DRAFT

Connecticut 2014 Annual Air Monitoring Network Plan

Connecticut Department of Energy and Environmental Protection
Bureau of Air Management
April 10, 2014

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Acronyms and Abbreviations

AQI – Air Quality Index
AQS – Air Quality System
BAM – Beta Attenuation Monitor
BC – Black Carbon (Aethalometer)
CAA – Clean Air Act
CFR – Code of Federal Regulations
CO – carbon monoxide
CSA – combined statistical area
CSN – Chemical Speciation Network
DEEP – Connecticut Department of Energy and Environmental Protection
DAS – data acquisition system
EC/OC – Elemental Carbon/Organic Carbon
EPA – Environmental Protection Agency
FEM – Federal Equivalent Method
FRM – Federal Reference Method
GC – gas chromatography
GC/MS – gas chromatography/mass spectrometry
HAP – hazardous air pollutant
IMPROVE – Interagency Monitoring of Protected Visual Environments
LMP – limited maintenance plan
MPA – monitoring planning area
MSA – metropolitan statistical area
NAAQS – National Ambient Air Quality Standards
NOAA – National Oceanic and Atmospheric Administration
NOx – nitrogen oxides
NOy – reactive oxides of nitrogen
OAQPS – Office of Air Quality Planning and Standards
PAMS – Photochemical Assessment Monitoring Stations
$PM_{2.5}$ – fine particulate matter (<2.5 microns)
PM_{10} – respirable particulate matter (<10 microns)
$PM_{10-2.5}$ – coarse particulate matter (PM_{10} – $PM_{2.5}$)
QA – quality assurance
QA/QC – quality assurance/quality control
QAPP – quality assurance project plan
QMP – quality management plan
RH – relative humidity
SIP – State Implementation Plan
SLAMS – state and local monitoring stations
SO_2 – sulfur dioxide
SOP – standard operating procedure
TSA – technical system audit
TSP – total suspended particulate
UVC – Ultra-violet carbon (aethalometer)
VOC – volatile organic compound

Introduction

This document is the Connecticut 2014 Air Monitoring Network Plan (Network Plan), prepared by the Connecticut Department of Energy and Environmental Protection (DEEP) in accordance with 40 CFR 58.10. This plan meets the requirement to develop and submit to the Environmental Protection Agency (EPA) an annual air quality monitoring network plan to describe the air monitoring network and propose any changes of air quality monitoring sites and monitored air pollutants planned in the 18 months following submittal.

DEEP is holding a public comment period for this Draft Network Plan, which is posted on DEEP's website at DEEP: Air Monitoring Network. Public comments are due by May 15, 2014 and may be submitted via email or mail. Please submit comments to:

Randall Semagin
Air Management/Planning and Standards
Connecticut Department of Energy and Environmental Protection
79 Elm Street, Hartford CT 06106-5127
randall.semagin@ct.gov

Background

The Clean Air Act of 1970 (CAA) established the Environmental Protection Agency as the principal administrative body to enact regulations to meet the requirements of the CAA and subsequent amendments thereto. One such requirement directed EPA to set primary and secondary air quality standards, known as the National Ambient Air Quality Standards (NAAQS) for the six "criteria pollutants" that Congress determined presented serious negative impacts to human health and welfare. For areas within Connecticut that do not meet a NAAQS, DEEP develops State Implementation Plans (SIPs) to detail the steps to be taken to bring air quality into attainment. Ambient air quality monitoring is essential to track progress towards meeting clean air goals and demonstrate attainment.

While DEEP monitors ambient air quality in Connecticut primarily for comparison with the NAAQS, there are other important objectives to ambient air quality monitoring. This monitoring provides local air quality data to the public, supports air quality forecasting and the Air Quality Index (AQI), supports long-term health assessments and other scientific research, assists with air permitting and identifying long-term air quality trends to gauge effectiveness of air pollution control strategies and serves as an accuracy check on computer based air quality models. DEEP's ability to manage the air quality monitoring network depends significantly on federal support from EPA.

Future federal funding levels for air monitoring programs remain uncertain. In addition, as with state governmental operations everywhere, state resources allocated to ambient air quality monitoring are unable to keep pace with rising costs. DEEP must continue to provide an acceptable level of service within these constraints by continually improving and focusing its efforts to ensure the completion of the most critical ambient air quality monitoring. As operating costs and federal monitoring requirements increase, DEEP must do more with fewer resources by either improving operational efficiencies or reducing other aspects of the air monitoring network. Efficiencies being employed include improvements to data acquisition (through software upgrades and the automating of data streams previously manual), to public data access (thorough Kiosks and improvements to the website), and to reduction of the number of monitoring sites by increasing multi-pollutant monitoring (resulting in consolidation of resources).

Network Overview

The DEEP air monitoring network (Figure 1) currently consists of 17 monitoring stations. Given continuously evolving standards, this Plan assumes the current level of staffing and federal funding will be maintained through federal FY15. Should EPA monitoring requirements significantly increase or should DEEP be impacted by staff attrition or a reduction in federal funding, the level of effort proposed in this Plan will have to be revisited.

In October 2006, EPA established a network of core multi-pollutant sites. These sites are known as the National Core (NCore) network, the primary purpose of which is to consolidate monitoring of multiple pollutants at fewer sites for efficiency and cost savings. In addition, the NCore sites provide a comprehensive suite of high-resolution pollutant data for NAAQS compliance assessment, research studies and long-term trends analysis. There are two NCore sites located in Connecticut: Criscuolo Park

in New Haven, and Mohawk Mountain in Cornwall. Although these sites predated NCore, DEEP upgraded both sites consistent with NCore requirements.

Figure 1: Connecticut DEEP Air Monitoring Network

Proposed Network Changes

Details of the proposed monitoring network configuration are described in the following site information pages. In addition to infrastructure maintenance and improvements, DEEP proposes to make the following changes to the monitoring network through the end of 2015:

- Discontinuing federal reference method (FRM) $PM_{2.5}$ sampling at the New Haven State Street site. Note that sample at this site was suspended as of January 1, 2014, due to construction activities.
- Discontinuing FRM $PM_{2.5}$ sampling at the East Hartford High Street site.
- Establishing FRM $PM_{2.5}$ sampling at the near-road Hartford Huntley Place site.
- Establishing FRM $PM_{2.5}$ sampling at the Groton Fort Griswold site.
- Discontinuing continuous $PM_{2.5}$ sulfate, organic carbon and elemental carbon sampling at the New Haven Criscuolo Park and Cornwall Mohawk Mountain sites.
- Commencing reporting of continuous $PM_{2.5}$ data from the East Hartford McAuliffe Park monitoring site as federal equivalent method (FEM) data eligible for comparison to the $PM_{2.5}$ NAAQS.
- Continuing the suspension of carbonyl sampling at the East Hartford McAuliffe Park site for 2014.
- Establishing particulate black carbon/UV carbon aethalometer monitoring at the Danbury Western Connecticut State University (WCSU) site.

DEEP maintains its air monitoring network to fulfill critical data needs. Recent EPA NAAQS rule revisions have mandated additional monitoring, reporting and analysis associated with the SLAMS networks, and, consistent with the LEAN culture embraced by DEEP, this Plan calls for continued efforts to streamline data handling, while also looking for opportunities to identify and address low value added monitoring sites. If limited opportunities exist to disinvest from low value added monitoring sites, efficiencies

nonetheless will occur by eliminating lower value data collection. Such efficiencies will be necessary to enable limited staff resources to focus on competing priorities, which may not be limited to air quality monitoring. If efficiencies alone are insufficient, either additional resources will be required or the scope of the monitoring program will need to be revisited.

Public Face

The DEEP is nearing completion of a dashboard to educate and inform the public about air quality using easily understandable metrics to convey how Connecticut is moving forward to achieve its clean air goals. DEEP is also nearing completion of a real-time air quality website that will be published Summer 2014. A kiosk system will also be deployed in 2014 to provide real-time access to the air quality information, provide a platform to discuss health related issues with respect to air quality, and provide an overview of Connecticut's ambient air monitoring network. DEEP plans to deploy three kiosk systems at the nature centers in Madison at Hammonasset State Park and Westport at Sherwood Island State Park as well as at the visitor's center in Dinosaur State Park in Rocky Hill. The kiosks will be portable and available for various applications as part of DEEP's public outreach and education campaign. DEEP's public face efforts are discretionary and therefore not bound by EPA oversight and approval.

Monitoring Site Information

The ambient air monitoring sites currently operated by DEEP are listed in the Table 1 below. Detailed information for each monitoring site is provided in a later section of this plan.

Table 1: Monitoring Network Summary

Town	Site	PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous)	PM10/PM-Coarse (FRM)	PM10/PM-Coarse (FRM, Collocated)	PM10/PM-Coarse (Continuous)	Lead-PM10	Lead-PM10 (Collocated)	PM Speciation (CSN)	PM Speciation (IMPROVE)	PM2.5 Carbon (OC/EC, Continuous)	PM2.5 Sulfate (Continuous)	PM2.5 Carbon (BC/UVC, Continuous)	Ozone	SO2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Rain Fall	Barometric Pressure	Solar Radiation
Bridgeport	Edison School															X													
Bridgeport	Roosevelt School	1/3		X	1/6												X								X				
Cornwall	Mohawk Mountain	1/3		X	1/3		X				X	X	X	X	X	X	X	X	X				X	X	X	X		X	
Danbury	Western Connecticut State University	1/3		X										P	X								X	X	X				
East Hartford	High Street	1/3		X																			X	X					
East Hartford	McAuliffe Park	1/1		X	1/6									X	X	X	X	X		X	X*		X	X	X	X		X	X
Greenwich	Point Park														X								X	X	X				
Groton	Fort Griswold	1/6		X											X								P	P	X			X	
Hartford	Huntley Place	1/3		X			X							X			X	X				X	X	X	X				
Madison	Hammonasset State Park														X								X	X					
Mansfield	DOT																						X	X					
Middletown	Connecticut Valley Hospital														X								X	X	X				
New Haven	Criscuolo Park	1/1	1/6	X	1/3	1/6	X	1/6	1/12	X		X	X	X	X	X	X	X	X	X			X	X	X	X		X	X
New Haven	State Street†	1/3																											
Stafford	Shenipsit State Forest														X								X	X	X				
Stratford	Stratford Lighthouse														X										X				
Waterbury	Meadow & Bank Street	1/3	1/6	X																			X	X	X				
Westport	Sherwood Island State Park	1/3													X			X		X			X	X	X				

X=Existing P =Planned in 2014, X = Proposed to terminate in 2014
1/1, 1/3, 1/6, 1/12 = 1 day, 3 day, 6 day, 12 day sampling schedule
*Carbonyl monitoring suspended for 2013 & 2014 due to resource constraints.
†New Haven State St site suspended on January 1, 2014 due to construction.

National Ambient Air Quality Standards (NAAQS)

The EPA's Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for six principal pollutants, known as the criteria pollutants. Table 2 summarizes the current NAAQS compliance requirements for the criteria pollutants.

Table 2: National Ambient Air Quality Standards

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution [78 FR 3086, Jan 15, 2013]	$PM_{2.5}$	primary	Annual	12.0 µg/m^3	annual mean, averaged over 3 years
		secondary	Annual	15.0 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010]		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(2) The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

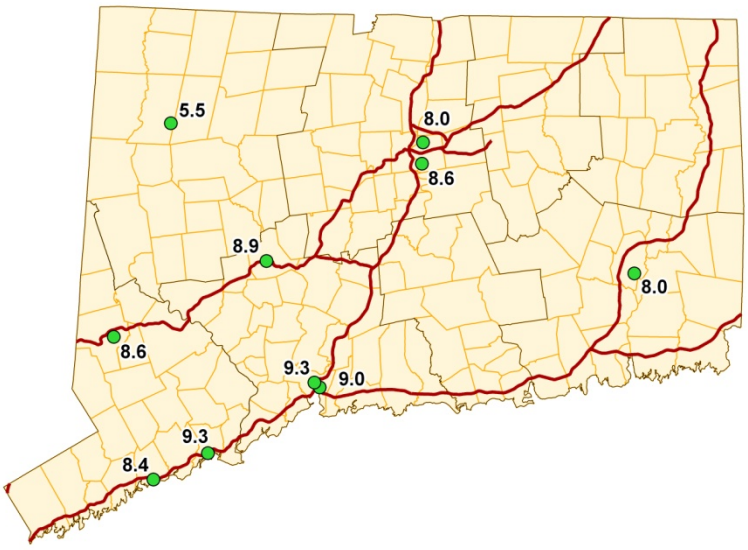
(3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

(4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

$PM_{2.5}$ Annual Design Values (2013)

The 2013 annual design values for $PM_{2.5}$, based on 2011 through 2013 data, are presented in the table and figure below. $PM_{2.5}$ annual design values are calculated using the 3-year average of the respective annual weighted averages. The current annual $PM_{2.5}$ NAAQS is 12.0 $\mu g/m^3$. All Connecticut monitors demonstrate compliance with the design value for the annual $PM_{2.5}$ NAAQS.

