State of Kansas

2016 – 2017 Ambient Air Monitoring Network Plan

Department of Health and Environment
Division of Environment
Bureau of Air
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TABLE OF CONTENTS

Air Monitoring 3

National Monitoring Network Design 5

National Core Monitoring (NCore) Network 6

IMPROVE Visibility Monitoring Network 9

Lead (Pb) Monitoring Network 9

Source-oriented Monitoring 9

Population based Lead Monitoring 11

Sulfur Dioxide Monitoring Network 12

Nitrogen Dioxide Monitoring Network 14

Ozone Monitoring Network 16

Current O_3 Standard and Monitoring Requirements 16

State of Kansas Current O_3 Monitoring Network 16

$PM_{2.5}$ Monitoring Network 17

Current $PM_{2.5}$ Standard and Monitoring Requirements 17

State of Kansas Current $PM_{2.5}$ Monitoring Network 19

PM_{10} Monitoring Network 20

Current PM_{10} Standard and Monitoring Requirements 20

State of Kansas Current PM_{10} Monitoring Network 21

Carbon Monoxide 23

Special Monitoring Projects 24

Quality Assurance/Quality Control (QA/QC) Program 28

List of Proposed Changes to the Kansas Ambient Air Monitoring Network 29

Public Comments 30

Sierra Club 30

KDHE response to Sierra Club comments- 35

Proposed Revisions to the Kansas Ambient Air Monitoring Network: 2016 - 2017 Annual Monitoring Plan

The Clean Air Act mandates an ambient air quality surveillance system in state and local jurisdictions. The U.S. Environmental Agency (EPA) codified the national air monitoring regulations in 40 Code of Federal Regulations (C.F.R.) Part 58. The regulations require state and local monitoring agencies to conduct a periodic assessment of ambient air monitoring networks and propose any changes in an annual air monitoring network plan. Annual network plans need to be submitted to EPA by July 1st of every year. As required by 40 C.F.R. Part 58.10, the Bureau of Air's draft 2016-17 Network Plan is being made available to the public on the Kansas Department of Health and Environment's (KDHE) website for a 30-day public examination. This notice is provided for the purpose of informing the public of this activity, and to provide an opportunity for interested parties to offer additional relevant information and comments to the KDHE. Written comments must be received by the Bureau of Air no later than June 24, 2016, to assure consideration prior to submission of this plan. Comments from the interested public should be addressed to:

Kansas Department of Health and Environment
Bureau of Air
1000 SW Jackson, Suite 310
Topeka, KS 66612-1366
Attention: Doug Watson

Comments may also be submitted electronically to the following: dwatson@kdheks.gov

Air Monitoring

The Bureau of Air's, Air Monitoring and Planning Section administers the air monitoring and modeling program and the emissions inventory program. In cooperation with two local agencies, section staff operates the Kansas Ambient Air Monitoring Network, which provides air quality data from 16 sites across the state (Figure 1). The monitoring data is analyzed to determine compliance with federal standards for criteria pollutants and to evaluate air quality trends. In addition, the department has 4 mercury wet deposition monitoring sites located across the state. Staff members also conduct an annual emissions inventory of pollutants emitted from permitted facilities and other sources for the entire state. Staff who conduct air quality modeling use the emission inventory data. Modeling helps to better understand the causes of air pollution and to develop pollution reduction strategies in targeted areas. Such pollution reduction strategies are incorporated into state and regional plans to protect the public health, welfare and environment from the negative effects of air pollution.

2016 Kansas Air Monitoring Sites

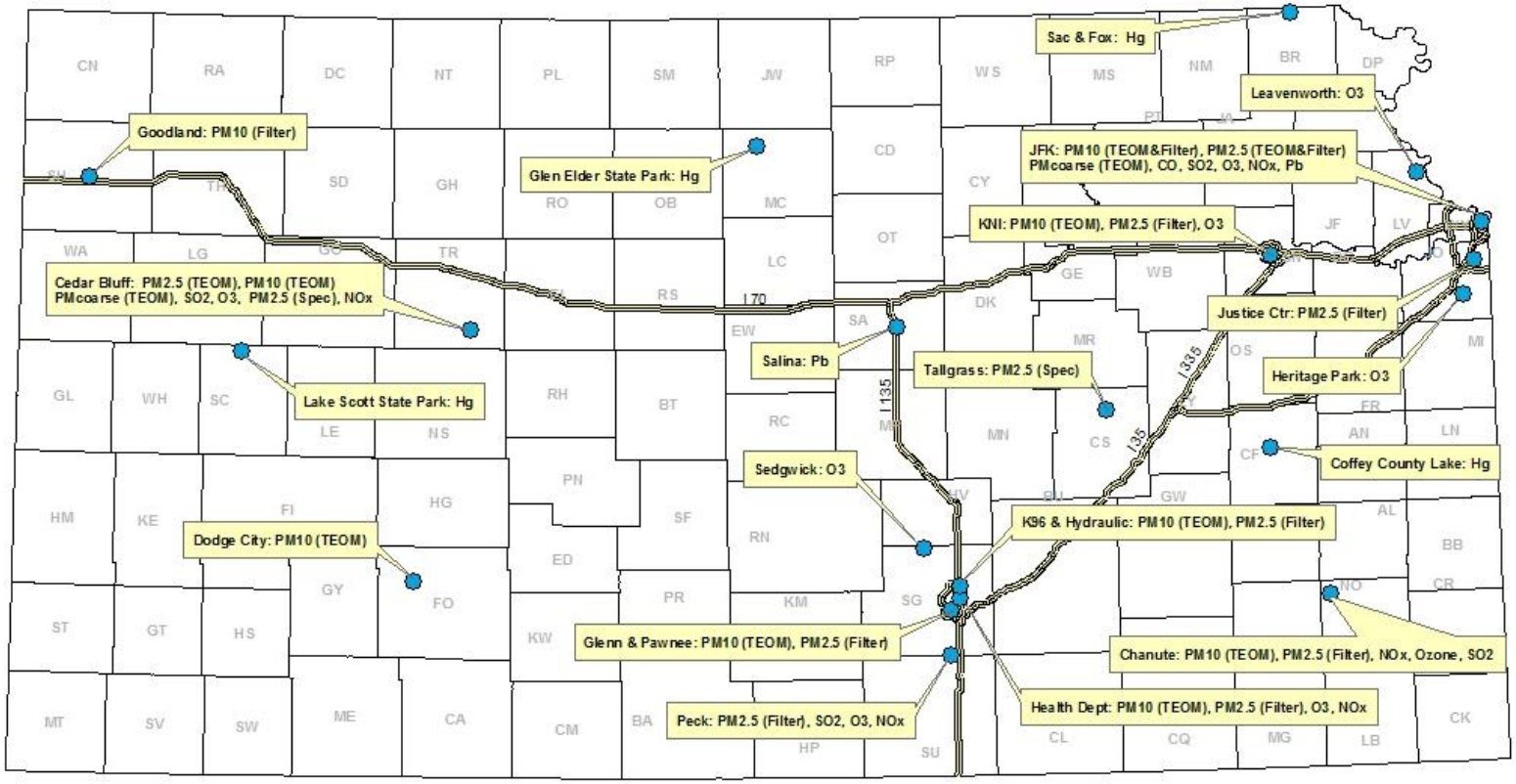


Figure 1. 2016 Kansas Ambient Air Monitoring Network

National Monitoring Network Design

The EPA developed a National Ambient Air Monitoring Strategy (NAAMS). The goal of the strategy is "to improve the scientific and technical competency of existing air monitoring networks to be more responsive to the public, and the scientific and health communities, in a flexible way that accommodates future needs in an optimized resource-constrained environment" (National Ambient Air Monitoring Strategy Document). As part of the Strategy, a network design has been implemented called the National Core Network (NCore). This network accommodates the overall strategic goals as well as determine air quality trends, report to the public, assess emission reduction strategy effectiveness, provide data for health assessments and help determine attainment / non-attainment status. NCore introduces a multi-pollutant monitoring component, and addresses the following major objectives:

• **Provide timely reporting of data to the public** through the AIRNow Web site (www.airnow.gov), air quality forecasting and other public reporting mechanisms;

• **Support the development of emission reduction strategies** through air quality model evaluation and other observational methods;

• **Provide accountability of emission reduction strategy progress** through tracking long-term trends of criteria and non-criteria pollutants and their precursors;

• **Support long-term health assessments** that contribute to ongoing review of National Ambient Air Quality Standards (NAAQS);

• **Evaluate compliance with NAAQS** through designation of attainment / non-attainment areas; and

• **Support scientific studies** ranging across technological, health, and atmospheric process disciplines.

The KDHE ambient air quality monitoring program has accomplished the network reconfiguration needed to meet NCore objectives. Since 1999, as a result of implementing a major network reconfiguration associated with promulgation of the National Ambient Air Quality Standard (NAAQS) for $PM_{2.5}$, the State of Kansas has:

1) completed a primary disinvestment in PM_{10} sampling;

2) established five multi-pollutant sites, including one rural background, two rural transport and two urban trends sites;

3) expanded the ozone monitoring network in the Kansas City metropolitan area to optimize spatial distribution of monitors, adequately monitor background and transport and provide better coverage for AirNow mapping; and

4) added two IMPROVE-protocol (regional haze) sites.

In 2009, KDHE prepared a Monitoring Plan for NCore, which included two monitoring locations, one urban and one rural. The two monitoring locations were proposed and accepted by EPA Region VII on October 30, 2009. Because of funding issues, only the urban site has been developed at this time.

