Illinois

Ambient Air Monitoring

2019 Network Plan

Illinois Environmental Protection Agency

Bureau of Air

June 26, 2018

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Tables and Figures (continued)

Acronyms

AQI	Air Quality Index
AQS	Air Quality System
BAM	Beta Attenuation Monitor
CAA	Clean Air Act
CASTNET	Clean Air Status and Trends Network
CBSA	Core Based Statistical Area
CCDES	Cook County Department of Environment and Sustainability
CFR	Code of Federal Regulations
CO	Carbon Monoxide
FEM	Federal Equivalent Method
FRM	Federal Reference Method
Illinois EPA	Illinois Environmental Protection Agency
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core multi-pollutant station
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NO_y	Total Reactive Nitrogen Oxides
O_3	Ozone
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
$PM_{2.5}$	Particulate matter with a diameter less than or equal to 2.5 micrometers
PM_{10}	Particulate matter with a diameter less than or equal to 10 micrometers
$PM_{10\text{-}2.5}$	Particulate matter with a diameter less than or equal to 10 micrometers and greater than or equal to 2.5 micrometers
ppb	Parts per billion
ppm	Parts per million
PWEI	Population Weighted Emissions Index
QA	Quality Assurance
SASS	Speciation Air Sampling System
SLAMS	State or Local Air Monitoring Station
SO_2	Sulfur Dioxide
SPM	Special Purpose Monitor
STN	Speciation Trends Network
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UV	Ultraviolet
VOC	Volatile Organic Compounds

Introduction

In 1970, Congress enacted the Clean Air Act (CAA), empowering the United States Environmental Protection Agency (USEPA) to develop and implement National Ambient Air Quality Standards (NAAQS) for pollutants shown to threaten human health.

NAAQS exist for six criteria pollutants – carbon monoxide (CO), ozone (O_3), lead (Pb), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with a diameter less than or equal to 10 micrometers (PM_{10}), and fine particulate matter ($PM_{2.5}$). There are primary and secondary NAAQS. Primary standards protect public health, whereas secondary standards protect public welfare including the environment.

A predominant goal of the air monitors within Illinois' network is to collect data with which to assess compliance with the NAAQS. A listing of these NAAQS calculations and contributions can be found at https://www.epa.gov/criteria-air-pollutants/naaqs-table.

Illinois has designed its ambient air monitoring network to provide timely air pollution data to the public, support compliance with ambient air quality standards and emissions strategy development, and support air pollution research studies. Data gathered from the Illinois EPA's monitoring network is used to produce a daily Air Quality Index (AQI) report, compile daily air quality forecast reports, support short- and long-term health risk assessments, identify localized health concerns, and track long-term trends in air quality that could potentially threaten Illinois citizen's quality of life.

The Illinois air monitoring network includes monitors for the six criteria pollutants: CO, O_3, Pb, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. The Illinois air monitoring network meets or, in most cases, exceeds the applicable minimum network requirements.

Monitor siting takes into consideration: peak (the highest concentration of pollution in a given area), population (presence of pollutants in areas with high population densities), source (pollution resulting from significant sources or source categories), background (general pollutant levels), and transport (extent of regional pollutant transport between populated areas). Federal regulations prescribe requirements for monitor and probe siting to ensure that the ambient air quality data is accurately representative. The criteria for the placement and operation of each monitor and probe vary. Site surveys ensure that each requirement is satisfied.

Federal regulations require each State to submit to USEPA an air monitoring network plan annually for the prospective year. Additionally, a five-year network assessment must be completed by USEPA Region 5 monitoring organizations. The last five-year network assessment was completed in 2015 and found the criteria pollutant monitoring network was adequate in meeting USEPA's minimum criteria. The annual network plans take into consideration findings of these assessments. The annual network plan provides a description of the monitoring network for each criteria pollutant including proposed changes. The air monitoring network plan is subject to public review and comment prior to its submission to the USEPA.

Monitoring Designations

The following designations describe the various types of monitors at the sites within Illinois' air monitoring network:

- **NCore** - National Core multi-pollutant monitoring station. Illinois is required by federal regulations to operate one NCore site, which includes monitors for CO, nitric oxide/reactive nitrogen (NO/NO_y), SO_2, O_3, PM_{10}, speciated $PM_{2.5}$, $PM_{2.5}$, $PM_{10\text{-}2.5}$, wind speed, wind direction, relative humidity, and ambient temperature. Illinois operates an NCore site in Northbrook and provides support for the federal rural NCore site located in Bondville measuring $PM_{2.5}$.
- **Near-road** - Placed near busy roadways, near-road sites measure the peak hourly concentrations of NO_2 and sometimes CO or $PM_{2.5}$ in urban areas. Illinois EPA will operate two near-road locations, in Chicago and Lansing. These two sites are expected to start operating in 2018.
- **PAMS** - Photochemical Assessment Monitoring Station. In addition to monitoring of criteria pollutants, Illinois also participates in a regional Photochemical Assessment Monitoring Station (PAMS) network in the Chicago area that is part of the USEPA approved "Alternate Plan for the Regional Lake Michigan PAMS Network." This regional PAMS network focuses on both the Milwaukee and Chicago areas that are classified as ozone nonattainment areas. These sites are dedicated to obtaining more information about ozone and its precursors. The Illinois sites participating in the 2019 regional PAMS network will include enhanced monitoring in Schiller Park as well as regulatorily-required monitoring in Northbrook. Illinois' regional PAMS sites will collect and monitor some or all of the following: speciated volatile organic compounds (VOCs), carbonyls, NO/NO_y, O_3, CO, and meteorological data in order to monitor potential threats of nonattainment.
- **SLAMS** - State or Local Ambient Monitoring Station. SLAMS monitoring is for comparison to the NAAQS.
- **SPM** - Special Purpose Monitor. The monitors in this category are included in the Agency network but do not apply toward the determination of area NAAQS compliance.

Siting and operation, including collocation requirements, of each monitor meets the requirements of Part 58 Appendices A, B, C, D, and E.

Monitoring Objectives

Monitoring objectives describe the various purposes of the monitors within Illinois' air monitoring network:

- **General Concentration (Background)** - These sites are positioned to measure the general background concentration of pollutants in an area.
- **Highest Concentration (Highest Conc.)-** These sites are located to determine the expected peak concentrations of pollutants in an area.
- **Population** - Located in areas categorized by high population density, these sites are used to determine the typical pollutant concentrations in a specific area.

- **Regional Transport (Transport)** - These sites are located to monitor the level of regional pollution transport from one area to the next.
- **Source-Oriented Source (Source)** - As certain sources contribute to pollution more significantly than others, source-oriented monitors are placed in order to identify the impact of these sources.

Spatial Scale Designations

Sites are not only characterized by type and by the objective, but also according to spatial scale. These scales are used to categorize siting areas and link them with the specific monitoring objectives. Spatial scales as outlined by the USEPA include:

- **Micro** - Concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- **Middle** - Concentrations typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometer.
- **Neighborhood** - Concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range.
- **Urban** - Overall, citywide conditions with dimensions on the order of four to 50 kilometers.
- **Regional** - A rural area of reasonably homogenous geography without large sources, extending from tens to hundreds of kilometers.

Sampling Methodology

Every ambient air monitor can be classified by a specific method number which identifies sample collection and analysis methods. A comprehensive list of these numbers can be found at: https://www.epa.gov/aqs/aqs-code-list.

Federal regulations specify that monitoring methods used for comparison to the NAAQS must be Federal Reference or Equivalent Methods (FRM or FEM). Almost all monitors listed in Illinois' network plan use either FRM or FEM with only a few exceptions. Locations hosting continuous $PM_{2.5}$ samplers solely for AQI purposes are not operated as FRM or FEM.

Quality Assurance

Guidance, policies, and federal regulations establish quality system requirements for data submitted to USEPA. Currently, there are two Primary Quality Assurance Organizations under this network plan – the Illinois EPA and the Cook County Department of Environment and Sustainability (CCDES).

Proposed Network for 2019

Ozone

Illinois is required to operate a minimum of 14 O_3 monitoring sites across the state to meet SLAMS O_3 requirements. NCore requires the operation of one O_3 monitor year-round. Additionally, 19 other O_3 monitors are operated for purposes of supporting the basic monitoring objectives of public data reporting, air quality mapping, compliance, enhanced monitoring, and supporting air pollution research studies. In 2017, the Jerseyville site was moved to a new location because the prior location became unavailable. In 2018, Illinois operated 33 O_3 monitors. Additionally, USEPA operated three ozone monitors as part of the Clean Air Status and Trends Network (CASTNET). The number of ozone monitors will not change in 2019.

Fine Particulate Matter ($PM_{2.5}$)

Illinois is required to operate a minimum of 13 FRM or FEM $PM_{2.5}$ monitors. NCore requires one continuous and one filter based $PM_{2.5}$ monitor. One near-road monitoring site with one FRM or FEM $PM_{2.5}$ monitor is also required. Illinois must operate at least one FRM or FEM $PM_{2.5}$ site monitoring regional background and at least one FRM or FEM $PM_{2.5}$ site to monitor regional transport. Additionally, 18 other $PM_{2.5}$ monitoring sites are operated for purposes of supporting the basic monitoring objectives of public data reporting, air quality mapping, compliance, and supporting air pollution research studies. Depending on funding availability and monitoring site logistics, additional primary designated $PM_{2.5}$ monitors may be switched from manual filter-based FRM monitors to continuous FEM monitors. As of May 2018, monitors that have switched to FEM continuous units include Braidwood, Decatur, Des Plaines, Houston, Jerseyville, Joliet, Knight Prairie, Naperville, Normal, Northbrook, Peoria, Rock Island, Rockford, and Springfield. These are in addition to a new near-road FEM $PM_{2.5}$ sampler in Chicago expected to begin operating in 2018. Between 2018 and 2019, additional conversions of FRM to FEM monitors will occur. Possible targets for FEM monitors include Alton, Aurora, Cary, Champaign, East St. Louis, Elgin, Granite City, Lyons Township, and Wood River. The sites that currently have FEM monitors are listed in Table 10. In 2018, 34 $PM_{2.5}$ sites were operating in Illinois. In 2019, the number of $PM_{2.5}$ sites will not change.

The Jerseyville $PM_{2.5}$ site was moved to a new location in 2017 as noted in the ozone section, above. Additionally, USEPA approved discontinuation of the $PM_{2.5}$ speciation monitor in Naperville for 2018.

Cook County Department of Environment and Sustainability will be relocating $PM_{2.5}$ and speciation samplers from a monitoring trailer adjacent to the Springfield Avenue Pumping Station in Chicago to the roof of the Springfield Avenue Pumping Station. The site identifier (17-031-0057) will remain the same. New site measurements and geographic coordinates will be determined when the relocation takes place in 2018.

In early 2018, Illinois was informed that the building housing $PM_{2.5}$ FRM monitors in Rockford would be demolished. Illinois moved locations to a replacement site located at the Rockford Fire Department Administration Building, 204 South 1st Street. The replacement site was approved

by USEPA in March 2018, and a continuous FEM monitor will be used instead of a filter-based FRM monitor at the replacement site.

Also in early 2018, Illinois will be searching for a new location for the $PM_{2.5}$ monitor in Champaign. The current location has issues with ongoing power supply for the monitor. Illinois will work with USEPA for approval once a new location has been determined, and when that occurs, Illinois plans to install a continuous FEM monitor instead of the filter-based FRM monitor that is currently in operation at the site.

Sulfur Dioxide

Illinois is required to operate six SO_2 monitors. One SO_2 monitor is required at each of the Northbrook and Bondville NCore sites to fulfill NCore requirements. The Illinois State Water Survey operates the Bondville SO_2 monitor. Additionally, five SO_2 monitoring sites are operated in Illinois' network supporting the basic monitoring objectives of public data reporting, air quality mapping, compliance, and supporting air pollution research studies. New SO_2 data requirements established by USEPA require either modeling or monitoring to characterize current air quality in areas with large sources of SO_2. ADM as well as Tate & Lyle are contracting with Environmental Resources Management, Inc. operating a combined three SO_2 monitors under this rule. In 2017, USEPA approved the discontinuation of SO_2 monitoring at the Peoria location. A total of 13 SO_2 monitors were operated in Illinois in 2018. The number of SO_2 monitors will not change in 2019.

Nitrogen Dioxide

Illinois is required to operate two near-road NO_2 monitors. In addition to area-wide monitors, federal regulations require the Regional Administrator to collaborate with each State in determining the need for additional NO_2 monitoring requirements beyond the minimum, with a primary focus on siting monitors in locations to protect susceptible and vulnerable populations. In Illinois, two NO_2 monitoring sites are designated, East St. Louis and ComEd. Illinois operates one NO/NO_y monitor in Northbrook. Additionally, the Illinois State Water Survey operates an NO/NO_y monitor at the rural NCore site in Bondville. In 2017, USEPA approved the discontinuation of the NO_2 monitor operated at the Chicago Transit Authority building. In 2018, Illinois elected to install a special purpose NO_2 monitor in Nilwood to measure background concentrations. The monitoring network consisted of six NO_2 monitoring sites in 2018. By June 2019, Illinois will be required to operate a direct measure NO_2 monitor at the Northbrook NCore site. Illinois plans to procure this monitor in 2018 and install the monitor before the 2019 deadline dependent upon the status of a national purchasing contract. The number of NO_2 monitors will increase to seven with the addition of the new direct measure NO_2 monitor at Northbrook in 2019. Two NO/NO_y monitors will continue to be operated by Illinois EPA and the State Water Survey.

