

CHAPTER 4:

Air Quality Division

The objectives of the Air Quality Division are to achieve and maintain the ambient air quality standards, to protect the quality of the air in areas of the state that have air cleaner than the standards, and to implement federal and state air quality rules and regulations. Each year, thousands of tons of air pollutants are emitted into the air from industrial and other man-made activities. Many of these air pollutants affect human health, reduce visibility, cause property damage and harm the environment. The air pollutants of most concern are particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, ozone, lead, and 187 listed hazardous air pollutants.

The primary air quality programs which help assure healthy air quality are: the construction permit program, operating permit program, emission inventory program, ambient air quality monitoring program, inspection and compliance program, the air toxics program, and planning and development program.

Three local agencies -- Lincoln/Lancaster County Health Department, Omaha Air Quality Control, and Douglas County Health Department -- have accepted through contract with NDEQ and direct delegation from the U.S. Environmental Protection Agency, responsibility for various facets of the air quality program. These responsibilities include air quality monitoring, permitting and enforcement within their areas of jurisdiction.

Permitting Section

During FY12, the NDEQ developed Title 129 regulations regarding particulate matter with an aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}, or PM fine). These regulations were patterned after the Federal rules promulgated in October 2010 and impacted the construction permit program, and to a lesser extent, the operating permit program. However, there has been no significant impact to the number of permit applications submitted by sources for PM_{2.5} because new projects and modifications also triggered requirements for the existing PM₁₀ standards (particulate matter less than 10 micrometers in size). PM_{2.5} emissions are a subset of PM₁₀ emissions.

The NDEQ also began to fully implement the greenhouse gas rules adopted into Title 129 last fiscal year. This resulted in an increase in major source (Title V) permit applications under the operating permit program, but had little effect to the construction permit program. Other regulatory actions last year by EPA provided a three year deferral for GHG emissions (specifically carbon dioxide, CO₂) from bioenergy and other biogenic sources under both permitting programs. During the deferral period, biogenic CO₂ emissions will not count toward permit applicability. The deferral of biogenic CO₂ emissions from permit applicability allowed some sources (particularly smaller ethanol plants) to avoid triggering the major source operating permit program for GHGs since a significant fraction of their total GHG emissions (CO₂ emissions from fermentation) are now excluded from permit applicability.

Construction Permit Program

NDEQ has maintained a construction permit program for air contaminant sources since the 1970's. Facilities are required to obtain a construction permit before they construct, reconstruct or modify any air contaminant source or emission unit where there is a net increase in the potential to emit above specified thresholds. The table below provides information relating to construction permit applications received, processed and pending:

Pending July 1, 2011	Applications Received	Applications Processed	Pending June 30, 2012
52	54	54	52

Nebraska also implements the federal construction permit program, Prevention of Significant Deterioration (PSD). The purpose of the PSD program is to protect areas of the state which are cleaner than the ambient air quality standards, while still allowing industrial and economic growth. The PSD program applies to sources that emit significant levels of certain types of emissions. If a source is regulated under PSD, the NDEQ conducts additional, more rigorous reviews of their construction permit application to ensure that best available control technology will be used. Best available controls are employed to minimize impacts on the environment. Before issuing a permit, the NDEQ must also assure that the source will not cause or contribute significantly to any deterioration of air quality, making the area potentially vulnerable to violations of the ambient air quality standards. The PSD program also ensures that visibility in nearby national parks and wilderness areas is protected. The NDEQ notifies federal land managers of pending PSD decisions. Lastly, the PSD program requires that permitting authorities advise nearby States and Tribes of pending PSD decisions so they may express any concerns they have with potential downwind impacts in their areas.

As a part of its state program, the NDEQ requires significant sources of hazardous air pollutants to control emissions with the best control technology available (Toxics BACT).

