THE NEW HAMPSHIRE AMBIENT AIR MONITORING PROGRAM 2013/2014 ANNUAL NETWORK REVIEW & PLAN

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THE NEW HAMPSHIRE
AMBIENT AIR MONITORING PROGRAM
2013/2014 ANNUAL NETWORK REVIEW & PLAN

prepared by

the

Air Monitoring Program

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Introduction

The New Hampshire Department of Environmental Services (DES) is pleased to submit this 2013/2014 Ambient Air Monitoring Program Annual Network Review Plan in accordance with the *Code of Federal Regulations Title 40, PART 58.* DES would like to thank the United States Environmental Protection Agency (EPA) for their continued support for improving and maintaining New Hampshire's Air Monitoring Network. Part 1 of this Plan reviews structure, objectives, history and data trends associated with DES' Air Monitoring Program (AMP). Part 2 of this Plan details individual air monitoring station information.

PART 1

As part of ongoing efforts to improve performance and maximize network efficiency within constrained resources, DES has enacted a number of changes to the network over this report period (as detailed in Network Modifications of this Part 1). Key objectives remain to provide quality ambient air data in order to

- determine attainment status with the National Ambient Air Quality Standards (NAAQS, see Table 1.1),
- guide future air quality policy decisions at the state and national level, and
- protect public health through real-time mapping and air pollution alert initiatives.

DES continually revisits and stresses basic air monitoring fundamentals and efficiency initiatives to allow for reliable, high quality data capture and analysis. Tables 1.7 through 1.10 at the end of this section summarize the current status of the New Hampshire ambient air monitoring network – July 2012 through June 2013.

Monitoring Objectives

In accordance with the DES mission "to help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire", DES operates a network of air monitoring sites throughout the state. These sites facilitate monitoring of ambient ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), volatile and semi-volatile organic compounds (VOCs), carbon monoxide (CO), lead (pb) and particulate matter (PM, $PM_{2.5}$, PM_{10}). Air monitoring data from DES' network helps assess air quality within New Hampshire, evaluate the status of air quality coming from areas upwind and also helps assess our contribution to downwind areas. These data allow DES to predict air pollution episodes, enact protective actions and warnings, develop and assess effectiveness of emission reduction strategies and support health assessments and NAAQS reviews.

Ambient air pollution monitoring began in New Hampshire in the 1970s at a few locations. Over subsequent years, it grew to the point where each of the state's ten counties hosted monitoring stations for air pollutants known to exist in the area. Over time, local industrial facilities either established pollution controls or shut down, resulting in improvements in air quality in those counties. For example, paper mills in Coos County emitted fairly high levels of sulfur dioxide and particles, resulting in periodic unhealthy air quality. Most of these facilities have since shut down and the air quality has improved to the point that there is a reduced need for monitoring in the area. Accordingly, DES has reallocated monitoring resources. However, DES continues to track emission inventories and reports of health concerns in these areas in order to assess any

potential need to reestablish air monitoring infrastructure. In recent years, DES has coordinated with EPA to streamline the monitoring network in order to meet demands for ever increasing efficiency with limited resources. DES has given careful consideration to how the need for efficiency would affect network consolidation while maintaining adequate public protection and the ability to track progress.

The current New Hampshire ambient air monitoring network is carefully configured to provide air quality data in populated areas which are potentially at risk for unhealthy air quality of one or more pollutants. Most populated areas are represented by an air monitoring station unless previous monitoring has demonstrated that either the community is not at risk or can be adequately represented by a nearby monitor. DES also considered topography, geographic coverage, and air pollution modeling in the current network design.

Now, in 2013, most of the major pollution sources that are in operation in New Hampshire are generally well controlled. Areas of continued concern are mobile and area sources where population density and highway networks are dense enough to multiply the emissions of relatively small individual sources hundreds of thousands of times over. The cumulative emissions are greatest in the southeastern portion of the state where population and highway densities are greatest. This region is generally bounded by the Massachusetts state line to the south, Nashua and Manchester to the west, Concord to the north, and Rochester and Portsmouth to the east. This same region is also the most exposed portion of the state to air pollution transport which generally crosses the southeastern part of the state from southwest to the northeast and along the New Hampshire coastline.

Pollutants of most concern in this area include ozone, ozone precursors (nitrogen oxides (NOx) and VOCs), $PM_{2.5}$ and SO_2. The monitoring network is most dense in the southeastern New Hampshire region to reflect these air quality concerns and the dense population. While the greatest risk of unhealthy air quality occurs in this portion of New Hampshire, unhealthy air quality events can occur anywhere in the state for ozone and small particles. Accordingly, the monitoring network for these pollutants extends into all portions of the state. Small particles also lead to visibility impairment, and there are federal regulations to track visibility progress with a special kind of speciation monitoring (IMPROVE) near the Class I airsheds (Great Gulf Wilderness and Presidential Dry-River Wilderness) located adjacent to Mt. Washington in northern New Hampshire.

Network Summary

Below is a brief summary of the New Hampshire Air Monitoring network and the role each station plays for public protection. The list is presented alphabetically by community.

Concord

The Concord monitoring site is primarily intended to track ozone and sulfur dioxide, the only criteria pollutants for which recent air monitoring and modeling have indicated possible population exposure to unhealthy levels. A previous Concord monitoring station was located in the valley near I-93, but was moved to reduce the risks of NOx scavenging caused by nearby freeway traffic emissions, effectively lowering the measured ozone levels in the immediate area. This site has the advantage of being in close proximity to the DES main office, for both outreach opportunities and ease of maintenance. It is also in the proximity of residential neighborhoods, retirement communities and schools. DES initiated SO_2 monitoring at this station during

October 2010 to help quantify local SO_2 levels relative to the new SO_2 NAAQS. This station represents population on a neighborhood scale.

Greens Grant – Mt. Washington base
The Greens Grant, Camp Dodge ozone monitor at the base of Mt. Washington is now the primary monitor representing the northern portion of New Hampshire. This monitoring location is also important since it represents two federally recognized Class I airsheds which also require IMPROVE visibility monitoring. DES tracks $PM_{2.5}$ levels measured by the IMPROVE monitor for the purpose of estimating current exposures and the demand for more comprehensive $PM_{2.5}$ monitoring. DES consolidated previous monitoring in the North Country (Pittsburg and Conway) at Camp Dodge due to the high correlation between sites, low population densities, and low risk of exposure to unhealthy air quality. This research oriented station represents population exposure on a regional scale.

Keene
The monitoring station in the city of Keene tracks ozone and $PM_{2.5}$ on a continuous basis. The southwest portion of the state experiences a few days per year when ozone levels have the potential to reach unhealthy levels. Similarly, DES is concerned about $PM_{2.5}$ levels at this station, especially during the winter months. DES installed a continuous $PM_{2.5}$ monitor at this station in September 2007 to better track the risks of wintertime wood smoke buildup. Keene is a prime example of a city distinguished by the factors, such as population density, woodstove use, and valley topography, that are necessary for these winter events, and other nearby communities may be similarly affected. The continuous $PM_{2.5}$ equipment has been invaluable in better understanding the winter $PM_{2.5}$ events and improving air pollution forecasts for the area. The data measured for ozone and non-winter $PM_{2.5}$ are considered valuable on a regional basis, and the data for winter $PM_{2.5}$ is considered non-regional. This station represents population exposure on a neighborhood scale.

Laconia
The Laconia monitor tracks ozone and $PM_{2.5}$ in the "Lakes Region" of the state. The population of this area swells during the summer months with tourists. The monitor represents the very northern edge of the Boston CMSA (combined metropolitan statistical area) and periodically experiences elevated ozone levels. This station represents population exposure on a regional scale.

Lebanon
The Lebanon monitoring station is sited to provide population and regional based monitoring for the Lebanon/White River Junction (VT) metropolitan area with information on regional ozone and $PM_{2.5}$. This site is also important since it represents the consolidation of the closed Claremont (ozone) and Haverhill (ozone and $PM_{2.5}$) monitoring stations. The station is located on a ridge at the Lebanon airport, just above the river valley. The site was primarily chosen to represent the regional exposure, and the station is important to the New Hampshire network for its geographic coverage.

Londonderry
The Londonderry station came online January 1, 2011 as an NCore super station measuring a wide selection of pollutants. DES worked closely with EPA to carefully select this site for its central proximity to the highly populated southeastern suburban portion of New Hampshire. The

site has no nearby emission sources of significance, but lies in the air pollution transport corridor that crosses the southern portion of the state. The site is expected to track a number of potentially unhealthy ozone events each year. Being a multi-parameter station located in an area representative of a large population living in the northern suburbs of Boston, as well as between the major population centers of Nashua and Manchester, the data collected at this site will be ideal for future research and health-related analysis. This station represents population exposure on a regional scale.

Mt. Washington – Summit

The Mt. Washington summit monitoring site is of special value for scientific research for tracking ozone transport. The summit is located at 6288 feet above sea level and is far away from any significant pollution sources; thus it is ideal for picking up long-range pollution transport into the northern portion of the state. The data are often compared to the data collected at Greens Grant (Camp Dodge) located at the base of the mountain, just a few miles to the east, to give a vertical gradient perspective. Ozone levels measured at the summit are normally higher than measured at the base and occasionally reach unhealthy levels. This station provides valuable high elevation data on a regional scale.

Nashua – Crown Street

The Crown Street monitoring station represents urban $PM_{2.5}$ within the city of Nashua. This station tracks urban population-based $PM_{2.5}$ exposure.

Nashua – Gilson Road

In recent years, the Nashua area has often seen the highest ozone concentrations in the state and there is an ongoing need to continue tracking ozone in this area. The Gilson Road monitoring station also includes photochemical assessment monitoring (PAMS), which measures important precursors to the development of ozone. These precursors include a wide variety of volatile organic compounds and nitrogen oxides. While this station is on the upwind side of the city of Nashua, it is critical to the network for tracking transport into the state and into the city of Nashua from the southwest. This station also pairs with the Pack Monadnock station to give the low elevation perspective as compared to Pack Monadnock's high elevation data for similar air masses transported into the area. This station represents population exposure on a regional scale.

Peterborough, Pack Monadnock Mountain – Summit (Miller State Park)

DES has monitored several parameters at the Pack Monadnock station since 2002 and became the state's second NCore site in 2011. The site's true value lies in the fact that it is located on a rural mountain top in the south-central portion of the state. At 2288 feet above sea level, the station is ideally located to pick up the transport airflow from the heavily populated northeast urban corridor (Washington, D.C. to Boston, MA.) and is at the northern terminus of the low-level jet that begins near the middle of Virginia. This non-population-based monitor does not have nearby sources of significance. This site measures a wide variety of pollutants, including PAMS ozone precursors, IMPROVE, ozone, and $PM_{2.5}$. Due to its location and elevation, DES considers this station to be of high scientific value for transport measurements on a regional scale.

Pembroke

The Pembroke monitoring station is located along the Merrimack River, just to the south of Merrimack Station power plant. The power plant is a large coal burning source which until

recently caused relatively high levels of SO_2 at this monitor. While the power plant is currently completing pollution control upgrades for SO_2, this station is critical for tracking progress and for its measurements of exposure in a nearby community. This station represents population exposure to SO_2 and $PM_{2.5}$ on a local scale.

