Iowa Ambient Air Monitoring Annual Report: 2011

Air Quality Bureau
Iowa Department of Natural Resources

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Iowa Ambient Air Monitoring Annual Network Report: 2011

Iowa Department of Natural Resources - Air Quality Bureau – Ambient Air Monitoring Group

Introduction

The purpose of this review is to compare the maximum values of ambient air monitoring data gathered in the state of Iowa during 2011 to the level of the National Ambient Air Quality Standards (NAAQS) established by the Environmental Protection Agency (EPA). The EPA has established NAAQS for seven "criteria" pollutants: particulate matter with a diameter less than 10 microns (PM_{10}), particulate matter with a diameter less than 2.5 microns ($PM_{2.5}$), sulfur dioxide, ozone, nitrogen dioxide, carbon monoxide, and lead. Continuous monitoring methods have been approved by EPA for all criteria pollutants except lead. Filter samplers and laboratory filter weighing procedures have been approved by EPA for $PM_{2.5}$ and PM_{10}. All data summarized in this review was obtained using methods that are currently approved by EPA for NAAQS comparisons.

This report is divided into two parts. The first part is an executive summary, indicating where exceedances of the NAAQS were measured in Iowa during 2011. A more comprehensive review, which includes the location and summary data for each monitor in the network, is included in the second part.

Gaseous pollutant monitors (ozone, nitrogen dioxide, sulfur dioxide, and carbon monoxide) provide hourly values and operate 24 hours a day, seven days a week. Most ozone monitors are operated only when ozone levels are highest, from April through October. The ozone monitor located at the multi pollutant site in Davenport operates year-round to establish ozone trends in cooler temperatures. Particulate filter samplers run for 24 hours at a time and collect one filter per day. Most PM_{10} and $PM_{2.5}$ filter based monitors are operated at a sampling frequency of one sample every third day. Some particulate monitoring sites are run at frequencies greater than this nominal frequency if they are located in highly populated areas, near pollution sources, or if pollutant levels are close to health standards. EPA finalized a monitoring rule for nitrogen dioxide setting a new 1 hour standard (100.5 ppb) in addition to the older annual standard. This rule became effective January 22, 2010. EPA finalized a monitoring rule for sulfur dioxide setting a new 1 hour standard (75.5 ppb) while retaining the 3 hour standard. This rule, effective August 23, 2010, revoked the 24 hour and annual standards.

Incomplete data may skew the summary statistics for a monitor. In order to alert the reader to data completeness problems data completeness statistics have been provided for each monitor. If a monitor collected all of the scheduled samples, then it has an associated data completeness of 100%. If the data capture from a monitor is insufficient to compute a valid annual average according to EPA completeness criteria, then the bar representing the comparison of the annual average to the NAAQS for that specific monitor is shaded lighter than the rest of the bars on the corresponding chart.

In 2011, there were 39 NAAQS exceedances in the state of Iowa. Two of the exceedances were associated with the 24 hour $PM_{2.5}$ standard and 37 were exceedances of the 1 hour sulfur dioxide standard. All of these exceedances are detailed in this report.

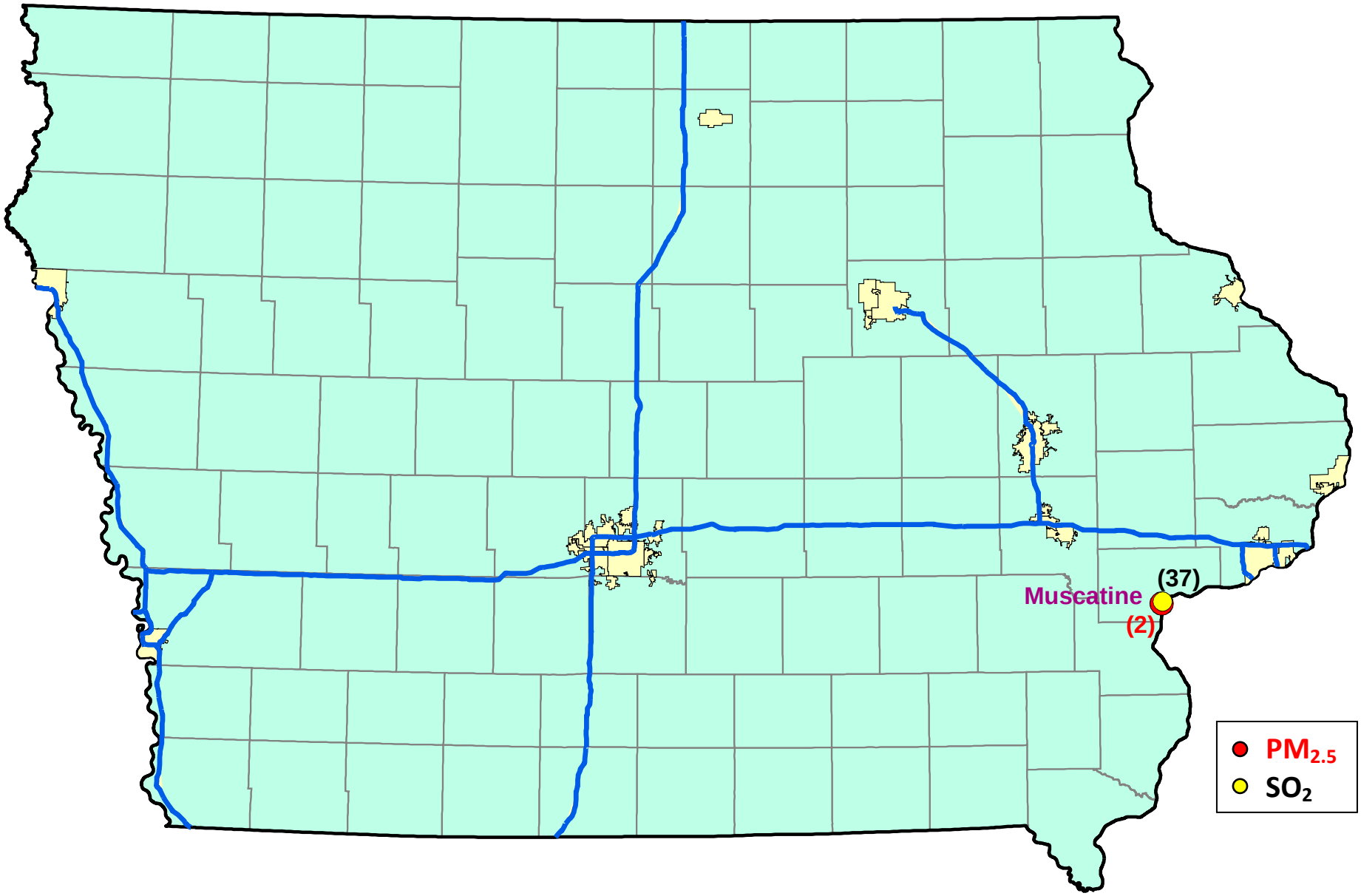
Data used to create this report were gathered by three organizations under contract with the Iowa Department of Natural Resources: the State of Iowa Hygienic Laboratory, the Linn County Public Health Department, and the Polk County Public Works Air Quality Division. Contract funds were provided by US EPA, the Iowa legislature, and regulated industry. Air pollution data for Iowa and all other states are available online at: http://www.epa.gov/airdata/. Additional information on the NAAQS is available at: http://www.epa.gov/air/criteria.html.

Exceedances of National Ambient Air Quality Standards (NAAQS) in 2011

Pollutant	Averaging Period	Exceedance Level	Units	Number of Exceedances
Ozone	8hr	76	ppb	0
PM2.5	24hr	35.5	micrograms per cubic meter	2
	annual	15.05	micrograms per cubic meter	0
PM10	24hr	155	micrograms per cubic meter	0
Sulfur dioxide	1hr	75.5	ppb	37
	3hr	0.55	ppm	0
Carbon monoxide	1hr	35.5	ppm	0
	8hr	9.5	ppm	0
Nitrogen dioxide	annual	0.0535	ppm	0
	1hr	100.5	ppb	0
Lead	Rolling 3-month average	0.155	micrograms per cubic meter	0

NAAQS Exceedance Counts at Iowa Monitoring Sites During 2011

(Values for individual sites indicated in parentheses)



$PM_{2.5}$ NAAQS Exceedances Measured in 2011

(Two $PM_{2.5}$ Exceedances Recorded in 2011)

Monitoring Site	Site ID	Exceedance Date	Concentration (µg/m^3)
Muscatine, Garfield School	191390015	1/10/2011	45.0
Muscatine, Garfield School	191390015	3/22/2011	52.3

SO_2 NAAQS Exceedances Measured in 2011

(37 SO_2 Exceedances Recorded in 2011)

Monitoring Site	Site ID	Exceedance Date	Concentration (ppb)
Muscatine, Musser Park	191390020	1/17/2011	175.5
Muscatine, Musser Park	191390020	2/17/2011	194.6
Muscatine, Musser Park	191390020	3/16/2011	146.6
Muscatine, Musser Park	191390020	3/17/2011	193.3
Muscatine, Musser Park	191390020	3/20/2011	96.1
Muscatine, Musser Park	191390020	4/3/2011	323.0
Muscatine, Musser Park	191390020	4/9/2011	143.7
Muscatine, Musser Park	191390020	4/10/2011	77.4
Muscatine, Musser Park	191390020	4/30/2011	224.4
Muscatine, Musser Park	191390020	5/5/2011	162.7
Muscatine, Musser Park	191390020	5/10/2011	111.5
Muscatine, Musser Park	191390020	5/21/2011	117.8
Muscatine, Musser Park	191390020	5/22/2011	208.8
Muscatine, Musser Park	191390020	5/30/2011	290.1
Muscatine, Musser Park	191390020	5/31/2011	230.9
Muscatine, Musser Park	191390020	6/3/2011	108.6
Muscatine, Musser Park	191390020	6/21/2011	95.6
Muscatine, Musser Park	191390020	7/9/2011	119.9
Muscatine, Musser Park	191390020	8/16/2011	129.7
Muscatine, Musser Park	191390020	8/23/2011	170.9
Muscatine, Musser Park	191390020	9/1/2011	99.6
Muscatine, Musser Park	191390020	9/20/2011	131.2
Muscatine, Musser Park	191390020	10/6/2011	91.6
Muscatine, Musser Park	191390020	10/7/2011	141.4
Muscatine, Musser Park	191390020	10/8/2011	103.0
Muscatine, Musser Park	191390020	10/25/2011	178.1
Muscatine, Musser Park	191390020	11/1/2011	199.9
Muscatine, Musser Park	191390020	11/2/2011	198.7
Muscatine, Musser Park	191390020	11/5/2011	114.5
Muscatine, Musser Park	191390020	11/6/2011	247.9
Muscatine, Musser Park	191390020	11/11/2011	110.0
Muscatine, Musser Park	191390020	11/12/2013	155.1
Muscatine, Musser Park	191390020	11/13/2011	209.8
Muscatine, Musser Park	191390020	11/18/2011	129.8
Muscatine, Musser Park	191390020	11/19/2011	309.3
Muscatine, Musser Park	191390020	11/24/2011	99.8
Muscatine, Musser Park	191390020	12/3/2011	233.7

2011 Ambient Monitoring Network Changes

Monitors Removed at the End of 2010

Site	Name	City	County	Site Label	Start Date	End Date	Pollutants
190550001	Backbone State Park	not in a city	Delaware	Backbone State Park	1/1/2009	12/31/2010	PM10

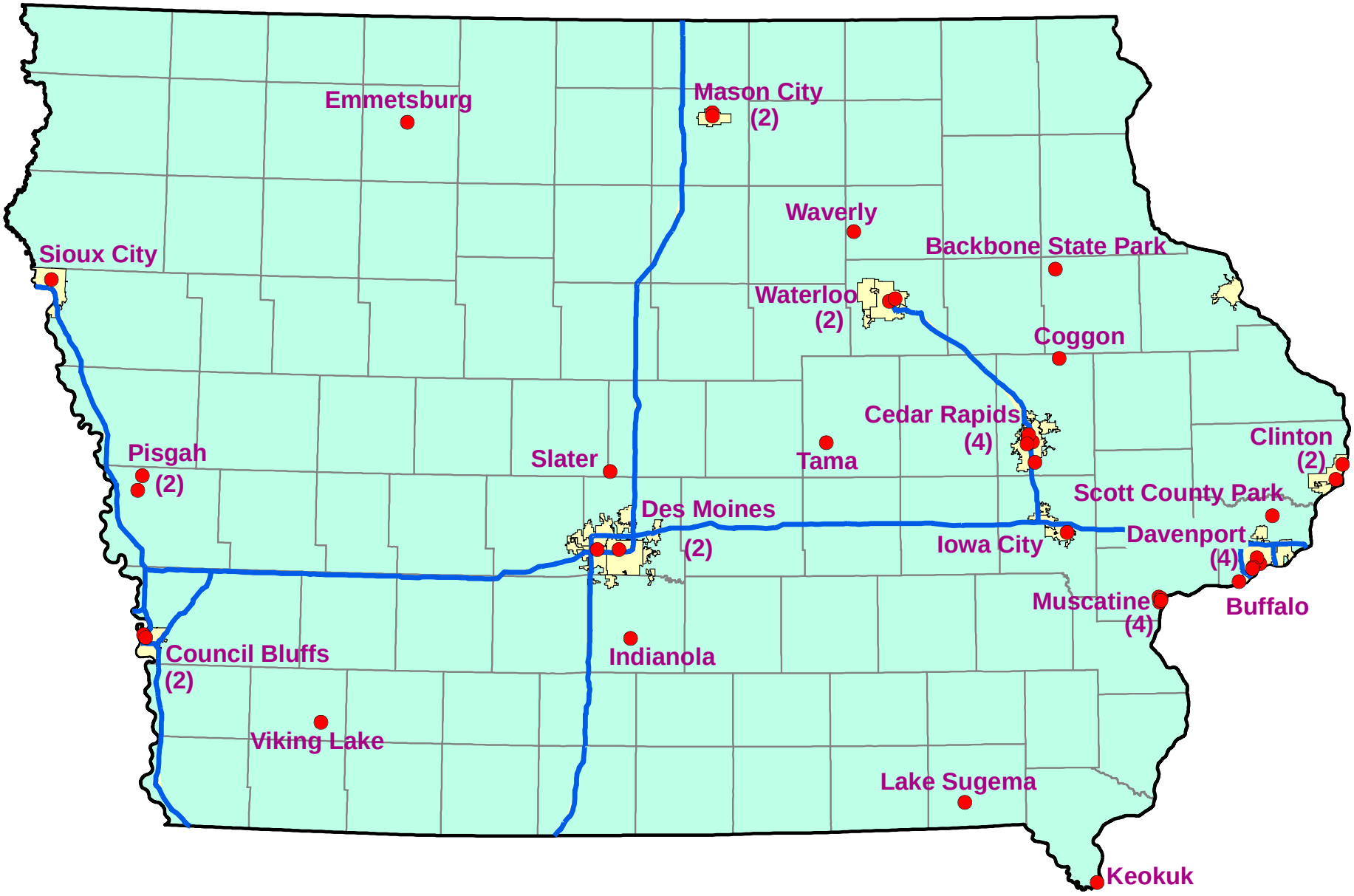
Monitors Added During 2011

Site	Name	City	County	Site Label	Start Date	End Date	Pollutants
190550001	Backbone State Park	not in a city	Delaware	Backbone State Park	1/1/2011	-	PM2.5
191390020	Musser Park	Muscatine	Muscatine	Muscatine, Musser Park	1/1/2011	-	PM2.5
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.	12/15/2010	-	Lead

