
NCDENR

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF AIR QUALITY, TOXICS PROTECTION BRANCH

AIR TOXICS ANALYTICAL SUPPORT TEAM

FIRE AT EVANS ROAD
BEAUFORT COUNTY, NC

June 1- August 4, 2008

ATAST Response # 08011

Final Report
January 27, 2009

Dr. James Bowyer, Ph.D.
Dr. John Holland, Ph.D.
Ms. Robin Barrows, MEM
Mr. Todd Pasley
Mr. Jim Lowder
Ms. Laurie Poll

Table of Contents

List of Tables

List of figures

Acronyms

AEGL	Acute Exposure Guidelines
ATAST	Air Toxics Analytical Support Team
ATSDR	Agency for Toxic Substances and Disease Registry
EBAM™	Electronic Beta Attenuation Monitor
EMEG	Environmental Media Evaluation Guide
EQ	Environmental Quality (facility)
Cal EPA	California Environmental Protection Agency
CaREL	California Acute Reference Exposure Levels
CO	carbon monoxide
DAQ	Division of Air Quality
DENR	Department of Environment and Natural Resources
ERPG	Emergency Response Planning Guidelines
GC/MS	gas chromatograph/mass spectrophotometer
Hazmat	Hazardous Materials
HCN	hydrogen cyanide
H_2S	hydrogen sulfide
ICP	Incident Command Post
LEL	lower explosive limit
MAML	mobile air monitoring laboratory
NC	North Carolina
NCDFR	NC Division of Forest Resources
NH_3	ammonia
NO	nitric oxide
NO_2	nitrogen dioxide
PH_3	phosphine
PM	particulate matter
ppb	part per billion
ppm	part per million
REL	Reference Exposure Level
SCAPA	Department of Energy Subcommittee on Consequence Assessment and Protective Actions
SO_2	sulfur dioxide
TEEL	Temporary Emergency Exposure Limits
UAT	Urban Air Toxics Network
VOC	Volatile Organic Compound

DIVISION OF AIR QUALITY
AIR TOXICS ANALYTICAL SUPPORT TEAM

FIRE AT EVANS ROAD
BEAUFORT COUNTY, NC

June 1- August 4, 2008

ATAST Response # 08011

1.0 ABSTRACT

The North Carolina Division of Air Quality (DAQ) responded to requests for emergency monitoring to assess air quality resulting from a fire in the Pocosin National Wildlife Refuge in the counties of Washington, Hyde, and Tyrrell, NC. DAQ staff took measurements at 6 locations using continuous, real-time monitors for total fine and ultrafine particulate matter (PM_{10} and $PM_{2.5}$ respectively), total volatile organic compounds (VOCs), oxygen levels, and carbon monoxide (CO). DAQ also measured meteorological parameters at heights of 2 and 10 meters. Results of these various methods showed that the primary pollutant of concern was the $PM_{2.5}$ concentration that were a constituent of the smoke plume from the fire. These levels on occasion did exceed the National Ambient Air Quality (NAAQ) Standard of 35 ug/m^3. This standard is a 24 hr average concentration and as such was compared to the monitored running 24 hr average during the event and to the daily average in this report. In addition to particulate and carbon monoxide concentrations, EPA and DAQ personnel also performed air measurements for elemental mercury at various locations and found no levels above EPA health standards.

2.0 INTRODUCTION

On Sunday June 1, 2008, a fire began on privately owned land adjacent to the Pocosin National Wildlife Refuge, the source of which was attributed to a lightning strike. The initial location of the fire was a wooded area northwest of Gall Road, Belhaven, NC (Hyde County). The North Carolina Division of Forest Resources (NCDFR) began working the fire at approximately 1:30 p.m. Sunday. By 3 p.m. Monday June 2, the fire area had roughly tripled to 1700 acres. As with most large fires, shifting winds continually changed the burn patterns and rates. In addition to burning surface vegetation, the peat soil in this area also acted a fuel source for the fire and in many areas the fire began to burn underground. This type of fire tends to produce large amounts of smoke as it is primarily a smoldering fire and is notoriously difficult to extinguish. The inability to extinguish the fire was exacerbated by the relatively remote location. Only one nonresidential structure was threatened, and few others are in the immediate proximity. On June 3, 2008, Charles Ray Spencer, Chairman of the Hyde County Commissioners, declared a State of Emergency for Hyde County, specifically in the Grassy Ridge and Ponzer areas, large amounts of smoke were being generated by this fire.

As the fire progressed large amounts of smoke covered a large area of Eastern NC, the North Carolina Division of Air Quality's Air Toxics Analytical Support Team (ATAST) was requested to respond by the Department of Environment and Natural Resources (DENR) Secretary's office

on June 11, 2008. Eight[1] ATAST members departed at approximately 12:00 p.m. and arrived at approximately 2:30 p.m. at the NC DENR Washington Regional Office (WaRO) in Washington, NC for their initial debriefing on the situation and to receive information on the fire site and location of the Incident Command Post (ICP) in Ponzer, NC. The ICP was under the direction of the NCDFR, the lead responding agency for DENR. Staff from the WaRO[2] were attached to the ATAST to assist with various field tasks and to act as liaison to the ICP and to provide any needed administrative or technical assistance. Additional ATAST staff[3] was dispatched to the scene as relief personnel at various times throughout the deployment from June 11 until June 19, 2008.

The deployment and operation of assets as well as the data collection from those assets are described in the operational narrative contained in Appendix A. In addition to the operational narrative, the final daily report filed on August 4 which describes the daily operational reports from June 11 until cessation of air monitoring on August 4, 2008 can be found in Appendix B.

3.0 AMBIENT AIR MONITORING

ATAST Emergency air monitoring is of most benefit when:

- Air-monitoring activities can aid in characterizing the degree of the hazard facing responders and the public during initial stages of response
- It can provide technical assistance to responders with tools such as air dispersion modeling, chemical review or meteorology.
- The team can coordinate with and provide technical support for decision-making or for information purposes.
- It can provide ongoing evaluation of air quality as conditions change to provide air monitoring data to the incident commander so that decisions can be made regarding public safety and potential exposures.

ATAST's objective was to determine the level of specific air contaminants in selected areas that were representative of potential exposures to the public. Those areas were primarily communities located downwind and/or proximate to the fire and the smoke plume. The six primary sampling locations are shown in Figure 1.

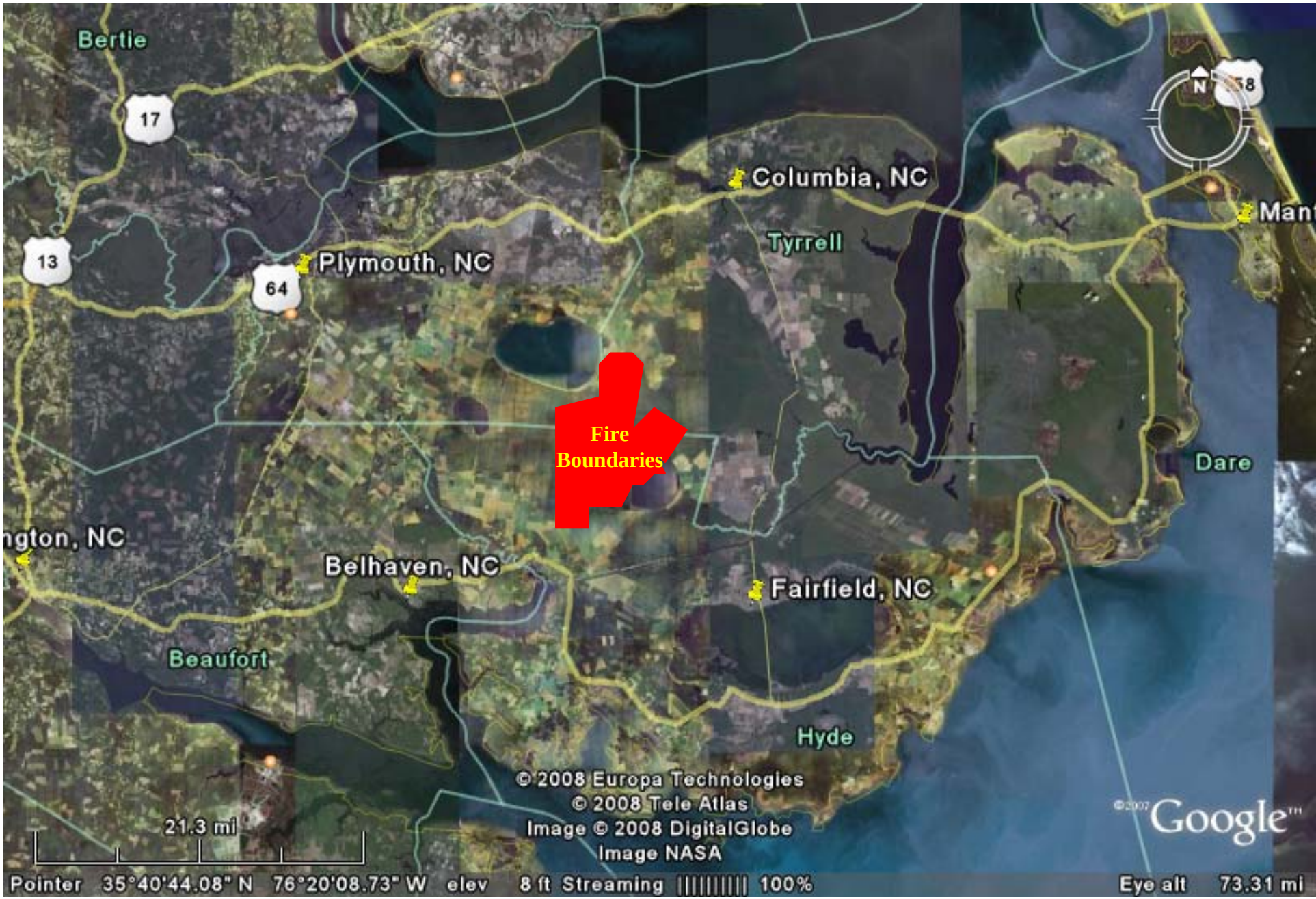
The operating assumption throughout the incident was that monitored levels of high PM concentrations were primarily due to smoke generated by the fire; whether directly downwind of the fire and/or caused by a radiative inversion near the monitor. A radiative inversion occurs when the ground cools much more quickly than the air, creating an extremely stable/stagnate layer of the air near the ground, which inhibits upward air motion and mixing. Fog is usually observed with these types of inversions, which acts like a cap on the atmosphere thereby trapping the particulate from the fire closer to ground level. We observed this phenomenon in the early morning hours most often at the Belhaven, Columbia, and Fairfield sites.

[1] Dr. J. Bowyer, Ms. L. Cherry, Ms. T. Colon, Mr. J. Lowder, Ms. L. Poll, Dr. J. Holland, Mr. R. Lasater, and Mr. P. Judd

[2] Mr. R. Fisher, Mr. S. Daniels, Mr. R. Bishop, and Mr. Rudy Whitehurst

[3] Ms. K. Clevenger, Mr. S. Schliesser, Mr. R. Lasater, Ms. H. Guan, Mr. T. Pasley, Mr. G. Kangkolo, and Ms. R. Barrows

Figure 1. Primary Sampling



Sites were phased into operation as locations and equipment became available. Initially, three sites were located in Washington (WaRO), Belhaven (BFD) and Columbia (COL), NC. Sites four and five were then established in Fairfield (FFLD) and Plymouth (PLY), NC and a sixth site was located in Manteo (MTO), NC. Because of highly variable meteorology, weather and smoke forecasts and fire mitigation approaches, site operations were flexible employing varied monitoring times, sampling techniques and constituents sampled. Particulate matter (smoke) was the primary constituent under monitoring surveillance although other gaseous pollutants such as carbon monoxide and total volatile organic compounds were sampled. Mercury screening was also undertaken by EPA and ATAST personnel to ascertain whether elemental mercury was being released by the burning peat.

Air monitoring field instrumentation included in approximate order of deployment: AreaRae monitors (CO and total VOC), Omni™ filter samplers, Electronic Beta Attenuation Monitor (EBAM™) continuous particulate monitors equipped with meteorological stations, and Lumex™ and Tekran continous mercury monitors. The deployment of instrumentation, collection of samples, and operational comments from the various sites are contained in the Operational Narrative (Appendix A) as well as in the daily status reports (Appendix B). The monitoring results and discussions are presented in the following sections.

4.0 AIR SAMPLING DATA AND ANALYSIS

As described in the Operational narrative (Appendix A), air sampling was conducted in six locations in Eastern NC (Figure 1) using AreaRae samplers, Omni™ filter samplers, EBAM™ samplers and mercury monitors. The data are presented in Appendices C-G; respectively, wind roses (wind speed and direction), Omni™ filter data, AreaRae data, EBAM™ temporal data, and EBAM™ data correlated to wind direction data.

4.1 Meteorological Data

Meteorological data were used to produce the wind roses in Appendix C. Each figure is composed of 6 wind roses, one from each site for a particular date and is arranged in an order which roughly corresponds to site locations relative to the fire. Therefore, the three top wind roses are the three sites north of the fire, Plymouth (NE), Columbia (NNE), and Manteo (NE) and the three lower windroses are the southern sites, Washington (WSW), Belhaven (SSW) and Fairfield (SE). The wind direction is plotted as the direction from which the wind is blowing towards the sampling station. In some cases there is no meteorological data for that particular site early in the response because there was no meteorological instrumentation at that site. The majority of the data recorded was obtained from the EBAM™ units although some data were initially obtained from the Mobile Air Monitoring Laboratory (MAML) meteorological station and used for the wind rose and other graphical representation for Washington until the EBAM™ at this location was operational. The EBAM™ meteorological data obtained was discrete 15 minute values meaning that they were instantaneous values datalogged at 15 minute intervals, i.e. they were not 15 minute average values. This was due to the nature of the EBAM™ datalogging capabilities. In some instances (noted on the wind rose), data was being collected by the EBAM™ unit as one hour discrete data points due to unfamiliarity with the monitors early in the response. This was primarily due to the unfamiliarity with the EBAM™

unit operation as the ATAST had no prior experience with operating these instruments. While this data logging scheme may not be optimal for determining the precise meteorological conditions it does provide a measure of the conditions at the time the data point was recorded.

Wind rose interpretation notes: The central number is the percentage of data points that are less than the lowest range value, in this case winds below 1 mph. The overall ray lengths represent the percentage of the data points when the wind was from that particular direction and the individual sections of the ray indicate the percentage of the data points when the wind was within that particular wind speed range (as indicated by the color and width of the ray shown in the key at the bottom of the figure) from that wind direction. The wind rose is divided into 16 segments and the ray is centered on the segment that is composed of wind directions from 11.25º on either side of that ray. For example, a ray along the easterly direction (90º) is generated from wind directions that are between 78.75º and 101.25º.

4.2 Omni™ Filter Samples (PM_{10}, $PM_{2.5}$)

On the initial two days of the ATAST response three particulate filter monitoring sites were set up, Washington (June 11), Belhaven (June 11), and Columbia (June 12) to collect 10-micron particulate matter (PM_{10}) for 12 hrs. Subsequent to this they were converted to collection of 2.5-micron particulate matter ($PM_{2.5}$) over 24-hour average. Because the filter samples required a period of laboratory conditioning prior to obtaining final filter weights, the results were not available until a minimum of 24-36 hours post-sample collection. The need for filter sampling was obviated by the arrival of several continuous, telemetry-equipped EBAM™ units from the US EPA, US Fish and Wildlife, and US Forestry Service on June 12 and 13; therefore use of these samplers was discontinued on June 17. However, there were a few days that both were in operation given ATAST's initial unfamiliarity with the EBAMs™ operation. *Note: optimal operation of the EBAM™ units was achieved very quickly after the first installations and data collection periods between June 12 and June 14.*

The data from these samples are contained in Appendix D. On June 11 and 12th, two consecutive 12-hour samples were obtained for PM_{10} at WaRO and Belhaven, so comparison to the 24 hr based NAAQS PM_{10} standard (150 ug/m3) is possible by averaging the values obtained for these samples. By doing so, the PM_{10} values at the respective sites are for WaRO 194 ug/m3 and BFD 91 ug/m3. This indicates that during the 24 hr period for the WARO sample the value was above the NAAQS standard of 150 ug/m3. [Note: Although the NAAQS standards are typically used to compare daily ambient air quality (midnight to midnight) and these samples were not collected on this timeframe, they can be compared to one another to provide a health based conclusion.]

From June 13 thru June 17, Omni™ samplers were changed to sampling on a 24 hr basis for $PM_{2.5}$ in order to be more readily compared to the NAAQS standard for $PM_{2.5}$ (35 ug/m3) as this was the basis of the DAQ Air Quality Index (AQI) forecast that was issued each day for the region. The data are shown in Appendix D and for the three sites it can be seen that the 35 ug/m3 was met or exceeded at WARO on June 13-14 (32.9 ug/m3) and at COL on June 14-15 (71.4 ug/m3) and June 16-17 (40.8 ug/m3). See Section 5 for discussion of these exceedances.

4.3 AreaRae Monitors (CO, Total VOCs)

The potential for whether there would be elevated levels of CO and VOC due even some distance from the fire and generally associated with some plume was considered. Therefore initially AreaRae monitors equipped with CO and VOC sensors were stationed at WARO, BFD, COL, PLY and FFLD at various times. The figures in Appendix E contain those data sets. Gaps in the data stream represent recharging or storage hiatus when not necessary for monitoring or when data logging was suspended for data collection.

ATAST's action level for CO is generally in the 25 ppm range, which means that if this concentration is reached or exceeded (for longer than a few minutes), ATAST typically considers that the area is not one to remain in with CO at this level. It does not mean that it is immediately dangerous but simply that caution should be used in remaining in this area. The data shows that this level was not reached at any of the sites during the time that CO was being monitored from June 11 – 17. It was also surmised that elevated levels at BFD on June 13 was probably due to emissions related to the nearby fire station traffic as the site area was being used as a shelter and seemed to be a central gathering spot in the community.

ATAST's action level for VOC is generally in the 10 ppm range, which means that if this concentration is reached or exceeded (for longer than a few minutes), ATAST typically considers that the area is not one to remain in with VOC at this level. It does not mean that it is immediately dangerous but simply that caution should be used in remaining in this area. The data shows that this level was not reached at any of the sites during the time that VOC was being monitored from June 11 – 17.

ATAST removed the AreaRea monitors from the various locations on various dates since to these low levels were observed and discontinued monitoring CO and VOC in the area completely their departure on June 19.

4.4 EBAM™ Monitors (PM_{10}, $PM_{2.5}$)

As described earlier, Omni™ filter samplers were used to collect particulate samples and provide data on the PM_{10} and $PM_{2.5}$ concentrations from June 11 thru 16 (see section 4.2). ATAST also received EBAM™ units from EPA, US Forest Service and US Fish and Wildlife between June 12 and 14 (see Appendix A for operational details). These were installed at the sites as they became available (See Appendix A). ATAST had no experience with EBAMs™ prior to receiving them from the Federal agencies. Minimal instructional opportunity and unfamiliarity resulted in some initial mistakes, but these were quickly overcome as the team gained proficiency. A discussion associated with unfamiliarity with instruments is found later in this section.

The PM_{10} and $PM_{2.5}$ concentration data from the EBAMs™ were used to produce the graphs in Appendices F and G. In Appendix F, the data are plotted in 7-day periods from June 12 through August 4 for each site. The plots show the particulate size being monitored, the 1 hr average concentration at a given date and time, a running 24 hr concentration, and a midnight to midnight average concentration, and one or both NAAQS values for PM_{10} and/or $PM_{2.5}$. This makes it relatively easy to determine whether the NAAQS standard was being exceeded during any consecutive 24 hr period and/or for a given calendar date. The PM size being monitored at a

particular time was dependent on the availability of equipment and monitoring needs. Because of other equipment failures, EBAMs™ were moved from one site to another to continue monitoring in what was deemed a higher priority area.

The polar plots in Appendix G, represent the correlation of the individual EBAM™ 1 hr average PM_{10} or $PM_{2.5}$concentration data to a discrete wind direction measurement taken at the time the data point was recorded by the EBAM™. Each figure is composed of 6 polar PM vs wind direction graphs, one from each site for that particular date and is arranged in order which roughly corresponds to their location relative to the fire just as the wind rose graphics are arranged. That is, the three top wind roses are the three sites north of the fire, Plymouth (NE), Columbia (NNE), and Manteo (NE) and the three lower wind roses are the southern sites, Washington (WSW), Belhaven (SSW) and Fairfield (SE). Plotting these correlations give an approximation of the direction from which the wind was blowing during the time the sample was taken. One interprets the graph in the following manner. On each figure these concentration data and correlated wind direction are plotted such that each ray represents the direction from which the wind was blowing and the length and location of the data point on the concentric concentration range rings indicates the particulate matter concentration. ***Note: the concentration ranges vary from plot to plot depending on the range of concentrations observed at that site for that date.*** By taking the aggregated data view of the polar plot one can discern the apparent origin (source) of the majority of the particulate matter and their relative concentrations. As an example, Figure G2 for the Belhaven site the high PM 10 values are observed when the winds are from the NNE and NE, which is from the direction of the fire.

By using these two sets of plots in concert with the wind roses, it is possible to discern, in many cases, the potential source of the PM concentrations. As stated in Section 3.0, the operating assumption through-out the incident was that high PM concentrations were primarily due to smoke generated by the fire; whether this was due to being directly downwind of the fire and/or caused by a radiative inversion near the monitor. This radiative inversion effect was recorded predominantly between 21:00 hrs to 10:00 hrs the following day and was evidenced primarily by an increase and decrease in PM in the course of a few hours as observed in the hourly readings. These types of occurrences were recorded most frequently at BFD, COL, and FFLD which were the sites closest to the fire. An example of this is at COL on June 26. From Figure F9 one can see just after midnight there is a “peak” in the 1 hr average readings lasting approximately 9 hours. Then looking at Figure G16, one sees that these values were obtained when the winds were from the SSE and SE (direction of the fire) and that from Figure A15 for Columbia the winds were between 2-10 mph.

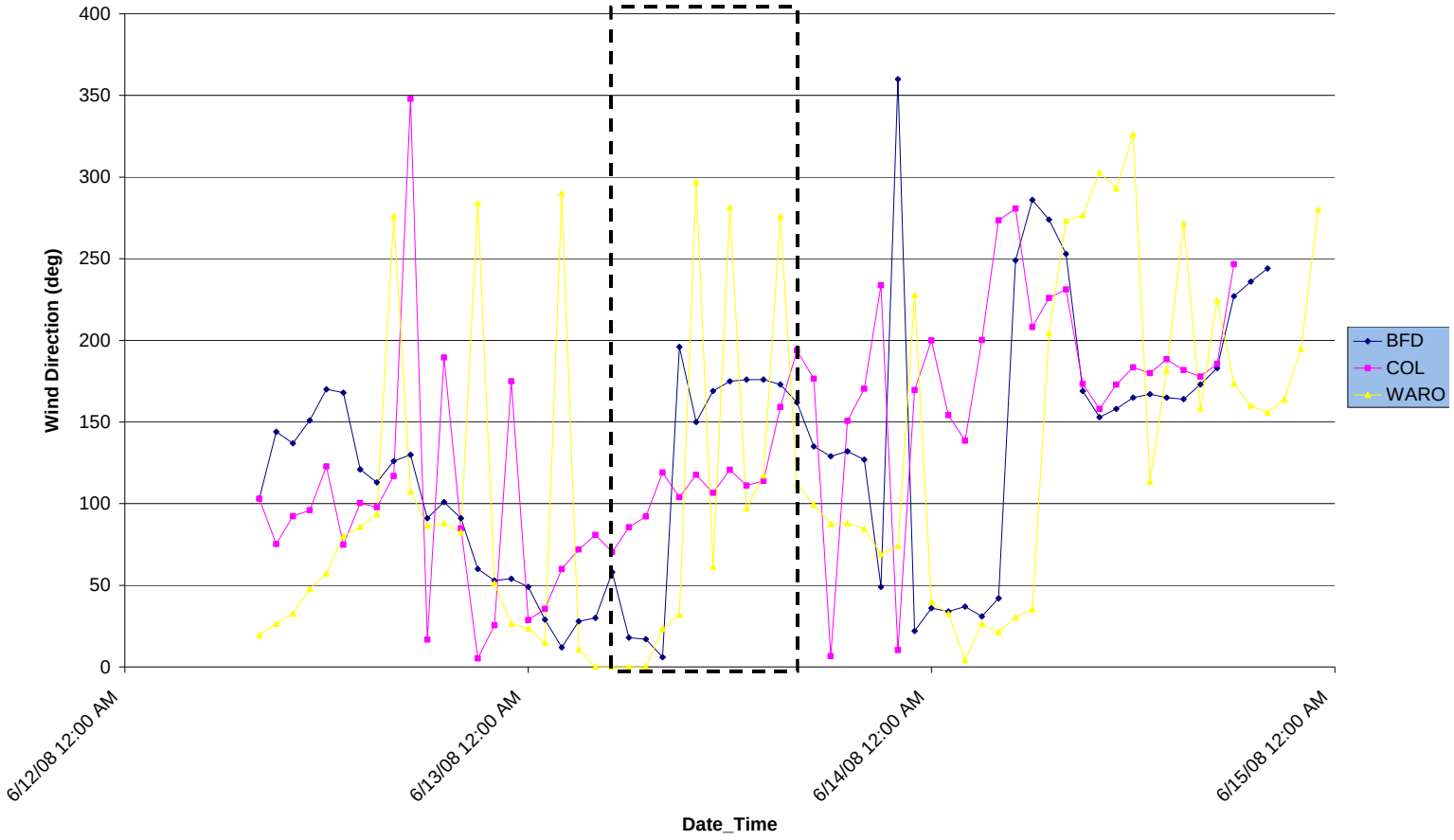
Additionally, looking at the Figures in Appendix F for each of the sites and comparing the running 24 hr average and daily 24 hr average PM concentrations over the course of the monitoring effort, that in general the site that was most often and most heavily impacted in terms of exceedance of the NAAQS standard was the Columbia site. This was due primarily to its location downwind of the prevailing wind direction during this time of year. Other exceedances at other sites were primarily due at least at the beginning of the event when those sites, as would be expected, were downwind of the fire. This can be seen as described earlier by looking at the polar graphs in Appendix G for those dates where exceedances are observed.

Occasionally, there did seem to be incongruities between the observed wind direction and the level of measured particulate matter; i.e., where particulate levels were elevated but the monitoring site was not generally downwind direction of the fire's smoke plume. In these instances early in the incident, it was surmised that this was due to combinations of circumstances such as light and highly variable winds, changes in directions of the prevailing winds thus causing large scale "swirling" of the very large smoke plume, proximity of the site to the fire, and/or inversions. Later in the incident timeline, it was surmised that these incongruities were related to potential local secondary sources such as open burning or agricultural burning. After the burn ban was lifted on July 19, 2008, sporadic, anomalies began to appear in the data making it difficult to correlate high levels of PM solely with the incident.

By observing the figures in Appendix F, a gradual trend over the event in $PM_{2.5}$ reduction for the running 24 hr average occurs. This is especially prevalent at the Columbia site. This is surmised to be due to the above ground fire being brought under control and the underground fires being extinguished or burning themselves out.

One very notable episode during the incident occurred early during ATAST's response on June 13. The EBAMs™ at BFD and WARO both recorded extremely high values for PM_{10} and $PM_{2.5}$ respectively between the hours of 5:00 and 16:00 hrs, peaking at both locations at approximately 10:00 hrs. The other operational site at that time, COL showed no similar results. Looking at the meteorological data graphed below (Figure 2) for this date indicates why this was the case; the winds during this time were shifting from their previous directions to directions that put these two sites downwind of the fire. These values were reported to DAQ central office immediately. However, the subsequent routine quality assurance audit of the pump flow revealed that the pump in that WARO EBAM was not performing correctly. Thus the actual values were not accurate. However, given the magnitude of the "peak" and the corroborative data from the BFD site closer to the fire and in the same general relative downwind position as the wind changed direction, this data does indicate that there was a qualitative inference of a serious air quality incident. Invalidating the quantitative utility of the WARO data was partially due to inexperience in the use of these monitors (as stated earlier) but the use of common quality control audit procedures discovered the problem early enough in the response and permitted corrective action was taken to ensure no further data loss.

Figure 2. Wind Direction vs Date_Time for BFD, COL, and WARO June 12-14, 2008



4.5 Mercury Monitoring

Due to concern about potential elemental mercury released from burning peat, ATAST requested US EPA assistance to monitor ambient mercury levels using a Lumex elemental mercury monitor. This instrument could quickly provide quantitative screening data of ambient mercury concentrations and was portable so that a wider area could be screened more quickly than with the instrument ATAST had for monitoring elemental mercury (Tekran Model 2737A). The Lumex instrument reads instantaneous, real time values and averages data over 10-second time periods. In this way, data could be obtained using a short-term sampling format and quickly and directly indicated the magnitude of ambient mercury concentrations. The advantage of using a screening technique is that it helps assess the 'appropriateness' of locating a more sensitive sampler or sensitive sampling format (Tekran 2737A). Data obtained using a short-term sampling format can potentially over-emphasize concentration 'peaks' than data obtained from samples collected over a longer time average. Monitoring using a longer averaging period following a series of short-term 'screening' provides a more robust evaluation of ambient concentrations.

EPA personnel, Ken Rhame, monitored about 10 locations in proximity to the fire, in smoke plumes, and at the WaRO on June 12 and June 13 from 2-6 p.m.. Data were taken at each

location for approximately 5 minutes and the highest numbers observed for both "real time" and "10 second average" reported. Short-term, transient, real-time values were highly variable in the 10-50 ng/m3 range apparently changing with smoke density. Ten second averages ranged from 4-23 ng/m3. The report filed by Ken Rhyme is included in it's entirety below.

Evans Road Wildfire
Mercury Air Monitoring Results

On Thursday June 12, US EPA began air monitoring for Mercury (Hg) at the request of NC DENR DAQ at the Evans Road Wildfire. US EPA used a Lumex™ 915+, the results reported are conservative in that EPA monitored at each location for approximately 5 minutes and reported the highest numbers observed for both "real time" and "10 second average".

June 12, 2008

Location	Time	Results	ng/m³
Prices Auto Sales	2:02 p.m.	Real Time	10
White Post Rd and Hwy 264		10 Second Avg	10
Northeastern Elementary School	2:15 p.m.	Real Time	17
N 35°32.316´		10 Second Avg	14
W 076°42.625´			
Bellhaven Fire Rescue	2:26 p.m.	Real Time	10
N 35°32.394´		10 Second Avg	6
W 076°37.412´			
Ponzer Community Park	2:51 p.m.	Real Time	12
N 35°34.864´		10 Second Avg	7
W 076°29.088´			
Kingdom Hall of Jehovah Witness	3:49 p.m.	Real Time	9
N 35°35.052´		10 Second Avg	7
W 076°39.939´			
Hwy 45 & Bridge	4:20 p.m.	Real Time	24
N 35°36.023´		10 Second Avg	23
W 076°31.748´			
Hwy 45 & Pat's Rd.	4:31 p.m.	Real Time	47
N 35°39.475´		10 Second Avg	4
W 076°35.481´			

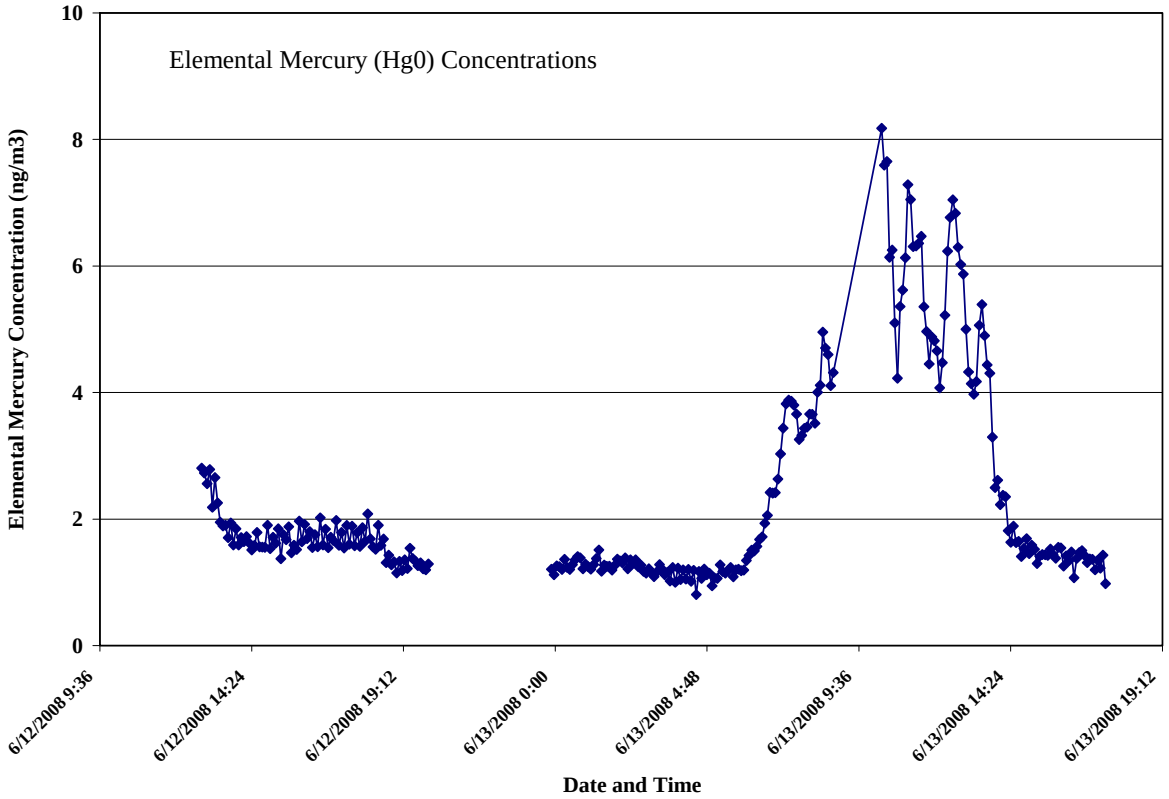
June 12, 2008 (cont)

Location	Time	Results	ng/m³
Hwy 45 & A Canal Rd	4:45 p.m.	Real Time	22

(Wenona Church of Christ) N 35°42.721´ W 076°38.503´		10 Second Avg	5
Hwy 45 & Bell Rd N 35°40.210´ W 076°43.405´	5:00 p.m.	Real Time 10 Second Avg	13 6
Washington Square Mall DENR Office Parking Lot	6:10 p.m.	Real Time 10 Second Avg	12 9

Additionally, a Tekran 2737A was put in operation on June 12 and 13 at the WaRO and recorded 5 minute average elemental mercury concentrations over much of this time. Values obtained at this location never exceeded concentrations above 9 ng/m3. (see Figure 3 below)

Figure 3 Tekran 2737A Elemental Mercury Data June 12-13, 2008 at WaRO site.



The Lumex™ and Tekran instruments were operated simultaneously concurrently at the WaRO on June 13. The data was found to be in good agreement.

From previous work done at Pettigrew State Park adjacent to the Pocosin National Wildlife Refuge, ATAST knew that the typical concentration range of elemental mercury was consistently less than 3 ng/m3. Additionally, EPA has a reference concentration (RfC) of 300 ng/m3 (see http://www.epa.gov/iris/subst/0370.htm for additional details for this RfC value). Given this information, the elemental mercury vapor monitoring was discontinued on June 13.

5.0 HEALTH IMPLICATIONS

The above sections have described the data as it relates to various standards and levels of concern without specific regard to the health implications. These standards are however for the most part health based in nature. As such this section will discuss the particular health implications of those values used for comparison.

5.1 Reference Exposure Limits

Fifteen minute and thirty minute air data for PM_{10} and $PM_{2.5}$ collected by the EBAM™ monitors must be compared with "reference exposure levels" for these chemicals in order to determine the extent to which humans were exposed during the incident. There are no regulations regarding acute PM exposures for time periods less than 24-hours. Reference exposure levels for these chemicals were assessed using 24-hour standards.

EPA has established health impacts of inhalation exposures to PM_{10} and $PM_{2.5}$. EPA established the 24-hour National Ambient Air Quality Standards (NAAQS) for PM_{10} at 150 ug/m^3, as part of the CAAA in 1990. Current guidance states that the maximum inhaled health standard for ambient $PM_{2.5}$ for an adult is 35 ug/m^3 over a 24-hour time period. These health standards for PM are based on a 24-hour average (midnight to midnight) of the monitored pollutant.[4]

These particles can be inhaled into the respiratory system where they accumulate. PM_{10} can cause aggravation of the respiratory and cardiovascular system, whereas $PM_{2.5}$ can lodge deeply into the lungs, and are believed to pose the largest health risks.[5]

Health studies have shown a significant association between exposure to $PM_{2.5}$ and premature mortality. Other important effects include aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days), lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and cardiac arrhythmia. Individuals particularly sensitive to fine particle exposure include older adults, people with heart and lung disease, and children.[3]

The Division of Air Quality's Ambient Monitoring section provided Air Quality Index[6] (AQI) forecasts using the EBAM™ continuous monitoring data after June 11, 2008. Ambient monitoring was forecasting the AQI based on the stationary monitor network prior to June 11, 2008.

[4] http://epa.gov/air/criteria.html
[5] http://www.epa.gov/ttn/naaqs/pm/pm25_index.html
[6] http://airnow.gov/index.cfm?action=aqibroch.aqi#2 accessed 9/15/08.

The AQI is a range of values from 0 – 500 which indicate the levels of pollution for a given area, the higher the number, the more pollution exists. Particulate matter is one of the pollutants that make up the AQI. This index is broken down into six categories ranging from good air quality to hazardous. The color assigned to each category makes it easy for the public at large to understand the air quality in their region for the day. Figure 4 shows the ranges, colors, and health hazards associated with each category of the AQI.

Figure 4. Air Quality Index (AQI): Particle Pollution[7]

$PM_{2.5}$ Conc (ug/m^3)	Index Value	Levels of Health Concern	Cautionary Statement
0.10 – 15.4	0 – 50	Good	None
15.5 – 35.4	51 – 100	Moderate	Unusually sensitive people should consider reducing prolonged or heavy exertion.
35.5 – 65.4	101 – 150	Unhealthy for Sensitive Groups	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.
65.5 – 150.4	151 – 200	Unhealthy	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.
150.5 – 250.4	201 – 300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.
250.5 – 500	301 – 500	Hazardous	People with heart or lung disease, older adults, and children should remain indoors and keep activity levels low. Everyone else should avoid all physical activity outdoors.

The NAAQS for PM directly relates to the AQI as the health-based standard for a 24-hour period is equivalent to the Code Orange level for both $PM_{2.5}$ (35 ug/m3) and PM_{10} (150 ug/m3). NCDAQ, as well as a few other state agencies, have developed an interim AQI where 35.5 ug/m^3 is considered a violation of the daily standard.

[7] http://www.airnow.gov/index.cfm?action=aqibroch.aqi#aqipar accessed 9/16/08

The NAAQS for both $PM_{2.5}$ and PM_{10} was exceeded at BFD on June 14, 2008 (384 ug/m^3) corresponding to a Code Maroon, making air quality for the 24-hr period hazardous to all adults. Table 1 indicates NAAQS exceedance for the entire monitoring event per site, per date with the corresponding AQI.

Table 1. $PM_{2.5}$ NAAQS Exceedance, Evans Road Fire, June 12 – August 4, 2008

Site	Date (2008)	$PM_{2.5}$ (ug/m^3)	AQI
BFD	June 14	384	Maroon
COL	June 14	79	Red
	June 15	66	Red
	June 16	38	Orange
	June 19	165	Purple
	June 20	81	Red
	June 21	263	Maroon
	June 22	73	Red
	June 23	88	Red
	June 27	74	Red
	June 28	75	Red
	June 29	127	Red
	June 30	43	Orange
	July 3	257	Maroon
	July 4	159	Purple
	July 5	73	Red
	July 11	44	Orange
FFLD	June 16	49	Orange
	June 17	42	Orange
	June 19	87	Red
	June 20	95	Red
	June 24	46	Orange
	July 2	49	Orange
MTO	June 19	46	Orange
	June 20	37	Orange
	June 22	39	Orange
	June 23	39	Orange
PLY	June 19	44	Orange
	June 25	86	Red
	July 11	38	Orange
WARO	June 13	354	Maroon

6.0 REFERENCES

i. California Environmental Protection Agency. Air Toxics Hot Spots Program Risk Assessment Guidelines. Part 1. The Determination of Acute Reference Exposure Levels for

Airborne Toxicants. Office of Environmental Health Hazard Assessment, Air Toxics and Epidemiology Section. March 1999. http://www.oehha.ca.gov/air/pdf/acuterel.pdf

ii. California Health and Safety Code Section 44303.

iii. http://www.epa.gov/oppt/aegl/

iv. http://www.orau.gov/emi/scapa/erpgdefinitions.htm

Appendix A

ATAST Operations Narrative

Evans Road Fire Response

Date: Wednesday June 11, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Set up and operated an AreaRAE monitor to measure CO and VOC concentrations. Sampling began at 18:23.
- Set up a 12 hr (Omni) PM10 filter sample. Sampling started at 21:00.

Site: BFD (Belhaven Volunteer Fire Department – Belhaven, NC)

Air Monitoring Activities:

- Set up and operated an AreaRAE monitor to measure CO and VOC concentrations. Sampling began at 21:30.
- Set up a 12 hr (Omni) PM10 filter sample. Sampling started at 22:03.

Date: Thursday June 12, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Set up and operated one EBAM real time PM monitor and met station to monitor PM10 concentrations. Monitoring began at 18:00.
- EPA Ken Rhame arrived AM and conducted LUMEX mercury monitoring at various location around fire area from 14:00 until 18:00.
- Set up and operated a TEKRAN Mercury monitor. Monitoring began at 11:00 and continued until Friday 6/13/08 17:27.
- Downloaded CO and VOC data from AreaRAE monitor at the following times: 13:02, 15:49, and 18:18.
- Collected the 12 hr (Omni) PM10 filter sample (from Wednesday evening) at 9:00. Set up and started the next 12 hr PM10 sample at 10:00 and collected sample at 22:00. Set up and started a 24 hr PM2.5 sample at 22:17.

Site: BFD (Belhaven Volunteer Fire Department – Belhaven, NC)

Air Monitoring Activities:

- Set up and operated one EBAM real time PM monitor and met station to monitor PM10 concentrations. Monitoring began at 11:15.
- Downloaded CO and VOC data from AreaRAE monitor at 11:45.
- Collected the 12 hr (Omni) PM10 filter sample (from Wednesday evening) at 10:03. . Set up and started the next 12 hr PM10 sample at 14:40

Site: COL (Columbia Volunteer Fire Department – Columbia, NC)

Air Monitoring Activities:

- Set up and operated one EBAM real time PM monitor and met station to monitor PM10 concentrations at 13:10.
- Set up and operated and AreaRAE monitor to measure CO and VOC concentrations. Monitoring began at 14:44. Data downloaded at 18:18.
- Set up a 12 hr PM10 filter sample. Sampling began at 18:00.

Date: Friday June 13, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Set up and operated one EBAM real time PM monitor and met station to monitor PM10 concentrations.
- Set up and operated an AreaRAE monitor to measure CO and VOC concentrations.
- Collected a 24 hr PM2.5 filter sample at 22:17. Started the next sample at 23:15.
- Set up and operated a TEKRAN Mercury monitor. Compared TEKRAN mercury concentration measurements to results from the LUMEX mercury monitor operated by Ken Rhame, US EPA; measured mercury concentrations were very close. Based on low mercury levels measured (well below the level of concern, or LOC), mercury monitoring was halted.

Site: BFD (Belhaven Volunteer Fire Department – Belhaven, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM concentrations. Switched from PM10 to PM2.5 at around 12:00. Noted elevated PM levels from ~ 04:00 to 13:00.
- Operated an AreaRAE monitor to measure CO and VOC concentrations. Noted elevated CO levels from ~ 04:30 to 12:30.
- Collected a 12 hr PM10 filter sample that completed at 02:40. Started a 24hr PM2.5 filter sample at 12:00.

Site: COL (Tyrrell Co. Fire Department – Columbia, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM concentrations. Switched from PM10 to PM2.5 at around 14:00.

- Operated an AreaRAE monitor to measure CO and VOC concentrations.
- Collected a 12 hr PM10 filter sample that completed at 06:00. Started a 24hr PM2.5 filter sample at 14:06.

Site: PLY (Fire Station 2 – Plymouth, NC)

Air Monitoring Activities:

- Set up and operated one EBAM real time PM monitor and met station to monitor PM2.5 concentrations. Monitoring started around 20:00.
- Set up and operated an AreaRAE monitor to measure CO and VOC concentrations. Monitoring started at 20:14.

Date: Saturday June 14, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM10 concentrations. A subsequent audit of the instrument on 6/15/08 revealed that none of the PM2.5 measurements for the day were valid due to a pump failure.
- Continued operation an AreaRAE monitor to measure CO and VOC concentrations.
- Collected a 24 hr, 6 min PM2.5 Omni filter sample at 23:21. Started the next sample at 23:25.

Site: BFD (Belhaven Volunteer Fire Department – Belhaven, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM2.5 concentrations. Switched from PM10 to PM2.5 at around 12:00. No elevated PM2.5 levels observed.
- Operated an AreaRAE monitor to measure CO and VOC concentrations. No elevated CO levels observed. CO and VOC monitoring at this site was stopped at 19:51.
- Collected a 24 hr PM2.5 filter sample that completed at 12:00. Started a 24hr PM2.5 filter sample at 12:30.

Site: COL (Tyrrell Co. Fire Department – Columbia, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM concentrations. Several elevated 1 hr PM2.5 concentration values were recorded.
- Operated an AreaRAE monitor to measure CO and VOC concentrations. CO levels increased significantly around 14:00. Data collection inadvertently stopped at 14:40 (data logging apparently not restarted after data download).
- Collected a 24 hr PM2.5 filter sample that completed at 14:06. Started a next 24hr PM2.5 filter sample at 14:30.

Site: PLY (Fire Station 2 – Plymouth, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM2.5 concentrations.
- Operated an AreaRAE monitor to measure CO and VOC concentrations.

Site: FFLD (NC DFR District 13 Headquarters – Fairfield, NC)

Air Monitoring Activities:

- Set up and operated one EBAM real time PM monitor and met station to monitor PM2.5 concentrations. Monitoring started between 09:00 and 10:00.
- Set up and operated an AreaRAE monitor to measure CO and VOC concentrations. Monitoring started around 17:49.

Date: Sunday June 15, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM2.5 concentrations. An audit of the instrument revealed a failing pump. The EBAM unit was replaced with a backup unit. The replacement unit was audited and put into operation at around 15:00.
- Operated an AreaRAE monitor to measure CO and VOC concentrations. No elevated CO levels observed. Stopped AreaRAE operation for this site at 23:48.
- Collected a 24 hr, 14 min PM2.5 Omni filter sample at 23:39. Started the next sample at 23:45.

Site: BFD (Belhaven Volunteer Fire Department – Belhaven, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM2.5 concentrations. No elevated PM2.5 levels observed.
- Collected a 24 hr PM2.5 filter sample that completed at 12:30. Started a 24hr PM2.5 filter sample at 16:34.

Site: COL (Tyrrell Co. Fire Department – Columbia, NC)

Air Monitoring Activities:

- Operated one EBAM real time PM monitor and met station to monitor PM concentrations. Several elevated 1 hr PM2.5 concentration values were recorded.
- Operated an AreaRAE monitor to measure CO and VOC concentrations. CO levels increased significantly around 14:00. Data collection inadvertently stopped at 14:40 (data logging apparently not restarted after data download).
- Collected a 24 hr PM2.5 filter sample that completed at 14:06. Started a next 24hr PM2.5 filter sample at 14:30.

Site: FFLD (NC DFR District 13 Headquarters – Fairfield, NC)

Air Monitoring Activities:

- Continued operation of one EBAM real time PM monitor and met station to monitor PM2.5 concentrations.

Date: Monday June 16, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Continued operation of an EBAM real time PM monitor and met station to monitor PM2.5 concentrations.
- Collected the final PM2.5 filter sample at 22:30. Total sampling time for sample was 22 hr, 45 min. Packed up PM filter sampling equipment.

Site: MTO (Dare Co. Visitors Center – Manteo, NC)

Air Monitoring Activities:

- Set up and operated one EBAM real time PM monitor and met station to monitor PM2.5 concentrations. Monitoring started between 16:00 and 18:00.

Date: Tuesday June 17, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Continued operation of an EBAM real time PM monitor and met station to monitor PM2.5 concentrations.

Date: Wednesday June 18, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Continued operation of an EBAM real time PM monitor and met station to monitor PM2.5 concentrations.

Date: Thursday June 19, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Air Monitoring Activities:

- Continued operation of an EBAM real time PM monitor and met station to monitor PM2.5 concentrations. Moved the EBAM from in front of the WaRO offices to a nearby fire station. Sampling was interrupted between 16:00 and 18:00, and back on line at 19:00.

All Sites: WaRO, BFD, COL, FFLD, PLY, MTO

Air Monitoring Activities:

- DAQ Toxics Protection Branch staff packed up the MAML and other vehicles and returned to Raleigh. A network of six EBAM real-time smoke monitoring instruments remained in operation.

Dates: Friday June 20 through Monday August 4, 2008

All Sites: WaRO, BFD, COL, FFLD, PLY, MTO

Air Monitoring Activities:

- A network of six EBAM real-time smoke monitoring instruments operated from 6/20/2008 to 8/4/2008. Data from the BFD, COL, PLY, and MTO sites were uploaded via satellite telemetry to the Interagency Real Time Smoke Monitoring website (http://www.airsis.com/usfs/), which is operated jointly by the US Forest Service, the Bureau of Land Management, and the US Fish & Wildlife Service. NC DAQ personnel then downloaded the data for these sites from the website. Bob Bishop from the DAQ WaRO office downloaded data daily from the EBAMs at the WaRO and PLY sites. Bob also maintained and audited the EBAM systems at all six sites and decommissioned the sites. Audit and decommissioning dates and activities are detailed below.

Date: July 16, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Audit – EBAM Particulate Matter Monitoring System: Bob Bishop performed an audit of the WaRO EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and also cleaned the PM10 and PM2.5 cyclones. All audit parameters were within specifications

Date: July 16, 2008

Site: PLY (Fire Station 2 – Plymouth, NC)

Audit – EBAM Particulate Matter Monitoring System: Bob Bishop performed an audit of the PLY EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and also cleaned the PM10 and PM2.5 cyclones. All audited temperature, pressure, and flow rate parameters were within specifications; however, the instrument self test indicated a failure of the pressure sensor on the low-pressure side of the filter tape. This sensor is used to determine when the filter tape needs to be advanced due to excessive particulate matter loading. Since no high PM2.5 readings were noted during this time, it is unlikely that failure of this sensor affected the accuracy of any the PM2.5 concentration readings. However, the EBAM unit was replaced on the following day (see below).

Date: July 17, 2008

Site: PLY (Fire Station 2 – Plymouth, NC)

Audit – EBAM Particulate Matter Monitoring System: Bob Bishop replaced the EBAM PLY unit with an identical spare and performed an audit of the system according to Met One (the EBAM manufacturer) and USFS guidelines. All audited temperature, pressure, and flow rate parameters were within specifications.

Date: July 17, 2008

Site: COL (Tyrrell Co. Fire Department – Columbia, NC)

Audit – EBAM Particulate Matter Monitoring System: Bob Bishop performed an audit of the COL EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and also cleaned the PM10 and PM2.5 cyclones. All audit parameters were within specifications

Date: July 17, 2008

Site: MTO (Dare Co. Visitors Center – Manteo, NC)

Audit – EBAM Particulate Matter Monitoring System: Bob Bishop performed an audit of the MTO EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and also cleaned the PM10 and PM2.5 cyclones. All audit parameters were within specifications

Date: July 18, 2008

Site: BFD (Belhaven Volunteer Fire Department – Belhaven, NC)

Audit – EBAM Particulate Matter Monitoring System: Bob Bishop performed an audit of the BFD EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines. All audit parameters were within specifications

Date: July 18, 2008

Site: FFLD (NC DFR District 13 Headquarters – Fairfield, NC)

Audit – EBAM Particulate Matter Monitoring System: Bob Bishop performed an audit of the BFD EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and also cleaned the PM10 and PM2.5 cyclones. All audit parameters were within specifications

Date: July 28, 2008

Site: PLY (Fire Station 2 – Plymouth, NC)

Final System Audit and Decomissioning – EBAM Particulate Matter Monitoring System: Bob Bishop performed a final audit of the PLY EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and then decommissioned the site.

Site: MTO (Dare Co. Visitors Center – Manteo, NC)

Final System Audit and Decomissioning – EBAM Particulate Matter Monitoring System: Bob Bishop performed a final audit of the MTO EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and then decommissioned the site.

Date: July 28, 2008

Site: BFD (Belhaven Volunteer Fire Department – Belhaven, NC)

Final System Audit and Decomissioning – EBAM Particulate Matter Monitoring System: Bob Bishop performed a final audit of the BFD EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and then decommissioned the site.

Date: August 1, 2008

Site: WaRO (NC DENR Washington Regional Ofc. – Washington, NC)

Final System Audit and Decomissioning – EBAM Particulate Matter Monitoring System: Bob Bishop performed a final audit of the WaRO EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and then decommissioned the site.

Site: FFLD (NC DFR District 13 Headquarters – Fairfield, NC)

Final System Audit and Decomissioning – EBAM Particulate Matter Monitoring System: Bob Bishop performed a final audit of the FFLD EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and then decommissioned the site.

Date: August 4, 2008

Site: COL (Tyrrell Co. Fire Department – Columbia, NC)

Final System Audit and Decomissioning – EBAM Particulate Matter Monitoring System: Bob Bishop performed a final audit of the FFLD EBAM system according to Met One (the EBAM manufacturer) and USFS guidelines, and then decommissioned the site.

Appendix B

Evans Road Fire Final Situation Report
August 4, 2008

Evans Road Wildfire
Beaufort County, North Carolina
June 1- August 4, 2008 Report
Air Toxics Analytical Support Team

The North Carolina Division of Air Quality Air Toxics Analytical Support Team (ATAST) responded to the Evans Road wildfire on June 11, 2008 after a request for air monitoring assistance was approved by the Secretary of the Department of Environment and Natural Resources (DENR).

Sites were phased into operation as locations and equipment became available. Three sites were located in Washington, Belhaven and Columbia NC. Sites four and five were located in Fairfield and Plymouth, NC and a sixth site was located in Manteo NC. Because of highly variable meteorology, weather and smoke forecasts and fire mitigation approaches, site operations were flexible employing varied monitoring times, sampling techniques and constituents sampled. Particulate matter was the primary constituent under monitoring surveillance although other gaseous pollutants such as carbon monoxide and volatile organic compounds were sampled.

The initial three particulate monitoring sites, Belhaven, Washington and Columbia were set up to monitor 10-micron particulate matter on a continuous basis and 10 micron particulate matter over a 12 and 24-hour average using filter samples. Filter samples require a period of laboratory conditioning prior to obtaining final filter weights. Results of filter weight samples are a minimum of 24 hours post-sample collection. A limited number of 10-micron particulate matter samples were collected and when the sites in Fairfield and Plymouth became operational, all five sites were switched to collection of fine particulate matter or PM2.5. The sixth site at Manteo was established on June 16 to monitor PM2.5 on a continuous basis; no PM10 and no filters were collected at Manteo.

The US EPA, the US Fish and Wildlife Service and the US Forest Service loaned continuous PM2.5 monitors to ATAST.

ALL data in this status report are draft and have not completed quality assurance processing.

Summary PM10 and PM2.5 data follows.

Code	Town	**PM10**	Duration	Date
BFD	Belhaven	0.148 mg/m3	12-hr	11-Jun-08
WARO	Washington	0.239 mg/m3	12-hr	11-Jun-08

Site Information						Monitoring		
Code	Town	County	Latitude	Longitude	Assignment	Method	Instrument	Constituent
BFD	Belhaven	Beaufort	35° 32.399'N	76° 37.424'W	Response Network	Filter	OMNI	PM10
COL	Columbia	Tyrrell	35° 55.625'N	76° 14.766'W	Response Network	Filter	OMNI	PM10
WARO	Washington	Beaufort	35° 33.546'N	77° 3.566'W	Response Network	Filter	OMNI	PM10
BFD	Belhaven	Beaufort	35° 33.546'N	77° 3.566'W	Response Network	atten.	E-BAM	PM10
COL	Columbia	Tyrrell	35° 55.625'N	76° 14.766'W	Response Network	atten.	E-BAM	PM10
BFD	Belhaven	Beaufort	35° 33.546'N	77° 3.566'W	Response Network	atten.	E-BAM	PM2.5
COL	Columbia	Tyrrell	35° 55.625'N	76° 14.766'W	Response Network	atten.	E-BAM	PM2.5
FFLD	Fairfield	Tyrrell	35° 32.530'N	76° 13.356'W	Response Network	atten.	E-BAM	PM2.5
MTO	Manteo	Dare	35° 53.556'N	75° 38.664'W	Response Network	atten.	E-BAM	PM2.5
PLY	Plymouth	Washington	35° 51.778'N	76° 43.969'W	Response Network	atten.	E-BAM	PM2.5
WARO	Washington	Beaufort	35° 33.546'N	77° 3.566'W	Response Network	atten.	E-BAM	PM2.5
BFD	Belhaven	Beaufort	35° 32.399'N	76° 37.424'W	Response Network	Sensor	RAE	CO
COL	Columbia	Tyrrell	35° 55.625'N	76° 14.766'W	Response Network	Sensor	RAE	CO
FFLD	Fairfield	Tyrrell	35° 32.530'N	76° 13.356'W	Response Network	Sensor	RAE	CO
PLY	Plymouth	Washington	35° 51.778'N	76° 43.969'W	Response Network	Sensor	RAE	CO
WARO	Washington	Beaufort	35° 33.546'N	77° 3.566'W	Response Network	Sensor	RAE	CO
BFD	Belhaven	Beaufort	35° 32.399'N	76° 37.424'W	Response Network	Sensor	RAE	VOCs
COL	Columbia	Tyrrell	35° 55.625'N	76° 14.766'W	Response Network	Sensor	RAE	VOCs
FFLD	Fairfield	Tyrrell	35° 32.530'N	76° 13.356'W	Response Network	Sensor	RAE	VOCs
PLY	Plymouth	Washington	35° 51.778'N	76° 43.969'W	Response Network	Sensor	RAE	VOCs
WARO	Washington	Beaufort	35° 33.546'N	77° 3.566'W	Response Network	Sensor	RAE	VOCs

Code	Site	Instrument	Constituent	Date							
				12-Jun-08		13-Jun-08		14-Jun-08		15-Jun-08	
				max ug/m3	hour ending	max ug/m3	hour ending	max ug/m3	hour ending	max ug/m3	hour ending
BFD	Belhaven	E-BAM	**PM2.5**	78	12:00	**2150**	10:00	35	15:00	39	18:00
COL	Columbia	E-BAM	**PM2.5**	37	23:00	60	7:00	532	15:00	297	0:50
WARO	Washington	E-BAM	**PM2.5**	60	21:00	**1329**	10:15	148	10:00	34	18:00, 23:00
PLY	Plymouth	E-BAM	**PM2.5**			32	21:00	32	0:30	30	5:00
FFLD	Fairfield	E-BAM	**PM2.5**					31	11:00	113	9:00
MTO	Manteo	E-BAM	**PM2.5**								

National Ambient Air Quality Standard for PM2.5 24hr Standard is 35 ug/m3

Code	Site	Instrument	Constituent	Date							
				16-Jun-08		17-Jun-08		18-Jun-08		19-Jun-08	
				max ug/m3	hour ending	max ug/m3	hour ending	max ug/m3	hour ending	max ug/m3	hour ending
BFD	Belhaven	E-BAM	**PM2.5**	45	6:00	26	11:00	232	01:00	38	21:00
COL	Columbia	E-BAM	**PM2.5**	233	0:00			4428 (PM10)	8:00 6/19	266	01:00 6/20
WARO	Washington	E-BAM	**PM2.5**	30	2:00, 7:00	34	18:00	66	04:00		
PLY	Plymouth	E-BAM	**PM2.5**	35	5:00						
FFLD	Fairfield	E-BAM	**PM2.5**	479	10:00	168	12:15	65	15:00	556	08:00
MTO	Manteo	E-BAM	**PM2.5**	19	20:00	95	21:00	35	23:00	158	10:00

These data are draft and have not completed quality assurance processing

June 18, 2008 Status

Operational sites are Belhaven, Fairfield, Manteo, and WaRO. An additional site at Columbia will be operational by 14:00 today with a non-telemetry EBAM particulate unit. Sites with telemetered data are Manteo and Fairfield. Belhaven and WaRO are onsite downloading of data. Data from June 17 is shown in the table above. There were 1 hr average values above the NAAQS 24 hr standard of 35 ug/m3 during this time but none to the extent seen on the June 13.

Two additional telemeter capable EBAM particulate monitors are arriving at the WaRO today and will be inspected, calibrated, and installed as soon as possible. Earliest installation would be morning of June 19th. Sites at which these would be installed are Belhaven and Columbia. The plan is to have 4 telemetered units at sites that are the furthest from the WaRO (Manteo, Columbia, Fairfield, and Belhaven) and two non-telemetered units at sites closest to WaRO (WaRO and Plymouth). Until a unit is available to install in Plymouth, the Jamesville TEOM site will be used as the monitoring site for the area west to northwest of the fire.

June 19, 2008 Status

Operational sites are at Belhaven, Fairfield, Manteo, WaRO and Columbia. EBAMs at each site continue to monitor PM2.5 concentrations with the exception of Columbia where a PM10 monitor is operating. Data from June 18 is shown in the table above. There were 1-hr average values above the NAAQS 24 hr standard of 35 ug/m3 recorded at Belhaven, Fairfield, and WaRO during this time but none to the extent seen on the June 13. Columbia this morning at 8:00 a PM10 value of 4428 ug/m3 was recorded. Values preceding this were in the 10-20 ug/m3 range for June 18 noon to midnight. The immediately before and after this reading the values were as follows:

Time ending	1Hr Avg. PM10 Conc. (ug/m3)
05:00	29
06:00	251
07:00	1154
08:00	922
09:00	4428
10:00	44
11:00	16

Important to Note: These are PM10 values NOT PM2.5 values

Fairfield was impacted early this morning and the data are shown below.

Fairfield Early morning data June 19, 2008 PM 2.5 Data						
Date	Time (edt)	ConcRT (µg/m³)	ConcHR (µg/m³)	Wind Speed (m/s)	Wind Direction (°)	Ambient Temp (F)
6/19/2008	1:00	19	28	0.5	331	59
6/19/2008	2:00	33	26	0.4	340	58.28
6/19/2008	3:00	19	10	0.3	106	55.94
6/19/2008	4:00	50	40	0.7	11	56.3
6/19/2008	5:00	8	20	0.3	324	56.3
6/19/2008	6:00	24	26	0.4	352	56.3
6/19/2008	7:00	565	273	1.6	346	63.14
6/19/2008	8:00	536	556	1.1	338	67.82
6/19/2008	9:00	291	477	1.3	309	75.02
6/19/2008	10:00	18	63	1.8	250	77.54
		Real Time	Hourly data			

These data are draft and have not completed quality assurance processing

The two telemetry capable particulate monitors arrived from the US Forest Service late Wednesday afternoon and were tested and calibrated at WaRO that evening. One of these telemetry monitors was taken to Belhaven to replace a non-telemetry monitor that evening. The non-telemetry monitor was returned to WaRO and was redeployed to Plymouth this morning. It should be operational by late morning today, June 19th. The second telemetry capable monitor is expected to be installed and operational in Columbia by early afternoon today. The non-telemetry monitor at Columbia will be returned to WaRO to act as a spare as needed (this is one of the EPA loaned monitors).

The two expected EBAM telemeter capable units were short meteorological sensors for wind speed and direction and one was short one carton from a group of six. This one carton may contain those sensors but until it is retrieved from FedEx in Greenville, NC at 09:30 this morning, it is uncertain if this is the case. However, these monitors are being installed at the Belhaven site and Columbia sites today without those sensors installed. Consultation with AirSys (the vendor that the data is telemetered to and who uploads it to the website) indicated that this should not impede the ability of the monitors to collect and telemeter particulate concentration data. If necessary, the sensors from the spare EPA unit will be tagged as such and used on the telemetry monitor at Belhaven. (Approval to do this will be obtained from EPA Region IV personnel that loaned the monitors to ATAST). It is suspected that the missing carton for the unit going to Columbia is indeed the meteorological sensors as all other necessary components are present to create an operational unit.

By early afternoon, the monitoring network should be in operation as follows:

Site ID	Location	County	Latitude	Longitude	Method	Instrument	Constituent
BFD	*Belhaven*	*Beaufort*	*35° 33.546'N*	*77° 3.566'W*	*β–atten.*	*E-BAM*	*PM2.5*
COL	*Columbia*	*Tyrrell*	*35° 55.625'N*	*76° 14.766'W*	*β–atten*	*E-BAM*	~~*PM2.5*~~
FFLD	*Fairfield*	*Tyrrell*	*35° 32.530'N*	*76° 13.356'W*	*β–atten*	*E-BAM*	*PM2.5*
MTO	*Manteo*	*Dare*	*35° 53.556'N*	*75° 38.664'W*	*β–atten*	*E-BAM*	*PM2.5*
PLY	Plymouth	Washington	35° 51.778'N	76° 43.969'W	*β–atten*	E-BAM	PM2.5
WARO	Washington	Beaufort	35° 33.546'N	77° 3.566'W	*β–atten*	E-BAM	PM2.5
WARO[1]	Washington	Beaufort	35° 34.002'N	77° 4.410'W	*β–atten*	E-BAM	PM2.5

1. Site was moved to 15th St Fire Station from Washington Region Office at approximately 6pm 6/19/08
Telemeter capable monitors are in italics

June 20, 2008 Status

ATAST left Washington, NC at approximately 19:30hrs for Raleigh. The four sites with telemeter monitors (see above) were transmitting data and the other two sites were operation. All monitors were equipped with meteorological stations and were operational. Problems associated with missing or misplaced parts were solved.

Data will be monitored from Raleigh by ATAST staff via the web and a WaRO staff member will download data from the non-telemetered sites and email the data set to ATAST on the following schedule. WARO will be downloaded twice daily, morning and by COB and Plymouth will be downloaded in the morning. All data will be transmitted by 10am and by COB on the day of collection. This schedule will also be adhered to on the weekends as long as conditions with the fire warrant. ATAST will continue to provide daily reports as long as necessary.

Telemetered data from Columbia and Fairfield early this morning indicate that these two sites are being impacted. See data tables below as of the 08:00 reporting time on the web site.

Columbia, NC							
Date	**Time (edt)**	**ConcRT (µg/m³)**	**ConcHR (µg/m³)**	**Wind Speed (m/s)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH external (%)**
6/19/2008	22:00	110	121	0.8	109	65.48	78
6/19/2008	23:00	33	67	1	130	66.56	73
6/20/2008	0:00	76	102	0.6	122	65.48	71
6/20/2008	1:00	247	266	1.1	207	67.1	62
6/20/2008	2:00	143	201	0.8	232	63.68	69
6/20/2008	3:00	32	86	1.2	276	67.46	64
6/20/2008	4:00	31	33	1.2	252	65.48	62
6/20/2008	5:00	41	37	0.7	206	61.7	66
6/20/2008	6:00	31	36	1.4	261	62.96	65
6/20/2008	7:00	161	101	0.6	188	59.36	81
6/20/2008	8:00	-5	11	0.8	118	59.72	76

Fairfield, NC							
Date	**Time (edt)**	**ConcRT (µg/m³)**	**ConcHR (µg/m³)**	**Wind Speed (m/s)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH external (%)**
6/20/2008	4:00	5	20	1.4	328	68.18	78
6/20/2008	5:00	159	89	0.8	322	64.04	82
6/20/2008	6:00	370	439	0.4	307	62.42	82
6/20/2008	7:00	176	262	0.5	330	64.58	76
6/20/2008	8:00	208	266	1	341	69.8	68
These data are draft and have not completed quality assurance processing							

June 21, 2008 Status

ATAST continues to monitor the 4 sites that are telemetered from Raleigh, NC. The manual data downloads are forthcoming and data from those may not make the deadline for compiling into these reports each morning. As of 9 am today, all monitors were operating and data was being received.