Portsmouth
The Portsmouth monitoring station is located on Pierce Island on the Piscataqua River just to the east of downtown Portsmouth. DES has been successful in establishing a long-term agreement for siting at its current location and has found the location to be suitable for tracking emissions from around the Portsmouth and Kittery (ME) areas. The station also picks up some sea breeze ozone events that work their way up the river. This station represents population exposure on a limited regional scale.

Rye
The Rye Monitoring station is located at Odiorne State Park. Its purpose is primarily to track summertime sea breeze-generated ozone events. Past experience monitoring ozone in Rye found that sea breeze events sometimes generate the highest ozone in the state. These events target the coastline area and rarely penetrate more than a few miles inland. The data from this site are of scientific interest for air pollution flow dynamics when compared with data from Portsmouth station. This station represents a specific and limited population along the New Hampshire coastline for periodic high ozone events.

Woodstock
The Woodstock monitoring station is a Clean Air Status and Trends Network (CASTNET) site operated by EPA for trends monitoring. DES supports this site and uses the data for regional ozone tracking.

Beta Attenuation Federal Equivalency Method (FEM) Monitoring
DES conducts FEM continuous (hourly) $PM_{2.5}$ sampling at several stations with Beta Attenuation Monitors (BAMs). To date, DES operates BAMs at Keene, Lebanon, Londonderry, Pack Monadnock, and Portsmouth stations. DES is field testing a new API 602 BAM alongside the Met One 1020 BAM at the Portsmouth station. The Met One 1020 BAM at Portsmouth will remain primary toward the standard until such time that DES determines the API BAM provides superior data. Please note that whenever BAMs are collocated with Federal Reference Monitors (FRM), DES will report BAM data as "primary". Any FRM data generated at these sites will be considered secondary when BAM data are available.

Network Modifications
DES made relatively few modifications to the air monitoring network between July 1, 2012 and June 30, 2013. Modifications consisted of development of a new, temporary, special study site in Concord and addition of new, temporary, special study monitors at the Keene, Water Street site. DES enacted these modifications under a special EPA grant to collect and speciate $PM_{2.5}$ for wood smoke tracers. Specific network modifications include the following:

Concord, Stickney Avenue
- **Established $PM_{2.5}$ and Black Carbon Monitoring for Winter Wood Smoke Study** – DES installed and operated a Met One BAM and a Magee Aetholometer inside an existing building located on Stickney Avenue in Concord. DES operated these instruments from October 2012

through March 2013 and they should be considered Special Purpose Monitors (SPM) in accordance with 40 CFR Part 58.

Keene, Water Street

- **Established Carbon Monoxide, Sulfur Dioxide, Black Carbon and Metals Monitoring for Winter Wood Smoke Study** – DES installed and operated a carbon monoxide, a sulfur dioxide and a black carbon analyzer at the Water Street station in Keene. DES operated these instruments from October 2012 through March 2013 and they should be considered Special Purpose Monitors (SPM) in accordance with 40 CFR Part 58. Additionally, DES' collected two filters from each of 10 inversion events from October 2012 through March 2013. DES had these filters analyzed for Ni, V, As, Se, Zn, Pb, Cu, Mn, Cd and levoglucosan to help determine the base constituents of $PM_{2.5}$ in the Keene area.

Future Plans

In Support of continuous efforts to improve performance and maximize network efficiency under a constrained budget, DES plans to continue to seek efficiencies where possible within the network, however at this time there are no planned significant changes for the upcoming year – July 2013 through June 2014. DES is exploring options to address source specific SO_2 monitoring should the state choose it for 2008 SO_2 NAAQS attainment requirements. DES is also exploring the possibility of consolidating the two Nashua monitoring stations. A potential consolidated location at Nashua South High School (athletic fields) may provide a balance of being located upwind of Nashua for ozone monitoring and near highway for $PM_{2.5}$ monitoring. Such a site would also be useful for any future needs for near-road monitoring.

Purchasing/Expenses

DES' budget cycle runs from July 1 through June 30 each year. DES did not have any funding for significant equipment procurement during this budget cycle. DES did, however, expend considerable resources for personnel, consumables, parts and supplies to operate the air monitoring network. Additionally, DES maintains fleet vehicles, updates maintenance and station contracts, pays utilities for existing facilities, and enhances air monitoring stations as needed throughout the network. Other key expenses include calibrating, repairing, and maintaining equipment to meet EPA and safety standards.

Please note that a number of analyzers and samplers in DES' network are old and require frequent maintenance in order to provide adequate data. In fact, most of DES' filter based particle samplers are in need of replacement. Table 1.0 presents equipment, analyzers, and samplers that DES currently uses for ambient air quality monitoring.

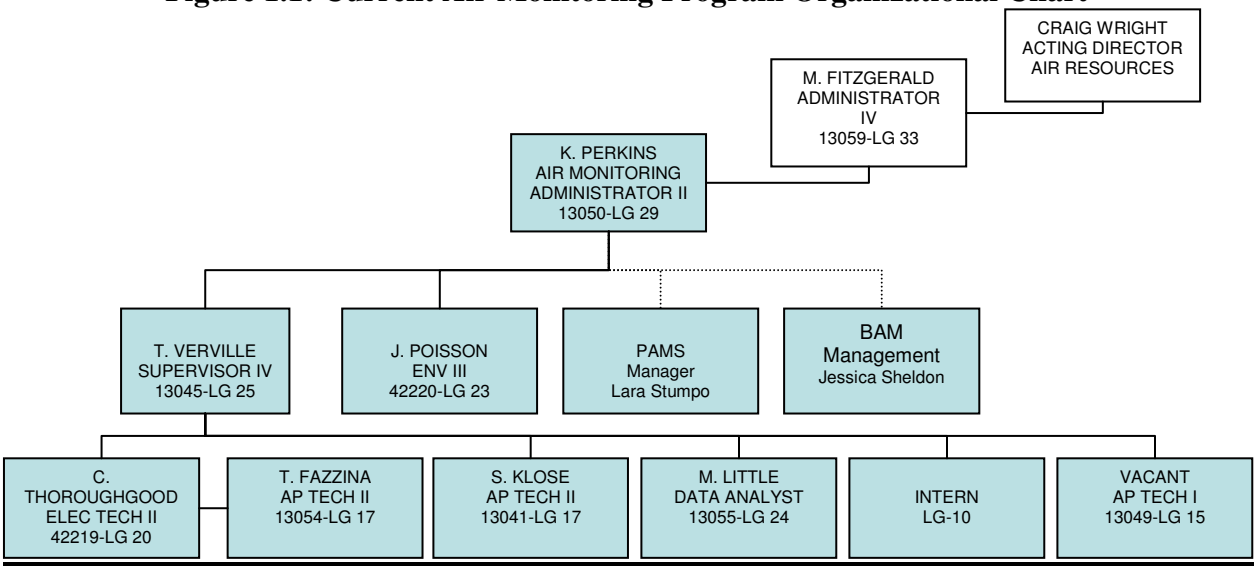
Table 1.0 : Equipment – (Method)
SO_2
Teledyne – API 100A and EU – (Automated Equivalent Method EQSA-0495-100)
Teco 43A – (Automated Equivalent Method EQSA-0486-060)
Teco 43C – (Automated Equivalent Method EQSA-0486-060)
Thermo 43i – (Automated Equivalent Method EQSA-0486-060)
CO
Teco 48C - (Automated Reference Method RFCA-0981-054)
Thermo 48i – (Automated Reference Method RFCA-0981-054)

Table 1.0 : Equipment – (Method)
Teledyne – API 300 EU – (Automated Equivalent Method RFCA-1093-093)
O_3
Teledyne – API 400E - (Automated Equivalent Method EQOA-0992-087)
Teco 49 - (Automated Equivalent Method EQOA-0880-047)
Teco 49C - (Automated Equivalent Method EQOA-0880-047)
Thermo 49i - (Automated Equivalent Method EQOA-0880-047)
Teco 49C PS – (Lab Standard EQOA-0880-047)
NO_2
Teledyne – API 200E – (Automated Reference Method RFNA-0691-082)
Teco 42C – (Automated Reference Method: RFNA-1289-074)
Thermo 42i – (Automated Reference Method RFNA-1289-074)
NO_y
Ecotech Model 9843 NOy
Particulate Matter
R&P Partisol Model 2000 (filter based)
R&P Partisol Model 2025 (filter based)
BGI Model PQ200 (filter based)
R&P TEOM Model 1400
Met One BAM Model 1020
API 602 BAM
IMPROVE Visibility Speciation Monitor
Calibrator (multiple parameter)
Monitor Labs Model 8500
TECO 165 Multi Gas Calibrator
Teledyne – API Model 700, 700E and 700U Gas Calibrators
Environics Series 6103 Multi Gas Calibrator
Data Acquisition System
Environmental Systems Corporation (ESC) Data Logger Model 8816
ESC Data Logger Model 8832
Agilaire Software and support Agreement
PAMS
Perkin Elmer Ozone Precursor System- Clarus 500 Gas Chromatograph, TurboMatrix 100 Thermal Desorber
Perkin Elmer Total Chrom Software- version 6.2.1
Parker Balston TOC Gas Generator
Perkin Elmer Hydrogen Generator
Parker Balston Hydrogen Generator
Uninterrupted Power Supply- APC Model SURT8000XLT

Personnel

The AMP continues to operate with one full-time technical position vacant as well as one technical position previously eliminated. Due to current budget constraints, DES has no immediate intent to fill the vacant position. DES assigns some technical support duties to individuals outside the official AMP organizational structure, including continuous $PM_{2.5}$ management and PAMS management duties which are supported by the Atmospheric Science and Analysis section of the Air Resources Division, as illustrated in Figure 1.1.

Figure 1.1: Current Air Monitoring Program Organizational Chart



Cooperative Air Monitoring Initiatives

DES is involved in numerous cooperative air monitoring initiatives with local, state, and private entities.

For over 23 years now, the Appalachian Mountain Club (AMC) and DES have been joining resources to conduct ozone monitoring in Coos County. Since 1990, AMC and DES have been cooperatively monitoring ozone on the summit of Mount Washington to determine the exposure of hikers and other visitors to this pollutant and to quantify ozone transport from upwind areas. Significant levels of ozone have been measured on the summit during the summer months throughout this time. Also, AMC and DES began cooperatively managing a second monitoring station near the base of Mount Washington (Camp Dodge) in 1996, a White Mountain National Forest Class I Wilderness visibility monitoring station. AMC's involvement in air monitoring activities saves DES significant resources.

DES also partners with the United States Department of Agriculture (Forest Service) in a Challenge Cost Share Agreement relative to air monitoring activities at Camp Dodge in Green's Grant. This agreement provides a framework of cooperation for station work such as upgrades, tree trimming, and routine costs. The Forest Service operates an IMPROVE (Interagency Monitoring of Protected Visual Environments) sampler at this station. DES and AMC currently maintain ozone sampling, upkeep, and routine site inspections at this station.

DES provides critical real-time rainfall data to the New Hampshire Department of Corrections for the protection of public health. When rainfall at the Laconia, Green Street station exceeds a specific amount over a specific time period, an automated notification system operated by DES facilitates closing of a public beach and alerts of possible bacterial dangers. Similar notification systems incorporating our real-time meteorology data have been used to enact erosion control inspections at various New Hampshire Department of Transportation road construction projects.