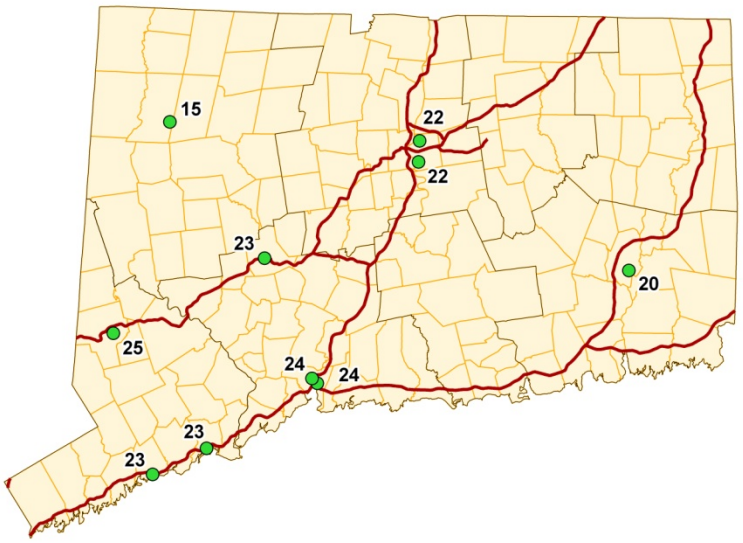
Site	Design Value ($\mu g/m^3$)
Bridgeport	9.3
Cornwall	5.5
Danbury	8.6
East Hartford – High St.	8.6
East Hartford – McAuliffe	8.0
New Haven – Criscuolo	9.0
New Haven – State St.	9.3
Norwich	8.0
Waterbury	8.9
Westport	8.4



$PM_{2.5}$ Daily Design Values (2013)

Daily design values for $PM_{2.5}$ using 2011 through 2013 data are given below. $PM_{2.5}$ daily design values are calculated using the 3-year average of the annual 98th percentile values. The daily $PM_{2.5}$ NAAQS is 35 $\mu g/m^3$, revised in 2006 from the previous daily standard of 65 $\mu g/m^3$. Final designations relative to the 2006 24-hour $PM_{2.5}$ NAAQS were finalized by EPA in November 2009 (effective as of December 14, 2009), based upon measured data from 2006 through 2008. All Connecticut monitors demonstrate compliance with the design value for the 24-hour $PM_{2.5}$ NAAQS.

Site	Design Value ($\mu g/m^3$)
Bridgeport	23
Cornwall	15
Danbury	25
East Hartford – High St.	22
East Hartford - McAuliffe	22
New Haven – Criscuolo	24
New Haven – State St.	24
Norwich	20
Waterbury	23
Westport	23

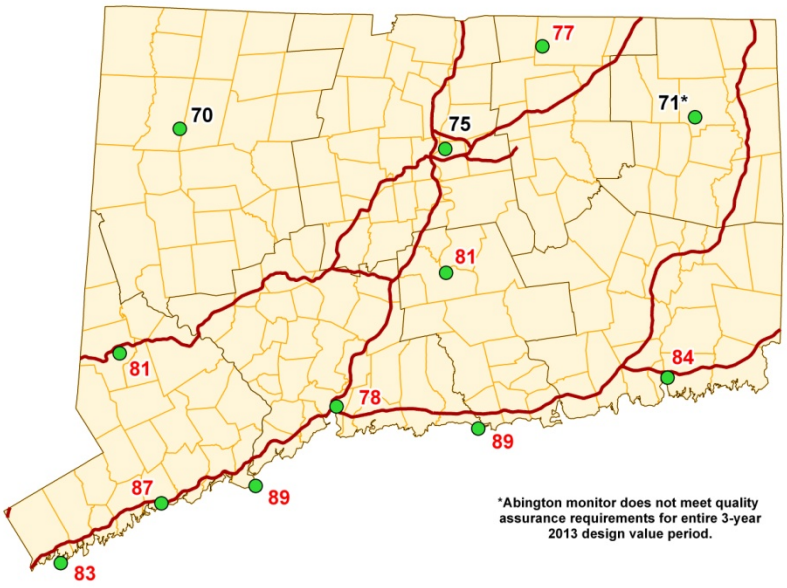


Ozone Design Values (2013)

The 2013 ozone 8-hour design values are given in the table below. Ozone design values are derived by averaging three consecutive annual fourth highest daily maximum 8-hour ozone values. Based on the

March 2008 revised ozone standard of 0.075 ppm (75 ppb), 9 out of 11 sites indicate nonattainment, shown in red font below. Currently, the ozone monitoring season in Connecticut is from April through September.

Site	Design Value (ppb)
Abington	**71***
Cornwall	**70**
Danbury	**81**
East Hartford	**75**
Greenwich	**83**
Groton	**84**
Madison	**89†**
Middletown	**81**
New Haven	**78**
Stafford	**77**
Stratford	**89**
Westport	**87**



* Monitor does not meet EPA quality assurance requirements for the full 2011-2013 period.
† Site was moved approximately 450 meters in 2012 within state park boundaries. Data is combined from the 2 locations to compute the design values.

CO, SO_2, NO_2, PM_{10} and Pb NAAQS Comparisons (2013)

Comparisons of ambient levels of CO, SO_2, NO_2, PM_{10} and Pb to the primary NAAQS are provided in the tables below. The design values for each pollutant were derived in accordance with 40 CFR 50. For PM_{10}, the 3-year fourth-high value is given to indicate the ambient level relative to the standard, as the actual design value is the expected number of annual exceedances of the standard, averaged over a 3-year period, which is in attainment with a value of less than or equal to one.

CO NAAQS Comparison

Site	1-Hr Design Value (ppm)	8-Hr Design Value (ppm)
Bridgeport	3.2	1.8
Cornwall	2.7	0.6
East Hartford	1.8	1.2
Hartford*	2.6	1.7
New Haven	2.0	1.6
NAAQS	**35**	**9**

*Data combined from Morgan Street and Huntley Place

SO_2 NAAQS Comparison

Site	1-Hr Design Value (ppb)
Bridgeport	14
Cornwall	7
East Hartford	10
New Haven	23
Westport	16
NAAQS	**75**

NO_2 NAAQS Comparison

Site	1-Hr Design Value (ppb)	Annual Design Value (ppb)
Cornwall	22	2
East Hartford	46	1
Hartford*	47	1
New Haven	55	2
Westport	44	1
NAAQS	**100**	**53**

*Data incomplete-site began 4/1/2013

PM_{10} NAAQS Comparison

Site	Daily Design Value ($\mu g/m^3$ STP)
Bridgeport	34
Cornwall	23
East Hartford	25
New Haven	39
NAAQS	**150**

Pb NAAQS Comparison

Site	Max 3-Yr 3-Month Mean ($\mu g/m^3$)
New Haven	0.04
NAAQS	**0.15**

Overview of Network Operation

DEEP operates a network of 17 sites throughout Connecticut used for monitoring air pollutants and meteorological parameters. This section contains information about monitoring methods and sampling frequencies, as well as monitoring network maps for each pollutant parameter. Network changes planned before the end of 2015 are discussed as are any anticipated network changes beyond that period.

$PM_{2.5}$ FRM Network

DEEP operates 8 $PM_{2.5}$ FRM sites in the air monitoring network using Thermo Partisol®-Plus 2025/2025i sequential air samplers with BGI VSCC (RFPS-0498-118). For the primary samplers, two of the sites, Criscuolo Park in New Haven and McAuliffe Park in East Hartford, operate on a daily sample schedule while all the other sites operate on a 1-in-3 day sample schedule. Two sites, Waterbury and Criscuolo Park in New Haven, operate collocated $PM_{2.5}$ FRM samplers on a 1-in-6 day sample schedule. Proposed changes to the $PM_{2.5}$ network through 2014 include the elimination of the East Hartford High Street and New Haven State Street $PM_{2.5}$ FRM monitors. Sampling at the State Street site was suspended as of January 1, 2014, with EPA Region 1 concurrence, due to a DOT construction project. Both the New Haven State Street and East Hartford High Street sites have measured levels well below the annual and 24-hour $PM_{2.5}$ NAAQS for the past several years.

DEEP also proposes to establish a 1-in-6 $PM_{2.5}$ monitor at Groton Fort Griswold and a 1-in-3 $PM_{2.5}$ FRM monitor at the near-road Hartford Huntley Place site. The PM2.5 FRM monitor at Groton is intended to support quality assurance measures for the continuous PM2.5 monitor at the site. $PM_{2.5}$ FRM/FEM monitoring is required to be established at the Hartford near-road site by 2017. By establishing this monitor by the end of 2014, it will enable the shutdown of the East Hartford High Street site as the $PM_{2.5}$ FRM monitoring at the East Hartford McAuliffe Park and Hartford Huntley Place sites meet the monitoring requirements for the greater Hartford area.

$PM_{10}/PM_{10\text{-}2.5}$ FRM Network

DEEP operates four PM_{10} FRM sites in the air monitoring network using Thermo Partisol®-Plus 2025 sequential air samplers (RFPS-1298-127). The two NCore sites, Cornwall and New Haven, operate on a 1-in-3 day sample schedule, while Bridgeport and East Hartford are operated on a 1-in-6 day sample schedule. In addition, the New Haven site has a collocated PM_{10} FRM sampler operating on a 1-in-6 day sample schedule. All sites that have PM_{10} FRM samplers are paired with collocated $PM_{2.5}$ FRM samplers. As such, $PM_{10\text{-}2.5}$ data, which represent the coarse fraction of inhalable PM, is also provided at the four sites. Coarse PM is defined as thoracic PM having particle sizes between 2.5 and 10 microns. No further changes to this network are proposed through the end of 2015.

PM Speciation Network

$PM_{2.5}$ chemical speciation measurements are obtained at four sites in the DEEP air monitoring network. These include filter-based daily composite 1-in-3 day samples at the NCore sites, and continuous hourly black carbon at all 4 sites. Continuous hourly sulfate and elemental/organic carbon (EC/OC) analyzers were operated at the NCore sites; however, these were suspended on January 1, 2014 and are proposed for termination in this Network Plan due to resource constraints and the desire to focus on other priorities.

The Interagency Monitoring of Protected Visual Environments (IMPROVE) monitor is located at the Cornwall site and the Chemical Speciation Network (CSN) monitor is at the New Haven Criscuolo Park site. Both sites are operated on the standard EPA PM 1-in-3 day sample schedule and provide 24-hour integrated filter-base measurements.

Black carbon (BC) and ultra-violet channel carbon (UVC), a wood smoke PM surrogate, are monitored at the Criscuolo Park, Cornwall, Hartford and East Hartford McAuliffe Park sites using 7-channel TAPI Model 633 aethalometers. DEEP is proposing to add BC/UVC monitoring at the Danbury WCSU site to provide information about the wood smoke contribution to $PM_{2.5}$ at this location.

Continuous PM Network

DEEP operates twelve continuous PM monitors at nine sites. This network includes continuous MetOne BAM 1020 $PM_{2.5}$ samplers (EQPM-0308-170) at each of the nine sites, and paired continuous MetOne 1020 BAM PM_{10}/ $PM_{10-2.5}$ samplers (EQPM-0798-122/EQPM-0709-185) at the two NCore sites (New Haven and Cornwall) and the near-road Hartford Huntley Place site. All BAM monitors are operated year-round and the hourly data is reported to AQS and is used for air quality index (AQI) reporting. All MetOne BAM 1020 $PM_{2.5}$ samplers currently operating in the DEEP network are configured as Federal Equivalent Method (FEM) Class III monitors.