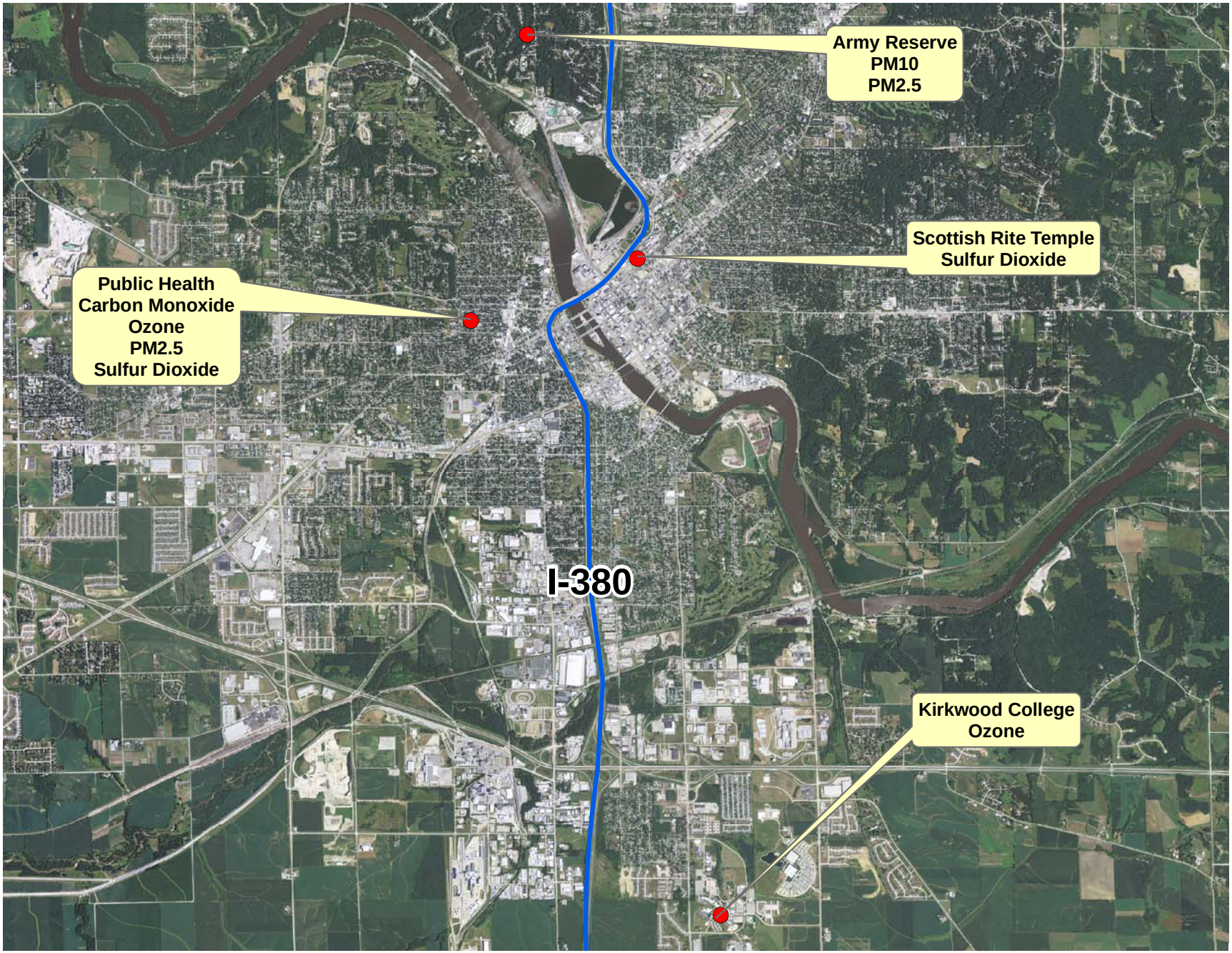
2011 Ambient Monitoring Network

Site ID	Name	City	Address	County	Site Label	Pollutants
190130008	Grout Museum	Waterloo	West Park St. & South St.	Black Hawk	Waterloo, Grout Museum	PM10, PM2.5
190130009	Water Tower	Waterloo	Vine St. & Steely	Black Hawk	Waterloo, Water Tower	PM2.5
190170011	Waverly Airport	Waverly	Waverly Airport	Bremer	Waverly, Airport	Ozone
190330018	Holnam Cement	Mason City	17th St. & Washington St.	Cerro Gordo	Mason City, Holnam Cement	PM10
190330020	Washington School	Mason City	700 N. Washington Avenue	Cerro Gordo	Mason City, Washington Sch.	PM10
190450019	Chancy Park	Clinton	23rd & Camanche	Clinton	Clinton, Chancy Park	PM2.5, SO2
190450021	Rainbow Park	Clinton	Roosevelt St.	Clinton	Clinton, Rainbow Park	Ozone, PM2.5
190550001	Backbone State Park	not in a city	Fish Hatchery Backbone State Park	Delaware	Backbone State Park	PM2.5
190850007	Forestry Office	Pisgah	206 Polk St.	Harrison	Pisgah, Forestry Office	Ozone
190851101	Highway Maintenance Shed	Pisgah	1575 Hwy 183	Harrison	Pisgah, Highway Maintenance	Ozone
191032001	Hoover Elementary	Iowa City	2200 East Court	Johnson	Iowa City, Hoover Sch.	PM10, PM2.5
191110008	Fire Station	Keokuk	111S. 13th St.	Lee	Keokuk, Fire Station	PM2.5
191130028	Kirkwood College	Cedar Rapids	6301 Kirkwood Blvd SW (Iowa Hall)	Linn	Cedar Rapids, Kirkwood Coll.	Ozone
191130031	Scottish Rite Temple	Cedar Rapids	616 A Ave.	Linn	Cedar Rapids, Scottish Rite Temple	SO2
191130033	Coggon Elementary School	Coggon	408 E Linn St.	Linn	Coggon, Coggon Sch.	Ozone
191130037	Army Reserve Center	Cedar Rapids	1599 Wenig Rd. NE	Linn	Cedar Rapids, Army Reserve	PM10, PM2.5
191130040	Public Health	Cedar Rapids	500 11th St. NW	Linn	Cedar Rapids, Public Health	CO, SO2, Ozone, PM2.5
191370002	Viking Lake State Park	not in a city	2780 Viking Lake Road	Montgomery	Viking Lake State Park	Ozone, PM10, PM2.5
191390015	Garfield School	Muscatine	1409 Wisconsin	Muscatine	Muscatine, Garfield Sch.	PM10, PM2.5
191390016	Greenwood Cemetary	Muscatine	Fletcher St. & Kimble St.	Muscatine	Muscatine, Greenwood Cemetary	PM2.5
191390018	Franklin School	Muscatine	210 Taylor St.	Muscatine	Muscatine, Franklin Sch.	PM2.5
191390020	Musser Park	Muscatine	Oregon St. & Earl Ave.	Muscatine	Muscatine, Musser Park	SO2, PM2.5
191471002	Iowa Lakes College	Emmetsburg	Iowa Lakes Community College - S Camp	Palo Alto	Emmetsburg, Iowa Lakes Coll.	Ozone, PM10, PM2.5
191530030	Health Department	Des Moines	1907 Carpenter	Polk	Des Moines, Health Dept.	CO, SO2, NO2, Ozone, PM10, PM2.5
191532510	Indian Hills Jr. High School	Clive	9401 Indian Hills	Polk	Clive, Indian Hills Jr. High Sch.	PM10, PM2.5
191550009	Franklin School	Council Bluffs	3130 C Ave.	Pottawattamie	Council Bluffs, Franklin Sch.	PM10, PM2.5
191550011	Griffin Pipe	Council Bluffs	8th Avenue and 27th St	Pottawattamie	Council Bluffs, Griffin Pipe	Pb
191630014	Scott County Park	Davenport	Scott County Park	Scott	Scott County Park	Ozone
191630015	Jefferson School	Davenport	10th St. & Vine St.	Scott	Davenport, Jefferson Sch.	CO, SO2, NO2, Ozone, PM10, PM2.5, Pb
191630017	Linwood Mining	Buffalo	11100 110th Ave.	Scott	Buffalo, LW Mining	PM10
191630018	Adams School	Davenport	3029 N Division St.	Scott	Davenport, Adams Sch.	PM10, PM2.5
191630019	Blackhawk Foundry	Davenport	300 Wellman St.	Scott	Davenport, Blackhawk Foundry	PM10, PM2.5
191630020	Hayes School	Davenport	622 South Concord St	Scott	Davenport, Hayes Elementary	PM2.5
191690011	City Hall	Slater	105 Greene	Story	Slater, City Hall	Ozone
191710007	Meskwaki Tribal Center	Tama	349 Meskwaki Road	Tama	Tama, Meskwaki Tribal Center	PM2.5
191770006	Lake Sugema	not in a city	24430 Lacey Trl, Keosauqua Lake Sugema	Van Buren	Keosauqua, Lake Sugema	SO2, Ozone, PM10, PM2.5
191810022	Lake Ahquabi State Park	Indianola	1650 118th Ave.	Warren	Indianola, Lake Ahquabi	Ozone
191930019	Bryant School	Sioux City	821 30th St.	Woodbury	Sioux City, Bryant Sch.	PM10, PM2.5