Monitoring Trends

Each year, DES reviews its monitoring data and calculates design values for comparison to the National Ambient Air Quality Standards (NAAQS) – Table 1.1. EPA establishes these standards to protect public health and welfare. In general, design values consider the three most recent years for an averaging period in the form of the NAAQS, such as looking at the 3-year average of the annual 4th highest ozone 8-hour value.

New Hampshire air quality data trends reveal the important progress that has been made in improving air quality in New Hampshire. Cleaner vehicles, fuels, power plants, industry, and small engines located throughout the region have all contributed to much improved air quality since the 1980s. More recent trends show that additional progress is still being made, but the task becomes more difficult as there are becoming fewer pollution sources that remain uncontrolled. It is also important to note that while progress has been made, the NAAQS have been lowered in some cases to be more protective, thus we have more progress to make.

Figures 1.2 through 1.16 present monitoring trends for the key criteria pollutants for the period 1997 through 2012. In all cases, air quality is significantly improved from the 1970s and 1980s. Currently monitored levels of nitrogen dioxide (NO_2), PM_{10}, lead (Pb) and carbon monoxide (CO) are safely below the current levels of the NAAQS. However, the NAAQS for ozone, $PM_{2.5}$, and SO_2 have all recently been tightened (lowered) to levels near what is currently being measured in New Hampshire. Two of these pollutants (ozone and $PM_{2.5}$) have drawn significant attention by DES as a focus for network monitoring and SIP planning. For SO_2, 1-hour NAAQS was recently added with a threshold of 0.075 parts per million (ppm) and DES is assessing its monitoring focus on a source-specific basis in order to address attainment requirements.

Existing SO_2 monitoring indicates that all areas of New Hampshire meets the 3-hour sulfur dioxide secondary NAAQS. Monitoring also indicates that Londonderry, Pack Monadnock, Manchester and Portsmouth are below the new 1-hour primary SO_2 NAAQS. The Pembroke monitoring station historically measured 1-hour SO_2 concentrations above the 0.075 ppm threshold until 2012. This station was sited as a source-specific monitor, located near a coal-burning power plant. In 2012 the power plant began operations of a new SO_2 scrubber which has significantly lowered its SO_2 emissions. As a result, the Pembroke monitor recorded a decrease from 57 daily maximum 1-hour SO_2 exceedances of 0.075 ppm in 2011 to just one exceedance of the same threshold in 2012. Exceedances of NAAQS thresholds during recent years are summarized in Table 1.2.

Tables 1.3 through 1.7 provide the five-year maximum and most recent (2012) design values for each criteria pollutant. These are also expressed as percentages of the current NAAQS. CO and NO_2 design values are all under 50% of the NAAQS. The 3-hour SO_2 design value stays under 60% of the NAAQS. The highest SO_2 site, Pembroke, exceeded the NAAQS in 2011. With the lower ozone standard of 0.075 ppm, Pack Monadnock summit just barely exceeded the standard in 2010, but it and all other sites are under the standard in 2012.

New Hampshire operates two Photochemical Assessment Monitoring Stations (PAMS): Pack Monadnock and Nashua. Tables 1.12 and 1.13 show that none of the toxic PAMS parameters are near their Ambient Allowable Limits (AAL) at either site. Benzene has the lowest AAL, 5.7 ug/m^3. At Pack Monadnock and Nashua, the maximum 24-hour averages for benzene over the

full period were about 1.1 ug/m^3, which is about 12% of the AAL. Maximum values for all the other parameters for both sites are consistently less than 1% of their AAL.

Table 1.1: 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 Dec 14, 2012	$PM_{2.5}$	primary	Annual	12 µg/m^3	annual mean, averaged over 3 years
		secondary	Annual	15 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] [38 FR 25678, Sept 14, 1973]		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

as of October 2011

(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 NO2 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.

Table 1.2: NAAQS Exceedences (Days) in New Hampshire (2008-2012)
(Includes all monitoring stations in operation since 2008)

Parameter/Location	Number of Exceedances					Most Recent
	2008	2009	2010	2011	2012	
CO						
1-Hour (1971)	0	0	0	0	0	None
8-Hour (1971)	0	0	0	0	0	1996
Lead						
Quarterly (2008)	0	0	0	0	0	None
NO_2						
1-Hour (2010)	//	//	0	0	0	None
Annual (1971)	0	0	//	//	//	None
Ozone						
8-Hour (2008)						
Camp Dodge	0	0	0	0	0	None
Claremont	1	--	--	--	--	2008
Concord	0	0	1	0	0	2010
Keene	1	0	0	0	0	2008
Laconia	0	0	2	0	0	2010
Lebanon	1	0	0	0	0	2008
Londonderry	--	--	--	2	2	2012
Manchester	0	0	1	0	0	2010
Miller	4	0	4	0	2	2012
Mt. Washington	4	0	2	0	0	2013
Portsmouth	1	1	2	1	1	2012
Rye	3	2	1	2	2	2012
Woodstock	0	0	0	0	0	None
PM_{10}						
24-Hour (1987)	0	0	0	0	0	None
$PM_{2.5}$						
Annual (1997)	0	0	0	0	0	None
24-Hour (2006)						
Keene	1	1*	1*	4*	1*	2013
Laconia	0	0	0	0	0	2005
Lebanon	0*	0*	0*	0*	0*	None
Manchester	--	--	--	--	--	2005
Miller	0*	0*	0*	0*	0*	2002
Nashua	0	0	0	0	0	2007
Pembroke	1	0	1	0	0	2010
Portsmouth	0*	0*	1*	0*	0*	2010
SO_2						
Annual (1971)	0	0	0	0	0	None
24-Hour (1971)	0	0	//	//	//	1980
1-Hour (2010)	//	//				
Concord	--	--	--	4	0	2011
Londonderry	--	--	--	0	0	None
Manchester	--	--	1	1		2011
Miller	--	--	0	0	0	None
Pembroke	--	--	95	57	1	2012
Portsmouth	--	--	0	0	0	2008

** - Denotes measured by FEM equipment. Otherwise measured by FRM methods*
// - Denotes NAAQS cited is not vald for this period
Notes: Claremont station closed in late 2008, Manchester closed in 2012, and Londonderry opened January 1, 2011. Concord station began SO_2 monitoring in 2011.

Table 1.3: 2010 – 2012 Ozone Design Values (ppb)

Ozone	Design Value (DV) Description	NAAQS	5-Year Max DV	% of NAAQS	Location	2012 Max DV	% of NAAQS	Location
8-Hour	3-year average of 4th-highest daily maximum 8-hour averages	75	79	105%	Rye	70	93%	Pack Monadnock, Mount Washington

Table 1.4: 2010 – 2012 Carbon Monoxide Design Values (ppm)

CO	Design Value (DV) Description	NAAQS	5-Year Max DV	% of NAAQS	Location	2012 Max DV	% of NAAQS	Location
1-Hour	2nd maximum over 2 years	35	6.0	17%	Manchester	3.2	9%	Manchester
8-Hour	2nd maximum over 2 years	9	3.5	39%	Manchester	2.4	27%	Londonderry

Table 1.5: 2010 – 2012 Sulfur Dioxide Design Values (ppb)

SO_2	Design Value (DV) Description	NAAQS	5-Year Max DV	% of NAAQS	Location	2012 Max DV	% of NAAQS	Location
1-Hour	3-year average of 99th percentile of daily maximum 1-hour averages	75	221	295%	Pembroke	157	209%	Pembroke
3-Hour	2nd maximum	500	221	44%	Pembroke	28	6%	Pembroke

Table 1.6: 2010 – 2012 Nitrogen Dioxide Design Values (ppb)

NO_2	Design Value (DV) Description	NAAQS	5-Year Max DV	% of NAAQS	Location	2012 Max DV	% of NAAQS	Location
1-Hour	3-year average of 98th percentile of daily maximum 1-hour averages	100	46	46%	Manchester	11	11%	Nashua
Annual	Annual average over 3 years	53	11	21%	Manchester	2	4%	Nashua

Table 1.7: 2010 – 2012 Fine Particulate Matter Design Values ($\mu g/m^3$)

$PM_{2.5}$	Design Value (DV) Description	NAAQS	5-Year Max DV	% of NAAQS	Location	2012 Max DV	% of NAAQS	Location
24-Hour	3-year average of 98th percentile of midnight-to-midnight 24-hour averages	35	29	83%	Keene	27	77%	Keene
Annual	Annual average over 3 years	12	11	73%	Keene	9.2	61%	Keene

Figure 1.2: Ozone trends for the 8-hour NAAQS (1997-2012)

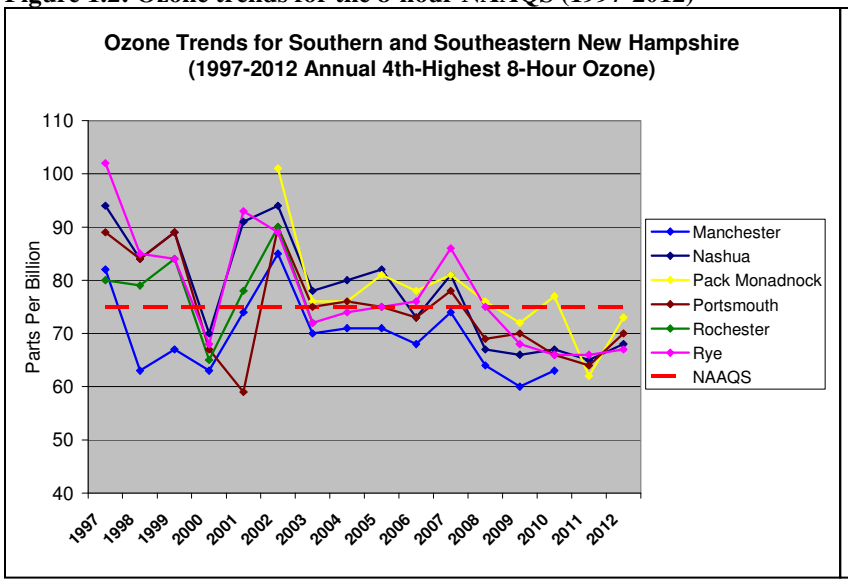


Figure 1.3: Ozone trends for the 8-hour NAAQS (1997-2012)