The Legislature passed LB449 in 2004, which provides the NDEQ the authority to assess construction permit application fees. Fee amounts are based upon the emissions potential of the facility. The fees generated through this program are used to pay a portion of the costs associated with processing construction permit applications. The remainder of the program is funded using federal grant funds, state general funds, and emission fees.

During FY06-08, NDEQ received an increasing number of applications from business and industry for air quality construction permits to build new or expand current business ventures across the state, including ethanol plants, power plants, and grain processing facilities. That trend changed during FY09 and continued through FY12 as a slower economy delayed or cancelled many capital projects at sources. Permit applications from grain and fertilizer handling facilities have been trending upwards over the last year.

	FY08	FY09	FY10	FY11	FY12
Number of Construction Permit Applications Received	104	53	55	52	54

Operating Permit Program

The operating permit program is the result of the Federal Clean Air Act Amendments of 1990 and the passage of LB1257 (1992) by the Nebraska Legislature. The operating permits are reviewed and renewed every five years. Operating permits are issued for both large and small sources of air pollution.

The Nebraska operating permit program offers an innovative alternative for sources who have taken measures to keep their emissions very low. This program is called the low emitter program. NDEQ also has general permits and permits by rule available for certain source categories. The table below provides statistics relating to all applications received, processed and pending under the operating permit program:

Pending June 2011	Operating Permit Applications Received	Operating Permit Applications Processed	Pending June 2012
95	43	53	85

From 2002 through 2004, the operating program was successful in eliminating the majority of the permitting backlog created at the onset of the program. However, this success has caused inconsistency in the amount of permits being received over a five-year time-frame. Because these permits were issued for five year terms, the operating permit program experienced a surge in renewal applications beginning in FY08 through FY10. Renewal applications then dropped significantly in FY11. The following table summarizes the applications received from FY07 through FY12 (applications for all application types, including applications for permit revisions, general permits, permit-by-rule, etc.).

	FY07	FY08	FY09	FY10	FY11	FY12
Number of Operating Permit Applications Received	58	92	75	61	32	43

The Department has the authority to issue operating permits for a fixed term of up to five years. To prevent a reoccurrence of this large fluctuation, the program has been seeking volunteer sources to accept shorter permit terms, i.e., three or four year permit terms. By doing this, the program will be able to stabilize the receipt of future renewal applications over a five year period.

Compliance Section

Ambient Air Quality Monitoring Program

The State of Nebraska operates an ambient air-monitoring network to determine compliance with the National Ambient Air Quality Standards (NAAQS) and State Ambient Air Quality Standards (SAAQS). In addition, the Nebraska network includes two sites for monitoring regional haze impacts that are part of a national program to help protect visibility in our National Parks and Monuments.

Three agencies are involved in the day-to-day operation of the network: the Nebraska Department of Environmental Quality, Lincoln/Lancaster County Health Department, and Douglas County Health Department. The Omaha Air Quality Control (part of the Omaha Public Works Department) also provides technical support for network related activities.

National standards have been established by the Environmental Protection Agency for the following six pollutants, to protect both public health and welfare:

- Particulate Matter
 - With a diameter of 10 micrometers or less (PM₁₀)
 - With a diameter of 2.5 micrometers or less (PM_{2.5})
- Sulfur Dioxide (SO₂)
- Nitrogen Dioxide (NO₂)
- Carbon Monoxide (CO)
- Ozone (O₃)
- Lead (Pb)

Nebraska has an additional ambient air quality standard for Total Reduced Sulfur (TRS). The TRS standard was adopted by the Environmental Quality Council in 1997 and is a public health based standard. The Department currently monitors TRS in Dakota City/South Sioux City.

NDEQ evaluates the adequacy of its monitoring network in accordance with federal regulations each year. Changes may be made to the network due to monitoring regulation changes, updates to the ambient standards, perceived changes in pollution trends, and/or funding issues. Loss of site access is another consideration that occasionally occurs. The Nebraska monitoring network includes sites at which air quality is monitored to evaluate attainment with the standards and other health and welfare associated priorities.