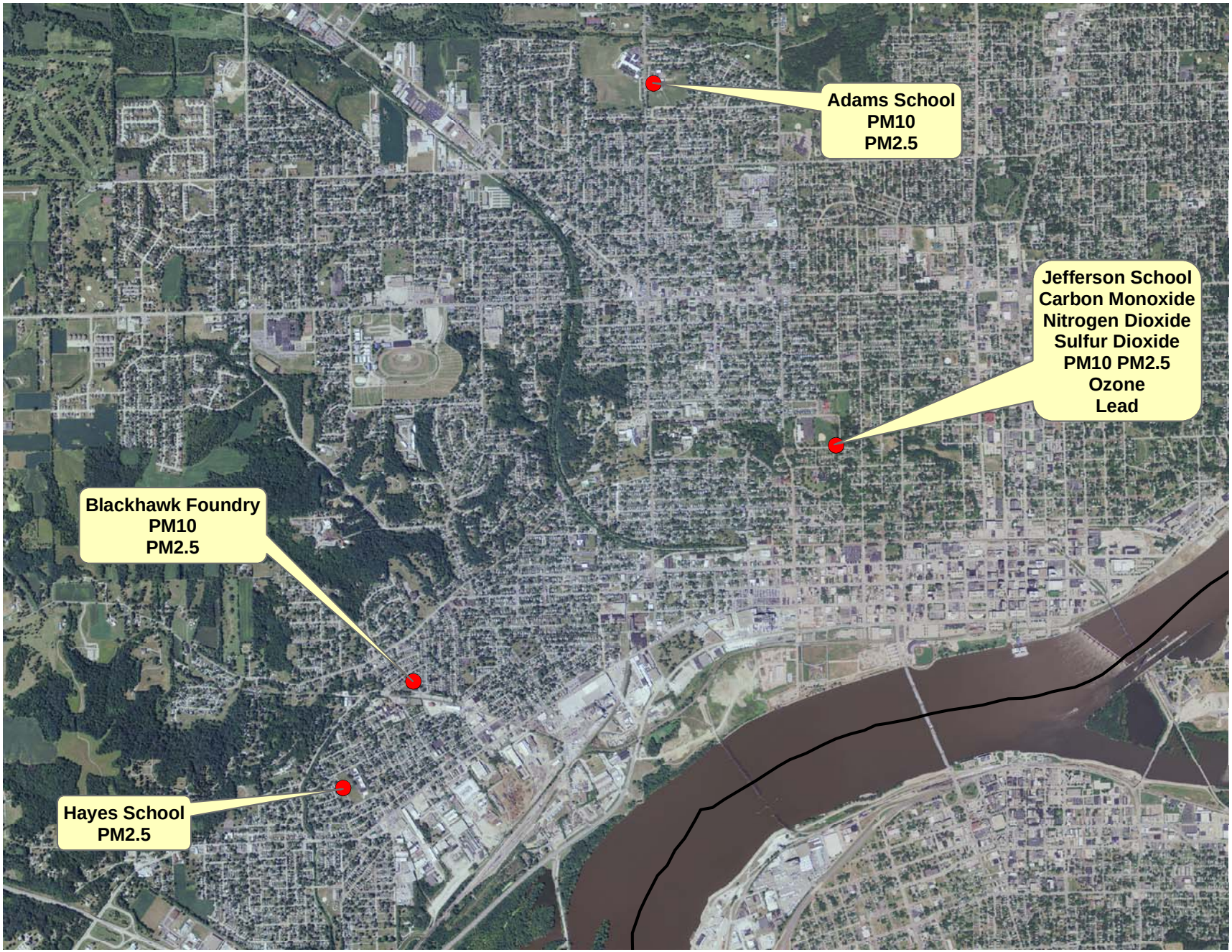
2011 Monitoring Site Locations



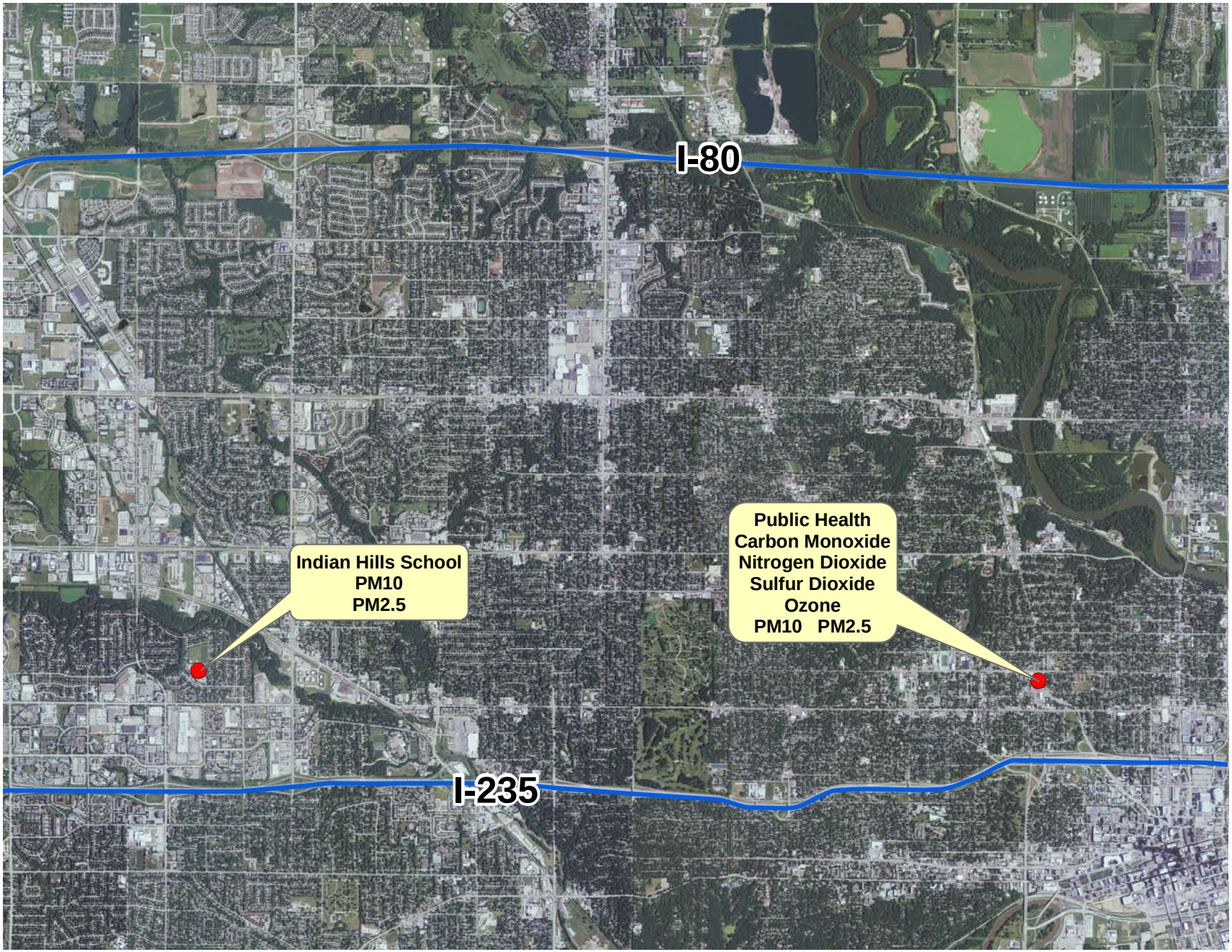
Monitoring Locations in Cedar Rapids



Monitoring Locations in Davenport



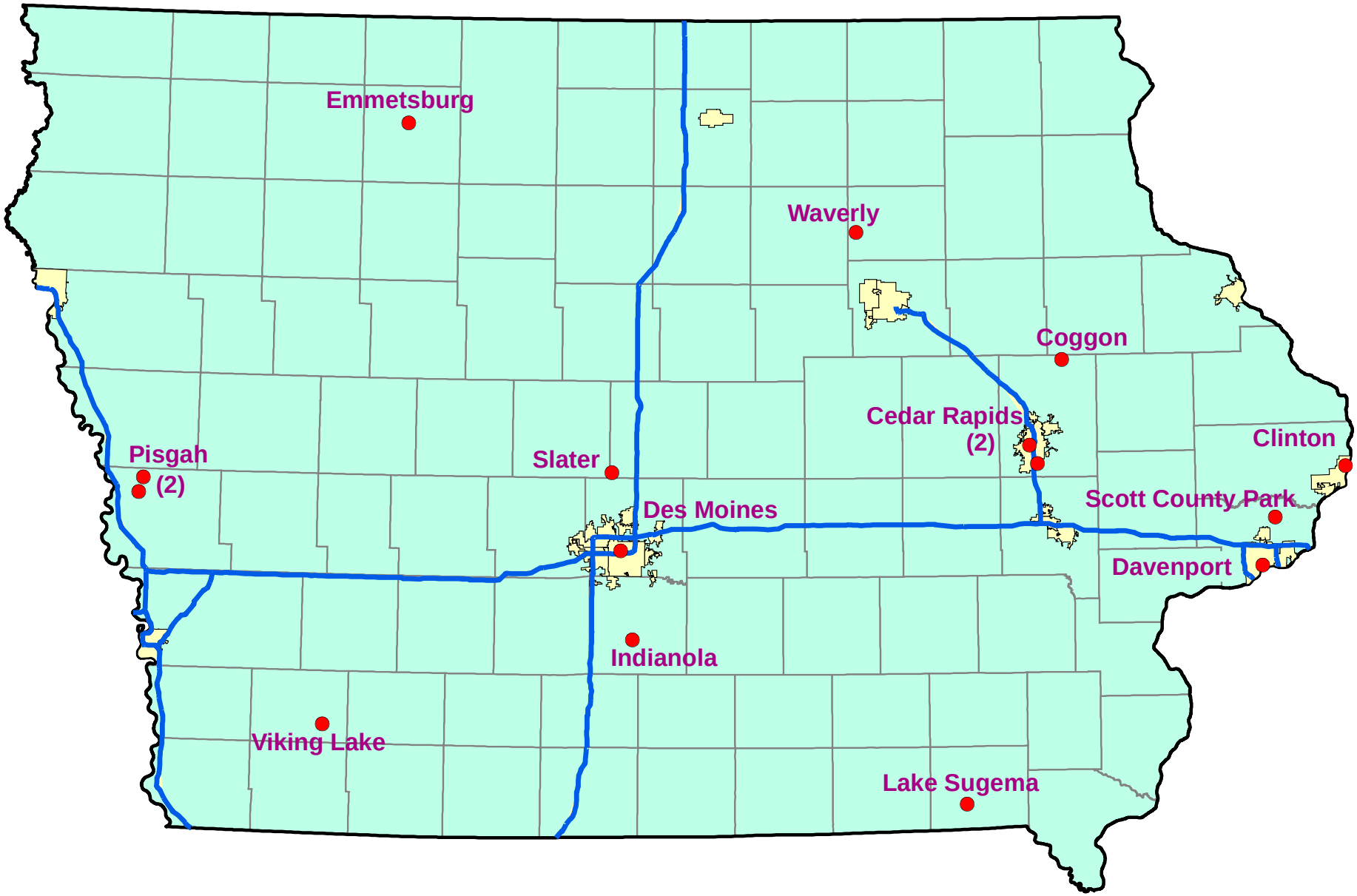
Monitoring Locations in Des Moines/Clive



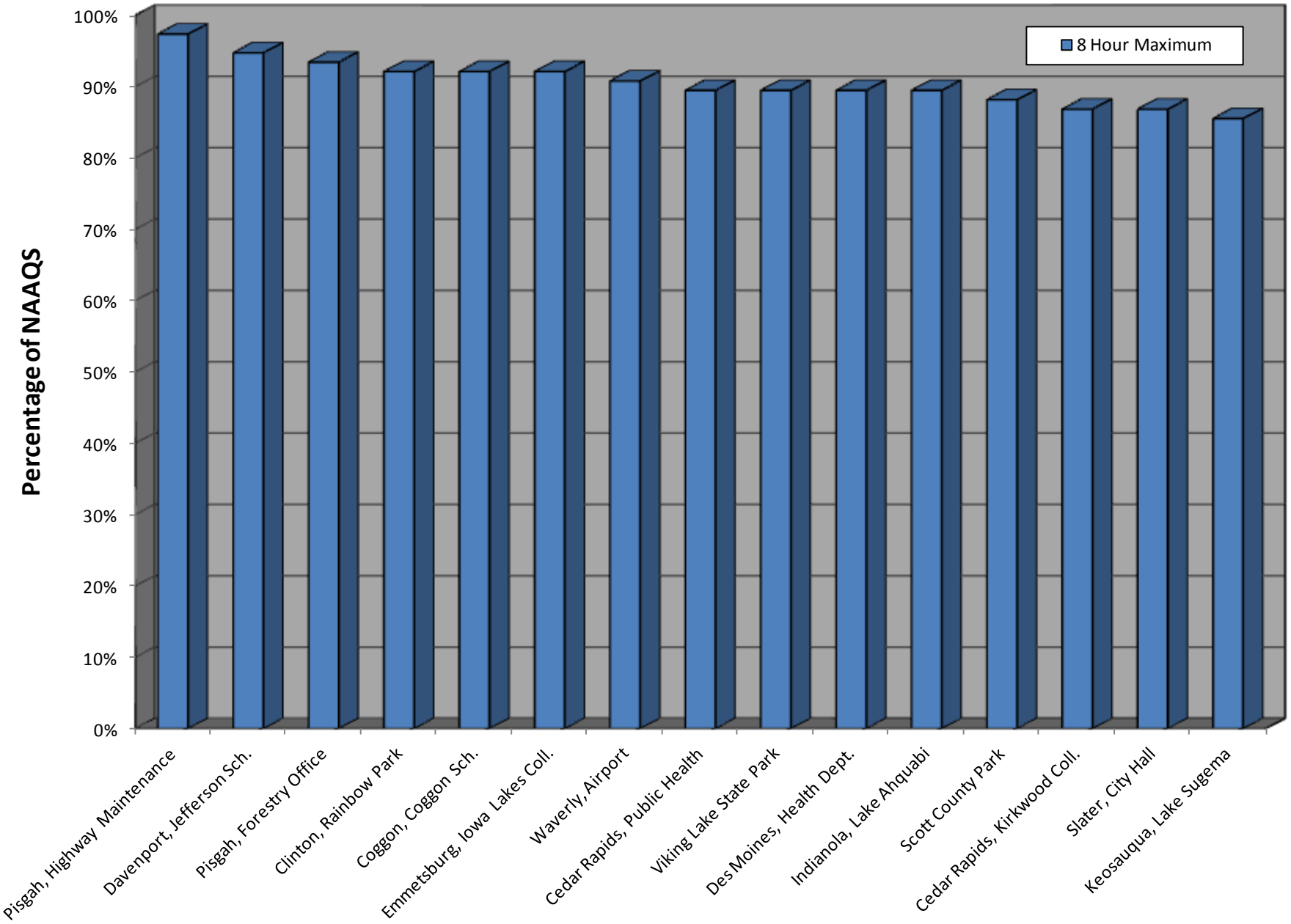
Ozone Monitoring Sites

Site	Name	City	County	Site Label
190170011	Waverly Airport	Waverly	Bremer	Waverly, Airport
190450021	Rainbow Park	Clinton	Clinton	Clinton, Rainbow Park
190850007	Forestry Office	Pisgah	Harrison	Pisgah, Forestry Office
190851101	Highway Maintenance Shed	Pisgah	Harrison	Pisgah, Highway Maintenance
191130028	Kirkwood College	Cedar Rapids	Linn	Cedar Rapids, Kirkwood Coll.
191130033	Coggon Elementary School	Coggon	Linn	Coggon, Coggon Sch.
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191370002	Viking Lake State Park	not in a city	Montgomery	Viking Lake State Park
191471002	Iowa Lakes College	Emmetsburg	Palo Alto	Emmetsburg, Iowa Lakes Coll.
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191630014	Scott County Park	Davenport	Scott	Scott County Park
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191690011	City Hall	Slater	Story	Slater, City Hall
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema
191810022	Lake Ahquabi State Park	Indianola	Warren	Indianola, Lake Ahquabi