Carbon Monoxide

Illinois must operate one CO monitor in conjunction with one near-road NO_2 monitor. In addition, it must operate one CO monitor at NCore sites, Northbrook and Bondville. (The

Illinois State Water Survey operates the Bondville CO monitor at the rural NCore site.) An additional CO monitoring site is operated in Illinois' network supporting the basic monitoring objectives of public data reporting, air quality mapping, compliance, and supporting air pollution research studies. In 2018, four CO monitors were in operation. In 2019, the number of CO sites will not change.

Particulate Matter (PM_{10})

Illinois must operate three PM_{10} monitors to satisfy MSA requirements. One PM_{10} monitor must also be operated for NCore purposes. Additionally, Illinois operates one $PM_{10-2.5}$ (PM coarse) monitor at the Northbrook location to fulfill NCore requirements. In 2018, the Illinois EPA operated a total of four PM_{10} monitoring sites. In 2019, the Illinois EPA will continue to operate four PM_{10} monitors and one $PM_{10-2.5}$ monitor.

Lead

Illinois is required to operate source-oriented monitors near facilities emitting 0.5 tons/year of lead that also have maximum lead concentrations in ambient air in excess of 50 percent of the NAAQS unless a waiver for that site has been approved. A lead monitoring waiver is currently in place with USEPA for Kincaid Generation Power Plant in Kincaid. The waiver was approved by USEPA in 2017 and must be renewed every five years. Modeling results for this facility demonstrated that it does not have the potential to contribute to a maximum lead concentration greater than 50 percent of the NAAQS.

Illinois is requesting additional waivers of the source-oriented lead monitoring requirement for Keystone Steel & Wire Corporation, Sterling Steel Corporation, and Gunite Corporation because lead emissions from these sites do not contribute to lead concentrations in excess of 50 percent of the NAAQS. All three of these facilities were monitored for lead from 2010 through 2013. As shown in Table 1, the maximum rolling three-month average ground level concentration in ambient air resulting from Keystone Steel & Wire Corporation lead emissions sources was 0.02 ug/m^3. For Sterling Steel Corporation, the maximum rolling three-month average was 0.03 ug/m^3. For Gunite Corporation, the maximum rolling three-month average was 0.06 ug/m^3. Reported lead emissions from these facilities have either decreased or remained steady since monitoring was discontinued, as seen in Table 2. The December 2010 final rule on lead monitoring states: "The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the State…can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent of the NAAQS (based on historical monitoring data, modeling, or other means)" [40 CFR Part 58, Appendix D, Section 4.5]. Because the monitored maximum rolling three-month average concentration for each facility was less than 50 percent of the lead NAAQS with steady or decreasing reported lead emissions, monitoring waivers are appropriate.

Table 1: Historical Maximum 3-Month Average Monitored Lead Concentrations (ug/m^3)

Facility Name	2010	2011	2012	2013
Keystone Steel & Wire	0.02	0.01	0.01	0.01
Sterling Steel	0.02	0.03	0.03	0.02
Gunite	0.06	0.04	0.03	0.05

Table 2: Reported Lead Emissions (tons/year)

	Keystone Steel & Wire	Sterling Steel	Gunite Corporation
2013	2.008	1.409	0.920
2014	1.992	1.358	1.010
2015	1.842	1.275	1.130
2016	1.894	1.343	1.060

In 2017, USEPA approved the discontinuation of lead monitoring at the Decatur Mueller location based on monitoring data. In 2018, Illinois operated three lead monitoring sites. No changes to lead monitoring sites in 2019 are proposed.

Photochemical Assessment Monitoring Implementation Network Plan

State and local monitoring agencies are required to collect and report PAMS measurements at each NCore site located in a CBSA with a population of 1,000,000 or more. In Illinois, PAMS measurements are required at the Northbrook monitoring location. These measurements include:

- Hourly averaged speciated volatile organic compounds (VOCs);
- Three eight-hour average carbonyl samples per day on a one-in-three day schedule, or hourly averaged formaldehyde;
- Hourly averaged ozone;
- Hourly average nitrogen oxide, true nitrogen dioxide, and total reactive nitrogen;
- Hourly average ambient temperature;
- Hourly vector-averaged wind direction;
- Hourly vector-averaged wind speed;
- Hourly average atmospheric pressure;
- Hourly averaged relative humidity;
- Hourly precipitation;
- Hourly averaged mixing-height;
- Hourly averaged solar radiation; and
- Hourly averaged ultraviolet radiation.

At a minimum, monitoring agencies are to collect the required PAMS measurements during the months of June, July, and August. Table 3 lists the PAMS monitors that are either currently in operation or will be in operation before June 1, 2019. It is Illinois' intention to begin purchasing needed equipment in 2018.

Auto Gas Chromatograph Decision

A complete list of the targeted volatile organic compounds is found in Table 3. Illinois will measure hourly speciated VOC measurements with an auto gas chromatograph using the Agilent/Markes CIA Advantage system.

Meteorology Measurements Decision

Illinois currently plans to use the Vaisala CL-51 ceilometer for the determination of mixing height. A MetOne all-in-one meteorological system will be moved from the Zion monitoring station to Northbrook during 2018 and will measure wind direction, wind speed, temperature, atmospheric pressure, and relative humidity. Additional equipment already purchased includes a MetOne rain gauge and a solar radiation sensor. Measurement of temperature, atmospheric pressure, relative humidity, and ultraviolet radiation are currently occurring at Northbrook.

Other Required Measurements

- **Carbonyls –** Carbonyl sampling at a frequency of three 8-hour samples on a one-in-three day basis (approximately 90 samples per PAMS sampling season) using an Eastern

Research Group contracted carbonyl sampler. A complete list of the target carbonyl compounds may be found in Table 4. The TO-11A test method, as used in the National Air Toxics Trend program, will be used.

- **Nitrogen Oxides –** Illinois will monitor for NO and NO_y (total oxides of nitrogen) in addition to true NO_2. The true NO_2 is required to be measured with a direct reading NO_2 analyzer, cavity attenuated phase shift (CAPS) spectroscopy, or photolytic-converter NO_x analyzer. Illinois has elected to use the CAPS T500U Teledyne monitor for the true NO_2 measurement. NO and NO_y are already being measured using the 42i-Y ThermoElectron monitor.

Table 3: PAMS Monitors

Parameter	Monitor Type	Model	Operation Status	Sampling Schedule
Speciated VOC	Auto Gas Chromatography	CIA Advantage	Yes, new equipment to be purchased	Hourly, seasonal
Carbonyl	ERG	ERG(C): AT-11	Yes, new equipment to be rented from ERG	Three 8-hour samples every 3rd day, seasonal
Ozone	Teledyne	T400	Yes	Hourly, year-round
Nitrogen oxide (NO)	Thermo	42i	Yes	Hourly, year-round
True nitrogen dioxide (NO_2)	Teledyne	T500U	No, new equipment to be purchased	Hourly, seasonal
Total reactive nitrogen (NOy)	Thermo	42i-y	Yes	Hourly, year-round
Ambient temperature	Met One	All-In-One 2	Yes, replace with new model.	Hourly, year-round
Wind direction	MetOne Sonimometer	All-In-One 2	No, has been purchased. Move from Zion, IL	Hourly, year-round
Wind speed	MetOne Sonimometer	All-In-One 2	No, has been purchased. Move from Zion, IL	Hourly, year-round
Atmospheric pressure	MetOne	All-In-One 2	Yes, replace with new model.	Hourly, year-round
Relative humidity	MetOne	All-In-One 2	Yes, replace with new model.	Hourly, year-round
Precipitation	MetOne	375	No, has been purchased. Move from Zion, IL	Hourly, seasonal
Mixing-height	Vaisala Ceilometer	CL-51	No, new equipment to be purchased	Hourly, seasonal
Solar radiation	MetOne	10718	No, has been purchased. Move from Zion, IL	Hourly, seasonal
Ultraviolet radiation	Climatronics Radiation Sensor	100UVR	Yes	Hourly, seasonal

Table 4: PAMS Target Compound List

Priority Compounds				Optional Compounds			
1	1,2,3-Trimethylbenzene	20	O-Ethyltoluene	1	1,3 Butadiene[b]	20	Cis-2-Pentene
2	1,2,4-Trimethylbenzene	21	O-Xylene[b]	2	1,2,3-Trimethylbenzene	21	Carbon Tetrachloride[b]
3	1-Butene	22	P-Ethyltoluene	3	1-Pentene	22	Cyclohexane
4	2,2,4-Trimethylpentane[b]	23	Propane	4	2,2-Dimethylbutane	23	Cyclopentane
5	Acetaldehyde[a]	24	Propylene	5	2,3,4-Trimethylpentane	24	Ethanol
6	Benzene[b]	25	Styrene[b]	6	2,3-Dimethylbutane	25	Isopropylbenzene[b]
7	Cis-2-Butene	26	Toluene[b]	7	2,3-Dimethylpentane	26	M-Diethylbenzene
8	Ethane	27	Trans-2-Butene	8	2,4-Dimethylpentane	27	Methylcyclohexane
9	Ethylbenzene[b]			9	2-Methylheptane	28	Methylcyclopentane
10	Ethylene			10	2-Methylhexane	29	N-Decane
11	Formaldehyde[a,b]			11	2-Methylpentane	30	N-Heptane
12	Isobutane			12	3-Methylheptane	31	N-Nonane
13	Isopentane			13	3-Methylhexane	32	N-Octane
14	Isoprene			14	3-Methylpentane	33	N-Propylbenzene
15	M/P Xylene[b]			15	Acetone	34	N-Undecane
16	M-Ethyltoluene			16	Acetylene	35	P-Diethylbenzene
17	N-Butane			17	Alpha Pinene	36	Tetrachloroethylene[b]
18	N-Hexane[b]			18	Benzaldehyde	37	Trans-2-Pentene
19	N-Pentane			19	Beta Pinene		

Source: Revisions to the Photochemical Assessment Monitoring Stations Compound Target List. USEPA, October 2, 2017.

[a] Carbonyl compounds measured using Method TO-11a

[b] HAP (Hazardous Air Pollutant) Compounds

Enhanced Monitoring Plan

Rulemaking for the final 2015 ozone National Ambient Air Quality Standard included several revisions to PAMS requirements. The first revision was to require PAMS monitoring at NCore sites in CBSAs with a population of one million or more, regardless of attainment status. For Illinois, this requirement affects the amount and type of monitoring at the Northbrook NCore site in Chicago. Missouri is responsible for PAMS monitoring in the St. Louis CBSA. The second revision requires that States with Moderate and above 8-hour ozone nonattainment areas develop and implement an Enhanced Monitoring Plan (EMP) detailing enhanced ozone and ozone precursor monitoring activities to be performed. Since the Chicago CBSA is currently classified as a Moderate ozone nonattainment area, an EMP is required.

These EMPs are intended to provide monitoring organizations with the flexibility to implement additional monitoring to suit the needs of their area. Guidance for elements of an EMP include additional ozone sites; additional nitrogen dioxide, nitrogen oxide, and/or nitric oxide sites; additional volatile organic compound measurements; and enhanced upper air measurements.

Illinois has determined that the EMP measurement options will include (but are not limited to) the continuation of additional ozone monitoring and nitrogen oxide monitoring in the Chicago CBSA, which are well above federally required minimum amounts. As seen in Table 5, the Chicago CBSA currently operates 21 ozone monitors, seven times the minimum required amount. The additional monitors operated in the Chicago CBSA are used to support the basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding of ozone-related atmospheric processes. For nitrogen oxide monitoring, Table 6 shows the current and upcoming locations of monitoring sites. Three monitors are required by federal rules with additional monitors required by the Regional Administrator. The Chicago CBSA operates eight nitrogen oxide monitors, including a new direct measure nitrogen dioxide monitor at Northbrook in 2019. Illinois is also planning to continue year-round carbonyl and volatile organic compound monitoring at the Schiller Park site near O'Hare International Airport on a one-in-six day schedule. Table 7 shows the current toxic monitoring network in the Chicago CBSA as well as future enhanced toxic monitoring at Northbrook in 2019. Lastly, as noted in the PAMS network plan, Illinois will measure additional meteorological parameters at the Northbrook site, including a ceilometer in 2019.

