σ_θ, σ_σ)^

Doe Run, Glover

Site#	Site Name	Parameter Monitored
15	Post Office #2*	Pb
16	Big Creek*	Pb

Doe Run, Buick

Site#	Site Name	Parameter Monitored
17	Buick NE	Pb
18	Buick North#5*	Pb
19	Buick South#1*	Pb, (WS, WD, OT, SR, BP, RH, Prec, σ_σ) ^*
20	Hwy 32 Northeast	SO2
21	West Entrance	SO2
22	County Road 75	SO2

Noranda Aluminum, Inc

Site#	Site Name	Parameter Monitored
23	Noranda Site 1	SO2
24	Noranda Site 2	SO2
25	Noranda Site 3	SO2, (WS, WD, OT)*

Acronym

SO2	Sulfur Dioxide
Pb	Lead (High Volume)
σ_σ	Sigma Theta (Standard Deviation of Horizontal Wind Direction
WS	Resultant Wind Speed
WD	Resultant Wind Direction
OT	Outside Temperature
SR	Solar Radiation
BR	Barometer Pressure
BP	Relative Humidity
σ_θ	Sigma Theta (Standard Deviation of Vertical Wind Speed)
Prec	Precipitation
VWS	Vertical Wind Speed

* Metrological Data is not submitted to the EPA Air Quality (AQS) Database

^ Regulatory Dispersion Modeling Grade Parameters

* Non-Ambient Monitor

PROPOSED CHANGES TO THE NETWORK

1. Lead Monitoring Network

Changes to airborne lead monitoring requirements were published in the Federal Register: December 27, 2010 (Volume 75, Number 247). The new rules require a plan for monitoring lead sources emitting 0.50 tons per year or more, revised from the previous requirement for monitoring sources emitting one ton per year or more. Airports are specifically exempted from these requirements except for a special study being conducted at specific airports, none of which are in Missouri.

Department staff reviewed the 2014 reported lead emissions and identified only one source not previously identified, NorthStar Battery in Springfield, as emitting greater than 0.50 tons of lead per year and for which ambient air monitoring is not currently being conducted or where EPA has not already granted a modeling waiver consistent with 40 CFR 58 Appendix D, 4.5 (a) (ii). However, a revised construction permit (no. 012016-002, issued in January 2016) for that facility limits its lead emissions to not more than 0.15 ton per year. Therefore, monitoring adjacent to this facility is not required.

1.1 Forest City, Exide Monitoring Site

The 2013 Monitoring Network Plan identified the resumption of lead TSP monitoring at a location near the Exide Secondary Lead Smelter in Forest City, MO. The monitoring method initially deployed, as described in the 2012 Monitoring Network Plan, utilized the low volume PM_{10} sampler and Pb-PM_{10} analysis performed by X-ray Fluorescence (XRF) following specifications and procedures in 40 CFR part 50 Appendix Q. Since the deployment of the Pb-PM_{10} FRM, as a Special Purpose Monitor, in March of 2012, three month rolling averages of airborne lead were monitored at concentrations greater than 0.15 micrograms per cubic meter ($\mu g/m^3$). As a result a Pb-TSP sampler was deployed in August 2012 for subsequent attainment determination. The department discontinued the Pb-PM_{10} FRM in December 2013 but the Pb-TSP sampler continues to monitor lead at the site. As a result of changes in operations at that facility, including addition of pollution control equipment, an exceedance of the lead NAAQS has not been monitored at that site since October-December 2013. Discontinuing the Forest City monitor may be proposed in future monitoring network plans if this trend continues.

1.2 Doe Run Operated Sites

1.2.1 Doe Run Lead Sites

Doe Run operates lead monitoring sites in the vicinity of their industrial facilities in Herculaneum, Glover, and Boss. Operation of some of these sites is required by Consent Judgments or Agreements with the department, and operation of other sites is voluntary.

1.2.2 Doe Run Meteorological Sites

Doe Run Herculaneum also operates one ten meter tower meteorological monitoring site as per language set forth under the 2011 Consent Judgment. Doe Run Herculaneum discontinued the 40 meter tower at Broad Street as per the Consent Judgment.

1.3 Department's Lead Monitoring Network in Herculaneum

With the cessation of primary lead smelting at the Doe Run facility in Herculaneum, the department proposes discontinuing monitoring at the Pevely North site. That site has never shown an exceedance of the lead NAAQS since it began operation in January 2010, and has averaged 0.01 $\mu g/m^3$ since smelting operations at Herculaneum were discontinued at the end of 2013. The Pevely North site meets the conditions in 40 CFR Part 58.14 (c) (1) for discontinuation; it has shown attainment for the last six years, it has a probability of less than 10 percent of exceeding 80 percent of the NAAQS, it is not required by an attainment or maintenance plan, and there are other monitors in the Herculaneum area with higher design values that will remain in operation.

The department continues to carefully evaluate the lead data monitored at its sites in Herculaneum and may consider additional modification, particularly sampling schedules at the Mott site.

1.4 St. Joe State Park Monitoring Site

The department has reduced the frequency of sampling at the Special Purpose lead monitoring site at St. Joe State Park from every third day to every sixth day. The St. Joe State Park site was intended to monitor airborne lead concentrations during remediation activities involving old lead mining waste in the Federal Mine Tailings. The bulk of the remediation activity was completed as of late July/early August of 2014. The three-month rolling average has not exceeded the lead standard, 0.15 $\mu g/m^3$, since the site began monitoring lead on July 1, 2010. The highest three-month rolling average airborne lead concentration at that site was 0.14 $\mu g/m^3$ in July-September 2011. This elevated lead concentration was attributable to remediation activities near the monitor. Since that time the three-month average lead concentration at that site has not exceeded 0.13 $\mu g/m^3$.

1.5 Blair Street TSP Lead Monitor

The department proposed in the 2015 monitoring network plan to discontinue the TSP Lead Monitor at the Blair Street NCore site in St. Louis pending finalization of proposed revisions to Ambient Monitoring Quality Assurance and other requirements in 40 CFR 58. The "Revisions to Ambient Monitoring Quality Assurance and Other Requirements; Final Rule," Federal Register volume 81, number 59 (March 28, 2016), effective April 27, 2016, removed the requirement for TSP lead monitoring at urban NCore sites from 40 CFR Part 58. Therefore, TSP lead monitoring

at Blair Street was discontinued at the end of April 2016. The Blair Street TSP lead monitor has never shown an exceedance of the NAAQS. The average three-month average from October 2011 through February 2016 is 0.02 $\mu g/m^3$.

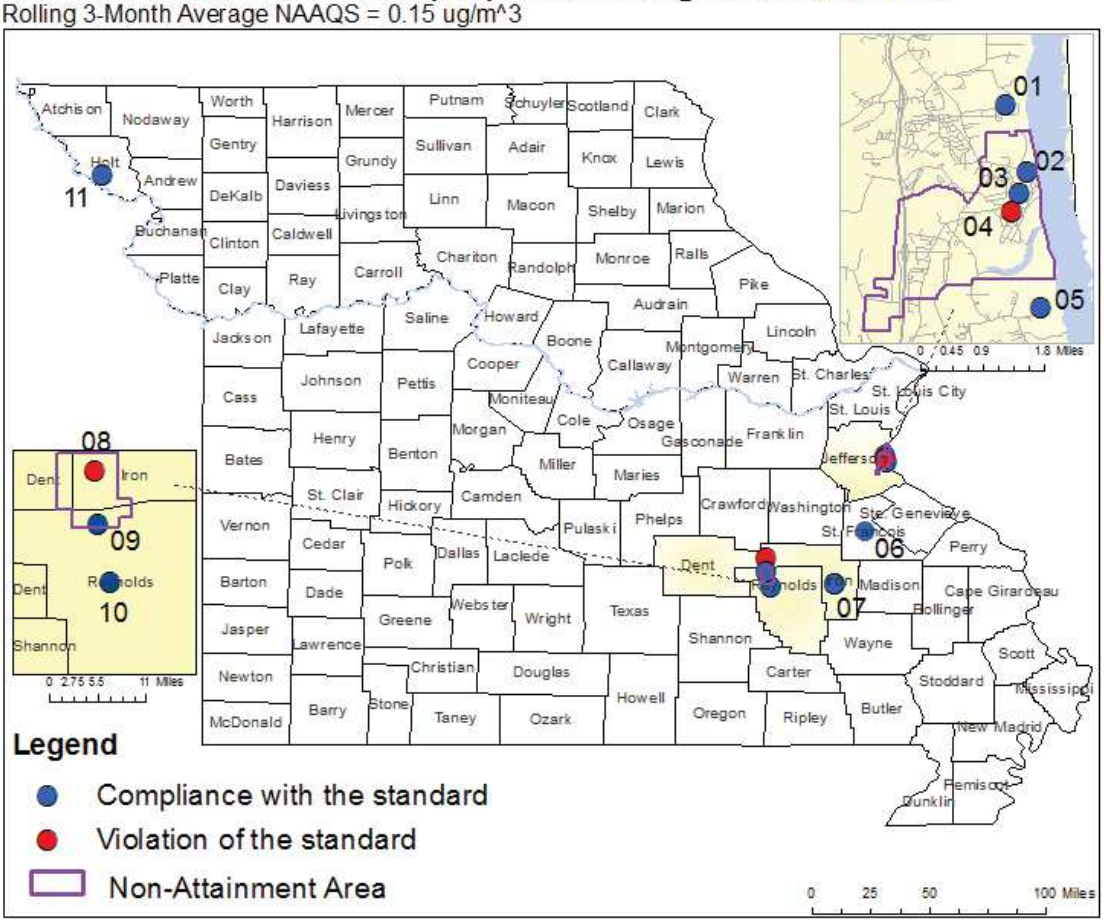
1.6 Bills Creek Lead Monitor

The department proposes to discontinue monitoring at the Bills Creek site in the New Lead Belt area. Lead emissions from the Brushy Creek mine/mill complex, which this site was intended to monitor, were reported as 0.34 tons per year in 2014. This site has not shown an exceedance of the lead NAAQS since it began operation in January 2010. The average three-month average from January-March 2010 through December 2015-February 2016 is 0.02 $\mu g/m^3$. The Bills Creek site meets the conditions in 40 CFR Part 58.14 (c) (1) for discontinuation; it has shown attainment for the last six years, it has a probability of less than 10 percent of exceeding 80 percent of the NAAQS, it is not required by an attainment or maintenance plan, and there are other monitors in the area with higher design values that will remain in operation.

The 2016 lead monitoring network is shown in the map below.

Missouri Statewide Lead (Pb) Monitoring Network, 2016

Rolling 3-Month Average NAAQS = 0.15 ug/m^3



Site#	SiteName (14-16 1st Max Avg^)
	Herculaneum Area
01	Pevely (0.04)
02	Herculaneum, Sherman (0.13)
03	Herculaneum, Dunklin H. Sch. (0.14)
04	Herculaneum, Mott Street **(0.32)**
05	Ursuline North (0.05)
	Old Pb Belt Area
06	St. Joe State Park (0.05)

Site#	SiteName (14-16 1st Max Avg^)
	New Pb Belt Area
07	Glover (0.08)
08	Buick NE **(0.26)**
09	Oates (0.06)
10	Fletcher (0.05)
	Outstate Area
11	Forest City, Exide Levee (0.15)

Missouri
Department of Natural Resources
Air Pollution Control Program
Monitoring Unit, November, 2016

^Quality assured data through June 30th, 2016
Red & Bold: Violation of the standard

2. Sulfur Dioxide (SO_2) Monitoring Network

On June 2, 2010, the US EPA revised the primary SO_2 standard by establishing a 1-hour standard at the level of 75 parts per billion (ppb). The EPA revoked the two previous primary standards of 140 ppb evaluated over 24-hrs and 30 ppb evaluated over an entire year. The 2011 Monitoring Network Plan[1] identified the minimum network monitoring required by the Population Weighted Emissions Index (PWEI). This analysis has been updated using 2010 census data and 2011 NEI emissions. The required numbers of monitoring sites based on the PWEI (2 sites each in the St. Louis and Kansas City CBSAs) did not change. The department's 2016 SO_2 monitoring network is shown in the map below.

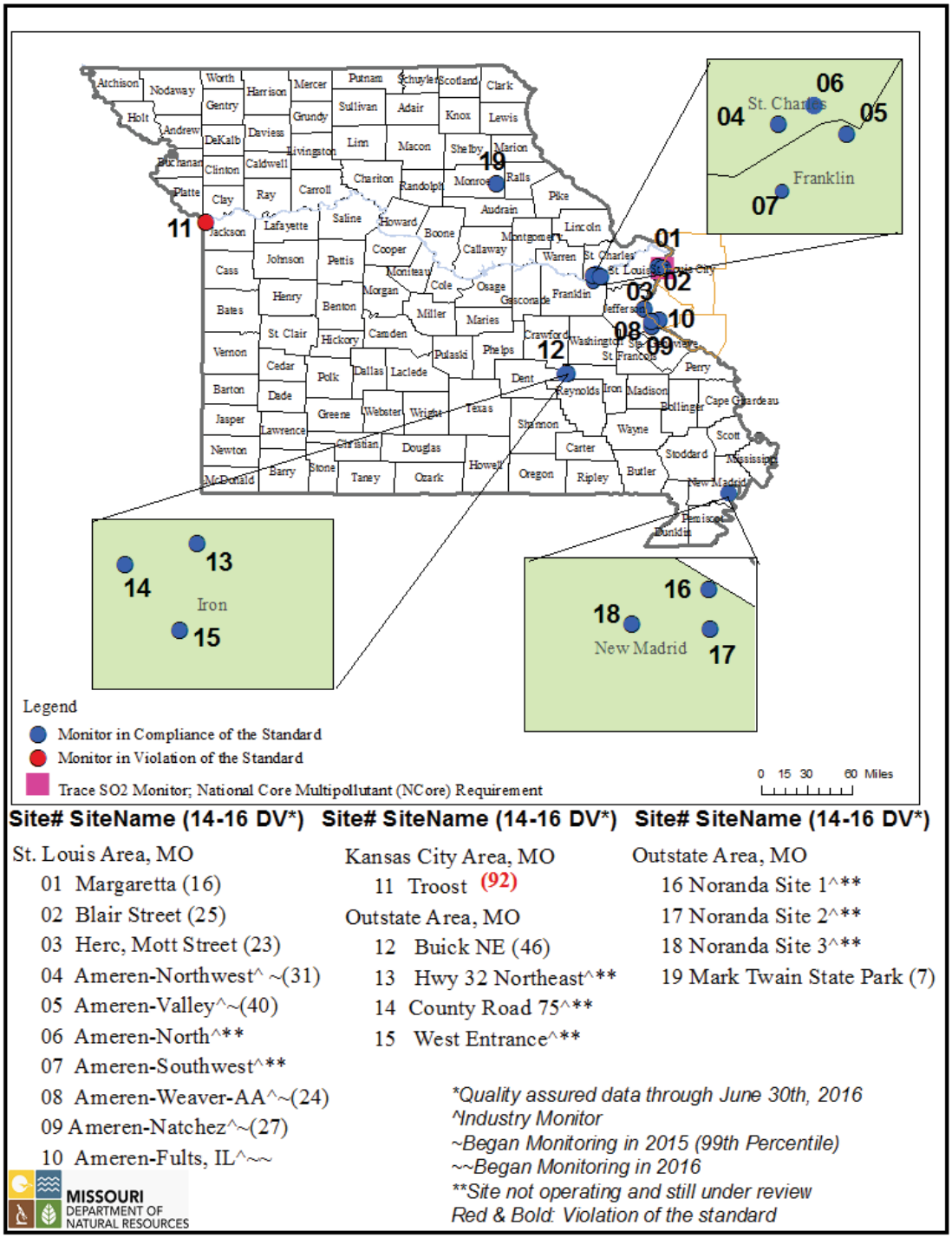
In May 2014 US EPA published proposed data requirements regulations related to SO_2 air quality monitoring and air quality dispersion modeling near emission sources. These requirements were finalized in the SO_2 Data Requirements Rule (DRR) published in the Federal Register on August 21, 2015. This final rule requires that air agencies must characterize air quality, either by monitoring or modeling, around sources that emit 2,000 tons per year (tpy) or more of SO_2. The requirement for air quality characterization near a source may be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO_2. On January 15, 2016 the department submitted a final list identifying the sources in the state around which SO_2 air quality will be characterized. That submittal may be found at https://www3.epa.gov/airquality/sulfurdioxide/drr/mo.pdf. The Ameren Missouri Labadie Energy Center and the Noranda Aluminum facility (both discussed below) were included on that list. The Doe Run Buick Resource Recycling Facility (also discussed below) reports emissions less than 2,000 tpy but was also included on the list because emissions from that facility were uncertain and under review at the time of the January submittal. The Ameren Missouri Rush Island Energy Center was not included in the list, because it is within a previously-designated nonattainment area (designated as nonattainment due to emissions from another facility). Monitoring in the area around that Rush Island is being conducted on an accelerated schedule (compared to the DRR timeline) by agreement between the department and Ameren associated with the plan for the Jefferson County nonattainment area submitted to EPA in May 2015.

For each facility listed in the January 2016 submittal, the state is required to identify by July 1, 2016, the approach (ambient monitoring or air quality modeling) that will be used to characterize air quality or identify sources whose emissions will be limited to less than 2,000 tpy by an enforceable agreement. For source areas that will be evaluated through ambient monitoring, the air agency must submit information on monitoring sites to the EPA by July 1, 2016, as part of its annual monitoring network plan (this plan). This SO_2 monitoring to meet the DRR must begin by January 1, 2017. Monitoring near these sources -in Missouri is discussed in the following sections. This monitoring is being conducted by the industries operating the sources, but the monitoring must be conducted in accordance with the SLAMS requirements in 40 CFR Part 58, and the department will review and approve the siting of the monitor(s) based on federal regulations and oversee the operation of the monitors. To meet the requirements of the DRR, these monitors will need a minimum of three years of monitoring data. The source cannot

[1] http://dnr.mo.gov/env/apcp/docs/2011monitoringnetwork.pdf

discontinue the monitor thereafter without EPA approval based on the requirements of 40 CFR 51.1203(c)(3) or 40 CFR 58.14.

Missouri Statewide SO_2 Monitoring Network, 2016
1-hour NAAQS = 75 ppb



Site#	SiteName (14-16 DV*)
St. Louis Area, MO	
01	Margaretta (16)
02	Blair Street (25)
03	Herc, Mott Street (23)
04	Ameren-Northwest^ ~(31)
05	Ameren-Valley^~(40)
06	Ameren-North^**
07	Ameren-Southwest^**
08	Ameren-Weaver-AA^~(24)
09	Ameren-Natchez^~(27)
10	Ameren-Fults, IL^~~
Kansas City Area, MO	
11	Troost (92)
Outstate Area, MO	
12	Buick NE (46)
13	Hwy 32 Northeast^**
14	County Road 75^**
15	West Entrance^**
Outstate Area, MO	
16	Noranda Site 1^**
17	Noranda Site 2^**
18	Noranda Site 3^**
19	Mark Twain State Park (7)

**Quality assured data through June 30th, 2016*
^Industry Monitor
~Began Monitoring in 2015 (99th Percentile)
~~Began Monitoring in 2016
***Site not operating and still under review*
Red & Bold: Violation of the standard

MISSOURI DEPARTMENT OF NATURAL RESOURCES

2.1 Industrial SO_2 & Meteorological Monitoring near the Labadie and Rush Island Energy Centers

As indicated in the Missouri 2015 Monitoring Network Plan, two SO_2 ambient Air Monitoring networks have been deployed around the Labadie and Rush Island power pants. At the time the plan was posted for public inspection, EPA had not promulgated the SO_2 DRR or revisions to the monitoring requirements in 40 CFR 58. The SO_2 DRR and revisions to 40 CFR 58 were published in the Federal Register on August 21, 2015 and March 28, 2016, respectively.

The recently revised quality assurance requirements of 40 CFR 58 Appendix A, indicate in section 1.1 (a) that "This appendix specifies the minimum quality system requirements applicable to SLAMS and other monitor types whose data are intended to be used to determine compliance with the NAAQS (e.g., SPMs, tribal, CASTNET, NCore, industrial, etc.),…" This revision supports states using monitors with any of these classifications to satisfy the DRR monitoring requirements in 40 CFR 51.1203 (c) so long as these monitors are being operated in a manner equivalent to SLAMS. Both SLAMS and industrial NAAQS compliance monitoring networks in Missouri are operated under a department approved QAPP consistent with the departmental Quality Management Plan (QMP) that has been approved by EPA Region VII.

EPA Region VII indicated in a January 25, 2016 letter approving our 2015 Monitoring Network Plan that they did not evaluate the Labadie and Rush Island SO_2 monitoring networks described in detail in that plan due to our classification of those monitors as Special Purpose Monitors (SPM). EPA also recommended that if we reclassify these sites as SLAMS they would evaluate these SO_2 monitors consistent with the SO_2 DRR for the 1-hour SO_2 NAAQS.

Despite EPA's previous recommendation to classify these monitors as SLAMS, after reviewing the revisions to 40 CFR 58 against monitor classifications as they apply to NAAQS compliance monitoring, we have decided to classify the Labadie and Rush Island SO_2 monitors as industrial SO_2 monitors. This is consistent with how we have handled industrial monitors used for NAAQS compliance in both our SO_2 and lead ambient air monitoring networks. Industrial and SPM monitors have been utilized for NAAQS compliance monitoring and other purposes in Missouri for decades. For example, the James River SO_2 monitoring site is an Industrial monitoring site operated by the City Utilities of Springfield and the department operates a SPM SO_2 monitor at our Buick Northeast site. Such monitoring sites have been included in past Monitoring Network Plans and approved by EPA Region 7.

The following sections describe changes to the Labadie and Rush Island SO_2 monitoring networks where they differ from the original 2015 Monitoring Network Plan. References to the previous plan will be addressed in this plan, as needed.

2.1.1 Labadie Energy Center

On March 20, 2015 EPA updated implementation guidance as a result of the March 2, 2015 U.S. District Court for the Northern District of California accepting an enforceable order and agreement between the EPA and Sierra Club and Natural Resources Defense council. This agreement is intended to resolve litigation related to the deadline for completing the 1-hour SO_2 NAAQS designations process.

Since proposing the first two SO_2 monitors near the Labadie Energy Center in our 2015 Monitoring Network Plan, EPA promulgated the SO_2 DRR. Consistent with the DRR definitions section, 40 CFR 51.1200, the area designation status with respect to the one-hour SO_2 NAAQS determines if this area is subject to the DRR. The DRR applies if the area around the Labadie Energy Center is not designated as a nonattainment area. On June 30, 2016, EPA designated that area as unclassifiable (Federal Register, volume 81, number 133, July 12, 2016). Therefore, the DRR applies to this area, and this monitoring network is designed consistent with the requirements of the DRR and ready for EPA's review and approval.

The department will continued to work with the Ameren UE to collect quality assured SO_2 ambient air quality data and meteorological data near the Labadie Energy Center to provide quantifiable and useful technical information to meet the DRR requirements and supplement the ongoing 1-hour SO_2 NAAQS implementation process.

Two industrial SO_2 ambient air monitoring sites and a meteorological monitoring station began operation in April 2015 in the area around the Ameren UE Labadie Energy Center, located at 226 Labadie Power Plant Road in Franklin County, Missouri. Two additional industrial SO_2 monitoring sites southwest and north of the Labadie Energy Center will be installed. The southwest site will begin operation by January 1, 2017. The location of that site was determined on the basis of dispersion modeling using, in part, meteorological data collected at the Valley site established in 2015, as discussed in Appendix 5. The target date for beginning operation of the north site is January 1, 2017. The location of that site was also determined on the basis of dispersion modeling (see Appendix 5). Also, meteorological monitoring using a 10 meter tower will be added at the Northwest site, beginning by January 1, 2017, and the SODAR instrument will be relocated from the Valley site to the Northwest site. These monitoring sites (see the following table) are operated by Ameren UE under a department-approved Quality Assurance Project Plan (QAPP). The rationale for site selection based on modeling results is discussed extensively in the 2015 Monitoring Network Plan and in Appendix 5 in this Plan.

<u>Summary of Industrial Monitoring Stations:</u>
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale ($100m^2$ to 0.5 km^2)
Labadie Northwest -SO_2, 10 Meter Meteorological Station and Sound Detection and Ranging (SODAR). (Lat: 38.5818 Long: -90.865528)
Labadie Valley -SO_2, 10 Meter Meteorological Station. (Lat: 38.572522 Long: -90.796911)
Labadie Southwest -SO_2, (Lat: 38.52814 Long: -90.86326; these are approximate; final coordinates will be determined after installation)
Labadie North –SO_2, (Lat: 38.59558 Long: -90.82860; these are approximate; final coordinates will be determined after installation)
(The Osage Ridge meteorological site described in the 2015 monitoring network plan was not installed due to technical difficulties; the SODAR instrument, currently at the Valley site, and soon to be relocated to the Northwest site because of potential flooding threats at the Valley site, is being used for upper air measurement. A 10 meter meteorological monitoring tower is also being added at the Northwest site.)

2.1.2 Rush Island Energy Center

On March 23, 2015 the Department and Ameren UE entered into a Consent Agreement (Appendix 3 of the 2015 Monitoring Network Plan) which included Ameren installing and operating an SO_2 monitoring network around the Rush Island Energy Center under department oversight. The siting of these monitors was consistent with the technical process described in the SO_2 DRR.

Although the primary objective of the Rush Island ambient air monitoring project is to satisfy the terms of the aforementioned Consent Agreement, it is possible that the quality assured monitoring data may be used for other future purposes depending on the final outcome of EPA's national implementation strategy for the 2010 1-hour SO2 NAAQS and the Jefferson County Nonattainment area implementation process.

The department will continued to work with the Ameren UE to collect quality assured SO_2 ambient air quality data and meteorological data near the Rush Island power station to provide quantifiable and useful information to supplement the ongoing 1-hour SO2 NAAQS implementation process.

The Rush Island monitoring network design was based on evaluation of dispersion modeling, as described in the 2015 Monitoring Network Plan and in Appendix 2 of this plan, based on the "SO2 NAAQS Designations Modeling Technical Assistance Document," https://www3.epa.gov/airquality/sulfurdioxide/pdfs/SO2ModelingTAD.pdf This updated modeling assessment did not change the recommended locations for monitoring. This network began operation in December 2015.

Summary of Rush Island area Industrial Monitoring Stations:
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale ($100m^2$ to 0.5 km^2)
Weaver-AA -SO_2. (Lat: 38.144529 Long: -90.304726)
Natchez -SO_2, (Lat: 38.10525 Long: -90.29842)
Fults, IL, -SO_2, 10 Meter Meteorological Station (Lat: 38.15908 Long: -90.22728)
Johnson Tall Tower -Meteorological Station Only, anemometers at 62.5m and 132.5m levels (Lat: 38.11999 Long: -90.28214)

2.2 Industrial SO_2 & Meteorological Monitoring near the Doe Run Buick Resource Recycling Facility

The Doe Run Company will conduct SO_2 monitoring at three sites in the area around the Buick Resource Recovery Facility near Boss, Missouri starting by January 1, 2017 to meet the requirements of the SO_2 Data Requirements Rule, as described above. Meteorological monitoring is already being conducted at the Buick South lead monitoring site, south of the facility. These sites will be operated under a department-approved QAPP, which will include performance evaluations (audits) by department staff. Potential areas for these ambient SO_2 monitoring sites were determined on the basis of air quality modeling of the impact of facility emissions. These evaluations are described in Appendix 3. Figures in the appendix show the

recommended areas and the locations of the monitoring sites superimposed on aerial photographs of the facility and surrounding area. West Entrance is located west of the facility and County Road 75 is to the northeast. Department Staff evaluated the Sawmill site, north of the facility but for logistical reasons Doe Run proposed the former Prevention of Significant Deterioration (PSD) SO_2 site as the third monitoring site, called Highway 32 Northeast. This site is located less than a quarter mile east of the Sawmill site and within the modeled area of impact. Department staff and EPA Region 7 staff visited the first two proposed monitoring sites on May 11, 2016 and determined that the sites could be developed to meet the siting criteria in 40 CFR Part 58 Appendix E. Department staff visited all three sites on November 10, 2016, verified that the sites have been developed and installed to meet siting criteria, but made additional recommendations on tree removal to improve exposure to the potential source. Latitude and longitude coordinates in the following table were measured during the most recent site visit.

Summary of Doe Run Buick area Industrial Monitoring Stations:
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale ($100m^2$ to 0.5 km^2)

West Entrance -SO_2. (Lat: 37.63211 Long: -91.13565)
County Road 75 -SO_2, (Lat: 37.64876 Long: -91.14890)
Hwy 32 Northeast (Former PSD site) -SO_2, (Lat: 37.65319 Long: 91.12795)

2.3 Industrial SO_2 & Meteorological Monitoring near the Noranda Aluminum Facility

Noranda Aluminum will conduct SO_2 monitoring at three sites and meteorological monitoring at one site in the area around their facility near New Madrid, Missouri starting by January 1, 2017 to meet the requirements of the SO_2 Data Requirements Rule, as described above. These sites will be operated under a department-approved QAPP, which will include performance evaluations (audits) by department staff. Potential areas for these ambient SO_2 monitoring sites were determined on the basis of air quality modeling of the impact of facility emissions, and the potential area for meteorological monitoring was determined on the basis of an analysis by a department meteorologist. These evaluations are described in Appendix 4. Figures in the appendix show the recommended areas and the locations of the monitoring sites superimposed on aerial photographs of the facility and surrounding area. Site 1 is near the northeast corner of the facility, site 2 is to the east of the facility, and site 3 is near the southwest corner of the facility. In addition to these evaluations, department staff visited the proposed monitoring sites in November 2015 and determined that the sites could be developed to meet the siting criteria in 40 CFR Part 58 Appendix E. Latitude and longitude coordinates in the following table were measured during that site visit and are approximate, since monitors have not yet been installed. Final coordinates will be determined once the sites are installed.

This Noranda Aluminum facility has recently been sold. The department will continue working with the new owners on this SO_2 monitoring project.

Summary of Noranda Aluminum area Industrial Monitoring Stations:
Monitoring Objective: Source Oriented

Spatial Scale of representativeness: Middle Scale (100m^2 to 0.5 km^2)
Site 1 -SO_2, (Lat: 36.51364 Long: -89.56093)
Site 2 -SO_2, (Lat: 36.50838 Long: -89.56074)
Site 3 -SO_2 and Meteorology, (Lat: 36.50899 Long: -89.57099)

2.4 South Charleston and James River South Sites

The department proposes to discontinue monitoring at the South Charleston and James River South sites in Springfield. These sites were intended to monitor ambient SO_2 concentrations near the City Utilities of Springfield James River Power Station. The following table lists SO_2 design values for these sites for the last five years. The design values have been steadily decreasing for both sites, and only the 2009-2011 design value at James River South exceeds the NAAQS during the last five years.

SO_2 Design Values (ppb)

	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015
South Charleston	62	54	44	35	26
James River South	81	68	44	32	25

Also, the power station formerly burned coal but switched fuel to natural gas on October 15, 2015. The operating permit for that facility (OP2016-003, effective January 29, 2016) limits the fuel to natural gas. A forthcoming State SO_2 rule amendment will also have a limit requiring James River Power Station to switch fuel to natural gas. Once the amended state rule becomes effective, the consent agreement that required SO_2 monitoring (at the James River South site but not at the South Charleston site) near the facility will terminate and the monitoring requirement will then not be in the State Implementation Plan. Since the fuel switch, the maximum daily one-hour average at South Charleston has been 3.2 ppb, and the maximum daily one-hour average at James River South has been 2.8 ppb.

The South Charleston site meets the conditions in 40 CFR Part 58.14 (c) (1) for discontinuation; it has shown attainment for the last five years, it has a probability of less than 10 percent of exceeding 80 percent of the NAAQS, and has never been required by an attainment or maintenance plan. The James River South site does not yet meet the conditions in 40 CFR Part 58.14 (c) (1) because of the design value slightly exceeding the NAAQS for 2009-2011 (when the power station was still burning coal). However, given the enforceable fuel change from coal to natural gas, the department requests that the James River South site also be discontinued under the provision in 40 CFR Part 58.14 (c) that "Other requests for discontinuation may also be approved on a case-by-case basis…."

2.5 Rider Trail I-70 Site

The department recently added a sulfur dioxide air monitor to the existing Rider Trail, I-70 monitoring site. The addition of a sulfur dioxide monitor at this site is to evaluate sulfur dioxide levels in the general area. Any sulfur dioxide concentrations monitored at this site may be due to

several emissions sources in the area. If the monitor records sulfur dioxide at levels of concern, the department will gather additional information to try to determine which sources are causing or contributing to the levels of concern. The department will evaluate the levels recorded after one year of operation and decide whether or not it is appropriate to continue operating a sulfur dioxide monitor at this location.

Since the monitor is located in the near-roadway environment and there are several other SO_2 sources in the area, the department is initially classifying the spatial scale of representativeness of the SO_2 measurements as middle-scale. This classification may be reevaluated if trends in the monitoring data and other analysis warrant increasing the spatial scale of representativeness. The monitoring objective for this monitor is to measure population exposure.

3. National Air Toxics Trends Stations (NATTS), and Other Non-Criteria Pollutant Special Purpose Monitoring

3.1 National Air Toxics Trends Stations Monitoring

Routine NATTS monitoring will continue at Blair Street. In addition to the regular NATTS monitoring, additional NATTS grant funds have been utilized to support continuing collocation of a near real time PM_{10} Metals Monitor (Xact™ 620) at the Blair Street site to increase understanding of the temporal variation of metals in the ambient air (particularly arsenic and lead) routinely measured by the time integrated 24-hr filter based PM_{10} sampling at this site. This project is useful in supplementing ambient air monitoring data objectives addressed in EPA's multi pollutant strategy. Continued operation of the PM_{10} Metals Monitor (Xact™ 620) will depend on the availability of funds.

3.2 Organic and Elemental Carbon Monitor Evaluation Project

The EPA Office of Air Quality Planning and Standards (OAQPS) contacted the EPA Regional Office and the state of Missouri about participating in a three year monitor evaluation study which began in the summer/fall of 2011. EPA provided the monitor and certain related components in exchange for the state providing in-kind staff time to operate and report data to the EPA Air Quality System (AQS) from the instrument. The location for the study is the Blair St. site, since the site is currently part of the NCore, NATTS and Chemical Speciation monitoring programs. The data from the Blair Street site is used extensively in various health and air pollution studies. Since elemental and organic carbon account for a significant amount of the particulate matter mass measured at this site at various times, understanding the temporal variation in carbon species relative to the 24-hr integrated filter based carbon data will be useful in understanding the local source contributions and diurnal variation in the carbon concentrations. This project will be useful in supplementing ambient air monitoring data objectives addressed in EPA's multi-pollutant monitoring strategy.

Currently, the preliminary near real-time monitoring data for this monitor is being reported each hour to the State of Missouri web page and is being uploaded to AQS.