Columbia is continuing to be impacted in a serious way due to its downwind location and will most like remain so given the latest smoke forecast from DAQ (see webpage http://daq.state.nc.us/news/pr/2008/smoke_warning.shtml). Other sites do not seem to be impacted to any great extent.

Columbia						
Date	**Time (edt)**	**ConcHR (µg/m³)**	**Wind Speed (m/s)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH external (%)**
6/20/2008	11:00	36	2.4	275	85.28	47
6/20/2008	12:00	30	2.2	315	86.54	49
6/20/2008	13:00	35	3.1	336	86	49
6/20/2008	14:00	23	2.5	332	89.06	35
6/20/2008	15:00	37	2.2	13	87.44	42
6/20/2008	16:00	24	1.5	282	91.04	35
6/20/2008	17:00	64	2.7	184	78.26	56
6/20/2008	18:00	104	2.2	190	74.48	60
6/20/2008	19:00	149	1.5	197	71.96	61
6/20/2008	20:00	225	1.3	232	70.52	61
6/20/2008	21:00	122	0.8	257	67.64	68
6/20/2008	22:00	84	0.5	302	64.04	75
6/20/2008	23:00	116	0.3	112	60.26	81
6/21/2008	0:00	458	0.5	167	58.46	83
6/21/2008	1:00	404	0.3	136	57.02	86
6/21/2008	2:00	445	0.4	157	55.94	88
6/21/2008	3:00	259	0.4	149	55.22	89
6/21/2008	4:00	433	0.6	165	53.96	89
6/21/2008	5:00	600	0.5	175	53.24	90
6/21/2008	6:00	540	0.3	44	53.06	89
6/21/2008	7:00	775	0.4	193	56.12	87
6/21/2008	8:00	579	0.4	152	63.32	81

Notice again that the increased particulate concentrations are occurring when the winds are low and the wind direction is from the south and southwest (fire direction) and in the mornings. The 24 hour average concentration is over the 35ug/m3 NAAQS.

Below is the summary for data on June 20, 2008

				20-Jun-08	
Code	**Site**	**Instrument**	**Constituent**	**max ug/m3**	**hour ending**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*30*	*06:00*
COL	*Columbia*	*E-BAM*	***PM2.5***	*247*	*01:00*
WARO	Washington	E-BAM	**PM2.5**	41	14:45
PLY	Plymouth	E-BAM	**PM2.5**	69	13:15
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*406*	*09:00*
MTO	*Manteo*	*E-BAM*	***PM2.5***	*138*	*05:00*
Telemetered sites in italics					

June 22, 2008 Status 08:00

ATAST continues to monitor the 4 sites that are telemetered from Raleigh, NC. The manual data downloads are forthcoming and data from those may not make the deadline for compiling into these reports each morning. As of 7 am today, all monitors were operating and data was being received.

As predicted yesterday, Columbia is continuing to be impacted due to its downwind location.. Over the last 24 hours, the highest hourly average was 706 ug/m3 PM2.5 occurring at 09:00 on June 21, 2008 and declined rapidly afterwards. Since midnight, the maximum hourly average occurred overnight during the 03:00 to 0:400 hour was 464 ug/m3 PM2.5. The 24-hour average over the last 60 hours was 149 ug/m3.

Manteo received an overnight hourly impact between 06:00 and 07:00 at 194 ug/m3 PM2.5 and is currently experiencing moderate or yellow air quality, AQI indicator. There was a single instantaneous reading at 218 ug/m3 PM2.5.

Fairfield's largest overnight impact was 48 ug/m3 PM2.5. The running 24- hour average PM2.5 is 15 ug/m3 and compared to the AQI indicator, the air quality remains at the good or green level.

At Belhaven, during 08:00 the AQI is at the unhealthy range, hourly readings building upwards with the hourly value 38 ug/m3 PM2.5.

Date	Time (edt)	ConcHR (µg/m³)	Wind Speed (m/s)	Wind Direction (°)	Temp (F)	RH (%)
6/21/2008	9:00	706	0.7	171	72	73
6/21/2008	10:00	485	1.2	161	78	66
6/21/2008	11:00	101	1.2	152	80	63
6/21/2008	12:00	48	0.8	155	68	84
6/21/2008	13:00	85	0.7	51	68	87
6/21/2008	14:00	46	1.8	201	73	78
6/21/2008	15:00	61	1.1	248	61	79
6/21/2008	16:00	92	1.3	145	70	70
6/21/2008	17:00	22	1.3	157	73	65
6/21/2008	18:00	14	1.6	140	73	67
6/21/2008	19:00	12	1.8	155	74	63
6/21/2008	20:00	28	0.9	142	69	73
6/21/2008	21:00	41	0.5	160	64	82
6/21/2008	22:00	37	0.4	116	61	87
6/21/2008	23:00	39	0.4	164	60	89
6/22/2008	0:00	32	0.3	13	57	90
6/22/2008	1:00	51	0.6	183	56	91
6/22/2008	2:00	102	0.3	129	54	91
6/22/2008	3:00	370	0.4	108	55	91
6/22/2008	4:00	464	0.8	185	56	92
6/22/2008	5:00	52	0.8	246	60	90
6/22/2008	6:00	28	0.5	210	58	91
6/22/2008	7:00	47	0.4	26	60	88
6/22/2008	8:00	8	1.7	256	69	79

June 23, 2008 Status 16:00

ATAST continues to monitor the 4 sites that are telemetered from Raleigh, NC. The manual data downloads are forthcoming and data from those may not make the deadline for compiling into these reports each day. As of 15:00 today, all monitors were operating and data was being received.

Columbia is continuing to be impacted due to its downwind location.. Over the last 24 hours,

				22-Jun-08	
Code	**Site**	**Instrument**	**Constituent**	**Hourly max ug/m3**	**hour ending**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*38*	*08:00*
COL	*Columbia*	*E-BAM*	***PM2.5***	*464*	*04:00*
WARO	Washington	E-BAM	**PM2.5**	43	04:00
PLY	Plymouth	E-BAM	**PM2.5**	40	06:00
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*48*	*04:00*
MTO	*Manteo*	*E-BAM*	***PM2.5***	*194*	*06:00*
Telemetered sites in italics					

the highest hourly average was 178 ug/m3 PM2.5 occurring at 03:00 on June 23, 2008. The 24 hour running average as of 15:00 hrs was 95 ug/m3.

Columbia, NC						
Date	**Time (edt)**	**ConcHR (µg/m³)**	**Wind Speed (m/s)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH external (%)**
6/22/2008	9:00	22	1.5	277	71.78	75
6/22/2008	10:00	11	1.6	280	76.46	69
6/22/2008	11:00	18	1.2	214	81.32	63
6/22/2008	12:00	22	1.7	222	86.54	55
6/22/2008	13:00	21	1.9	202	91.04	45
6/22/2008	14:00	41	1.8	109	88.7	52
6/22/2008	15:00	36	1.9	137	78.62	57
6/22/2008	16:00	31	2.6	140	80.6	59
6/22/2008	17:00	66	1.7	191	68.36	77
6/22/2008	18:00	33	1.5	180	72.32	77
6/22/2008	19:00	72	1.1	140	73.58	78
6/22/2008	20:00	34	0.8	133	73.04	80
6/22/2008	21:00	34	0.6	295	71.06	84
6/22/2008	22:00	63	0.8	192	70.7	83
6/22/2008	23:00	96	0.7	176	70.16	84
6/23/2008	0:00	69	0.7	143	68	87
6/23/2008	1:00	97	0.6	185	68.54	88
6/23/2008	2:00	159	0.3	72	67.1	89
6/23/2008	3:00	178	0.4	113	64.58	91
6/23/2008	4:00	166	0.5	170	63.5	91
6/23/2008	5:00	142	0.3	77	62.42	91
6/23/2008	6:00	165	0.4	158	63.68	91
6/23/2008	7:00	162	0.6	137	65.48	90
6/23/2008	8:00	138	1.1	128	68.18	89
6/23/2008	9:00	163	1.8	214	75.38	75
6/23/2008	10:00	147	1.8	203	77.72	72
6/23/2008	11:00	143	1.4	189	81.86	68
6/23/2008	12:00	65	1.8	173	80.6	66
6/23/2008	13:00	23	2.2	136	81.68	70
6/23/2008	14:00	17	3.1	201	84.02	68
6/23/2008	15:00	25	3.1	188	82.58	66

Manteo received an overnight hourly impact maximum at 04:00 June 23 of 71 ug/m3 PM2.5. The 24 hour running average as of 15:00 hrs was 13.5 ug/m3.

Fairfield received an overnight hourly impact maximum at 08:00 June 23 of 42 ug/m3 PM2.5. The 24 hour running average as of 08:00 hrs was 14.3 ug/m3. This site experiences some download satellite feed difficulties at times but eventually the data is uploaded to the site. If this continues to be a problem then we can troubleshoot and/or collect data manually tomorrow or Wednesday when TPB staff will be in the area.

Belhaven received an overnight hourly impact maximum at 07:00 June 23 of 102 ug/m3 PM2.5. The 24 hour running average as of 15:00 hrs was 17.2 ug/m3.

Data from the WaRO and Plymouth sites have not been obtained due to TPB staff being in a debriefing for the event most of today and the usual ER Monday check in for equipment readiness. This data will be available in tomorrow's briefing. However, given the current weather conditions, minimal impacts at these sites are expected due to their being southwesterly and westerly, respectively from the fire.

June 24, 2008 Status 09:00 hrs
Summary of hourly max and time are given below for each site

				23-Jun-08	
Code	**Site**	**Instrument**	**Constituent**	**Hourly max ug/m3**	**hour ending**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*40*	*19:00*
COL	*Columbia*	*E-BAM*	***PM2.5***	*121*	*00:00*
WARO	Washington	E-BAM	**PM2.5**	28	18:00
PLY	Plymouth	E-BAM	**PM2.5**	65	20:00
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*105*	*06:00 6/24*
MTO	*Manteo*	*E-BAM*	***PM2.5***	*106*	*07:00 6/24*
Telemetered sites in italics					

Belhaven received an overnight hourly impact maximum at 19:00 June 23 of 40 ug/m3 PM2.5. The 24 hour running average as of 08:00 hrs was 8.4 ug/m3.

Fairfield received an overnight hourly impact maximum at 06:00 June 24 of 105 ug/m3 PM2.5. The 24 hour running average as of 08:00 hrs was 29.0 ug/m3. Data did finally update on the website for this site.

Manteo received an overnight hourly impact maximum at 07:00 June 24 of 106 ug/m3 PM2.5. The 24 hour running average as of 08:00 hrs was 15.8 ug/m3.

Columbia did not experience similar elevated overnight concentrations as has been seen in the last several days although levels did rise around midnight. The 24 hour running average as of 09:00 hrs was 49.9 ug/m3.

Columbia Date	**Time (edt)**	**ConcHR (µg/m³)**	**Wind Speed (m/s)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH external (%)**
6/23/2008	16:00	27	2.4	179	84.74	61
6/23/2008	17:00	38	1.5	140	81.32	65
6/23/2008	18:00	19	2	140	80.24	67
6/23/2008	19:00	-1	1.6	174	76.46	74
6/23/2008	20:00	22	1.1	143	71.78	81
6/23/2008	21:00	25	0.8	174	70.52	83
6/23/2008	22:00	30	1	188	69.08	86
6/23/2008	23:00	88	1.8	200	69.26	76

6/24/2008	0:00	121	1.6	211	66.92	76
6/24/2008	1:00	84	1.7	232	66.74	78
6/24/2008	2:00	25	0.8	306	66.56	80
6/24/2008	3:00	24	0.8	274	67.1	81
6/24/2008	4:00	40	0.7	200	65.84	84
6/24/2008	5:00	40	0.5	323	62.24	87
6/24/2008	6:00	42	0.8	278	60.44	89
6/24/2008	7:00	-5	1.1	260	64.94	84
6/24/2008	8:00	-5	2.3	330	71.78	67

June 25, 2008 Status 15:30 hrs
Summary of hourly max and time are given below for each site

				24-Jun-08	
Code	**Site**	**Instrument**	**Constituent**	**Hourly max ug/m3**	**hour ending**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*59*	*03:00 6/25*
COL	*Columbia*	*E-BAM*	***PM2.5***	*121*	*00:00 6/25*
WARO	Washington	E-BAM	**PM2.5**	unavailable	as of 15:30
PLY	Plymouth	E-BAM	**PM2.5**	unavailable	as of 15:30
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*61*	*02:00 6/25*
MTO	*Manteo*	*E-BAM*	***PM2.5***	*30*	*09:00 6/25*
Telemetered sites in italics					

As of 15:30 data had not arrived from Plymouth and WaRO sites because ATAST staff from Raleigh were operating the sites today and data would not be returned until tomorrow morning. This team was obtaining all serial numbers from EBAM units at all sites and taking site photos.

Belhaven received an overnight hourly impact maximum at 03:00 June 25 of 59 ug/m3 PM2.5. The 24 hour running average as of 15:00 hrs was 24.3 ug/m3.

Fairfield received an overnight hourly impact maximum at 02:00 June 25 of 61 ug/m3 PM2.5. The 24 hour running average as of 12:00 hrs was 33.1 ug/m3. Data did finally update on the website for this site.

Manteo received an overnight hourly impact maximum at 09:00 June 25 of 30 ug/m3 PM2.5. The 24 hour running average as of 15:00 hrs was 11.3 ug/m3.

Columbia did not experience similar elevated overnight concentrations as has been seen in the last several days although levels did rise around midnight on June 24. The 24 hour running average as of 14:00 hrs was 26.8 ug/m3.

June 26, 2008 Status as of 09:00 hrs
ATAST continues to monitor at the six sites and the summary of data from the preceding 12-36 hrs are given in the table below. Note that the order of the sites has changed to facilitate a delineation of telemetered and manual download monitors.

				26-Jun-08 as of 10:00 hrs		
Code	**Site**	**Instrument**	**Constituent**	**Hourly max (ug/m^3)**	**Hour ending**	**24 hr Running Avg (ug/m^3)**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*42*	*08:00*	*21.7*
COL	*Columbia*	*E-BAM*	***PM2.5***	*213*	*02:00*	*55.3*
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	64	00:00	27.7 @ 09:00
MTO	*Manteo*	*E-BAM*	***PM2.5***	71	07:00	36.0
PLY	Plymouth	E-BAM	**PM2.5**	*209*	*07:00*	*19.0* (1)
WARO	Washington	E-BAM	**PM2.5**	*42*	*07:00*	*25.4* (1)
Telemetered sites in italics			(1) *As of 10:15 6/25*			

Overnight peak data for the Columbia site

Columbia						
Date	**Time (edt)**	**24 hr avg Conc ($\mu g/m^3$)**	**Wind Speed (m/s)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH (%)**
6/25/2008	20:00	32	1.3	134	84.92	62
6/25/2008	21:00	35	0.7	132	79.52	71
6/25/2008	22:00	48	0.9	170	77.36	75
6/25/2008	23:00	115	0.7	132	73.76	81
6/26/2008	0:00	178	1.1	198	74.12	80
6/26/2008	1:00	159	1.2	192	72.5	81
6/26/2008	2:00	213	1.4	182	71.78	79
6/26/2008	3:00	199	1.3	195	70.52	80
6/26/2008	4:00	130	1.1	197	69.62	82
6/26/2008	5:00	101	1.2	200	69.44	82
6/26/2008	6:00	65	1.3	210	70.16	84
6/26/2008	7:00	-5	1.3	231	72.68	82
6/26/2008	8:00	-5	1.8	225	78.26	74
6/26/2008	9:00	-5	2.2	236	85.28	65
6/26/2008	10:00	9	2	235	89.96	61

Overnight peak data for the Plymouth site. This elevation may be related to the smoke plume from the Dismal Swamp Fire given the wind direction and location of the fire(s).

Plymouth					
Time	**ConcHR ($\mu g/m^3$)**	**Wind Speed (m/s)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH (%)**
6/25/2008 0:00	114	1.4	322	71.42	81
6/25/2008 0:15	114	1.1	337	71.24	83
6/25/2008 0:30	114	1.2	342	70.88	84
6/25/2008 0:45	114	1.1	310	70.7	84
6/25/2008 1:00	116	1	315	70.52	85
6/25/2008 1:15	116	0.9	263	69.8	86
6/25/2008 1:30	116	0.8	305	69.08	87
6/25/2008 1:45	116	0.7	310	68.9	87
6/25/2008 2:00	155	0.7	282	68.36	87
6/25/2008 2:15	155	0.7	257	67.82	88

Time	ConcHR (µg/m³)	Wind Speed (m/s)	Wind Direction (°)	Ambient Temp (F)	RH (%)
6/25/2008 2:30	155	0.5	233	67.28	88
6/25/2008 2:45	155	0.3	209	66.74	89
6/25/2008 3:00	188	0.5	199	66.38	90
6/25/2008 3:15	188	0.4	221	66.02	90
6/25/2008 3:30	188	0.3	249	65.66	90
6/25/2008 3:45	188	0.7	345	66.02	90
6/25/2008 4:00	166	0.6	324	65.84	90
6/25/2008 4:15	166	0.8	322	65.84	90
6/25/2008 4:30	166	0.3	342	65.66	90
6/25/2008 4:45	166	0.3	202	65.48	90
6/25/2008 5:00	187	0.3	168	65.12	90
6/25/2008 5:15	187	0.4	96	66.02	91
6/25/2008 5:30	187	0.4	83	66.56	91
6/25/2008 5:45	187	0.5	82	66.56	91
6/25/2008 6:00	208	0.3	84	66.38	91
6/25/2008 6:15	208	0.6	77	66.2	91
6/25/2008 6:30	208	0.4	42	66.2	91
6/25/2008 6:45	208	0.3	84	66.38	91
6/25/2008 7:00	209	0.5	311	66.2	91
6/25/2008 7:15	209	0.6	299	66.38	91
6/25/2008 7:30	209	0.6	283	66.74	91
6/25/2008 7:45	209	0.6	238	66.92	91
6/25/2008 8:00	167	1	320	67.46	91
6/25/2008 8:15	167	0.7	327	67.82	90
6/25/2008 8:30	167	0.9	39	68.18	90
6/25/2008 8:45	167	0.8	75	68.9	89
6/25/2008 9:00	149	0.8	47	69.44	87
6/25/2008 9:15	149	1	328	71.06	83
6/25/2008 9:30	149	1.2	325	73.76	76
6/25/2008 9:45	149	1.1	325	76.46	69
6/25/2008 10:00	19	0.8	328	79.52	62
6/25/2008 10:15	19	0.8	294	81.14	58

June 27, 2008 Status as of 09:00 hrs

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hrs are given in the table below. Note that the order of the sites has changed to facilitate a delineation of telemetered and manual download monitors.

				NAAQS 24hr avg. is 35 ug/m³		27-Jun-08 as of 09:00 hrs
Code	**Site**	**Instrument**	**Constituent**	**Hourly max (ug/m³)**	**Hour ending**	**24 hr Running Avg (ug/m³)**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*45*	*07:00*	*22.1*
COL	*Columbia*	*E-BAM*	***PM2.5***	*102*	*00:00*	*43.8*
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	32	04:00	19.0
MTO	*Manteo*	*E-BAM*	***PM2.5***	48	07:00	18.2
PLY	Plymouth	E-BAM	**PM2.5**	62	08:00 6/26	25.3
WARO	Washington	E-BAM	**PM2.5**	42	02:00 6/26	24.3
Telemetered sites in italics						

Columbia still seems to be the impacted the most but not to the extent observed in previous days and data indicate that there are few spikes to higher numbers than earlier in the event. Also, the peak is probably associated with a nightly build up of an inversion that starts breaking up later in the morning and the PM2.5 concentrations begin going down. This can be seen in the data shown below for the 24 hrs between 09:00 6/26 and 09:00 6/27.

Columbia

Date	Time (edt)	ConcHR (µg/m³)	Wind Speed (m/s)	Wind Direction (°)	Ambient Temp (F)	RH external (%)
6/26/2008	9:00	-5	2.2	236	85.2	65
6/26/2008	10:00	9	2	235	89.9	61
6/26/2008	11:00	11	1.9	230	94.8	55
6/26/2008	12:00	17	2	228	99.3	51
6/26/2008	13:00	36	2.5	224	101.3	47
6/26/2008	14:00	37	2.7	223	105.6	42
6/26/2008	15:00	35	2.8	218	107.9	37
6/26/2008	16:00	40	2.5	219	107.2	36
6/26/2008	17:00	43	2.8	227	106.8	34
6/26/2008	18:00	66	2.3	207	102.7	47
6/26/2008	19:00	58	2	196	95.9	60
6/26/2008	20:00	77	1.7	182	91.7	61
6/26/2008	21:00	98	1.7	195	86.9	64
6/26/2008	22:00	90	1.2	201	83.1	67
6/26/2008	23:00	116	2	219	81.6	70
6/27/2008	0:00	102	2.1	222	79.8	73
6/27/2008	1:00	62	1.6	229	78.0	75
6/27/2008	2:00	37	1.4	234	76.1	77
6/27/2008	3:00	46	1.7	226	74.4	80
6/27/2008	4:00	26	1.5	209	73.9	81
6/27/2008	5:00	44	1	202	71.0	85
6/27/2008	6:00	16	1.3	211	70.8	85
6/27/2008	7:00	-5	2	227	74.4	79
6/27/2008	8:00	-5	2.3	243	80.0	70
6/27/2008	9:00	5	2.1	228	85.2	62

June 28, 2008 Status as of 08:00 hrs

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hrs are given in the table below.

NAAQS 24hr avg. is 35 ug/m³				28-Jun-08 as of 08:00 hrs		
Code	**Site**	**Instrument**	**Constituent**	**Hourly max (ug/m³)**	**Hour ending**	**24 hr Running Avg (ug/m³)**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*33.0*	*07:00*	*20.6*
COL	*Columbia*	*E-BAM*	*PM2.5*	*189*	*07:00*	***66.0***
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*30*	*23:00 6/27*	*19.6*
MTO	*Manteo*	*E-BAM*	***PM2.5***	53	20:00 6/27	24.3
PLY	Plymouth	E-BAM	**PM2.5**	42	21:00 6/27	25.6
WARO	Washington	E-BAM	**PM2.5**	35	22:00 6/27	22.9
Telemetered sites in italics						

Columbia still seems to be the impacted the most but not to the extent observed early in the event and data indicate that there are few spikes to higher numbers than earlier in the event. The impacts on Columbia are due its downwind location of the prevailing wind direction during this time of year. Manteo seems to be less impacted primarily because it is further away and further off the axis of the prevailing wind direction relative to the fire location.

Columbia						
Date	Time (edt)	ConcHR (µg/m³)	Wind Speed (m/s)	Wind Direction (°)	Ambient Temp (F)	RH external (%)
6/27/2008	12:00	22	2.4	214	97.88	49
6/27/2008	13:00	28	2.9	234	102.38	45
6/27/2008	14:00	36	2.8	220	104.18	42
6/27/2008	15:00	34	3	225	106.34	36
6/27/2008	16:00	27	2.9	221	104.54	37
6/27/2008	17:00	38	3.1	239	101.3	41
6/27/2008	18:00	48	2.7	203	97.16	50
6/27/2008	19:00	103	2	212	96.08	51
6/27/2008	20:00	110	1.5	176	89.06	61
6/27/2008	21:00	118	0.9	195	86.36	67
6/27/2008	22:00	135	0.4	157	80.6	76
6/27/2008	23:00	144	1.4	197	81.5	73
6/28/2008	0:00	25	1.8	230	83.48	67
6/28/2008	1:00	16	1.2	207	80.96	63
6/28/2008	2:00	76	1.6	215	78.62	67
6/28/2008	3:00	62	1.4	216	76.64	71
6/28/2008	4:00	33	1.4	199	74.48	76
6/28/2008	5:00	55	1.1	213	73.22	79
6/28/2008	6:00	174	1.4	231	72.32	81
6/28/2008	7:00	189	1.6	229	75.38	78
6/28/2008	8:00	71	2.2	227	80.06	72

June 29, 2008 Status as of 09:00 hrs

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hrs are given in the table below.

NAAQS 24hr avg. is 35 ug/m³				29-Jun-08 as of 09:00 hrs		
Code	Site	Instrument	Constituent	Hourly max (ug/m³)	Hour ending	24 hr Running Avg (ug/m³)
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*37*	*07:00*	*15.0*
COL	*Columbia*	*E-BAM*	*PM2.5*	*351*	*06:00*	***131.5***
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*23*	*02:00*	*15.0*
MTO	*Manteo*	*E-BAM*	***PM2.5***	No data	reported on	website
PLY	Plymouth	E-BAM	**PM2.5**	Data	unavailable	as of 09:00
WARO	Washington	E-BAM	**PM2.5**	26	00:00	19
Telemetered sites in italics						

Manteo has not reported data to the website since 8am 6/26. This may be difficulty with satellite uplink as has been seen with Fairfield on occasion or the instrument is not functioning properly. A team from the WaRO or ATAST will be dispatched on Monday morning if the situation has not improved. Data had been reported passed what is currently available now so the difficulty may be with the web provider. This will be checked on Monday as well as our contact for correction of these types of problems is not available until then.

Columbia was significantly impacted during the night and early morning of 6/28 and 6/29 and most likely due to low wind speeds and being downwind of the fire location. At the time of this report the levels were beginning to drop back some.

Columbia

Date	Time (edt)	ConcHR (µg/m³)	Wind Speed (m/s)	Wind Direction (°)	Ambient Temp (F)	RH external (%)
6/28/2008	8:00	71	2.2	227	80.1	72
6/28/2008	9:00	-4	2.2	256	85.8	65
6/28/2008	10:00	9	2.5	244	90.7	59
6/28/2008	11:00	14	2.9	220	94.3	53
6/28/2008	12:00	8	2.8	254	100.8	44
6/28/2008	13:00	18	2.4	253	104.4	40
6/28/2008	14:00	11	2.3	243	106.0	37
6/28/2008	15:00	10	2.4	222	107.2	34
6/28/2008	16:00	18	3.2	234	108.7	34
6/28/2008	17:00	15	3	224	108.1	35
6/28/2008	18:00	171	2.6	188	101.3	48
6/28/2008	19:00	137	1.9	202	99.9	48
6/28/2008	20:00	134	1.9	202	93.4	59
6/28/2008	21:00	157	2.1	190	87.8	59
6/28/2008	22:00	196	1.6	210	84.2	65
6/28/2008	23:00	211	1.5	208	82.9	71
6/29/2008	0:00	210	2.1	209	82.9	71
6/29/2008	1:00	193	2	215	80.6	73
6/29/2008	2:00	182	1.8	207	79.0	76
6/29/2008	3:00	173	1.7	209	77.7	77
6/29/2008	4:00	199	1.4	188	76.6	79
6/29/2008	5:00	195	0.9	164	74.5	82
6/29/2008	6:00	351	1.3	178	74.3	84
6/29/2008	7:00	313	1.5	204	76.6	80
6/29/2008	8:00	156	2.7	206	82.2	66
6/29/2008	9:00	76	1.9	214	75.6	76

June 30, 2008 Status as of 10:00 hrs

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hrs are given in the table below.

NAAQS 24hr avg. is 35 ug/m^3				30-Jun-08 as of 10:00 hrs		
Code	**Site**	**Instrument**	**Constituent**	**Hourly max (ug/m^3)**	**Hour ending**	**24 hr Running Avg (ug/m^3)**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*39*	*02:00*	*16.2*
COL	*Columbia*	*E-BAM*	***PM2.5***	*181*	*05:00*	*65.1*
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*28*	*00:00 6/29*	*15.8 @ 08:00*
MTO	*Manteo*	*E-BAM*	***PM2.5***		See note 1 below	
PLY	Plymouth	E-BAM	**PM2.5**	51	22:00 6/29	15.9 @ 09:00
WARO	Washington	E-BAM	**PM2.5**	61	21:00 6/29	19.0 @ 08:00
Telemetered sites in italics						

Note 1: After a call to the Washington Regional office, they made a call to the Visitors Center at Manteo (site location) and it was discovered that the breaker supplying power had tripped and the monitor was off. They restored power and at 09:48, there was report to the website of a data for the 1 hr average ending at 09:00. A staff member at WaRO will be going to the site to ascertain if the instrument is functioning properly and if any additional work needs to be performed. Data from Plymouth and WaRO were collected by the staff member before being directed to go to Manteo. Data from those sites will be relayed as soon as possible.

Note 2: Updated PLY and WARO data in table June 30 5pm See Table above.

July 1, 2008 Status as of 13:00 hrs

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hrs are given in the table below.

NAAQS 24hr avg. is 35 ug/m^3				01-July-08 as of 13:00 hrs		
Code	**Site**	**Instrument**	**Constituent**	**Hourly max (ug/m^3)**	**Hour ending**	**24 hr Running Avg (ug/m^3)**
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*44*	*04:00*	*15.3*
COL	*Columbia*	*E-BAM*	***PM2.5***	*298*	*02:00*	*43.8*
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*159*	*09:00*	*34.7 @ 08:00*
MTO	*Manteo*	*E-BAM*	***PM2.5***	*54*	*06:00*	*18.7*
PLY	Plymouth	E-BAM	**PM2.5**	41	03:00	17.5*
WARO	Washington	E-BAM	**PM2.5**	33	04:00	17.8*
Telemetered sites in italics			** Data collected at 10:00hrs and 9:00 7/1 respectively*			

Manteo monitor was restored to service at approximately 08:45 June 30 and is now reporting data to the website. Fairfield has no reported values since 08:00 today and trying to ascertain the difficulty. This site has repeatedly been intermittently slow at finding a satellite uplink and reporting.

Update: July 1, 2008 15:00hrs

Fairfield is now reporting data as of last reporting period of 14:00hrs. There was a peak in the data as shown in the table below. The winds were primarily from the direction of the fire and at relatively low speeds.

Fairfield						
Date	Time (edt)	ConcHR (µg/m³)	Wind Speed (m/s)	Wind Direction (°)	Ambient Temp (F)	RH external (%)
7/1/2008	0:00	17	1.9	225	76.46	76
7/1/2008	1:00	15	1.4	248	76.46	75
7/1/2008	2:00	17	1.9	226	76.28	76
7/1/2008	3:00	20	1.6	235	76.28	76
7/1/2008	4:00	17	0.7	284	75.2	79
7/1/2008	5:00	31	1.4	328	72.14	82
7/1/2008	6:00	50	1.2	306	69.08	80
7/1/2008	7:00	107	0.9	309	68.72	82
7/1/2008	8:00	138	1	329	71.96	73
7/1/2008	9:00	159	1.3	242	74.66	63
7/1/2008	10:00	117	1.6	284	77.36	57
7/1/2008	11:00	13	2.2	232	78.26	55
7/1/2008	12:00	4	2.1	233	80.42	52
7/1/2008	13:00	10	2	270	82.22	49
7/1/2008	14:00	-5	2.7	221	82.76	46

July 2, 2008 Status as of 10:00 hrs

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hrs are given in the table below.

NAAQS 24hr avg. is 35 ug/m³				02-July-08 as of 10:00 hrs		
Code	Site	Instrument	Constituent	Hourly max (ug/m³)	Hour ending	24 hr Running Avg (ug/m³)
BFD	*Belhaven*	*E-BAM*	***PM2.5***	*26*	*07:00*	*11.3*
COL	*Columbia*	*E-BAM*	***PM2.5***	*43*	*01:00*	*19.8*
FFLD	*Fairfield*	*E-BAM*	***PM2.5***	*66*	*23:00 7/1*	*37.8 @ 06:00*
MTO	*Manteo*	*E-BAM*	***PM2.5***	*58*	*14:00 7/1*	*14.9*
PLY	Plymouth	E-BAM	**PM2.5**	43	05:00	15.2
WARO	Washington	E-BAM	**PM2.5**	32	08:00	10.9 @ 09:00
Telemetered sites in italics						

Note on Columbia site impact that although the wind directions are generally from the direction of the fire, the PM2.5 values are lower that what has been seen previously. Fairfield has no reported values since 06:00 today. This site has repeatedly been intermittently slow at finding a satellite uplink and reporting. This is potentially the situation now.

Manual downloads of collected monitoring data at site WARO and PLY will be suspended over the July 4th holidays due to the weather forecast for these sites to be located upwind from the fire and no significant fire impacts to them would be expected to occur. However, if local

conditions do dramatically change due to unexpected meteorological conditions, arrangements have been made to collect this data as soon as possible and reported to ATAST.

July 3, 2008 Status as of 10:00 hrs
Data from the WARO and PLY sites was reported yesterday and is documented in the table for July 2. As a reminder, manual downloads of monitoring data collected at these two sites will be suspended over the July 4th holiday.

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hours are given in the table below. Please note the changes to the table.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			03-July-08 Report			
			Preceding 12-24 hours			10:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Current 24 hr Running Avg.
BFD	*Belhaven*	*E-BAM*	*35 @ 08:00*	*14.4*	*08:00*	*12.3*
COL	*Columbia*	*E-BAM*	*1042@08:00*	*222.6*	*08:00*	*253.1*
FFLD	*Fairfield*	*E-BAM*	*457 @09:00 7/2*	*45.8*	*07:00*	*45.3*
MTO	*Manteo*	*E-BAM*	*27 @ 18:00 7/2*	*11.89*	*08:00*	*8.7*
PLY	Plymouth	E-BAM				-----
WARO	Washington	E-BAM				-----
Telemetered sites in italics						

A significant change in the PM values at Columbia site corresponds with the changing meteorological conditions driving an increase in fire activity. The forecasted drier conditions, higher temperatures and lower relative humidity are expected to aggravate the situation. Typical southwesterly wind patterns will transport smoke towards the site at Columbia and depending upon the intensity, some impacts may be experienced at Manteo.

July 4, 2008 Status as of 10:00 hrs
Data from the WARO and PLY sites was reported yesterday and both sites reported in under a 'green' AQI. As a reminder, manual downloads of monitoring data collected at these two sites will be suspended over the July 4th holiday.

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			04-July-08 Report			
			Preceding 12-24 hours			07:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Current 24 hr Running Avg.
BFD	*Belhaven*	*E-BAM*	*17 @ 06:00*	*12.0*	*06:00*	*11.9*
COL	*Columbia*	*E-BAM*	*589 @ 05:00*	*254.1*	*05:00*	*225.1*
FFLD	*Fairfield*	*E-BAM*	*27 @ 05:00*	*12.0*	*06:00*	*11.5*
MTO	*Manteo*	*E-BAM*	*21 @ 0:00*	*9.3*	*06:00*	*10.5*

PLY	Plymouth	E-BAM				-----
WARO	Washington	E-BAM				-----
Telemetered sites in italics						

At COL on 7/3/2008, the PM 2.5 values peaked at 1.042 **mg/m^3** (1042 ug/m^3) 08:00 then dropped very fast back to the double digit ug/m^3 levels during the period of 10:00-22:00. Beginning 23:00 7/3/08 to 05:00 on 7/4/08 PM2.5 levels climbed to the triple digit ug/m^3 levels and as of 07:00 remain in the AQI code 'purple' level. For the period of midnight to 06:00, windspeeds were very low, <1m/s and reasonably consistent from the SE. Whether or not the anticipated change in the fire behavior occurred yesterday, the typical night time inversion seems to be trapping the particulates from the smoke. The table below outlines the midnight to 07:00 readings.

Date	Time (edt)	Rolling 24 hr avg (µg/m^3)	Wind Speed (m/s)	Wind Direction(°)	Ambient Temp (F)	RH (%)	Type
7/4/2008	0:00	242	0.5	153	67.1	80	PM 2.5
7/4/2008	1:00	358	0.7	211	64.2	84	PM 2.5
7/4/2008	2:00	460	0.7	128	62.4	85	PM 2.5
7/4/2008	3:00	420	0.7	148	61.9	84	PM 2.5
7/4/2008	4:00	399	0.9	119	59.9	87	PM 2.5
7/4/2008	5:00	589	0.3	113	57.2	89	PM 2.5
7/4/2008	6:00	589	0.6	120	58.1	89	PM 2.5
7/4/2008	7:00	151	1.3	206	69.1	84	PM 2.5

Overnight conditions at the other three telemetered sites indicated PM2.5 levels in the AQI code 'green' level.

July 5, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hours are given in the table below.

At 11:00 on 7/4/08 the BFD EBAM unit went into an alarm status and is currently being investigated.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3 | **05-July-08 Report**

Code	Site	Instrument	Preceding 12-24 hours: Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	07:00 Last hourly reading (24 hr avg.)
BFD	*Belhaven*	*E-BAM*	*No data*	*No data*	-----	*No data*
COL	*Columbia*	*E-BAM*	*161 @ 00:00*	*69.2*	*06:00*	*77*
FFLD	*Fairfield*	*E-BAM*	*19 @ 19:00*	*9.5*	*06:00*	*9.0*
MTO	*Manteo*	*E-BAM*	*96 @ 11:00 7/4*	*23.2*	*06:00*	*25*
PLY	Plymouth	E-BAM				-----
WARO	Washington	E-BAM				-----
Telemetered sites in italics						

July 6, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			06-July-08 Report			
			Preceding 12-24 hours			06:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly reading (24 hr avg.)
BFD	*Belhaven*	*E-BAM*	*15 @ 21:00 7/5*	*7.1 (17 hr)*	*05:00*	*0*
COL	*Columbia*	*E-BAM*	*420@ 08:00 7/5*	*57.8*	*06:00*	*36*
FFLD	*Fairfield*	*E-BAM*	*102 @ 01:00*	*12.2*	*06:00*	*12*
MTO	*Manteo*	*E-BAM*	*34 @ 11:00 7/5*	*6.4*	*06:00*	*7*
PLY	Plymouth	E-BAM				-----
WARO	Washington	E-BAM				-----
Telemetered sites in italics						

All sites are functioning. The BFD site became re-operational at 14:00 7/5/08 and has been collecting data for the past 17 hours with no interruptions. The winds have remained steady from the SE-SW quadrant over the past six hours and PM readings have been substantially lowered over the last 12 hours than in the prior 48, most differently at COL.

July 7, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 12-24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			07-July-08 Report			
			Preceding 12-24 hours			14:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly reading (24 hr avg.)
BFD	*Belhaven*	*E-BAM*	*44 @ 20:00 7/6*	*11.8*	*06:00*	*3*
COL	*Columbia*	*E-BAM*	*198 @ 06:00*	*45.4*	*06:00*	*19*
FFLD	*Fairfield*	*E-BAM*	*42 @ 05:00*	*11.5*	*06:00*	*10*
MTO	*Manteo*	*E-BAM*	*42 @ 09:00 &10:00*	*9.0*	*06:00*	*1*
PLY	Plymouth	E-BAM	62 @ 01:00	15.4	06:00	16.1 @ 10:00
WARO	Washington	E-BAM	26 @ 22:00 7/6	11.3	06:00	11.9 @ 08:00
Telemetered sites in italics						

July 8, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			08-July-08 Report			
			Preceding 24 hours			07:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly reading (24 hr avg.)
BFD	*Belhaven*	*E-BAM*	*27 @08:00 7/7*	*7.8*	*06:00*	*8.1*
COL	*Columbia*	*E-BAM*	*127 @ 04:00*	*33.8*	*06:00*	*30.7*
FFLD	*Fairfield*	*E-BAM*	*19 @ 20:00 7/7*	*7.1*	*06:00*	*7.1 @06:00*
MTO	*Manteo*	*E-BAM*	*42 @ 09:00-10:00 7/7*	*9.0*	*06:00*	*10.0*
PLY	Plymouth	E-BAM	Not available	@ report time		-----
WARO	Washington	E-BAM	Not available	@ report time		-----
Telemetered sites in italics						

July 3-6 data from Plymouth and WARO received on July 7 and compiled into a summary table below

		08-July-03		08-July-04		08-July-05		08-July-06	
Code	Site	Hourly max (ug/m^3)	24 hr Avg (ug/m^3)	Hourly max (ug/m^3)	24 hr Avg (ug/m^3)	Hourly max (ug/m^3)	24 hr Avg (ug/m^3)	Hourly max (ug/m^3)	24 hr Avg (ug/m^3)
PLY	Plymouth	31 @ 05:00	17.6	30 @ 20:00	15.8	22 @ 01:00	11.0	48 @ 04:00	14.9
WARO	Washington	28 @ 03:00	16.7	35 @09:00	15.4	22 @09:00	9.1	26 @ 22:00	11.2
Manual downloads received on 7/7/08. Values are calculated based on 24hr from midnight to midnight									

July 9, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below. **Note**: the data for Plymouth and WaRO are reported for the previous day because of the reporting schedule of the manually downloaded to ATAST.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			09-July-08 Report			
			Preceding 24 hours			07:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
BFD	*Belhaven*	*E-BAM*	*26 @ 01:00*	*8.0*	*06:00*	*7.3*
COL	*Columbia*	*E-BAM*	*86 @ 23:00 7/8*	*21.9*	*06:00*	*23.5*
FFLD	*Fairfield*	*E-BAM*	*19 @ 20:00 7/8*	*5.8*	*06:00*	*5.8 @ 06:00*
MTO	*Manteo*	*E-BAM*	*36 @ 20:00 7/8*	*7.9*	*06:00*	*6.9*
Data for the following sites are for previous day.				08-July-08 Report		
PLY	Plymouth	E-BAM	32 @ 08:00 7/8	9.6	12:00	n/a
WARO	Washington	E-BAM	27 @ 10:00 7/8	7.4	08:00	n/a
Telemetered sites in italics						

July 10, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below. **Note**: the data for Plymouth and WaRO are reported for the previous day because of the reporting schedule of the manually downloaded to ATAST.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			**10-July-08 Report**			
			Preceding 24 hours			**06:00**
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
BFD	*Belhaven*	*E-BAM*	*37 @ 20:00 7/9*	*11.36*	*06:00*	*11.36*
COL	*Columbia*	*E-BAM*	*109 @ 13:00 7/9*	*22.5*	*06:00*	*22.5*
FFLD	*Fairfield*	*E-BAM*	*64 @ 13:00 7/9*	*10.8*	*05:00*	*10.8 @ 05:00*
MTO	*Manteo*	*E-BAM*	*13 @ 07:00 7/9**	*5.7*	*07:00 7/9*	*See below **
Data for the following sites are for previous day.				**09-July-08 Report**		
PLY	Plymouth	E-BAM	53 @ 01:00	12.1	06:00	n/a
WARO	Washington	E-BAM	32 @ 01:00	8.8	06:00	n/a
Telemetered sites in italics						

The website for Belhaven was not reporting 1hr average readings on the graphic but the data was available so the instrument is working properly, and the issue must be with the website. This has been reported and will hopefully be corrected soon.

* The Manteo site last reported data to the website at noon Wed 7/9. The problem was discovered this morning and WaRO staff are ascertaining what the problem may be. However, a TPB staff member (Pernell Judd) checked the website at approximately 23:30 hrs to check on site operation after seeing the local weather report and noting the coast was having thunderstorms. He reports that there was data being displayed as of 22:00 hrs. An update will be forthcoming when the situation has been assessed and a solution instituted.

July 10, 2008 Update 13:30hrs

The Manteo site had a power failure and the site operation was restored at 8am this morning and Bob Bishop from WaRO went to inspect the site and corrected a couple of problems that may have contributed to the outages (although I don't think he can do anything about the weather). Since 09:00, the AQI at Manteo has been in the mid-yellow to mid-orange ranges.

Columbia has not reported since 11:00 today but this may be due to overcast skies when it is trying to get a satellite up link.

Fairfield has not reported data since 06:00 today but this site at times has historically been slow to report data possibly due to its location and ability to get a clear satellite link but eventually it has reported all of its data.

Belhaven is still not graphed on the website and AIRSIS is not sure why but the data itself is being uploaded to the site so the monitor is functioning properly and collecting data. Since 06:00, the AQI at Belhaven has been in the upper green to mid-yellow range most of the day.

On his return trip from Manteo to the Washington Regional Office, the field technician will check Columbia and Fairfield.

July 11, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below. **Note**: the data for Plymouth and WaRO are reported for the previous day because of the reporting schedule of the manually downloaded to ATAST.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			**11-July-08 Report**			
			Preceding 24 hours			**06:00**
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
BFD	*Belhaven*	*E-BAM*	*48 @ 20:00 7/10*	*17.7*	*06:00*	*17.7*
COL	*Columbia*	*E-BAM*	*80 @ 20:00 7/10*	*26.0*	*23:00*	*See below[1]*
FFLD	*Fairfield*	*E-BAM*	-----	------	------	*See below[1]*
MTO	*Manteo*	*E-BAM*	*85 @ 06:00*	*25.9[2]*	*07:00*	*26.5*
Data for the following sites are for previous day.				**10-July-08 Report**		
PLY	Plymouth	E-BAM	48 @ 14:00 7/9	12.8	06:00	n/a
WARO	Washington	E-BAM	31 @ 21:00 7/9	9.5	06:00	n/a
Telemetered sites in italics						

1. Columbia has not reported data to the website since 23:00 hrs last night and Fairfield has yet to report since 07:00 both of which may be due either to reported thick overcast not allowing timely satellite uplink or a monitor malfunction. WaRO personnel checked the monitors at both locations yesterday and reported that it was functioning properly. If data does not appear on the website by 09:00 the WaRO staff will be asked to investigate.

2. Manteo is again functioning properly and reporting data, 24 hr average is actually an average from 09:00 yesterday until 07:00 today. The monitor was restarted at 08:00 and its first 1 hr average was reported at 09:00.

July 12, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			**12-July-08 Report**			
			Preceding 24 hours			**06:00**
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
BFD	*Belhaven*	*E-BAM*	*73 @ 20:00 7/11*	*21.7*	*06:00*	*19*
COL	*Columbia*	*E-BAM*	*191 @ 09:00 7/11*	*32.8*	*06:00*	*36*
FFLD	*Fairfield*	*E-BAM*	*74 @ 00:00*	*34.6*	*06:00*	*0*
MTO	*Manteo*	*E-BAM*	*85 @ 06:00 7/11*	*21.7*	*06:00*	*16*
Data for the following sites are for previous day.				**11-July-08 Report**		
PLY	Plymouth	E-BAM	----------	----------	----------	----------

WARO	Washington	E-BAM	----------	----------	----------	----------
Telemetered sites in italics						

Data from both the Columbia and Fairfield sites uploaded successfully from 23:00 July 10, 2008. Since 06:00 on July 11, 2008 (the past 24 hours) the air quality has remained in the moderate or AQI yellow range for all of the sites although the 06:00 reading for Fairfield indicates a 05:00-06:00 reading in AQI green, or good. However, the AQI forecast for today is for a Code Orange in areas surrounding the fire. Data from the Washington and Plymouth sites is expected on Monday, July 13, 2008 when the manual data retrieval is accomplished.

July 13, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			**13-July-08 Report**			
			Preceding 24 hours			**13:00 Last hourly 24 hr running avg.**
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	
BFD	*Belhaven*	*E-BAM*	*40 @ 09:00*	*11.0*	*13:00*	*10*
COL	*Columbia*	*E-BAM*	*57 @ 00:00*	*18.3*	*13:00*	*8*
FFLD	*Fairfield*	*E-BAM*	*130 @ 04:00*	*24.1*	*13:00*	*11*
MTO	*Manteo*	*E-BAM*	*28 @ 19:00 7/12*	*9.3*	*13:00*	*3*
Data for the following sites are for previous day.				**xx-July-08 Report**		
PLY	Plymouth	E-BAM	----------	----------	----------	----------
WARO	Washington	E-BAM	----------	----------	----------	----------
Telemetered sites in italics						

A comparison of data over the last fourteen hours indicate that the Belhaven and Columbia sites are reporting values within 5% of the average ambient concentration values reported for the prior 24 hours. At Fairfield, the average ambient concentrations have increased roughly 21% while the Manteo concentrations have decreased approximately 57%. The air quality has improved at the Belhaven and Manteo sites from the preceding 24 hours. The air quality at Columbia appears to be unchanging while the data indicates that the air quality at Fairfield has degraded somewhat from the preceding 24 hours. Data from the Washington and Plymouth sites is expected on Monday, July 13, 2008 when the manual data retrieval is accomplished from those two locations.

July 14, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 18 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			14-July-08 Report			
			Preceding 24 hours			07:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
BFD	*Belhaven*	*E-BAM*	*19 @ 07:00*	*10.4*	*07:00*	*10.4*
COL	*Columbia*	*E-BAM*	*59 @ 03:00*	*22.1*	*07:00*	*22.1*
FFLD	*Fairfield*	*E-BAM*	*22 @ 01:00*	*12.5*	*07:00*	*12.5*
MTO	*Manteo*	*E-BAM*	*37 @ 06:00*	*7.4*	*07:00*	*7.4*
Data for the following sites are for previous day.						
			Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Date Ending
PLY	Plymouth	E-BAM	96 @22:00 7/11	34.3	06:00	12-July-08
PLY	Plymouth	E-BAM	66 @ 00:00 7/12	16.9	06:00	13-July-08
PLY	Plymouth	E-BAM	50 @ 01:00 7/13	15.3	06:00	14-July-08
WARO	Washington	E-BAM	51 @ 16:00 7/11	18.6	06:00	12-July-08
WARO	Washington	E-BAM	42 @ 09:00 7/12	15.4	06:00	13-July-08
WARO	Washington	E-BAM	35 @ 08:00 7/13	13.4	06:00	14-July-08
Telemetered sites in italics						

All sites are reporting and in the green or low yellow AQI ranges. Data from Plymouth and WaRO will be received later in the day due to a computer failure over the weekend and replacement late Monday morning.

July 14, 2008 Update 14:00

See data table above for values for July 11 to July 14 for 24 hr periods from 06:00 to 06:00 each day.

July 15, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 18 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			15-July-08 Report			
			Preceding 24 hours			07:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
BFD	*Belhaven*	*E-BAM*	*47 @ 21:00 7/14*	*17.2*	*06:00*	*17.5*
COL	*Columbia*	*E-BAM*	*66 @ 20:00 7/14*	*23.9*	*06:00*	*24.3*
FFLD	*Fairfield*	*E-BAM*	*36 @ 00:00 7/14*	*11.8*	*03:00*	*11.8 @ 03:00*
MTO	*Manteo*	*E-BAM*	*52 @ 20:00 7/14*	*9.8*	*06:00*	*10.5*
PLY	Plymouth	E-BAM	65 @ 01:00 7/15	30.3	06:00	30.0
WARO	Washington	E-BAM	99 @ 23:00 7/14	26.1	06:00	27.0
Telemetered sites in italics						

The AQI ranges are continuing to be in the green and low yellow ranges and the peak impacts over the last 24 hrs ending at 06:00 are below 70 ug/m3 at all sites. Fairfield is delayed in its reporting as has been typical. The last reported data was at 03:00 today. Plymouth and WaRO data will be received later in the morning and included in an update.

July 15, 2008 Update 12:00
See data table above for values for July 15 for 24 hr periods from 06:00 7/14 to 06:00 7/15.

July 16, 2008
ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			16-July-08 Report			
			Preceding 24 hours			06:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
BFD	*Belhaven*	*E-BAM*	*45 @ 10:00 7/15*	*15.5*	*06:00*	*15.5*
COL	*Columbia*	*E-BAM*	*96 @ 06:00*	*27.6*	*06:00*	*27.6*
FFLD	*Fairfield*	*E-BAM*	*51 @ 07:00 7/15*	*17.7*	*02:00*	*17.7 @ 02:00*
MTO	*Manteo*	*E-BAM*	*21 @ 16:00 7/15*	*8.0*	*06:00*	*8.0*
Data for this site was not received until after COB 7/16				16-July-08 Report		
PLY	Plymouth	E-BAM	---	---	---	---
WARO	Washington	E-BAM	---	---	---	---
Telemetered sites in italics						

The AQI ranges are continuing to be in the green and low/mid yellow ranges and the peak impacts over the last 24 hrs ending at 06:00 are below 55 ug/m3 at all sites except Columbia. The Columbia site continues to be the most impacted but in what appears to be decreasing frequency of 1 hr-average high impacts. Fairfield is delayed in its reporting as has been typical. The last reported data was at 02:00 today. Plymouth and WaRO data will be received later in the morning and will be included in an update.

July 17, 2008
ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

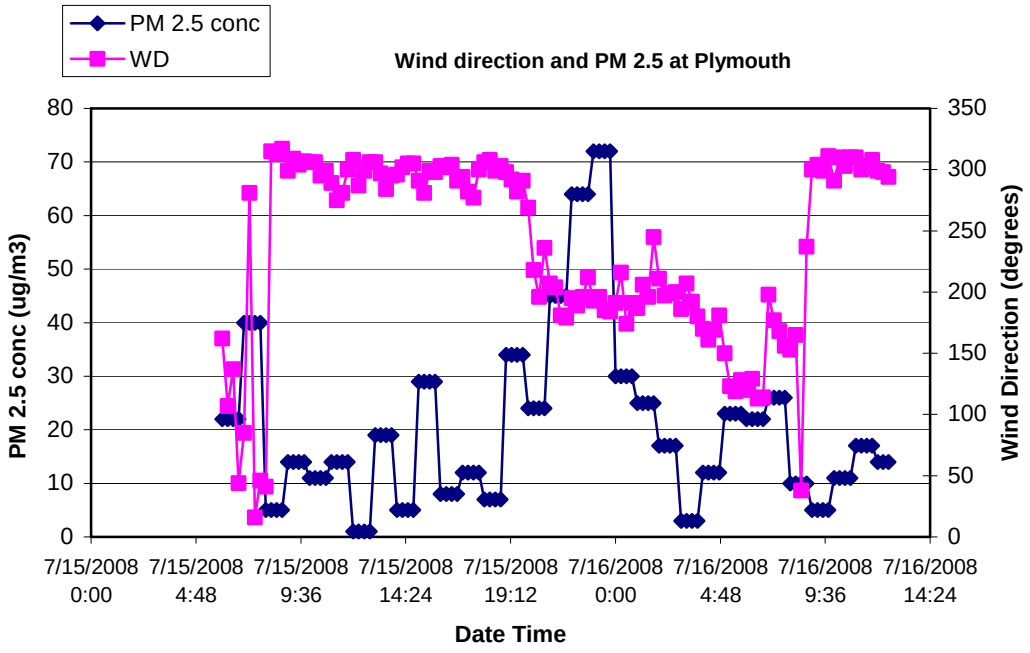
PM2.5 NAAQS 24hr avg. is 35 ug/m^3			17-July-08 Report			
			Preceding 24 hours			07:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
BFD	*Belhaven*	*E-BAM*	*41 @ 08:00 7/16*	*13.5*	*06:00*	*13.2*
COL	*Columbia*	*E-BAM*	*140 @ 08:00 7/16*	*32.4*	*06:00*	*32.8*
FFLD	*Fairfield*	*E-BAM*	*70 @ 07:00 7/16*	*18.7*	*23:00 7/16*	*

MTO	*Manteo*	*E-BAM*	*57 @ 08:00 7/16*	*15.5*	*06:00*	*16.0*
Data is for the previous day				**16-July-08 Report**		
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
PLY	Plymouth	E-BAM	72 @ 00:00 7/16	22.3	06:00	20.7 @ 13:00
WARO	Washington	E-BAM	37 @ 22:00 7/15	20.9	06:00	21.8 @ 10:00
Telemetered sites in italics						

* Last reported web site value at Fairfield was at 23:00 on 7/16 again probably due to satellite communications.

Interesting note that all of the sites experienced a spike at about the same time yesterday morning and the winds at each location was from the N to NE quadrant. The exception was Plymouth where winds were neither from the direction of the Evans Road fire nor from a ENE direction (Dismal Swamp see discussion below). See the graphic below the table. This may indicate a less wide spread source in the vicinity rather than a long range transport.

Site	**Hourly max (ug/m^3)**	**Date/Time**	**Wind Direction (°)**	**Wind Speed (m/s)**
Belhaven	*41*	*08:00 7/16*	*7*	*2.1*
Columbia	*140*	*08:00 7/16*	*18*	*1.8*
Fairfield	*70*	*07:00 7/16*	*0*	*1.4*
Manteo	*57*	*08:00 7/16*	*48*	*3*
Plymouth	26	08:00 7/16	156	0.5
Washington	37	08:00 7/16	47	1.9



At the Columbia site, there were several 1-hr average spikes into the red AQI range but the wind directions do not seem to confirm that these were in the direction of the fire (see table below). The wind has been primarily from the NNE and NE quadrant (the Evans Road Fire is to the SE). Also note that as the winds pick up the values begin going down later in the morning and mid-day while the wind direction continued to be from the NNE direction. The source of the smoke may be the fire in the Great Dismal swamp to the N. This is indicative of the dissipation of a morning inversion that may have been "holding" down and "concentrating" moderate amounts of smoke from a more distant fire. This supposition may also be borne out by the variations in the hourly levels, i.e. one might expect a large scale fire or one closer by to produce a relatively continuous high concentration especially when the wind is steady from one direction whereas these values seem to vacillate over time. This supposition may also be supported by the information in the table above that all the sites were experiencing to some degree an impact at about the same time. This same scenario seems to have set up again this morning.

Columbia							
Date	**Time (edt)**	**ConcHR (µg/m³)**	**Wind Speed (m/s)**	**Wind Speed (mph)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH external (%)**
7/16/2008	0:00	26	1.3	2.9	8	69.08	86
7/16/2008	1:00	22	1.3	2.9	12	68.9	86
7/16/2008	2:00	76	1.2	2.7	8	67.46	88
7/16/2008	3:00	36	1.4	3.1	17	68.18	87
7/16/2008	4:00	18	1	2.2	9	66.74	89
7/16/2008	5:00	-5	1.9	4.3	13	66.92	89
7/16/2008	6:00	96	1.8	4.0	7	67.1	88
Date	**Time (edt)**	**ConcHR (µg/m³)**	**Wind Speed (m/s)**	**Wind Speed (mph)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH external (%)**
7/16/2008	7:00	-5	1.8	4.0	19	66.74	88
7/16/2008	8:00	140	2.7	6.0	18	69.8	85
7/16/2008	9:00	29	3.1	6.9	20	71.78	83
7/16/2008	10:00	-5	3.2	7.2	25	77	77
7/16/2008	11:00	3	3.1	6.9	29	78.8	75
7/16/2008	12:00	15	3.8	8.5	23	78.98	74
7/16/2008	13:00	4	3.9	8.7	24	81.14	71
7/16/2008	14:00	3	3.6	8.1	31	82.4	70
7/16/2008	15:00	3	3.9	8.7	42	84.38	68
7/16/2008	16:00	9	4	8.9	48	84.56	65
7/16/2008	17:00	4	3.7	8.3	37	84.02	59
7/16/2008	18:00	25	3.5	7.8	39	82.22	62
7/16/2008	19:00	32	2.8	6.3	43	79.34	68
7/16/2008	20:00	104	1.4	3.1	60	73.58	76
7/16/2008	21:00	35	0.3	0.7	65	67.64	86
7/16/2008	22:00	31	0.3	0.7	300	64.58	89
7/16/2008	23:00	40	0.3	0.7	62	62.6	89

7/17/2008	0:00	27	0.3	0.7	34	59.9	90
7/17/2008	1:00	16	0.3	0.7	118	60.26	91
7/17/2008	2:00	42	0.4	0.9	16	61.34	91
7/17/2008	3:00	-5	0.6	1.3	181	61.16	91
7/17/2008	4:00	78	0.3	0.7	332	58.1	91
7/17/2008	5:00	-5	0.5	1.1	77	57.74	91
7/17/2008	6:00	132	0.4	0.9	1	57.56	91

July 18, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			**18-July-08 Report**			
			Preceding 24 hours			**06:00**
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
BFD	*Belhaven*	*E-BAM*	*98 @ 03:00*	*28.2*	*06:00*	*28.2*
COL	*Columbia*	*E-BAM*	*60 @ 01:00*	*18.9*	*06:00*	*18.9*
FFLD	*Fairfield*	*E-BAM*	*33 @ 08:00 7/17*	*13.7*	*23:00*	*
MTO	*Manteo*	*E-BAM*	*30 @ 03:00*	*10.3*	*06:00*	*10.3*
Data is for the previous day			**17-July-08 Report**			
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
PLY	Plymouth	E-BAM	31 @ 02:00	13.1	06:00	12.6 @ 10:00
WARO	Washington	E-BAM	37 @ 03:00	18.8	06:00	18.6 @ 08:00
Telemetered sites in italics						

* Last reported web site value at Fairfield was at 23:00 on 7/17 again probably due to satellite communications.

All sites reporting in the green or yellow AQI ranges.

July 19, 2008

ATAST continues to monitor at the six sites, however there will not be a written report today or tomorrow, it will be updated on Monday, July 21. A synopsis of the data shows that:

A review of the telemetered site data overnight show that the northeast sites of Columbia and Manteo were reading low particulate levels--showing good air quality--overnight. Fairfield to the south/SE had not reported in since 2 am. Belhaven was in the low 20 ug/m3--or low yellows--some sensitive individuals may have experienced effects with activity.

Manually reported data from the previous day (18th) for Washington was also in the low yellows during the morning hours that is consistent with what was reported both from the

instruments and from observers in the area. Also on the 18th, Plymouth experienced an excursion where monitors indicated an hourly value or two in the orange, or unhealthy for sensitive individuals.

July 21, 2008

ATAST continues to monitor at the six sites and the summary of data from 06:00 hrs Fri July 18 until 06:00 hrs Monday July 21 are given in the table below. Data from Manteo will be for a somewhat shorter time because the monitor was taken out of operation on Sunday July 20 due to tropical storm, Cristobal off the NC coast with expected winds of 50-70 mph. That site will be reestablished once the storm no longer poses a threat to the area.

Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Date Ending
BFD	*Belhaven*	*E-BAM*	*72 @ 06:00 7/18*	*9.9*	*06:00*	19-July-08
BFD		*E-BAM*	*30 @ 08:00 7/19*	*9.0*	*06:00*	20-July-08
BFD		*E-BAM*	*37 @ 19:00 7/20*	*7.5*	*06:00*	21-July-08
COL	*Columbia*	*E-BAM*	*122 @ 07:00 7/18*	*17.2*	*06:00*	19-July-08
COL		*E-BAM*	*26 @ 20:00 7/19*	*11.9*	*06:00*	20-July-08
COL		*E-BAM*	*95 @ 10:00 7/20*	*18.0*	*06:00*	21-July-08
FFLD	*Fairfield*	*E-BAM*	*16 @ 06:00 7/18*	*4.5*	*06:00*	19-July-08
FFLD		*E-BAM*	*36 @ 04:00 7/20*	*7.2*	*06:00*	20-July-08
FFLD		*E-BAM*	*48 @ 15:00 7/20*	*11.4*	*06:00*	21-July-08
MTO	*Manteo*	*E-BAM*	*125 @ 12:00 7/18**	*10.5*	*06:00*	19-July-08
MTO		*E-BAM*	*26 @ 04:00 7/20*	*6.9*	*06:00*	20-July-08
MTO		*E-BAM*	*26 @ 04:00 7/20*	*8.4* +	*16:00*	21-July-08
Telemetered sites in italics						

* The value for a 1 hr average at Manteo was a single excursion, all other values 4 hrs before and after were below 7 ug/m3. This is shown by the green range for the AQI for this 24 hr period.

+ The Manteo site was taken out of operation at approximately 16:15 hrs on 7/20 so this 24 hr average was for the period of 16:00 hrs 7/19 to 16:00 hrs 7/20.

All sites reporting in the green or yellow AQI ranges.

Data from PLY and WaRO be reported later today in an update.

July 21, 2008 Update

Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Date Ending
PLY	Plymouth	E-BAM	49 @ 09:00 7/18	9.9	06:00	19-July-08
PLY		E-BAM	29 @ 04:00 7/20	8.6	06:00	20-July-08
PLY		E-BAM	29 @ 22:00 7/20	8.1	06:00	21-July-08
WaRO	Washington	E-BAM	37 @ 07:00 7/18	11.0	06:00	19-July-08
WaRO		E-BAM	24 @ 13:00 7/19	9.2	06:00	20-July-08
WaRO		E-BAM	27 @ 10:00 7/20	6.9	06:00	21-July-08

July 22, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			22-July-08 Report			
			Preceding 24 hours			06:00 Last hourly 24 hr running avg.
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	
BFD	*Belhaven*	*E-BAM*	*51 @ 08:00 7/21*	*27.9*	*06:00*	*27.9*
COL	*Columbia*	*E-BAM*	*169 @ 13:00 7/21*	*20.0*	*13:00 7/21*	*
FFLD	*Fairfield*	*E-BAM*	*95 @ 06:00*	*30.0*	*06:00*	*30.0*
MTO	*Manteo*	*E-BAM*	+			
Data is for the previous day			21-July-08 Report			
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
PLY	Plymouth	E-BAM	33 @ 09:00 7/21	9.5	11:00	9.5
WARO	Washington	E-BAM	27 @ 10:00 7/20	6.9	06:00	6.9
Telemetered sites in italics						

* Data still being reported at Columbia but the value has been zero since 16:00 hrs yesterday 7/21, there is an alarm code of 16 which indicates a pump malfunction. A TPB staff member, Karen Clevenger is going to reestablish Manteo today and will check on Columbia's operation as well. Spoke with that staff member at 07:00 hrs and she reported smoky conditions about 20 miles outside of Manteo.

+ Manteo will be reestablished today by noon.

All sites reporting in the green and yellow AQI range.

July 23, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			23-July-08 Report			
			Preceding 24 hours			06:00 Last hourly 24 hr running avg.
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	
BFD	*Belhaven*	*E-BAM*	*51 @ 07:00 7/22*	*26.6*	*06:00*	*26.6*
COL	*Columbia*	*E-BAM*	*104 @ 08:00 7/22*	*41.5 (22 hrs)*	*06:00*	*41.5 (22 hrs)*
FFLD	*Fairfield*	*E-BAM*	*99 @ 06:00*	*31.3*	*06:00*	*31.3*
MTO	*Manteo*	*E-BAM*	*82 @ 22:00 7/22*	*32.0 (21 hrs)*	*06:00*	*32.0 (21 hrs)*
Data is for the previous day			22-July-08 Report			

Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
PLY	Plymouth	E-BAM	69 @ 00:00 7/22	29.9	06:00	31.6 @ 10:00
WARO	Washington	E-BAM	55 @ 10:00 7/21	28.6	06:00	29.3 @ 08:00
Telemetered sites in italics						

Columbia resumed operation at 08:00 hrs Tues July 22 and Manteo resumed operation at 09:00 hrs July 22. All other sites are operational. The averages for the AQI color ranges for Columbia and Manteo were calculated based on 22 and 21 hours respectively because of their restart times and the time of this report.

The burning ban was lifted on July 21, 2008 in the area.

The Columbia site did experience elevated levels of PM2.5 for much of the day but also notice that the winds were very light and variable with some times generally from the direction of the fire. The low wind speeds may have contributed to smoke from the fire not being dissipated as quickly.

Columbia

Date	Time (edt)	ConcHR (µg/m^3)	Wind Speed (m/s)	Wind Direction (°)	Ambient Temp (F)	RH external (%)
7/22/2008	8:00	104	1.1	202	81.68	74
7/22/2008	9:00	50	1.2	222	86	63
7/22/2008	10:00	46	1.7	211	89.42	55
7/22/2008	11:00	36	2	240	92.48	47
7/22/2008	12:00	36	1.9	183	94.1	37
7/22/2008	13:00	28	1.8	197	95	36
7/22/2008	14:00	37	2.2	172	91.4	49
7/22/2008	15:00	20	2.2	233	87.62	48
7/22/2008	16:00	29	0.9	187	84.56	57
7/22/2008	17:00	28	1.8	92	82.94	68
7/22/2008	18:00	23	1.3	219	83.66	63
7/22/2008	19:00	22	1.2	204	85.1	62
7/22/2008	20:00	39	0.6	151	82.76	71
7/22/2008	21:00	35	0.5	241	81.14	77
7/22/2008	22:00	39	0.6	152	79.88	78
7/22/2008	23:00	36	0.3	170	78.08	82
7/23/2008	0:00	45	0.6	125	77.9	84
7/23/2008	1:00	26	0.6	156	77.36	82
7/23/2008	2:00	55	0.3	101	75.74	87
7/23/2008	3:00	68	0.3	84	75.2	88
7/23/2008	4:00	79	0.4	95	74.84	90
7/23/2008	5:00	73	0.5	347	76.28	91
7/23/2008	6:00	42	0.9	249	78.62	88

All sites reporting in the yellow AQI range with the exception of Columbia in the orange range.