Table 5: Chicago CBSA Ozone Monitoring

Monitor Count	State	County	Site	AQS ID	Scale
1	Illinois	Cook	Alsip	17-031-0001	Urban
2	Illinois	Cook	Chicago SWFP	17-031-0032	Neighborhood
3	Illinois	Cook	Chicago Lawndale	17-031-0076	Urban
4	Illinois	Cook	Chicago Taft	17-031-1003	Urban
5	Illinois	Cook	Lemont	17-031-1601	Urban
6	Illinois	Cook	Schiller Park	17-031-3103	Neighborhood
7	Illinois	Cook	Cicero	17-031-4002	Neighborhood
8	Illinois	Cook	Des Plaines	17-031-4007	Urban
9	Illinois	Cook	Northbrook	17-031-4201	Urban
10	Illinois	Cook	Evanston	17-031-7002	Neighborhood
11	Illinois	DuPage	Lisle	17-043-6001	Urban
12	Illinois	Kane	Elgin	17-089-0005	Urban
13	Illinois	Lake	Zion	17-097-1007	Urban
14	Illinois	McHenry	Cary	17-111-0001	Urban
15	Illinois	Will	Braidwood	17-197-1011	Regional
16	Indiana	Lake	Gary	18-089-0022	Neighborhood
17	Indiana	Lake	Hammond	18-089-2008	Neighborhood
18	Indiana	Porter	Ogden Dunes	18-127-0024	Urban
19	Indiana	Porter	Valparaiso	18-127-0026	Urban
20	Wisconsin	Kenosha	Chiwaukee Prairie	55-059-0019	Neighborhood
21	Wisconsin	Kenosha	Kenosha	55-059-0025	Neighborhood

Table 6: Chicago CBSA Nitrogen Oxides Monitoring

Monitor Count	State	County	Site	AQS ID	Scale	Monitor
1	Illinois	Cook	Chicago Lawndale	17-031-0076	Neighborhood	NO-NO_2-NOx
2	Illinois	Cook	Schiller Park	17-031-3103	Middle	NO-NO_2-NOx
3	Illinois	Cook	Cicero	17-031-4002	Neighborhood	NO-NO_2-NOx
4	Illinois	Cook	Northbrook	17-031-4201	Urban **(new in 2019)**	NO_2
5	Illinois	Cook	Northbrook	17-031-4201	Urban	NO-NO_y
6	Illinois	Cook	Kingery	17-031-0118	Near-road **(new in 2018)**	NO_2
7	Illinois	Cook	Kennedy	17-031-0218	Near-road **(new in 2018)**	NO_2
8	Indiana	Lake	Gary	18-089-0022	Neighborhood	NO-NO_2-NOx

Table 7: Chicago CBSA Toxics Monitoring

Monitor Count	State	County	Site	AQS ID	Pollutant Class
1	Illinois	Cook	Northbrook	17-031-4201	Carbonyls
2	Illinois	Cook	Northbrook	17-031-4201	Enhanced Carbonyls **(new in 2019)**
3	Illinois	Cook	Northbrook	17-031-4201	Volatile Organic Compounds
4	Illinois	Cook	Northbrook	17-031-4201	Semi-Volatile Organic Compounds
5	Illinois	Cook	Northbrook	17-031-4201	Enhanced Speciated Volatile Organic Compounds **(new in 2019)**
6	Illinois	Cook	Northbrook	17-031-4201	PM10 metals
7	Illinois	Cook	Schiller Park	17-031-3103	Carbonyls
8	Illinois	Cook	Schiller Park	17-031-3103	Volatile Organic Compounds
9	Indiana	Lake	Gary	18-089-0022	Volatile Organic Compounds
10	Indiana	Lake	Hammond	18-089-2008	Volatile Organic Compounds
11	Indiana	Porter	Ogden Dunes	18-127-0024	Volatile Organic Compounds

Table 8: Illinois Monitoring Network by Criteria Pollutant

AQS ID	County	City	Address	Site Description	Owner	CO	NO_2	NOy	SO_2	O_3	PM_{10} / Coarse	$PM_{2.5}$	Pb
17-001-0007	Adams	Quincy	1301 S. 48th St	John Wood Community College	IEPA					X			
17-019-0006	Champaign	Champaign	904 N. Walnut	Ameren Substation Platform	IEPA							X	
17-019-0007	Champaign	Thomasboro	North Thomas St.	Resident's Building	IEPA					X			
17-019-1001	Champaign	Bondville	Twp. Rd. 500 E.	State Water Survey Climate Station	SWS	X		X	X				
17-019-1001	Champaign	Bondville	Twp. Rd. 500 E.	State Water Survey Climate Station	IEPA							X	
17-019-1001	Champaign	Bondville	Twp. Rd. 500 E.	CASTNET Station	USEPA					X			
17-031-0001	Cook	Alsip	4500 W. 123rd St.	Village Garage	CCDES					X		X	
17-031-0022	Cook	Chicago	3535 E. 114th St	Washington High School	CCDES						X	X	X
17-031-0032	Cook	Chicago	3300 E. Cheltenham Pl.	South Water Filtration Plant	CCDES					X			
17-031-0052	Cook	Chicago	4850 Wilson Ave.	Mayfair Pump Station	CCDES							X	
17-031-0057	Cook	Chicago	1745 N. Springfield Ave.	Springfield Pump Station	CCDES							X	
17-031-0076	Cook	Chicago	7801 Lawndale	Com Ed Maintenance Bldg. Trailer	CCDES		X		X	X		X	
17-031-0110	Cook	Chicago	1241 19th St.	Perez Elementary School	CCDES								X
17-031-1003	Cook	Chicago	6545 W. Hurlbut St.	Taft High School	CCDES					X			
17-031-0118	Cook	Lansing	Kingery Expy & Torrence Ave.	Kingery Near-road #1	IEPA	X	X					X	
17-031-0218	Cook	Chicago	Kennedy Expy & W. Webster Ave.	Kennedy Near-road #2	IEPA		X						
17-031-1016	Cook	Lyons Township	50th St. & Glencoe	Village Hall	IEPA						X	X	
17-031-1601	Cook	Lemont	729 Houston	Lemont Trailer	CCDES				X	X			

AQS ID	County	City	Address	Site Description	Owner	CO	NO_2	NOy	SO_2	O_3	PM_{10} / Coarse	$PM_{2.5}$	Pb
17-031-3103	Cook	Schiller Park	4743 Mannheim Rd.	Schiller Park Trailer	IEPA		X			X		X	
17-031-3301	Cook	Summit	60th St. & 74th Ave.	Graves Elementary School	CCDES							X	
17-031-4002	Cook	Cicero	1820 S. 51st Ave.	Cicero Trailer	CCDES		X			X			
17-031-4007	Cook	Des Plaines	9511 W. Harrison St.	Regional Office Bldg.	IEPA					X		X	
17-031-4201	Cook	Northbrook	750 Dundee Rd.	Northbrook Water Plant	IEPA	X	X	X	X	X	Coarse	X	
17-031-6005	Cook	Cicero	13th St. & 50th Ave.	Liberty School	CCDES							X	
17-031-7002	Cook	Evanston	531 E. Lincoln	Evanston Water Plant	IEPA					X			
17-043-4002	DuPage	Naperville	400 S. Eagle St.	City Hall	IEPA							X	
17-043-6001	DuPage	Lisle	Route 53	Morton Arboretum	IEPA					X			
17-049-1001	Effingham	Effingham	10421 N. US Hwy. 45	Central Grade School	IEPA					X			
17-065-0002	Hamilton	Knight Prairie Twp	Route 14	Knight Prairie Trailer	IEPA					X		X	
17-083-0117	Jersey	Jerseyville	21965 Maple Summit Rd.	Jerseyville Trailer	IEPA					X		X	
17-085-9991	Jo Daviess	Stockton	10952 E. Parker Rd.	CASTNET Station	USEPA					X			
17-089-0003	Kane	Elgin	258 Lovell St.	McKinley School	IEPA							X	
17-089-0005	Kane	Elgin	665 Dundee Rd.	Larsen Junior High School	IEPA					X			
17-089-0007	Kane	Aurora	1240 N. Highland	Health Department	IEPA							X	
17-097-1007	Lake	Zion	Illinois Beach State Park	Zion Trailer	IEPA					X			
17-099-0007	La Salle	Oglesby	308 Portland Ave.	Oglesby Trailer	IEPA				X				
17-111-0001	McHenry	Cary	First St. & Three Oaks Rd.	Cary Grove High School	IEPA					X		X	

AQS ID	County	City	Address	Site Description	Owner	CO	NO_2	NOy	SO_2	O_3	PM_{10} / Coarse	$PM_{2.5}$	Pb
17-113-2003	McLean	Normal	Main & Gregory	Normal-ISU Physical Plant Trailer	IEPA					X		X	
17-115-0013	Macon	Decatur	2200 N. 22nd St.	Decatur Trailer	IEPA				X	X		X	
17-115-0117	Macon	Decatur	Brush College & Reas Bridge Rds.	Archer Daniel Midlands	ERM Inc.				X				
17-115-0217	Macon	Decatur	Folk & E. Marietta Sts.	Tate & Lyle Northwest	ERM Inc.				X				
17-115-0317	Macon	Decatur	El Dorado St.	Tate & Lyle Southeast	ERM Inc.				X				
17-117-0002	Macoupin	Nilwood	Heaton & Dubois	Nilwood Trailer	IEPA		X		X	X			
17-119-0008	Madison	Alton	409 Main St	Clara Barton School	IEPA					X			
17-119-0010	Madison	Granite City	15th & Madison	Air Products	IEPA								X
17-119-0024	Madison	Granite City	2100 Madison	Gateway Medical Center	IEPA							X	
17-119-1007	Madison	Granite City	23rd. & Madison	Fire Station # 1	IEPA						X	X	
17-119-1009	Madison	Maryville	200 W. Division	Maryville Trailer.	IEPA					X			
17-119-2009	Madison	Alton	1700 Annex. St.	SIU Dental Clinic	IEPA							X	
17-119-3007	Madison	Wood River	54 N. Walcott	Wood River Water Treatment Plant	IEPA				X	X		X	
17-119-9991	Madison	Highland	5403 State Rd. 160	CASTNET Station	USEPA					X			
17-143-0024	Peoria	Peoria	Hurlburt & MacArthur	Fire Station #8	IEPA					X			
17-143-0037	Peoria	Peoria	613 N.E. Jefferson	City Office Bldg.	IEPA							X	
17-143-1001	Peoria	Peoria Heights	508 E. Glen Ave.	Peoria Heights High School	IEPA					X			
17-157-0001	Randolph	Houston	Hickory Grove & Fallview	Houston Trailer	IEPA					X		X	
17-161-3002	Rock Island	Rock Island	32 Rodman Ave.	Rock Island Arsenal	IEPA					X		X	

AQS ID	County	City	Address	Site Description	Owner	CO	NO_2	NOy	SO_2	O_3	PM_{10} / Coarse	$PM_{2.5}$	Pb
17-163-0010	St. Clair	East St. Louis	13th & Tudor	ESTL Trailer	IEPA	X	X		X	X		X	
17-167-0012	Sangamon	Springfield	State Fair Grounds	Agriculture Bldg.	IEPA							X	
17-167-0014	Sangamon	Springfield	Illinois Building	State Fairgrounds Shelter	IEPA					X			
17-179-0004	Tazewell	Pekin	272 Derby	Pekin Fire Station #3	IEPA				X				
17-197-1002	Will	Joliet	Midland & Campbell Sts.	Pershing Elementary School	IEPA							X	
17-197-1011	Will	Braidwood	36400 S. Essex Rd.	Com Ed Training Ctr. Trailer	IEPA					X		X	
17-201-0013	Winnebago	Rockford	401 Division St.	Winnebago Co.Health Department	IEPA							X	
17-201-0118	Winnebago	Rockford	204 South 1st St.	Fire Department Admin. Bldg.	IEPA							X	
17-201-2001	Winnebago	Loves Park	1405 Maple Ave.	Maple Elementary School	IEPA					X			
					IEPA	3	6	1	7	27	3	27	1
					CCDES	0	2	0	2	6	1	7	2
					SWS	1	0	1	1	0	0	0	0
					ERM Inc.	0	0	0	3	0	0	0	0
					USEPA	0	0	0	0	3	0	0	0
					Total	4	8	2	13	36	4	34	3

Red indicates monitor/site proposed for removal or has been removed, Green indicates monitor/site proposed for installation or has been installed.