3.3 Black Carbon

As part of the condition of receiving one time section 103 Grant funds to implement certain sites for the near-roadway monitoring network, the department will continue to conduct special purpose $PM_{2.5}$ black carbon monitoring at the Forest Park and Blue Ridge I-70 near roadway NO_2 sites using aethalometers.

4. $PM_{2.5}$ Monitoring Network

4.1 $PM_{2.5}$ SLAMS Network

The TEOM-1405-DF is the primary instrument being used in the state network for $PM_{2.5}$ measurement. The EPA has also designated the TEOM-1405-DF, operating with firmware version 1.70 and later, as a Federal Equivalent Method (FEM) on November 12, 2013 for PM_{10} and $PM_{10\text{-}2.5,}$ (http://www.gpo.gov/fdsys/pkg/FR-2013-11-12/pdf/2013-27016.pdf). The Thermo-Fisher 1.71 firmware version has been integrated into the TEOM-1405-DF monitors, and the department is evaluating the performance of the instruments with this firmware for PM_{10} measurement. Until this evaluation is completed, the PM_{10} channels from the TEOM-1405-DF instruments are not being reported to AQS. Once the instruments are determined to be successfully operating for these channels, the PM_{10c} and PM_{10} parameters will provide more temporal and spatial coverage for PM_{10} in the network.

Network $PM_{2.5}$ collocated FRM requirements were previously satisfied at the Blair Street NCore site in St. Louis and the Troost site in Kansas City. The following page reports the FRM/FEM Comparability statistics (Class III performance criteria of 40 CFR Part 53) for three years of the TEOM-1405-DF (EQPM-0609-182) operating at the Blair Street, St. Louis NCore site. The additive and multiplicative bias meets the Class III performance criteria of 40 CFR Part 53.

The "Revisions to Ambient Monitoring Quality Assurance and Other Requirements; Final Rule," Federal Register volume 81, number 59 (March 28, 2016), effective April 27, 2016, removed the requirement for collocated monitoring for $PM_{10\text{-}2.5}$ at NCore sites from 40 CFR Part 58. Therefore, operation of the collocated set of filter samplers used for measurement of $PM_{10\text{-}2.5}$ filter samplers was discontinued at the Blair Street site. At the same time, the TEOM-1405-DF FEM was re-designated as the primary $PM_{2.5}$ instrument at this site. The Blair Street FEM/FRM comparability statistics below show that this method meets the comparability criteria, and setting the TEOM-1405-DF as the primary $PM_{2.5}$ reporting monitor at Blair St. allows us to use it in AQS for the network data quality assessment. The FRM $PM_{2.5}$ sampler at Blair Street was re-designated as the collocated reporting FRM sampler for the state network, and also provides $PM_{2.5}$ for the calculation of $PM_{10\text{-}2.5}$ and reporting FRM $PM_{2.5}$ for the NCore site. This change allowed the collocated FRM $PM_{2.5}$ sampler at the Troost site to be discontinued. Two FRM PM_{10} samplers remain at Blair Street: one used to report both PM_{10c} (at local conditions) for calculation of $PM_{10\text{-}2.5}$ and PM_{10} at standard conditions, and a second one which provides collocation for the PM_{10} measurement. The current $PM_{2.5}$ network is summarized in the table below.

Two TEOM-1405-DF instruments are operated at the St. Joseph Pump Station site, one designated as primary, and one as collocated to satisfy the collocation requirement for that FEM method.

The department will also operate a 1405-F $PM_{2.5}$ instrument and a collocated FRM at Ladue in part to evaluate the 1405-F for possible additional future use in the network.

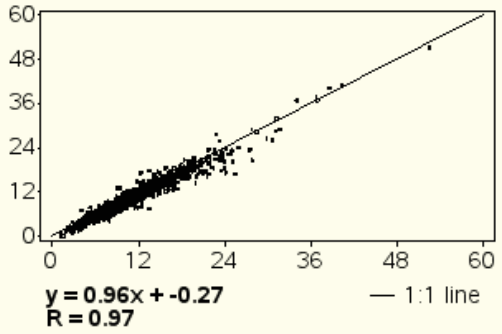
Class III Performance Criteria of 40 CFR Part 53
Blair Street St. Louis Air Quality System # 29-510-0085
TEOM-1405-DF, EQPM-0609-182 ($PM_{2.5}$)
January 2013 through December 2015
Source: EPA AirData $PM_{2.5}$ Continuous Monitor Comparability Assessments

PM 2.5 Continuous Monitor Comparability Assessment

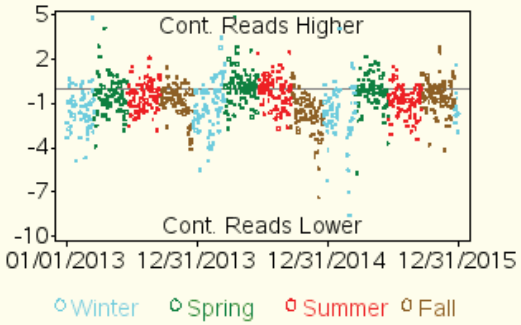
Site 29-510-0085: St. Louis, MO

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC - Gravimetric (145,118), PM2.5 - Local Conditions (88101), POC=1
Cont: Thermo Scientific TEOM 1405-DF Dichotomous FDMS - FDMS Gravimetric (182), PM2.5 - Local Conditions (88101), POC=4

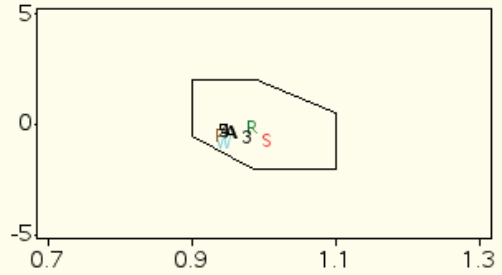
Cont. (y) vs. FRM (x) $PM_{2.5}$ ($\mu g/m^3$)



Cont. minus FRM $PM_{2.5}$ ($\mu g/m^3$)

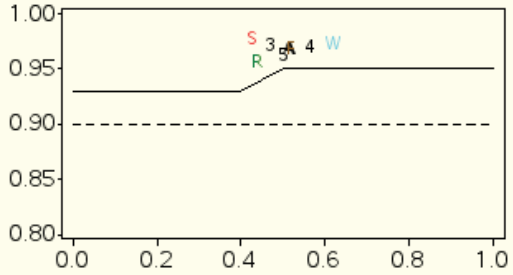


Additive (y) vs. Multiplicate (x) Bias



A=AllData, 3=2013, 4=2014, 5=2015
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 3=2013, 4=2014, 5=2015
W=Winter, R=Spring, S=Summer, F=Fall

Mean $PM_{2.5}$ ($\mu g/m^3$)

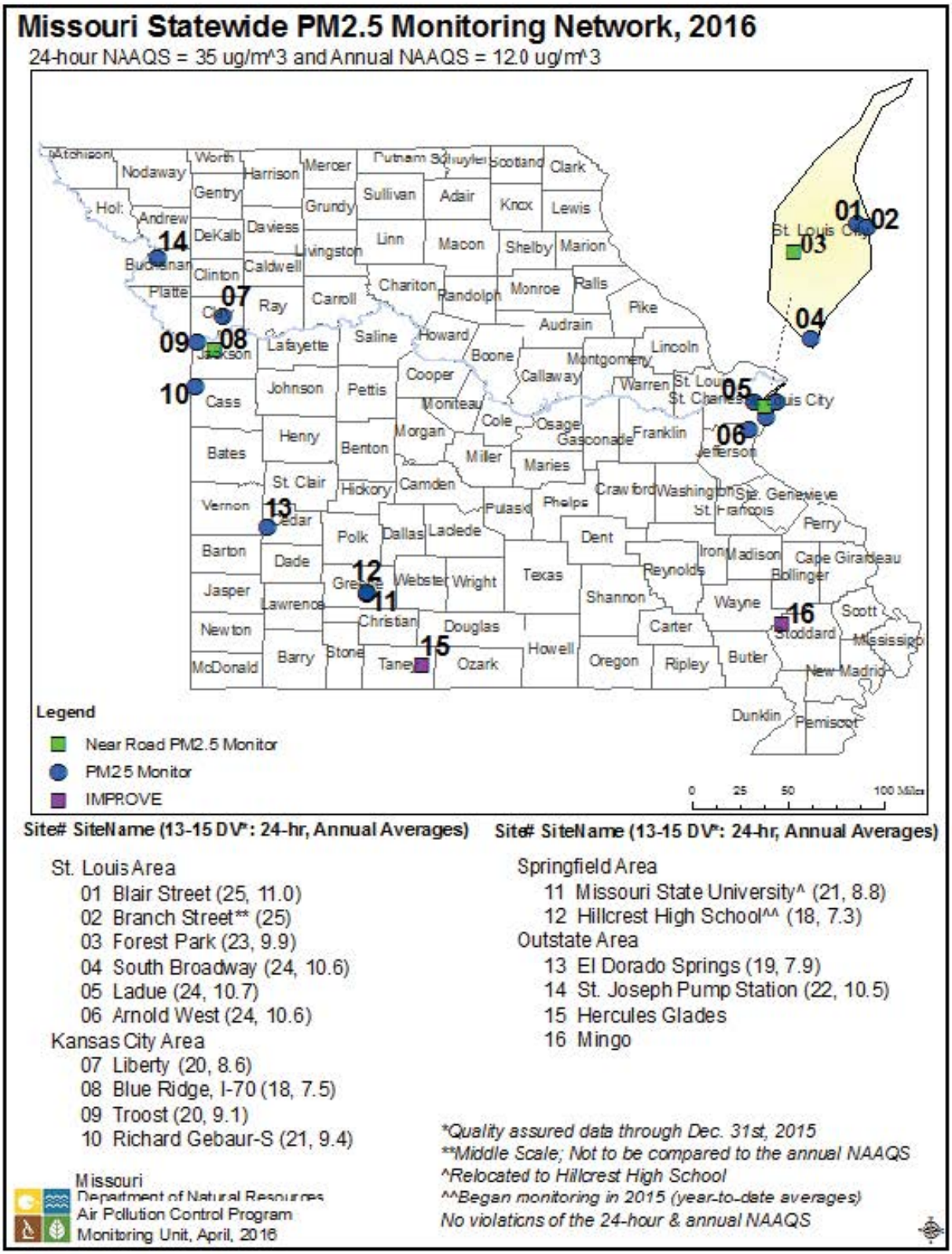
Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**1020**	**11.0**	**10.2**	**0.93**
Winter	228	12.2	10.8	0.89
Spring	263	9.6	9.4	0.98
Summer	263	12.2	11.6	0.95
Fall	266	10.2	9.2	0.90
2013	342	11.1	10.4	0.93
2014	348	11.5	10.7	0.93
2015	330	10.4	9.6	0.92

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 3 ug/m^3)	Bias
AllData	**1020**	**-7.9**	**980**	**-6.9**
Winter	228	-12	216	-11
Spring	263	-2.9	252	-1.5
Summer	263	-5.5	259	-5.3
Fall	266	-12	253	-10
2013	342	-8.5	329	-7.3
2014	348	-7.2	333	-6.2
2015	330	-8.0	318	-7.2

Data Source: EPA AQS Data Mart

Generated on: February 26, 2016


Missouri Statewide PM2.5 Monitoring Network, 2016
24-hour NAAQS = 35 ug/m^3 and Annual NAAQS = 12.0 ug/m^3
Legend
Near Road PM2.5 Monitor
PM2.5 Monitor
IMPROVE
0 25 50 100 Miles
Site# SiteName (13-15 DV*: 24-hr, Annual Averages)
St. Louis Area
01 Blair Street (25, 11.0)
02 Branch Street** (25)
03 Forest Park (23, 9.9)
04 South Broadway (24, 10.6)
05 Ladue (24, 10.7)
06 Arnold West (24, 10.6)
Kansas City Area
07 Liberty (20, 8.6)
08 Blue Ridge, I-70 (18, 7.5)
09 Troost (20, 9.1)
10 Richard Gebaur-S (21, 9.4)
Site# SiteName (13-15 DV*: 24-hr, Annual Averages)
Springfield Area
11 Missouri State University^ (21, 8.8)
12 Hillcrest High School^^ (18, 7.3)
Outstate Area
13 El Dorado Springs (19, 7.9)
14 St. Joseph Pump Station (22, 10.5)
15 Hercules Glades
16 Mingo
*Quality assured data through Dec. 31st, 2015
**Middle Scale; Not to be compared to the annual NAAQS
^Relocated to Hillcrest High School
^^Began monitoring in 2015 (year-to-date averages)
No violations of the 24-hour & annual NAAQS
Missouri
Department of Natural Resources
Air Pollution Control Program
Monitoring Unit, April, 2016

IMPROVE Protocol Site; El Dorado Springs

The EPA conducted an assessment of the IMPROVE Protocol Sites in an effort to optimize the Chemical Speciation Network (CSN) and create a network that is sustainable going forward. As a result of this assessment, EPA recommended defunding a number of monitoring sites, including the IMPROVE protocol site at El Dorado Springs. Operation of that site was discontinued effective January 2016.

Missouri State University Site (MSU)

New construction on the campus of Missouri State University in Springfield required relocation of the MSU monitoring site in April 2015. The $PM_{2.5}$ and PM_{10} instrument at MSU was relocated to the Hillcrest High School site as discussed in the 2015 monitoring network plan.

4.2 $PM_{2.5}$ Chemical Speciation Network (CSN)

$PM_{2.5}$ speciation sampling is currently being conducted at two locations: Blair Street in St. Louis and Arnold West. Bonne Terre and Liberty were discontinued in January 2015 as per recommendation from the US EPA evaluation of the national speciation network. The sampling schedule at Arnold West was modified to every six days in February 2015.

REVISED $PM_{2.5}$ MONITORING NETWORK

Site	Schedule*	Type	Agency	Purpose
St. Louis				
1. Blair St.	3	Collocated FRM	ESP	Quality Assurance & NCore PM2.5 & PM10-2.5 particle mass
	3	Speciation	ESP	
	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
2. Branch St.	H	TEOM-1405-DF FEM	ESP	24 hr NAAQS/AQI, PM10-2.5 continuous (unique middle scale monitor†)
3. South Broadway	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
4. Ladue	6	Collocated FRM	ESP	Quality Assurance
	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
5. Arnold West	6	Speciation	ESP	
	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
6. Forest Park (near-roadway)	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous (micro scale monitor)
Kansas City				
7. Liberty	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
8. Troost	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
9. Blue Ridge I-70 (near-roadway)	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous (micro scale monitor)
10. Richards-Gebaur South	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
Springfield				
11. Hillcrest High School	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
St. Joseph				
12. Pump Station	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
	H	Collocated TEOM-1405-DF FEM	ESP	Quality Assurance
Outstate				
13. El Dorado Springs	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
14. Mingo	3	IMPROVE	Fish & Wildlife	
15. Hercules Glades	3	IMPROVE	Forest Service	

* 3 = Every third day; 6 = Every sixth day; H = Continuous monitoring, hourly data reported.
† The Branch St. Monitor is a unique middle scale impact site and not eligible for comparison to the Annual $PM_{2.5}$ NAAQS consistent with 40 CFR 58.30.

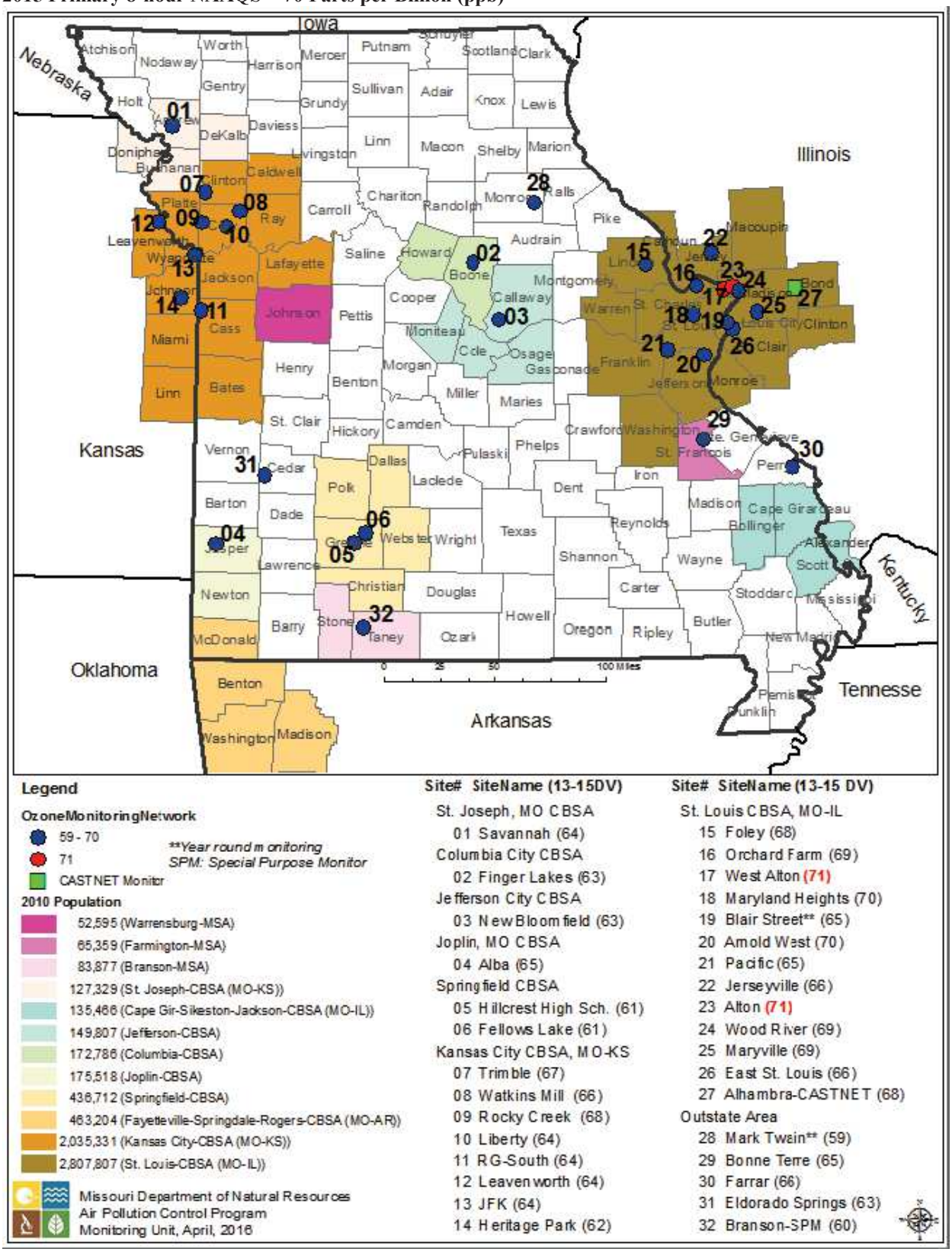
5. Ozone Monitoring Network

The Foley monitoring site (site no. 15 in the map below) will be relocated before the start of the 2017 ozone monitoring season in March 2017. This change is required for logistical reasons (change in property ownership). The site will be relocated to a new location within less than 4 kilometers of the current site and representative of the same air mass. In accordance with the system modification requirements of 40 CFR 58.14(c)(6) and consistent with the discussion of unanticipated network modifications in the Introduction to this document, details of this change will be communicated in writing as they become available to EPA Region VII staff, and the new location will be specifically identified in the next annual monitoring network plan.

There are no other planned changes to the ozone monitoring network, and ozone monitoring will continue to be conducted all year at the Mark Twain State Park (MTSP) site to collect ozone background concentrations need for PSD modeling projects and at Blair Street to meet the NCore ozone monitoring requirement. The current monitoring network is based on the current ozone standard and ground-level ozone air quality monitoring network design requirements.

Reduction of the ozone NAAQS to 70 ppb was published in the Federal Register in October 2015, effective in December 2015. That change also included extension of the ozone monitoring season in Missouri to include the month of March and a requirement for photochemical assessment monitoring stations (PAMS) at NCore sites in nonattainment areas starting in 2019.

Missouri Statewide Ozone (O_3) Monitoring Network, 2016
2015 Primary 8-hour NAAQS = 70 Parts per Billion (ppb)



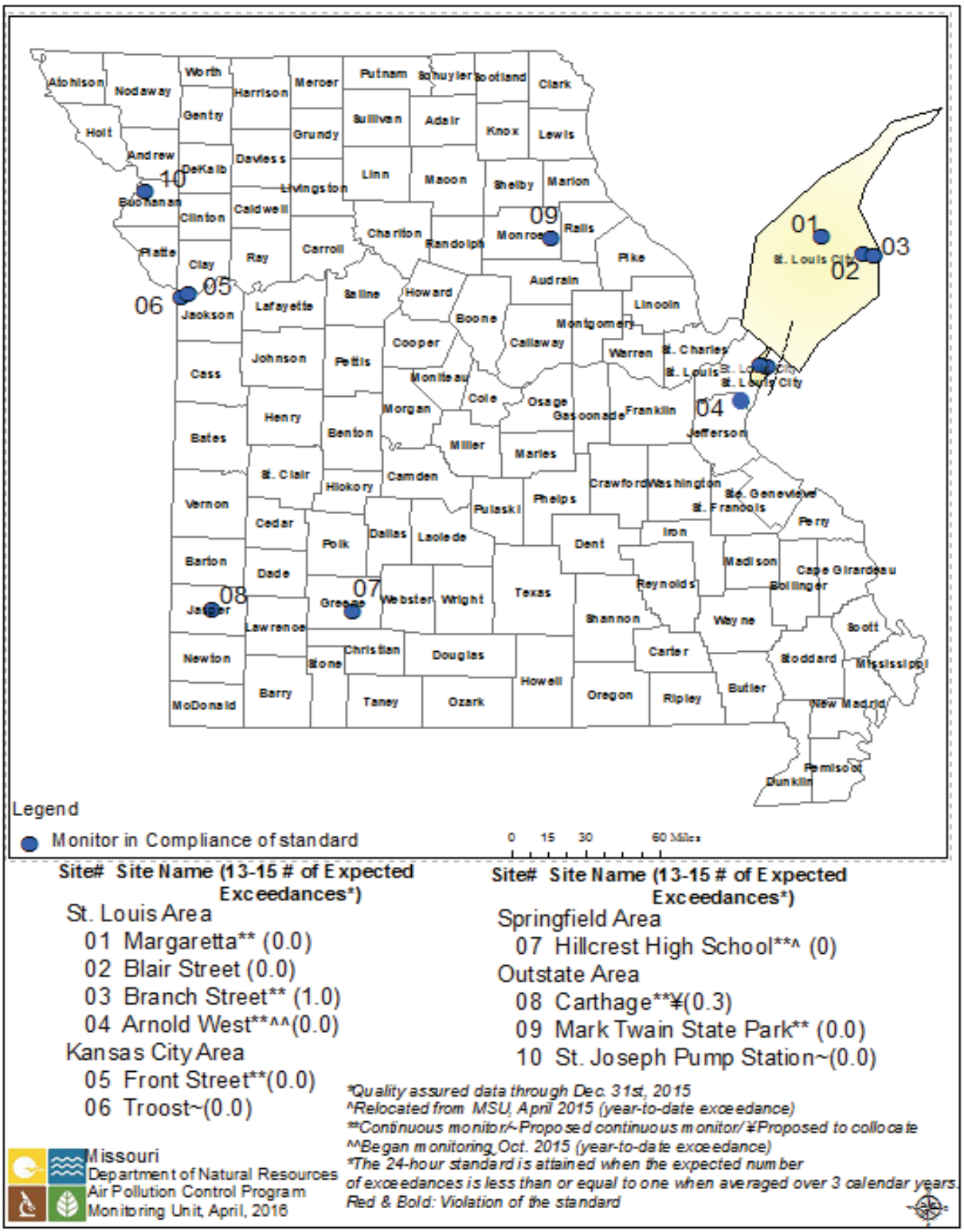
6. PM_{10} Monitoring Network

As discussed in Section 4, the TEOM-1405-DF monitor has the capability of reporting PM_{10} along with the $PM_{2.5}$ FEM measurements. The 1.71 firmware version has been integrated into the TEOM-1405-DF instruments, and the department is evaluating the performance of the monitors for PM_{10} measurement through data analysis. Once the PM_{10} data from these instruments is determined to be acceptable, the number of continuous PM_{10} monitors comparable to the NAAQS will increase by three (3) sites to include Blair Street, Ladue, and South Broadway in the St. Louis area. This will bolster the count of PM_{10} monitors in this CBSA to a total count of nine (9) monitors, more than enough to meet the minimum monitoring requirements specified in 40 CFR 58 Appendix D §4.6 (not including the microscale Forest Park site). The PM_{10} minimum monitoring requirement in the Kansas City CBSA is also being met currently by the Troost and Front Street sites in Missouri and the JFK site in Kansas. Pending successful integration of the 1.71 firmware into the TEOM 1405 DF's, the TEOM 1405 DF PM_{10} FEM channel can also be used for PM_{10} NAAQS compliance reporting at Hillcrest, Troost, St. Joseph Pump Station, Arnold West, and Branch Street. This would allow us to eventually replace the TEOM-1400ab instruments at Hillcrest, Branch St., and Arnold West.

As discussed in Section 4 above, the $PM_{2.5}$ and PM_{10} monitor at Missouri State University in Springfield was relocated to Hillcrest High School in April 2015. Also, as discussed in the 2014 Monitoring Network Plan, the PM_{10} monitor at Oakville was moved to Arnold West in July 2015.

A collocated PM_{10} TEOM-1400ab monitor has been installed at the Carthage site effective in April 2016. The PM_{10} low volume samplers at Troost and St. Joseph Pump Station will be replaced with TEOM-1400ab monitors. This will leave only the Blair Street site with a low-volume filter-based PM_{10} sampler and a collocated low-volume filter-based PM_{10} sampler, which meets the collocation requirement.

Missouri Statewide PM_{10} Monitoring Network, 2016
24-hour NAAQS = 150 Micrograms per Cubic Meter ($\mu g/m^3$)



Site#	Site Name (13-15 # of Expected Exceedances*)
	St. Louis Area
01	Margaretta** (0.0)
02	Blair Street (0.0)
03	Branch Street** (1.0)
04	Arnold West**^^(0.0)
	Kansas City Area
05	Front Street**(0.0)
06	Troost~(0.0)

Site#	Site Name (13-15 # of Expected Exceedances*)
	Springfield Area
07	Hillcrest High School**^ (0)
	Outstate Area
08	Carthage**¥(0.3)
09	Mark Twain State Park** (0.0)
10	St. Joseph Pump Station~(0.0)

Quality assured data through Dec. 31st, 2015
^Relocated from MSU, April 2015 (year-to-date exceedance)
***Continuous monitor/^-Proposed continuous monitor/¥Proposed to collocate*
^^Began monitoring Oct. 2015 (year-to-date exceedance)
**The 24-hour standard is attained when the expected number of exceedances is less than or equal to one when averaged over 3 calendar years.*
Red & Bold: Violation of the standard

Missouri Department of Natural Resources
Air Pollution Control Program
Monitoring Unit, April, 2016

7. Nitrogen Dioxide (NO_2) Monitoring Network

Requirements for near-roadway NO_2 monitoring are being met in the St. Louis area by the Forest Park I-40/64 and Rider Trail 1-70 monitoring sites. The requirement for near roadway NO_2 monitoring in the Kansas City area is being met by the Blue Ridge I-70 site. The community-wide monitoring network requirement of 40 CFR 58 Appendix D, 4.3.3(a) is satisfied by the existing Troost and Margaretta monitoring sites.

EPA has identified the Margaretta NO_2 site as one of the minimum of forty additional NO_2 monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. This requirement is the responsibility of the respective Regional Administrators working with their respective states consistent with 40 CFR 58 Appendix D, 4.3.4(a). For additional information about this topic consult the following EPA website resource: http://www.epa.gov/ttn/amtic/svpop.html

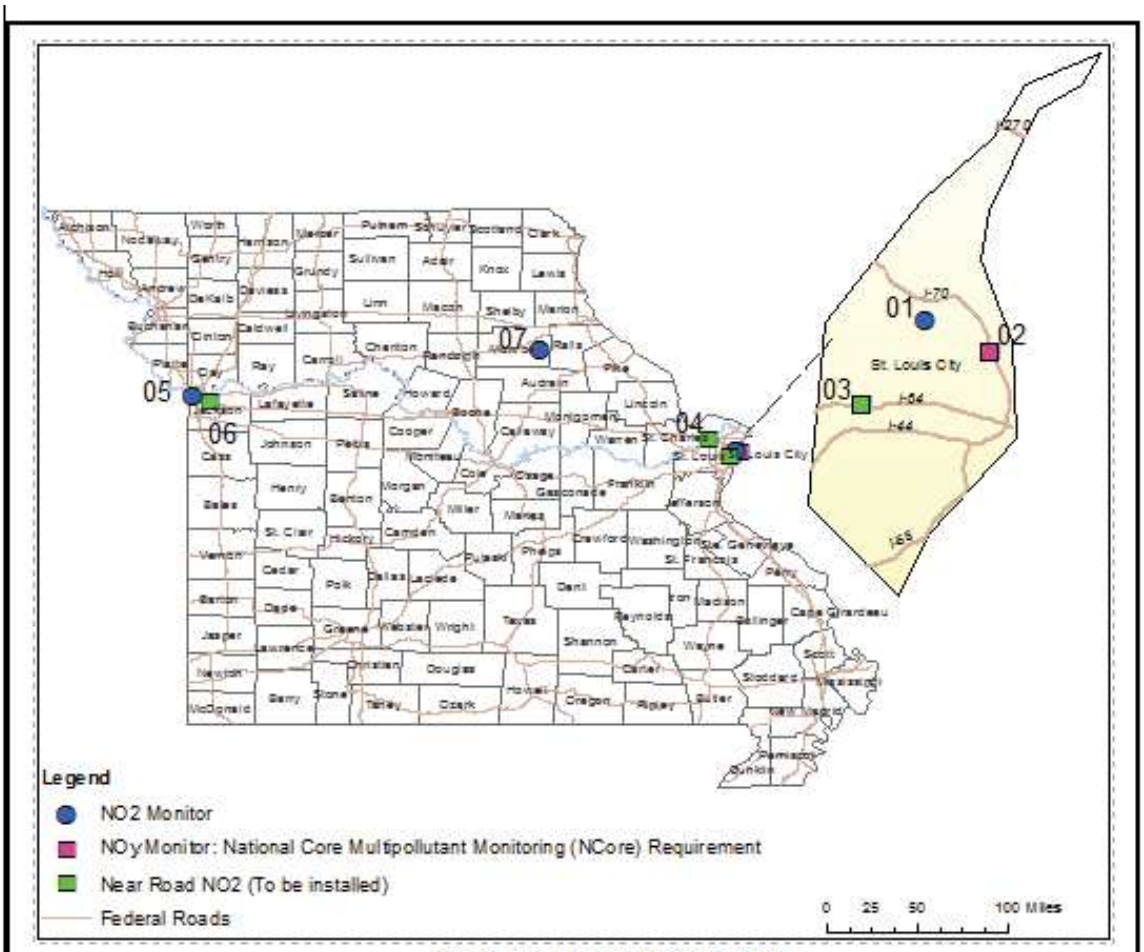
The department added, in 2013, photolytic NO_2 monitors at the Blair Street NCore site and the Forest Park near-roadway site in St. Louis. Now that the evaluation project is complete, the photolytic NO_2 instrument from Forest Park has been moved to Blair Street and is the primary instrument. The Blair instrument is now a backup to the primary. Photolytic NO_2 monitoring is identified in EPA's long term monitoring strategy, and this monitoring supplement the required NOy monitoring being conducted at the NCore site.

7.1 NO_2 Near-Roadway Monitoring

The final rule published in 2010 revising the NAAQS to add the 1-hour standard of 100 ppb (3-year average of annual 98th percentile) requires near-road NO_2 monitoring at two sites in the St. Louis CBSA (population 2.8 million) and one site in the Kansas City CBSA (population 2.0 million), based on population and traffic count. Sites were to be identified in the 2012 air monitoring network plan and begin operation by 1/1/2013. The schedule was revised in a rulemaking published in 2013 that required the first St. Louis area near-road site to begin operation in January 2014, the Kansas City area site to begin operation in January 2014, and the second St. Louis area site to begin operation in January 2015. Due in part to receipt of EPA funding for establishment of near-road sites, the department established the first St. Louis area site in January 2013, and the Kansas City area site was established in July 2013. The second near-roadway site in the St. Louis area was established in January 2015. The site selection process was described in the 2013 Monitoring Network Plan, http://dnr.mo.gov/env/apcp/2013monitoringnetworkplan.pdf.

The first St. Louis area near-roadway site, Forest Park, is located adjacent to I-64 west of downtown St. Louis. Air monitoring results at that site are consistent with commuter traffic, heaviest on weekday mornings. The second St. Louis area site, called Rider Trail S. I-70, is adjacent to Interstate 70 just west of Interstate 270. Interstate 70 extends across the United States and carries through traffic in addition to commuter traffic and other local traffic. Therefore, the fleet mix and congestion patterns relative to time of day and day of the week are expected to be different than at the first site.