EPA's December 2012 PM NAAQS[1] rule requires that State and Local Air Monitoring Stations (SLAMS) $PM_{2.5}$ data from FEM monitors must be reported to AQS and be eligible for comparison to the NAAQS to determine attainment. The rule provides that data from FEM monitors not meeting the required level of performance may be exempted from NAAQS comparison if requested by the state and approved by the EPA Regional Office. As discussed below, DEEP performed an analysis that showed poor equivalence between many of the $PM_{2.5}$ BAMs and the corresponding collocated FRMs. As such, this Network Plan requests EPA approve exempting data from four monitors (Danbury WCSU, East Hartford High Street, Cornwall Mohawk Mountain, and New Haven Criscuolo Park), in addition to the Hartford Huntley Place Special Purpose monitor, from NAAQS comparison to determine attainment. However,

[1] 78 FR 3086, Jan 15, 2013

three monitors: Bridgeport Roosevelt School, East Hartford McAuliffe Park and Waterbury Bank Street, demonstrated sufficient conformity with EPA's performance standard such that they may be used for NAAQS attainment determination. In addition, DEEP proposes to continue operating the Groton Fort Griswold $PM_{2.5}$ monitor as an FEM monitor, which shall be eligible for NAAQS attainment purposes.

$PM_{2.5}$ BAM Performance Evaluation

DEEP conducted a $PM_{2.5}$ BAM performance evaluation using data from the 7 sites that have collocated FRMs. As such, the Hartford and Groton BAMs were not included. The Hartford BAM, having begun operations on April 1, 2013, is currently a special purpose monitor and may not be used for attainment purposes. In the evaluation, DEEP analyzed $PM_{2.5}$ FRM and FEM ambient monitoring data from the period January 1, 2012 through December 31, 2013. This period was selected because there are sufficient valid pairs to perform the analysis and because equipment, firmware and procedures had been recently upgraded to improve BAM performance and comply with FEM operating procedures. DEEP is continuing this process by working with the vendor, reaching out to other state monitoring programs and EPA staff, and refining operating and calibration procedures while closely tracking monitor performance. This includes increasing the frequency of BAM zero calibrations to seasonal (quarterly) and more closely tracking quality control procedures.

Correlation plots with data summaries of $PM_{2.5}$ FRM with FEM data for each site derived from the EPA $PM_{2.5}$ continuous monitor comparability assessment tool[2] are provided in Appendix A. DEEP also derived correlations from 2012-2013 AQS data manually using Microsoft Excel for the linear regressions. These correlations are shown in Appendix B.

The results from the Excel-based correlations are summarized in Table 3 below. DEEP found the results from the EPA tool to be similar, with small differences apparently due to missing data substitutions that DEEP performed for FRMs at sites with collocated FRM samplers. Coefficients of determination (R^2) ranged between 0.41 and 0.92. As shown in Table 3, three monitors, Bridgeport Roosevelt School, East Hartford McAuliffe Park and Waterbury Bank Street, meet the linear regression slope and intercept performance criteria for the $PM_{2.5}$ FEM. Regression slope and intercept for the correlation of the monitors is shown graphically in Figure 2, where the area enclosed by the polygon indicates acceptable combinations of slope and intercept. The linear function boundaries are shown by the colored line segments.

Based on this analysis, DEEP requests that the continuous $PM_{2.5}$ FEM monitors at Danbury WCSU, East Hartford High Street, Cornwall Mohawk Mt and New Haven Criscuolo Park be exempt from consideration for $PM_{2.5}$ NAAQS attainment comparison. Additionally, DEEP requests that the Hartford $PM_{2.5}$ FEM monitor, started in 2013, retain its Special Purpose monitor type, and therefore be exempt from NAAQS comparison for attainment determination. Table 4 provides a summary of the status of the continuous $PM_{2.5}$ monitor network as proposed by DEEP in this plan. Based on EPA's anticipated approval of these recommendations, these network changes will be implemented on January 1, 2015. It should be noted that correlation analyses based on the data from the most recent calendar year or from the most recent three calendar years did not indicate that additional monitors beyond those indicated in this analysis are complying with FEM performance requirements.

DEEP commits to update this analysis and reconsider the suitability of the continuous $PM_{2.5}$ data from additional sites for NAAQS comparison as part of future Annual Network Plans.

[2] http://www.epa.gov/airquality/airdata/ad_rep_frmfem.html

Table 3: CT $PM_{2.5}$ FEM Performance Criteria Evaluation Summary (2012-2013 Data)

Correlation Data Summary							Evaluation Summary*			
Site Name	AQS ID	Slope	Intercept	R^2	No. Data Pairs	Meets FEM Performance Criteria	Slope ≥0.9 and ≤1.1	Intercept ≥-2 and ≤2	Intercept linear condition†	Meets all performance conditions
New Haven Criscuolo Park	09-009-0027	0.99	2.94	0.82	688	N	1	0	0	0
Waterbury Bank Street	09-009-2123	1.04	1.26	0.74	227	Y	1	1	1	1
Danbury WCSU	09-001-1123	1.17	-0.10	0.92	232	N	0	1	0	0
East Hartford McAuliffe Park	09-003-1003	1.03	0.94	0.88	638	Y	1	1	1	1
East Hartford High Street	0--003-2006	1.10	1.69	0.84	226	N	1	1	0	0
Bridgeport Roosevelt School	09-001-0010	0.95	1.02	0.66	219	Y	1	1	1	1
Cornwall Mohawk Mt	09-005-0005	0.78	3.17	0.41	227	N	0	0	1	0

*A value of 1 indicates condition satisfied, 0 indicates condition not satisfied
†Intercept between 15.05-(17.32*Slope) and 15.05-(13.20*Slope)

Figure 2: CT $PM_{2.5}$ FEM Comparison with EPA Performance Standards (2012-2013 data)

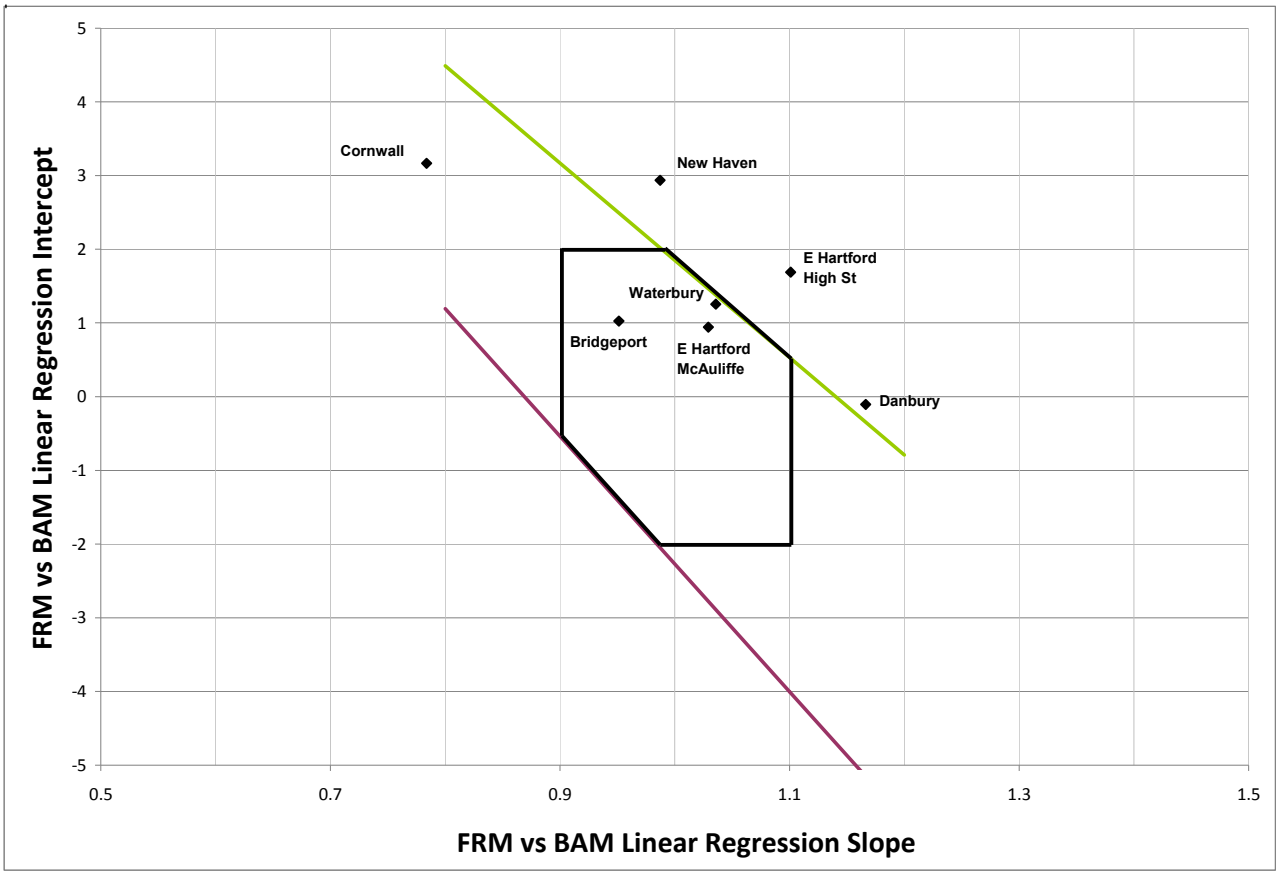


Table 4: Proposed Monitor Status of the DEEP Continuous $PM_{2.5}$ Network

Site Name	AQS ID	Parameter Name	Parameter Code	Monitor Type	Monitor Status for NAAQS	Meets FEM Performance Criteria	Eligibility for AQI Reporting
Bridgeport Roosevelt School	09-001-0010	PM2.5 LC	88101	SLAMS	Collocated	Y	Y
Danbury WCSU	09-001-1123	Acceptable PM2.5 AQI	88502	SLAMS	n/a	N	Y
Hartford Huntley Place	09-003-0025	Acceptable PM2.5 AQI	88502	SPM	n/a	n/a	Y
East Hartford McAuliffe Park	09-003-1003	PM2.5 LC	88502	SLAMS	Collocated	Y	Y
East Hartford High Street	09-003-2006	Acceptable PM2.5 AQI	88502	SLAMS	n/a	N	Y
Cornwall Mohawk Mountain	09-005-0005	Acceptable PM2.5 AQI	88502	SLAMS	n/a	N	Y
New Haven Criscuolo Park	09-009-0027	Acceptable PM2.5 AQI	88502	SLAMS	n/a	N	Y
Waterbury Bank Street	09-009-2123	PM2.5 LC	88101	SLAMS	Primary	Y	Y
Groton Fort Griswold	09-011-0124	PM2.5 LC	88101	SLAMS	Primary	n/a	Y

Ozone Network

DEEP operates eleven ozone sites in the air monitoring network. The ozone analyzers at the Cornwall and New Haven Criscuolo Park sites are operated year-round, while the remaining sites are operated from April 1 through September 30. In addition to the DEEP network, EPA operates a seasonal ozone monitor in Abington (Pomfret) as part of its Clean Air Status and Trends (CASTNET) network.

Ozone monitoring in the DEEP network is conducted using Teledyne-API Model T400 photometric ozone analyzers (method EQOA-992-087). Ozone measurements are sent to the EPA AIRNow website for AQI purposes on an hourly basis. No changes to the ozone monitoring network are anticipated through the end of 2015.

PAMS Network

DEEP operates three Photochemical Assessment Monitoring Stations (PAMS) sites in the air monitoring network. PAMS measurements are obtained from June 1 through August 31 each year. PAMS sampling generates hourly measurements of 56 volatile organic compounds (VOCs), such as benzene and toluene, which are precursors to ozone formation in addition to being hazardous air pollutants (HAPs). Two Synspec Gas Chromatographs (FID and PID detectors) are deployed at the Westport Sherwood Island and New Haven Criscuolo Park sites. A Perkin Elmer Gas Chromatograph (FID detectors) is operated at East Hartford McAuliffe Park. All three sites have on-site surface meteorological monitoring, while upper air measurements for ozone transport modeling are obtained from regional National Oceanic and Atmospheric Administration (NOAA) radiosondes. Carbonyl sampling at East Hartford was suspended for 2013 and will continue to be suspended for 2014 due to a re-prioritization of limited funding resources. No changes to the PAMS monitoring network are anticipated through the end of 2015.

NO_2 / NO_Y Network

DEEP operates five nitrogen oxide/nitrogen dioxide/oxides of nitrogen ($NO/NO_2/NO_X$) sites in the air monitoring network. All NO_2 analyzers are operated year-round. The TE Model 42C $NO/NO_2/NO_X$ (RFNA-1289-074) analyzers have been replaced in the network with Teledyne-API Model T200U (RFNA-1194-099) units. DEEP also operates two nitrogen oxide/total reactive oxides of nitrogen (NO/NO_Y) TAPI model T200U/501 monitors in the network. NO_Y is defined as $NO+NO_2+NO_Z$, where NO_Z represents higher oxides of nitrogen.