Table 9: Ozone Sites

AQS ID	Site	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Station Type	Monitor Type	Sampling Schedule
17-001-0007	Quincy	+39.91540937 -91.33586832	Quincy, IL-MO	Population	N/A	Urban	SLAMS	49i	Hourly/S
17-019-0007	Thomasboro	+40.244913 -88.188519	Champaign-Urbana, IL	Population	N/A	Urban	SLAMS	T400	Hourly/Y
17-019-1001	Bondville	+40.052780 -88.372510	Champaign-Urbana, IL	Highest Conc.	N/A	Regional	NCORE	49i	Hourly/Y
17-031-0001	Alsip	+41.6709919 -87.7324569	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T400	Hourly/Y
17-031-0032	South Water Filtration Plant	+41.75583241 -87.54534967	Chicago-Naperville-Michigan City, IL-IN-WI	Highest Conc.	Population	Neighborhood	SLAMS	T400	Hourly/S
17-031-0076	Com Ed.	+41.75139998 -87.71348815	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T400	Hourly/Y
17-031-1003	Taft High School	+41.98433233 -87.7920017	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T400	Hourly/S
17-031-1601	Lemont	+41.66812034 -87.99056969	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T400	Hourly/Y
17-031-3103	Schiller Park	+41.96519348 -87.87626473	Chicago-Naperville-Michigan City, IL-IN-WI	Population	Source	Neighborhood	PAMS/SLAMS	T400	Hourly/Y
17-031-4002	Cicero	+41.85524313 -87.7524697	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	SLAMS	T400	Hourly/Y
17-031-4007	Des Plaines	+42.06028469 -87.86322543	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T400	Hourly/S
17-031-4201	Northbrook	+42.13999619 -87.79922692	Chicago-Naperville-Michigan City, IL-IN-WI	Population	NA	Urban	PAMS/NCORE	T400	Hourly/Y
17-031-7002	Evanston	+42.062053 -87.675254	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	SLAMS	T400	Hourly/S
17-043-6001	Lisle	+41.81304939 -88.0728269	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T400	Hourly/S
17-049-1001	Effingham	+39.06715932 -88.54893401	Effingham, IL	Population	N/A	Regional	SLAMS	T400	Hourly/S
17-065-0002	Knight Prairie	+38.08215516 -88.6249434	Mt Vernon, IL	Background	N/A	Regional	SLAMS	T400	Hourly/S
17-083-0117	Jerseyville	+39.101439 -90.344494	St Louis, IL-MO	Transport	Population	Regional	SLAMS	T400	Hourly/S
17-085-9991	Stockton	+42.2869 -89.9997	Stockton, IL	Highest Conc.	N/A	Regional	SLAMS	49i	Hourly/Y
17-089-0005	Elgin	+42.04914776 -88.27302929	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T400	Hourly/Y
17-097-1007	Zion	+42.4675733 -87.81004705	Chicago-Naperville-Michigan City, IL-IN-WI	Highest Conc.	Transport	Urban	PAMS/SLAMS	T400	Hourly/Y
17-111-0001	Cary	+42.22144166 -88.24220734	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T400	Hourly/Y

AQS ID	Site	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Station Type	Monitor Type	Sampling Schedule
17-113-2003	Normal	+40.51873537 -88.99689571	Bloomington-Normal, IL	Population	Highest Conc.	Urban	SLAMS	T400	Hourly/Y
17-115-0013	Decatur	+39.866933 -88.925452	Decatur, IL	Population	Highest Conc.	Urban	SLAMS	49i	Hourly/Y
17-117-0002	Nilwood	+39.39607533 -89.80973892	St Louis, IL-MO	Transport	Population	Regional	SLAMS	49i	Hourly/S
17-119-0008	Alton	+38.89018605 -90.14803114	St Louis, IL-MO	Highest Conc.	Population	Urban	SLAMS	49i	Hourly/S
17-119-1009	Maryville	+38.72657262 -89.95996251	St Louis, IL-MO	Population	N/A	Urban	SLAMS	T400	Hourly/S
17-119-3007	Wood River	+38.86066947 -90.10585111	St Louis, IL-MO	Population	N/A	Urban	SLAMS	T400	Hourly/Y
17-119-9991	Highland	+38.8690 -89.6228	St Louis, IL-MO	Highest Conc.	N/A	Regional	SLAMS	49i	Hourly/Y
17-143-0024	Peoria	+40.68742038 -89.60694277	Peoria, IL	Population	N/A	Neighborhood	SLAMS	T400	Hourly/Y
17-143-1001	Peoria Heights	+40.74550393 -89.58586902	Peoria, IL	Highest Conc.	Population	Urban	SLAMS	T400	Hourly/S
17-157-0001	Houston	+38.17627761 -89.78845862	N/A	Background	N/A	Regional	SLAMS	T400	Hourly/S
17-161-3002	Rock Island	+41.51472697 -90.51735026	Davenport-Moline-Rock Island, IA-IL	Population	N/A	Neighborhood	SLAMS	T400	Hourly/Y
17-163-0010	East St. Louis	+38.61203448 -90.16047663	St Louis, IL-MO	Population	N/A	Neighborhood	SLAMS	T400	Hourly/Y
17-167-0014	Springfield	+39.831522 -89.640926	Springfield, IL	Population	Highest Conc.	Urban	SLAMS	49i	Hourly/Y
17-197-1011	Braidwood	+41.22153707 -88.19096718	Chicago-Naperville-Michigan City, IL-IN-WI	Background	N/A	Regional	PAMS/SLAMS	T400	Hourly/Y
17-201-2001	Loves Park	+42.33498222 -89.0377748	Rockford, IL	Highest Conc.	Population	Urban	SLAMS	T400	Hourly/Y

T400 – Teledyne (method 087); 49i – ThermoScientific (method 047)

S = Seasonal – March through October ozone monitoring season

Y = Year-round monitoring

Red indicates monitor proposed for removal

Green indicates monitor proposed for installation

Figure 1a: Ozone Sites – Illinois

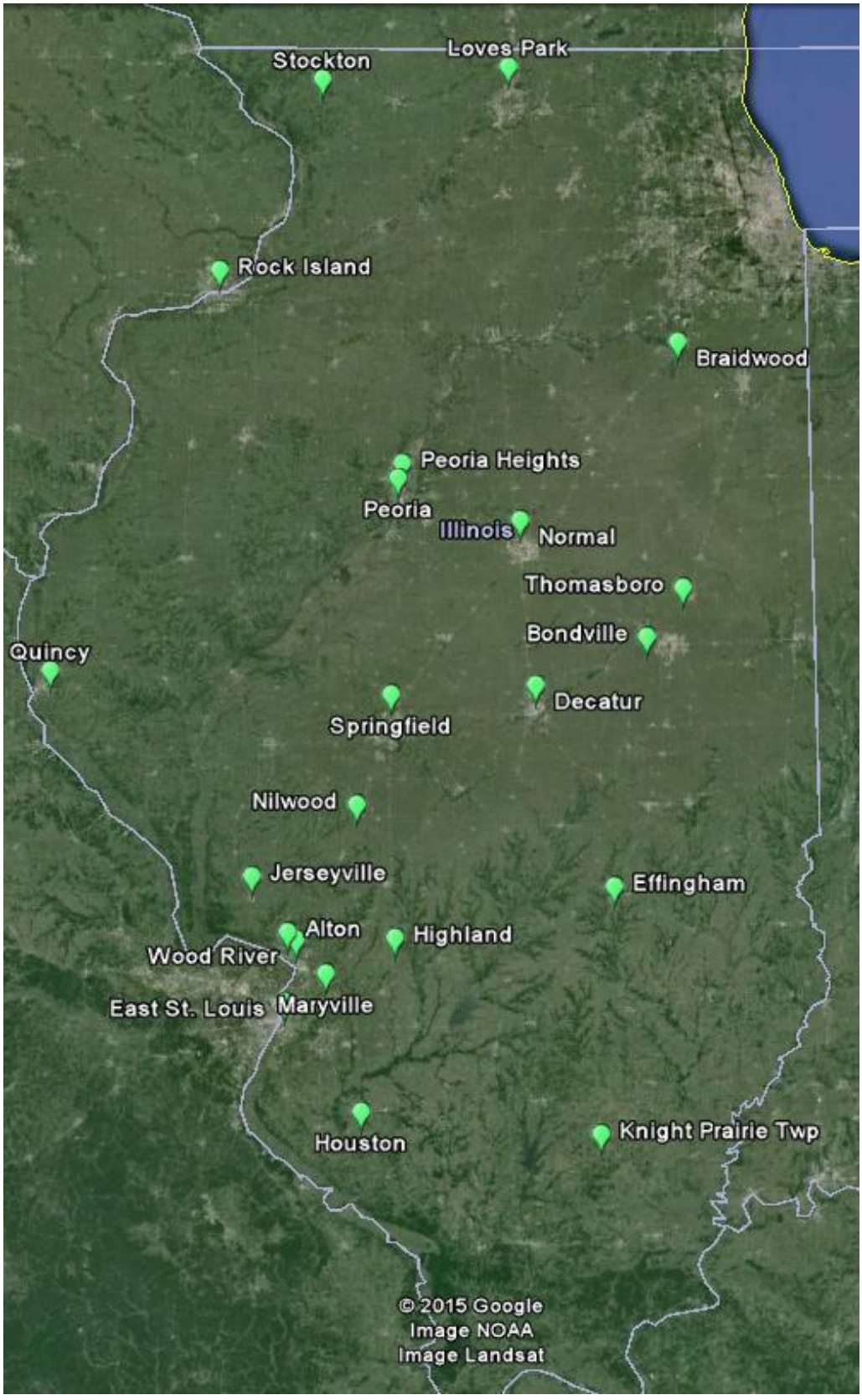


Figure 1b: Ozone Sites – Illinois Chicago Area

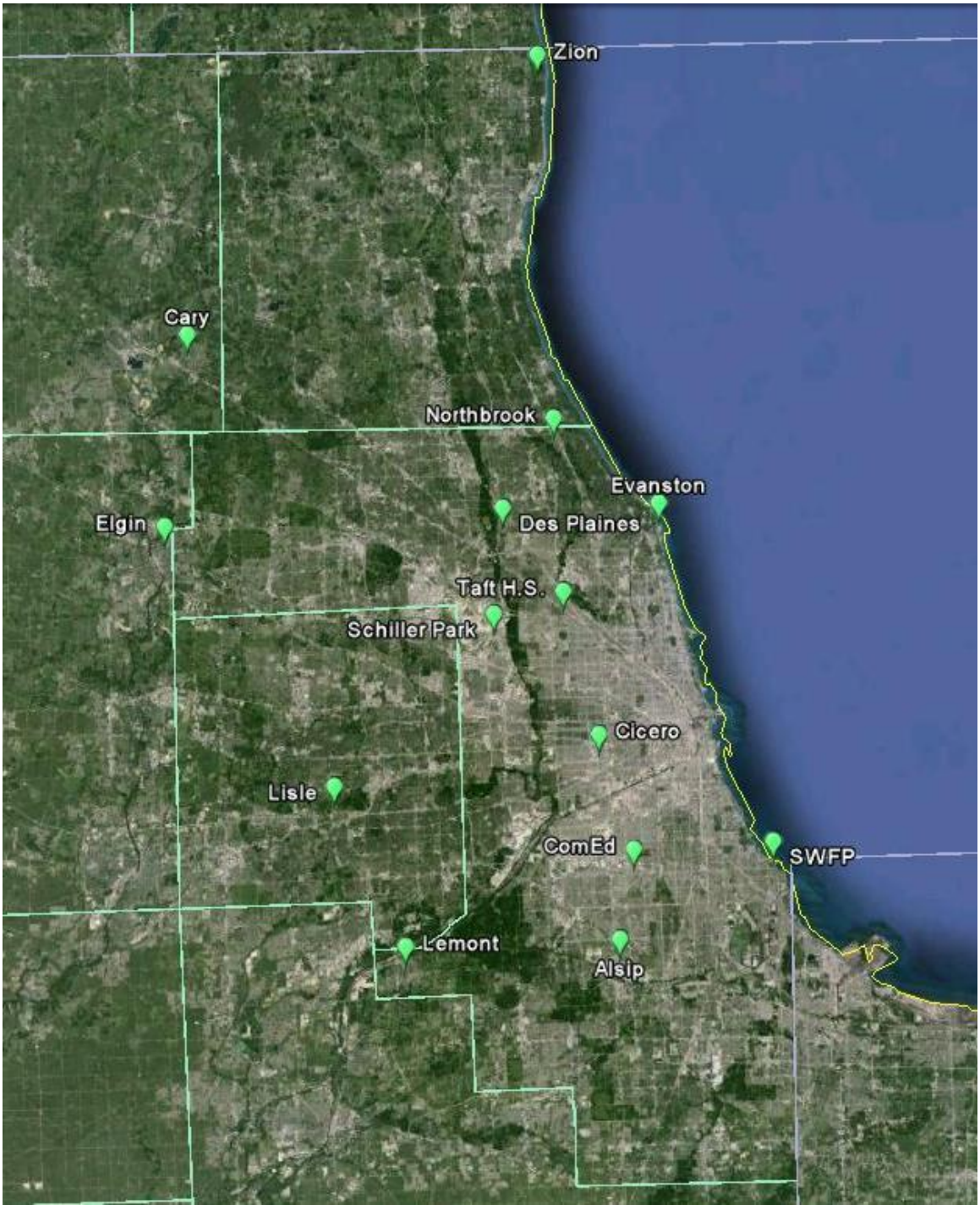


Table 10: $PM_{2.5}$ Sites

AQS ID	Site	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Standard	Station Type	Monitor Type (Primary)	Sampling Schedule	Collocated	Chemical Speciation	Frequency
17-019-0006	Champaign	+40.123883 -88.240550	Champaign-Urbana, IL	Population	N/A	Neighborhood	Annual/24	SLAMS	BGI	1/3			
17-019-1001	Bondville	+40.052780 -88.372510	Champaign-Urbana, IL	Transport	Population	Regional	Annual/24	RURAL NCORE	BGI	1/3, Hourly	FEM		
17-031-0001	Alsip	+41.6709919 -87.7324569	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	Annual/24	SLAMS, SPM	AS, BAM	1/6, Hourly			
17-031-0022	Washington High School	+41.68716544 -87.53931548	Chicago-Naperville-Michigan City, IL-IN-WI	Population	Source	Neighborhood	Annual/24	SLAMS	AS	1/3	AS (1/12 day)		
17-031-0052	Mayfair Pump Station	+41.96548483 -87.74992806	Chicago-Naperville-Michigan City, IL-IN-WI	Highest Conc.	Population	Neighborhood	Annual/24	SLAMS	AS	1/3			