National Core Monitoring (NCore) Network

In October 2006, the EPA established the National Core (NCore) multi-pollutant monitoring network in its final amendments to the ambient air monitoring regulations for criteria pollutants (codified in 40 CFR parts 53 and 58). EPA expects each state to have at least one NCore site. Nationwide, there will be approximately 75 sites, mostly in urban areas.

The NCore monitoring network addresses the following monitoring objectives which are equally valued at each site:

- timely reporting of data to the public through AIRNow, air quality forecasting, and other public reporting mechanisms;
- support development of emission strategies through air quality model evaluation and other observational methods;
- accountability of emission strategy progress through tracking long-term trends of criteria and non-criteria pollutants and their precursors;
- compliance through establishing nonattainment/attainment areas by comparison with the NAAQS;
- support of scientific studies ranging across technological, health, and atmospheric process disciplines; support long-term health assessments that contribute to ongoing reviews of the National Ambient Air Quality Standards (NAAQS); and
- support of ecosystem assessments, recognizing that national air quality networks benefit ecosystem assessments and, in turn, benefit from data specifically designed to address ecosystem analysis.

At a minimum, NCore monitoring sites must measure the parameters listed in Table 1.

Table 1: NCore Parameters

Parameter	Comments
$PM_{2.5}$ speciation	Organic and elemental carbon, major ions and trace metals (24 hour average every 3rd day)
$PM_{2.5}$ FRM mass	24 hour average every third day
continuous $PM_{2.5}$ mass	one hour reporting interval
continuous $PM_{(10-2.5)}$ mass	in anticipation of a $PM_{(10-2.5)}$ standard
lead (Pb)	24 hour sample every sixth day (first sample is required on December 29, 2011)
ozone (O_3)	continuous monitor consistent with other O_3 sites
carbon monoxide (CO)	continuous monitor consistent with other CO sites
carbon monoxide (CO) trace level	continuous monitor capable of trace levels (low ppb and below)
sulfur dioxide (SO_2)	continuous monitor consistent with other SO_2 sites
sulfur dioxide (SO_2) trace level	continuous monitor capable of trace levels (low ppb and below)
oxides of nitrogen (NO_X)	continuous monitor consistent with other NO_X sites
total reactive nitrogen (NO/NO_y)	continuous monitor capable of trace levels (low ppb and below)
surface meteorology	wind speed and direction, temperature, barometric pressure, and relative humidity

20-209-0021; Kansas City:
This site (Figs. 2-5), which currently serves as an urban core multi-pollutant monitoring station, is designated as a NCore station. The site is located close to Nebraska Ave and North 10th Street, Kansas City, Kansas (N 39.117219; W -94.635605).

Figure 2. Kansas City, KS JFK NCore Site Map

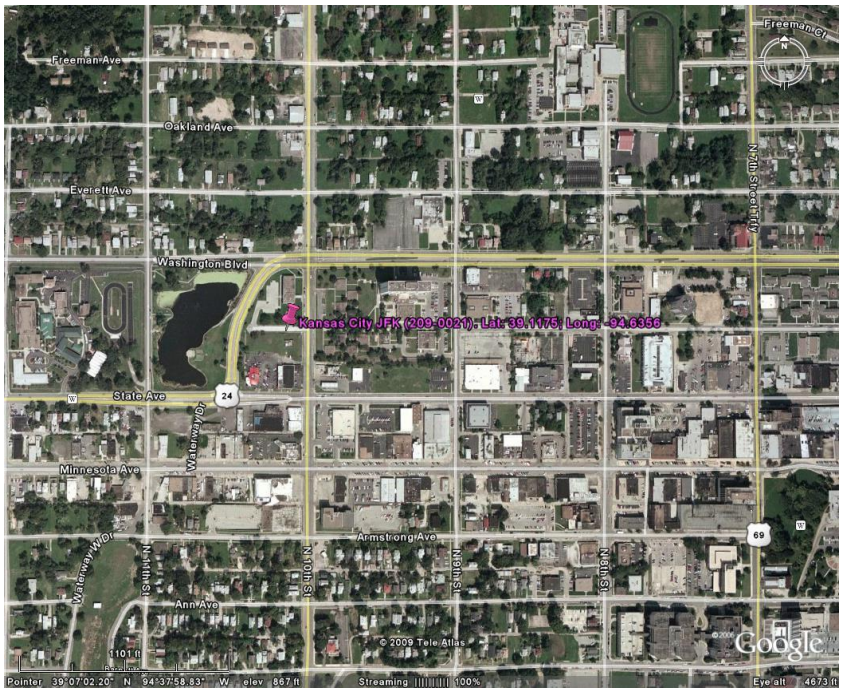


Figure 3. Kansas City, KS JFK NCore Site

Figure 4. Kansas City, KS JFK NCore Site

Figure 5. Kansas City, KS JFK NCore Site

IMPROVE Visibility Monitoring Network

20-017-0001; Tallgrass Prairie National Preserve:

This site operates as an Interagency Monitoring of Protected Visual Environments (IMPROVE) protocol sampler. The site is located at N 38.433611; W -96.55944, northwest of Strong City, Kansas on Kansas Highway 177.

20-195-0001; Cedar Bluff Reservoir:

This location was chosen in Western Kansas to serve as a background site for several pollutants, including NO_2, SO_2, ozone, PM_{10} and $PM_{2.5}$. It also operates as an IMPROVE protocol sampler site. The site is located at N 38.77027; W -99.76361, on the south side of Cedar Bluff Reservoir in Trego County.

Lead (Pb) Monitoring Network

Source-oriented Monitoring

According to 40 CFR Part 58, Appendix D, paragraph 4.5(a), state and, where appropriate, local agencies are required to conduct ambient air monitoring for lead (Pb) considering Pb sources that are expected to or have been shown to contribute to a maximum Pb concentration in ambient air in excess of the NAAQS. At a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each Pb source that emits one-half (0.5) or more tons per year. A search of reported emissions for 2007 revealed that only one source in Kansas exceeds the one-half ton threshold. This source is located at Salina.

According to 40 CFR Part 58, Appendix D, paragraph 4.5(a), source-oriented monitors are to be sited at the location of predicted maximum concentration in ambient air taking into account the potential for population exposure, and logistics. Typically, dispersion modeling will be required to identify the location of predicted maximum concentration.

Dispersion modeling was performed by KDHE to determine the area of maximum concentration for sampler placement. KDHE prepared a Monitoring Plan for Airborne Lead in 2009.

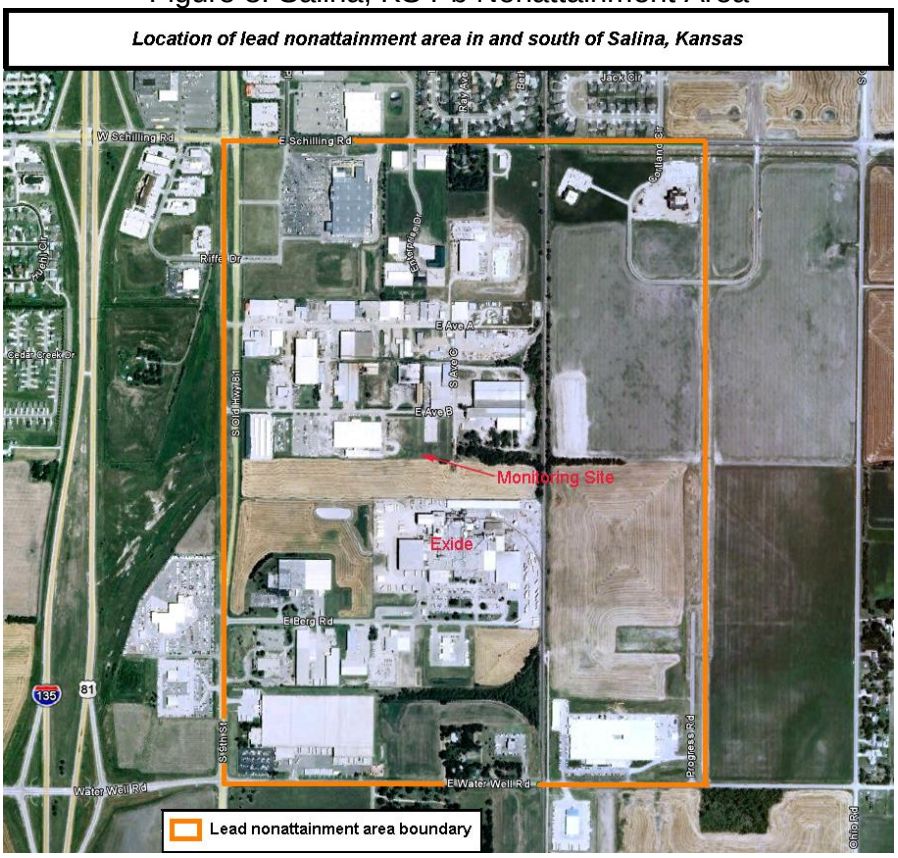
The Pb site near the Exide Technologies facility at Salina, KS has been designated with AQS site ID 020-169-0004. A high volume (HiVol), total suspended particulate (TSP) sampler is running at the site on a 1/6 day schedule and began sampling on February 2, 2010. KDHE installed an additional high volume (HiVol), total suspended particulate (TSP) sampler at the Salina monitoring site to use for collocation purposes in 2013. This monitor runs on the same 1/6 day sampling schedule as the existing lead monitor and was installed next to the existing monitor. The monitoring site is located at the following legal description:

SOUTH INDUSTRIAL AREA, S1, T15, R3, BLOCK 2, ACRES 13.4, LTS 21-
30 EXC E 32 LT 30

Figure 6. Salina, KS Pb Source Monitoring Site

Figure 7. Salina, KS Pb Source Monitoring Site

Figure 8. Salina, KS Pb Nonattainment Area



Population based Lead Monitoring

EPA also requires lead monitoring in large urban areas. These monitors are located along with multi-pollutant ambient monitoring sites (known as the "NCore network"). Lead monitoring at these sites began January 1, 2012. KDHE located a high volume (HiVol), total suspended particulate (TSP) sampler at the JFK NCore site in Kansas City, Kansas to fulfill this requirement. It is running at the site on a 1/6 day schedule and began running December 27, 2011 and took its first sample on January 4, 2012. On March 28, 2016, EPA published a rule entitled, "*Revisions to Ambient Monitoring Quality Assurance and Other Requirements",* in which EPA allowed for the discontinuance of population based lead monitoring at NCore sites if states provided three years of data showing the monitor was below the lead standard. KDHE intends to <u>discontinue</u> this monitoring requirement at our NCore site in Kansas City, KS and provides the following data to show that it meets this requirement.