Missouri Statewide Nitrogen Dioxide (NO_2) Monitoring Network, 2016
1-hour NAAQS = 100 ppb



Site# SiteName (13-15 DV*)

St. Louis Area
- 01 Margaretta (47)
- 02 Blair Street (44)
- 03 Forest Park (49)
- 04 Rider Trail, I-70 (44)^^

Kansas City Area
- 05 Troost (51)
- 06 Blue Ridge, I-70 (43)
- 07 Mark Twain State Park (11)^

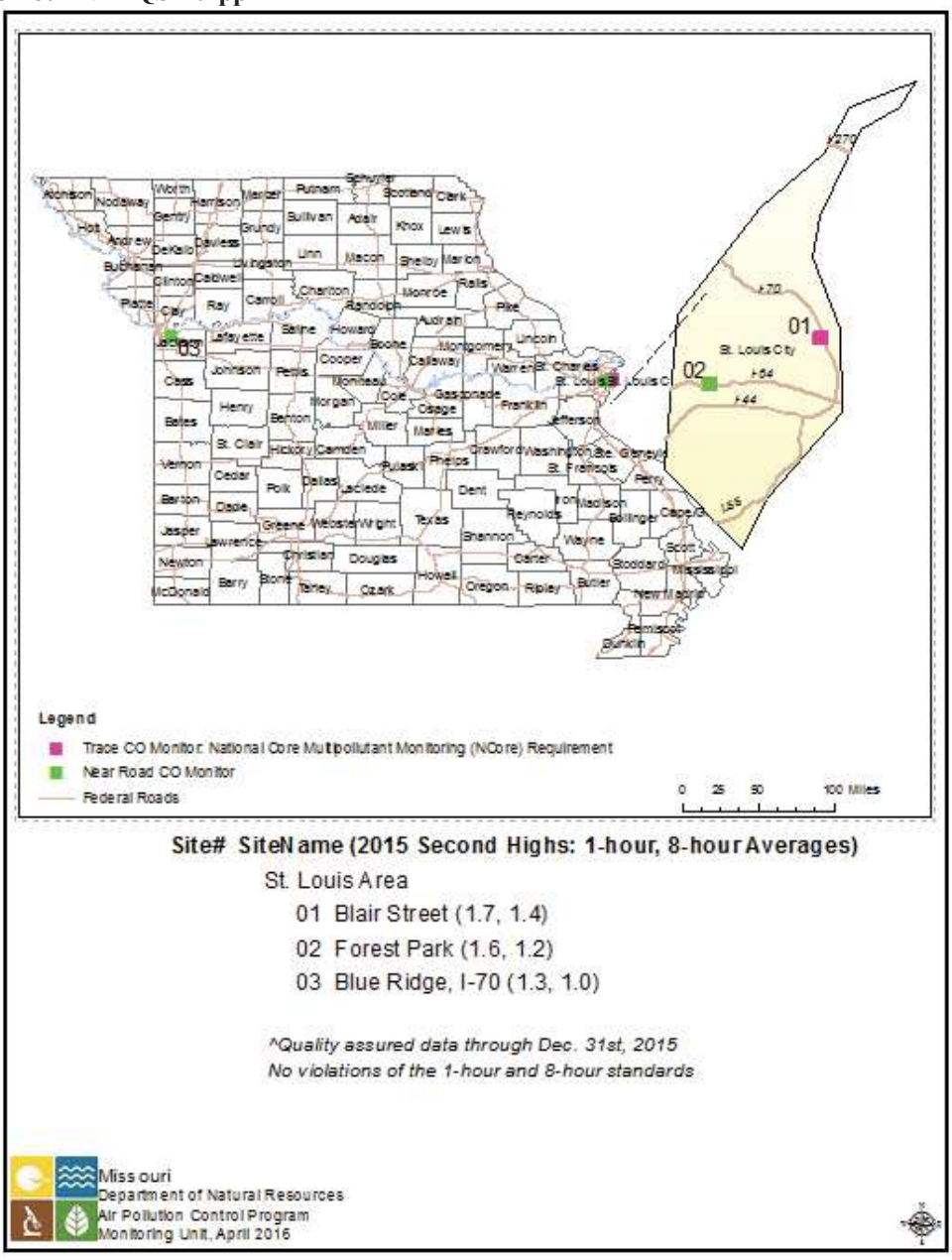
**Quality assured data through Dec 31st, 2015*
^Began Monitoring on July 1, 2014
^^Began Monitoring on January 13, 2015
No violation of the 1-hour standard

Missouri Department of Natural Resources
Air Pollution Control Program
Monitoring Unit, April, 2016

8. Carbon Monoxide (CO) Monitoring Network

On August 12, 2011, the EPA issued a decision to retain the existing NAAQS for CO. A final rule published on August 31, 2013 requires near-road CO monitoring at one site in the St. Louis CBSA by 1/2015 and one site in the Kansas City CBSA by 1/2017. The department established CO monitoring sites at the same time as the NO_2 monitoring sites at the two near-roadway sites described above. The department has added near-roadway CO monitors to the network at the Forest Park I-40/64 and Blue Ridge I-70 near-roadway monitoring sites. No additional changes to the CO monitoring network are proposed in this plan.

Missouri Statewide Carbon Monoxide (CO) Monitoring Network, 2016
1-hour NAAQS = 35 ppm
8-hour NAAQS = 9 ppm



9. Rural National Core

EPA has expressed interest in pursuing the installation and operation of a rural NCore site in Missouri. Department staff has suggested that EPA evaluate the Mark Twain State Park Site as a candidate for consideration of the rural NCore site due to its location and the historically low PM_{10} and SO_2 concentrations measured at the site. The department is waiting for EPA to identify specifically what funding may become available for this project before committing additional resources to the project. The department will continue to work with EPA Region VII staff to pursue this project at some time in the future.

Currently the department is conducting background monitoring for SO_2, PM_{10}, ozone, and NO, NO_2, and NO_x. Data from monitors at the Mark Twain State Park Site provide background ambient air monitoring concentrations for Prevention of Significant Deterioration (PSD) permit projects and other potential modeling purposes and other analysis.

NETWORK DESCRIPTION/COMPONENTS

See Appendix 1 for the Network Description, which includes the following components.

Site Data

All ambient air monitoring sites are recorded in the EPA's Air Quality System database. Data includes location data such as latitude & longitude.

Air Quality System Site Code

The site code includes a numerical designation for State, county, and individual site. The state and county codes are assigned a number based on the alphabetical order of the State or county. Site numbers are assigned sequentially by date established in most counties. St. Louis County sites also have a division for municipality within St. Louis County.

Street Address

The official Post Office address of the lot where the monitors are located. Because not all sites are located in cities or towns, the street address is occasionally given as the intersection of the nearest streets or highways.

Geographical Coordinates

The coordinate system used by Missouri Department of Natural Resources is latitude and longitude.

Air Quality Control Region

Air Quality Control Regions, or AQCR, are defined by EPA and designates either urban regions, like St. Louis or Kansas City, or rural sections of a state, such as northeast or southwest Missouri.

AQCR	AQCR Name
070	Metropolitan St. Louis
094	Metropolitan Kansas City
137	Northern Missouri
138	SE Missouri
139	SW Missouri

Core Based Statistical Area

Core Based Statistical Areas, or CBSA are defined by the U.S. Census Bureau.

CBSA Code	CBSA Name
00000	Not in a CBSA
16020	Cape Girardeau-Jackson, MO-IL
17860	Columbia, MO
27620	Jefferson City, MO
27900	Joplin, MO
28140	Kansas City, MO-KS
41140	St. Joseph, MO-KS
41180	St. Louis, MO-IL

44180 Springfield, MO

Monitor Data

Each monitor is designed to detect a specific chemical pollutant or group of related pollutants. A site may have one or many monitors and not all sites will have the same monitors.

Pollutant

The common name of the pollutant. “Criteria” pollutants are defined by statute in the Clean Air Act.

Air Quality System Pollutant Code

Each pollutant has a specific numerical code to distinguish it from others.

Pollutant Code	Pollutant
14129	Lead – Local Conditions
42101	Carbon Monoxide
42401	Sulfur Dioxide
42406	Sulfur Dioxide 5-min
42600	Reactive Oxides of N (NOY)
42601	Nitric Oxide
42602	Nitrogen Dioxide
42603	Oxides of Nitrogen
44201	Ozone
61103	Resultant Wind Speed
61104	Resultant Wind Direct
62101	Outdoor Temperature
62107	Indoor Temperature
62201	Relative Humidity
63301	Solar Radiation
64101	Barometric Pressure
68105	Average Ambient Temperature
68108	Sample Baro Pressure
81102	PM_{10}
88313	Black Carbon-Local Condition
85101	PM_{10} - LC
85129	Lead PM10 LC - FRM/FEM
86101	PMCoarse - LC (FRM Diff)
88101	$PM_{2.5}$ FRM
88500	$PM_{2.5}$ Tot Atmospheric
88502	$PM_{2.5}$ AQI/Speciation
88503	$PM_{2.5}$ Reference
61106	Sigma Theta
62106	Temperature Difference
65102	Precipitation
88314	UV Carbon PM2.5-Local Condition

85102	Antimony
85103	Arsenic PM10 LC
85107	Barium PM10 LC
85109	Bromine PM10 LC
85110	Cadmium PM10 LC
85111	Calcium PM10 LC
85112	Chromium PM10 LC
85113	Cobalt PM10 LC
85114	Copper PM10 LC
85126	Iron PM10 LC
85128	Lead PM10 LC
85132	Manganese PM10 LC
85136	Nickel PM10 LC
85142	Mercury PM10 LC
85154	Selenium PM10 LC
85160	Tin PM10 LC
85161	Titanium PM10 LC
85164	Vanadium PM10 LC
85166	Silver PM10 LC
85167	Zinc PM10 LC
85173	Thallium PM10 LC
85180	Potassium PM10 LC
88160	Tin PM10 LC
88305	OC CSN Unadj PM2.5 LC TOT
88312	Total Carbon PM2.5 LC TOT
88316	Optical EC PM2.5 LC TOT

Parameter Occurrence Code

The Parameter Occurrence Code (POC) distinguishes between different monitors for the same pollutant, most often collocated monitors used for precision and quality assurance. For $PM_{2.5}$, different parameter occurrence codes are assigned to FRM, collocated FRM, continuous, and speciation monitors.

Collocated

Collocated monitors are used for precision and quality assurance activities, and for redundancy for critical pollutants such as ozone.

Sampling Frequency

Sampling frequency varies for each pollutant, depending on the nature of the NAAQS standard and the technology used in the monitoring method. Most gaseous pollutants, $PM_{2.5}$ and PM_{10} monitors use continuous monitoring FEM methods and are averaged over

one hour. Some particulate pollutants are filter-based FRM methods and averaged over one day.

Scale of Representation

Each monitor is intended to represent an area with similar pollutant concentration. The scales range from only a few meters to many kilometers.

MIC Microscale - defines the concentration in air volumes associated with area dimensions ranging from several meters up to about 100 meters.

MID Middle - defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometers.

NBR Neighborhood - defines concentrations within an extended area of a city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers.

URB Urban - defines an overall citywide condition with dimensions on the order of 4 to 50 kilometers.

REG Regional - defines air quality levels over areas having dimensions of 50 to hundreds of kilometers.

Monitor Type

The monitor's administrative classification as determined by the purpose for the monitor in the agency sampling strategy. Assignment of monitor types “NCORE” and “PAMS” is limited to EPA Headquarters and is done only after a complete review and approval is done for all site/monitor metadata.

Code	Description
IMPROVE	IMPROVE or IMPROVE Protocol
INDEX SITE	(not currently used by MO)
INDUSTRIAL	Used to indicate sites operated by an industry Primary Quality Assurance Organization (PQAO)
NATTS	National Air Toxics Trends Station
NON-EPA FEDERAL	(not currently used by MO)
NON-REGULATORY	Not used for NAAQS Compliance
PAMS	(not currently used by MO)
PROPOSED NCORE	
QA COLLOCATED	Collocated to Satisfy 40 CFR Part 58, Appendix A
SLAMS	State or Local Air Monitoring Station
SPECIAL PURPOSE	Special Purpose Monitoring Station (SPM or SPMS)
SUPLMNTL SPECIATION	
TRENDS SPECIATION	
TRIBAL MONITORS	(not currently used by MO)
UNOFFICIAL PAMS	(not currently used by MO)

State Monitoring Objective

Each monitor has a distinct objective such as providing real-time data for public awareness or use in determining compliance with regulations. The state monitoring objective provides more information about the purpose of the monitoring in addition to the monitor objective required of 40 CFR 58.10(a)(6).

State Objective Code	Objective
AQI	Public Information
COM	NAAQS Compliance
MET	Meteorological Data
RES	Research
STA	State Standard

Units

The physical terms used to quantify the pollutant concentration, such as parts per million or micrograms per cubic meter.

Unit Code	Unit Description
001	$\mu g/m^3$
007	parts per million
008	parts per billion
011	meters per second
012	miles per hour
013	knots
014	degree, compass
015	degree Fahrenheit
016	millbars
017	degree Celsius
018	Langleys
019	percent humidity
021	inches
022	inches Mercury
025	Langleys per minute
059	Millimeter (Mercury)
073	Liters/minute STP-Flow
077	Micrograms
079	$Watts/m^2$
083	Cubic meter/minute
105	$\mu g/m^3$ LC
106	Minutes
107	Percent
118	Liters/minute LC-Flow
119	Cubic meters/minute LC-Flow
121	parts per trillion

Monitoring/Analytical Method

Each monitor relies on a scientific principle to determine the pollutant concentration, which is described by the sampling method. Each method code is specific for a particular pollutant; therefore a three numeral code may be used for different methods for different pollutants. This is required of 40 CFR 58.10(a)(3).

Monitoring Objective

This is the primary monitoring objective(s) for the monitoring parameter required of 40 CFR 58.10(a)(6). The monitoring Objective is specific to the pollutant. Some sites may have more than one monitoring objective, but the primary objective is listed first.

APPENDIX 1

Missouri Monitoring Network Description

Missouri Ambient Air Monitoring Network

MIC	*Microscale*	*Several meters up to about 100 meters*
MID	*Middle*	*100 meters to 0.5 kilometer*
NBR	*Neighborhood*	*0.5 to 4.0 kilometers range*
URB	*Urban*	*4 to 50 kilometers*
REG	*Regional*	*Tens to hundreds of kilometers*

COM National Ambient Air Quality Standards (NAAQS) Compliance
MET Meteorological Data
N/A Not Applicable
NCore National Multi-Pollutant Monitoring Stations
NON-A Non-Ambient Site
NON-R Non-Regulatory
PQAO Primary Quality Assurance Organization
RES Research
SLAMS State and Local Monitoring Stations
SIP State Implementation Plan
SPEC Speciation
STA State Standard
SPM Special Purpose Monitoring
SPP Special Purpose Project

Keep/Back-Up: 'Keep' a monitor under performance evaluation and data is not reported to EPA Air Quality System (AQS). 'Back-Up' a monitor where Quality Assurance/Quality Control is being performed but no data is reported to AQS unless the primary monitor does not produce a valid measurement.

Ameren Missouri (PQAO - 1440)

Labadie, North

AQS Site Number 29-183-9004

~150 ft. N of Terry Rd and ~600 ft. N Kingfisher Ct, Augusta, MO 63332

Latitude: 38.595578 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.828601 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 816

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Labadie, Northwest

AQS Site Number 29-183-9002

Rt. 94, Augusta, MO 63332 near the intersection with Schluersburg Road

Latitude: 38.5818 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.865528 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 550

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)

Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
WD - Sigma Theta (Horizontal)	61106	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
WD - Sigma Theta (Vertical)	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)

Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Labadie, Southwest — *AQS Site Number* **29-183-9003**

~600 ft. NNE of junction of Maple Hill Rd. / Cedar Hill Dr., Labadie, MO 63055

Latitude: 38.52814 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.86326 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 630

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Labadie, Valley Site — *AQS Site Number* **29-071-9001**

2901 Labadie Bottom Road, Labadie, MO 63055

Latitude: 38.572522 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.796911 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 525

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	Industrial	1	☐	1	N/A	MET	016	Millbars	015	Instrumental-Barometric Press Transducer	Other

Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Precipitation	65102	Industrial	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Solar Radiation	63301	Industrial	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
WD - Sigma Theta (Horizontal)	61106	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)

WD - Sigma Theta (Vertical)	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Rush Island, Fults-Site, IL — *AQS Site Number* 17-133-9001

Off Ivy Road, Fults, IL 62244

Latitude: 38.15908 ***AQCR:*** 138 SE Missouri

Longitude: -90.22728 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 446

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Barometric Pressure	64101	Industrial	1	☑	1	N/A	MET	016	Millbars	015	Instrumental-Barometric Press Transducer	Other
Outdoor Temperature	62101	Industrial	2	☑	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☑	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☑	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Precipitation	65102	Industrial	1	☑	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	Industrial	1	☑	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Solar Radiation	63301	Industrial	1	☑	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Sulfur Dioxide	42401	Industrial	1	☑	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☑	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

WD - Sigma Theta (Horizontal)	61106	Industrial	1	☑	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
WD - Sigma Theta (Vertical)	61107	Industrial	1	☑	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	Industrial	1	☑	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☑	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☑	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☑	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)
Wind Speed - Vertical	61109	Industrial	1	☑	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☑	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Rush Island, Johnson Tall Tower — AQS Site Number 29-099-9008

600 Johnson Rd., Festus, MO 63028

Latitude: 38.11999 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.28214 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 656

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (62.5m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (132.5m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (132.5m-62.5m Probe Heights)
WD - Sigma Theta (Horizontal)	61106	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
WD - Sigma Theta (Horizontal)	61106	Industrial	2	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)
WD - Sigma Theta (Horizontal)	61106	Industrial	3	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)
WD - Sigma Theta (Horizontal)	61106	Industrial	4	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)
WD - Sigma Theta (Horizontal)	61106	Industrial	5	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)

WD - Sigma Theta (Horizontal)	61106	Industrial	6	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)
WD - Sigma Theta (Vertical)	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
WD - Sigma Theta (Vertical)	61107	Industrial	2	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)
WD - Sigma Theta (Vertical)	61107	Industrial	3	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
WD - Sigma Theta (Vertical)	61107	Industrial	4	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
WD - Sigma Theta (Vertical)	61107	Industrial	5	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
WD - Sigma Theta (Vertical)	61107	Industrial	6	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (132.5m Probe Height)
Wind Direction - Resultant	61104	Industrial	2	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (62.5m Probe Height)
Wind Direction - Resultant	61104	Industrial	3	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (62.5m Probe Height)

Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (132.5m Probe Height)
Wind Direction - Scalar	61102	Industrial	2	☐	1	N/A	MET	014	deg	063	Climatronics	Other (62.5m Probe Height)
Wind Direction - Scalar	61102	Industrial	3	☐	1	N/A	MET	014	deg	063	Climatronics	Other (62.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (132.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	2	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (62.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	3	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (62.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (132.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	2	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (62.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	3	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (62.5m Probe Height)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (132.5m Probe Height)

Wind Speed - Vertical	61109	Industrial	2	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (62.5m Probe Height)
Wind Speed - Vertical	61109	Industrial	3	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (62.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	2	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	3	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)

Rush Island, Natchez — *AQS Site Number* 29-099-9009

917 Natchez Trace Drive, Bloomsdale, MO 63627

Latitude: 38.10525 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.29842 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 505

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Rush Island. Weaver-AA

AQS Site Number 29-099-9007

802 Weaver Road, Festus, MO 63028

Latitude: 38.144972 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.304783 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 502

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

City Utilities (PQAO - 1292)

James River South (Recommended for discontinuation) *AQS Site Number* 29-077-0037

2251 East Evans Road, Springfield, MO 65804

Latitude: 37.104461 ***AQCR:*** 139 SW Missouri

Longitude: -93.25339 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1227

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	3	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	3	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Doe Run Buick (PQAO - 1288)

County Road 75

AQS Site Number 29-093-9010

98 Iron County Road, Bixby, MO 65439

Latitude: 37.64876 ***AQCR:*** 138 SE Missouri

Longitude: -91.14980 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1365

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Doe Run Buick - Buick NE

AQS Site Number 29-093-9008

346 Power Lane, Bixby West, MO 65439

Latitude: 37.65214 ***AQCR:*** 138 SE Missouri

Longitude: -91.11689 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1423

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	COM	105	ug/m^3-LC	113	Doe Run Mass Spectra ICAP	Source Oriented

Doe Run Buick - North #5 (NON-A)

AQS Site Number 29-093-0021

Doe Run Buick - North#5, Buick, MO 65439

Latitude: 37.65178 ***AQCR:*** 138 SE Missouri

Longitude: -91.13094 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1443

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM 14129		Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	113	Doe Run Mass Spectra ICAP	Source Oriented

Doe Run Buick - South #1 (NON-A)

AQS Site Number 29-093-0016

Doe Run Buick - South#1, Buick, MO 65439

Latitude: 37.62400 ***AQCR:*** 138 SE Missouri

Longitude: -91.12827 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1502

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM 14129		Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	113	Doe Run Mass Spectra ICAP	Source Oriented
Lead (TSP) - LC FRM/FEM 14129		Industrial	2	☐	1/6	MID	SIP	105	ug/m^3-LC	113	Doe Run Mass Spectra ICAP	Quality Assurance (Collocation)

Hwy 32 Northeast

AQS Site Number 29-093-9009

1582 Highway 32, Bixby, MO 65439

Latitude: 37.65319 ***AQCR:*** 138 SE Missouri

Longitude: -91.12795 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1384

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective

Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

West Entrance — *AQS Site Number* 29-093-9011

18594 Hwy KK, Boss, MO 65440

Latitude: 37.63211 ***AQCR:*** 138 SE Missouri

Longitude: -91.13565 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1463

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Doe Run Glover (PQAO - 1289)

Doe Run Glover - Big Creek #5 (NON-A)

AQS Site Number 29-093-0029

Doe Run Glover - Big Creek #5, Glover, MO 65439

Latitude:	37.47211	***AQCR:***	138	SE Missouri
Longitude:	-90.68919	***MSA:***	0000	Not in a MSA
Elevation (ft):	927			

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	Source Oriented

Doe Run Glover - Post Office #2 (NON-A)

AQS Site Number 29-093-0027

Doe Run Glover - Post Office #2, Glover, MO 65439

Latitude:	37.48532	***AQCR:***	138	SE Missouri
Longitude:	-90.68991	***MSA:***	0000	Not in a MSA
Elevation (ft):	927			

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	Source Oriented
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☐	1/6	MID	SIP	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	Quality Assurance (Collocation)

Doe Run Herculaneum (PQAO - 1290)

Herculaneum, Church Street (NON-A)

***AQS Site Number*29-099-0024**

951 Church St., Herculaneum, MO 63048

Latitude: 38.258667 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.380889 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 463

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)

Herculaneum, City Hall (Mott Street)

***AQS Site Number*29-099-0020**

Mott Street, Herculaneum, MO, 63048

Latitude: 38.263394 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.379667 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 468

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/1	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☐	1/3	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)

Herculaneum, Dunklin High School

AQS Site Number 29-099-9002

1 Black Cat Dr., Herculaneum, MO, 63048

Latitude: 38.26703 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37875 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 445

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/3	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Population Exposure

Herculaneum, North Cross

AQS Site Number 29-099-0023

North Cross, Herculaneum, MO 63048

Latitude: 38.263378 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.381122 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 463

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Population Exposure

Herculaneum, Sherman

AQS Site Number 29-099-9004

460 Sherman St., Herculaneum, MO, 63048

Latitude: 38.27176 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37648 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 462

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective

Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented

Environmental Services Program (ESP) [PQAO - 0588]

Alba — *AQS Site Number* 29-097-0004

20400 Millwood Rd., Alba, MO 64755

Latitude: 37.2385 ***AQCR:*** 139 SW Missouri

Longitude: -94.42468 ***MSA:*** 3710 Joplin, MO

Elevation (ft): 965

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

Arnold West: PM10-FEM not submitting AQS data — *AQS Site Number* 29-099-0019

1709 Lonedell Dr., Arnold, MO 63010

Latitude: 38.448581 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.398436 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 636

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Ammonium Ion PM2.5 LC	88301	SLAMS	6	☐	1/6	NBR	RES	105	ug/m^3-LC	812	Met One SASS Nylon	Population Exposure (UC-Davis)

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
OP CSN_Rev Undj PM2.5 LC TOR	88378	SLAMS	6	☐	1/6	NBR	RES	105	ug/m^3-LC	842	URG 3000N w/Pall Quartz filter & Cyclone Inlet	Population Exposure (UC-Davis)
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Population Exposure

PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (10m Tower)

Bills Creek (Recommended for discontinuation) *AQS Site Number* **29-179-0001**

0.75 mile S. of 3229 County Rd., Boss, MO 65440

Latitude: 37.53467 ***AQCR:*** 138 SE Missouri

Longitude: -91.14857 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 996

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Blair Street: PM10-FEM not submitting AQS data — *AQS Site Number* 29-510-0085

3247 Blair Street, St. Louis, MO 63107

Latitude: 38.656449 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.198548 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 450

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Ammonium Ion PM2.5 LC	88301	SLAMS	6	☐	1/3	NBR	RES	105	ug/m^3-LC	812	Met One SASS Nylon	Highest Concentration (UC-Davis)
Antimony	85102	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Arsenic PM10 LC	85103	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Barium PM10 LC	85107	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Black Carbon PM2.5 LC	88313	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure

Bromine PM10 LC	85109	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Cadmium PM10 LC	85110	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Calcium PM10 LC	85111	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Carbon Monoxide	42101	NCORE	1	☐	1	NBR	COM	007	ppm	055	Gas Filter Corr Thermo Electron 48C-TL	Population Exposure
Chromium PM10 LC	85112	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Cobalt PM10 LC	85113	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Copper PM10 LC	85114	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Indoor Temperature	62107	SLAMS	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Large Shelter)
Indoor Temperature	62107	SLAMS	2	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Small Shelter)

Iron PM10 LC	85126	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Lead PM10 LC	85128	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Lead PM10 LC - FRM/FEM	85129	SLAMS	6	☐	1/6	NBR	RES	108	ng/m^3-LC	907	R&P Partisol 2025 Teflon	Population Exposure (ERG)
Lead PM10 LC - FRM/FEM	85129	SLAMS	7	☐	1/6	NBR	RES	108	ng/m^3-LC	907	R&P Partisol 2025 Teflon	Population Exposure (ERG)
Manganese PM10 LC	85132	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Mercury PM10 LC	85142	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Nickel PM10 LC	85136	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Nitric Oxide	42601	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Nitric Oxide	42601	SPM	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
Nitrogen Dioxide	42602	SPM	2	☑	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure

OC CSN Unadj PM2.5 LC TOT	88305	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	867	Sunset Labs	Population Exposure
OP CSN_Rev Undj PM2.5 LC TOR	88378	SLAMS	6	☐	1/3	NBR	RES	105	ug/m^3-LC	842	URG 3000N w/Pall Quartz filter & Cyclone Inlet	Highest Concentration (UC-Davis)
Optical EC PM2.5 LC TOT	88316	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	895	Sunset Lab	Population Exposure
Outdoor Temperature	62101	NCORE	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Oxides of Nitrogen	42603	SPM	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
Ozone	44201	NCORE	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	NCORE	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	127	Lo-Vol R&P 2025 Sequential	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	2	☐	1/6	NBR	COM	105	ug/m^3-LC	127	Lo-Vol R&P 2025 Sequential	Quality Assurance (Collocation)

PM10 - LC/FEM/NonFEM	85101	SLAMS	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	1	☐	1/3	NBR	COM	001	ug/m^3	127	Lo-Vol R&P 2025 Sequential	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	2	☐	1/6	NBR	COM	001	ug/m^3	127	Lo-Vol R&P 2025 Sequential	Quality Assurance (Collocation)
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	NCORE	2	☐	1/3	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	Quality Assurance (Collocation)
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SLAMS	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SLAMS	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	176	Thermo 2025 Sequential PM10-PM2.5	Population Exposure

PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Potassium PM10 LC	85180	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Reactive Oxides of N (NOY)	42600	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Relative Humidity	62201	NCORE	1	☐	1	N/A	MET	019	%humidity	014	Instrumental-Hygromer C94 Probe	Other
Selenium PM10 LC	85154	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Silver PM10 LC	85166	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Sulfur Dioxide	42401	NCORE	1	☐	1	NBR	COM	008	ppb	600	Ultraviolet Fluorenscence API 100 EU	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	NCORE	1	☐	1	NBR	COM	008	ppb	600	Ultraviolet Fluorenscence API 100 EU	Population Exposure

Thallium PM10 LC	85173	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Tin PM10 LC	85160	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Titanium PM10 LC	85161	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
Total Carbon PM2.5 LC TOT	88312	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	867	Sunset Labs	Population Exposure
UV Carbon PM2.5 LC	88314	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure
Vanadium PM10 LC	85164	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	NCORE	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	NCORE	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Zinc PM10 LC	85167	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	Other

Blue Ridge, I-70: PM10-FEM not submitting AQS data *AQS Site Number* **29-095-0042**

4018 Harvard Lane, Kansas City, MO 64133

Latitude: 39.047911 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.450513 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 960

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Black Carbon PM2.5 LC	88313	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SLAMS	1	☐	1	MIC	COM	007	ppm	055	Gas Filter Corr Thermo Electron 48C-TL	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented

Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	MIC	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	MIC	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	MIC	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 - LC FRM/FEM	88101	SPM	4	☐	1	MIC	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented

PM2.5 Volatile Channel	88503	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	MIC	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
UV Carbon PM2.5 LC	88314	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Bonne Terre

AQS Site Number 29-186-0005

15797 Highway D, Bonne Terre, MO 63628

Latitude: 37.90084 ***AQCR:*** 138 SE Missouri

Longitude: -90.42388 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 840

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☑	1	REG	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Branch Street: PM10-FEM not submitting AQS data

AQS Site Number 29-510-0093

100 Branch St., St. Louis, MO 63102

Latitude: 38.65643 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.18977 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 422

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	MID	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	MID	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	MID	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Source Oriented

PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MID	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	MID	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 Volatile Channel	88503	SPM	1	☐	1	MID	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	MID	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Source Oriented
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Branson

AQS Site Number 29-213-0004

251 SW. Outer Rd., Branson, MO 65616

Latitude: 36.70765 ***AQCR:*** 139 SW Missouri

Longitude: -93.22181 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1052

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SPM	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SPM	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Buick NE

AQS Site Number 29-093-0034

346 Power Lane, Bixby West, MO 65439

Latitude: 37.65212 ***AQCR:*** 138 SE Missouri

Longitude: -91.11653 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1423

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM	14129	SLAMS	2	☐	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Quality Assurance (Collocation)
Sulfur Dioxide	42401	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (6 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (6 meters)

Carthage — *AQS Site Number* 29-097-0003

530 Juniper, Carthage, MO 64836

Latitude: 37.19822 ***AQCR:*** 139 SW Missouri

Longitude: -94.31702 ***MSA:*** 3710 Joplin, MO

Elevation (ft): 986

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	4	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Quality Assurance (Collocation)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

El Dorado Springs: PM10-FEM not submitting AQS data *AQS Site Number* **29-039-0001**

Highway 97 & Barnes Road, El Dorado Springs, MO 64744

Latitude: 37.70097 ***AQCR:*** 139 SW Missouri

Longitude: -94.03474 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 965

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☑	1	REG	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	REG	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Regional Transport
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	REG	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Regional Transport
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	REG	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Regional Transport
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	REG	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Regional Transport
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	REG	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Regional Transport
PM2.5 Volatile Channel	88503	SPM	1	☐	1	REG	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Regional Transport
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	REG	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Regional Transport

Relative Humidity	62201	SPM	2	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Farrar — *AQS Site Number* 29-157-0001

County Rd. 342, Farrar, MO 63746

Latitude: 37.70264 ***AQCR:*** 138 SE Missouri

Longitude: -89.698640 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 497

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Fellows Lake — AQS Site Number 29-077-0042

4208 E. Farm Rd. 66, Springfield, MO 65803

Latitude: 37.319444 ***AQCR:*** 139 SW Missouri

Longitude: -93.204444 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1346

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	URB	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

Finger Lakes — AQS Site Number 29-019-0011

1505 E. Peabody Road, Columbia, MO 65202

Latitude: 39.07803 ***AQCR:*** 137 Northern Missouri

Longitude: -92.31632 ***MSA:*** 1740 Columbia, MO

Elevation (ft): 726

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

Fletcher — *AQS Site Number* 29-179-0002

Forest Rd. 2236, Westfork, MO 64498

Latitude: 37.46889 ***AQCR:*** 138 SE Missouri

Longitude: -91.08847 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1256

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Foley (to be relocated) — *AQS Site Number* 29-113-0003

#7 Wild Horse, Foley, MO 63347

Latitude: 39.04512 ***AQCR:*** 137 Northern Missouri

Longitude: -90.86633 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 715

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind

Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Forest City, Exide Levee — *AQS Site Number* **29-087-0008**

300 S. Washington St., Oregon MO, 64473

Latitude: 40.027222 ***AQCR:*** 137 Northern Missouri

Longitude: -95.235833 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 904

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Forest Park: PM10-FEM not submitting AQS data — *AQS Site Number* **29-510-0094**

5600 Clayton Avenue, St. Louis, MO 63110

Latitude: 38.631057 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.281144 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 531

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other

Black Carbon PM2.5 LC	88313	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SLAMS	1	☐	1	MIC	COM	007	ppm	055	Gas Filter Corr Thermo Electron 48C-TL	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented

PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	MIC	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	MIC	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	MIC	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 - LC FRM/FEM	88101	SPM	4	☐	1	MIC	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 Volatile Channel	88503	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	MIC	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
UV Carbon PM2.5 LC	88314	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Front Street — *AQS Site Number* 29-095-0018

1331 N. Jackson, Kansas City, MO 64120

Latitude: 39.13198 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.53128 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 728

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Highest Concentration & Population Exposure

Glover — AQS Site Number 29-093-0033

Highway 49, approx. 0.4m South Highways 21/49/72 Intersection, Glover, 63620

Latitude: 37.48966 **AQCR:** 138 SE Missouri

Longitude: -90.69246 **MSA:** 0000 Not in a MSA

Elevation (ft): 907

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Other

Herculaneum, Dunklin High School — AQS Site Number 29-099-0005

1 Black Cat Dr., Herculaneum, MO, 63048

Latitude: 38.26703 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.37875 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 445

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Herculaneum, Mott Street — AQS Site Number 29-099-0027

Mott Street, Herculaneum, MO, 63048

Latitude: 38.263394 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.379667 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 468

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/1	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM	14129	SLAMS	2	☐	1/2	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Quality Assurance (Collocation)
Sulfur Dioxide	42401	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Herculaneum, Sherman — *AQS Site Number* **29-099-0013**

460 Sherman St., Herculaneum, MO, 63048

Latitude: 38.27176 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37648 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 462

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Hillcrest High School: PM10-FEM not submitting AOS data *AQS Site Number* 29-077-0036

3319 N. Grant, Springfield, MO 65803

Latitude: 37.256069 ***AQCR:*** 139 SW Missouri

Longitude: -93.299692 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1321

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	URB	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure

PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Ladue

AQS Site Number 29-189-3001

73 Hunter Ave., Ladue, MO 63124

Latitude:	38.65021	***AQCR:***	070	Metropolitan St. Louis
Longitude:	-90.35036	***MSA:***	7040	St. Louis, MO-IL
Elevation (ft):	528			

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM2.5 - LC FRM/FEM	88101	SLAMS	1	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	2	☐	1/6	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	Quality Assurance (Collocation)
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (10m Tower)

Liberty: PM10-FEM not submitting AQS data — *AQS Site Number* 29-047-0005

Highway 33 & County Home Rd., Liberty, MO 64068

Latitude: 39.303056 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.376389 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 930

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other

Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Margaretta — *AQS Site Number* 29-510-0086

4520 Margaretta, St. Louis, MO 63105

Latitude: 38.673172 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.239086 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 514

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	NBR	COM	008	ppb	074	Chemiluminescence	Population Exposure
Nitrogen Dioxide	42602	SLAMS	1	☐	1	NBR	COM	008	ppb	074	Chemiluminescence	Population Exposure
Oxides of Nitrogen	42603	SPM	1	☐	1	NBR	COM	008	ppb	074	Chemiluminescence	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure

Sulfur Dioxide	42401	SLAMS	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	SLAMS	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	Population Exposure

Mark Twain State Park — *AQS Site Number* 29-137-0001

20057 State Park Office Rd., Stoutsville, MO 65283

Latitude: 39.47510 ***AQCR:*** 137 Northern Missouri

Longitude: -91.78899 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 710

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Nitrogen Dioxide	42602	SLAMS	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Oxides of Nitrogen	42603	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	General/Background