The $NO/NO_2/NO_X$ and NO/NO_Y networks fulfill requirements for PAMS, NCore and SLAMS monitoring of these parameters. These requirements include: near-road NO_2 monitoring (Hartford), area-wide NO_2 monitoring (East Hartford), nationwide NO_2 monitoring for susceptible and vulnerable populations (New Haven), NCore NO/NO_Y monitoring (Cornwall and New Haven), PAMS $NO/NO_2/NO_X$ monitoring (Westport, East Hartford and New Haven) and NO/NO_Y monitoring at one PAMS site (New Haven). In addition, $NO/NO_2/NO_X$ is monitored at Cornwall to complement and support NO/NO_Y monitoring.

Nitrogen oxide and total reactive oxides of nitrogen (NO/NO_Y) monitoring is required at one of the PAMS sites (in addition to NCore), which should be either an upwind background (Type 1) or a maximum ozone (Type 3) site. The New Haven Criscuolo Park site monitor is intended to satisfy the PAMS requirement for NO/NO_Y.

On January 22, 2010, EPA revised the NO_2 NAAQS and included new requirements for near-road NO_2 monitoring to be implemented by January 1, 2013. A subsequent NO_2 rule[3] issued on March 7, 2013,

[3] http://www.epa.gov/airquality/nitrogenoxides/pdfs/20130307fr.pdf

extended the deadline for near-road monitoring to January 1, 2014 for areas the size of Hartford. The current NO_2 rules requires states to establish a network of NO_2 near-road monitoring and community based monitoring sites based on population. All core-based statistical areas (CBSAs) with populations greater than 500,000 are required to have one near-road monitor by January 1, 2017. CBSAs with more than 1,000,000 people are required to have a community-based monitor in addition to the near road monitor by January 1, 2014. Under the current rule, three CBSAs (Bridgeport-Stamford-Norwalk, Hartford-West Hartford-East Hartford and New Haven-Milford) will require near road monitors, and one CBSA (Hartford-West Hartford-East Hartford) will require a community based monitor. The near-road sites must be selected from the highest annual average daily traffic (AADT) road segments in each CBSA where the maximum hourly NO_2 concentrations are expected to occur, taking into consideration fleet mix, roadway design, traffic congestion patterns, terrain and meteorology. Near-road sites must meet applicable siting criteria as indicated in the final NO_2 NAAQS rules and guidance documents. Based on analysis of these factors, DEEP selected and EPA approved the near-road site location at 17 Huntley Place, Hartford, adjacent to I-84 westbound near the intersections of Huntley, Hoadley, Walnut and High Streets. The site became operational on April 1, 2013.

The January 2010 rule also specifies siting requirements for the community based monitors. The requirement may be satisfied by a current PAMS site where the highest concentrations occur in the area and the site represents a neighborhood or urban scale. The East Hartford McAuliffe Park NO_2 monitor serves as the community-wide monitoring in the Hartford CBSA. In addition to the minimally-required four near-road and community-wide NO_2 monitors indicated above, the EPA Regional Administrators were required to identify at least 40 nationwide NO_2 monitors to help protect communities that are susceptible or vulnerable to NO_2 related health effects. Working closely with DEEP, the EPA Regional Administrator has identified the New Haven Criscuolo Park NO_2 monitor as part of this nationwide network. No changes to the $NO/NO_2/NO_x$ or NO/NO_y monitoring networks are anticipated through the end of 2015.

CO Network

DEEP operates 5 carbon monoxide (CO) sites in the air monitoring network. All CO samplers are operated year-round and employ TE 48i- TLE analyzers (RFCA-0981-054). Of the 5 sites, New Haven and Cornwall comply with the requirement for CO monitoring at NCore sites, Hartford and Bridgeport monitor under CO limited maintenance plans, and East Hartford and New Haven include CO as a complement to PAMS monitoring.

EPA's most recent revision to the CO NAAQS rule, finalized August 12, 2011, specifies CO monitoring collocated with NO_2 near-road monitors in CBSAs with populations greater than 1,000,000. This requirement applies to the Hartford-West Hartford-East Hartford CBSA. CO monitoring at the Huntley Place site meets the local monitoring requirement for DEEP's Hartford area CO limited maintenance plan (DEEP, 2004), as well as the near-road CO monitoring requirement. No changes to the CO monitoring network are anticipated through the end of 2015.

SO_2 Network

DEEP operates four sulfur dioxide (SO_2) sites in the air monitoring network. All samplers are TE 43i-TLE SO_2 analyzers (EQSA-0486-060) and are operated year-round. Both 1-hour and 5-minute block average SO_2 data are validated and reported to EPA as required.

The Bridgeport Edison School and the East Hartford McAuliffe Park SO_2 monitors continue to satisfy the requirements of the June 2, 2010 SO_2 final NAAQS rule[4] for population-weighted emissions index (PWEI) monitoring in the Bridgeport-Stamford-Norwalk and Hartford-East Hartford-West Hartford CBSAs, respectively. In addition, SO_2 monitoring is required at both the Cornwall Mohawk Mountain and the New

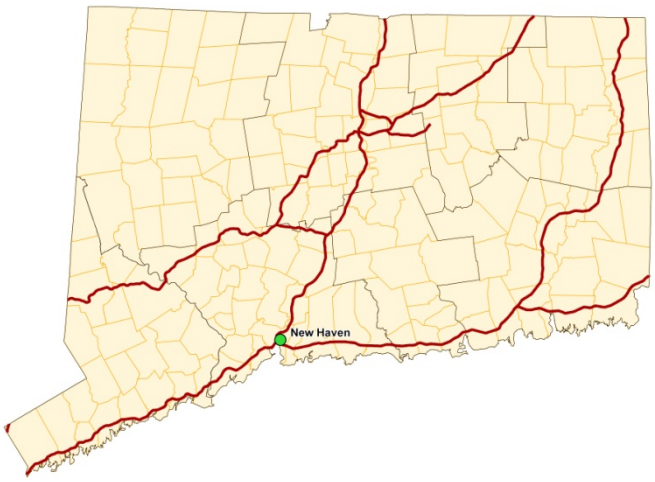
[4] http://www.epa.gov/ttn/naaqs/standards/so2/fr/20100622.pdf

Haven Criscuolo Park NCore sites. DEEP discontinued SO_2 monitoring at Westport Sherwood Island State Park on December 31, 2013 pursuant to the 2013 Network Plan.

EPA's June 2010 SO_2 final NAAQS rule also provided initial implementation guidance indicating that, in addition to design values from NCore and PWEI-required monitoring, EPA will use refined dispersion modeling for SO_2 attainment designations. Subsequent EPA guidance indicated that states may alternately employ source-oriented monitoring or a combined approach using both modeling and monitoring. As EPA has not yet proposed the requirements for emission sources that must be characterized under this rule, DEEP cannot anticipate locations for any future source-oriented monitors. No changes to the SO_2 monitoring network are anticipated through the end of 2015.

Lead (Pb) Network

The DEEP Pb monitoring network consists of primary 1-in-6 day and collocated 1-in-12 day sampling at the New Haven Criscuolo Park urban NCore site in fufillment of the revised Pb NAAQS and monitoring requirements promulgated in December 2010. No additional Pb monitors are required for stationary source or airport monitoring as required by the rule[5]. Lead measurements are obtained from Energy Dispersive X-Ray Fluorescence (XRF) analysis of the 47 mm Teflon filter samples collected using a low-volume (lo-vol) FRM R&P Partisol Plus 2025 PM_{10} Sequential Air Samplers. Although the Pb NAAQS is defined as 0.15 µg/m^3 lead in total suspended particulates (TSP), Pb monitoring regulations allow surrogate monitoring of Pb in PM_{10}, providing that design values are below two-thirds of the NAAQS, or 0.10 µg/m^3. New Haven Pb values continue to remain well below this threshold, with a 2013 design value of 0.04 µg/m^3. No changes to the Pb monitoring network are anticipated through the end of 2015.



[5] http://www.gpo.gov/fdsys/pkg/FR-2010-12-27/pdf/2010-32153.pdf

Detailed Site Information

The following section presents detailed information for each monitoring site, such as: identification code, location, history, monitored parameters, monitoring objectives, history and descriptive information.

Town – Site:	**Pomfret – Abington**		
County:	**Windham**	Latitude:	**41.84046°**
Address:	**80 Ayers Road**	Longitude:	**-72.010368°**
AQS Site ID:	**09-015-9991**	Elevation:	**209 m (686 ft)**
Spatial Scale:	**Regional**	Year Established:	**1993**
Statistical Area:	**CBSA Willimantic, CT**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	Lead (Pb)	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
													X														

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Abington site is a regional-scale site located in a rural/agricultural area in northeast Connecticut in the town of Pomfret. This site is operated by the National Park Service under the direction of EPA as part of their Clean Air Status and Trends Network (CASTNET). It is located on a hilltop approximately 2.3 km south of State Route (SR) 44 and 0.6 km east of SR 97. The site includes a portable shed located in the center of an agricultural field that is surrounded by forest. DEEP tracks ambient air quality and quality assurance data from the site but is not responsible for site operations and planning.

Monitoring Objectives: The Abington monitoring site objective is to collect ozone measurements to assess long-terms trends as part of the national CASTNET network. The site will also be used to determine compliance with the ozone NAAQS in Windham County.

Planned changes for 2014-2015: (Not addressed in this Network Plan)

Town – Site:	**Bridgeport – Edison School**		
County:	**Fairfield**	Latitude:	**41.19500°**
Address:	**115 Boston Terrace**	Longitude:	**-73.16350°**
AQS Site ID:	**09-001-0012**	Elevation:	**34 m (110 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**1983**

Statistical Area: **CSA (New York-Newark-Bridgeport)**

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	Lead (Pb)	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
														X														

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Edison School site is a neighborhood-scale site located in southwestern Connecticut in the town of Bridgeport. This site is located 170 m to the north of Rte 1, 2.2 km to the north of I-95 and 2.7 km to the east of Rte 8. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Bridgeport Edison School monitoring site objective is to collect SO_2 measurements for compliance purposes and to potentially address the source-oriented monitoring requirement for the recently finalized 1-hour SO_2 NAAQS. The monitor satisfies the requirement for population weighted emission index (PWEI) monitoring within the Bridgeport-Stamford-Norwalk CBSA.

Planned changes for 2014-2015: None

Town – Site:	**Bridgeport – Roosevelt School**		
County:	**Fairfield**	Latitude:	**41.17086°**
Address:	**Park Avenue**	Longitude:	**-73.19476°**
AQS Site ID:	**09-001-0010**	Elevation:	**7 m (23 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**1982**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/3		X	1/6												X								X				

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Roosevelt School site is a neighborhood-scale site located in southwestern Connecticut in the town of Bridgeport. This site is located 50 m to the north of I-95 and 200 m to the west of the I-95 and Rte 8 interchange. This coastal site is located in a schoolyard and residential neighborhoods are present in every direction of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Bridgeport Roosevelt School monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI and forecasting purposes. The $PM_{2.5}$ BAM and has been designated as an FEM to be used to determine NAAQS compliance as well. CO measurements will continue to be conducted at this site per requirements of the CO limited maintenance plan (LMP).

Planned changes for 2014-2015: None

Town – Site:	**Cornwall – Mohawk Mountain**		
County:	**Litchfield**	Latitude:	**41.82140°**
Address:	**Mohawk Mountain**	Longitude:	**-73.29733°**
AQS Site ID:	**09-005-0005**	Elevation:	**505 m (1656 ft)**
Spatial Scale:	**Regional**	Year Established:	**1988**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/3		X	1/3		X				X	X	X	X	X	X	X	X	X				X	X	X	X		X	

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Mohawk Mountain site is a regional-scale site located in northwestern Connecticut in the town of Cornwall. The site is located at the summit of Mohawk Mountain with an elevation of 505 m (1656 ft), and is approximately 17 km to the east of the New York border and 25 km to the south of the Massachusetts border. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The primary monitoring objectives are to meet NCore requirements for O_3, CO, SO_2, NO, NOy, $PM_{2.5}$ FRM, PM_{10} FRM, $PM_{10\text{-}2.5}$ FRM, $PM_{2.5}$ speciation, continuous $PM_{2.5}$ and surface meteorology. NO_x monitoring is conducted to support NO_y monitoring at the site. $PM_{2.5}$ chemical speciation measurements are collected through the IMPROVE network as one-in-three day 24-hour samples and by continuous analyzers for fine particulate carbon parameters (BC/UVC).