There has been discussion of beginning to audit and remove some of the lesser impacted sites like Plymouth and Washington where any westward movement of smoke from the fire may be recorded at the Jamesville TEOM site.

July 24, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			**24-July-08 Report**			
			Preceding 24 hours			**06:00**
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
BFD	*Belhaven*	*E-BAM*	*90 @ 09:00 7/23*	*23.7*	*06:00*	*23.7*
COL	*Columbia*	*E-BAM*	*68 @ 20:00*	*22.2*	*06:00*	*22.2*
FFLD	*Fairfield*	*E-BAM*	*37 @ 09:00 7/23*	*20.4*	*06:00*	*20.4*
MTO	*Manteo*	*E-BAM*	*178 @ 13:00 7/23*	*34.3*	*06:00*	*34.3*
Data is for the previous day				**23-July-08 Report**		
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
PLY	Plymouth	E-BAM	55 @ 06:00	23.3	06:00	24.2 @ 10:00
WARO	Washington	E-BAM	67 @ 06:00	25.4	06:00	26.4 @ 09:00
Telemetered sites in italics						

All sites were in the yellow AQI range. As was the case with the wind speed at the other sites on July 22-23, the sites at Washington and Plymouth saw an elevated 24 hr running average but not out of the yellow range, due primarily to light and variable winds that was not conducive to dispersion of particulates.

Manteo had an impact at 13:00 hrs yesterday (Wed 7/23) for a 1 hr average value of 178 ug/m3 that occurred when the average wind direction (168°) was not from the direction of the fire. For the preceding and following three hours, the winds had been from that same general direction and no exceptional impact was recorded. This may indicate a local source.

Manteo

Date	**Time (edt)**	**ConcHR (µg/m³)**	**Wind Speed (m/s)**	**Wind Direction (°)**	**Ambient Temp (F)**	**RH external (%)**
7/23/2008	7:00	93	1.4	215	76.82	87
7/23/2008	8:00	122	1.7	236	77	86
7/23/2008	9:00	37	0.4	183	76.46	84
7/23/2008	10:00	-5	1.8	184	79.7	79

7/23/2008	11:00	-5	3.2	179	82.58	70
7/23/2008	12:00	8	4	178	84.74	68
7/23/2008	13:00	178	3.3	168	75.2	82
7/23/2008	14:00	-5	2.4	186	77.72	88
7/23/2008	15:00	49	4.5	179	82.76	71
7/23/2008	16:00	-5	4.1	171	84.02	61
7/23/2008	17:00	41	3.9	173	82.94	67
7/23/2008	18:00	34	3.3	175	80.6	68
7/23/2008	19:00	91	3.4	178	79.7	73
7/23/2008	20:00	43	3.6	179	78.98	76
7/23/2008	21:00	-2	2.8	216	72.68	84
7/23/2008	22:00	13	1.5	178	74.84	84
7/23/2008	23:00	45	4.7	177	78.26	77
7/24/2008	0:00	20	4.7	179	78.44	76
7/24/2008	1:00	21	4.5	183	77.36	78
7/24/2008	2:00	16	3.9	186	77.54	75
7/24/2008	3:00	16	3.7	190	77.54	75
7/24/2008	4:00	17	4	231	73.04	79
7/24/2008	5:00	-5	1.8	281	67.28	93
7/24/2008	6:00	6	1.8	241	68.18	93

July 25, 2008

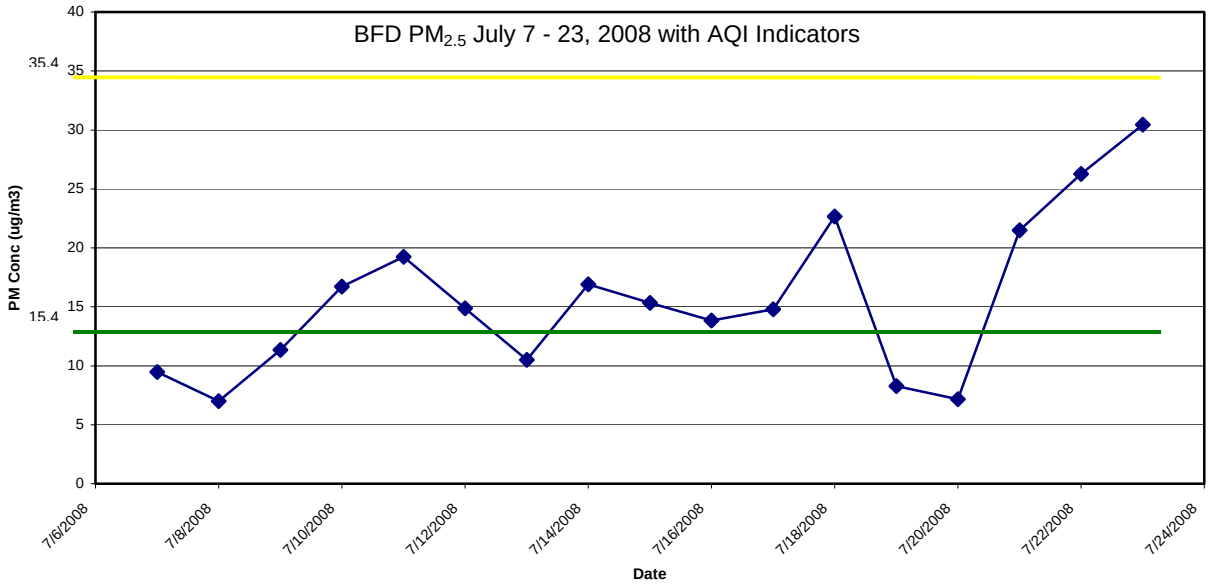
ATAST continues to monitor at the six sites and the summary of data from the preceding 24 hours are given in the table below.

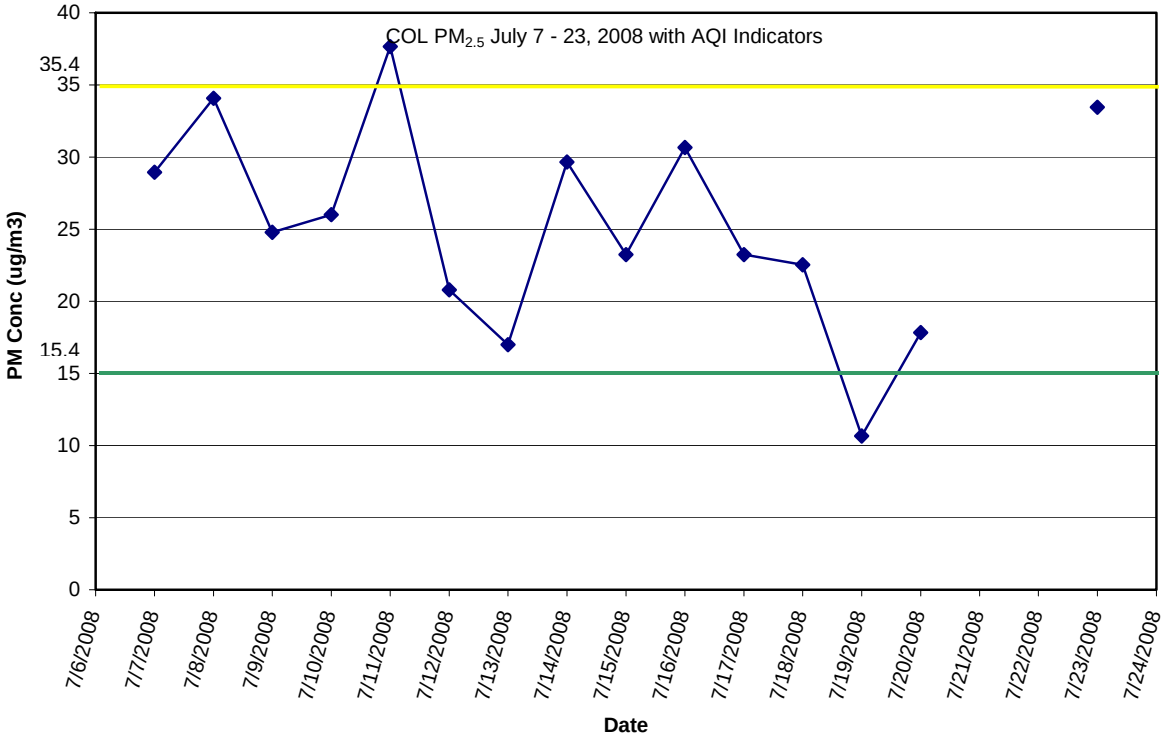
PM2.5 NAAQS 24hr avg. is 35 ug/m^3			**25-July-08 Report**			
			Preceding 24 hours			**06:00**
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
BFD	*Belhaven*	*E-BAM*	*47 @ 20:00 7/24*	*14.4*	*06:00*	*14.4*
COL	*Columbia*	*E-BAM*	*53 @ 20:00 7/24*	*18.4*	*06:00*	*18.4*
FFLD	*Fairfield*	*E-BAM*	*47 @ 19:00 7/24*	*14.3*	*06:00*	*14.3*
MTO	*Manteo*	*E-BAM*	*86 @ 09:00 7/24*	*14.1*	*06:00*	*14.1*
Data is for the previous day				**24-July-08 Report**		
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
PLY	Plymouth	E-BAM	126 @ 01:00	31.1	06:00	29.5 @ 09:00
WARO	Washington	E-BAM	95 @ 01:00	26.0	06:00	25.1 @ 08:00
Telemetered sites in italics						

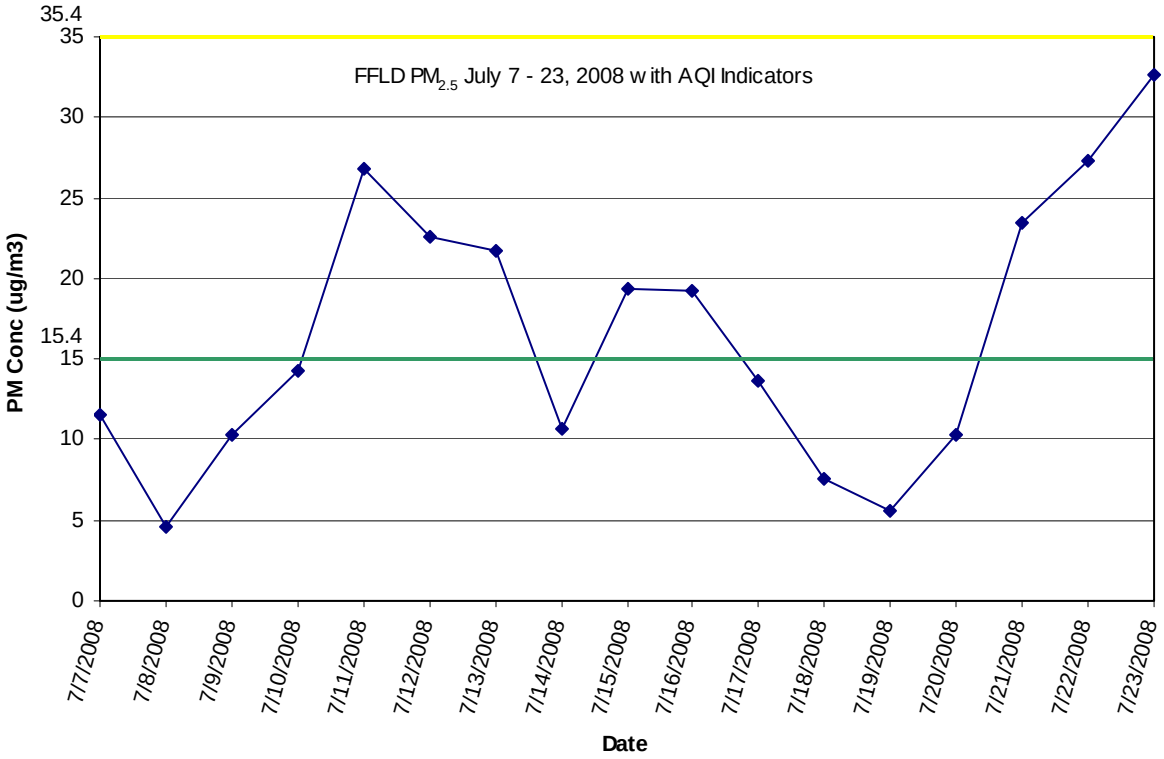
All sites were in the green and yellow AQI ranges. As was the case with the wind speed at the other sites on July 22-23, the sites at Washington and Plymouth saw an elevated 24 hr running average but not out of the yellow range, due primarily to light and variable winds that was not conducive to dispersion of particulates.

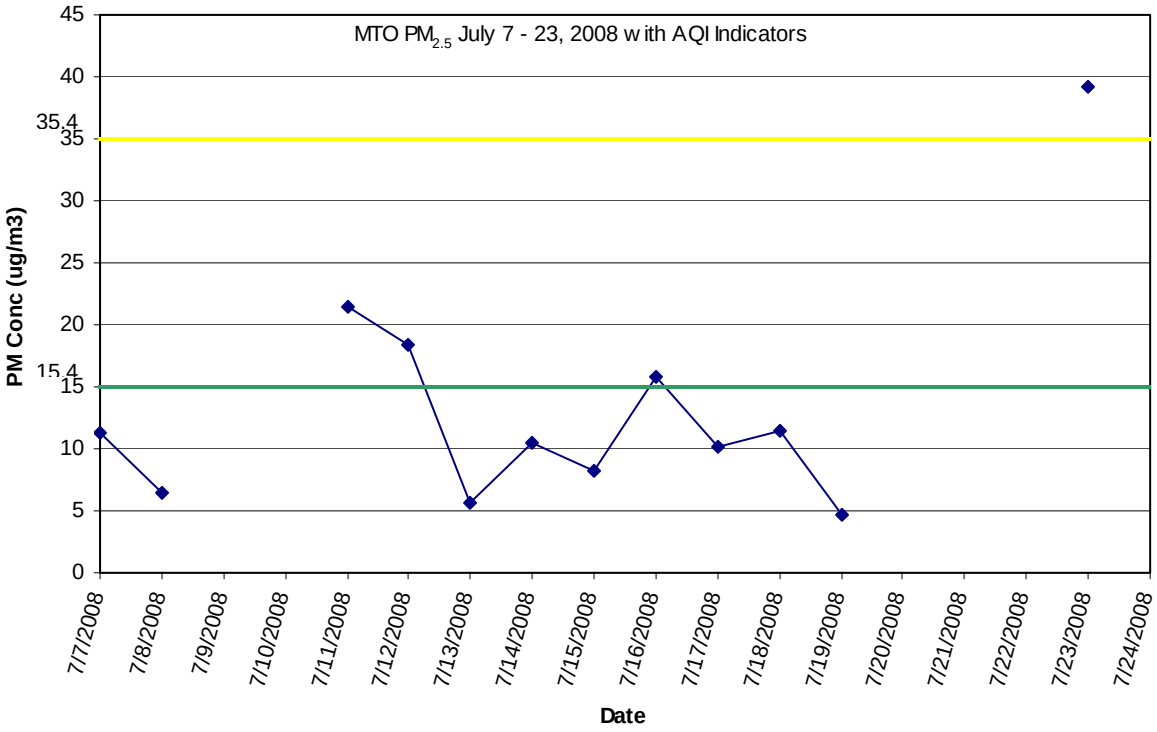
There will not be a report issued for the weekend, however, TPB staff will monitor the website for significant impacts and notify the appropriate personnel as needed. A review of the weekend's data will be done for the Monday July 28 report.

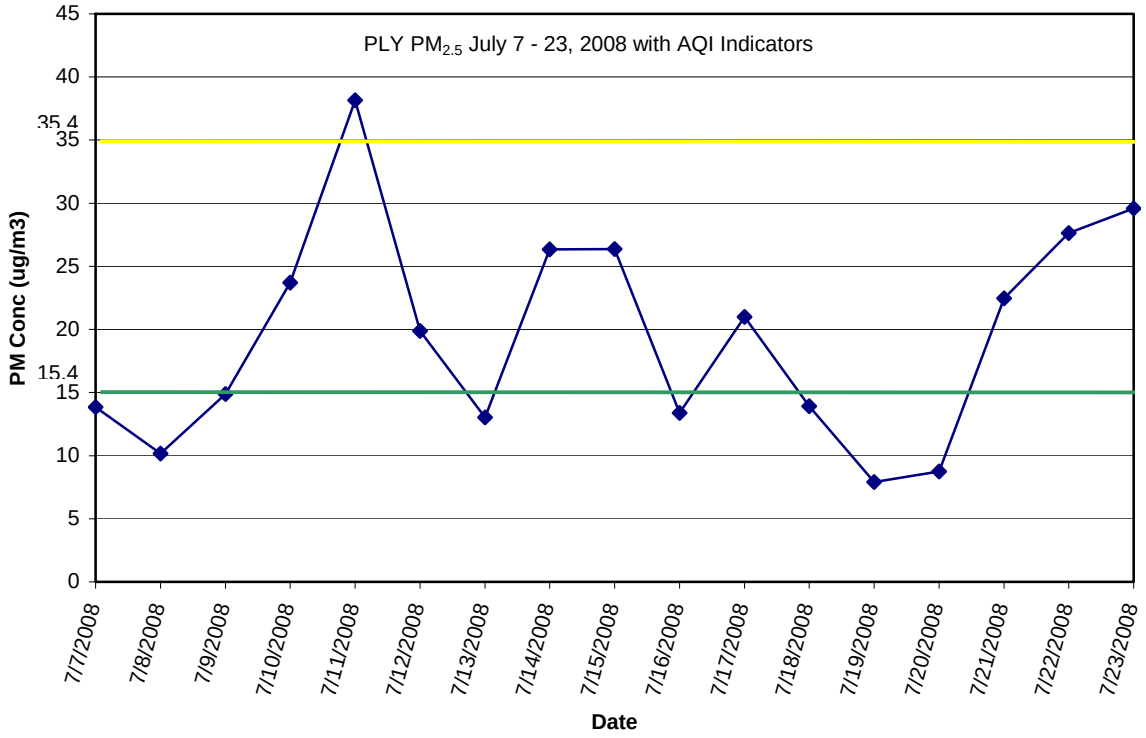
Below are graphics of the 24 hr averages from **midnight to midnight** for the period of July 7-23 that show most of these concentrations have been in the green or yellow AQI ranges for most this time and in some cases are beginning to trend downward. This is especially true at Columbia, which has been the most often impacted due to its location in the prevailing downwind position from the fire. Days where there are no data points are days either when the samplers did not run for a complete 24 hours or were shut down.

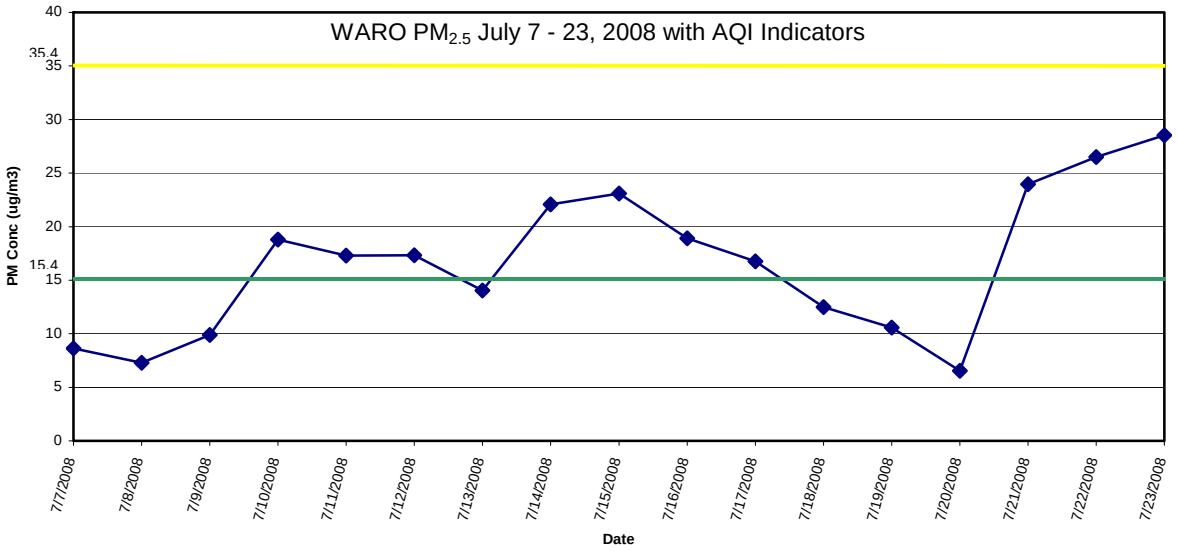



COL PM2.5 July 7 - 23, 2008 with AQI Indicators
PM Conc (ug/m3)
40
35.4
35
30
25
20
15.4
15
10
5
0
7/6/2008
7/7/2008
7/8/2008
7/9/2008
7/10/2008
7/11/2008
7/12/2008
7/13/2008
7/14/2008
7/15/2008
7/16/2008
7/17/2008
7/18/2008
7/19/2008
7/20/2008
7/21/2008
7/22/2008
7/23/2008
7/24/2008
Date


FFLD PM2.5 July 7 - 23, 2008 with AQI Indicators
PM Conc (ug/m3)
35.4
35
30
25
20
15.4
15
10
5
0
7/7/2008
7/8/2008
7/9/2008
7/10/2008
7/11/2008
7/12/2008
7/13/2008
7/14/2008
7/15/2008
7/16/2008
7/17/2008
7/18/2008
7/19/2008
7/20/2008
7/21/2008
7/22/2008
7/23/2008
Date


MTO PM2.5 July 7 - 23, 2008 with AQI Indicators
PM Conc (ug/m3)
45
40
35.4
35
30
25
20
15.4
15
10
5
0
7/7/2008
7/8/2008
7/9/2008
7/10/2008
7/11/2008
7/12/2008
7/13/2008
7/14/2008
7/15/2008
7/16/2008
7/17/2008
7/18/2008
7/19/2008
7/20/2008
7/21/2008
7/22/2008
7/23/2008
7/24/2008
Date


PLY PM2.5 July 7 - 23, 2008 with AQI Indicators
PM Conc (ug/m3)
45
40
35.4
35
30
25
20
15.4
15
10
5
0
7/7/2008
7/8/2008
7/9/2008
7/10/2008
7/11/2008
7/12/2008
7/13/2008
7/14/2008
7/15/2008
7/16/2008
7/17/2008
7/18/2008
7/19/2008
7/20/2008
7/21/2008
7/22/2008
7/23/2008
Date



July 28, 2008

ATAST continues to monitor at the six sites and the summary of data from the preceding 72 hours are given in the table below.

Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Date Ending
BFD	*Belhaven*	*E-BAM*	*35 @ 09:00 7/25*	*18.0*	*06:00*	26-July-08
BFD		*E-BAM*	*79 @ 08:00 7/26*	*19.8*	*06:00*	27-July-08
BFD		*E-BAM*	*66 @ 20:00 7/27*	*18.8*	*06:00*	28-July-08
COL	*Columbia*	*E-BAM*	*98 @ 02:00 7/26*	*28.8*	*06:00*	26-July-08
COL		*E-BAM*	*154 @ 12:00 7/26*	*33.1*	*06:00*	27-July-08
COL		*E-BAM*	*138 @ 11:00 7/27*	*31.8*	*06:00*	28-July-08
FFLD	*Fairfield*	*E-BAM*	*39 @ 00:00 7/26*	*22.0*	*06:00*	26-July-08
FFLD		*E-BAM*	*35 @ 03:00 7/27*	*16.3*	*06:00*	27-July-08
FFLD		*E-BAM*	*54 20:00 7/27*	*21.1*	*06:00*	28-July-08
MTO	*Manteo*	*E-BAM*	*49 @04:00 7/26*	*20.3*	*06:00*	26-July-08
MTO		*E-BAM*	*62 @ 03:00 7/27*	*17.5*	*06:00*	27-July-08
MTO		*E-BAM*	*78 @ 20:00 7/27*	*17.6*	*06:00*	28-July-08
Telemetered sites in italics						

All sites reporting in the yellow AQI range over the weekend with some 1hr excursions that were mainly during times of very low wind speeds (< 2m/s or 4.5 mph). Additionally, the excursions at Columbia occurred under these same conditions and the wind directions was usually not from the direction of the fire.

Because of continued AQI ranges remaining in the green and yellow ranges for all the sites and an increasing fire situation in California and other western states, decommissioning of the sites will commence this week and and the instruments returned to the agencies that loaned them to DAQ. The first two sites will be at Plymouth and Manteo as they are the sites furthest from the fire and continue to be the least impacted. These two sites will have their data downloaded, audits performed, instrumentation decommissioned and returned to the loaning agencies today. Additional sites will be decommissioned in the coming days with the Columbia site being the last site to be decommissioned because it has been the most often impacted.

July 29, 2008

ATAST has decommissioned two sites yesterday, Plymouth and Manteo. These two sites were audited and passed that final audit. They have been packed and are awaiting shipment back to their original owners. The instrument going from Manteo was timely as the owner US Forest Service was in need of the instrument soon in Montana. We are shipping that instrument back to Andy Trent, USFS. An additional site will be audited and decommissioned today at Belhaven. This will leave Columbia, Fairfield and WaRO operational. These sites will be decommissioned in the coming days.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			**29-July-08 Report**			
			Preceding 24 hours			**06:00**
Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Last hourly 24 hr running avg.**
BFD	*Belhaven*	*E-BAM*	*70 @ 04:00*	*26.4*	*06:00*	*26.4*
COL	*Columbia*	*E-BAM*	*89 @ 14:00 7/28*	*31.4*	*06:00*	*31.4*
FFLD	*Fairfield*	*E-BAM*	*77 @ 04:00*	*28.8*	*06:00*	*28.8*
MTO	*Manteo*	*E-BAM*	*62 @ 08:00 7/28*	*17.7* @ 14:00 7/28*	*06:00*	*17.7* @ 14:00 7/28*
Telemetered sites in italics						

Columbia's spike at 14:00 was when winds were not from the direction of the fire but from the NNE.

* Manteo was decommissioned at approximately 14:00 on July 28.

Code	**Site**	**Instrument**	**Hourly max (ug/m^3) occurred:**	**24 hr Running Avg (ug/m^3)**	**Hour Ending**	**Date Ending**
Data below is summary data from the weekend 06:00 July 24 to 06:00 July 28.						
PLY	Plymouth	E-BAM	61 @ 23:00 7/24	12.6	06:00	25-July-08
PLY		E-BAM	53 @ 06:00 7/26	18.0	06:00	26-July-08
PLY		E-BAM	52 @ 04:00 7/27	20.5	06:00	27-July-08
PLY		E-BAM	57 @ 22:00 7/27	18.3	06:00	28-July-08
WaRO	Washington	E-BAM	40 @ 11:00 7/24	17.2	06:00	25-July-08
WaRO		E-BAM	59 @ 22:00 7/25	18.0	06:00	26-July-08
WaRO		E-BAM	33 @ 14:00 7/26 *	20.6*	06:00	27-July-08
WaRO		E-BAM	42 @ 19:00 7/27	19.1	06:00	28-July-08

* There was a 3.5 hr gap in the data set for this day possible due to a power outage.

July 30, 2008

ATAST decommissioned the Belhaven site at 11:45 hrs yesterday. This site was audited and passed that final audit. It has been packed and is awaiting shipment back to their original owners. This leaves Columbia, Fairfield and WaRO operational. These sites will be decommissioned in the coming days.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			30-July-08 Report			
			Preceding 24 hours			06:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
BFD	*Belhaven*	*E-BAM*	*decommissioned*	---	---	---
COL	*Columbia*	*E-BAM*	*45 @ 11:00 7/29*	*26.1*	06:00	*26.1*
FFLD	*Fairfield*	*E-BAM*	*43 @ 20:00 7/29*	*18.5*	06:00	*18.5*
MTO	*Manteo*	*E-BAM*	*decommissioned*	---	---	---
Data is for the previous day			29-July-08 Report			
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
PLY	Plymouth	E-BAM	*decommissioned*	---	---	---
WARO	Washington	E-BAM	42 @ 05:00 7/29	21.7	06:00	21.7
Telemetered sites in italics						

The 1hr maxima at Fairfield and WaRO were observed when the winds were not from the direction of the fire. The 1 hr maximum at Columbia was observed when winds were from the direction of the fire. However, the maxima were lower than have been previously observed.

July 31, 2008

ATAST continues to monitor at Columbia, Fairfield and WaRO. These sites will be decommissioned in the following order over the next 5 days. WaRO and Fairfield will be audited and decommission on Friday Aug. 1 and Columbia will be audited and decommissioned on Monday Aug 4. This will end the monitoring effort for the Division of Air Quality's ATAST unit.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3			31-July-08 Report			
			Preceding 24 hours			06:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
COL	*Columbia*	*E-BAM*	*101 @ 20:00 7/30*	*31.8*	06:00	*31.8*
FFLD	*Fairfield*	*E-BAM*	*58 @ 20:00 7/30*	*22.2*	06:00	*22.2*
Data is for the previous day			30-July-08 Report			
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
WARO	Washington	E-BAM	50 @ 22:00 7/29	17.8	06:00	17.8
Telemetered sites in italics						

The 1hr maxima at Fairfield and WaRO were observed when the winds were not from the direction of the fire. The 1 hr maximum at Columbia was observed when winds were generally from the direction of the fire. However, the maxima were lower than have been previously observed.

August 1, 2008

ATAST continues to monitor at Columbia, Fairfield and WaRO until Monday August 4. The Fairfield and WaRO sites will be audited and decommissioned today.

PM2.5 NAAQS 24hr avg. is 35 ug/m^3						01-August-08 Report
			Preceding 24 hours			06:00
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
COL	*Columbia*	*E-BAM*	*96 @ 20:00 7/31*	*27.3*	06:00	*27.3*
FFLD	*Fairfield*	*E-BAM*	*35 @ 18:00 7/31*	*16.1*	06:00	*16.1*
Data is for the previous day				31-July-08 Report		
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
WARO	Washington	E-BAM	No data reported	---	---	---
Telemetered sites in italics						

The 1 hr maximum at Columbia was observed when winds were generally from the direction of the fire. The 1hr maxima at Fairfield were observed when the winds were not from the direction of the fire. Data was not received from WaRO site yesterday afternoon. Data will probably be relayed today after noon.

August 4, 2008

ATAST audited (both passed) and decommissioned Fairfield and WaRO sites on Friday August. 1. Columbia will be audited and decommissioned by Monday afternoon August 4.

Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Date Ending
COL	*Columbia*	*E-BAM*	*50 @ 23:00 08/01*	*28.9*	*06:00*	02-Aug-08
COL		*E-BAM*	*92 @ 07:00 08/02*	*27.4*	*06:00*	03-Aug-08
COL		*E-BAM*	*42 @ 07:00 8/3**	*	*	04-Aug-08
Telemetered sites in italics						

PM2.5 NAAQS 24hr avg. is 35 ug/m^3				01-Aug-08 Report		
Code	Site	Instrument	Hourly max (ug/m^3) occurred:	24 hr Running Avg (ug/m^3)	Hour Ending	Last hourly 24 hr running avg.
WARO	Washington	E-BAM	39 @ 10:00 07/31	19.5	06:00	20.6 @ 09:00 08/01
Telemetered sites in italics						

* Columbia has not been running since 7 am Sunday August 3 probably due to power failure at the site therefore the 1 hr max is the only value that was obtained. No average is available.

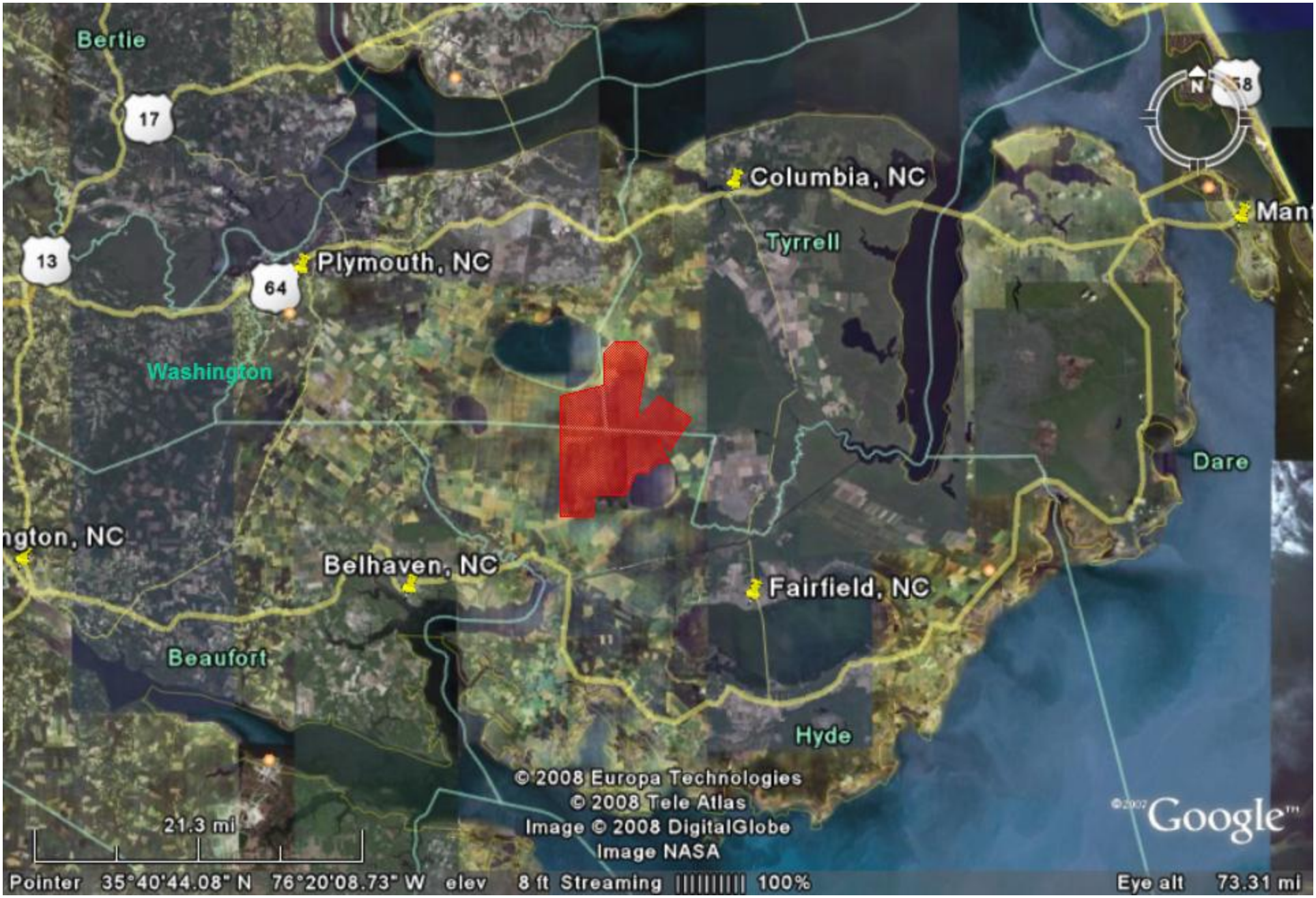
The 1 hr maxima at Columbia were observed when winds were generally from the direction of the fire however wind speeds have been fairly low and other 1 hr averages have been observed that are over 35ug/m3 at other hours of the day when winds were not from the direction of the fire.

The 1hr maximum at WaRO for 06:00 July 31to 06:00 Aug 1was observed when the winds were not from the direction of the fire.

Because the Columbia site is the last site to be decommissioned today and it has had a power failure that has resulted in no data since 07:00 Sunday Aug 3, this will be the last DAQ daily report.

All EBAM units have been or will be sent back to their respective loaning agencies by Tues Aug 2.

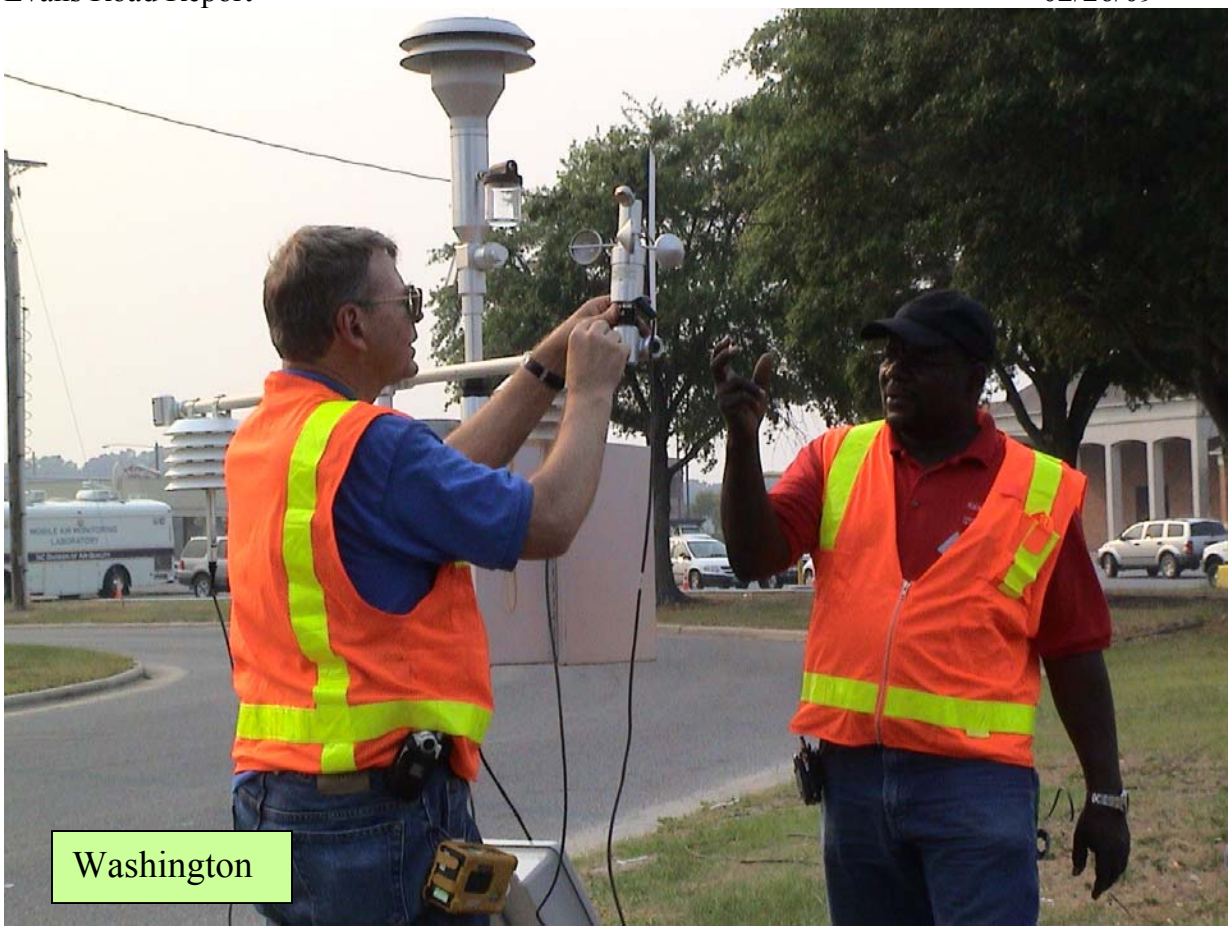
As of the afternoon of Monday August 4, 2008, the efforts of the ATAST for DAQ will be ended. A final report will be issued at a later date.


Bertie
17
13
64
Plymouth, NC
Washington
Columbia, NC
Tyrrell
Dare
Belhaven, NC
Fairfield, NC
Beaufort
Hyde
© 2008 Europa Technologies
© 2008 Tele Atlas
Image © 2008 DigitalGlobe
Image NASA
Google
21.3 mi
Pointer 35°40'44.08" N 76°20'08.73" W elev 8 ft Streaming 100%
Eye alt 73.31 mi


Plymouth


Columbia


Belhaven



Mercury monitoring

ATAST requested US EPA assistance to monitor ambient mercury levels. The major reason for assistance is that US EPA has an instrument that quickly provides quantitative screening data of ambient mercury concentrations. These data are obtained using a short-term sampling format and quickly and directly indicate the magnitude of ambient mercury concentrations. This instrument reads instantaneous, real time values and averages data over 10-second time periods. The advantage of using a screening technique is that it helps assess the 'appropriateness' of locating a more sensitive sampler or sensitive sampling format. Data obtained using a short-term sampling format can potentially over-emphasize concentration 'peaks' than data obtained from samples drawn over a longer time average. Monitoring using a longer averaging period following a series of short-term 'screening' provides a more robust evaluation of ambient concentrations.

EPA monitored in about 10 locations on June 12 and June 13 from 2 -6 pm. Data were taken at each location for approximately 5 minutes and the highest numbers observed for both "real time" and "10 second average" reported.

Comparison data were obtained from the Tekran Mercury Vapor analyzer operated by ATAST. The Tekran is a continuous monitor that averages the sample value over a five-minute period. The two instruments were in good correlation.

Short-term, transient, real-time values were highly variable in the 10-50 ng/m3 range apparently changing with smoke density. Ten second averages ranged from 4-23 ng/m3.

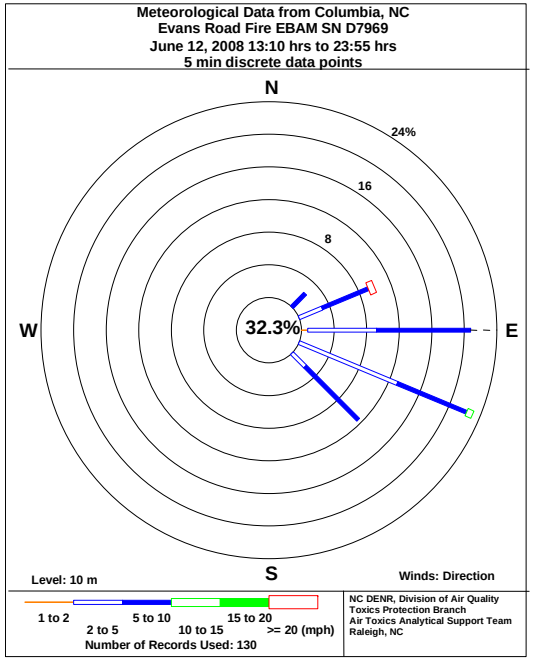
Tekran values were reasonably consistent at 1-3 ng/m3 until the morning of June 13. When PM values increased to the >1 mg/m3 range, the Hg vapor concentrations increased to 3-7 ng/m3. The historic values for Hg vapor in the area have been around 1-2 ng/m3.

Appendix C - EBAM Monitor Graphs for Meteorological Data

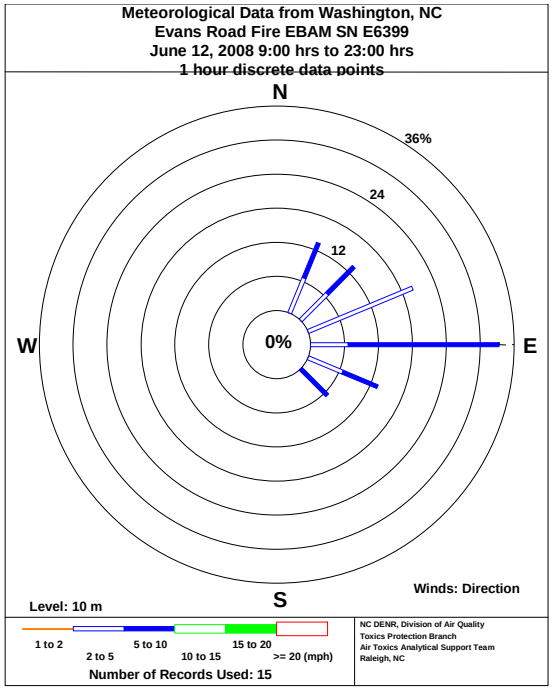
Table of Figures

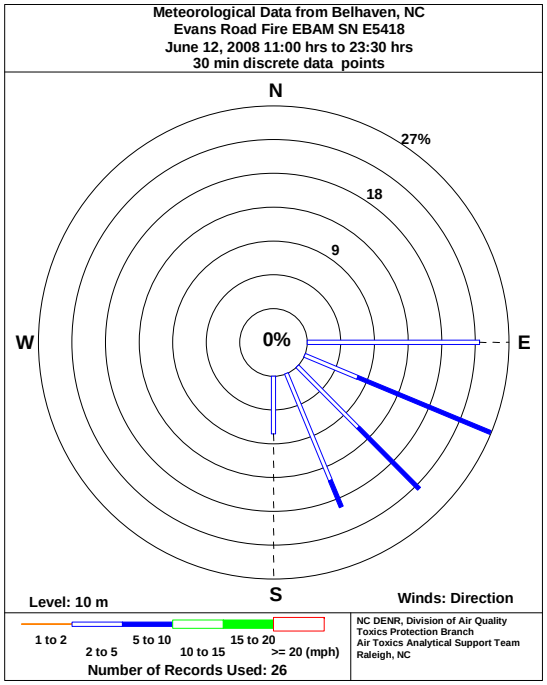
Table of Figures cont.

No Observed DATA
From Plymouth, NC
June 12, 2008



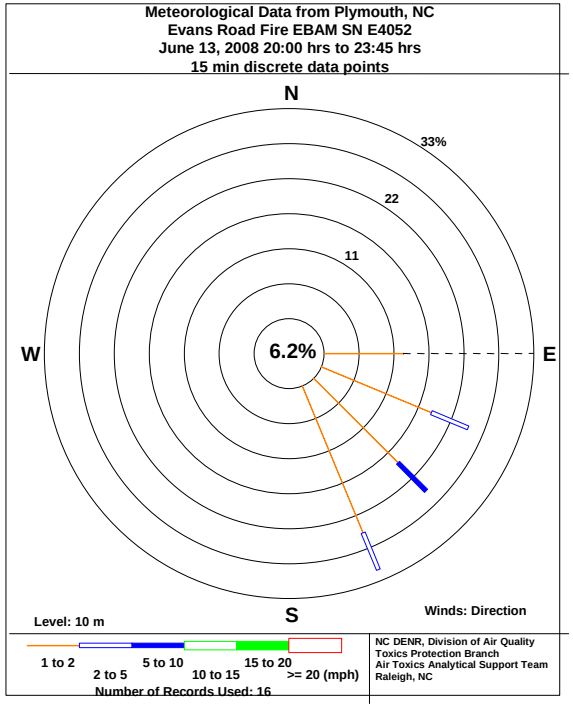
No Observed DATA
From Manteo, NC
June 12, 2008

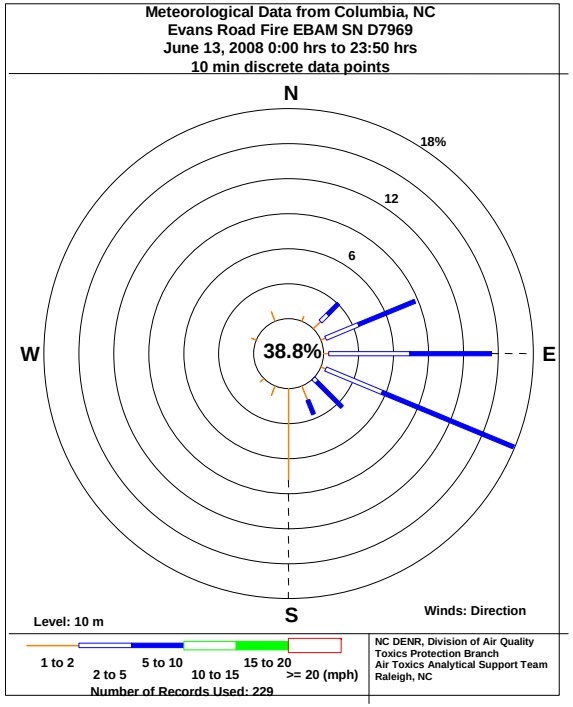




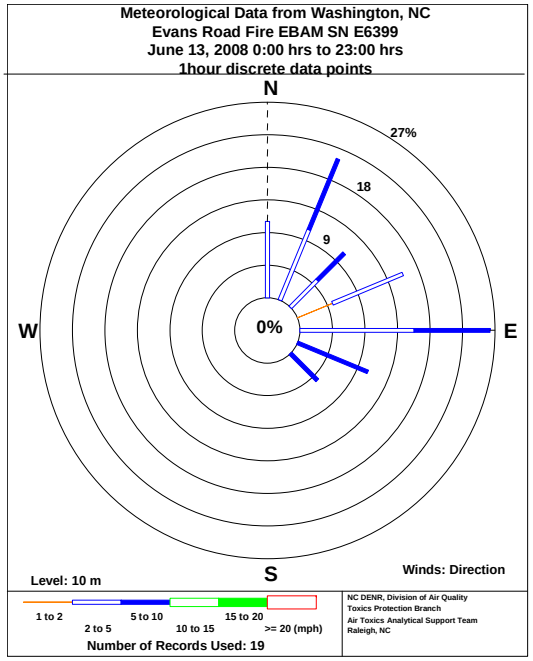
No Observed DATA
From Fairfield, NC
June 12, 2008

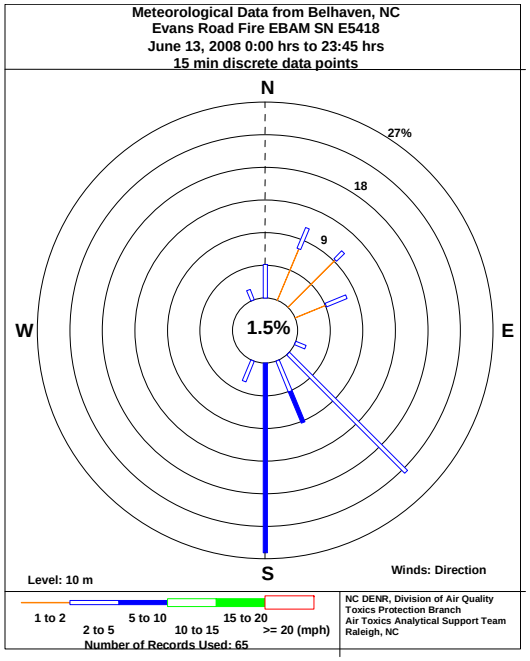
Figure C1. EBAM Monitor Meteorological Data for June 12, 2008 at Belhaven, Columbia and Washington, NC





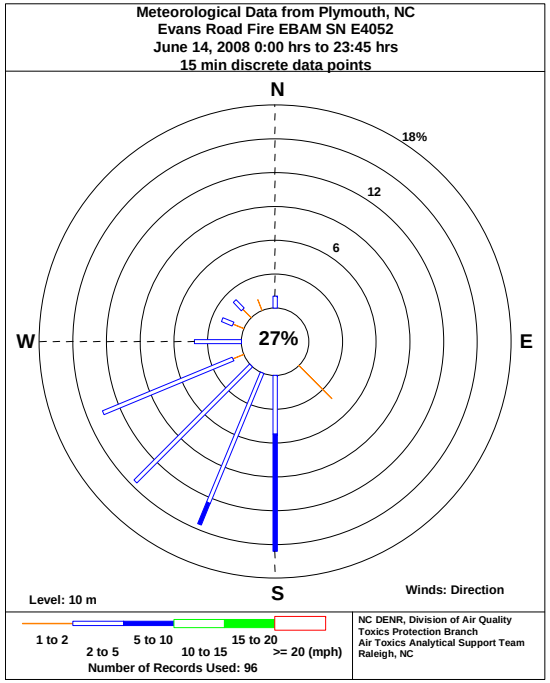
No Observed DATA
From Manteo, NC
June 13, 2008

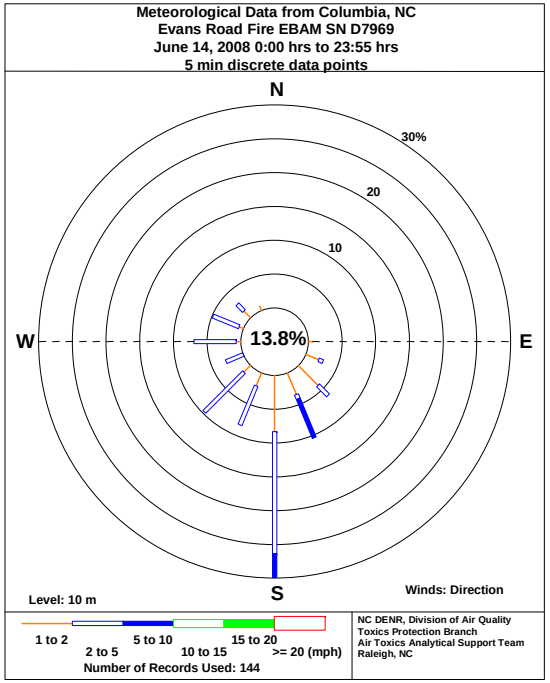




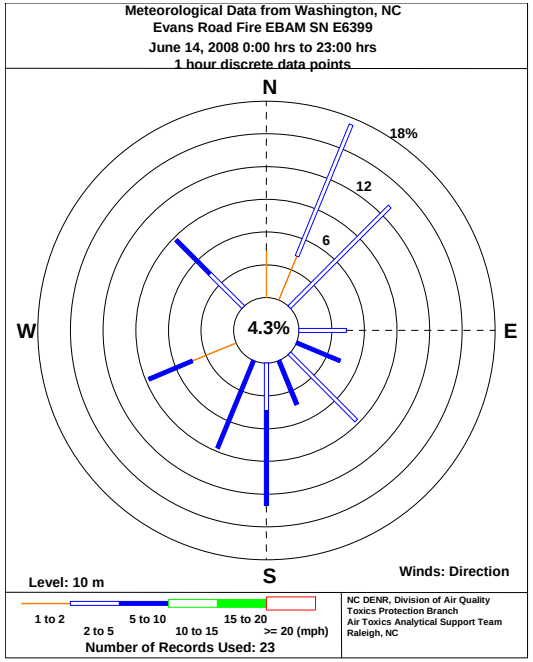
No Observed DATA
From Fairfield, NC
June 13, 2008

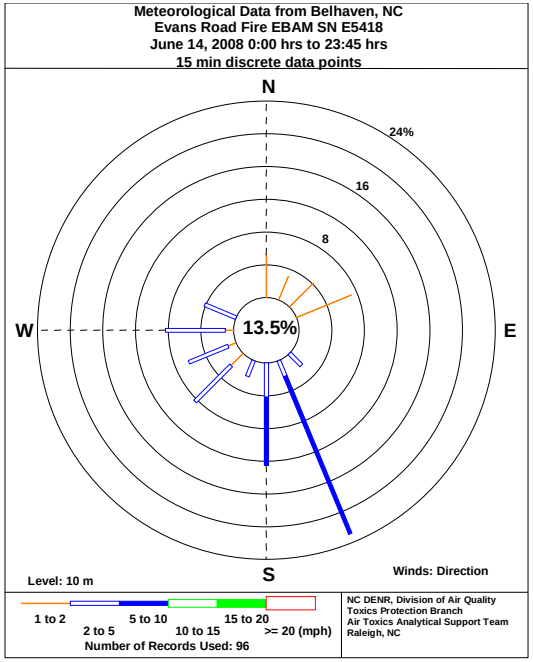
Figure C2. EBAM Monitor Meteorological Data for June 13, 2008 at Belhaven, Columbia, Plymouth and Washington, NC





No Observed DATA
From Manteo, NC
June 14, 2008





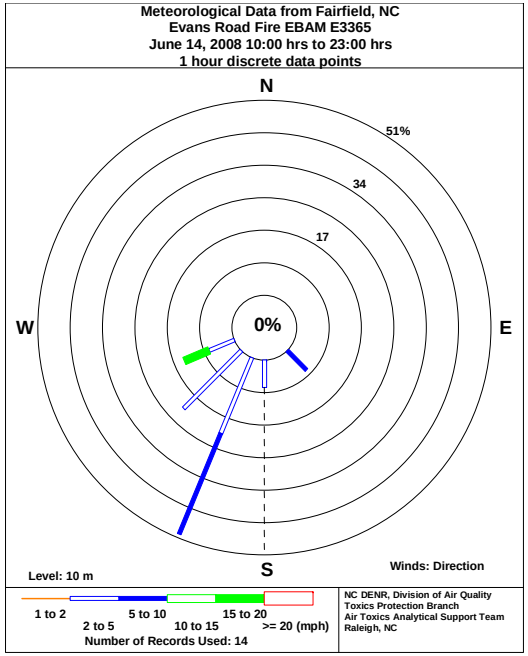
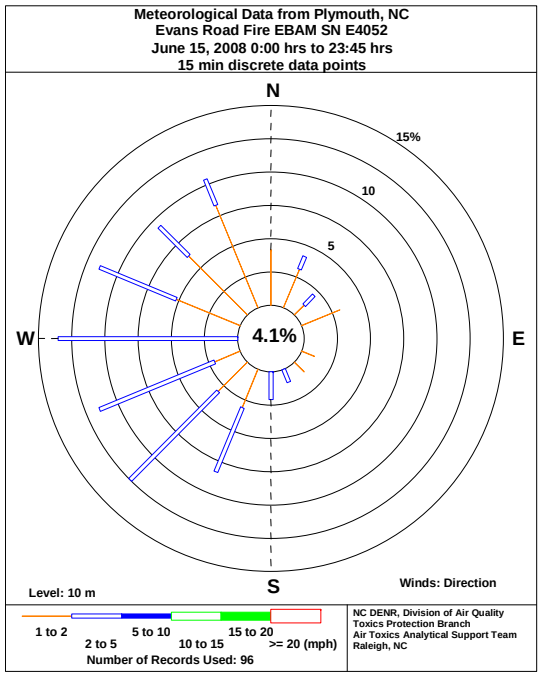
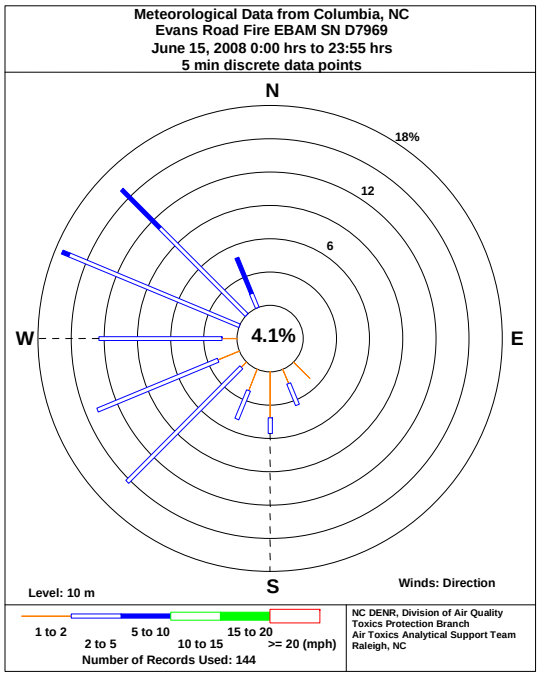
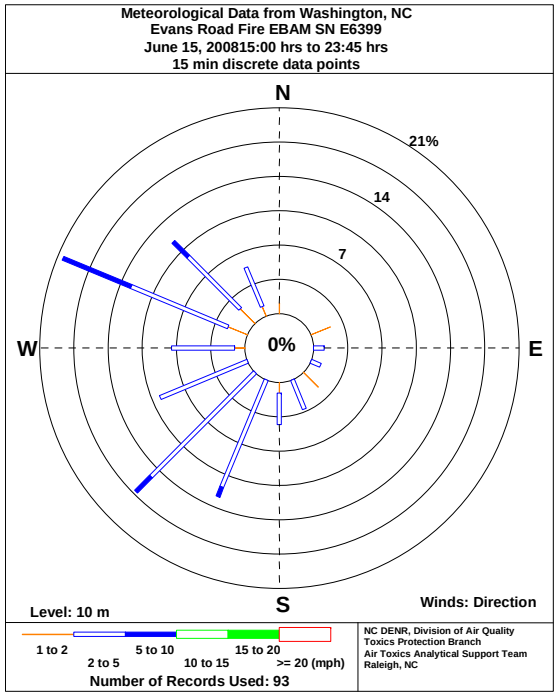


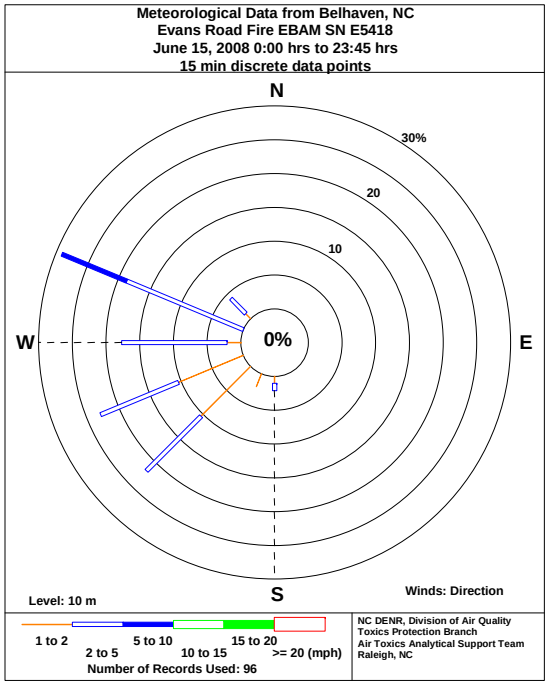
Figure C3. EBAM Monitor Meteorological Data for June 14, 2008 at Belhaven, Columbia, Fairfield, Plymouth and Washington, NC





No Observed DATA
From Manteo, NC
June 15, 2008





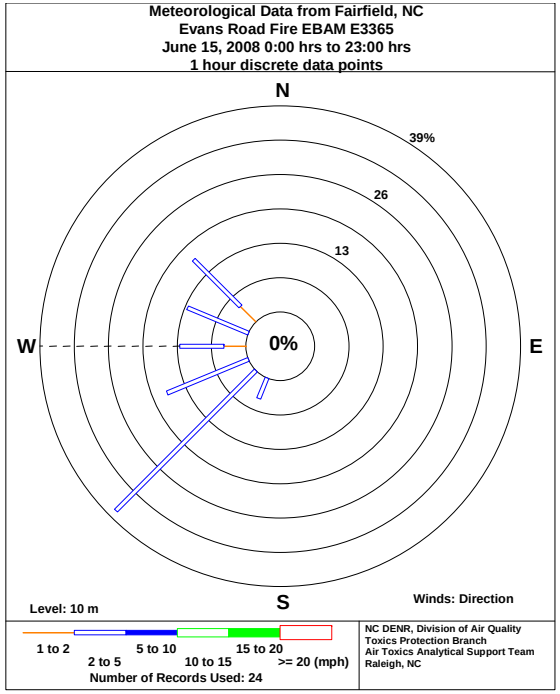
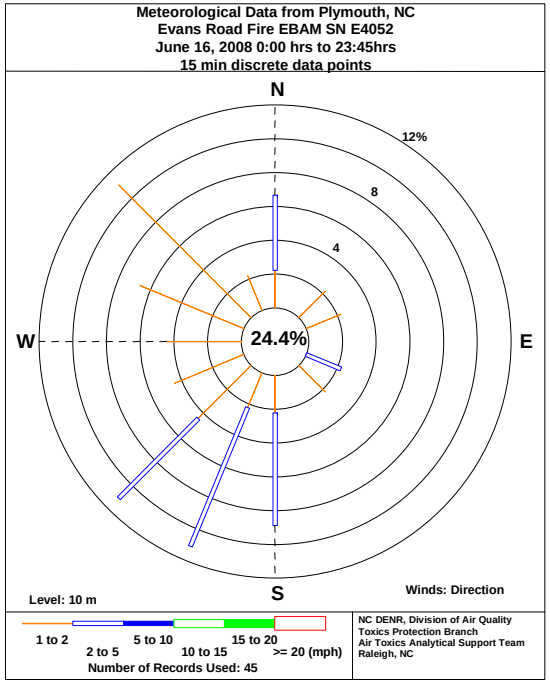
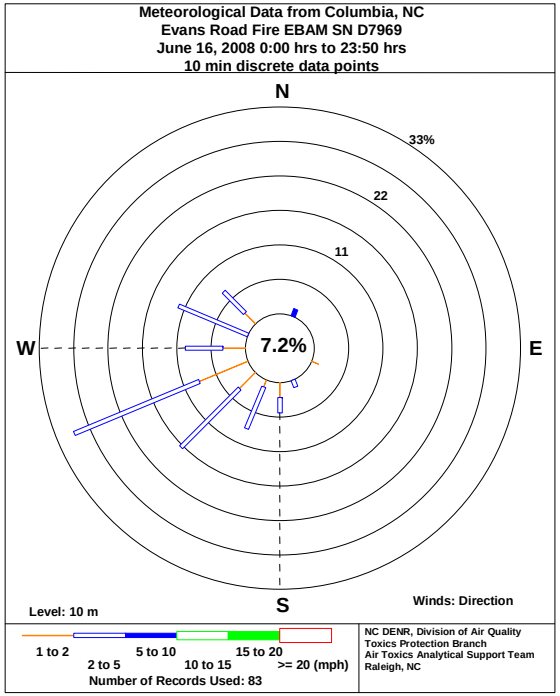
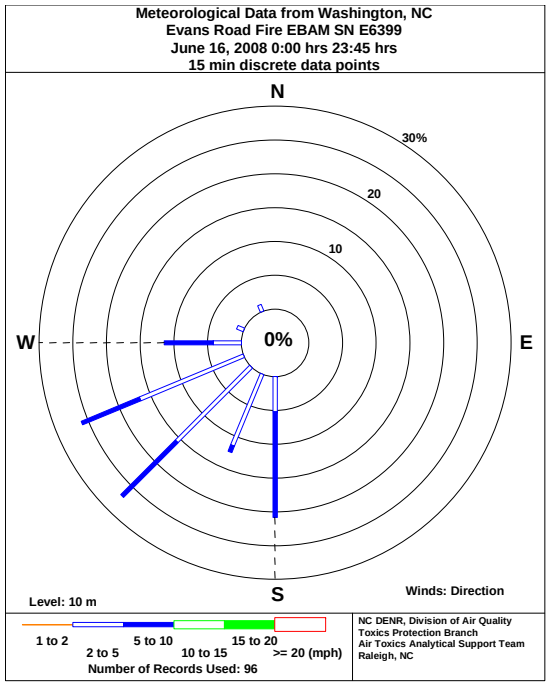


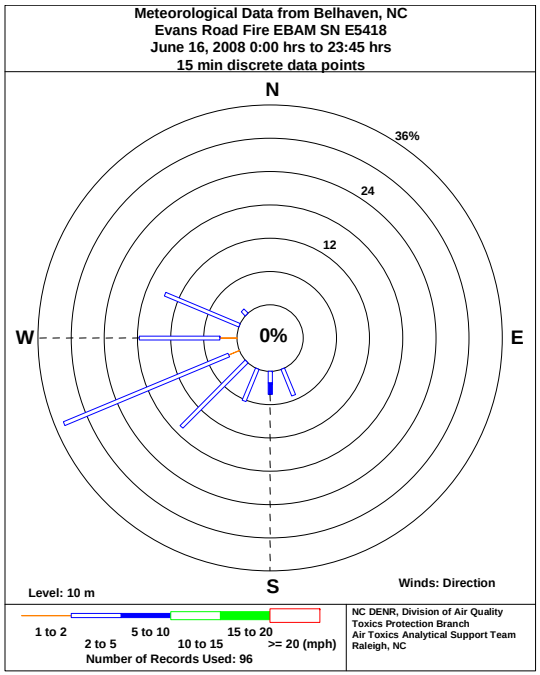
Figure C4. EBAM Monitor Meteorological Data for June 15, 2008 at Belhaven, Columbia, Fairfield, Plymouth and Washington NC