Ozone	44201	SLAMS	2	☑	1	REG	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - STP FRM/FEM	81102	SPM	3	☐	1	REG	SIP	001	ug/m^3	079	R&P SA246B TEOM	General/Background
Sulfur Dioxide	42401	SPM	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	General/Background
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	General/Background
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Maryland Heights — *AQS Site Number* 29-189-0014

13044 Marine Ave., Maryland Heights, MO 63146

Latitude: 38.7109 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.4759 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 633

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

New Bloomfield — *AQS Site Number* **29-027-0002**

2625 Meadow Lake View, New Bloomfield, MO, 65063

Latitude: 38.70608 ***AQCR:*** 137 Northern Missouri

Longitude: -92.09308 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 860

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

Oates — *AQS Site Number* **29-179-0034**

13155 Highway KK, Boss, MO 65440

Latitude: 37.56485 ***AQCR:*** 138 SE Missouri

Longitude: -91.11423 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1134

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Lead (TSP) - LC FRM/FEM 14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Orchard Farm — AQS Site Number 29-183-1004

2165 Highway V, St. Charles, MO 63301

Latitude: 38.8994 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.44917 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 441

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	URB	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

Pacific — AQS Site Number 29-189-0005

18701 Old Highway 66, Pacific, MO 63039

Latitude: 38.4902 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.7052 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 524

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Pevely — *AQS Site Number* 29-099-0009

500 Dow Industrial Dr., Pevely, MO 63070

Latitude: 38.2861 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.38094 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 409

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Pevely North (Recommended for discontinuation) — AQS Site Number 29-099-0026

Tiarre at the Abbey, Station 150N, Christine Drive, Pevely, MO 63070

Latitude: 38.296 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.393 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 582

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Richards Gebaur-South: PM10-FEM not submitting AQS d — AQS Site Number 29-037-0003

1802 E. 203rd Street, Belton, MO, 64012

Latitude: 38.75976 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.57997 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 1031

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure

Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Rider Trail, I-70 — *AQS Site Number* 29-189-0016

13080 Hollenberg Drive, Bridgeton, MO 63044

Latitude: 38.75264 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.44884 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 488

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)

Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Sulfur Dioxide	42401	SPM	1	☑	1	MID	SPP	008	ppb	060	Pulsed Fluorescent	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☑	1	MID	SPP	008	ppb	060	Pulsed Fluorescent	Population Exposure
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Rocky Creek — AQS Site Number 29-047-0006

13131 Highway 169 NE., Smithville, MO 64089

Latitude: 39.33188 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.5806 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 993

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

Savannah — AQS Site Number 29-003-0001

11796 Highway 71, Savannah, MO 64485

Latitude: 39.9544 ***AQCR:*** 137 Northern Missouri

Longitude: -94.849 ***MSA:*** 7000 St. Joseph, MO

Elevation (ft): 1120

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

South Broadway: PM10-FEM not submitting AQS data *AQS Site Number* **29-510-0007**

8227 South Broadway, St. Louis, MO 63111

Latitude: 38.5425 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.263611 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 452

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure

PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

South Charleston (Recommended for discontinuation) *AQS Site Number* **29-077-0026**

5012 S. Charleston, Springfield, MO 65804

Latitude: 37.122561 ***AQCR:*** 139 SW Missouri

Longitude: -93.263161 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1234

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Sulfur Dioxide	42401	SLAMS	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SLAMS	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

St. Joe State Park — *AQS Site Number* **29-187-0007**

2800 Pimville Rd., Park Hills, MO 63601

Latitude: 37.81413 ***AQCR:*** 138 SE Missouri

Longitude: -90.50738 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 937

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	SPM	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

St. Joseph Pump Station: PM10-FEM not submitting AQS d — *AQS Site Number* **29-021-0005**

S. Highway 759, St. Joseph, MO 64501

Latitude: 39.741667 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.858333 ***MSA:*** 7000 St. Joseph, MO

Elevation (ft): 845

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Barometric Pressure	64101	SPM	2	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SPM	6	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Quality Assurance (Collocation)
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	9	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Quality Assurance (Collocation)
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	9	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Quality Assurance (Collocation)

PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	5	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Quality Assurance (Collocation)
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	2	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Quality Assurance (Collocation)
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	2	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Quality Assurance (Collocation)
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	9	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Quality Assurance (Collocation)
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Relative Humidity	62201	SPM	2	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Trimble — *AQS Site Number* 29-049-0001

7536 SW. O Highway, Trimble, MO 64492

Latitude: 39.5306 ***AQCR:*** 137 Northern Missouri

Longitude: -94.556 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 955

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

Troost: PM10-FEM not submitting AOS data — *AQS Site Number* 29-095-0034

724 Troost (Rear), Kansas City, MO 64106

Latitude: 39.104722 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.570556 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 971

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure
Nitrogen Dioxide	42602	SLAMS	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	8	☑	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☑	1	NBR	COM	001	ug/m^3	208	FMDS-Gravimetric 1405-DF	Population Exposure

PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Sulfur Dioxide	42401	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Ursuline North — *AQS Site Number* **29-099-0025**

210 Glennon Heights Rd., Crystal City, MO 63019

Latitude: 38.243 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37372 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 578

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Lead (TSP) - LC FRM/FEM 14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Upwind Background

Watkins Mill State Park — *AQS Site Number* 29-047-0003

Watkins Mill Road, Lawson, MO 64062

Latitude: 39.407419 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.265142 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 1009

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	URB	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

West Alton — *AQS Site Number* 29-183-1002

General Elecric Store, Highway 94, West Alton, MO 63386

Latitude: 38.8725 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.226389 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 425

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	URB	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (10m Tower)

Noranda Aluminum, Inc. (PQAO - 0771)

Noranda Site #1

AQS Site Number **29-143-9001**

Northeast of the facility

Latitude: 36.51364 ***AQCR:*** 138 SE Missouri

Longitude: -89.56093 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 297

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	000	To be determined	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	000	To be determined	Source Oriented

Noranda Site #2

AQS Site Number **29-143-9002**

Southeast of the facility

Latitude: 36.50838 ***AQCR:*** 138 SE Missouri

Longitude: -89.56074 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 296

Pollutant	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Keep/ Back-Up*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	000	To be determined	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	000	To be determined	Source Oriented

Noranda Site #3

AQS Site Number 29-143-9003

Southwest of the facility

Latitude: 36.50899 ***AQCR:*** 138 SE Missouri

Longitude: -89.57099 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 298

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Keep/ Back-Up	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	000	To be determined	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	000	To be determined	Source Oriented

APPENDIX 2

Review of proposed SO_2 and meteorological monitoring stations around Ameren Missouri's Rush Island Energy Center (Supplemental)

Supplemental Review
Rush Island Energy Center Project #2010-SO_2-3
Date: 05-13-2016

Review of proposed SO_2 and meteorological monitoring stations around Ameren Missouri's Rush Island Energy Center (Supplemental)

Purpose

The purpose of this supplemental is to provide additional evaluation of the SO_2 monitoring sites around Rush Island Energy Center through air dispersion modeling. In February 2016, the U.S. Environmental Protection Agency (EPA) released a revision to the technical assistance document entitled "*SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (February 2016)"* (TAD). The revision included an option for creating a relative prioritized list of receptor locations for consideration of monitoring sites using normalized design value (NDVs)[1] and frequency of having the 1-hour daily maximum concentration amongst the top-concentrated receptors. This supplement analysis is intended to update the modeling performed for the original report [2](i.e. the June 2015 report) to address EPA's revised guidance.

It should be noted that at the time that EPA released the revised guidance, two monitors had already been installed around the Rush Island Energy Center on the Missouri side. These monitors are currently considered operational.

Supplemental Analysis of Site Selection

The June 2015 report used air dispersion modeling to determine the appropriateness of locations for possible monitor site locations. The parameters of the original modeling analysis were not changed with the exception of the model version. For this supplemental analysis, AERMOD version 15181 was used.

The modeling performed for the June 2015 report was based on the analysis of actual Continuous Emissions Monitoring System (CEMS) data for evaluating the monitoring sites in lieu of the normalized design value (NDV) method. Therefore the impacts are reported as actual modeled impact values. For reference, Figure 2 from the June 2015 report is duplicated here to show the areas of high concentration based on the 4th highest hourly SO_2 concentrations at each receptor (Figure S-1). This continues to be an appropriate method for evaluating possible monitoring sites. This method was only used for monitor siting and not for compliance determination.

[1] NDVs are calculated by modeling the normalized hourly SO_2 emissions.
[2] See Appendix 5 of Missouri Department of Natural Resources Air Pollution Control Program 2015 Monitoring Network Plan

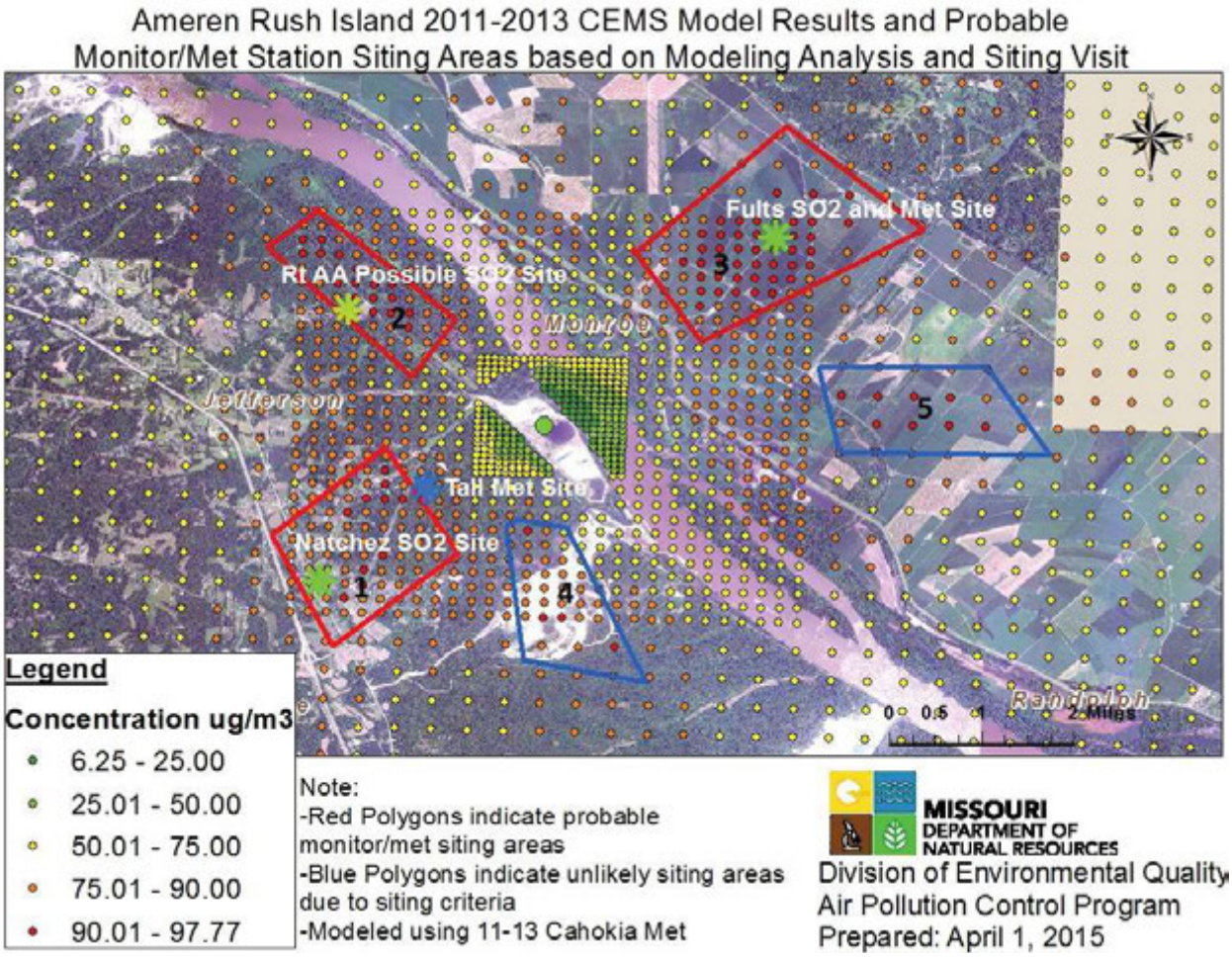


Figure S-1 (Duplicated from June 2015 report Figure 2). High impact areas and probable SO_2/Meteorological (Met) station siting areas based on dispersion modeling

EPA details the NDV method as using a normalized emission rate for sources to result in an NDV at receptors. Details of the strategy for ranking the order of potentially siting permanent source-oriented SO_2 monitors can be found in EPA's Monitoring TAD[3].

Model results and discussion

The analysis presented in the original report prioritizes the locations for the installation of potential monitors based on the top density of high concentration receptors. However, based on the revised guidance, the site selection process also needs to account for the frequency with which a receptor registers a daily maximum concentration. In order to assess the frequency of occurrence of concentration maxima at a given receptor, an analysis was performed on the top

[3] US EPA document: SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (draft), pages A-7 and A-8, February 2016.

300 receptors. In AERMOD the MAXDAILY option was used to output the maximum 1-hour concentration for each receptor for each day. This output was used to rank the areas by the total number of days that an individual receptor had a 1-hour daily maximum concentration for the 36 modeled months as shown in Figure S-2. The larger diameter circles indicate a higher number of days that a receptor had the 1-hour daily maximum concentration. From most to least number of receptors, the areas are ranked as follows: 3>2>1>5.

The scoring strategy employed in the site selection process creates a relative prioritized list of receptor locations for monitor siting using NDV's and 1-hour daily maximum concentration frequencies. This strategy provides a list of receptor locations, ranked in general order of desirability with regard to potential siting of permanent source-oriented SO_2 monitors. Lower numerical scores indicate higher probability of capturing peak 1-hour SO_2 concentrations in the modeled domain as seen in Figure S-3. From lower to highest scores, the areas are ranked as follows: 3>2>1>5. For ease of comparing the number of receptors in each polygon, Table S-1 lists the data plotted in Figure S-3.

Table S-1. Number of ranked receptors in the five polygons

Polygon Identifier	**1**	**2**	**3**	**4**	**5**
# of receptors with score less than 175 (red)	3	4	16	Holcim property	5
# of receptors with 176 < score <246 (orange)	5	15	28		4
# of receptors with 247 < score <316 (yellow)	16	22	18		6
# of receptors with 317 < score <390 (light green)	22	7	8		1
# of receptors with 391 < score <519 (green)	4	2	5		6
Total number	50	50	75		22

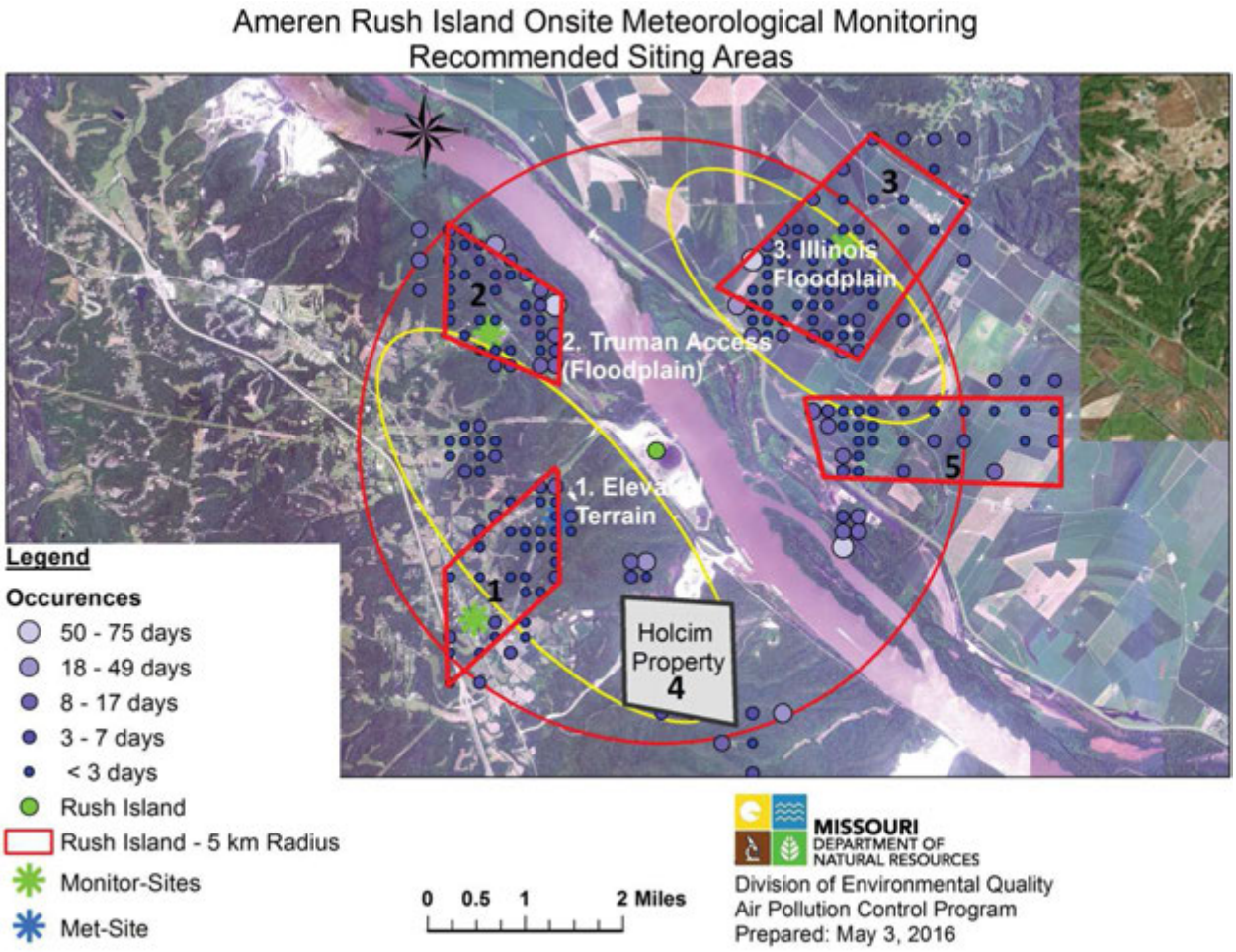


Figure S-2. Cumulative number of days that an individual receptor had the 1-hour daily maximum concentration among receptors.

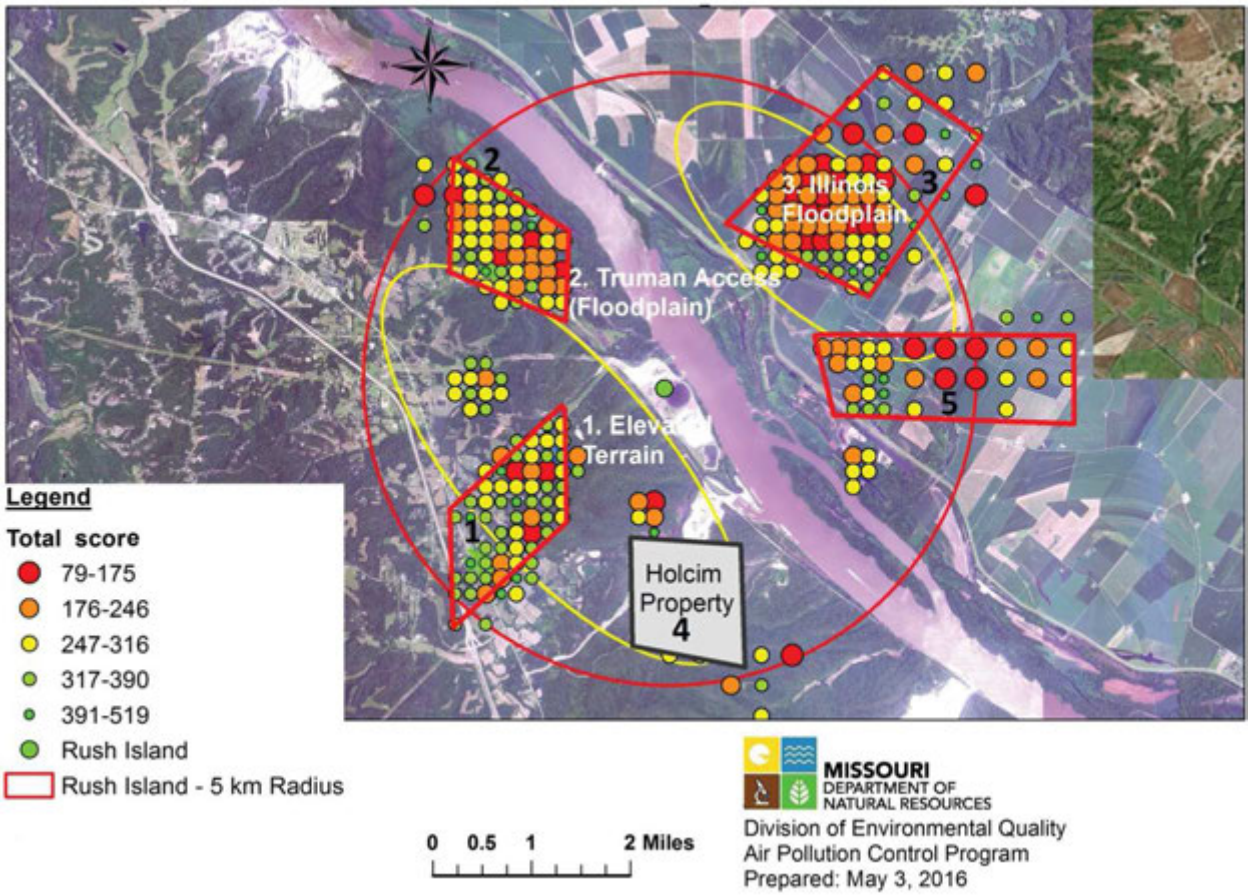


Figure S-3. Receptors ranked by relative score reflecting NDV and frequency of having the 1-hour daily maxima amongst all receptors. Lower numerical scores indicate higher probability of experiencing peak 1-hour SO2 concentrations in the modeled domain.

Conclusions

This supplemental analysis supports the conclusions from the June 2015 report. The locations for the proposed (installed) monitoring sites are reasonable and in agreement with the air program's analysis.

APPENDIX 3

Review of Proposed SO_2 Monitoring Stations around the Buick Resource Recycling Facility

Project #2010-SO_2-5-DRR
Doe Run Buick (093-0009)
Date: 05/18/2016

Review of Proposed SO_2 Monitoring Stations around the Buick Resource Recycling Facility

Introduction

The purpose of this review is to evaluate the proposed selection of SO_2 monitoring sites around the Doe Run Buick Resource Recycling Facility (BRRF) through air dispersion modeling. The intention is to determine if the proposed sites will adequately represent BRRF's SO_2 air quality impact. It should be noted that the evaluation of siting criteria under 40 CFR Part 51 is conducted separately through the Air Quality Analysis Section of the Air Pollution Control Program (Air Program).

To implement the 1-hour SO_2 National Ambient Air Quality Standard (NAAQS), the U.S. Environmental Protection Agency (EPA) finalized the SO_2 Data Requirements Rule (DRR) in August 2015. The DRR requires state air agencies to evaluate air quality around facilities that have emitted more than 2,000 tons of SO_2 through either dispersion modeling or new ambient air monitors installed by the facility. Using this information EPA intends to designate these areas as attaining or not attaining the 1-hour standard. The timetable for these designations is set by court order. In 2014 BRRF reported 1,649 tons of actual SO_2 emissions. BRRF's 2014 reported emissions are currently being reviewed for accuracy which may result in a change in BRRF's annual emissions. Due to the uncertainties surrounding BRRF's emissions data and the proximity of the reported emissions to the 2,000 ton threshold, the air program decided to include BRRF on the list of sources for further evaluation per the DRR. To comply with the DRR, BRRF is proposing to install at least two ambient monitors. The facility submitted a preliminary analysis of the proposed monitor locations to the Air Program on February 2, 2016[1]. New monitors must be operational no later than January 1, 2017.

BRRF is a secondary lead smelting/recycling plant operated by Doe Run near Boss, Missouri. BRRF is located in an area of relatively hilly terrain with mixed forest and grassy cover. BRRF recycles lead-acid batteries and other lead-bearing hazardous and non-hazardous wastes to recover the lead, trace metals, sulfuric acid and polyethylene plastic. The sulfuric acid is recycled and plastics are collected for shipment off-site for recycling.

Technical Analysis of Site selection

SO_2 Emission sources

BRRF has several small point sources and one main stack (P8- Main Stack). In MoEIS (Missouri Emission Inventory System), this emission release point is identified as EP8. The majority of SO_2 emission sources at the facility are vented to the main stack. Emissions are generated by

[1] BRRF submitted, on February 2, 2016, map of the SO_2 proposed monitoring sites entitled "SO_2 Monitor Siting-Prelim Model Results"

many types of equipment and processes, including but not limited to; smelting furnaces, and material handling and crushing. Emissions are characterized for modeling using their release parameters as stack, vent, or fugitive emissions. A table of all SO_2 emission sources is included in Attachment A

BRRF is required to collect hourly Continuous Emission Monitoring System (CEMS) data for the main stack, however this data has not been quality assured for the years 2013 – 2015 and was not used in this modeling analysis. The Air Program used modeling input data with normalized emission rates to inform the identification of potential source-oriented SO_2 monitoring sites.

It should be noted that BRRF's analysis used the facility data emissions rate as reported to MOEIS, not CEMs data, for the sources to establish monitoring locations. Because the air program used normalized emission rates, the concentration values between these two analyses are different.

There are no permitted SO_2 sources within 20 km of Buick; therefore no additional sources were included in the interactive inventory for this modeling analysis.

SO_2 Dispersion Modeling Program Selection

The location and number of ambient air quality monitors are dependent on several factors including topography and meteorology, which affect where areas of high concentration will be observed and how often those high concentrations will occur. Air dispersion modeling was used to account for these factors and determine the appropriateness of locations for possible monitor site locations.

AERMOD is EPA's preferred air dispersion model. The most recent version of AERMOD and its preprocessors were used in this analysis, as of March 2016. AERMOD can be used to evaluate time-dependent impacts of SO_2 emissions from stack driven point sources or fugitive releases.

Both the air program and BRRF based their analysis and evaluation of proposed monitoring sites on the SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document from EPA (February 2016 Draft) which describes the procedures for siting source oriented monitors.

Meteorological Data and Geographic influence

The choice of meteorological data used for dispersion modeling is described in the February 25, 2016 staff memorandum[2]. EPA guidance is followed to choose the most representative dataset to

[2] Memorandum from staff meteorologist in Air Program to file entitled "Recommendation for representative meteorological data set for Doe Run Buick" dated (February 25,2016)

characterize weather data at Buick. Understanding the influence of meteorology on an SO_2 source is critical. Meteorological inputs to the dispersion modeling influence how SO_2 emissions are dispersed and affects the location(s) of maximum ground-level concentrations. An Air Program staff meteorologist evaluated the terrain surrounding the BRRF plant and meteorological data from nearby National Weather Service (NWS) stations.

Representative Meteorological Data (dispersion modeling)

Both surface and upper air meteorological datasets are used in the modeling exercise. Surface data was chosen based on the availability of on-site data.

BRRF collects surface meteorological data as part of post-construction monitoring required by permit 012005-008, special condition 31, issued January 26, 2005, and continued through the 2013 Consent Judgment section V.9.C. The meteorological data is collected at the "Buick South" location, which is approximately 1,000 meters from the southern property line of the facility, and collocated with a lead sampler for ambient air. Figure 1 shows a wind rose plot of Buick Onsite Meteorological Data for the 4th Quarter 2013 through 1st Quarter 2015 time period. For upper air data, the Springfield, MO upper air station is closest to Buick at 205 km and best represents the vertical atmospheric characteristics of the region surrounding Buick.

Air Dispersion Modeling Results

The AERMOD model (version 15181) was executed using the onsite meteorological dataset for the period of 4th quarter 2013 through 1st quarter of 2015. The analysis shown in Figure 2 prioritizes the locations that should be evaluated to potentially establish a site monitor. In this evaluation, the primary objective is to find a sufficient number of feasible locations with predicted peak and/or relatively high SO_2 concentrations where a permanent monitoring site might be located.

In the Air Program modeling input file, all SO_2 point and volume sources, as identified in MOEIS, were represented in the modeling analysis using a relative percentage of hourly SO_2 emission rates to establish monitoring locations. The resulting modeled concentrations are called normalized design values (NDVs). NDVs do not indicate exceedance or compliance with the NAAQS, but provide a means to understanding the relative magnitude of ambient SO_2 concentrations across an area. The resulting 4^{th} highest hourly SO_2 concentrations at each receptor were plotted to determine the areas of high concentration as shown in Figure 2. The results indicate several areas of frequently higher concentrations about 0.5 to 2 miles away from the facility center. These areas are outlined and numbered from 1 to 2 as depicted in Figure 2. These outlines were established to include all receptors with modeled concentrations in the top 10, 25,100, and 200 as shown in Figure 3; respectively. Within these outlines, we can rank the areas in order by the magnitude of the number of receptors with high concentration values. From areas of highest to lowest concentrations, the areas are ranked as follows: 1>2.

The site selection process also accounts for the frequency with which a receptor registers a daily maximum concentration. In order to assess the frequency of occurrence of concentration maxima at a given receptor, an analysis was performed on the top 200 receptors. In AERMOD the MAXDAILY option was used to output the maximum 1-hour concentration for each receptor for each day. This output was used to rank the areas by the total number of days that an individual receptor had a 1-hour daily maximum concentration for the 18 modeled months as shown in Figure 4. Darker colors indicate a higher number of days that a receptor had the 1-hour daily maximum concentration. From most to least number of receptors, the areas are ranked as follows: 1>2.

The scoring strategy employed in the site selection process creates a relative prioritized list of receptor locations for monitor siting using NDV's and 1-hour daily maximum concentration frequencies. This strategy will provide a list of receptor locations, ranked in general order of desirability with regard to potential siting of permanent source-oriented SO_2 monitors. Lower numerical scores indicate higher probability of capturing peak 1-hour SO_2 concentrations in the modeled domain as seen in Figure 5. From lower to highest scores, the areas are ranked as follows: 1>2.

Based on the location of available areas, 1and 2 are the two areas with the highest density of receptors with maximum daily concentrations and frequent highest 1-hour concentrations. These areas are ranked in order of highest to lowest. It should be noted that the modeling results in the area northeast of the main stack shows high NDV 1-hour concentrations and higher cumulative number of days. This can be attributed to the difference between smaller fugitive sources and higher point sources like main stack. The Air Program will consider the existing northeast state SO_2 monitoring site as a good candidate to monitor SO_2 for the specified area.

Based on the modeling results and the best available meteorological data, monitors placed in these two areas, marked 1, and 2 are expected to record the highest SO_2 air quality impacts from BRRF. In addition, the state SO_2 monitor will continue to be maintained to capture SO_2 impacts expected to be seen in this relatively high impact area.

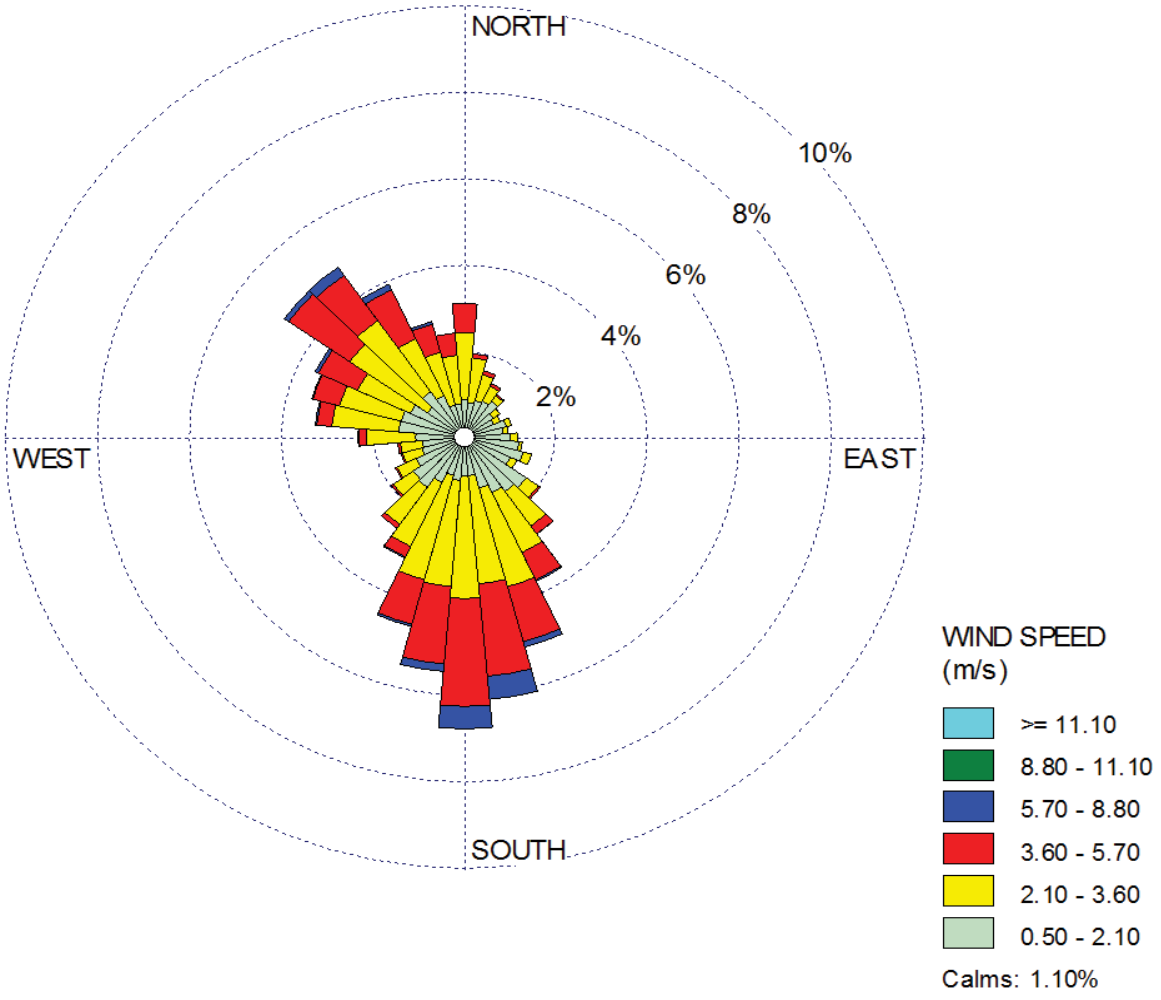


Figure 1. Wind rose plot of Buick Onsite Met Data 4th Quarter 2013- 1st Quarter 2015

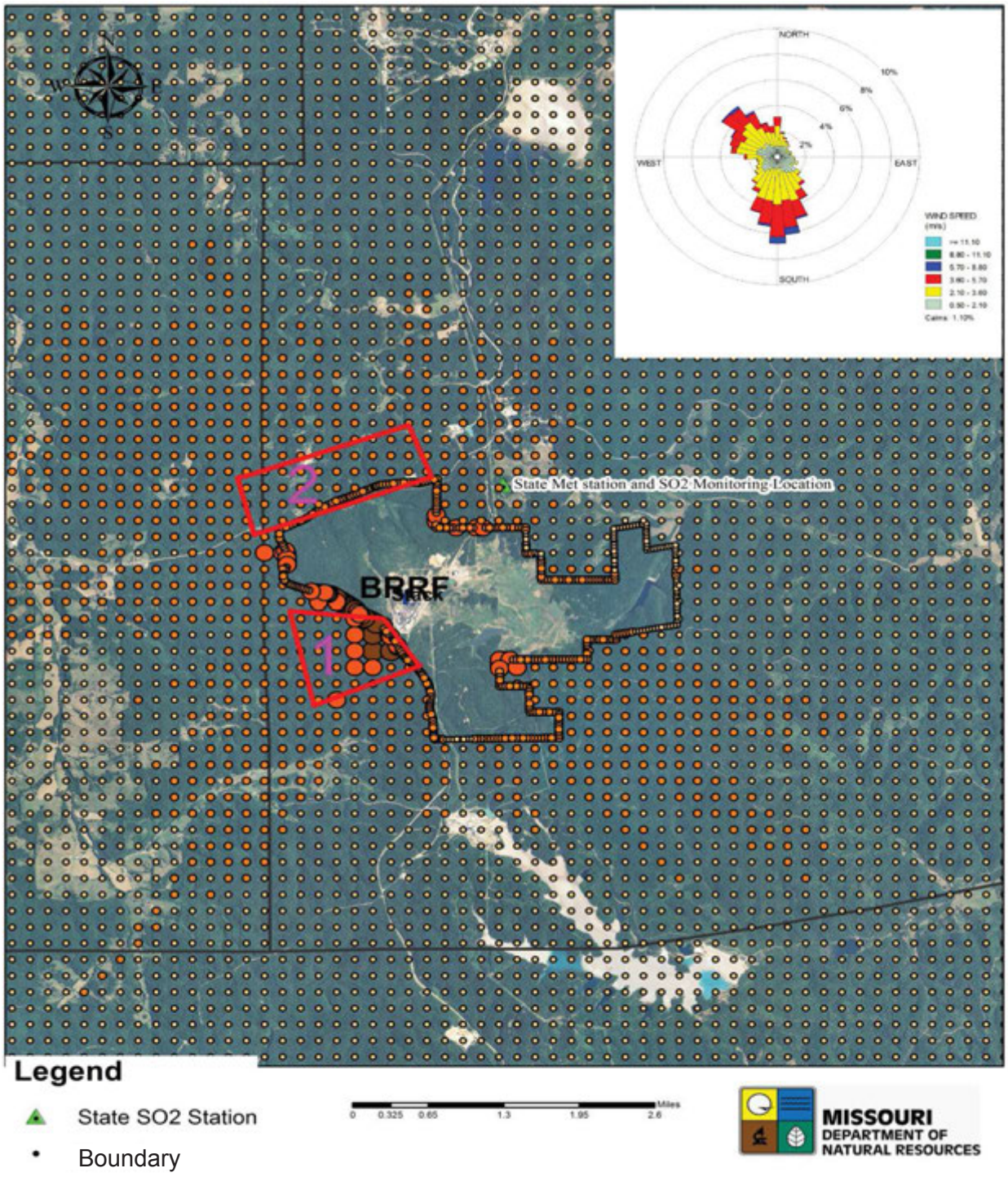


Figure 2. Normalized design values. NDV for each modeled receptor. The darker colors indicate relatively higher NDVs. 20 km Receptor Grid with Property Boundary as provided by facility.