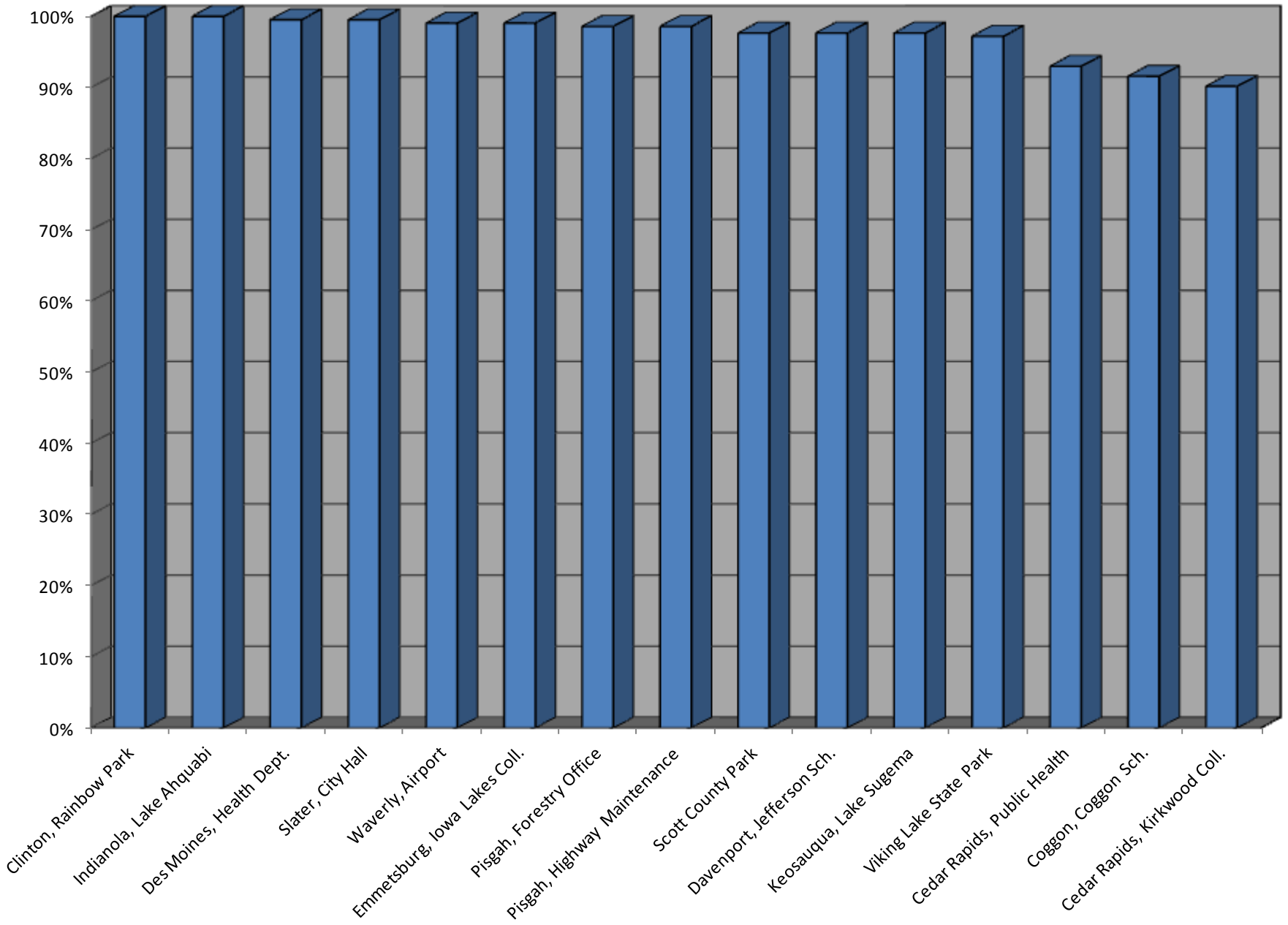
Ozone Monitoring Locations



Comparison of 2011 Ozone Data with National Ambient Air Quality Standards



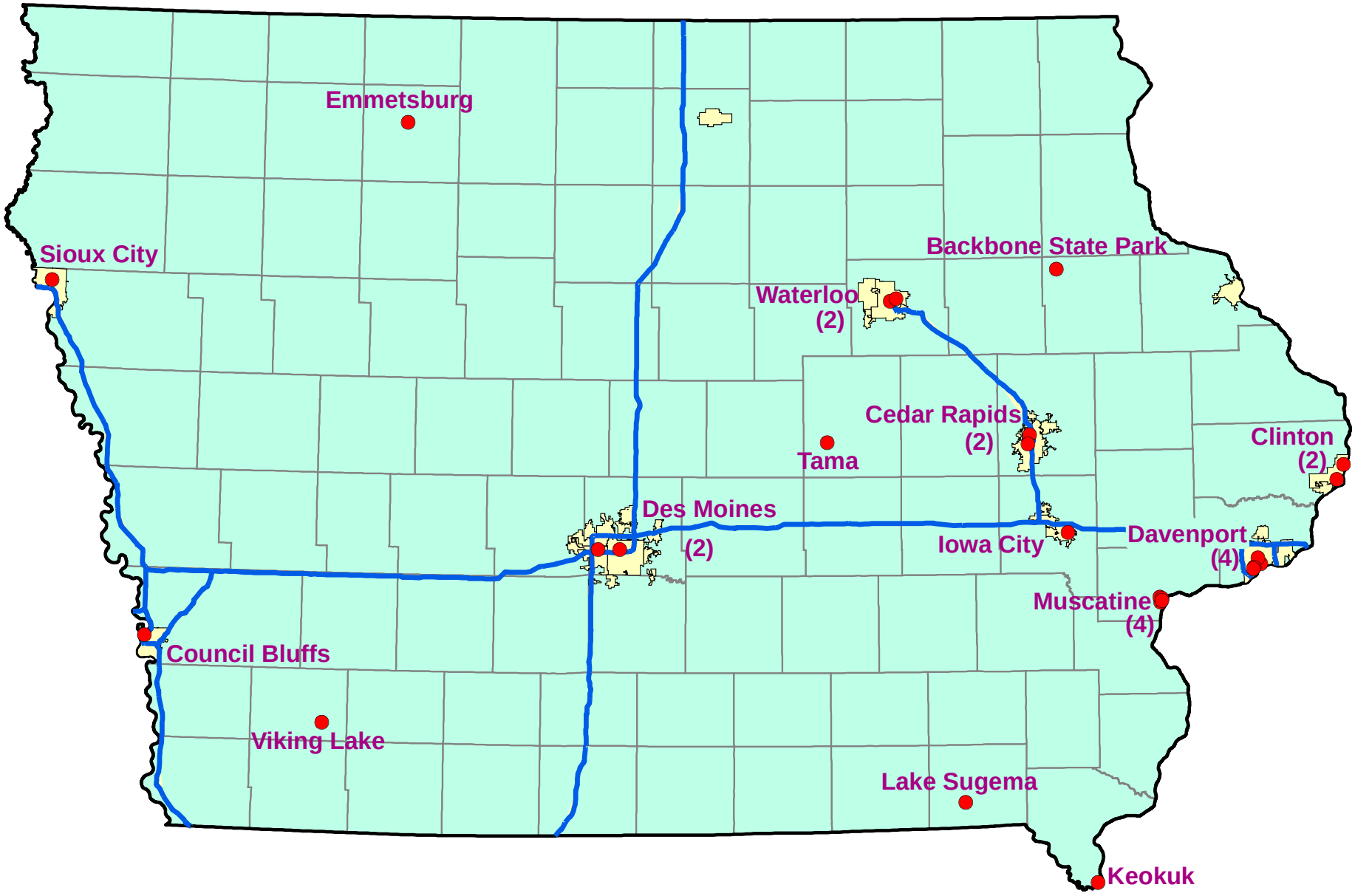
2011 Data Completeness – Ozone



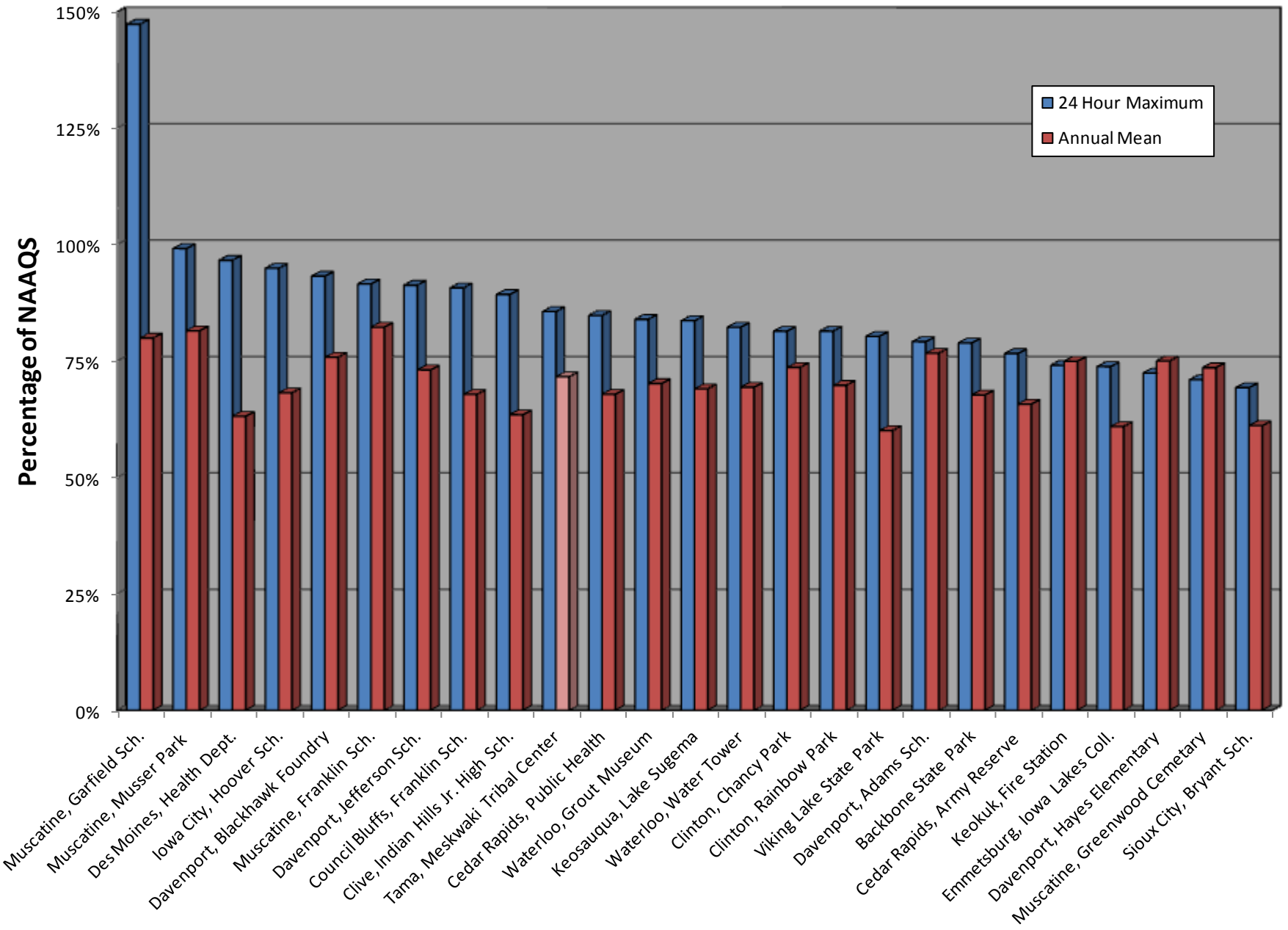
$PM_{2.5}$ Monitoring Sites

Site	Name	City	County	Site Label
190130008	Grout Museum	Waterloo	Black Hawk	Waterloo, Grout Museum
190130009	Water Tower	Waterloo	Black Hawk	Waterloo, Water Tower
190450019	Chancy Park	Clinton	Clinton	Clinton, Chancy Park
190450021	Rainbow Park	Clinton	Clinton	Clinton, Rainbow Park
190550001	Backbone State Park	not in a city	Delaware	Backbone State Park
191032001	Hoover Elementary	Iowa City	Johnson	Iowa City, Hoover Sch.
191110008	Fire Station	Keokuk	Lee	Keokuk, Fire Station
191130037	Army Reserve Center	Cedar Rapids	Linn	Cedar Rapids, Army Reserve
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191370002	Viking Lake State Park	not in a city	Montgomery	Viking Lake State Park
191390015	Garfield School	Muscatine	Muscatine	Muscatine, Garfield Sch.
191390016	Greenwood Cemetary	Muscatine	Muscatine	Muscatine, Greenwood Cemetary
191390018	Franklin School	Muscatine	Muscatine	Muscatine, Franklin Sch.
191390020	Musser Park	Muscatine	Muscatine	Muscatine, Musser Park
191471002	Iowa Lakes College	Emmetsburg	Palo Alto	Emmetsburg, Iowa Lakes Coll.
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191532510	Indian Hills Jr. High School	Clive	Polk	Clive, Indian Hills Jr. High Sch.
191550009	Franklin School	Council Bluffs	Pottawattamie	Council Bluffs, Franklin Sch.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191630018	Adams School	Davenport	Scott	Davenport, Adams Sch.
191630019	Blackhawk Foundry	Davenport	Scott	Davenport, Blackhawk Foundry
191630020	Hayes School	Davenport	Scott	Davenport, Hayes Elementary
191710007	Meskwaki Tribal Center	Tama	Tama	Tama, Meskwaki Tribal Center
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema
191930019	Bryant School	Sioux City	Woodbury	Sioux City, Bryant Sch.