No Observed data
From Manteo, NC
June 16, 2008





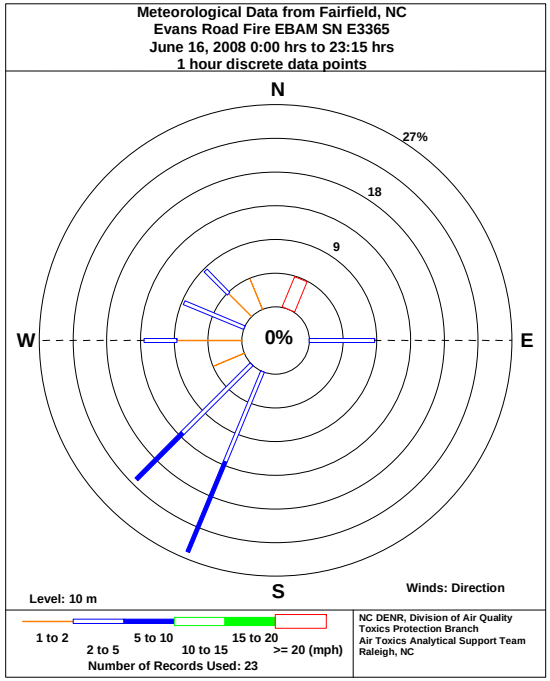
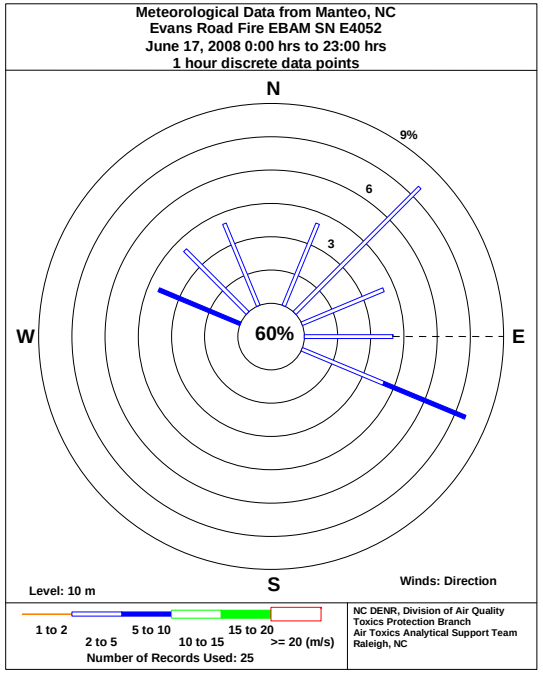
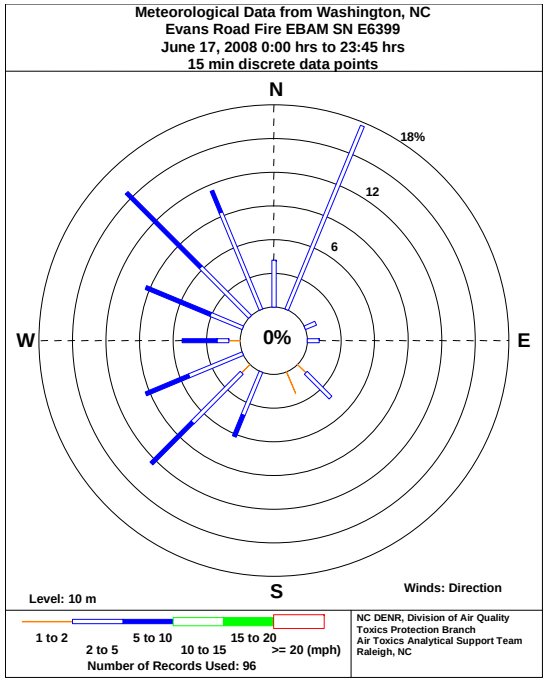


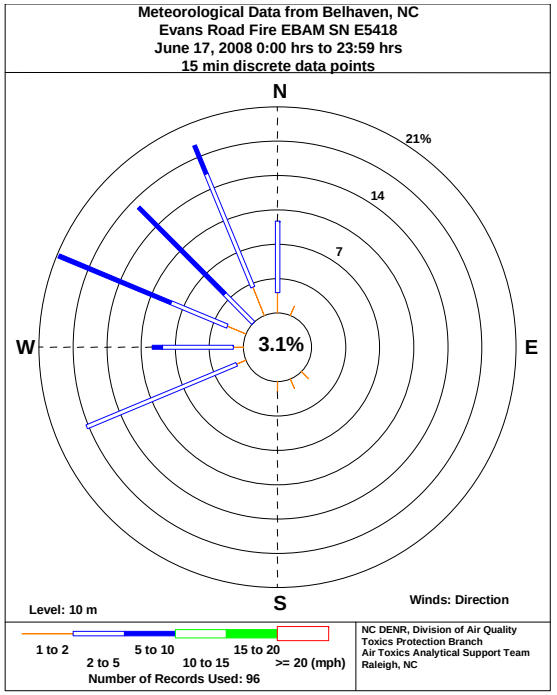
Figure C5. EBAM Monitor Meteorological Data for June 16, 2008 at Belhaven, Columbia, Fairfield, Plymouth and Washington NC

No Observed data
From Plymouth, NC
June 17, 2008

No Observed data
From Columbia, NC
June 17, 2008







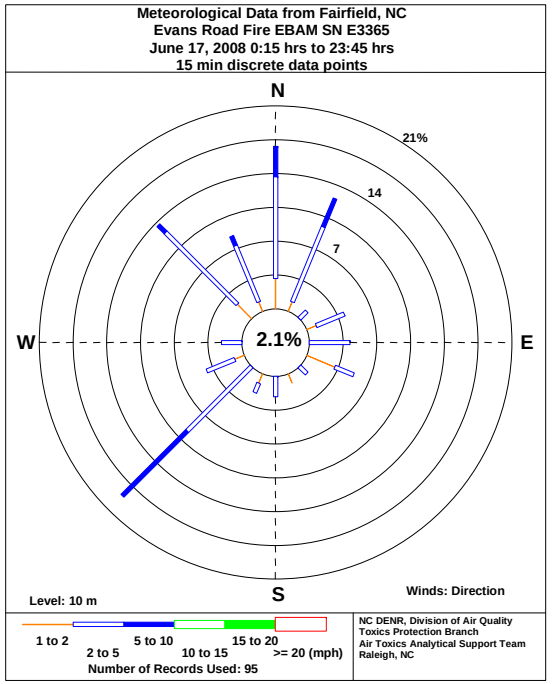
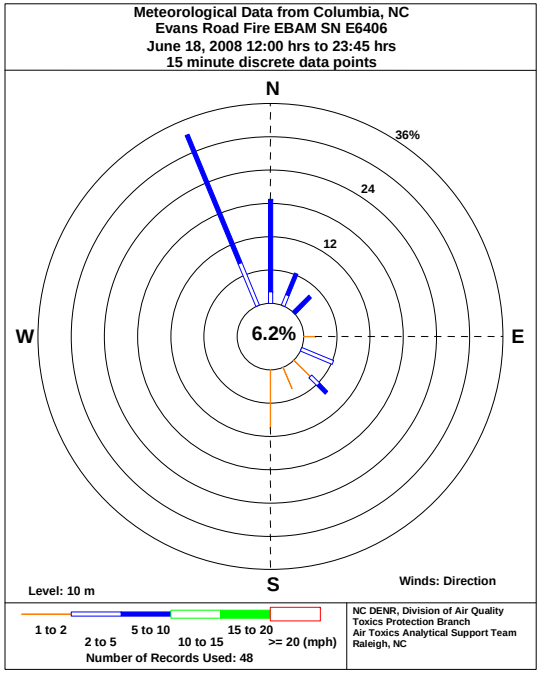
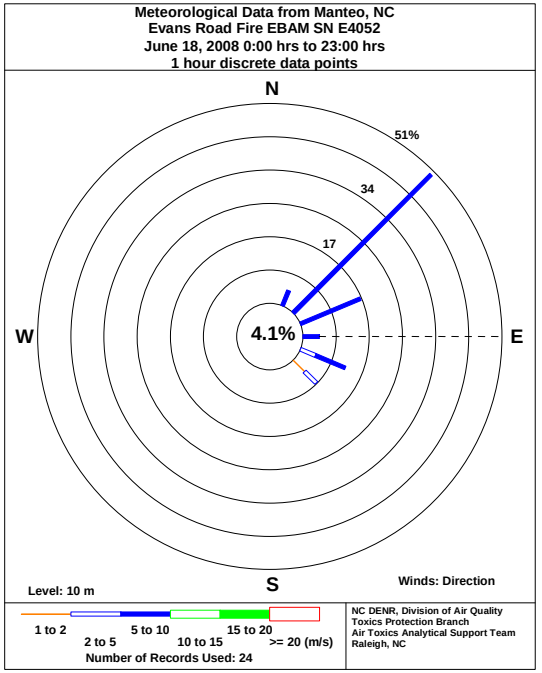
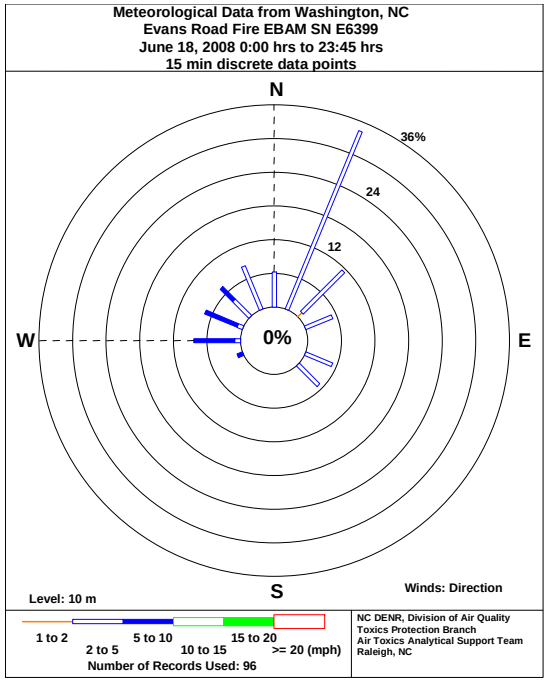


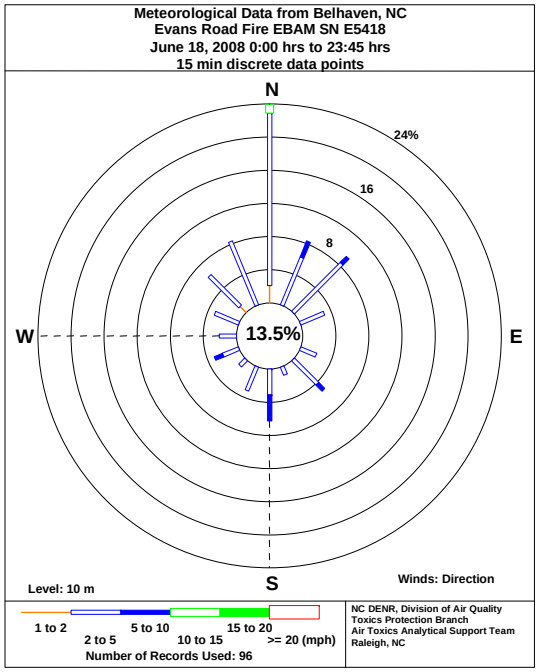
Figure C6. EBAM Monitor Meteorological Data for June 17, 2008 at Belhaven, Fairfield, Manteo and Washington NC

No Observed data
From Plymouth, NC
June 18, 2008









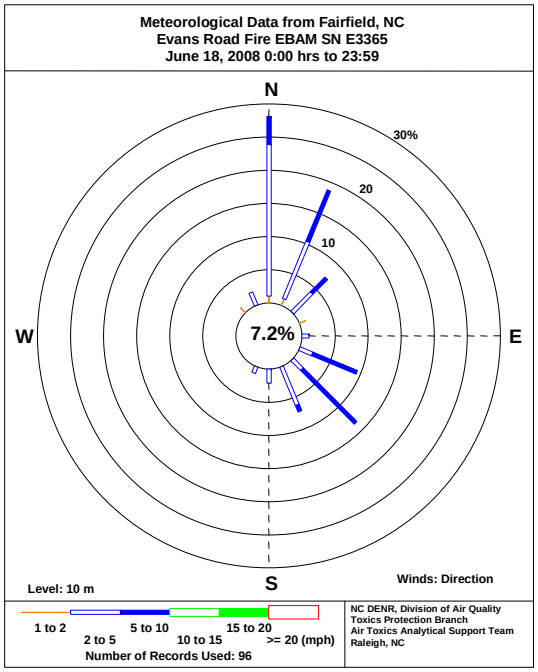
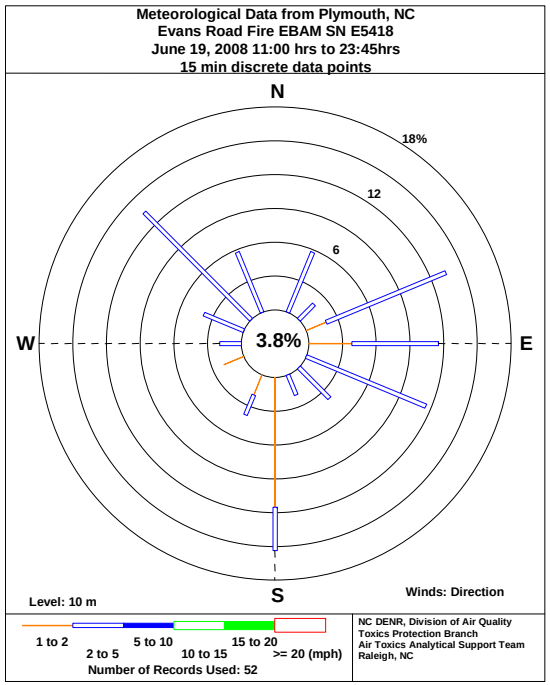
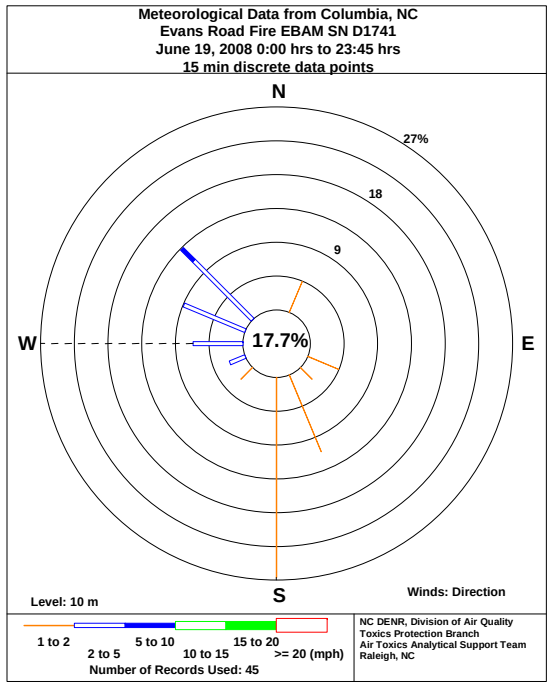
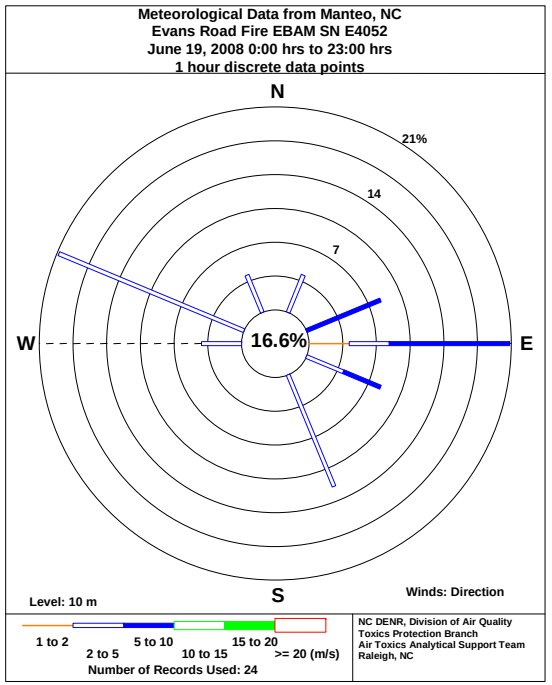
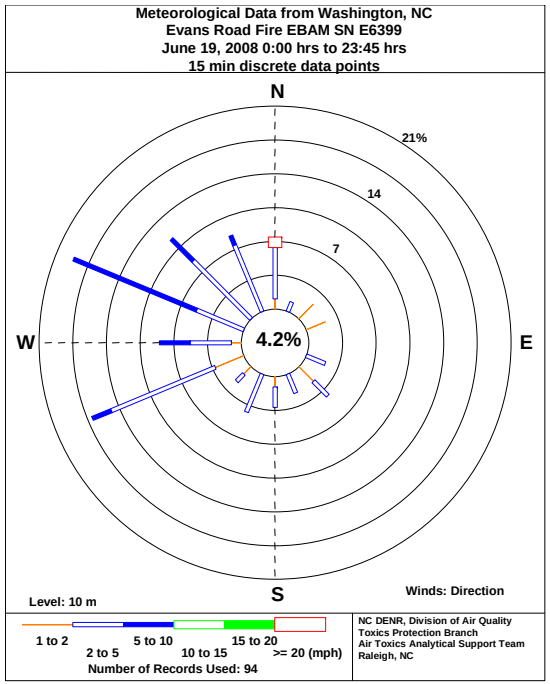


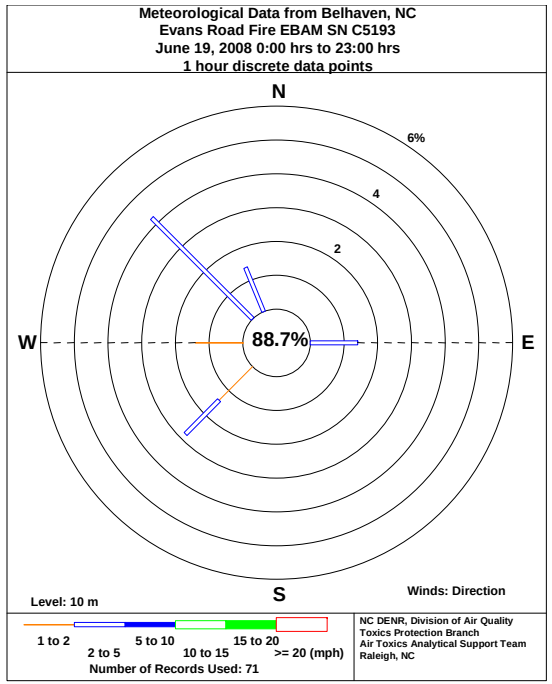
Figure C7. EBAM Monitor Meteorological Data for June 18, 2008 at Belhaven, Columbia, Fairfield, Manteo and Washington NC











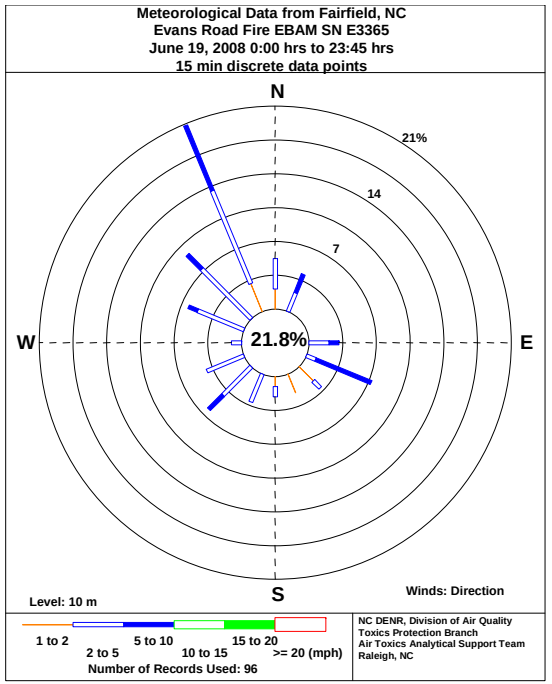
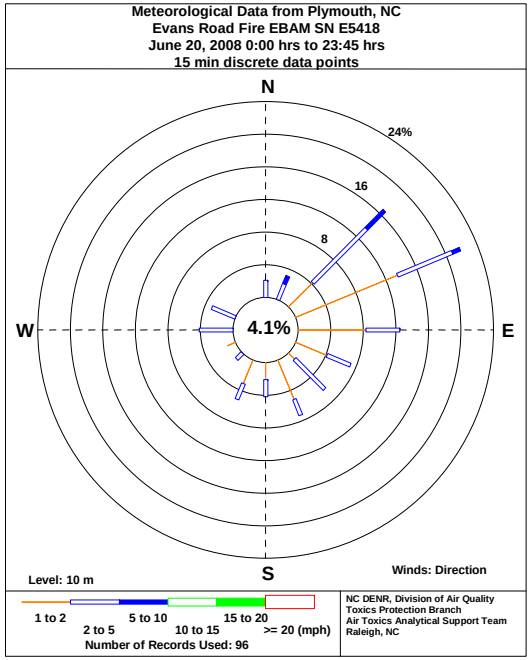
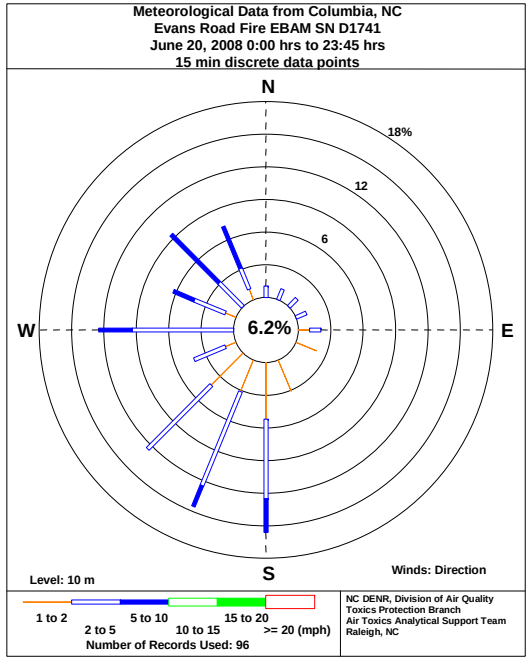
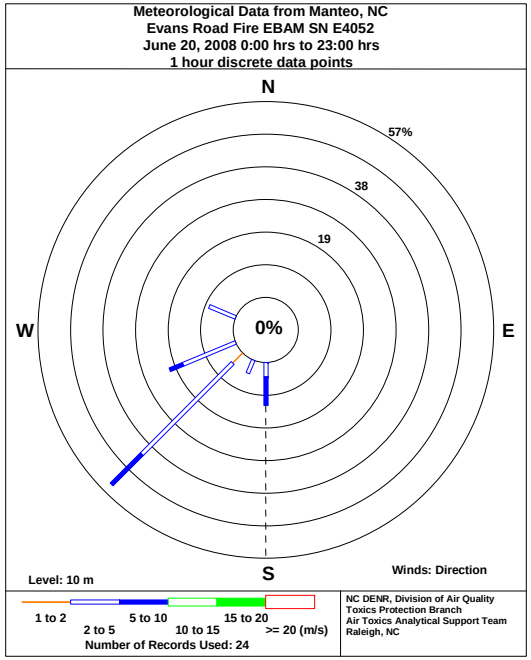
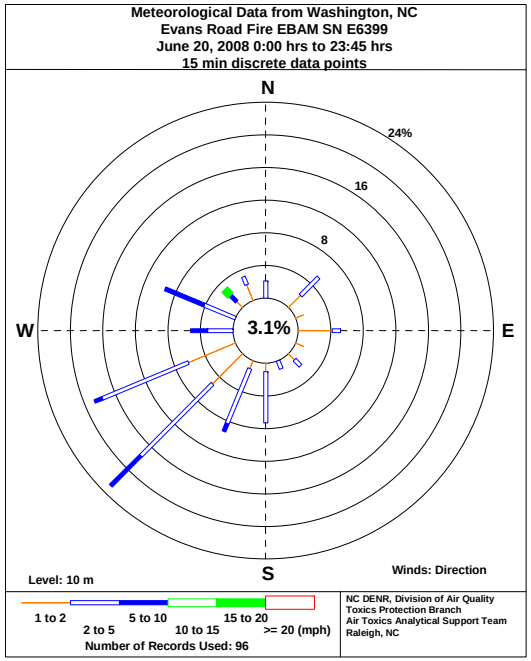


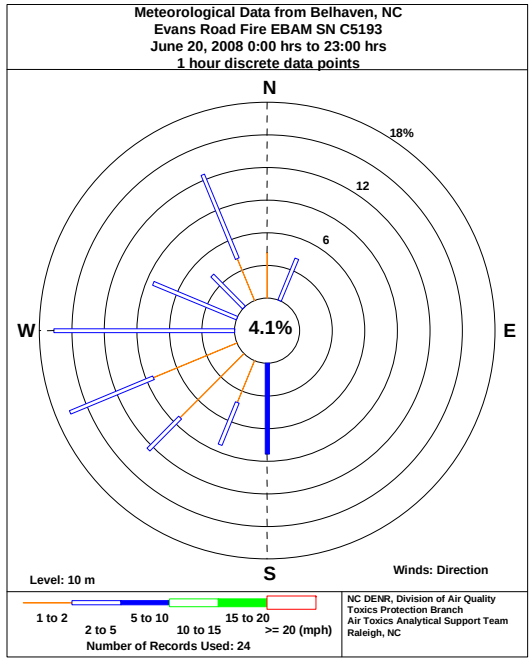
Figure C8. EBAM Monitor Meteorological Data for June 19, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











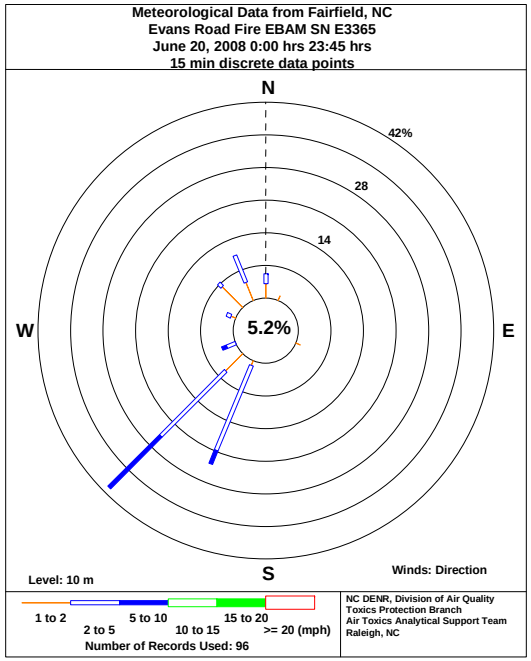
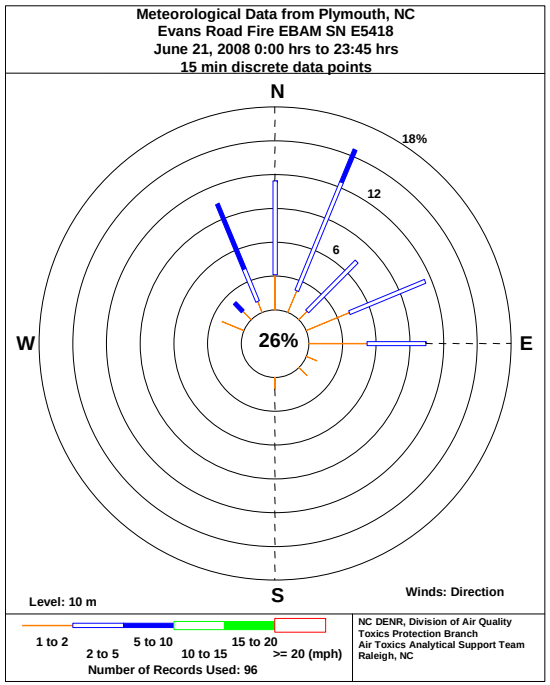
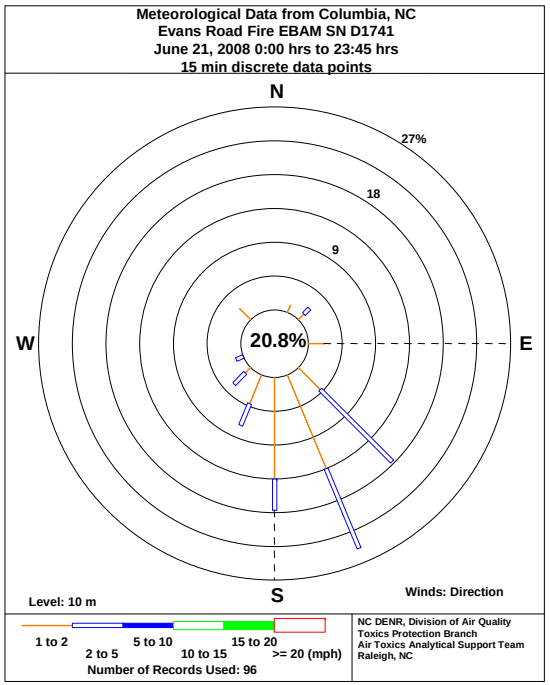
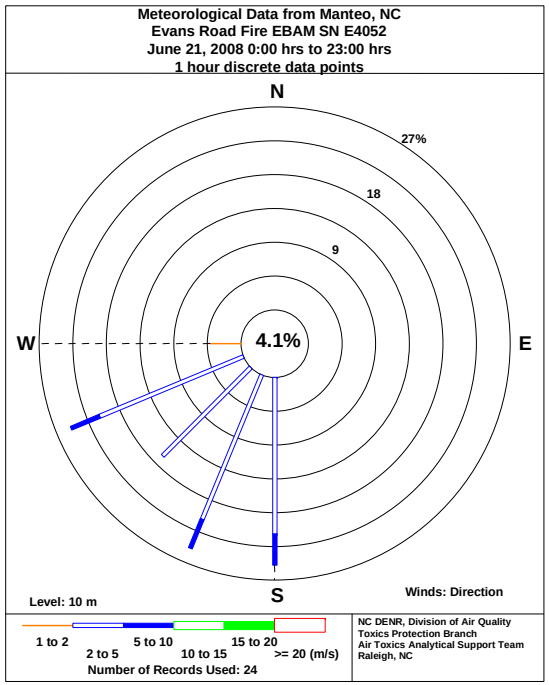
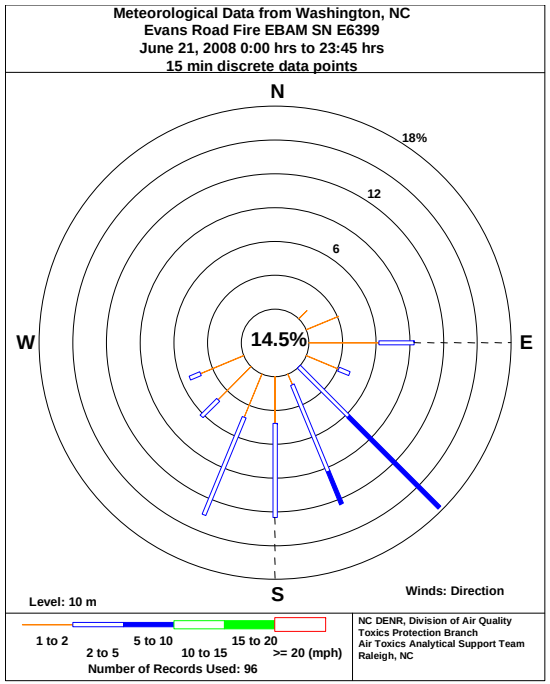


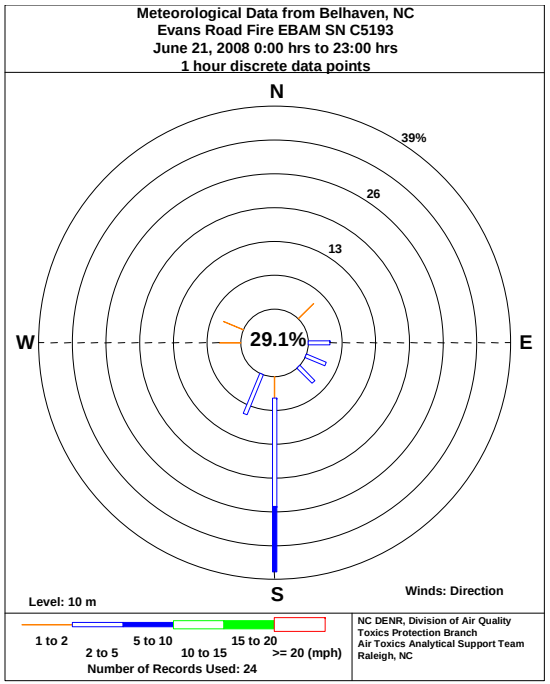
Figure C9. EBAM Monitor Meteorological Data for June 20, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











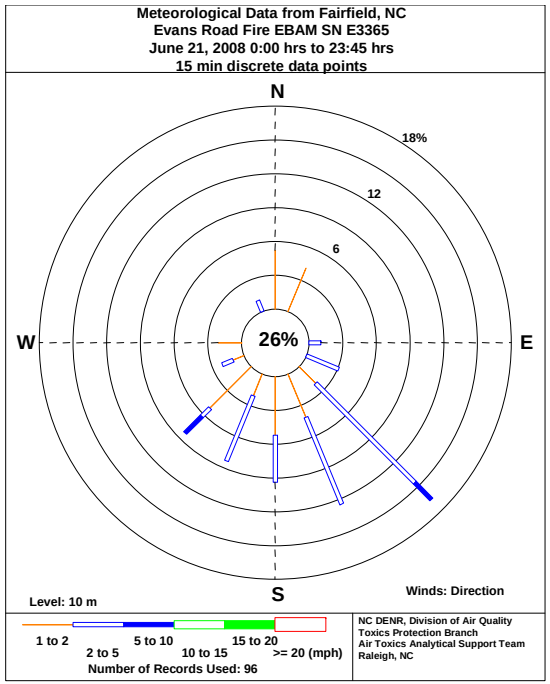
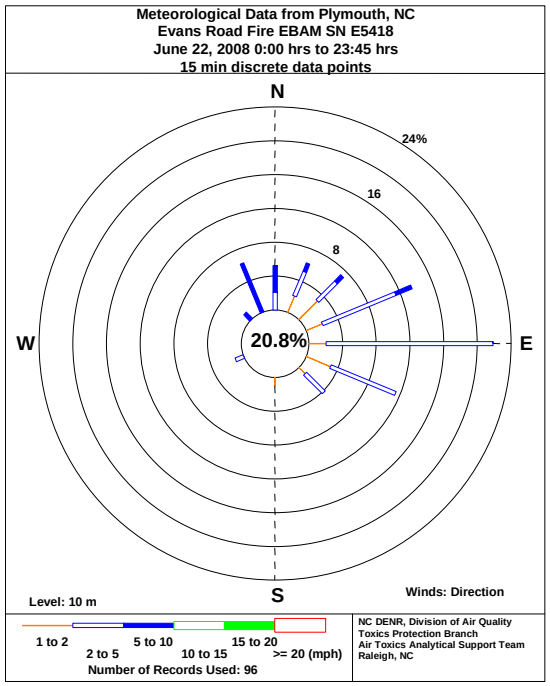
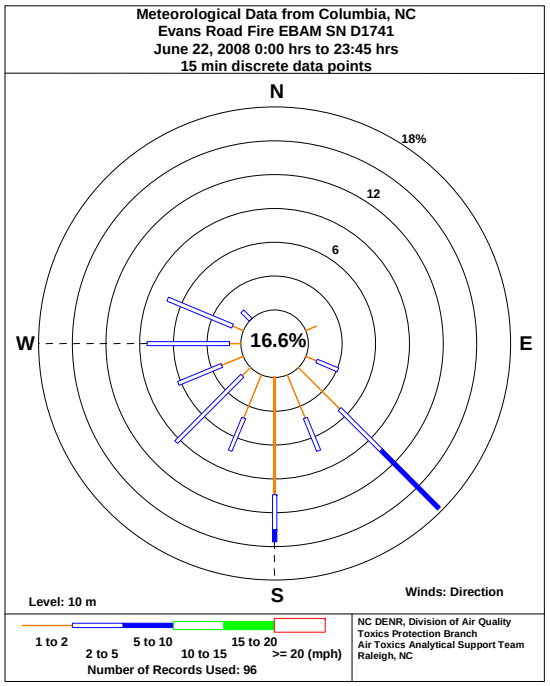
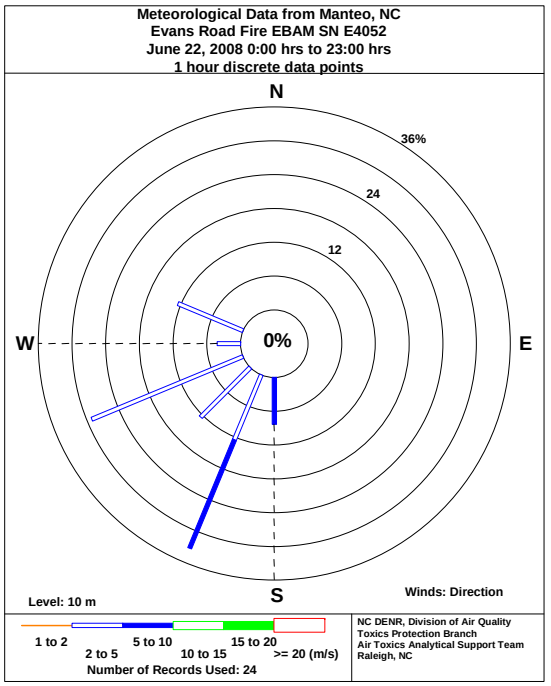
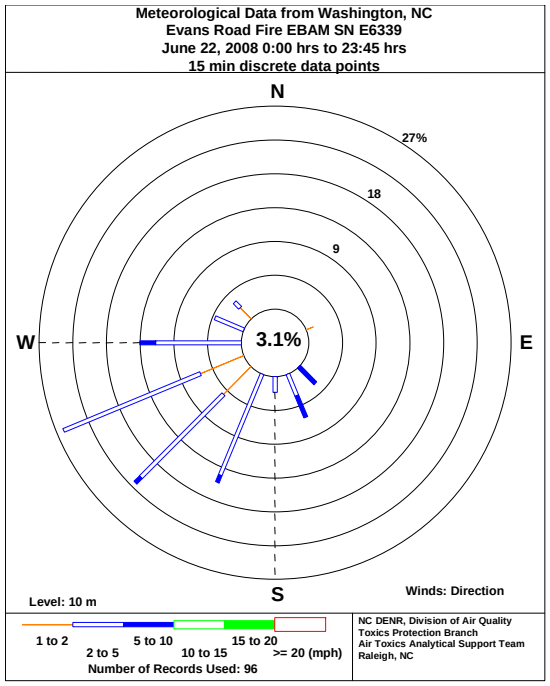


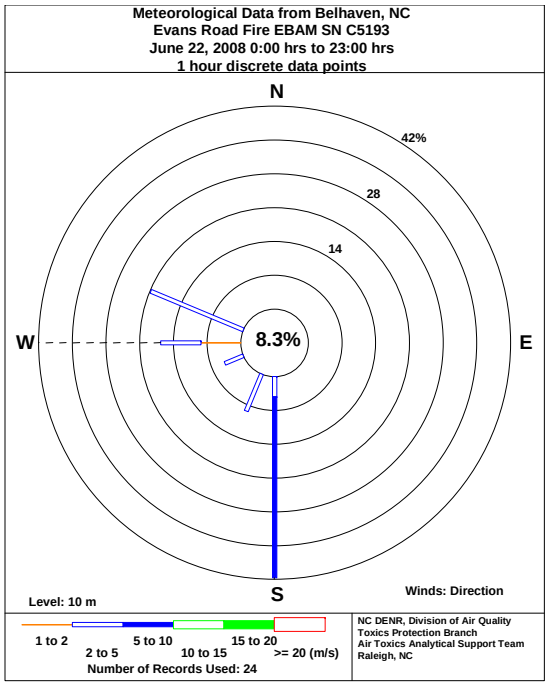
Figure C10. EBAM Monitor Meteorological Data for June 21, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











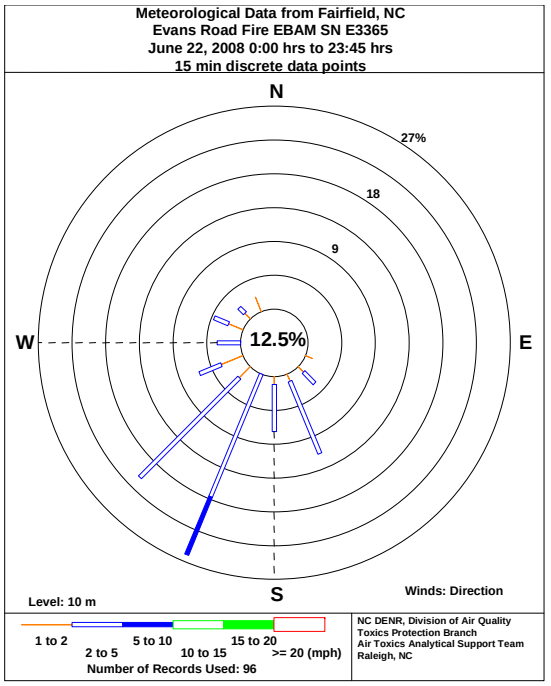
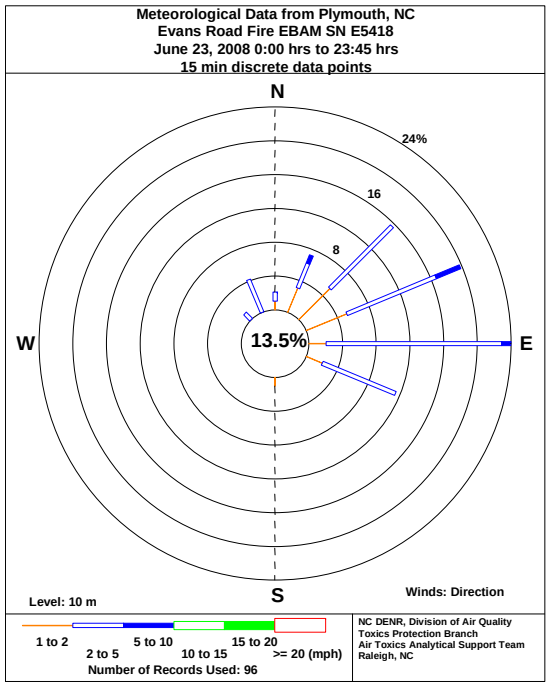
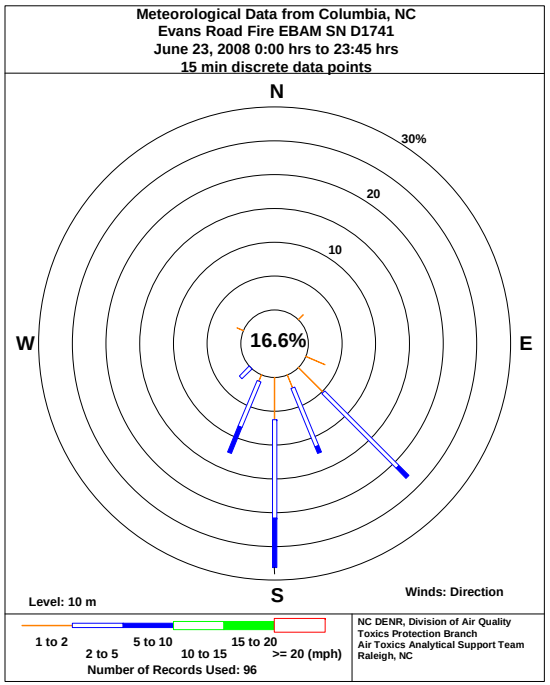
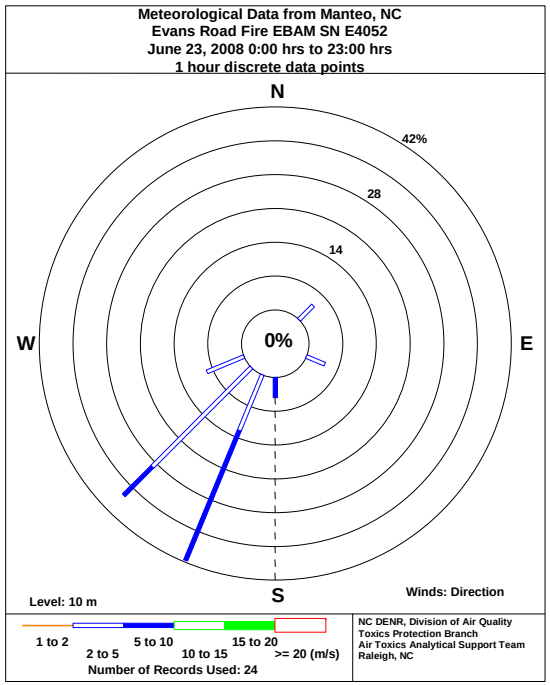
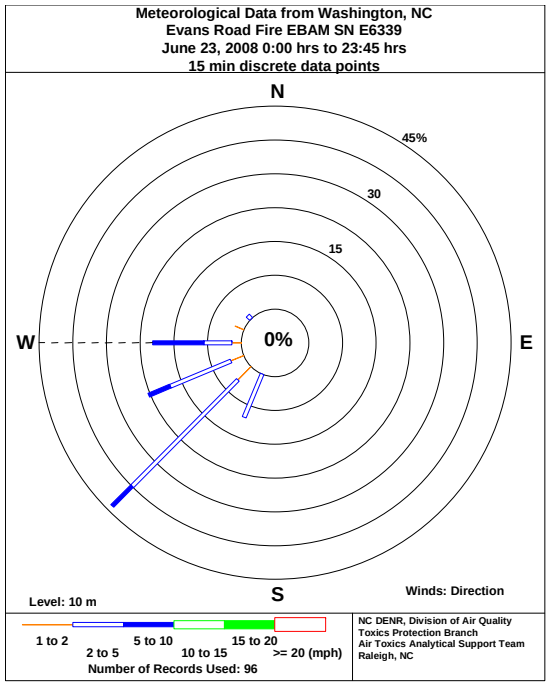


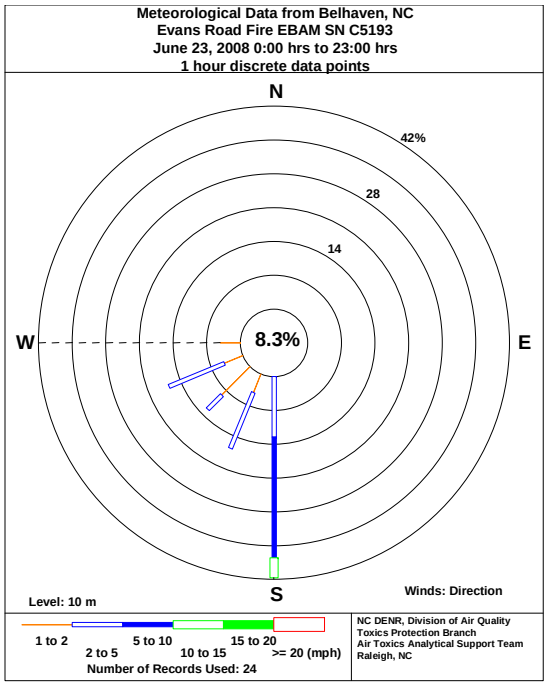
Figure C11. EBAM Monitor Meteorological Data for June 22, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











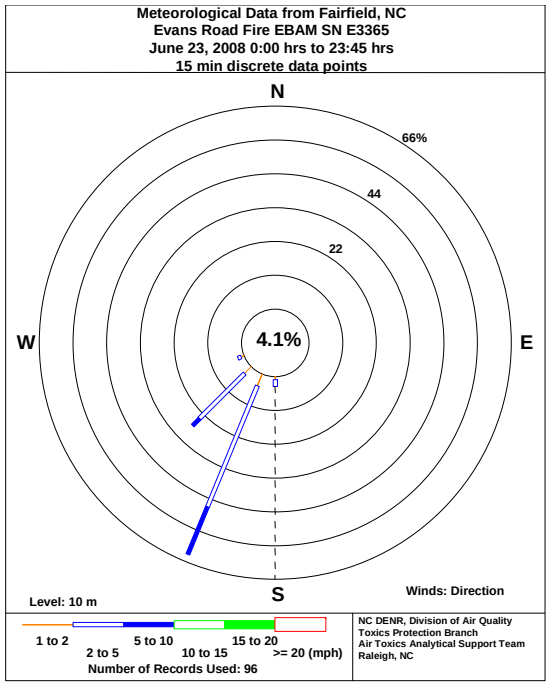
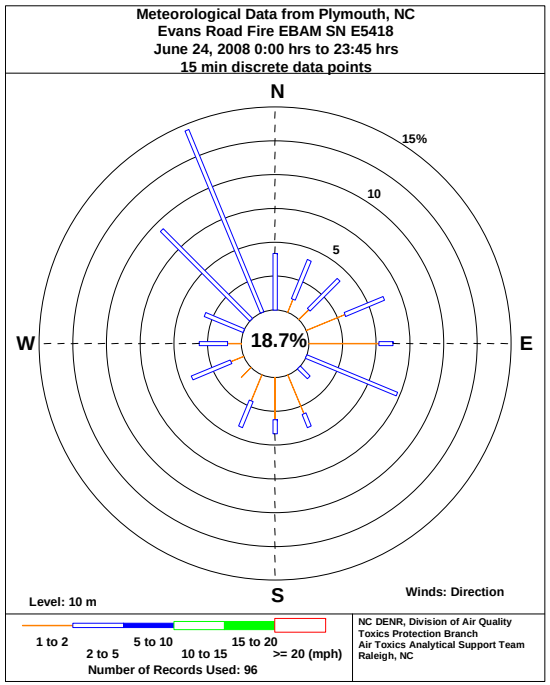
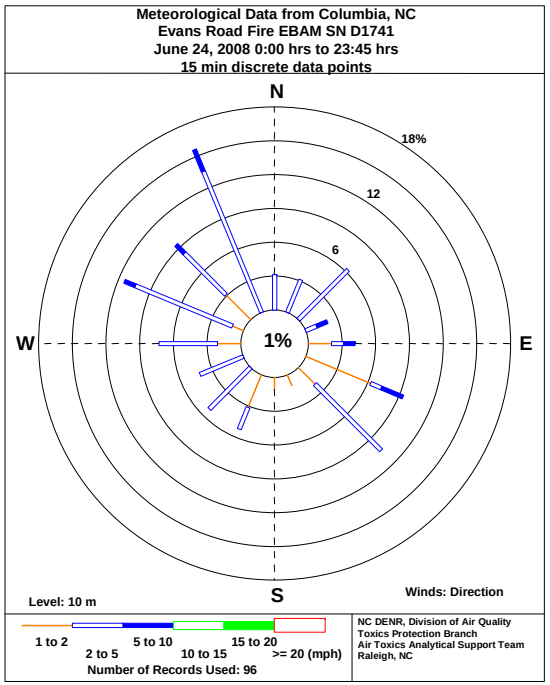
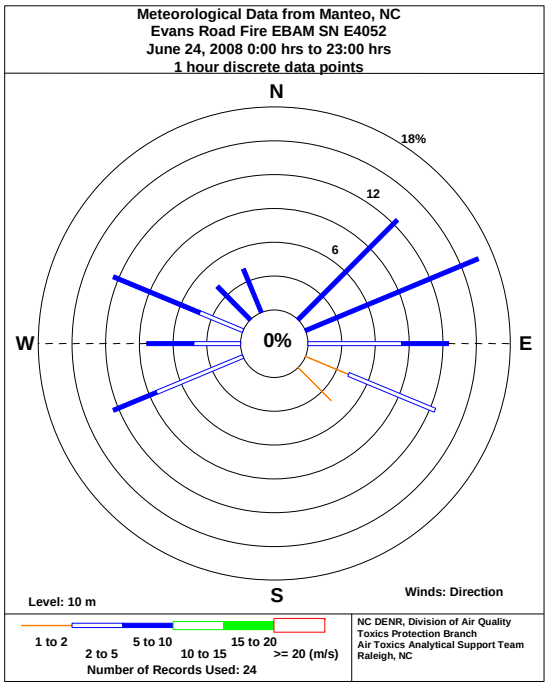
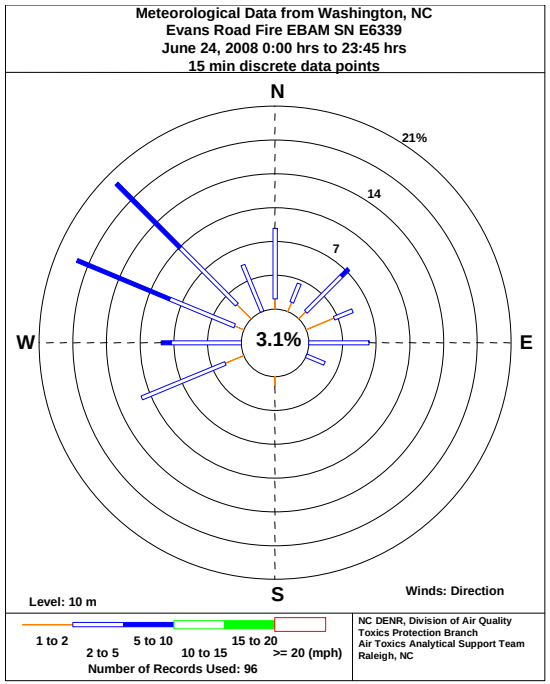


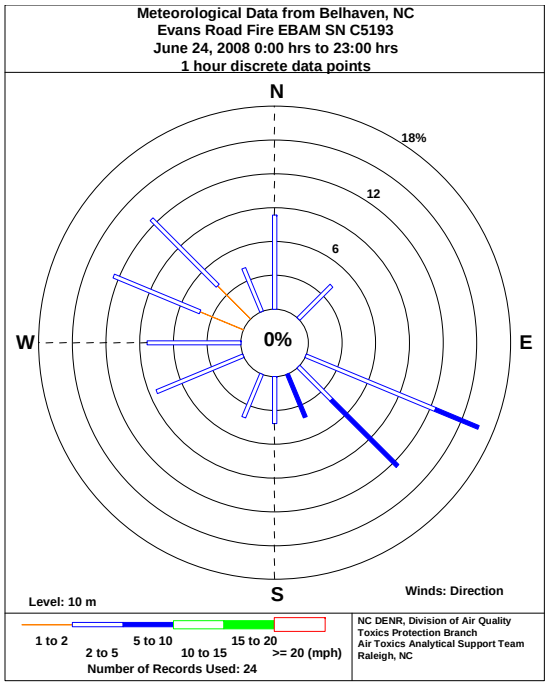
Figure C12. EBAM Monitor Meteorological Data for June 23, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











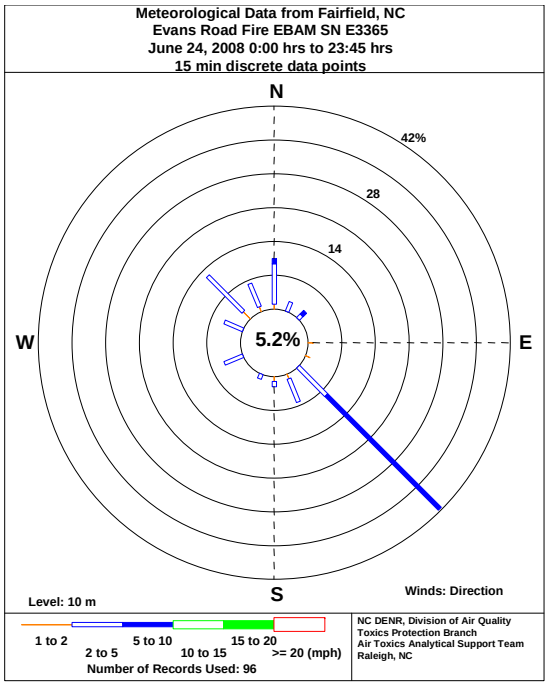
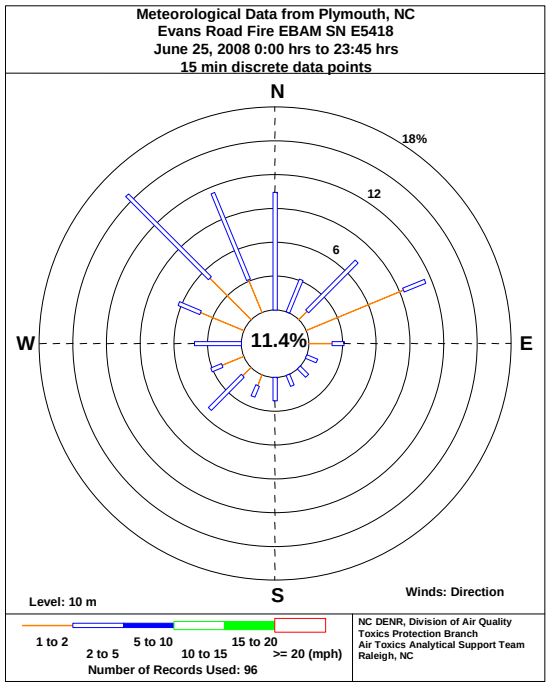
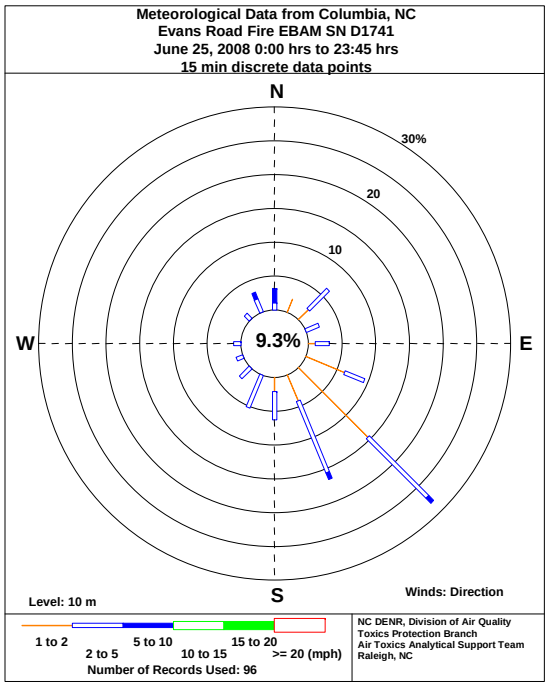
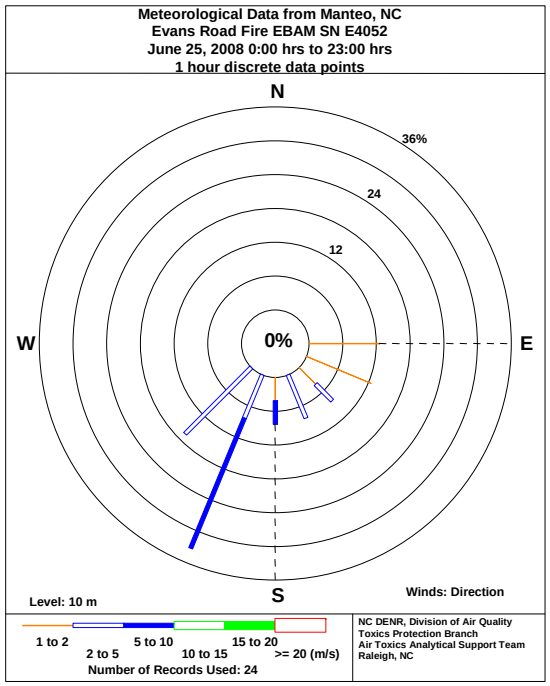
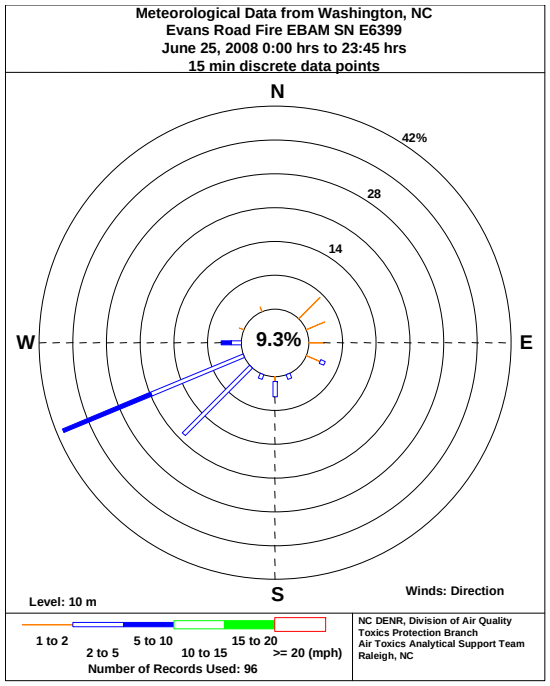


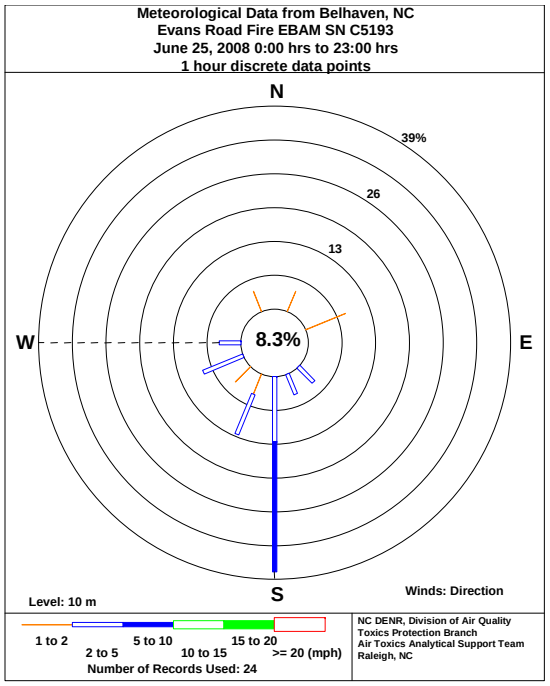
Figure C13. EBAM Monitor Meteorological Data for June 24, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











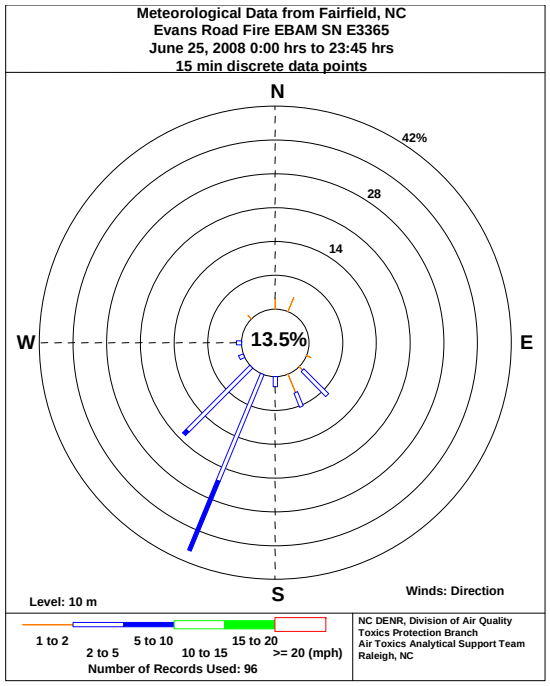
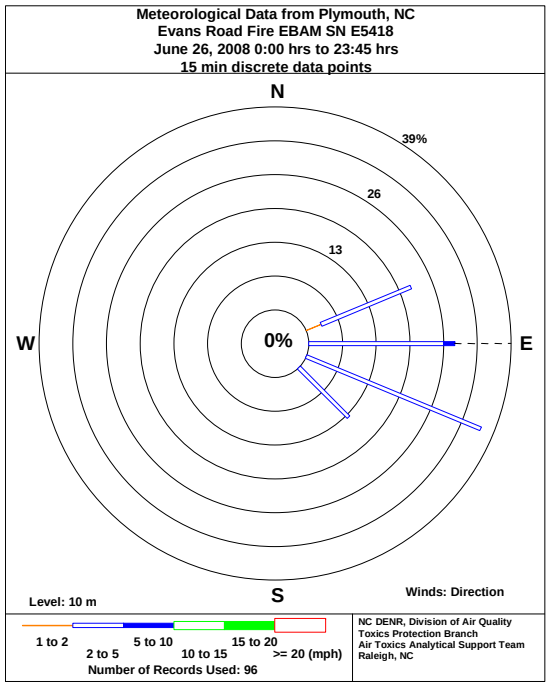
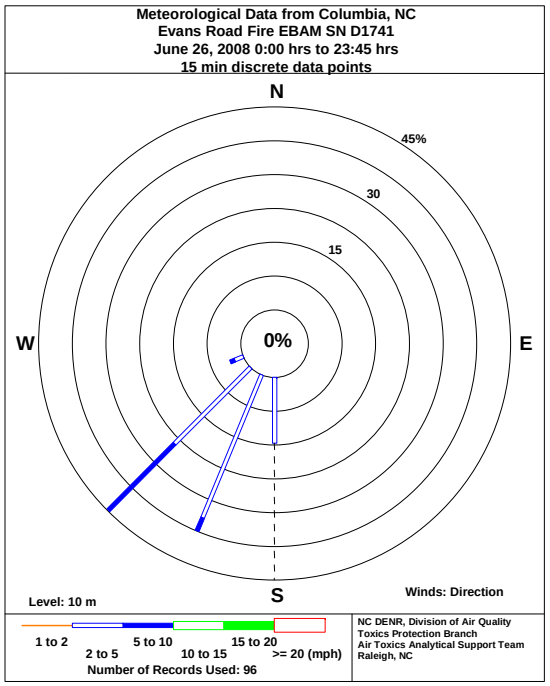
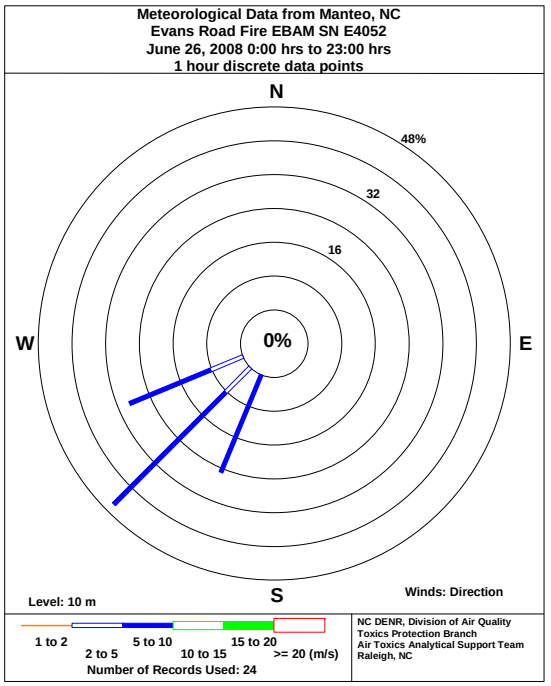
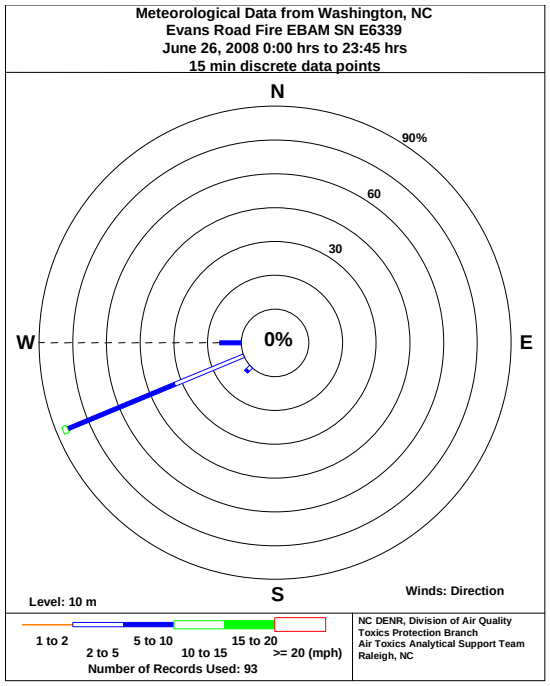


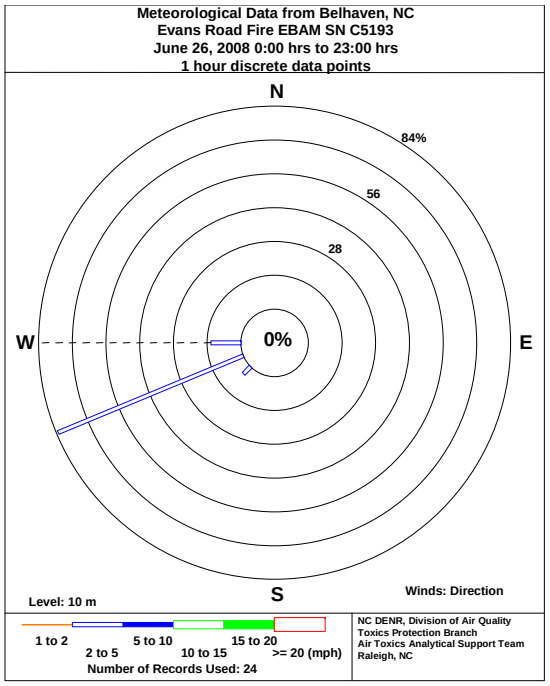
Figure C14. EBAM Monitor Meteorological Data for June 25, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