Most of the sites in the monitoring network evaluate pollutants for which standards are established (i.e., PM_{2.5}, PM₁₀, CO, SO₂, Lead, Ozone or TRS). There are two additional types of sites in the network: Interagency Monitoring of Protected Visual Environments (IMPROVE), and National Atmospheric Deposition Program/National Trends Network (NADP/NTN) sites.

IMPROVE monitors provide information for studying regional haze that may impact the visibility in listed federal Class I National Park and Wilderness Areas. There are two

IMPROVE monitoring sites in Nebraska at Halsey National Forest and Crescent Lake National Wildlife Refuge. These sites provide data on pollution trends and transport.

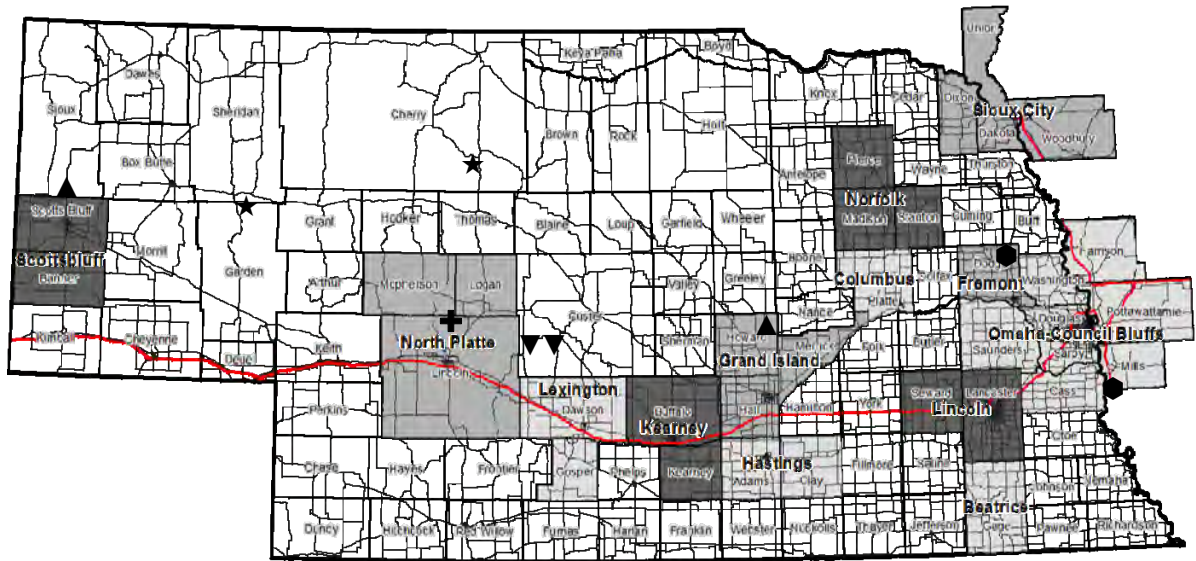
The National Trends Network (NTN) of the National Atmospheric Deposition Program (NADP) is a nationwide network of sites that monitor for deposition constituents in precipitation. The deposition constituents examined include acidity, sulfates, nitrates, ammonium chloride, and base-cations (e.g., calcium, magnesium, potassium and sodium). There are two NADP/NTN sites in Nebraska: one near Mead and one near North Platte. Both have been operational for over 20 years. These sites are operated by the University of Nebraska, with analytical and data development support from the NADP. The Mead site was upgraded to include mercury (Hg) deposition monitoring and was part of the NADP/Mercury Deposition Network (MDN). Both sites maintain the NADP monitoring. The monitoring in Mead is made possible through cooperative efforts of the NDEQ and the University of Nebraska. Additional information about the NADP/NTN can be found at: <http://nadp.sws.uiuc.edu/nadpoverview.asp>.