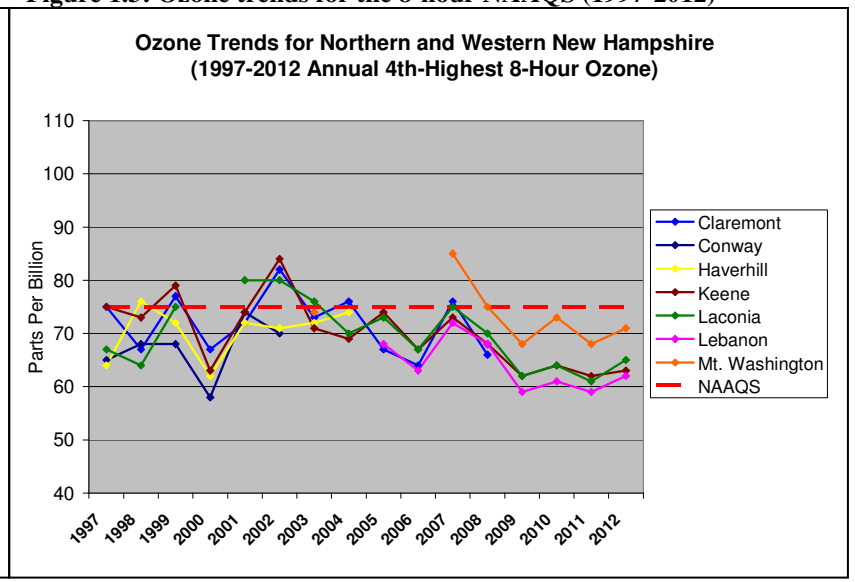


Figure 1.4: Carbon Monoxide trends for the 1-hour NAAQS (1997-2012)

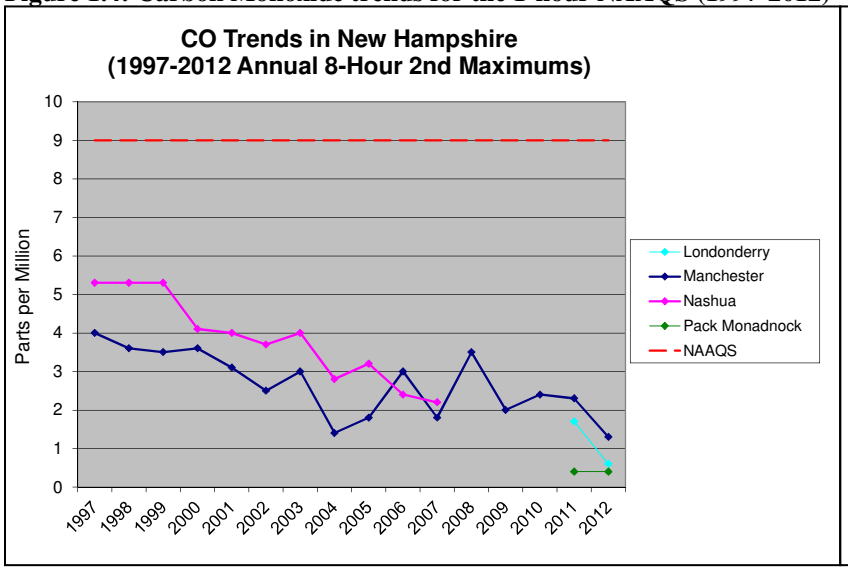


Figure 1.5: Carbon Monoxide trends for the 8-hour NAAQS (1997-2012)

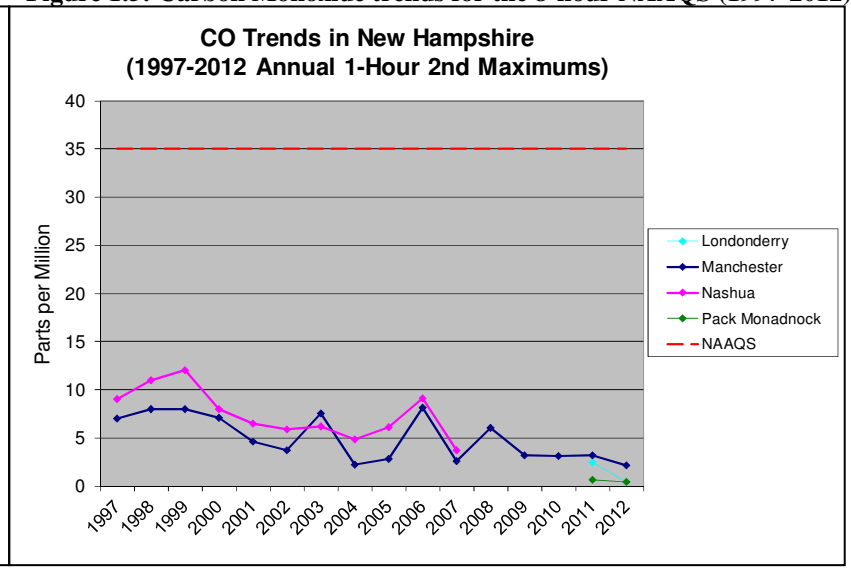


Figure 1.6: $PM_{2.5}$ trends for the 24-hour NAAQS (2001-2012)

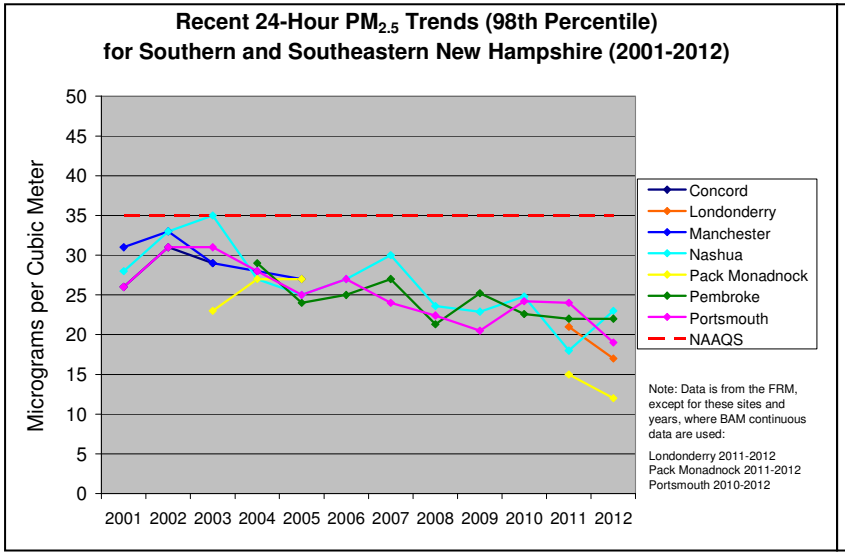


Figure 1.7: $PM_{2.5}$ trends for the 24-hour NAAQS (2001-2012)

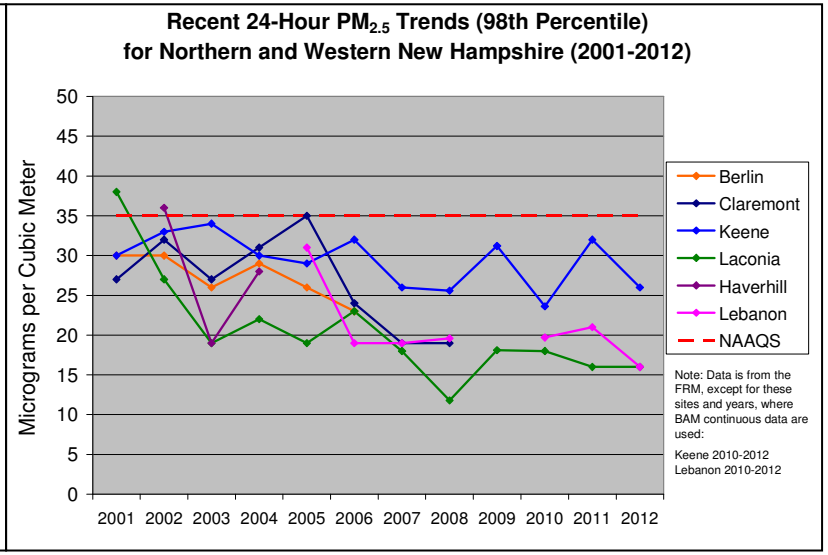


Figure 1.8: $PM_{2.5}$ trends for the annual NAAQS (2001-2012)

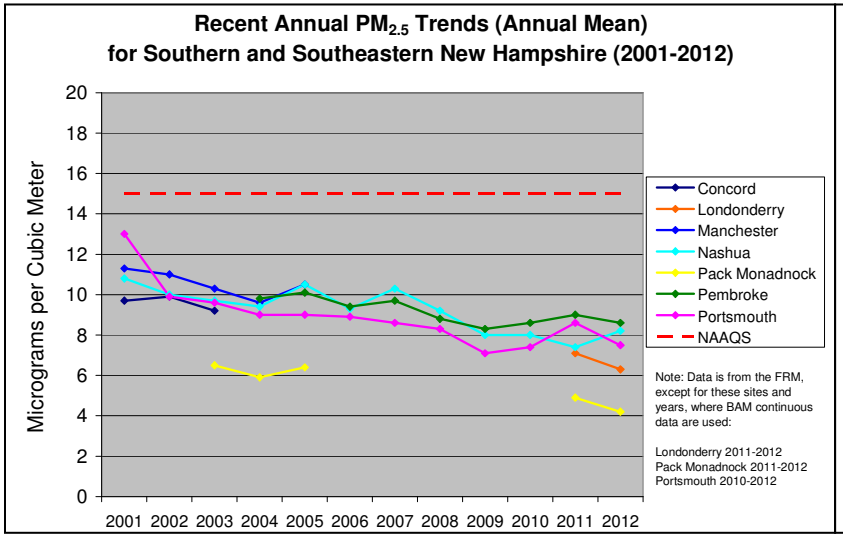


Figure 1.9: $PM_{2.5}$ trends for the annual NAAQS (2001-2012)

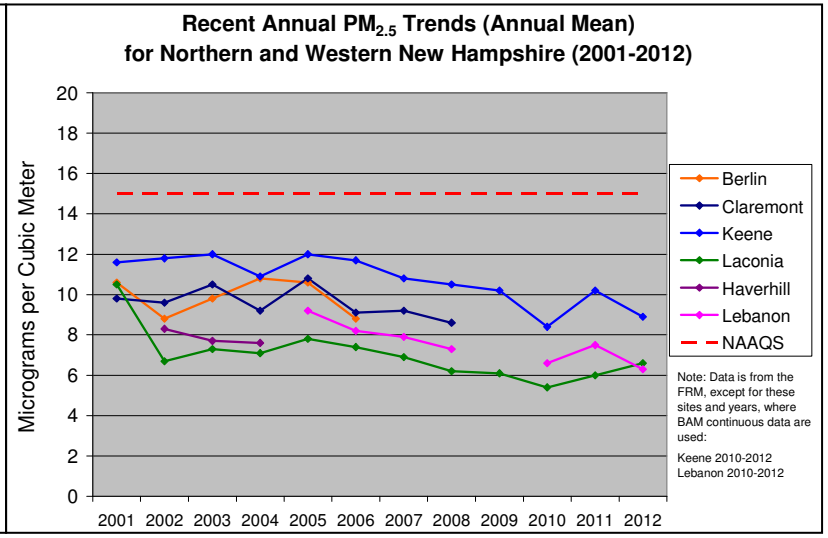


Figure 1.10: Nitrogen Dioxide trends for the 1-hour NAAQS (2001-2012)

