

Nebraska Department of Environmental Quality

2014 Ambient Air Monitoring Network Plan

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Acronyms and Abbreviations

Agencies/Organizations

- ATSDR - Agency for Toxic Substances and Disease Registry (an agency within the US Department of Health)
- CASAC - Clean Air Scientific Advisory Committee^(a)
- DCHD - Douglas County Health Department
- EPA - United States Environmental Protection Agency
- EPA R7 - United States Environmental Protection Agency Region VII
- LLCHD - Lincoln/Lancaster County Health Department
- NDEQ - Nebraska Department of Environmental Quality
- OAQC - City of Omaha Air Quality Control

(a) CASAC was established by the Clean Air Act (CAA) Amendments of 1977, and provides independent advice to the EPA Administrator on the technical bases for EPA's national ambient air quality standards.
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Regulations

- CFR - Code of Federal Regulations
- NAAQS - National Ambient Air Quality Standards
- Title 129 - Nebraska Air Quality Regulations

Site Types

- IMPROVE - Interagency Monitoring of Protected Visual Environments (monitoring performed to evaluate regional haze)
- MDN - Mercury Deposition Network (a type of NADP site)
- NADP - National Atmospheric Deposition Program (analysis of deposition components in precipitation. May include NTN and MDN sites)
- NCore - National Core multi-pollutant monitoring stations. Monitors at these sites are required to measure particles (PM_{2.5}, speciated PM_{2.5}, PM_{10-2.5}), O₃, SO₂, CO, nitrogen oxides (NO/NO_y), Pb, and basic meteorology.
- NTN - National Trends Network (a type of NADP site that analyzes for acidity, sulfate, nitrate, ammonium, chloride, and base cations (e.g., CA, Mg, K and Na))
- SLAMS - State and Local Air Monitoring Stations

Monitor Terminology

- AQS - Air Quality System, the name for EPA's air monitoring data base
- FRM - Federal Reference Method used for determining compliance with the NAAQS
- FEM - Federal Equivalent Method used for determining compliance with the NAAQS
- PWEI - Population Weighted Emissions Index (a term defined in 40 CFR Part 58 Appendix D that relates to SO₂ monitoring requirements)

2010 Network Assessment – Nebraska’s *2010 Ambient Air Monitoring Network Plan and 5-Year Assessment*.

2011 Network Plan – Nebraska’s *2011 Ambient Air Monitoring Network Plan*

2012 Network Plan – Nebraska’s *2012 Ambient Air Monitoring Network Plan*

2013 Network Plan – Nebraska’s *2013 Ambient Air Monitoring Network Plan*

2014 Network Plan – Nebraska’s *2014 Ambient Air Monitoring Network Plan* (i.e., this document)

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Acronyms and Abbreviations (Continued)

Pollutants

- CO - Carbon Monoxide
- H₂S - Hydrogen sulfide (typically a major component of TRS)
- O₃ - Ozone
- Pb - Lead
- PM_{2.5} - Particulate matter with a diameter equal to or less than 2.5 micrometers or microns (reported as µg/m³ with air volumes measures at local conditions)
- PM₁₀ - Particulate matter with a diameter equal to or less than 10 micrometers or microns (reported as µg/m³ with air volumes measures at standard conditions (25° C, 1 atm))
- PM_{10-2.5} - The difference between PM₁₀ and PM_{2.5} (Both being calculated at local conditions)
- SO₂ - Sulfur Dioxide
- TRS - Total Reduced Sulfur (H₂S + other reduced sulfur-containing compounds)
- TSP - Total Suspended Particulates
- TSP-Pb - Lead sampled using a TSP sampler

Concentration Units

- ppb - Parts per billion (a volume/volume concentration unit)
- ppm - Parts per million (a volume/volume concentration unit)
- mg/m³ - Milligrams per cubic meter (a mass/volume concentration unit)
- µg/m³ - Micrograms per cubic meter (a mass/volume concentration unit)

Census Terminology

- MSA - Metropolitan Statistical Area
- MiSA - Micropolitan Statistical Area

Definitions

in situ - A Latin phrase meaning *in the place*. As used in this report it refers to the formation of pollutants in the atmosphere. For example, ozone is formed *in situ* from the photochemical reaction of pollutant precursors. Ozone is not emitted directly from sources. PM_{2.5} and haze are also formed *in situ*, although they are also emitted by sources. PM₁₀ and CO, on the other hand, are largely emitted from sources; *in situ* formation being of minimal importance. NO_x and SO_x are emitted and then undergo transformations to NO₂ and SO₂; they also can play a role in the *in situ* formation of ozone and PM_{2.5}.

Criteria Pollutants – The six pollutants for which National Ambient Air Quality Standards (NAAQS) have been established: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, particulates and lead.

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I. Introduction and Purpose

This 2014 Ambient Air Monitoring Network Plan (hereafter referred to as the “2014 Network Plan”) was prepared to meet the requirements of federal regulations set forth in 40 CFR Part 58.10. It serves several purposes as listed below.

- Describes the current ambient air monitoring network in Nebraska including:
 - The purpose of each monitoring site, and
 - Changes made since January 1, 2013.
- Discusses ambient air quality issues as they relate to the monitoring network.
- Reviews the ambient air monitoring network to determine that the requirements of 40 CFR Part 58 Appendixes A, C, D and E are met.
- Describes planned and possible changes to the ambient air monitoring network through 2015, as best they can be determined at the time this review was conducted.

II. Public Participation

Federal regulations require annual network plans to be made available for public inspection. The NDEQ meets this requirement by posting it on the NDEQ web site (www.ndeq.state.ne.us) for 30 days. During the 30 day public inspection period, written comments regarding this Network Plan may be submitted to the Nebraska Department of Environmental Quality (NDEQ). Contact information is provided below.

Mail:

Nebraska Department of Environmental Quality
Attn: Jim Yeggy - Air Quality Compliance Section
PO Box 98922
1200 N Street, The Atrium Suite 400
Lincoln, NE 68509

Email:

NDEQ.airquality@nebraska.gov

Informal inquiries may also be directed to Jim Yeggy at 402/471-2142. Non-written comments are not necessarily included or addressed as review comments.

The deadline for written comment submittal can be found on the NDEQ web site.

III. Overview of Current Ambient Air Monitoring Network

Nebraska’s current air monitoring network is summarized in Table III-1 below. The network description tables in Attachment A provide more detailed information on the network, including site locations and monitoring objectives.

The network includes monitoring sites for ozone, carbon monoxide, nitrogen oxides, sulfur dioxide, total reduced sulfur, lead, PM₁₀, PM_{2.5}, PM_{10-2.5} and regional haze (i.e., IMPROVE monitors). The network is operated by the Nebraska Department of Environmental Quality and two local agencies: the Douglas County Health Department and the Lincoln Lancaster County Health Department.

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Table III-1: Number of Monitoring Sites in the Nebraska Air Monitoring Network ⁽¹⁾					
Pollutant	Omaha MSA ⁽²⁾	Lincoln MSA ⁽⁵⁾	Sioux City MSA ⁽⁶⁾	Other Areas of NE ⁽⁶⁾	Total Sites
Ozone	3 ⁽³⁾	1	0	0	4
Carbon Monoxide	2 ⁽³⁾	0	0	0	2
Nitrogen Oxides	1 ⁽³⁾	0	0	0	1
Sulfur Dioxide	2 ⁽³⁾	0	0	0	2
Total Reduced Sulfur	0	0	1	0	1
PM ₁₀	6 ⁽³⁾⁽⁴⁾	0	0	2	8
PM _{2.5}	4 ⁽³⁾	1	0	2	7
PM _{10-2.5}	1 ⁽³⁾	0	0	0	1
PM _{2.5} Speciation	1 ⁽³⁾	0	0	0	1
Lead	1 ⁽³⁾	0	0	2	3
NCore ⁽⁷⁾	1	0	0	0	1
IMPROVE ⁽⁸⁾	0	0	0	2	2
Totals	12 ⁽²⁾⁽⁴⁾⁽⁷⁾	2 ⁽⁵⁾	1	8	23 ⁽⁹⁾

Footnotes:

(1) This table summarizes the number of operating sites in the NE SLAMS network as of 5/31/14.

(2) There are 2 multi-pollutant monitoring sites in the Omaha MSA:

- The 24th & O Sts (South Omaha) site, at which ozone and a PM₁₀ are monitored;
- The NCore site, at which CO, NO/NO_y, O₃, SO₂, PM, lead and meteorological parameters are monitored.

Thus there are 12 monitoring sites within the Omaha MSA, but if the pollutants are counted separately the total would be 19.

(3) This footnote means that one (1) monitor in this category is located at the NCore site.

(4) PM₁₀ sites in the Omaha MSA include 4 sites operated by DCHD that are located in Douglas County; and 2 sites operated by NDEQ. The NDEQ operated sites are located in the Weeping Water area of Cass County.

(5) LLCHD operates the 2 monitoring sites in the Lincoln MSA: the Davey ozone site and the N Street PM_{2.5} site..

(6) The NDEQ operates 11 sites: 2 at Weeping Water in the Omaha MSA, 1 in the Sioux City MSA, and 8 in “Other Areas of NE”.

(7) The 12 Omaha MSA sites includes 10 sites operated by DCHD: 30th & Fort (O₃), 24th & O St (O₃ & PM₁₀), 78th & Dodge (CO), 16th & Whitmore (SO₂), 19th & Burt (PM₁₀), 46th & Farnum (PM₁₀), 92nd & Berry (PM_{2.5}), Bellevue (PM_{2.5}), Blair (PM_{2.5}) & 42nd & Woolworth (Ncore); and 2 sites operated by NDEQ: Weeping Water WWTF (PM₁₀) & Weeping Water Farm (PM₁₀).

(8) IMPROVE – Interagency Monitoring of Protected Visual Environments. These are fine particulate and particulate speciation monitors intended to provide information for studying regional haze that may impact Class I National Park and Wilderness Areas.

(9) The sum total number of individual pollutant sites in the *Total Sites* column exceeds the bottom total sites value because the multi-pollutant NCore site and the ozone/PM₁₀ site at 24th & O Sts. were counted as one site each.

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IV. Nebraska Ambient Air Monitoring Network: January 1, 2013 thru May 31, 2014

This section describes Nebraska's Ambient Air Monitoring Network in place from January 1, 2013 thru May 31, 2014, and changes made during that time period. There were no new sites established, nor permanent closure of existing sites during this time span.

Detailed information on individual monitoring sites, including purpose, scale, monitor details and start dates, is contained in Attachment A.

For the most part, this section is organized around the MSAs and MiSAs in which monitoring is conducted. For population and statistical information about the MSAs and MiSAs see Attachment C.

A. Omaha MSA Sites Operated by the DCHD

DCHD operates an ambient air network of 10 sites in Douglas, Sarpy and Washington Counties. Multi-pollutant monitoring is conducted at two of the sites. The NCore site monitors for 9 pollutant parameters (CO, NOy/NOx, O₃, SO₂, PM_{2.5}, PM₁₀, PM_{10-2.5}, PM_{2.5} speciation & TSP lead), meteorological parameters, and atmospheric radiation (RADNET*). The South Omaha site has both an ozone and a PM₁₀ monitor. Thus the Omaha area monitoring network is more extensive than the 10 site total might indicate; if the pollutants are counted separately, there are 19 pollutant monitoring sites.

Table III-1 above provides summary information on the DCHD operated network, while Attachment A provides detailed information.

* Note: RadNet is a nationwide system that monitors the nation's air, drinking water, precipitation, and pasteurized milk to determine levels of radiation in the environment. RadNet sample analyses and monitoring results provide baseline data on background levels of radiation in the environment and can detect increased radiation from radiological incidents. The RadNet monitor is not subject to the network planning process set forth in 40 CFR Part 58.10. It is recognized above for informational purposes only.

B. Omaha MSA Sites Operated by the NDEQ

The NDEQ operates 2 PM₁₀ monitoring sites in the Weeping Water area. One at the city waste water treatment plant (abbr. WW City site) and one approximately 1/3 mile northwest of the Weeping Water spur (State Spur 13K) and Highway 50 intersection (abbr. WW Farm site).

The WW City site was temporarily closed from May 17, 2013 thru July 30, 2013 because a new roof was put on the WWTP building. Both the primary and collocated samplers were re-located to a newly constructed platform located ~ 40 ft NW of their previous location. The re-location was required because the City's roofing company would not warranty the new roof if our monitors were on it.

C. Lincoln MSA Sites Operated by the LLCHD

LLCHD operates two monitoring sites:

- A PM_{2.5} site at 3140 N Street in Lincoln, and
- An ozone site in Davey, NE.

The PM_{2.5}, N Street site has three monitors: a primary filter-based FRM sampler, a collocated filter-based FRM sampler, and a continuous MetOne BAM monitor. Data from the continuous monitor is reported to AirNow, but not AQS.

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LLCHD deployed new ozone monitoring equipment (i.e., analyzer, transfer standards and local primary standard) at the start of the 2014 ozone monitoring season.

D. Sioux City Metropolitan Statistical Area in Dakota and Dixon Counties

The NDEQ operates one TRS monitoring at 501 Pine Street in Dakota City. There were no changes to the Nebraska air monitoring network in the Sioux City MSA from January 1, 2013 thru March 31, 2014.

E. Grand Island Metropolitan Statistical Area

The NDEQ operates a PM_{2.5} filter-based FRM sampler at Grand Island Senior High.

A new ThermoScientific 2025i was put into service in November 2013 (replaced an older R&P 2025 sampler), and then taken out of service in December 2013 because of re-current filter exchange failures. The R&P 2025 sampler was put back in service at the site.

Grand Island was officially recognized as a MSA in February 2013. The potential impact on monitoring requirements associated with the MSA designation are discussed in Section V.E.2 below.

F. Scottsbluff Micropolitan Statistical Area

The NDEQ operates a PM_{2.5} filter-based FRM sampler at the Scottsbluff high School.

A new ThermoScientific 2025i was put in service in September 2012 (replaced an older R&P 2025 sampler). The 2025i has had some cold-weather related filter exchange failure, but not as frequently as the unit installed at Grand Island. Thus the 2025i remains in service at Scottsbluff.

G. Fremont Micropolitan Statistical Area

The NDEQ operates a TSP-lead monitoring site at 1255 Front Street in Fremont. This site has two TSP samplers for collecting ambient air lead samples: a primary sampler that operates once every 6 days and a collocated QA sampler that operates once every 12 days. There were no changes in the Fremont lead monitoring network from January 1, 2013 thru March 31, 2014.

Motor malfunctions impacted data completeness in 2013. In March 2013, the motor in one of the Fremont samplers prematurely failed. The motor was sent in for warranty repair/replacement. The Fremont site operated with only the primary sampler from March 11th thru May 28th of 2013. The replacement motor failed again in March 2014. A spare replacement motor was used to bring the sampler back on line with minimal data loss. The TSP-Pb sampler at Auburn experienced similar problems (see below).

H. Lexington Micropolitan Statistical Area

The NDEQ operates PM₁₀ sites in Cozad and Gothenburg. These are source-oriented sites with respect to alfalfa processing and grain handling facilities in these communities. Data from these sites is demonstrating attainment with the PM₁₀ NAAQS (see Attachment B Table B-5.a).

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I. City of Auburn

The NDEQ operates a TSP-lead monitoring site in Auburn that is located approximately 0.15 miles northeast of the city ball park facilities. The site has a single TSP sampler that operates on a once per 6 day schedule. There were no changes to the Auburn lead monitoring network from January 1, 2013 thru March 31, 2014.

The sampler motor prematurely failed in October 2013 (Same problem as occurred in Fremont), and 2 samples were lost to this malfunction.

J. IMPROVE Sites

IMPROVE is the acronym for Interagency Monitoring of Protected Visual Environments. These sites contain fine particulate and particulate speciation monitors intended to provide information for studying regional haze that may impact Class I National Park and Wilderness Areas. There are no Class I National Park and Wilderness Areas in Nebraska; the nearest sites are in Colorado and South Dakota. Data collected at the Nebraska sites facilitate regional haze and pollution transport studies.

The NDEQ provides administrative oversight of the operation of two IMPROVE sites: one at Halsey National Forest in Thomas County and one at Crescent Lake National Wildlife Refuge in Garden County. These sites began operation in 2002. No changes were made at these sites from January 1, 2013 thru March 31, 2014.

K. National Atmospheric Deposition Program (NADP):

National Trends Network (NTN) & Mercury Deposition Network (MDN)

There are two NADP/NTN sites in Nebraska: one near Mead that has operated since 1978 and one near North Platte that has operated since 1985. These sites are operated by the University of Nebraska, with analytical and data development support from the NADP. There were no changes to the NADP/NTN network from January 1, 2013 thru March 31, 2014.

National Atmospheric Deposition Program/National Trends Network (NADP/NTN) is a nationwide network of sites that monitor for deposition constituents in precipitation. The deposition parameters examined include acidity, sulfate, nitrate, ammonium, chloride, and base cations (e.g., calcium, magnesium, potassium and sodium).

Mercury Deposition Network (MDN) monitoring was initiated at the Mead site on June 26, 2007, and is continuing. At the North Platte site, MDN monitoring was conducted from October 2008 thru October 2010.

The operation of NADP sites is not subject to the provisions of 40 CFR Part 58.10. Their inclusion in this Network Plan is for informational purposes only. More information on the NADP/NTN and the NADP/MDN can be found in Attachment A and at the following web addresses: <http://nadp.sws.uiuc.edu/> or <http://nadp.sws.uiuc.edu/mdn/>

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V. Considerations for Network Planning

A. Compliance with 40 CFR Part 58 Requirements

The Nebraska Ambient Air Quality Network must comply with the requirements set forth in 40 CFR Part 58, including Appendices A, C, D and E. Attachment D of this Network Plan contains a review of the Nebraska ambient air monitoring network with respect to these requirements. The review indicates the Nebraska ambient air monitoring program is meeting applicable requirements with one possible exception related to collocation in the DCHD PM_{2.5} network (see *DCHD PM_{2.5} Collocation Upgrade* below).

DCHD PM_{2.5} Collocation Upgrade:

As noted in previous Network Plans, DCHD currently operates one collocated PM_{2.5} FRM monitor at its Ncore site. The FRM is collocated with a MetOne BAM FEM. This meets the collocation requirements for the 2 PM_{2.5} sites operated by DCHD that use MetOne BAM samplers.

It does not appear to meet the collocation requirements for the 2 DCHD sites with PM_{2.5} FRM samplers. The current collocation set-up was originally approved by EPA, which created uncertainty as to whether an upgrade was needed.

The NDEQ has agreed to finance the purchase of a new FRM sampler from existing §103 funds. It is anticipated that DCHD will install the new sampler at the Berry St monitoring site in 2014, thus satisfying the collocation requirement.

Additional information is provided below concerning 2 potential monitoring site requirements that pertain to 40 CFR Part 58 Appendix D requirements.

1) Near-Road NO_x Monitoring in the Omaha MSA

On March 14, 2013, EPA promulgated changes to the near-road NO_x monitoring requirements (see 40 CFR Part 58 Appendix D Sec. 4.3.2) that were consistent with the previously-recommended, phased-implementation strategy. The revised regulations will require a near-road monitoring site in the Omaha MSA by January 1, 2017, with the site to be identified in the 2016 Network Plan.

There is a provision in the revised regulation, where-by a near-road monitoring site would be required in the Omaha MSA if there are road-segments with traffic counts that equal or exceed 250,000 Annual Average Daily Traffic (AADT). This provision does not apply to Omaha, because traffic counts are below this threshold. See *Omaha Traffic Count Data Summary* below.

Omaha Traffic Count Data Summary: Both the NDOR and Omaha Metropolitan Area Planning Association (MAPA) publish traffic count data. Both agencies identified I-80 near the 42nd St. intersection as the highest traffic count segment as summarized below:

- NDOR: 2012 traffic count data identified I-80 at 42nd St. to be the heaviest traveled segment with ~170,000 AADT.
- MAPA: The *2010 Traffic Flow Map* identified the heaviest traveled road segment as I-80 between I-480 and 42nd St interchanges with an estimated 183,500 annual average weekday traffic (AAWT) count. The AAWT should be slightly higher than the AADT.

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The Douglas County Health Department has indicated that the current CO monitoring site at 78th St. and W. Dodge Rd. would be a good candidate for consideration as the near-road NOx monitoring site. City of Omaha traffic count data estimates are 89,000 AADT for the 72nd and Dodge Street intersection, and 67,000 AADT for the 84th and West Dodge Road intersection. Although the traffic counts are lower than on I-80 near 42nd St., the 78th and Dodge Street location is subject to traffic congestion (slower speed limit and multiple traffic light stops in the vicinity), and is in a valley location adjacent to Little Papillion Creek. Factors such as these are important in the determining where to place the near-road NOx site.

EPA published the *Near-Road NO₂ Monitoring Technical Assistance Document* (EPA-454/B-12-002) in June 2012, which explains EPA recommendations for the site selection process. Traffic volumes, fleet mix, roadway design, traffic congestion patterns, meteorology, and local terrain & topography are all considerations in identifying the near-road NOx monitoring site.

2) Source-Oriented Lead Monitoring

On December 14, 2010 EPA promulgated modifications to 40 CFR Part 58 Appendix D Sec 4.5, which lowered the emission threshold for requiring source-oriented lead monitoring to 0.5 tons per year (previously it had been 1 ton of lead emitted per year). This change required lead monitoring near the Nucor Steel-Norfolk facility, unless it could be demonstrated that lead levels would not exceed 50% of the NAAQS. Nucor Steel initially provided modeling in 2011 that demonstrated the 50% criteria would be met, and the NDEQ submitted a waiver request in June 2011.

EPA was reviewing this request, when Nucor Steel submitted a construction permit application for an expansion of the Norfolk facility. Nucor Steel revised the model to include the expansion, and the revised model indicated that ambient lead levels would not exceed 50% of the NAAQS.

The EPA Region VII Administrator Karl Brooks approved the waiver in a letter dated April 16, 2014. The waiver will need to be renewed in 5 years (i.e., by April 2019).

B. Attainment with the National Ambient Air Quality Standards (NAAQS)

There are no declared non-attainment areas in Nebraska at this time (May 2014), but there are attainment related issues that are discussed in this section. Attainment with NAAQS is evaluated using data from the latest 3 years. Attachment B contains a summary of ambient monitoring data for all sites from 2011 thru 2013, and a comparison of the monitoring data to the NAAQS.

The NAAQS attainment issues are discussed in this section are:

- Lead: Fremont & Auburn sites
- PM₁₀: Weeping Water Farm and Omaha 46th & Farnam sites
- PM_{2.5}: Statewide with respect to 2012 NAAQS revision
- 1-Hour SO₂ NAAQS
- 1-hour NO₂ NAAQS
- Ozone: Current NAAQS and revision review

None of these issues is anticipated to require modifications to the Nebraska ambient air monitoring network before the end of 2015.

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1) Lead

The NAAQS for lead was revised in 2008 and additional monitoring requirements were established. To meet the new monitoring requirements source-oriented monitoring sites were established in Fremont and Auburn

1a) Lead: Fremont Site

The Fremont lead monitoring site is a source-oriented site with respect to Magnus Farley Metals (MFM). MFM recycles and manufactures brass castings with lead babbitt linings for locomotive and rail car wheel bearings. The ambient air monitoring site is located ~ 80 meters north of the MFM facility fence-line.

Fremont remains in compliance with the NAAQS, although the Fremont monitoring site has recorded 3-month average lead concentrations near or above the lead NAAQS in 2011, 2012 and 2013 as summarized below.

- September thru November 2011: A 3-month average value of 0.16 ug/m^3 (NAAQS = 0.15 ug/m^3) was found. However, sampler flow bias issues resulted in data being invalidated. Thus the exceedence could not be supported. The samplers were refitted with different flow controllers in 2012, and sampler performance has been within specifications since the refits were completed.
- April thru June 2012 & May thru July 2012: The averages for these two 3-month time periods were 0.13 and 0.14 ug/m^3 , respectively. These ambient lead levels are at 87% and 93% of the NAAQS.
- October thru December 2013: The 3-month average for this period was 0.11 ug/m^3 or 73 % of the NAAQS. There was a double-run filter during this time-frame that could not be counted, but appeared high, which might have raised the 3-month average if it had been valid.
- Data collected in 2014 (thru May) indicates attainment with the NAAQS, but 7 samples (between 2/16/14 thru 3/30/14) were lost due to a shipping problem and a sampler malfunction.

The NDEQ has taken several steps to encourage voluntary efforts at MFM to reduce lead emissions:

- In 2012, NDEQ met with MFM to review potential lead emissions sources and encourage voluntary reduction efforts
- There was also follow-up with respect to the higher lead levels found in the 4th quarter of 2013.
- Typically results become available 3 to 7 weeks after sampling. When the results do become available they are disseminated to MFM as soon as possible via email.

Changes to the ambient monitoring conducted in Fremont are not anticipated at this time.

1b) Lead: Auburn Site

The Auburn lead monitoring site is a source-oriented site with respect to Magnolia Metals Corporation (MMC). MMC manufactures bronze castings. The ambient air monitoring site is located ~ 540 meters southeast of the MMC process areas. The monitoring site is located between the MMC facility and residential/recreational areas in the city of Auburn.

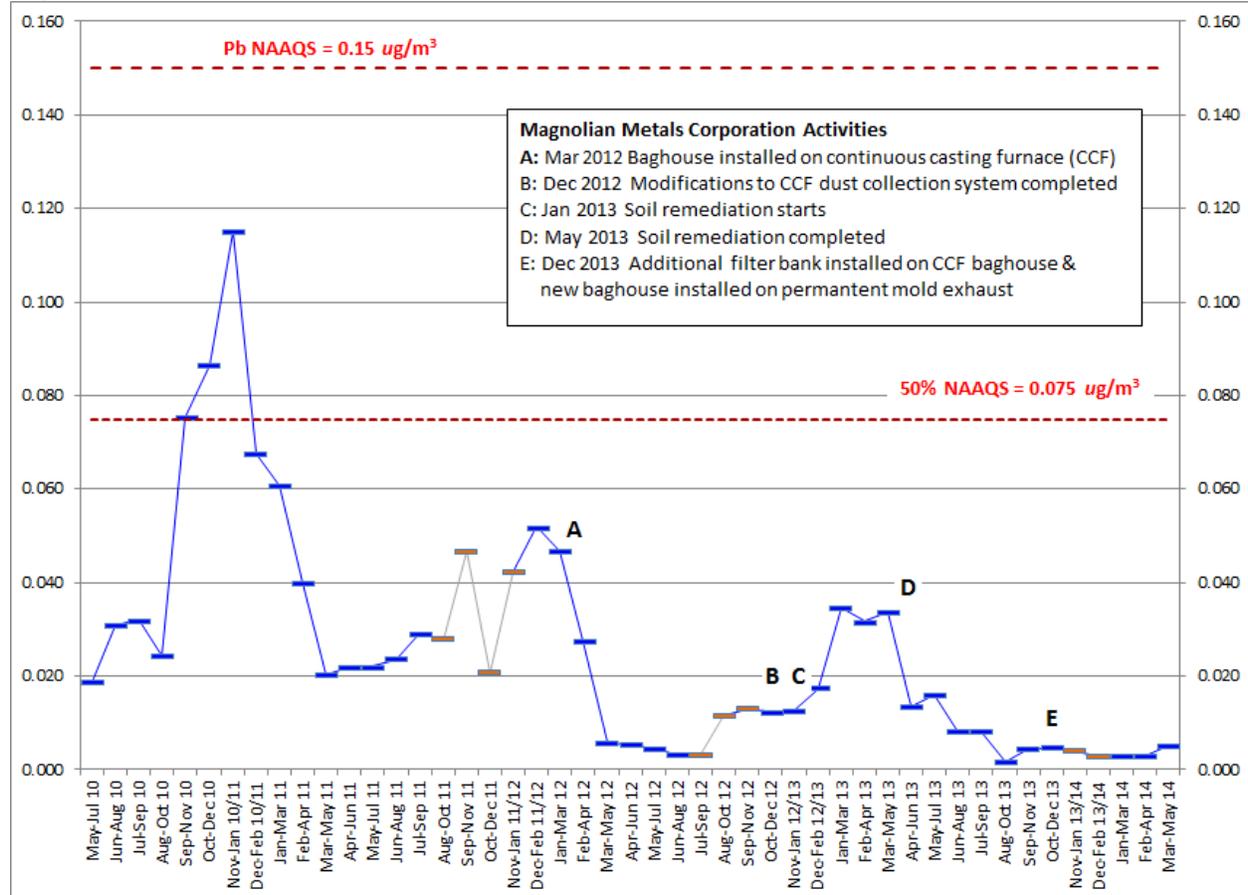
The Auburn monitor has consistently demonstrated that lead levels are below the NAAQS

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since it became operational in May 2010, as shown in Figure V-1 below. MMC installed additional air pollution control technology in 2012 & 2013, and completed a soil remediation project in 2013. Lead levels have been less than 50% of the NAAQS since the start of 2011, and are now ranging from 2% to 3% of the NAAQS, after the completion of the soil remediation project.

After reviewing this data, some of which became available late in this network review process, it may be appropriate to apply for a waiver from the source-oriented lead monitoring requirements in Auburn. Such waiver requests are authorized in 40 CFR Part 58 Appendix D Section 4.5.a.ii. The waiver requests would be made separate from the 2014 Network Plan. If the waiver request is submitted (by NDEQ) and approved (by EPA), the NDEQ will close the Auburn lead monitoring site as outlined in Section VI below.

Figure V-1: Lead Levels in Auburn, NE⁽¹⁾



Footnotes:

(1) The Auburn lead monitoring site is source-oriented with respect to the Magnolia Metals Corporation bronze casting facility which is located ~ 550 yds NW of the monitoring site.

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2) PM₁₀ NAAQS

The PM₁₀ NAAQS is set at 150 $\mu\text{g}/\text{m}^3$ as a 24-hour average value. This 24-hour NAAQS is attained when the expected number of exceedences per year at each monitoring site is less than or equal to one. Typically attainment is evaluated over a 3-year period, with up to three 24-hour values exceeding 150 $\mu\text{g}/\text{m}^3$ allowed as attainment (i.e., 4 or more values above 150 $\mu\text{g}/\text{m}^3$ being indicative of non-attainment).

2a) PM₁₀: Weeping Water

Source-oriented PM₁₀ monitoring is conducted in the Weeping Water area with respect to limestone mining and processing facilities located there. There are two PM₁₀ monitoring sites in the Weeping Water area:

- The Weeping Water City (WW City) site at the wastewater treatment plant in the east central part of the city; and
- The Weeping Water Farm site (WW Farm) located ~ 1.9 miles west of the city in an agricultural field.

Historically, there have been times when 24-hour PM₁₀ value exceeds the 150 $\mu\text{g}/\text{m}^3$. When this occurs sources in the area are notified, compliance reviews are conducted, and voluntary control efforts and due diligence are encouraged. This has proven to be an effective strategy in lowering ambient PM₁₀ levels.

The most recent time frame with elevated PM₁₀ values occurred in the 2010 thru 2012 time frame. The WW Farm site recorded 4 days from October thru November 2010 and one day in January 2012 when the 24- hour average PM₁₀ level exceeded 150 $\mu\text{g}/\text{m}^3$.

In the latest 3-year time frame (2011 – 2013), 24-hour PM₁₀ values exceeded 150 $\mu\text{g}/\text{m}^3$ only once at 179 $\mu\text{g}/\text{m}^3$ on 1/5/12. The next highest value was 129 on 10/18/12. The highest value in 2011 was 108 $\mu\text{g}/\text{m}^3$ on 10/21/11, and in 2013 it was 108 on 2/13/13. See Table V-1 above for additional maximum value data.

There are limestone mining and processing facilities located ~ 0.3 miles to the west of the WW Farm monitoring site, which in turn is located approximately 1.9 miles west of the City of Weeping Water. During the 4 year 2010 thru 2013 time frame, the highest value reported at the WW City monitoring site was 75 $\mu\text{g}/\text{m}^3$ on 12/14/12 (Table V-1 above has additional maximum value data). Thus it appears that area impacted by the elevated PM₁₀ values did not extend into the city of Weeping Water.