Planned changes for 2014-2015: Continuous organic carbon, elemental carbon and sulfate monitoring was terminated January 1, 2014 due to limited resources to maintain adequate operation and maintenance.

Town – Site:	**Danbury – Western Connecticut State University**		
County:	**Fairfield**	Latitude:	**41.398692°**
Address:	**White Street**	Longitude:	**-73.443148°**
AQS Site ID:	**09-001-1123**	Elevation:	**116 m (380 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**1974**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/3		X										P	X								X	X	X				

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Western Connecticut State University (WCSU) site is a neighborhood site located in western Connecticut in the town of Danbury. This site is located on the top level of a parking garage on the WCSU campus. This site is located approximately 140 m to the southeast of I-84 on White Street. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Danbury WCSU monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI and forecasting purposes. Ozone is measured at the Danbury site for compliance assessment and AQI forecast reporting.

Planned changes for 2014-2015: DEEP is proposing to monitor particulate black carbon by aethalometer (BC/UVC) to assess the wood smoke contribution to $PM_{2.5}$ in the area.

Town – Site:	**East Hartford – High Street**		
County:	**Hartford**	Latitude:	**41.74259°**
Address:	**High Street**	Longitude:	**-72.63433°**
AQS Site ID:	**09-003-2006**	Elevation:	**12 m (40 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**1989**
Statistical Area:	**CSA (Hartford-West Hartford-Willimantic)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/3		X																			X	X					

X=Existing, P =Proposed, = Planned to terminate

Site Description: The High Street site is neighborhood-scale site located in central Connecticut in the town of East Hartford. The site is located approximately 70 m to the northeast of Rte 2 and 20 m to the west of High Street. This site is located 4.2 km to the southeast of the city of Hartford. Residential neighborhoods are located in all directions of this site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The East Hartford High Street monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI forecast reporting.

Planned changes for 2014-2015: With the establishment of the near-road Hartford Huntley Place site, and considering existing monitoring at McAuliffe Park 4.7 km to the north within East Hartford, DEEP proposes to terminate all monitoring at the High Street site on December 31, 2014.

Town – Site:	**East Hartford – McAuliffe Park**		
County:	**Hartford**	Latitude:	**41.78471°**
Address:	**McAuliffe Park**	Longitude:	**-72.63158°**
AQS Site ID:	**09-003-1003**	Elevation:	**15 m (50 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**1981**
Statistical Area:	**CSA (Hartford-West Hartford-Willimantic)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/1		X	1/6									X	X	X	X	X		X	X*		X	X	X	X		X	X

X=Existing, P =Proposed, = Planned to terminate

*Carbonyl monitoring suspended for 2013 & 2014 due to federal funding reduction.

Site Description: The McAuliffe Park site is neighborhood-scale site located in central Connecticut in the town of East Hartford. The site is located approximately 120 m to the east of Rte 5, 2.0 km to the east of I-91 and 2.5 km to the south of I-291. This site is located 3.7 km to the northeast of the city of Hartford. Residential neighborhoods are located in all directions of this site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I. DEEP upgraded the air monitoring equipment shelter during Fall of 2013, during which time most monitors experienced some data loss.

Monitoring Objectives: The East Hartford McAuliffe Park monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI and forecasting purposes. The SO2 monitor satisfies the PWEI requirement for the Hartford-West Hartford-East Hartford CBSA. A PM_{10} FRM is operated for compliance purposes, as well as to gather $PM_{10-2.5}$ measurements. Ozone is measured at the McAuliffe Park site for compliance assessment and AQI and forecast reporting. PAMS and NO_x monitoring is conducted to obtain measurements of ozone precursors. CO measurements are being collected to complement the PAMS measurements.

Planned changes for 2014-2015: Carbonyl sampling was been suspended for 2013 due to a reduction in federal funding and it is proposed that carbonyl sampling remains suspended for 2014.

Town – Site:	**Greenwich – Point Park**		
County:	**Fairfield**	Latitude:	**41.005047°**
Address:	**Point Park**	Longitude:	**-73.58382°**
AQS Site ID:	**09-001-0017**	Elevation:	**3 m (10 ft)**
Spatial Scale:	**Urban**	Year Established:	**1978**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
													X								X	X	X				

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Greenwich Point Park site is an urban-scale site located is southwestern Connecticut on the Long Island Sound in Greenwich. This is a coastal site located approximately 3.0 km to the southeast and 5.0 km to the northeast of the New York border. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Greenwich Point Park monitoring site objectives include collecting ozone measurements for compliance assessment and AQI and forecast reporting.

Planned changes for 2014-2015: None

Town – Site:	**Groton – Fort Griswold**		
County:	**New London**	Latitude:	**41.35362°**
Address:	**141 Smith Street**	Longitude:	**-72.07882°**
AQS Site ID:	**09-011-0124**	Elevation:	**37 m (120 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**2007**
Statistical Area:	**MSA (Norwich-New London)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/6		X											X								P	P	X				

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Fort Griswold site is a neighborhood-scale site located in southeastern Connecticut in the town of Groton. This site is located approximately 1.1 km to the south of I-95 and 0.5 km to the east of the New London Harbor. Residential neighborhoods are located in all directions of this site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I. During 2012, the site was moved to a new shelter approximately 15 meters south of the old shelter.

Monitoring Objectives: The Groton Fort Griswold monitoring site objectives include monitoring of the two key pollutants, ozone and $PM_{2.5}$, for the southeastern part of Connecticut. Ozone is measured at the Fort Griswold site for compliance assessment and AQI and forecast reporting. $PM_{2.5}$ is currently monitored for AQI reporting and has been designated as an FEM to be used to determine NAAQS compliance.

Planned changes for 2014-2015: Installation of a $PM_{2.5}$ FRM sampler is proposed for comparison purpose with the $PM_{2.5}$ FEM BAM. Also, installation of a meteorological tower for wind speed and wind direction measurements is planned.

Town – Site:	**Hartford – Huntley Place**		
County:	**Hartford**	Latitude:	**41.771444°**
Address:	**10 Huntley Place**	Longitude:	**-72.679923°**
AQS Site ID:	**09-003-0025**	Elevation:	**57.2 m (187.7 ft)**
Spatial Scale:	**Near Road**	Year Established:	**2013**
Statistical Area:	**CSA (Hartford-West Hartford-Willimantic)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation	Traffic Counter
1/3		X			X							X			X	X				X	X	X	X			X		X

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Huntley Place site is a near-road site located in north central Hartford. The site, located on the north west side of US I-84, is approximately 0.25 km to the west of the US I-91 corridor and the Founders and Buckley Bridges over the Connecticut River. Residential neighborhoods are located to the north, east and west of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Near Road monitoring objective will focus monitoring resources to capture short-term NO_2 concentrations near heavily trafficked roads, to assess area-wide NO_2 concentrations, and to assess NO_2 concentrations for vulnerable and susceptible populations in adjacent neighborhoods. The data will be also used to help determine compliance with the 1-hour NO_2 NAAQS as established by EPA in 2010. This site also collects CO, continuous $PM_{2.5}$ & PM_{10} (BAM), BC/UVC and traffic counts. DEEP is proposing to operate a PM2.5 FRM sampler at the site.

Planned changes for 2014-2015: The establishment of a 1-in-3 day $PM_{2.5}$ FRM by January 1, 2015.

Town – Site:	**Madison – Hammonasset State Park**		
County:	**New Haven**	Latitude:	**41.25984°**
Address:	**Hammonasset SP**	Longitude:	**-72.55018°**
AQS Site ID:	**09-009-9002**	Elevation:	**3 m (10 ft)**
Spatial Scale:	**Regional**	Year Established:	**1981**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
													X								X	X					

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Hammonasset State Park site is a regional-scale site located in central coastal Connecticut in the town of Madison. This site is located approximately 1.5 km to the south of Rte 1 and 3.0 km to the south of I-95 on the Long Island Sound. Residential neighborhoods are located primarily to the northeast, north and northwest of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I. On August 30, 2012, the site was relocated approximately 450 meters to the southwest within the park due to storm damage at the previous location. The previous AQS ID was 09-009-3002.

Monitoring Objectives: The Madison Hammonasset State Park monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecast reporting.

Planned changes for 2014-2015: None

Town – Site:	**Mansfield – DOT**		
County:	**Tolland**	Latitude:	**41.73140°**
Address:	**N. Frontage Road**	Longitude:	**-72.21163°**
AQS Site ID:	**09-013-0003**	Elevation:	**76 m (253 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**2006**
Statistical Area:	**CSA (Hartford-West Hartford-Willimantic)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
																					X	X					

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Mansfield DOT site is a neighborhood-scale site located in eastern Connecticut 2 km to the north of downtown Willimantic. This site is located on North Frontage Road and is 60 m to the north of Rte 6. Residential neighborhoods are located in all directions of this site with the downtown located to the south. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Mansfield DOT site monitoring objective is to collect meteorological data for forecasting and modeling purposes.

Planned changes for 2014-2015: None

Town – Site:	**Middletown – Central Valley Hospital**		
County:	**Middlesex**	Latitude:	**41.55224°**
Address:	**Shew Hall**	Longitude:	**-72.63004°**
AQS Site ID:	**09-007-0007**	Elevation:	**58 m (190 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**1980**
Statistical Area:	**CSA (Hartford-West Hartford-Willimantic)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
													X								X	X	X				

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Middletown Central Valley Hospital site is a neighborhood-scale site located in central Connecticut. This site is located approximately 0.2 km to the east of Rte 9. Residential neighborhoods are located to the west, north and south of this site. This site meets all siting requirements and criteria with the exception of the height requirement. A height requirement waiver has been approved and granted by EPA Region I and EPA Headquarters. This site has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Middletown Central Valley Hospital monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecast reporting.

Planned changes for 2014-2015: None

Town – Site:	**New Haven – Criscuolo Park**		
County:	**New Haven**	Latitude:	**41.30117°**
Address:	**1 James Street**	Longitude:	**-72.90288°**
AQS Site ID:	**09-009-0027**	Elevation:	**3 m (10 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**2004**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/1	1/6	X	1/3	1/6	X	1/6	1/12	X		X	X	X	X	X	X	X	X	X			X	X	X	X		X	X

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Criscuolo Park site is a neighborhood-scale site located on the western side of the city of New Haven. The site is approximately 0.25 km to the north of the I-95 Quinnipiac River Bridge. The site is approximately 1.0 km to the east of the I-91 and I-95 interchange. Bulk gasoline transfer stations are located 0.3 to 2.0 km to the south of the site. Residential neighborhoods are located to the west, north and east of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The primary monitoring objectives are to meet NCore requirements for O_3, CO, SO2, NO, NOy, $PM_{2.5}$ FRM, PM_{10} FRM, $PM_{10-2.5}$ FRM, Pb, $PM_{2.5}$ speciation, continuous $PM_{2.5}$ and surface meteorology. NO_x monitoring is conducted to support NO_y monitoring at the site and in partial fulfillment of the requirement for NO_2 monitoring of vulnerable and sensitive populations 40 nationwide sites selected by the Regional Administrators. $PM_{2.5}$ chemical speciation measurements are collected through the Chemical Speciation Network (CSN) as one-in-three day 24-hour samples and by continuous analyzers for fine particulate carbon parameters (BC/UVC and EC/OC) and sulfate. Ozone is measured at the Criscuolo Park site for compliance assessment and AQI forecast reporting. PAMS and NO_x monitoring is conducted to obtain measurements of ozone precursors.

Planned changes for 2014-2015: Continuous organic carbon, elemental carbon and sulfate monitoring was terminated January 1, 2014 due to limited resources to maintain adequate operation and maintenance.

Town – Site:	**New Haven – State Street**		
County:	**New Haven**	Latitude:	**41.31078°**
Address:	**715 State Street**	Longitude:	**-72.91688°**
AQS Site ID:	**09-009-1123**	Elevation:	**9 m (30 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**1975**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

	PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/3																												

X=Existing, P =Proposed, = Planned to terminate

Site Description: The State Street site is a neighborhood-scale site located in the center of New Haven near the State Street and Trumbull Street intersection. The site is located 0.3 km to the west of I-91 and approximately 1.0 km to the northwest of the I-91 and I-95 interchange. Residential neighborhoods are located to the east, west, north and south of the site.

Monitoring Objectives: The New Haven State Street monitoring site objective is to collect $PM_{2.5}$ FRM measurements for compliance purposes.