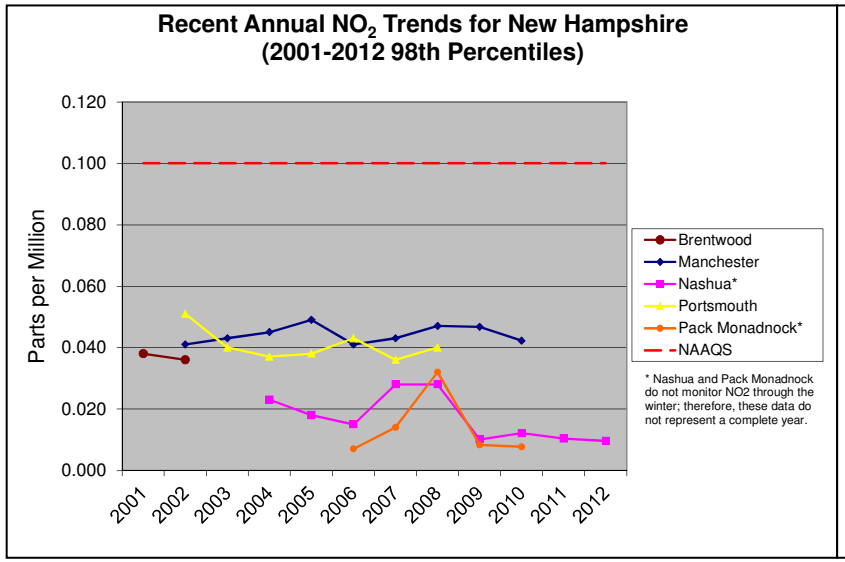


Figure 1.11: Nitrogen Dioxide trends for the annual NAAQS (2001-2012)

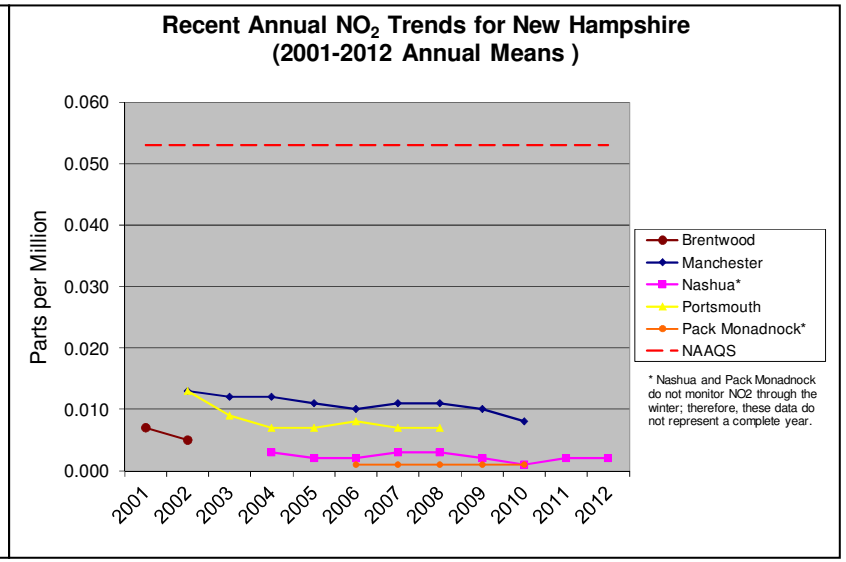


Figure 1.12: Sulfur Dioxide trends for the 1-hour NAAQS (2001-2012)

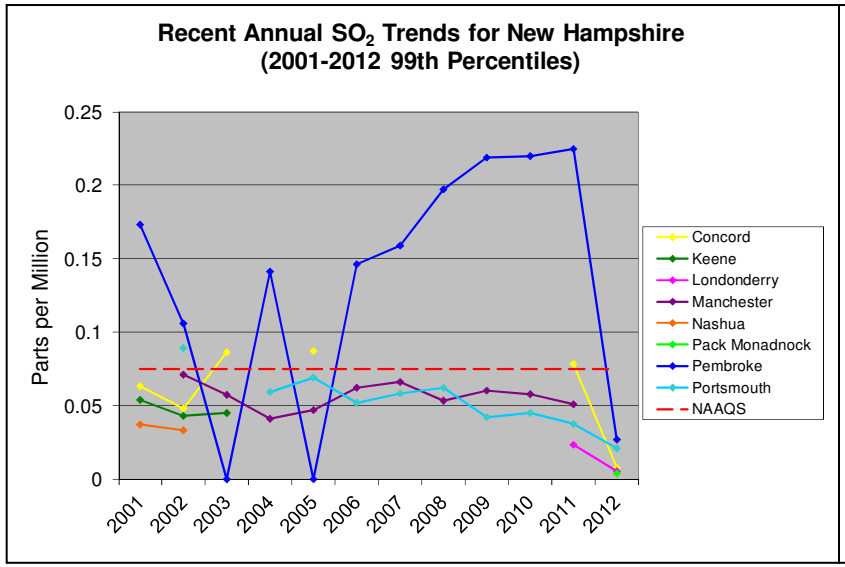


Figure 1.13: Sulfur Dioxide trends for the 3-hour NAAQS (2001-2012)

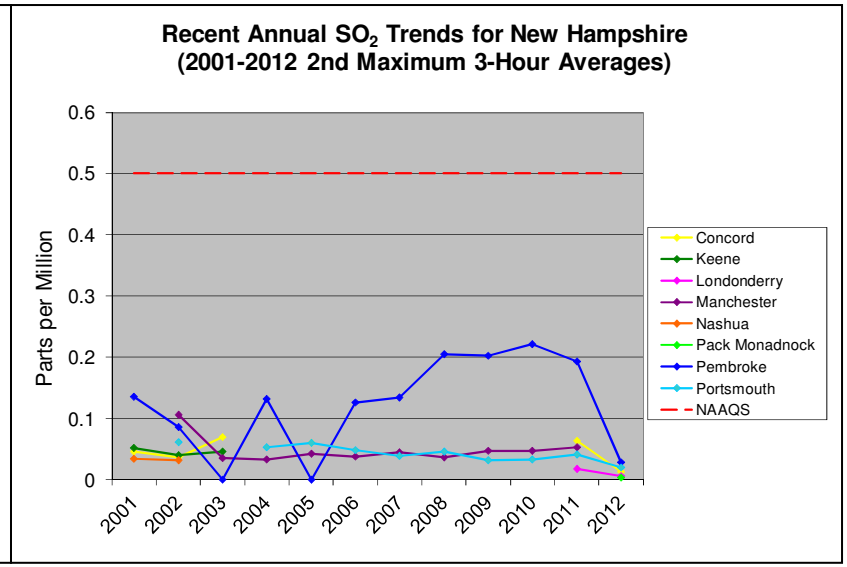


Figure 1.14: PM_{10} trends for the 24-hour NAAQS (2001-2012)

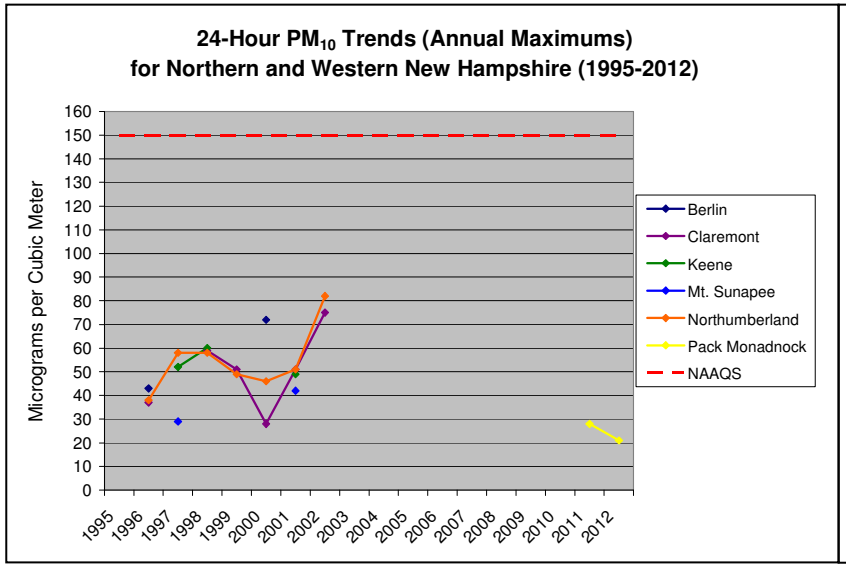


Figure 1.15: PM_{10} trends for the 24-hour NAAQS (2001-2012)

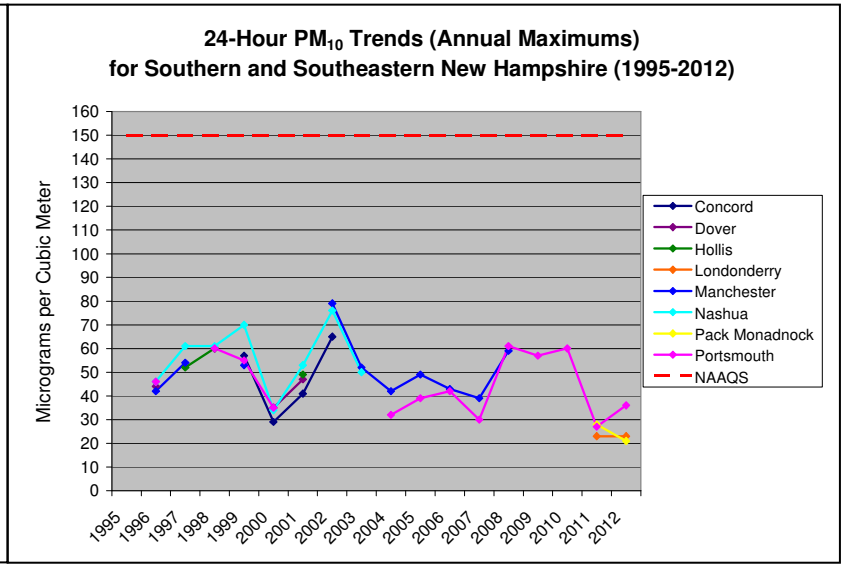


Figure 1.16: Lead trends for the primary NAAQS (2012)