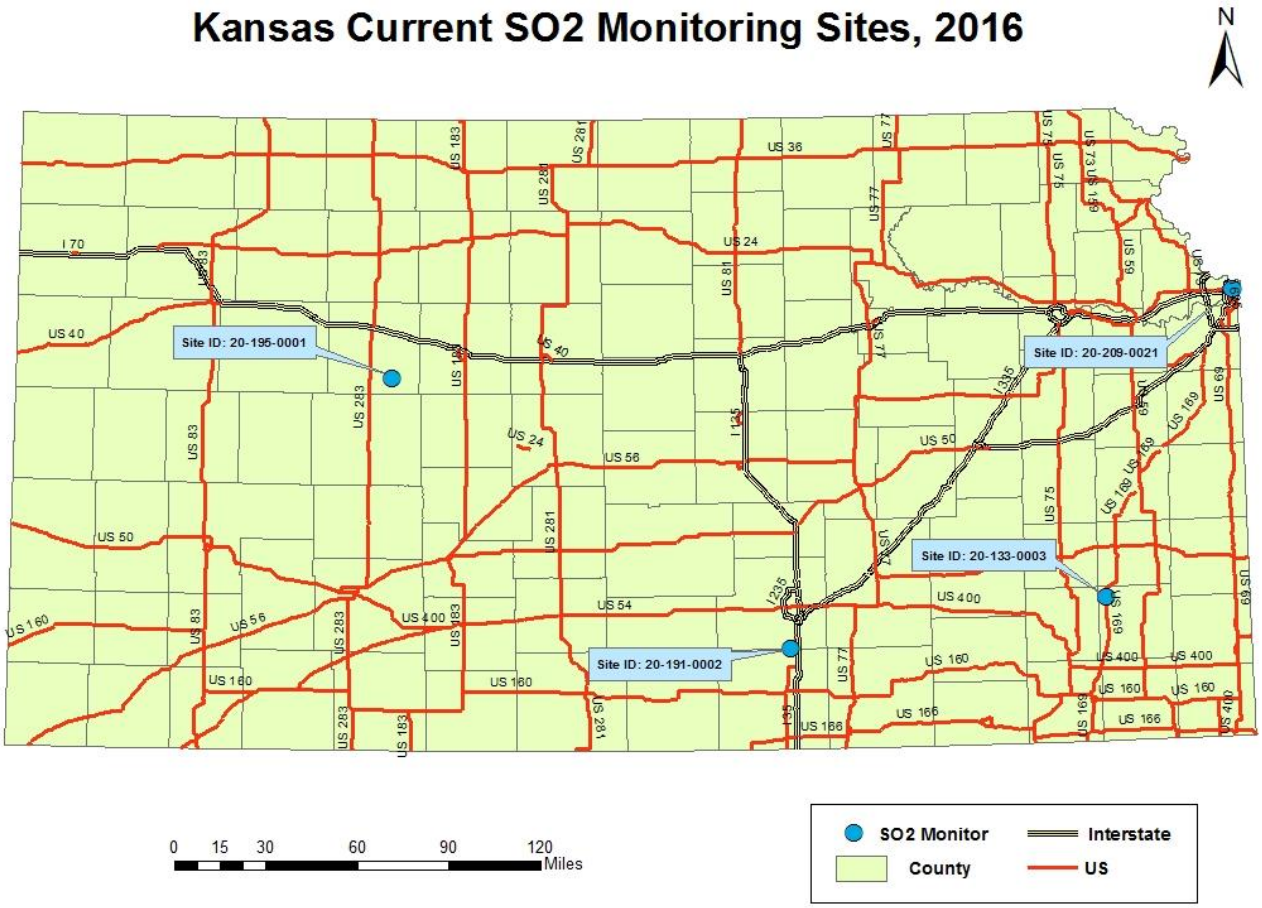
Lead at NCore - JFK	
3 Month Max.	
2012	0.01 µg/m^3
2013	0.01 µg/m^3
2014	0.01 µg/m^3
2015	0.01 µg/m^3

Sulfur Dioxide Monitoring Network

On June 2, 2010, EPA revoked the primary annual and 24-hour SO_2 standards from 30 ppb and 140 ppb, respectively, to a 1-hour standard of 75 ppb. The new SO_2 rule, published June 22, 2010, also stated the following:

- Any new monitors must be in operation by January 1, 2013.
- Monitoring required in Core Based Statistical Areas (CBSA's) based on population size and SO_2 emissions.
- Additional monitoring would also be required based on the state's contribution to national SO_2 emissions, which could be placed either within or outside a CBSA's.
- Reporting requirement added to include maximum 5-minute block average of each hour.

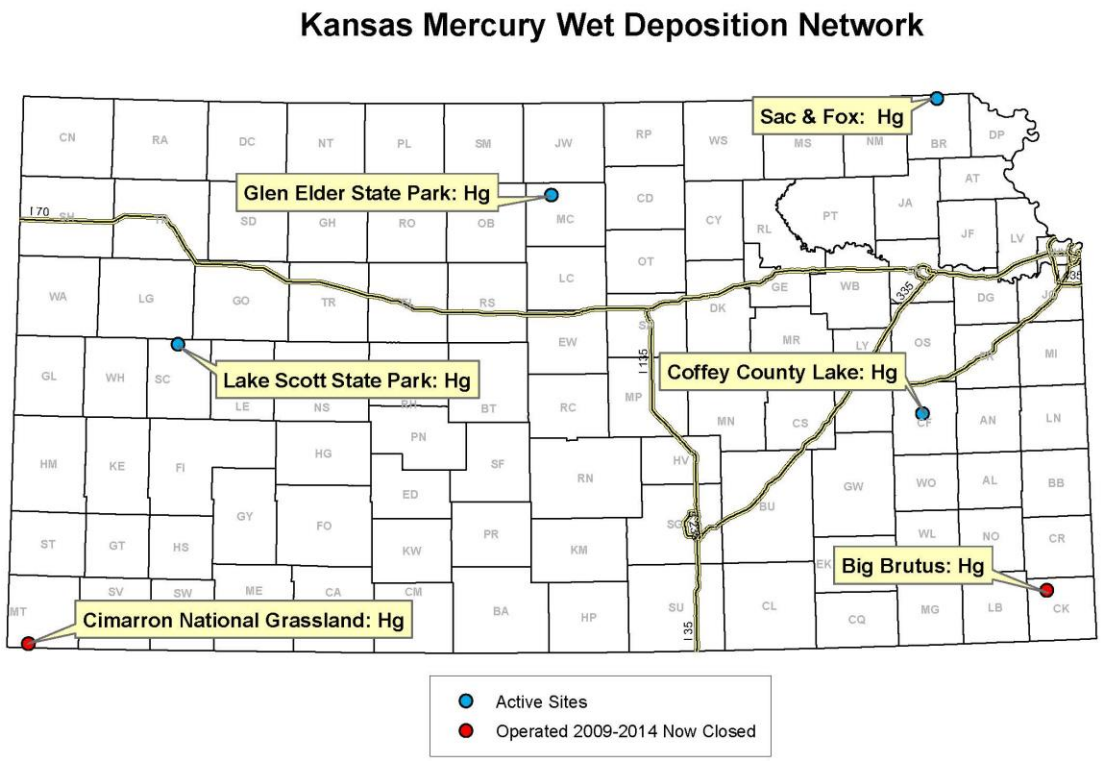
KDHE currently monitors for SO_2 at the following sites; Cedar Bluff, Peck (Wichita), Chanute and JFK (Kansas City).



Mercury Deposition Monitoring Network

KSA 75-5673 originally required that the Kansas Department of Health and Environment (KDHE) establish a statewide mercury deposition network consisting of at least six monitoring sites. Monitoring for a period of time long enough to determine trends (five or more years) was also specified. Legislative changes were enacted in 2014 that keep a network in place but allow the KDHE to re-examine the network size and location of the original six sites as established in response to KSA 75-5673. KDHE has reconfigured the network to now include four sites across the state. These network changes will continue to assure compatibility with the national Mercury Deposition Network (MDN). The MDN, coordinated through the National Atmospheric Deposition Program (NADP), is designed to study and quantify the atmospheric fate and deposition of mercury. The MDN collects weekly samples of wet deposition (rain and snow) for analysis to determine total mercury. The current Kansas Mercury Wet Deposition Monitoring Network (KMDN) consists of four sites distributed across the state. The locations of existing and future sites in the states of Nebraska and Oklahoma were also taken into consideration to optimize regional mercury network coverage. A more detailed report on this network may be found at http://www.kdheks.gov/bar/air-monitor/mercury/Hg_Report.pdf. A map of the network appears below in Figure 9.