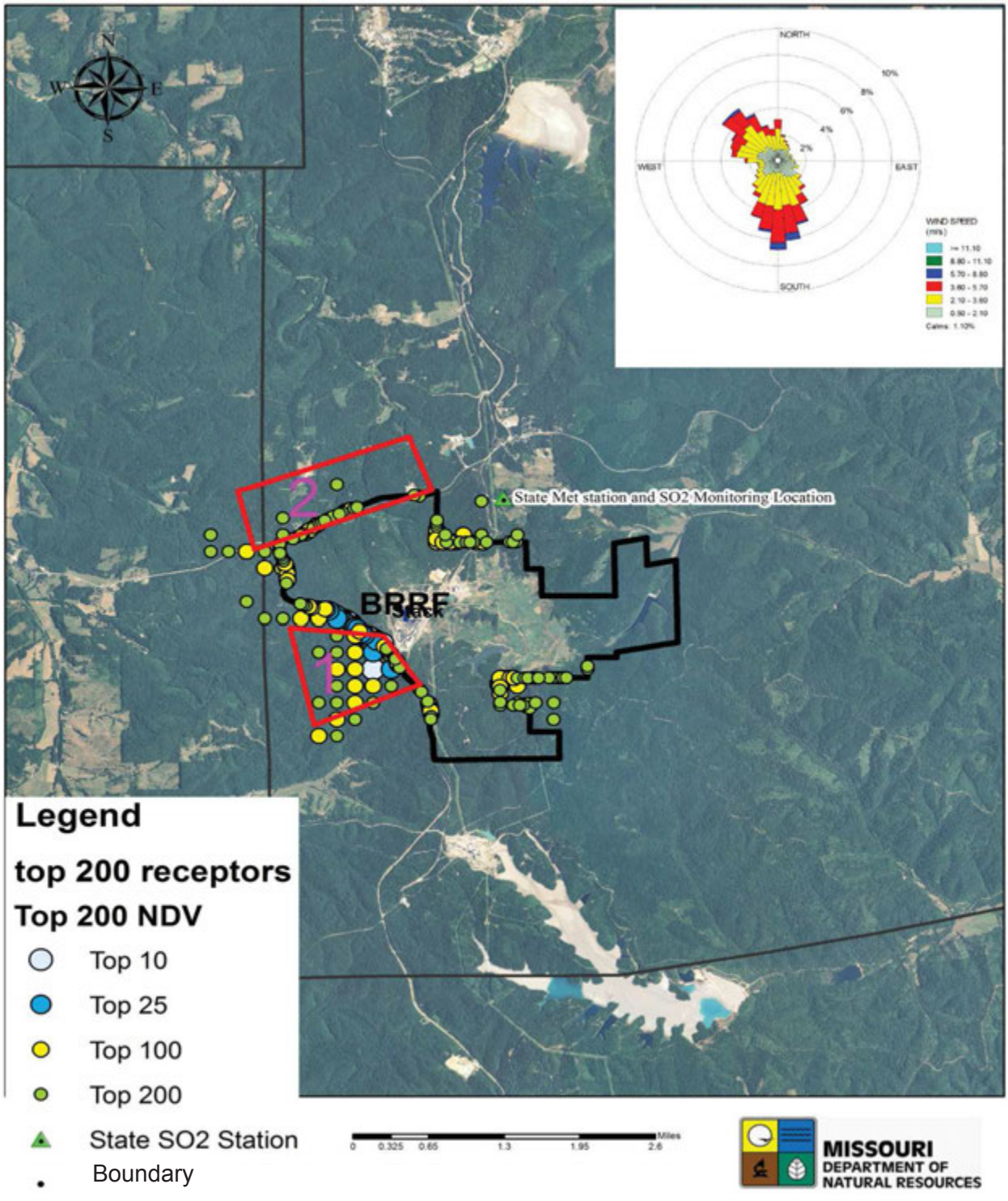


Figure 3. Maximum concentration locations of Top 10, 25, 100 and 200 normalized design values (NDV).

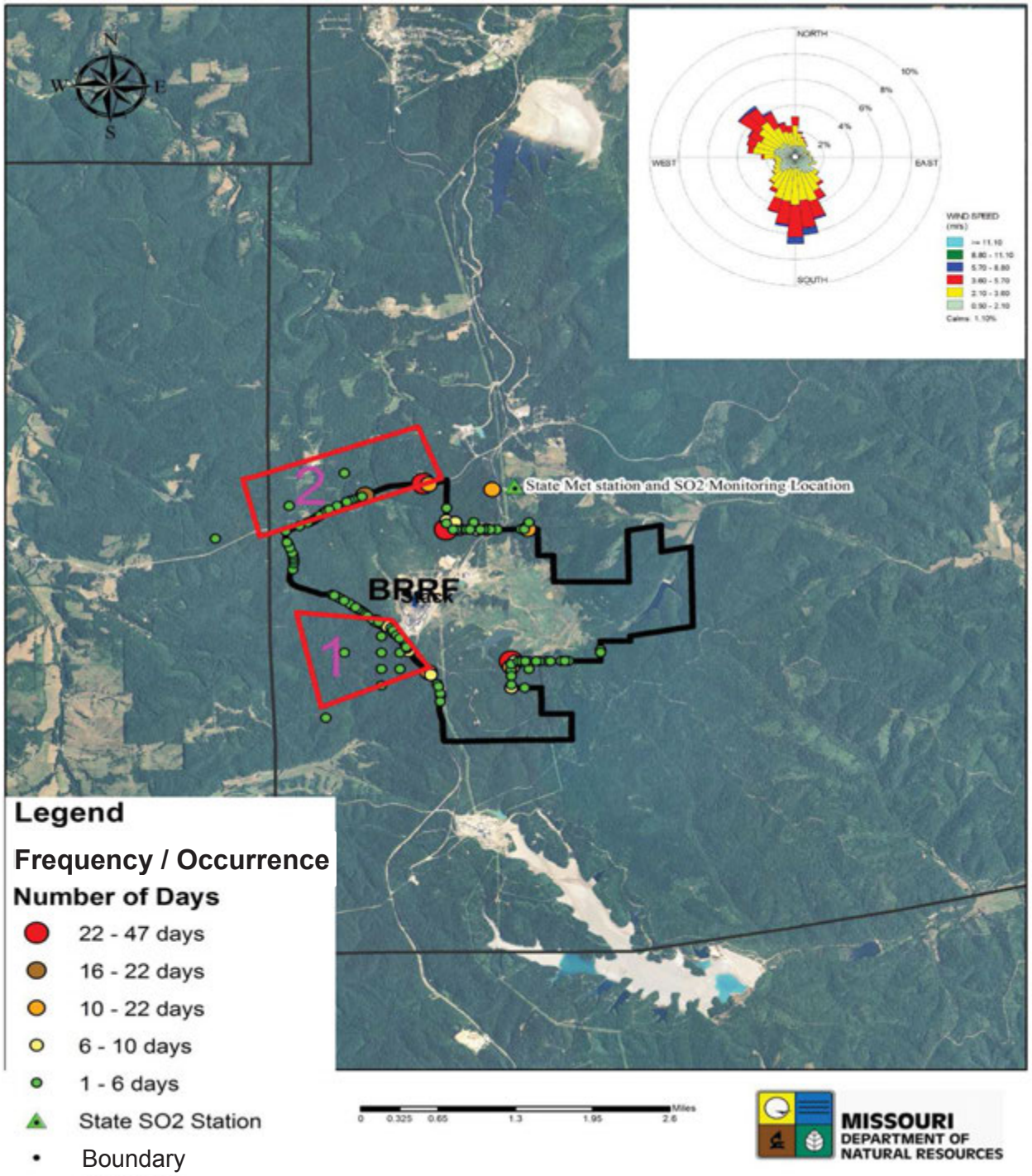


Figure 4. Cumulative number of days that an individual receptor had the 1-hour daily maximum concentration among all receptors. Darker colors indicate an increasing number of days that a receptor had the 1-hour daily maximum concentration.

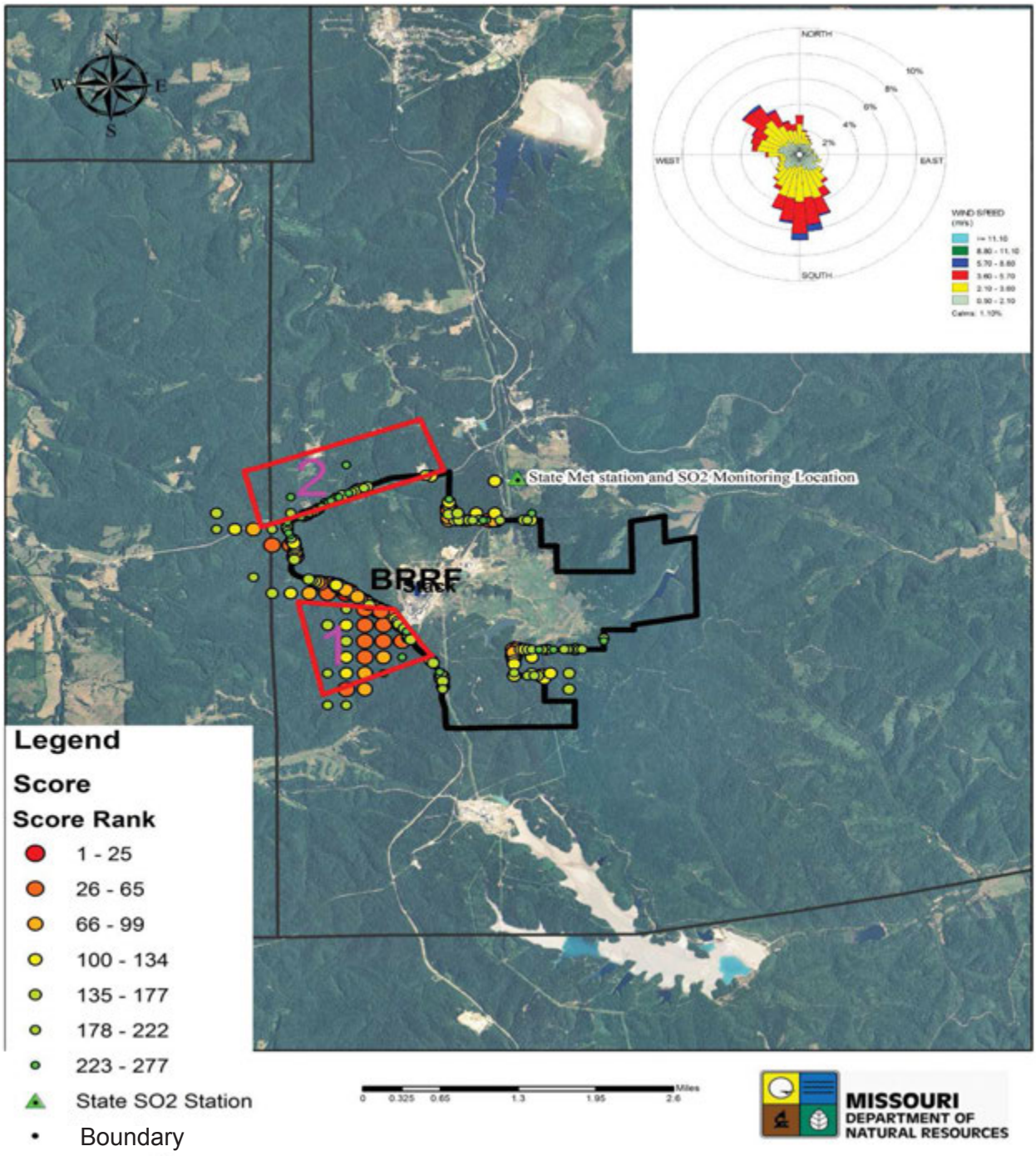


Figure 5. Receptors ranked by relative score reflecting NDV and frequency of having the 1-hour daily maxima amongst all receptors. Lower numerical scores indicate higher probability of experiencing peak 1-hour SO_2 concentrations in the modeled domain.

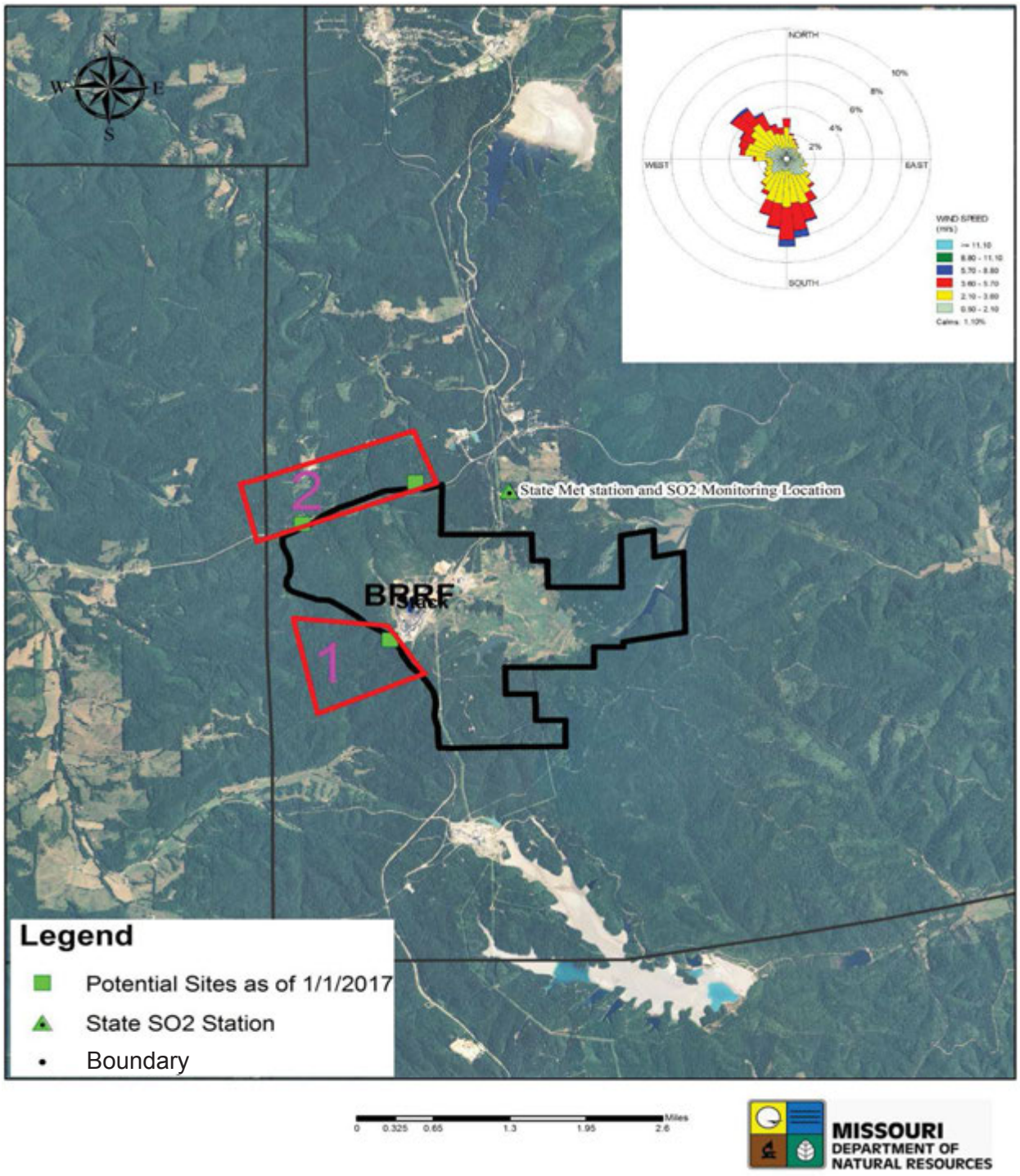


Figure 6. Probable SO_2 siting areas (1 and 2) and three potential SO_2 monitoring sites near the Doe Run BRRF based on dispersion modeling and siting visit.

Buick's proposed site selection

During a site visit to BRRF, three potential sulfur dioxide monitoring sites near the Doe Run BRRF were identified as shown in area 1 and 2. Based on the modeling results and availability of locations, BRRF proposed two ambient air SO_2 monitoring sites. The proposed SO_2 sites are shown in Figure 6. One proposed monitor is directly across from the facility's entrance off Hwy KK on Doe Run property (area 1). Additional monitors are proposed to be located near the northern and/or northwest ambient border, which is also on Doe Run property (area 2).
Doe Run BRRF's analysis used the onsite meteorological data from 2014-2015 and emission rates for all sources as reported in MOEIS.

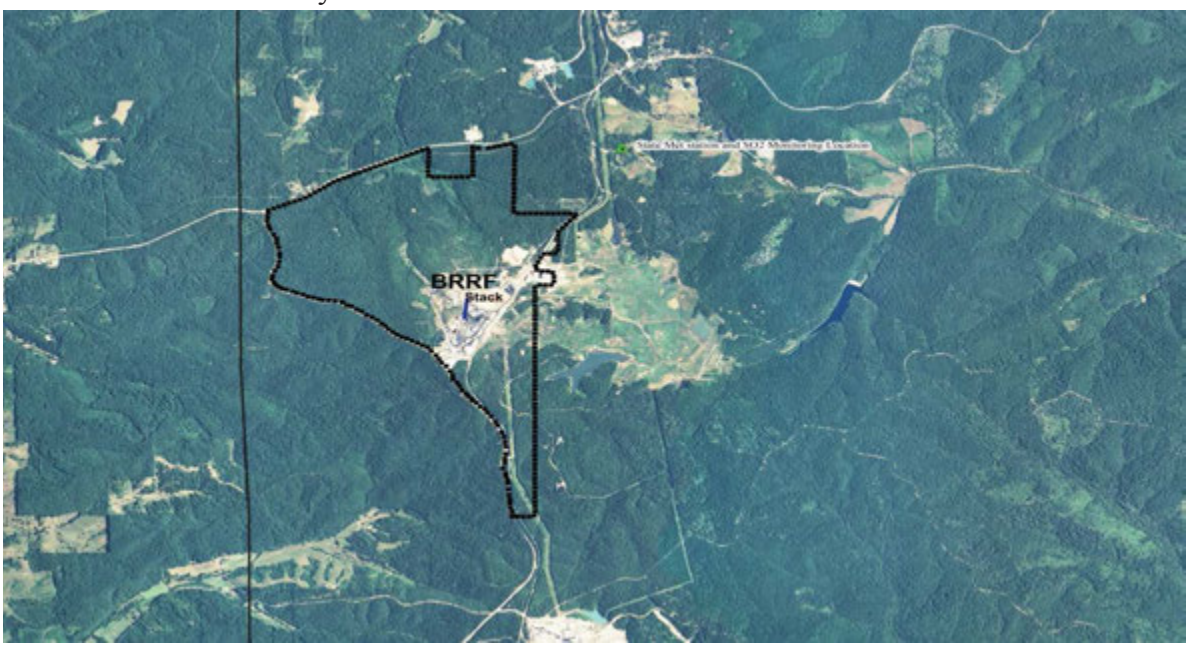
Buick's Updated Property Boundary

On April 25, 2016, BRRF updated their ambient boundary around their facility. Figure 7 shows the previous boundary and the updated boundary. According to BRRF, the updated boundary will be fenced by January 1, 2017 at which point it will no longer be considered ambient air. The analysis included in this report is based on the updated boundary. However, an evaluation using the previous boundary is included for reference in the event the ambient boundary remains unchanged. The modeling analysis and parameters are the same as discussed in this report with the only differences being the ambient boundaries. The results are illustrated in Figures 8 and 9.

Conclusions

From the analysis and evaluation of the updated boundary discussed above, areas 1 and 2 in Figure 6 will provide the greatest opportunity to monitor the highest concentrations of SO_2 emitted by the Doe Run BRRF. The SO_2 monitoring sites proposed by BRRF (area 1and area 2) are within these areas predicted to have the highest and most frequent modeled impacts. Based on the evaluation described in this document, the sites proposed by BRRF are reasonable and are in agreement with the APCP's analysis.

Previous BRRF boundary



Updated BRRF boundary as of 1/1/2017

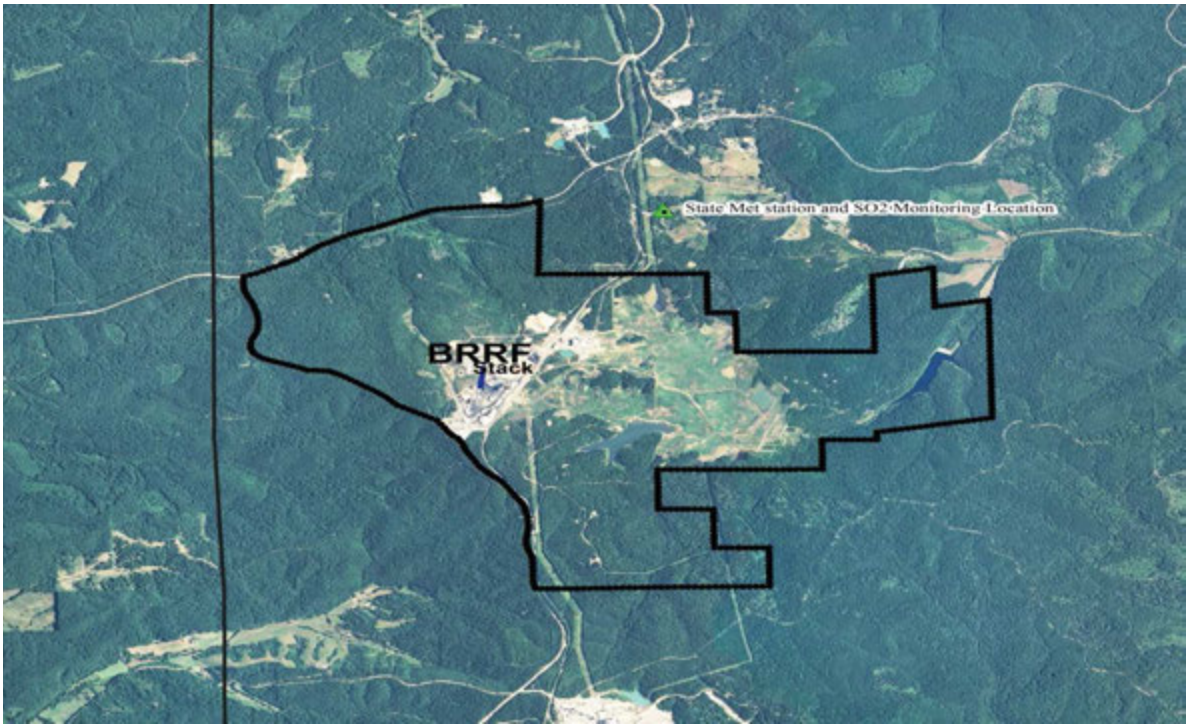


Figure 7. Comparison of BRRF boundaries

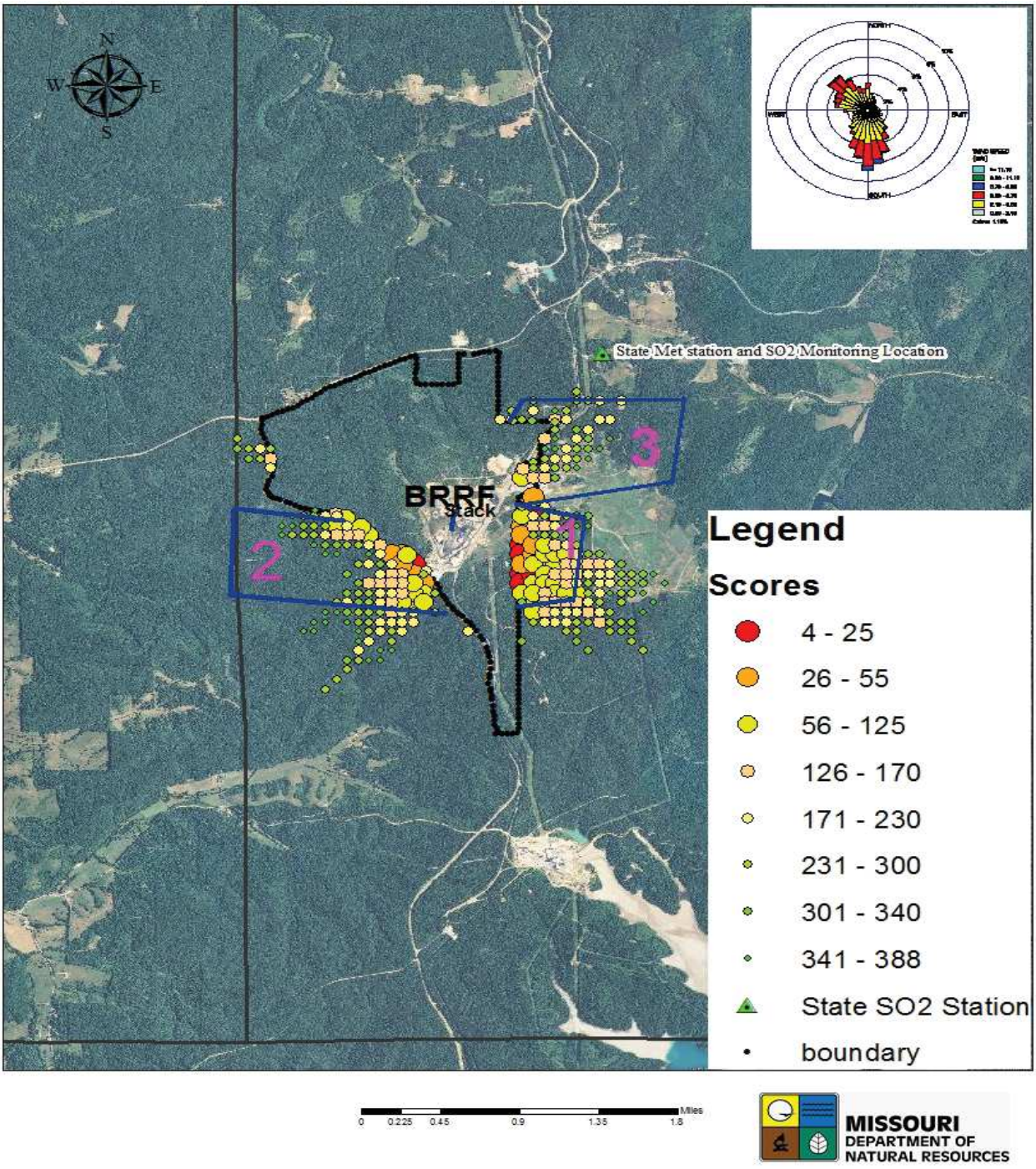


Figure 8. Based on the previous BRRF boundary, receptors ranked by relative score reflecting NDV and frequency of having the 1-hour daily maxima amongst all receptors. Lower numerical

scores indicate higher probability of experiencing peak 1-hour SO2 concentrations in the modeled domain.

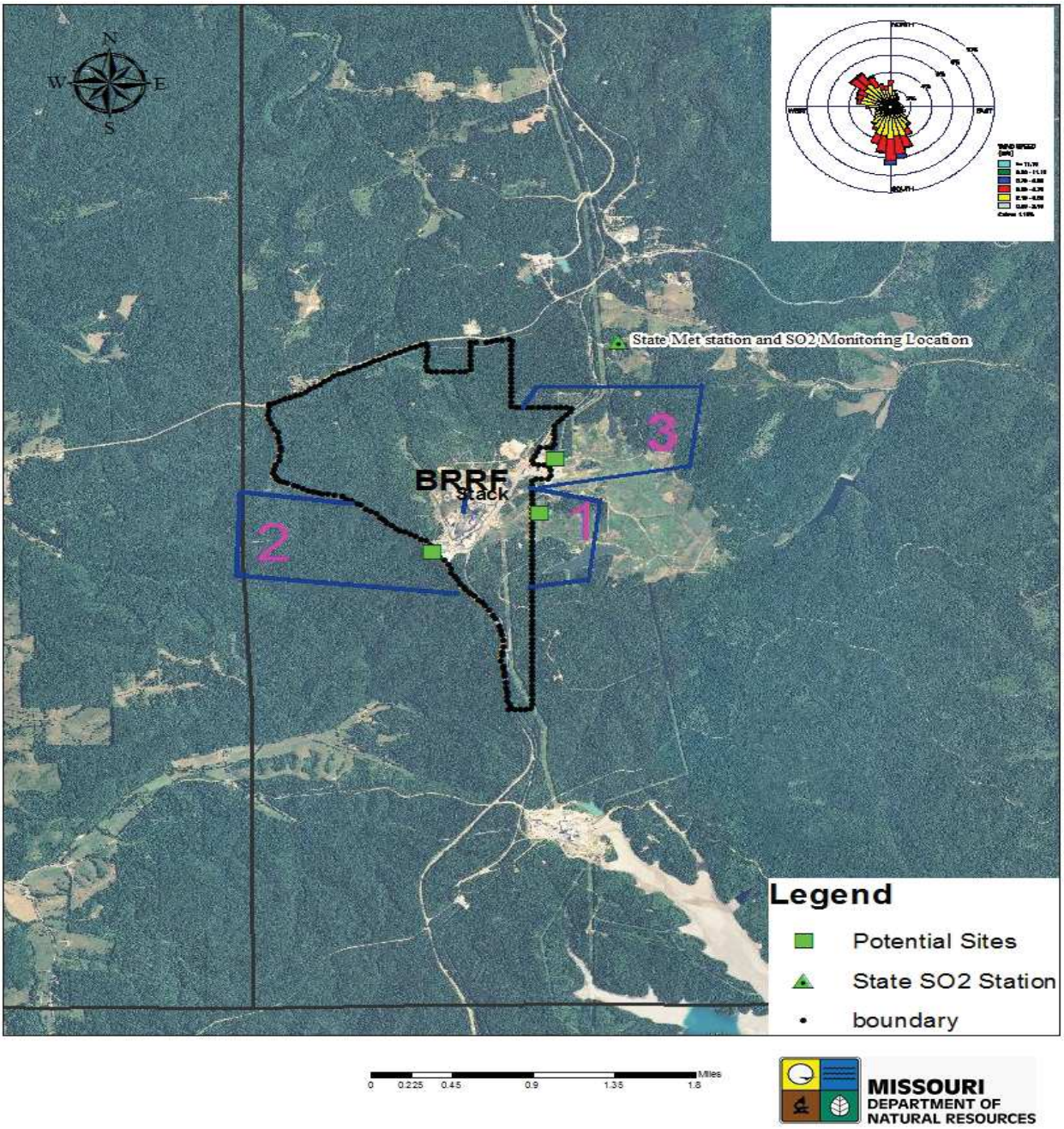


Figure 9. Probable SO_2 siting areas (1, 2, and 3) and three potential SO_2 monitoring sites near the Doe Run BRRF based on dispersion modeling , siting visit and the previous BRRF boundary .