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Table V-1: Maximum 24-Hour PM₁₀ Values from the Weeping Water Area: 2010-2013											
Year	Rank	1	2	3	4	5	6	7	8	9	10
Weeping Water – City Site											
2010	Date	10/20	12/7	10/14	4/20	10/8	12/10	4/5	10/17	4/14	4/11
	ug/m ³	73	61	55	53	49	40	38	38	34	33
2011	Date	10/21	10/6	5/9	6/8	10/3	7/20	3/4	4/12	5/30	8/31
	ug/m ³	52	47	43	43	42	37	35	35	35	34
2012	Date	12/14	9/30	9/27	9/24	10/2	8/22	9/6	10/18	11/20	5/18
	ug/m ³	75	55	51	46	45	44	44	44	43	42
2013	Date	12/3	8/29	9/7	5/16	11/15	11/30	12/18	8/23	4/4	8/14
	ug/m ³	45	42	40	37	36	35	35	34	33	31
Weeping Water – Farm Site											
2010	Date	10/27	10/26	11/26	10/20	10/19	3/31	10/21	4/19	3/23	9/7
	ug/m ³	306	249	209	176	122	109	106	93	88	85
2011	Date	10/21	12/30	12/29	10/6	2/11	11/21	11/7	11/28	5/31	5/10
	ug/m ³	108	95	94	89	86	86	82	77	76	75
2012	Date	1/5	10/18	10/31	5/14	9/27	2/1	12/13	9/26	5/16	10/1
	ug/m ³	179	129	116	109	108	104	99	98	94	93
2013	Date	2/13	4/19	1/14	7/2	4/4	12/2	1/25	6/22	11/8	5/15
	ug/m ³	108	91	85	85	77	73	71	67	66	64
Notes:											
<ul style="list-style-type: none"> • Values greater than the 150 µg/m³ NAAQS are shown in bold, red font. • The 24-hour values are calculated to the nearest µg, and rounded to the nearest 10 µg for comparison to the NAAQS. Values of 151 to 154 are rounded to 150 (i.e., do not exceed the NAAQS), while values of 155 to 159 are rounded to 160 (i.e., exceed the NAAQS). • The NAAQS is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. Assuming daily monitoring, then there cannot be more than 3 exceedences of 150 µg/m³ in 3 consecutive calendar years. 											

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2b) PM₁₀: 46th & Farnam Sts., Omaha

The 46th & Farnam site is source-oriented, with the monitor being located within 150 to 200 ft of the production areas at Omaha Steel Castings Company. From September 2011 thru June 2012, the 46th & Farnam site recorded four (4) 24-hour average PM₁₀ values greater than the 150 µg/m³ standard (see Table V-2, next page below).

Omaha Air Quality and Omaha Steel representatives met to discuss potential PM₁₀ sources and controls. Process-handling and housekeeping changes were recommended to reduce PM₁₀ emissions. This appears to have been effective; the last time ambient PM₁₀ exceeded 150 µg/m³ was in June 2012.

PM₁₀ values were significantly lower in 2013 (see Table V-2, next page below) as Omaha Steel began the process of relocating their plant to Wahoo, NE. The air quality construction permit for the new plant was issued on March 11, 2013. The move is being performed in a phased manner. Relocation to the Wahoo site was recently completed in the summer of 2014, with all production activities at the 46th & Farnam site to be discontinued.

DCHD wants to continue operating the monitor through 2014, and possibly into 2015, depending upon the ambient PM₁₀ levels detected after Omaha Steel Castings ceases operations.

Year	Rank	1	2	3	4	5	6	7	8	9	10
2010	Date	4/20	10/8	7/10	7/9	10/1	4/19	6/1	12/8	10/15	5/14
	µg/m ³	145	145	133	132	117	116	113	113	111	109
2011	Date	9/28	10/29	10/24	10/5	10/31	10/6	10/11	10/21	3/16	6/7
	µg/m ³	172	152	151	141	138	135	122	122	120	120
2012	Date	5/14	6/5	1/5	10/3	3/16	6/6	5/18	5/10	6/1	1/10
	µg/m ³	199	181	159	150	143	143	140	133	132	129
2013	Date	7/8	5/7	9/10	8/30	9/9	6/25	2/21	1/9	5/14	6/21
	µg/m ³	94	89	87	85	84	81	80	78	78	78
Notes:											
<ul style="list-style-type: none"> • Values greater than the 150 µg/m³ NAAQS are shown in bold, red font. • The 24-hour values are calculated to the nearest µg, and rounded to the nearest 10 µg for comparison to the NAAQS. Values of 151 to 154 are rounded to 150 (i.e., do not exceed the NAAQS), while values of 155 to 159 are rounded to 160 (i.e., exceed the NAAQS). • The NAAQS is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. Assuming daily monitoring, then there can not be more than 3 exceedences of 150 µg/m³ in 3 consecutive calendar years. 											

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3) PM_{2.5}: December 2012 NAAQS Revision

In December 2012, EPA finalized changes to the NAAQS regulations that lowered the annual average PM_{2.5} NAAQS from 15.0 µg/m³ to 12.0 µg/m³. The subsections that follow discuss the attainment status of various areas of Nebraska with this new NAAQS.

3a) Omaha MSA: PM_{2.5}

There are 5 PM_{2.5} monitoring sites in the Omaha MSA: 4 in Nebraska and 1 in Council Bluffs, IA. Figure V-2 shows the 2011 thru 2013 annual average data and the 3-year Design Values (DVs) from these 5 sites. The DVs at all 5 sites within the Omaha MSA are less than 12.0 µg/m³. Thus attainment with the NAAQS is indicated.

Note: the Design Value (DV) for the Council Bluffs site was calculated by the NDEQ using data from the EPA AQS data base. The IA DNR will calculate the official DV for the Council Bluffs site. Thus the Council Bluffs DV used in this document is preliminary and is used for preliminary evaluation purposes.

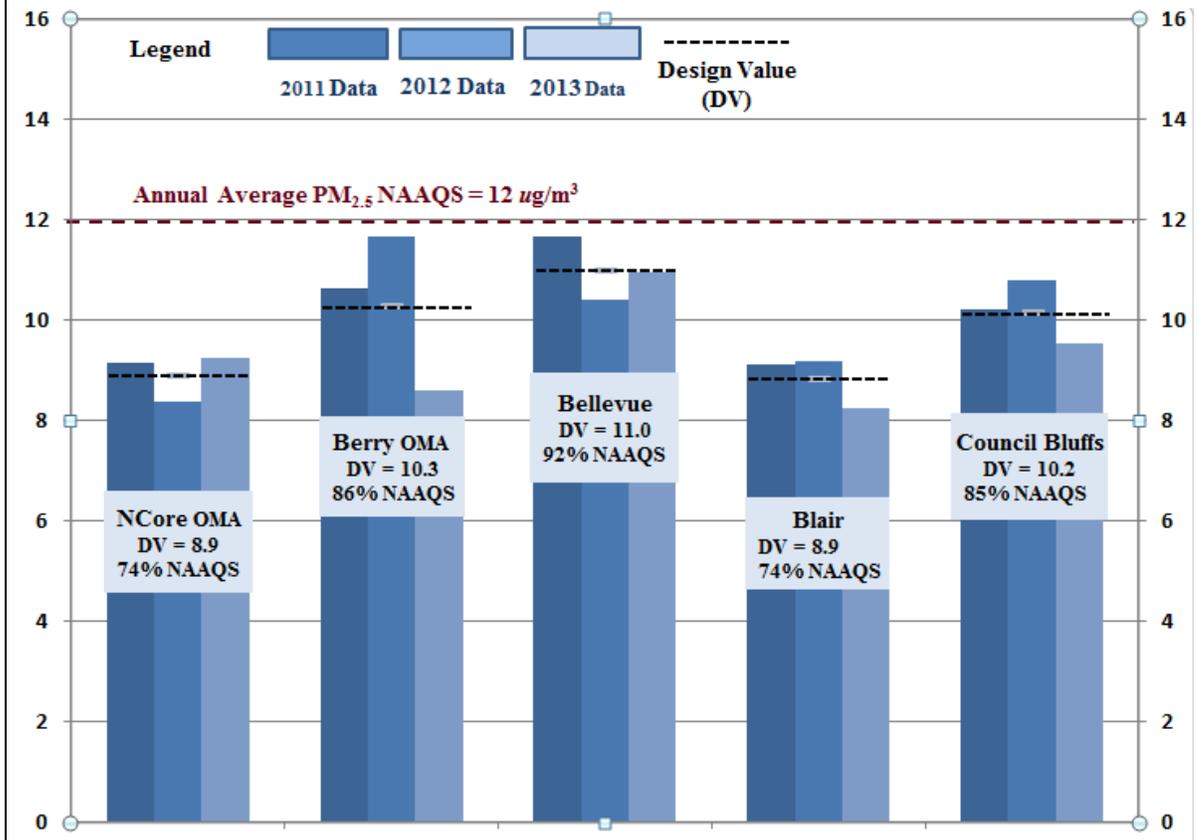
Figure V-3 shows the annual average data for these 5 sites from 2004 thru 2014 (10 years), with both the 10-year (2004 thru 2013) and the 5-year (2009 thru 2013) trend lines and slopes. The following is noted from the data summarized in Figure V-3:

- For all 5 sites, the 2010-12 and 2011-13 Design Values (DVs) indicate attainment with the 2012 NAAQS of 12.0 µg/m³;
- Previous DVs from 2004-06 thru 2009-11 would also have been in attainment with the 2012 NAAQS;
- There were 3 instances where the annual average value exceeded 12.0 µg/m³ (i.e., annual averages have exceeded 12.0 µg/m³, but not the 3-year DV):
 - In 2005 at the Council Bluffs, IA site the annual average was 12.5 µg/m³,
 - In 2010 at the Council Bluffs, IA site the annual average was 12.5 µg/m³, and
 - In 2010 at the Bellevue, NE site the annual average was 12.4 µg/m³.
- The Bellevue site had the highest 2011-13 Design Value (DV) at 11.0 µg/m³ or 92% of the NAAQS, while the 2010-12 DV was 11.5 µg/m³, the 2009-11 DV was 11.0 µg/m³ and the 2008-10 DV was 10.2 µg/m³;
- The Bellevue site had the most pronounced upward trend over the 5 year and 10 year periods examined, although over the most recent 4 years (2010 thru 2013) there was a downward trend.

It is noted that historical trends are not necessarily indicative of future trends. This is amply demonstrated at the Bellevue site in Figure V-3 by comparing the 2009 thru 2013 5-year upward trend of +0.23 µg/m³/yr and the 2010-2013 4-year downward trend of -0.56 µg/m³/yr.

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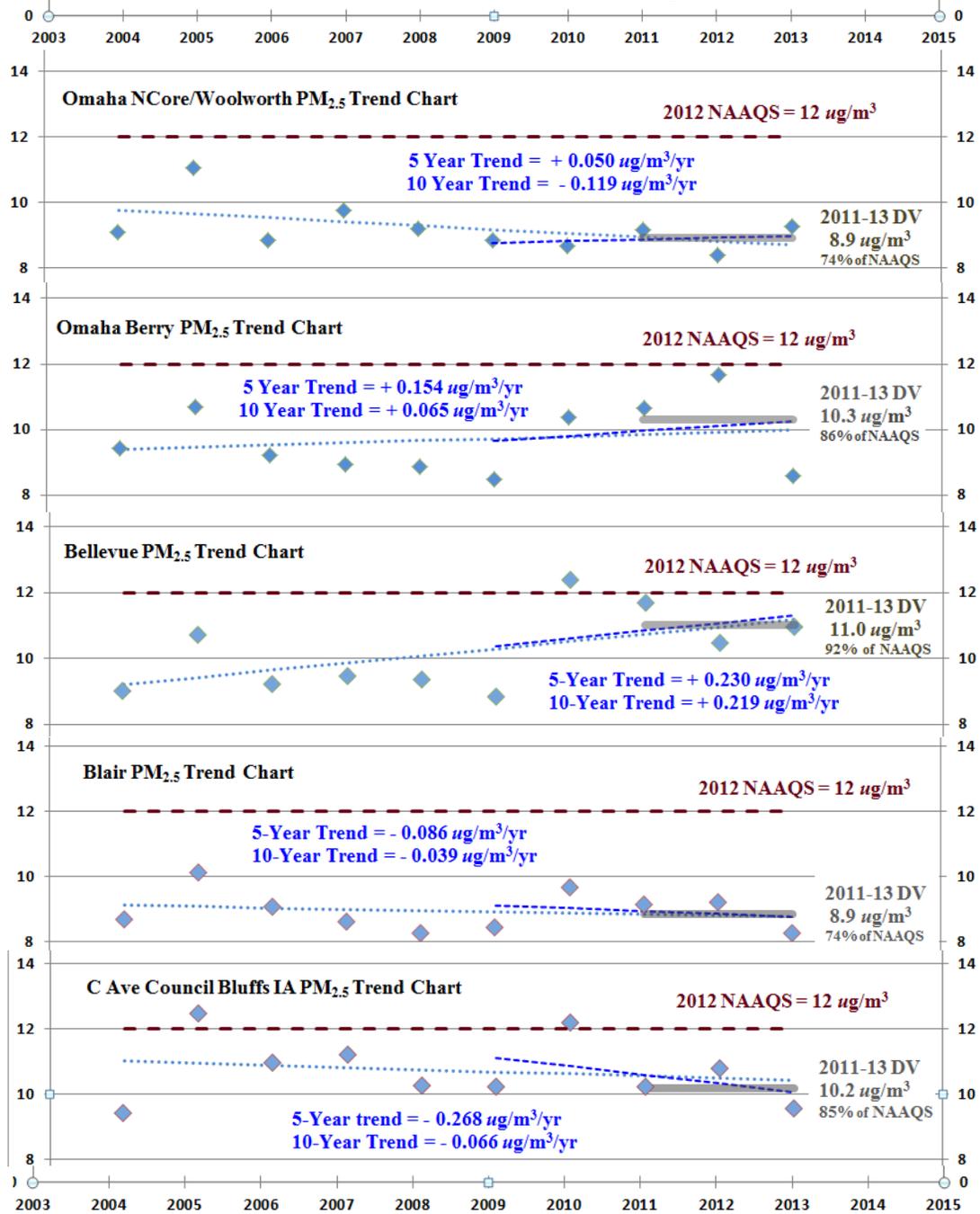
Figure V-2: Annual Average PM_{2.5} Levels and 2011-13 Design Values (DVs) in the Omaha MSA



Note: the DV for the Council Bluffs site was calculated by the NDEQ using data from the EPA AQS data base. The IA DNR will calculate the official DV for the Council Bluffs site. Thus the Council Bluffs DV used in this document is preliminary and is used for preliminary evaluation purposes.

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Figure V-3: Omaha MSA PM_{2.5} 2004-2013: Annual Averages with Trend Plots



Notes:.....

- * This figure summarizes data from the 5 PM_{2.5} monitoring sites in the Omaha MSA
- * There were 3 instances when annual average exceeded 12 µg/m³:
 - * In 2005 and 2010 at the Council Bluffs, IA site
 - * In 2010 at the Bellevue, NE site
- * The 2010-12 and 2011-13 Design Values were in attainment with the NAAQS
- * Previous Design Values since 2004-06 would have been in attainment with the 2012 NAAQS
- * The Bellevue site had the highest DV and the most pronounced upward trend, although the most recent 4 year trend (2010-2013) is downward.

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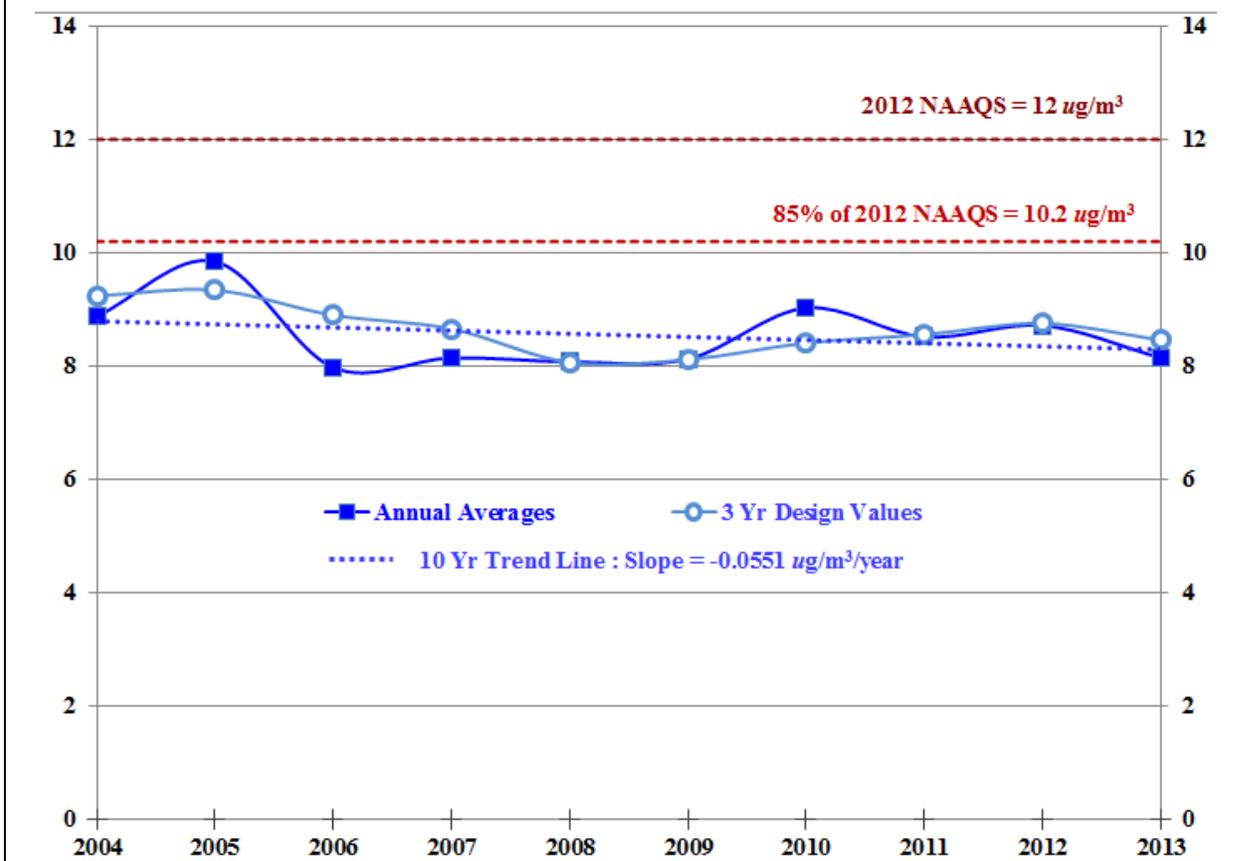
3b) Lincoln MSA: PM_{2.5}:

There is one PM_{2.5} monitoring site in the Lincoln MSA. The 2011-13 Design Value (DV) is 8.5 $\mu\text{g}/\text{m}^3$ or 71% of the revised NAAQS finalized in 2012.

The minimum number of PM_{2.5} monitoring sites required for an MSA with a population between 50,000 to 500,000 and a DV less than 85% of the NAAQS is zero (40 CFR Part 58 Appendix D Section 4.7.1, Table D-5). The Lincoln MSA has a population of ~310,000. As shown in Figure V-4 below, the historical DVs from this site going back to 2000-03 have always been less than 10.2 $\mu\text{g}/\text{m}^3$ (85% of new NAAQS).

No additional PM_{2.5} monitoring sites are required or anticipated.

Figure V-4: Lincoln MSA PM_{2.5} 2004-2013 : Annual Averages and Design Values (DVs)



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3c) Sioux City MSA: PM_{2.5}

There are 3 monitoring sites in the Sioux City MSA: one in Sioux City, IA and two in Union County, SD. As shown in Figure V-5 below the 2011-13 Design Values (DVs) were less than 85% of the 12.0 $\mu\text{g}/\text{m}^3$ NAAQS.

The Sioux City MSA has a population of ~ 169,000. The minimum number of PM_{2.5} monitoring sites required for an MSA with a population between 50,000 to 500,000 is dependent upon the DV (see 40 CFR Part 58 Appendix D Section 4.7.1, Table D-5):

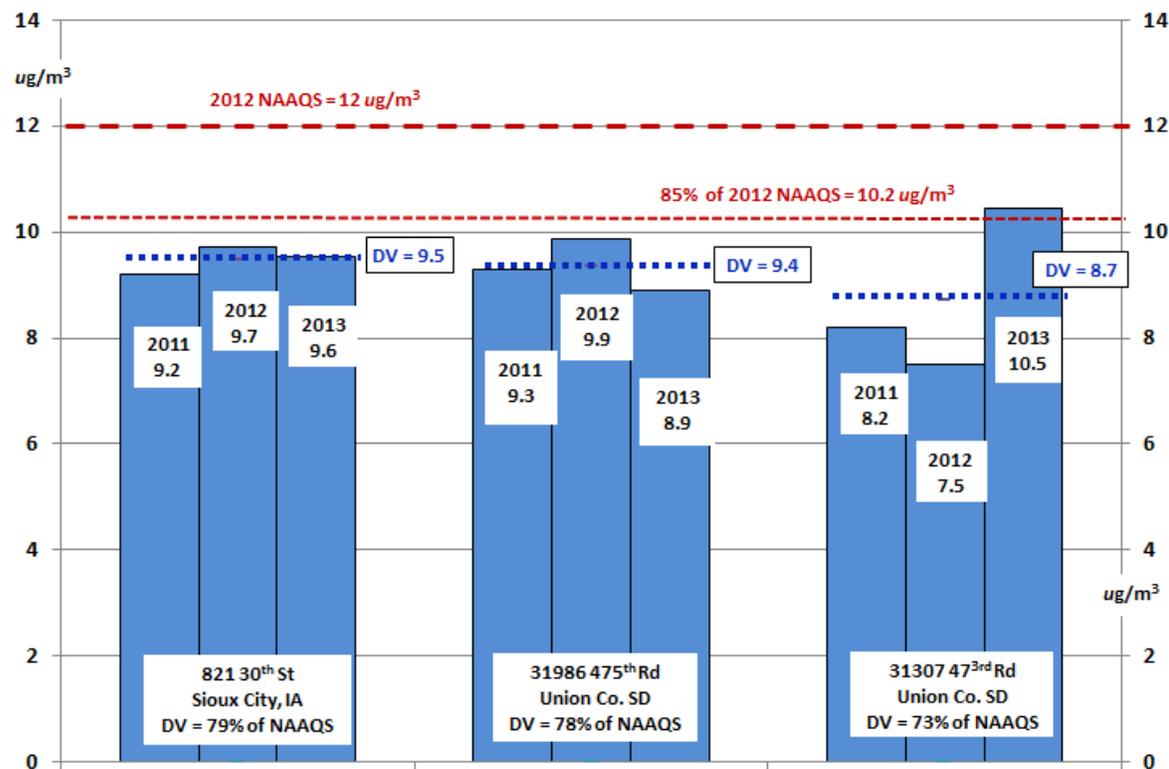
- If the DV less than 85% of the NAAQS no sites are required; or
- If DV is equal to or greater than 85% of the NAAQS one site is required.

Thus no additional PM_{2.5} monitoring sites are required or no additional sites within Nebraska are anticipated.

Table V-3 below provides a historical summary of PM_{2.5} levels at monitoring sites within the Sioux City MSA. Annual average PM_{2.5} levels have never exceeded 12.0 $\mu\text{g}/\text{m}^3$.

There have been 4 instances since 2000 when the DV within Sioux City was equal to or greater than 85% of the NAAQS. The highest DV recorded was 10.5 $\mu\text{g}/\text{m}^3$ or 87.5 % of the 2012 NAAQS for 2005 thru 2007. The most recent instance was the 2006-08 DV, which was 10.3 $\mu\text{g}/\text{m}^3$ or 86% of the 2012 NAAQS.

Figure V-5: Sioux City MSA: Annual Average PM_{2.5} Levels and Design Values (DVs): 2011-2013



Note: The DVs in this figure were calculated by the NDEQ using data from the EPA AQS data base. The official DVs for these sites will be calculated by Iowa and South Dakota.

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Table V-3: Historical Summary of Annual Average PM_{2.5} Levels and Design Values in the Sioux City MSA: 2000 thru 2013

Sites	Year Monitoring Started	Highest Annual Average		Highest DV	
		µg/m ³	Year	µg/m ³	Years
821 30 th St, Sioux City IA	2010	10.73	2003	10.5*	2005-07
31986 475 th Rd, Union Co SD	2009	9.88	2012	9.6	2010-12
31307 473 rd Rd, Union Co. SD	2013	10.46	2010	8.7	2009-11 2011-13

* Other instances when the Sioux City monitoring site has met or exceeded 10.2 µg/m³ or 85% of the 2012 NAAQS: 2001-03 DV = 10.3; 2003-05 DV = 10.3 & 2006-08 DV = 10.3.

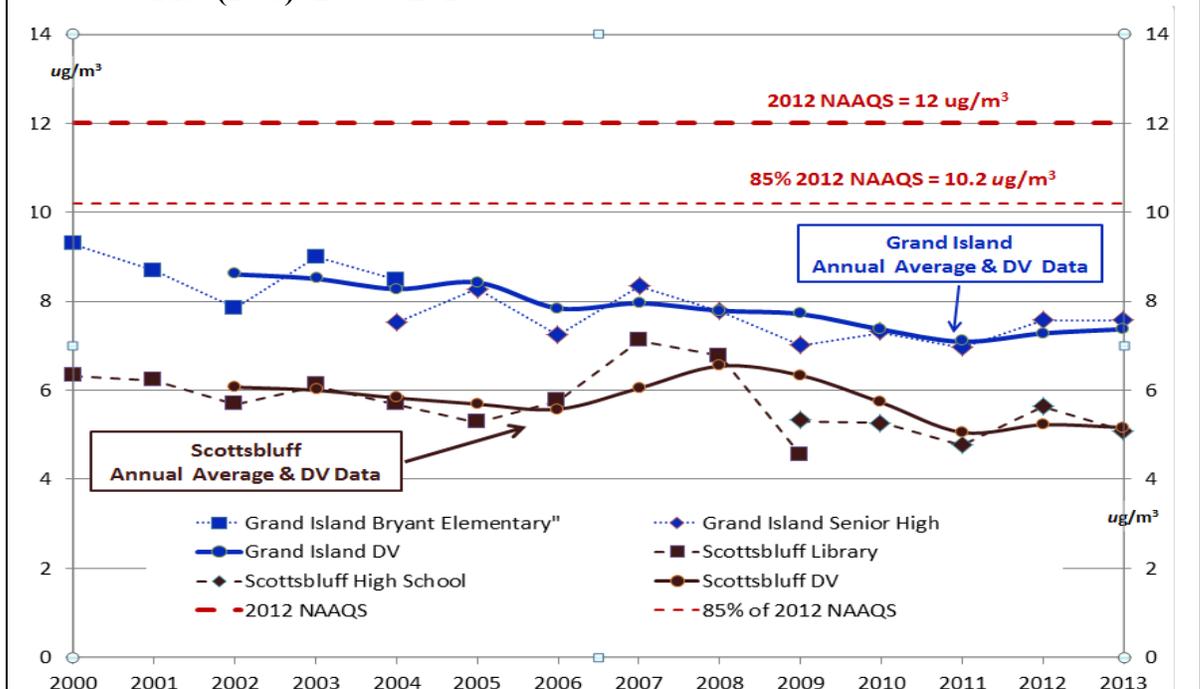
3d) Grand Island and Scottsbluff: PM_{2.5}

The NDEQ operates monitoring sites in Grand Island and Scottsbluff. The Grand Island site was established as Nebraska's transport site. The Scottsbluff site was established as Nebraska's background site. Each state is required to have one background site and one transport site per 40 CFR Part 58 Appendix D Section 4.7.3. Both the Grand Island and Scottsbluff sites are also population oriented, being located at the high schools in these two communities.

The 2011-13 Design Values, as well as historical design values going back to 2000-02, have been less than 85% of the 12.0 µg/m³ NAAQS. See Figure V-6 below.

Also see Section V.E.2 below for the PM_{2.5} monitoring requirements for the newly designated Grand Island MSA.

Figure V-6: Grand Island and Scottsbluff Annual Average PM_{2.5} Levels and Design Values (DVs): 2000 – 2013



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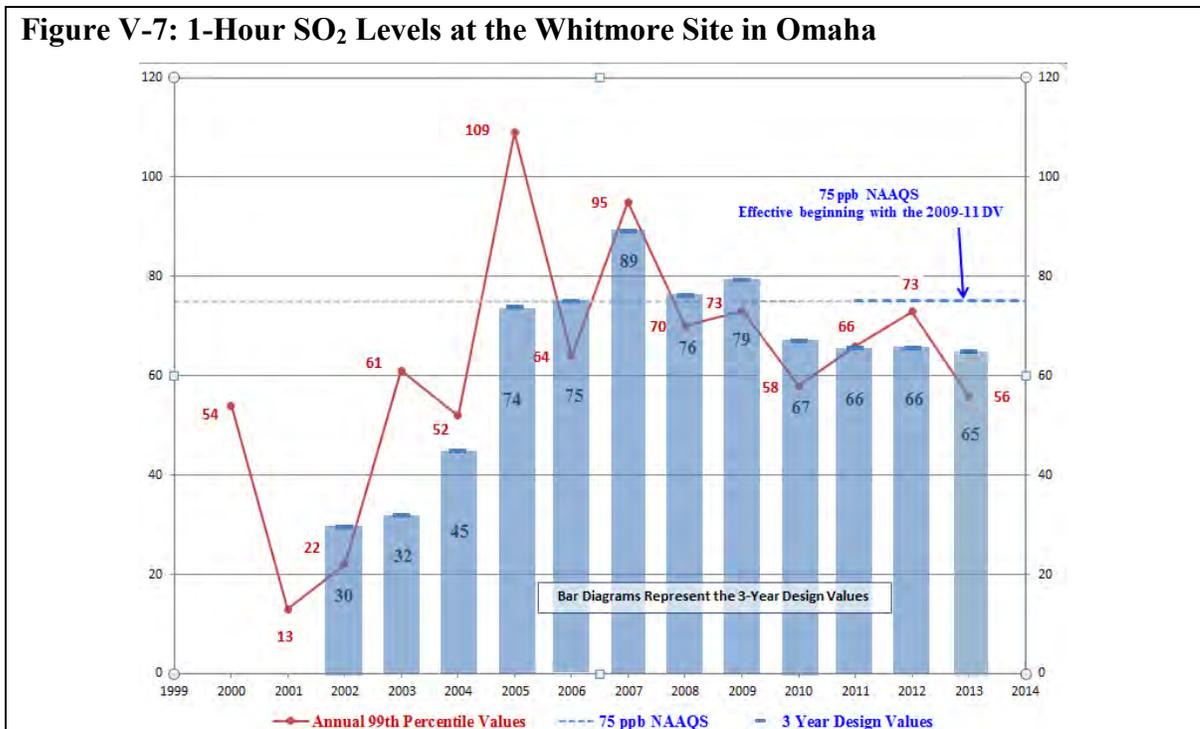
4) Sulfur Dioxide – Primary 1-Hour NAAQS

EPA promulgated a new 1-hour SO₂ NAAQS of 0.075 ppm in 2010. Attainment with the NAAQS is evaluated using the 3-year average of the annual 99th percentile 1-hour values (1-Hour SO₂ Design Value). Nebraska’s initial designation recommendation was submitted as “unclassifiable” in accordance with the EPA regulations and guidance. EPA issued a letter in February 2013 confirming that Nebraska did not have any monitored nonattainment areas but deferred designating Nebraska.

There is one source-oriented SO₂ monitoring site in the Nebraska network. It is located at 1616 Whitmore Ave in Omaha and operated by DCHD. The site is at a highest concentration location relative to the OPPD North Omaha Station (a coal-fired electricity generating facility). This site is currently finding SO₂ levels to be in attainment with the NAAQS. Historically (before the current NAAQS was promulgated) the 2005-07, 2006-08 and 2007-09 design values did exceed 75 ppb. See Figure V-7 below.

Table V-4 contains data on the BTU input and SO₂ emissions from coal-fired power plants in and near Nebraska. The two largest plants without source-oriented SO₂ monitoring are NPPD’s Gerald Gentleman Station in Lincoln County and OPPD’s Nebraska City Station in Otoe County.

Until EPA finalizes the procedures for completing area designations, it is not possible to determine whether additional source-oriented SO₂ monitoring sites will need to be established. Therefore, any additional monitoring site needs will be addressed in future network plans.



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Table V-4: SO₂ Related Information on Power Plants in or near Nebraska: 2011-13 Data ⁽¹⁾⁽²⁾

Plant name	Location	BTU Input (BTU x10 ¹²)	SO ₂ (tons)	1-Hr Ambient Monitoring Data (ppm) ⁽³⁾	
				2013 99 th Percentile	Design Value ⁽³⁾
Mid Am Scott Energy Ctr	Pottawattamie Co IA Omaha MSA	112	14,073	nd	nd
OPPD North Omaha Stn	Douglas Co NE Omaha MSA	35	11,377	56	65 ⁽⁴⁾
Mid Am G. Neal North Stn	Woodbury Co IA Sioux City MSA	44	9789	16	6 qtr avg 24 ⁽⁵⁾
Mid Am G Neal South Stn	Woodbury Co IA Sioux City MSA	45	14273		
NPPD Gerald Gentleman Stn	Lincoln Co NE 18 mi W North Platte	89	26438	nd	nd
OPPD Nebraska City Stn	Otoe Co NE 4 mi SE Neb City	95	16766	nd	nd
Gerald Whelan Energy Ctr	Adams Co NE 2 mi E Hastings	15	2133	nd	nd
NPPD Sheldon Stn	Lancaster Co NE Lincoln MSA	12	2760	nd	nd
Platte Generating Stn	Hall Co NE 2 mi S Grand Island	6	1813	nd	nd
Lon D Wright Power Plant	Dodge Co NE SE edge Fremont	4	1095	nd	nd

Abbr:

nd – Source-oriented ambient air monitoring site data not available (no data)

na – Data not available

Footnotes:

(1) BTU input and SO₂ emission data from the EPA Acid Rain data base (<http://www.epa.gov/airmarkets/quarterlytracking.html>).