AQS ID	Site	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Standard	Station Type	Monitor Type (Primary)	Sampling Schedule	Collocated	Chemical Speciation	Frequency
17-031-0057	Springfield Pump Station	+41.912739 -87.722673	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	Annual/24	SLAMS, SPM	AS, BAM	1/6, Hourly		YES	1/6
17-031-0076	Com Ed	+41.75139998 -87.71348815	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	Annual/24	SLAMS, SPM	AS, BAM	1/6, Hourly		YES	1/3
17-031-1016	Lyons Township	+41.801180 -87.832349	Chicago-Naperville-Michigan City, IL-IN-WI	Source	Population	Middle	24	SLAMS	THRM	1/3	THRM (1/12 day)		
17-031-3103	Schiller Park	+41.96519348 -87.87626473	Chicago-Naperville-Michigan City, IL-IN-WI	Highest Conc.	Population	Middle	Annual/24	SLAMS	BGI	1/3			
17-031-3301	Summit	+41.78276601 -87.80537679	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	Annual/24	SLAMS	AS	1/3			
17-031-4007	Des Plaines	+42.06028469 -87.86322543	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	Annual/24	SLAMS	FEM	Hourly			

AQS ID	Site	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Standard	Station Type	Monitor Type (Primary)	Sampling Schedule	Collocated	Chemical Speciation	Frequency
17-031-4201	Northbrook	+42.13999619 -87.79922692	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	Annual/24	URBAN NCORE	FEM	1/3, Hourly	THRM (1/12 day)	YES	1/3
17-031-6005	Cicero	+41.86442642 -87.74890238	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	Annual/24	SLAMS	AS, BAM	1/6, Hourly			
17-031-0118	Lansing Kingery near-road #1	+41.578603 -87.557392	Kingery high traffic near-road segment	Highest Conc.	N/A	Micro	Annual/24	SLAMS	FEM	Hourly			
17-043-4002	Naperville	+41.77107094 -88.15253365	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	Annual/24	SLAMS	FEM	Hourly			
17-065-0002	Knight Prairie	+38.08215516 -88.6249434	Mt Vernon, IL	Background	Population	Regional	Annual/24	SLAMS	FEM	Hourly			
17-083-0117	Jerseyville	+39.101439 -90.344494	St Louis, IL-MO	Population	Transport	Urban	Annual/24	SLAMS	FEM	Hourly			
17-089-0003	Elgin	+42.050403 -88.28001471	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	Annual/24	SLAMS	A1	1/3			
17-089-0007	Aurora	+41.78471651 -88.32937361	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	Annual/24	SLAMS	A1	1/3	A1 (1/12 day)		
17-111-0001	Cary	+42.22144166 -88.24220734	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	Annual/24	SLAMS, SPM	A1	1/6			

AQS ID	Site	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Standard	Station Type	Monitor Type (Primary)	Sampling Schedule	Collocated	Chemical Speciation	Frequency
17-113-2003	Normal	+40.51873537 -88.99689571	Bloomington-Normal, IL	Population	N/A	Urban	Annual/24	SLAMS	FEM	Hourly	FEM (Daily)		
17-115-0013	Decatur	+39.86683389 -88.92559445	Decatur, IL	Population	Source	Neighborhood	Annual/24	SLAMS	FEM	Hourly			
17-119-0024	Granite City Gateway	+38.7006315 -90.14476267	St Louis, IL-MO	Source	Population	Middle	24	SLAMS, SPM	BGI			YES	1/6
17-119-1007	Granite City	+38.70453426 -90.13967484	St Louis, IL-MO	Highest Conc.	Population	Neighborhood	Annual/24	SLAMS, SPM	BGI, BAM	1/6, Hourly	BGI (1/12 day)		
17-119-2009	Alton	+38.90308534 -90.14316803	St Louis, IL-MO	Population	N/A	Neighborhood	Annual/24	SLAMS	BGI	1/3			
17-119-3007	Wood River	+38.86066947 -90.10585111	St Louis, IL-MO	Population	N/A	Neighborhood	Annual/24	SLAMS	THRM	1/3			
17-143-0037	Peoria	+40.697007 -89.58473722	Peoria, IL	Population	N/A	Urban	Annual/24	SLAMS	FEM	Hourly			
17-157-0001	Houston	+38.17627761 -89.78845862	N/A	Background	Population	Regional	Annual/24	SLAMS	FEM	Hourly			
17-161-3002	Rock Island	+41.51472697 -90.51735026	Davenport-Moline-Rock Island, IA-IL	Population	N/A	Urban	Annual/24	SLAMS	FEM	Hourly			

AQS ID	Site	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Standard	Station Type	Monitor Type (Primary)	Sampling Schedule	Collocated	Chemical Speciation	Frequency
17-163-0010	East St. Louis	+38.61203448 -90.16047663	St Louis, IL-MO	Population	Source	Neighborhood	Annual/24	SLAMS, SPM	BGI, BAM	1/6, Hourly			
17-167-0012	Springfield	+39.83192087 -89.64416359	Springfield, IL	Population	N/A	Urban	Annual/24	SLAMS	FEM	Hourly			
17-197-1002	Joliet	+41.52688509 -88.11647381	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	Annual/24	SLAMS	FEM	Hourly			
17-197-1011	Braidwood	+41.22153707 -88.19096718	Chicago-Naperville-Michigan City, IL-IN-WI	Background	Population	Regional	Annual/24	SLAMS	FEM	Hourly			
17-201-0118	Rockford	+42.2670002 -89.089170	Rockford, IL	Population	N/A	Urban	Annual/24	SLAMS	FEM	Hourly			

AS – Anderson Sequential (method 155); A1 – Anderson Single Event (method 153); BGI – BGI Instruments (method 142); THRM – ThermoScientific (method 143); FEM – Federal Equivalent Method Thermo Continuous (method 183)

Sites that are part of the Chemical Speciation Network are listed in the Chemical Speciation column.

Red indicates monitor proposed for removal
Green indicates monitor proposed for installation