Planned changes for 2014-2015: Due to a DOT construction project, this site was terminated effective January 1, 2014.

Town – Site:	**Stafford – Shenipsit State Forest**		
County:	**Tolland**	Latitude:	**41.97568°**
Address:	**Route 190**	Longitude:	**-72.38674°**
AQS Site ID:	**09-013-1001**	Elevation:	**265 m (869 ft)**
Spatial Scale:	**Regional**	Year Established:	**1980**
Statistical Area:	**CSA (Hartford-West Hartford-Willimantic)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
													X								X	X	X				

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Shenipsit State Forest site is a regional-scale site that is located in northern Connecticut in the town of Stafford. The site is approximately 100 m to the south of Rte 190, 17 km to the east of I-91 and 12 km to the northwest of I-84. This site is located 34 km to the northeast of the city of Hartford. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Stafford Shenipsit State Forest monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecasting purposes.

Planned changes for 2014-2015: None

Town – Site:	**Stratford – Lighthouse**		
County:	**Fairfield**	Latitude:	**41.15181°**
Address:	**Prospect Drive**	Longitude:	**-73.10334°**
AQS Site ID:	**09-001-3007**	Elevation:	**3 m (10 ft)**
Spatial Scale:	**Regional**	Year Established:	**1980**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
													X										X				

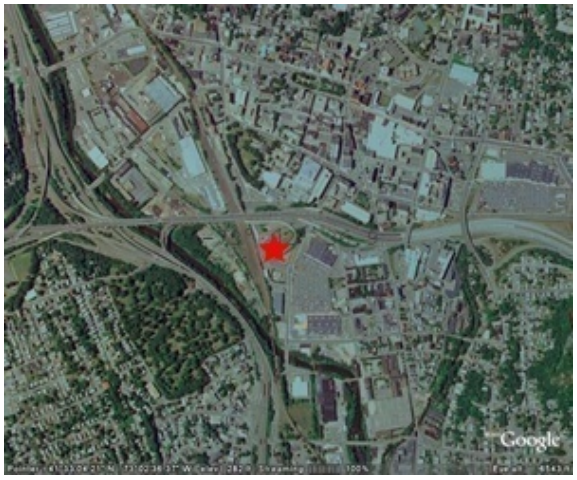
X=Existing, P =Proposed, = Planned to terminate

Site Description: The Stratford Lighthouse site is a regional-scale site located in southwestern Connecticut in the town of Stratford. This is a coastal site that is located 4.5 km to the southeast of I-95 and is directly on the Long Island Sound. This site is approximately 45 km to the northeast of the New York border. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Stratford Lighthouse monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecasting purposes.

Planned changes for 2014-2015: None

Town – Site:	**Waterbury – Meadow & Bank Street**		
County:	**New Haven**	Latitude:	**41.55046°**
Address:	**Meadow & Bank**	Longitude:	**-73.04365°**
AQS Site ID:	**09-009-2123**	Elevation:	**80 m (269 ft)**
Spatial Scale:	**Neighborhood**	Year Established:	**1975**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		



Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/3	1/6	X																			X	X	X				

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Waterbury site is a neighborhood-scale site located in western Connecticut at Meadow Street and Bank Street in the Naugatuck River Valley. This site is approximately 170 m to the south of I-84, 300 m to the east of Rte 8 and 0.75 km to the east of the I-84 and Rte 8 interchange. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Waterbury Meadow & Bank Street site monitoring objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI forecast reporting. The $PM_{2.5}$ BAM and has been designated as an FEM to be used to determine NAAQS compliance as well. A collocated FRM sampler is operated at this site to gather FRM precision data.

Planned changes for 2014-2015: None

Town – Site:	**Westport – Sherwood Island State Park**		
County:	**Fairfield**	Latitude:	**41.11822°**
Address:	**Sherwood Island SP**	Longitude:	**-73.33681°**
AQS Site ID:	**09-001-9003**	Elevation:	**4 m (13 ft)**
Spatial Scale:	**Regional**	Year Established:	**1996**
Statistical Area:	**CSA (New York-Newark-Bridgeport)**		

Pollutant and Meteorological Parameters:

PM2.5 FRM	PM2.5 FRM colo	PM2.5 Continuous	PM10/PM-Coarse FRM	PM10 FRM colo	PM10 Continuous	Lead-PM10	Lead-PM10 colo	PM Speciation (CSN)	PM Speciation (IMPROVE)	Continuous OC/EC	Continuous Sulfate	BC/UVC - Aethalometer	Ozone	SO_2	CO	$NO/NO_2/NOx$	NOy	VOCs (PAMS)	Carbonyls (PAMS)	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point	Rain Fall	Barometric Pressure	Solar Radiation
1/3													X			X		X			X	X	X				

X=Existing, P =Proposed, = Planned to terminate

Site Description: The Westport Sherwood Island State Park site is a regional-scale site located in southwestern Connecticut. This is a coastal site that is approximately 0.5 km to the south of I-95 on the Long Island Sound. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Westport Sherwood Island State Park monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes. Ozone is measured at the Westport site for compliance assessment and AQI forecast reporting. PAMS and NO_x monitoring is conducted to obtain measurements of ozone precursors.

Planned changes for 2014-2015: None

References

Connecticut Department of Environmental Protection (2004). Limited Maintenance Plans for the Hartford, the New Haven, and the Connecticut Portion of the New York/New Jersey/Connecticut Carbon Monoxide Maintenance Areas. June 18, 2004

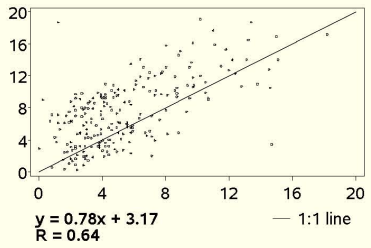
Appendix A EPA Continuous $PM_{2.5}$ Assessment Tool Output

PM 2.5 Continuous Monitor Comparability Assessment

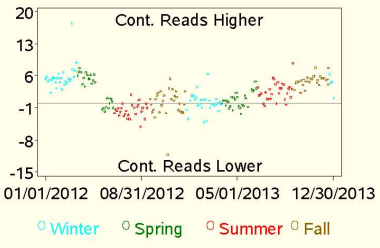
Site 09-005-0005: Torrington, CT

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC-Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Met-One BAM-1020 W/PM2.5 SCC-Beta Attenuation (731), Acceptable PM2.5 AQI & Speciation Mass (88502), POC=3

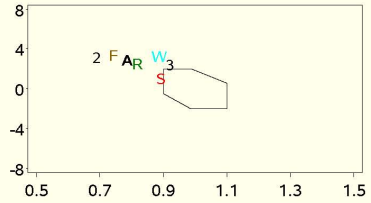
Cont. (y) vs. FRM (x) PM 2.5 ($\mu g/m^3$)



Cont. minus FRM PM 2.5 ($\mu g/m^3$)

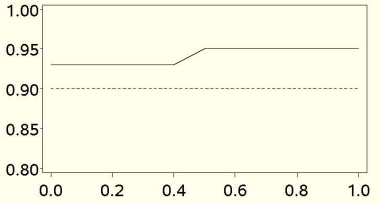


Additive (y) vs. Multiplicate (x) Bias



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

Mean PM 2.5 ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**227**	**5.4**	**7.4**	**1.37**
Winter	59	4.9	7.9	1.60
Spring	53	4.6	6.6	1.43
Summer	57	7.0	7.6	1.09
Fall	58	4.9	7.3	1.49
2011	0	.	.	.
2012	112	5.6	7.4	1.31
2013	115	5.1	7.3	1.45

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 3 ug/m^3)	Bias
AllData	**227**	**87.3**	**154**	**42.2**
Winter	59	93.5	42	60.2
Spring	53	69.7	34	43.4
Summer	57	91.2	44	15.3
Fall	58	93.4	34	53.7
2011	0	.	.	.
2012	112	70.1	74	39.8
2013	115	104	80	44.4

Data Source: EPA AQS Data Mart

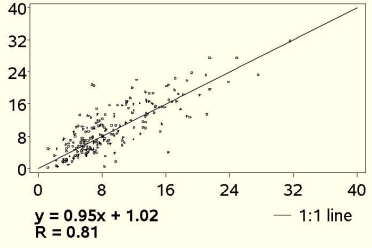
Generated on: March 11, 2014

PM 2.5 Continuous Monitor Comparability Assessment

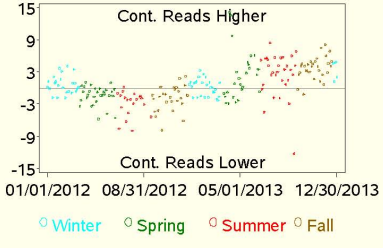
Site 09-001-0010: Bridgeport, CT

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC-Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Met-One BAM-1020 W/PM2.5 SCC-Beta Attenuation (731), Acceptable PM2.5 AQI & Speciation Mass (88502), POC=3

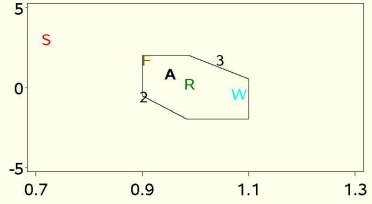
Cont. (y) vs. FRM (x) PM 2.5 ($\mu g/m^3$)



Cont. minus FRM PM 2.5 ($\mu g/m^3$)

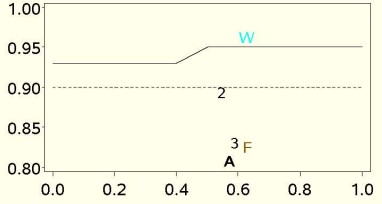


Additive (y) vs. Multiplicate (x) Bias



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

Mean PM 2.5 ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**219**	**9.0**	**9.6**	**1.06**
Winter	55	9.5	10.1	1.06
Spring	56	7.3	7.6	1.04
Summer	51	10.1	10.5	1.04
Fall	57	9.2	10.3	1.12
2011	0	.	.	.
2012	104	9.4	8.1	0.86
2013	115	8.6	10.9	1.27

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 3 ug/m^3)	Bias
AllData	**219**	**9.4**	**195**	**14.2**
Winter	55	2.6	50	7.9
Spring	56	7.2	46	9.6
Summer	51	8.6	49	12.3
Fall	57	19.0	50	26.7
2011	0	.	.	.
2012	104	-16	92	-11
2013	115	32.1	103	36.5

Data Source: EPA AQS Data Mart

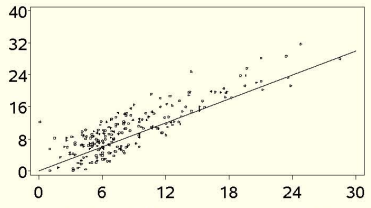
Generated on: March 11, 2014

PM 2.5 Continuous Monitor Comparability Assessment

Site 09-009-2123: Waterbury, CT

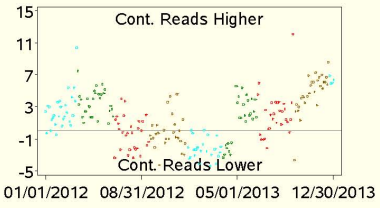
FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC-Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Met-One BAM-1020 W/PM2.5 SCC-Beta Attenuation (731), Acceptable PM2.5 AQI & Speciation Mass (88502), POC=3

Cont. (y) vs. FRM (x) PM 2.5 ($\mu g/m^3$)



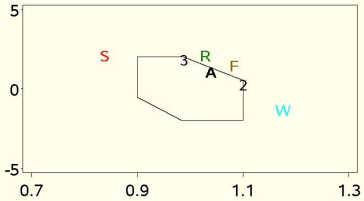
y = 1.04x + 1.26
R = 0.86
— 1:1 line

Cont. minus FRM PM 2.5 ($\mu g/m^3$)



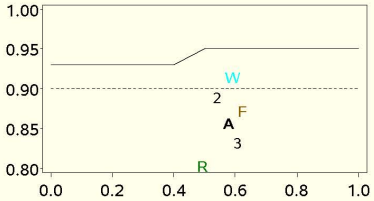
○ Winter ○ Spring ○ Summer ○ Fall

Additive (y) vs. Multiplicate (x) Bias



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

Mean PM 2.5 ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**223**	**8.7**	**10.3**	**1.18**
Winter	55	10.5	11.2	1.07
Spring	55	6.6	9.1	1.37
Summer	57	8.6	9.5	1.10
Fall	56	8.9	11.3	1.27
2011	0	.	.	.
2012	113	8.6	9.9	1.15
2013	110	8.7	10.6	1.22