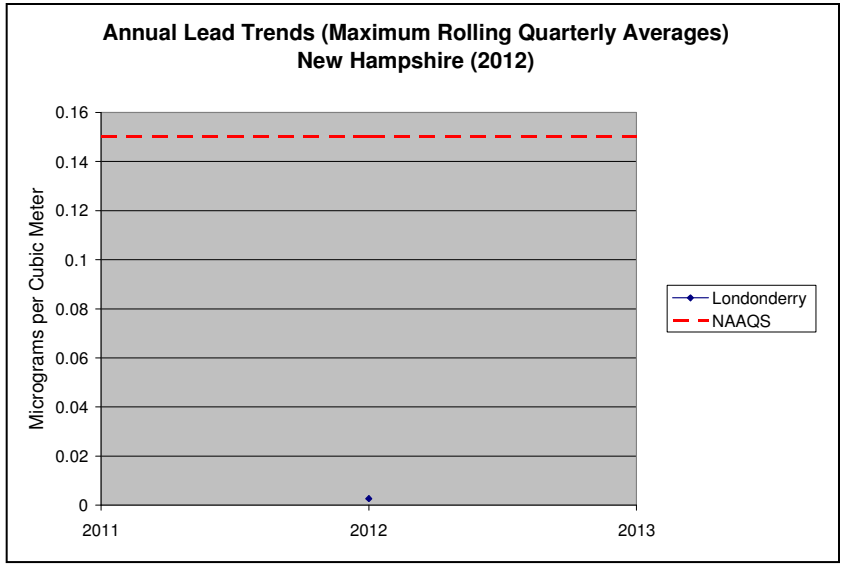


Table 1.8: New Hampshire State and Local Air Monitoring Stations Network – 2012/2013					
SO_2					
Town	**Name**	**AIRS #**	**Frequency**	**Scale**	**Objective**
Londonderry	Moose Hill School	33 015 0018	Continuous	Regional	Population
Pembroke	Pembroke Highway Dept.	33 013 1006	Continuous	Neighborhood	High Concentration
Peterborough	Pack Monadnock	33 011 5001	Continuous	Regional	Research
Portsmouth	Pierce Island	33 015 0014	Continuous	Neighborhood	Population
Concord	Hazen Drive	33 013 1007	Continuous	Neighborhood	Population
CO					
Town	**Name**	**AIRS #**	**Frequency**	**Scale**	**Objective**
Londonderry	Moose Hill School	33 015 0018	Continuous	Regional	Population
Peterborough	Pack Monadnock	33 011 5001	Continuous	Regional	Research
O_3					
Town	**Name**	**AIRS #**	**Frequency**	**Scale**	**Objective**
Concord	Hazen Drive	33 013 1007	April - Sept	Neighborhood	Population
Greens Grant	Camp Dodge	33 007 4002	April - Sept	Regional	Research
Keene	Water Street	33 005 0007	Continuous	Neighborhood	Population
Laconia	Lakes Region	33 001 2004	April - Sept	Regional	Population
Lebanon	Lebanon	33 009 0010	Continuous	Neighborhood	Population
Londonderry	Moose Hill School	33 015 0018	Continuous	Regional	Population
Mount Washington	Mt. Washington Summit	33 007 4001	Continuous	Regional	Research
Nashua	Gilson Road	33 011 1011	April - Sept	Regional	Population
Peterborough	Pack Monadnock	33 011 5001	Continuous	Regional	Research
Portsmouth	Pierce Island	33 015 0014	Continuous	Neighborhood	Population
Rye, Odiorne	Seacoast Science Center	33 015 0016	April - Sept	Neighborhood	High Concentration
NO_2/NO_y					
Town	**Name**	**AIRS #**	**Frequency**	**Scale**	**Objective**
Londonderry	Moose Hill School	33 015 0018	Continuous	Regional	Population
Nashua	Gilson Road	33 011 1011	June - Sept	Neighborhood	Population
Peterborough	Pack Monadnock	33 011 5001	Continuous	Regional	Research

Table 1.9: New Hampshire Particulate Matter Network – 2012/2013					
$PM_{2.5}$					
Town	**Name**	**AIRS #**	**Frequency**	**Scale**	**Objective**
Keene	Water Street	33 005 0007	1 in 12 filter	Neighborhood	Population
Keene	Water Street	33 005 0007	Continuous - BAM	Neighborhood	Population
Laconia	Green Street	33 001 2004	1 in 6 filter	Regional	Population
Lebanon	Lebanon Airport	33 009 0010	1 in 12 filter	Neighborhood	Population
Lebanon	Lebanon Airport	33 009 0010	Continuous - BAM	Neighborhood	Population
Londonderry	Moose Hill School	33 015 0018	1 in 3 filter	Regional	Population
Londonderry	Moose Hill School	33 015 0018	Continuous - BAM	Regional	Population
Nashua	Crown Street	33 011 1015	1 in 6 filter	Urban	High Concentration
Pembroke	Pembroke Highway Dept.	33 013 1006	1 in 3 filter	Neighborhood	High Concentration
Pembroke	Pembroke Highway Dept.	33 013 1006	1 in 6 filter	Neighborhood	Collocate Audit
Peterborough	Pack Monadnock	33 011 5001	Continuous - BAM	Regional	Research
Peterborough	Pack Monadnock	33 011 5001	1 in 3 filter	Regional	Research
Portsmouth	Pierce Island	33 015 0014	1 in 12 filter	Regional	Population
Portsmouth	Pierce Island	33 015 0014	Continuous - BAM	Regional	Population
$PM_{2.5}$ Speciation					
Peterborough	Pack Monadnock	33 011 5001	1 in 3 IMPROVE	Regional	Research
Londonderry	Moose Hill School	33 015 0018	1 in 3 IMPROVE	Regional	Population
PM10					
Londonderry	Moose Hill School	33 015 0018	1 in 3 filter	Regional	Population
Peterborough	Pack Monadnock	33 011 5001	1 in 3 filter	Regional	Research
Portsmouth	Pierce Island	33 015 0014	1 in 6 filter	Neighborhood	Population
Portsmouth	Pierce Island	33 015 0014	1 in 6 filter	Neighborhood	Audit

Table 1.10: New Hampshire PAMS Network – 2012/2013					
Town	**Name**	**AIRS #**	**Frequency**	**Scale**	**Objective**
Nashua	Gilson Road	33 011 1011	June - Sept	Regional	Population
Peterborough	Pack Monadnock	33 011 5001	June - Sept	Regional	Research

Table 1.11: New Hampshire NCore Network – 2012/2013					
Town	**Name**	**AIRS #**	**Status**	**Scale**	**Objective**
Londonderry	Moose Hill School	33 015 0018	Operational on Jan 1, 2011	Regional	Population
Peterborough	Pack Monadnock	33 011 5001	Operational on Jan 1, 2011	Regional	Research

Table 1.12: Seasonal Maximum 24-hour Averages at Gilson Road in Nashua for Toxic PAMS Species Compared to the Ambient Allowable Limit (AAL), 2005-2012

PAMS Parameter	AAL ug/m^3	Max 24-hour Avg. (ug/m^3)								Max as % of AAL
		2005	2006	2007	2008	2009	2010	2011	2012	
PROPYLENE (43205)	35,833	0.55	0.34	0.30	0.33	0.35	0.20	1.29	1.49	0.00%
CYCLOPENTANE (43242)	25,595	0.23	0.23	0.16	0.13	0.15	0.10	0.30	1.12	0.00%
ISOPENTANE (43221)	36,875	2.04	2.50	1.56	1.41	1.23	1.13	4.58	11.95	0.03%
PENTANE (43220)	36,875	3.13	1.39	0.85	0.74	0.76	0.61	1.99	6.05	0.02%
2-METHYLPENTANE (43285)	36,875	0.60	0.78	0.21	0.35	0.25	0.18	0.45	2.26	0.01%
3-METHYLPENTANE (43230)	36,875	0.41	0.48	0.20	0.30	0.20	0.25	0.44	1.65	0.00%
HEXANE (43231)	885	0.59	0.58	0.47	0.74	0.51	1.18	1.17	1.89	0.21%
BENZENE (45201)	5.7	0.51	0.74	0.36	0.42	0.37	0.29	1.11	1.23	21.65%
CYCLOHEXANE (43248)	6,000	0.25	0.21	0.21	0.48	0.19	0.29	0.41	0.47	0.01%
HEPTANE (43232)	8,249	0.56	0.34	0.18	0.32	0.25	0.12	0.43	1.37	0.02%
METHYLCYCLOHEXANE (43261)	23,958	0.21	0.21	0.11	0.16	0.10	0.06	0.30	0.85	0.00%
TOLUENE (45202)	5,000	2.37	2.67	1.39	1.97	1.60	1.77	2.18	5.10	0.10%
OCTANE (43233)	7,000	0.32	0.13	0.10	0.13	0.09	0.07	0.25	2.04	0.03%
ETHYLBENZENE (45203)	1,000	0.36	0.36	0.18	0.39	0.57	0.14	0.47	1.14	0.11%
M & P-XYLENES (45109)	1,550	0.88	0.96	0.68	1.15	2.04	0.45	1.22	3.49	0.22%
STYRENE (45220)	1,000	0.88	0.13	0.22	0.07	0.06	0.13	0.19	0.89	0.09%
O-XYLENE (45204)	1,550	0.32	0.36	0.26	0.40	0.40	0.16	0.56	1.26	0.08%
NONANE (43235)	15,625	0.21	0.13	0.21	0.10	0.11	0.07	0.33	0.35	0.00%
1,3,5-TRIMETHYLBENZENE (45207)	619	0.11	0.12	0.09	0.32	0.17	0.09	0.44	0.61	0.10%
1,2,4-TRIMETHYLBENZENE (45208)	619	0.32	0.39	0.32	0.39	0.31	0.18	0.47	1.25	0.20%

Table 1.13: Seasonal Maximum 24-hour Averages at Pack Monadnock in Miller State Park for Toxic PAMS Species Compared to the Ambient Allowable Limit (AAL), 2006-2012

PAMS Parameter	AAL (ug/m^3)	Max 24-hour Avg. (ug/m^3)							Max as % of AAL
		2006	2007	2008	2009	2010	2011	2012	
PROPYLENE (43205)	35,833	0.28	0.25	0.46	0.15	0.20	0.59	0.38	0.00%
CYCLOPENTANE (43242)	25,595	0.42	0.53	1.63	0.09	0.29	0.17	0.21	0.01%
ISOPENTANE (43221)	36,875	1.03	1.09	0.70	0.89	0.75	1.84	2.32	0.01%
PENTANE (43220)	36,875	45.41	7.63	0.55	0.45	0.38	0.86	0.76	0.12%
2-METHYLPENTANE (43285)	36,875	0.19	0.27	0.04	0.06	0.04	0.30	0.25	0.00%
3-METHYLPENTANE (43230)	36,875	0.13	0.17	0.01	0.04	0.03	0.21	0.19	0.00%
HEXANE (43231)	885	0.21	0.27	0.19	0.32	1.36	1.01	0.48	0.15%
BENZENE (45201)	5.7	0.31	0.33	0.32	0.41	0.73	1.09	0.45	19.18%
CYCLOHEXANE (43248)	6,000	0.14	0.05	0.02	0.08	0.04	0.48	0.15	0.01%
HEPTANE (43232)	8,249	0.71	0.16	0.15	0.17	0.13	0.79	0.21	0.01%
METHYLCYCLOHEXANE (43261)	23,958	1.23	0.15	0.15	0.11	0.16	0.49	0.14	0.01%
TOLUENE (45202)	5,000	1.00	1.05	1.11	1.01	0.77	2.48	1.36	0.05%
OCTANE (43233)	7,000	0.91	0.17	0.27	0.11	0.06	0.40	0.23	0.01%
ETHYLBENZENE (45203)	1,000	0.35	0.20	0.59	0.21	0.15	0.42	0.18	0.06%
M & P-XYLENES (45109)	1,550	1.88	0.37	2.38	0.46	0.23	1.22	0.42	0.15%
STYRENE (45220)	1,000	1.03	1.13	1.80	0.40	0.08	0.18	0.14	0.18%
O-XYLENE (45204)	1,550	0.60	0.13	0.67	0.15	0.08	0.45	0.20	0.04%
NONANE (43235)	15,625	8.83	1.33	0.57	0.23	0.08	0.16	0.20	0.06%
1,3,5-TRIMETHYLBENZENE (45207)	619	1.75	0.08	0.29	0.13	0.04	0.10	0.12	0.28%
1,2,4-TRIMETHYLBENZENE (45208)	619	3.91	1.34	0.79	0.53	0.14	0.38	0.26	0.63%