Figure 2a: $PM_{2.5}$ Sites – Illinois

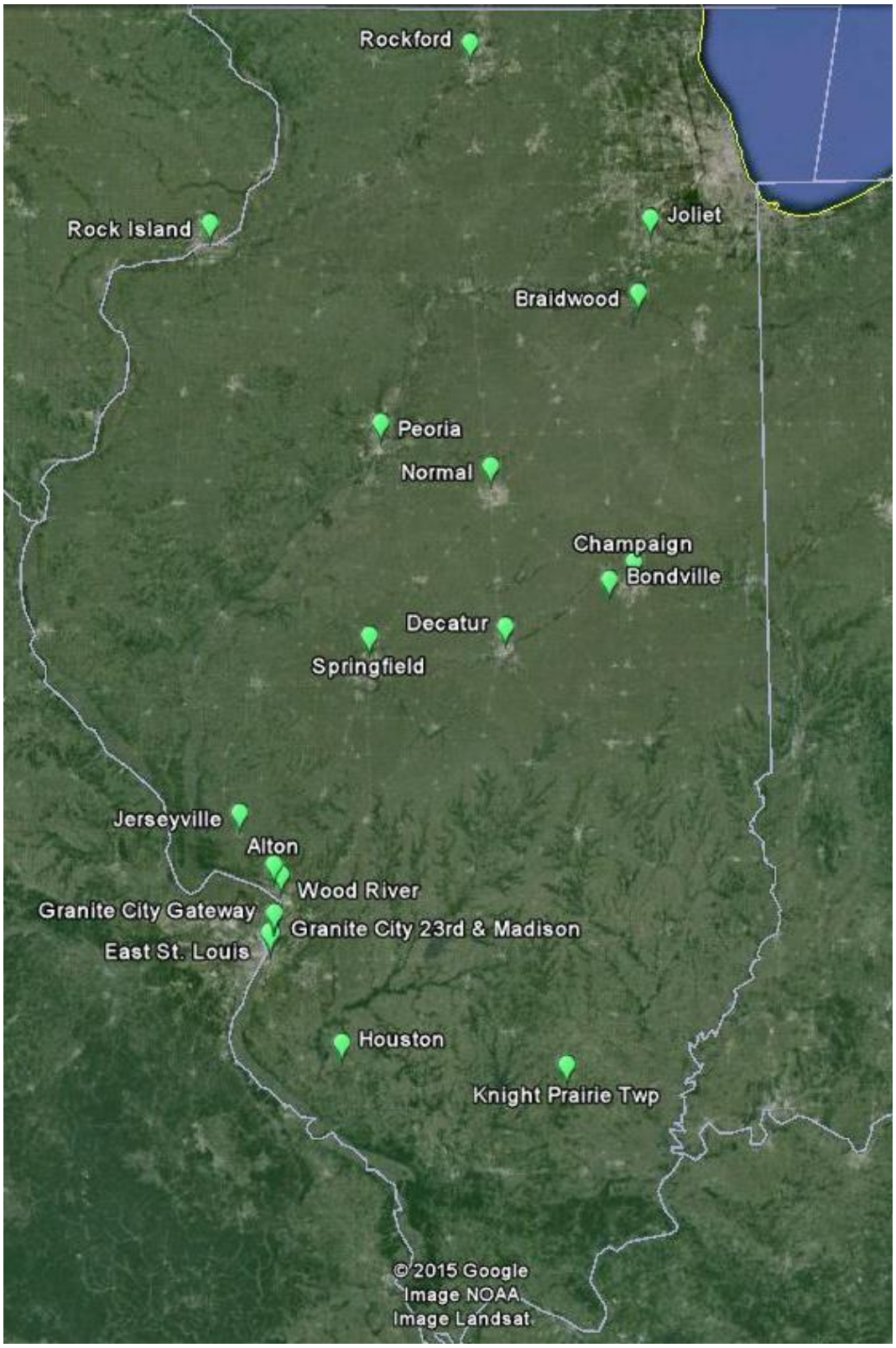


Figure 2b: $PM_{2.5}$ Sites – Illinois Chicago Area

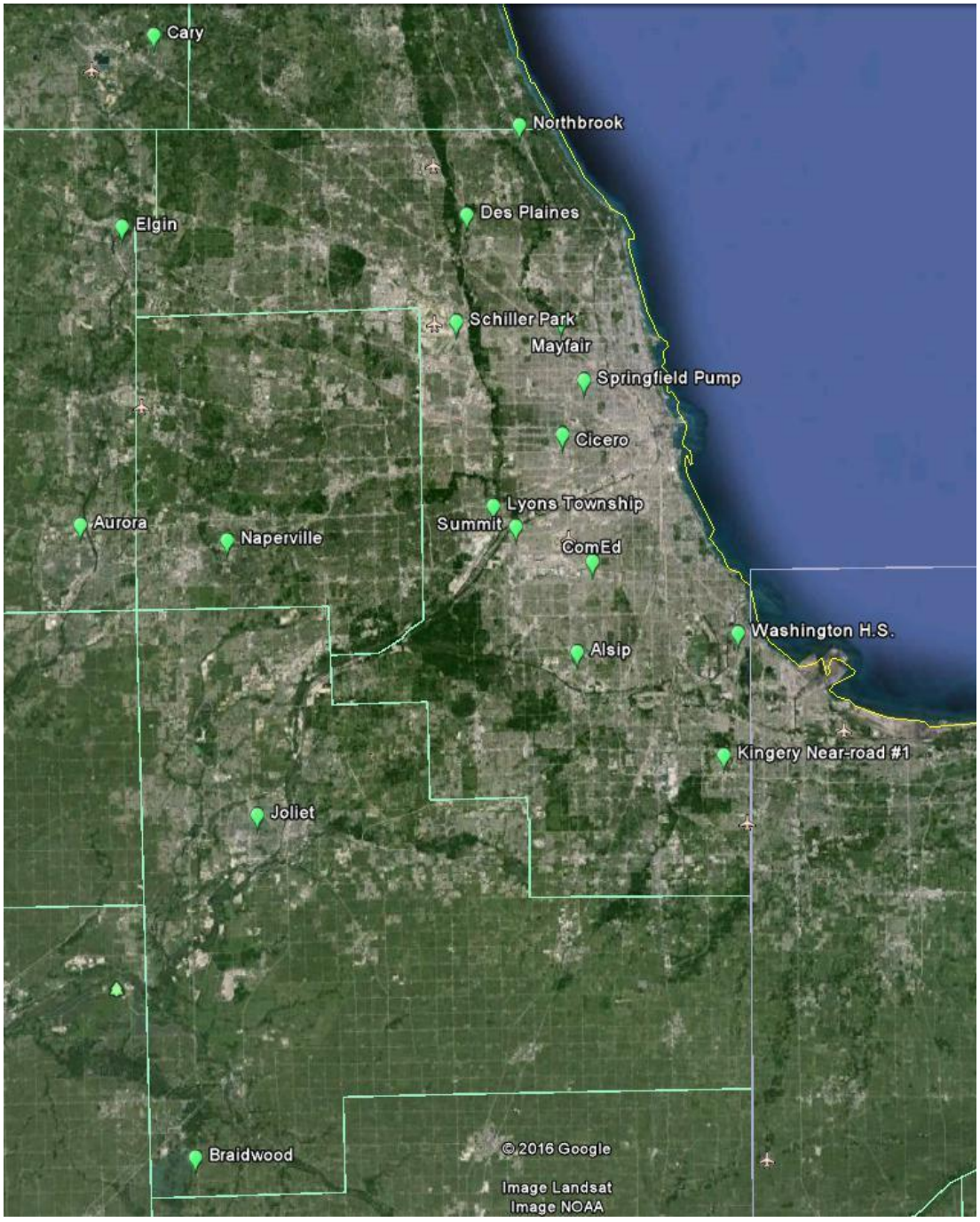


Table 11: SO_2 Sites

AQS ID	Site	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Station Type	Monitor Type	Sampling Schedule
17-019-1001	Bondville	+40.052780 -88.372510	Champaign-Urbana, IL	Highest Conc.	N/A	Regional	NCORE	T100U	Hourly
17-031-0076	Com Ed	+41.75139998 -87.71348815	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	SLAMS	T100	Hourly
17-031-1601	Lemont	+41.66812034 -87.99056969	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	SLAMS	T100	Hourly
17-031-4201	Northbrook	+42.13999619 -87.79922692	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	NCORE	T100U	Hourly
17-099-0007	Oglesby	+41.29301454 -89.04942498	Ottawa-Streator, IL	Highest Conc.	Source	Neighborhood	SLAMS	T100	Hourly
17-115-0013	Decatur	+39.86683389 -88.92559445	Decatur, IL	Population	N/A	Neighborhood	SLAMS	T100	Hourly
17-115-0117	ADM	+39.880404 -88.894488	Archer Daniels Midland Co.	Source	N/A	Neighborhood	SLAMS	43i	Hourly
17-115-0217	Tate & Lyle NW	+39.850712 -88.933635	Tate & Lyle	Source	N/A	Neighborhood	SLAMS	43i	Hourly
17-115-0317	Tate & Lyle SE	+39.846856 -88.923323	Tate & Lyle	Source	N/A	Neighborhood	SLAMS	43i	Hourly
17-117-0002	Nilwood	+39.39607533 -89.80973892	St Louis, IL-MO	Background	Population	Regional	SLAMS	T100	Hourly
17-119-3007	Wood River	+38.86066947 -90.10585111	St Louis, IL-MO	Population	N/A	Neighborhood	SLAMS	T100	Hourly
17-163-0010	East St. Louis	+38.61203448 -90.16047663	St Louis, IL-MO	Population	N/A	Neighborhood	SLAMS	T100	Hourly
17-179-0004	Pekin	+40.55646017 -89.65402807	Peoria, IL	Highest Conc.	Source	Neighborhood	SLAMS	T100	Hourly

T100 – Teledyne (method 100); T100U – Teledyne Trace Level (method 600); 43i – Thermo Scientific Model 43i (method 060)

Red indicates monitor proposed for removal
Green indicates monitor proposed for installation

Figure 3: SO_2 Sites – Illinois

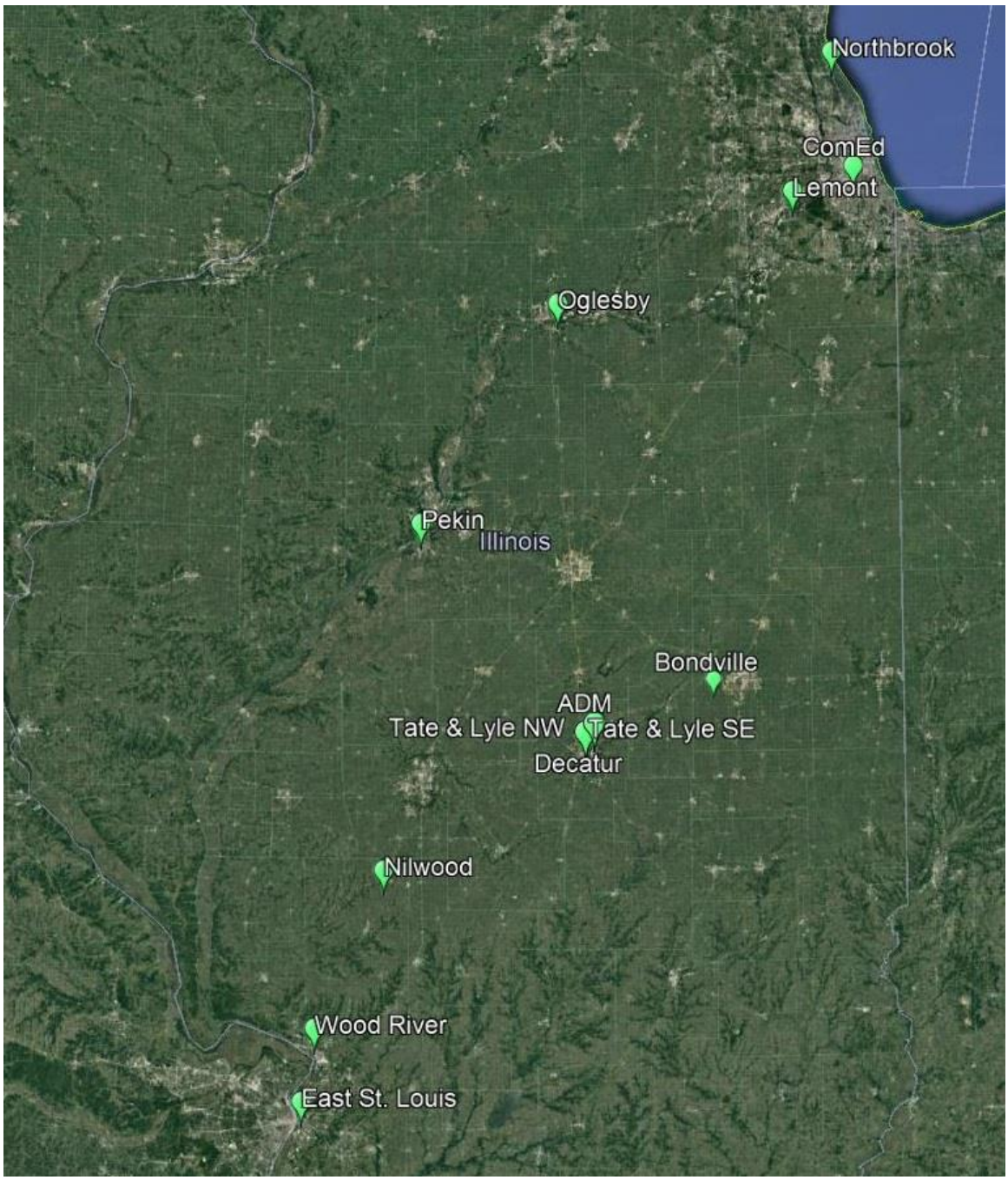


Table 12: NO_2 Sites

AQS ID	Site Description	Latitude Longitude	Area Represented	Monitoring Type	Primary Objective	Secondary Objective	Spatial Scale	Station Type	Monitor Type	Sampling Schedule
17-031-0076	Com Ed	+41.75139998 -87.71348815	Chicago-Naperville-Michigan City, IL-IN-WI	Area-wide	Population	N/A	Neighborhood	SLAMS	TE	Hourly
17-031-3103	Schiller Park	+41.96519348 -87.87626473	Chicago-Naperville-Michigan City, IL-IN-WI	Susceptible Population	Highest Conc.	Source	Middle	PAMS/SLAMS	T200	Hourly
17-031-4002	Cicero	+41.85524313 -87.7524697	Chicago-Naperville-Michigan City, IL-IN-WI	Area-wide	Population	Highest Conc.	Neighborhood	SLAMS	TE	Hourly
17-031-4201	Northbrook	+42.13999619 -87.79922692	Chicago-Naperville-Michigan City, IL-IN-WI	Area-wide	Population	N/A	Urban	PAMS/NCORE	T500U	Hourly
17-031-0118	Lansing Kingery near-road #1	+41.578603 -87.557392	Kingery high traffic road segment	Near-road	Highest Conc.	Source	Micro	SLAMS	T500U	Hourly
17-031-0218	Chicago Kennedy near-road #2	+41.920681 -87.674425	Kennedy high traffic road segment	Near-road	Highest Conc.	Source	Micro	SLAMS	T500U	Hourly
17-117-0002	Nilwood	+39.39607533 -89.80973892	St Louis, IL-MO	Area-wide	Background	Population	Regional	SPM	T200	Hourly
17-163-0010	East St. Louis	+38.61203448 -90.16047663	St Louis, IL-MO	Area-wide	Population	N/A	Neighborhood	SLAMS	T200	Hourly

T200 – Teledyne (method 099); TE – ThermoScientific (method 074); T500U – Teledyne (method 212)

Red indicates monitor proposed for removal

Green indicates monitor proposed for installation

Figure 4: NO_2 Sites – Illinois

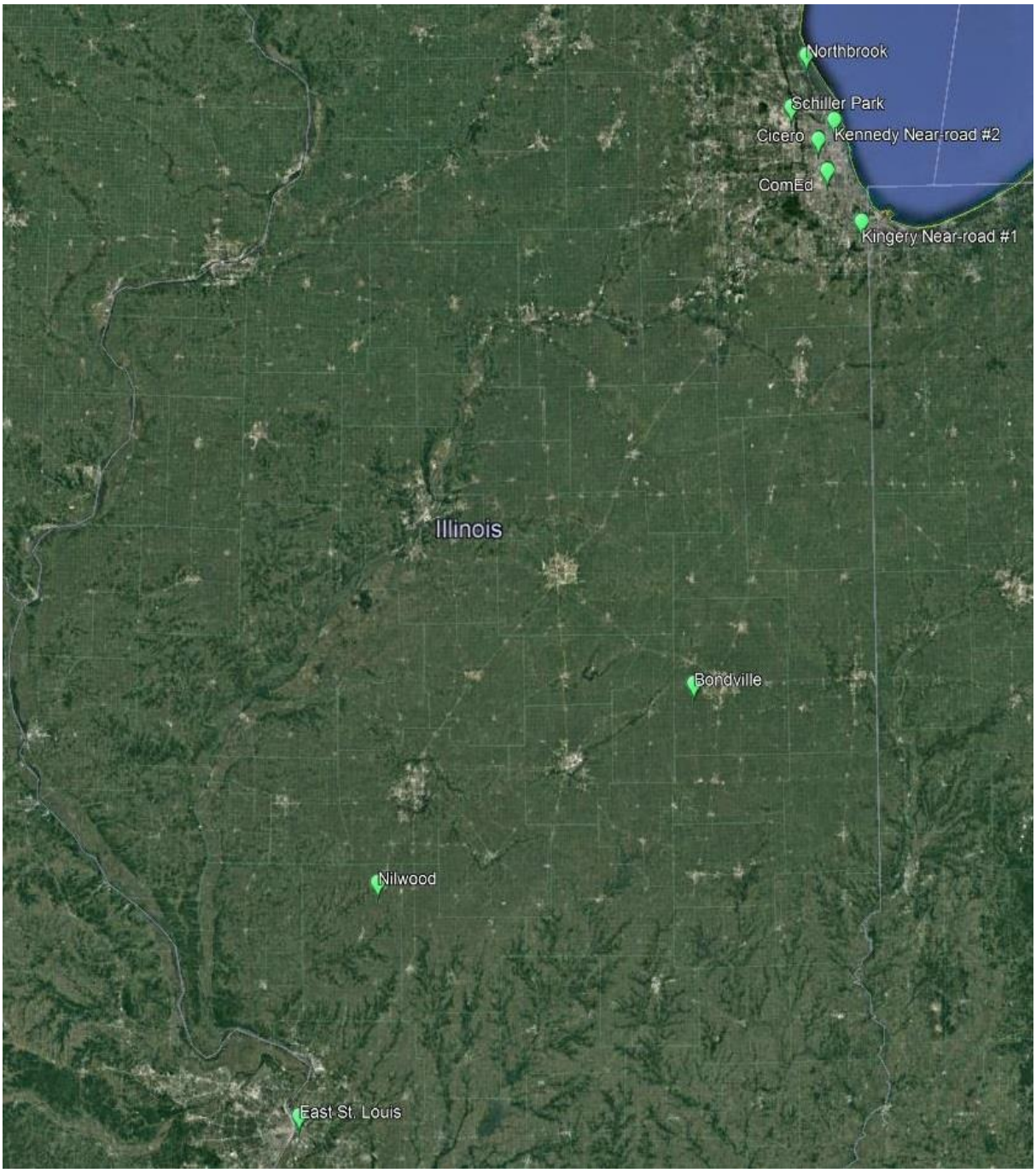


Table 13: CO Sites

AQS ID	Site Description	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Station Type	Monitor Type	Sampling Schedule
17-019-1001	Bondville	+40.052780 -88.372510	Champaign-Urbana, IL	Highest Conc.	N/A	Regional	NCORE	API 300EU	Hourly
17-031-4201	Northbrook	+42.13999619 -87.79922692	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Neighborhood	PAMS/NCORE	48iTLE	Hourly
17-031-0118	Lansing Kingery near-road #1	+41.578603 -87.557392	Kingery high traffic road segment	Highest Conc.	Source	Micro	SLAMS	API 300	Hourly
17-163-0010	East St. Louis	+38.61203448 -90.16047663	St Louis, IL-MO	Highest Conc.	N/A	Neighborhood	SLAMS	48i	Hourly