Appendix A Statistics

Dataset	N	Bias (all observations)	N	Bias (only >= 3 ug/m^3)
AllData	**223**	**78.6**	**194**	**25.9**
Winter	55	0.5	47	11.9
Spring	55	49.7	49	45.6
Summer	57	223	52	13.7
Fall	56	36.4	46	33.0
2011	0	.	.	.
2012	113	17.2	99	20.2
2013	110	142	95	31.8

Data Source: EPA AQS Data Mart

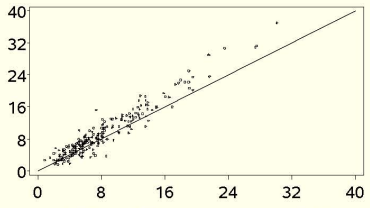
Generated on: March 11, 2014

PM 2.5 Continuous Monitor Comparability Assessment

Site 09-001-1123: Danbury, CT

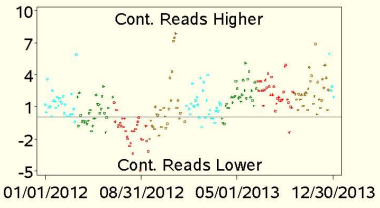
FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC-Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Met-One BAM-1020 W/PM2.5 SCC-Beta Attenuation (731), Acceptable PM2.5 AQI & Speciation Mass (88502), POC=3

Cont. (y) vs. FRM (x) PM 2.5 ($\mu g/m^3$)



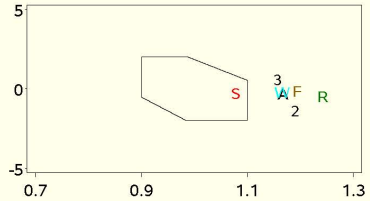
y = 1.17x + -0.10
R = 0.96
— 1:1 line

Cont. minus FRM PM 2.5 ($\mu g/m^3$)



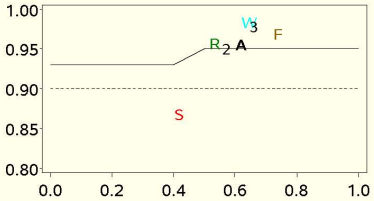
○ Winter ○ Spring ○ Summer ○ Fall

Additive (y) vs. Multiplicate (x) Bias



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

Mean PM 2.5 ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**232**	**8.0**	**9.3**	**1.15**
Winter	59	8.5	9.9	1.16
Spring	57	6.2	7.4	1.20
Summer	59	8.7	9.3	1.07
Fall	57	8.7	10.5	1.20
2011	0	.	.	.
2012	111	8.2	8.6	1.05
2013	121	7.9	9.9	1.26

Appendix A Statistics

Dataset	N	Bias (all observations)	N	Bias (only >= 3 ug/m^3)
AllData	**232**	**16.8**	**208**	**16.0**
Winter	59	16.1	52	17.0
Spring	57	20.7	48	20.5
Summer	59	6.9	57	8.4
Fall	57	23.9	51	19.1
2011	0	.	.	.
2012	111	1.5	100	3.4
2013	121	30.9	108	27.6

Data Source: EPA AQS Data Mart

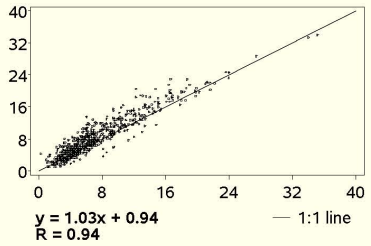
Generated on: March 11, 2014

PM 2.5 Continuous Monitor Comparability Assessment

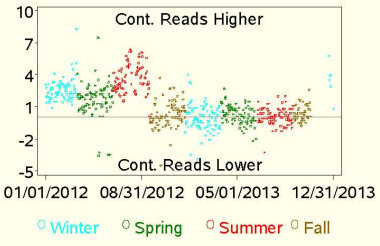
Site 09-003-1003: East Hartford, CT

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC-Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Met-One BAM-1020 W/PM2.5 SCC-Beta Attenuation (731), Acceptable PM2.5 AQI & Speciation Mass (88502), POC=3

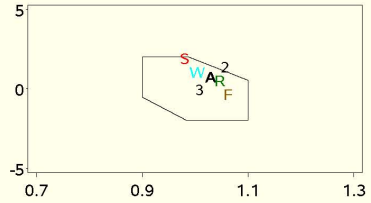
Cont. (y) vs. FRM (x) PM 2.5 ($\mu g/m^3$)



Cont. minus FRM PM 2.5 ($\mu g/m^3$)

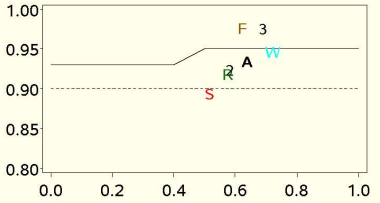


Additive (y) vs. Multiplicate (x) Bias



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

Mean PM 2.5 ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**638**	**7.3**	**8.5**	**1.16**
Winter	173	7.7	9.0	1.16
Spring	175	5.7	6.7	1.17
Summer	161	8.5	10.4	1.22
Fall	129	7.5	7.8	1.04
2011	0	.	.	.
2012	344	7.3	9.3	1.27
2013	294	7.3	7.5	1.03

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 3 ug/m^3)	Bias
AllData	**638**	**22.6**	**555**	**19.2**
Winter	173	31.1	151	22.8
Spring	175	21.6	141	19.5
Summer	161	29.8	150	26.2
Fall	129	3.5	113	4.8
2011	0	.	.	.
2012	344	39.4	304	31.6
2013	294	2.9	251	4.2

Data Source: EPA AQS Data Mart

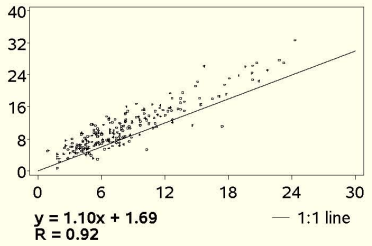
Generated on: March 11, 2014

PM 2.5 Continuous Monitor Comparability Assessment

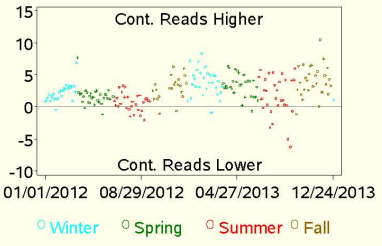
Site 09-003-2006: East Hartford, CT

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC-Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Met-One BAM-1020 W/PM2.5 SCC-Beta Attenuation (731), Acceptable PM2.5 AQI & Speciation Mass (88502), POC=3

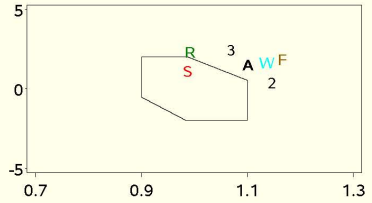
Cont. (y) vs. FRM (x) PM 2.5 ($\mu g/m^3$)



Cont. minus FRM PM 2.5 ($\mu g/m^3$)

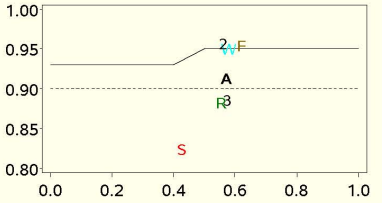


Additive (y) vs. Multiplicate (x) Bias



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

Mean PM 2.5 ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**226**	**8.2**	**10.7**	**1.31**
Winter	57	8.9	11.9	1.34
Spring	59	6.2	8.7	1.40
Summer	59	8.7	9.9	1.14
Fall	51	9.2	12.8	1.39
2011	0	.	.	.
2012	110	8.5	10.3	1.21
2013	116	8.0	11.2	1.40

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 3 ug/m^3)	Bias
AllData	**226**	**39.3**	**212**	**35.7**
Winter	57	42.3	56	39.6
Spring	59	52.7	53	42.3
Summer	59	16.8	55	16.5
Fall	51	46.8	48	45.7
2011	0	.	.	.
2012	110	25.4	103	23.3
2013	116	52.6	109	47.4

Data Source: EPA AQS Data Mart

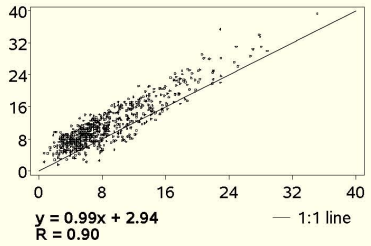
Generated on: March 11, 2014

PM 2.5 Continuous Monitor Comparability Assessment

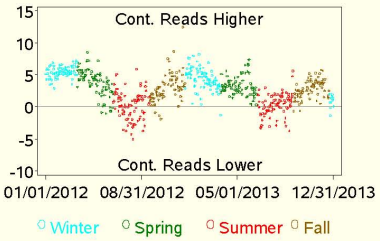
Site 09-009-0027: New Haven, CT

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC-Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Met-One BAM-1020 W/PM2.5 SCC-Beta Attenuation (731), Acceptable PM2.5 AQI & Speciation Mass (88502), POC=3

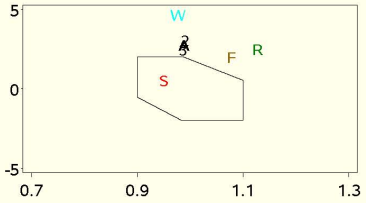
Cont. (y) vs. FRM (x) PM 2.5 ($\mu g/m^3$)



Cont. minus FRM PM 2.5 ($\mu g/m^3$)

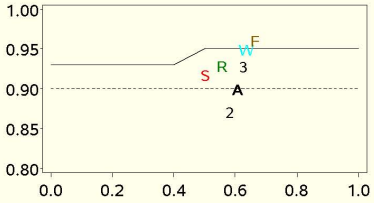


Additive (y) vs. Multiplicate (x) Bias



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 1=2011, 2=2012, 3=2013
W=Winter, R=Spring, S=Summer, F=Fall

Mean PM 2.5 ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**687**	**8.6**	**11.4**	**1.33**
Winter	177	8.7	13.3	1.53
Spring	174	6.9	10.5	1.52
Summer	175	9.7	9.9	1.02
Fall	161	9.1	12.0	1.32
2011	0	.	.	.
2012	347	8.4	11.5	1.38
2013	340	8.8	11.3	1.28

Appendix A Statistics

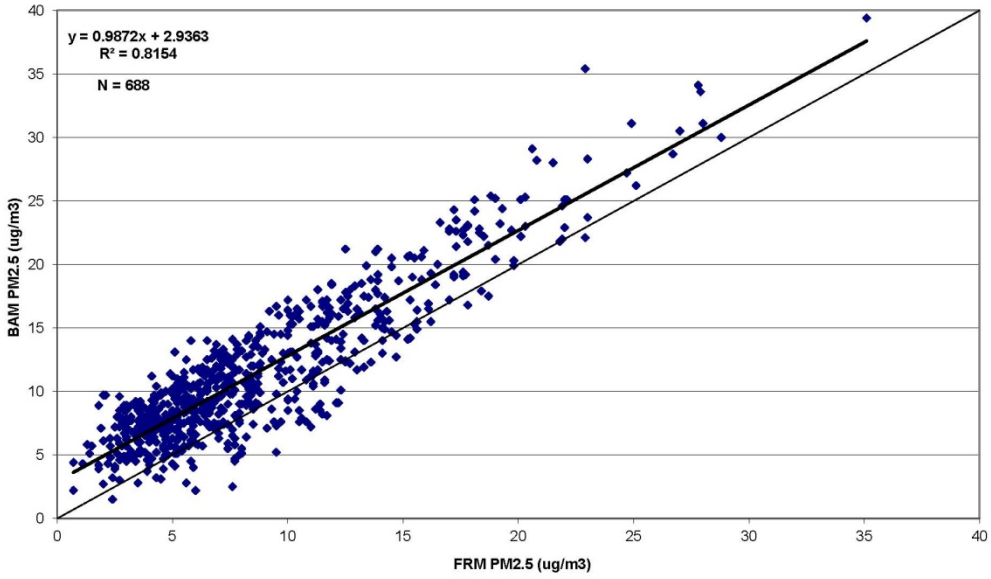
Dataset	N (all observations)	Bias	N (only >= 3 ug/m^3)	Bias
AllData	**687**	**50.2**	**642**	**42.6**
Winter	177	76.5	168	67.5
Spring	174	67.2	156	57.3
Summer	175	8.4	167	7.4
Fall	161	48.2	151	38.6
2011	0	.	.	.
2012	347	57.7	319	47.6
2013	340	42.5	323	37.6