Monitoring Information On-Line

Ozone and continuous PM_{2.5} data from Lincoln and Omaha is reported hourly to the EPA AirNOW system, which makes contemporaneous air quality information available to the public on web at <http://www.airnow.gov/>. The Douglas County Health Department also participates in the ENVIROFLASH program that allows members of the public to sign-up to receive air quality alerts via email.

Both the Douglas County Health Department and the Lincoln/Lancaster County Health Department also report daily Air Quality Index (AQI) evaluations on the Omaha and Lincoln web sites. The AQI is a numeric rating of the current air quality in each city, and provides the public with a quick and simple means to evaluate current air quality in each metro area.

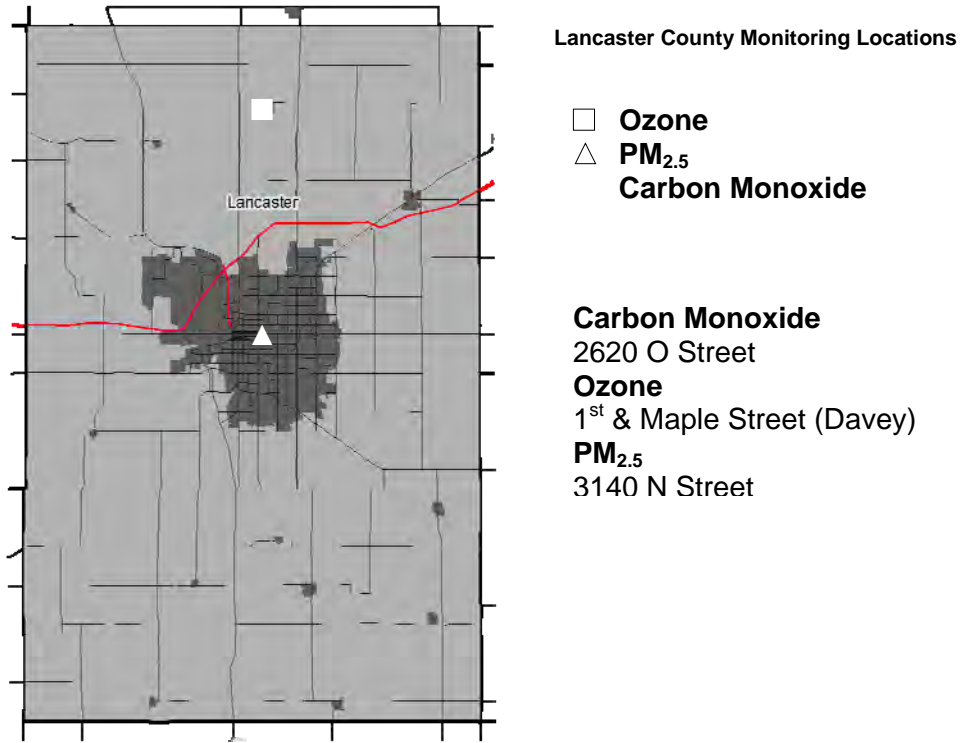
Nebraska Monitoring Sites not in a Metropolitan Statistical Area