PART 2: Individual Station Information

NH Department of Environmental Services
Air Resources Division

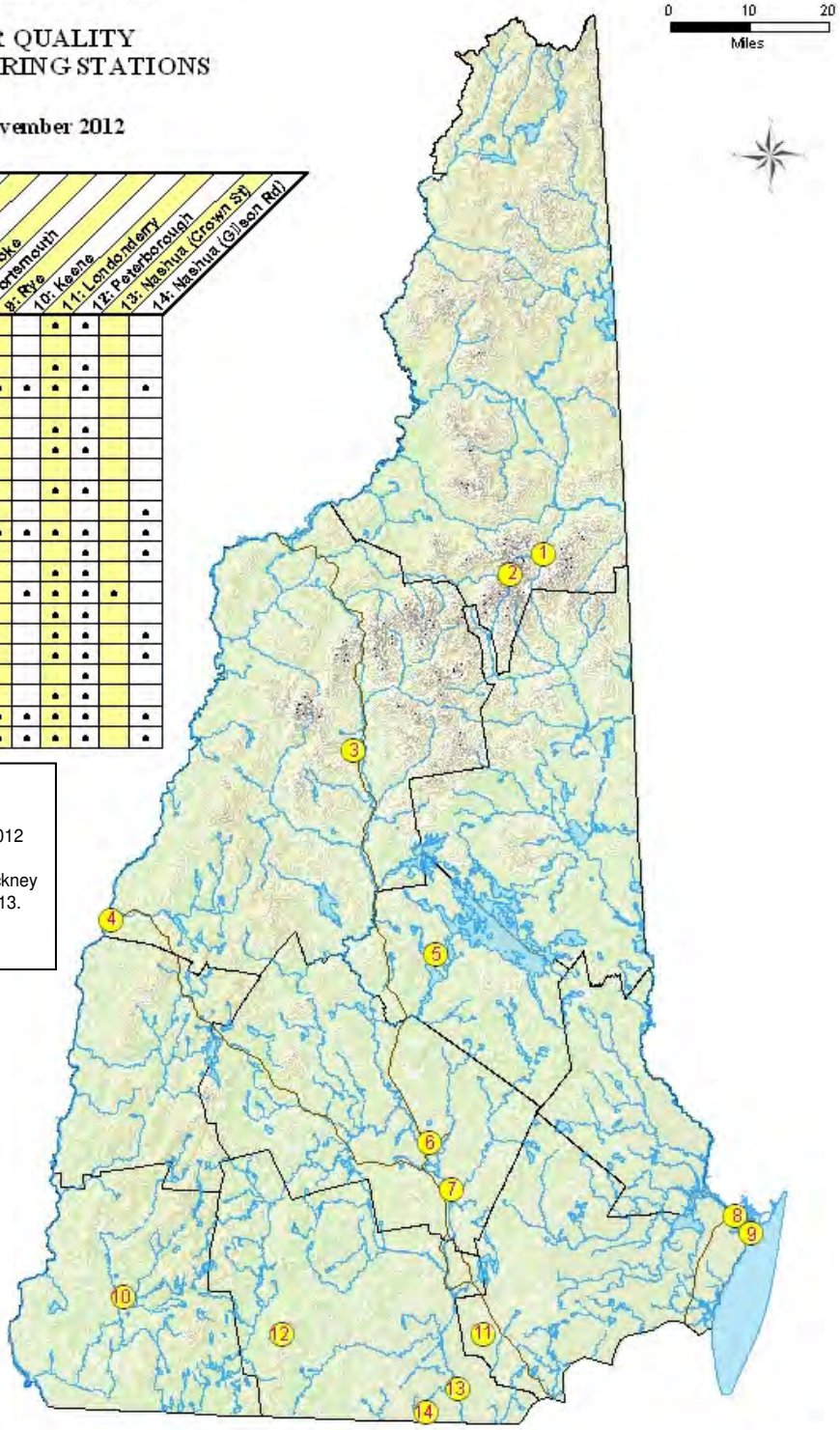
AIR QUALITY MONITORING STATIONS

November 2012

PARAMETER	1: Greens Grant	2: Sargents Purchase	3: Woodstock	4: Lebanon	5: Laconia	6: Concord	7: Pembroke	8: Portsmouth	9: Rye	10: Keene	11: Londonderry	12: Peterborough	13: Nashua (Crown St)	14: Nashua (Gilson Rd)
BP										•	•			
CASTNET			•											
CO										•	•			
ETP	•	•	•	•	•	•	•	•	•	•	•			•
Lab						•								
IMPROVE	•									•	•			
NCore										•	•			
NADP			•											
NOy										•	•			
NO_2														•
Ozone (O_3)	•	•	•	•	•	•		•	•	•	•	•		•
PAMS											•			•
PM10							•			•	•			
PM2.5				•	•		•	•		•	•	•	•	
PM Coarse										•	•			
RH										•	•			•
RF					•					•	•			•
Solrad											•			
SO_2						•	•	•		•	•			
WD				•	•	•	•	•	•	•	•			•
WS				•	•	•	•	•	•	•	•			•

Station Notes:

Keene – Added SO2 and CO from Oct 2012 through March 2013.
Concord – Added new station '6a' at Stickney Avenue from Oct 2012 through March 2013. Ran PM2.5 and Black Carbon.



NH Department of Environmental Services

NHDES ARD
02 November 2012

Camp Dodge, Green's Grant

General Information			
AQS ID:	33-007-4002	Latitude:	44.308119
Town:	Green's Grant	Longitude:	-71.217658
Address:	Route 16	Elevation (m):	335
County:	Coos	Year Est.:	1995
Spatial Scale:	Regional		

Site Description

This air monitoring station is located in a rural forested area off Route 16 in Green's Grant. This wood clad, stick built shelter is approximately 7' wide by 10' long. This station is representative of a Class 1 Type Airshed. DES operates this station in cooperation with the Appalachian Mountain Club and the US Forest Service.

Pollutants/Parameters

Ozone – Temperature – IMPROVE. The US Forest Service operates the IMPROVE sampler.

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Mt. Washington Summit

General Information			
AQS ID:	33-007-4001	Latitude:	44.270086
Town:	Sargents Purchase	Longitude:	-71.303844
		Elevation (m):	1,917
Address:	Yankee Bld.	Year Est.:	1990
County:	Coos		
Spatial Scale:	Regional		

Site Description

This air monitoring station is located at the top of Mt. Washington in the Yankee Building.

Pollutants/Parameters

Ozone – Temperature

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Hubbard Brook, Woodstock

General Information			
AQS ID:	33-009-8001	Latitude:	43.944544
Town:	Woodstock	Longitude:	-71.700772
Address:	Mirror Lake Rd.	Elevation (m):	250
County:	Grafton	Year Est.:	1989
Spatial Scale:	Regional		

Site Description

This air monitoring station is located in a rural area in the White Mountain National Forest. This pre-fabricated structure is specifically designed for climate-controlled scientific operations. It measures approximately 8' wide by 10' long. This is a CASTNET station and DES' involvement is limited to capturing ozone data for real-time mapping purposes. An EPA Contractor operates this site.

Pollutants/Parameters

Ozone – Temperature – CASTNET

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Lebanon Airport, Lebanon

General Information			
AQS ID:	33-009-0010	Latitude:	43.6296
Town:	Lebanon	Longitude:	-72.309533
Address:	Airport Road	Elevation (m):	167
County:	Grafton	Year Est.:	2005
Spatial Scale:	Neighborhood		

Site Description

This 8’ wide by 10’ long insulated trailer is located at the northeast edge of the Lebanon Municipal Airport in a commercial area. The filter based $PM_{2.5}$ sampler is located on a deck on top of the trailer.

Pollutants/Parameters

Ozone - Continuous $PM_{2.5}$ (BAM) – filter based $PM_{2.5}$ (1 every 12 days) - Wind Speed - Wind Direction - Temperature

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Green Street, Laconia

General Information			
AQS ID:	33-001-2004	Latitude:	43.566111
Town:	Laconia	Longitude:	-71.496322
Address:	Green Street	Elevation (m):	216
County:	Belknap	Year Est.:	2001
Spatial Scale:	Regional		

Site Description

This 10’ wide by 12’ long cedar clad, stick-built air monitoring station is located in an open field in a rural residential area. The filter-based $PM_{2.5}$ sampler is located on a platform approximately 30m from the structure.

Pollutants/Parameters

Ozone – filter based $PM_{2.5}$ (1 every 6 days) – Wind Speed – Wind Direction – Temperature - Precipitation

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Hazen Station, Concord

General Information				
AQS ID:	33-013-1007	Latitude:	43.218478	
Town:	Concord	Longitude:	-71.514533	
Address:	27 Hazen Dr.	Elevation (m):	100	
County:	Merrimack	Year Est.:	2004	
Spatial Scale:	Neighborhood			

Site Description

This site has the advantage of being in close proximity to the DES main office, for both outreach opportunities and ease of maintenance. It is also in the proximity of residential neighborhoods, retirement communities and schools. The Station measures 8' wide by 18' long. Its insulated, box-type structure is specifically designed for climate-controlled scientific functions.

Pollutants/Parameters

Ozone – Sulfur Dioxide – Temperature – Wind Speed – Wind Direction. DES also uses this station as an air monitoring laboratory and a staging area for field-ready equipment.

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Stickney Avenue, Concord

General Information				
AQS ID:	33-013-2007	Latitude:	43.209342	
Town:	Concord	Longitude:	-71.535103	
Address:	11Stickney Av	Elevation (m):	72.5	
County:	Merrimack	Year Est.:	2012	
Spatial Scale:	Neighborhood			

Site Description

This site is located in an old Department of Transportation garage. DES modified a back room for a temporary study that took place from October 2012 through March 2013. The site in the Merrimack River Valley near commercial and residential neighborhoods.

Pollutants/Parameters

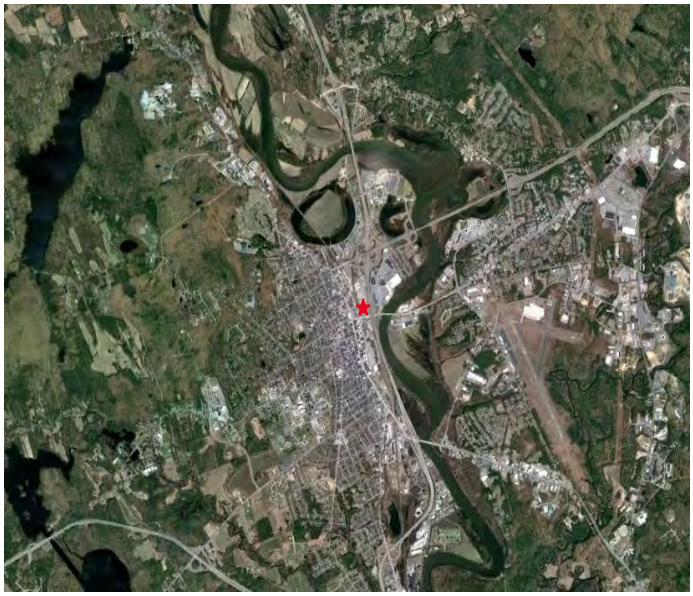
$PM_{2.5}$ – Black Carbon (Aetholometer)

Recent Changes

DES created this station to operate from October 2012 through March 2013.