Figure 9. 2016 Kansas Mercury Deposition Network and recently closed sites.



Nitrogen Dioxide Monitoring Network

The state is required by 40 CFR 58 Appendix D to install and operate one microscale near-road NO_2 monitoring station and it is to be operational by January 1, 2017. On May 15, 2016, the EPA proposed to revise the minimum monitoring requirements for near-road nitrogen dioxide (NO_2) monitoring by removing the existing requirements for near-road NO_2 monitoring stations in Core Based Statistical Areas (CBSAs) having populations between 500,000 and 1,000,000 persons, that are due by January 1, 2017. If this proposed rule is finalized, KDHE would no longer be required to have a near road NO_2 monitor sited in Wichita.

Two criteria have been set up for NO_2 monitoring:

- Near-road NO_2 monitoring; 1 micro-scale site would be required in CBSAs >= 350,000 at a location of expected highest hourly NO_2 concentrations sited near a major road with high AADT (Annual Average Daily Traffic) counts.
- Community-wide; required in CBSAs >= 1 million at a location of expected highest NO_2 concentrations representing neighborhood or larger (urban) spatial scale.

Based on the near-road criteria, one monitor site was installed in 2013 in the Kansas City Metropolitan Area by the Missouri Department of Natural Resources Air Pollution Control Program and is located near I-70 and Sterling Avenue (39.047911, -94.450513, Figures 10-11). Based on the community-wide criteria, the Kansas City CBSA would be required to have a monitor and the JFK NCore monitoring site (20-209-0021) satisfies this requirement.

Figure 10. Kansas City Near-Road NO_2 Station, 2016

Figure 11. Kansas City Near-Road NO_2 Station, 2016

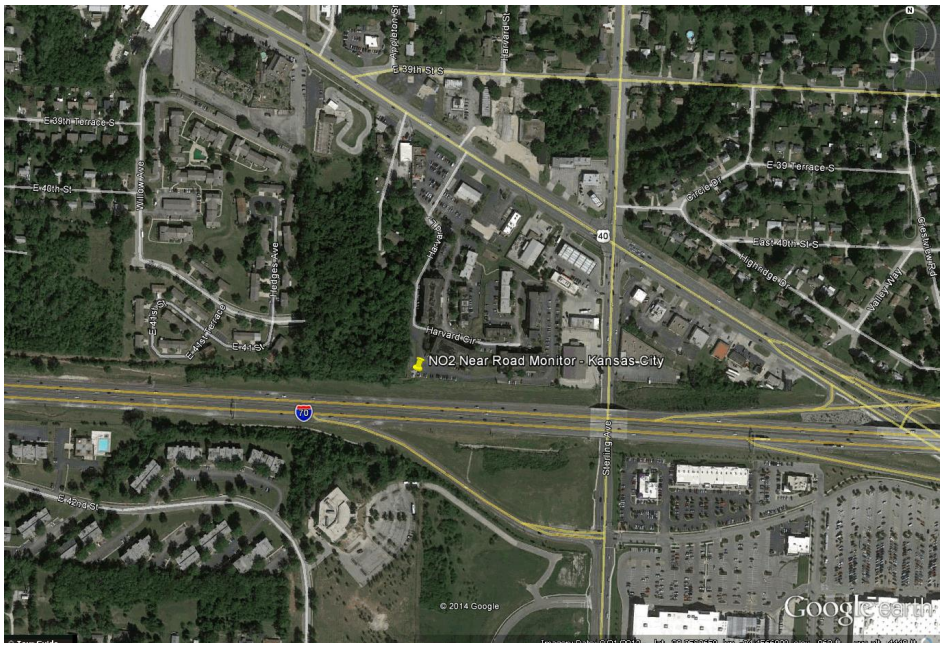
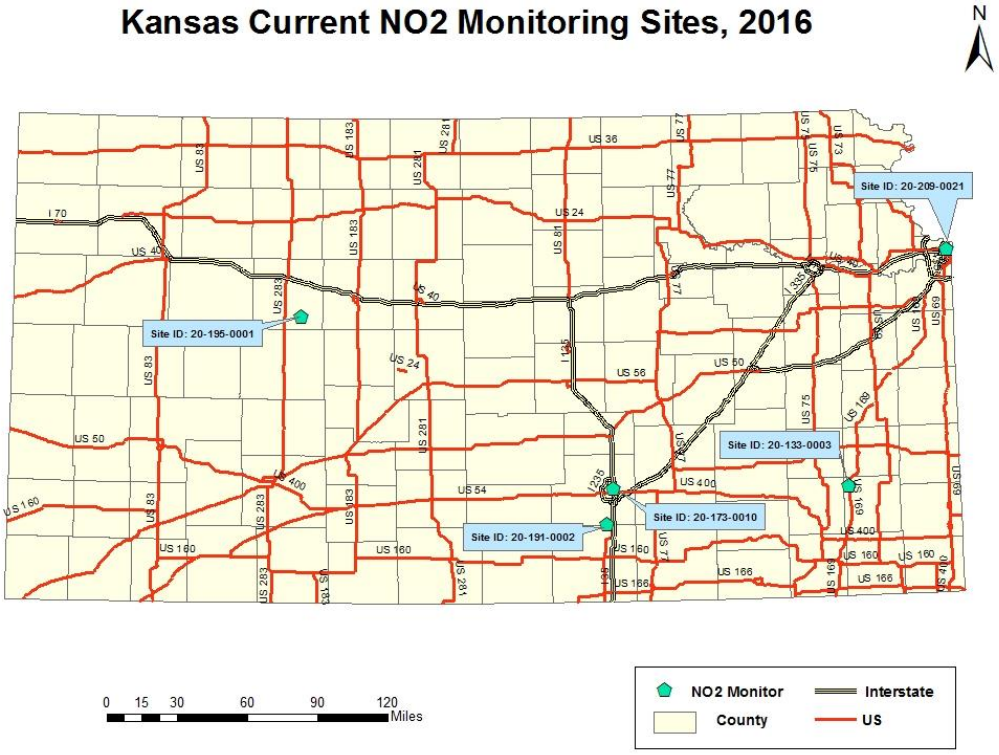


Figure 12. Kansas Nitrogen Dioxide Monitoring Sites, 2016



Ozone Monitoring Network

Current O_3 Standard and Monitoring Requirements

The current NAAQS for O_3 is set at 0.070 parts per million (ppm) for both the primary standard and the secondary standard.

State of Kansas Current O_3 Monitoring Network

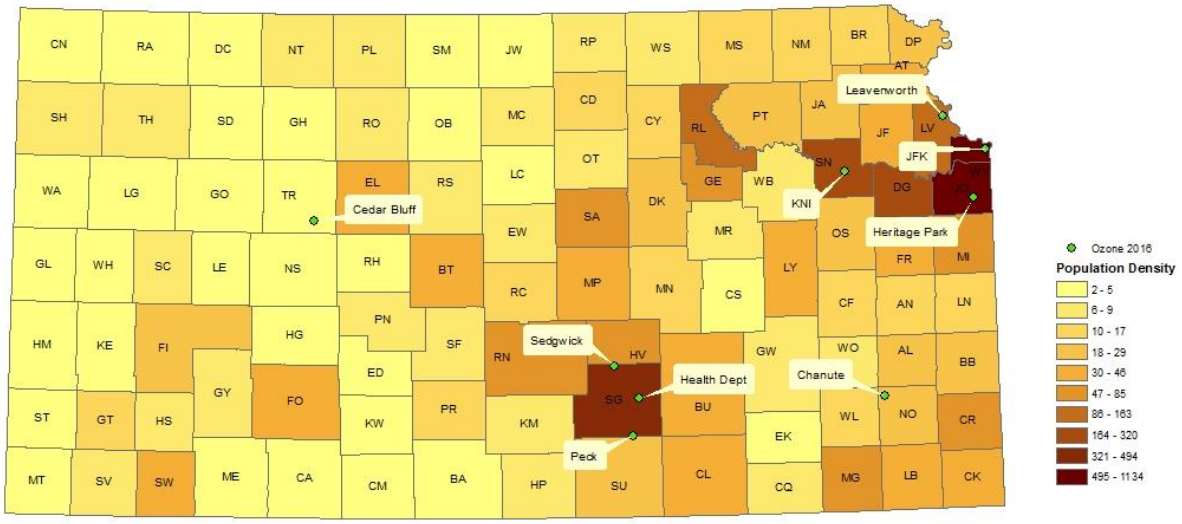
The current Kansas O_3 monitoring network includes 9 monitors located throughout the state. Monitors are listed in Table 3 along with detailed site information. No collocated O_3 measurements are available in Kansas.

Table 3. State of Kansas O_3 Monitor Site ID and Location.

Site Name	Site ID	Latitude	Longitude	Address
Heritage Park	091 - 0010	38.838575	-94.746424	13899 W 159th (Heritage Park)
Leavenworth	103 - 0003	39.327391	-94.951020	2010 Metropolitan
Chanute	133 - 0003	37.67696	-95.47594	1500 West 7th Street
Sedgwick	173 - 0018	37.897506	-97.492083	12831 W. 117N Sedgwick, KS
Wichita Health Dept.	173 - 0010	37.702066	-97.314847	Health Dept., 1900 East 9th St.
Topeka KNI	177 - 0013	39.024265	-95.711275	2501 Randolph Avenue
Peck	191 - 0002	37.476890	-97.366399	707 E 119th St South, Peck Comm. Bldg.
Cedar Bluff	195 - 0001	38.770081	-99.763424	Cedar Bluff Reservoir, Pronghorn & Muley
Kansas City JFK	209 - 0021	39.117219	-94.635605	1210 N. 10th St., JFK Recreation Center

Figure 13 shows the population density of the State of Kansas along with the monitoring sites. Among these monitors, Wichita HD, Topeka KNI, Peck and Kansas City JFK are urban scale monitors measuring population exposure; Sedgwick is an urban scale monitor measuring highest concentration; Heritage Park, Chanute and Leavenworth are neighborhood scale monitors measuring population exposure; Peck is a regional scale monitors measuring regional transport; and Cedar Bluff is regional scale monitor measuring the general background O_3 concentration in the state of Kansas. The implementation of the 2015 Ozone NAAQS includes expanding the ozone season in Kansas from March 1 to October 31, beginning March 1, 2017.