48i – ThermoScientific (method 054); 48iTLE – ThermoScientific Trace Level (method 554); API 300EU – Teledyne Trace Level (method 593) API 300 – Teledyne/API non-trace level (method 093)

Red indicates monitor proposed for removal
Green indicates monitor proposed for installation

Figure 5: CO Sites – Illinois

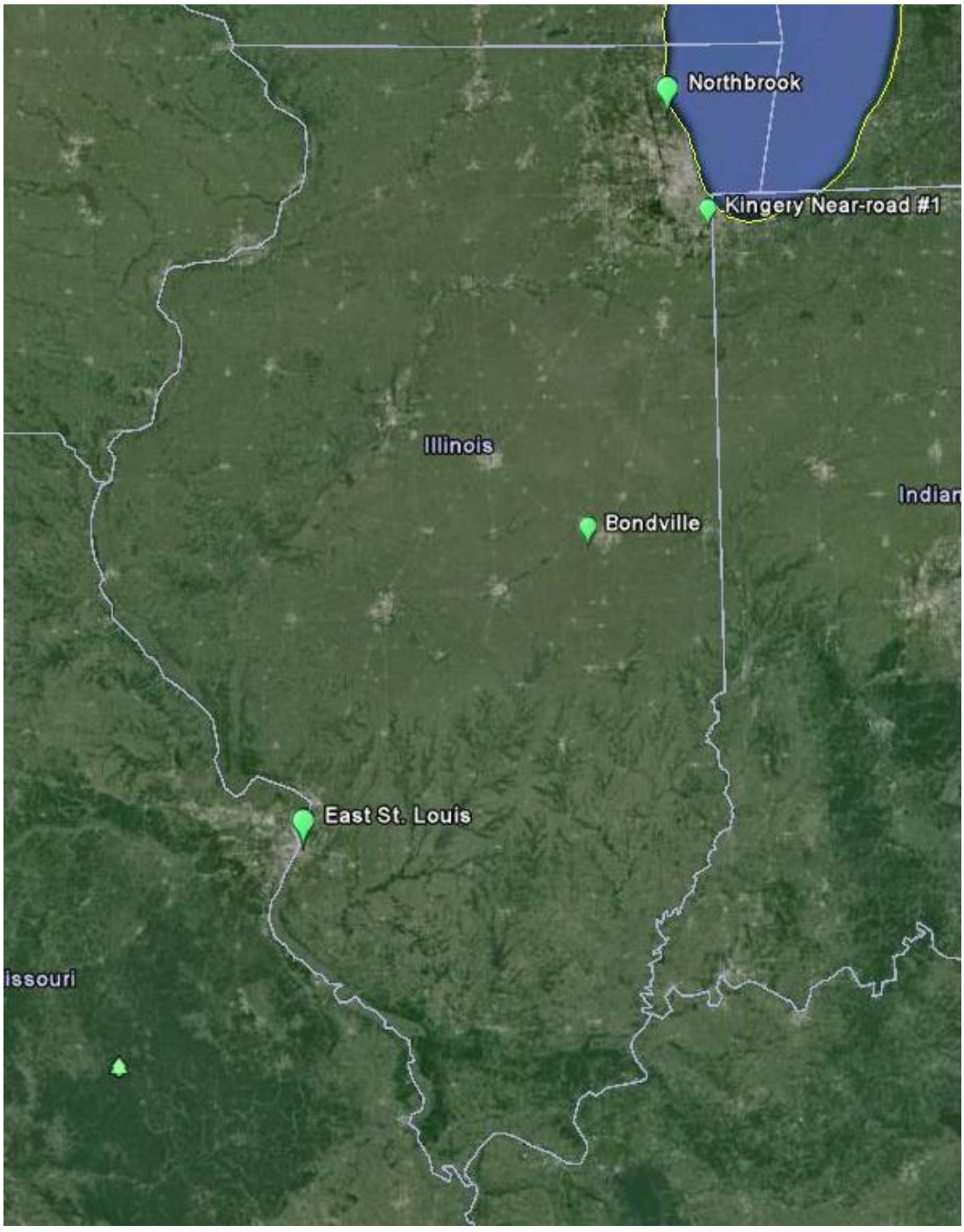


Table 14: PM_{10} and $PM_{10-2.5}$ Sites

AQS ID	Site Description	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Station Type	Monitor Type (Primary)	Sampling Schedule	Collocated
17-031-0022	Washington High School (PM10)	+41.68716544 -87.53931548	Chicago-Naperville-Michigan City, IL-IN-WI	Highest Conc.	Source	Neighborhood	SLAMS	BAM 1020	Hourly	
17-031-1016	Lyons Township (PM10)	+41.801180 -87.832349	Chicago-Naperville-Michigan City, IL-IN-WI	Highest Conc.	Source	Middle	SLAMS	BAM 1020	Hourly	
17-031-4201	Northbrook (PM10)	+42.13999619 -87.79922692	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	NCORE	SA/GMW	1/6	YES (1/12 day)
17-031-4201	Northbrook (PM coarse)	+42.13999619 -87.79922692	Chicago-Naperville-Michigan City, IL-IN-WI	Population	N/A	Urban	NCORE	Thermo Pair	1/3	
17-119-1007	Granite City (PM10)	+38.70453426 -90.13967484	St Louis, IL-MO	Highest Conc.	Source	Neighborhood	SLAMS	SA/GMW	1/6	

BAM 1020 - Met One 1020 Beta Attenuation Monitor (method 122);
SA/GMW - Sierra Anderson/General Metal Works Hi-Volume Sampler, Standard Conditions (method 063);
Thermo Pair - Thermo Scientific Partisol Model 2000 Sampler Pair for PM coarse (method 175).

Red indicates monitor proposed for removal
Green indicates monitor proposed for installation

Figure 6: PM_{10} Sites – Illinois

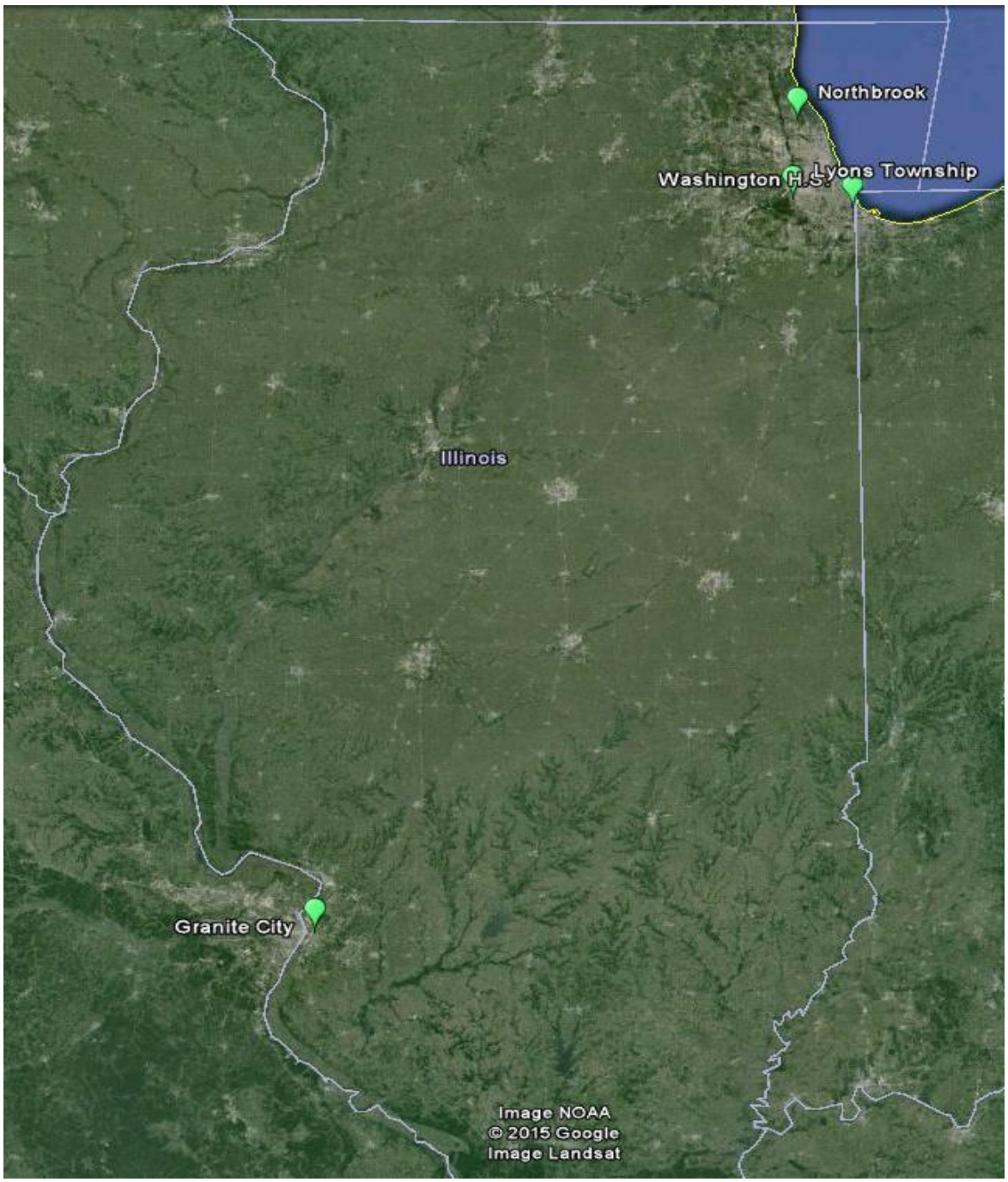


Table 15: Lead Sites

AQS ID	Site Description	Latitude Longitude	Area Represented	Primary Objective	Secondary Objective	Spatial Scale	Station Type	Monitor Type (Primary)	Frequency	Collocated
17-031-0022	Washington High School	+41.68716544 -87.53931548	Chicago-Naperville-Michigan City, IL-IN-WI	Highest Conc.	N/A	Neighborhood	SLAMS	SA/GMW	1/6	
17-031-0110	Perez	+41.855917 -87.658419	H. Kramer	Source	N/A	Middle	SLAMS	SA/GMW	1/6	YES (1/12 day)
17-119-0010	Granite City	+38.69443831 -90.15395426	Mayco / US Steel	Highest Conc.	Source	Middle	SLAMS	Hi-Q	1/6	YES (1/12 day)