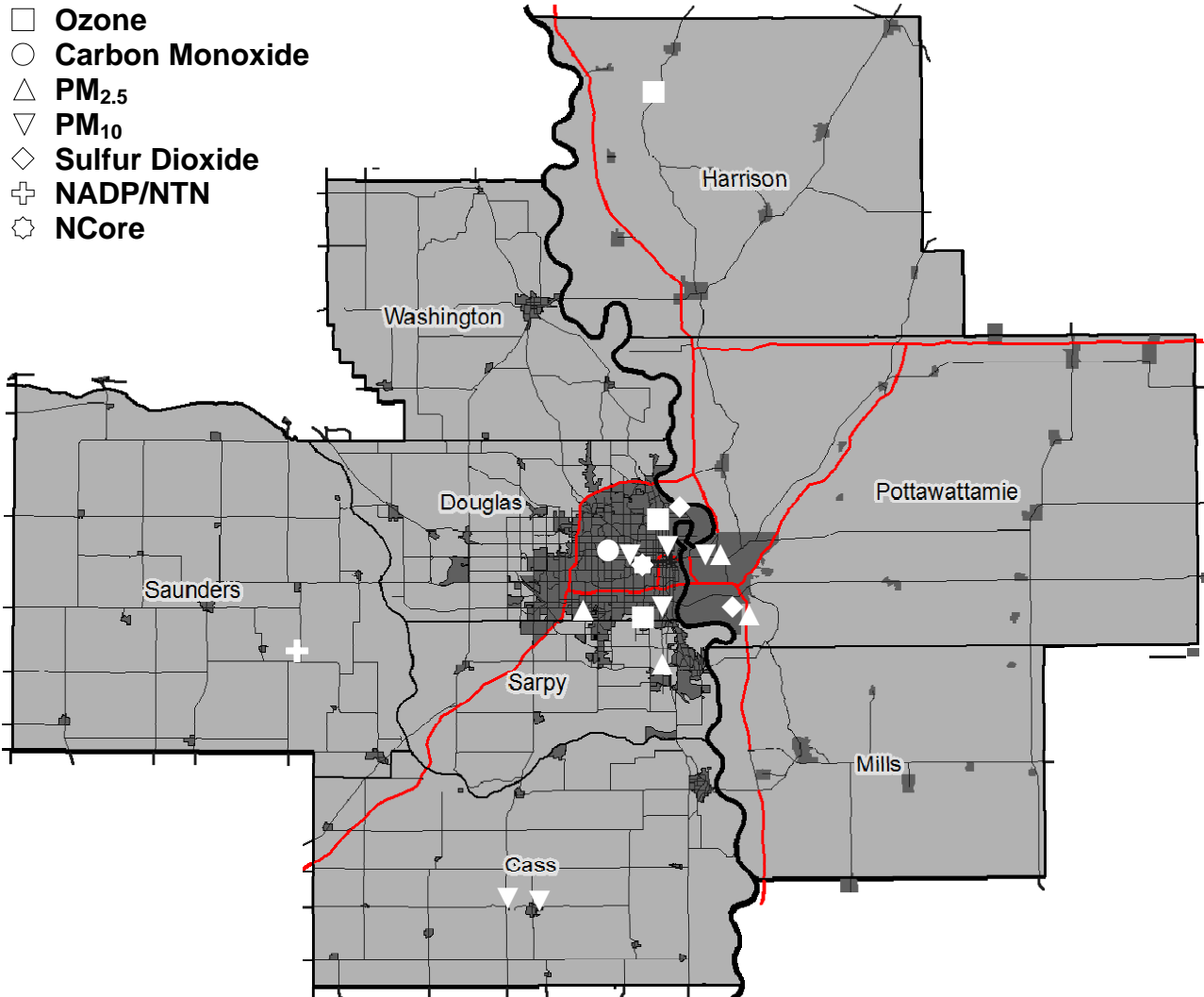
- | | | |
|---------------------------|---|--|
| ▲ PM_{2.5} | PM_{2.5} | IMPROVE |
| ▼ PM₁₀ | Grand Island, 2124 North Lafayette Avenue | Garden County, Crescent Lake Wildlife Refuge |
| ● Lead | Scottsbluff, Highway 26 & 5th Avenue | Thomas County, Nebraska National Forest |
| ★ IMPROVE | PM₁₀ | Lead |
| ✚ NADP/NTN | Cozad, 215 West 8th Street | Fremont |
| | Gothenburg, 9 th Street | Auburn |
| | NADP/NTN | |
| | Maxwell, North Platte Agricultural Experiment Station | |

The map above shows monitoring sites that are in non-metropolitan areas. Maps on the next three pages show monitoring sites in the metropolitan areas of Lancaster County, Omaha-Council Bluffs, and South Sioux City. (The Omaha and South Sioux City maps also include adjoining counties in Iowa that are part of the region.)