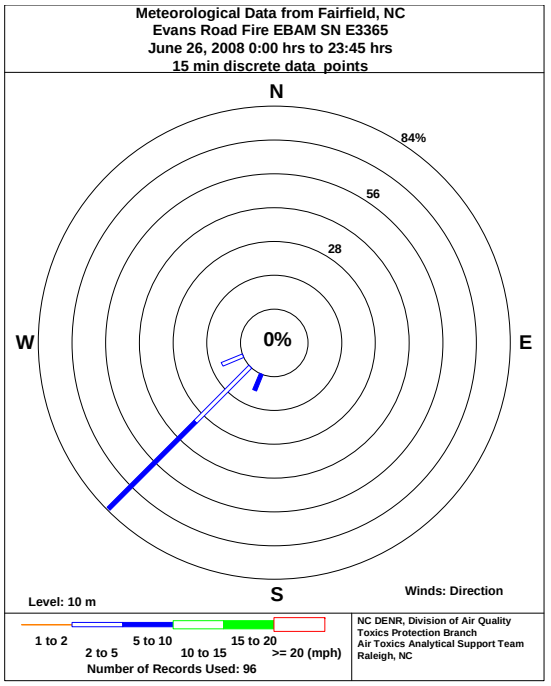
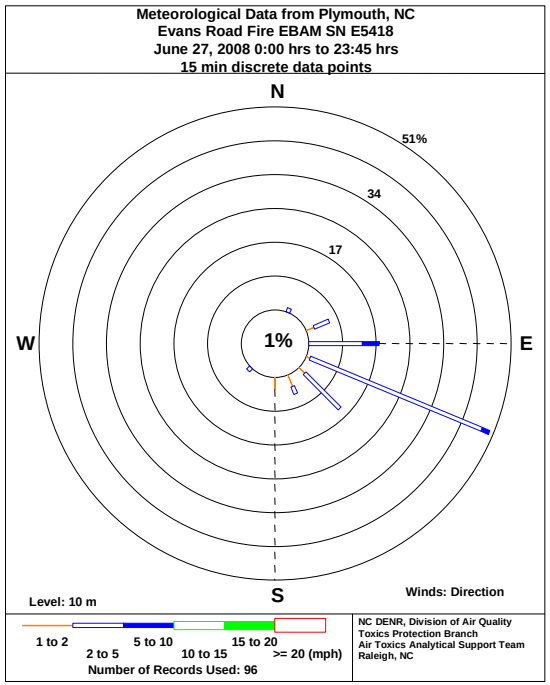
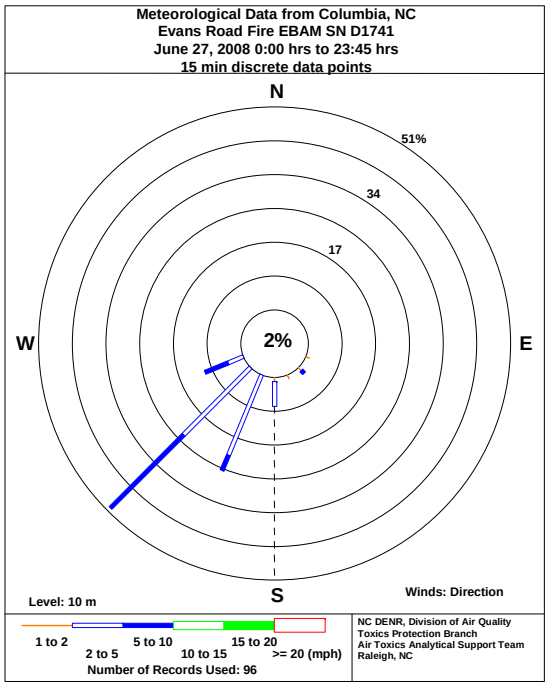
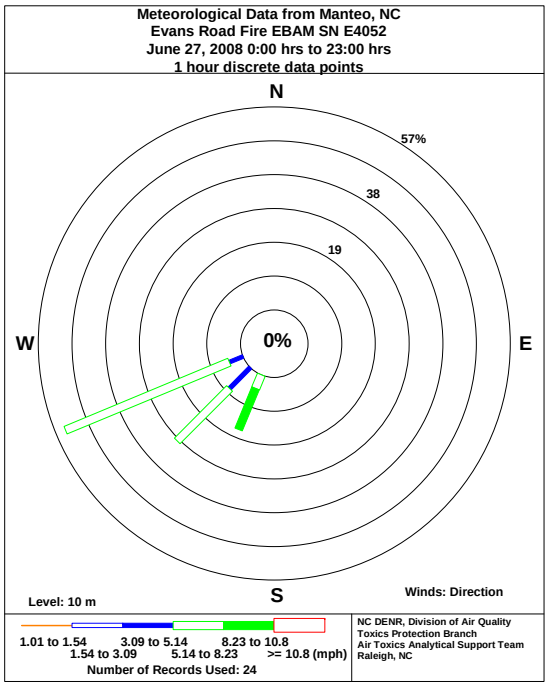
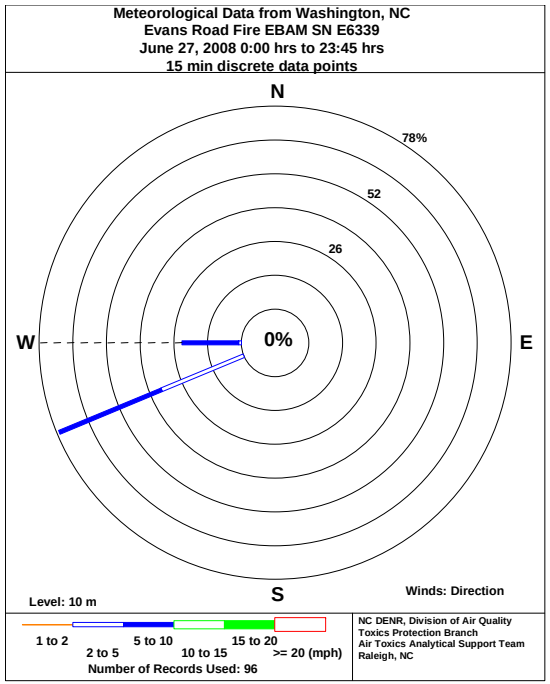


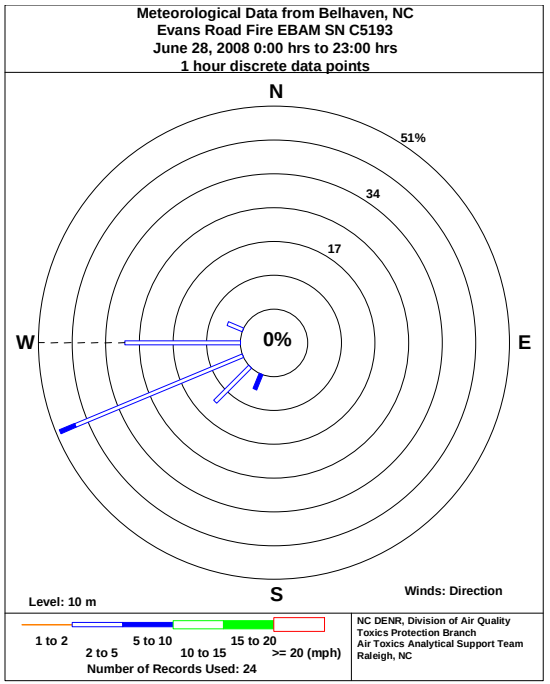
Figure C15. EBAM Monitor Meteorological Data for June 26, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











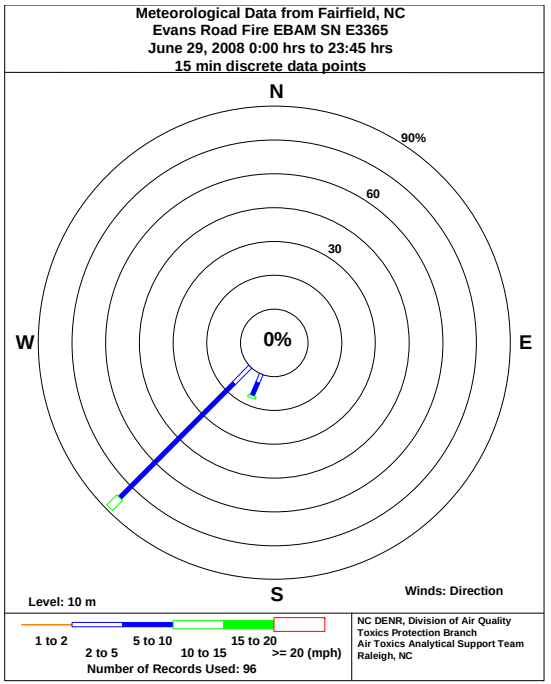
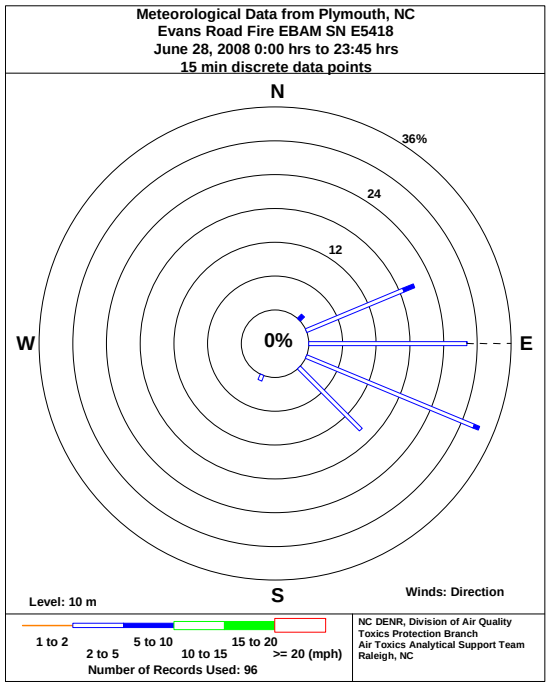
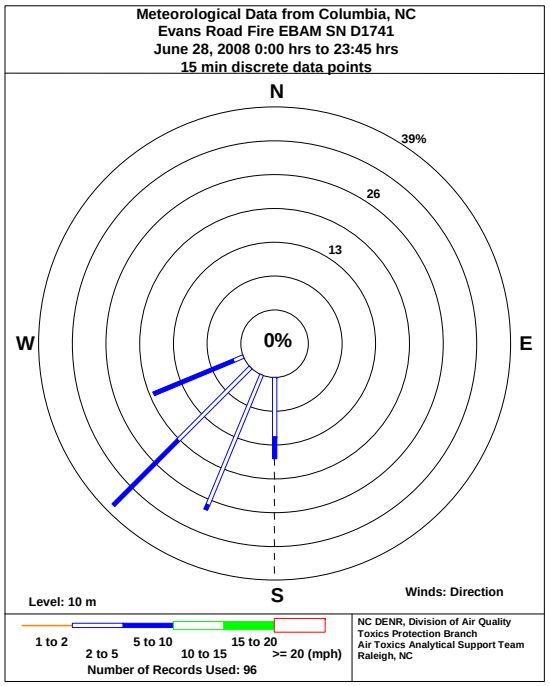
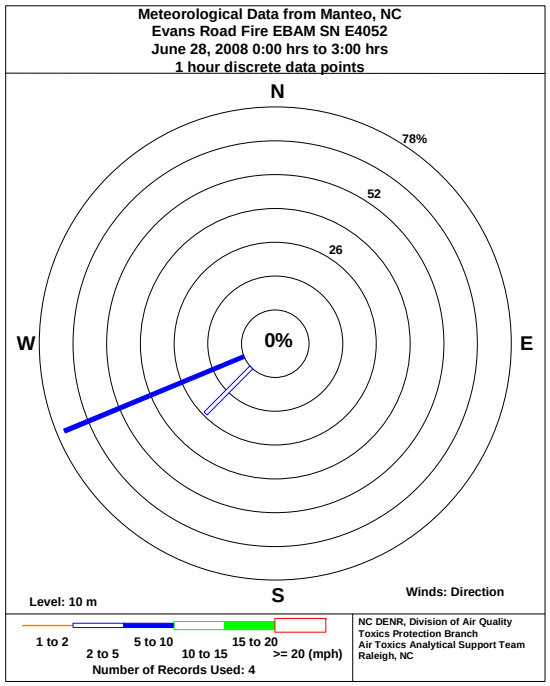
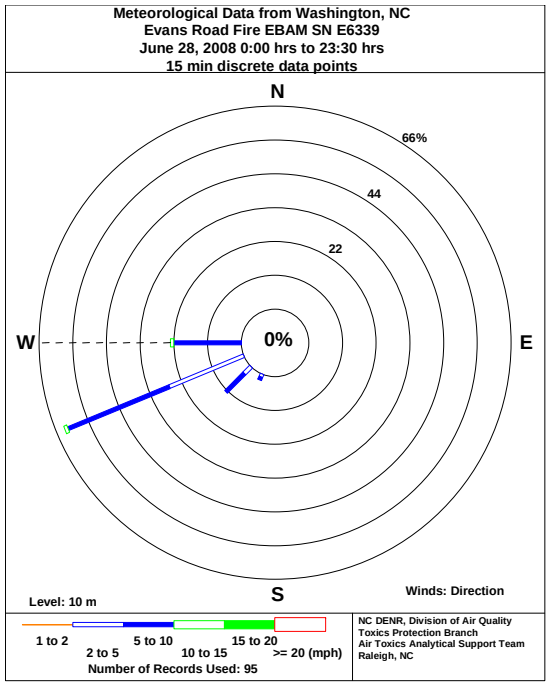


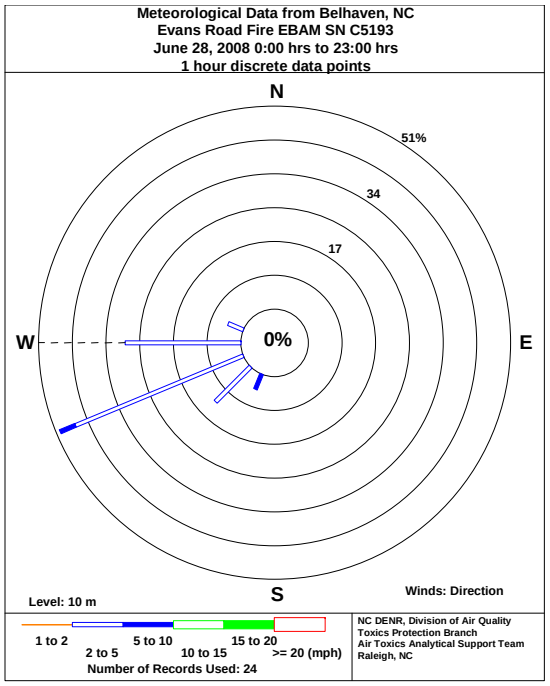
Figure C16. EBAM Monitor Meteorological Data for June 27, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











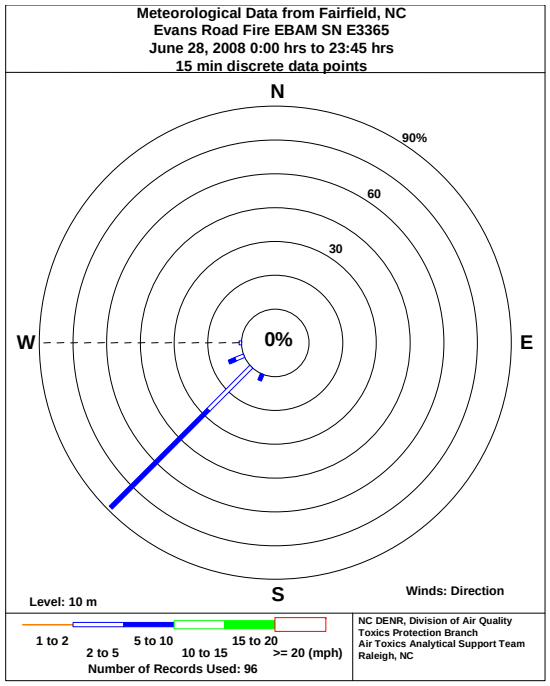
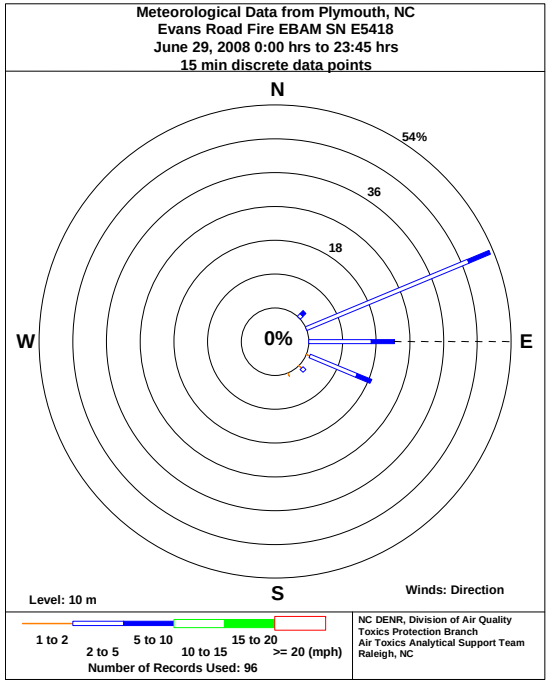
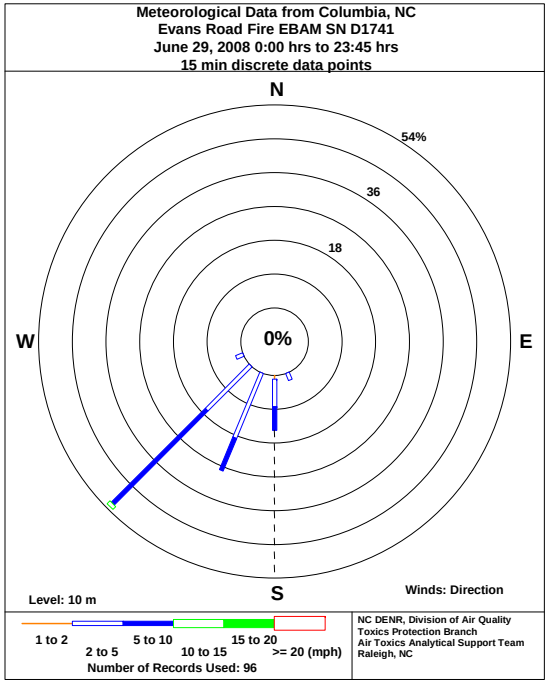
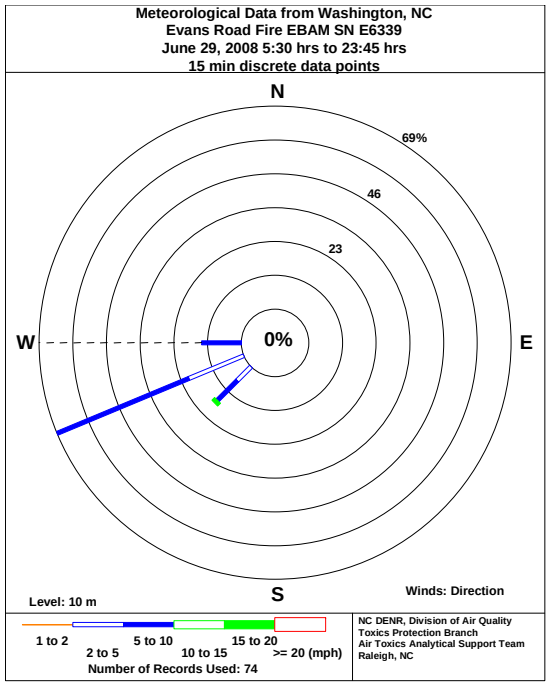


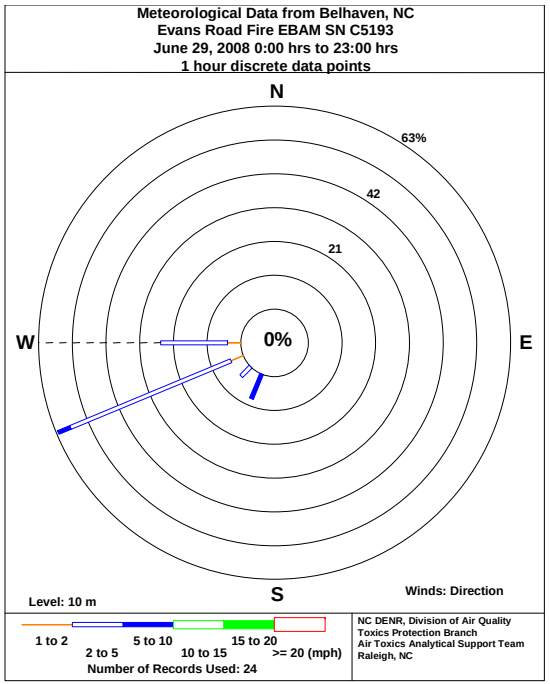
Figure C17. EBAM Monitor Meteorological Data for June 28, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC





No Observed data
From Manteo, NC
June 29, 2008





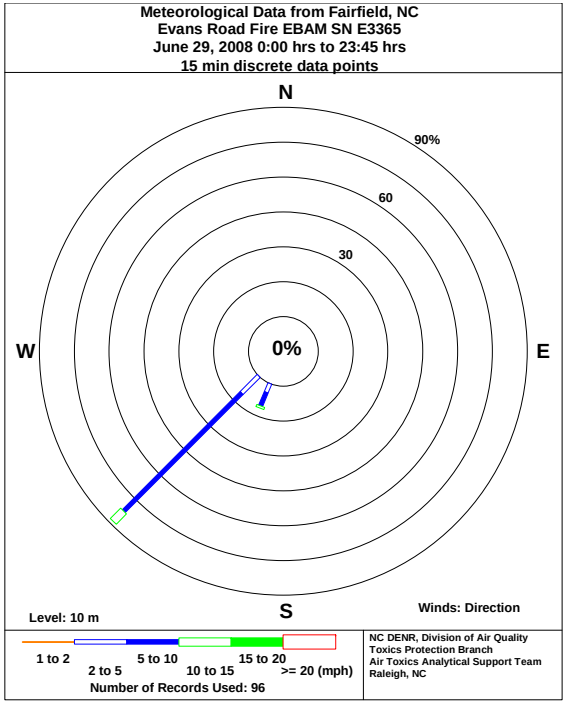


Figure C18. EBAM Monitor Meteorological Data for June 29, 2008 at Belhaven, Columbia, Fairfield, Plymouth and Washington NC

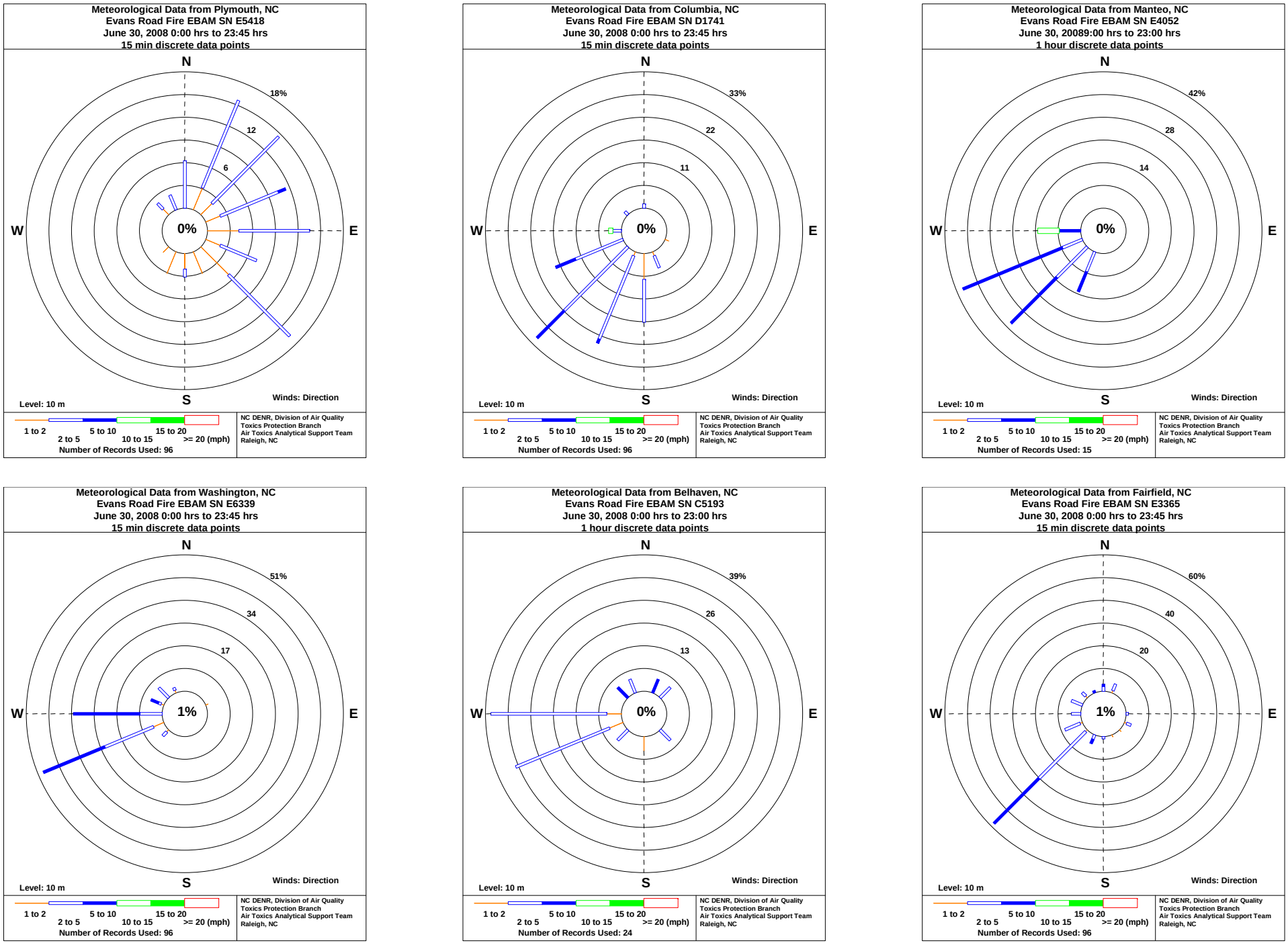
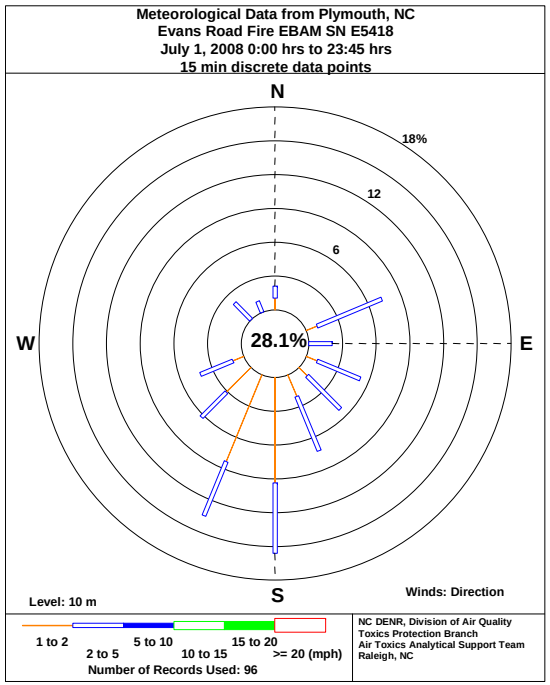
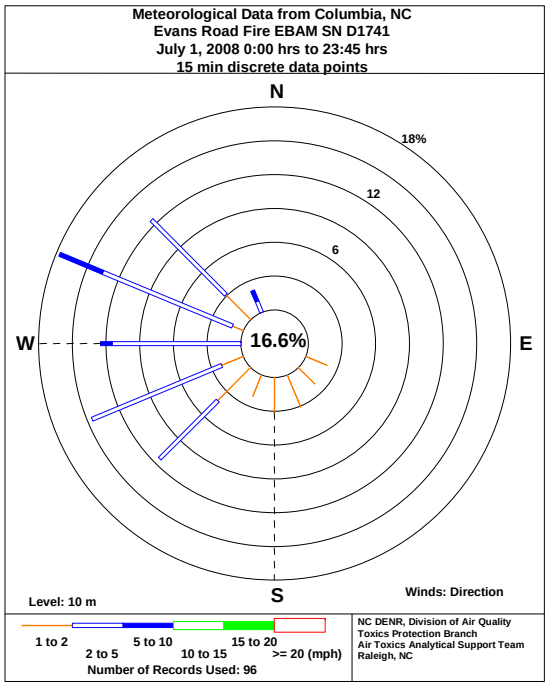
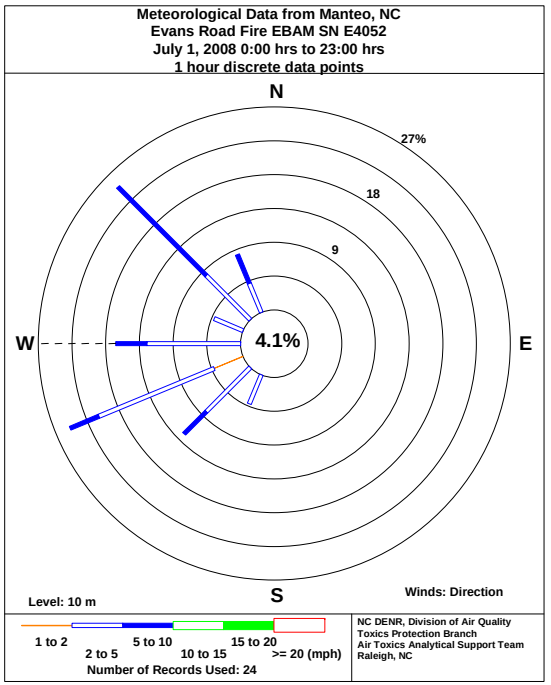
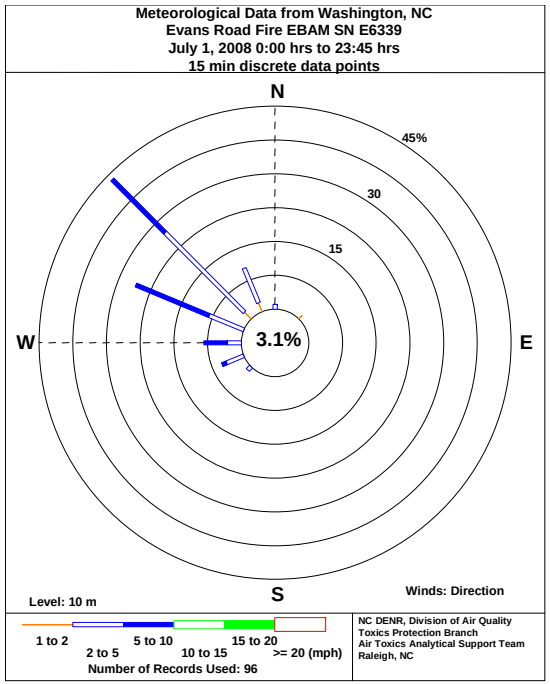


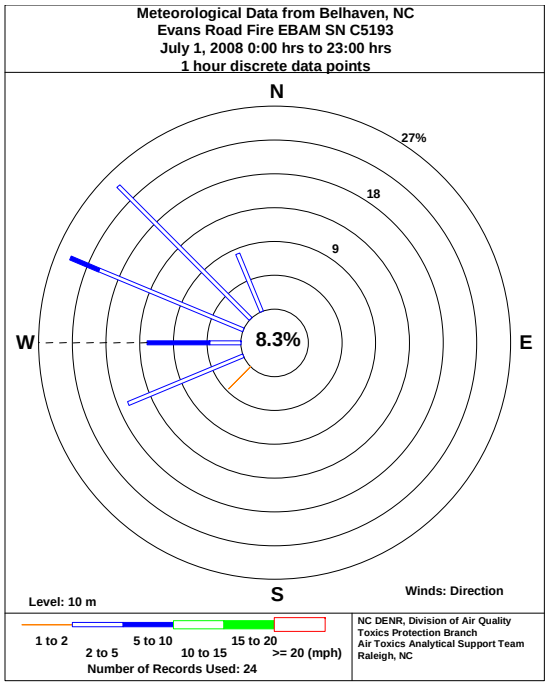
Figure C19. EBAM Monitor Meteorological Data for June 30, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











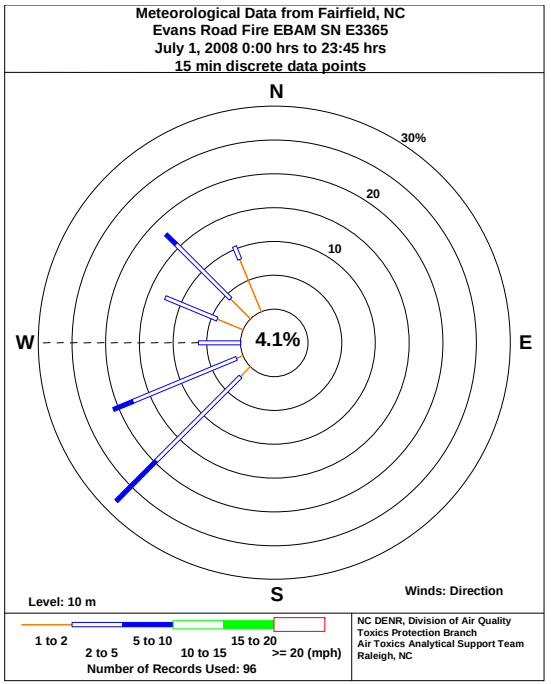
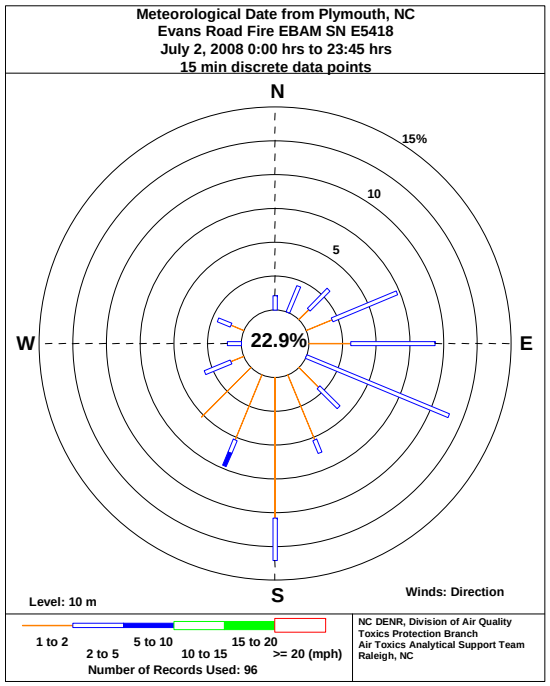
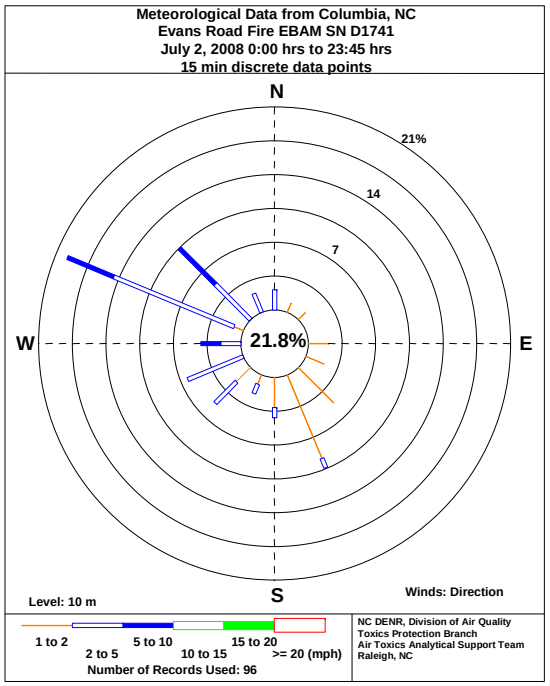
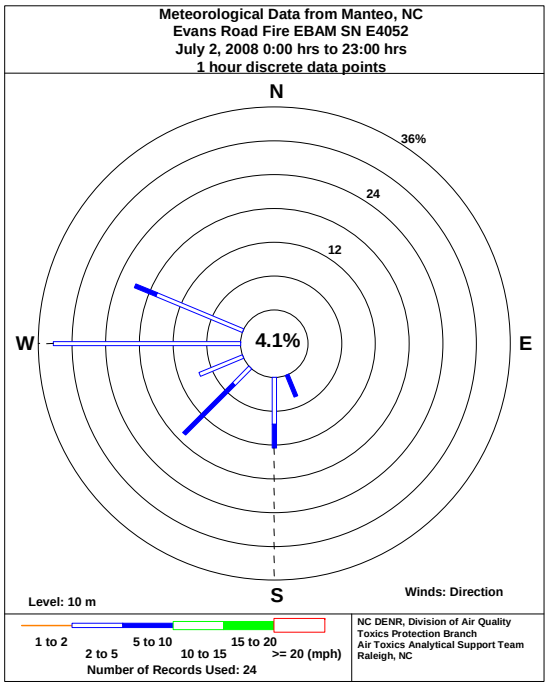
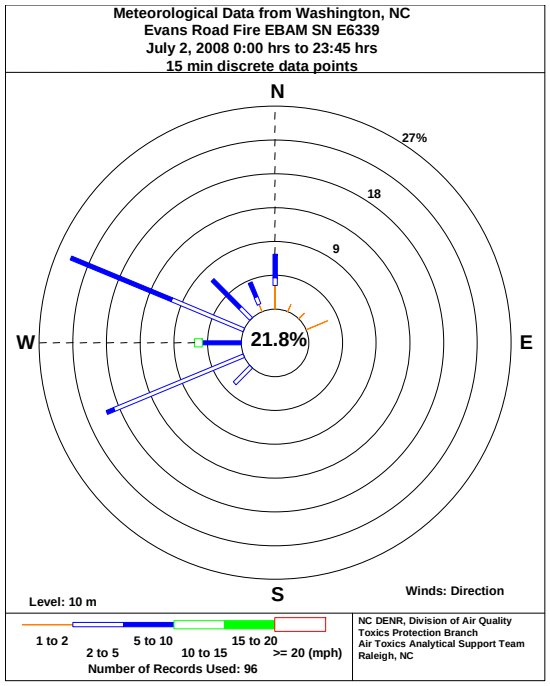


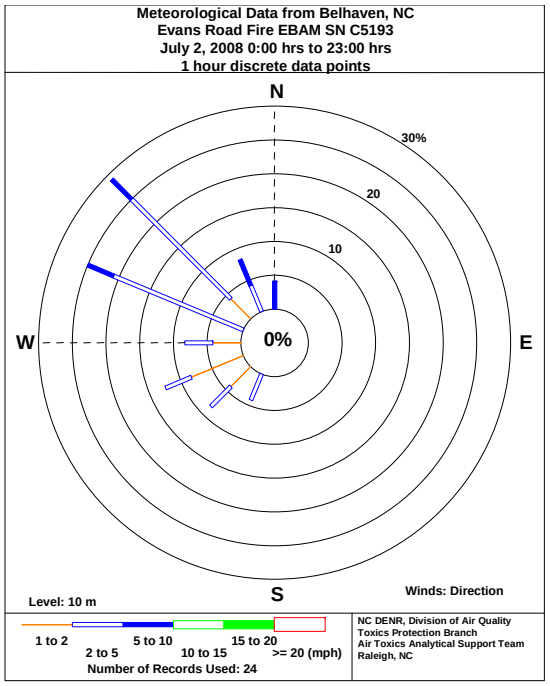
Figure C20. EBAM Monitor Meteorological Data for July 1, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











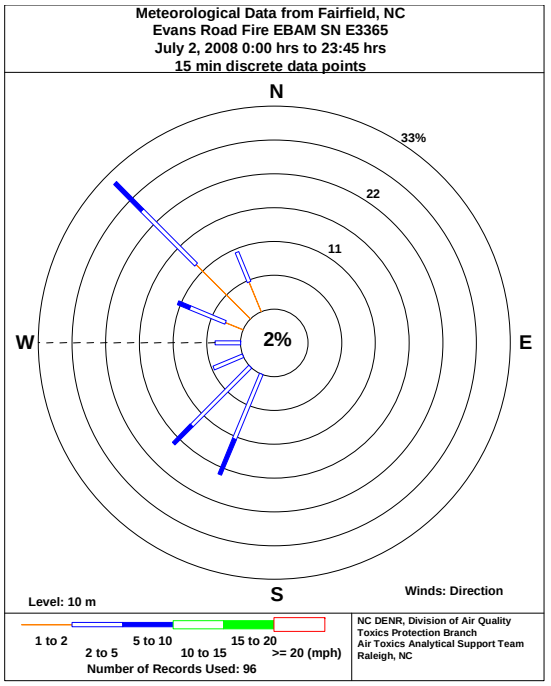
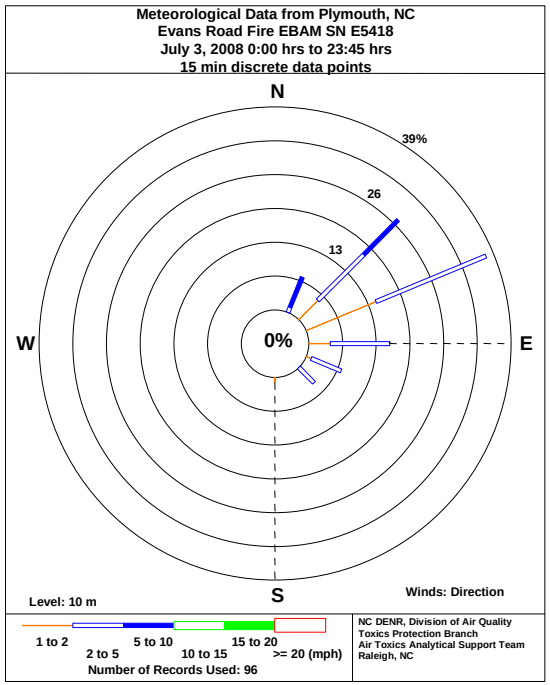
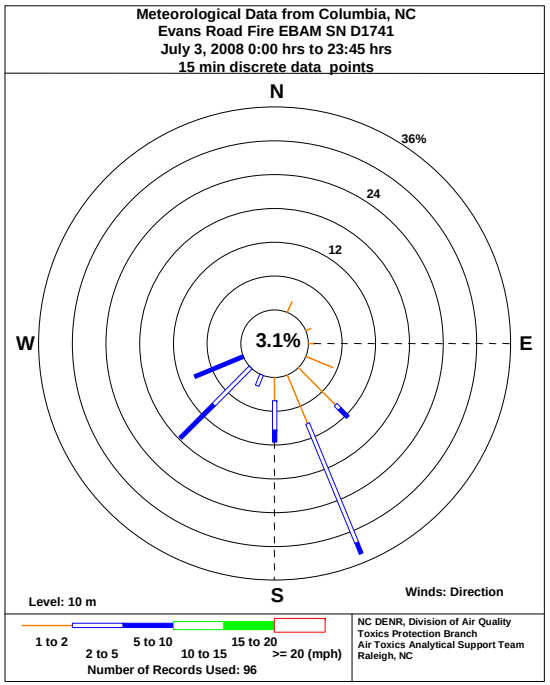
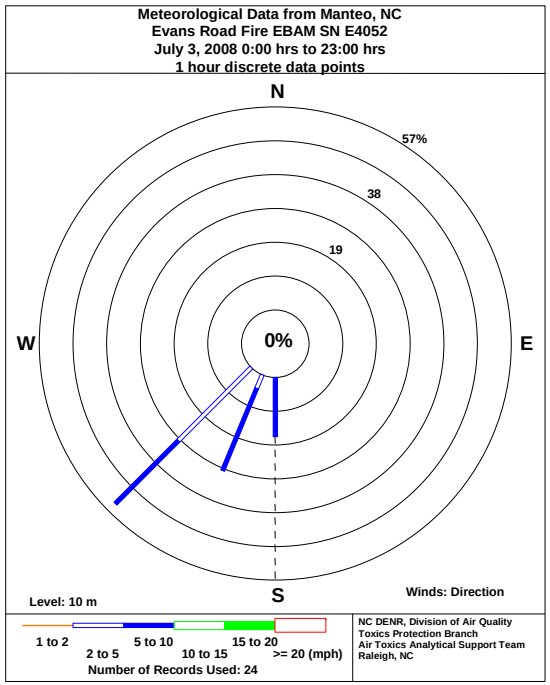
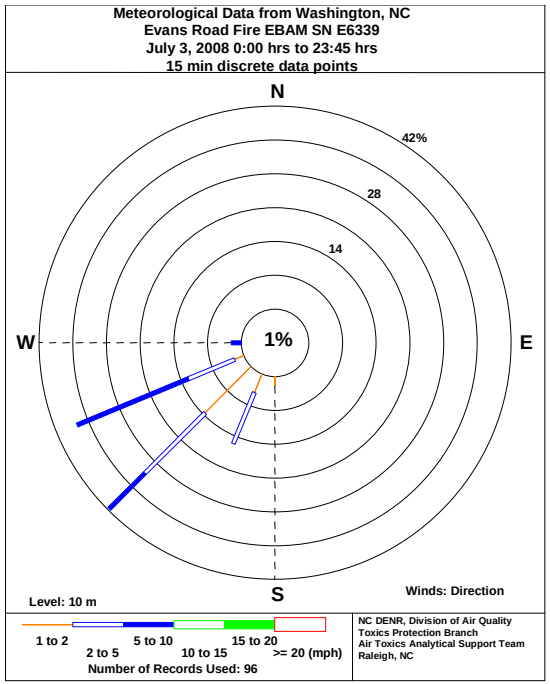


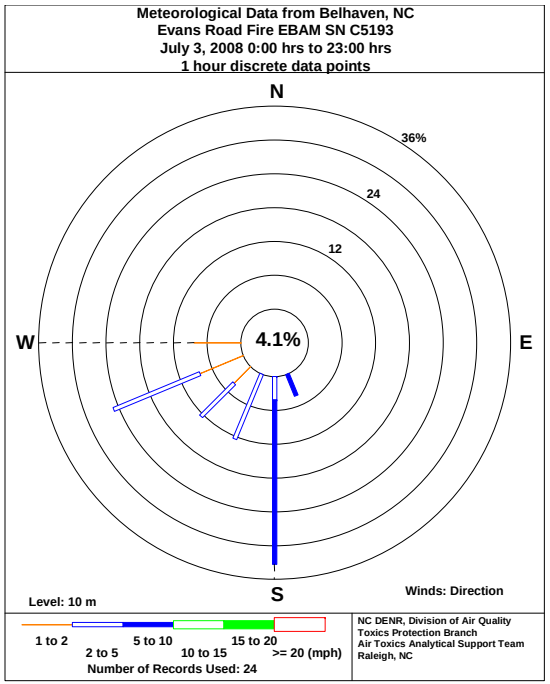
Figure C21. EBAM Monitor Meteorological Data for July 2, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











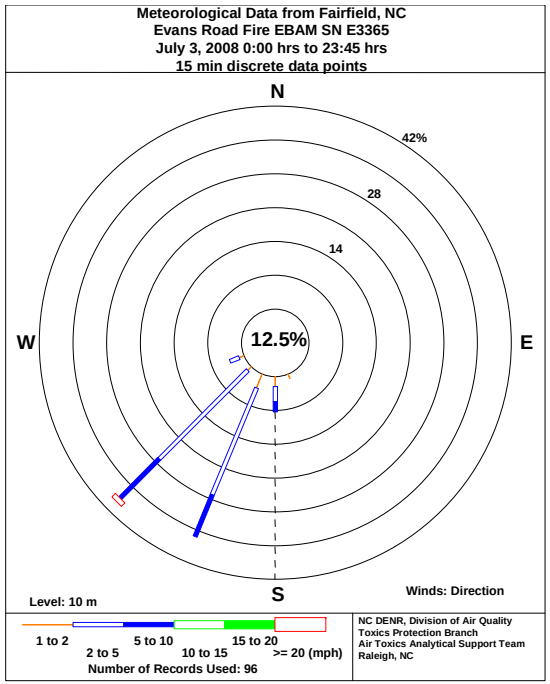
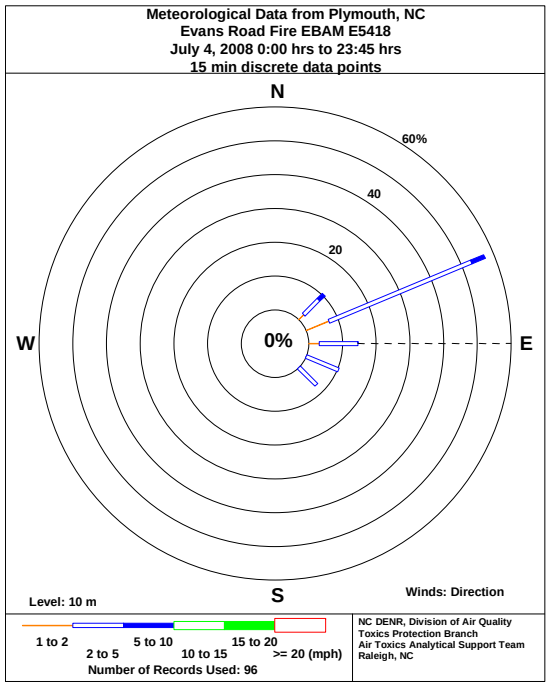
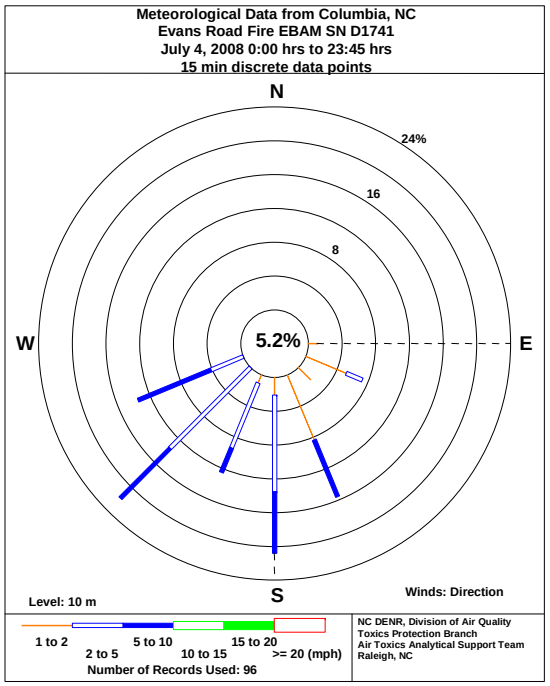
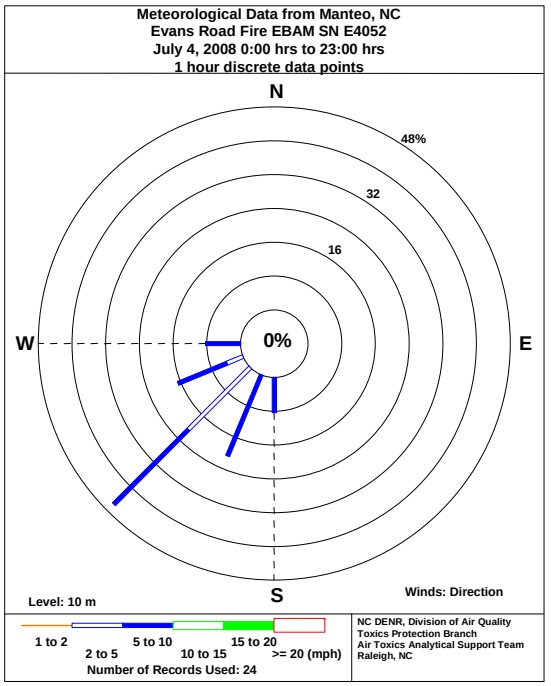
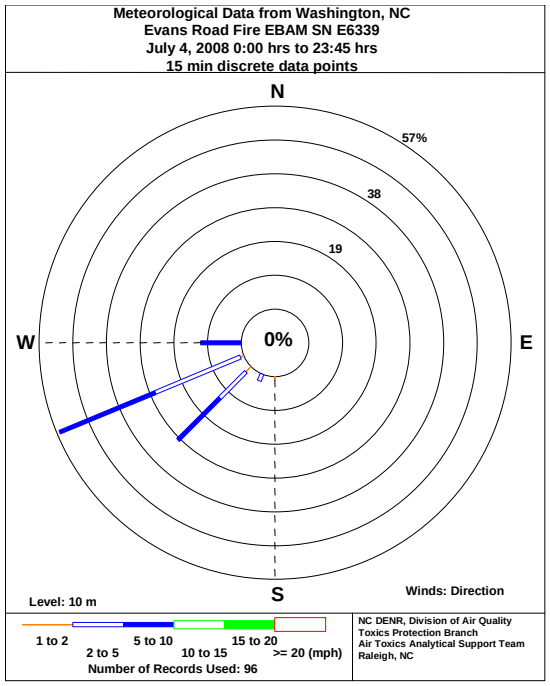


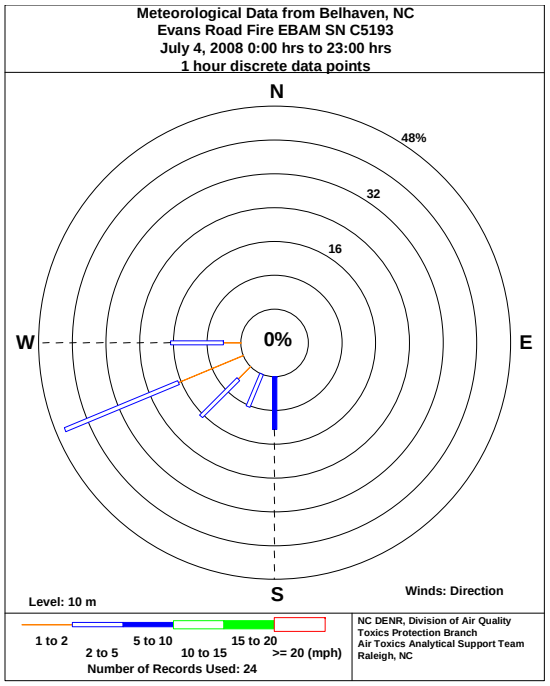
Figure C22. EBAM Monitor Meteorological Data for July 3, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











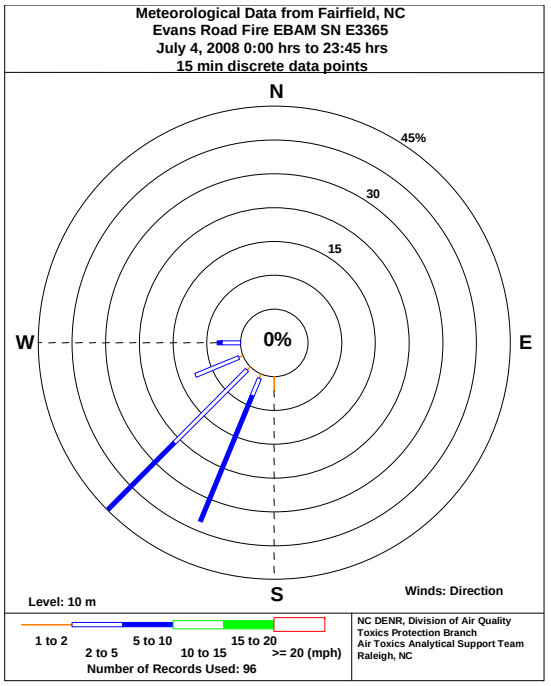
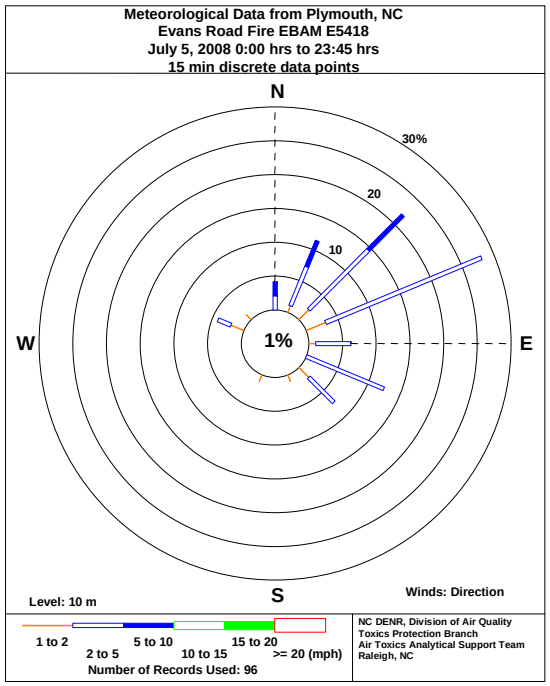
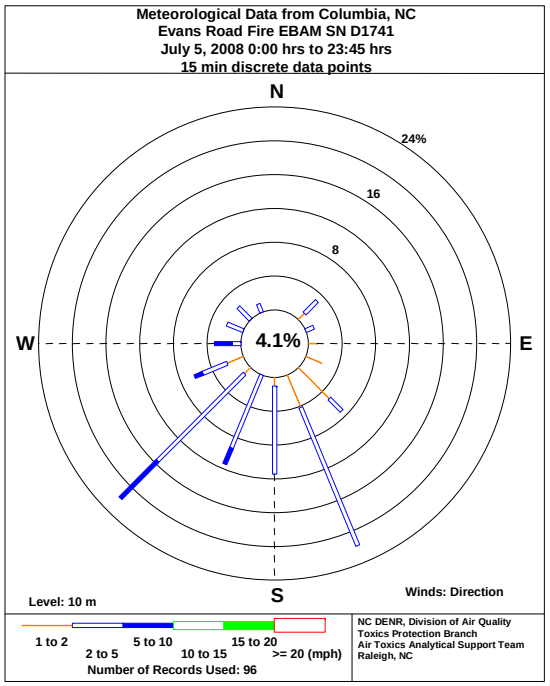
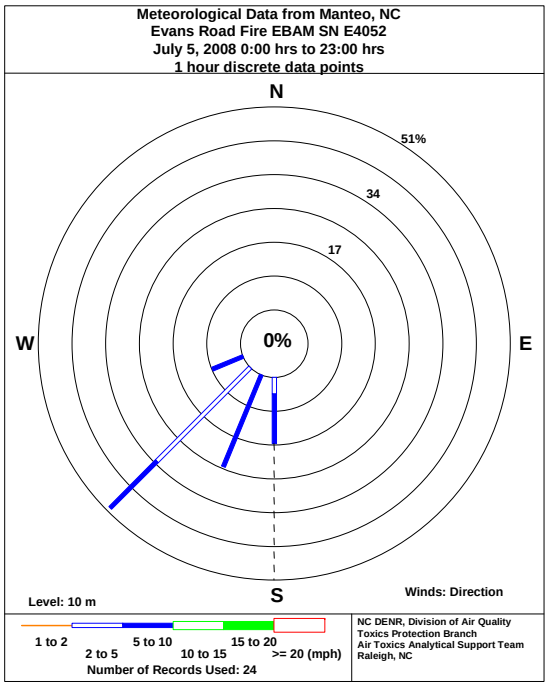
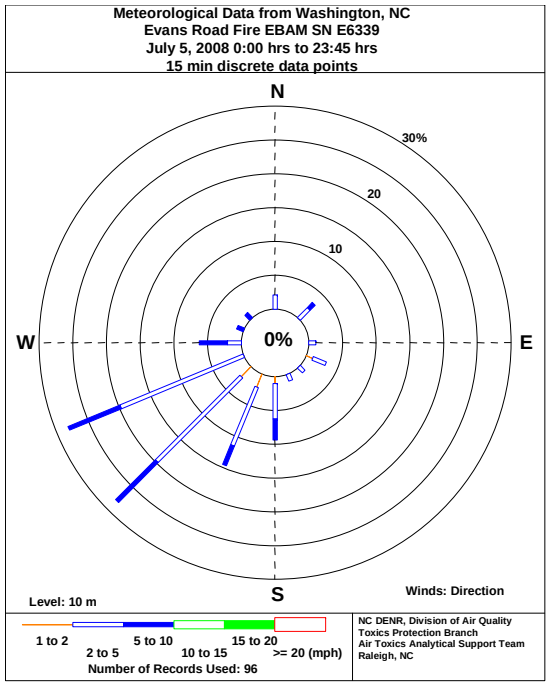


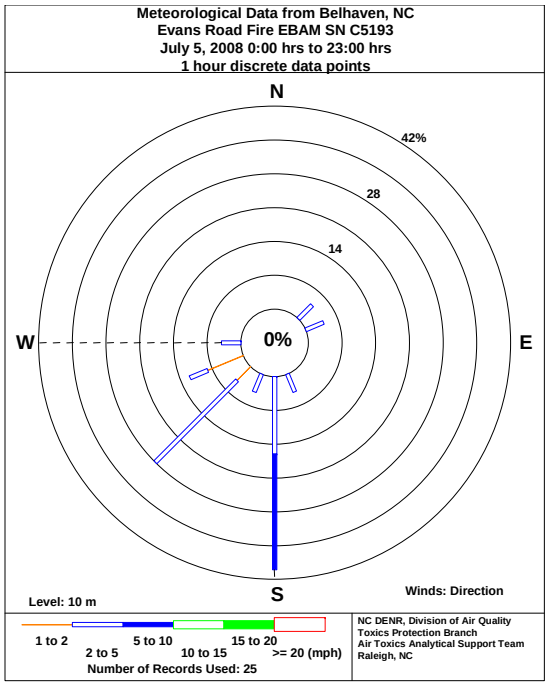
Figure C23. EBAM Monitor Meteorological Data for July 4, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











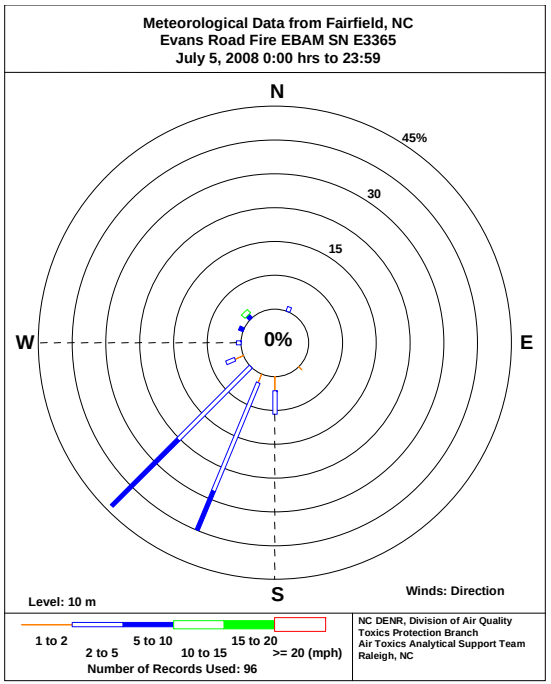
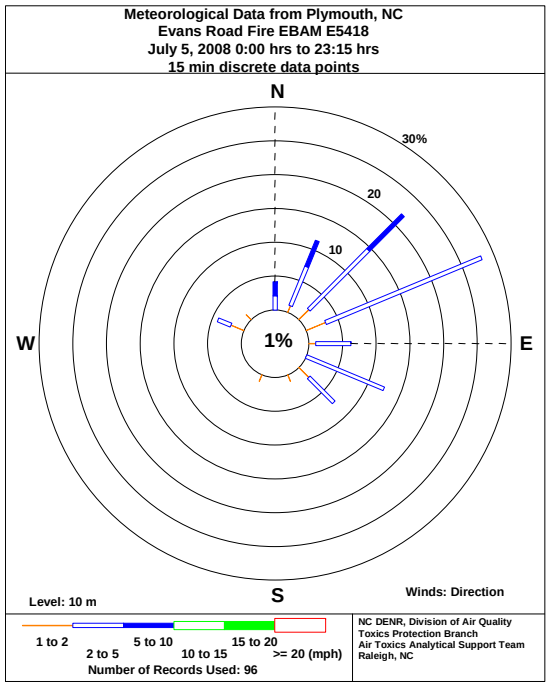
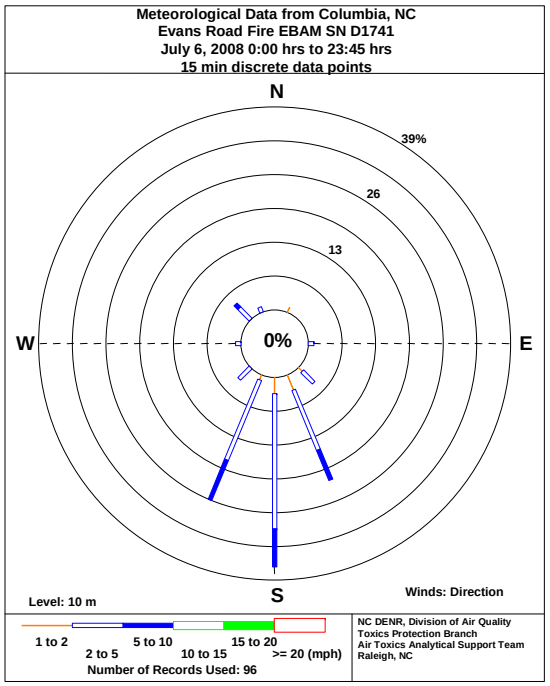
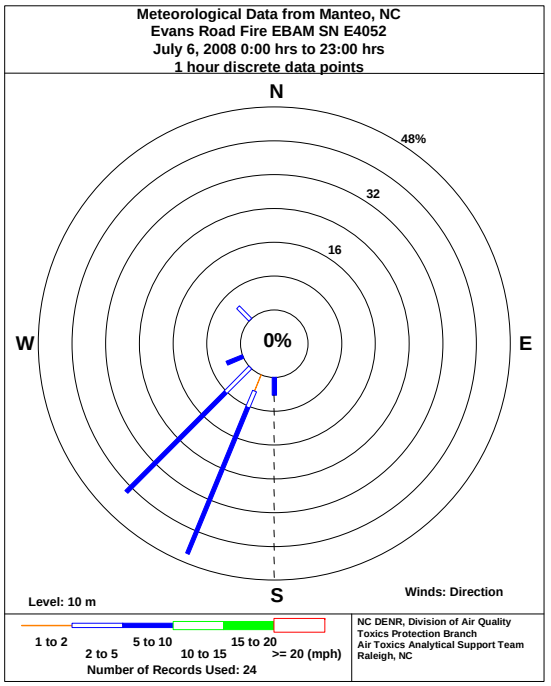
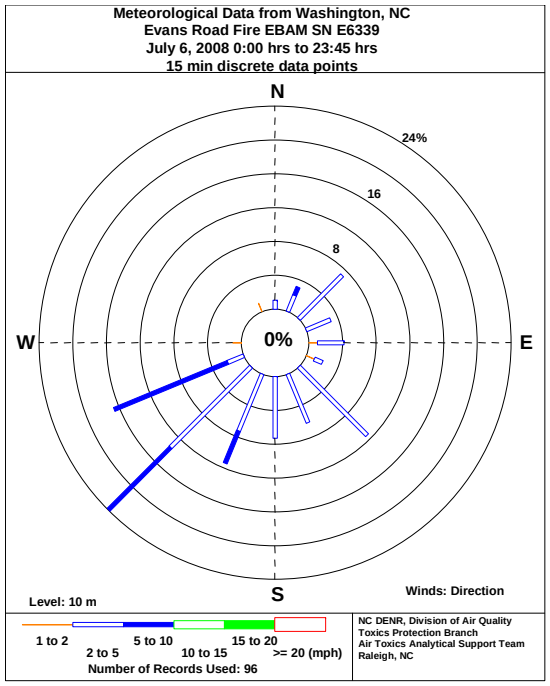