Figure 13. State of Kansas Population Density Map and the Location of O_3 Monitors.



$PM_{2.5}$ Monitoring Network

Current $PM_{2.5}$ Standard and Monitoring Requirements

On December 14, 2012, the U.S. Environmental Protection Agency (EPA) changed the primary annual National Ambient Air Quality Standard (NAAQS) for fine particles to 12.0 micrograms per cubic meter (µg/m^3) and retained the 24-hour fine particle standard of 35 µg/m^3. They also retained the existing secondary standards for $PM_{2.5}$ to address PM-related effects such as visibility impairment, ecological effects, damage to materials and climate impacts. This includes an annual standard of 15.0µg/m^3 and a 24-hour standard of 35µg/m^3.

The primary annual standard is based on a 3 year average of the weighted annual mean. The primary 24-hour standard is based on a 3 year 98th percentile average of 24-hour values. Current minimum monitoring requirements for $PM_{2.5}$ are shown in Table 4 (http://edocket.access.gpo.gov/2006/pdf/06-8478.pdf).

Table 4. $PM_{2.5}$ Minimum Monitoring Requirements (Number of Stations per MSA)

Population Category	3-yr design value > 85% of NAAQS	3-yr design value < 85% of NAAQS
> 1,000,000	3	2
500,000 - 1,000,000	2	1
50,000 - <500,000	1	0

[1] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

[2] Population based on latest available census figures.

[3] The PM*2.5* National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

[4] These minimum monitoring requirements apply in the absence of a design value.

[5] Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

In addition to the minimum number of monitors required, there are also requirements for a minimum number of continuous monitors to be deployed. Fifty percent of the minimum required number of monitoring sites are required to be a continuous $PM_{2.5}$ monitor. For Kansas this means that at a minimum two continuous $PM_{2.5}$ monitors need to be operated in the state.

Applying the minimum monitoring requirements to Kansas urban areas, population totals and historical $PM_{2.5}$ measurements results in the design requirements shown in Table 5. According to Tables 4 and 5, $PM_{2.5}$ monitors could be removed from the Wichita area and the Kansas City area assuming the Missouri side of Kansas City retains a $PM_{2.5}$ monitor(s).

Table 5. Minimum Number of $PM_{2.5}$ Monitors Required in Kansas MSA

MSA	Population (2010)	Number of Existing $PM_{2.5}$ Monitors	$PM_{2.5}$ Monitors Required
Wichita, KS	623,061	3	1
Topeka, KS	233,870	1	0
Lawrence, KS	110,826	0	0
Kansas City, MO-KS	2,035,334	3 (KS side only)	2

State of Kansas Current $PM_{2.5}$ Monitoring Network

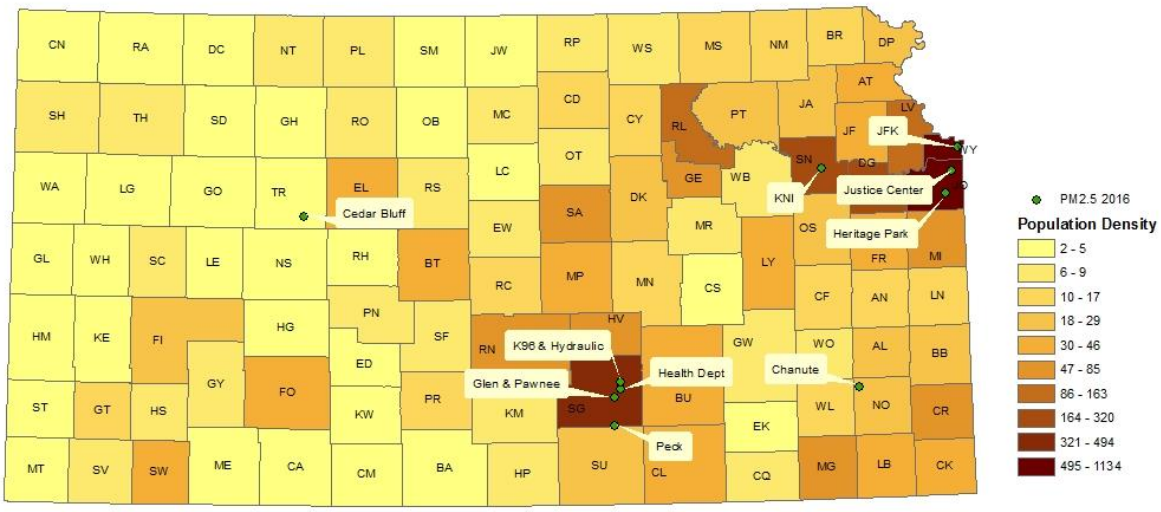
Current Kansas $PM_{2.5}$ monitoring network includes 13 monitors located throughout the state at 10 different monitoring sites. Ten of the monitors are filter based while the remaining two monitors are continuous Tapered Element Oscillating Microbalance (TEOM). Only one of the TEOM monitors, located at JFK, is equipped with a Filter Dynamics Measurement System (FDMS, 1405DF) and is considered a federal reference monitor. Monitor locations and type are listed in Table 6 along with detailed site information. One site has collocated filterable and continuous $PM_{2.5}$ measurements, at JFK in Kansas City.

Table 6. State of Kansas $PM_{2.5}$ Monitor Site ID and Location.

Site Name	Site ID	City	Address	Lat_DD	Lon_DD	$PM_{2.5}$	$CPM_{2.5}$
Cedar Bluff	195 - 0001	Cedar Bluff	Cedar Bluff Reservoir, Pronghorn & Muley	38.770081	-99.763424	NO	YES
Justice Center	091 - 0007	Overland Park	85th And Antioch	38.974457	-94.687013	YES	NO
Heritage Park	091 - 0010	Olathe	13899 W 159th (Heritage Park)	38.838575	-94.746424	YES	YES
K-96 and Hydraulic	173 - 1012	Wichita	K-96 and Hydraulic	37.747085	-97.316912	YES	NO
Glenn & Pawnee	173 - 0009	Wichita	Glenn & Pawnee	37.651114	-97.362212	YES	NO
Health Dept.	173 - 0010	Wichita	Health Dept., 1900 East 9th St.	37.702066	-97.314847	YES	NO
KNI	177 - 0013	Topeka	2501 Randolph Avenue	39.024265	-95.711275	YES	NO
Peck	191 - 0002	Peck	707 E 119th St South, Peck Community Bldg.	37.476890	-97.366399	YES	NO
Chanute	133 - 0003	Chanute	1500 West 7th Street	37.67696	-95.47594	YES	NO
JFK	209 - 0021	Kansas City	1210 N. 10th St., JFK Recreation Center	39.117219	-94.635605	YES	YES

Figure 14 shows the population density of the State of Kansas along with the $PM_{2.5}$ monitoring sites. All of these monitors have 3 year design values at or below the 85% of the NAAQS concentration category.

Figure 14. State of Kansas Population Density Map and the Location of $PM_{2.5}$ Monitors.



PM_{10} Monitoring Network

Current PM_{10} Standard and Monitoring Requirements

Current national ambient air quality standards (NAAQS) for PM_{10} has been set to 150 micrograms per meter cubed for both the primary standard and the secondary standard (http://www.epa.gov/ttn/naaqs/standards/pm/data/fr20061017.pdf). This standard is not to be exceeded more than once per year on average over 3 years. Current minimum monitoring requirements for PM_{10} are shown in Table 7 (http://edocket.access.gpo.gov/2006/pdf/06-8478.pdf).

Table 7. PM_{10} Minimum Monitoring Requirements (Number Of Stations per MSA)[1]

Population Category	High Concentration[2]	Medium Concentration[3]	Low Concentration[4]
> 1,000,000	6 - 10	4 - 8	2 - 4
500,000 - 1,000,000	4 - 8	2 - 4	1 - 2
250,000 - 500,000	3 - 4	1 - 2	0 - 1
100,000 - 250,000	1 -2	0 - 1	0

[1] Selection of urban areas and actual numbers of stations per area within the ranges shown in this table will be jointly determined by EPA and the State Agency.
[2] High concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding the PM_{10} NAAQS by 20% or more.
[3] Medium concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding 80% of the PM_{10} NAAQS.
[4] Low concentration areas are those for which ambient PM_{10} data show ambient concentrations < 80% of the PM10 NAAQS.

Applying the minimum monitoring requirements to Kansas urban areas, population totals and historical PM_{10} measurements results in the design requirements shown in Table 8. According to Tables 7 and 8, PM_{10} monitors could be removed from the Wichita area and the Kansas City area assuming the Missouri side of Kansas City retains a PM_{10} monitor.