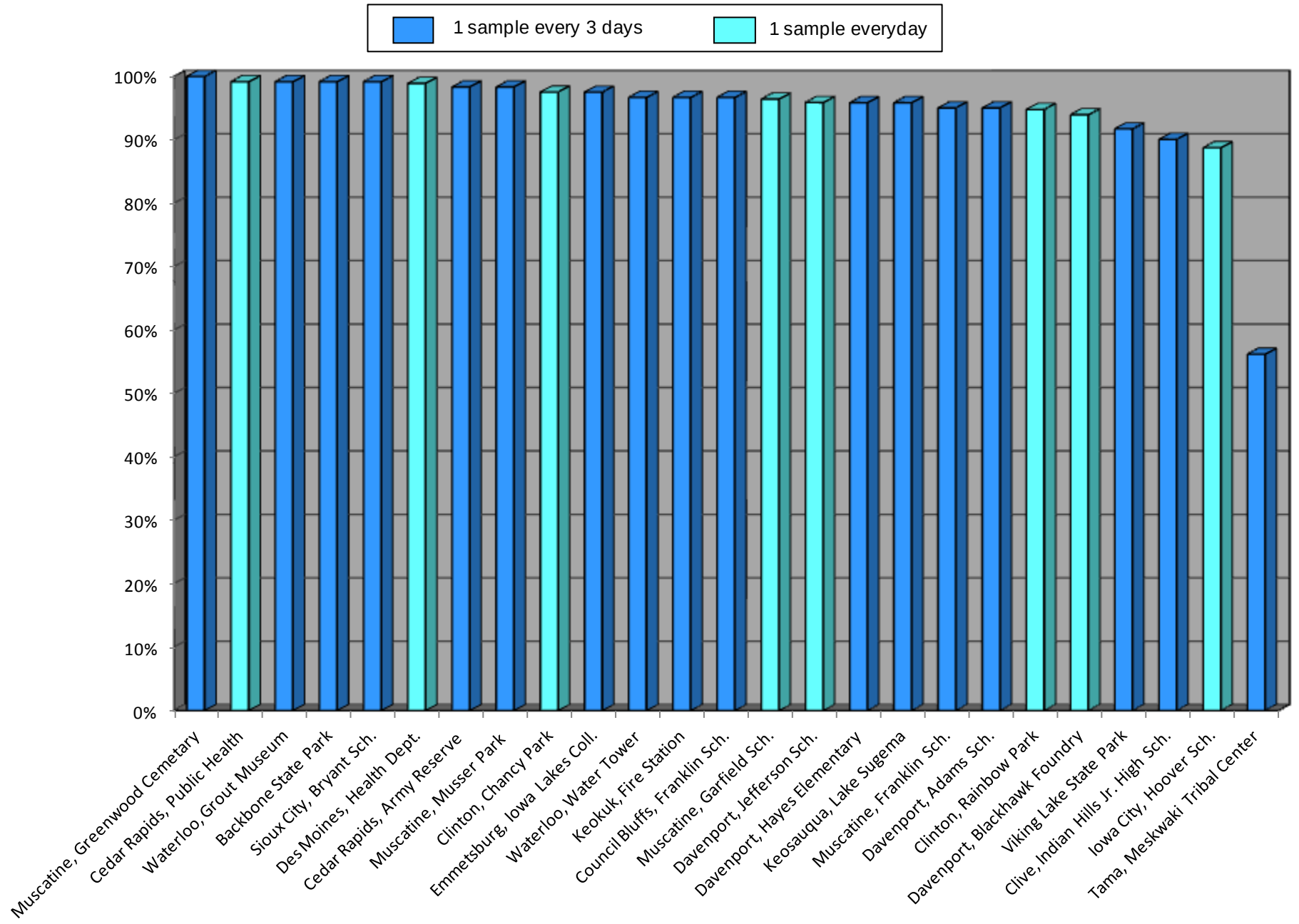
$PM_{2.5}$ Monitoring Locations



Comparison of 2011 $PM_{2.5}$ Data with National Ambient Air Quality Standards



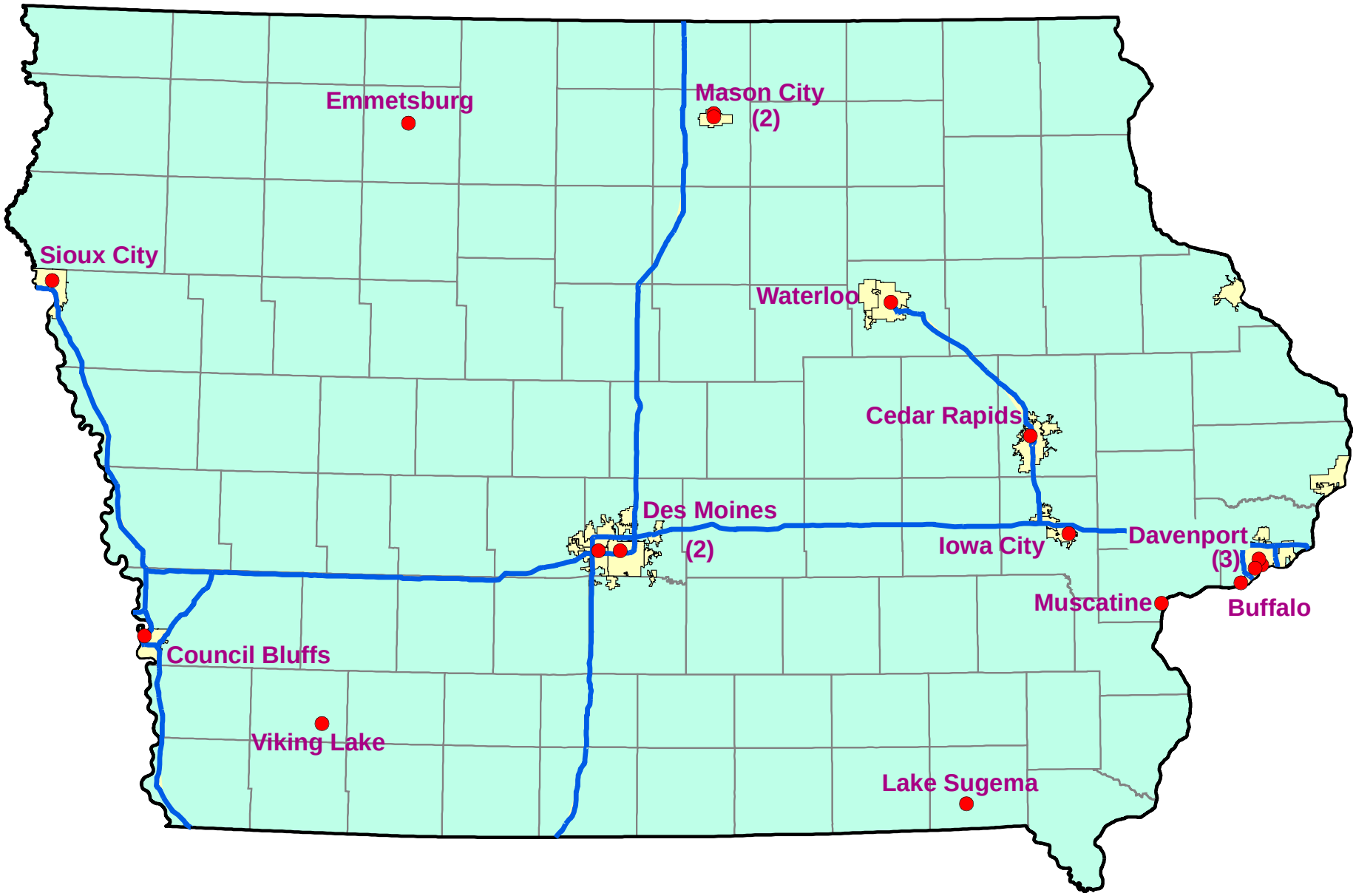
2011 Data Completeness – $PM_{2.5}$



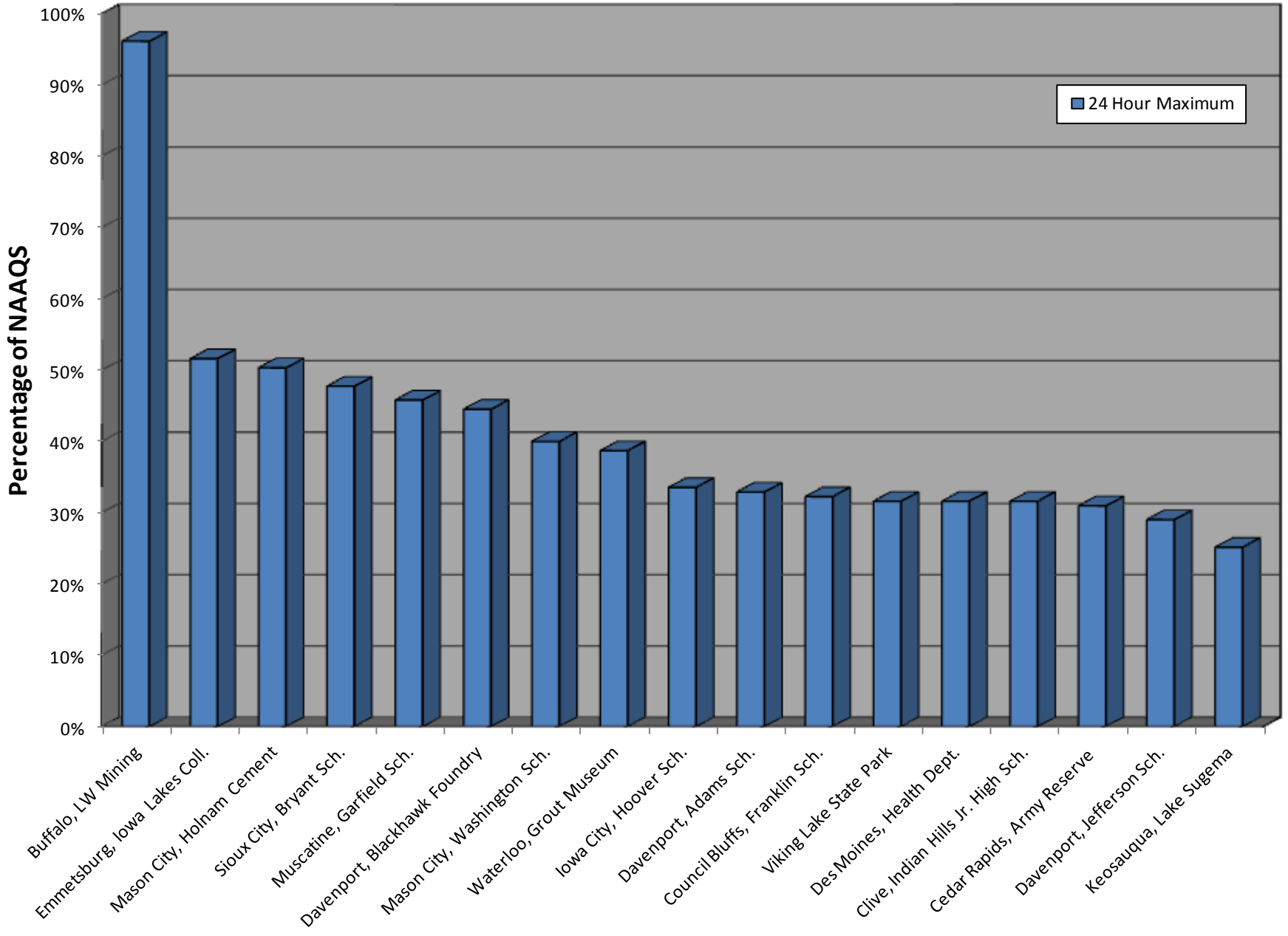
PM_{10} Monitoring Sites

Site	Name	City	County	Site Label
190130008	Grout Museum	Waterloo	Black Hawk	Waterloo, Grout Museum
190330018	Holnam Cement	Mason City	Cerro Gordo	Mason City, Holnam Cement
190330020	Washington School	Mason City	Cerro Gordo	Mason City, Washington Sch.
191032001	Hoover Elementary	Iowa City	Johnson	Iowa City, Hoover Sch.
191130037	Army Reserve Center	Cedar Rapids	Linn	Cedar Rapids, Army Reserve
191370002	Viking Lake State Park	not in a city	Montgomery	Viking Lake State Park
191390015	Garfield School	Muscatine	Muscatine	Muscatine, Garfield Sch.
191471002	Iowa Lakes College	Emmetsburg	Palo Alto	Emmetsburg, Iowa Lakes Coll.
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191532510	Indian Hills Jr. High School	Clive	Polk	Clive, Indian Hills Jr. High Sch.
191550009	Franklin School	Council Bluffs	Pottawattamie	Council Bluffs, Franklin Sch.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191630017	Linwood Mining	Buffalo	Scott	Buffalo, LW Mining
191630018	Adams School	Davenport	Scott	Davenport, Adams Sch.
191630019	Blackhawk Foundry	Davenport	Scott	Davenport, Blackhawk Foundry
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema
191930019	Bryant School	Sioux City	Woodbury	Sioux City, Bryant Sch.

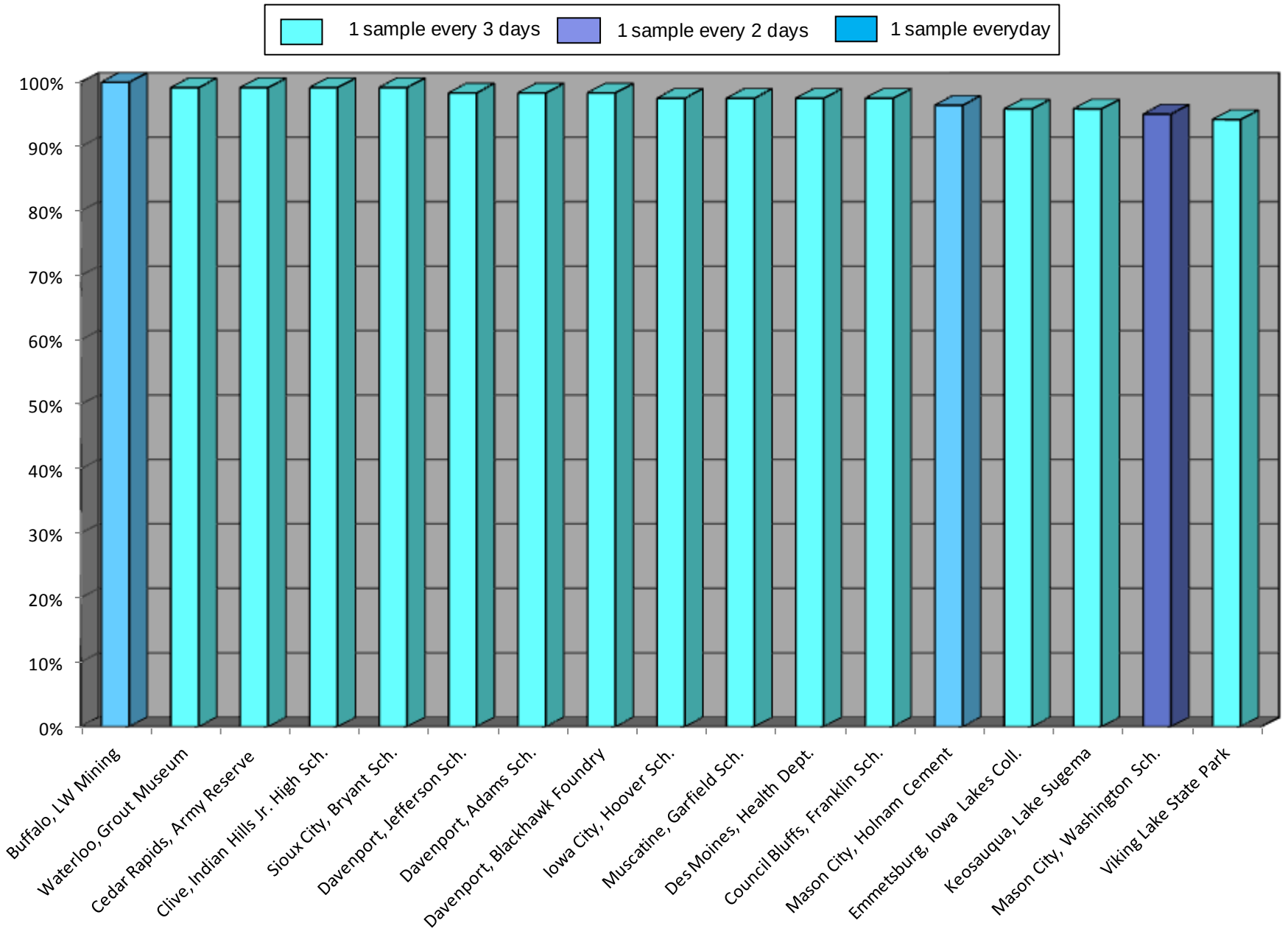
PM_{10} Monitoring Locations



Comparison of 2011 PM_{10} Data with the National Ambient Air Quality Standard



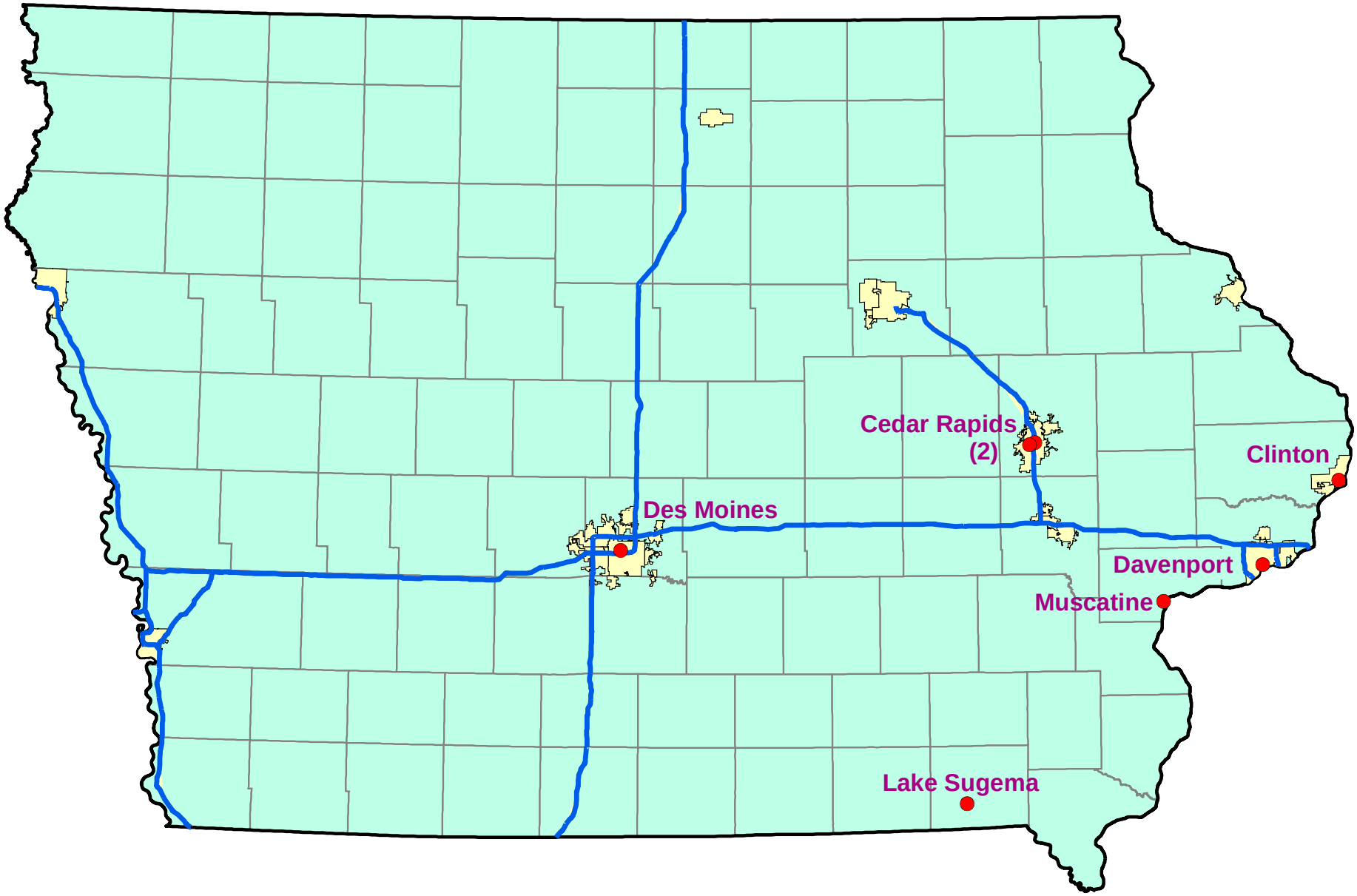
2011 Data Completeness – PM_{10}



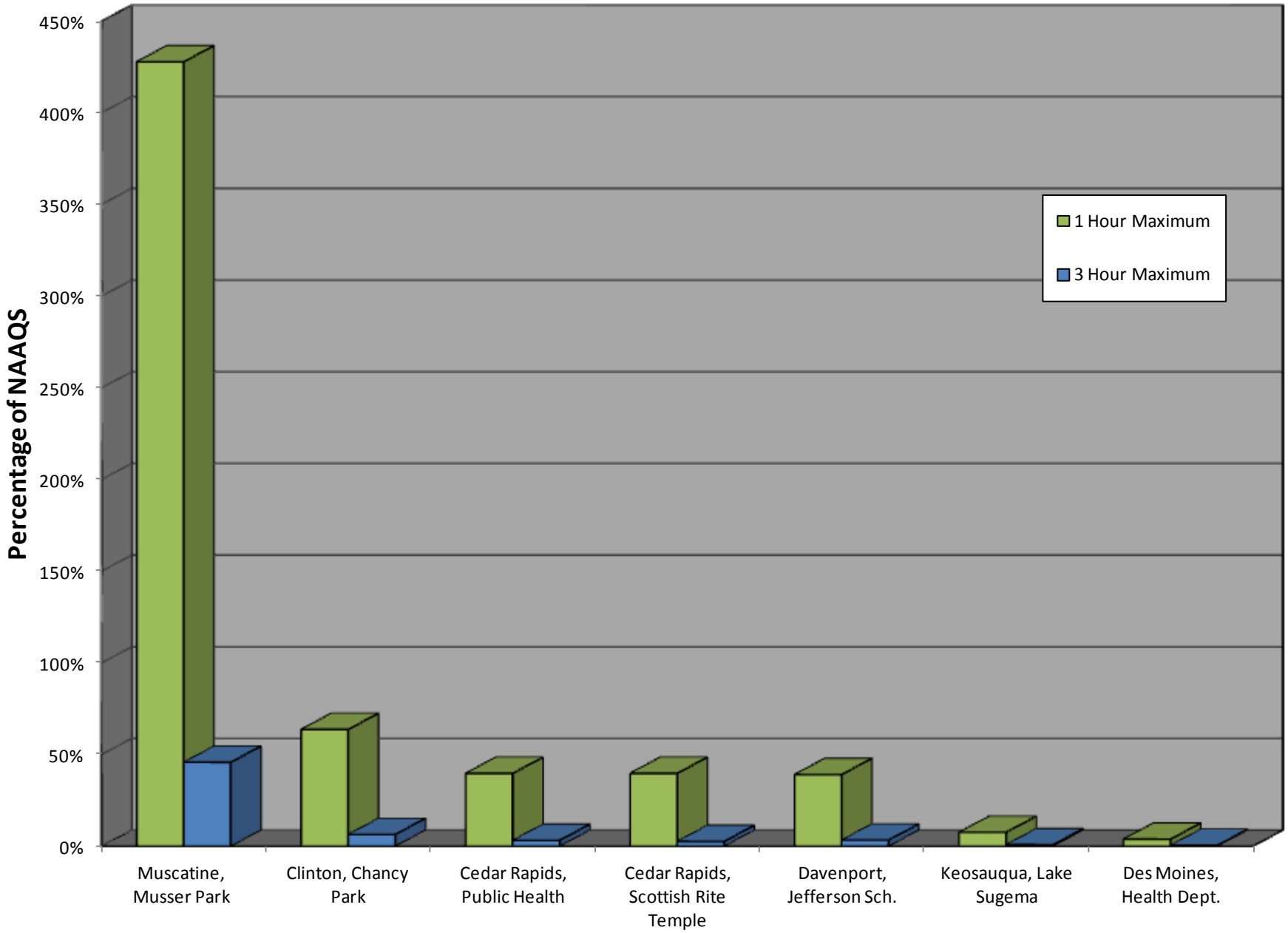
Sulfur Dioxide Monitoring Sites

Site	Name	City	County	Site Label
190450019	Chancy Park	Clinton	Clinton	Clinton, Chancy Park
191130031	Scottish Rite Temple	Cedar Rapids	Linn	Cedar Rapids, Scottish Rite Temple
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191390020	Musser Park	Muscatine	Muscatine	Muscatine, Musser Park
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema