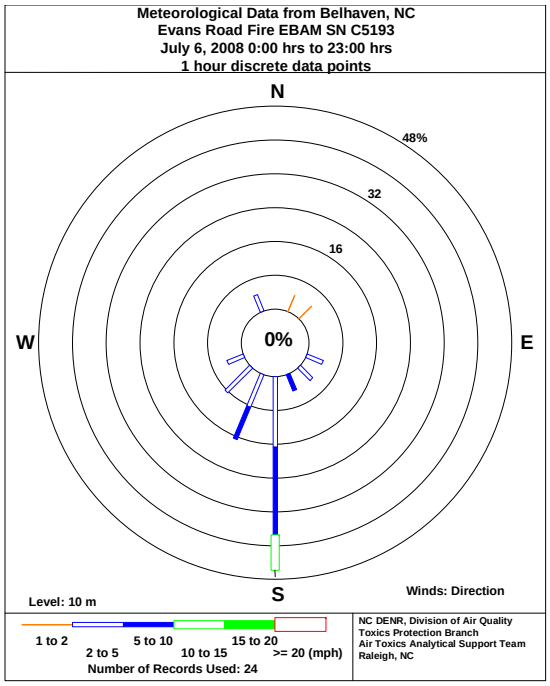
Figure C24. EBAM Monitor Meteorological Data for July 5, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











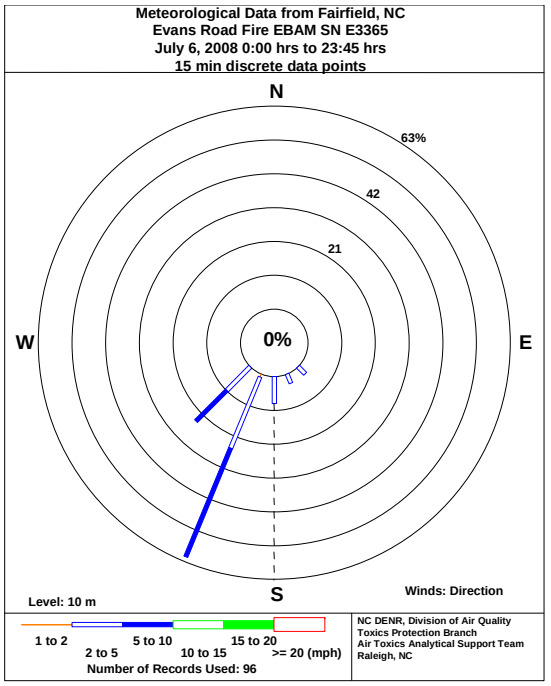
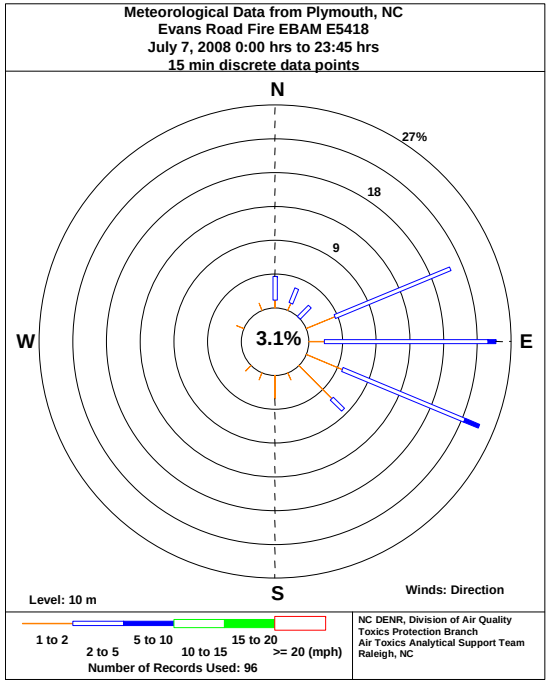
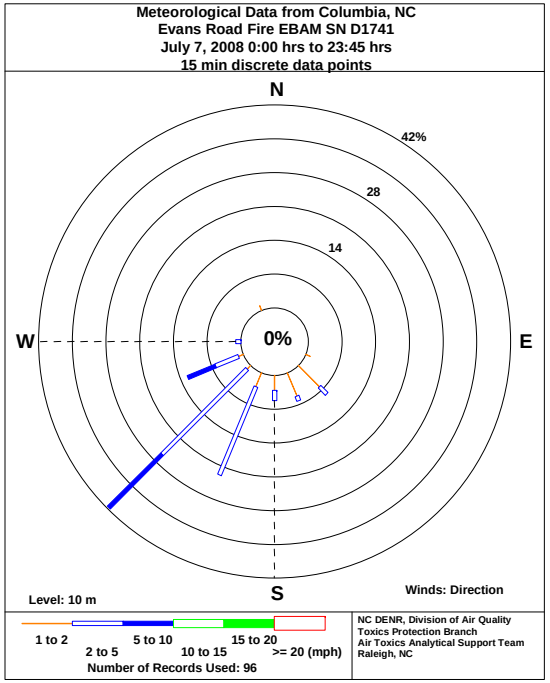
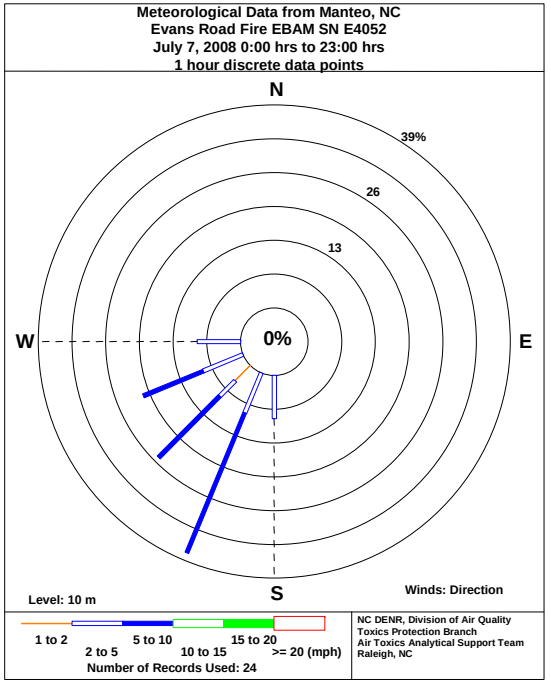
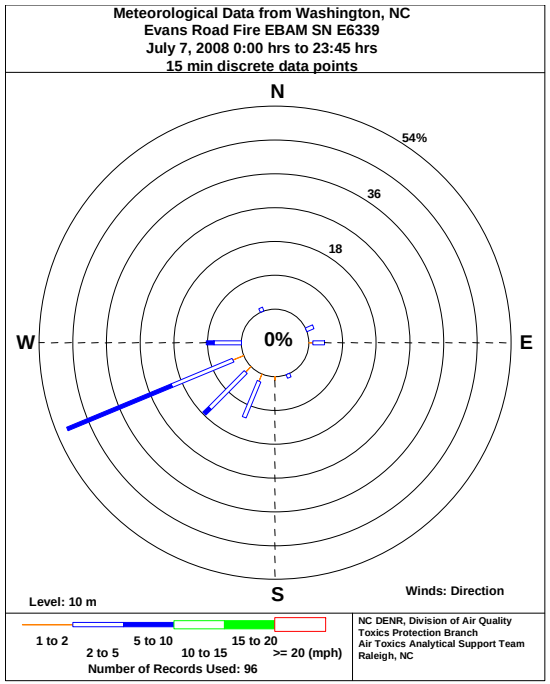


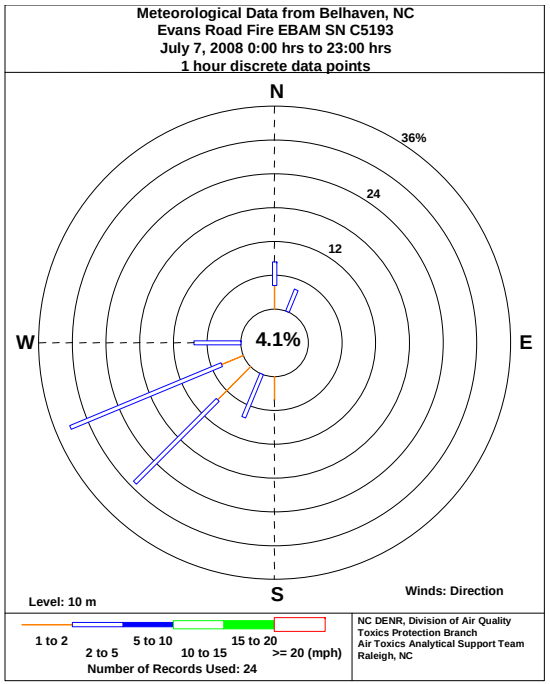
Figure C25. EBAM Monitor Meteorological Data for July 6, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











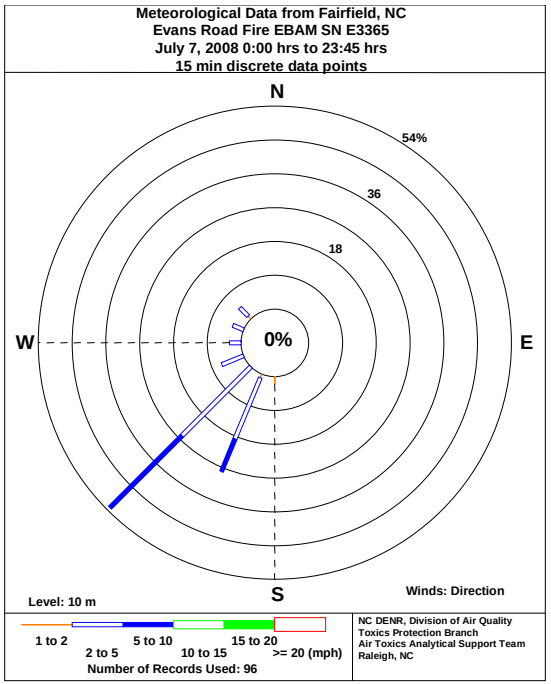
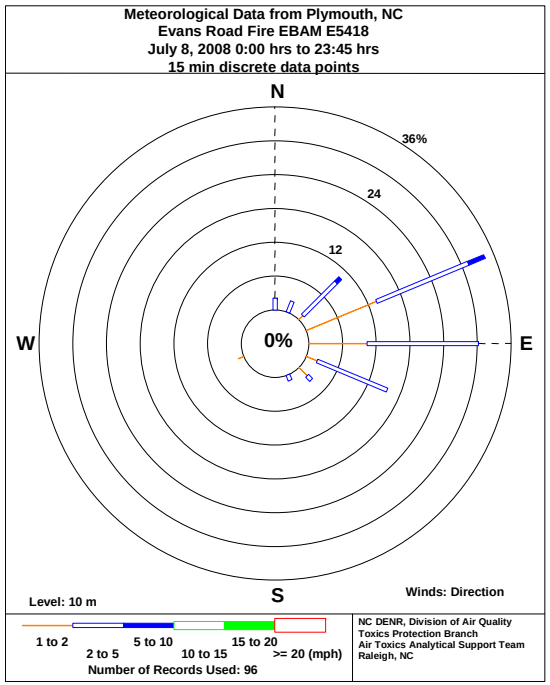
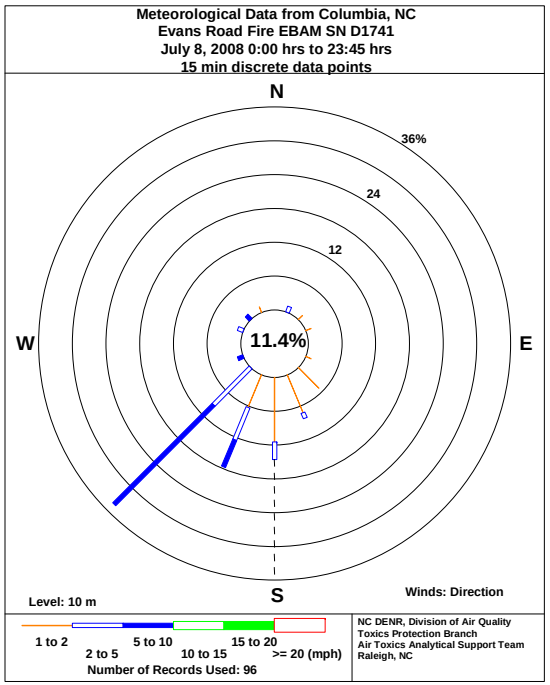
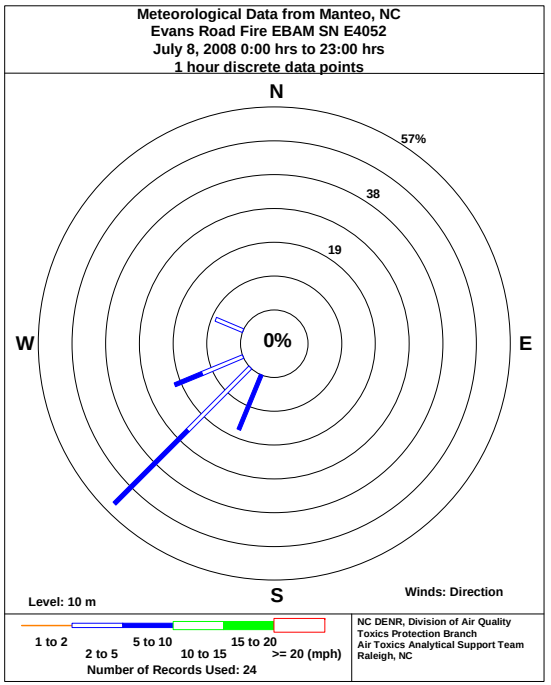
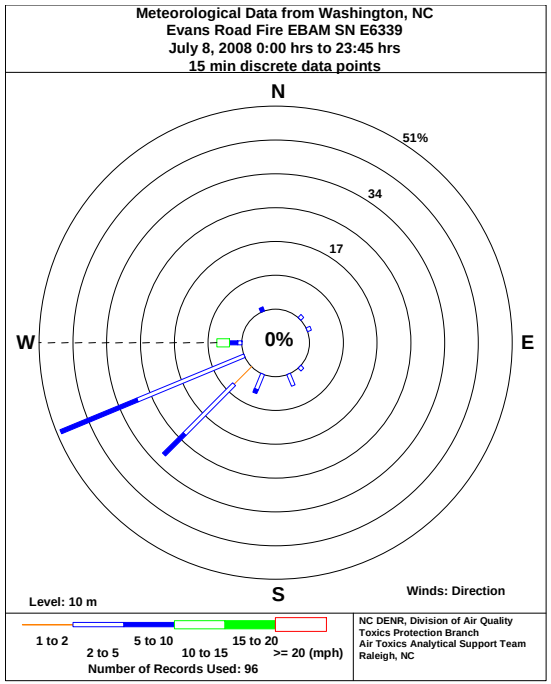


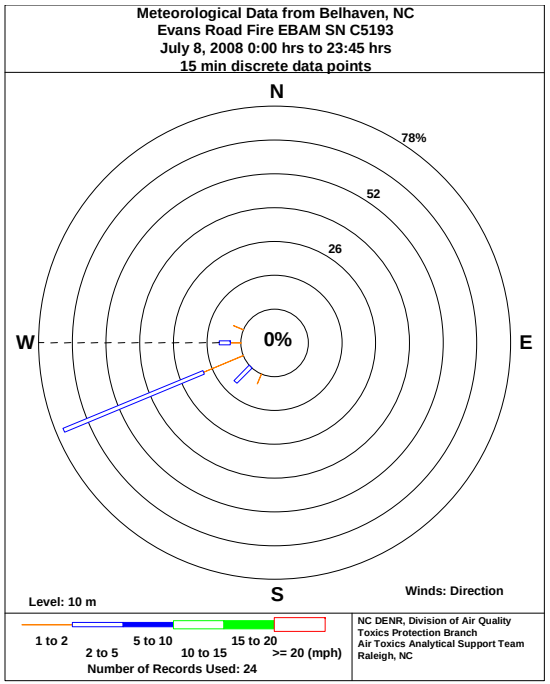
Figure C26. EBAM Monitor Meteorological Data for July 7, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











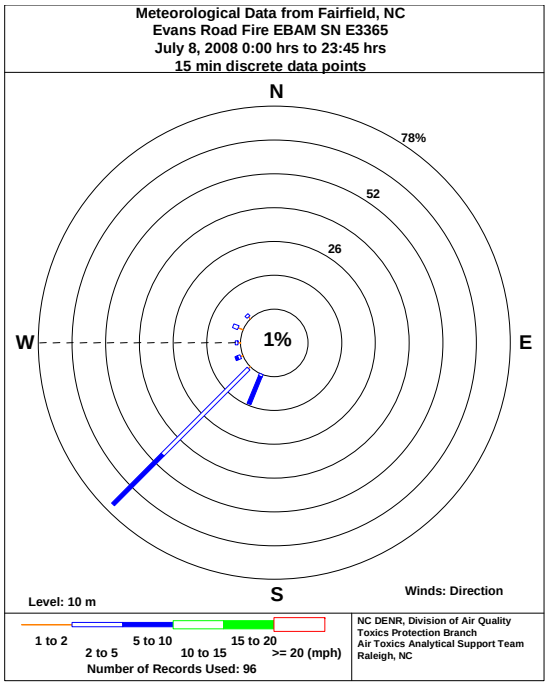
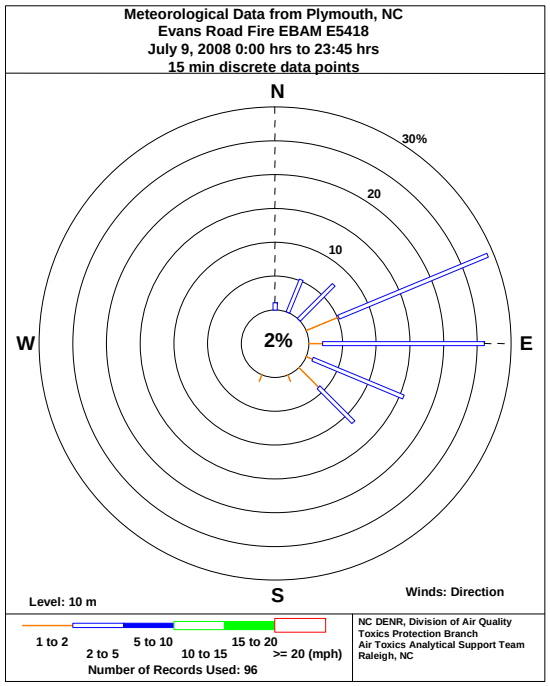
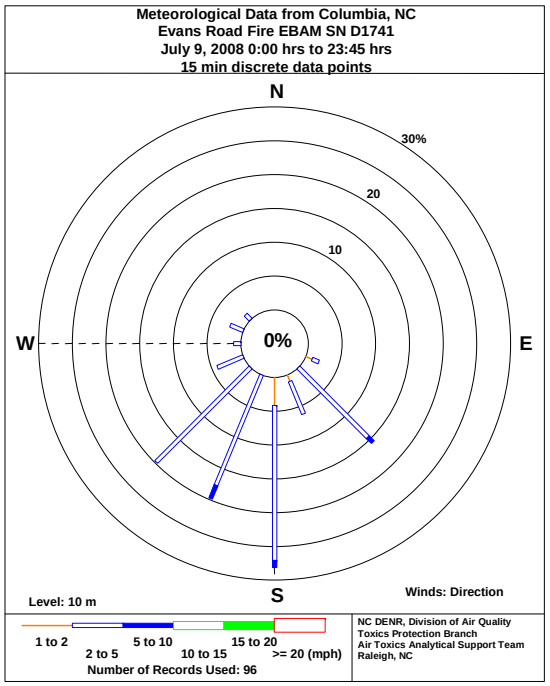
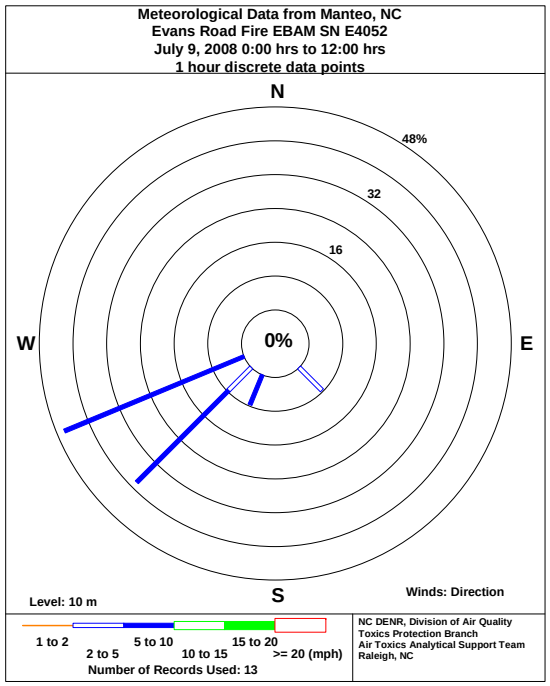
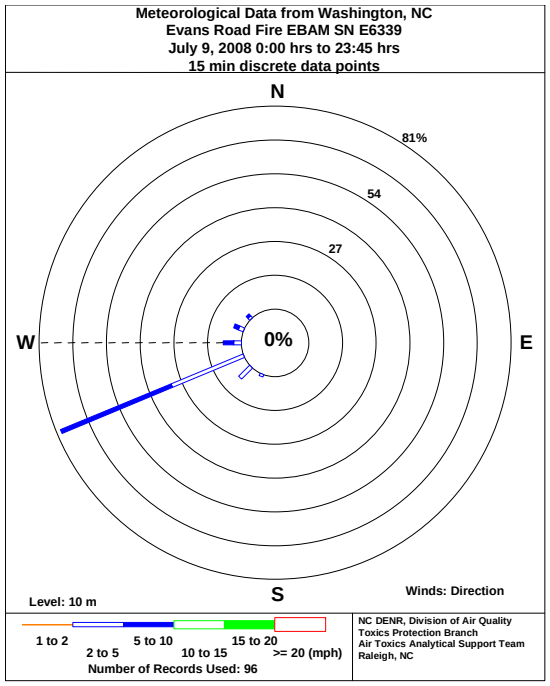


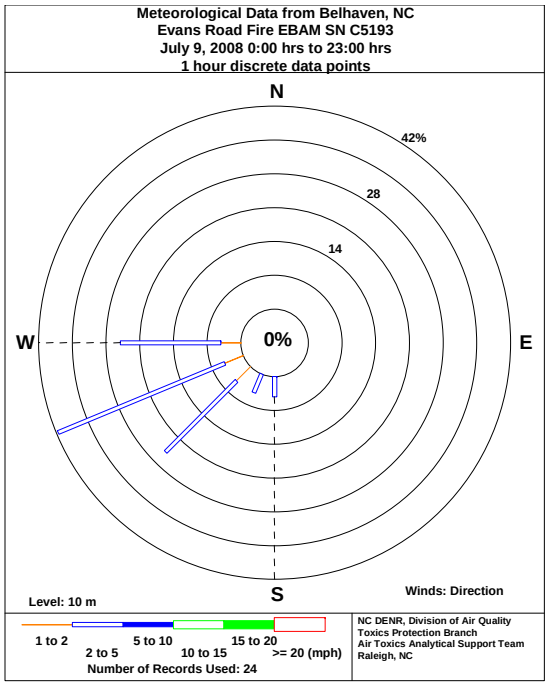
Figure C27. EBAM Monitor Meteorological Data for July 8, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











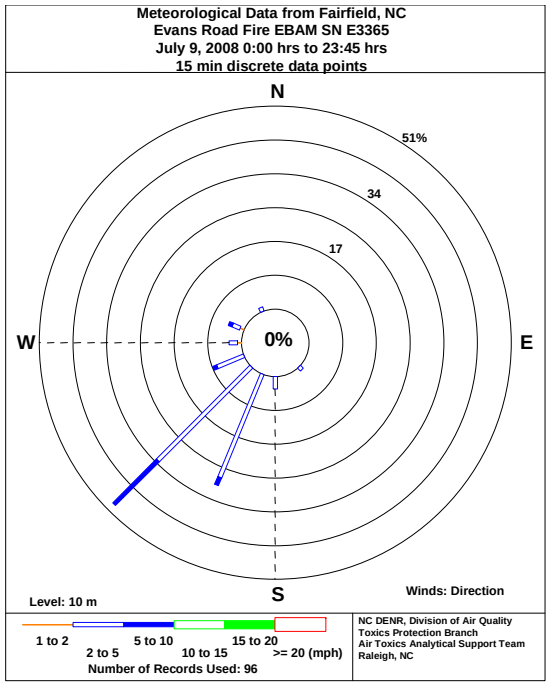
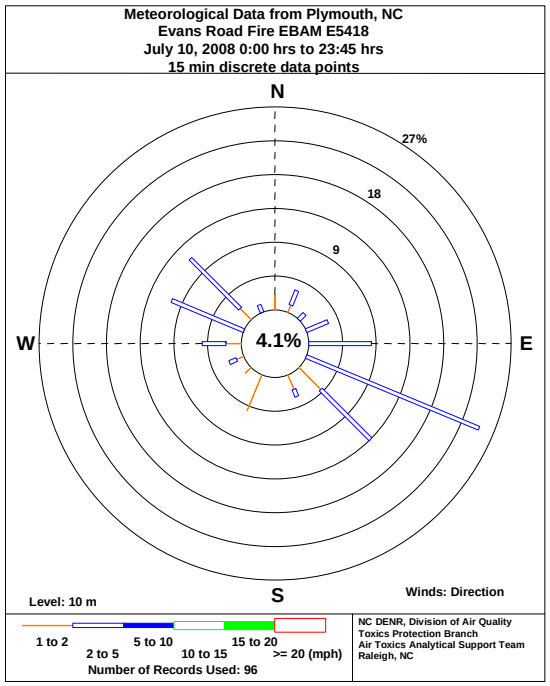
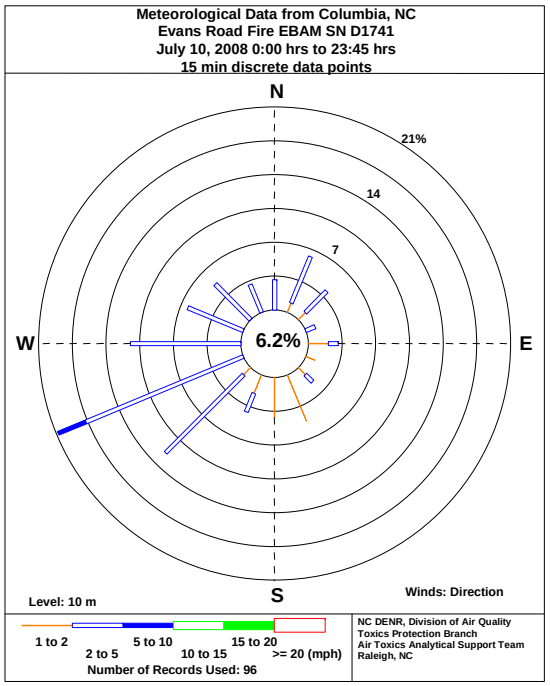
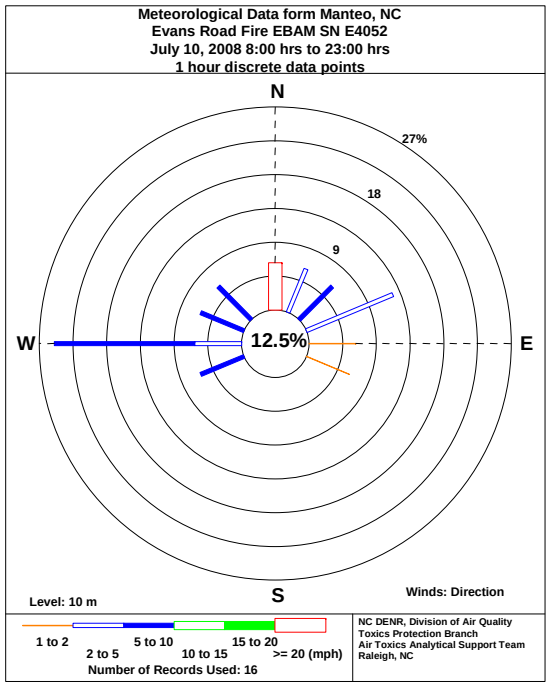
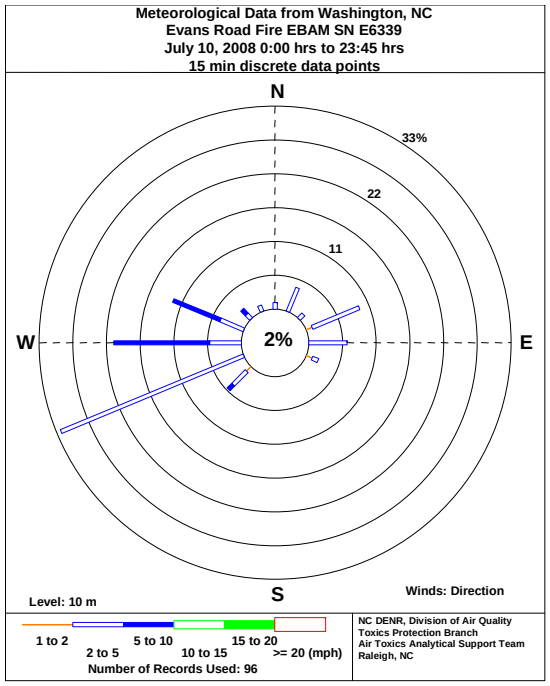


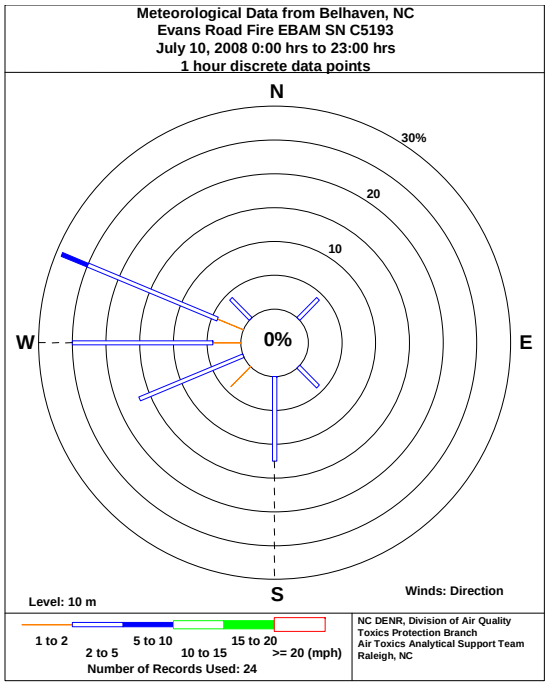
Figure C28. EBAM Monitor Meteorological Data for July 9, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











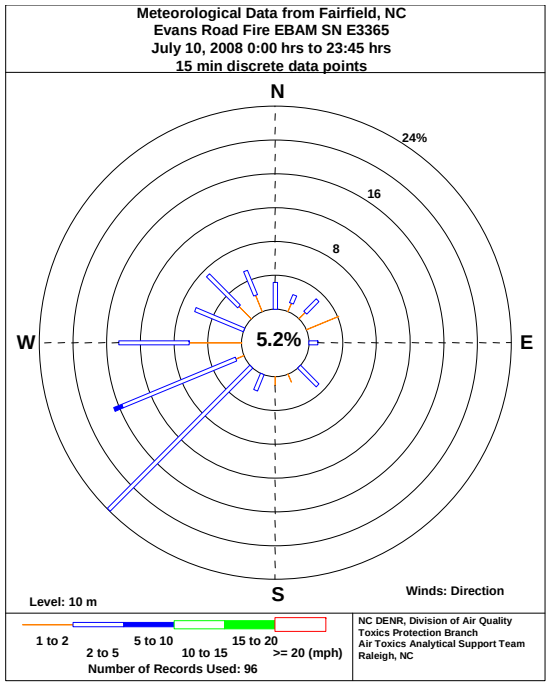
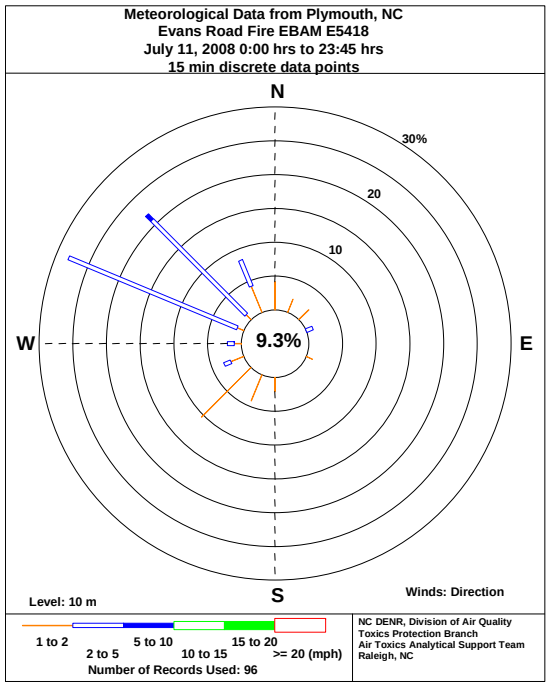
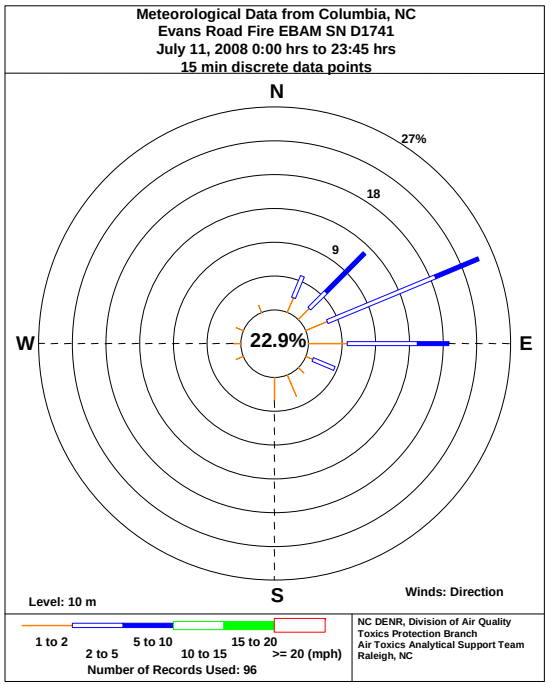
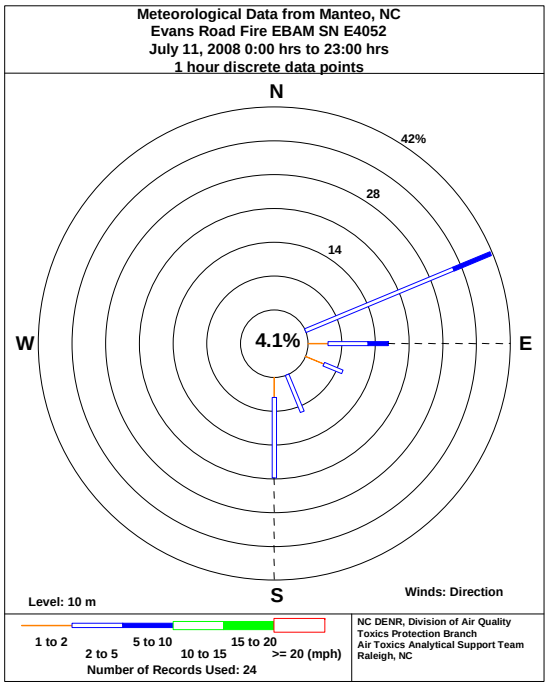
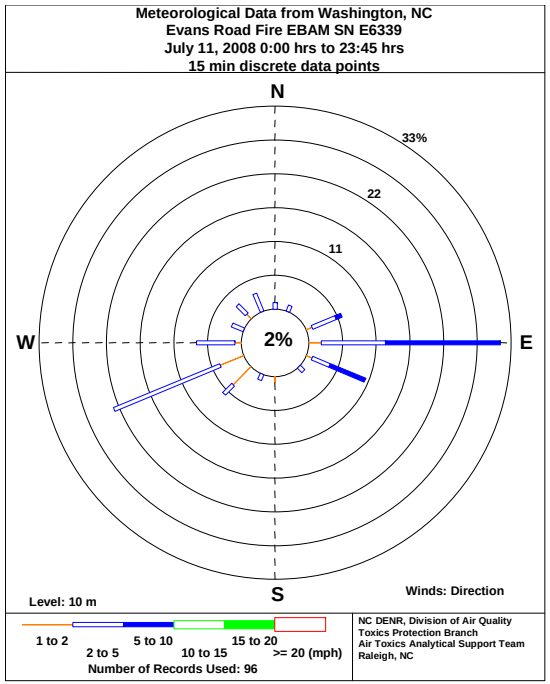


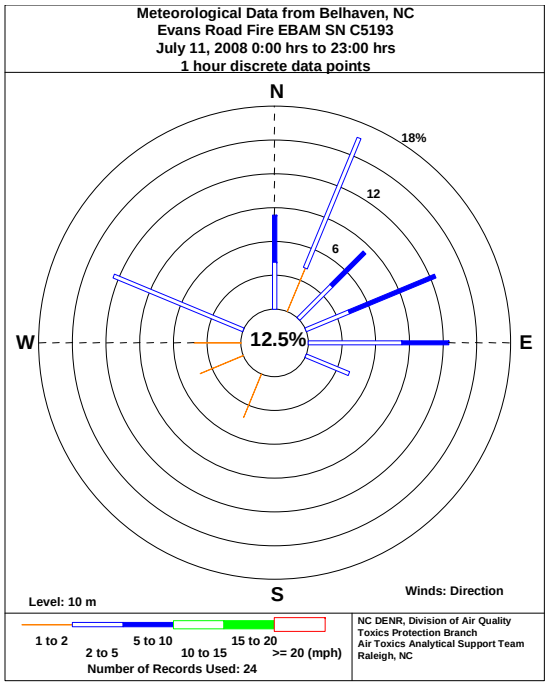
Figure C29. EBAM Monitor Meteorological Data for July 10, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











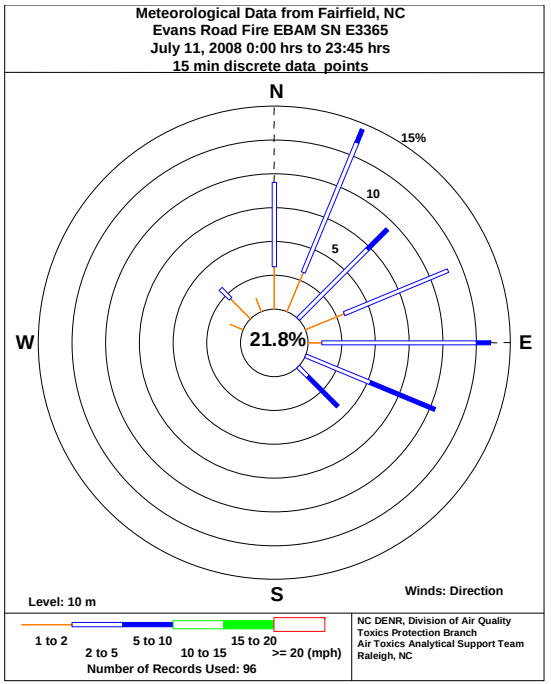
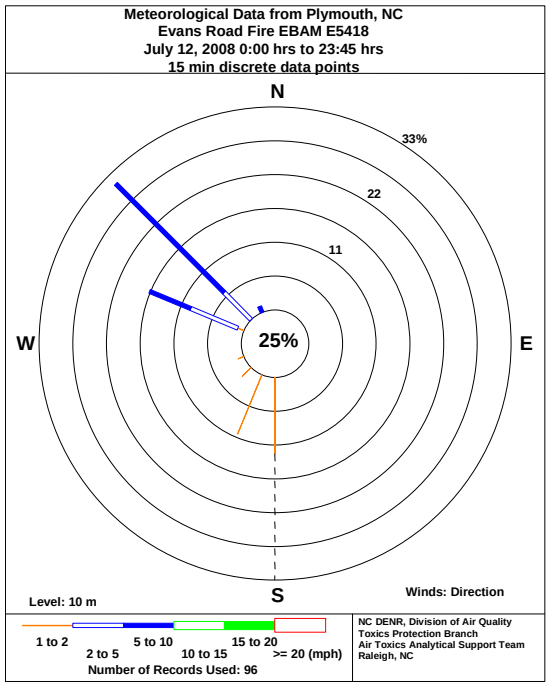
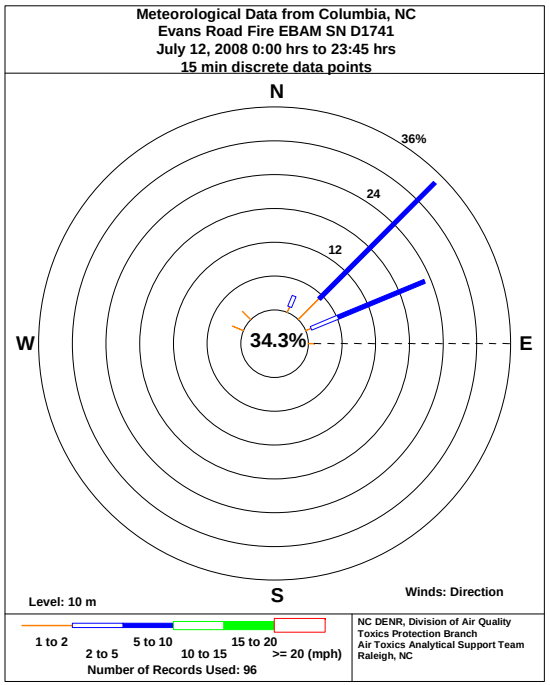
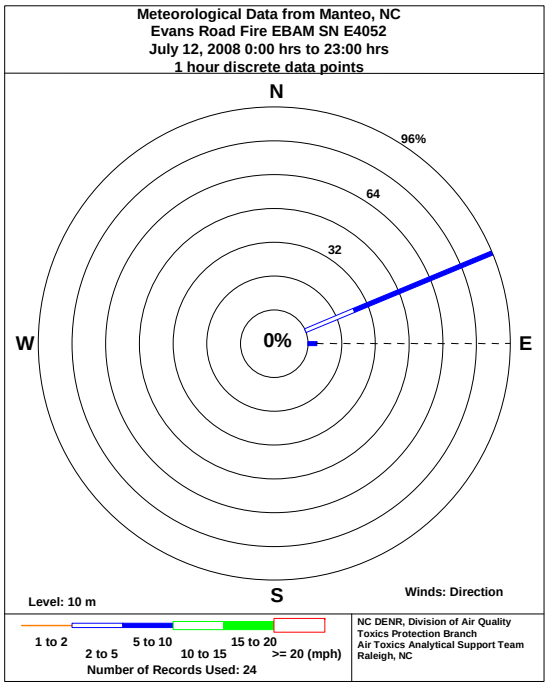
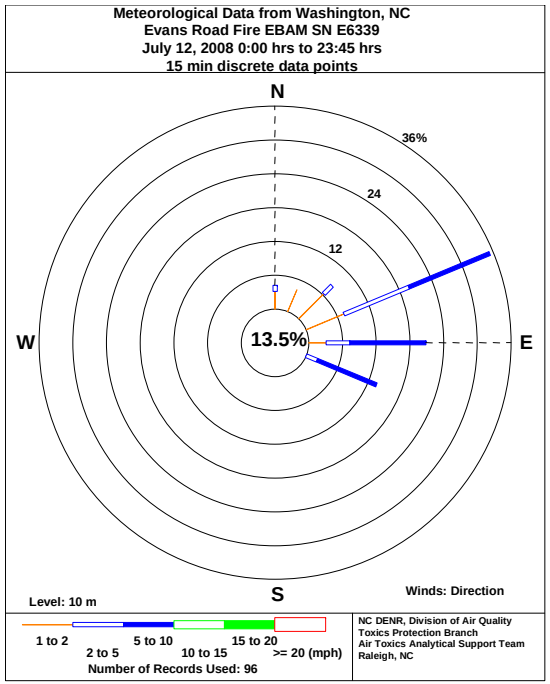


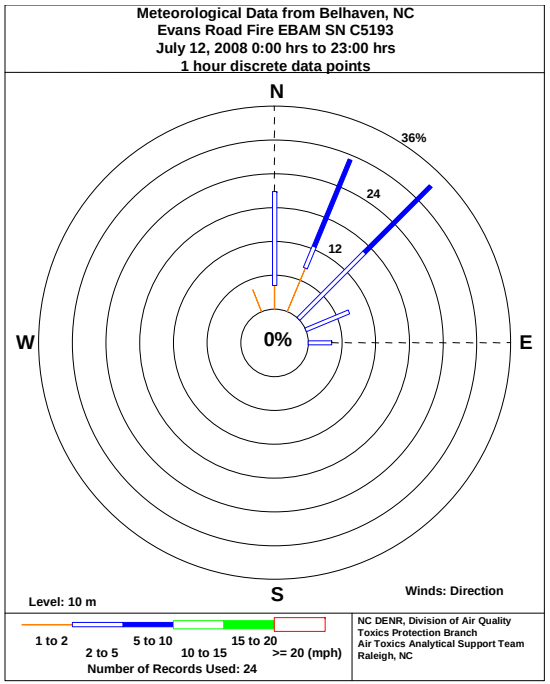
Figure C30. EBAM Monitor Meteorological Data for July 11, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











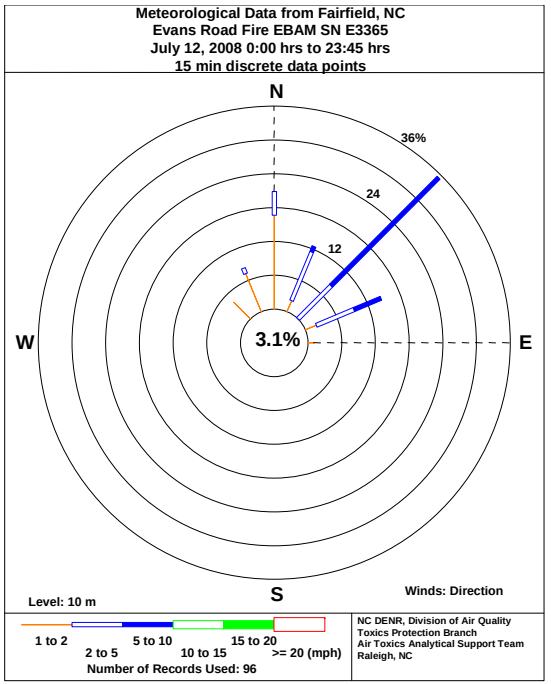
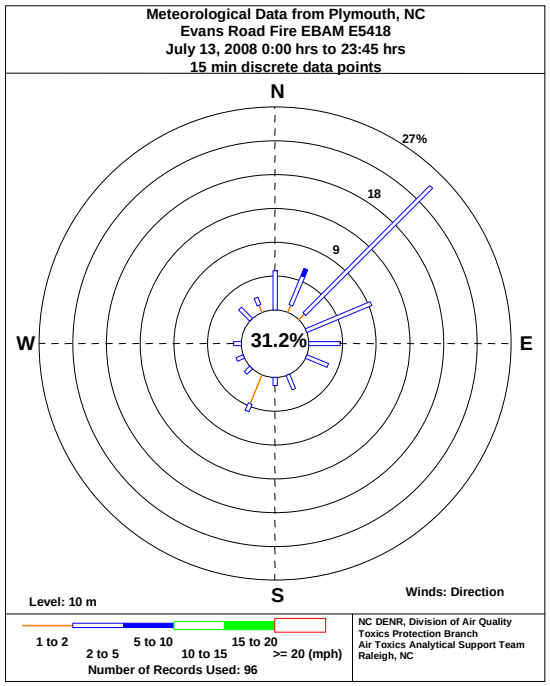
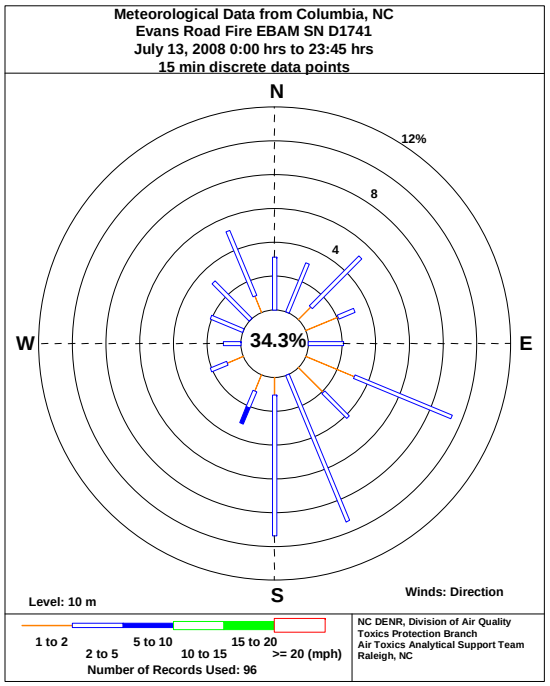
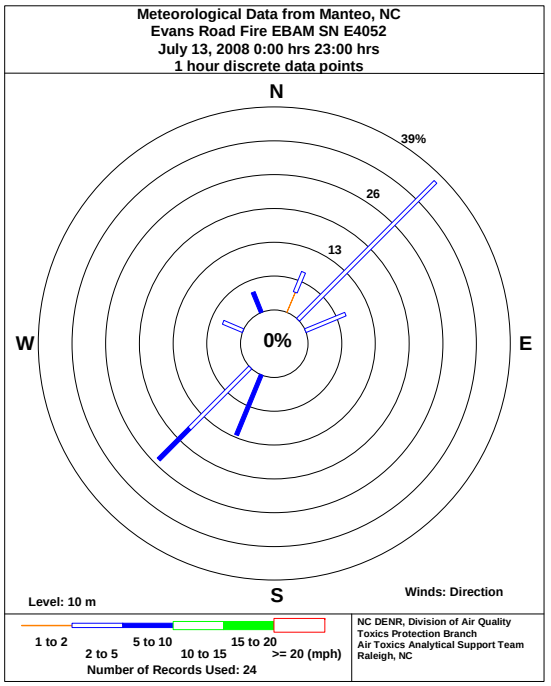
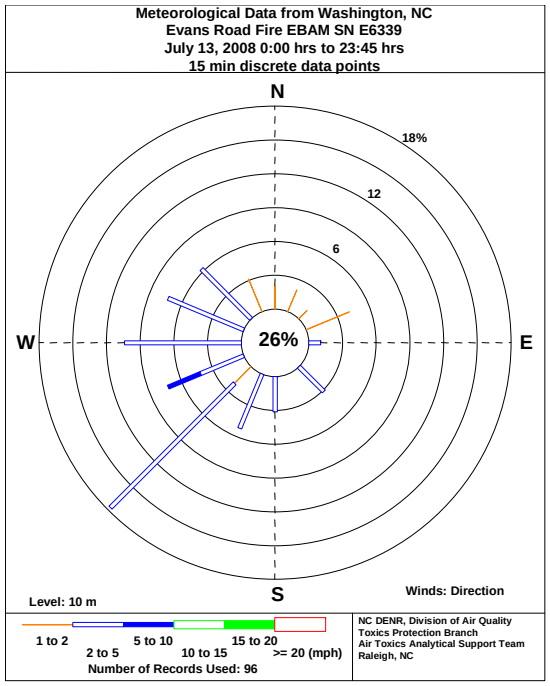


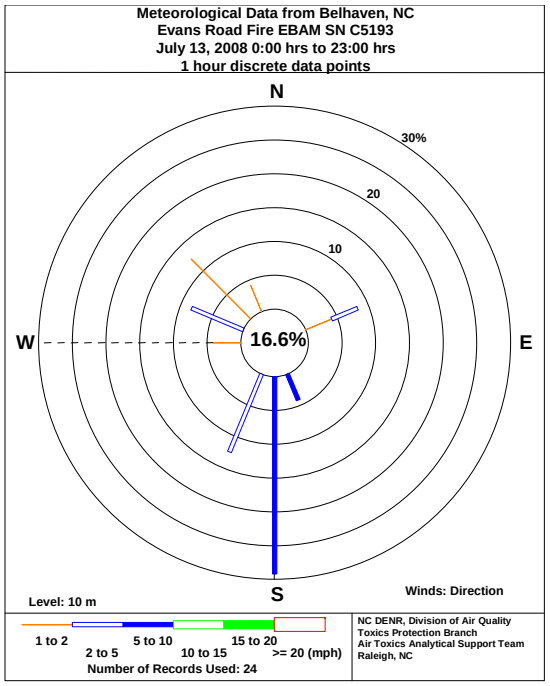
Figure C31. EBAM Monitor Meteorological Data for July 12, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











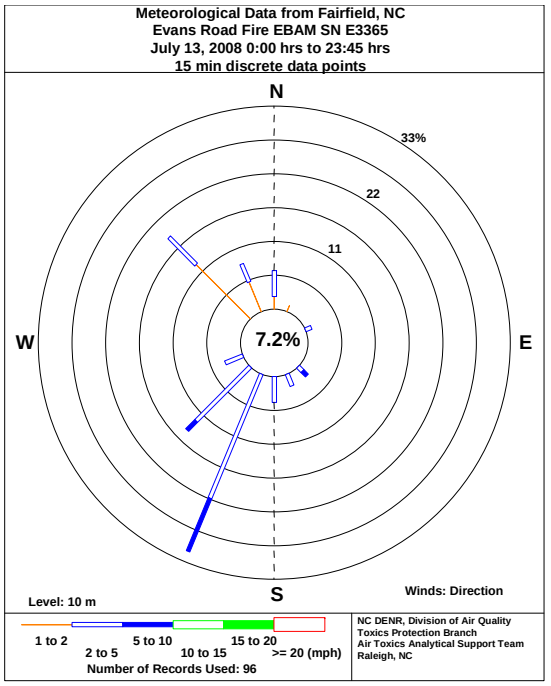
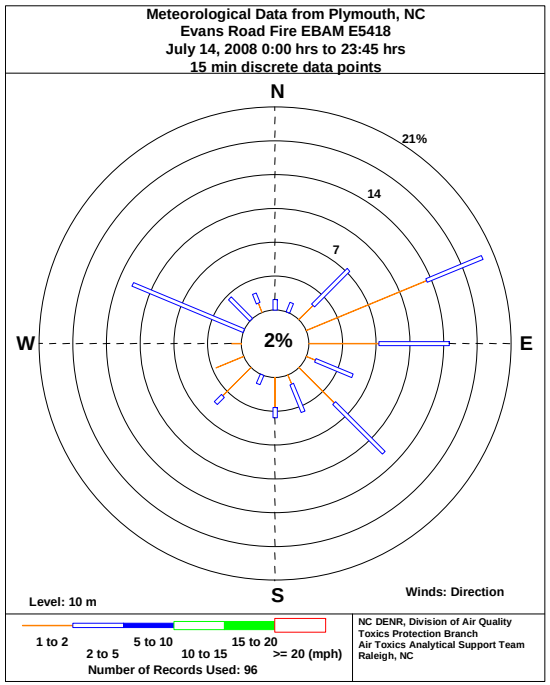
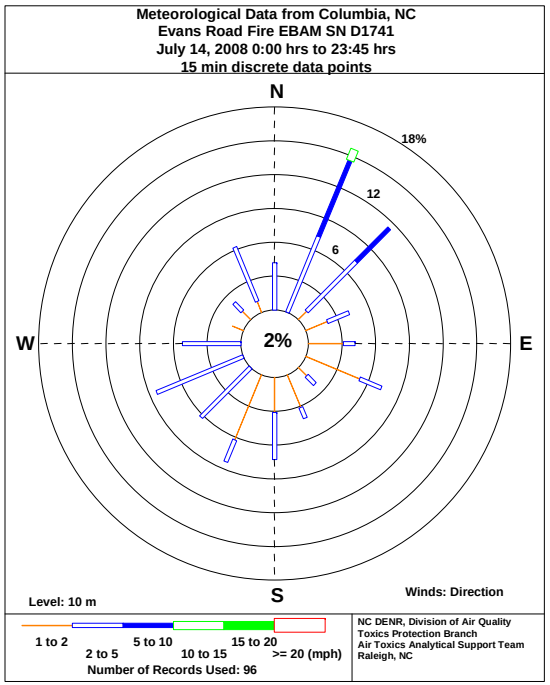
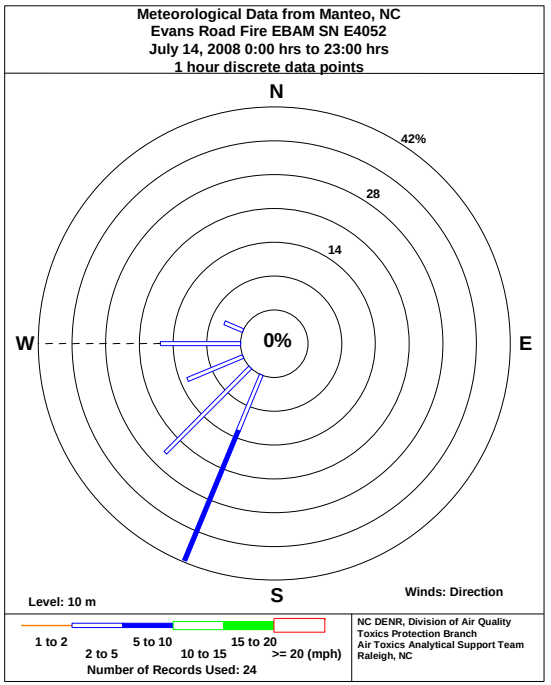
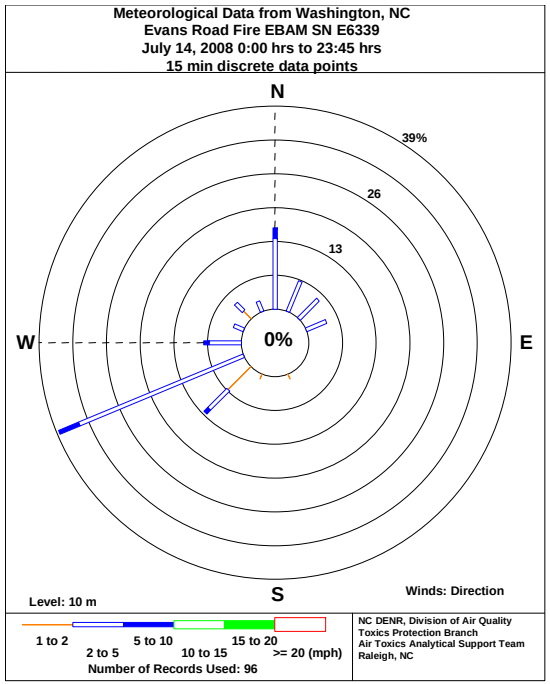


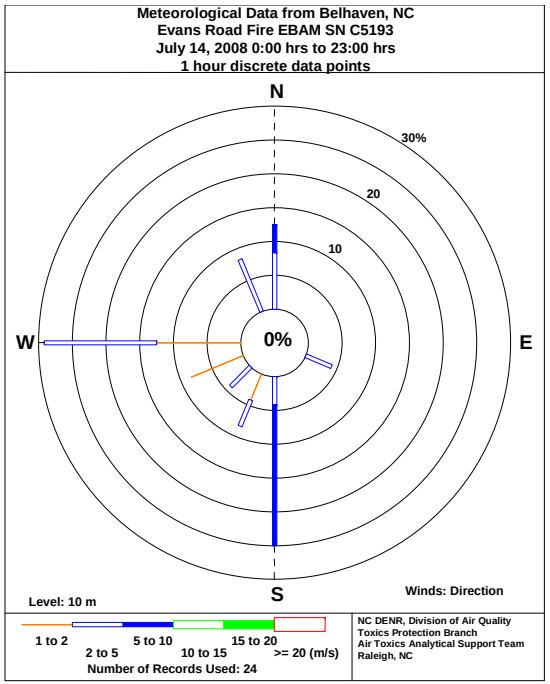
Figure C32. EBAM Monitor Meteorological Data for July 13, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











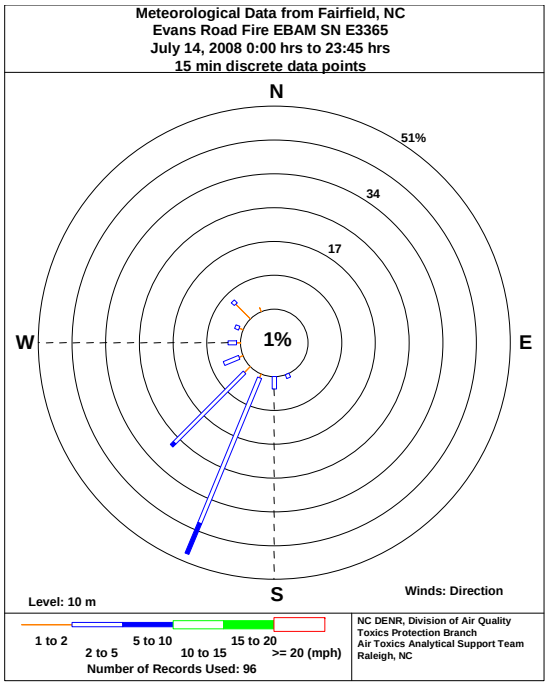
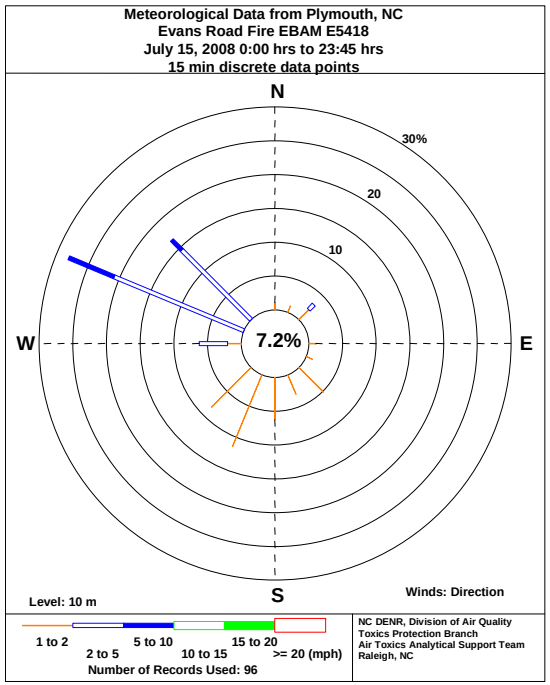
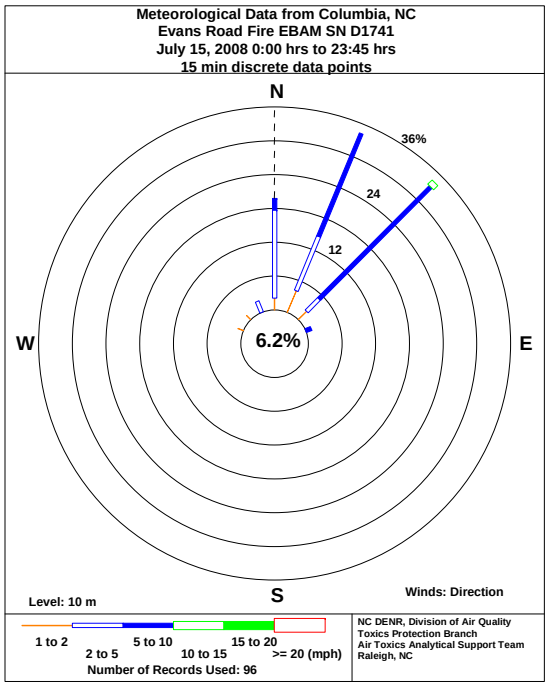
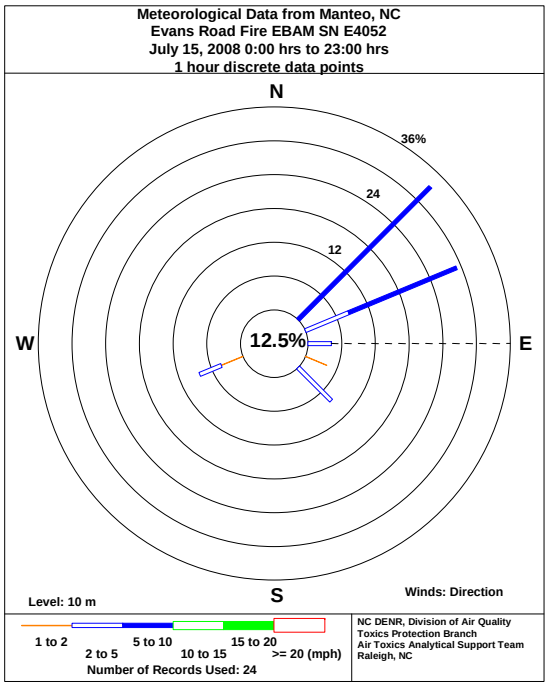
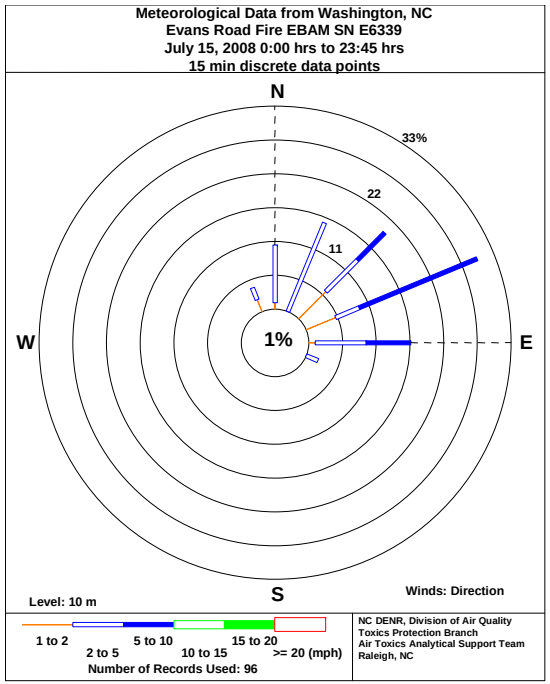


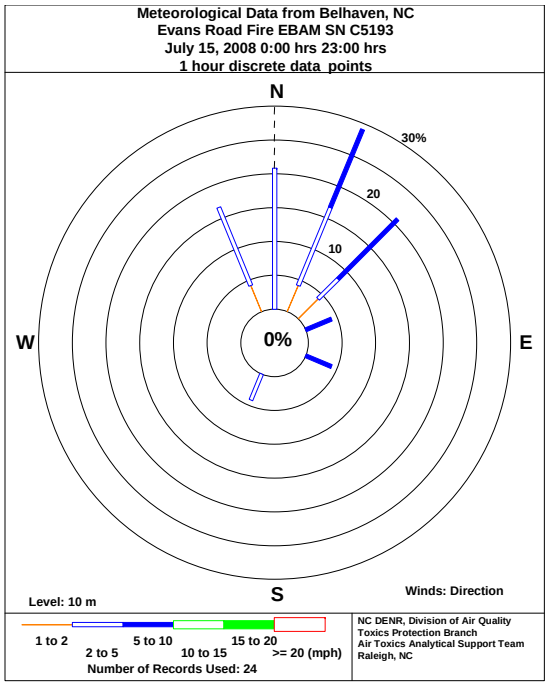
Figure C33. EBAM Monitor Meteorological Data for July 14, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