Table 8. Minimum Number of PM_{10} Monitors Required in Kansas MSA

MSA	Population (07/08/2008)	Number of Existing PM_{10} Monitors	PM_{10} Monitors Required
Wichita, KS	603,716	3	1 – 2
Topeka, KS	229,619	1	0 – 1
Lawrence, KS	114,748	0	0
Kansas City, MO-KS	2,002,047	2 (KS side only)	2 – 4

State of Kansas Current PM_{10} Monitoring Network

Current Kansas PM_{10} monitoring network includes 11 monitors located throughout the state at 9 monitoring sites. Three of the monitors are filter based while the other eight monitors

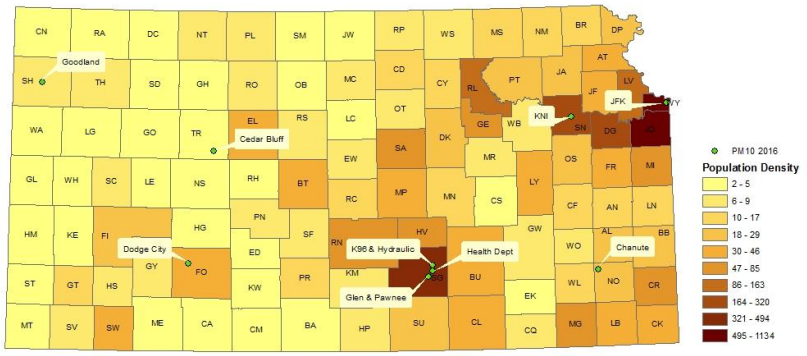
are continuous. Monitor locations and type are listed in Table 9 along with detailed site information.

Table 9. State of Kansas PM_{10} Monitor Site ID and Location.

Site Name	Site ID	City	Address	Lat_DD	Lon_DD	Filter PM_{10}	Cont. PM_{10}
Dodge City	057 - 0002	Dodge City	Dodge City Community College	37.775303	-100.035440	NO	YES
Glen & Pawnee	173 - 0009	Wichita	Glen & Pawnee	37.651114	-97.362212	NO	YES
Health Dept.	173 - 0010	Wichita	Health Dept., 1900 East 9th St.	37.702066	-97.314847	NO	YES
Chanute	133 - 0002	Chanute	1500 West Seventh	37.676308	-95.474649	NO	YES
Goodland	181 - 0001	Goodland	City Fire Sta. , 1010 Center	39.348452	-101.713405	YES	NO
JFK	209 - 0021	Kansas City	1210 N. 10th St., JFK Recreation Center	39.117219	-94.635605	YES + collocated	YES
K-96 And Hydraulic	173 - 1012	Wichita	K-96 And Hydraulic	37.747085	-97.316912	NO	YES
Cedar Bluff	195-0001	Cedar Bluff Reservoir	Pronghorn & Muley	38.770277	-99.763611	NO	YES
KNI	177 - 0013	Topeka	2501 Randolph Avenue	39.024265	-95.711275	NO	YES

Figure 15 shows the population density of the State of Kansas along with the monitoring sites. All of these monitors have 3 year design values in the Low (< 80% of the NAAQS) concentration category.

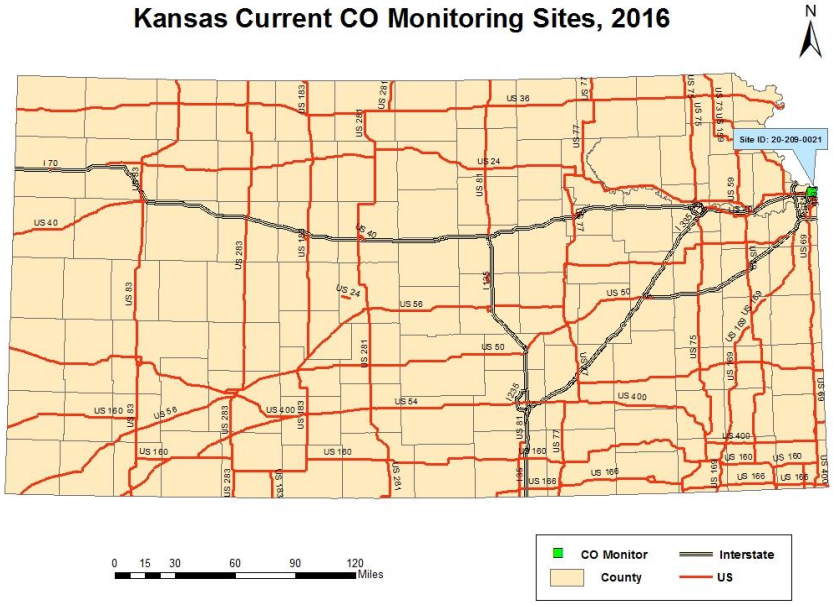
Figure 15. State of Kansas Population Density Map and the Location of PM_{10} Monitors.



Carbon Monoxide

EPA conducted a review of the CO NAAQS and decided to retain the existing standards in 2011. The BOA currently has one CO monitoring site in the state (Figure 16). It is located at the JFK NCore site in Kansas City, KS.

Figure 16. Kansas Carbon Monoxide Monitoring Site, 2016



Special Monitoring Projects

BNSF Intermodal

The KDHE and the BNSF Railway Company established a continuous $PM_{2.5}$ and PM_{10} monitoring site near the new BNSF Kansas City Intermodal Facility to determine traffic impacts on near road air quality. The site was located on the SE corner of 191st Street and Homestead Road in Johnson County (Figures 17-18). KDHE concluded its two year special monitoring study at this site in the fall of 2015 and prepared a report for BNSF and EPA R7 on the results of this study. This site was removed at that time.

Figure 17. Monitoring Site location for BNSF Intermodal Facility

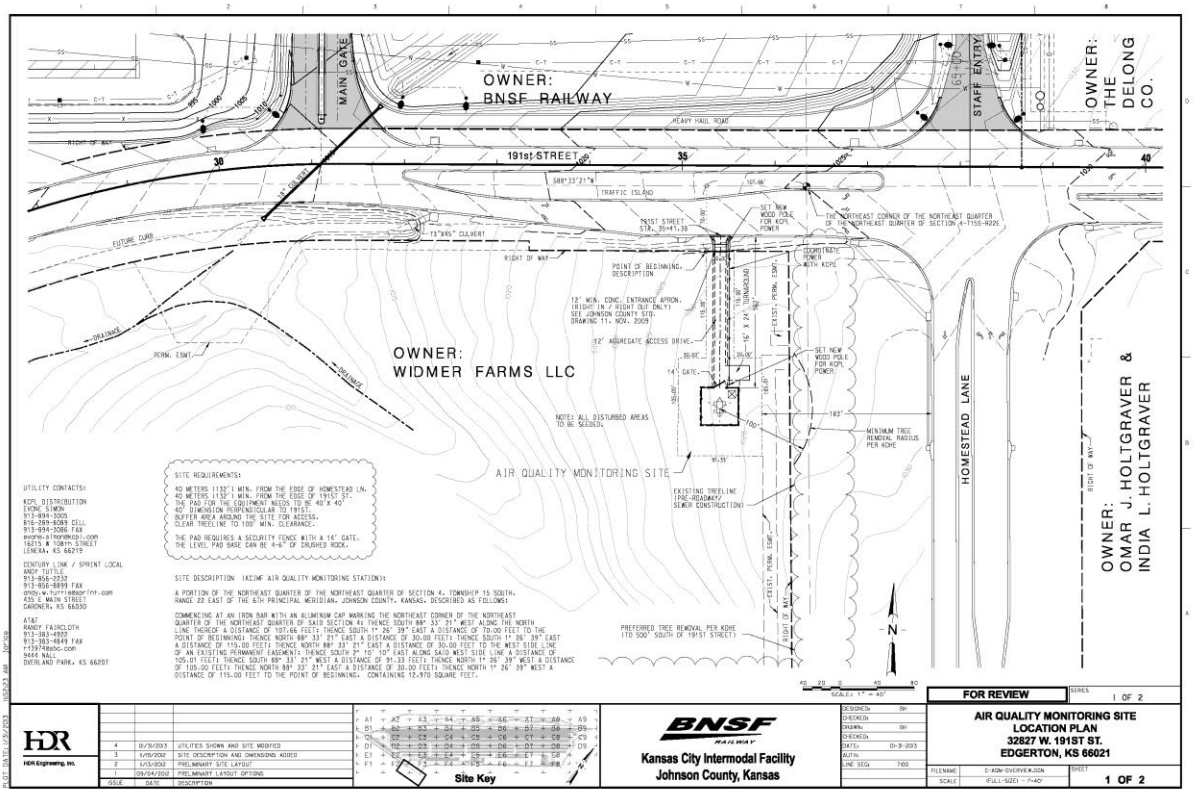


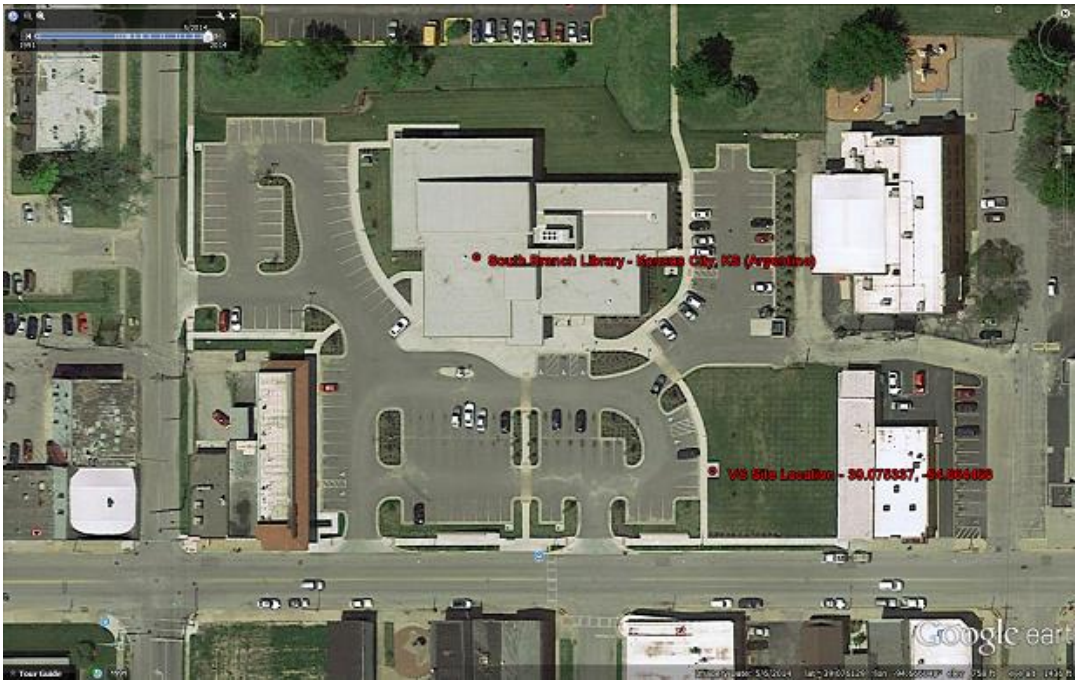
Figure 18. Monitoring Site location for BNSF Intermodal Facility