(2) Ambient air monitoring data from the EPA AQS data base.

(3) The 1-hour SO₂ NAAQS is equal to 75 ppm. Attainment is evaluated using the 3-year average of the annual 99th percentile value, which is referred to as the Design Value or DV.

(4) The source-oriented monitoring site for the OPPD North Omaha Station was shut down from 6/22/11 thru 10/1/11 due to Missouri River flooding.

(5) The source-oriented monitoring site for the Mid America George Neal North & South Stations began operations on 7/1/12. There is insufficient data for a 3-year average DV; the value shown is a 6 quarter average.

Source-Oriented Ambient Air Monitoring Stations:

Mid America George Neal North & South Stations: Site located at 1221 260th Street, Sergeant Bluff, IA; Operated by the IA DNR /University Hygienic Laboratory; Began operation on 7/1/12.

OPPD North Omaha Station: Site located at 1616 Whitmore Street, Omaha, NE; Operating by DCHD; Began operation in 1999, but was shut-down from 6/22/11 thru 10/1/11 due to Missouri River flooding.

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5) Nitrogen Oxides - Primary 1-Hour NAAQS

EPA promulgated a new 1-hour NO_x NAAQS of 100 ppb in February 2010. Attainment with the NAAQS is evaluated using the 3-year average of the annual 98th percentile 1-hour NO₂ values.

The initial attainment evaluation was to be performed using 2008 thru 2010 data. The NDEQ submitted a classification recommendation of *unclassifiable/attainment* in August 2011, and EPA approved this classification in January, 2012. This classification was used because Nebraska did not have NO_x monitoring data available for 2008 thru 2010, but no evidence was available that Nebraska had not attained the standard.

In 2011, DCHD began operating a NO/NO_y monitor at the NCore site at 4102 Woolworth St. in Omaha (see Attachment B Table B-4.b for data). The NO/NO_y monitor will not provide an exact NO₂ value, but the NO_y-NO should approximate NO₂ levels with the possibility of a positive bias (i.e., NO_y-NO \geq NO₂).

Table V-5 below contains NO/NO_y data from the Omaha NCore site, as well as NO₂ data from selected monitoring sites in adjacent or near-by states for 2011 thru 2013. The data demonstrates that NO_y-NO levels are well below the NO_x NAAQS at the Omaha NCore site, and that NO₂ levels in adjacent states are also in attainment with the NAAQS.

The 2010 thru 2012 data presented in the 2012 Network Plan demonstrated very similar results, with the highest 3-year DV (2010-2012) being 72% of the NAAQS at Denver, CO (Site 08-031-0002)*; very similar to the 71% of NAAQS value for 2011 thru 2013.

The data in Table V-5 supports the *unclassifiable/attainment* classification (i.e., although data from Nebraska is limited, the data available from Nebraska and near-by states indicates attainment).

There is a possibility that the highest NO₂ levels may exist at near-road sites. The near-road monitoring program is discussed in Section V.A.1 above. It is noted that two of the sites listed in Table V-5 below are near-road-sites that began operation on 1/1/2013: Minneapolis, MN (27-053-0962) @ 58 ppb and St. Louis, MO (29-510-0094) @ 65 ppb.

* Note: the Denver site (08-031-0002) is located north of downtown Denver (~0.9 mi north of the Colorado State Capitol building), on a building roof at the intersection of Broadway, Champa & 21st Sts. Pollutant source is listed as "Area" and scale as "neighborhood".

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Table V-5: One-Hour NO_x Levels at Monitoring Sites in Nebraska and at Selected Sites in Near-By States for Comparison to the Primary NAAQS ⁽¹⁾⁽²⁾⁽³⁾							
Site	Site #	98 th Percentiles (ppb)			DV (ppb)	% NAAQS	Pollutant
		2011	2012	2013			
Omaha NE NCore	31-055-0019	45.0	45.0	35.3	41.8	42%	NO _y -NO
Des Moines IA	19-153-0030	39.3	39.6	36.8	38.6	39%	NO ₂
Davenport IA	19-163-0015	37.5	34.1	38.8	36.8	37%	NO ₂
Blaine MN Minneapolis MSA	27-003-1002	46.0	41.0	43.0	43.3	43%	NO ₂
Rosemount MN Minneapolis MSA	27-037-0020	37.0	36.0	38.0	37.0	37%	NO ₂
Minneapolis MN Near-road site	27-053-0962	nd	nd	58.0	na	na	NO ₂
Sioux Falls SD	46-099-0008	38.6	36.6	33.8	36.3	36%	NO ₂
Union Co. SD Sioux City MSA	46-127-0002	14.3	57.0	40.3	37.2	37%	NO ₂
Rapid City SD	46-103-0020	47.0	42.2	38.6	42.6	43%	NO ₂
Campbell Co WY	56-005-0011	nd	46.0 ⁽⁴⁾	52.0	na	na	NO ₂
Brookhurst WY Casper MSA	56-025-2601	42.2	27.3	35.9	35.1	35%	NO ₂
Cheyenne WY	56-021-0100	32.3	35.8	37.1	35.1	35%	NO ₂
Wamsutter WY	56-037-0200	37.9	36.3	37.7	37.3	37%	NO ₂
Denver CO	08-031-0002	72.0	72.0	67.6	70.5	71%	NO ₂
Wichita KS	20-173-0010	68.8	85.1	39.6	64.5	65%	NO ₂
Kansas City KS	20-209-0021	53.1	51.5	47.4	50.7	51%	NO ₂
Kansas City MO	29-095-0034	53.9	52.8	48.1	51.6	52%	NO ₂
St. Louis MO	29-510-0086	55.5	52.4	50.5	52.8	53%	NO ₂
St. Louis MO Near-road site	29-510-0094	nd	nd	65.1	na	na	NO ₂

Footnotes:

- (1) The Omaha NCore site is the only NO_x monitoring site in Nebraska. This site monitors for NO and NO_y. The NO_y-NO parameter includes NO₂ as well as other reactive forms of NO_x. The NO_y-NO parameter can be used demonstrate attainment with the NO_x NAAQS, but not non-attainment.
- (2) Sites from the near-by states of IA, MN, SD, WY, CO, KS and MO were selected in part on their proximity to NE. Urban sites and highest concentration sites also received priority. In areas where there was more than one NO_x monitoring site, data from the site that had the highest NO_x values is shown. The levels shown in this table include the highest found in each state.
- (3) The NO_x 1-hour primary NAAQS is 100 ppb. Attainment with the NAAQS is evaluated using the 3 year average of the annual 98th percentile values for NO₂. The NO_y-NO value is equal to or greater than the NO₂ value.
- (4) There was only 3 quarters of 2012 data from the Campbell Co WY site.

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6) Ozone: Current NAAQS and Revision Review

The current ozone NAAQS is set at 75 ppb with attainment being evaluated by averaging the 4th highest 8-hour values from the previous 3 years. The calculations involve truncation of the 8-hour values and the 3-year average values (e.g., 69.9 ppb truncates to 69 ppb). These 3-year truncated average values are referred to as Design Values.

EPA is in the process of re-evaluating the ozone NAAQS. In 2010, EPA proposed lowering the 8-hour ozone NAAQS to be within the range of 60 to 70 ppb as recommended by the Clean Air Science Advisory Committee (CASAC). There were also proposed changes that would have eliminated the current practice of truncating annual 4th-high values and 3 year average values. Using the revised calculation method, DVs could be raised as much as 2 ppb because truncation is currently used in calculating both the 8-hr values and the 3-yr DVs.

EPA subsequently withdrew the proposed regulation and is in the process of re-evaluating the ozone NAAQS. EPA is under a court schedule to publish the draft revised ozone NAAQS by December 2014 and promulgate by October 2015. CASAC has once again recommended the NAAQS to be within 60 to 70 ppb over an 8-hour period.

The subsections below discuss how ozone levels comply with the current NAAQS and how they compare to the revision range EPA is currently considering.

6a) Omaha MSA: Ozone

Figure V-8 below shows summary ozone monitoring data from the five monitoring sites in the Omaha MSA. Figure V-8 shows the 2011 thru 2013 4th high values for 8-hour ozone levels and the 3-year averages of these values. The 3-year averages approximate the 3-year Design Values.

Figure V-8 shows that the Omaha MSA remains in attainment with the current 75 ppb 8-hour ozone NAAQS. Figure V-8 also demonstrates how the attainment status of the Omaha MSA might be impacted if the ozone NAAQS is lowered into the 60 to 70 ppb range.

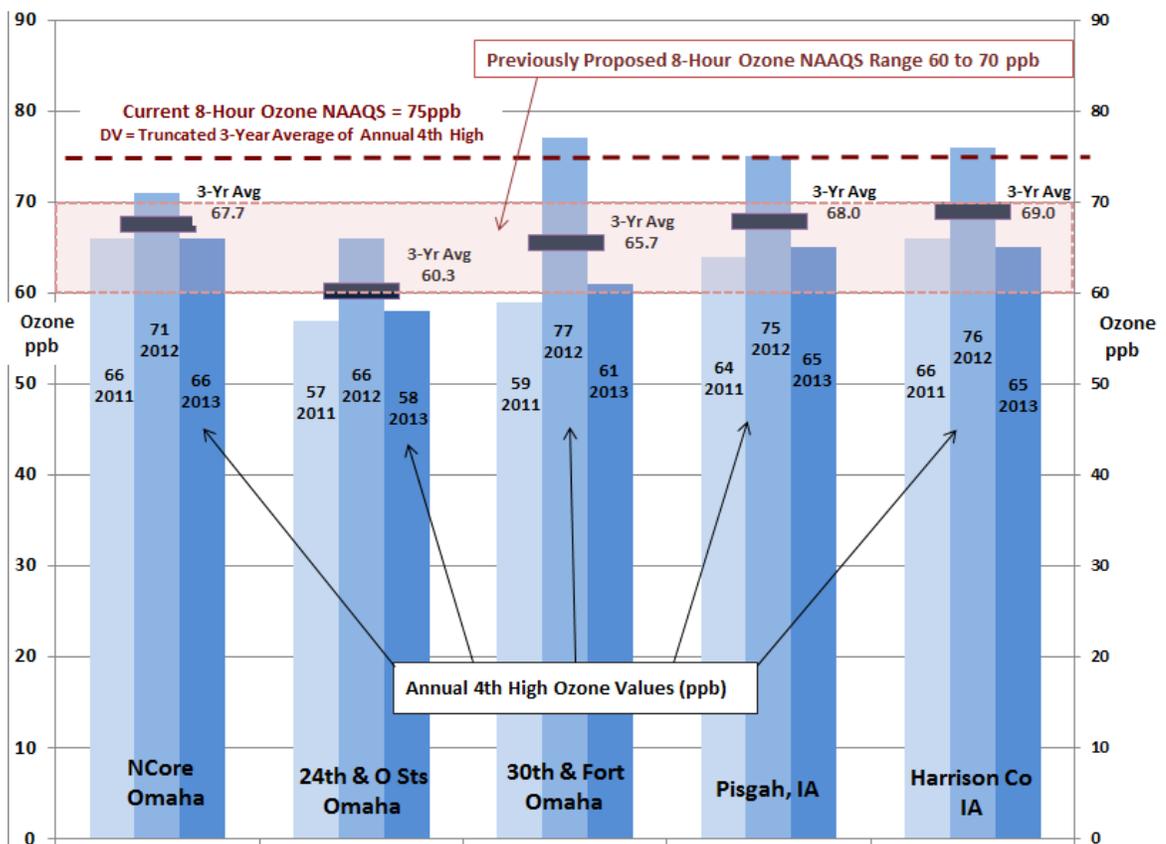
Historically, the Harrison County site has recorded the highest ozone Design Values in the Omaha MSA. Figure V-9 below shows the DVs and annual 4th-high 8-hour values from the Harrison County site for data collected from 2000 thru 2013.

As can be seen from Figure V-9, the annual 4th-high ozone levels dropped below 70 ppb after 2007 and stayed there until 2012 when the 4th-high value was 76 ppb. The Design Values have ranged from 63 to 70 ppb since 2007. This demonstrates how the attainment status of Omaha might be impacted if the ozone NAAQS is lowered into the 60 to 70 ppb range (see Section V.C.2 below for a discussion of the NAAQS review status).

Extrapolating the historical data from Figure V-9 indicates that ozone levels in the Omaha MSA will remain in attainment with the current 75 ppb NAAQS through 2014, unless unprecedentedly high ozone levels are reached in 2014 (i.e., a 4th high value of 85 ppb or higher would be required to raise the DV above 75 ppb).

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Figure V-8: Annual 4th-High 8-Hour Ozone Levels and 3-Year Averages in the Omaha MSA: 2011-13

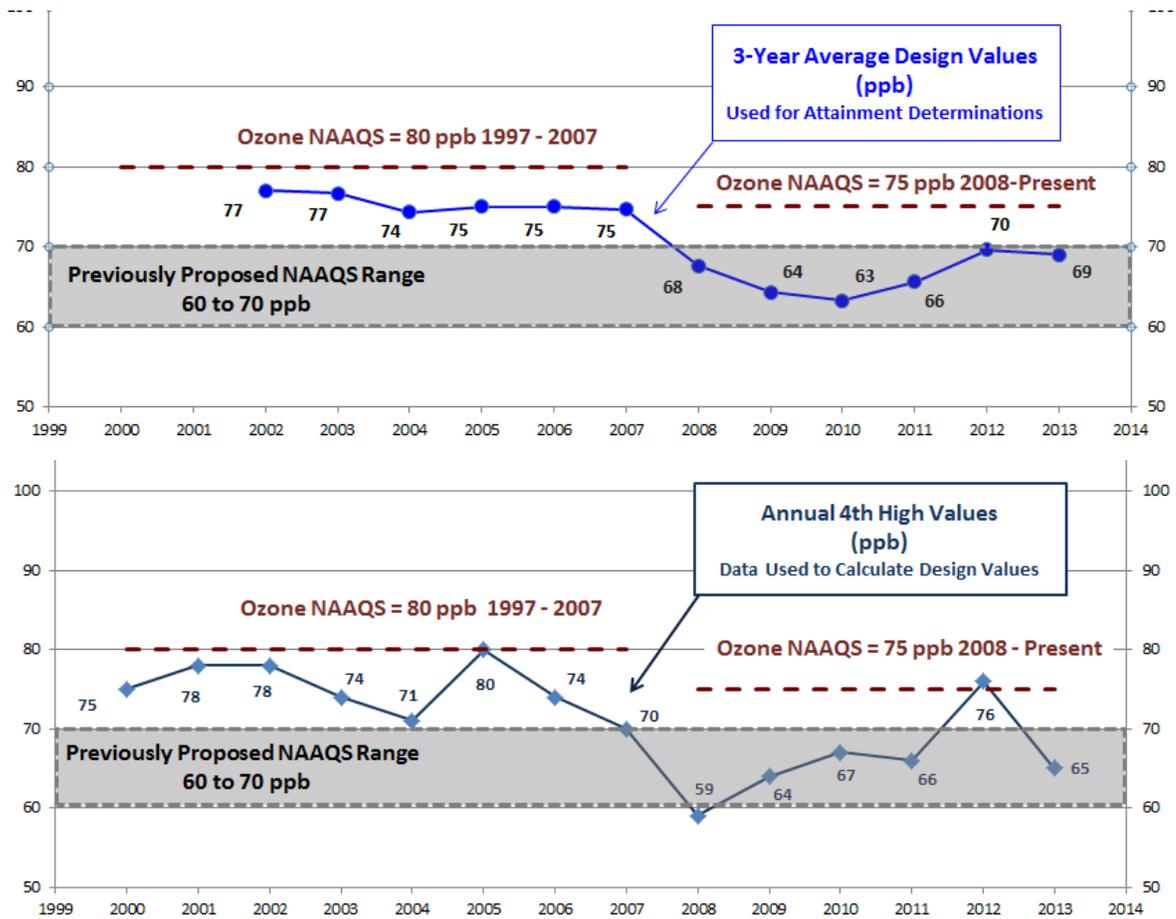


Footnotes:

- 1) The annual 4th high values are truncated values from the EPA AQS data base.
- 2) The 3-year average values were calculated using the annual 4th high values. The 3-year design value (DV) is equal to the truncated 3-year average value.
- 3) The IA DNR calculates the DVs for the IA sites. It is possible that the final DVs calculated by Iowa could differ from the truncated 3-year average values in this figure.

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Figure V-9: Ozone Design Values (DV)s* and Annual 4th-High Levels at the Harrison County IA Site: 2000 - 2013



* The “DV”s shown in this figure were calculated using the Design Value calculation procedures set forth in 40 CFR Part 58. However, the IA DNR is responsible for calculating the DVs for the Harrison County site. It is possible that the final DVs calculated by Iowa could differ from the DVs shown above.

6b). Nebraska Outside of the Omaha MSA: Ozone

There are two ozone monitoring sites in Nebraska located outside of the Omaha MSA:

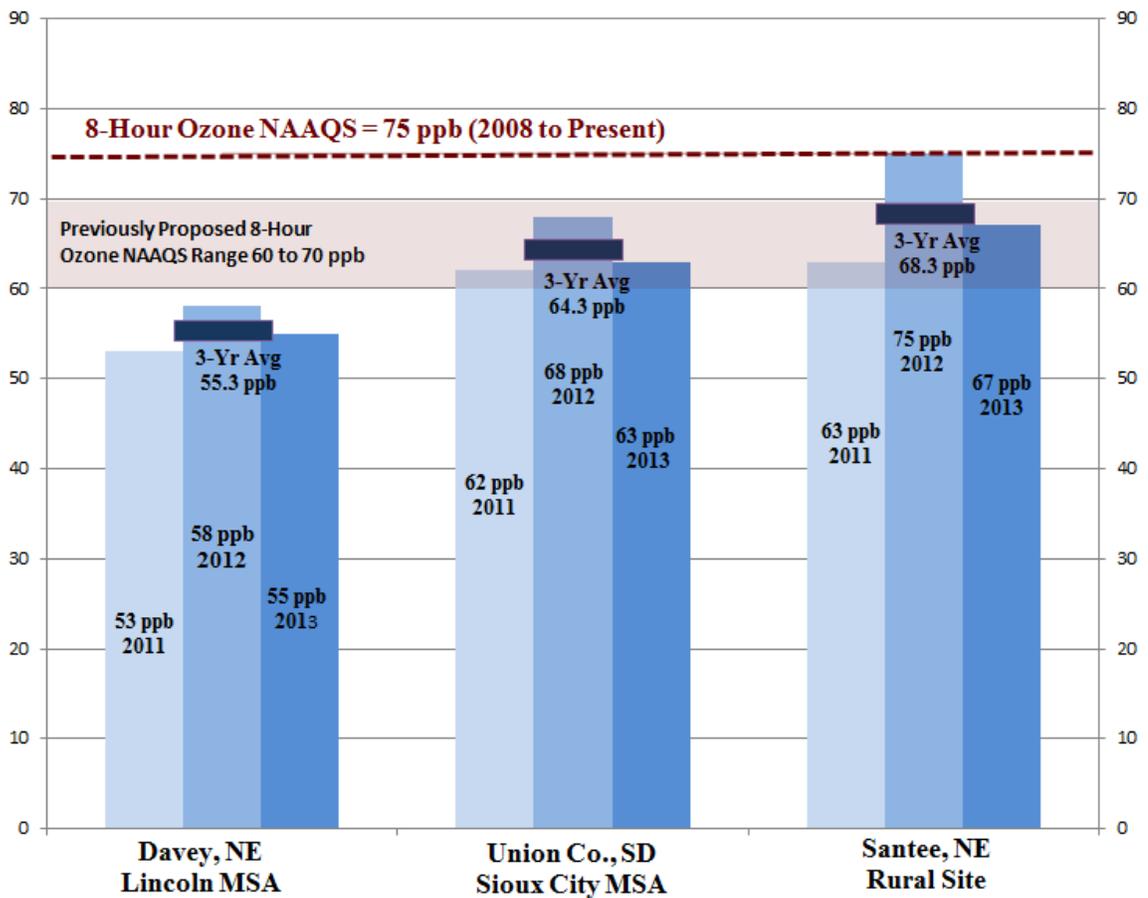
- Davey: a SLAMS site operated by LLCHD in the Village of Davey ~ 6 miles north of Lincoln, which began operation in 1985; and
- Santee: a CASTNET site operated by EPA located ~ ¼ mile south of the Village of Santee, which began operation on January 1st, 2011.

There is also an ozone monitoring site in Union County SD ~ 15 miles north of Elk Point, SD near I-29. This site is within the Sioux City MSA and has operated since January 1, 2009. It is operated by the SD Department of Environmental Protection.

Figure V-10 below shows the 2011-13 annual 4th high values and 3-year average values for the Davey, Santee and Union Co., SD sites. Figure V-10 demonstrates that ozone at these 3 sites was in attainment with the ozone NAAQS for the 2011-13 time period. Figure V-10 also shows that the 3-year average values at the Union County, SD (Sioux City MSA) and Santee, NE sites are in the 60 to 70 ppb range previously proposed for the revised NAAQS (see Section V.C.2 below for a discussion of the NAAQS review status).

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Figure V-10: Ozone Data from Sites Outside of the Omaha MSA: 2011 - 2013 ^{(1) (2)}



Footnotes:

- (1) The 3-year average shown in this figure were calculated from the annual 4th-high values in the EPA AQS database on or about 3/18/14. The Design Value or DV that is compared to the current NAAQS is calculated by truncating the 3-year average to a whole ppb value (e.g., 55.9 ppb is truncated to 55 ppb). The previously proposed ozone NAAQS revision used standard rounding conventions to calculate the DV (e.g., 55.9 ppb rounds to 56 ppb).
- (2) The 3 year average values shown above should be used with caution for comparison to the NAAQS, because these are not final DV calculations.

There was no ozone monitoring conducted in 2013 in the Nebraska's panhandle. The National Park Service had operated temporary ozone monitoring sites there previously:

- The Scotts Bluff National Monument from 2010 thru 2012: Annual 8-hour 4th high ozone values of 59 to 67 ppb were detected with a 3-year average value of 63 ppb.
- The Agate Fossil Beds in Sioux County (~40 miles north of Scottsbluff) from 2007 thru 2009: Annual 8-hour 4th high ozone values of 62 to 67 ppb were detected with a 3-year average value of 65 ppb.

This data indicates that the Nebraska panhandle area is in attainment with the current 75 ppb NAAQS. It also shows that the attainment status could change if the NAAQS were lowered into the 60 to 70 ppb range previously proposed (see Section V.C.2 below for a discussion of the NAAQS review status).

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Figure V-11 shows the 2013 4th-high ozone levels for sites in and around Nebraska, while Figure V-12 shows the DVs for these sites. Figures V-11 and V-12 demonstrate that annual 4th high ozone levels in the 60 to 75 ppb range are common at rural and municipal monitoring sites in and around Nebraska.

Figure V-11: 4th-High Ozone Levels for Sites In and Around Nebraska in 2013 ^{(1) (2) (3)}



- 1) Data was retrieved from the EPA AQS database on 3/19/14. The 2013 data was not yet certified.
- 2) In instances where there was more than one site in an area, values from the site with the highest ozone levels are shown.
- 3) Brick red font indicates less than a full year of data was available from a site.

Figure V-12: Ozone Design Values for Monitoring Sites In and Around Nebraska: 2011-2013 ^{(1) (2) (3)}



- 1) The DVs shown in this figure were calculated by truncating the 3-year averages of the annual 4th-high values. They are “unofficial” because the “official” DVs are calculated by the state or local authority in which the sites reside. Also the 2013 data had not yet been certified when the data was retrieved from the EPA AQS database.
- 2) In instances where there is more than one site in an area, the DV from the site with the highest DV is shown.
- 3) Brick red font indicates that 3 years of data was not available. The value shown was calculated using only 2 years of data, or was calculated using data from 2 near-by sites.

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As shown in Figures V-11 & V-12 (also see Attachment B, Table B.1), the Lincoln MSA ozone monitoring site at Davey has been reporting lower ozone levels than other sites in Nebraska. LLCHD and NDEQ have discussed possibly seeking a higher concentration ozone monitoring site within the Lincoln MSA. For 2014, LLCHD will continue to operate the ozone monitoring site at Davey. It is possible that temporary SPAMS or special study sites could be used to investigate higher ozone concentration areas.

Ozone NAAQS Attainment Summary: All monitoring sites in Nebraska and the Omaha MSA are demonstrating attainment with the current 75 ppb NAAQS. If the NAAQS were lowered as previously proposed, non-attainment is a possibility.

C. EPA Regulation Changes that are Proposed or Under Consideration

1. Ozone NAAQS Revision

At this time EPA is reviewing the ozone NAAQS. See Section V.C.6 discusses the status of the review and how it might impact Nebraska. The current ozone monitoring network in Nebraska consists of 3 sites in the Omaha MSA and one site in the Lincoln MSA. At this time, no changes to the ozone network are anticipated until the ozone NAAQS is finalized.

2. Rural Ozone Monitoring

EPA proposed additional ozone monitoring requirements on July 8, 2009. The proposed regulation called for an additional 3 non-urban monitors in Nebraska. EPA indicated their intent to finalize the additional ozone monitoring requirements at the same time they finalized the revised ozone NAAQS, which were proposed in January 2010 (see next section).

In September 2011, EPA withdrew the proposed regulations and stated their intent to defer changes until the next 5-year ozone NAAQS review. That review is currently underway, but a schedule for a proposed determination relative to the ozone NAAQS has not been established.

It now appears that any changes to the ozone monitoring requirements will likely not be finalized until 2015 or later. At this time, the NDEQ is not proposing initiating a rural ozone monitoring network.

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D. Other Air Quality Issues:

1) PM₁₀ at Cozad and Gothenburg

PM₁₀ monitoring was initiated in Cozad in 1994 and Gothenburg in 1991. Concern over particulate levels in these communities prompted the establishment of these monitoring sites. Both cities have alfalfa dehydration/pelleting plants and other agriculturally-related processing facilities that are particulate sources.

The highest 24-hour PM₁₀ values found in this 20 to 22 year monitoring period were 146 $\mu\text{g}/\text{m}^3$ at Cozad in 2002 and 143 $\mu\text{g}/\text{m}^3$ at Gothenburg in 2004. The 24-Hour NAAQS is 150 $\mu\text{g}/\text{m}^3$, which is not to be exceeded more than 3 times in 3 consecutive years.

Figures V-13 and V-14 below summarize the monitoring data from Cozad and Gothenburg, respectively. As can be seen in Figures V-13 and V-14, PM₁₀ levels have been lower in the past 6 to 7 years, and attainment/compliance with the NAAQS is being demonstrated with the highest 3rd high values in the last five years being 94 $\mu\text{g}/\text{m}^3$ at Cozad and 73 $\mu\text{g}/\text{m}^3$ at Gothenburg (63% and 49% of the NAAQS, respectively).

Closure of the Cozad and Gothenburg PM₁₀ sites was considered as part of this network review. Three factors prompting the closure review are listed below. Those marked with a “-” favor closure. Those marked with a “+” favor continued operation. Those marked with a “n” are neutral.

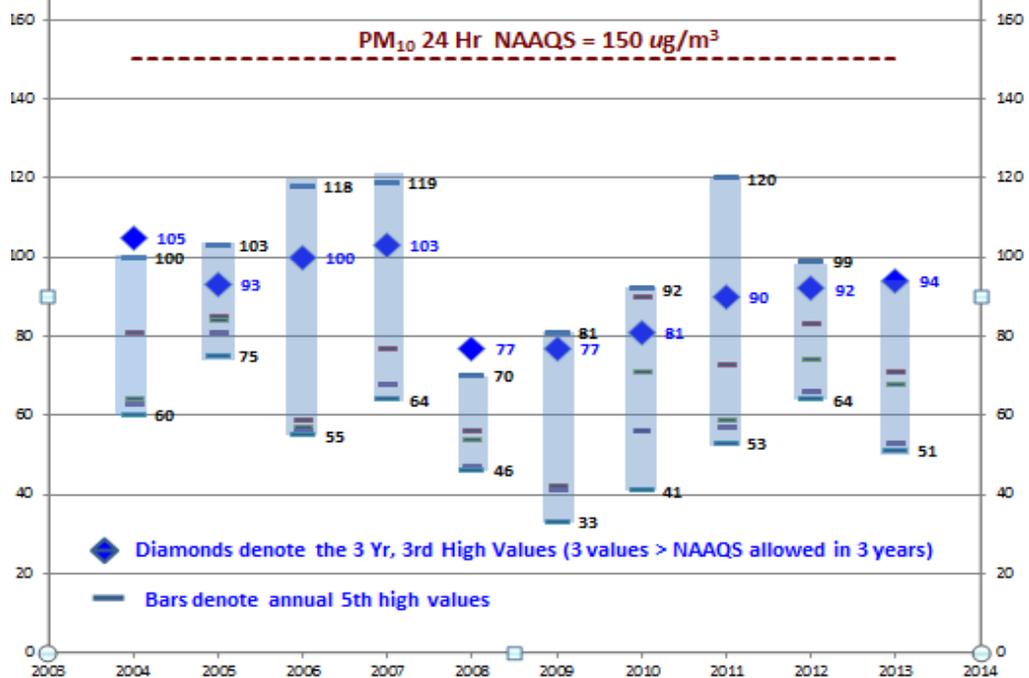
- Historical monitoring results indicate attainment with a significant margin of safety.
- The samplers at these sites are more than 10 years old and will need to be replaced soon, which will involve significant expenditures for replacements.
- n Ozone monitoring may be required in Grand Island and other areas of Nebraska in the future (see Sections C.1 & E.2), and a re-deployment of resources from PM₁₀ to ozone might be prudent (i.e., purchase new ozone monitoring equipment needed in a year or two, rather than new PM₁₀ samplers that may only be used for a year or two).
- + The presence of the samplers may provide incentive for sources in the area to diligently implement dust controls.

It was determined that it was best to continue operating the Cozad and Gothenburg sites with the existing samplers for the time being. If the samplers encounter O&M problems such that replacement is required, then temporary closure may occur (i.e., temporary until a final determination is rendered as part of the 2015 network review).

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Figure V-13: 24-Hour PM₁₀ Values at Cozad NE: 2004 – 2013

Five Highest Annual Values and 3rd Highest 3-Year Values



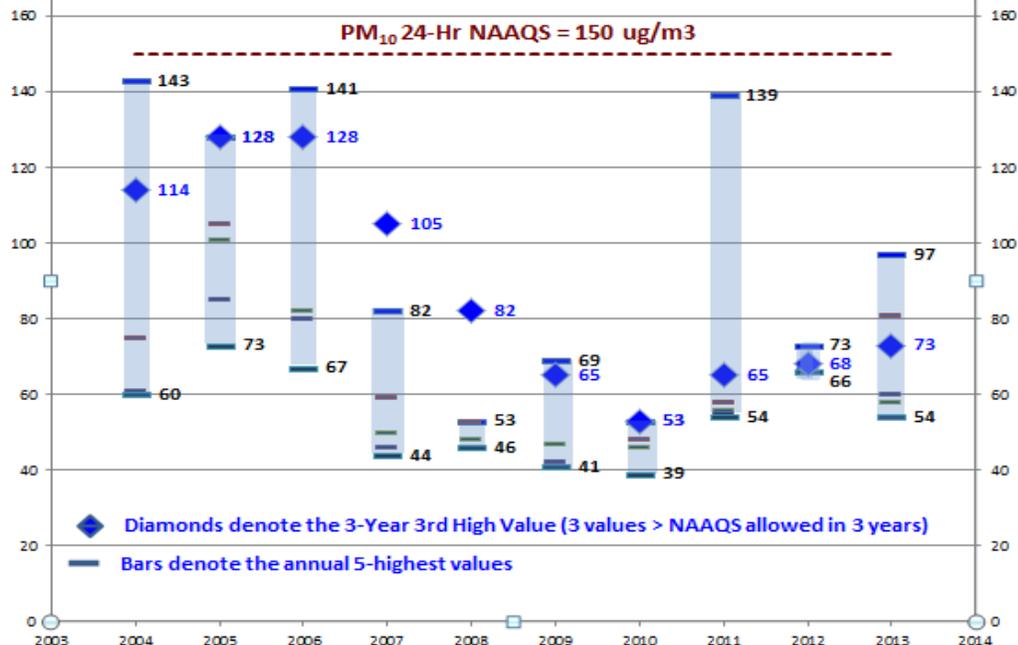
Maximum 3-Year, 3rd High Value 2004 - 2013 = 105 ug/m³ or 70% of NAAQS

Maximum 3-Year, 3rd High Value in Last 5-Years (2009-2013) = 94 ug/m³ or 63% of NAAQS

Maximum Annual High Value 2004-2013 = 120 ug/m³ or 80% of NAAQS

Figure V-14: 24-Hour PM₁₀ Values at Gothenburg NE: 2004 – 2013

Five Highest Annual Values and 3rd Highest 3-Year Values



Maximum 3-Year, 3rd High Value 2004 - 2013 = 143 ug/m³ or 70% of NAAQS

Maximum 3-Year, 3rd High Value in Last 5 Years (2009-2013) = 73 ug/m³ or 49% of NAAQS

Maximum Annual High Value 2004-2013 = 143 ug/m³ or 95% of NAAQS

Maximum Annual High Value in last 5 Years (2009-2013) = 139 ug/m³ or 93% of NAAQS

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2) Total Reduced Sulfur (TRS) Monitoring

Monitoring is conducted to verify compliance with the Nebraska air quality standard for TRS set forth in Chapter 4 of Title 129 – Nebraska Air Quality Regulations. In most instances hydrogen sulfide is the primary component of ambient TRS. However, TRS includes additional reduced sulfur compounds including methyl mercaptan, dimethyl sulfide and dimethyl disulfide

TRS monitoring was initiated in 1997 in and around Lexington and Dakota City. These sites were source-oriented with respect to the packing plants located there. The packing plants installed covers over their anaerobic lagoons in 2000, which resulted in dramatic decreases in ambient TRS levels. From 2001 forward all sites, except the Dakota City site demonstrated continuous attainment with the standard. The Dakota City site continued to report short-term isolated exceedences of the 30-minute standard through 2010.