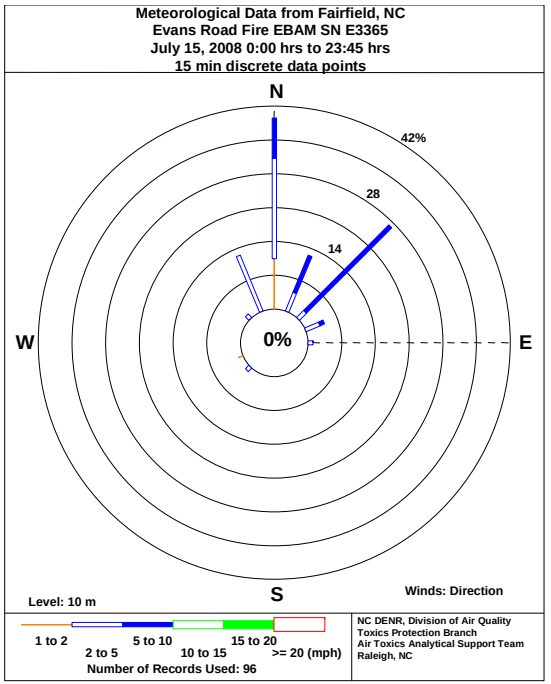
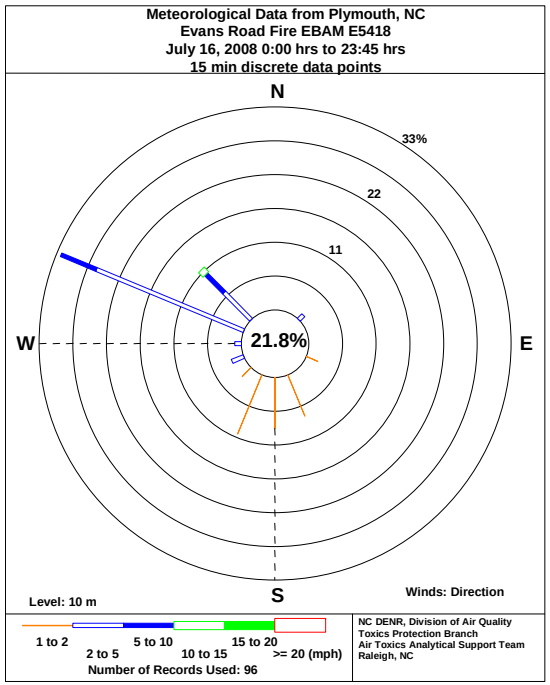
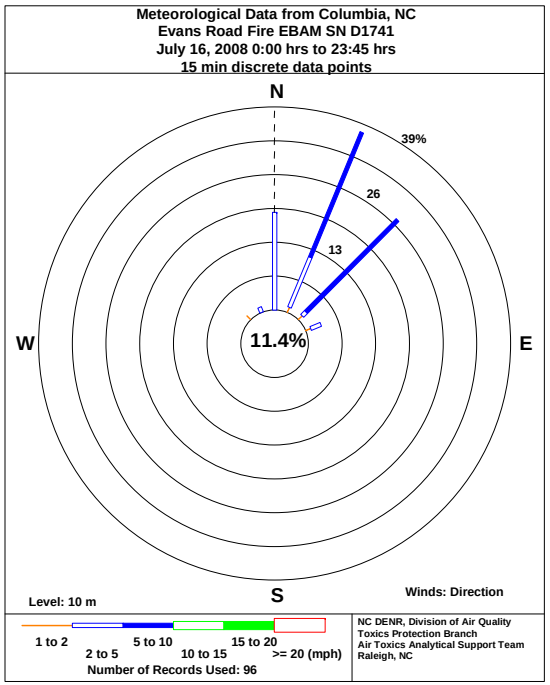
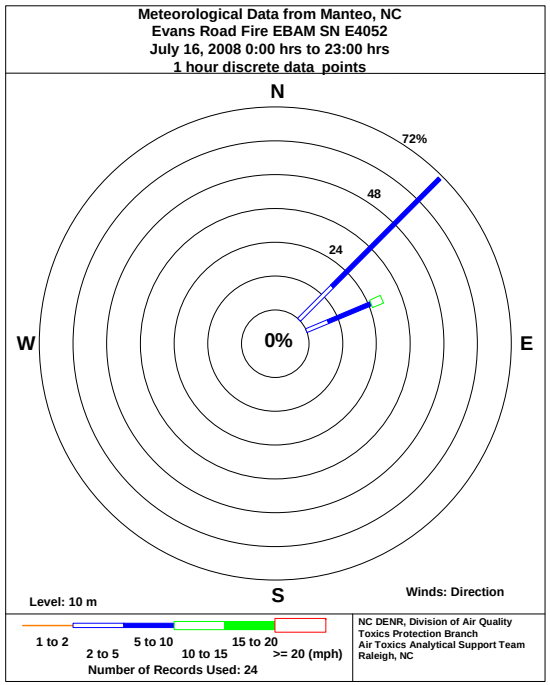
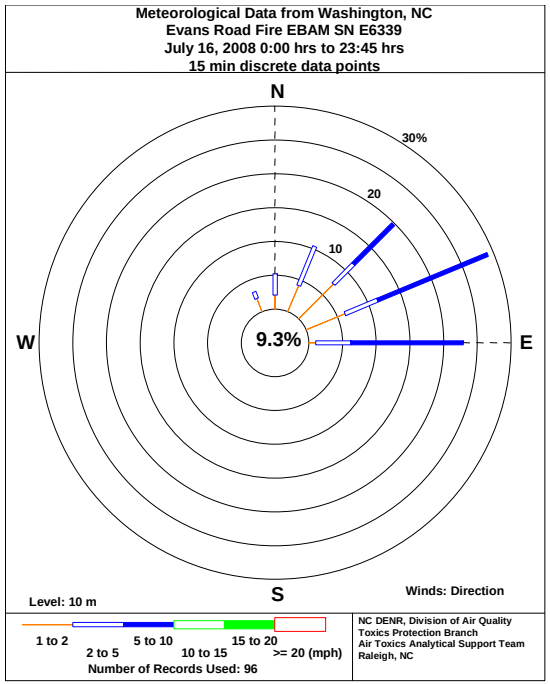


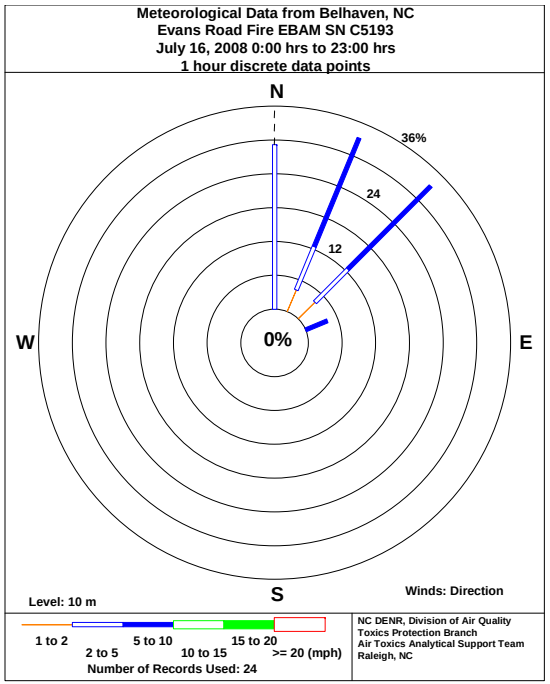
Figure C34. EBAM Monitor Meteorological Data for July 15, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











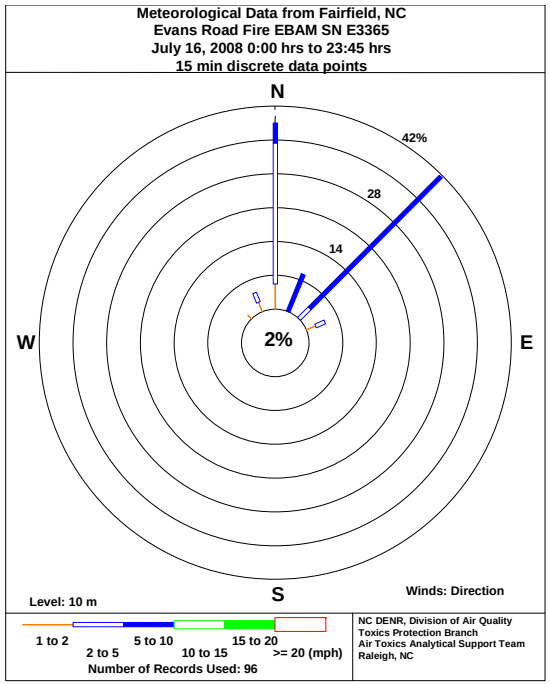
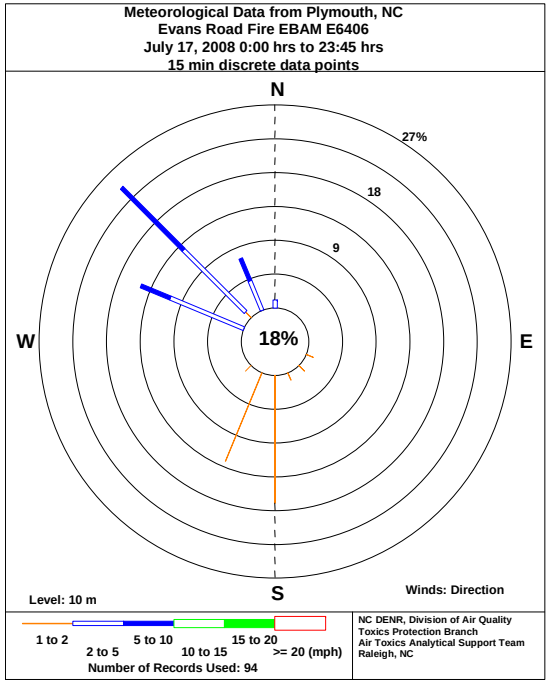
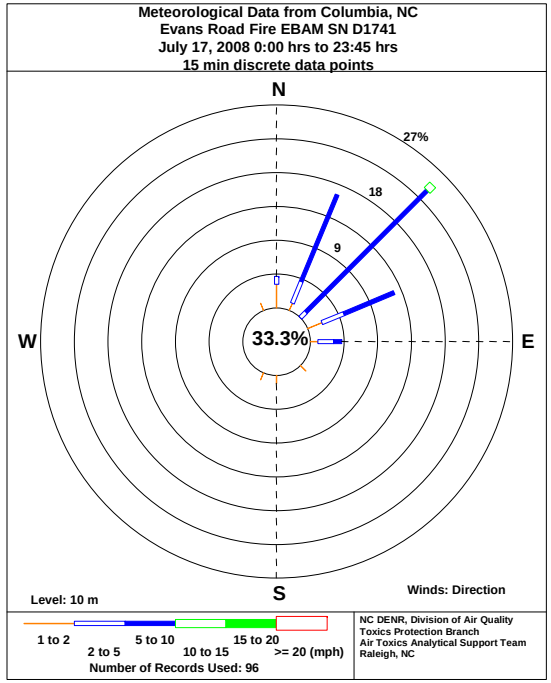
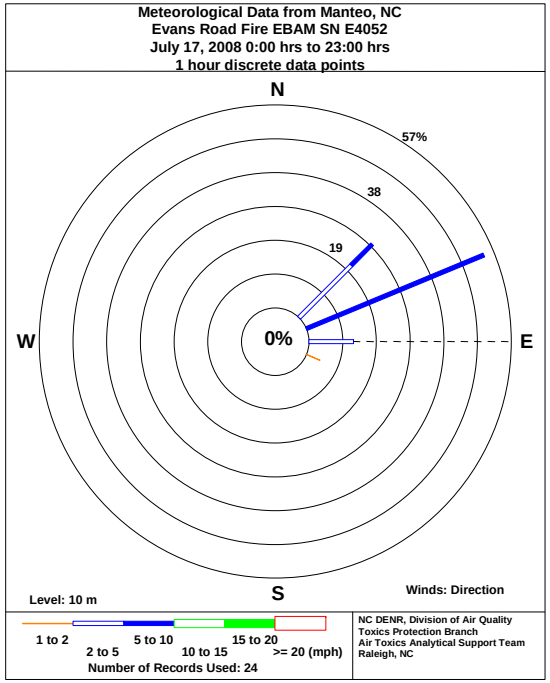
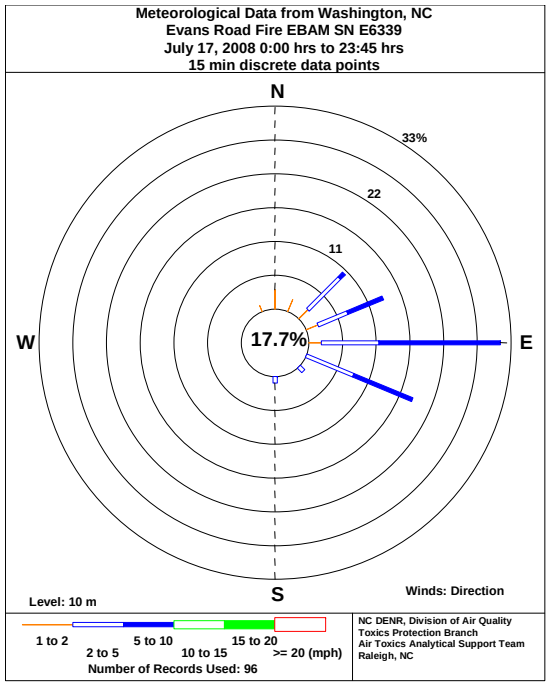


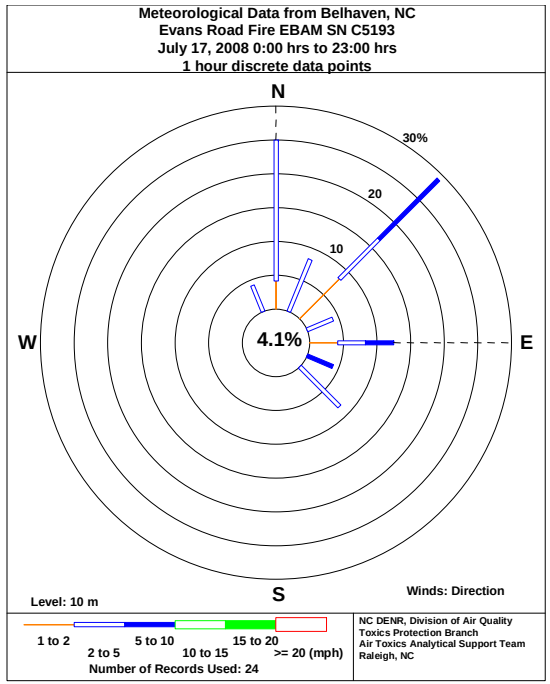
Figure C35. EBAM Monitor Meteorological Data for July 16, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











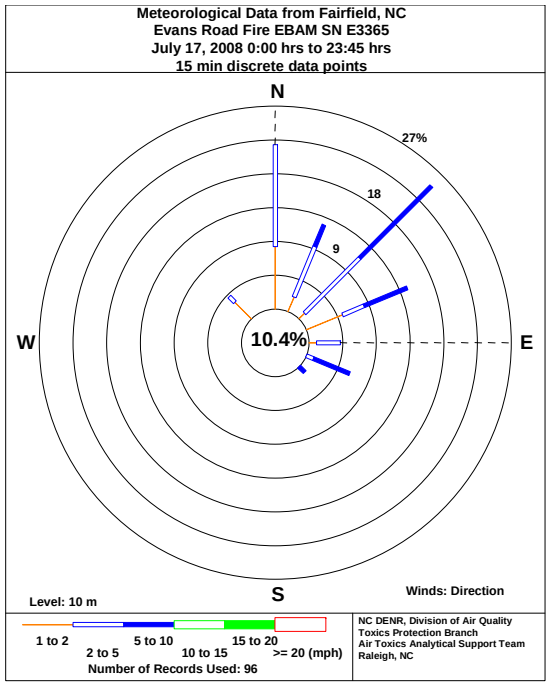
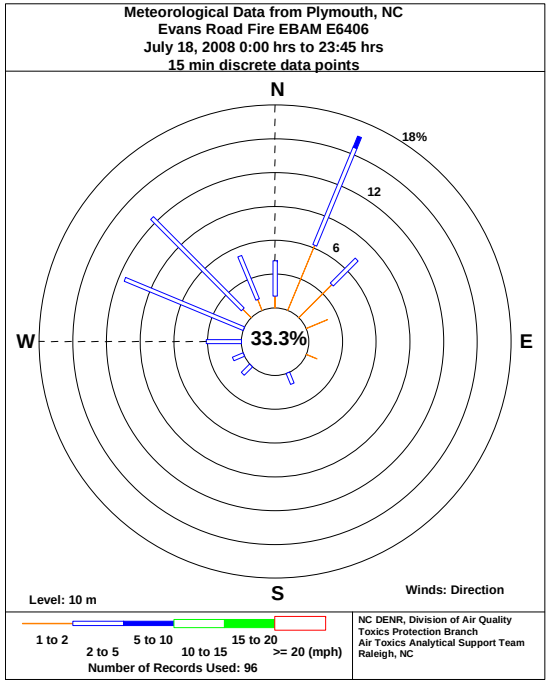
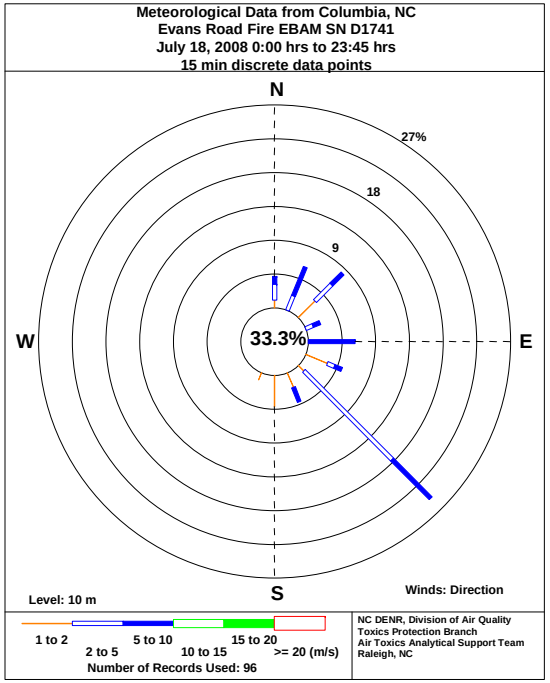
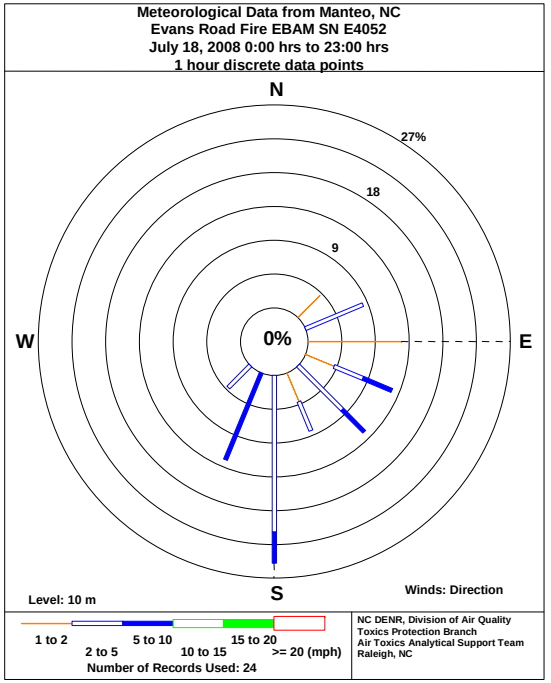
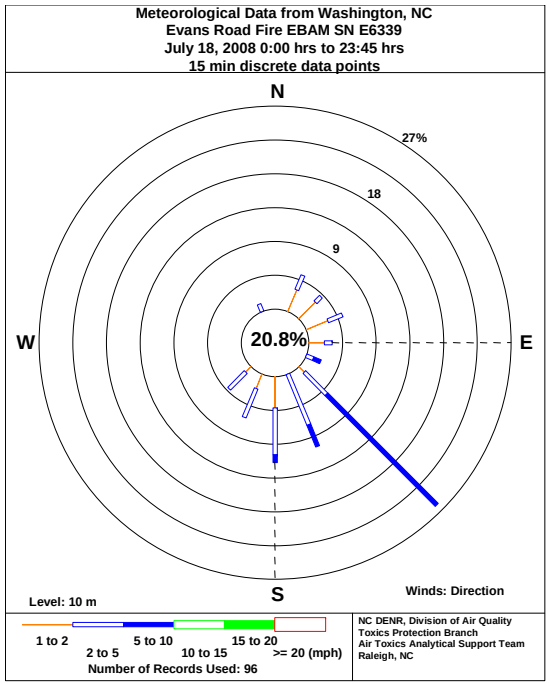


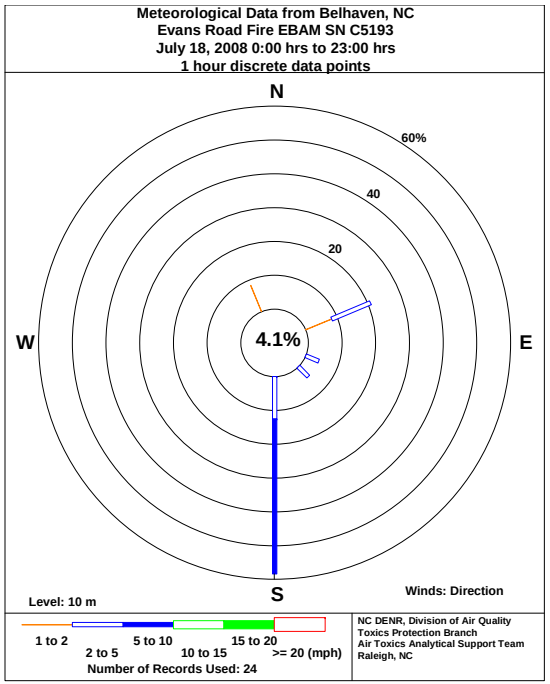
Figure C36. EBAM Monitor Meteorological Data for July 17, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











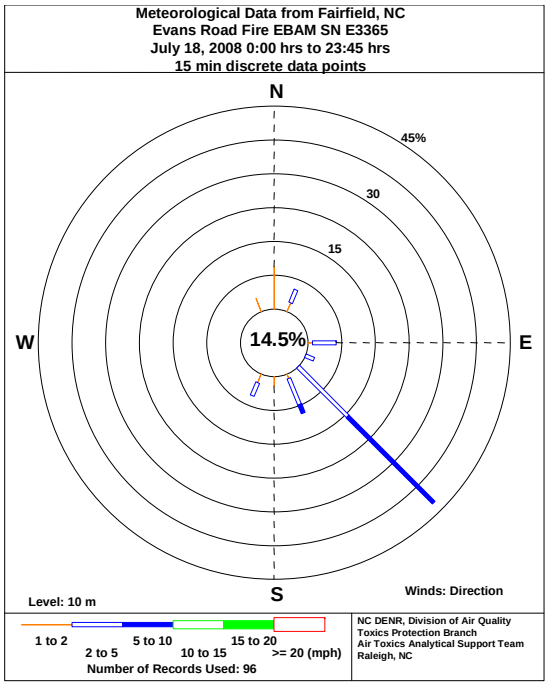
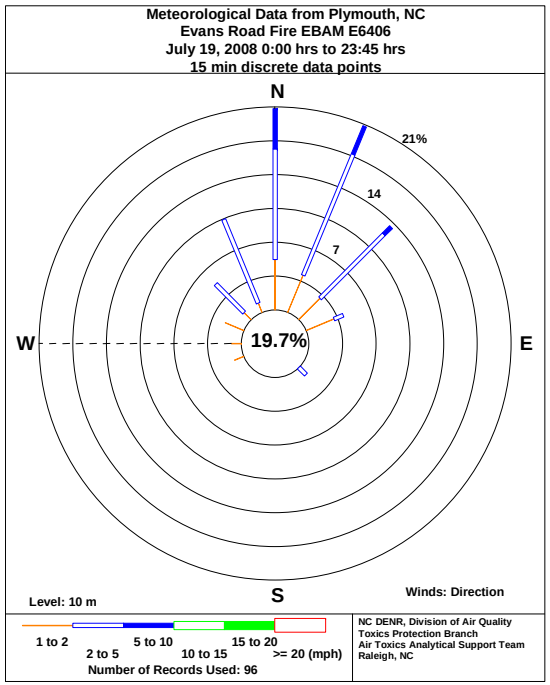
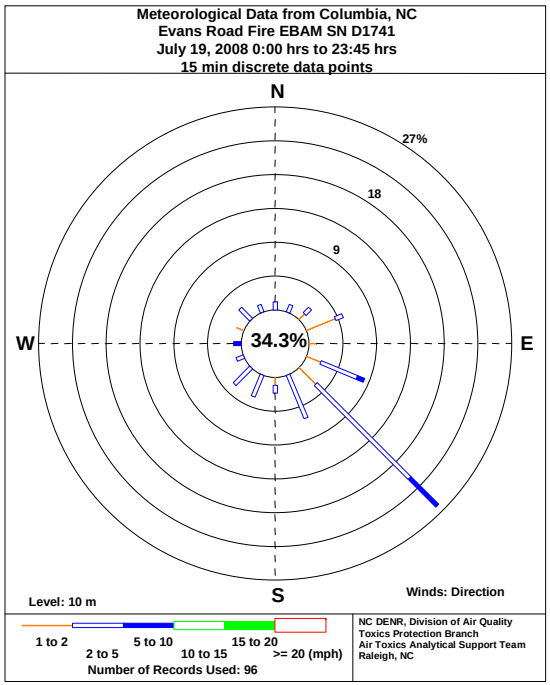
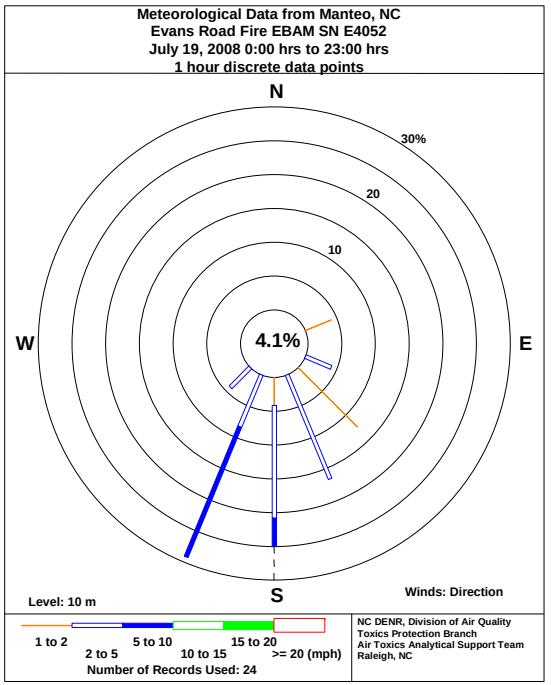
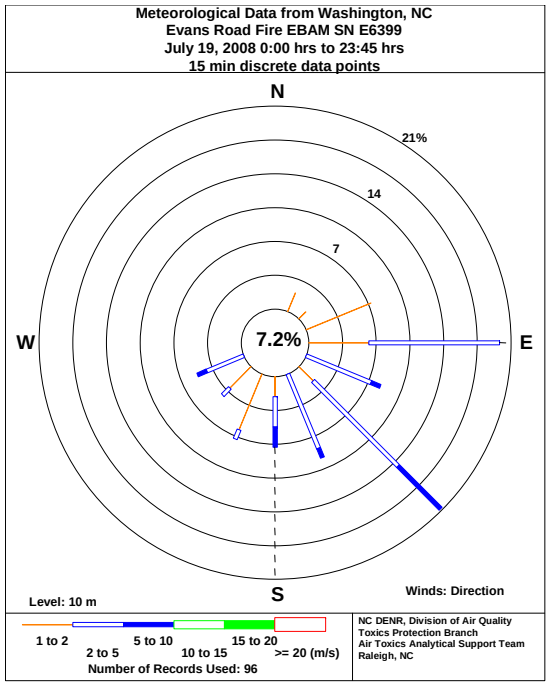


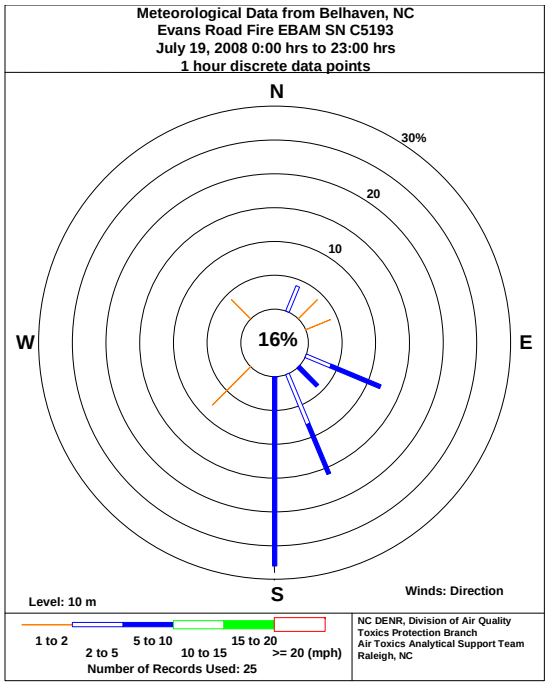
Figure C37. EBAM Monitor Meteorological Data for July 18, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











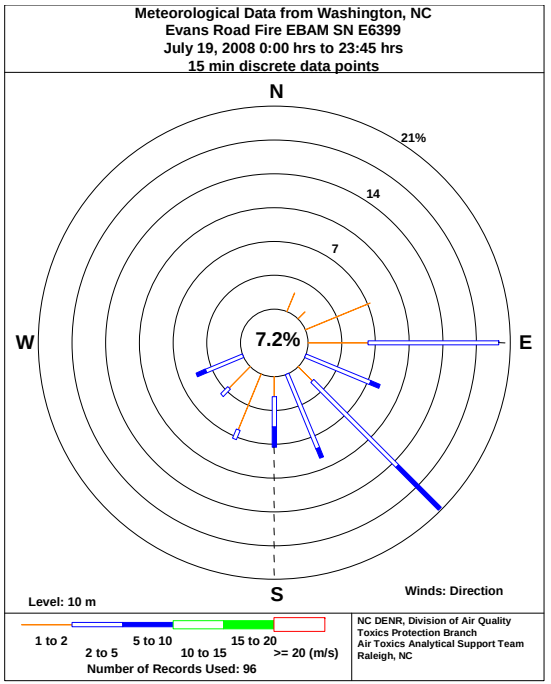
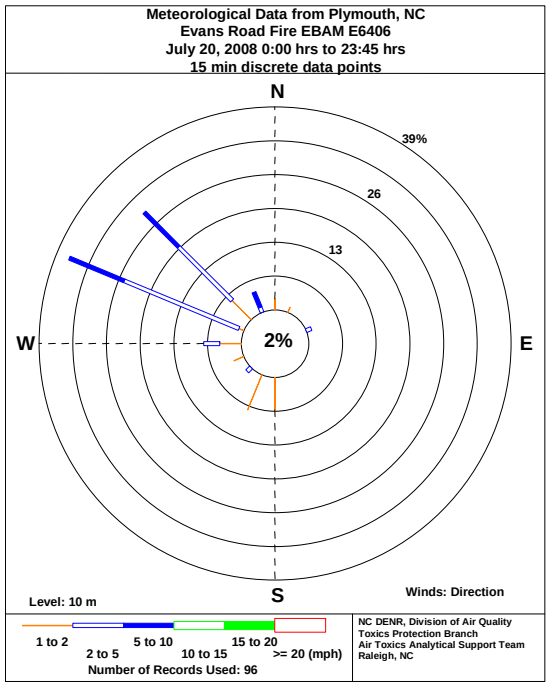
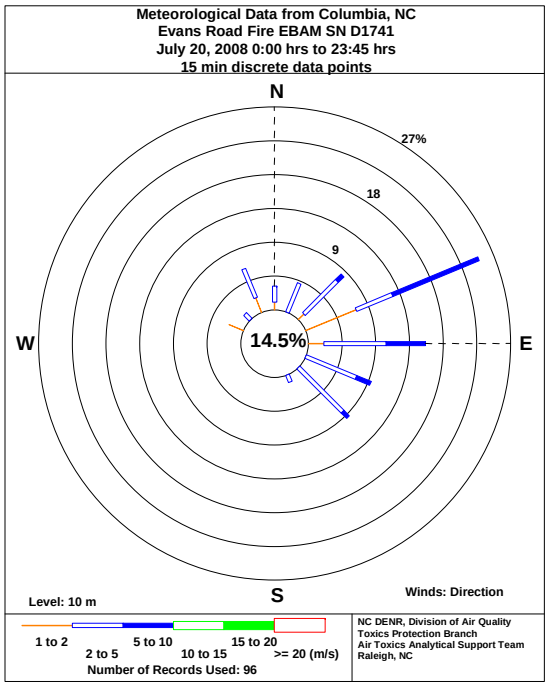
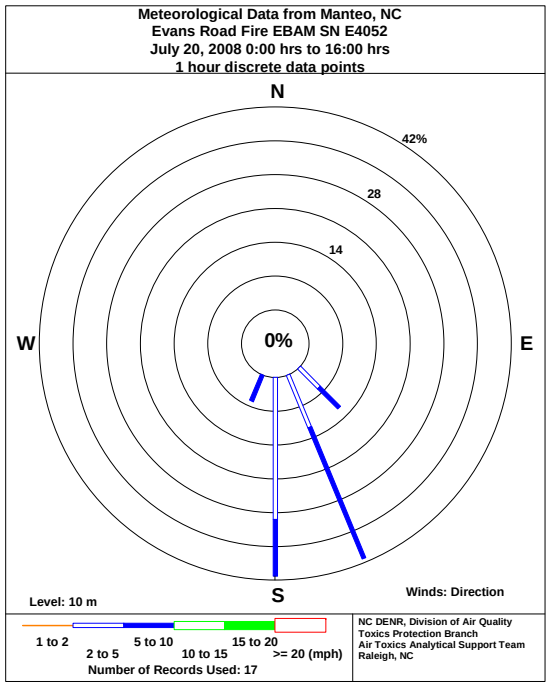
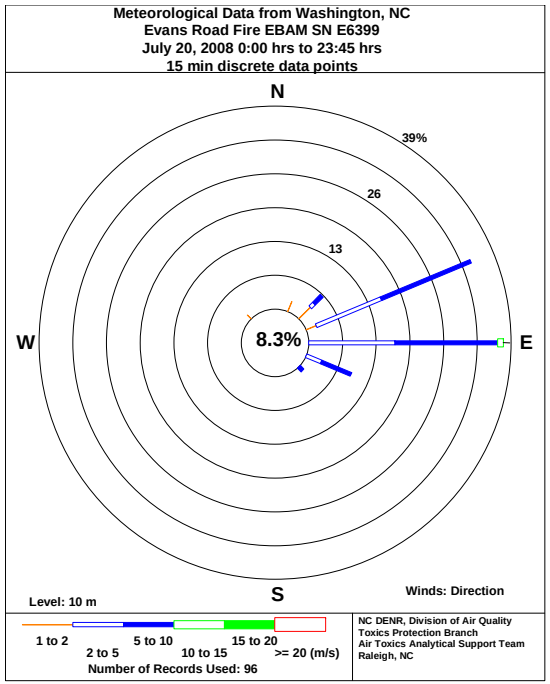


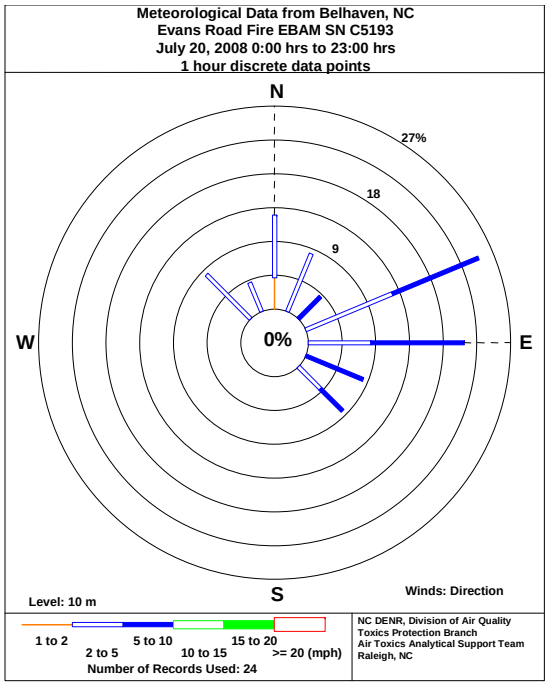
Figure C38. EBAM Monitor Meteorological Data for July 19, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











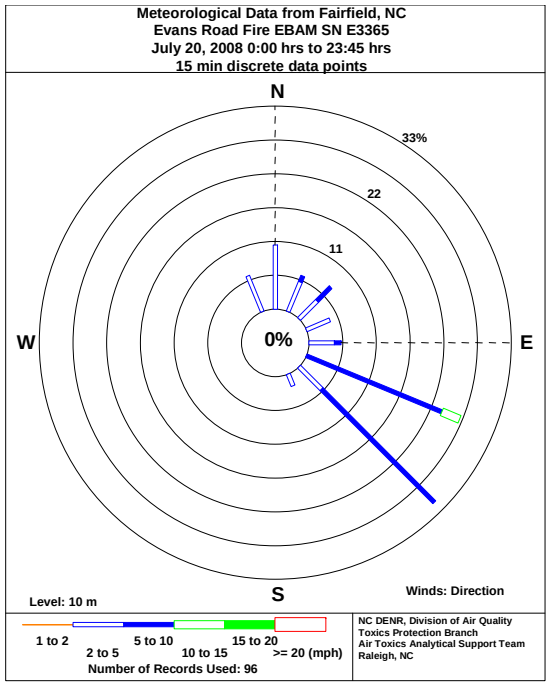
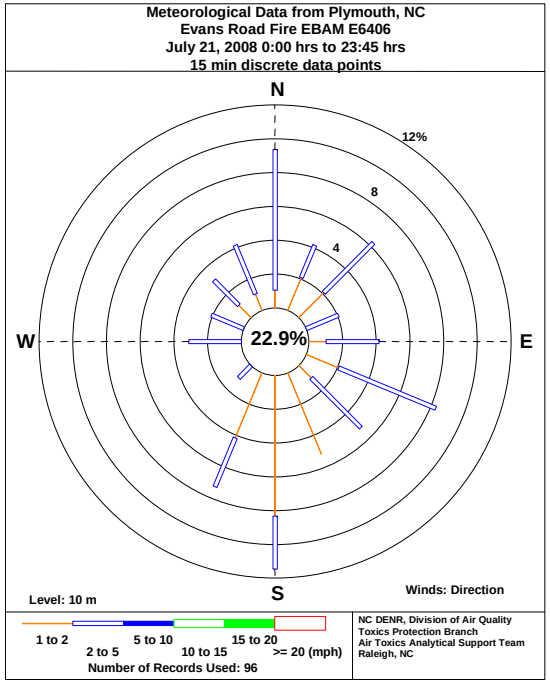
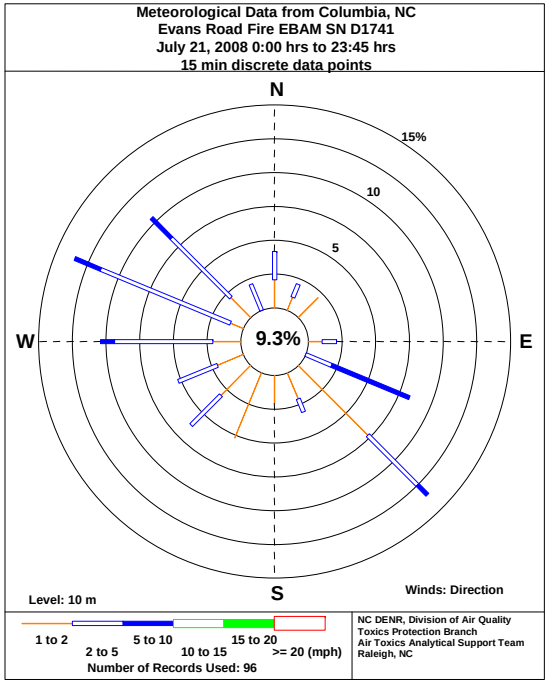
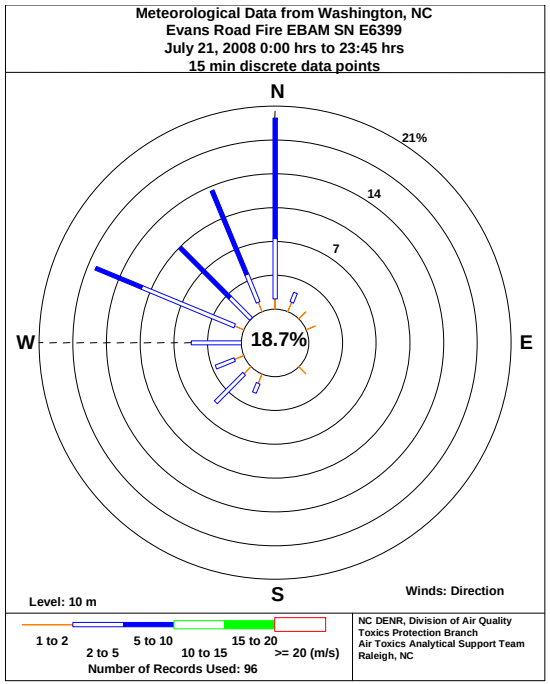


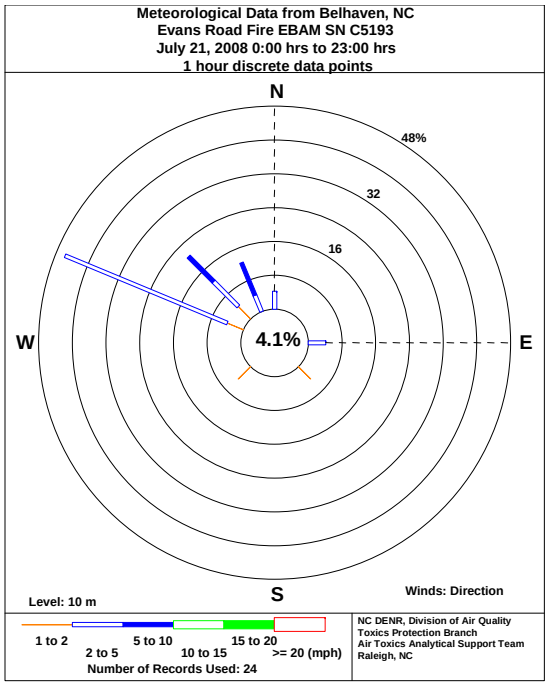
Figure C39. EBAM Monitor Meteorological Data for July 20, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC





No Observed data
From Manteo, NC
June 29, 2008





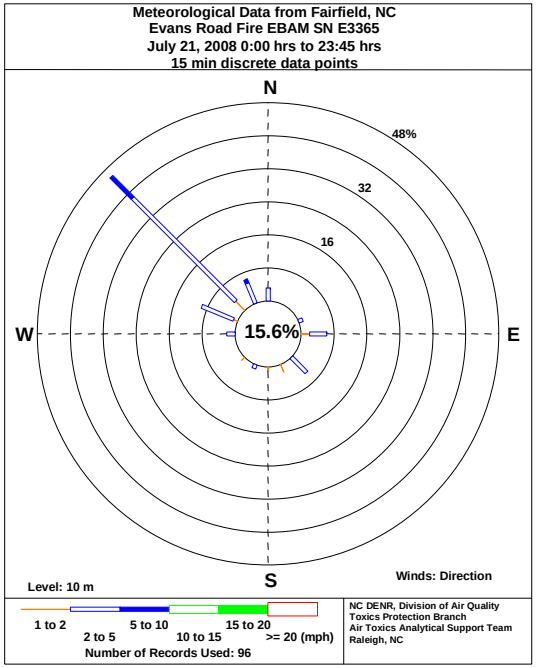
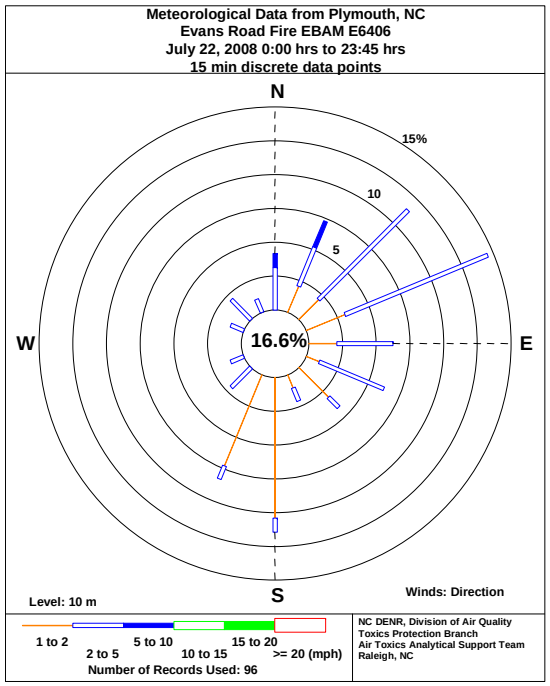
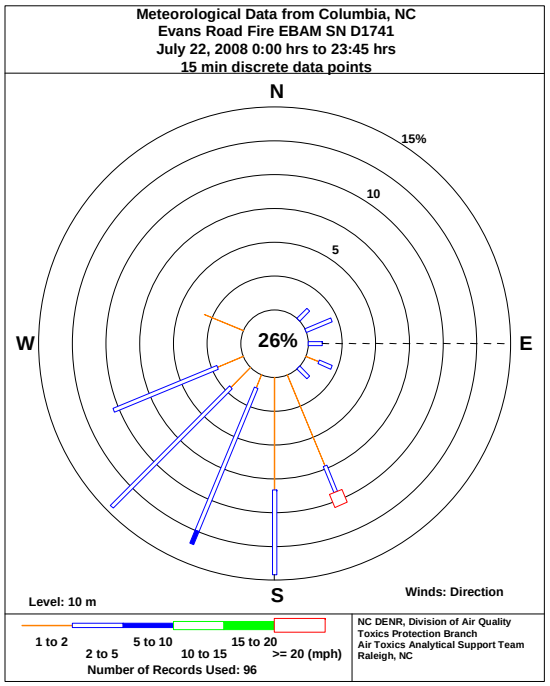
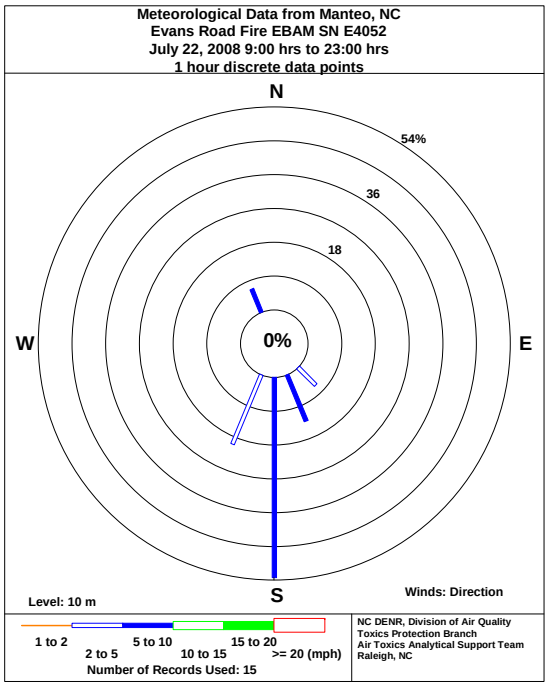
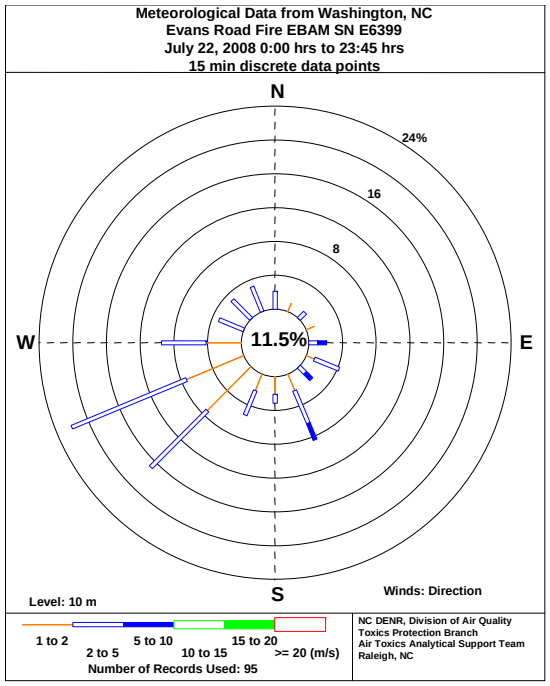


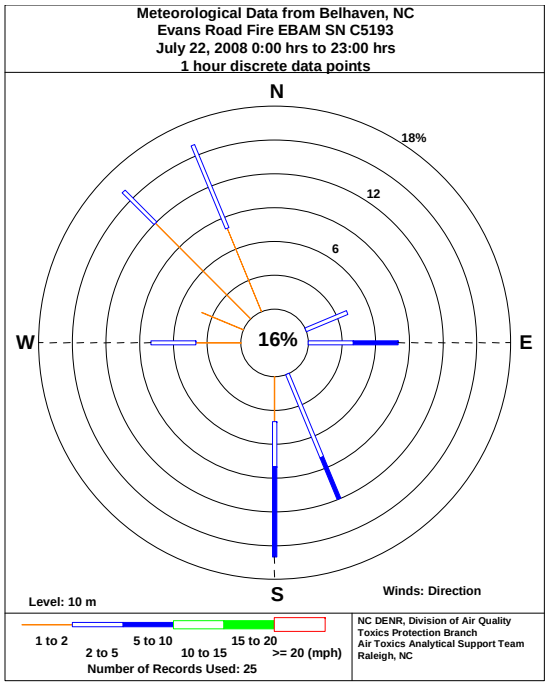
Figure C40. EBAM Monitor Meteorological Data for July 21, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











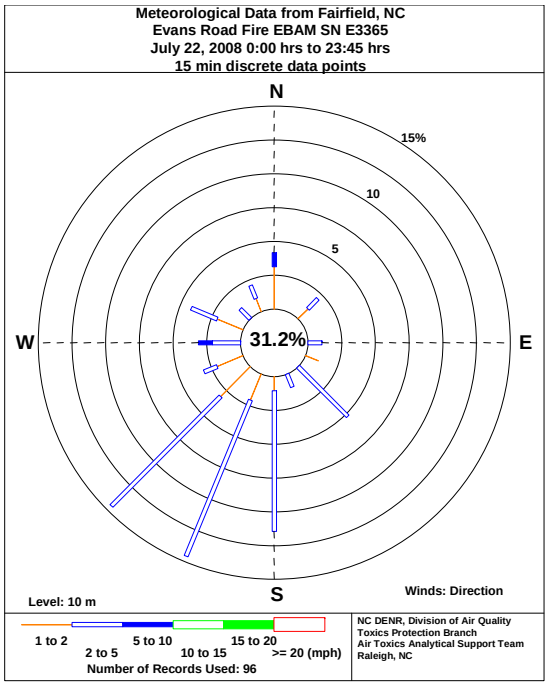
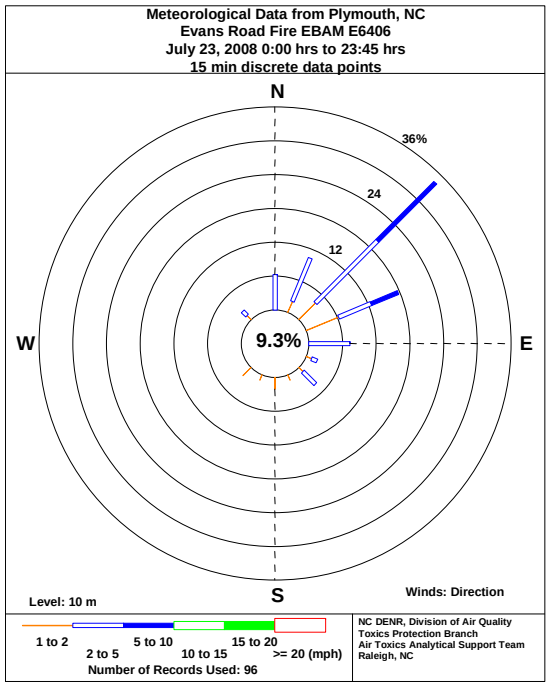
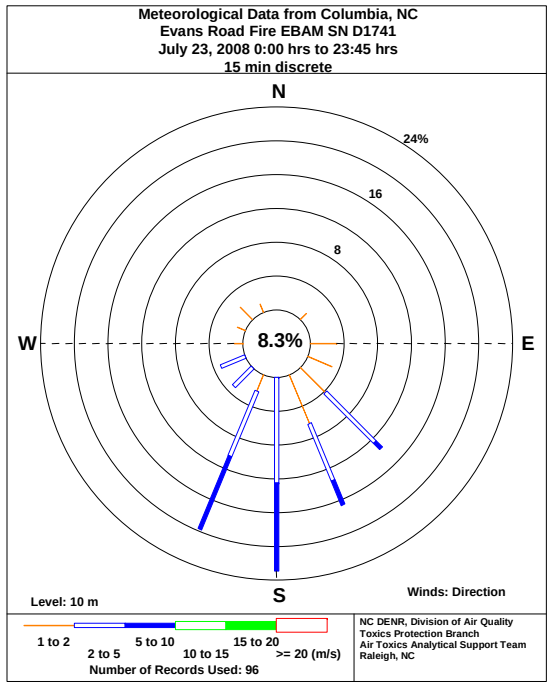
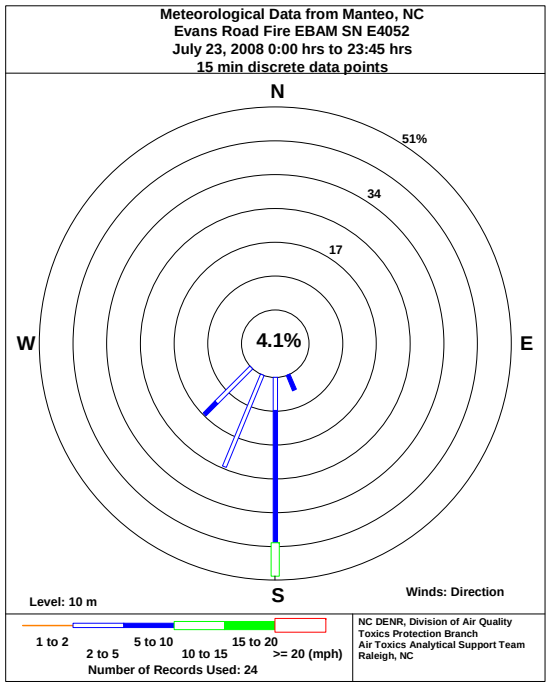
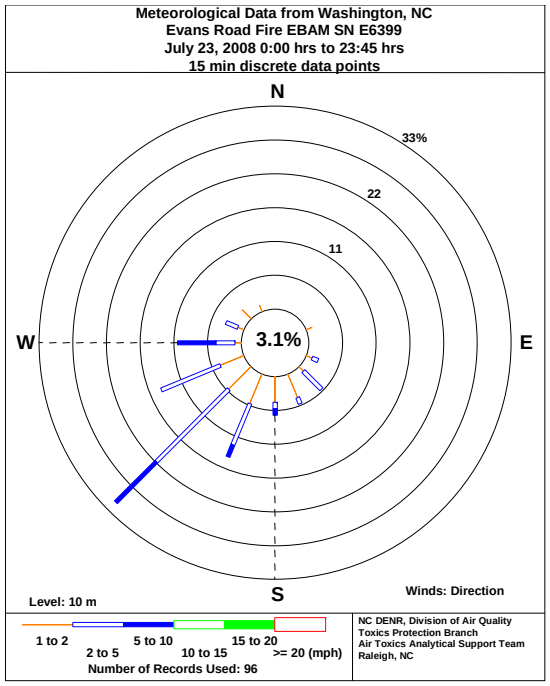


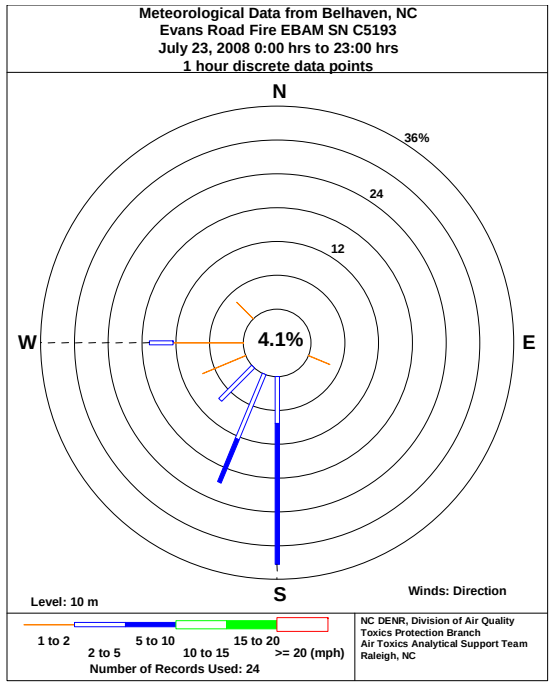
Figure C41. EBAM Monitor Meteorological Data for July 22, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











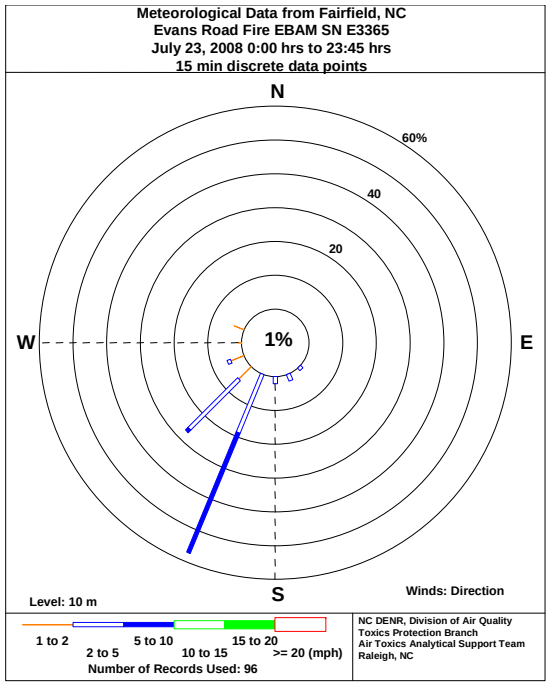
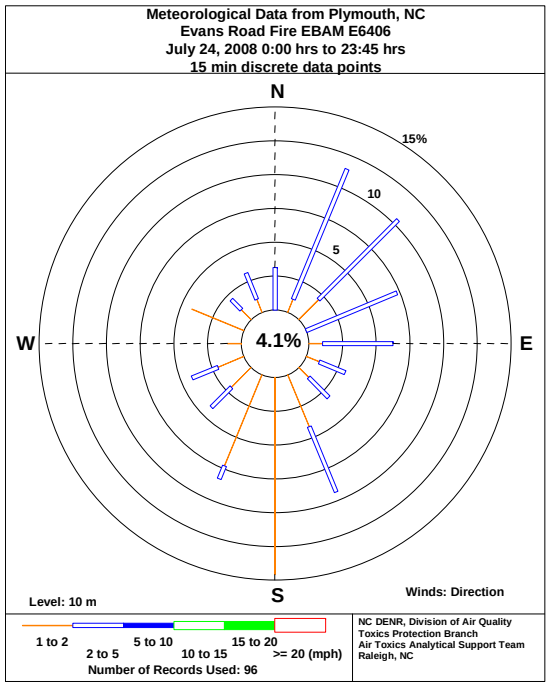
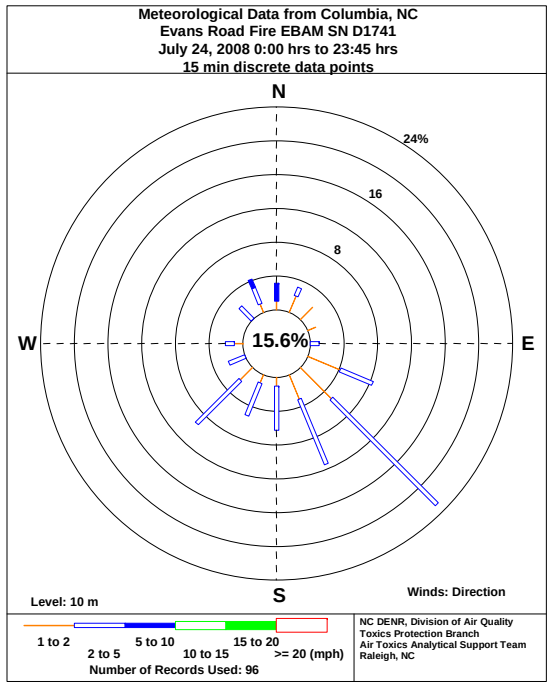
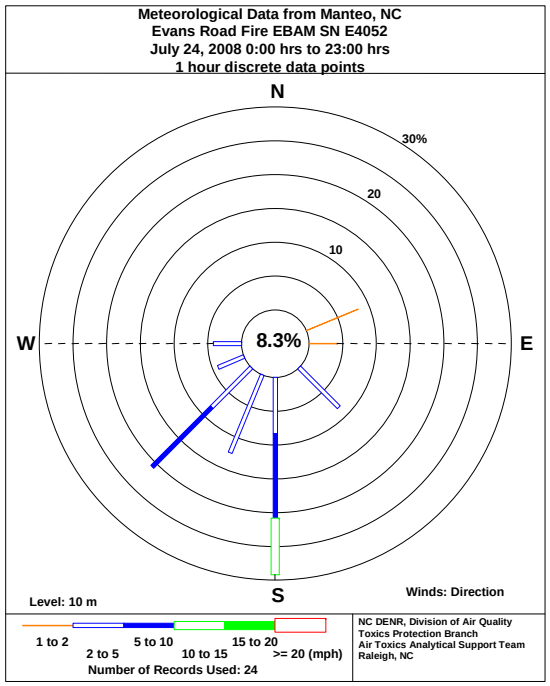
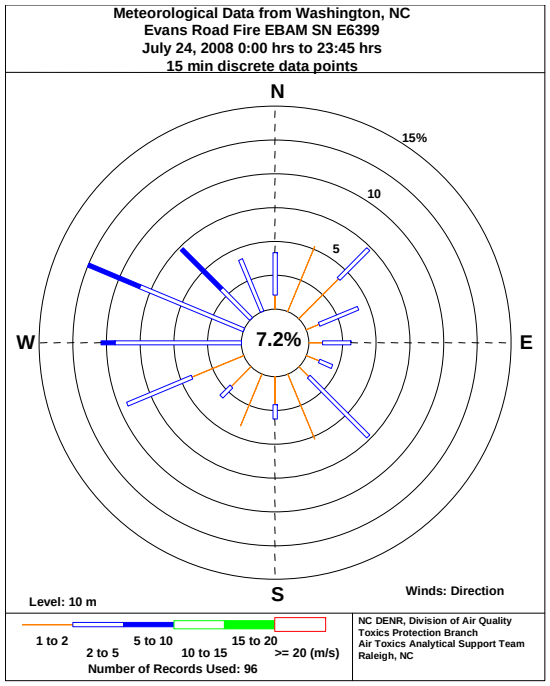


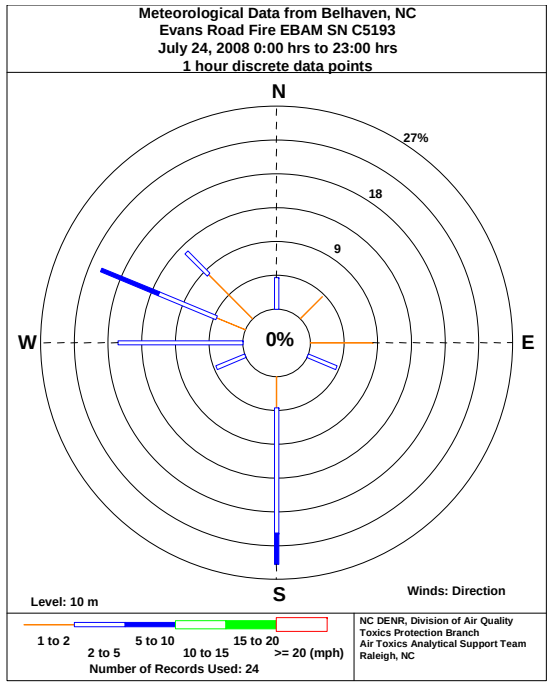
Figure C42. EBAM Monitor Meteorological Data for July 23, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











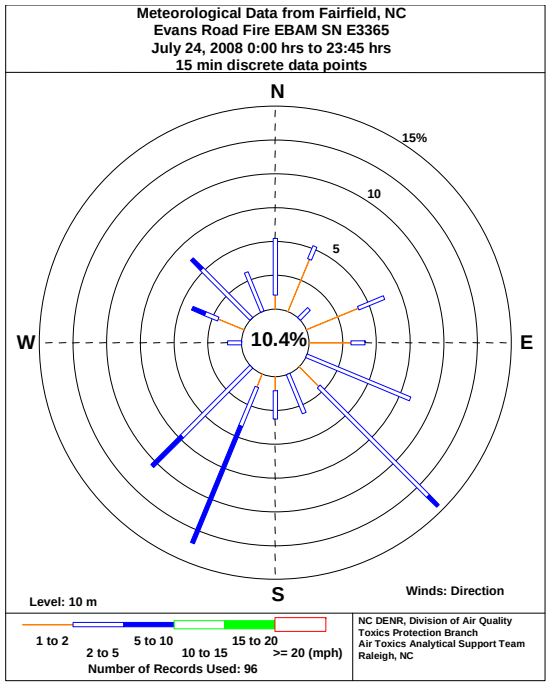
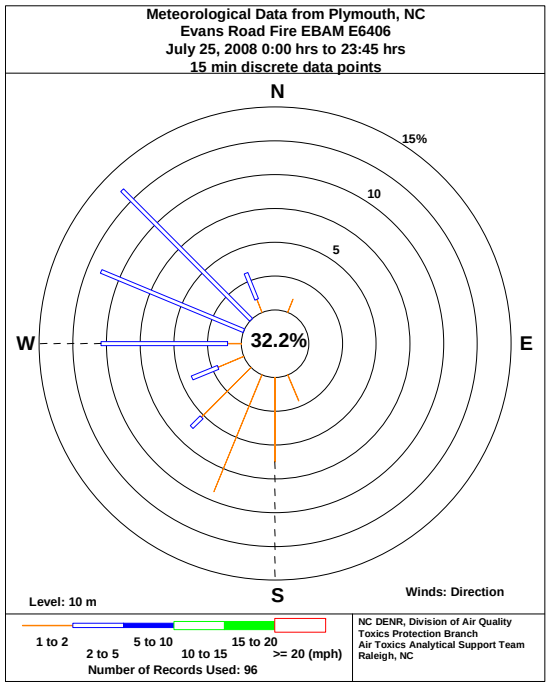
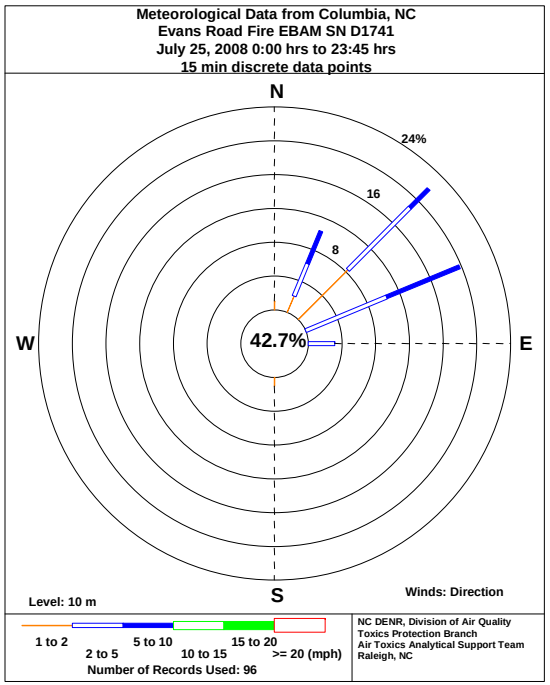
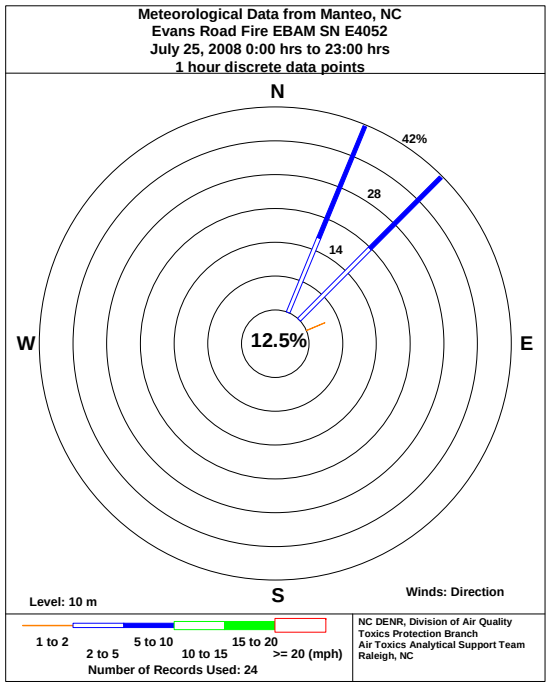
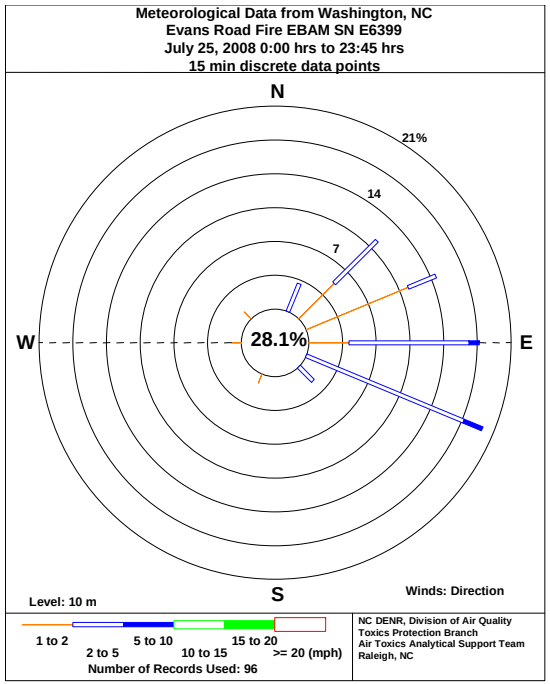