Attachment A

Table with BRRF Emission Source parameters

Source ID	Easting (UTM-m)	Northing (UTM-m)	Elevation (m-asl)	Stack Height (m)	Stack Temperature (K)	Stack Gas Exit Velocity (m/s)	Stack Diameter (m)
EP8-POINT	664808	4167094	423.8	60.96	322.79	15.83	5.03
EP71 -POINT	664952	4167055	427.67	24.38	318.89	22.86	1.37
EP22-POINT	664960	4167092	427.41	30.78	561.11	3.87	0.76
EP23-POINT	664964	4167090	427.39	30.78	561.11	5.8	0.76
EP24-POINT	664971	4167085	427.42	30.78	561.11	4.94	0.76
EP25-POINT	664974	4167083	427.45	30.78	561.11	4.94	0.76
EP26-POINT	664979	4167080	427.51	30.78	561.11	4.94	0.76
EP27-POINT	664983	4167078	427.56	30.78	561.11	3.87	0.76
EP28-POINT	664987	4167074	427.74	30.78	561.11	3.61	0.76
EP33-POINT	664655.1	4166694	433	5.49	338.89	0.51	0.1
EP34-POINT	664818.7	4166815	426	10.67	338.89	0.51	0.1
EP21-POINT	664860.7	4166790	428.4	24.38	421.89	2.03	0.91
EP10-VOLUME	664896	4167042	427	2.9	0.85	1.35	

APPENDIX 4

Review of Proposed SO_2 and Meteorological Monitoring Stations around the Noranda New Madrid Plant

Project #2010-SO_2-5-DRR
Noranda Aluminum New Madrid Plant (143-0008)
Date: 5-13-2016

Review of Proposed SO_2 and Meteorological Monitoring Stations around the Noranda New Madrid Plant

Introduction

The purpose of this review is to evaluate the proposed selection of sulfur dioxide (SO_2) and meteorological monitoring sites around the Noranda Aluminum New Madrid plant (Noranda) through air dispersion modeling. The intention is to determine if the proposed sites will adequately represent 1) Noranda's SO_2 air quality impact and 2) the meteorological conditions surrounding Noranda. It should be noted that the evaluation of siting criteria under 40 CFR Part 51 is conducted separately through the Air Quality Analysis Section of the Air Pollution Control Program (air program).

To implement the 1-hour SO_2 National Ambient Air Quality Standard (NAAQS), the U.S. Environmental Protection Agency (EPA) finalized the SO_2 Data Requirements Rule (DRR) in August 2015. The DRR requires state air agencies to evaluate air quality around facilities that have emitted more than 2,000 tons of SO_2 through either dispersion modeling or new ambient air monitors installed by the facility. Using this information EPA intends to designate these areas as attaining or not attaining the 1-hour standard. The timetable for these designations is set by court order. Noranda emitted 5,323 tons SO_2 in 2014 and is therefore subject to the DRR. Noranda has elected to install new ambient air quality monitors in order to characterize the air quality surrounding their facility. New monitors must be operational no later than January 1, 2017.

Noranda is a facility that produces primary aluminum from raw alumina in aluminum smelting vessels. In order to extract aluminum from alumina, the raw material must be processed through an electrolytic reduction process, called the Hall-Heroult process. Thus, these smelters are also termed reduction cells or pots. In this process, baked carbon blocks, serving as anodes, are placed below the surface of the electrolyte in the pots, and the carbon lined shell, the cathode, contains molten cryolite that is used to dissolve oxides. Electricity is consumed in the extraction process and electric current is applied to the anode blocks (attached by metal rods) to pass through the extremely corrosive molten electrolytic bath. The oxygen from aluminum oxides reacts with carbon anodes to produce carbon dioxide that is subsequently released into the atmosphere. Each anode has a limited lifespan because the carbon anode will always be consumed during the aluminum extracting process. The anodes used by Noranda are produced from petroleum coke. Noranda maintains a carbon anode formation operation that is comprised of three carbon bake furnaces for calcination of the carbon anodes.

SO_2 Emission Sources

Throughout the production process, there are two primary SO_2 emission sources: the potlines and the carbon bake furnaces. SO_2 is generated in both sources through the oxidation of sulfur existing in raw materials. The materials include fresh coke and pitch containing sulfur, and alumina that may also contain sulfur. Permit #082010-003A limits Noranda's facility-wide SO_2 emissions to 6,077 tons in any consecutive 12 month period.

Noranda operates three potlines and each potline spans two identical rooms. There is a hood over each pot in each of the rooms to capture SO_2 exhaust from the pots. There is also some SO_2 that is not captured by the hood, which will release to the atmosphere through the roof vents of each potline building. Exhaust gas from potlines 1 and 2 is collected together from separate ducts and fed into a common stack, EP61, which emits to the ambient environment. However, the collection of exhaust gas from rooms E and F in potline 3 is divided into east and west manifolds. The stacks for the two manifolds are EP62 and EP63, respectively. According to the Missouri Emission Inventory System (MoEIS), EP61 emitted 2,705 tons of SO_2 and EP 62 and 63 each emitted 795.9 tons SO_2 in 2014. Although the individual emissions of potline 1 and 2 are unknown, some assumptions can be made to draw a conclusion. Assuming even distribution of emissions from potline 1 and 2, they would emit 1,352.5 tons of SO_2 each. Potline 3 emits a total of 1,591.8 tons of SO_2, which shows potline 3 contributes close to 18% more than the other two potlines to total SO_2 emissions. Since potline 3 is the largest emitter of all three potlines, it warrants extra consideration when choosing potential monitoring sites.

The potline roof vent SO_2 exhaust must also be considered for all three potlines. According to MoEIS, the roof vents of Potline 1 emitted 55.31 tons in 2014, and the roof vents of potline 2 and 3 emitted 52.41 tons and 63.39 tons, respectively. In MoEIS, these emission releases are identified as EP 59, EP 60, and EP 64 for potlines 1, 2, and 3, respectively. However, these emissions are currently difficult to measure quantitatively and are only estimated by mass balance of sulfur.

The carbon bake furnace exhaust is the other main source of SO_2 emissions, and Noranda operates three carbon bake furnaces. Each furnace has a dry scrubber system before SO_2 containing exhaust is released into the ambient atmosphere. However, the dry scrubber systems are not for SO_2 control. The exhaust stack ID's of EP98, EP99, EPAA are assigned to bake furnace system 1, 2, and 3, respectively. All three have the same reported emissions in 2014 of 284.99 tons.

A table of Noranda's emissions sources is included in Attachment A.

Technical Analysis of Site Selection

Noranda is located in New Madrid County in southeastern Missouri. There is an interactive SO_2 source nearby Noranda, which is Associated Electric Cooperative, Inc. (AECI) New Madrid power plant (143-0001). These two facilities share a property boundary, as shown in Figure 1. The AECI New Madrid power plant is required to operate a Continuous Emissions Monitoring System (CEMS) to record hourly emissions information which was utilized in this model analysis.

Noranda's supplied modeling performed as part of their 2008 Prevention of Significant Deterioration (PSD) permit application was used to support their proposed monitoring sites for the purposes of compliance with the DRR. The air program duplicated this modeling as discussed later in the report and included the AECI New Madrid power plant as a nearby

interactive source. The AECI New Madrid power plant's emissions information is also included in Attachment A.

SO_2 Dispersion Modeling Program Selection

The location and number of ambient air quality monitors are dependent on several factors including topography and meteorology, which affect where areas of high concentration will be observed and how often those high concentrations will occur. Air dispersion modeling was used to account for these factors and determine the appropriateness of locations for possible monitor site locations.

AERMOD is EPA's preferred air dispersion model. The most recent version of AERMOD and its preprocessors were used in this analysis, as of May 2016 (version 15181). AERMOD can be used to evaluate time-dependent impacts of SO_2 emissions from stack driven point sources or fugitive releases. Thus, SO_2 exhaust from the potline stacks and carbon bake furnace stacks were modeled by AERMOD. However, Noranda, as an aluminum reduction facility, also has SO_2 exhaust from the roof vents of the potline houses. In accordance with 40 CFR Part 51 Appendix W, these roof vent exhausts were included in separate line sources using the Buoyant Line and Point (BLP) model. This complex and detailed modeling was performed as part of Noranda's 2008 PSD permit application, and since there have been no operational changes since that time; no changes to the modeling analysis were evaluated for this purpose. Since the AERMOD modeling analysis already results in high concentrations near the fenceline, the BLP impacts were not included in this evaluation. The BLP outputs would only fortify the high concentrations found near the fenceline as they have no exit velocity associated with their release.

The air program referenced the modeling guidelines laid out in EPA's SO_2 Source Oriented Monitoring Technical Assistance Document (TAD), draft February 2016[1]. The monitoring TAD describes receptor grid spacing used to site monitoring stations and this analysis follows those guidelines. Receptors were placed every 250 meters (m) from the facility center out to 10 kilometers (km) and every 500 m out to 20 km to form a tiered 40 km X 40 km grid, centered on the facility. No receptors were removed from the grid, i.e. on facility property or in bodies of water.

[1] EPA's SO_2 Source Oriented Monitoring Technical Assistance Document (TAD), draft February 2016. https://www3.epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf

Figure 1. Satellite Image of Noranda and New Madrid Facilities

Meteorological Data and Geographic Influence

Understanding the influence of meteorology on an SO_2 source is critical. Meteorological inputs to the dispersion modeling influence how SO_2 emissions are dispersed and affects the location(s) of maximum ground-level concentrations. An air program staff meteorologist evaluated the terrain surrounding the Noranda New Madrid plant and meteorological data from nearby National Weather Service (NWS) stations and made recommendations on: 1) the meteorological data sets to be used in air dispersion modeling, and 2) the location of a meteorological monitoring site for the collection of data that accurately depicts meteorological conditions around Noranda.

Representative Meteorological Data (Used for Dispersion Modeling)

Noranda previously collected minimal onsite meteorological data. However, this on-site tower was only sited for preconstruction monitoring. This tower did not collect enough data parameters and was not sited properly for use in dispersion modeling exercises. As a result, representative NWS data was chosen for the dispersion modeling exercise since suitable on-site meteorological data is not currently available for Noranda. Analysis of land use and surface characteristics was performed to determine the most representative meteorological stations for the area. In addition, the wind rose plots from Noranda's historical on-site tower and Cape Girardeau Regional Airport were compared for similarities in wind patterns. Cape Girardeau's wind rose is shown in Figure 2 for reference. Surface elevation meteorological data from the Cape Girardeau, MO (KCGI) and upper air meteorological data from Springfield, MO (KSGF)

were chosen as the most representative datasets for Noranda[2]. The most recent full three years of available meteorological data was used in the analysis, 2012-2014. The same period of available hourly varying emissions data was used for the AECI New Madrid power plant.

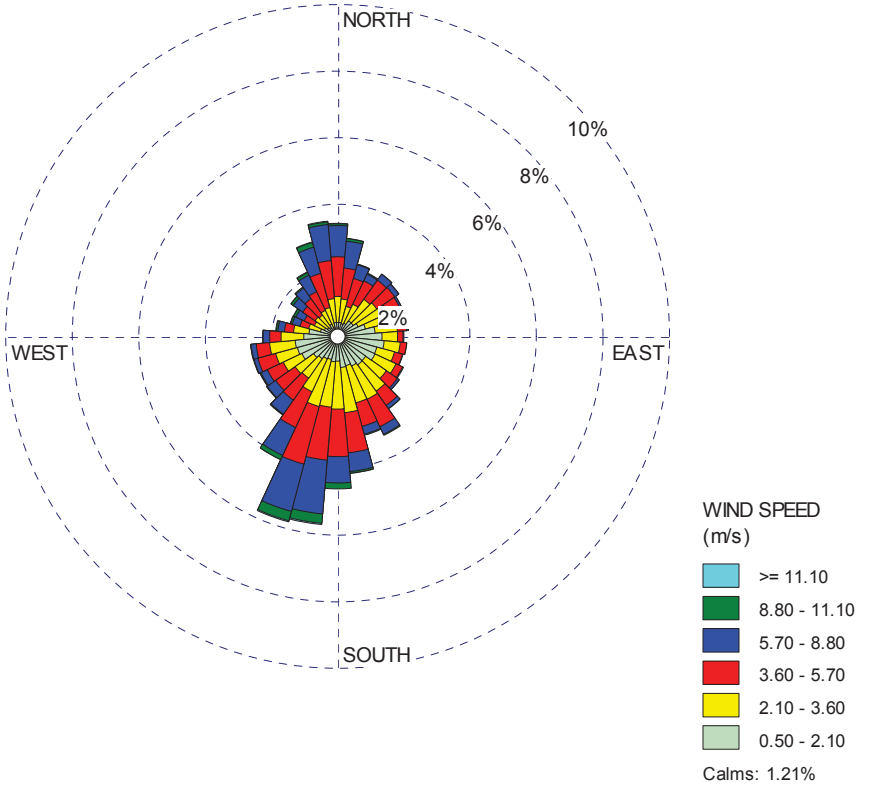


Figure 2. Wind Rose Plot for Cape Girardeau Regional Airport Surface Station Data (2012-2014)

Potential Meteorological Tower Locations (Possible Monitor Placement)

Although not required under the DRR, a meteorological monitoring station provides invaluable data that can potentially be used for many modeling purposes in the future, such as a model performance evaluation. An air program staff meteorologist prepared a full recommendation[3], summarized here, for Noranda if they decide to install a full suite of meteorological monitoring instruments suitable for modeling purposes. For a 10 meter meteorological tower, the recommended data fields, equipment, quality assurance and completeness are summarized in EPA's Quality Assurance Handbook for Air Pollutant Measurement Systems, Volume IV: Meteorological Measurements Version 2.0 (Final) March 2008, found

[2] Memorandum from staff meteorologist in APCP to file entitled "Recommendation for representative meteorological data set for New Madrid Power Station and Noranda Aluminum" (dated October 14, 2014).

[3] Memorandum from staff meteorologist in APCP to file entitled "Recommendation for meteorological tower location(s) near the New Madrid Power Plant and Noranda Aluminum Facilities" (dated September 21, 2015).

at: https://www3.epa.gov/ttn/amtic/qalist.html, Table 0-9 on pages 14-15 of section 0. The details of each piece of equipment and data are in the following sections of the guidance.

A surface weather station is recommended for placement within 1 to 2 km of both the New Madrid and Noranda facilities. Based on an evaluation of proximity, terrain, and exposure, the area is narrowed to the agricultural land-use area west of Noranda and south of the two round white storage buildings/tanks (see Figure 3).

Upper air data is not recommended to be collected on site. For this location, there are no concerns that upper air flow patterns are influenced by nearby topography. The regional nature of NWS upper air network should be sufficient to represent New Madrid/Noranda in modeling exercises.

Noranda proposed to collocate the meteorological station with monitoring site #3, near the southwest corner of Noranda's property. Noranda proposed a ten meter tower with minimum monitoring parameters. The proposed site is near the Noranda fenceline while also being removed enough from significant obstacles, such as terrain and vegetation. Noranda historically collected limited onsite meteorological parameters near this proposed site. This location is near the region recommended by our staff meteorologist depicted in Figure 3. If Noranda does not decide to install full meteorological monitoring instrumentation, at minimum we recommend measuring wind speed and wind direction at or near this location. This minimal data could still be used for wind pattern and pollution rose analyses.

Noranda sits on the western bank of the Mississippi river; its surrounding area is relatively flat, with no altitude changes greater than 15 meters. This simple nature of terrain will not have a significant influence on the dispersion of SO_2 emissions from Noranda.

Figure 3. Recommended Meteorological Monitoring Location

Air dispersion modeling results

Two independent modeling scenarios were executed: 1) Noranda and AECI New Madrid power plant combined; 2) AECI New Madrid power plant alone. It should be noted that the Noranda modeling scenario performed originated from their 2008 PSD permit application. The PSD modeling was chosen for evaluating the monitoring sites in lieu of the normalized design value (NDV) method, as outlined in EPA's Monitoring TAD, to take advantage of extensive modeling that had already been performed for the recent permitting action. Therefore the impacts are reported as actual modeled impact values. EPA details the NDV method as using a normalized emission rate for sources to result in a normalized design value at receptors. This method is only used for monitor siting and not for compliance determination. Baseline and/or Scenario 2 emission rates and existing release parameters from the PSD modeling were chosen for this analysis to capture the worst case SO_2 emissions. BLP model results were not included in this modeling analysis because numerous high concentrations were already being modeled near Noranda's fenceline. Adding the BLP results would yield even higher concentrations near the fenceline and potline buildings and is not expected to change the overall analysis conclusions.

An annual background concentration of 9 ppb was added linearly to the combined model scenario results. The level of the background concentration is the same as the concentration used in the Jefferson County Nonattainment Area (NAA) plan submitted to EPA in 2015. During the development of this plan, a thorough background concentration analysis was performed. This analysis yielded a rural background concentration of 9 ppb used for Jefferson County. Since the

area surrounding Noranda is also rural, a background concentration of 9 ppb was utilized as the representative background concentration for modeling purposes.

Analysis of the AECI New Madrid power plant model scenario produces no violating receptors. There is one main region with concentrations greater than 90 $\mu g/m^3$. This region is located to the east within 5 km from the AECI New Madrid power plant, depicted in Figure 4 by blue triangles. The highest modeled SO_2 concentration from the AECI New Madrid power plant is 99.8 $\mu g/m^3$ which is less than 13% of the combined scenario's maximum modeled concentration. Both model scenarios include the 9 ppb background concentration. The highest modeled SO_2 concentration from the AECI New Madrid power plant is approximately 3.5 km away from the release point. This can be attributed to the fact that the AECI New Madrid power plant has much higher stacks than Noranda, which allow for more dispersion and longer travel time before deposition. In the combined modeling scenario, AECI New Madrid power plant's contributions are less compared to Noranda's modeled contributions along their fenceline. Thus, the AECI New Madrid power plant was also modeled alone to allow for proper evaluation of the single source's impacts. The expected influence from the AECI New Madrid power plant on the proposed monitoring sites is minimal.

Figure 4 graphically plots the results from both modeling scenarios. The results are differentiated by colors and shapes to represent the separate scenarios and modeled concentrations. For the combined model scenario, red dots represent concentrations greater than 350 $\mu g/m^3$ and yellow dots represent concentrations in the range of 196 -350 $\mu g/m^3$. The highest concentration is 783 $\mu g/m^3$. The predicted concentration nearest the position of proposed SO_2 monitoring site #3 in Figure 4 is 525 $\mu g/m^3$. The predicted concentration nearest the proposed SO_2 monitoring site #2 is 712 $\mu g/m^3$. The predicted concentration nearest the proposed SO_2 monitoring site #1 is 228 $\mu g/m^3$. The highest concentration receptors, denoted by red dots, are focused in an area close to the potlines. The proposed monitoring site #1 is located near and in the dominant wind direction to capture impacts from the carbon-bake furnaces. The proposed monitoring sites #2 and #3 are located near enough to capture impacts from the potlines.

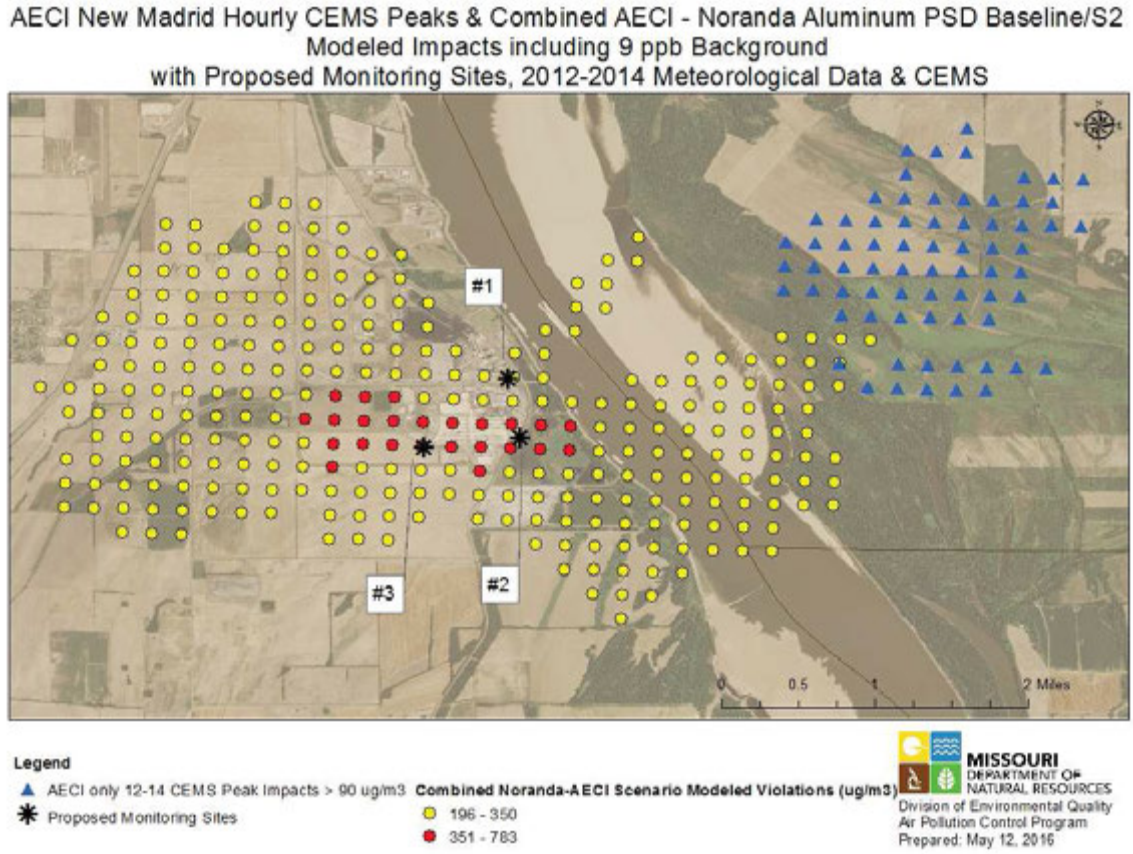


Figure 4. Noranda Aluminum and AECI New Madrid power plant combined model results with proposed monitoring sites

The model-predicted concentration decreases as the distance from the facility center increases. This can be attributed to the relatively low vertical releases and large amount of fugitive releases. The extent of high concentration receptors extends to 3 km to the west and the east from the facility center. For ease of reference, the high concentration receptors were divided into two levels: 1) red dots denote the highest peak concentrations (larger than 350 µg/m^3) and 2) yellow dots still denote high impacts but to a lesser extent.

The site selection process also accounts for the frequency with which a receptor registers a daily maximum concentration. In order to assess the frequency of occurrence of concentration maxima at a given receptor, an analysis was performed on the top 300 receptors. In AERMOD the MAXDAILY option was used to output the maximum 1-hour concentration for each receptor for each day. This output was used to rank the areas by the total number of days that an individual receptor had a 1-hour daily maximum concentration for the 36 modeled months as shown in Figure 5. The red dots indicate receptors that exhibited an overwhelming amount of the modeled maximum daily concentrations. Areas near Noranda's property boundary and potlines, exhibit the highest frequency of experiencing maximum daily concentrations which supports the monitors being sited near the property line and potlines specifically. This method is detailed in EPA's monitoring TAD.

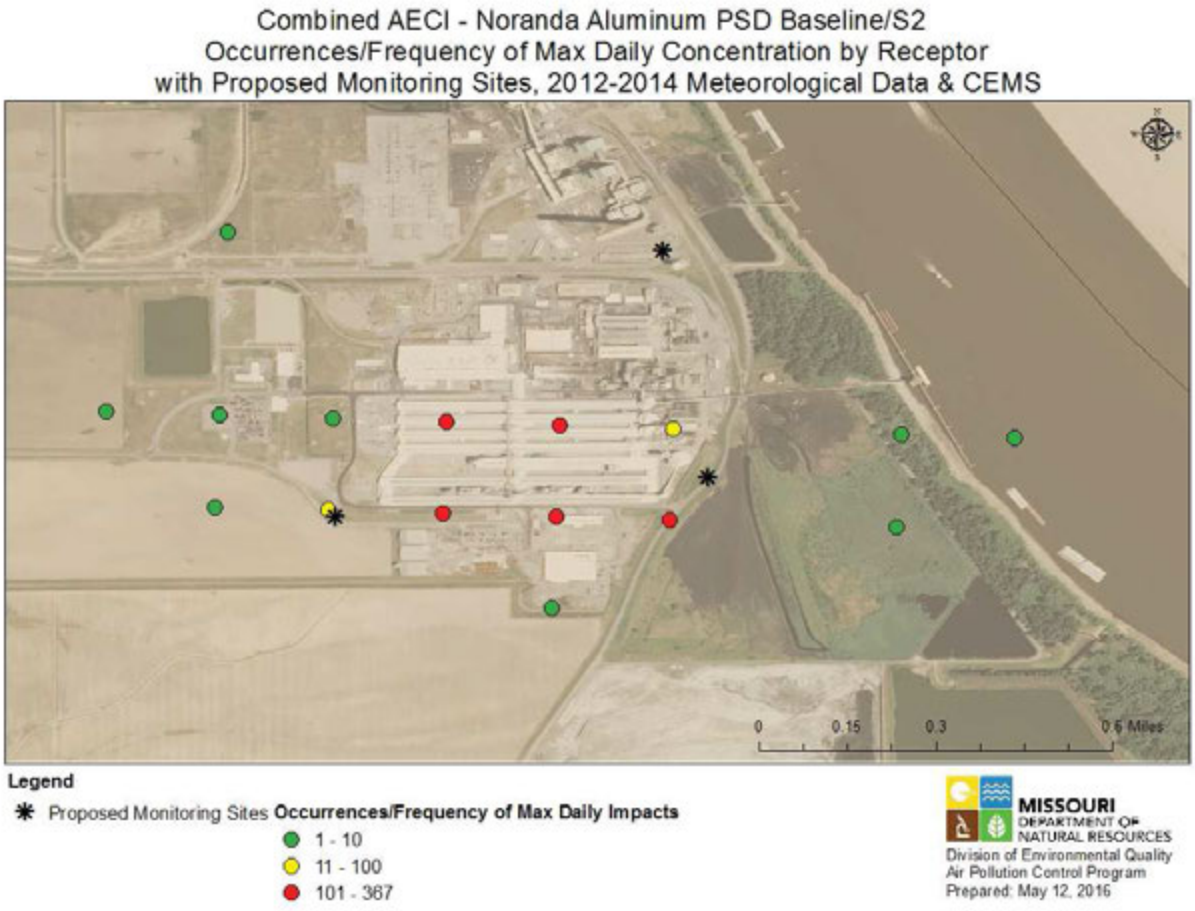


Figure 5. Frequency/Occurrences for receptors exhibiting daily maximum hourly concentrations for 2012-2014

Another method outlined in EPA's monitoring TAD entails scoring receptors. The scoring strategy employed in the site selection process creates a relative prioritized list of receptor locations for monitor siting using modeled peak impacts and 1-hour daily maximum concentration frequencies. The scoring takes into account both the highest modeled concentration at each receptor and the frequency or number of times that the receptor exhibits the daily maximum concentration. This strategy will provide a list of receptor locations, ranked in general order of desirability with regard to potential siting of permanent source-oriented SO_2 monitors. Lower numerical scores indicate higher probability of capturing peak 1-hour SO_2 concentrations in the modeled domain. Figure 6 shows the scores by receptor with the red dots having the most desirable score and blue dots a less desirable score. The area with the highest density of receptors with frequent maximum daily concentrations and highest 1-hour concentrations and therefore best scores is near the Noranda fenceline.

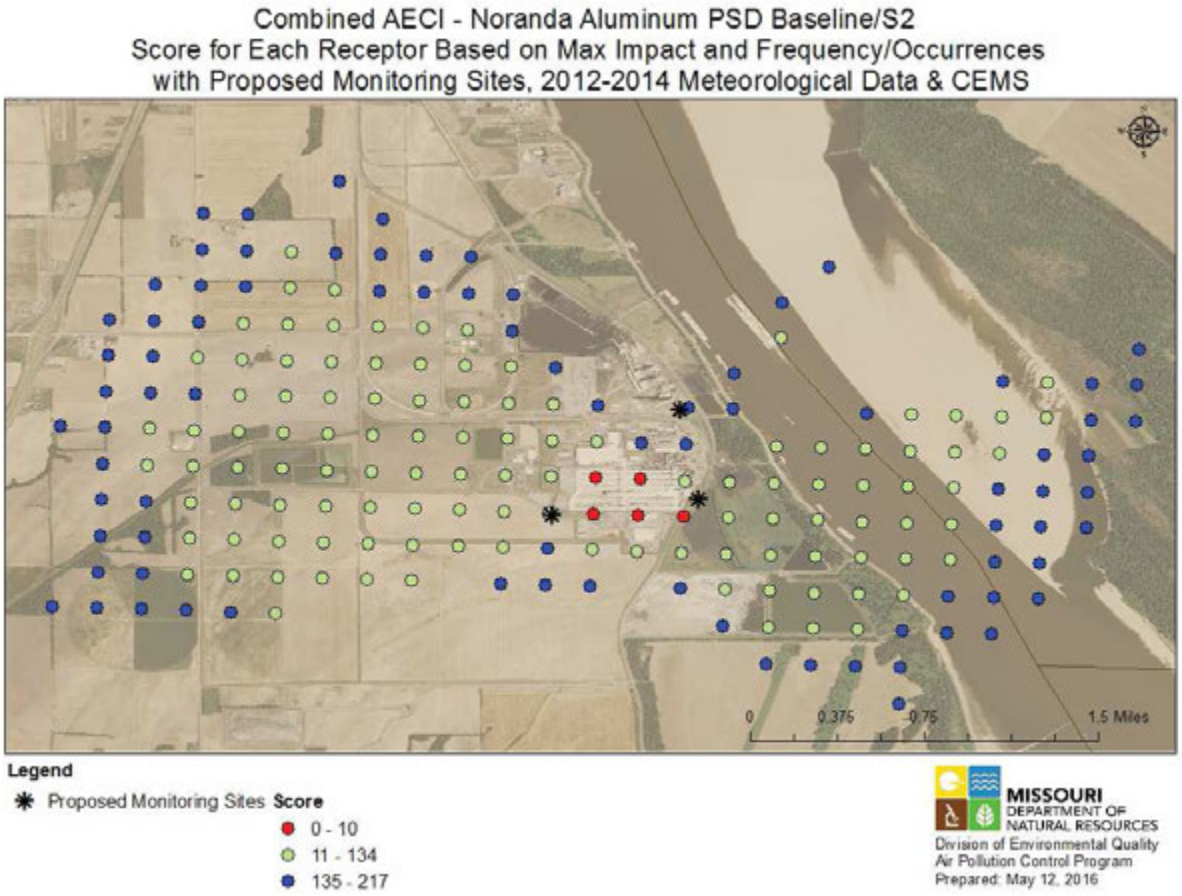


Figure 6. Scoring based on maximum modeled impact and frequency of exhibiting daily maximum hourly concentrations by receptor

Noranda's Proposed Site Selection

Noranda's proposed monitoring sites are all located near the area of frequent and high modeled concentrations near the facility fenceline. Monitors placed near the fenceline would be expected to capture Noranda's impacts on the surrounding area's air quality. From the analysis and evaluation detailed in this report, the regions with highest peak concentrations, frequency of high impacts, and therefore desirable scores will provide the greatest opportunity to monitor peak concentrations of SO_2 emitted by Noranda.

Based on the analysis of modeling results, the best available positions for installing monitors are near the Noranda property boundary because of the high frequency and peak modeled concentrations of SO_2. Monitors installed near receptors with frequently high modeled impacts have the best opportunity to capture peak concentrations of SO_2. Specifically, site #1 is proposed to be located near the northeast corner of the Noranda-AECI New Madrid fenceline, indicated in Figure 7. This position is expected to capture the highest impact from the carbon bake furnace emissions. According to the wind rose pattern, this location has a dominant wind direction in the

northeast direction. Proposed site #2 is located along the eastern fenceline of Noranda just off the southeast corner of the potline 3 building. Proposed Site #3 is located near the southwest corner near potline 3 on Noranda's fenceline. All three proposed monitoring sites are near the Noranda fenceline; and are therefore expected to capture peak impacts from Noranda.

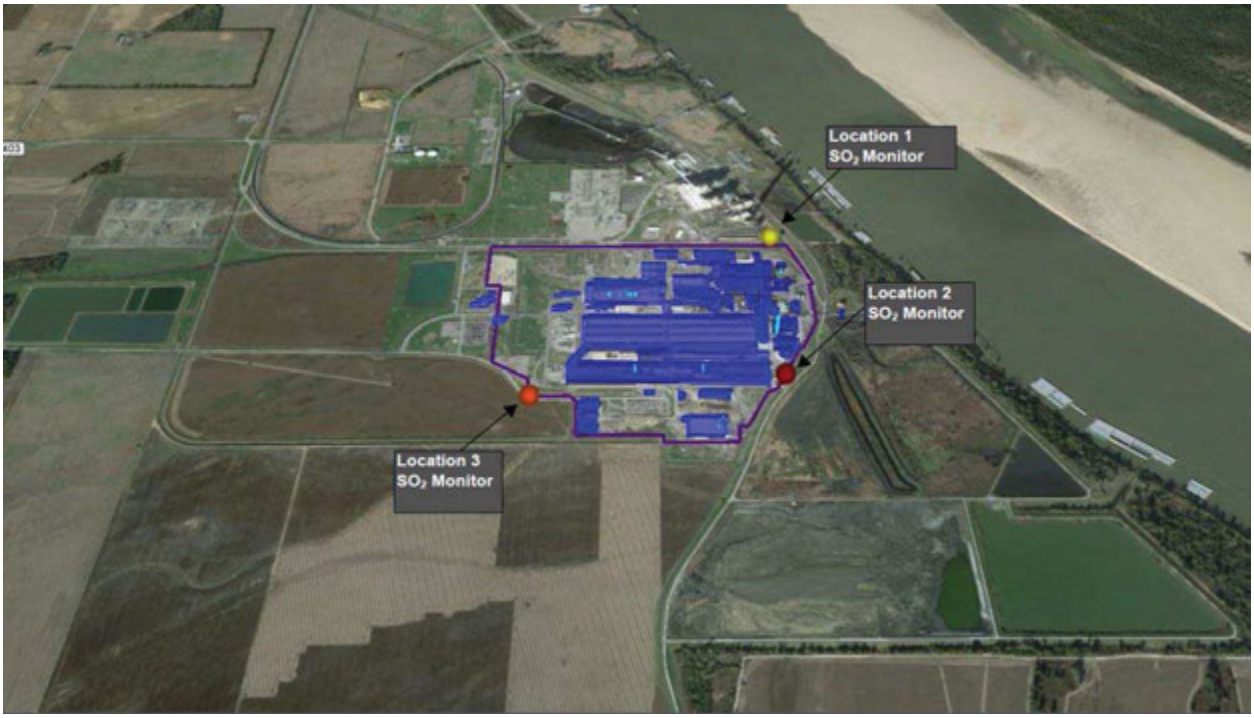


Figure 7. Aerial View of Noranda Aluminum and three Proposed SO_2 Monitoring Sites

Conclusions

From the modeling analysis and evaluation discussed above, monitors installed near the proposed site positions depicted in Figure 7 would provide the greatest opportunity to monitor high concentrations of SO_2 emitted by Noranda. The proposed sites are reasonable and in agreement with the air program's analysis given they meet minimum monitor siting criteria.