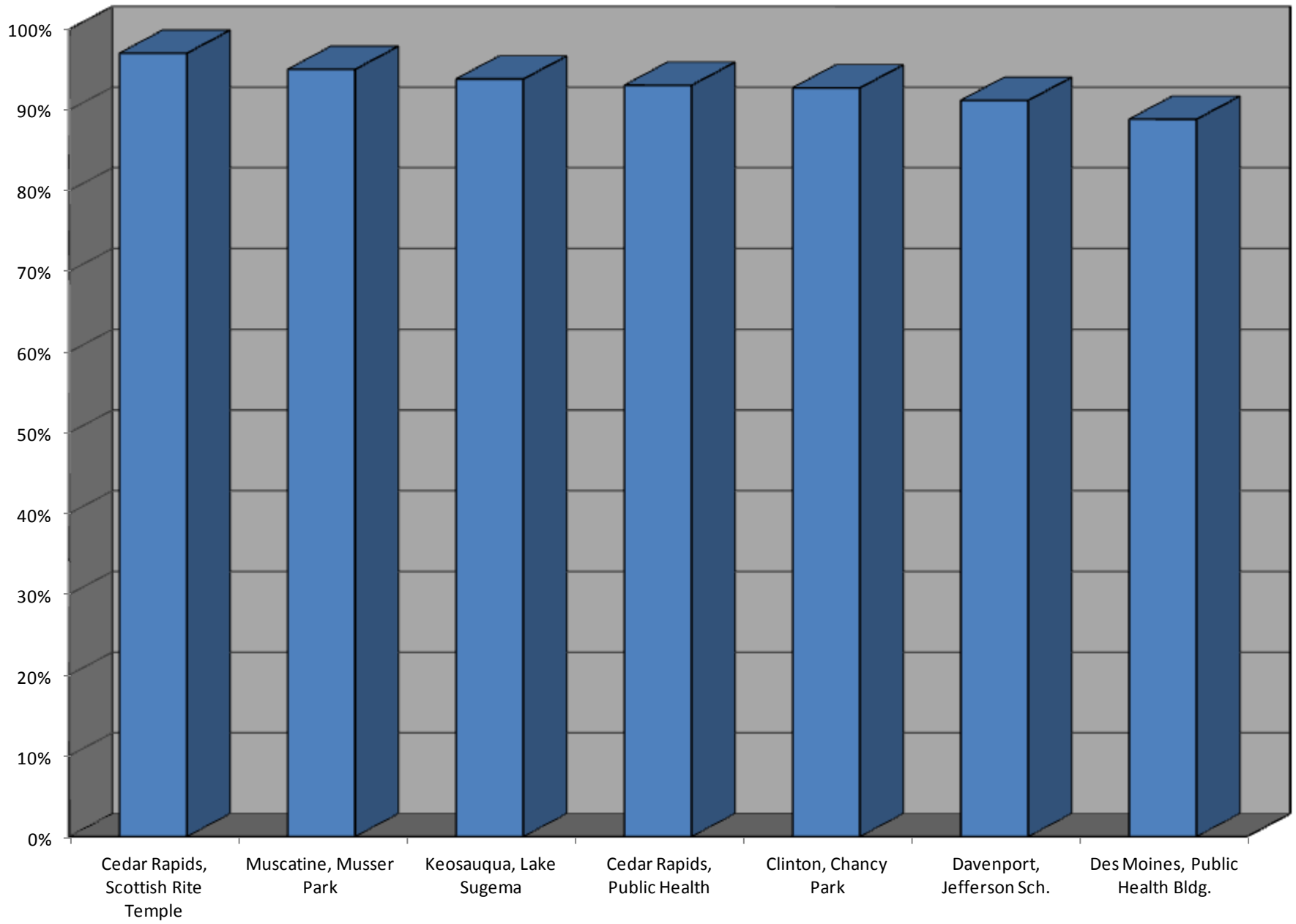
Sulfur Dioxide Monitoring Locations



Comparison of 2011 Sulfur Dioxide Data with National Ambient Air Quality Standards



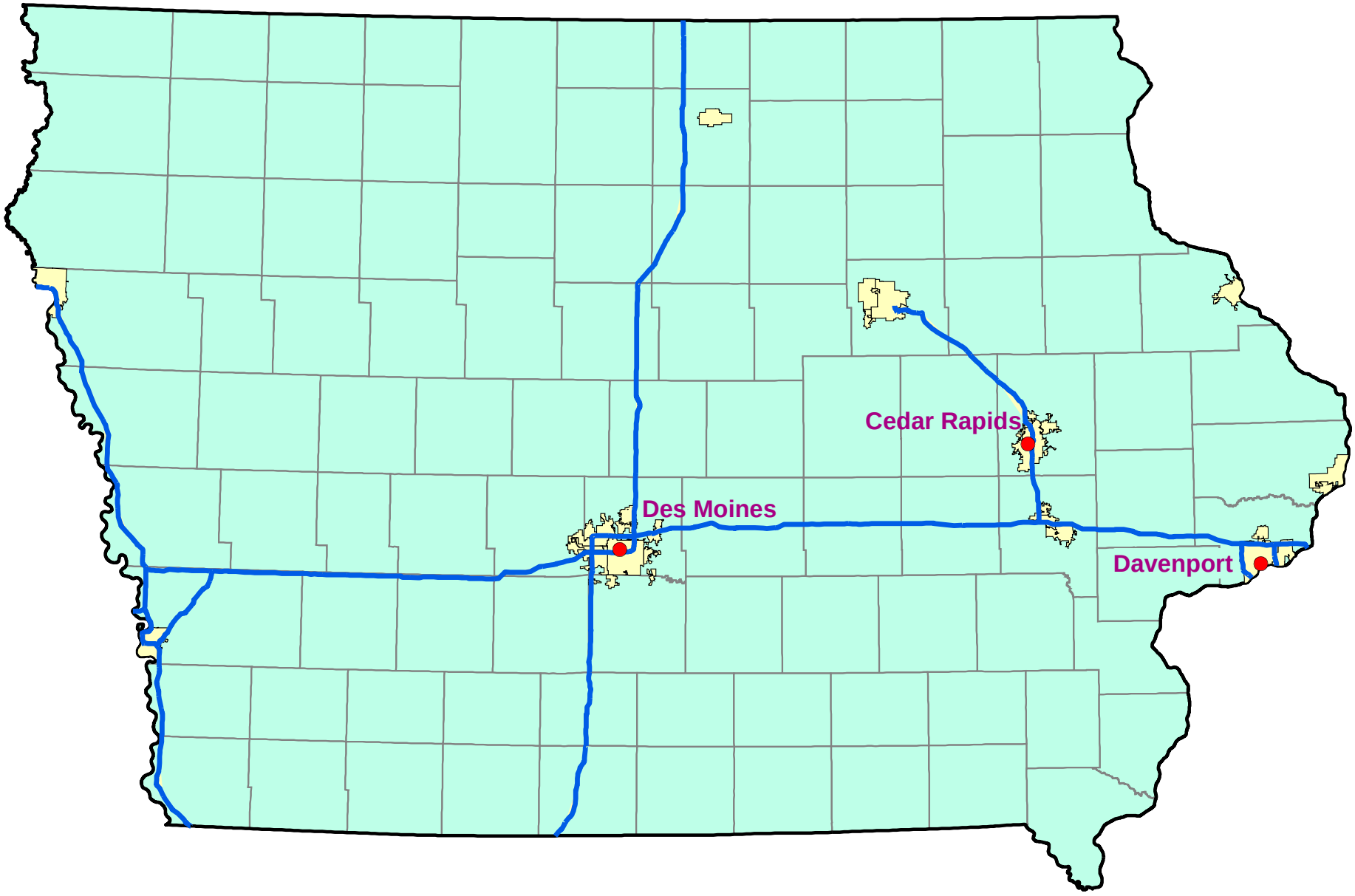
2011 Data Completeness – Sulfur Dioxide



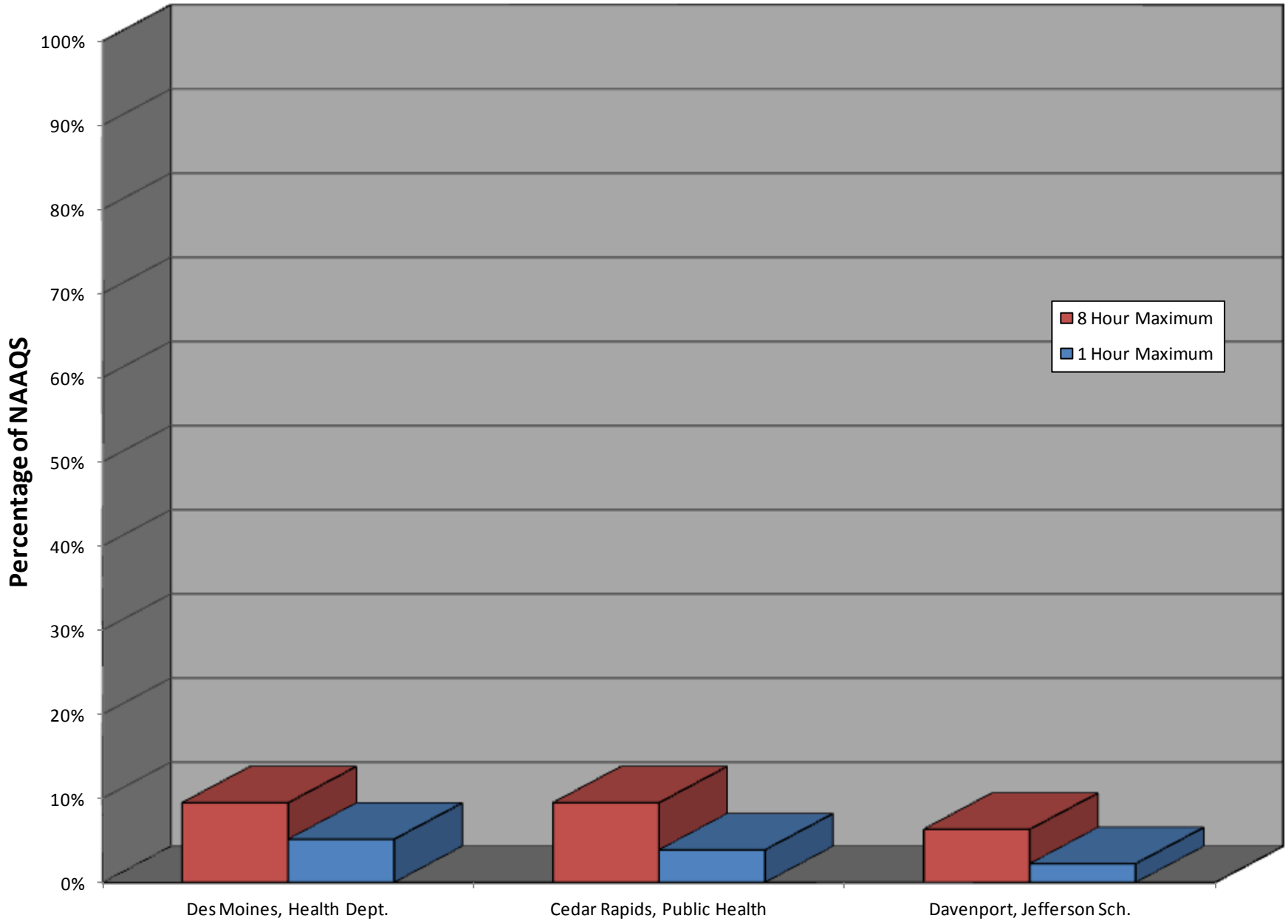
Carbon Monoxide Monitoring Sites

Site	Name	City	County	Site Label
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.