Nebraska Monitoring Sites in Metropolitan Areas



Omaha-Council Bluffs Metropolitan Statistical Area Monitor Location



Carbon Monoxide

4102 Woolworth Avenue (NCore Trace Monitor)
7747 Dodge Street, Omaha

Sulfur Dioxide

4102 Woolworth Avenue (NCore Trace Monitor)
1616 Whitmore Street
2115 Navajo Road (Council Bluffs, IA)

NADP/NTN

Mead, Saunders County

PM_{2.5}

4102 Woolworth Avenue (NCore)
9225 Berry Street
2912 Coffey Avenue (Bellevue, NE)
2242 Wright Street (Blair, NE)
3130 C Avenue (Council Bluffs, IA)
2115 Navajo Road (Council Bluffs, IA)

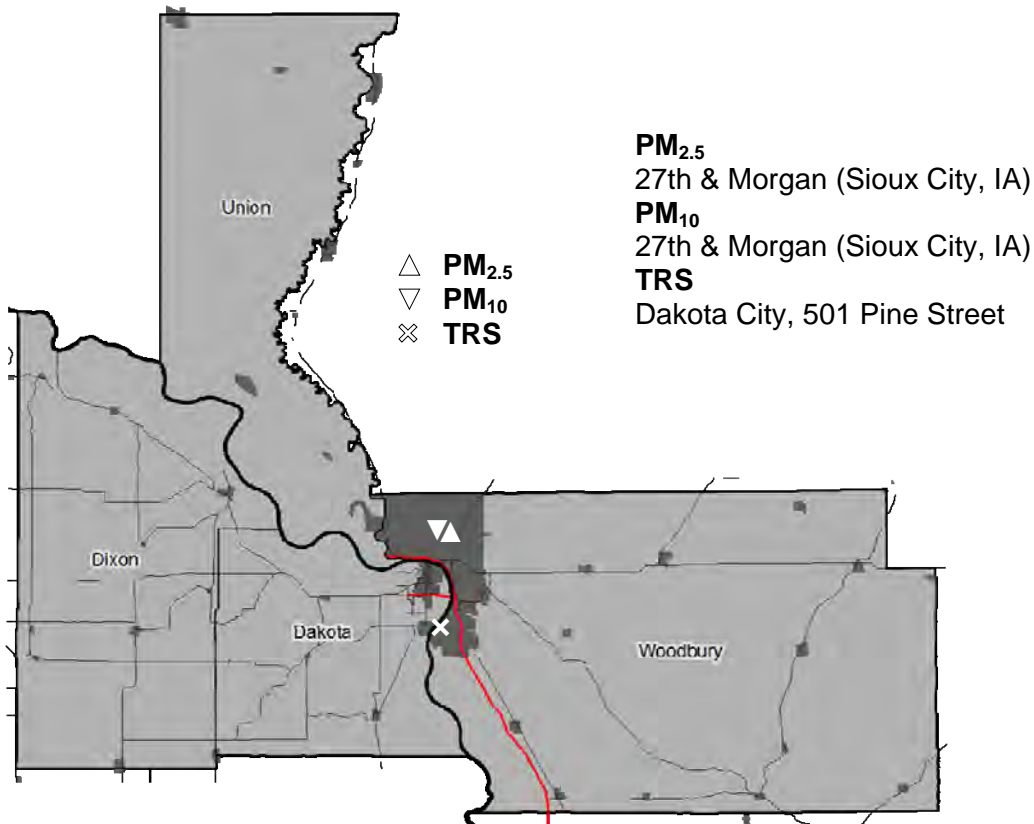
Ozone

4102 Woolworth Avenue (NCore)
30th & Fort Streets
2411 O Street
1575 Highway 183 (Harrison County, IA)

PM₁₀

4102 Woolworth Avenue (NCore)
19th & Burt Streets
46th & Farnam Streets
2411 O Street
102 P Street (Weeping Water, NE)
5102 Highway 2 (Weeping Water, NE)
3130 C Avenue (Council Bluffs, IA)