Village Green

The U.S. Environmental Protection Agency (EPA) has developed an innovative, solar and wind-powered air-monitoring system designed and incorporated into a park bench that measures ozone, fine particle pollution $PM_{2.5}$, wind speed and direction, temperature and humidity. The study, called the Village Green Project, is being conducted in partnership with the Kansas Department of Health and Environment, Bureau of Air and USD # 500 in Kansas City, KS to advance air quality measurement capabilities to states, tribes and local communities.

The prototype monitoring system is located outside the new Kansas City, KS South Branch Library (Figure 19).

Figure 19. Village Green Monitoring Site location (South Branch Library, KC, KS)



KDHE and EPA began running the system in the spring of 2015. This project stems from a growing national interest in using new sensor technologies to learn more about air quality conditions and trends near schools, playgrounds, parks and neighborhoods.
The project's three goals are to:

- Engage communities in air pollution awareness
- Increase air pollution monitoring coverage
- Advance EPA's ability to measure and communicate air pollution information in real-time at lower cost and maintenance.

KDHE was one of five original sites chosen by EPA to expand their Village Green Monitoring Research Project (Figures 18 – 19). The park bench air monitoring station is

primarily for technology demonstration and public education purposes and it is not part of the Agency's regulatory network of air monitoring stations.

Figure 18. Village Green Monitoring Site

Figure 19. Village Green Monitoring Site

Quality Assurance/Quality Control (QA/QC) Program

The purpose of the QA/QC program is to assure the quality of data obtained from the KDHE air monitoring networks. The KDHE meets or exceeds the QA requirements defined in 40 CFR 58 and all applicable appendices.

The QA/QC program includes but is not limited to the following activities:

- instrument performance audits,
- monitor siting evaluations,
- precision and span checks,
- bias determinations,
- flow rate audits,
- leak checks, and
- data validation

.

For independent quality assurance activities, the KDHE participates in the National Performance Audit Program and the Performance Evaluation Program for criteria pollutant monitoring and performance.

As the Primary Quality Assurance Organization (PQAO) for ambient air monitoring activities in Kansas, the KDHE operates under an EPA approved Quality Management Plan (QMP) and utilizes Quality Assurance Project Plans (QAPP) for each statewide monitoring network. The primary purpose of the QAPP is to provide an overview of the project, describe the need for the measurements, and define QA/QC activities to be applied to the project. All other ambient air monitoring initiatives including state, tribal and industrial projects must have a KDHE approved monitoring plan for each specific project.

List of Proposed Changes to the Kansas Ambient Air Monitoring Network

20-195-0001; Cedar Bluff;
This is a comprehensive site in Western Kansas (38.770081, -99.763424) BOA installed a new combination continuous $PM_{10}/PM_{2.5}$ monitor (1405DF) at this site in May 2015. KDHE will analyze comparability of data to the filter based PM_{10} monitor in Goodland and remove the filter based monitor if data shows good comparability.

20-181-0001; Goodland;
It is the intention of the BOA to remove the Goodland PM_{10} filter based monitor once the continuous $PM_{10}/PM_{2.5}$ (1405DF) monitor is continuously running at the Cedar Bluff site (Installed in May 2015). The BOA will run both monitors for a period of time to analyze the data comparability of the two sites before removing the Goodland monitor.

20-209-0021; JFK Center (NCore) KC, KS;
KDHE intends to remove the lead monitor from this site because recorded data is significantly below the NAAQS.

20-173-0010; Wichita HD;
Installation of a new continuous $PM_{2.5}$ monitor at this site in 2016. Remove both the filter based primary and collocated $PM_{2.5}$ monitors from this site.

20-173-0009; Wichita Glenn & Pawnee;
This site is now located at ground level (removed from roof of city emergency services building). One of the filter-based $PM_{2.5}$ monitors that will be removed from the Health Department site will be moved to this site to serve as a collocated $PM_{2.5}$ monitor.

20-091-0010; Heritage Park Johnson Co.;
The continuous $PM_{2.5}$ monitor that was moved from the JFK NCore (Wyandotte Co.) site to this site to replace the existing filter based monitor has been returned to the manufacturer for repairs. Once it returns in proper operating condition, the filter based monitor will be removed.

20-177-0013; KNI Topeka;
The BOA is considering adding a continuous $PM_{2.5}$ monitor to this site.

The BOA is considering purchasing 2-3 small Community Based Sized Monitors to use in special air monitoring studies.

Public Comments

Sierra Club

Sierra Club

Craig Volland – Chair
609 North 72nd Street • Kansas City, KS 66112
(913) 334-0556

Kansas Chapter Air Quality Committee
www.kansas.sierraclub.org

June 16, 2016

Kansas Department of Health and Environment
Bureau of Air
1000 SW Jackson, Suite 310
Topeka, KS 66612-1366

Attention: Doug Watson

Subject: Comment on Draft *2016 - 2017 Ambient Air Monitoring Network Plan* for Kansas

In its new monitoring plan KDHE proposes to place a continuous PM2.5 fine particle monitor in Wichita. That is a step forward in partially addressing one of our concerns about last year's Plan expressed in our comment dated June 9, 2015, which is incorporated herein by reference. The new monitor in Wichita will connect the south-central part of the state to EPA's AirNow warning system for fine particulate, and will thereby provide some real-time coverage of the impacts of the annual burning of the Flint Hills in that area.

However, the new plan does nothing to address our concerns about the central and north-central parts of the state that are extremely vulnerable to heavy smoke from the burning. This vulnerability is rather clearly demonstrated by the attached NOAA-KML smoke graphics depicting the April 12 - 14, 2016, heavy burn period. See Figures 1 - 3. These plumes were not detected on a timely basis by the current monitoring network. These plumes went on to cause PM2.5 exceedances at continuous monitors in Lincoln and Omaha, Neb. on April 13 and 14. Further, Figure 4 shows an undetected heavy smoke plume on April 22 that would have affected the sizable rural and urban population near Manhattan, Ks.

So, we reiterate the obvious fact that the current monitoring network is woefully inadequate to accurately assess air quality in Kansas especially as it affects the health of predominantly rural citizens in central and north central Kansas. We again point out that this unacceptable situation is also the responsibility of EPA, and we expect the two agencies to obtain the resources to solve this problem.

With best regards,

Craig Volland
Chair, Air Quality and Agriculture Committees
Kansas Chapter, Sierra Club

cc: EPA Region 7 Air Division
Nebraska Department of Environmental Quality
Lincoln-Lancaster County Health Dept.
Wichita Environmental Health Dept.
Mid America Regional Council
Riley County Health Department
Flint Hills Community Health Center
Johnson Co. Environmental Div.