TRS monitoring was also conducted in Broken Bow starting in 2000 and ending in 2002. Cattle feedlots in the area were suspected sources of hydrogen sulfide odors present in the area. The monitoring found ambient TRS levels to be in attainment with the state standard.

The last site in Lexington was closed in 2011. The Dakota City site is the sole remaining TRS site currently operated. The last exceedence of the TRS standard at the Dakota City site was in 2010.

Table V-6 contains a 10-year summary of the exceedence history for the Dakota City site. As can be seen the Dakota City site is finding TRS to be in attainment with the standard from July 2010 thru May 2014.

Year	Maximum	Time > Std	Details
2004	0.11 ppm	10 min	1 event: 4/15/2004
2005	0.10 ppm	None	Maximum event in June
2006	0.16 ppm	27 min	1 event: 4/24/06
2007	0.11 ppm	14 min	1 event: 5/8/07
2008	0.16 ppm	115 min	4 events: 5/25/08, 0.13 ppm, 26 min; 5/31/08, 0.11 ppm, 10 min; 6/2/08, 0.13 ppm, 51 min & 6/2/08, 0.16 ppm, 51 minutes
2009	0.04 ppm	None	Maximum event in May
2010	0.14 ppm	40 min	1 event : 5/27/10
2011	0.05 ppm	None	Maximum event in May
2012	0.09 ppm	None	Maximum event in March
2013	0.04 ppm	None	Maximum event in August
2014*	0.09 ppm	None	Maximum event in May*
* 2014 data only available through May			

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The closing of this site was considered. Factors considered are listed below. Factors marked with a “-” tend to favor closure. Those marked with a “+” tend favor continued operation of the site. Those marked with an “n” are neutral.

- Site has demonstrated consistent attainment for nearly 4 years: July 2010 thru May 2014.
- Comparing data from the last 5 years shows a downward trend in maximum TRS values from the previous 5 years.
- n The monitoring equipment in use at the site is over 10 years old. The Department has at least 1 spare operating unit for all site components (i.e., analyzer, zero air system and calibrator). Thus keeping the site operational for another year without additional equipment expenses should be feasible.
- + This is the last TRS site open. If all TRS sites are closed, it can be anticipated that technical expertise and parts inventory within the NDEQ for operating and maintaining a TRS site will decline. This could make it harder to initiate a new site if a future need arises.
- + The presence of the site provides sources with incentive to diligently implement TRS/odor control efforts.
- n Ozone monitoring may be required in Grand Island and other areas of Nebraska in the future (see Sections C.1 & E.2), and a re-deployment of resources from TRS to ozone may be prudent. However, these additional ozone monitoring requirements are at least a year away, and it is anticipated that the TRS site can be operated over the next year or two without major capital expenditures for new/replacement components.

After considering these factors, it was decided to continue operating the Dakota City TRS site for the time being.

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3) Range and Grassland Management Burning

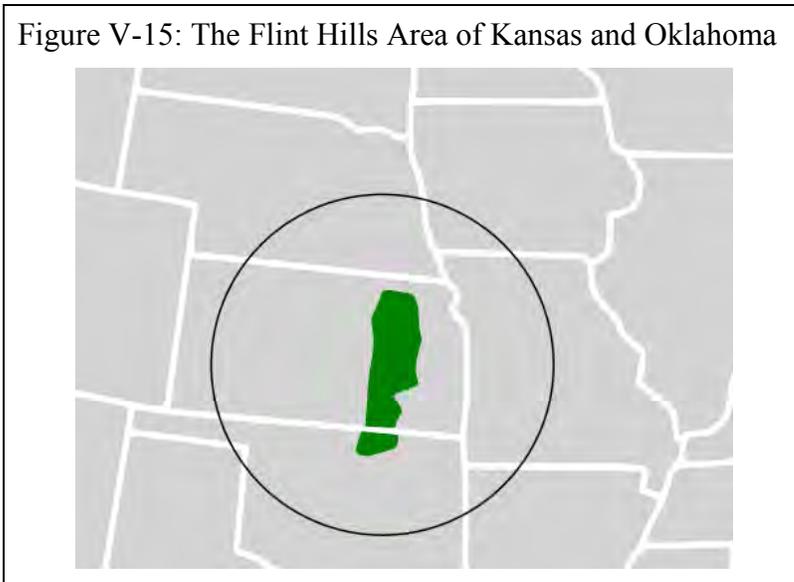
Prescribed burning is a common range and grassland management practice conducted in the spring to promote native prairie species, to suppress tree growth in pastures and prairies, and to release nutrients back into the soil. It is a conservation/grassland management tool recognized by state and federal agencies, as described at the following web addresses:

- <http://www.npwrc.usgs.gov/resource/habitat/burning/>
- <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ia/newsroom/features/?cid=stelprdb1077081>
- <http://outdoornebraska.ne.gov/wildlife/programs/wildnebraska/options.asp>

The appeal of burning is in part because it recreates natural prairie fires that were important to maintaining native grasslands in their indigenous, pre-settlement state. Thus from an ecological viewpoint, it is the “natural” way to maintain prairie environments. These burns destroy invading trees and shrubs, release nutrients, and maintain inter-species populations of prairie plants and grasses in a natural state. The down-side is that smoke from wildfires can travel great distances and can cause elevated air pollution hundreds of miles from the site of the fires.

The Flint Hills of eastern Kansas and northeast Oklahoma (see Figure V-15) contain the densest coverage of intact tallgrass prairie in North America. It is roughly 200 miles N-to-S and 80 miles E-to-W. The northern end of the Flint Hills extends into the southern areas of Washington County and Marshall County KS; approximately 20 miles south of the Nebraska/Kansas boundary. The cattle ranchers within the Flint Hills conduct spring burning to maintain the prairie.

Figure V-15: The Flint Hills Area of Kansas and Oklahoma



It was anticipated that Flint Hills prairie burning would be extensive in the spring of 2014 because drought conditions in 2012 and wet conditions in 2013 reduced the feasibility of burning in those years. Air quality data indicates that prescribed burns in the Flint Hills did impact Nebraska’s air quality on numerous occasions during March & April of 2014. Table V-7 below contains PM_{2.5} and ozone air quality data from the Lincoln, Omaha and Sioux City MSAs for 4 dates (3/30/14, 4/6/14, 4/12/14 and 4/18/14) when the impacts were greatest. Figures V-16 thru V-20 demonstrates the relationship between increased pollutant levels on these four dates and the occurrence of wildfires.

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Table V-7: Elevated PM_{2.5} and Ozone Levels on Four Specific Days that Appear Associated with Grassland Burning in the Flint Hills Area ^{(1) (2)}

Date	Location	24-Hour PM _{2.5} (ug/m ³)	8-Hour Ozone (ppb)	Additional Information
3/30/14	Omaha MSA	34.5	58	See Figure V-16
	Lincoln MSA	38.7	nd	
	Sioux City MSA	34.3	50	
4/6/14	Omaha MSA	22.5	55	See Figure V-17
	Lincoln MSA	38.6	52	
	Sioux City MSA	23.1	54	
4/12/14	Omaha MSA	36.0	62	See Figure V-18
	Lincoln MSA	31.1	53	
	Sioux City MSA	34.7	67	
4/18/14	Omaha MSA	22.4	61	See Figures V-19 & V-20
	Lincoln MSA	60.5	65	
	Sioux City MSA	28.8	63	

Air Quality Index (AQI) Public Health Impact Categories noted in this figure. ⁽⁴⁾

Green indicates a GOOD AQI - Air quality is considered satisfactory, and air pollution poses little or no risk

Yellow indicates a MODERATE AQI - Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.

Orange indicates an UNHEALTHY TO SENSITIVE GROUPS AQI - Members of sensitive groups may experience health effects. The general public is not likely to be affected.

Red indicates an UNHEALTHY AQI - Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.

National Ambient Air Quality Standards (NAAQS) ⁽⁵⁾

24-Hour PM_{2.5} = 35 ug/m³, which is compared to the 3 year average of the annual 98th percentile values (98th percentile = annual 8th high if 351 or more days of data is available)

Annual Average PM_{2.5} = 12 ug/m³, which is compared to the 3 year average of the annual averages ⁽⁵⁾

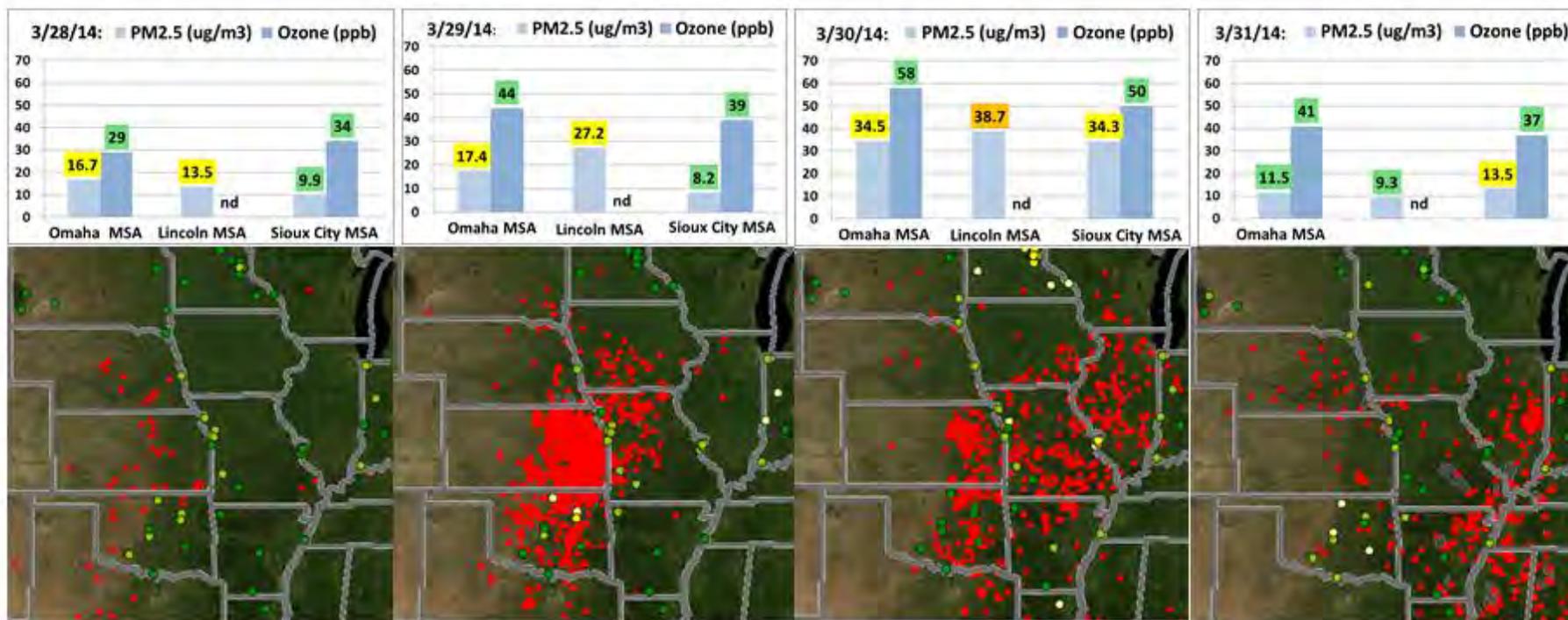
8-Hour Ozone = 75 ppb, which is compared to the 3 year average of the annual 4th high values

Footnotes:

- (1) PM_{2.5} and Ozone Data Source: EPA AirNow Web Site
- (2) Pollution impacts were not isolated to the four days shown, but four days had the highest PM_{2.5} levels that appeared associated with Flint Hills burning.
- (3) Lincoln PM_{2.5} analyzer was not operating from 1/1/14 thru 1/30/14. Thus the average value is for data collected between 1/3/14 and 4/30/14.
- (4) The AQI Category descriptions are from the AirNow website: airnow.gov/index.cfm?action=aqibasics.aqi
- (5) All areas of Nebraska are in attainment with the PM_{2.5} and ozone NAAQS. See Attachment B. If historical trends from recent years) hold through the remainder of 2014, the 2012-14 design values for PM_{2.5} and ozone are anticipated to remain in attainment with the current NAAQS. If EPA lowers the ozone NAAQS that could change (see Sections V.C.10 & V.C.11).

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Figure V-16: Wildfires and Ambient Pollutant Levels (PM_{2.5} & Ozone): March 28, 2014 thru March 31, 2014



▲ Red triangles are fires Gray areas are smoke plumes Data & maps from EPA AirNow website.

Daily Observations:

3/28/14: Some wildfires in NE, KS & OK. **PM_{2.5} AQI MODERATE** in Omaha & Lincoln MSAs and good in Sioux City MSA. **Ozone AQI GOOD** in Omaha & Sioux City MSAs. Lincoln not reporting ozone.

3/29/14: Numerous wildfires, especially in the Flint Hills area. **PM_{2.5} AQI MODERATE** range in Omaha & Lincoln MSAs and **GOOD** in Sioux City MSA. Ozone AQI in **GOOD** d range in Omaha & Sioux City MSAs. Lincoln not reporting ozone.

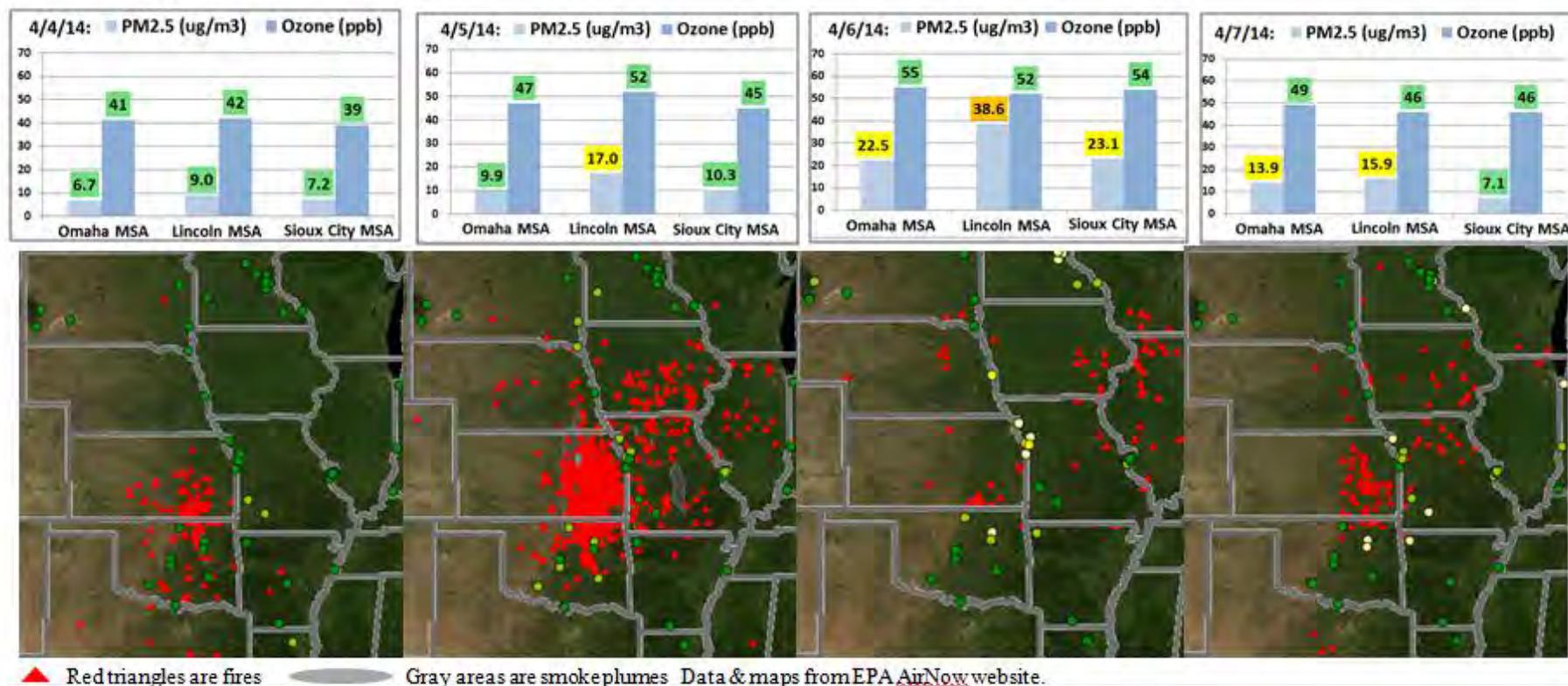
3/30/14: Wildfires less than previous day. **PM_{2.5}** elevated from previous day at all 3 cities. **PM_{2.5} AQI MODERATE** in Omaha & Sioux City MSAs and **UNHEALTHY TO SENSITIVE GROUPS** in Lincoln MSA. **Ozone AQI GOOD** in Omaha & Sioux City MSAs. Lincoln not reporting ozone.

3/31/14: Wildfires less than previous 2 days. **PM_{2.5} AQI GOOD** range in Omaha & Lincoln MSAs and **MODERATE** in Sioux City MSA. **Ozone AQI** in **GOOD** in Omaha & Sioux City MSAs. Lincoln not reporting ozone.

General Observations: There were numerous wildfires in the Flint Hills on 3/29/14, and pollutant levels (both PM_{2.5} and ozone) peaked in the Omaha, Lincoln and Sioux City MSAs one day later, on 3/30/14. At their peaks, the PM_{2.5} AQI reached **UNHEALTHY TO SENSITIVE GROUPS** in the Lincoln MSA, and **MODERATE** in the Omaha and Sioux City MSA's. The ozone AQI remained **GOOD** in all three MSAs.

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Figure V-17: Wildfires and Ambient Pollutant Levels (PM_{2.5} & Ozone): April 4, 2014 thru April 7, 2014



Daily Observations:

4/4/14: Some wildfires in Flint Hills & surrounding areas. **PM_{2.5} and ozone AQIs** in Omaha, Lincoln & Sioux City MSAs are **GOOD**.

4/5/14: High concentration of wildfires in Flint Hills area. **PM_{2.5} AQI** in Lincoln MSA is **MODERATE**, and **GOOD** in Omaha & Sioux City MSAs. **Ozone AQI** **GOOD** in Omaha, Lincoln & Sioux City MSAs.

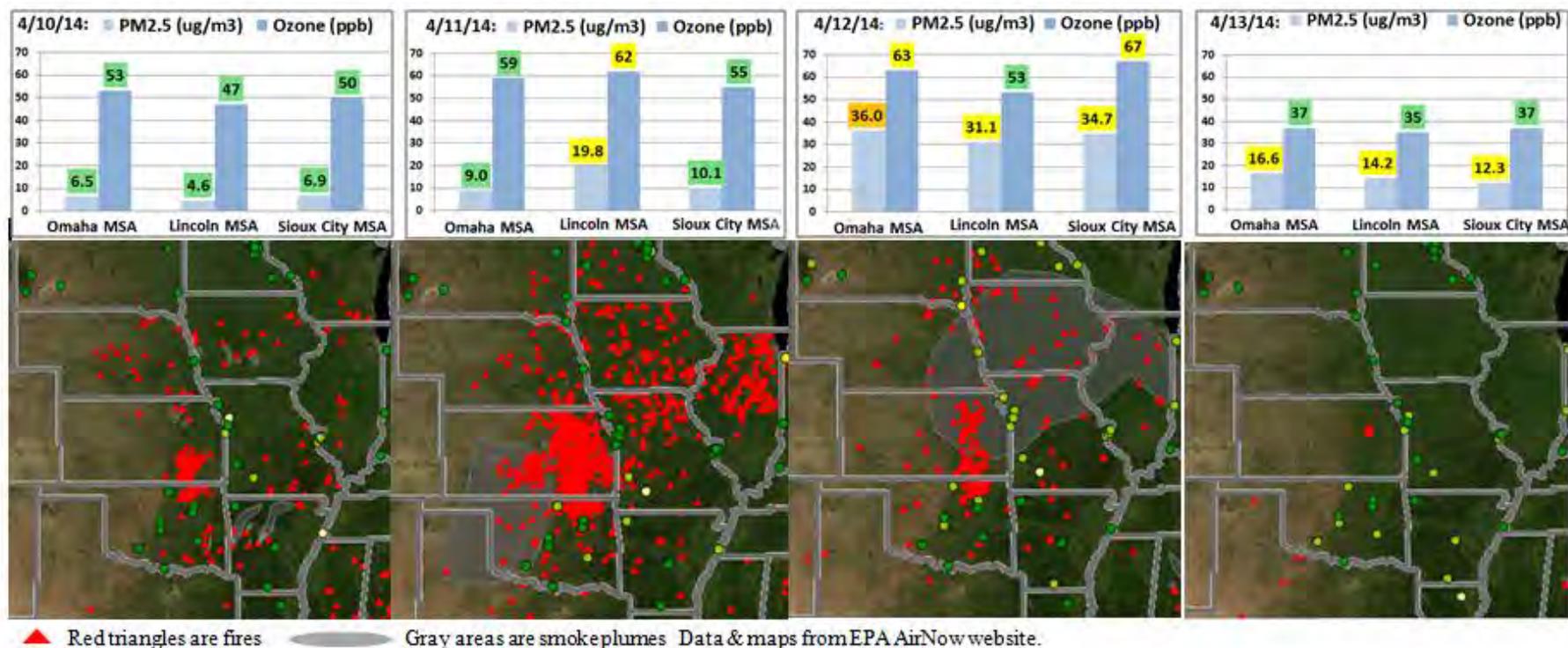
4/6/14: Wildfires much reduced from previous day. **PM_{2.5} AQI** in Lincoln MSA is **UNHEALTHY TO SENSITIVE GROUPS**, and **MODERATE** in Omaha & Sioux City MSAs. **Ozone AQI** **GOOD** in Omaha, Lincoln & Sioux City MSAs.

4/7/14: Some wildfires in Flint Hills, & also in IA, MO & NE. **PM_{2.5} AQI** in Omaha & Lincoln MSAs is **MODERATE**, and **GOOD** in Sioux City MSA. **Ozone AQI** **GOOD** in Omaha, Lincoln & Sioux City MSAs.

General Observations: The heaviest concentration of wildfires occurred on 4/5/14. **PM_{2.5}** levels peaked in the Omaha, Lincoln and Sioux City MSAs one day later, on 4/6/14. At their peaks, the **PM_{2.5} AQI** reached **UNHEALTHY TO SENSITIVE GROUPS** in the Lincoln MSA, and **MODERATE** in the Omaha and Sioux City MSA's. The ozone AQI remained **GOOD** in all three MSAs, and peaked slightly on 4/6/14.

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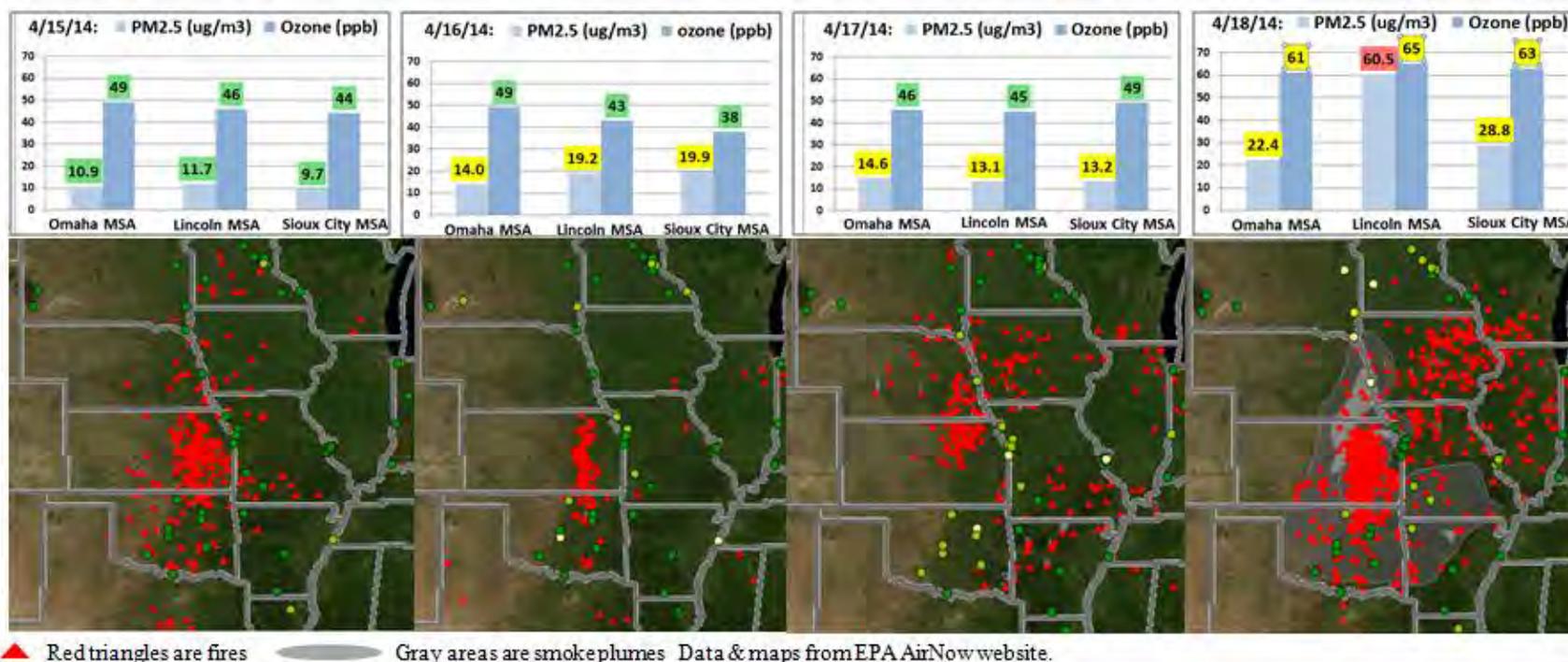
Figure V-18: Wildfires and Ambient Pollutant Levels (PM_{2.5} & Ozone): April 10, 2014 thru April 13, 2014



Daily Observations			
<p>4/10/14: Some wildfires in Flint Hills & surrounding areas. PM_{2.5} and ozone AQIs GOOD in Omaha, Lincoln & Sioux City MSAs.</p>	<p>4/11/14: Numerous wildfires with high concentration in Flint Hills. Smoke plume SW of Flint Hills in KS, OK & TX. PM_{2.5} & Ozone AQIs MODERATE in Lincoln MSA. PM_{2.5} & Ozone AQIs GOOD in Omaha and Sioux City MSAs.</p>	<p>4/12/14: Wildfires reduced from previous day. Smoke plume extends over 8 states: KS, NE, MO, IA, MN, WI, IL & IN. PM_{2.5} AQI UNHEALTHY TO SENSITIVE GROUPS in Omaha, and MODERATE in Lincoln & Sioux City. Ozone AQI is MODERATE in Omaha & Sioux City MSAs, and GOOD in Lincoln.</p>	<p>4/13/14: A few wildfires in Flint Hills. PM_{2.5} AQI MODERATE in Omaha, Lincoln & Sioux City. Ozone AQI GOOD in Omaha, Lincoln & Sioux City MSAs.</p>
<p>General Observations: The heaviest concentration of wildfires occurred on 4/11/14 with a smoke plume that drifted SW. On 4/12/14 the smoke plume drifted NE and covered portions of 8 states. On 4/12/14, PM_{2.5} levels peaked in the Omaha, Lincoln and Sioux City MSAs, and ozone also peaked on this day at Omaha and Sioux City. Ozone in the Lincoln MSA peaked on 4/11/14. The afternoon and evening of 4/13/14 there was precipitation across eastern NE, which should have facilitated reductions in PM_{2.5} and ozone.</p>			

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Figure V-19: Wildfires and Ambient Pollutant Levels (PM_{2.5} & Ozone): April 15, 2014 thru April 18, 2014



Daily Observations:

4/15/14: Numerous wildfires with concentrated fires in Flint Hills. **PM_{2.5} and ozone AQIs GOOD** in Omaha, Lincoln & Sioux City MSAs.

4/16/14: Wildfires concentrated in Flint Hills. **PM_{2.5} AQI MODERATE** in Omaha, Lincoln & Sioux City MSAs. **Ozone AQIs GOOD** in Omaha, Lincoln & Sioux City MSAs.

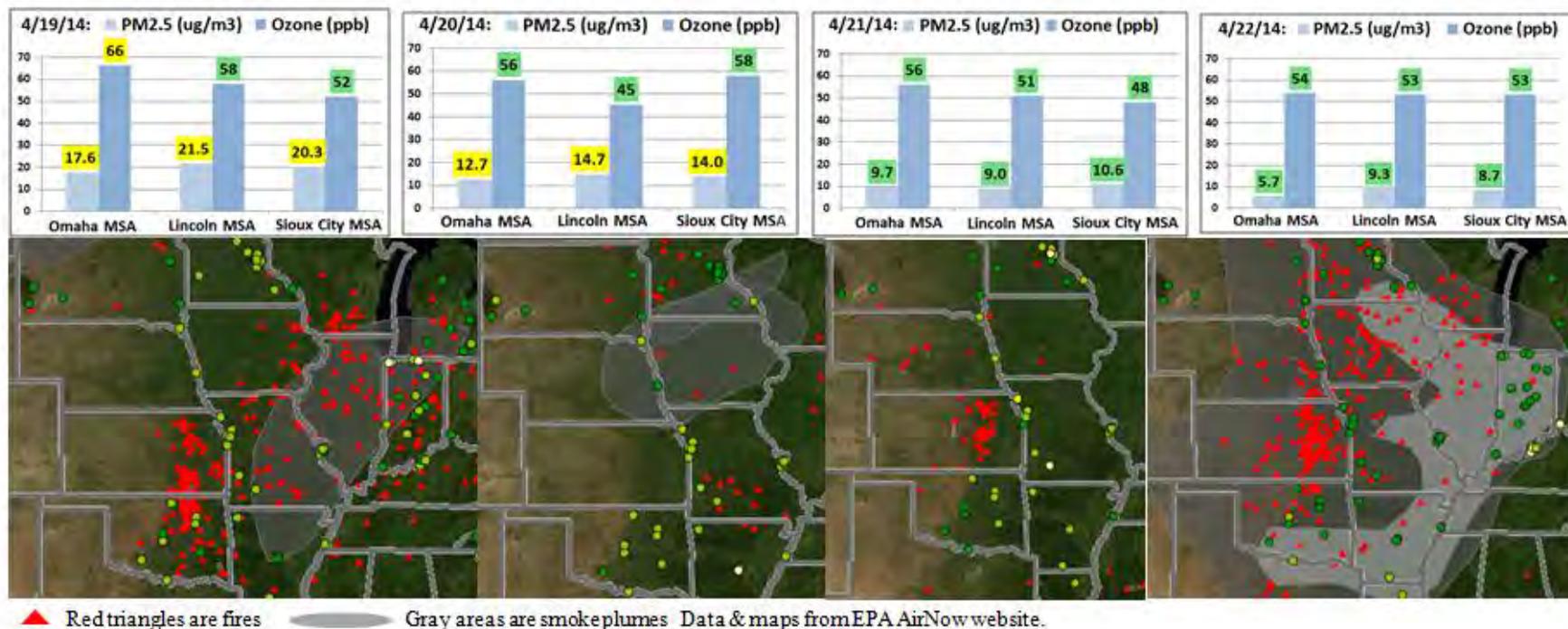
4/17/14: Numerous wildfires with concentrated fires in northeast KS & southeast NE. **PM_{2.5} AQI MODERATE** in Omaha, Lincoln & Sioux City MSAs. **Ozone AQI GOOD** in Omaha, Lincoln & Sioux City MSAs.