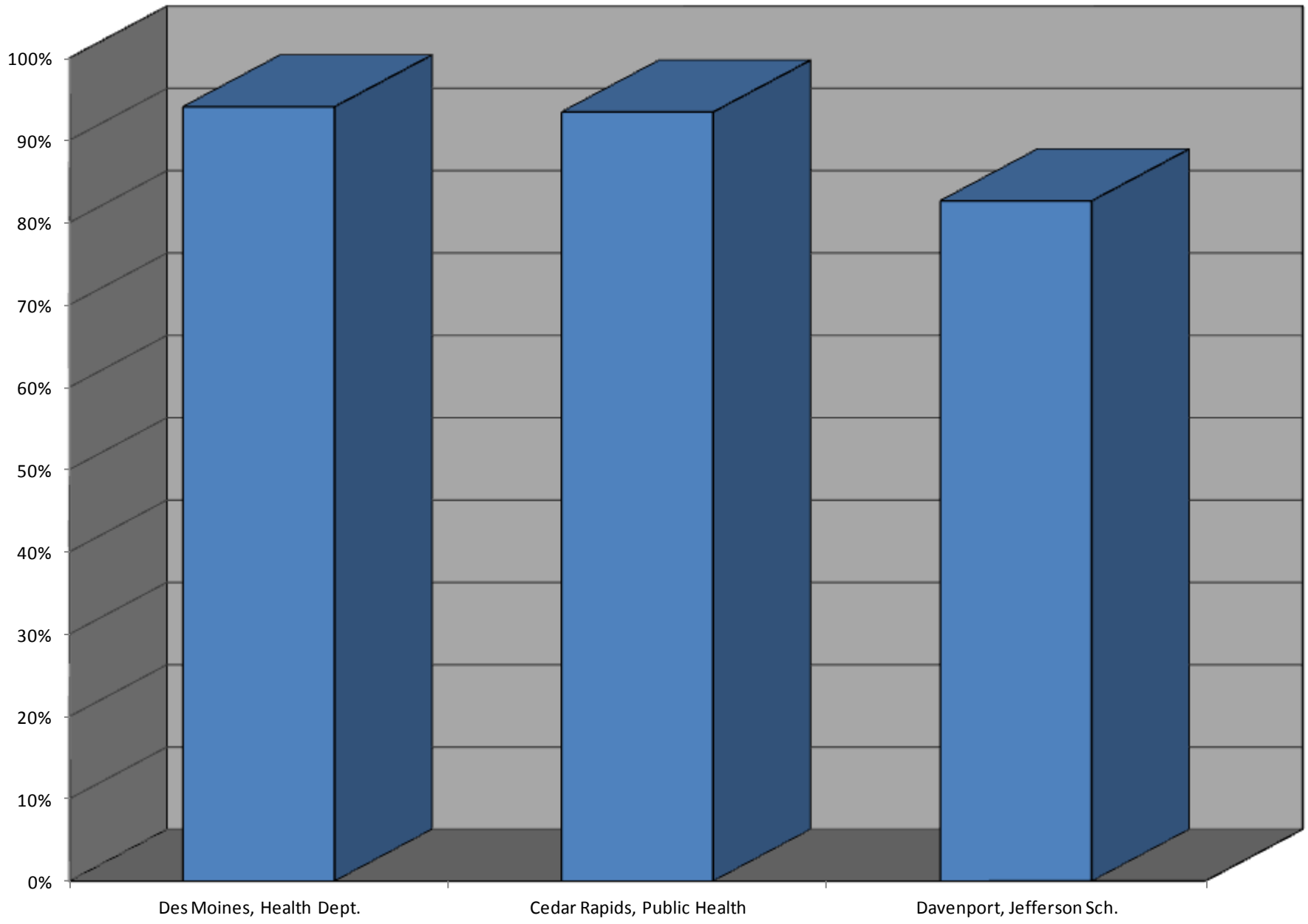
Carbon Monoxide Monitoring Locations



Comparison of 2011 Carbon Monoxide Data with National Ambient Air Quality Standards



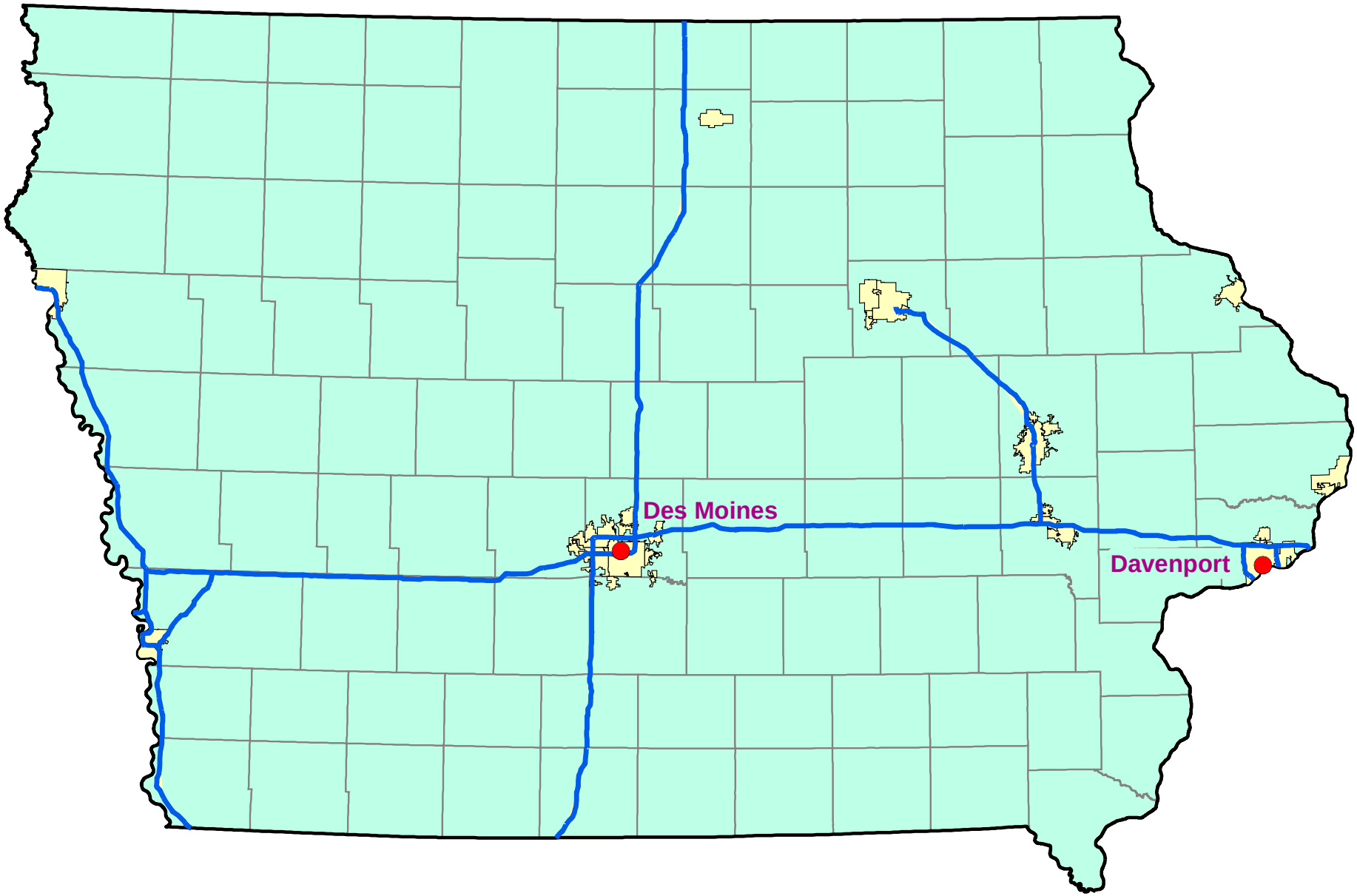
2011 Data Completeness – Carbon Monoxide



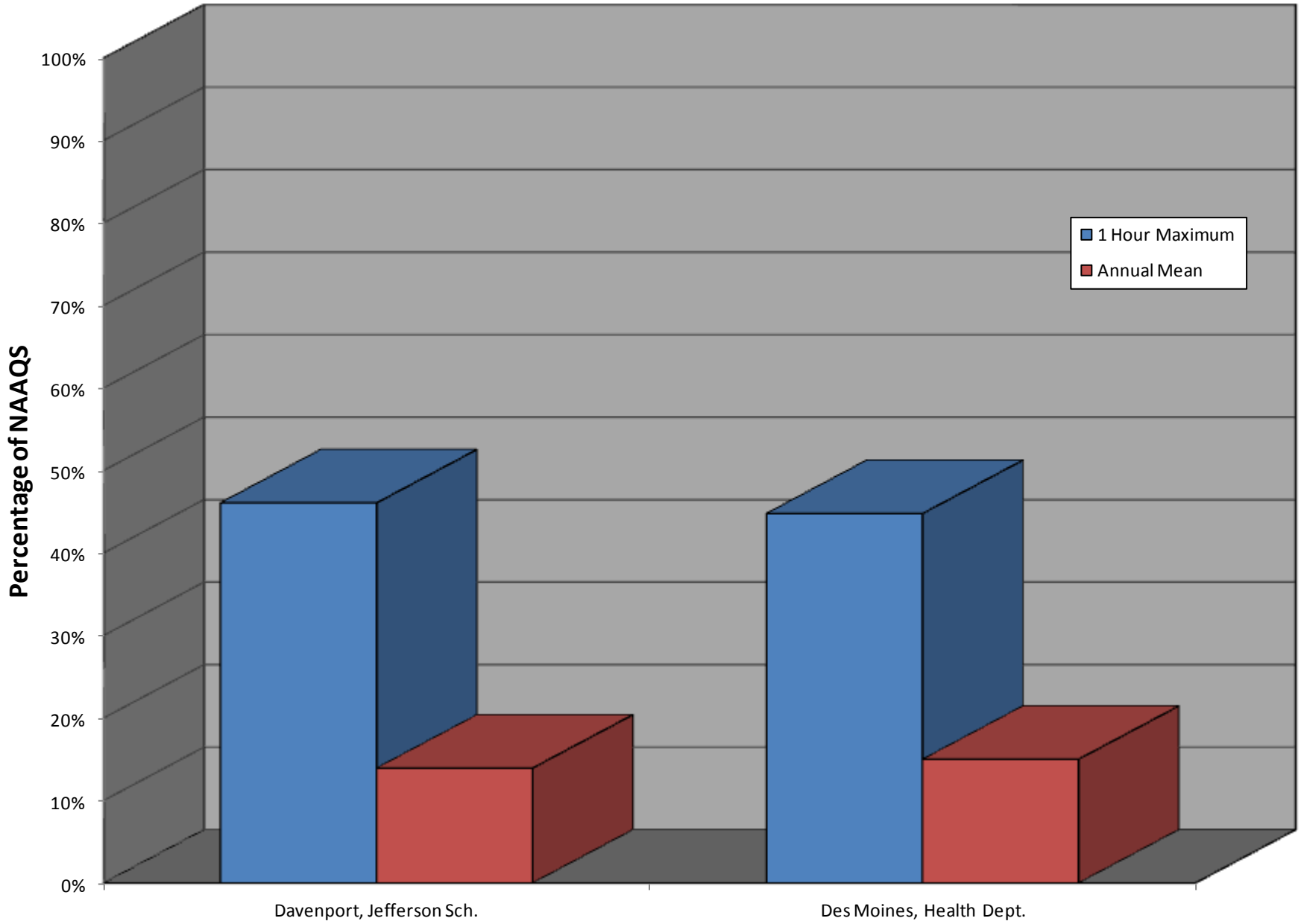
Nitrogen Dioxide Monitoring Sites

Site	Name	City	County	Site Label
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.

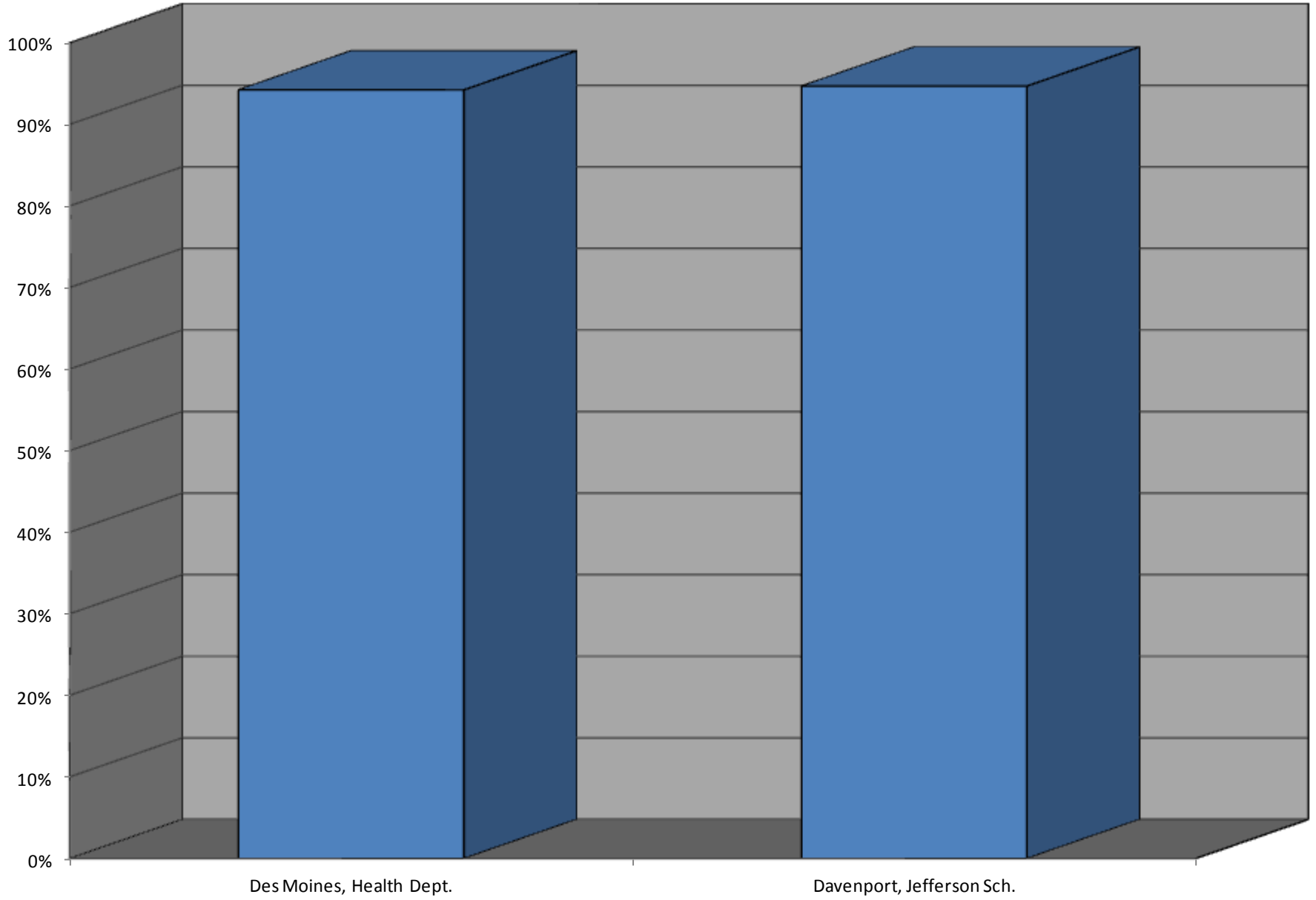
Nitrogen Dioxide Monitoring Locations



Comparison of 2011 Nitrogen Dioxide Data with the National Ambient Air Quality Standard