ATTACHMENT A. SO_2 Source Emissions Information

Noranda Aluminum Source Information (from Noranda's 2008 PSD permit application: Scenario 2 and Baseline Emissions Information used in modeling)

Noranda Aluminum, Inc.-Point Source Emission Rates and Stack Parameters																			
EP ID	Description	Model ID	Release Type	Easting	Northing	Elevation	Emission Rate		Stack Height		Stack Temperature		Stack Exit Velocity		Stack Diameter		Altered?		Comment
							(g/s)	(lb/hr)	(Meters)	(Feet)	(Kelvin)	(Fahrenheit)	(m/s)	(ft/min)	(Meters)	(Feet)	(Yes)	(No)	
SO_2 NAAQS-1-Hour Emission Rates-Scenario 2																			
EP61	Stack - Potline 1 & 2	EP61	POINT	807991.10	4045990.40	91.82	1.0713E+02	8.503E+02	72.030	236.319	360.370	188.996	11.711	2305.392	7.920	25.984		X	
EP62	Stack - Potline 3E	EP62	POINT	807771.10	4045812.90	91.06	3.1941E+01	2.535E+02	42.000	137.795	357.820	184.406	11.735	2310.000	4.360	14.304	X		Stack Height Decreased from 65 to 42 Meters
EP63	Stack - Potline 3W	EP63	POINT	807554.20	4045812.50	90.88	3.1941E+01	2.535E+02	42.000	137.795	359.480	187.394	11.735	2310.000	4.360	14.304	X		Stack Height Decreased from 65 to 42 Meters
EP94	Natural Gas Fired Boiler for Hot Oil System	EP94	POINT	807953.70	4046131.90	92.08	5.0400E-04	4.000E-03	6.401	21.001	298.150	77.000	5.000	984.252	0.610	2.001		X	
EP95	Natural Gas Fired Boiler for Hot Oil System	EP95	POINT	808018.80	4046106.80	91.52	4.5400E-04	3.603E-03	5.182	17.001	298.150	77.000	5.000	984.252	0.457	1.499		X	
EP96	Natural Gas Fired Boiler for Hot Oil System	EP96	POINT	808018.80	4046092.70	91.32	4.5400E-04	3.603E-03	4.572	15.000	298.150	77.000	5.000	984.252	0.366	1.201		X	
EP97	Carbon Rodding Aluminum Spray Furnace	EP97	POINT	807708.60	4046131.90	90.42	4.1300E-04	3.278E-03	3.050	10.007	298.150	77.000	5.000	984.252	0.430	1.411		X	
EPAAA	Proposed Carbon Bake Furnaces 1, 2 & 3	EPAAA	POINT	808011.70	4046226.34	92.85	2.0977E+00	1.665E+01	65.000	213.255	343.710	159.008	30.480	6000.000	2.180	7.152	X		Stack Height Decreased from 71 to 65 Meters
EP98	Existing Carbon Bake Stack Prior to Permit #082010-003	EP98	POINT	808034.20	4046184.00	85.00	6.9910E-01	5.549E+00	65.000	213.255	343.889	159.330	19.671	3872.244	1.676	5.499	X		To Be Decommisioned Upon Completion of EP-AAA
EP99	Existing Carbon Bake Stack Prior to Permit #082010-003	EP99	POINT	808011.70	4046211.10	85.00	6.9910E-01	5.549E+00	65.000	213.255	343.889	159.330	19.671	3872.244	1.676	5.499	X		To Be Decommisioned Upon Completion of EP-AAA
EPAA	Existing Carbon Bake Stack Prior to Permit #082010-003	EPAA	POINT	808030.00	4046254.90	85.00	6.9910E-01	5.549E+00	65.000	213.255	343.889	159.330	10.579	2082.480	2.286	7.500	X		To Be Decommisioned Upon Completion of EP-AAA
EPAB	Stack for Old Pig Melter	EPAB	POINT	807561.40	4046135.60	90.10	1.5840E-03	1.257E-02	30.480	100.000	866.483	1100.000	0.780	153.543	1.130	3.707		X	
EPAD	Stack for #1MP&S Melter	EPAD	POINT	807610.10	4046135.60	90.11	1.5840E-03	1.257E-02	30.480	100.000	866.483	1100.000	1.550	305.118	0.910	2.986		X	
EPAE	Stack for #1 MP&S Holder	EPAE	POINT	807623.10	4046134.80	90.12	9.3600E-04	7.429E-03	30.480	100.000	755.372	900.000	0.520	102.362	0.980	3.215		X	

EPAF	Stack for #2 MP&S Melter	EPAF	POINT	807596.80	4046135.60	90.10	1.5840E-03	1.257E-02	30.480	100.000	866.483	1100.000	1.550	305.118	0.910	2.986		X	
EPAG	Stack for #2 MP&S Holder	EPAG	POINT	807583.50	4046135.20	90.10	9.3600E-04	7.429E-03	30.480	100.000	755.372	900.000	0.520	102.362	0.980	3.215		X	
EPAH	Stack for #4 MP&S Melter	EPAH	POINT	807513.00	4046135.60	90.08	2.3620E-03	1.875E-02	30.480	100.000	866.483	1100.000	0.990	194.882	1.220	4.003		X	
EPAI	Stack for #4 MP&S Holder	EPAI	POINT	807500.50	4046135.60	90.08	9.3600E-04	7.429E-03	27.430	89.993	755.372	900.000	0.610	120.079	0.980	3.215		X	
EPAJ	Stack for Homogenizing Furnace #1	EPAJ	POINT	807644.80	4046166.00	90.10	1.0800E-04	8.572E-04	14.940	49.016	533.150	500.000	0.310	61.024	0.910	2.986		X	
EPAK	Stack for Homogenizing Furnace #2	EPAK	POINT	807645.20	4046182.70	90.08	1.0800E-04	8.572E-04	14.940	49.016	533.150	500.000	0.310	61.024	0.910	2.986		X	
EPAL	Stack for Homogenizing Furnace #3	EPAL	POINT	807645.60	4046196.50	90.07	1.0800E-04	8.572E-04	14.940	49.016	533.150	500.000	0.160	31.496	1.280	4.199		X	
EPAN	Stack for PIG Melter 2	EPAN	POINT	807529.70	4046135.60	90.09	2.0160E-03	1.600E-02	30.480	100.000	866.483	1100.000	0.780	153.543	1.130	3.707		X	
EPBA	Stack for Rod Mill #1 Melter	EPBA	POINT	807789.90	4045619.40	91.46	1.8720E-03	1.486E-02	15.240	50.000	866.483	1100.000	10.973	2160.000	1.130	3.707	X		Velocity & Diameter-Per 05/23/11 Email Trinity Consultant's, Inc.
EPBB	Stack for Rod Mill #1 Holder	EPBB	POINT	807790.30	4045599.40	91.57	7.2000E-04	5.714E-03	15.240	50.000	755.372	900.000	8.230	1620.000	1.130	3.707	X		Velocity & Diameter-Per 05/23/11 Email Trinity Consultant's, Inc.
EPBC	Stack for Rod Mill #2 Melter	EPBC	POINT	807813.20	4045619.40	91.38	1.8720E-03	1.486E-02	15.240	50.000	866.483	1100.000	10.973	2160.000	1.130	3.707	X		Velocity & Diameter-Per 05/23/11 Email Trinity Consultant's, Inc.
EPBD	Stack for Rod Mill #2 Holder	EPBD	POINT	807812.80	4045599.40	91.52	7.2000E-04	5.714E-03	15.240	50.000	755.372	900.000	8.230	1620.000	1.130	3.707	X		Velocity & Diameter-Per 05/23/11 Email Trinity Consultant's, Inc.
EPBH	#5 Rod Mill Holder	EPBH	POINT	807790.70	4045572.70	91.56	4.3200E-04	3.429E-03	15.240	50.000	866.483	1100.000	0.030	5.906	0.610	2.001		X	
EPBI	Natural Gas Fired Boiler for Office Heat	EPBI	POINT	807086.70	4046127.90	88.55	1.0400E-04	8.254E-04	5.486	17.999	298.150	77.000	0.208	40.945	0.183	0.600		X	
EPBJ	Natural Gas Fired Boiler for Locker Room Heat	EPBJ	POINT	807305.20	4046097.10	89.95	1.4700E-04	1.167E-03	5.791	18.999	298.150	77.000	0.132	25.984	0.213	0.699		X	
EPBK	Natural Gas Fired Boiler for Locker Room Heat	EPBK	POINT	807337.20	4046097.10	90.03	1.4700E-04	1.167E-03	5.791	18.999	298.150	77.000	0.122	24.016	0.305	1.001		X	
EP113	Holding Furnace	EP113	POINT	807789.80	4045590.50	91.44	1.4360E-03	1.140E-02	15.240	50.000	449.820	350.006	18.873	3715.157	0.914	3.000	X		Stack Exit Velocity Increase
EP114	Holding Furnace	EP114	POINT	807790.30	4045584.10	91.44	1.4360E-03	1.140E-02	15.240	50.000	449.820	350.006	12.190	2399.606	0.914	3.000		X	

SO2 Baseline Emissions[1]					
Emission Point Number	Modeled Emission Point Number	Description	Baseline Emissions (tpy)	Baseline Emissions (lb/hr)	Baseline Emissions (g/s)
EP-61	EP-61	Stack - Potline 1 & 2	2485.54	567.48	71.50
EP-62	EP-62	Stack - Potline 3E	740.74	169.12	21.31
EP-63	EP-63	Stack - Potline 3W	740.74	169.12	21.31

1. The baseline emissions have been updated based on a new mass balance approach that incorpates facility-wide SO2-impacting activities. Noranda will submit updated EIQs to reflect these changes.

SO2 Baseline Emissions[1]					
Emission Point Number	Modeled Emission Point Number	Description	Baseline Emissions (tpy)	Baseline Emissions (lb/hr)	Baseline Emissions (g/s)
EP-98	EP-98	Carbon Bake 1 Stacks (64 total)	459.83	104.98	13.28
EP-99	EP-99	Carbon Bake 2 Stacks (64 total)	459.83	104.98	13.28
EP-AA	EP-AA	Carbon Bake 3 Stacks (64 total)	459.83	104.98	13.28

1. The baseline emissions have been updated based on a new mass balance approach that incorpates facility-wide SO2-impacting activities. Noranda will submit updated EIQs to reflect these changes.

Project #2010-SO_2-5-DRR
Noranda Aluminum New Madrid Plant (143-0008)
Date: 5-13-2016

AECI New Madrid Source Information

Excerpt from Hourly CEMS Emission File:

	Year	Month	Day	Hour	Unit	SO2 ER (g/s)	Temp (K)	Velocity (m/s)
SO HOUREMIS	12	1	1	1	B1	262.553	579.2611111	29.49448
SO HOUREMIS	12	1	1	1	B2	0	581.4833333	29.22524
SO HOUREMIS	12	1	1	2	B1	268.046	579.2611111	29.49448
SO HOUREMIS	12	1	1	2	B2	0	581.4833333	29.22524

Source Information and Release Parameters:

Facility I.D.	Facility Name	Site Name	Emission Point I.D.	Model ID	Description	Release Type
143-0004	AECI	New Madrid Power Plant	EP01	B1	BOILER #1 - BITUMINOUS COAL - this is for Subbituminous Coal	Point
143-0004	AECI	New Madrid Power Plant	EP02	B2	BOILER #2 - BITUMINOUS COAL - this is for Subbituminous Coal	Point

Easting	Northing	Base Elevation	Allowable Emission Rate	Actual Stack Height	Stack Temperature	Stack Exit Velocity	Stack Diameter
Meters	*Meters*	*Meters*	*Grams/Second*	*Meters*	*Kelvin*	*Meters/Second*	*Meters*
807904.5	4046549	91.1352	337.9484895	243.84	579.2611111	29.49448	6.096
807911.6	4046555	91.1352	300.2954796	243.84	581.4833333	29.22524	6.096

APPENDIX 5

Review of Proposed Additional Southwest and North SO_2 Monitoring Stations Around the Labadie Energy Center

Southwest and North SO_2 Monitoring Station Network Enhancement
Around the Labadie Energy Center

Introduction

On June 30, 2016, EPA designated the area around the Labadie Energy Center as unclassifiable. In a detailed response to comments document[1] and a technical support document (TSD)[2] for the second round of the 1-hour SO2 NAAQS designation process EPA reviewed and commented on technical information regarding SO_2 dispersion modeling and other analysis for the Labadie area.

In their response to comments document, EPA cites reviewing a total of 48 modeling runs submitted by Ameren Missouri, the Missouri Department of Natural Resources' Air Pollution Control Program (Air Program), and Sierra Club for the Labadie area. EPA concludes on page 26 in the designations TSD that for the Labadie area "…EPA's view is that the modeling results widely vary and greatly depend upon how the modeling was conducted, as discussed in this Technical Support Document. Because of the issues present in the modeling methodologies, the EPA does not have a clear basis to determine whether the area currently meets or does not meet the 2010 SO2 NAAQS based on all currently available information."

On page 84 of the response to comments document EPA states: "While EPA has indicated for MDNR's 2015 monitoring network plan that the monitors meet siting criteria for purposes of being away from obstructions, etc., EPA has not made any determinations of whether the monitors are in expected peak concentration locations as outlined by the 1-hr SO2 designations Monitoring Technical Assistance Document. Given our analysis of both the windrose and terrain information, along with factoring in historic monitoring locations, it appears that the current monitors are not likely sited in an area to measure the maximum concentrations."

As a result of the issues addressed in these EPA designation documents which were posted after the 2016 Monitoring Network Plan plan's public inspection period, Air Program worked with EPA to determine the additional monitoring plan changes that are needed to satisfy the 1-hour SO_2 Data Requirements Rule and revised the 2016 Monitoring Network Plan accordingly.

The following sections identify the information supporting the additional Labadie SO_2 monitoring network enhancement.

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[1] Responses to Significant Comments on the Designation Recommendations for the 2010 Sulfur Dioxide Primary National Ambient Air Quality Standard (NAAQS), Docket Number EPA–HQ–OAR–2014–0464 U.S. Environmental Protection Agency, https://www.epa.gov/sites/production/files/2016-07/documents/so2d-r2-response-to-comments-06302016.pdf

[2] Final Technical Support Document Missouri Area Designations for the 2010 SO2 Primary National Ambient Air Quality Standard, https://www.epa.gov/sites/production/files/2016-07/documents/r7_mo_final_designation_tsd_07012016.pdf

Labadie, Southwest

On August 30, 2016, Ameren Missouri submitted to the Air Program a report titled "Evaluation for an Additional SO_2 Monitoring Site Around the Labadie Energy Center, August 30, 2016" This report is included at the end of this appendix.

After reviewing this report Air Program and EPA Region VII staff concurred with establishing a southwest monitor consistent with the report recommendations. On September 21, 2016 Air Program, EPA Region VII, and Ameren staff visited a candidate location in the area of maximum modeled impact and confirmed this location can be developed to meet the ambient air monitoring siting criteria of 40 CFR 58 Appendix E. This site is proposed as the Labadie, Southwest SO_2 monitoring site in revision 1 of 2016 Monitoring Network Plan.

Labadie, North

The Labadie Valley meteorological tower provided data from April 22, 2015 through June 30, 2016 except for the period from the end of December 2015 through late March 2016. This data gap was a result of flooding and instrument damage.

Due to the modeling uncertainties that occurred using various meteorological data substitution techniques discussed in the report, the Labadie SO_2 network has been enhanced by adding a site north of the Labadie energy center. The north site is located in an area of modeled maximum SO_2 impact using a meteorological monitoring data set comprising of the on-site Valley and Jefferson City Airport (KJEF) meteorological monitoring sites with actual plant emissions.

This model run yielded modeled impacts north of the Labadie Energy Center in a predominant wind direction and in an area of relatively high elevation. EPA Region VII staff supplied these modeling results to the Air Program in an HTML map file on October 17, 2016. Air Program, Ameren, and EPA Region VII staff visited several candidate north locations based on this analysis on October 21, 2016. Figure A shows two EPA proposed candidate locations, in addition to current and former monitoring sites.

Ameren subsequently located a property in the area of high modeled impact. This location can be developed to meet the ambient air monitoring siting criteria of 40 CFR 58 Appendix E and is identified on the map as Labadie, North site in the second revision of 2016 Monitoring Network Plan.

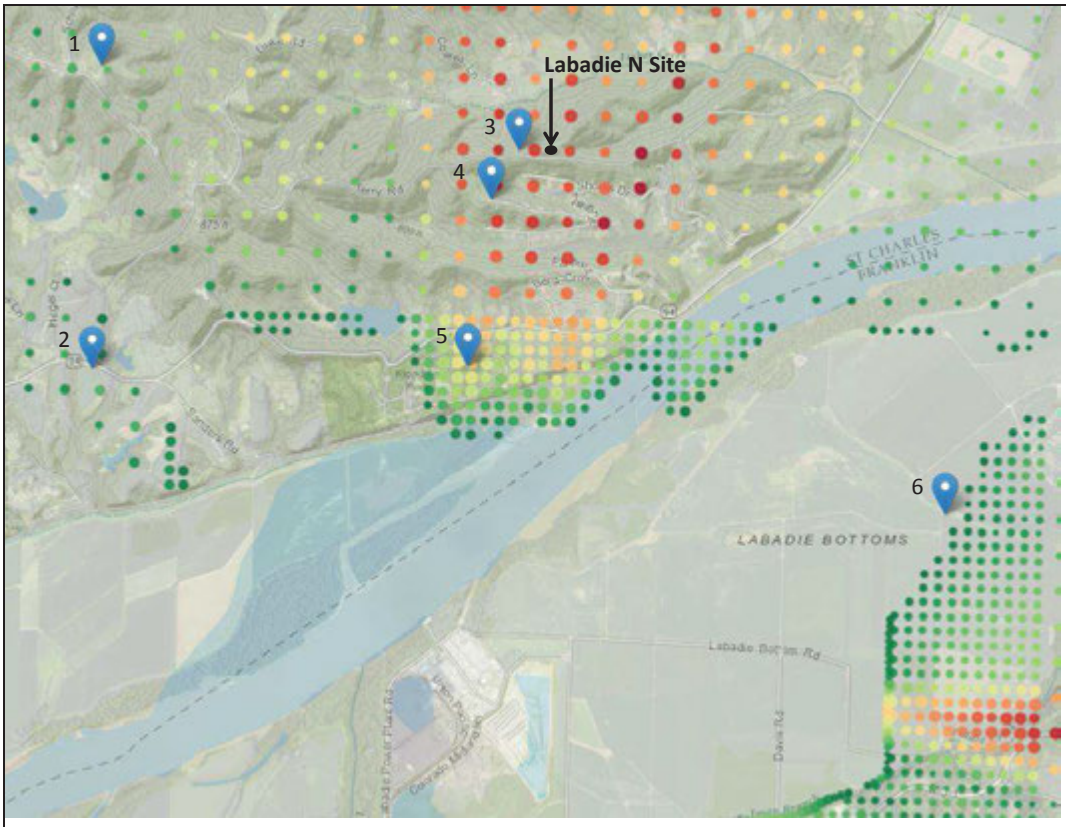


Figure A. Green, red, and yellow colors indicate modeling results. Monitoring sites (blue flags) are: 1. Augusta (former site), 2. NW (current site), 3. EPA2 (proposed site), 4. EPA1 (alternate proposed site), 5. Quarry (former site), 6. Valley (current site). The Black dot (and arrow) indicates the selected N site, near no. 3.

Evaluation for an Additional SO2 Monitoring Site Around the Labadie Energy Center
(August 30, 2016)

An evaluation for an additional monitoring site for the area around the Labadie Energy Center was performed using the methodology described in "SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, U.S. EPA, February 2016 (DRAFT)"(Monitoring TAD) utilizing predicted SO2 air quality Normalized Design Values (NDV). In addition a corroboratory analysis was performed by US EPA Region VII personnel. For these evaluations the following datasets were utilized.

Meteorology:

1) The Labadie Valley site data from April 22, 2015 through June 30, 2016; upper air data from Lincoln, IL (Kilx).
2) The Labadie Valley site data from April 22, 2015 through June 30, 2016 with data missing from the Valley site dataset filled with National Weather Service (NWS) data from the St. Louis Chesterfield Airport (Ksus); upper air data from Lincoln, IL (Kilx).
3) The Labadie Valley site data from April 22, 2015 through June 30, 2016 with data missing from the Valley site dataset filled with NWS data from the Jefferson City Airport (Kjef); upper air data from Lincoln, IL (Kilx)
4) Weather Research and Forecasting (WRF) model for the year 2015. The model configuration and description are illustrated in Appendix A.

Emissions:

1) Actual hourly stack temperature and stack flow rates with normalized SO2 emissions based on 100 g/s maximum per unit for all four Labadie Energy Center generating units.
2) Constant hourly stack temperature and stack flow rate (developed from the operating period January 1, 2013 through December 31, 2015) based on all four Labadie Energy Center generating units operating at > 500 Mw with normalized SO2 emissions of 100 g/s per unit; defined as a high load scenario.
3) Constant hourly stack temperature and stack flow (developed from the operating period January 1, 2013 through December 31, 2015) based on all four Labadie Energy Center generating units operating between 300 – 450 MW with normalized SO2 emissions of 100 g/s per unit; defined as a mid-load scenario.

Modeling Discussion:

Versions 15181 of AERMOD and AERMET along with version 15272 of AERMINUTE were utilized for this modeling analysis (see Appendix A for WRF processing). The modeling grid used was a telescoping 100, 250 and 500 m grid (out to 10 km) and is shown in Figure 1.

As expected, each meteorological dataset and operating scenario produced different results in terms of predicted monitor locations. For example, Figures 2 through5 provide an illustrative example of the various Score Ranks for the top 200 monitor locations developed from the four meteorological scenarios discussed above coupled with the actual normalized SO2 emissions scenario. As is evident from the figures, preferred additional monitor locations appear to range from north to southeast to southwest of the Labadie Energy Center.

Figure 1

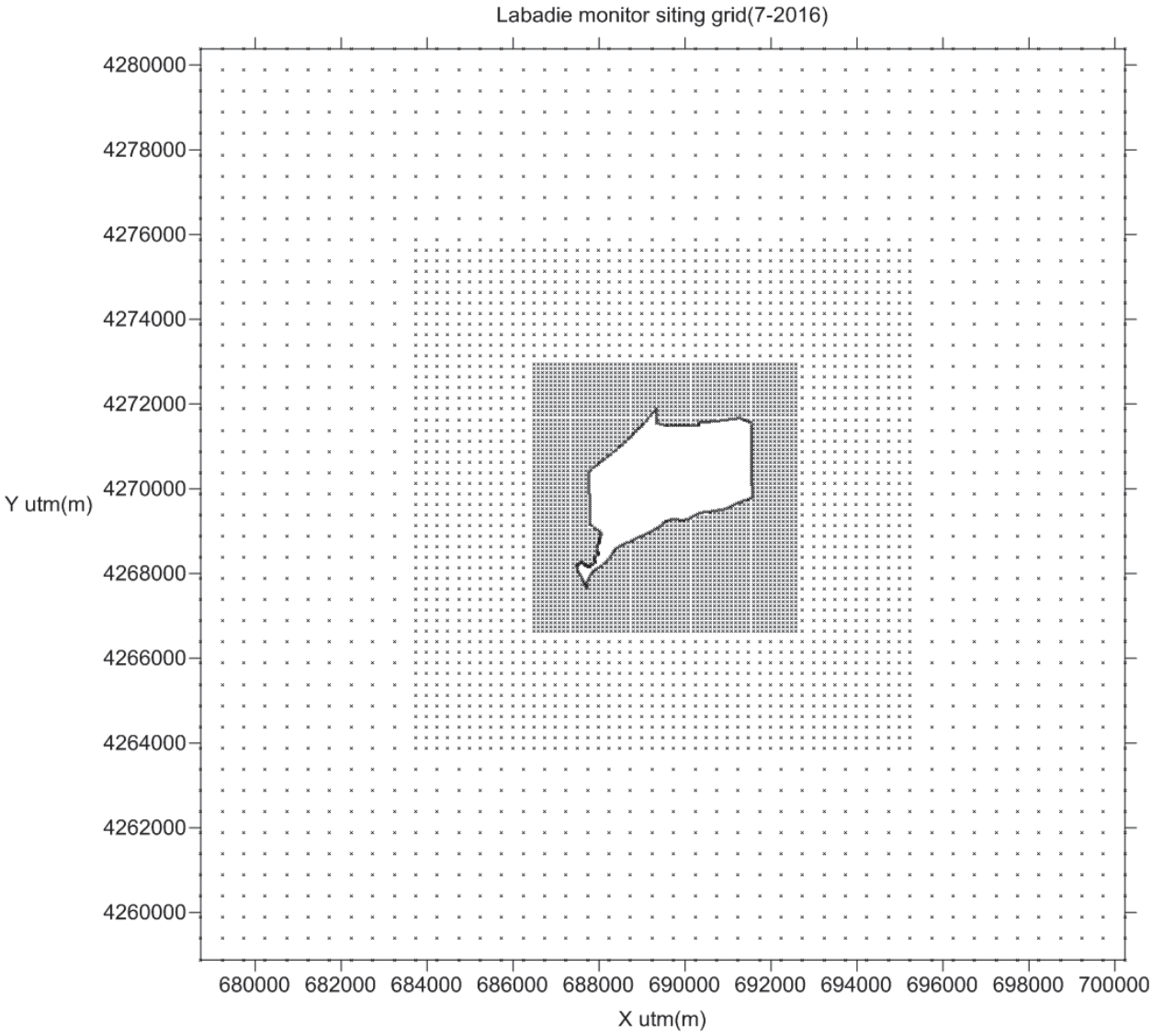
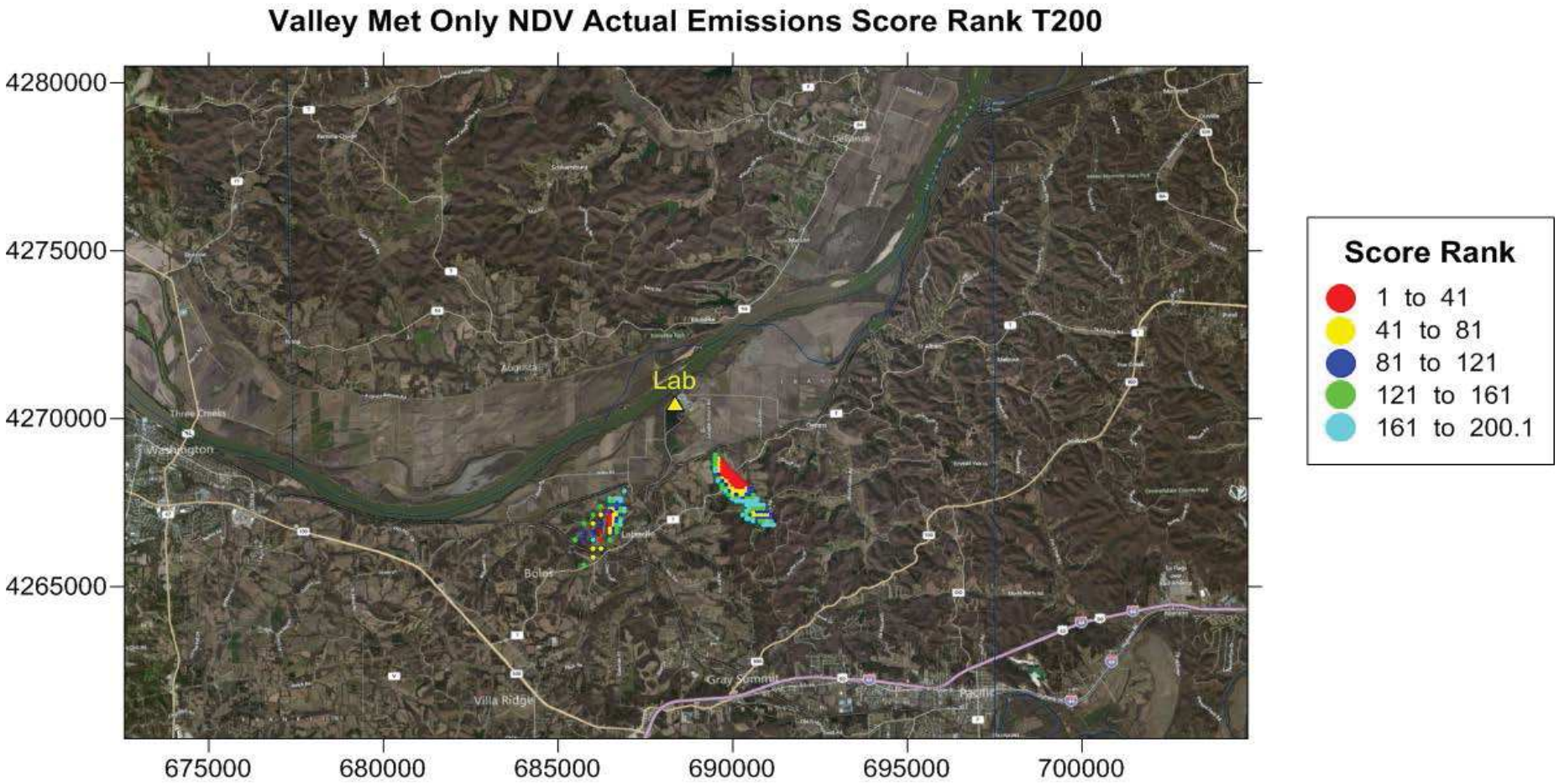


Figure 2


Valley Met Only NDV Actual Emissions Score Rank T200
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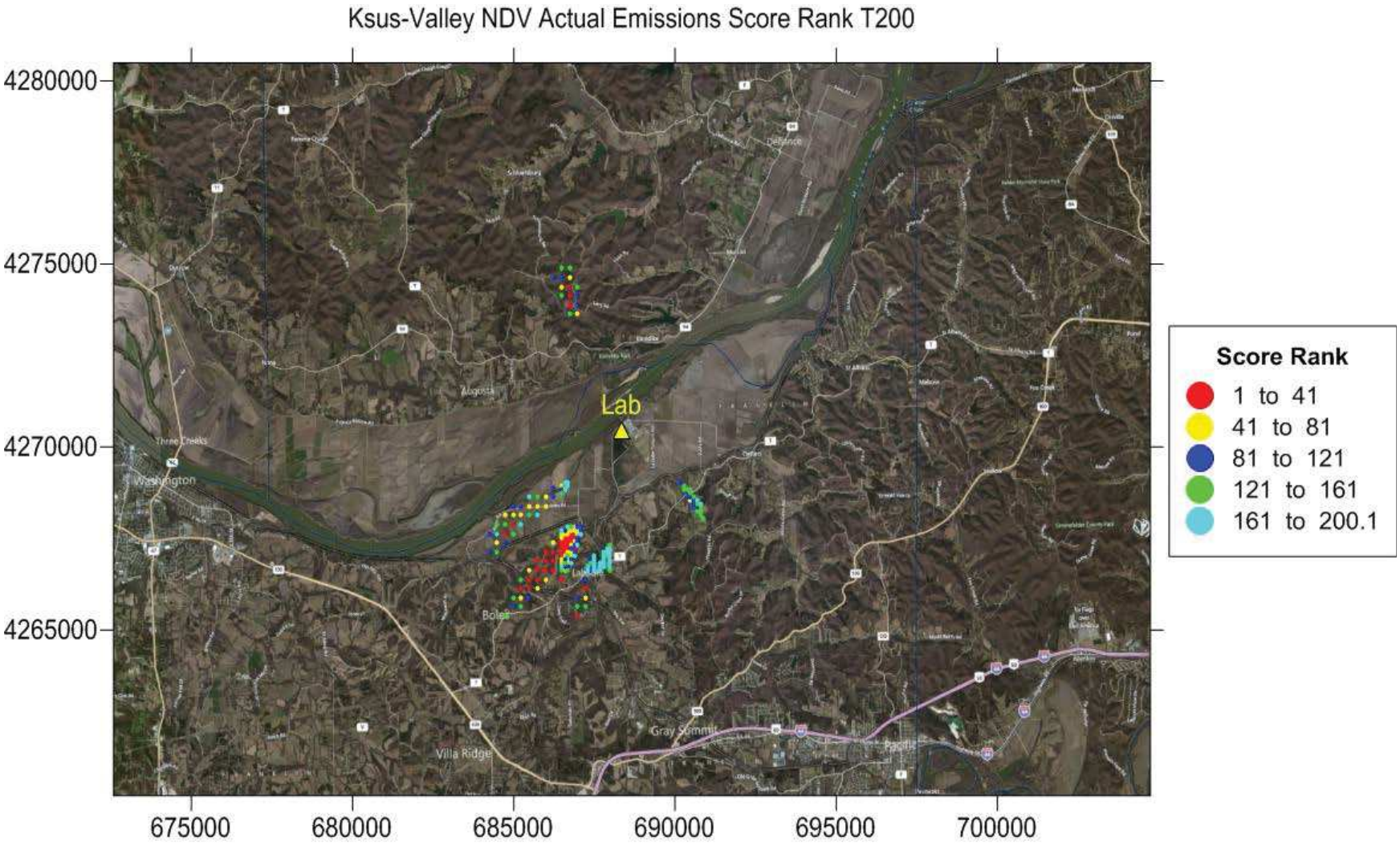
4270000
4265000
675000
680000
685000
690000
695000
700000
Lab
Score Rank
1 to 41
41 to 81
81 to 121
121 to 161
161 to 200.1