4/18/14: Many wildfires with concentrated fires in Flint Hills. Smoke plume extends across 6 states: OK, KS, NE, AR, MO & IA. **PM_{2.5} AQI MODERATE** in Omaha & Sioux City, & **UNHEALTHY** in Lincoln. **Ozone AQIs MODERATE** in Omaha, Lincoln & Sioux City.

General Observations: There were significant number of wildfires on all 4 days. PM_{2.5} in the Omaha, Lincoln & Sioux City MSAs became elevated on 4/16/14 and 4/17/14 (i.e., the 2nd & 3rd days) in the **MODERATE** AQI range. On 4/18/14 (the 4th day), a smoke plume developed over 6 states, and was most concentrated over northeast KS and southeast NE. Both PM_{2.5} and ozone levels were elevated to **MODERATE**, except Lincoln PM_{2.5} was **UNHEALTHY TO SENSITIVE GROUPS**.

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Figure V-20: Wildfires and Ambient Pollutant Levels (PM_{2.5} & Ozone): April 19, 2014 thru April 22, 2014



Daily Observations:

4/19/14: Wildfires in Flint Hills and other states. Smoke plume extends over 7 states: AK, MO, IA, IL, WI, MI & IN. **PM_{2.5} AQI MODERATE** in Omaha, Lincoln & Sioux City MSAs. **Ozone AQI MODERATE** in Omaha MSA & **GOOD** in Lincoln & Sioux City MSAs.

4/20/14: Few wildfires. Smoke plume remains over parts of 6 states: NE, SD, MO, IA, MN & WI. **PM_{2.5} AQI MODERATE** in Omaha, Lincoln & Sioux City MSAs. **Ozone AQI GOOD** in Omaha, Lincoln & Sioux City MSAs.

4/21/14: Some wildfires in Flint Hills and a few in NE and other states. **PM_{2.5} & Ozone AQIs GOOD** in Omaha, Lincoln & Sioux City MSAs.

4/22/14: Wildfires in Flint Hills and other states. Smoke plume extends from Canada to Mexico and 20 states (see Figure XX below). across 6 states: OK, KS, NE, AR, MO & IA. **PM_{2.5} & Ozone AQIs GOOD** in Omaha, Lincoln & Sioux City MSAs.

General Observations: PM_{2.5} and ozone pollutant levels declined during this period from previous peak on 4/18/14. Smoke plumes were present on 4/19/14, 4/20/14 and 4/22/14. The smoke plume on 4/22/14 was very wide-spread. Visual observations at mid-day in Lincoln on 4/22/14 indicated good visibility and little haze (personal observation of Jim Yeggy).

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An examination of Figures V-15 thru V-19 above indicates that pollution impacts on the Lincoln, Omaha and Sioux City MSAs typically occurred the day after peak burning activities in the Flint Hills. An exception was April 18, 2014 when the 24-hour PM_{2.5} level reached 60.5 ug/m³ in Lincoln, which was a peak burning day.

Atmospheric conditions such as wind direction, wind direction changes, atmospheric dispersion/inversions and/or rainfall events can greatly affect the pollution impact of open burning. For example see figure V-17, on 4/11/14 the smoke plume from the Flint Hills drifted to the southwest and covered parts of 3 states, and then on 4/12/14 the plume shifted to the northeast and covered parts of 8 states. Rainfall on 4/13/14 cleared the smoke plume.

E. Population Growth and Metropolitan Areas

1. General Population Trends and Network Design

Population related data is reviewed as part of the network planning process because:

- Population growth may be associated with pollution source growth;
- High population density generally correlates with high air pollution potential; and
- Some 40 CFR Part 58 requirements are based on population and/or federally defined metropolitan statistical definitions.

Attachment C contains a review of population growth and growth trends in Nebraska. The data in Attachment C is based on 2010 census and 2012 survey estimate data.

Overall growth trends in Nebraska appear basically unchanged from those described in previous annual Network Plans. Most of the population growth is occurring in Nebraska's 3 most populous and densely populated counties: Douglas, Lancaster and Sarpy (i.e., the Omaha and Lincoln MSAs).

The basic design of the Nebraska ambient air monitoring network is consistent with these population trends: 61% of the monitoring sites and 73% of the pollutant monitors are located within the Omaha and Lincoln MSAs. The Omaha MSA network contains 52% of the monitoring sites in Nebraska and 67% of the monitors.

2. Grand Island MSA

The 2010 US Census found the urbanized core of Grand Island to have a population of 50,440, and Grand Island was formally recognized as a Metropolitan Statistical Area on February 28, 2013. The MSA designation triggered new minimum monitoring site requirements for PM_{2.5} and ozone as summarized in Table V-8.

The existing PM_{2.5} monitoring site in Grand Island meets/exceeds the minimum monitoring requirements for that pollutant. Thus, no changes in the PM_{2.5} monitoring network at Grand Island are planned.

Currently there are no ozone monitoring sites in Grand Island, which creates uncertainties in the application of the minimum monitoring requirements in 40 CFR Part 58 Appendix D (see Table V-8). Further uncertainty is created because the ozone NAAQS is currently under review(see Section V.C.1 above). Also there is a possibility that rural ozone monitoring requirements may be associated with the revised NAAQS (see section V.C.1 above), which might influence the preferred location for a monitor within the Grand Island MSA

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Thus at this time, the NDEQ is deferring a determination to initiate ozone monitoring in Grand Island until the ozone NAAQS review is completed, and any NAAQS changes and associated rural monitoring requirements are finalized.

While awaiting the finalization of the ozone NAAQS and any associated monitoring requirements, the NDEQ will proceed with preliminary planning for deployment of ozone monitoring outside the Omaha and Lincoln MSAs.

Table V-8: Minimum Monitoring Site Requirements for the Grand Island MSA ^(a)
<p>PM_{2.5}: 40 CFR Part 58 Appendix D Section 4.7 Table D-5 that apply to MSAs with populations of 50,000 to 499,000 (Grand Island MSA population ~ 84,000)</p> <ul style="list-style-type: none"> • DV ≥ 85% of NAAQS => At least 1 monitoring site required • DV < 85% of NAAQS => No monitoring site required
<p>2011-13 PM_{2.5} Design Values (DVs):</p> <ul style="list-style-type: none"> • Annual Average = 7.3 µg/m³ or 61% of NAAQS (12 µg/m³) • 98th Percentile = 18.8 µg/m³ or 54% of the NAAQS (35 µg/m³)
<p>Grand Island is not required to have a PM_{2.5} monitoring site. Grand Island has one PM_{2.5} monitoring site, which meets/exceeds the minimum monitoring requirement. Changes in the PM_{2.5} monitoring network in Grand Island are not needed nor anticipated.</p>
<p>Ozone: 40 CFR Part 58 Appendix D Section 4.1 Table D-2, which apply to MSAs with populations of 50,000 to 349,999 (Grand Island MSA population ~ 84,000)</p> <ul style="list-style-type: none"> • DV ≥ 85% of NAAQS => At least 1 monitoring site required • DV < 85% of NAAQS => No monitoring site required
<p>2011-13 Design Value (DV) for 4th High Values is not available because ozone monitoring site has not been conducted in Grand Island.</p>
<p>Ozone monitoring needs under review.</p>
<p>Footnotes: (a) 40 CFR Part 58 Appendix D sets forth the minimum number of monitoring sites required. The actual number of monitoring sites needed may exceed the minimum number required.</p>

F. Funding

Air monitoring is supported by a combination of federal, cash, state and local funding sources. Table V-4 below provides a summary of the primary funding sources used for air monitoring.

Current funding levels are adequate to continue the operation of the existing Nebraska air monitoring network, at least through the end of the current federal fiscal year (sept. 2014). Current funding levels have been sufficient to allow upgrades including:

- New ozone monitoring equipment and reporting software for LLCHD, and
- A new PM_{2.5} FRM monitor being sought to fulfill collocation requirements for DCHD (see Section V.A).

Federal CAA §103 grant funding for April 2014 thru March 2015 was maintained at previous levels. Initial indications are that Federal CCA §105 funding for October 2014 thru September 2015 will also be maintained at current levels. These future funding levels appear adequate to allow continued operation of the current monitoring network. Expansion of the monitoring

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network is not currently planned thru the 2015 FFY. If a need for expanding the monitoring network develops, funding would need to be obtained.

Table V-9: Primary Funding Sources used to Support Air Monitoring in Nebraska	
Nebraska Department of Environmental Quality (NDEQ)	
Funding Source	Comments
State General Funds	At a minimum must be sufficient to meet minimum federal match requirements
State Title V Funds	Fees paid by major sources based on the quantity of air pollutants they emit. NDEQ collects Title V fees for sources through-out Nebraska, except those regulated by LLCHD and Omaha Air Quality Control. Title V funds cannot be used for state/local match.
CAA §105 Funds	Federal grant funds used for air monitoring activities set forth in a bi-annually negotiated EPQA-NDEQ work plan. Requires a 40% state/local match. A portion of this grant funding is passed on to DCHD and LLCHD.
CAA §103 Funds	Federal grant funds used for air monitoring activities set forth in a bi-annually negotiated EPQA-NDEQ work plan. This money is currently limited to funding PM _{2.5} and IMPROVE monitoring, and sometimes for specified equipment purchases and/or special monitoring studies. Requires no state/local match. A portion of this grant funding is passed on to DCHD and LLCHD.
Douglas County Health Department (DCHD)	
Local County Funds	At a minimum must be sufficient to meet minimum federal match requirements
City of Omaha Title V funds	See <i>State Title V Funds</i> comments above. The Omaha Air Quality Control regulates air emission sources in the City of Omaha, including the collection of Title V fees from major sources. A portion of the Omaha Title V funds are directed to DCHD to support air monitoring. Title V funds can not be used for state/local match.
CAA §105 Funds	NDEQ passes-through a portion of the Federal §105 funds to DCHD for activities described in an NDEQ/DCHD work plan. DCHD is required to meet the 40% state/local match requirement.
CAA §103	NDEQ passes-through a portion of the federal §103 funds to DCHD for activities described in an NDEQ/DCHD work plan, primarily PM _{2.5} related monitoring activities. There is no state/local match requirement.
Metropolitan Area Planning Assoc. (MAPA) Funds	Typically federal grant funds obtained by MAPA are for specific purposes such as transportation or homeland security related activities. Historically they have been used for equipment purchases and site set-up, not network operating costs.
Lincoln Lancaster County Health Department (LLCHD)	
Local County Funds	At a minimum must be sufficient to meet minimum federal match requirements
Lancaster County Title V funds	See <i>State Title V Funds</i> comments above. LLCHD regulates air emission sources in Lancaster County, including the collection of Title V fees from major sources. A portion of the Title V funds are used to support air monitoring activities performed by LLCHD. Title V funds cannot be used for state/local match.
CAA §105 Funds	NDEQ passes-through a portion of the Federal §105 funds to LLCHD for activities described in an NDEQ/LLCHD work plan. LLCHD is required to meet the 40% state/local match requirement.
CAA §103	NDEQ passes-through a portion of the federal §103 funds to LLCHD for activities described in an NDEQ/LLCHD work plan, primarily PM _{2.5} related monitoring activities. There is no state/local match requirement.

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VI. Anticipated Nebraska Air Monitoring Network Modifications

There are no definitive plans to add or close sites within the Nebraska air monitoring network before the end of 2015. However, there are possible closures and network upgrades that could occur in this time frame. These are summarized below with references to sections with detailed discussion.

- The NDEQ is considering submitting a waiver pursuant to 40 CFR Part 58 Appendix D Section 4.5.a.ii that would allow for closure of the lead monitoring site in Auburn. If a waiver was approved, the NDEQ would close the site, possibly in 2014 (if the waiver was approved). Currently the Auburn site is detecting lead levels that are 2% to 3% of the NAAQS as discussed in Section V.B.2.
- DCHD Sequential PM_{2.5} Samplers Collocation (Section V.A): Funds have been allocated for the purchase of a new sequential PM_{2.5} sampler so that a collocated sampler can be placed at the Berry St. site in Omaha. This upgrade is being made to meet collocation requirements in 40 CFR Part 58 Appendix A.
- PM₁₀ Monitoring at 46th and Farnam Streets (Section V.B.3): It is anticipated that this site will be operated after Omaha Steel discontinues operations to allow a post-shutdown air quality analysis. A determination on closure of the site will hinge on the PM₁₀ levels detected, with consideration of re-development activities and the emission potential of any new sources. Thus a site closure decision is anticipated in 2015, but cannot be forecast at this time.
- Ozone Monitoring in Grand Island (Section V.E.2): This was considered and a decision to proceed was deferred pending finalization of the ozone NAAQS review and possible rural ozone monitoring requirements.
- Cozad and Gothenburg Up-Grade or Closure (Section D.1): These sites are demonstrating, and always have demonstrated compliance with the current 24-hour NAAQS. The sequential samplers at these sites are more than 10 years old. Upgrading to new samplers will involve a significant expenditure of funds. Re-deployment of resources from these sites toward establishing ozone monitoring sites in Grand Island and rural Nebraska is an option. A determination to close or up-grade these sites was deferred for 2014. The NDEQ will continue to evaluate options for either closure or up-grade as the ozone NAAQS review proceeds. In the interim, if the samplers at either of these sites were to fail and could not be repaired (not considered a likely possibility, but possible), temporarily closure might be necessitated (until replacement equipment is purchased or a permanent closure determination is finalized).

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- Weeping Water PM₁₀ Up-Grade (not discussed elsewhere): The possibility of replacing the filter-based sequential PM₁₀ samplers at the Weeping Water City site with continuous monitors) has been discussed. The current samplers are more than 10 years old and due for replacement. Continuous samplers have several advantages:
 - Lower operating costs because filter analysis are not required,
 - They provide daily versus the current one in six day sampling, and
 - The operation of a collocated monitor is not required.The filter-based, sequential samplers are federal reference methods (FRMs), while the continuous monitors are federal equivalent methods (FEMs).

The replacement of FRM with FEM samplers (or an FEM to FRM switch) does not need to be included in the Network Plan, but is related to the Cozad and Gothenburg determination discussed above, because the Weeping Water City site is currently the collocated site for PM₁₀ network operated by NDEQ (i.e, Weeping Water City, Cozad and Gothenburg sites). Thus an upgrade to a continuous sampler at the Weeping Water City site must be made in conjunction with the determination to up-grade or close the Cozad and Gothenburg sites.
- Ozone Monitoring in the Lincoln MSA (Sections IV.C & V.B.6b) :
 - New monitoring equipment (i.e., analyzer, transfer standards and primary local standard was deployed at the start of the 2014 monitoring season.
 - The establishment of a temporary investigative site in 2014 or 2015 to explore the possibility of identifying a higher concentration site has been discussed. Any relocation of the existing Davey site would occur after 2014.
- Total Reduced Sulfur Monitoring in Dakota City (Section V.D.2): This is the sole remaining TRS monitoring site in Nebraska's air monitoring network. It is a source-oriented site that is demonstrating attainment with the Nebraska air quality standard for TRS. Closure of this site was discussed. The determination was made to continue operating this site for the time being.

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Attachment A: Ambient Air Monitoring Sites in Nebraska

Omaha NCore Site Operated by DCHD

Site Name: Omaha NCore ⁽¹⁾		AIRS ID: 31-055-0019 ⁽¹⁾	
Location: 4102 Woolworth St., Omaha		Latitude: 41.246792° Longitude: -95.973964°	
Operating Agency: Douglas County Health Department			
Purpose: NCore		Scale: Neighborhood	
Monitor/Pollutant: Carbon Monoxide (CO) - Trace Level			
Type/POC: Primary / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 48i-TLE		EPA Method: RFCA-0981-054 (AQS 554)	
Start-Up Date: 1/20/11		Closure Date: Currently operating	
Monitor/Pollutant: Ozone (O₃)			
Type/POC: Primary / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 49i		EPA Method: EQOA-0880-047	
Start-Up Date: 4/1/11		Closure Date: Currently operating	
Monitor/Pollutant: Nitrogen Oxides (NO/NO_y)			
Type/POC: Primary / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 42i NO/NO ₂ /NO _x		EPA Method: RFNA-1289-074	
Start-Up Date: 1/20/11		Closure Date: Currently operating	
Monitor/Pollutant: Sulfur Dioxide (SO₂) – Trace Level			
Type/POC: Primary / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 43i-TLE		EPA Method: EQSA-0486-060 (AQS 560)	
Start-Up Date: 1/20/11		Closure Date: Currently operating	
Monitor/Pollutant: PM_{2.5}			
Type/POC: Primary Continuous / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM-1020 ⁽³⁾⁽⁴⁾		EPA Method: EQPM-0308-170	
Start-Up Date: 2/1/04 ⁽³⁾		Closure Date: Currently operating	
Monitor/Pollutant: PM_{2.5}			
Type/POC: Collocated ⁽²⁾ / POC 002		Monitoring Frequency: Once every 6 days ⁽²⁾	
Analyzer/Sampler: 2025 Sequential		EPA Method: RFPS-0498-118	
Start-Up Date: 1/1/99		Closure Date: Currently operating	
Monitor/Pollutant: PM_{2.5} Speciation			
Type/POC: Speciation / POC 005 ⁽⁶⁾		Monitoring Frequency: Once every 3 days	
Analyzer/Sampler: PM _{2.5} Speciation		Sampler Type: SASS and a 3000 URG	
Start-Up Date: 5/25/01		Closure Date: Currently operating	
Monitor/Pollutant: PM₁₀ – STP & Local Conditions			
Type/POC: Continuous ⁽³⁾ / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM-1020 ⁽⁴⁾		EPA Method: EQPM-0798-122	
Start-Up Date: 1/1/11 ⁽⁴⁾		Closure Date: Currently operating	
Monitor/Pollutant: PM_{10-2.5} – Local Conditions			
Type/POC: Continuous ⁽³⁾ / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM-1020 ⁽⁴⁾		EPA Method: EQPM-0709-185	
Start-Up Date: 1/1/11 ⁽⁴⁾		Closure Date: Currently operating	
Continued on next page			

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Attachment A: Ambient Air Monitoring Sites in Nebraska

Omaha NCore Site Operated by DCHD

Site Name: Omaha NCore		AIRS ID: 31-055-0019 (See Comment 1)	
Location: 4102 Woolworth St., Omaha		Latitude: 41.246792°	Longitude: -95.973964°
Operating Agency: Douglas County Health Department		(continued from previous page)	
Monitor Information – Lead (Pb)			
Type/POC: Primary / POC 1		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Hi-Vol TSP-Pb (ICP-MS)		EPA Method: EQL-0310-189	
Start-Up Date: 12/1/12		Closure Date: Currently operating	
Meteorological Parameters – Manufacturer & Model – Start Date			
Wind Direction & Velocity – MetOne 50.5 Sonic - 5/13/11			
Temperature - MetOne Model 083D – 4/12/11			
Barometric Pressure – MetOne Model 090D – 4/12/11			
Relative Humidity – MetOne 083D – 4/12/11			
Solar Radiation – MetOne Model 096-1 – 4/12/11			
Closure Date: Currently operating			
Atmospheric Radiation – RadNet Air Monitor			
RadNet is a nationwide system that monitors the nation’s air, drinking water, precipitation, and pasteurized milk to determine levels of radiation in the environment. RadNet sample analyses and monitoring results provide baseline data on background levels of radiation in the environment and can detect increased radiation from radiological incidents. The RadNet monitor is not subject to the network planning process set forth in 40 CFR Part 58.10. It is recognized in this Network Plan for informational purposes only. The RadNet monitor began operating at the Woolworth site in June 2006.			
Comments:			
<ol style="list-style-type: none"> 1. Site History: Site 31-055-0019 was referred to as the “Woolworth site” through 12/31/10. The Woolworth site was a PM monitoring site with PM_{2.5} filter-based, continuous and speciation monitors located on the roof of Douglas County Hospital. To accommodate NCore monitoring more space was required and the site was moved approximately 550 ft north to the roof of an adjacent/attached building. The move was initiated in December 2010 with the moving of the PM_{2.5} monitors. 2. The POC 1 filter-based sequential monitor was used as the primary site monitor for NAAQS attainment evaluation through September 2009. At that point, it was converted to the collocated sampler with the POC 3 continuous monitor becoming the primary monitor. The POC 2 collocated sampler was shut down after taking the 9/22/09 sample. 3. The POC 3 continuous PM_{2.5} monitor operated from 2/1/04 thru 1/5/09 using a R&P TEOM continuous PM_{2.5} monitor. The TEOM monitor is not an FRM/FEM. On 1/6/09 a Met One BAM monitor was brought on line. The Met One BAM monitor is an FEM. Through September 2009 the BAM unit was run as an auxiliary monitor for AirNow and AQI reporting purposes. A review found good correlation between the POC 1 and POC 3 data. On October 1, 2009 the POC 3 monitor was designated the primary monitor for evaluating NAAQS attainment status. On January 1, 2011 the continuous monitor was re-designated as POC 1, to facilitate AQS data analysis issues. 4. Between 10/28/10 and 1/3/11, the PM_{2.5} Met One BAM-1020 was temporarily removed from service so that it could be reconfigured to operate as the PM_{2.5} portion of a dichotomous PM_{10-2.5} monitoring system. The other part of the dichotomous PM_{10-2.5} monitoring system is a PM₁₀ Met One BAM-1020, which is configured to report PM₁₀ data in local and STP conditions. The dichotomously-configured PM_{2.5} and PM₁₀ BAM units, which comprise the PM_{10-2.5} monitoring system, were put on-line on 1/1/11. 5. The POC 5 speciation monitor is comprised two speciation samplers: a SASS and a 3000 URG. The speciation data derived from both samplers are reported as POC 005 results. 			

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Attachment A: Ambient Air Monitoring Sites in Nebraska

Carbon Monoxide Sites in the Omaha MSA that are Operated by DCHD

Site Name: 78 th & Dodge – Omaha	AIRS ID: 31-055-0056
Location: 78 th St and W Dodge Rd, Omaha	Latitude: 41.259175° Longitude: -96.028628°
Operating Agency: Douglas County Health Department	
Monitor Information	Pollutant: Carbon Monoxide (CO)
Type/POC: Primary / POC 001	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 48i	EPA Method: RFCA-0981-054
Purpose: Highest Concentration	Scale: Microscale
Start-Up Date: 10/01/07	Closure Date: Currently operating
Comments: None	

Sulfur Dioxide Sites in the Omaha MSA that are Operated by DCHD

Site Name: Whitmore – Omaha	AIRS ID: 31-055-0053
Location: 1616 Whitmore St, Omaha	Latitude: 41.297778° Longitude: -95.937500°
Operating Agency: Douglas County Health Department	
Monitor Information	Pollutant: Sulfur Dioxide (SO₂)
Type/POC: Primary / POC 001	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 43i	EPA Method: EQSA-0486-060
Purpose: High Conc. & Population Oriented	Scale: Neighborhood
Start-Up Date: 7/1/99	Closure Date: Currently operating*
Comments: This site was temporarily closed from 6/22/11 thru 10/1/11 due to Missouri River flooding.	

Ozone Sites in the Omaha MSA that are Operated by DCHD

Site Name: South Omaha – Ozone	AIRS ID: 31-055-0028
Location: 2411 O Street, Omaha	Latitude: 41.207500° Longitude: -95.947500°
Operating Agency: Douglas County Health Department	
Monitor Information	Pollutant: Ozone (O₃)
Type/POC: Primary / POC 001	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 49C	EPA Method: EQOA-0880-047
Purpose: Population Oriented	Scale: Neighborhood
Start-Up Date: 7/1/78	Closure Date: Currently operating
Comments: There is also a PM ₁₀ monitor located at this site.	

Site Name: 30 th & Fort - Omaha	AIRS ID: 31-055-0035
Location: 30 th & Fort Sts., Omaha	Latitude: 41.306111° Longitude: -95.960278°
Operating Agency: Douglas County Health Department	
Monitor Information	Pollutant: Ozone (O₃)
Type/POC: Primary / POC 001	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 49C	EPA Method: EQOA-0880-047
Purpose: Population Oriented	Scale: Neighborhood
Start-Up Date: 5/1/81	Closure Date: Currently operating
Comments: None	

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Attachment A: Ambient Air Monitoring Sites in Nebraska

PM_{2.5} Sites in the Omaha MSA that are Operated by DCHD (Continued)

Site Name: Berry Street Omaha	AIRS ID: 31-055-0052
Location: 9225 Berry Street, Omaha	Latitude: 41.333056° Longitude: -96.099722°
Operating Agency: Douglas County Health Department	
Monitor Information	Pollutant: PM_{2.5}
Type/POC: Primary / POC 001	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: 2025 Sequential	EPA Method: RFPS-0498-118
Purpose: Population & Source Oriented	Scale: Neighborhood
Start-Up Date: 1/1/99	Closure Date: Currently operating
Comments: None	

Site Name: Bellevue	AIRS ID: 31-153-0007
Location: 2912 Coffey Ave., Bellevue	Latitude: 41.166944° Longitude: -95.923889°
Operating Agency: Douglas County Health Department	
Monitor Information	Pollutant: PM_{2.5}
Type/POC: Primary Continuous / POC 001	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: Met One BAM-1020 ⁽¹⁾	EPA Method: EQPM-0308-170
Purpose: Population & Source Oriented	Scale: Neighborhood
Start-Up Date: 3/1/99	Closure Date: Currently operating
Comments:	
(1) This site was operated with a 2025 sequential sampler from 3/1/99 thru 6/30/10 (RFPS-0498-118). On 7/1/10 a Met One BAM monitor began operating.	

Site Name: Blair	AIRS ID: 31-177-0002
Location: 2242 Wright St., Blair	Latitude: 41.551136° Longitude: -96.146753
Operating Agency: Douglas County Health Department	
Monitor Information	Pollutant: PM_{2.5}
Type/POC: Primary / POC 001	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: 2025 Sequential	EPA Method: RFPS-0498-118
Purpose: Population & Source Oriented	Scale: Neighborhood
Start-Up Date: 4/6/09	Closure Date: Currently operating
Comments: None	

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Attachment A: Ambient Air Monitoring Sites in Nebraska

PM₁₀ Sites in the Omaha MSA that are Operated by DCHD

Site Name: 19th & Burt, Omaha		AIRS ID: 31-055-0054	
Location: 19th & Burt Sts., Omaha		Latitude: 41.267770°	Longitude: -95.940830°
Operating Agency: Douglas County Health Department			
Monitor Information		Pollutant: PM₁₀	
Type/POC: Primary / POC 001		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Hi-Vol Filter		EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented		Scale: Middle	
Start-Up Date: 6/1/01		Closure Date: Currently operating	
Monitor Information		Pollutant: PM₁₀	
Type/POC: Collocated / POC 002		Monitoring Frequency: Once every 6 days ⁽¹⁾	
Analyzer/Sampler: Hi-Vol Filter		EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented		Scale: Middle	
Start-Up Date: 6/1/01		Closure Date: Currently operating	
Comments: None			

Site Name: 46th & Farnam, Omaha		AIRS ID: 31-055-0045	
Location: 46th & Farnam Sts, Omaha		Latitude: 41.257500°	Longitude: -95.976111°
Operating Agency: Douglas County Health Department			
Monitor Information		Pollutant: PM₁₀	
Type/POC: Primary Continuous / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo FH 62 C14		EPA Method: EQPM-1102-150	
Purpose: Source Oriented		Scale: Middle	
Start-Up Date: 1/1/93 (See Comments)		Closure Date: Currently operating	
Comments: This site utilized a Hi-Vol sampler on a once every 6 day sampling schedule until 1/1/08, when a continuous sampler was installed.			

Site Name: South Omaha - PM₁₀		AIRS ID: 31-055-0028	
Location: 2411 O Street, Omaha		Latitude: 41.207500°	Longitude: -95.947500°
Operating Agency: Douglas County Health Department			
Monitor Information		Pollutant: PM₁₀	
Type/POC: Primary / POC 001		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Hi-Vol Filter		EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented		Scale: Neighborhood	
Start-Up Date: 6/1/06 (See Comments)		Closure Date: Currently operating	
Comments:			
<ul style="list-style-type: none"> • This site was originally established for ozone monitoring on 2/1/78. • The PM₁₀ sampler was initially set-up at 25th & L Sts and then moved to 2411 O St on 8/22/07. 			

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Attachment A: Ambient Air Monitoring Sites in Nebraska

PM₁₀ Sites in the Weeping Water Area* that are Operated by NDEQ

Site Name: Weeping Water City (at WWTP)		AIRS ID: 31-025-0002	
Location: 102 P Street, Weeping Water		Latitude: 40.866228	Longitude: -96.137678
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: PM₁₀	
Type/POC: Primary / POC 001		Monitoring Frequency: Once per 3 days	
Analyzer/Sampler: 2025 Sequential		EPA Method: RFPS-1298-127	
Purpose: Population & Source Oriented		Scale: Neighborhood	
Start-Up Date: 1/1/85		Closure Date: Currently operating	
Monitor Information		Pollutant: PM₁₀	
Type/POC: Collocated / POC 001		Monitoring Frequency: Once per 6 days	
Analyzer/Sampler: 2025 Sequential		EPA Method: RFPS-1298-127	
Purpose: Population & Source Oriented		Scale: Neighborhood	
Start-Up Date: 1/1/85		Closure Date: Currently operating	
Comments: Located at the city waste water treatment facility.			

Site Name: Weeping Water Farm		AIRS ID: 31-025-0009	
Location: 5102 Hwy 50, Cass Co.		Latitude: 40.873309°	Longitude: -96.183359°
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: PM₁₀	
Type/POC: Primary Continuous / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: R&P TEOM		EPA Method: RFPS 1090-079	
Purpose: Source Oriented		Scale: Neighborhood	
Start-Up Date: 4/8/05		Closure Date: Currently operating	
Comments: None			

* The Weeping Water Area is in Cass County, which is part of the Omaha MSA. This is a relatively non-urbanized area of the county with limestone mining and processing activities. The PM₁₀ monitoring conducted here is for evaluation of air quality in the vicinity of Weeping Water, and not the Omaha MSA as a whole.

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Attachment A: Ambient Air Monitoring Sites in Nebraska

Sites in the Lincoln MSA that are Operated by LLCHD

Site Name: Davey		AIRS ID: 31-109-0016	
Location: 1st & Maple Sts., Davey		Latitude: 40.984722°	Longitude: -96.677222°
Operating Agency: Lincoln Lancaster County Health Department			
Monitor Information		Pollutant: Ozone	
Type/POC: Primary / POC 001		Monitoring Frequency: Continuous	
Analyzer/Sampler: Dasibi Model 1003 AH		EPA Method: EQOA 0577-019	
Purpose: Population Oriented		Scale: Urban	
Start-Up Date: 1/1/85		Closure Date: Currently operating	
Comments: It is anticipated that the analyzer equipment at this site will be updated in 2013 or 2014. It is also possible that this site may be relocated in 2014.			
Site Name: LLCHD Building		AIRS ID: 31-109-0022	
Location: 3140 N St., Lincoln		Latitude: 40.812590°	Longitude: -96.683020°
Operating Agency: Lincoln Lancaster County Health Department			
Monitor Information		Pollutant: PM_{2.5}	
Type/POC: Primary / POC 001		Monitoring Frequency: Once every 3 days	
Analyzer/Sampler: R&P 2025 Seq. Filter		EPA Method: RFPS 0498-118	
Purpose: Population Oriented		Scale: Neighborhood	
Start-Up Date: 1/1/99		Closure Date: Currently operating	
Monitor Information		Pollutant: PM_{2.5}	
Type/POC: Collocated / POC 002		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: R&P 2025 Seq. Filter		EPA Method: RFPS 0498-118	
Purpose: Population Oriented		Scale: Neighborhood	
Start-Up Date: 1/1/99		Closure Date: Currently operating	
Monitor Information		Pollutant: PM_{2.5}	
Type/POC: Continuous / POC 003 ⁽¹⁾		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM-1020		EPA Method: EQPM-0308-170	
Purpose: Population Oriented		Scale: Neighborhood	
Start-Up Date: 7/1/06		Closure Date: Currently operating	
Comment: (1) The MetOne BAM monitor reports to AirNow, but not AQS.			