Sioux City Metropolitan Statistical Area Monitor Locations



Renewable Power Projects

The NDEQ operates two sites that are powered totally through renewable energy sources: a solar powered site near Weeping Water, and a solar/wind turbine powered site at the Scottsbluff High School. Both sites have successfully operated on renewable energy and are examples of energy conservation. The Scottsbluff site was designed to be portable so that it could be easily set up in any location within the state where sufficient solar and/or wind resources exist. The Scottsbluff site also allows an opportunity for NDEQ to partner with the local high school to educate the students about air quality and renewable energy.

Inspections and Facility Compliance

The Compliance Program is responsible for conducting compliance inspections of air pollution sources, responding to citizen complaints, observing and evaluating emission tests, and the acid rain program.

Consistent with the Nebraska Environmental Protection Act, the Air Division attempts to obtain compliance with environmental regulations first through voluntary efforts. Voluntary compliance has helped bring about a better working relationship with the regulated community without sacrificing environmental quality. However, enforcement actions are pursued by the Agency when compliance issues are serious, chronic, or cannot otherwise be resolved. To further the Department's goals to protect and enhance public health and the environment, in certain instances, environmentally beneficial projects, or Supplemental Environmental Projects, may be part of an enforcement settlement.

Compliance Activity Summary

Compliance Activity	NDEQ	LLCHD	OAQC
On-site Inspections	139	99	62
Facility Stack Tests Reviewed	78	4	0
On site observations conducted	43	6	0
Continuous Emission Monitoring Audits Reviewed	39	0	0
On-site observations conducted	12	1	0
Complaints Received	185	2	91
Burn Permits Issued	69	27	61
Burn Permits Denied	4	0	2

Grants, Planning, and Outreach Unit

The Air Quality Division's Grants, Planning, and Outreach Unit, formerly called the Program Planning and Development Unit, provides support and training to permitting and compliance staff, provides outreach and training to the regulated and general public, and provides information and analyses to Department and other policy makers. The Unit includes the air dispersion modeling and emissions inventory functions for the Air Division. It is also responsible for maintaining state air quality regulations, updating the state implementation plan, providing expert information on National Emissions Standards for Hazardous Air Pollutants (NESHAPS, also known as air toxics), New Source Performance Standards (NSPS) and National Ambient Air Quality Standards (NAAQS). The Unit coordinates local agency activities, as well as negotiates work plans with the EPA. The Unit also administers the Nebraska Clean Diesel Grant Program.

During 2011 and 2012, under the Nebraska Clean Diesel Grant Program, two new rebate grant programs for long haul trucks were created. The 2011 Clean Diesel Rebate and the 2012 Expanded Clean Diesel programs awarded \$308,000 toward the purchase and installation of new diesel or battery powered auxiliary power units (APUs). APUs were chosen because significant reductions are achieved across a range of areas such as idling, fuel consumption, diesel emissions and greenhouse gases. A total of 25 grants were awarded which culminated in 88 rebates. As a result of these programs, idling was reduced an average of 75%* and the following reduction in diesel related pollutants were achieved.

Diesel Pollutant and Fuel Reductions*						
	NOx	PM2.5	HC	CO	CO2	Fuel: Diesel-Equivalent
Annual Reductions	119.04 (short tons/year)	8.87 (short tons/year)	9.82 (short tons/year)	43.03 (short tons/year)	299.7 (short tons/year)	27,000 (gallons)
Lifetime Reductions	2,618.93 (short tons)	195.03 (short tons)	216.13 (short tons)	946.63 (short tons)	6,593.4 (short tons)	594,000 (gallons)

*All reductions were calculated using EPA's Diesel Emissions Quantifier.