Figure 3


Ksus-Valley NDV Actual Emissions Score Rank T200
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675000
680000
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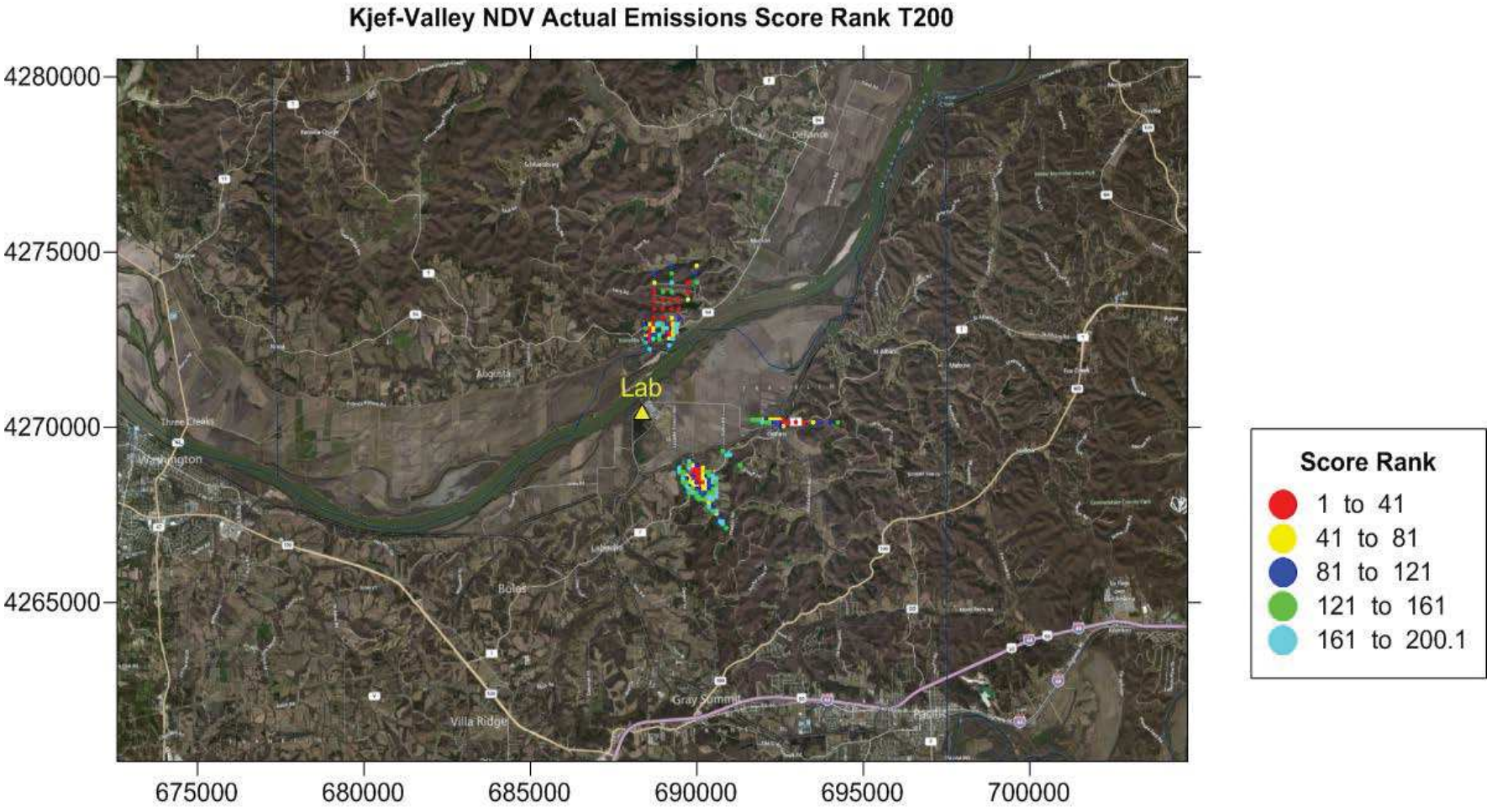
690000
695000
700000
Lab
Defiance
Augusta
Three Creeks
Washington
Boles
Villa Ridge
Gray Summit
Score Rank
1 to 41
41 to 81
81 to 121
121 to 161
161 to 200.1

Figure 4


Kjef-Valley NDV Actual Emissions Score Rank T200
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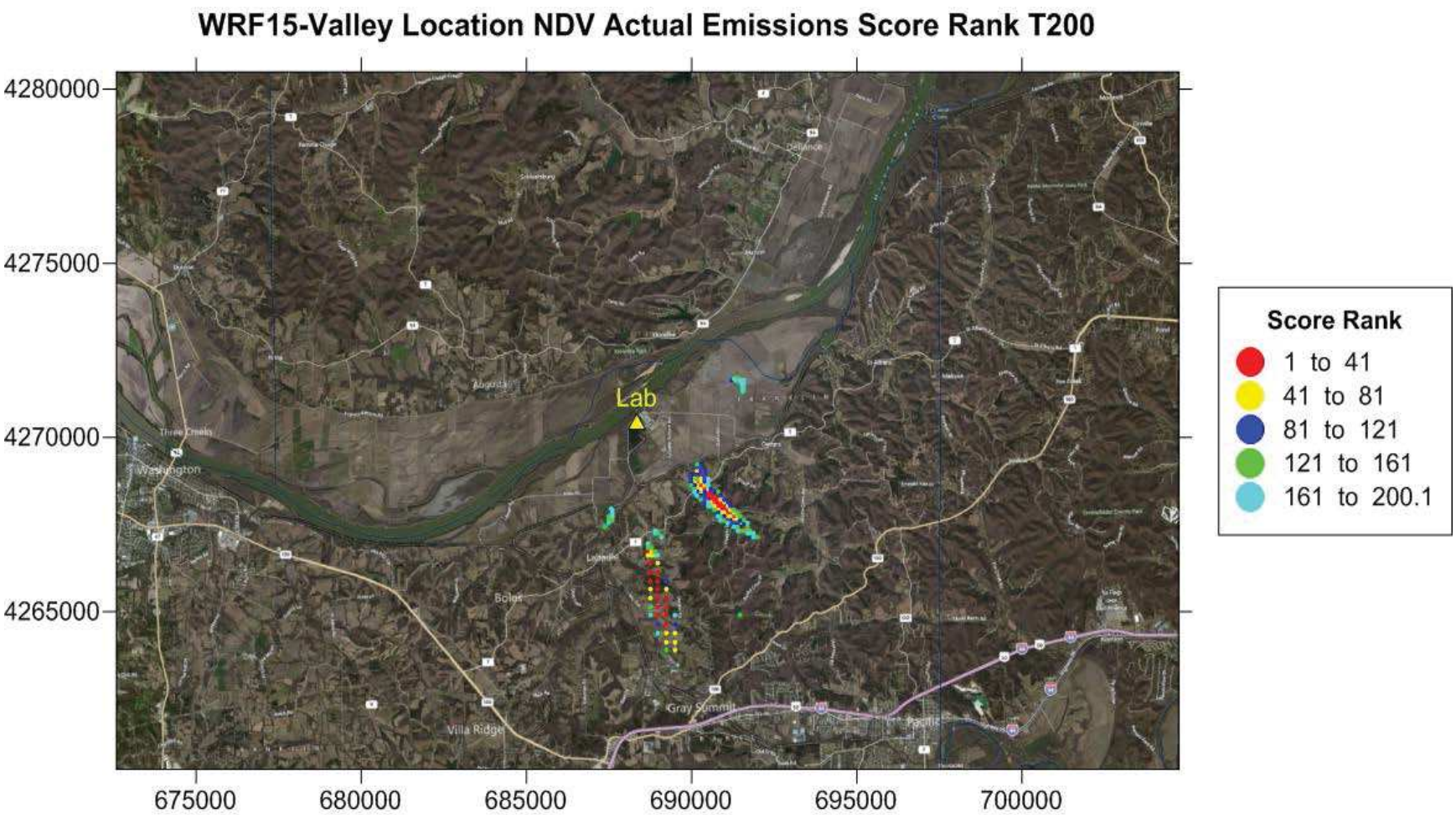
Lab
Augusta
Defiance
Boles
Villa Ridge
Gray Summit
Score Rank
1 to 41
41 to 81
81 to 121
121 to 161
161 to 200.1

Figure 5


WRF15-Valley Location NDV Actual Emissions Score Rank T200
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685000
690000
695000
700000
Lab
Score Rank
1 to 41
41 to 81
81 to 121
121 to 161
161 to 200.1

In order to better delineate a preferred monitor location from the different scenario predictions, further analysis was performed. The operating conditions from April 22, 2015 through June 30, 2016 (actual normalized, high load scenario and mid-load scenario) were compared to the 2013-2015 operating conditions to determine how well the April 22, 2015 through June 30, 2016 represented typical operating conditions for the four Labadie Energy Center generating units. Table 1 below shows a comparison between the April 22, 2015 through June 30, 2016 period and the period January 2013 through December 2015.

Table 1
Labadie Operating Comparison

Unit	Clock Hours 2013-15	Unit Operating Hours 2013-15	Unit Operating (Percent)	Unit Operating Time >500 Mw (Hr)	Unit Operating Time >500 Mw (Percent)	Unit Operating Time 300-450 Mw (Hr)	Unit Operating Time 300-450 Mw (Percent)
Lab1	26280	22722	86.46%	18688	82.25%	2862	12.60%
Lab2	26280	23197	88.27%	18488	79.70%	3248	14.00%
Lab3	26280	22935	87.27%	17097	74.55%	4207	18.34%
Lab4	26280	24801	94.37%	18783	75.73%	4173	16.83%
Plant	**105120**	**93655**	**89.09%**	**73056**	**78.01%**	**14490**	**15.47%**
Unit	**Clock Hours 4-22-15 to 6-30-16**	**Unit Operating Hours 4-22-15 to 6-30-16**	**Unit Operating (Percent)**	**Unit Operating Time >500 Mw (Hr)**	**Unit Operating Time >500 Mw (Percent)**	**Unit Operating Time 300-450 Mw (Hr)**	**Unit Operating Time 300-450 Mw (Percent)**
Lab1	10464	9981	95.38%	7279	72.93%	1874	18.78%
Lab2	10464	9029	86.29%	6208	68.76%	1989	22.03%
Lab3	10464	8999	86.00%	5571	61.91%	2424	26.94%
Lab4	10464	8335	79.66%	4987	59.83%	2532	30.38%
Plant	**41856**	**36344**	**86.83%**	**24045**	**66.16%**	**8819**	**24.27%**

As is evident from Table 1, the 2013-15 operating period had a higher percentage of operating time in the high load scenario than the period of April 22, 2015 through June 30, 2016. Conversely the mid-load operating scenario had a lower percentage of operating time than that of the April 22, 2015 to June 30, 2016 period. However, the overall unit percentage of unit operating time was similar for both operating periods. Based on the results shown in Table 1, further analysis was performed for the actual normalized emissions operating conditions and the high load normalized emissions operating conditions for the four meteorological scenarios.

To further refine a preferred monitor location from the scenario predictions, the top 200 NDV receptors for these two operating conditions were combined into individual files of 800 receptors (top 200 NDV receptors for each meteorological scenario). These receptors were then searched to see if any of the top 200 NDV receptors for each meteorological scenario were repeated. A list of receptors that occurred in at least two or more of the meteorological scenarios were compiled and the average score rank for those duplicate receptors was calculated. Those duplicate receptors were then ranked. This ranked list of receptors

represents a consensus between the four different meteorological scenarios as to the best location to site an additional SO2 monitor.

Figure 6

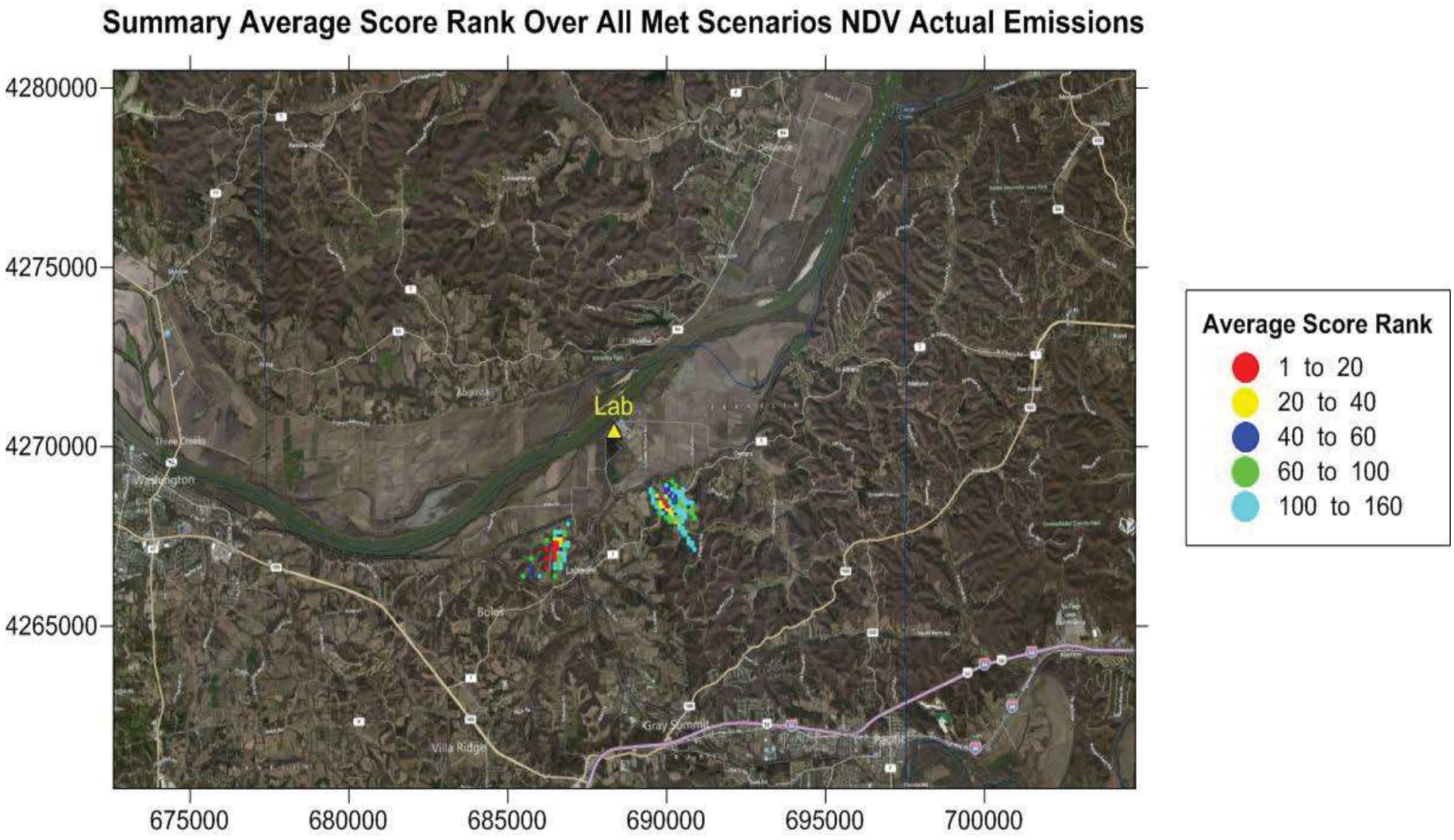
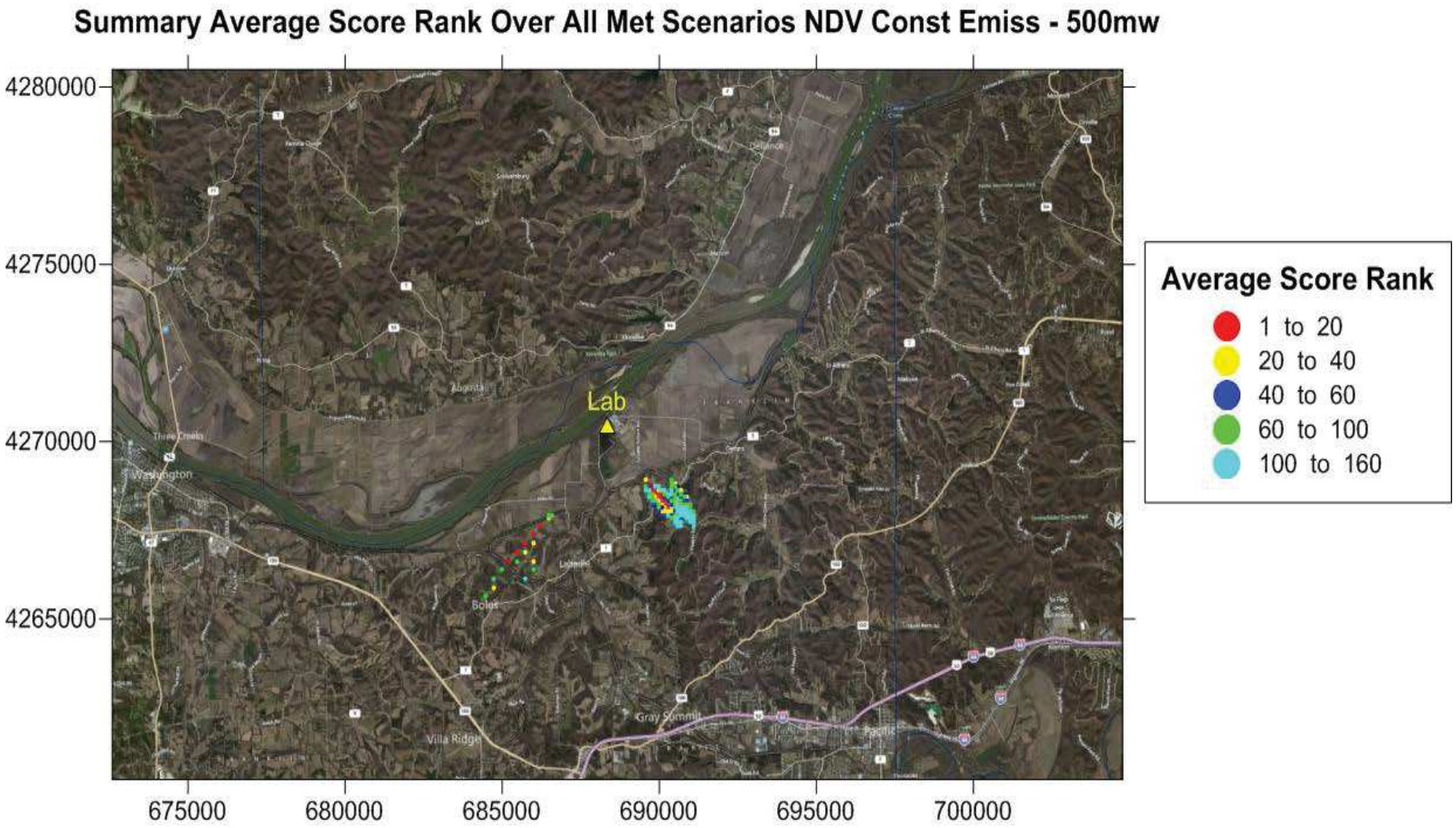

Summary Average Score Rank Over All Met Scenarios NDV Actual Emissions
4280000
4275000
4270000
4265000
675000
680000
685000
690000
695000
700000
Lab
Average Score Rank
1 to 20
20 to 40
40 to 60
60 to 100
100 to 160

Figure 7


Summary Average Score Rank Over All Met Scenarios NDV Const Emiss - 500mw
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675000
680000
685000
690000
695000
700000
Lab
Defiance
Augusta
Three Creeks
Washington
Boles
Gray Summit
Villa Ridge
Pacific
Average Score Rank
1 to 20
20 to 40
40 to 60
60 to 100
100 to 160

Figures 6 and 7 show the score rank for the actual normalized and high load normalized operating conditions, respectively. As can be seen from the figures, only locations to the southwest and southeast of the Labadie Energy Center remain as preferred SO2 monitoring locations. From these figures more of the higher ranking receptors (lower number rank) appear in the area to the southwest. Note that the area to the southwest appears as less dense than the area to the southeast. This is an artifact of the telescoping grid which changes from 100 m spacing to 250 m spacing in this area. Considering the lower score ranks, the area southwest of the Labadie Energy Center is the best location to site an additional SO2 monitor.

US EPA Region VII Analysis:

US EPA Region VII evaluated the analysis discussed above utilizing the same meteorological and emission inputs to AERMOD. However Region VII used a different statistic to evaluate the preferred area for site placement. The Region VII analysis considered the output from AERMOD in 3 different ways and is outlined below:

1) 4th highs – only those receptors greater than or equal to 50% of maximum 4^{th} high concentration for each run
2) Sum of maximum daily concentrations at each receptor – only those receptors greater than or equal to 50% of maximum daily sum for each run
3) (Sum of maximum daily) * (4th highs ** 2) - only including receptors greater than or equal to 50% of the maximum of (Sum of maximum daily) * (4th highs ** 2).

For the 12 different scenarios evaluated, the Region VII analysis was in agreement with the analysis discussed above which used the Monitoring TAD evaluation process. A comparison of Figure 8 below from Region VII's analysis to that of Figure 3 above is provided as an example. Both analyses use the Labadie Valley meteorological data with the Chesterfield Airport NWS data (Ksus) substituted for missing Labadie Valley meteorological data and the actual NDV emissions. Both of these figures indicate small impact areas to the north and southeast with a larger impact area to the southwest. Similarly, using the Labadie Valley meteorological data with actual NDV emissions and without any substitution for missing meteorological data is shown in Figure 2 and Figure 9. These figures again indicate similar results with a major impact area to the southwest of the Labadie Energy Center and smaller impact area to the southeast. Similar comparisons are seen with all twelve of the different meteorological and emission scenarios.

Figure 8
Ksus – Valley NDV Actual Emissions
EPA Region VII Analysis
(Sum of maximum daily) * (4th highs ** 2)

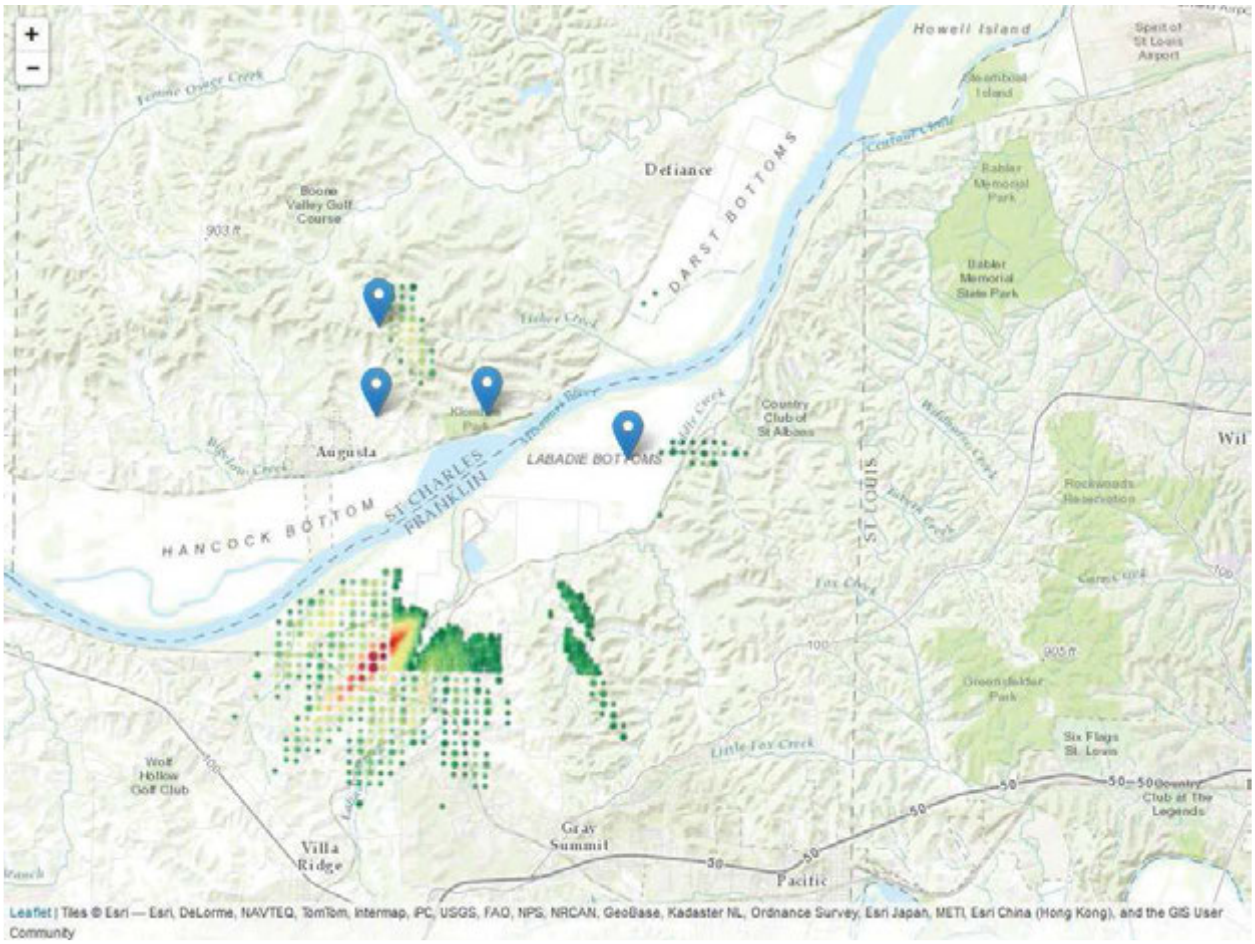
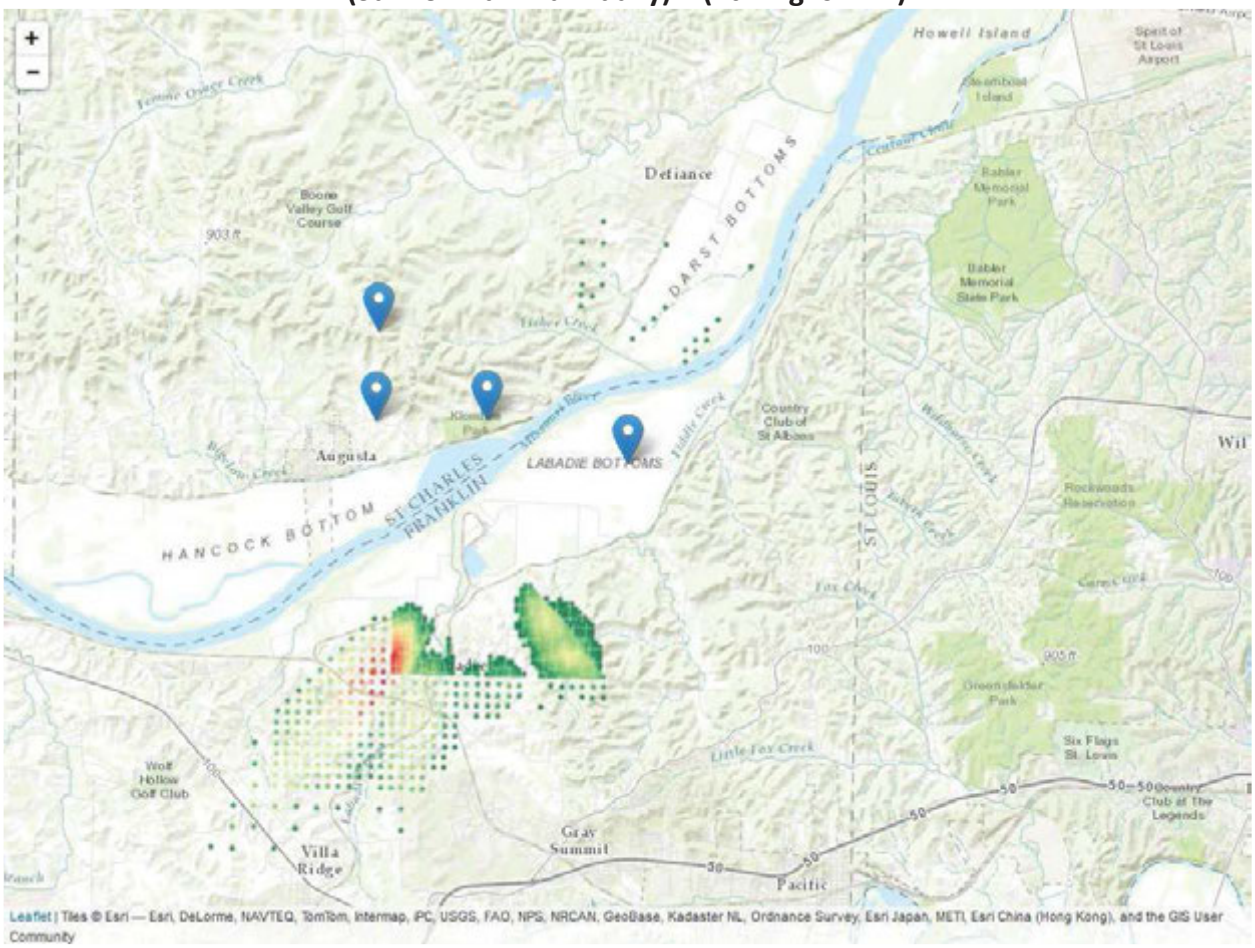


Figure 9
Valley Met Only NDV Actual Emissions
EPA Region VII Analysis
(Sum of maximum daily) * (4th highs ** 2)



<u>Conclusion:</u>

Based on the analysis utilizing the Monitor TAD evaluation process and EPA Region VII's independent analysis, the best location for an additional SO2 monitor is in the identified area southwest of the Labadie Energy Center.

Appendix A

WRF/MMIF Model Processing and Description

The Weather Research and Forecasting Model (WRF) was executed for the entire year of 2015. A detailed report was submitted to Missouri Department of Natural Resources as well as the US Environmental Protection Agency; "Ameren 2015 WRF Model Application and Performance Evaluation Report, March 2016". Table A-1 below shows the physics options chosen and Table A-2 the vertical layer structure.

Table A-1
WRF Physics Options

Name	Value	Description
mp_physics	3	WRF Single-Moment 3-class water microphysics scheme
ra_lw_physics	4	RRTMG long-wave radiation scheme
ra_sw_physics	4	RRTMG short-wave radiation scheme
sf_sfclay_physics	1	Revised MM5 surface layer scheme
sf_surface_physics	2	Noah land-surface model
bl_pbl_physics	1	YSU planetary boundary layer scheme
cu_physics	5	New Grell (G3) cumulus scheme (36km and 12km only)

Table A-2
Vertical Layer Structure

WRF Layer	Height(m)	Pressure(100mb)	Sigma
35	17,556	5000	0.000
34	14,780	9750	0.050
33	12,822	14500	0.100
32	11,282	19250	0.150
31	10,002	24000	0.200
30	8,901	28750	0.250
29	7,932	33500	0.300
28	7,064	38250	0.350
27	6,275	43000	0.400
26	5,553	47750	0.450
25	4,885	52500	0.500
24	4,264	57250	0.550
23	3,683	62000	0.600
22	3,136	66750	0.650
21	2,619	71500	0.700
20	2,226	75300	0.740
19	1,941	78150	0.770
18	1,665	81000	0.800
17	1,485	82900	0.820
16	1,308	84800	0.840
15	1,134	86700	0.860
14	964	88600	0.880
13	797	90500	0.900
12	714	91450	0.910
11	632	92400	0.920
10	551	93350	0.930
9	470	94300	0.940
8	390	95250	0.950
7	311	96200	0.960
6	232	97150	0.970
5	154	98100	0.980
4	115	98575	0.985
3	77	99050	0.990
2	38	99525	0.995
1	19	99763	0.9975
Surface	0	100000	1.000

The WRF model was run with a nested grid structure of 36 km, 12 km, 4 km, 1.33 km and 444 m. The 444 m grids surround the Labadie and Rush Island Ameren Energy Centers. Figures A-1 and A-2 show this nested grid structure.

Figure A-1
Map of 36 km WRF Domain

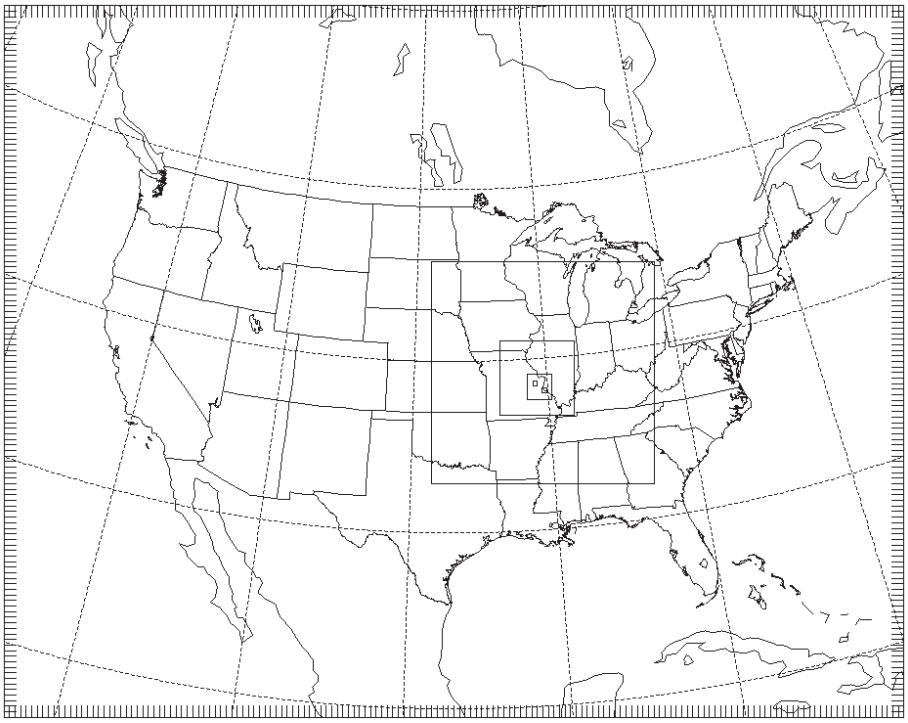
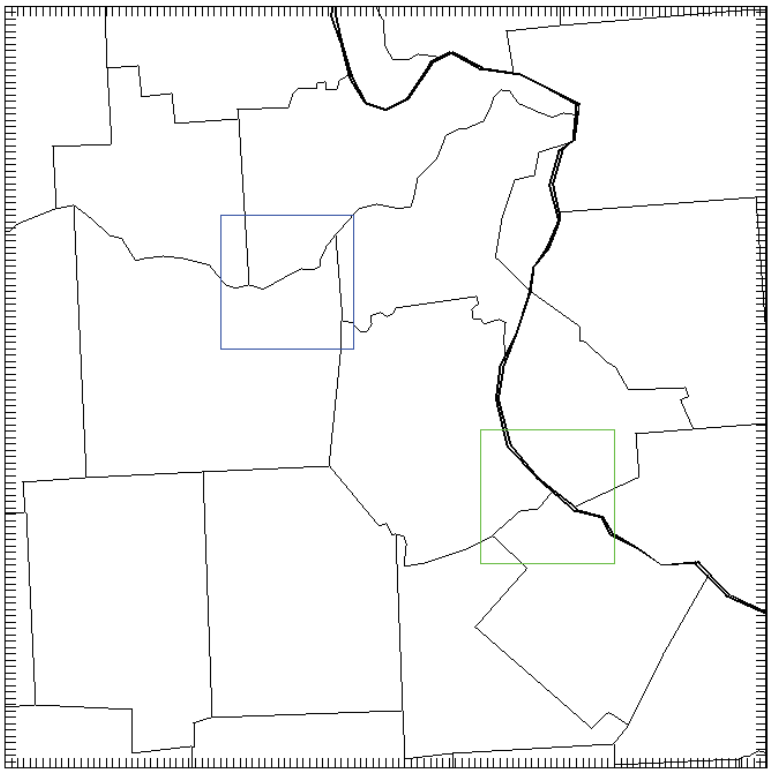


Figure A-2
Map of 1.33 km WRF Domain



The WRF data was processed with the Mesoscale Model Interface Program (MMIF) Version 3.2, 2015-07-24 according to US EPA guidance ("Guidance on the Use of the Mesoscale Model Interface Program (MMIF) for AERMOD Applications, July 2015") using 444 m grid (shown in blue above - Figure A-2). The grid cell enclosing Ameren's Labadie Valley SO2 and meteorological site was used for the extraction. The MMIF processor was run to develop inputs into US EPA's AERMOD Meteorological Preprocessor (AERMET Version 15181). The mid layer elevations chosen were 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000 meters according to US EPA guidance referenced above. MMIF generated files for the onsite data as well as the upper air data and surface characteristics representative of the Labadie Valley monitoring site.