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Attachment A: Ambient Air Monitoring Sites in Nebraska

PM_{2.5} Sites Operated by NDEQ

Site Name: Grand Island Senior High		AIRS ID: 31-079-0004	
Location: 2124 N Lafayette Ave, Grand Island		Latitude: 40.942099°	Longitude: -98.364967°
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: PM_{2.5}	
Type/POC: Primary FRM/ POC 1		Monitoring Frequency: Once every 3 days	
Analyzer/Sampler: 2025 Sequential		EPA Method: RFPS-0498-118	
Purpose: Transport & Population Oriented		Scale: Regional & Neighborhood	
Start-Up Date: 5/7/04		Closure Date: Currently operating	
Comments: None			

Site Name: Scottsbluff Senior High School		AIRS ID: 31-157-0004	
Location: Hwy 26 & 5th Ave, Scottsbluff		Latitude: 41.876853°	Longitude: -103.656561°
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: PM_{2.5}	
Type/POC: Primary FRM/ POC 1		Monitoring Frequency: Once every 3 days	
Analyzer/Sampler: 2025 Sequential		EPA Method: RFPS-0498-118	
Purpose: Background & Population Oriented		Scale: Regional & Neighborhood	
Start-Up Date: 5/13/09		Closure Date: Currently operating	
Comments: Electric power is supplied to this site by wind and solar generating units.			

PM₁₀ Sites Operated by NDEQ (Outside of the Omaha MSA/Weeping Water Area)

Site Name: Cozad		AIRS ID: 31-047-0001	
Location: 215 W 8th Street, Cozad		Latitude: 40.859444°	Longitude: -99.987778°
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: PM₁₀	
Type/POC: Primary FRM/ POC 1		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: 2025 Sequential		EPA Method: RFPS-1298-127	
Purpose: Source and Population Oriented		Scale: Neighborhood	
Start-Up Date: 10/1/94		Closure Date: Currently operating	
Comments: None			

Site Name: Gothenburg		AIRS ID: 31-047-0003	
Location: 409 9th Street, Gothenburg		Latitude: 40.927500°	Longitude: -100.162778°
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: PM₁₀	
Type/POC: Primary FRM/ POC 1		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: 2025 Sequential		EPA Method: RFPS-1298-127	
Purpose: Source and Population Oriented		Scale: Neighborhood	
Start-Up Date: 9/1/91		Closure Date: Currently operating	
Comments: None			

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Attachment A: Ambient Air Monitoring Sites in Nebraska

Lead (Pb) Sites Operated by NDEQ

Site Name: Fremont		AIRS ID: 31-053-0005	
Location: 1255 Front St., Fremont, NE		Latitude: 41.90583°	Longitude: -97.31583°
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: Lead (Pb)	
Type/POC: Primary / POC 1		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Hi-Vol TSP-Pb (ICP-MS)		EPA Method: EQL-0310-189	
Purpose: Source Oriented		Scale: Micro-scale	
Start-Up Date: 3/9/10		Closure Date: Currently operating	
Monitor Information		Pollutant: Lead (Pb)	
Type/POC: Collocated / POC 2		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Hi-Vol TSP-Pb (ICP-MS)		EPA Method: EQL-0310-189	
Purpose: Source Oriented		Scale: Micro-scale	
Start-Up Date: 3/9/10		Closure Date: Currently operating	
Comments: Highest concentration site			

Site Name: Auburn		AIRS ID: 31-127-0002	
Location: RR2, Auburn, NE		Latitude: 40.40254°	Longitude: -95.84164°
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: Lead (Pb)	
Type/POC: Primary / POC 1		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Hi-Vol TSP-Pb (ICP-MS)		EPA Method: EQL-0310-189	
Purpose: Source Oriented		Scale: Micro-scale	
Start-Up Date: 5/8/10		Closure Date: Currently operating	
Comments: Highest concentration site			

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Attachment A: Ambient Air Monitoring Sites in Nebraska

Total Reduced Sulfur (TRS) Sites operated by NDEQ

Site Name: Pine Street – Dakota City		AIRS ID: State SPM, AIRS ID not assigned	
Location: 501 Pine St, Dakota City		Latitude: 42.421867°	Longitude: -96.403031°
Operating Agency: Nebraska Department of Environmental Quality			
Monitor Information		Pollutant: Total Reduced Sulfur (TRS)	
Type/POC: State TRS monitor		Monitoring Frequency: Continuous	
Analyzer/Sampler: API 102A w TOX		Method: NDEQ T129 Chap 4.007	
Purpose: Source Oriented		Scale: Neighborhood	
Start-Up Date: 9/15/97		Closure Date: Currently operating	
Comments: None			

Interagency Monitoring of Protected Visual Environments (IMPROVE) Sites *

Site Name: Crescent Lake IMPROVE		AIRS ID: Not applicable, See Comments	
Location: Crescent Lake WRA, Gosper Co.		Latitude: 41.7627°	Longitude: -102.4336°
Operating Agency: Nebraska Department of Environmental Quality / US Fish & Wildlife Service			
Monitor Information		Pollutant: IMPROVE (See Comments)	
Type/POC: IMPROVE		Monitoring Frequency: Continuous	
Method Description: : IMPROVE		EPA Method: Not applicable	
Purpose: Background & Transport		Scale: Regional	
Start-Up Date: 2002		Closure Date: Currently operating	
Comments: None			

Site Name: NE National Forest IMPROVE		AIRS ID: Not applicable, See Comments	
Location: Nebraska National Forest, Thomas Co.		Latitude: 41.8888°	Longitude: -100.3387°
Operating Agency: Nebraska Department of Environmental Quality / US Forest Service			
Monitor Information		Pollutant: IMPROVE (See Comments)	
Type/POC: IMPROVE		Monitoring Frequency: Continuous	
Method Description: : IMPROVE		EPA Method: Not applicable	
Purpose: Background & Transport		Scale: Regional	
Start-Up Date: 2002		Closure Date: Currently operating	
Comments: None			

* Interagency Monitoring of Protected Visual Environments (IMPROVE) monitors are operated to evaluate regional haze that may impact Federal Class I areas in National Parks and Wilderness Areas. Fine particulate and particulate speciation monitoring is conducted at these sites. They do not have an AIRS ID.

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Attachment A: Ambient Air Monitoring Sites in Nebraska

Monitoring Sites not subject to the Network Plan Review Process**

** These sites are included in the Network Plan for informational purposes only.

Site Name: Mead NADP		AIRS ID: Not applicable, See Comments	
Location: U of Ne Field Lab, Saunders Co.		Latitude: 41.1528°	Longitude: -96.4912
Operating Agency: University of Nebraska			
Monitor Information		Pollutant: TNT/MDN	
Type/POC: NTN/MDN	Monitoring Frequency: Continuous		
Method Description: NTN/MDN	EPA Method: Not applicable		
Purpose: Background & Transport	Scale: Regional		
Start-Up Date: 7/25/78	Closure Date: Currently operating		
<p>Comments: The Mead and North Platte National Atmospheric Deposition Program (NADP) sites are operated by the University of Nebraska with analytical and data processing support from the NADP. NADP sites are not subject to review under the provisions of 40 CFR Part 58.10, and thus are not subject to review under this Network Plan. They are included herein for informational purposes only.</p> <ul style="list-style-type: none"> Monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM). The National Trends Network (NTN) sites collect deposition data on acidity, sulfate, nitrate, ammonium, chloride, and base cations (e.g., calcium, magnesium, potassium and sodium). Mercury Deposition Network (MDN) sites collect mercury deposition data. The NADP oversees both NTN and MDN sites, and provides analytical and data processing support. The Mead site initiated operation as an NTN site in 1978 and began MDN operations in June 2007. 			

Site Name: North Platte NADP		AIRS ID: Not applicable, See Comments	
Location: U of Ne Ag Station, Lincoln, Co.		Latitude: 41.0592°	Longitude: -100.7464°
Operating Agency: University of Nebraska			
Monitor Information		Pollutant: NTN	
Type/POC: NTN	Monitoring Frequency: Continuous		
Method Description: NTN	EPA Method: Not applicable		
Purpose: Background & Transport	Scale: Regional		
Start-Up Date: 9/24/85	Closure Date: Currently operating		
<p>Comments: The Mead and North Platte National Atmospheric Deposition Program (NADP) sites are operated by the University of Nebraska with analytical and data processing support from the NADP. NADP sites are not subject to review under the provisions of 40 CFR Part 58.10, and thus are not subject to review under this Network Plan. They are included herein for informational purposes only.</p> <ul style="list-style-type: none"> Monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM). The National Trends Network (NTN) sites collect deposition data on acidity, sulfate, nitrate, ammonium, chloride, and base cations (e.g., calcium, magnesium, potassium and sodium). Mercury Deposition Network (MDN) data was collected at this site from October 2009 thru October 2011 using Nebraska Environmental Trust funding. The NADP oversees both NTN and MDN sites, and provides analytical and data processing support. 			

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

This attachment compares ambient air quality data from 2011 thru 2013 to the NAAQS, or in the case of Total Reduced Sulfur to Nebraska's state standard. The annual data presented below was retrieved from the EPA AQS data base. The 2013 data was not yet certified and could be subject to change. The values compared to the NAAQS were calculated as set forth in 40 CFR Part 58.

The NDEQ operates an ambient air monitoring program in Nebraska, and provides oversight for the DCHD and LLCHD monitoring programs. Data from sites outside Nebraska and from sites within Nebraska not operated by the NDEQ, DCHD and LLCHD (collectively abbreviated "non-NDEQ sites") are included below. The NAAQS comparisons for these non-NDEQ sites are not official, and are included for comparison purposes only.

Table B-1: Ozone Data

Comparison of 3-Year Design Values for 8-hour Ozone to NAAQS ⁽¹⁾					
Site	2011	2012	2013	DV ⁽¹⁾	% NAAQS
Omaha MSA and Near-By Montgomery Co., IA ⁽⁴⁾					
Omaha NCore ⁽²⁾	0.066	0.071	0.066	0.067	89%
2411 O St., Omaha	0.057	0.066	0.058	0.060	80%
30th & Fort, Omaha	0.059	0.077	0.061	0.065	87%
Harrison Co, IA (orig. Pisgah site) ⁽³⁾	0.066	0.076	0.065	0.069	92%
Pisgah, IA (new in 2009) ⁽³⁾	0.064	0.075	0.065	0.068	91%
Montgomery County, IA ⁽³⁾⁽⁴⁾	0.065	0.071	0.060	0.065	87%
Lincoln MSA					
First & Maple, Davey	0.053	0.058	0.055	0.055	73%
Sioux City MSA and Surrounding Area ⁽⁶⁾					
31102 471st Ave, Union Co, SD ⁽⁵⁾	0.062	0.068	nd	0.064 Combined	85%
31986 475th Ave Union Co, SD ⁽⁵⁾	nd	nd	0.063		
Emmetsburg, IA ⁽⁶⁾	0.067	0.070	0.064	0.067	89%
Sioux Falls, SD ⁽⁶⁾	0.065	0.072	0.072	0.069	92%
Santee Indian Reservation ⁽⁶⁾⁽⁷⁾	0.063	0.075	0.067	0.068	91%
Nebraska Panhandle					
Scotts Bluff National Monument ⁽⁷⁾	0.063	0.067	nd	0.065	87%
Notes and Explanations: (EPA AQS data retrieval 3/25/14)					
(1) Concentrations are in units of ppm.. The Design Value (DV) is the truncated 3-year average of the 4 th highest max for each year. The NAAQS = 0.075 ppm (promulgated 3/27/2008).					
(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(3) The following sites are operated by the IA DNR: Harrison Co. IA, Pisgah, IA, Montgomery Co, IA and Emmetsburg, IA.					
(4) The Montgomery County, IA site is located outside the Omaha MSA at Viking Lake State Park;~18 miles east of the Mills-Montgomery County line and ~ 45 miles SE of the I-29/I-80 intersection.					
(5) The Union Co., SD site is in the Sioux City MSA & operated by the SD Dept. of Environment & Natural Resources					
(6) Three of the four sites listed are located outside the Sioux City MSA:					
<ul style="list-style-type: none"> • Emmetsburg, IA site is 97 mi NE of Sioux City & is operated by the IA DNR. • Sioux Falls, SD site is 75 NNW of Sioux City & is operated by the SD Dept of Environment & Natural Resources • Santee Indian Reservation site is 76 mi WNW of Sioux City & is operated by EPA as part of CASTNET. 					
(7) The Scotts Bluff NM site was operated by the National Park Service; using a method that is not an EPA reference or equivalent method (FRM/FEM). It was not operated in 2011 & 2012, but not in 2013					

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-2: Carbon Monoxide Data

Comparison of 3-Year Maximum Value for 1-Hour Carbon Monoxide to NAAQS ^{(1) (2)}					
Site	2011	2012	2013	Design Value ⁽²⁾	% NAAQS
Omaha MSA					
78th & Dodge Sts, Omaha	2.4	2.6	2.4	2.6	7%
Omaha NCore ⁽⁴⁾	1.3	1.3	0.9	1.3	4%
Lincoln MSA					
2620 O St, Lincoln	2.9	1.3 ⁽⁶⁾	nd	2.9	8%
Sioux City MSA					
31986 475th Ave, Union Co, SD ⁽⁵⁾	0.4	0.6	0.5	0.6	2%
Comparison of 3-Year Maximum Value for 8-Hour Carbon Monoxide to NAAQS ^{(1) (3)}					
Site	2011	2012	2013	Design Value ⁽³⁾	% NAAQS
Omaha MSA					
78th & Dodge Sts., Omaha	1.6	2.3	1.9	2.3	26%
Omaha NCore ⁽⁴⁾	0.5	0.8	0.6	0.8	9%
Lincoln MSA					
2620 O St, Lincoln	1.5	0.9 ⁽⁶⁾	nd	1.5	17%
Sioux City MSA					
31986 475th Ave, Union Co, SD ⁽⁵⁾	0.3	0.3	0.3	0.3	3%
Notes and Explanations:					
(1) The CO NAAQS were last revised in 1984. The latest review was concluded in August 2011 when EPA determined no changes in the CO NAAQS were warranted.					
(2) The 1-hour NAAQS = 35 ppm. The Design Value is the highest annual 2 nd highest maximum value over the last 3 years. The annual values shown are the annual 2 nd highest maximum values. Concentrations are in units of ppm.					
(3) The 8-hour NAAQS = 9 ppm. The Design Value is the highest annual 2 nd highest maximum value over the last 3 years. The annual values shown are the 2 nd highest 8-hour maximum values. Concentrations are in units of ppm.					
(4) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(5) The Union Co., SD site is operated by the South Dakota Department of Environment & Natural Resources					
(6) The 2620 O St. Lincoln site closed 2/3/12.					

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-3: Sulfur Dioxide Data

Comparison of 1-Hour Sulfur Dioxide Levels to the Primary NAAQS ⁽¹⁾					
Site	2011	2012	2013	Design Value ⁽¹⁾	% NAAQS
Omaha MSA					
1616 Whitmore St., Omaha	0.066 ⁽⁴⁾	0.073	0.056	0.065	86%
Omaha NCore ⁽³⁾	0.037	0.038	0.027	0.034	45%
Sioux City MSA Sites					
1221 260th St. Sergeant Bluff, IA ⁽⁵⁾	nd	0.039	0.021	0.030	40%
31986 475th Ave, Union Co, SD ⁽⁶⁾	0.007	0.009	0.006	0.007	10%
31307 473rd Ave, Union Co, SD ⁽⁶⁾	0.008	0.007	0.005	0.007	9%
Comparison of 3-Hour Sulfur Dioxide Levels to the Secondary NAAQS ⁽²⁾					
Site	2011	2012	2013	Design Value ⁽²⁾	% NAAQS
Omaha MSA					
1616 Whitmore St., Omaha	0.054 ⁽⁴⁾	0.076	0.052	0.076	15%
Omaha NCore ⁽³⁾	0.026	0.026	0.027	0.027	5%
Sioux City MSA					
1221 260th St. Sergeant Bluff, IA ⁽⁵⁾	nd	0.015	0.014	0.015	3%
31986 475th Ave, Union Co, SD ⁽⁶⁾	0.005	0.007	0.005	0.007	1%
31307 473rd Ave, Union Co, SD ⁽⁶⁾	0.006	0.005	0.003	0.006	1%
Notes and Explanations: (EPA AQS data retrieval 3/25/14)					
(1) The 1-hour NAAQS is 75 ppb or 0.075 ppm. The Design Value is the three-year average of the annual 99 th percentile values. This NAAQS was promulgated on June 22, 2010. The annual values shown are annual 99 th percentile values in ppm units.					
(2) The 3-hour NAAQS is 0.5 ppm not to be exceeded more than once per year. It is a secondary standard promulgated in 1971, and retained without change in 1996. The Design Value is the highest annual 2 nd highest maximum 3-hour reading over the last three years. The annual values shown are 2 nd highest maximum values. All concentrations expressed in units of ppm.					
(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(4) The Whitmore St Omaha site was closed from 6/22/11 thru 10/1/11 due to Missouri River flooding.					
(5) The Sergeant Bluff IA site began operation 7/1/12 and is operated by the IA DNR.					
(6) The Union Co., SD sites are operated by the South Dakota Department of Environment & Natural Resources.					

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-3: Sulfur Dioxide Data (continued)

Comparison of 24-Hour Sulfur Dioxide Levels to the Pre-2010 NAAQS ⁽⁷⁾⁽⁸⁾					
Site	2011	2012	2013	Design Value ⁽¹⁾	% NAAQS
Omaha MSA					
1616 Whitmore St., Omaha	0.020 ⁽⁴⁾	0.025	0.019	0.025	18%
Omaha NCore ⁽³⁾	0.006	0.006	0.006	0.006	4%
Sioux City MSA					
1221 260 th St. Sergeant Bluff, IA ⁽⁵⁾	nd	0.003	0.003	0.003	2%
31986 475 th Ave, Union Co, SD ⁽⁶⁾	0.002	0.002	0.002	0.002	2%
31307 473 rd Ave, Union Co, SD ⁽⁶⁾	0.003	0.002	0.002	0.003	2%
Comparison of Annual Average Sulfur Dioxide Levels to the Pre-2010 NAAQS ⁽⁹⁾⁽¹⁰⁾					
Site	2011	2012	2013	Design Value ⁽¹⁾	% NAAQS
Omaha MSA					
1616 Whitmore St., Omaha ⁽⁴⁾	0.0024	0.0023	0.0021	0.0024	8%
Omaha NCore ⁽³⁾	0.0009	0.0009	0.0007	0.0009	3%
Sioux City MSA					
1221 260 th St. Sergeant Bluff, IA ⁽⁵⁾	nd	0.0003	0.0003	0.0003	1%
31986 475 th Ave, Union Co, SD ⁽⁶⁾	0.0002	0.0004	0.0003	0.0004	1%
31307 473 rd Ave, Union Co, SD ⁽⁶⁾	0.0003	0.0003	0.0004	0.0004	1%
Notes and Explanations:					
(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(4) The Whitmore St Omaha site was closed from 6/22/11 thru 10/1/11 due to Missouri River flooding.					
(5) The Sergeant Bluff IA site began operation 7/1/12 and is operated by the IA DNR.					
(6) The Union Co., SD sites are operated by the South Dakota Department of Environment & Natural Resources					
(7) The 24-hour NAAQS is a primary standard promulgated in 1971 and retained without change in 1996. It will no longer apply once the attainment status to the 1-hour NAAQS is determined per regulations changes in 2010.					
(8) The 24-hour NAAQS is 0.14 ppm not to be exceeded more than once per year. The Design Value is the highest annual 2 nd highest maximum 24-hour reading over the last three years. The annual values shown are 2 nd highest maximum values. The 24-hour NAAQS is a primary standard. All concentrations expressed in units of ppm.					
(9) The Annual Average NAAQS is a primary standard promulgated in 1971 and retained without change in 1996. It will no longer apply once the attainment status to the 1-hour NAAQS is determined per regulations changes in 2010.					
(10) The Annual Average NAAQS is 0.03 ppm not to be exceeded in a calendar year. The Design Value is the highest annual average over the last 3-years. The Annual Average NAAQS is a primary standard. All concentrations expressed in units of ppm.					

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-4a: Nitrogen Dioxide Data

Comparison of 1-Hour Maximum Levels of Nitrogen Dioxide to NAAQS					
Site	2011	2012	2013	Design Value ⁽¹⁾	% NAAQS
Sioux City MSA					
31986 475 th Ave, Union Co, SD ⁽³⁾	0.015	0.016	0.018	0.016	16%
31307 473 rd Ave, Union Co, SD ⁽³⁾	0.014	0.057	0.040	0.037	37%
Comparison of 3-Year Maximum Annual Average Value for Nitrogen Dioxide to NAAQS					
Site	2011	2012	2013	Design Value ⁽²⁾	% NAAQS
Sioux City MSA					
31986 475 th Ave, Union Co, SD ⁽³⁾	0.003	0.003	0.003	0.003	6%
31307 473 rd Ave, Union Co, SD ⁽³⁾	0.003	0.006	0.004	0.004	8%
Notes and Explanations:					
(1) (3) The Union Co., SD sites are operated by the South Dakota Department of Environment & Natural Resources					

Table B-4b: 2011-2013 Nitrogen Oxide Data from the Omaha NCore Site ⁽¹⁾⁽²⁾

Parameter	2011	2012	2013	Approx. DV ⁽³⁾⁽⁴⁾⁽⁸⁾	% NAAQS
1-Hour Data: Annual Maximum					
NO _y ⁽⁶⁾	0.121	0.158	0.104	na	na
NO ⁽⁷⁾	0.089	0.133	0.084	na	na
NO _y -NO ⁽⁸⁾	0.053	0.051	0.040	na	na
1-Hour Data: 98th Percentile ⁽⁵⁾					
NO _y ⁽⁶⁾	0.090	0.113	0.078	na	na
NO ⁽⁷⁾	0.060	0.103	0.051	na	na
NO _y -NO ⁽⁸⁾	0.045	0.045	0.035	0.042	42%
1-Hour Data: Annual Average					
NO _y ⁽⁶⁾	0.010	0.010	0.009	na	na
NO ⁽⁷⁾	0.002	0.002	0.002	na	na
NO _y -NO ⁽⁸⁾	0.008	0.008	0.007	0.008	16%
Footnotes:					
(1) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(2) All concentrations expressed in ppm units.					
(3) The 1-hour NO ₂ NAAQS is 0.100 ppm (promulgated Feb. 2010). NAAQS attainment is achieved if the 3-year average of the annual 98th percentile of the daily maximum 1-hour values does not exceed 0.100 ppm.					
(4) The Annual Average NO ₂ NAAQS is 0.053 ppm not to be exceeded in a calendar year. It was promulgated 1971, and retained in the 1996 and 2010 reviews. The Design Value is the highest annual average over the 3-year comparison period.					
(5) Percentile determination: (Days ≥ 75% complete data): 2011 331 d => 7 th high value, 2012 356 d => 8 th high value & 2013 341 d => 7 th high value.					
(6) NO _y – Reactive oxides of nitrogen; includes NO, NO ₂ and other nitrogen oxides, including organic nitrogen oxide compounds.					
(7) NO – Nitrogen oxide					
(8) NO _y -NO provides an approximation of nitrogen dioxide (NO ₂), with some possibility of over-estimating the true NO ₂ concentration. For this reason, the NO _y -NO parameter can be used to demonstrate attainment, but not non-attainment.					

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-5a: PM₁₀ - Maximum 24-Hour Data ^{(1) (2)}

Site	2011	2012	2013	Design Value ⁽¹⁾	% NAAQS
Omaha MSA & Montgomery Co., IA ⁽⁵⁾					
Omaha NCore ⁽³⁾	86	74	62	70	47%
2411 O St, Omaha	58	71	67	58	39%
46th & Farnam Sts, Omaha	172	199	94	159	106%
19th & Burt Sts, Omaha	44	51	56	50	33%
3130 C Ave, Council Bluffs, IA ⁽⁴⁾	50	64	65	60	40%
Montgomery Co., IA (outside Omaha MSA) ^{(4) (5)}	49	65	45	45	30%
Weeping Water WWTF ⁽⁶⁾	52	75	45	51	34%
Weeping Water Lauritzen Farm ⁽⁶⁾⁽⁷⁾	108	179	108	109	73%
Sioux City MSA Sites					
821 30th St, Sioux City, IA ⁽⁴⁾	74	78	57	58	39%
31986 475th Ave, Union Co, SD ⁽⁸⁾	69	101	103	82	55%
31307 473rd Ave, Union Co, SD ⁽⁸⁾	67	82	49	67	45%
Other Nebraska Sites					
Cozad	120	99	94	83	55%
Gothenburg	139	73	97	73	49%
Notes and Explanations:					
(1) NAAQS = 150 µg/m ³ , not to be exceeded more than once per year on average over 3 years, where exceedence is defined as a value of 155 µg/m ³ or more. The Design Value is the 4 th highest 24-hour value found in the 3-year design period. Concentrations are in units of µg/m ³ at standard temperature (25° C) and pressure (760 mm Hg) conditions.					
(2) NAAQS History: The primary 24-hour NAAQS was initially set at 150 µg/m ³ in 1987, and was retained at this level in the 1997, 2006 and 2012 PM NAAQS reviews.					
(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(4) The Council Bluffs, Montgomery Co., Emmetsburg and Sioux City IA sites are operated by the IA DNR					
(5) The Montgomery County, IA site is located outside the Omaha MSA at Viking Lake State Park; ~18 miles east of the Mills-Montgomery County line and ~ 45 miles SE of the I-29/I-80 intersection.					
(6) Weeping Water is a limestone mining and processing area in Cass County, which is located 15 to 20 miles south of the main urbanized area within the Omaha MSA.					
(7) The Weeping Water Lauritzen Farm site recorded four 24-hour PM ₁₀ values above 150 µg/m ³ in 2010: 176 on 10/20/10, 249 on 10/26/10, 306 on 10/27/10 and 209 on 11/26/10. Attainment status is under review.					
(8) The Union Co., SD sites are operated by the South Dakota Department of Environment & Natural Resources					

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-5b: PM₁₀ - Annual Average Data ⁽¹⁾

Site	2011	2012	2013	3-Year Average	% Old Std
Omaha MSA and Montgomery Co., IA ⁽⁴⁾					
Omaha NCore ⁽²⁾	21.8	24.6	20.8	22.4	45%
2411 O St, Omaha	25.9	30.1	24.0	26.7	53%
46th & Farnam Sts, Omaha	44.3	52.4	32.0	42.9	86%
19th & Burt Sts, Omaha	21.0	25.0	21.4	22.5	45%
3130 C Ave, Council Bluffs, IA ⁽³⁾	23.4	28.4	23.8	25.2	50%
Montgomery Co., IA (outside Omaha MSA) ⁽³⁾⁽⁴⁾	18.7	21.7	16.8	19.1	38%
Weeping Water WWTF ⁽⁵⁾	20.4	25.1	19.0	21.5	43%
Weeping Water Lauritzen Farm ⁽⁵⁾	28.1	34.7	27.7	30.2	60%
Sioux City MSA					
821 30th St, Sioux City, IA ⁽³⁾	19.7	22.8	18.3	20.3	41%
31986 475th Ave, Union Co, SD ⁽⁶⁾	17.1	22.4	18.5	19.3	39%
31307 473rd Ave, Union Co, SD ⁽⁶⁾	15.6	19.2	14.1	16.3	33%
Other Nebraska Sites					
Cozad	24.9	29.4	25.4	26.6	53%
Gothenburg	28.1	29.5	27.2	28.3	57%
Notes and Explanations:					
<p>(1) There is currently no NAAQS for the annual average PM₁₀ concentration. An annual average NAAQS of 50 µg/m³ was established in 1987, and then rescinded on December 18, 2006. Comparison to the rescinded NAAQS is provided for informational purposes only. Concentrations are in units of µg/m³.</p> <p>(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.</p> <p>(3) The Council Bluffs, Montgomery Co., Emmetsburg and Sioux City IA sites are operated by the IA DNR</p> <p>(4) The Montgomery County, IA site is located outside the Omaha MSA at Viking Lake State Park; ~18 miles east of the Mills-Montgomery County line and ~ 45 miles SE of the I-29/I-80 intersection.</p> <p>(5) Weeping Water is a limestone mining and processing area in Cass County, which is located 15 to 20 miles south of the main urbanized area within the Omaha MSA.</p> <p>(6) The Union Co., SD sites are operated by the South Dakota Department of Environment & Natural Resources.</p>					

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-6a: PM_{2.5} - 98th Percentile, 24-Hour Data ^{(1) (2)}

Site	2011	2012	2013	Design Value ⁽¹⁾	% NAAQS
Omaha MSA & Montgomery Co., IA ⁽⁵⁾					
Omaha NCore ⁽³⁾	22.5	21.3	22.2	22.0	63%
9225 Berry St.; Omaha	20.4	24.8	21.0	22.1	63%
2912 Coffey Ave., Bellevue	28.1	23.5	24.0	25.2	72%
2242 Wright St., Blair	21.8	24.1	20.6	22.2	63%
3130 C Ave., Council Bluffs, IA ⁽⁴⁾	20.8	28.5	22.4	23.9	68%
Montgomery Co., IA (outside Omaha MSA) ^{(4) (5)}	21.5	20.5	21.0	21.0	60%
Lincoln MSA					
3140 N Street, Lincoln	21.1	20.0	19.5	20.2	58%
Sioux City MSA & Emmetsburg, IA ⁽⁷⁾					
821 30th St, Sioux City, IA ⁽⁴⁾	23.4	24.9	21.5	23.3	66%
31986 475th Ave, Union Co, SD ⁽⁶⁾	23.1	19.7	22.8	21.9	62%
31307 473rd Ave, Union Co, SD ⁽⁶⁾	22.1	20.8	23.5	21.8	62%
Emmetsburg, IA (outside Sioux City MSA) ⁽⁴⁾⁽⁷⁾	22.0	22.4	20.9	21.8	62%
Other Nebraska Sites					
Grand Island Senior High	17.7	17.5	21.3	18.8	54%
Scottsbluff	12.6	17.9	12.2	14.2	41%
Notes and Explanations:					
(1) The Design Values are the 3-year average of the annual 98 th percentile values. To determine attainment status, the Design Values are compared to the 35 µg/m ³ NAAQS. Concentrations are in units of µg/m ³ .					
(2) NAAQS History: The 24-hour PM _{2.5} NAAQS was initially established at 65µg/m ³ in 1997. It was lowered to 35 mg/m ³ in 2006 and retained at the 35 µg/m ³ level in 2012.					
(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(4) The Council Bluffs, Montgomery Co., Emmetsburg and Sioux City IA sites are operated by the IA DNR					
(5) The Montgomery County, IA site is located outside the Omaha MSA at Viking Lake State Park; ~18 miles east of the Mills-Montgomery County line and ~ 45 miles SE of the I-29/I-80 intersection.					
(6) The Union Co., SD sites are operated by the South Dakota Department of Environment & Natural Resources					
(7) Emmetsburg is located outside the Sioux City located approximately 97 miles northeast of Sioux City. Data from this site is included here for comparison purposes only.					

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-6b: PM_{2.5} - Annual Average Data ^{(1) (2)}

Site	2011	2012	2013	Design Value ⁽¹⁾	% NAAQS
Omaha MSA & Montgomery Co., IA ⁽⁴⁾					
Omaha NCore ⁽³⁾	9.2	8.4	9.2	8.9	74%
9225 Berry St.; Omaha	10.6	11.7	8.6	10.3	86%
2912 Coffey Ave., Bellevue	11.7	10.4	11.0	11.0	92%
2242 Wright St., Blair	9.1	9.2	8.3	8.9	74%
3130 C Ave., Council Bluffs, IA ⁽⁴⁾	10.2	10.8	9.6	10.2	85%
Montgomery Co., IA (outside Omaha MSA) ^{(4) (5)}	9.0	8.8	8.3	8.7	72%
Lincoln MSA Site					
3140 N Street, Lincoln	8.5	8.7	8.2	8.5	71%
Sioux City MSA & Emmetsburg, IA ⁽⁶⁾					
821 30th St, Sioux City, IA ⁽⁴⁾	9.2	9.7	9.3	9.4	78%
31986 475th Ave, Union Co, SD ⁽⁶⁾	9.3	9.9	8.9	9.4	78%
31307 473rd Ave, Union Co, SD ⁽⁶⁾	8.1	7.5	10.5	8.7	72%
Emmetsburg, IA (outside Sioux City MSA) ⁽⁴⁾⁽⁷⁾	9.2	8.7	8.1	8.6	72%
Other Nebraska Sites					
Grand Island Senior High	7.0	7.6	7.6	7.4	61%
Scottsbluff ⁽⁸⁾	4.8	5.6	5.1	5.2	43%

Notes and Explanations:

- (1) The Design Values are the 3 year average of the annual average values. To determine attainment status, the Design Values compared to the 12 µg/m³ NAAQS. Concentrations are in units of µg/m³.
- (2) NAAQS History: The annual average PM_{2.5} NAAQS was initially established in 1997 at 15 µg/m³. It was retained at this level in the 2006 review and then lowered to 12 µg/m³ in December 2012.
- (2) The Omaha NCore site is located at 4102 Woolworth Street. It is a multi-pollutant monitoring site.
- (3) The Council Bluffs, Montgomery Co., Emmetsburg and Sioux City IA sites are operated by the IA DNR
- (4) The Montgomery County, IA site is located outside the Omaha MSA at Viking Lake State Park; ~18 miles east of the Mills-Montgomery County line and ~ 45 miles SE of the I-29/I-80 intersection.
- (5) The Union Co., SD sites are operated by the South Dakota Department of Environment & Natural Resources
- (6) Emmetsburg is located well outside the Sioux City located approximately 97 miles northeast of Sioux City. Data from this site is included here for comparison purposes only.
- (7) The Scottsbluff site was relocated from 1809 3rd St. (shut-down on 5/11/09) to the Scottsbluff High School at Hwy 26 and 5th St (start-up 5/13/09). Combined data for both sites is presented above.