The Air Toxics Notebook and the New Source Performance Standards (NSPS) Notebook continued to be maintained as valuable online resources for staff and regulated sources. The Grants, Planning, and Outreach Unit also announced the release of their new webpage, the AirNews Page (<http://deq.ne.gov/AirDates.nsf/AirNewsMain.xsp>). The AirNews Page is designed to provide easy access to information about the NDEQ Air Division, including important dates and deadlines, access to the AirNews Listserv archive, and links to other important forms and documents on the NDEQ website.

The annual Air Updates Workshops were again offered at four locations. They were conducted in Lincoln, Grand Island, Norfolk, and Scottsbluff in August of 2012. A total of 145 participants attended the workshops. For those unable to attend, all of the materials were made available through the AirNews Page.

In 2011, the Department submitted a state implementation plan to address Nebraska's obligations under the Regional Haze and Best Available Retrofit Technology Program. In July, 2012, EPA issued a final decision to partially approve and to partially disapprove Nebraska's Regional Haze implementation plan and to implement a federal implementation plan. The disapproval was based on the EPA's determination of inadequate controls at Gerald Gentlemen Power Station in Sutherland. The federal implementation plan utilized a separate rule-making that the Cross State Air Pollution Program achieved higher reductions than Best Available Retrofit Technology. This was possible since Nebraska, including Gerald Gentlemen Power Station, were included in the Cross State Air Pollution Program. However, in August, 2012, the United States Court of Appeals vacated the Cross State Air Pollution Program. EPA is expected to challenge the ruling and is still determining how to proceed, including how the decision will affect Nebraska's implementation plan for Gerald Gentlemen Power Station.

Emission Inventory and Emission Fees

Each year, the Department conducts an inventory of emissions from major industrial sources and a representative sample of lower-emitting, minor industrial sources. Every three years, the Department assists the EPA to prepare a comprehensive national inventory of emissions. The emissions inventory is used to support the planning efforts for national rulemaking and to assess trends in emissions. Emission inventories are due on March 31st each year. The NDEQ also uses emission inventory to support the assessment of annual emission fees. Major sources of air pollution are required to pay emission fees for each ton of pollutant actually emitted during the calendar year. The maximum emission for which a fee is assessed is 4,000 tons per pollutant. For electrical generating facilities with a capacity of between 75 and 115 megawatts, the maximum emission is 400 tons per

pollutant. The fees generated are used to support the administration of the permitting program.

The Department makes every attempt to set the fee rate at the minimal level needed to pay reasonable direct and indirect costs of developing and administering the air quality permit program. An analysis detailing how the Department arrived at the fee rate is made available to fee payers and is on the NDEQ's website. The fee rate is determined in May of each year. The rate for 2011 emissions was \$64 per ton, down 3.0% from the 2010 emissions fee of \$66 per ton.

Future Air Issues for Nebraska

Under the federal Clean Air Act, the EPA issues National Ambient Air Quality Standards (NAAQS) for "criteria pollutants." These standards are intended to protect public health and the environment. States must determine whether they are in attainment of these standards and take corrective action if needed. The standards are reviewed and revised periodically, based on the most recent scientific information available.

Nebraska is currently in attainment of all the NAAQS. There is concern, however, that the Omaha-Council Bluffs area may not remain in compliance with the ozone and particulate matter NAAQS when these standards are expected to be revised in the future. The 2012 ozone monitoring season witnessed very high ozone readings throughout the state, including the Omaha-Council Bluffs area. These high readings can be attributed to several factors, including the extremely warm and dry summer and the wildfires in Colorado. Additionally Nebraska has experienced exceedences in the particulate matter standard in Weeping Water. The expectation is that the EPA will be issuing revised standards for particulate matter by the end of 2012 and ozone in 2014. The levels and form of the revised standards will be a major factor in the future attainment of the NAAQS in Nebraska.

For more information about the Nebraska air quality program, please refer to the annual Air Quality Reports and the Ambient Air Monitoring Network Plan, both of which are available on the agency's website at <http://deq.ne.gov/> under "Focus on Air."