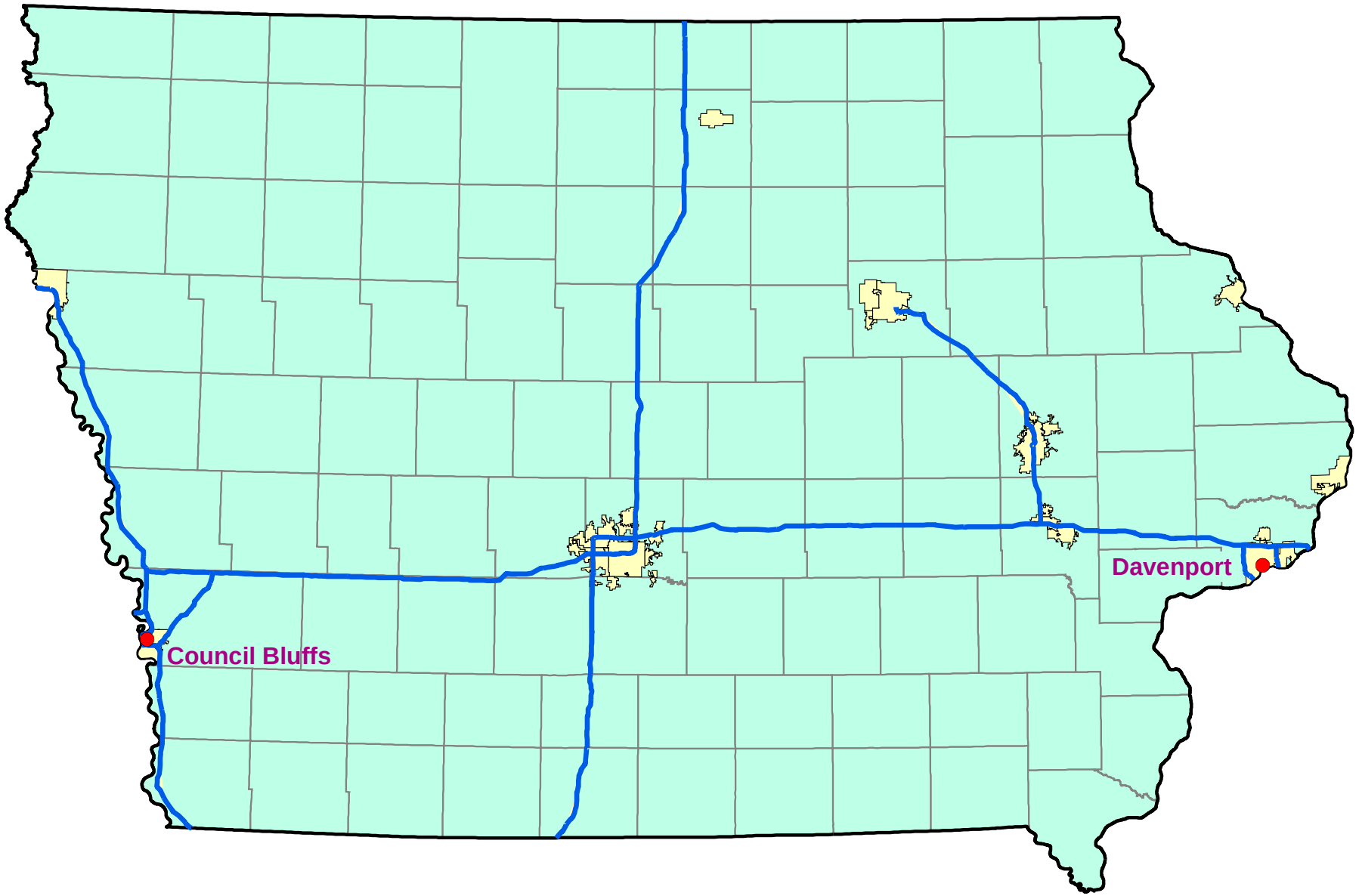
2011 Data Completeness – Nitrogen Dioxide



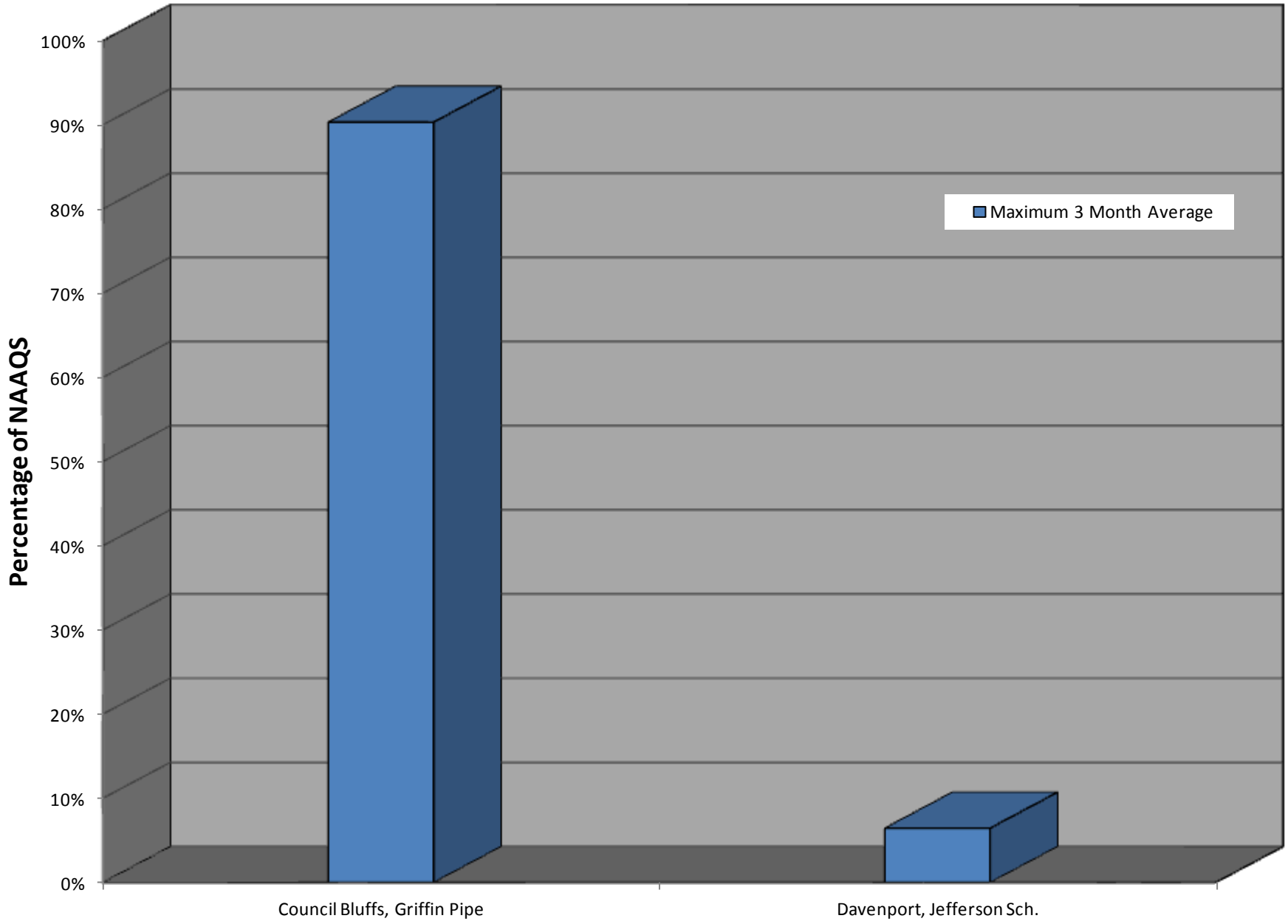
Lead Monitoring Sites

Site	Name	City	County	Site Label
191550011	Griffin Pipe	Council Bluffs	Pottawattamie	Council Bluffs, Griffin Pipe
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.

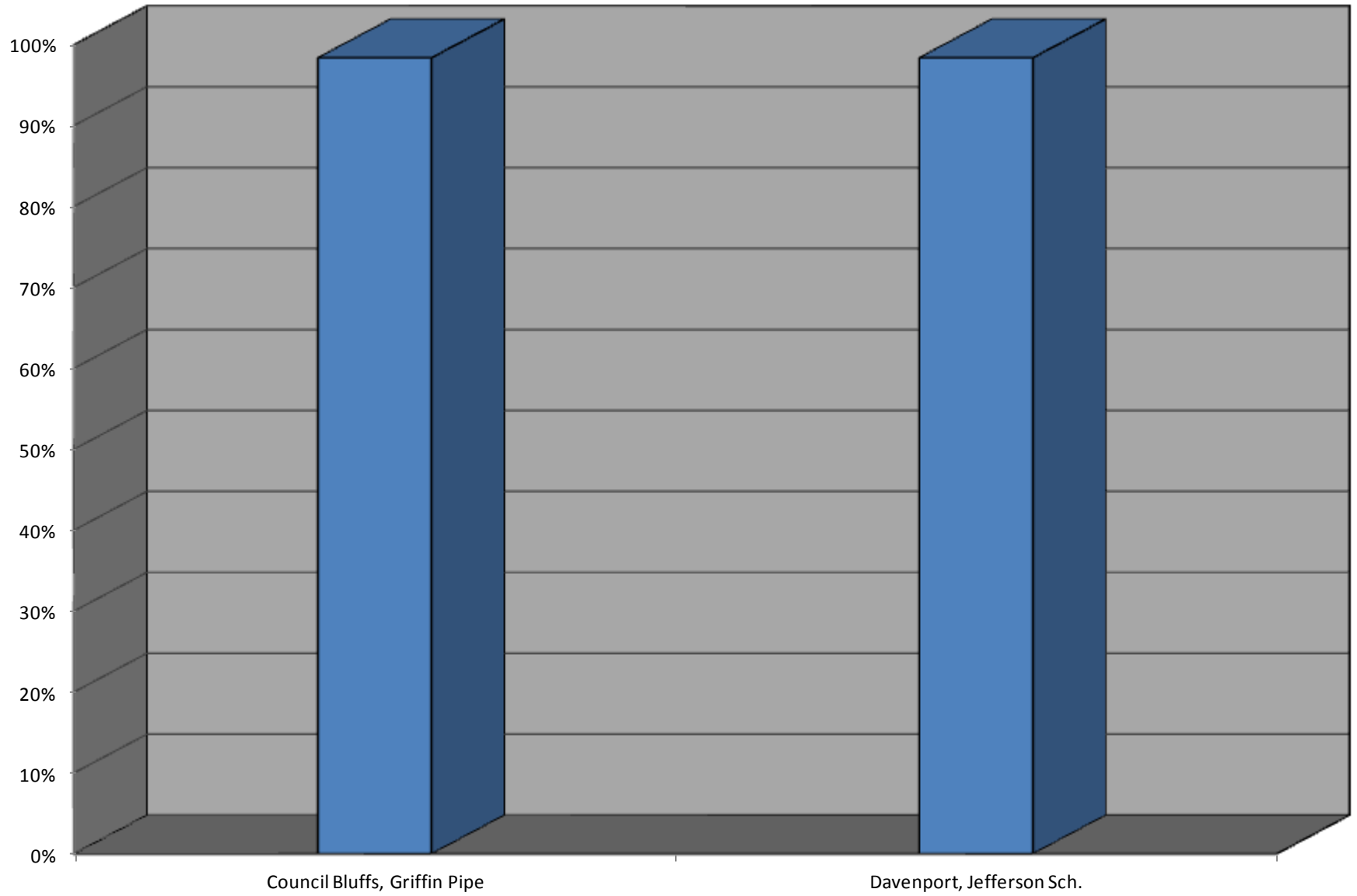
Lead Monitoring Locations



Comparison of 2011 Lead Data with the National Ambient Air Quality Standard



2011 Data Completeness – Lead



Appendix A

Additional Chart Information

Listed below is additional information that may be useful in interpreting the charts contained in this review

Ozone

Comparison of 2011 Ozone Data with National Ambient Air Quality Standards

This chart shows the highest eight hour ozone average (expressed as a percentage of the 76 ppb eight-hour NAAQS) for each ozone monitor operated in 2011. The National Ambient Air Quality Standard for ozone was changed from 85 ppb to 76 ppb in May of 2008.

Back to Chart

Data Completeness – Ozone

This chart shows the total number of valid ozone monitoring days (expressed as a percentage of the total number of days in the ozone season) for each ozone monitor operated in 2011. According to EPA guidelines, an ozone monitoring day is considered valid if at least 75% of the 24 8-hour averages for the day are valid. An 8-hour average is valid if at least 75% of the hourly average values for the 8-hour period are available. In the event that less than 75% of the 8-hour averages are available, a day is also counted as valid if the daily maximum 8-hour average for that day exceeds the NAAQS ($\geq$76 ppb). Ozone season runs from April through October; this amounts to 214 possible sampling days. An ozone monitor that recorded data for all 214 days of the season would have a data capture rate of 100%.

Back to Chart

$PM_{2.5}$

Comparison of 2011 $PM_{2.5}$ Data with National Ambient Air Quality Standards

This chart shows the highest 24 hour value (expressed as a percentage of the 35.5 $\mu g/m^3$ 24-hour NAAQS), and the annual average (expressed as a percentage of the 15.05 $\mu g/m^3$ annual NAAQS) for each $PM_{2.5}$ monitor operated in 2011.

Back to Chart

Data Completeness – $PM_{2.5}$

This chart shows the fraction of scheduled sampling days for each $PM_{2.5}$ monitor operated in 2011, where a valid $PM_{2.5}$ sample was collected. During 2011, $PM_{2.5}$ samplers in Iowa were scheduled to operate at a sampling frequency of either one sample every third day (121 scheduled samples) or one sample every day (365 scheduled samples). The sampling frequency of each monitor is indicated by the color of the bar.

Back to Chart

PM_{10}

Comparison of 2011 PM_{10} Data with National Ambient Air Quality Standards

This chart shows the highest 24 hour value (expressed as a percentage of the 155 µg/m^3 24-hour NAAQS) for each PM_{10} monitor operated in 2011.

Back to Chart

Data Completeness – PM_{10}

This chart shows the fraction of scheduled sampling days in 2011, for each PM_{10} monitor operated in 2011, where a valid PM_{10} sample was collected. During 2011, PM_{10} samplers in Iowa were scheduled to operate at a frequency of one sample every third day (121 scheduled samples), one sample every other day (183 scheduled samples), or one sample every day (365 scheduled samples). The sampling frequency of each monitor is indicated by the color of the bar in the chart.

Back to Chart

Sulfur Dioxide

Comparison of 2011 Sulfur Dioxide Data with National Ambient Air Quality Standards

This chart shows the highest 1 hour value (expressed as a percentage of the 75.5 ppb 1 hour NAAQS), and highest 3 hour value (expressed as a percentage of the 0.55 ppm 3 hour NAAQS) for each sulfur dioxide monitor operated in Iowa in 2011.

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Data Completeness – Sulfur Dioxide

This chart shows the total number of hourly sulfur dioxide values (expressed as a percentage of the total number of hours in 2011) for each sulfur dioxide monitor that operated in 2011. A sulfur dioxide monitor that recorded data for all 8760 hours during 2011 would have a data capture rate of 100%.

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Carbon Monoxide

Comparison of 2011 Carbon Monoxide Data with National Ambient Air Quality Standards

This chart shows the highest 1 hour value (expressed as a percentage of the 35.5 ppm 1 hour NAAQS) and the highest 8 hour value (expressed as a percentage of the 9.5 ppm 8 hour NAAQS) for each carbon monoxide monitor operated in 2011.

Back to Chart

Data Completeness – Carbon Monoxide

This chart shows the total number of hourly carbon monoxide values (expressed as a percentage of the total number of hours in 2011). A carbon monoxide monitor that recorded data for all 8760 hours during 2011 would have a data capture rate of 100%.

Back to Chart

Nitrogen Dioxide

Comparison of 2011 Nitrogen Dioxide Data with National Ambient Air Quality Standards

This chart shows the maximum 1 hour value (expressed as a percentage of the 100.5 ppb 1 hour NAAQS), and the annual average (expressed as a percentage of the 0.0535 ppm annual NAAQS) for each nitrogen dioxide monitoring site that operated in 2011.

Back to Chart

Data Completeness – Nitrogen Dioxide

This chart shows the total number of hourly nitrogen dioxide values (expressed as a percentage of the total number of hours in 2011). A nitrogen dioxide monitor that recorded data for all 8760 hours during 2011 would have a data capture rate of 100%.

Back to Chart

Lead

Comparison of 2011 Lead Data with National Ambient Air Quality Standards

This chart shows the maximum three month average (expressed as a percentage of the 0.155 $\mu g/m^3$ annual NAAQS) for each lead monitoring site that operated in 2011.

Back to Chart

Data Completeness – Lead

This chart shows the fraction of scheduled sampling days for each lead monitor operated in 2011, where a valid lead sample was actually collected. During 2011, lead samplers in Iowa were scheduled to operate at a one in three day sampling frequency (121 scheduled samples) or one in six day sampling frequency (61 scheduled samples).

Back to Chart