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Attachment B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-7: Lead in Total Suspended Particulate (TSP-Pb)

Comparison of 3-Year Maximum Values of 3-Month Average Values ⁽¹⁾⁽²⁾					
Site	2011	2012	2013	DV ⁽¹⁾	% NAAQS
Sioux City MSA					
Auburn ⁽³⁾	0.12	0.05	0.03	0.12	80%
Fremont ⁽⁴⁾	0.03	0.14	0.11	0.14	93%
Omaha NCore ⁽⁵⁾⁽⁶⁾	nd	0.006	0.006	0.006	7%
Notes and Explanations:					
(1) Concentrations are in units of $\mu\text{g}/\text{m}^3$. The 3-month average NAAQS = $0.15 \mu\text{g}/\text{m}^3$. The DV or Design Value is the highest 3 month average in the last 3 years.					
(2) NAAQS History: The initial NAAQS was promulgated in 1978 and was set at $1.5 \mu\text{g}/\text{m}^3$ calendar quarter average. In 2008, it was modified to $0.15 \mu\text{g}/\text{m}^3$ 3-month running average.					
(3) Auburn Data Completeness: (3-month average completeness needs to meet or exceed 75%) 2011- Invalid data from 10/6 thru 12/5 due to flow control issues. Nine valid 3-mo averages; Aug-Oct, Sep-Nov & Oct-Dec were lost. 2012- Data lost to sampler repair 8/25 thru 9/30. Nine 3 mo averages were obtained; Jul-Sep, Aug-Oct & Sep-Nov were lost 2013 – Data completeness for 3-month averages ranged from 76% to 100%. All 3-month averages were valid.					
(4) Fremont Data Completeness: (3-month average completeness needs to meet or exceed 75%) 2011- Invalid data from 2/26 thru 5/21 and 8/1 thru 11/29 due to flow control issues. Two valid 3-mo averages obtained (Nov-Jan & Dec-Feb) 2012- Invalid data in Nov 2011, resulted in the loss of the Nov-Jan 3-mo average; Eleven 3-mo averages obtained. 2013 – Data completeness for 3-month averages ranged from 80% to 100%. All 3-month averages were valid.					
(5) The Omaha NCore site is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(6) Omaha NCore Data Completeness: (3-month average completeness needs to meet or exceed 75%) 2012 - Operations were initiated on 1/4/12. Ten 3-month averages obtained starting with Jan-Mar 2012. Completeness ranged from 87% to 100%. 2013 –April thru June 2014 completeness fell to 73%. Completeness for the other 11 3-month averages ranged from 80% to 100%.					
Abbreviation: nd – no data, site not operating					

Table B-8: Total Reduced Sulfur (TRS) Data

Comparison of 3-Year Maximum Value for 1-Minute TRS to the State Standard ⁽¹⁾⁽²⁾					
Site	2011	2012	2013	Maximum Value	% NE Std
Sioux City MSA					
501 Pine St. Dakota City	0.075	0.180	0.058	0.180	1.8%
Comparison of 3-Year Maximum Value for 30-Minute TRS to the State Standard ⁽¹⁾⁽³⁾					
Site	2011	2012	2013	Maximum Value	% NE Std
Sioux City MSA					
501 Pine St. Dakota City	0.049	0.086	0.042	0.86	86% ⁽⁴⁾
Notes and Explanations:					
(1) Concentrations are in units of ppm.					
(2) The 1-minute Nebraska Air Quality Standard is 10 ppm.					
(3) The 30-minute Nebraska Air Quality Standard is 0.10 ppm.					

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Attachment C – Population Dynamics

Note: Attachment C is unchanged from the Nebraska 2013 Ambient Air Monitoring Network Plan. It was last updated in the spring of 2013 using US Census data from on 2010 Census and 2012 survey estimate data.

Population related data is reviewed as part of the network planning process because:

- Population growth may be associated with pollution source growth;
- High population density generally correlates with high air pollution potential; and
- Some 40 CFR Part 58 requirements are based on population and/or Federally defined metropolitan statistical definitions.

Population data from the US Census Bureau from 2000, 2010 and 2012 was used in this attachment. The US Census Bureau conducts a comprehensive population census every 10 years referred to as a decennial census. The last decennial census was completed in 2010. In addition, the US Census Bureau conducts annual surveys to provide annual population estimates for each interim year. Population data from the decennial census is more reliable than that from the annual survey estimates.

Population Growth Summary:

Five counties (Douglas, Lancaster, Sarpy, Hall and Buffalo Counties) have consistently ranked as the fastest growing counties in terms of actual population growth over the 2000 – 2012 time frame. See Table C-1 below. These are also the counties with the highest populations as shown in Table C-2, with 59% of Nebraska's population residing in these 5 counties.

Also as shown in Table C-1, the counties of Douglas, Lancaster and Sarpy Counties accounted for most of the population growth within Nebraska (i.e., 106%). The total population growth in these 3 counties was able to exceed 100% of the Nebraska's total population growth because many other counties lost population (see Table C-7 at the end of this attachment for population data for all of Nebraska's counties). Douglas, Lancaster and Sarpy Counties are also the highest population counties (see Table C-2) and the most densely populated counties (see Table C-3).

Percent growth rates of counties (in contrast to actual population growth) provide a somewhat different picture of population growth as seen in Table C-4. However, a high growth rate in a low population county does not have that much impact on pollution potential because of the relatively small number of additional people involved. For example, the 10-year growth rate in Johnson County was 1.5%, which equates to a population gain of 73 people; vs. Lancaster County with a growth rate of 1.3% and a population gain of 3,461 people (i.e., a 47 fold higher population gain in the lower percent growth county).

From a potential air pollution source perspective, the population growth trends remain basically unchanged from previous years. Most of the population growth is occurring in the Omaha and Lincoln MSAs, and specifically in Douglas, Lancaster and Sarpy Counties. These counties have the highest populations and population densities. There are other counties growing at similar or even slightly higher rates, but their smaller populations equate to smaller population increases.

Note: this attachment focuses on population dynamics because it is a factor that can impact air pollution potential. It is recognized that there are many other factors and those are examined elsewhere in the 2013 Network Plan.

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Attachment C – Population Dynamics

Table C-1: Population Growth Rate Data for the 15 Nebraska Counties Demonstrating the Highest Population Gains from 2010 thru 2012					
County Rank ⁽¹⁾	Geographic Area	2-Year Annualized Growth ⁽²⁾	10-Year Annualized Growth ⁽³⁾	Percent of NE Population Gain ⁽⁴⁾	Cumulative Percent ⁽⁵⁾
na	Nebraska	12,692	11,686	na	na
1	Douglas County	6,300	5,384	47%	47%
2	Lancaster County	3,623	3,461	29%	76%
3	Sarpy County	3,075	3,646	30%	106%
4	Hall County	787	521	5%	111%
5	Buffalo County	655	382	4%	114%
6	Platte County	206	72	1%	115%
7	Saline County	169	34	0%	117%
8	Seward County	70	30	0%	118%
9	Colfax County	59	10	0%	118%
10	Madison County	55	-31	0%	118%
11	Adams County	54	17	0%	118%
12	York County	51	-92	-1%	117%
13	Chase County	51	-8	0%	117%
14	Cheyenne County	50	16	0%	117%
15	Howard County	38	-27	0%	117%
Footnotes:					
<p>(1) County Rank based on the 2-year annualized population growth.</p> <p>(2) The 2-Year Annualized Growth is calculated by dividing the 2010-12 population gain by 2.</p> <p>(3) The 10-Year Annualized Growth is calculated by dividing the 2000-2010 population gain by 10.</p> <p>(4) The % of NE Population Gain is calculated by dividing the population gain of each county from 2000 to 2012 and dividing by the population gain of Nebraska over this same time frame.</p> <p>(5) The Cumulative Percent is calculated by adding the % of NE Population Gain from each successive county.</p>					
Explanatory Notes:					
<ul style="list-style-type: none"> • The 2-year and 10-year population gains are calculated on exclusive time frames. The 2-year uses 2010-12 data, while the 10 year uses 2000-10 data. • The 2-year population gains (2010-12) rely on estimated data for 7/1/10 and 7/1/12. While the 10-year population gains (2010-12) rely on 7/1/00 and 7/1/10 estimated data. The 10-year estimates are more closely tied to the decennial census, and thus more reliable. • The % of Ne Population Gain is based on the entire 12 year time frame over which the 2-year and the 10-year population gains were examined: 2000-12. • The Cumulative Percent exceeds 100% because many NE counties are losing population. See Table C-7 below. • Sarpy County was the only county listed in this table that grew at a slower rate in 2010 -12 than in 2000-10. • Table C-7 at the end of this attachment contains population and population density data for all of Nebraska's counties. 					

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Attachment C – Population Dynamics

Table C-2: Population Data for Nebraska’s 15 Most Highly Populated Counties					
Co. Rank	Geographic Area	MSA/MiSA	Population 7/1/2012	Percent Nebraska ⁽¹⁾	Cumulative Percent ⁽²⁾
	Nebraska	na	1,855,525	100%	na
1	Douglas County	Omaha MSA	531,265	29%	29%
2	Lancaster County	Lincoln MSA	293,407	16%	44%
3	Sarpy County	Omaha MSA	165,853	9%	53%
6	Hall County	Grand Island MSA	60,345	3.3%	57%
7	Buffalo County	Kearney MiSA	47,463	2.6%	59%
8	Scotts Bluff County	Scottsbluff MiSA	36,964	2.0%	61%
9	Dodge County	Fremont MiSA	36,427	2.0%	63%
10	Lincoln County	North Platte MiSA	36,099	1.9%	65%
11	Madison County	Norfolk MiSA	35,031	1.9%	67%
12	Platte County	Columbus MiSA	32,681	1.8%	69%
13	Adams County	Hastings MiSA	31,459	1.7%	70%
14	Cass County	Omaha MSA	25,133	1.4%	72%
6	Dawson County	Lexington MiSA	24,220	1.3%	73%
14	Gage County	Beatrice MiSA	21,806	1.2%	74%
15	Dakota County	Sioux City MSA	20,918	1.1%	75%
Footnotes:					
(1) Percent Nebraska: The percent of Nebraska’s population that resides in that county					
(2) Cumulative Percent: The cumulative total of the percentages in the preceding column. For example: 44% of Nebraska’s residents reside in Douglas and Lancaster Counties, and 75% reside in the 15 counties listed.					
Notes:					
<ul style="list-style-type: none"> • All 15 of the most populated counties are located within MSA’s or MiSA’s. • Table C-7 at the end of this attachment contains population data for all of Nebraska’s counties. 					

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Table C-3: The 15 Most Densely Populated Nebraska Counties					
Rank	Geographic Area	MSA/MiSA	Population Density	Population 7/1/12	Area (sq. mi.)
	Nebraska	na	24	1,855,525	76,872
1	Douglas County	Omaha MSA	1605	531,265	331
2	Sarpy County	Omaha MSA	690	165,853	241
3	Lancaster County	Lincoln MSA	350	293,407	839
4	Hall County	Grand Island MSA	110	60,345	546
5	Dakota County	Sioux City MSA	79	20,918	264
6	Dodge County	Fremont MiSA	68	36,427	534
7	Madison County	Norfolk MiSA	61	35,031	573
8	Adams County	Hastings MiSA	56	31,459	563
9	Washington County	Omaha MSA	52	20,252	390
10	Scotts Bluff County	Scottsbluff MiSA	50	36,964	739
11	Buffalo County	Kearney MiSA	49	47,463	968
12	Platte County	Columbus MiSA	48	32,681	678
13	Cass County	Omaha MSA	45	25,133	559
14	Seward County	Lincoln MSA	30	16,935	575
15	Saunders County	Omaha MSA	28	20,823	754
Notes: <ul style="list-style-type: none"> • All 15 of the most densely populated counties are located within MSA’s or MiSA’s. • Table C-7 at the end of this attachment contains population and population density data for all of Nebraska’s counties. 					

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Table C-4: Percent Growth Rates: 15 Counties with the Highest 10-Year and 2-Year Rates							
10-Year 2000-2010				2-Year: 2010-2012			
Rank	Geographic Area	Percent Growth ⁽¹⁾	Annual Population Gain ⁽²⁾	Rank	Geographic Area	Percent Growth ⁽³⁾	Annual Population Gain ⁽⁴⁾
	Nebraska	0.7%	11,686		Nebraska	0.7%	12,692
1	Sarpy Co.	2.6%	3,646	1	Banner Co.	4.3%	32
2	Johnson Co.	1.5%	73	2	Blaine Co.	4.2%	21
3	Lancaster Co.	1.3%	3,461	3	Arthur Co.	2.2%	11
4	Douglas Co.	1.1%	5,384	4	Thomas Co.	2.0%	14
5	Hall Co.	0.9%	521	5	Sarpy Co.	1.9%	3,075
6	Buffalo Co.	0.9%	382	6	Buffalo Co.	1.4%	655
7	Garfield Co.	0.8%	15	7	Grant Co.	1.4%	9
8	Washington Co.	0.8%	148	8	Hall Co.	1.3%	787
9	Arthur Co.	0.5%	2	9	Chase Co.	1.3%	50
10	Saunders Co.	0.5%	103	10	Lancaster Co.	1.3%	3,623
11	Lincoln Co.	0.5%	162	11	Douglas Co.	1.2%	6,300
12	Cass Co.	0.4%	88	12	Saline Co.	1.2%	169
13	Dakota Co.	0.4%	73	13	Deuel Co.	0.8%	16
14	Saline Co.	0.2%	34	14	Platte Co.	0.6%	206
15	Platte Co.	0.2%	72	15	Howard Co.	0.6%	38
Footnotes:							
(1) 10-Year Percent Growth = (100%)(pop. 2010 – pop. 2000)(2) / (pop. 2000 + pop. 2010)							
(2) 10-Year Annual Population Gain = (pop. 2010 – pop. 2000) / 10							
(3) 2-Year Percent Growth = (100%)(pop. 2012 – pop. 2010)(2) / (pop. 2010 + pop. 2012)							
(4) 2-Year Annual Population Gain = (pop. 2012 – pop. 2010) / 10							
Note: Table C-7 at the end of this attachment contains growth rate information for all of Nebraska’s counties.							

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Metropolitan Statistical Areas and Micropolitan Statistical Areas

The U.S. Office of Management and Budget (OMB) defines Metropolitan Statistical Areas (MSAs), Micropolitan Statistical Areas (MiSAs) and Combined Statistical Areas (CSAs) based upon urban population data and *urbanized area/urban cluster* definitions provided by the US Census Bureau.

Metropolitan Statistical Areas (MSAs) contain an *urbanized area*, where an *urbanized area* is a densely settled territory delineated by the US Census Bureau that contains 50,000 or more people.

Micropolitan Statistical Area (MiSAs) contain an *urban cluster* with a population of 10,000 to 49,999, where an *urban cluster* is a densely settled territory delineated by the US Census Bureau that contains at least 2,500 people, but fewer than 50,000 people.

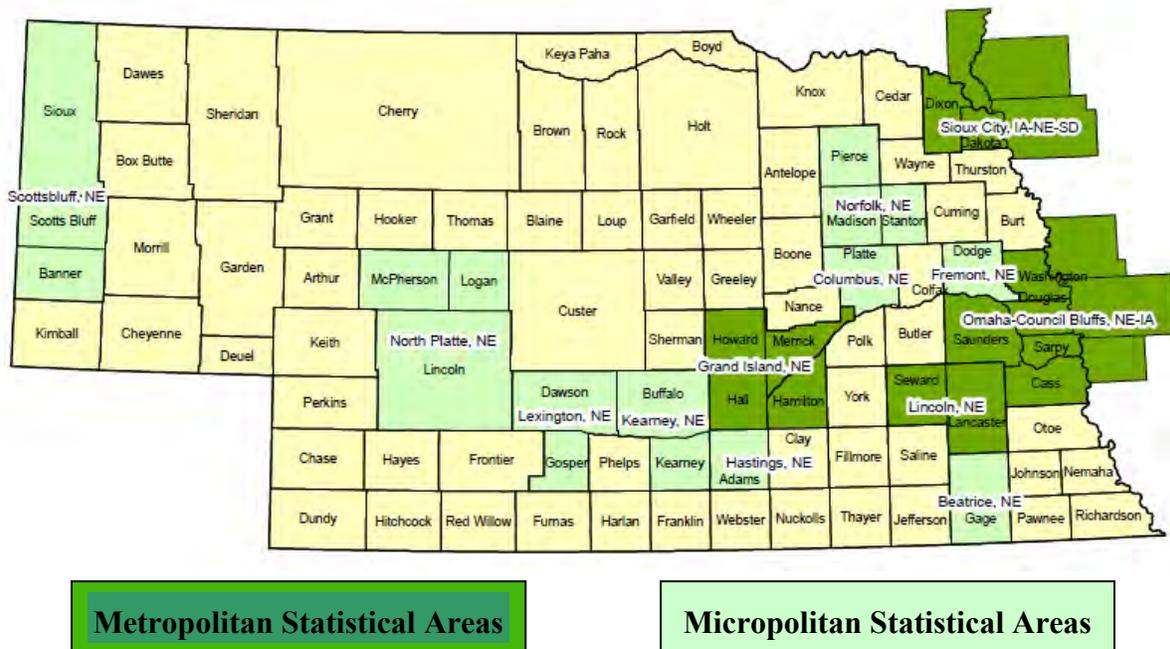
Combined Statistical Areas (CSAs) are adjacent MSAs and MiSAs with social and economic ties.

Of these 3 designations, the MSA is of the most importance from an ambient monitoring perspective because:

- It is sometimes used in defining minimum monitoring requirements, and
- It is often the default boundary when defining non-attainment areas.

The OMB released a revised listing of CSAs, MSAs and MiSAs on February 28, 2013, which were based on 2010 decennial census data. The Nebraska MSAs and MiSAs are shown in Figure C-1. Table C-5 lists the Nebraska CSAs, MSAs & MiSAs and the counties that comprise them.

Figure C-1: Nebraska Metropolitan Statistical Areas (MSAs) and Micropolitan Statistical Areas (MiSAs)



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Table C-5: Nebraska CSAs, MSAs and MiSAs: Summary Information	
Urbanized Area	Subparts & Basic Information
Omaha-Council Bluffs-Fremont NE-IA CSA	Omaha-Council Bluffs, NE-IA MSA & Fremont NE MiSA CSA Population: 922,051
Omaha-Council Bluffs NE-IA MSA	NE Counties: Cass, Douglas, Saunders, Sarpy & Washington IA Counties: Harrison, Mills & Pottawattamie Principal Cities: Omaha, NE & Council Bluffs, IA MSA Population: 885,624
Fremont NE MiSA	NE Counties: Dodge Principal City: Fremont MiSA Population: 36,427
Lincoln-Beatrice NE CSA	Lincoln NE MSA & Beatrice NE MiSA CSA Population: 332,148
Lincoln NE MSA	Lancaster and Seward Counties Principal City: Lincoln MSA Population: 310,342
Beatrice NE MiSa	Gage County Principal City: Beatrice MiSA Population: 21,806
Sioux City-Vermillion IA-SD-NE CSA	Sioux City, IA-SD-NE MSA & Vermillion, SD MiSA CSA Population: 183,052
Sioux City IA-SD-NE MSA	NE Counties: Dakota & Dixon IA Counties: Plymouth & Woodbury SD Counties: Union Principal City: Sioux City, IA MSA Population: 168,921
Vermillion SD MiSA	Clay County SD Principal City: Vermillion, SD MiSA Population: 14,141
Table continued on next page	

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Table C-5: Nebraska CSAs, MSAs and MiSAs: Summary Information (continued)	
Urbanized Area	Subparts & Basic Information
Grand Island NE MSA	NE Counties: Hall, Hamilton, Howard & Merrick Principal City: Grand Island MSA Population: 83,472
Kearney NE MiSA	NE Counties: Buffalo & Kearney Principal City: Kearney MiSA Population: 53,948
Norfolk NE MiSA	NE Counties: Madison, Pierce & Stanton Principal City: Norfolk MiSA Population: 48,286
Scottsbluff NE MiSA	NE Counties: Banner, Scotts Bluff & Sioux Principal City: Scottsbluff MiSA Population: 39,039
North Platte NE MiSA	Ne Counties: Lincoln, Logan & McPherson Principal City: North Platte MiSA Population: 37,373
Hastings NE MiSA	Ne Counties: Adams Principal City: Hastings MiSA Population: 31,459
Columbus NE MSA	Ne Counties: Platte Principal City: Columbus MiSA Population: 32,681
Lexington NE MiSA	Ne Counties: Dawson & Gosper Principal City: Lexington MiSA Population: 26,249
<p>Data Sources: CSA, MSA & MiSA definitions, including counties and principal cities, from OMB Bulletin No. 13-01 (February 28, 2013). Population data from US Census survey estimates for July 1, 2012.</p>	

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Table C-6 below provides population, population density and population growth information on Nebraska MSAs and MiSAs, and the counties within them. Table C-6 shows that the Omaha and Lincoln MSAs have the highest growth rates, and that most of this growth is occurring in Douglas, Lancaster and Sarpy Counties. The Grand Island MSA and the Kearney MiSA have the next highest growth rates. This is the same basic growth pattern recognized in the county analysis at the beginning of this attachment.

Also see Figures C-2 and C-3 below. Most (86%) of the population in the Omaha-Council Bluffs MSA resides in Nebraska. While in the Sioux City MSA, most (75%) of the population resides in Iowa.

Table C-6: Nebraska MSAs and MiSAs: Population Data

Geographic Area	2012 Population	Population Density	10-Year Annualized Population Growth	2-Year Annualized Population Growth	12-Year Annualized Percent Growth
Omaha-Council Bluffs MSA	885,624	202	9882	8754	1.2%
NE Counties	763,326	336	9369	9296	1.3%
Cass Co NE	25,133	56	88	-63	0.3%
Douglas Co NE	531,265	1605	5384	6300	1.1%
Sarpy Co NE	165,853	690	3646	3075	2.5%
Saunders Co NE	20,823	28	103	-9	0.4%
Washington Co NE	20,252	52	148	-8	0.7%
IA Counties	122,298	58	514	-542	0.3%
Harrison Co IA	14,548	21	-76	-190	-0.6%
Mills Co IA	14,837	34	49	-107	0.2%
Pottawattamie Co IA	92,913	97	541	-246	0.5%
Lincoln MSA	310,342	220	3492	3693	1.2%
Lancaster Co	293,407	350	3461	3623	1.3%
Seward Co	16,935	29	30	70	0.2%
Sioux City MSA	168,921	57	98	48	0.1%
NE Counties	26,836	68	44	-84	0.1%
Dakota Co NE	20,918	79	73	-60	0.2%
Dixon Co NE	5,918	12	-28	-24	-0.5%
IA Counties	127,230	10	-137	-54	-0.1%
Woodbury Co IA	102,323	117	-149	-23	-0.1%
Plymouth Co IA	24,907	29	12	-31	0.02%
SD – Union Co	14,855	32	191	186	1.4%
Grand Island MSA	83,472	39	440	736	0.6%
Hall Co	60,345	110	521	787	1.0%
Hamilton Co	9,011	17	-26	-56	-0.3%
Howard Co	6,336	11	-27	38	-0.3%
Merrick Co	7,780	16	-28	-33	-0.4%

Table continued on next page.

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Table C-6: Nebraska MSAs and MiSAs: Population Data

Geographic Area	2012 Population	Population Density	10-Year Annualized Population Growth	2-Year Annualized Population Growth	12-Year Annualized Percent Growth
Kearney MiSA	53,948	36	337	652	0.8%
Buffalo Co	47,463	49	382	655	1.0%
Kearney Co	6,485	13	-45	-3	-0.6%
Norfolk MSA	48,286	31	-117	-6	-0.2%
Madison Co	35,031	61	-31	55	-0.05%
Pierce Co	7,166	12	-56	-45	-0.7%
Stanton Co	6,089	14	-30	-16	-0.4%
Scottsbluff MSA	39,039	11	-23	-19	-0.1%
Banner Co	819	1.0	-12	32	-0.6%
Scotts Bluff Co	36,964	50	5	-52	-0.01%
Sioux Co	1,315	0.6	-16	2	-0.1%
North Platte MiSA	37,373	9	162	-102	0.3%
Lincoln Co	36,099	14	162	-85	0.3%
Logan Co	765	1.3	0	-3	-0.1%
McPherson Co	509	0.6	1	-15	-0.4%
Fremont MiSA	36,427	68	49	-140	0.05%
Dodge Co	36,427	68	49	-140	0.05%
Columbus MiSA	32,681	48	72	206	0.3%
Adams Co	32,681	48	72	206	0.3%
Hastings MiSA	31,459	56	17	54	0.1%
Adams Co	31,459	56	17	54	0.1%
Lexington MiSA	26,249	18	-18	-77	-0.1%
Dawson Co	24,220	24	-8	-68	-0.1%
Gosper Co	2,029	4	-9	-9	-0.4%
Beatrice MiSA	21,806	25	-64	-248	-0.4%
Gage Co	21,806	25	-64	-248	-0.4%

Term Definitions:

2012 Population – The US Census survey estimate for 7/1/12

10-Year Annualized Population Growth – The change in population between 7/1/00 and 7/1/10 based on US Census Bureau survey estimate data.

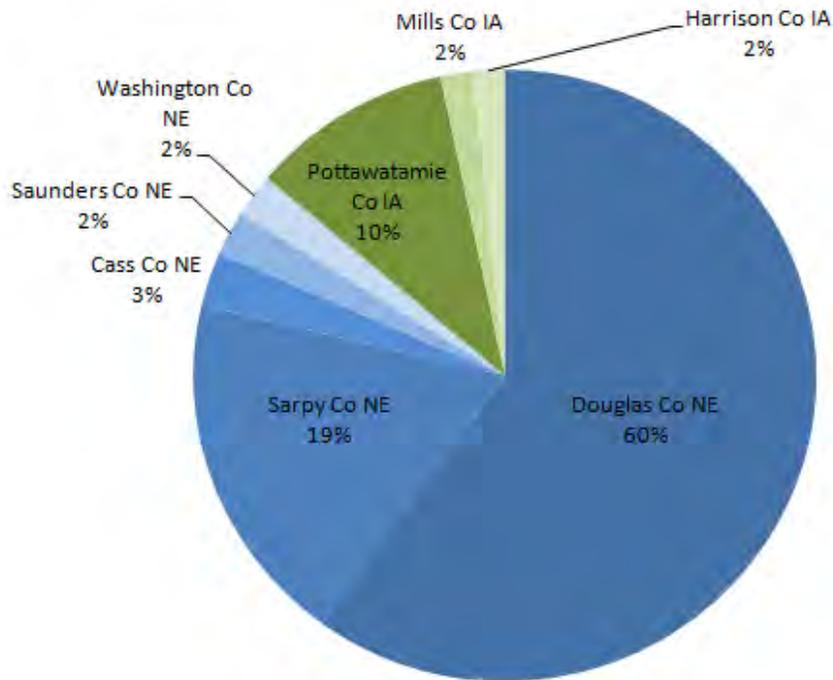
2-Year Annualized Population Growth – The change in population between 7/1/10 and 7/1/12 based on US Census Bureau survey estimate data.

12-Year Annualized Population Growth – The change in population from 7/1/00 to 7/1/12 divided by the average of the 7/1/00 and 7/1/12 populations and divided by 12 years, express as a percent. US Census Bureau survey estimate data was used for the calculations.

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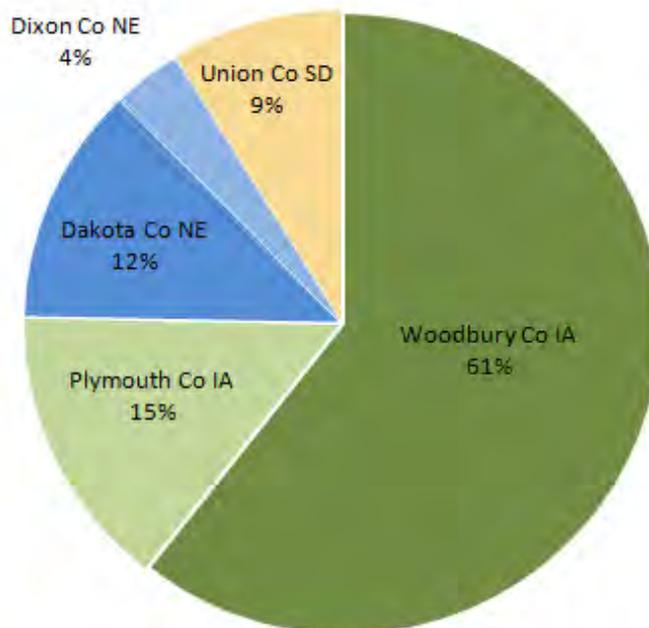
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Figure C-2: Population Distribution within the Omaha MSA



Nebraska Counties: 86% of the Omaha MSA population & a growth rate of 1.3 % per year from 2000 thru 2012.
Iowa Counties: 14% of the Omaha MSA population & a growth rate of 0.3 % per year from 2000 to 2012.

Figure C-3: Population Distribution within the Sioux City MSA



Nebraska Counties: 16% of the Sioux City MSA population with a growth rate of 0.1% per year from 2000 thru 2012.
Iowa Counties: 75% of the Sioux City MSA population with a growth rate of -0.1 % per year from 2000 to 2012
South Dakota Counties: 9% of the Sioux City MSA population with a growth rate of 1.4 % per year from 2000-12.