Data Source: EPA AQS Data Mart

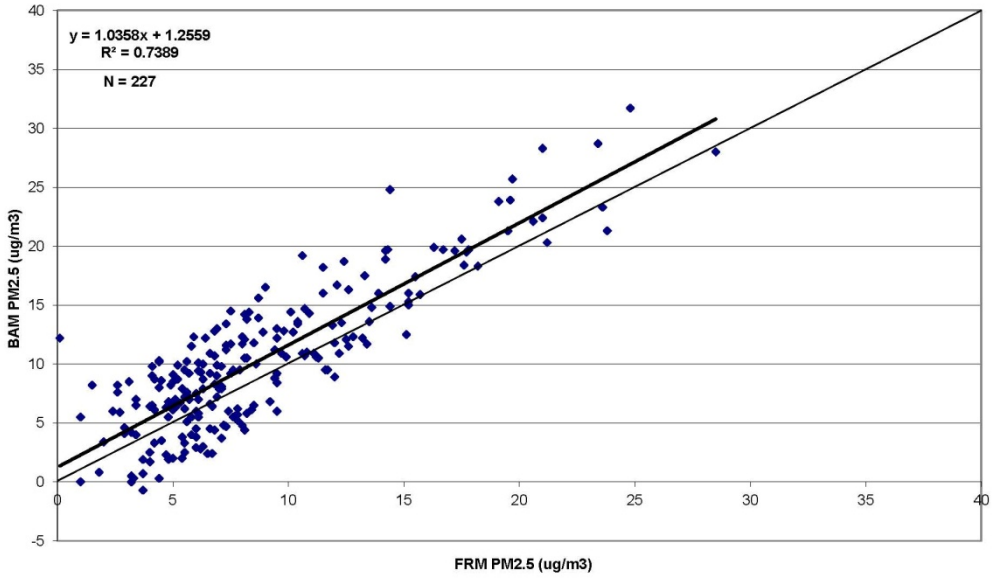
Generated on: March 11, 2014

Appendix B Continuous $PM_{2.5}$ Correlation Charts

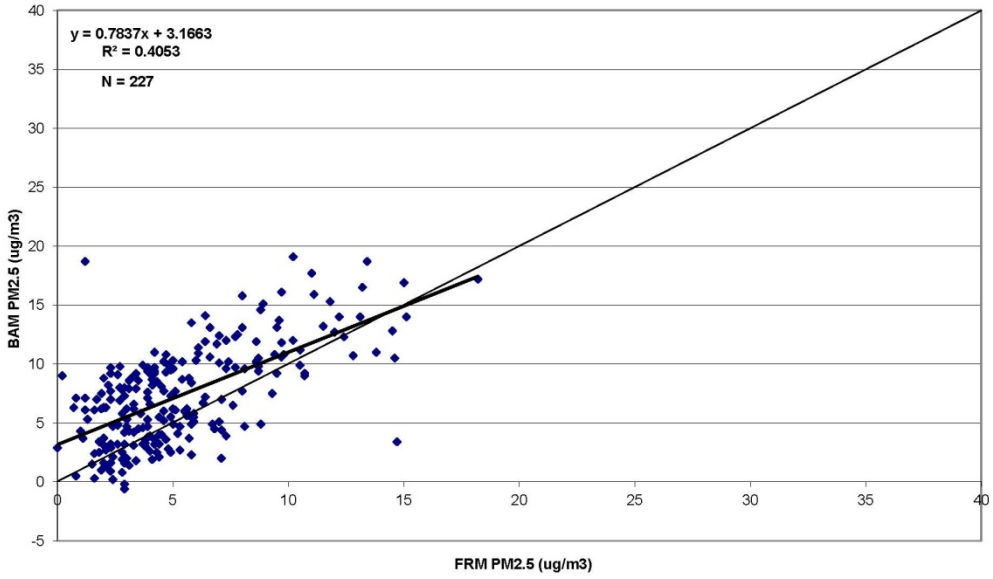
New Haven Criscuolo Park PM2.5 FRM vs. BAM
2012-2013 Data



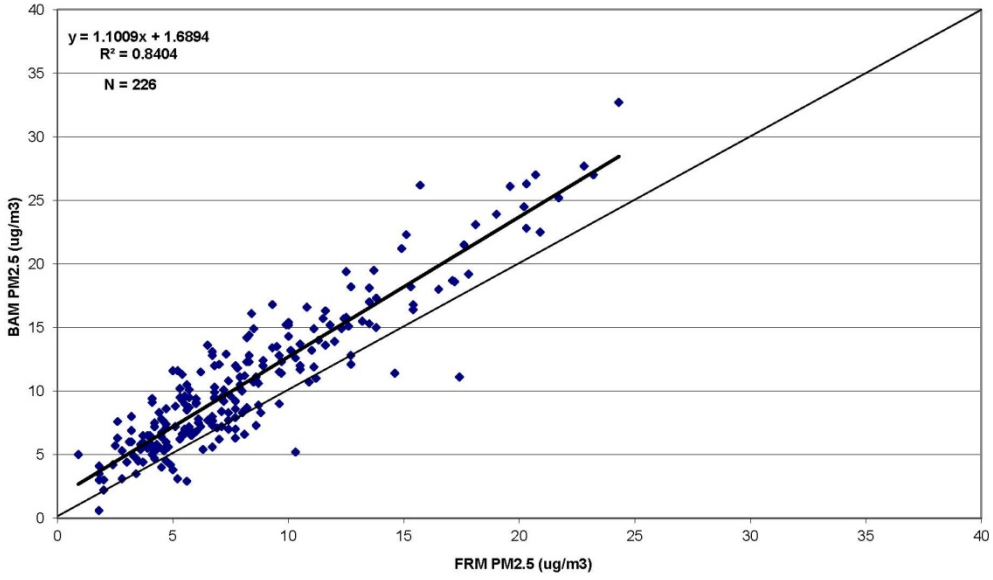
Waterbury Bank St PM2.5 FRM vs. BAM
2012-2013 Data



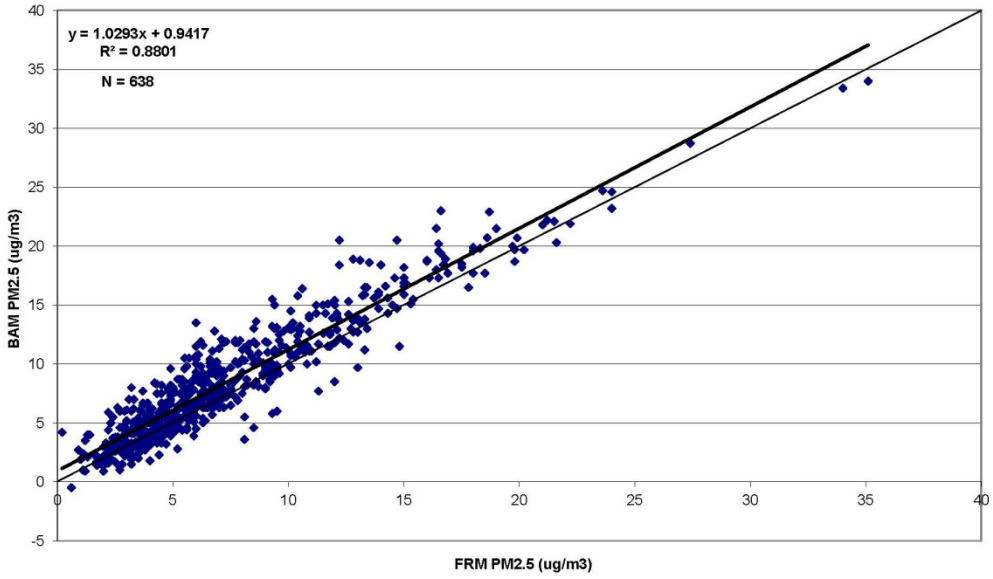
Cornwall Mohawk Mt PM2.5 FRM vs. BAM
2012-2013 Data



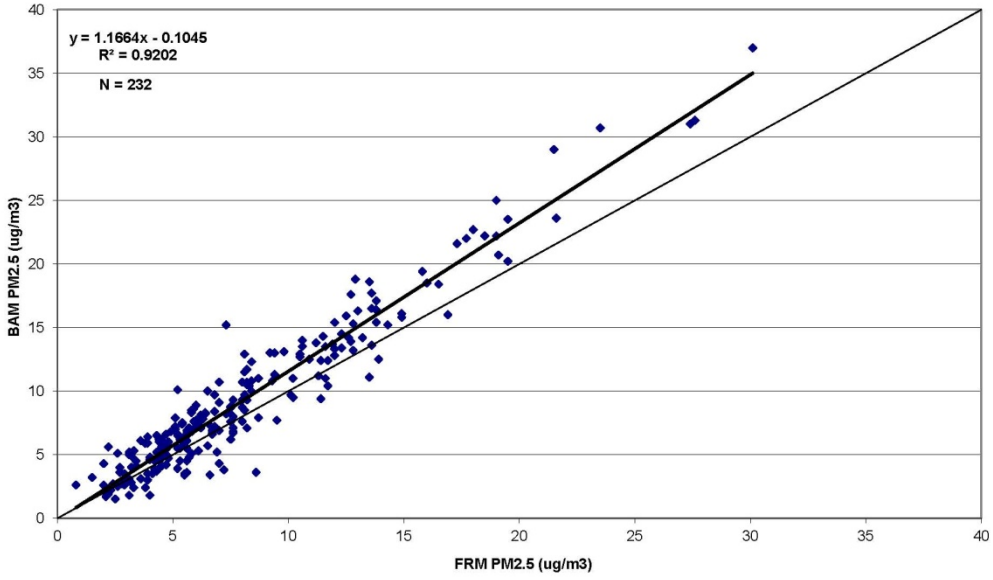
East Hartford High St PM2.5 FRM vs. BAM
2012-2013 Data

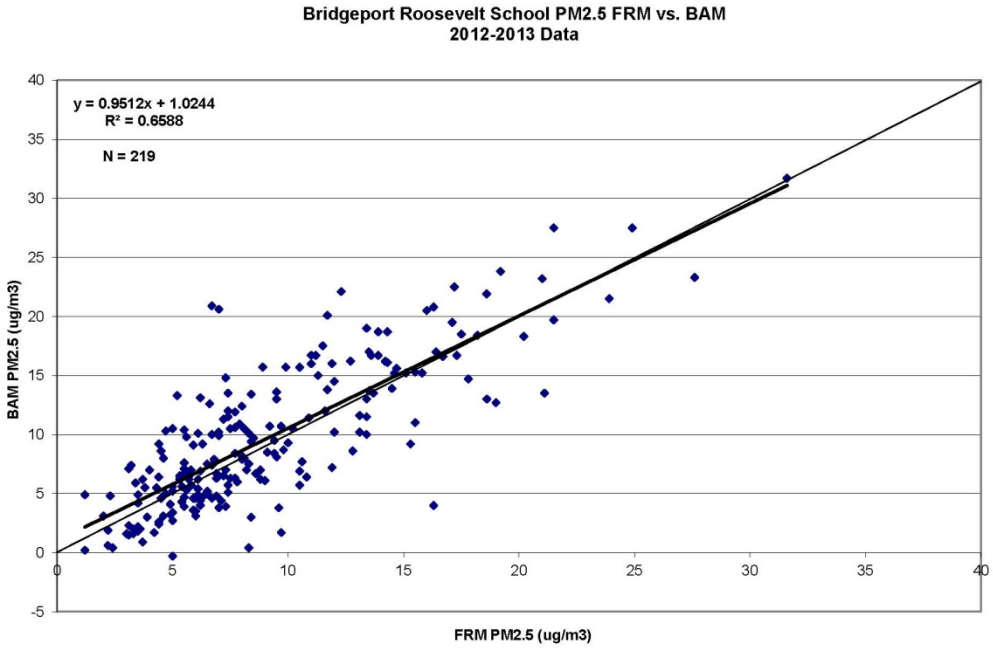


East Hartford McAuliffe Park PM2.5 FRM vs. BAM
2012-2013 Data



Danbury WCSU PM2.5 FRM vs. BAM
2012-2013 Data




Bridgeport Roosevelt School PM2.5 FRM vs. BAM
2012-2013 Data
y = 0.9512x + 1.0244
R² = 0.6588
N = 219
BAM PM2.5 (ug/m3)
FRM PM2.5 (ug/m3)
40
35
30
25
20
15
10
5
0
-5
0
5
10
15
20
25
30
35
40