Figure 1 April 12, 2016

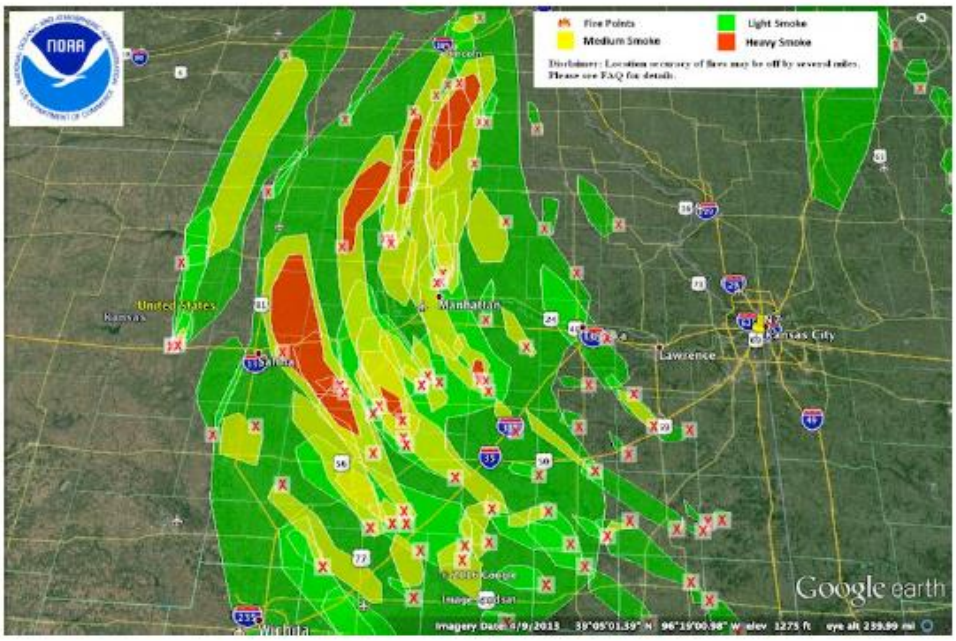


Figure 2 April 13, 2016

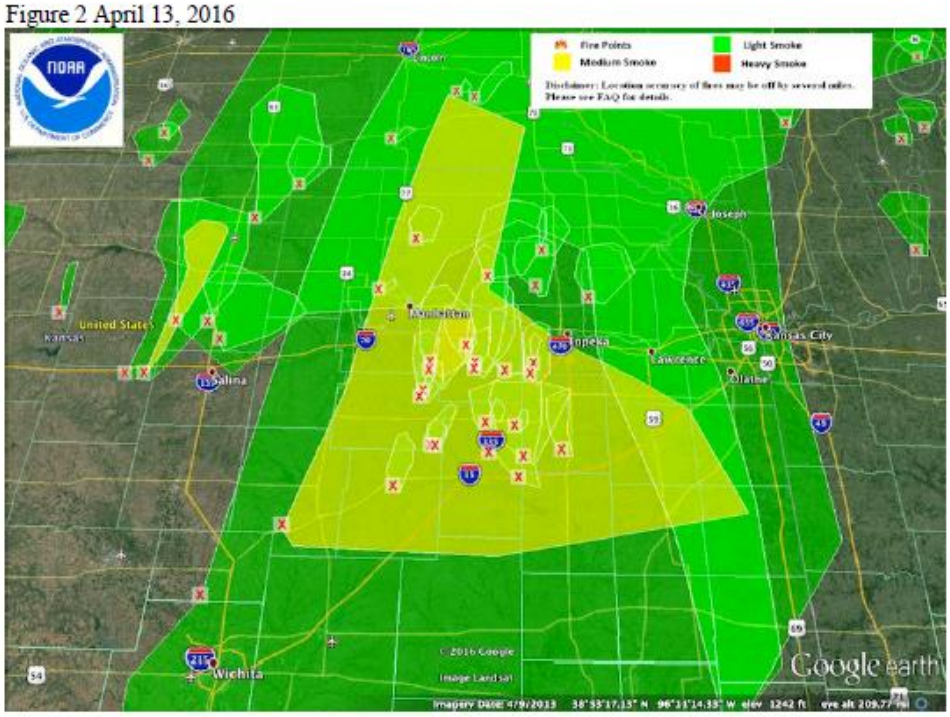


Figure 3 April 14, 2016

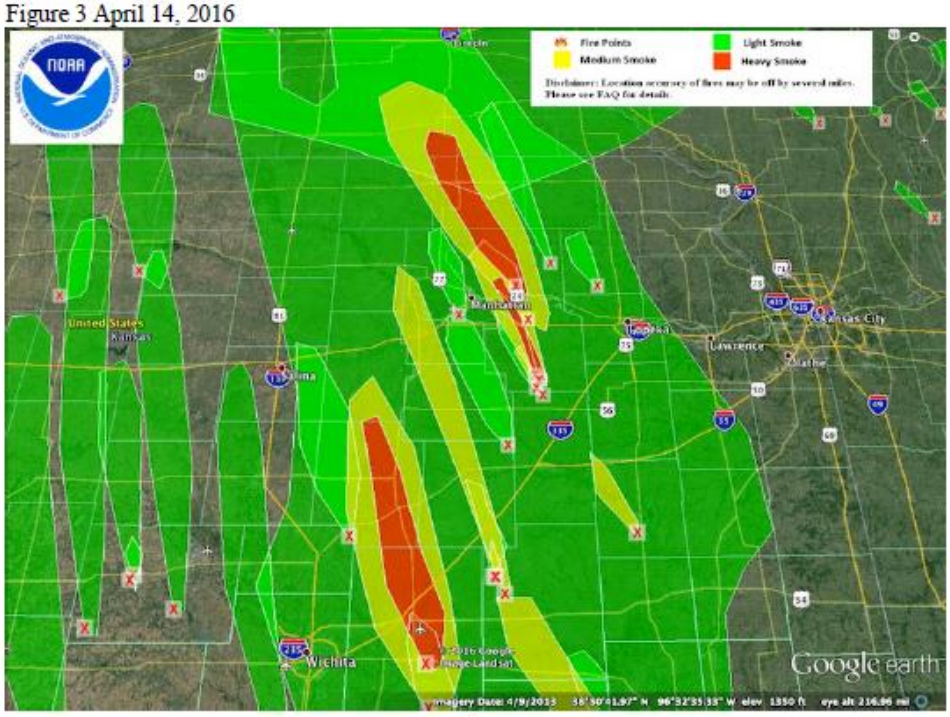
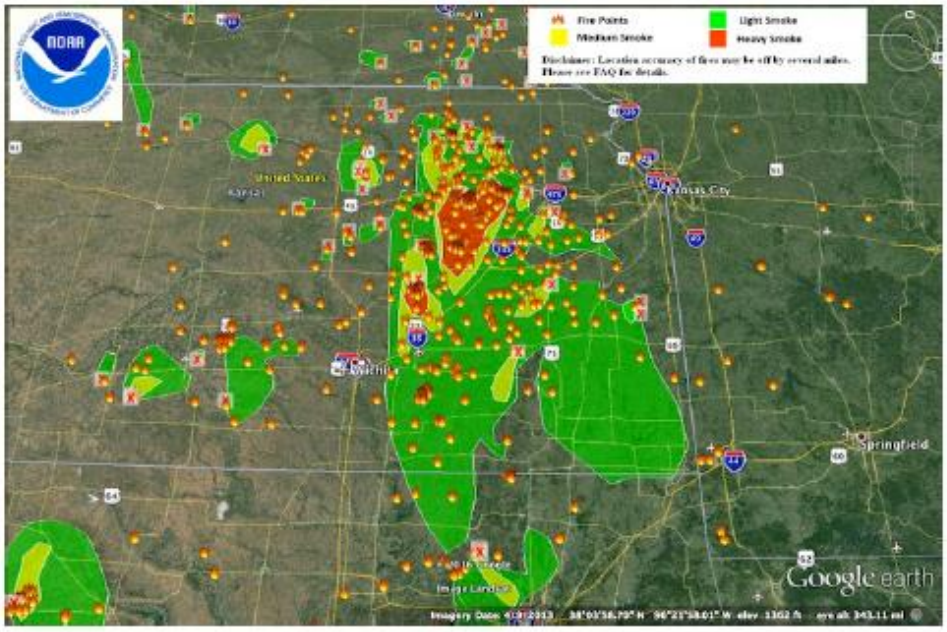


Figure 4 April 22, 2016



KDHE response to Sierra Club comments-

1. Sierra Club Comment: Page 1, Paragraph 2 - However, the new plan does nothing to address our concerns about the central and north-central parts of the state that are extremely vulnerable to heavy smoke from the burning. This vulnerability is rather clearly demonstrated by the attached NOAA-KML smoke graphics depicting the April 12 - 14, 2016, heavy burn period. See Figures 1 - 3. These plumes were not detected on a timely basis by the current monitoring network.

KDHE Response: *As part of the development of the Kansas Flint Hills Smoke Management Plan (SMP), KDHE has been releasing yearly press announcements alerting citizens about the upcoming prescribed fire season in the state. These releases describe to the public the reasons for these burns, when they occur and steps that they can take to limit the potential health impacts from the smoke that these fires may produce. In addition, during the season, KDHE has alerted the public when we feel that the potential exists for numerous fires and heavy smoke may impact parts of the state. We also notify downwind states/communities of potential impacts. In fact, KDHE issued an Air Quality Health Advisory for eastern Kansas on April 13, 2016 to address our concerns that there would be several days of heavy burning in the Flint Hills and alerted downwind states that could be impacted by the smoke generated by these fires. Although the existing monitoring network was not designed solely for monitoring the Flint Hills region, it is based on criteria set down by the Environmental Protection Agency (40 CFR Part 58, Appendix D). KDHE maintains several monitoring stations located near the Flint Hills Physiographic Region. These include five monitoring sites in the Wichita area, one in Chanute and one in Topeka. These sites range from 14-27 miles from the edge of the Flint Hills Region and monitor for Particulate Matter and Ozone, two pollutants of concern from the prescribed fires. KDHE does not presently have any continuous* $PM_{2.5}$ *monitors located north of the Flint Hills but has installed a continuous* $PM_{2.5}$ *monitor at the Health Department site in Wichita. We do have a network of continuous* PM_{10} *and ozone monitors located around the Flint Hills in Topeka, Wichita and Chanute. It is our experience from analysis, that in many smoke related events,* PM_{10}*, Ozone and* $PM_{2.5}$ *values will rise as the plume moves across the monitoring stations. In addition, as mentioned in this document, KDHE is considering adding a continuous* $PM_{2.5}$ *monitor to the Topeka KNI site. Although not specifically designed for the Flint Hill's fires, the proposed network plan contains sites (Wichita, Kansas City, Topeka and Chanute) that predict and record data influenced by the fires. This data is used to inform and alert the public to potential air quality impacts from the smoke generated from the prescribed fires in the Flint Hills and other areas of the state and other states that may have fires. KDHE maintains an ambient air monitor network that meets the requirements set forth by the federal government with the resources and personnel available to maintain that network. It is KDHE's goal to replace all filter based monitors with continuous monitors as resources allow.*