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Table C-7: Nebraska Population Data: All Counties							
Geographic Area	Area (sq mi)	Population 7/1/2012	Population Density	10-Year Annualized Growth	10-Year Annualized Percent Growth	2-Year Annualized Growth	2-Year Annualized Percent Growth
Nebraska	76,872	1,855,525	24.1	11,686	0.7%	12,692	0.7%
Adams Co	563	31,459	55.8	17	0.1%	54	0.2%
Antelope Co	857	6,545	7.6	-77	-1.1%	-55	-0.8%
Arthur Co	715	486	0.7	2	0.5%	11	2.2%
Banner Co	746	760	1.0	-12	-1.6%	32	4.3%
Blaine Co	711	514	0.7	-11	-2.1%	21	4.2%
Boone Co	687	5,417	7.9	-71	-1.2%	-40	-0.7%
Box Butte Co	1,075	11,317	10.5	-95	-0.8%	21	0.2%
Boyd Co	540	2,054	3.8	-33	-1.5%	-23	-1.1%
Brown Co	1,221	3,023	2.5	-39	-1.2%	-61	-2.0%
Buffalo Co	968	47,463	49.0	382	0.9%	655	1.4%
Burt Co	493	6,659	13.5	-94	-1.3%	-92	-1.4%
Butler Co	584	8,295	14.2	-44	-0.5%	-41	-0.5%
Cass Co	559	25,133	44.9	88	0.4%	-63	-0.2%
Cedar Co	740	8,746	11.8	-76	-0.8%	-38	-0.4%
Chase Co	895	4,064	4.5	-8	-0.2%	51	1.3%
Cherry Co	5,961	5,727	1.0	-42	-0.7%	8	0.1%
Cheyenne Co	1,196	10,068	8.4	16	0.2%	50	0.5%
Clay Co	573	6,411	11.2	-47	-0.7%	-66	-1.0%
Colfax Co	413	10,653	25.8	10	0.1%	59	0.6%
Cuming Co	572	9,072	15.9	-102	-1.1%	-34	-0.4%
Custer Co	2,576	10,740	4.2	-84	-0.7%	-86	-0.8%
Dakota Co	264	20,918	79.3	73	0.4%	-60	-0.3%
Dawes Co	1,396	9,152	6.6	13	0.1%	-8	-0.1%
Dawson Co	1,013	24,220	23.9	-8	0.0%	-68	-0.3%
Deuel Co	440	1,972	4.5	-14	-0.7%	16	0.8%
Dixon Co	476	5,918	12.4	-28	-0.5%	-24	-0.4%
Dodge Co	534	36,427	68.2	45	0.1%	-118	-0.3%
Douglas Co	331	531,265	1605.1	5,384	1.1%	6,300	1.2%
Dundy Co	920	2,021	2.2	-26	-1.2%	7	0.3%
Fillmore Co	576	5,771	10.0	-73	-1.2%	-55	-0.9%
Franklin Co	576	3,188	5.5	-28	-0.8%	-25	-0.8%
Frontier Co	975	2,741	2.8	-31	-1.1%	-6	-0.2%
Furnas Co	718	4,907	6.8	-33	-0.6%	-23	-0.5%
Gage Co	855	21,806	25.5	-64	-0.3%	-248	-1.1%

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Table C-7: Nebraska Population Data: All Counties							
Geographic Area	Area (sq mi)	Population 7/1/2012	Population Density	10-Year Annualized Growth	10-Year Annualized Percent Growth	2-Year Annualized Growth	2-Year Annualized Percent Growth
Garden Co	1,704	1,953	1.1	-20	-0.9%	-63	-3.1%
Garfield Co	570	2,007	3.5	15	0.8%	-17	-0.8%
Gosper Co	458	2,029	4.4	-9	-0.4%	-9	-0.4%
Grant Co	776	629	0.8	-12	-1.8%	9	1.4%
Greeley Co	570	2,458	4.3	-16	-0.6%	-42	-1.7%
Hall Co	546	60,345	110.4	521	0.9%	787	1.3%
Hamilton Co	544	9,011	16.6	-26	-0.3%	-56	-0.6%
Harlan Co	553	3,410	6.2	-33	-0.9%	-3	-0.1%
Hayes Co	713	953	1.3	-11	-1.1%	-4	-0.4%
Hitchcock Co	710	2,887	4.1	-20	-0.7%	-5	-0.2%
Holt Co	2,413	10,396	4.3	-100	-0.9%	-23	-0.2%
Hooker Co	721	727	1.0	-4	-0.5%	-4	-0.5%
Howard Co	569	6,336	11.1	-27	-0.4%	38	0.6%
Jefferson Co	573	7,521	13.1	-79	-1.0%	4	0.1%
Johnson Co	376	5,140	13.7	73	1.5%	-37	-0.7%
Kearney Co	516	6,485	12.6	-45	-0.7%	-3	0.0%
Keith Co	1,061	8,220	7.7	-46	-0.5%	-73	-0.9%
Keya Paha Co	773	804	1.0	-16	-1.8%	-9	-1.1%
Kimball Co	952	3,783	4.0	-23	-0.6%	-20	-0.5%
Knox Co	1,108	8,573	7.7	-63	-0.7%	-51	-0.6%
Lancaster Co	839	293,407	349.8	3,461	1.3%	3,623	1.3%
Lincoln Co	2,564	36,099	14.1	162	0.5%	-85	-0.2%
Logan Co	571	765	1.3	0	0.0%	-3	-0.3%
Loup Co	570	589	1.0	-8	-1.2%	-19	-3.1%
McPherson Co	859	509	0.6	1	0.1%	-15	-2.8%
Madison Co	573	35,031	61.2	-31	-0.1%	55	0.2%
Merrick Co	485	7,780	16.0	-28	-0.4%	-33	-0.4%
Morrill Co	1,424	4,889	3.4	-37	-0.7%	-75	-1.5%
Nance Co	441	3,715	8.4	-32	-0.8%	-4	-0.1%
Nemaha Co	409	7,154	17.5	-29	-0.4%	-48	-0.7%
Nuckolls Co	575	4,438	7.7	-53	-1.1%	-32	-0.7%
Otoe County	616	15,747	25.6	29	0.2%	-13	-0.1%
Pawnee Co	432	2,765	6.4	-32	-1.1%	0	0.0%
Perkins Co	883	2,931	3.3	-20	-0.6%	-25	-0.8%
Phelps Co	540	9,215	17.1	-54	-0.6%	15	0.2%

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Table C-7: Nebraska Population Data: All Counties							
Geographic Area	Area (sq mi)	Population 7/1/2012	Population Density	10-Year Annualized Growth	10-Year Annualized Percent Growth	2-Year Annualized Growth	2-Year Annualized Percent Growth
Pierce Co	574	7,166	12.5	-56	-0.7%	-45	-0.6%
Platte Co	678	32,681	48.2	72	0.2%	206	0.6%
Polk Co	439	5,320	12.1	-22	-0.4%	-30	-0.6%
Red Willow Co	717	10,975	15.3	-43	-0.4%	-36	-0.3%
Richardson Co	553	8,290	15.0	-114	-1.3%	-29	-0.3%
Rock Co	1,008	1,376	1.4	-24	-1.4%	-66	-4.5%
Saline Co	575	14,557	25.3	34	0.2%	169	1.2%
Sarpy Co	241	165,853	689.6	3,646	2.6%	3,075	1.9%
Saunders Co	754	20,823	27.6	103	0.5%	-9	0.0%
Scotts Bluff Co	739	36,964	50.0	5	0.0%	-52	-0.1%
Seward Co	575	16,935	29.5	30	0.2%	70	0.4%
Sheridan Co	2,441	5,319	2.2	-69	-1.2%	-70	-1.3%
Sherman Co	566	3,108	5.5	-15	-0.5%	-19	-0.6%
Sioux Co	2,067	1,315	0.6	-16	-1.1%	2	0.1%
Stanton Co	430	6,089	14.2	-30	-0.5%	-16	-0.3%
Thayer Co	575	5,134	8.9	-81	-1.4%	-40	-0.8%
Thomas Co	713	676	0.9	-8	-1.2%	14	2.0%
Thurston Co	394	7,020	17.8	-15	-0.2%	24	0.3%
Valley Co	568	4,229	7.4	-37	-0.8%	-17	-0.4%
Washington Co	390	20,252	51.9	148	0.8%	-8	0.0%
Wayne Co	443	9,554	21.5	-24	-0.2%	-27	-0.3%
Webster Co	575	3,725	6.5	-21	-0.5%	-47	-1.2%
Wheeler Co	575	805	1.4	-6	-0.7%	-9	-1.0%
York Co	576	13,746	23.9	-92	-0.7%	51	0.4%

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Attachment D: Verification of Compliance with 40 CFR Part 58

This attachment reviews compliance with 40 CFR Part 58 Appendixes A, C, D and F as set forth on February 28, 2013. The review found the Nebraska Ambient Monitoring Network to be in compliance with these requirements.

I. Appendix A Review

40 CFR Part 58 Appendix A sets forth quality assurance requirements for the collection, calculation and reporting of air monitoring data. To ensure compliance with these requirements, the NDEQ has a *Quality Assurance Project Plan (QAPP) for the Nebraska Ambient Air Monitoring Program for PM₁₀, PM_{2.5}, CO, O₃, SO₂ and TRS*. EPA Region 7 reviewed and approved this QAPP in June 2006. Actual procedures for operating monitors, as well as for collecting, reviewing and submitting data are set forth in Standard Operating Procedures (SOPs) that were developed to comply with the requirements of the QAPP.

Appendix A also sets forth requirements specifying the number of collocated monitors required for PM_{2.5}, PM₁₀, PM_{10-2.5} and Lead (Pb) monitors. Table D-1 summarizes the collocated sites in Nebraska. It appears that Nebraska is meeting these collocation requirements. It is noted, as it was previously in the 2011 and 2012 Network Plans, that DCHD is meeting the collocation requirement for its PM_{2.5} network of 3 sites (1 MetOne BAM and 2 2025 sequential samplers) with a 2025 sequential sampler collocated at the MetOne BAM site.

II. Appendix C Review

Appendix C contains requirements for approved ambient air monitoring methodologies. Any monitor that is used to evaluate NAAQS compliance must be a Federal Reference Method (FRM) or a Federal Equivalent Method (FEM) or an alternatively approved method as defined in Appendix C. The network description tables in Attachment A of the network plan identify the monitoring method used by each monitor in the Nebraska ambient air monitoring network. All monitors used to evaluate compliance with the NAAQS are FRM or FEM certified. The only monitors that are not FRM/FEM certified are the TRS monitors used to evaluate compliance with Nebraska's TRS standard.

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Table D-1: Compliance Summary: Collocation Requirements of Appendix A							
Parameter	Method	NDEQ/LLCHD ⁽¹⁾			DCHD ⁽¹⁾		
		# of Sites	# Collocated	% Collocated	# of Sites	# Collocated	% Collocated
PM ₁₀	Hi-Vol Sampler	0	0	na	2	1	50%
PM ₁₀	Sequential 2025 Sampler	3	1	33%	0	0	na
PM ₁₀	Continuous Monitor	1	0	See Footnote (2)	1	0	See Footnote (2)
PM _{2.5}	Sequential 2025 Sampler	3	1	33%	2	See Footnote (3)	33% ⁽³⁾
PM _{2.5}	Met One BAM Method ⁽⁵⁾	0	0	na	2	1	
PM _{10-2.5}	Met One BAM Method	0	0	na	1	0	See Footnote (4)
TSP-Lead	Hi-Vol Sampler	2	1	50%	0	0	See Footnote (4)
<p>Collocation Requirement: Appendix A requires 15% of the sites in each parameter/method category to have collocated monitors with certain exceptions and additional requirements explained in the footnotes below.</p> <p>Footnotes:</p> <p>(1) The 15% collocation requirements applies to each Primary Quality Assurance Organization (PQAO) separately. There are two PQAO's in Nebraska: DCHD and NDEQ/LLCHD.</p> <p>(2) Collocated monitors are not required for continuous PM10 monitors.</p> <p>(3) The sequential 2025 sampler collocated with the MetOne BAM sampler at the NCore site is currently being used to meet the collocation requirement for the DCHD PM_{2.5} monitoring network of 3 sites: one Met One BAM and two 2025 sequential samplers.</p> <p>(4) Only EPA designated NCore sites are required to have collocated monitors for PM_{10-2.5} and TSP-Lead sites, The PM_{10-2.5} and TSP-Lead monitors operated by DCHD are located at the Omaha NCore site, and EPA has not required collocation for these monitors at this site.</p>							
<p>Network Descriptions</p> <p>NDEQ Sequential 2025 PM₁₀: Weeping Water (collocated), Cozad & Gothenburg</p> <p>NDEQ Continuous PM₁₀: Weeping Water Farm (collocation not required)</p> <p>NDEQ Sequential 2025 PM_{2.5}: LLCHD (collocated), Grand island & Scottsbluff</p> <p>NDEQ TSP-Lead: Fremont (collocated) & Auburn</p>				<p>DCHD Hi-Vol PM₁₀: 19& Burt (collocated) and South Omaha</p> <p>DCHD Continuous PM₁₀: 46th & Farnam (collocation not required)</p> <p>DCHD Sequential 2025 PM_{2.5}: Berry St & Blair (collocation at NCore)</p> <p>DCHD MetOne BAM PM_{2.5}: NCore (collocated) & Bellevue</p> <p>DCHD Met MetOne BAM PM_{10-2.5}: NCore (collocation not required)</p> <p>DCHD TSP-Lead: NCore (collocation not required)</p>			

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Attachment D: Verification of Compliance with 40 CFR Part 58

III. Appendix D Review

Appendix D sets forth monitoring objectives and minimum monitoring site requirements that must be met. The review that follows demonstrates that the Nebraska ambient air monitoring network meets the Appendix D requirements in effect on February 28, 2013.

EPA periodically re-evaluates the NAAQS and monitoring requirements. Regulatory modifications may impact the minimum monitoring requirements in one of two ways:

- Appendix D minimum monitoring requirements may be changed (i.e., more or less monitoring could be required); or
- Monitoring needs may change as a result of a NAAQS modification (e.g., when the annual average PM_{2.5} NAAQS was lowered from 15 µg/m³ to 12 µg/m³, the 85% of NAAQS threshold set forth in 40 CFR Part 58 Appendix D Sec. 4.7 Table D.5 was crossed, and the minimum number of PM_{2.5} monitoring sites for the Omaha MSA increased from 1 to 2).

III.A: Appendix D - Objectives Review

Appendix D Section 1.1 sets forth 3 objectives that ambient air monitoring networks must be designed to meet:

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

Each of these objectives is discussed below.

1. Timely Dissemination of Data - Met

Air monitoring data is made available to the public and other parties in several ways.

- a. Ambient air monitoring data is reviewed quarterly and entered into the national EPA-operated AQS database. The AQS data base is available to federal, state and local monitoring agency personnel, as well as some other public agencies and researchers. AQS data cannot be directly accessed by the general public, but the NDEQ does respond to data requests.
- b. Air Quality Index reporting is performed by DCHD and LLCHD for their respective jurisdictions. The AQI information is made available on their respective city websites.
- c. Monitoring data from continuous particulate, ozone and CO monitors in the Omaha and Lincoln MSA report directly to the EPA AirNow system. The general public can access air quality index information on-line at: www.airnow.gov
- d. Daily maximum TRS monitoring data is available to the public on the NDEQ web site. This data is typically entered on a monthly basis. The NDEQ also responds to telephone or email requests for more timely or detailed information.
- e. The NDEQ publishes an annual Air Quality Report. This report is available on-line and upon request. Similarly the annual Network Plan reports are also available to the public on-line or upon request.

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2. Support compliance with ambient air quality standards and emissions strategy development – Met

The annual Network Plans and Five Year Assessments are an important element in meeting this objective. They examine historical pollutant trends, NAAQS attainment, source impacts and population growth. All of this information is important not only to network planning, but air quality planning in general.

In addition, the NDEQ, DCHD and LLCHD review monitoring data on a quarterly or more frequent basis to evaluate attainment with the standards. The purpose of these reviews is to identify any non-attainment or near non-attainment circumstances. If such conditions are identified, efforts are made to ascertain the cause and to the extent possible bring about corrective action through regulatory and/or voluntary mechanisms. Three examples are described below

- In the fall of 2011, the 3 month average lead concentration at the Fremont site exceeded the NAAQS. EPA and the one known source were notified. The data was discussed and presented to EPA for review. NDEQ and the source conducted an on-site review of the facility and potential emission sources (see Section V.B.2 in this network plan for additional information).

In 2012, NDEQ continued to calculate daily and 3-month average lead monitoring data as the data became available; and to disseminate this information to the primary known source. High daily lead levels in May thru early July brought the 3-month average within 93% of the NAAQS, and these lead levels were discussed with the primary known source. Lower lead levels were seen beginning in July and continuing thereafter. The impact of this information exchange with the source is difficult to evaluate, but it may have played an important role in facilitating the source in remaining diligent with their control efforts.

- From September 2011 thru June 2012, the 46th & Farnam site recorded four (4) 24-hour average PM₁₀ values greater than the 150 $\mu\text{g}/\text{m}^3$ standard. The 46th & Farnam site is source-oriented with respect to Omaha Steel Castings Company. Douglas County Health Department made Omaha Air Quality and Omaha Steel aware of the high values in a timely manner. Omaha Air Quality met with Omaha Steel to discuss potential PM₁₀ sources and controls. Omaha Steel proceeded with process-handling and housekeeping changes intended to reduce PM₁₀ emissions. Omaha Steel is anticipated to move from this site by April 2014 as part of a planned facility relocation.
- In the summer of 2012, Nebraska monitoring sites began reporting ozone levels above those seen in recent years. The NDEQ began using Air Now data to track the current 4th highest values for sites in and around Nebraska as the ozone season progressed. Although the 4th high values at 2 sites in the Omaha MSA exceeded 0.075 ppm 8-hour ozone NAAQS, the 3 year average design values did not exceed the NAAQS (i.e., the maximum unofficial 2010-2012 DVs = 0.069 ppm).

This information was disseminated within the NDEQ Air Quality Division and to DCHD, OAQC and LLCHD. The periodic updating of the 4th high values to DCHD and OAQC facilitated the timely transfer of attainment status information to stakeholders in the Omaha/Council Bluffs Ozone-Reduction Community Based Planning Process was facilitated, which encouraged Omaha/Council Bluffs-area residents to take voluntary measures to help reduce ground-level ozone.

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3. Support for air pollution research studies – Met

The NDEQ, DCHD and LLCHD operate the Nebraska SLAMS network in accordance with the monitor specifications, site placement and QA requirements set forth in 40 CFR Part 50 and 58. EPA R7 provides oversight to ensure that regulatory requirements are met with respect to methodology and QA.

Data is reviewed quarterly before being submitted to EPA's AQS data base. Once in AQS, the data is available for pollution research studies.

Near real-time data is also reported to the EPA AirNow data from the continuous PM, CO and ozone monitors operating in the Omaha and Lincoln MSA. This data is also available for research purposes.

III.B: Appendix D – Minimum Monitoring Site Requirements

Nebraska has the minimum number of monitoring sites required by Appendix D. The minimum monitoring site requirements for each of the four MSAs are examined separately and documented in Tables D-2.a thru D-2.d below.

The review for non-MSA areas of the state was performed on a pollutant specific basis. This review is documented in narrative form in Section III.C below.

It should be noted that the number of monitoring sites required in a network generally needs to be greater than the minimum number required by Appendix D. This is stated in Appendix D Section 1.1.2: "... total number of monitoring sites that will serve the variety of data needs will be substantially higher than these minimum requirements provide..."

III.C: Appendix D Minimum Monitoring Requirements for non-MSAs

NCore – (40 CFR Part 58 App. D Sec. 3). None required or operated.

At this time there is no requirement or plan to develop an NCore site in Nebraska, other than the current site in Omaha.

Ozone (O₃) – (40 CFR Part 58 App. D Sec. 4.1) No sites required or operated.

At this time there is no requirement to deploy ozone monitoring sites outside of the MSAs.

Previously, EPA had proposed requiring rural ozone monitoring sites. These proposed regulations would have required 1 to 3 rural monitoring sites in Nebraska. These regulations were not issued, but ozone NAAQS is currently under review. Proposed regulations, which may include rural ozone monitoring requirements, are anticipated in 2013.

Carbon Monoxide (CO) – (40 CFR Part 58 App. D Sec. 4.2). No sites required or operated.

At this time there is no requirement or plan to conduct CO monitoring outside the MSAs.

Nitrogen Dioxide (NO₂) – (40 CFR Part 58 App. D Sec. 4.3). No sites required or operated.

At this time there is no requirement or plan to conduct NO₂ monitoring outside the MSAs.

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Sulfur Dioxide (SO₂) – (40 CFR Part 58 App. D Sec. 4.4) No sites required or operated.

At this time there is no requirement or plan to conduct SO₂ monitoring outside the Omaha MSA.

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Lead (Pb) – (40 CFR Part 58 App. D Sec. 4.5) Two required and 2 sites operated.

Two source-oriented sites with lead emissions ≥ 1 tpy were required to be established in 2010. One site is in Fremont near Magnus Farley (established in March 2010). The other site is in Auburn near Magnolia Metals (established in May 2010).

The emission threshold for source-oriented sites was lowered to ≥ 0.5 tpy with additional sites needing to be established in 2012. Emission estimates for Nucor Steel in Norfolk exceeded the 0.5 tpy threshold. There was an allowance for not conducting monitoring if it could be shown that ambient lead concentrations would not exceed 50% of the NAAQS. Nucor Steel submitted a modeling study to the NDEQ that ambient lead concentrations would not exceed 50% of the NAAQS. The NDEQ reviewed the modeling study; and based on the findings of the study submitted it to the EPA Region 7 Administrator with a request for waiver pursuant to 40 CFR Part 58 Appendix D Section 4.5(a)(ii). The EPA R7 administrator approved the waiver in April 2014. The waiver must be renewed every 5 years. Thus a lead monitoring site in Norfolk is not required at this time.

PM₁₀ Particulate Matter (40 CFR Part 58 App. D Sec. 4.6). No sites required. Two sites operated.

There are no minimum PM₁₀ monitoring requirements for areas outside of MSAs. Both of the Nebraska PM₁₀ sites located outside of the Omaha MSA are source and population oriented. One is deployed in downtown Cozad; the other one is in downtown Gothenburg. These sites were established to monitor for possible impacts from agricultural processing facilities, primarily alfalfa processing facilities in these two communities.

Fine Particulate Matter: PM_{2.5} (40 CFR Part 58 Appendix D Section 4.7 & 4.7.3) Two (2) sites required and 2 operated.

States are required to operate a background site and a transport site for PM_{2.5}. Nebraska's background site is in Scottsbluff, and the transport site is in Grand Island.

Coarse Particulate Matter: PM_{10-2.5} (40 CFR Part 58 App D Sec 4.8). No sites required or operated.

Photochemical Assessment Monitoring Stations (PAMS) (40 CFR Part 58 Appendix D Section 5)
No sites required or deployed.

PAMS are only required in areas classified as serious, severe, or extreme non-attainment for O₃. No such areas exist in Nebraska at this time.

IV: Appendix E Review

This appendix sets forth requirements for probe and monitoring path placement, including: horizontal and vertical placement, spacing from minor sources, spacing from obstructions, spacing from trees, spacing from roadways, cumulative interferences on a monitoring path, maximum monitoring path length, and probe material and sample residence time. Compliance with these criteria is verified when the site is set-up and periodically thereafter. Compliance is evaluated using review sheets developed for that purpose.

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Tables D-2.a thru D-2.c: Minimum Monitoring Reviews for Each Nebraska MSA

Table D-2.a: 40 CFR Part 58 Appendix D Review: Omaha MSA (MSA Population ~ 886,000) *					
Pollutant	App. D Citation	Review Criteria & Comments	Sites Required	Sites Operated	Criteria Met?
Ozone	Sec. 4.1 Table D-2	Omaha's MSA population is between 350K to 4M and O ₃ levels are ≥ 85% of NAAQS (<i>See Design Values in Attachment B</i>).	2	3 Includes NCore	Y
CO	Sec. 4.2	A near-road CO monitor will be required to be located at the near-road NOx monitor site (see near-road NOx below).	0	2 Includes NCore	Y
NO₂	Sec. 4.3.2	One near road NOx monitor for CBSA ≥ 500K to be operational by 1/1/2013. However, under EPA's proposed regulation of 10/5/12, a near-road NO ₂ monitor will not be required in Omaha until 1/1/17.	0	0	Y
	Sec.4.3.3	Area-Wide monitoring if CBSA ≥ 1M (Omaha CBSA population < 1 M)	0	1 @ NCore	Y
	Sec. 4.3.4	Regional Administrator required monitoring	0	0	Y
SO₂	Sec. 4.4	The need for SO ₂ sites is based on the <i>Population Weighted Emissions Index</i> (PWEI) with any newly required sites to be operational by 1/1/2013. Omaha's PWEI = 42906, which falls within the 5000 to 100000 range requiring 1 site. <i>The current network of one highest concentration site and one NCore site exceeds the minimum requirements. No changes are proposed.</i>	1	2 Includes NCore	Y
		Regional Administrator required monitoring	0	0	Y
Lead	Sec. 4.5 (a)	Near sources emitting ≥ 0.5 tpy of lead	0	0	Y
	Sec. 4.5 (b)	One community-based site if CBSA population ≥ 500K by 1/1/2012 at the NCore site.	1	1	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring	0	0	Y
PM₁₀	Sec. 4.6 Table D-4	Omaha has a CBSA population between 500K – 1M. and a high PM ₁₀ concentration range with max values > 120% of NAAQS at the 46 th & Farnam St Site (<i>See Design Values in Attachment B</i>).	4-8	6 Includes NCore & 2 sites @ Weeping Water	Y
PM_{2.5}	Sec 4.7 Table D-5	Omaha has a CBSA population between 500K – 1M. and PM _{2.5} levels ≥ 85% of NAAQS range (<i>See Design Values in Attachment B</i>).	2	4 Includes NCore	Y
	Sec 4.7.2	Continuous monitor	1	1 @ NCore	Y
	Sec. 4.7.4	PM _{2.5} Speciation Trends Network	1	1 @ NCore	Y
PAMS	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O ₃	0	0	NA
NCore	Sec. 3	Omaha has been designated to operate an NCore site with lead and NOx/NOy monitoring.	1	1	Y

* Unless noted otherwise, this analysis does not count monitors located in IA toward meeting the minimum monitoring requirements. It does consider pollutant levels measured at IA sites, when determining minimum monitoring needs for ozone and PM_{2.5}.

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Table D-2.b: 40 CFR Part 58 Appendix D Review: Lincoln MSA (Population ~ 310,000)					
Pollutant	App. D Citation	Review Criteria & Comments	Sites Required	Sites Operated	Criteria Met?
Ozone	Sec. 4.1 Table D-2	Lincoln's MSA population is between 50K to 350K and O ₃ levels < 85% of NAAQS (<i>See Design Values in Attachment B</i>)	0	1	Y
CO	Sec. 4.2	No minimum requirement	0	0	Y
NO₂	Sec. 4.3.2	Near-road monitoring: No requirement for CBSA < 500K.	0	0	Y
	Sec.4.3.3	Area-Wide monitoring: No requirements for CBSA < 1M	0	0	Y
	Sec. 4.3.4	Regional Administrator required monitoring	0	0	Y
SO₂	Sec. 4.4	Based on the <i>Population Weighted Emissions Index (PWEI)</i> with any newly required sites to be operational by 1/1/2013. Lincoln's PWEI = 3301, which falls below 5000 where sites are required.	0	0	Y
		Regional Administrator required monitoring	0	0	Y
Lead	Sec. 4.5 (a)	Near sources emitting ≥ 0.5 tpy of lead	0	0	Y
	Sec. 4.5 (b)	Community-based monitor required if CBSA population ≥ 500K by 1/1/2011	0	0	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring	0	0	Y
PM₁₀	Sec. 4.6 Table D-4	Lincoln's CBSA population between 250K – 500K and PM ₁₀ assumed < 80% of NAAQS. <i>The highest 24-hr value found from 1988-98 was 102 µg/m³ or 68% of the NAAQS</i>	0-1	0	Y
PM_{2.5}	Sec 4.7 Table D-5	Lincoln's CBSA population between 50K – 500K and PM _{2.5} levels < 85% of NAAQS (<i>See Design Values in Attachment B</i>).	0	1	Y
	Sec 4.7.2	Continuous monitor	0	1	Y
	Sec. 4.7.4	PM _{2.5} Speciation Trends Network	0	0	Y
PAMS	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O ₃	0	0	Y
NCore	Sec. 3	Lincoln has not been designated to operate an NCore site.	0	0	Y

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Table D-2.c: 40 CFR Part 58 Appendix D Review: Sioux City MSA (Population ~ 169,000) **					
Pollutant	App. D Citation	Review Criteria & Comments	Sites Required	Sites Operated	Criteria Met?
Ozone	Sec. 4.1 Table D-2	Sioux City MSA population is between 50K -350K and O ₃ levels assumed < 85% of NAAQS in accordance with footnote 4 in Table D-2. There is one ozone site in the SC MSA. It is located in Union County SD. The 2009-11 3 year DV is 81% of NAAQS (<i>See Design Values in Attachment B</i>).	0	0	Y
CO	Sec. 4.2	No minimum requirement.	0	0	Y
NO₂	Sec. 4.3.2	Near-road monitoring: No requirement for CBSA < 500K.	0	0	Y
	Sec.4.3.3	Area-Wide monitoring: No requirements for CBSA ≥1M	0	0	Y
	Sec. 4.3.4	Regional Administrator required monitoring	0	0	Y
SO₂	Sec. 4.4	Based on the <i>Population Weighted Emissions Index</i> (PWEI) with any newly required sites to be operational by 1/1/2013. Sioux City MSA's PWEI = 6073, which falls within the 5000 to 100000 range requiring 1 site. <i>It appears that existing monitoring sites in South Dakota may meet the minimum SO₂ monitoring requirements for the Sioux City MSA.</i> Also, the IA DNR installed a source-oriented near in Sergeant Bluff in 2012.	(1 in 2013)	0	Y
		Regional Administrator required monitoring	0	0	Y
Lead	Sec. 4.5 (a)	Near sources emitting ≥ 0.5 tpy of lead	0	0	Y
	Sec. 4.5 (b)	Community-based if CBSA population ≥ 500K by 1/1/2011	0	0	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring	0	0	Y
PM₁₀	Sec. 4.6 Table D-4	Sioux City's CBSA population is between 100K – 250K and PM ₁₀ levels are < 80% of NAAQS (<i>See Design Values in Attachment B</i>).	0	0	Y
PM_{2.5}	Sec 4.7 Table D-5	Sioux City's CBSA population is between 50K – 500K and PM _{2.5} levels are < 85% of NAAQS (<i>See Design Values in Attachment B</i>).	0	0	Y
	Sec 4.7.2	Continuous monitor	0	0	Y
	Sec. 4.7.4	PM _{2.5} Speciation Trends Network	0	0	Y
PAMS	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O ₃	0	0	Y
NCore	Sec. 3	The Nebraska portion of the Sioux City MSA has not been designated to operate an NCore site.	0	0	Y

* Unless noted otherwise, this analysis does not count monitors located in IA and SD toward meeting the minimum monitoring requirements. It does use pollutant levels measured at IA and SD monitoring sites, when determining minimum monitoring needs for ozone and PM.

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Table D-2.d: 40 CFR Part 58 Appendix D Review: Grand Island MSA (Population ~ 83,500) **					
Pollutant	App. D Citation	Review Criteria & Comments	Sites Required	Sites Operated	Criteria Met?
Ozone	Sec. 4.1 Table D-2	Grand Island MSA population is between 50K -350K and O ₃ levels assumed < 85% of NAAQS, although no monitoring has been conducted. See Section V.F.2 in this Network Plan for further discussion.	0	0	Y
CO	Sec. 4.2	No minimum requirement.	0	0	Y
NO₂	Sec. 4.3.2	Near-road monitoring: No requirement for CBSA < 500K.	0	0	Y
	Sec.4.3.3	Area-Wide monitoring: No requirements for CBSA ≥1M	0	0	Y
	Sec. 4.3.4	Regional Administrator required monitoring	0	0	Y
SO₂	Sec. 4.4	<i>Population Weighted Emissions Index (PWEI) = 271, which falls below 5000. No minimum number of sites required. See Table D-3 below for PWEI calculation data</i>	0	0	Y
		Regional Administrator required monitoring	0	0	Y
Lead	Sec. 4.5 (a)	Near sources emitting ≥ 0.5 tpy of lead	0	0	Y
	Sec. 4.5 (b)	Community-based if CBSA population ≥ 500K by 1/1/2011	0	0	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring	0	0	Y
PM₁₀	Sec. 4.6 Table D-4	PM ₁₀ monitoring is not required if MSA population < 100,000	0	0	Y
PM_{2.5}	Sec 4.7 Table D-5	Grand Islands's CBSA population is between 50K – 500K and PM _{2.5} levels are < 85% of NAAQS (<i>See Design Values in Attachment B</i>)	0	0	Y
	Sec 4.7.2	Continuous monitor	0	0	Y
	Sec. 4.7.4	PM _{2.5} Speciation Trends Network	0	0	Y
PAMS	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O ₃	0	0	Y
NCore	Sec. 3	The Grand Island MSA has not been designated to operate a NCore site	0	0	Y

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Table D-3: Population Weighted Emissions Index (PWEI) Data for Nebraska Core Based Statistical Areas (CBSAs)				
CBSA ⁽¹⁾	County	Population ⁽²⁾	SO₂ Emissions ⁽³⁾ (tons/yr)	PWEI ⁽⁴⁾
Omaha - Council Bluffs - Fremont	Cass Co NE	25,133	1226.2	37884
	Dodge Co NE	36,427	1999.2	
	Douglas Co NE	531,265	15288.4	
	Sarpy Co NE	165,853	57.8	
	Saunders Co NE	20,823	179.1	
	Washington Co NE	20,252	25.4	
	Harrison Co IA	14,548	40.8	
	Mills Co IA	14,837	26.7	
	Pottawattamie Co IA	92,913	22242.6	
	Totals	922,051	41086	
Lincoln - Beatrice	Gage Co NE	21,806	49.5	1700
	Lancaster Co NE	293,407	5026.8	
	Seward Co NE	16,935	40.4	
	Total	332,148	5,117	
Sioux City- Vermillion	Dakota Co NE	20,918	16.9	6555
	Dixon Co NE	5,918	25.0	
	Woodbury Co IA	102,323	35698.2	
	Plymouth Co IA	24,907	34.6	
	Clay Co SD	14,131	15.8	
	Union Co SD	14,855	17.2	
	Total	183,052	35,808	
Grand Island	Hall Co NE	60,345	3145.8	271
	Hamilton Co NE	9,011	33.0	
	Howard Co NE	6,336	17.9	
	Merrick Co NE	7,780	44.3	
	Total	83,472	3,241	
Footnotes:				
(1) CBSAs as defined in OMB Bulliten 13-01 (February 28, 2013)				
(2) Population based on the US Census Bureau 2012 population estimates				
(3) SO ₂ emission estimates from the 2008 NEI. This was the most recent NEI data available at www.epa.gov/ttnchie1/net/2008inventory.html				
(4) PWEI = (population) x (SO ₂ tons/yr) / 1,000,000 (ref. 40 CFR Part 58 App. D Sec 4.4.2)				
Minimum CBSA SO₂ Monitoring Site Requirements:				
PWEI ≥ 1,000,000 => 3 sites				
PWEI range 100,000 to < 1,000,000 => 2 sites				
PWEI range 5,000 to < 100,000 => 1 site				
PWEI < 5,000 => no minimum site requirement				