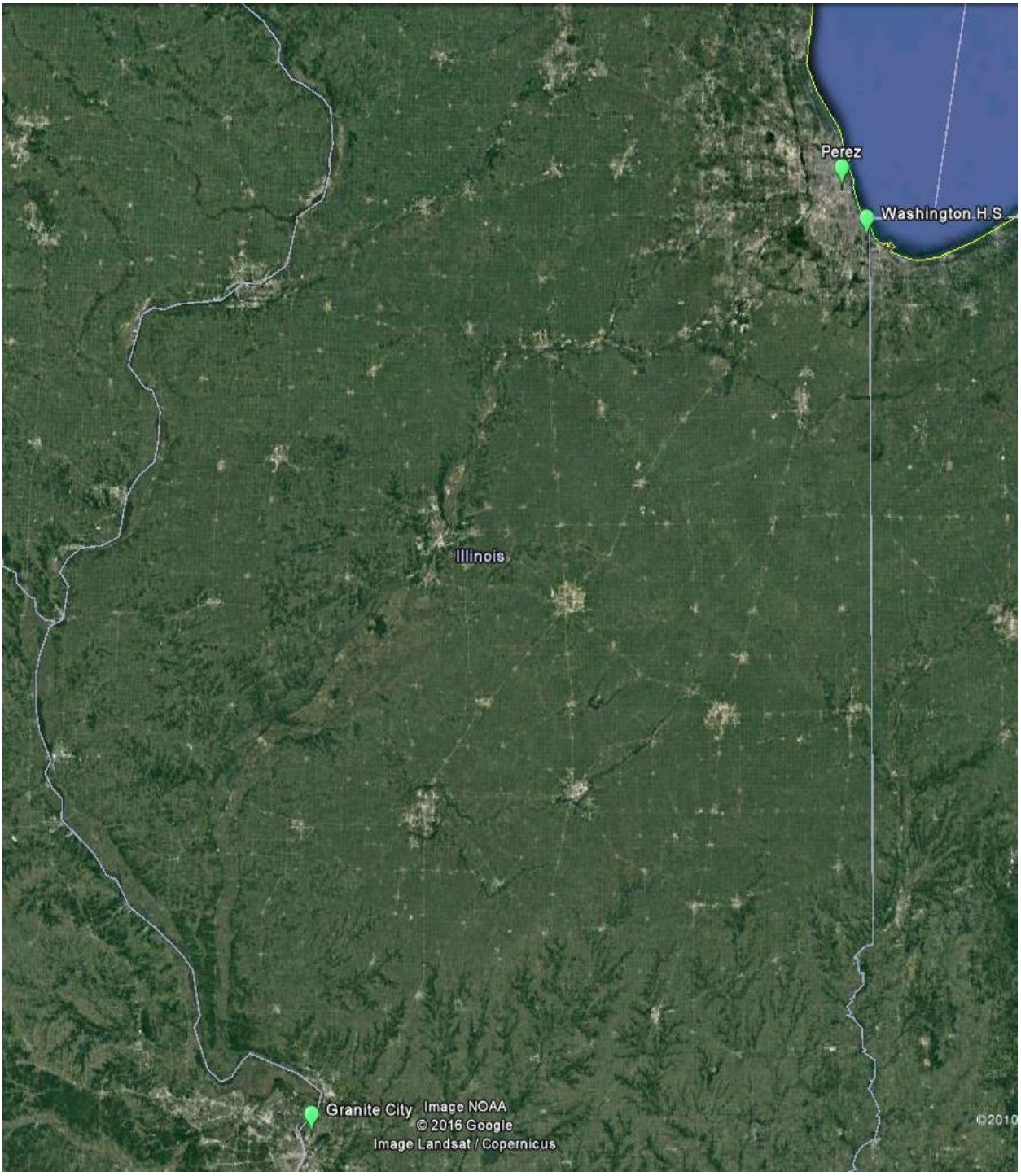
Hi-Q - Hi-Q Environmental Products Hi-Volume Sampler, Local Conditions (laboratory method 094);

SA/GMW – Sierra Anderson/General Metal Works Hi-Volume Sampler, Local Conditions (laboratory method 043)

Red indicates monitor proposed for removal

Green indicates monitor proposed for installation

Figure 7: Lead Sites – Illinois



Appendix A

Data Requirements Rule SO_2 Emissions Assessment for Illinois Areas Modeled to be in Attainment with the 2010 1-hour SO_2 NAAQS

Background

Pursuant to Section 51.1205(b) of the Data Requirements Rule (DRR) (40 CFR 51 Subpart BB), Illinois EPA is required to submit an annual report to the Regional Administrator that documents the annual SO_2 emissions of each applicable source in each area modeled to be attaining the 2010 1-hour SO_2 NAAQS. This report is to be submitted to the Regional Administrator by July 1 of each year and must provide an assessment of the cause of any emissions increases from the previous year and a recommendation regarding the need for additional modeling to determine if the areas are still meeting the 1-hour SO_2 NAAQS.

Effective April 9, 2018, five additional modeled areas in Illinois were designated by USEPA as attaining the 1-hour SO_2 NAAQS. The designations were based upon a technical analysis by USEPA that considered, in part, modeling results submitted by Illinois EPA pursuant to the DRR. These new attainment/unclassifiable areas are listed in Table A-1.

Table A-1: Additional 1-hour SO_2 Attainment/Unclassifiable Areas in Illinois

Attainment/Unclassifiable Area	Applicable Source(s)	Model Design Value	Percent of 1-hour SO_2 NAAQS*
Kincaid Area (Christian, Macoupin, Montgomery, and Sangamon Counties)	Kincaid Generation LLC	64.28 ug/m^3	32.74%
Crawford County	Rain CII Carbon	105.01 ug/m^3	53.49%
Lake County	Midwest Generation LLC - Waukegan	98.91 ug/m^3	50.38%
Baldwin and Prairie State Area (Monroe, Randolph, St. Clair, Perry, and Washington Counties)	Dynegy Midwest Generation LLC - Baldwin; Prairie State Generating Company, LLC	78.21 ug/m^3	39.84%
Granite City Area (Remainder of Madison County not previously designated as nonattainment or as attainment/unclassifiable)	U.S. Steel-Granite City Works; Gateway Energy & Coke Company	190.93 ug/m^3	97.25%

*Based on 1-hour SO_2 NAAQS value of 196.32 ug/m^3

Section 51.1205(b)(2) of the DRR relieves air agencies from the ongoing data requirements listed under Section 51.1205(b) for areas where air quality modeling demonstrates that all receptors have model design values that are no greater than 50% of the 1-hour SO_2 NAAQS. The model results for the Kincaid and Baldwin-Prairie State areas meet this criterion; therefore, these areas will not be addressed in this report or in future reports. The remainder of this report will focus on the annual SO_2 emission trends for the remaining three areas – Lake County, Crawford County, and the Granite City area – together with Jasper County and Massac County, which USEPA had designated as attainment/unclassifiable based on modeling performed in accordance with the 2015 SO_2 Consent Decree (see Illinois' 2018 Air Monitoring Network Plan for more details). All of these areas had air dispersion modeling results with design values that exceeded 50% of the 1-hour SO_2 NAAQS.

2012-2017 SO_2 Emission Trends Data and Recommendations

Table A-2 presents the annual SO_2 emissions data for the applicable attainment/unclassifiable areas for the period 2012 through 2017. Annual SO_2 emissions are listed for the applicable DRR source(s) in each area, along with all the background sources that were included in the DRR and SO_2 Consent Decree modeling.

Emissions data for 2013, 2014, and 2015 were used in the DRR modeling, whereas emissions data for 2012, 2013, and 2014 were used in the SO_2 Consent Decree modeling. The maximum annual emissions total for the three-year modeled period was determined for each area and then compared with the area totals for 2016 and 2017. These data were then compared with USEPA's recommended guidelines for additional modeling presented in the Preamble to the DRR (80 FR 51052). The results of this analysis are presented below:

Jasper County – The highest modeled annual SO_2 emissions total for the Jasper County attainment/unclassifiable area was 16,533.83 tons, which occurred in 2012. Emissions from the Newton Power Station, the only applicable SO_2 source for this area, decreased to 7,742.70 tons in 2016 (-53.2%) and 4,873.20 tons in 2017 (-70.5%). Given the emission decreases in both 2016 and 2017, Illinois EPA recommends no additional modeling for the Jasper County attainment/unclassifiable area at this time.

Massac County – The highest modeled annual SO_2 emissions total for the Massac County attainment/unclassifiable area was 48,599.45 tons, which occurred in 2014. Emissions from area SO_2 sources decreased to 32,289.08 tons in 2016 (-33.6%) and 31,314.25 tons in 2017 (-35.6%). Given the emission decreases in both 2016 and 2017, Illinois EPA recommends no additional modeling for the Massac County attainment/unclassifiable area at this time.

Crawford County – The highest modeled annual SO_2 emissions total for the Crawford County attainment/unclassifiable area was 6,657.10 tons, which occurred in 2014. Emissions from area SO_2 sources increased to 7,242.22 tons in 2016 (+8.8%) and 9,625.37 tons in 2017 (+44.6%). These increases were almost entirely driven by increases in production at Rain CII Carbon. Given the magnitude of the emissions increase for 2017 (greater than 15%), Illinois EPA recommends that additional modeling be performed for the Crawford County attainment/ unclassifiable area for the period of 2015-2017.

Lake County – The highest modeled annual SO_2 emissions total for the Lake County attainment/unclassifiable area was 9,205.90 tons, which occurred in 2013. Emissions from area SO_2 sources decreased to 3,930.17 tons in 2016 (-57.3%) and 2,757.00 tons in 2017 (-70.1%). Given the emission decreases in both 2016 and 2017, Illinois EPA recommends no additional modeling for the Lake County attainment/unclassifiable area at this time.

Granite City Area – The highest modeled annual SO_2 emissions total for the Granite City attainment/unclassifiable area was 2,345.30 tons, which occurred in 2014. Emissions from area SO_2 sources decreased to 1,292.91 tons in 2016 (-44.9%) and 1,582.35 tons in 2017 (-32.5%). Given the emission decreases in both 2016 and 2017, Illinois EPA recommends no additional modeling for the Granite City attainment/unclassifiable area at this time.

Table A-2: Annual SO_2 Emissions Tonnage Data for Attainment/Unclassifiable Areas

Attainment Area	ID Number	Facility Name	2012 Emissions	2013 Emissions	2014 Emissions	2015 Emissions	2016 Emissions	2017 Emissions	Modeled Maximum	2016 Area Total	2017 Area Total
Jasper County	079808AAA	Newton Power Station	16,533.83	16,144.50	16,372.76	12,805.40	7,742.70	4,873.20	16,533.83	7,742.70	4,873.20
Massac County	127855AAC	Joppa Power Station	17,007.07	16,557.74	18,229.24	13,230.00	7,634.00	10,310.20	48,599.45	32,289.08	31,314.25
	127855AAA	Holcim US Inc.	552.60	553.28	491.65	259.42	698.18	409.31			
	127899AAA	Midwest Electric Power Inc. (MEPI)	5.68	0.00	0.00	0.01	0.01	0.02			
	127855AAB	Trunkline Gas Company	0.866	0.866	0.866	0.60	0.20	0.12			
	127854AAD	Honeywell International Inc.	162.51	58.73	143.15	147.30	148.89	100.60			
	2114500006	TVA – Shawnee Power Plant	27,114.87	27,210.73	29,734.54	24,301.80	*23,807.80*	*20,494.00*			
Crawford County	033025AAJ	Rain CII Carbon	n/a	2,958.90	3,134.10	2,161.40	3,836.20	6,810.10	6,657.10	7,242.22	9,625.37
	033808AAB	Marathon Petroleum	n/a	218.80	207.10	213.40	262.22	177.17			
	1815300005	Merom Generating Station	n/a	2,816.20	3,315.90	2,579.40	*3,143.80*	*2,638.10*			
Lake County	097190AAC	Midwest Generation LLC – Waukegan	n/a	7,749.90	5,792.40	2,339.30	2,733.95	1,705.94	9,205.90	3,930.17	2,757.00
	097190AAP	New NGC Inc.	n/a	8.70	8.70	8.70	7.72	0.13			
	097025AAR	Countryside Genco LLC	n/a	27.10	53.10	41.50	19.43	41.85			
	097806AAG	Countryside Landfill	n/a	23.90	6.30	14.50	30.90	21.80			
	097809AAD	Abbott Laboratories	n/a	74.00	22.80	0.20	0.32	0.31			
	097125AAA	AbbVie Inc.	n/a	59.50	16.20	6.60	12.35	1.50			
	097200AAV	ADS Zion Landfill Inc.	n/a	48.10	28.40	26.70	23.40	32.87			
	097200ABC	Bio Energy (Illinois) LLC	n/a	40.90	24.70	22.30	15.10	21.60			
	230006260	Pleasant Prairie Generating Station	n/a	1,173.80	1,310.10	1,335.50	*1,087.00*	*931.00*			
Granite City Area	119813AAI	U.S. Steel – Granite City Works	n/a	864.00	961.30	828.30	9.94	12.10	2,345.30	1,292.91	1,582.35
	119040ATN	Gateway Energy & Coke	n/a	1,127.70	1,240.60	1,187.70	1,190.74	1,470.37			
	119465AAG	Green Plains Madison LLC	n/a	7.20	7.90	7.80	3.10	1.96			
	119040AAC	Amsted Rail Co. Inc.	n/a	2.80	5.20	5.90	4.00	3.50			
	163121AAB	Afton Chemicals	n/a	102.10	96.70	98.00	72.97	73.78			
	163050AAD	Milam Recycling & Disposal	n/a	28.50	28.90	17.50	7.35	15.98			
	119801AAK	Chain of Rocks Recycling & Disposal	n/a	4.50	4.70	4.80	4.81	4.66			

Source: Illinois EPA Annual Emissions Reports, except for those values listed in *red italics*, which were obtained from USEPA's Clean Air Markets database.