Proposed/Planned Changes

DES has discontinued monitoring from this station.



Exchange Street, Pembroke

General Information			
AQS ID:	33-013-1006	Latitude:	43.132444
Town:	Pembroke	Longitude:	-71.458270
Address:	Pleasant St.	Elevation (m):	100
County:	Merrimack	Year Est.:	2002
Spatial Scale:	Neighborhood		

Site Description

This station is located in a suburban residential area southeast of the coal burning Merrimack station power plant. It is the ideal location for improving our understanding of near-field emissions from the Merrimack Station power plant. This insulated, box-type structure is specifically designed for climate-controlled scientific functions and measures approximately 8' wide by 10' long. The filter based $PM_{2.5}$ samplers are located on a deck on top of the structure.

Pollutants/Parameters

Sulfur Dioxide – filter based $PM_{2.5}$ (1 every 3 days) – filter based $PM_{2.5}$ Audit (1 every 6 days) – Temperature – Wind Speed – Wind Direction.

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Pierce Island, Portsmouth

General Information			
AQS ID:	33-015-0014	Latitude:	43.075367
Town:	Portsmouth	Longitude:	-70.748014
Address:	Pierce Island	Elevation (m):	4
County:	Rockingham	Year Est.:	2001
Spatial Scale:	Neighborhood		

Site Description

This station is located in an urban commercial/residential area. It is strategically position to capture air quality data from the Portsmouth Shipyard (northeast), the urban center of Portsmouth (southwest), the industrialized Piscataqua River (northwest) and ocean fetch-type events (southeast) depending on wind direction. The cedar clad, stick built shelter is approximately 10' wide by 12' long. Filter based $PM_{2.5}$ samplers are located on platforms approximately 8m from the shelter.

Pollutants/Parameters

Ozone – $PM_{2.5}$ Continuous (BAM) – filter based $PM_{2.5}$ (1 every 12 days) – filter based PM_{10} (1 every 6 days) – filter based PM_{10} Colocation (1 every 6 days) – Sulfur Dioxide – Temperature – Wind Speed – Wind Direction

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Seacoast Science Center, Rye

General Information			
AQS ID:	33-015-0016	Latitude:	43.045267
Town:	Rye	Longitude:	-70.713953
Address:	Seacoast Science Ctr.	Elevation (m):	10
		Year Est.:	2003
County:	Rockingham		
Spatial Scale:	Neighborhood		

Site Description

This station is located in a suburban residential neighborhood on the seacoast in direct exposure to the Atlantic Ocean. The station is located inside a modified corner of the main facility building at the Seacoast Science Center. DES established this station to measure coastal ozone episodes as well as to promote public understanding of air pollution and monitoring.

Pollutants/Parameters

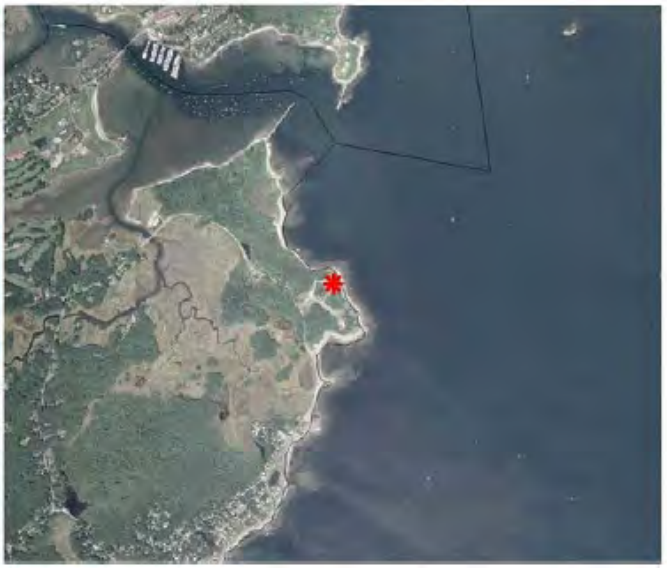
Ozone - Temperature – Wind Speed – Wind Direction.

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.



Water Street, Keene

General Information			
AQS ID:	33-005-0007	Latitude:	42.930517
Town:	Keene	Longitude:	-72.272372
Address:	Water Street	Elevation (m):	145
County:	Cheshire	Year Est.:	1989
Spatial Scale:	Neighborhood		

Site Description

This 8' wide by 10' long air monitoring station is situated in a commercial area, close to the center of the city of Keene. The filter-based $PM_{2.5}$ sampler is located on the rooftop deck.

Pollutants/Parameters

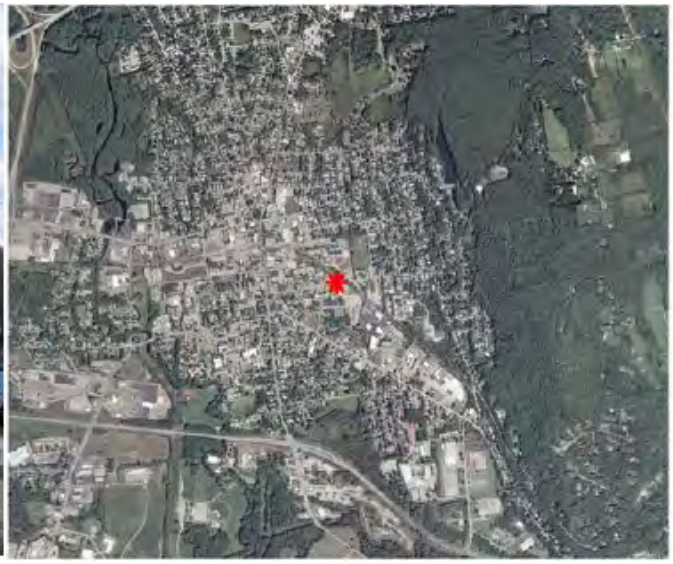
Ozone - $PM_{2.5}$ Continuous (BAM) – filter based $PM_{2.5}$ (1 every 12 days) – Wind Speed - Wind Direction - Temperature – SO_2 – CO

Recent Changes

DES added SO_2, CO and black carbon analyzers to run from October 2012 through March 2013 for a special study. Additionally, DES collected two filters from each of 10 inversion events from October 2012 through March 2013. DES had these filters analyzed for Ni, V, As, Se, Zn, Pb, Cu, Mn, Cd and levoglucosan.

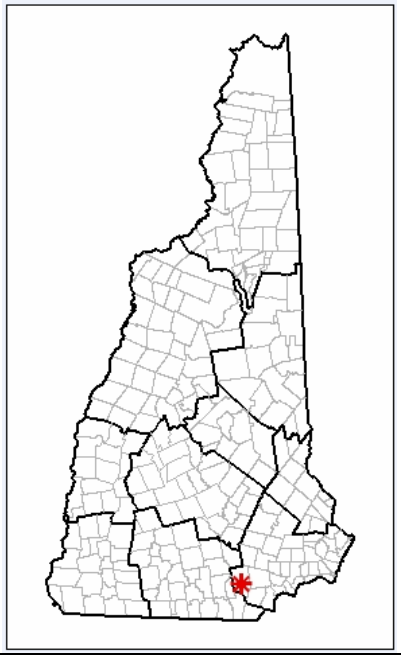
Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.



Moose Hill, Londonderry

General Information			
AQS ID:	33-015-0018	Latitude:	42.862522
Town:	Londonderry	Longitude:	-71.380153
Address:	Moose Hill Sch.	Elevation (m):	104
County:	Rockingham	Year Est.:	2009
Spatial Scale:	Neighborhood		



Site Description

Proposed:

This 12' wide by 16' long wood clad, stick-built air monitoring station is located in a very open field in the heart of suburban New Hampshire, approximately halfway between the state's two largest cities (Manchester and Nashua). It has virtually zero local interferences from nearby pollution sources or obstructions, making it an ideal location to measure regional air quality. Filter-based $PM_{2.5}$ samplers are located on platforms approximately 15 m from the structure.

Pollutants/Parameters

NCORE: $PM_{2.5}$ Continuous (BAM) - filter based $PM_{2.5}$ (1 every 3 days) – IMPROVE – PM Course (1 every 3 days) – filter based PM_{10} (1 every 3 days) – Nitrogen Oxides – Ozone – Sulfur Dioxide (trace) – Carbon Monoxide (trace) – Lead – Temperature – Wind Speed – Wind Direction – Relative Humidity – Precipitation – Barometric Pressure.

Recent Changes

DES initiated lead monitoring on January 1, 2012.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Pack Monadnock Mountain

General Information			
AQS ID:	33-011-5001	Latitude:	42.861901
Town:	Peterborough	Longitude:	-71.878613
Address:	Miller State Park	Elevation (m):	694.6
		Year Est.:	2002
County:	Hillsborough		
Spatial Scale:	Regional		

Site Description

This station is located in an elevated forest environment on the summit of Pack Monadnock Mountain. DES recently renovated this 27' by 10' structure to include many efficiency initiatives. The location of this station is scientifically significant because it is the highest accessible peak that lies directly within the primary air pollution transport corridor into the central part of the state. This allows this site to be the ideal location for improving our understanding of air pollution transport into the heavily populated Merrimack Valley and beyond. The Filter based $PM_{2.5}$ sampler is located on a deck on top of the structure.

Pollutants/Parameters

NCORE: $PM_{2.5}$ Continuous (BAM) - filter based $PM_{2.5}$ (1 every 3 days) – IMPROVE – PM Course (1 every 3 days) – filter based PM_{10} (1 every 3 days) – Nitrogen Oxides – Ozone – Sulfur Dioxide (trace) – Carbon Monoxide (trace) – Temperature – Wind Speed – Wind Direction – Relative Humidity – Precipitation – Barometric Pressure – Solar Radiation.

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Crown Street, Nashua

General Information				
AQS ID:	33-011-1015	Latitude:	42.762028	
Town:	Nashua	Longitude:	-71.444572	
Address:	Crown Street	Elevation (m):	33.5	
County:	Hillsborough	Year Est.:	2005	
Spatial Scale:	Urban			

Site Description

This air monitoring station is located in an urban commercial and residential neighborhood. It is located approximately 30 meters from the Merrimack River and consists of a small fenced-in platform approximately 12' long by 8' wide.

Pollutants/Parameters

Filter based $PM_{2.5}$ (1 every 6 days)

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.

Gilson Road, Nashua

General Information			
AQS ID:	33-011-1011	Latitude:	42.718656
Town:	Nashua	Longitude:	-71.522428
Address:	57 Gilson Rd.	Elevation (m):	59
County:	Hillsborough	Year Est.:	2003
Spatial Scale:	Neighborhood		

Site Description

This air monitoring station is located in a suburban residential neighborhood near a Superfund site. DES requires two 8' wide by 16' long trailers to accommodate the equipment needed to measure ambient air parameters, including PAMS. DES collects meteorological data from a tower located on an adjacent building.

Pollutants/Parameters

Ozone - Nitrogen Dioxide – PAMS – Temperature – Wind Speed – Wind Direction.

Recent Changes

DES did not make any significant changes to this station during this review period.

Proposed/Planned Changes

DES is not planning any significant changes to this station into the foreseeable future.