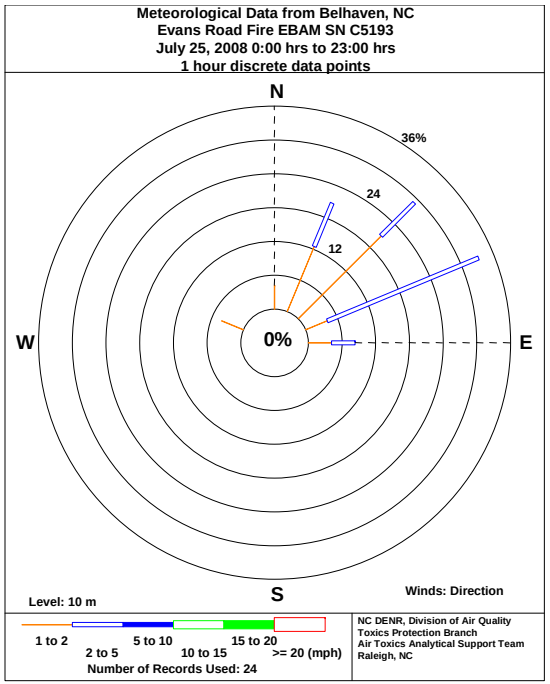
Figure C43. EBAM Monitor Meteorological Data for July 24, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











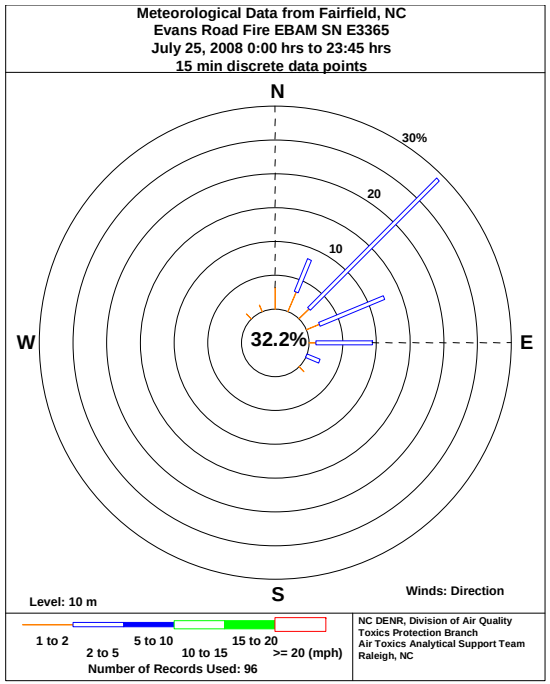


Figure C44. EBAM Monitor Meteorological Data for July 25, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC

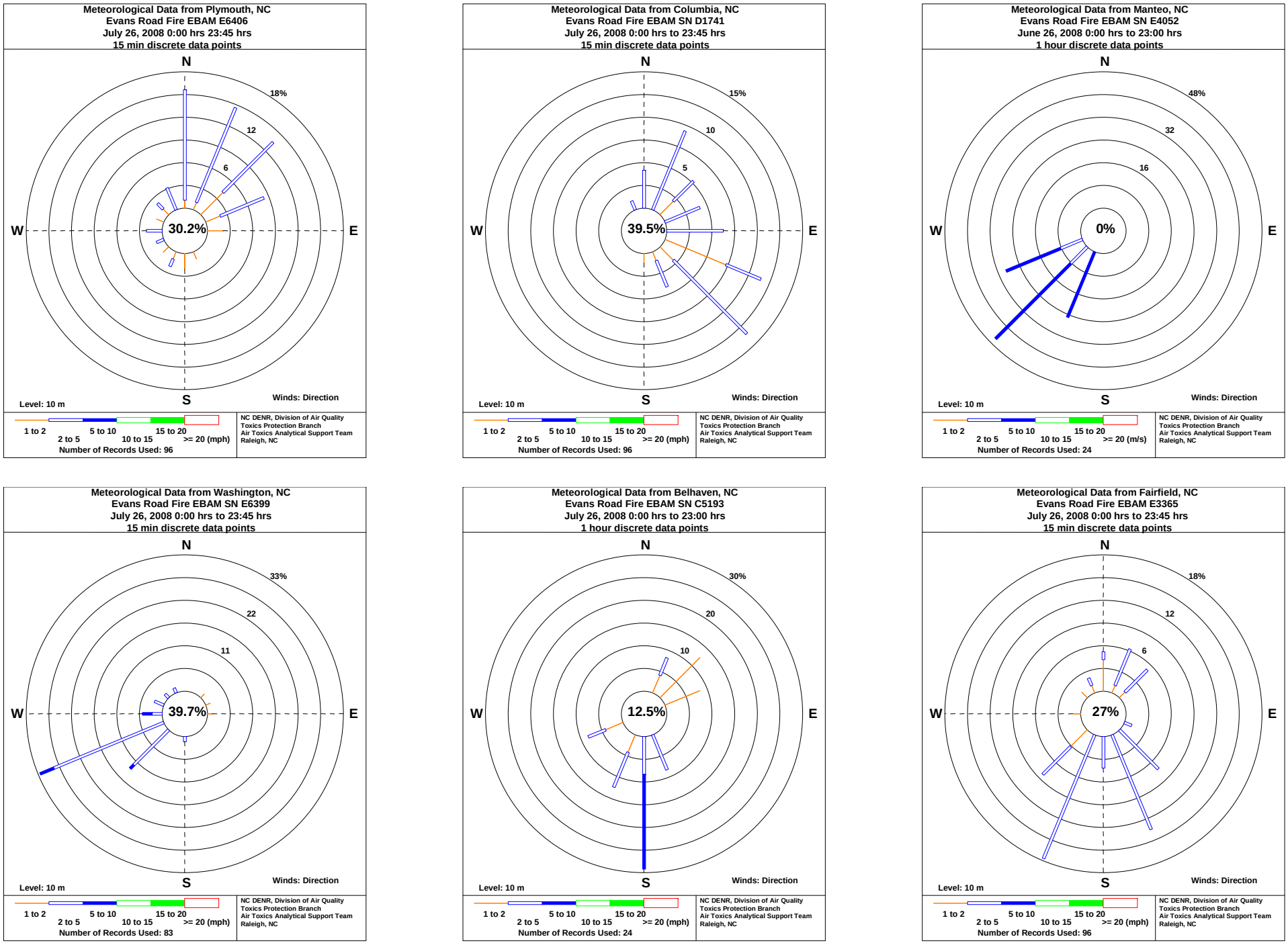
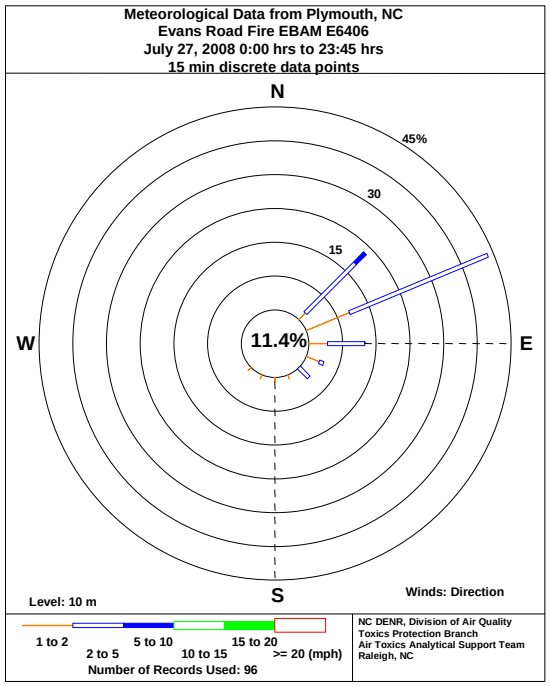
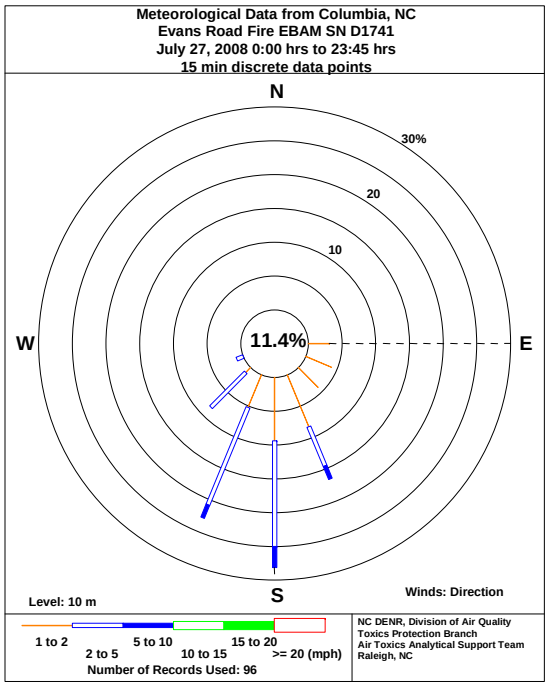
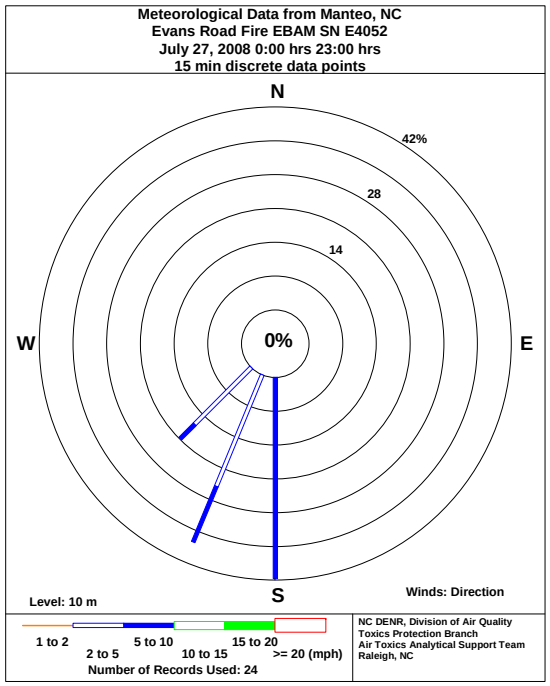
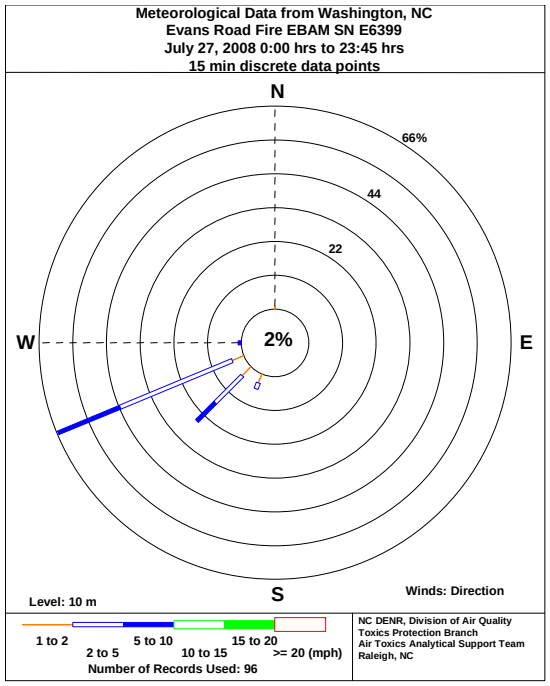


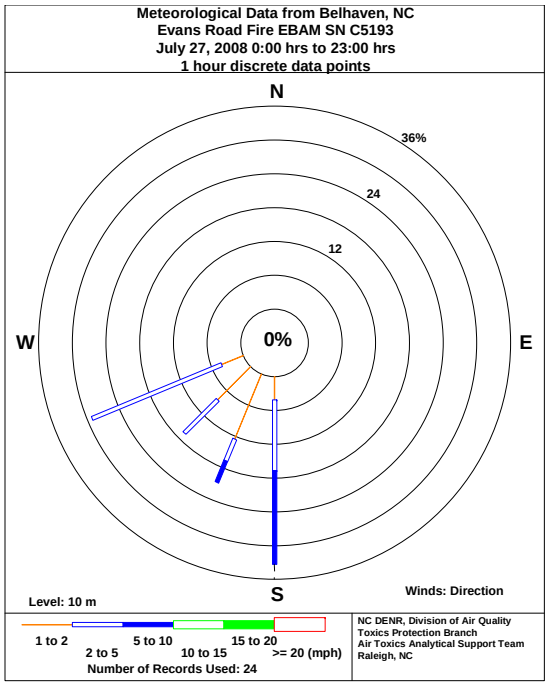
Figure C45. EBAM Monitor Meteorological Data for July 26, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











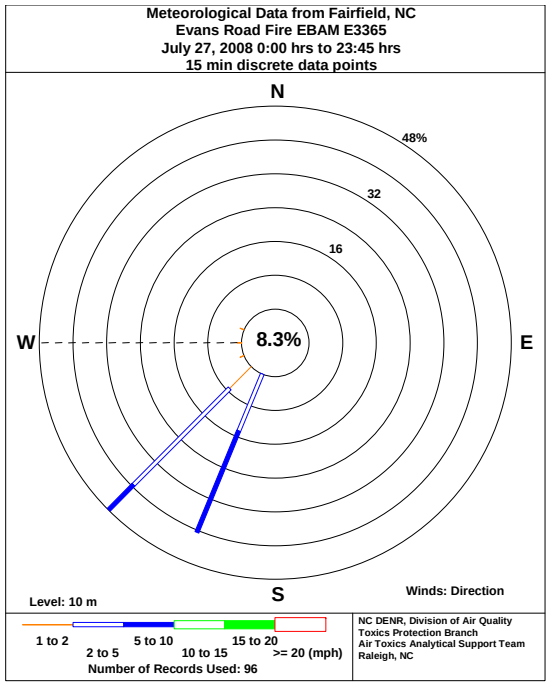
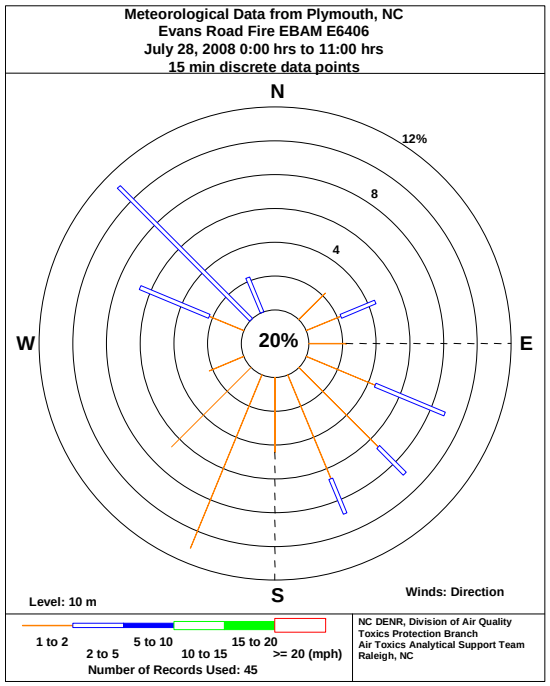
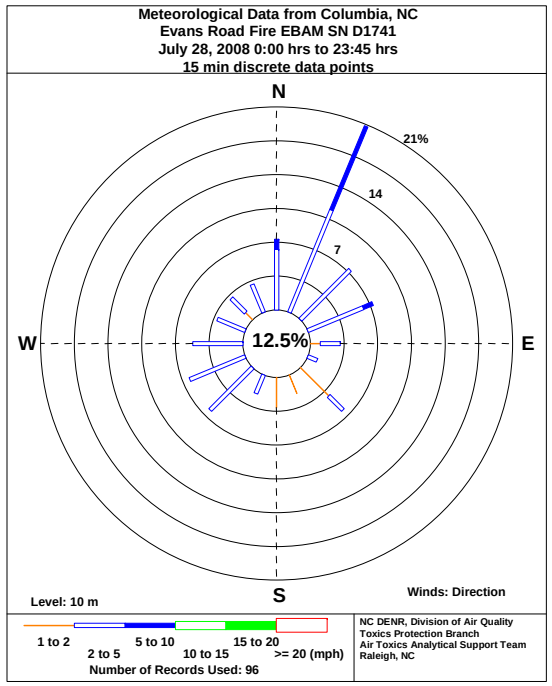
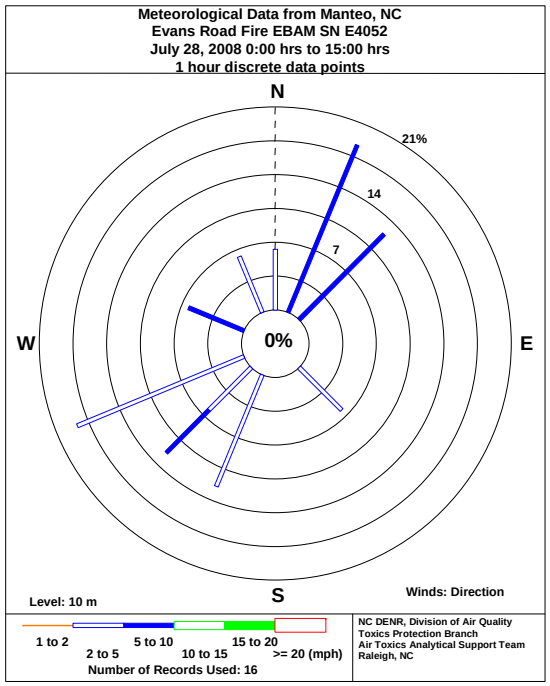
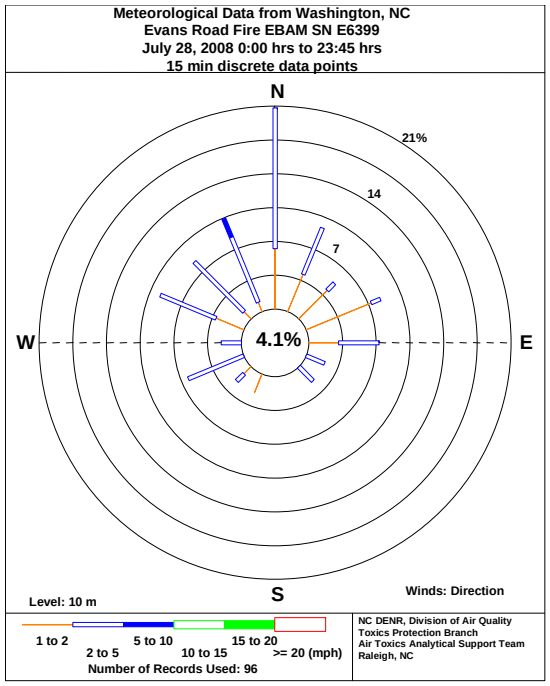


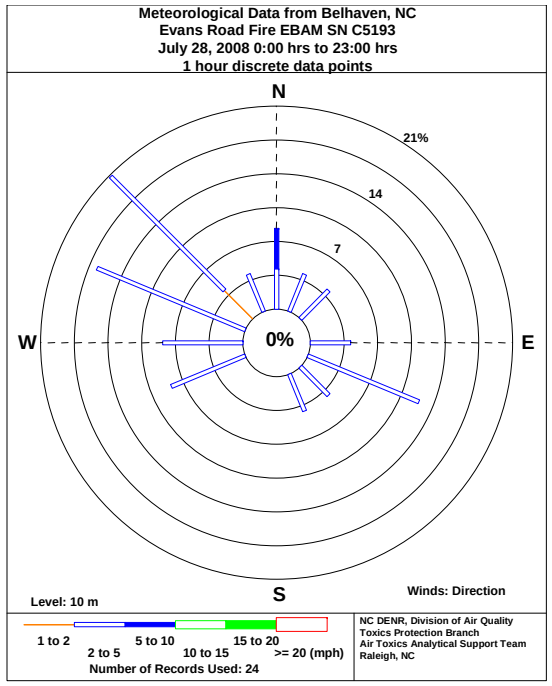
Figure C46. EBAM Monitor Meteorological Data for July 27, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC











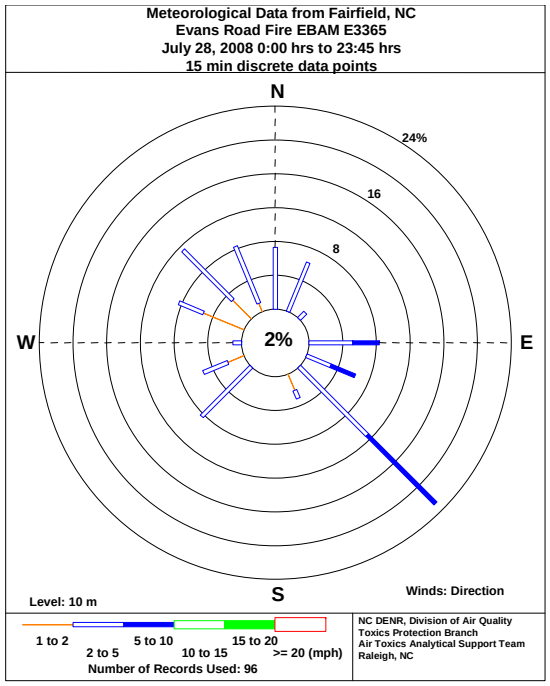
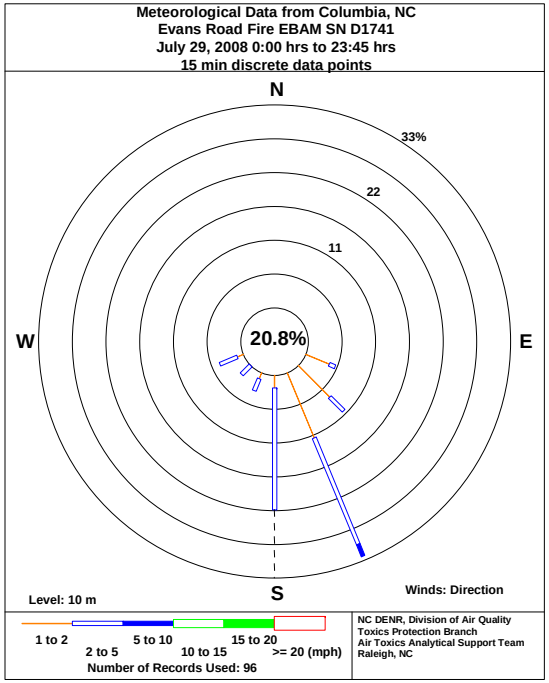
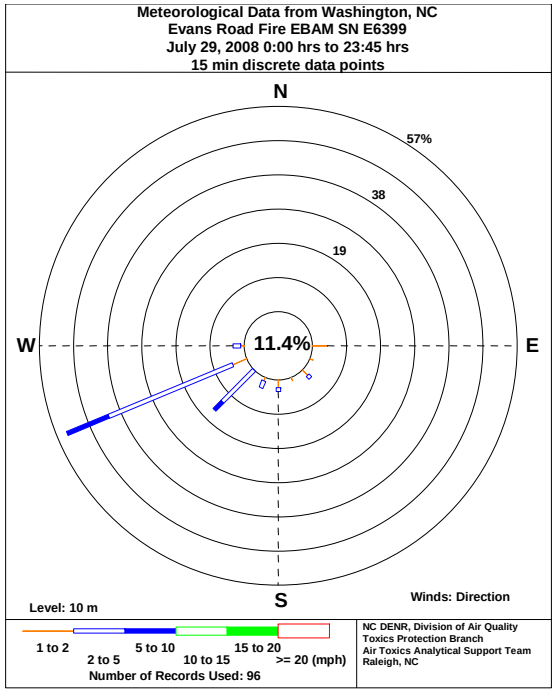


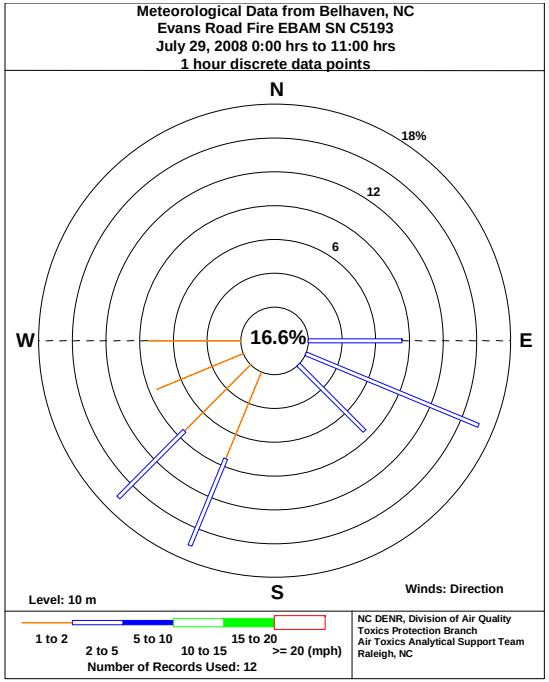
Figure C47. EBAM Monitor Meteorological Data for July 28, 2008 at Belhaven, Columbia, Fairfield, Manteo, Plymouth and Washington NC

No Observed DATA
From Plymouth, NC
July 29, 2008



No Observed DATA
From Manteo, NC
July 29, 2008





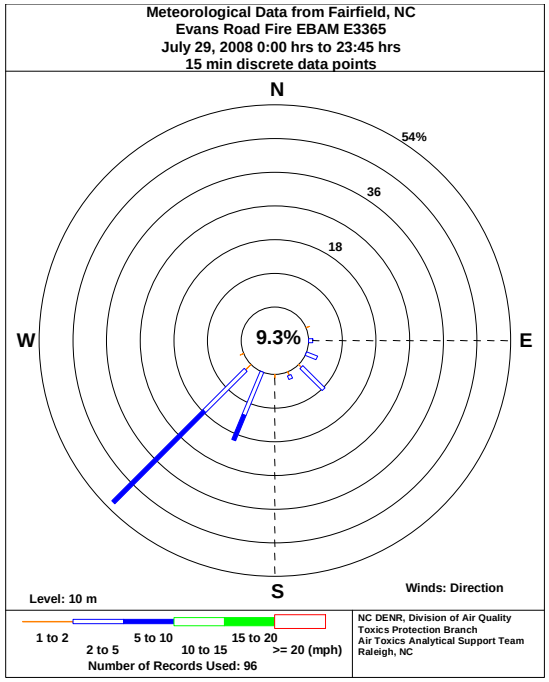
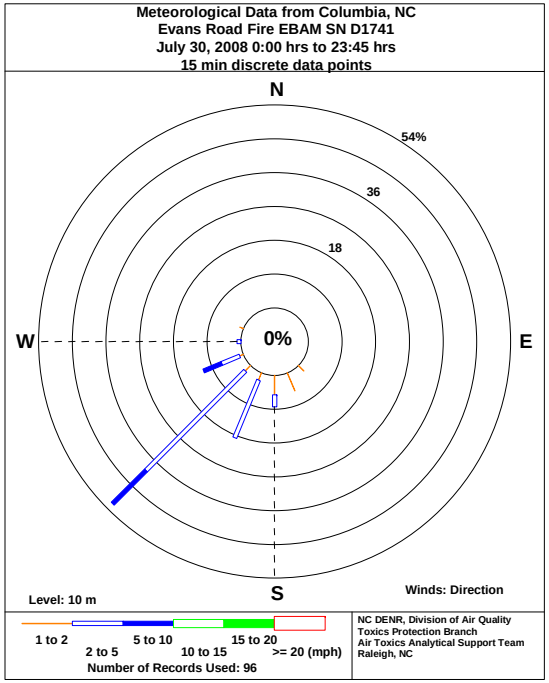
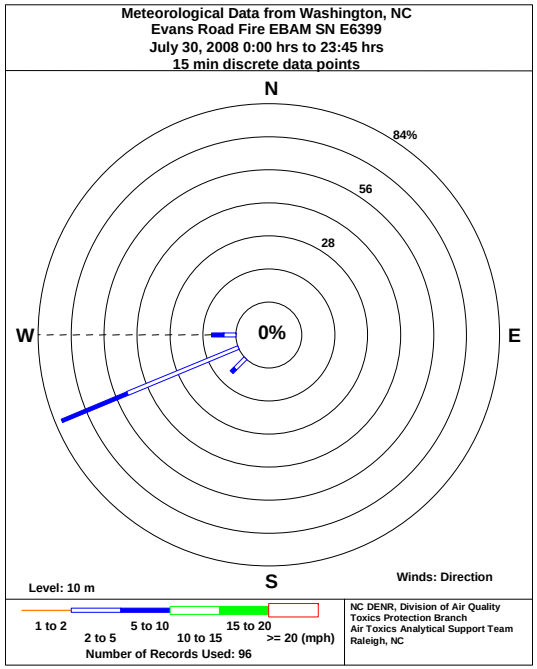


Figure C48. EBAM Monitor Meteorological Data for July 29, 2008 at Belhaven, Columbia, Fairfield, and Washington NC

No Observed DATA
From Plymouth, NC
July 30, 2008



No Observed DATA
From Manteo, NC
July 30, 2008



No Observed DATA
From Belhaven, NC
July 30, 2008

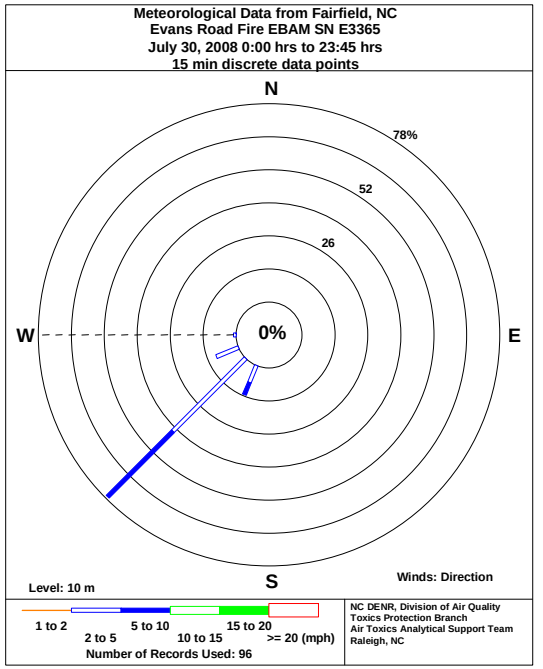
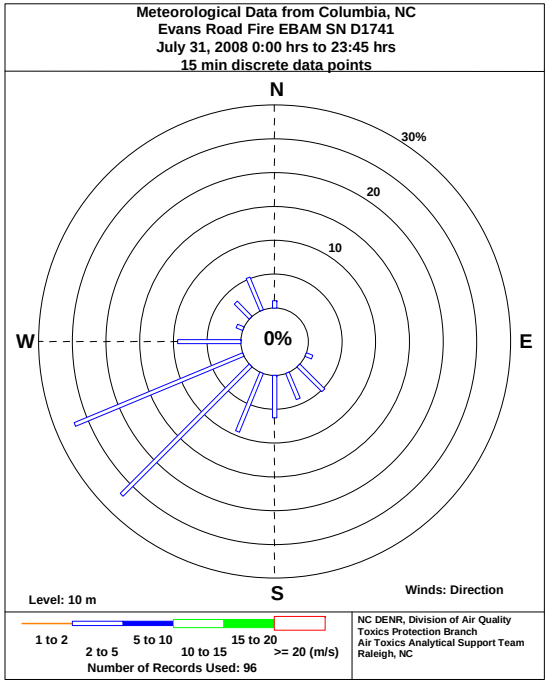
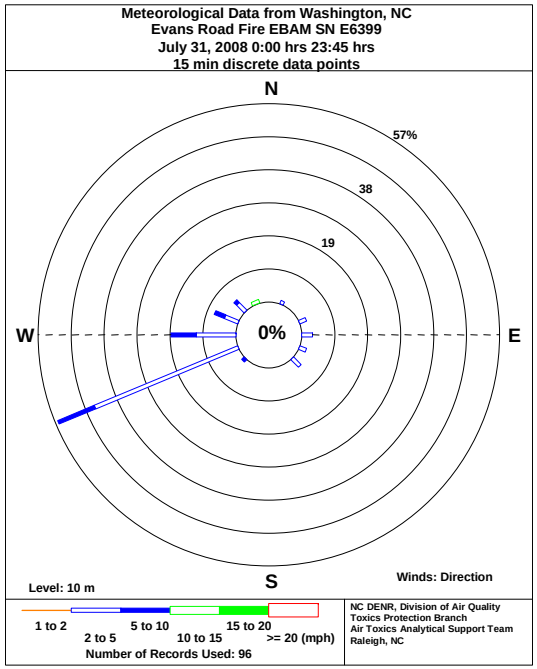


Figure C49. EBAM Monitor Meteorological Data for July 30, 2008 at Belhaven, Columbia, Fairfield, and Washington NC

No Observed DATA
From Plymouth, NC
July 31, 2008



No Observed DATA
From Manteo, NC
July 31, 2008



No Observed DATA
From Belhaven, NC
July 31, 2008

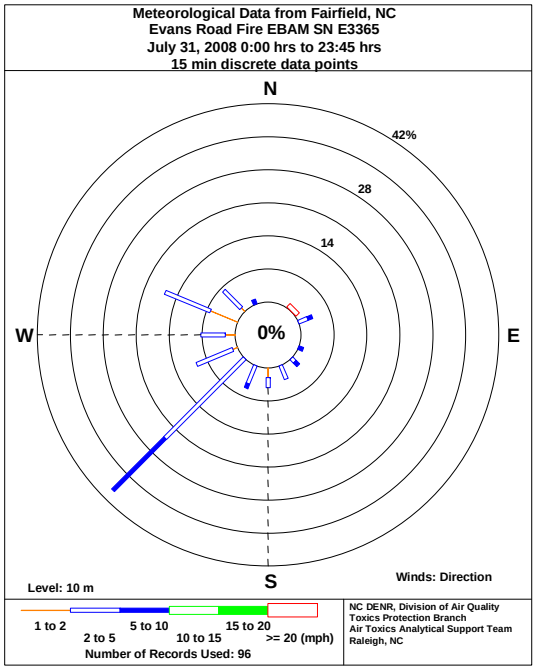
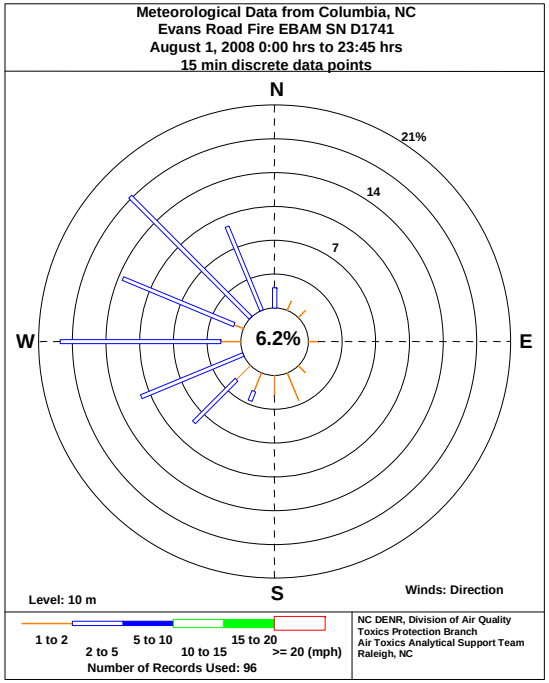
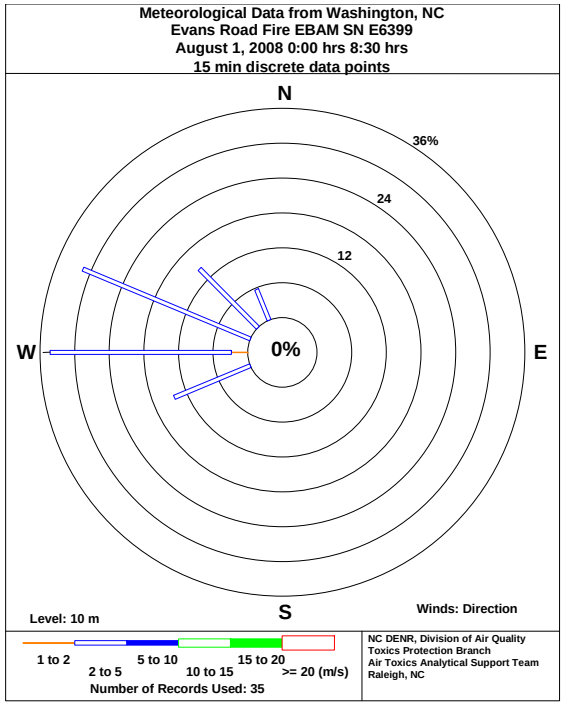


Figure C50. EBAM Monitor Meteorological Data for July 31, 2008 at Belhaven, Columbia, Fairfield, and Washington NC

No Observed DATA
From Plymouth, NC
August 1, 2008



No Observed DATA
From Manteo, NC
August 1, 2008



No Observed DATA
From Belhaven, NC
August 1, 2008

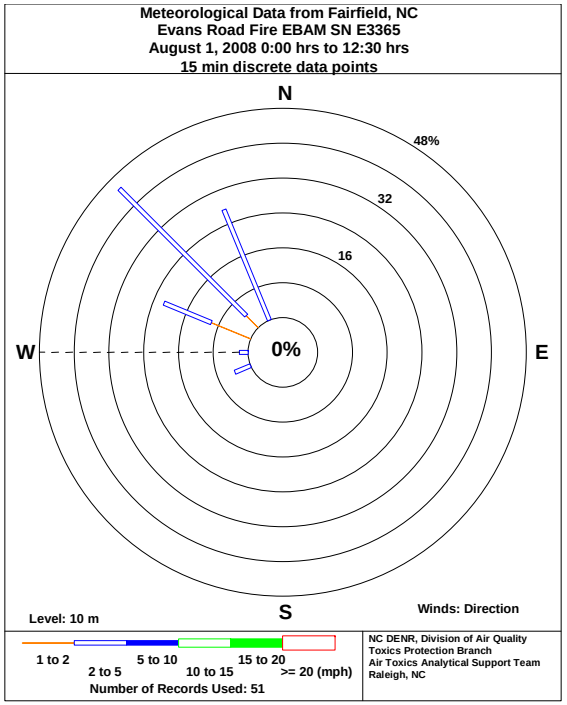
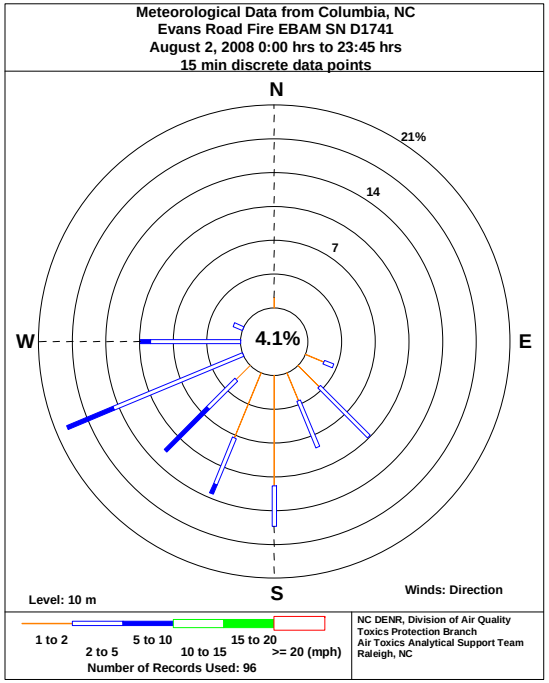


Figure C51. EBAM Monitor Meteorological Data for August 1, 2008 at Belhaven, Columbia, Fairfield, and Washington NC

No Observed DATA
From Plymouth, NC
August 2, 2008



No Observed DATA
From Manteo, NC
August 2, 2008

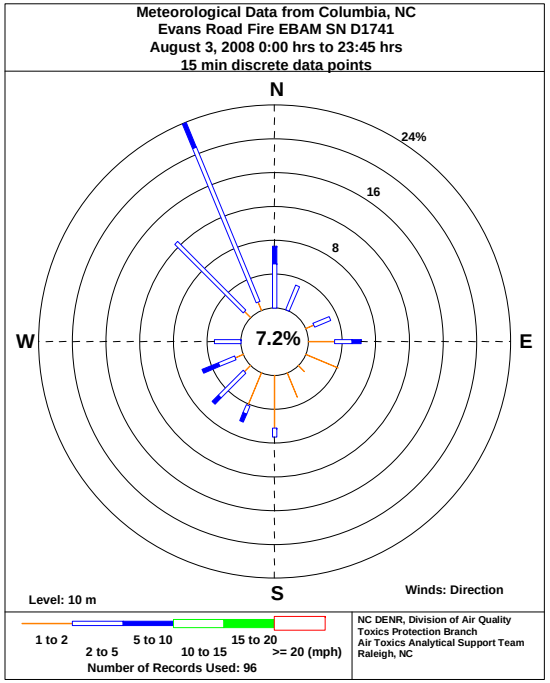
No Observed DATA
From Washington, NC
August 2, 2008

No Observed DATA
From Belhaven, NC
August 2, 2008

No Observed DATA
From Fairfield, NC
August 2, 2008

Figure C52. EBAM Monitor Meteorological Data for August 2, 2008 at Columbia, NC

No Observed DATA
From Plymouth, NC
August 3, 2008



No Observed DATA
From Manteo, NC
August 3, 2008

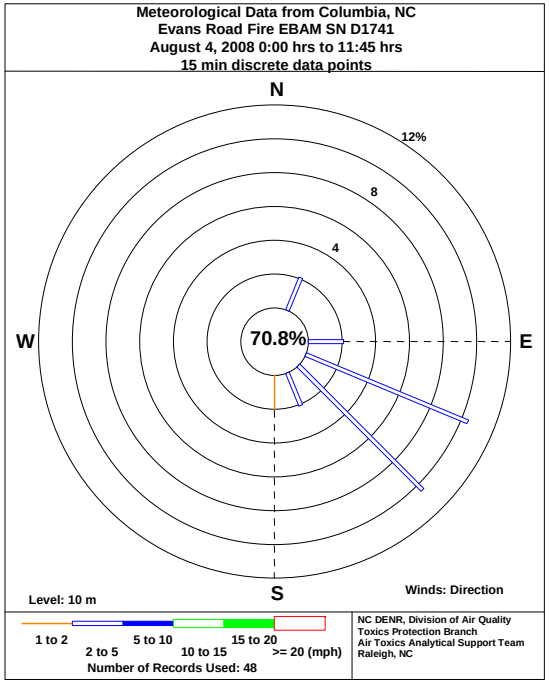
No Observed DATA
From Washington, NC
August 3, 2008

No Observed DATA
From Belhaven, NC
August 3, 2008

No Observed DATA
From Fairfield, NC
August 3, 2008

Figure C53. EBAM Monitor Meteorological Data for August 3, 2008 at Columbia, NC

No Observed DATA
From Plymouth, NC
August 4, 2008



No Observed DATA
From Manteo, NC
August 4, 2008

No Observed DATA
From Washington, NC
August 4, 2008

No Observed DATA
From Belhaven, NC
August 4, 2008

No Observed DATA
From Fairfield, NC
August 4, 2008

Figure C54. EBAM Monitor Meteorological Data for August 4, 2008 at Columbia, NC

Appendix D – OMNI Monitor Graphs for 12-hr, and 24-hr Average Particulate Matter Concentrations

Table of Figures

Figure D1. PM_{10} and $PM_{2.5}$ Concentrations (ug/m^3) for June 11-18, 2008 at Washington, NC OMNI Monitor

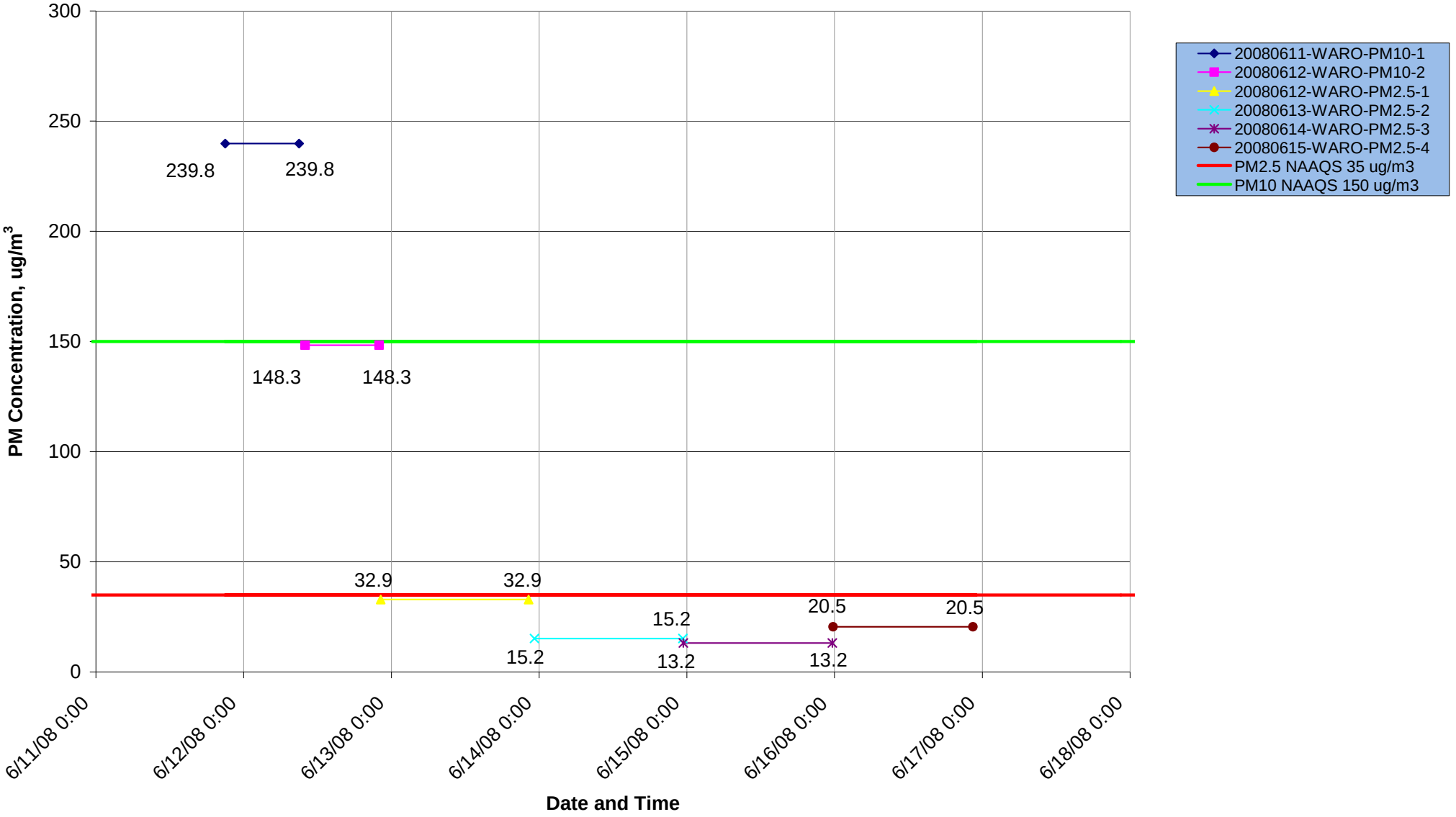


Figure D2. PM_{10} and $PM_{2.5}$ Concentrations (ug/m^3) for June 11-17, 2008 at Belhaven, NC
OMNI Monitor

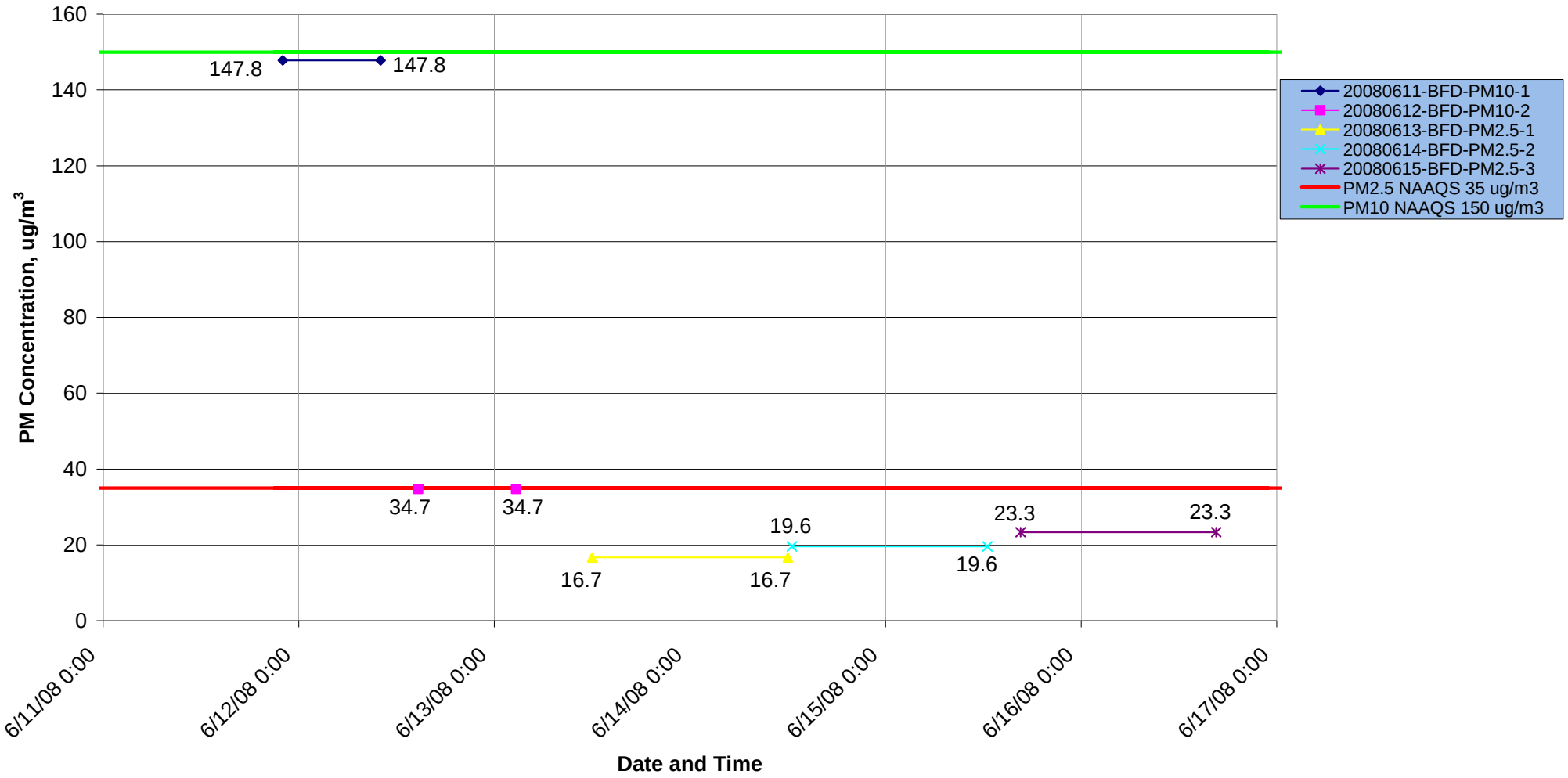
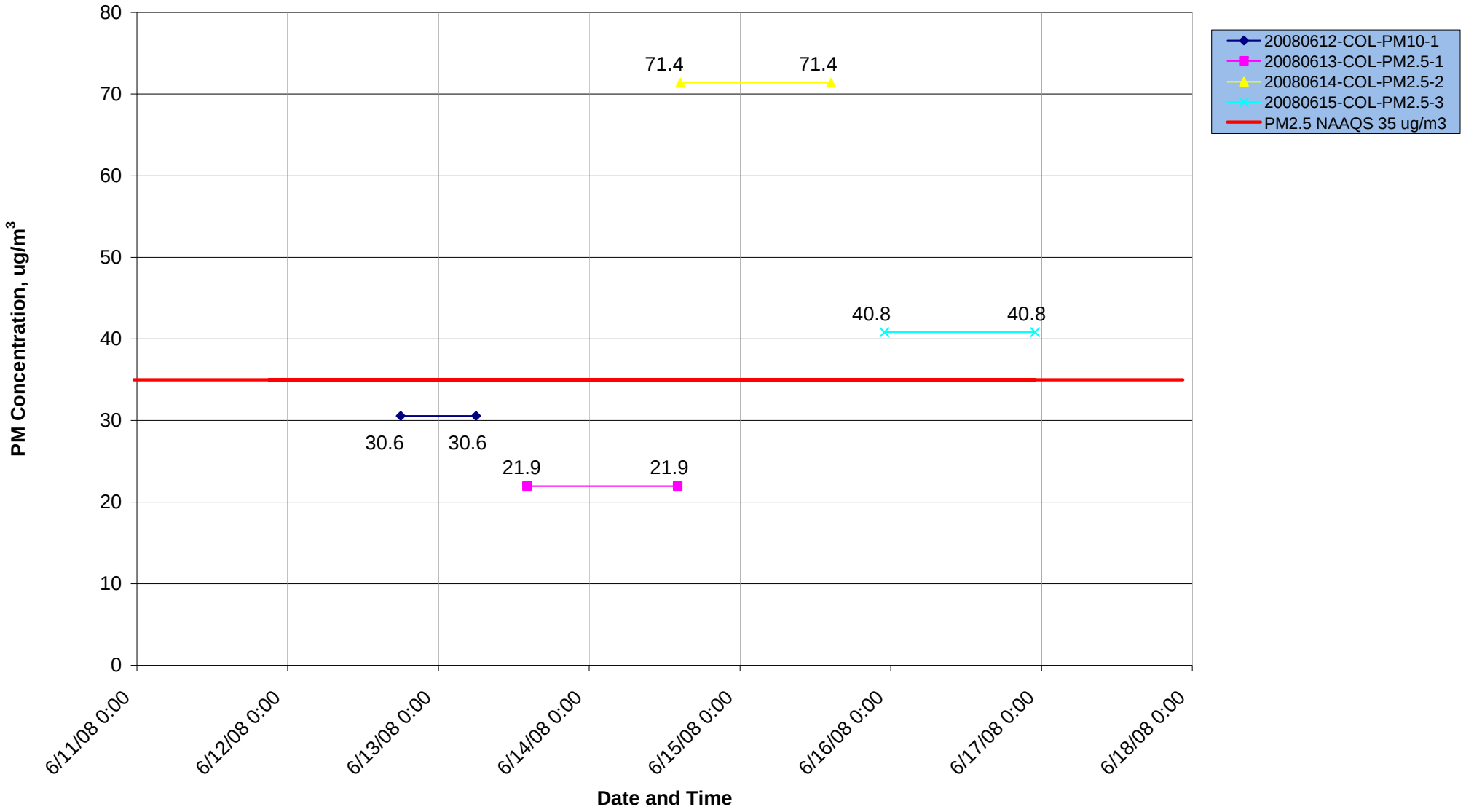


Figure D3. PM_{10} and $PM_{2.5}$ Concentrations (ug/m^3) for June 12-18, 2008 at Columbia, NC
OMNI Monitor



Appendix E – AreaRAE Monitor Graphs for 12-hr, and 24-hr Average Carbon Monoxide Concentrations

Table of Figures

Figure E1. Carbon Monoxide (CO) Concentrations (ppm_v) for June 12-16, 2008 at Washington, NC

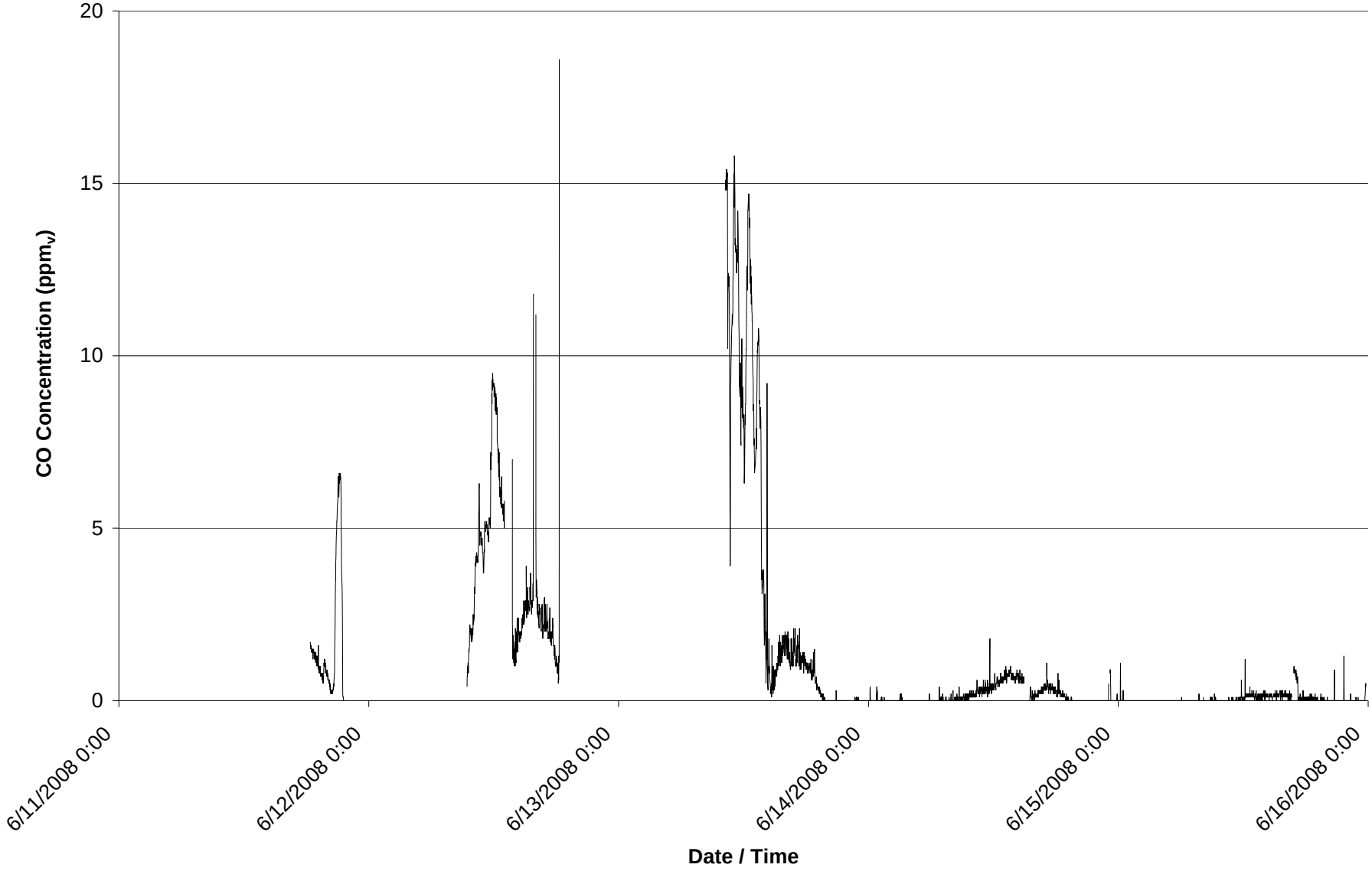


Figure E2. Carbon Monoxide (CO) Concentrations (ppm_v) for June 12-14, 2008 at Belhaven, NC

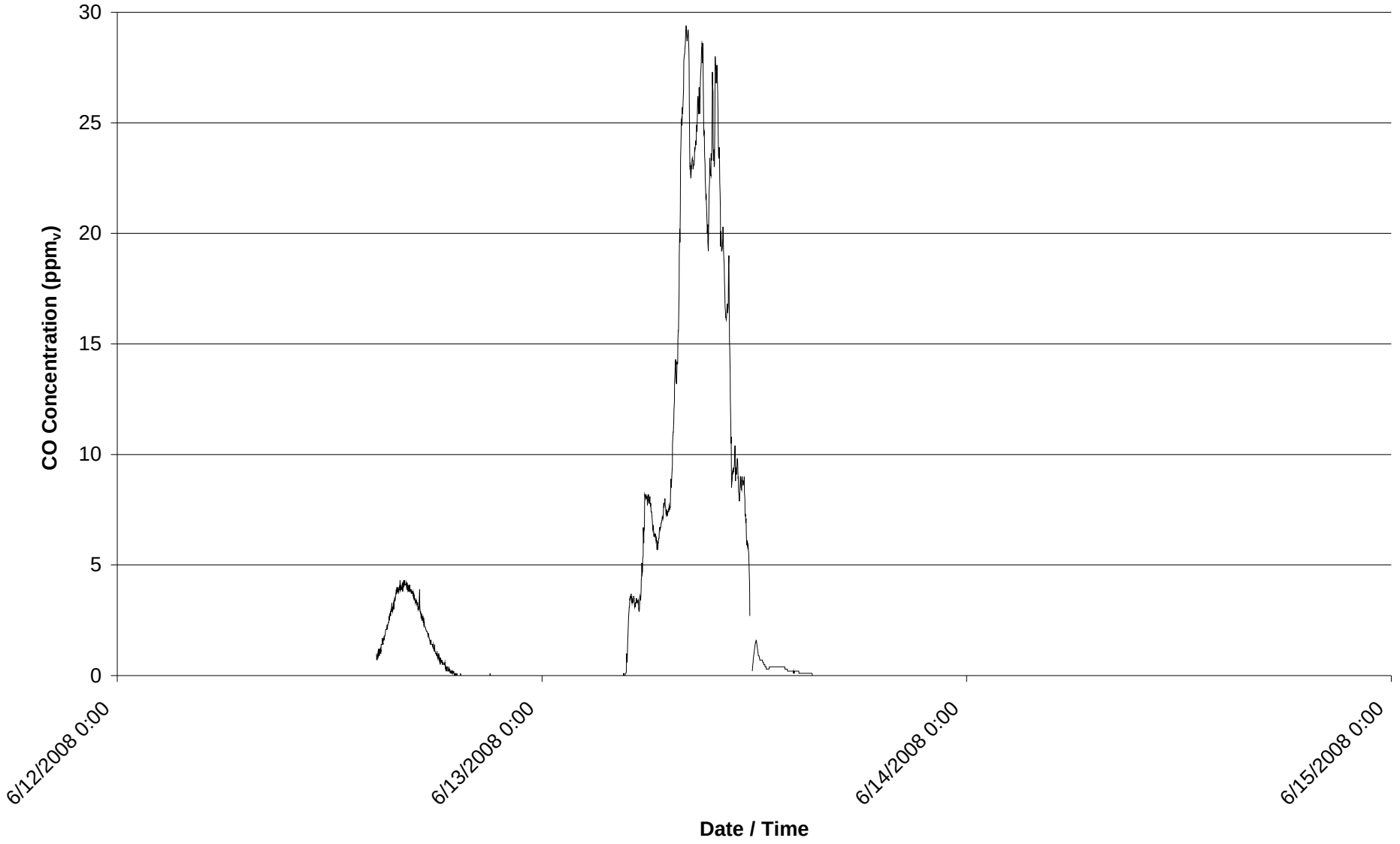


Figure E3. Carbon Monoxide (CO) Concentrations (ppm_v) for June 12-17, 2008 at Tyrell Co. FD, Columbia NC

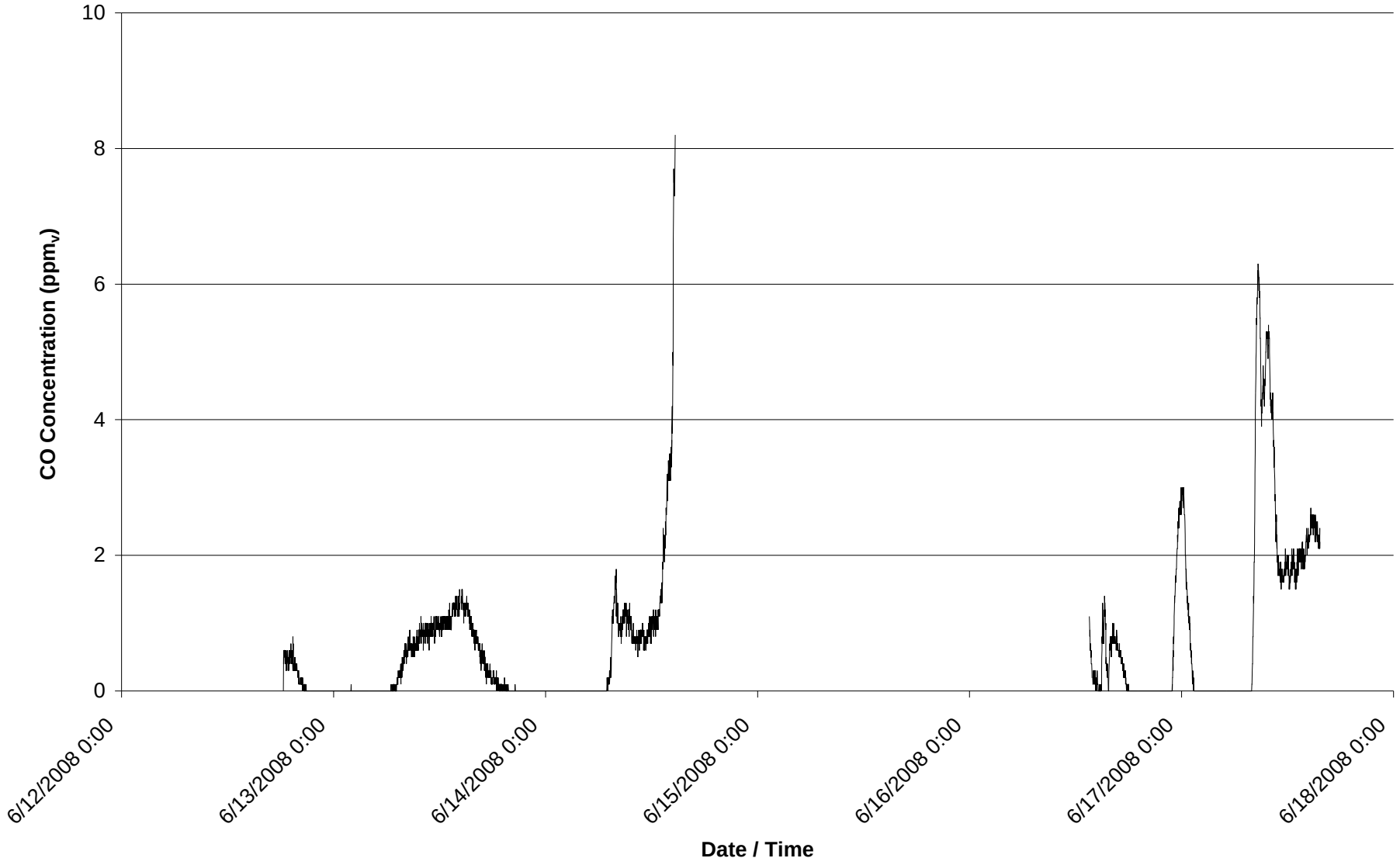


Figure E4. Carbon Monoxide (CO) Concentrations (ppm_v) for June 13-16, 2008 at Plymouth NC

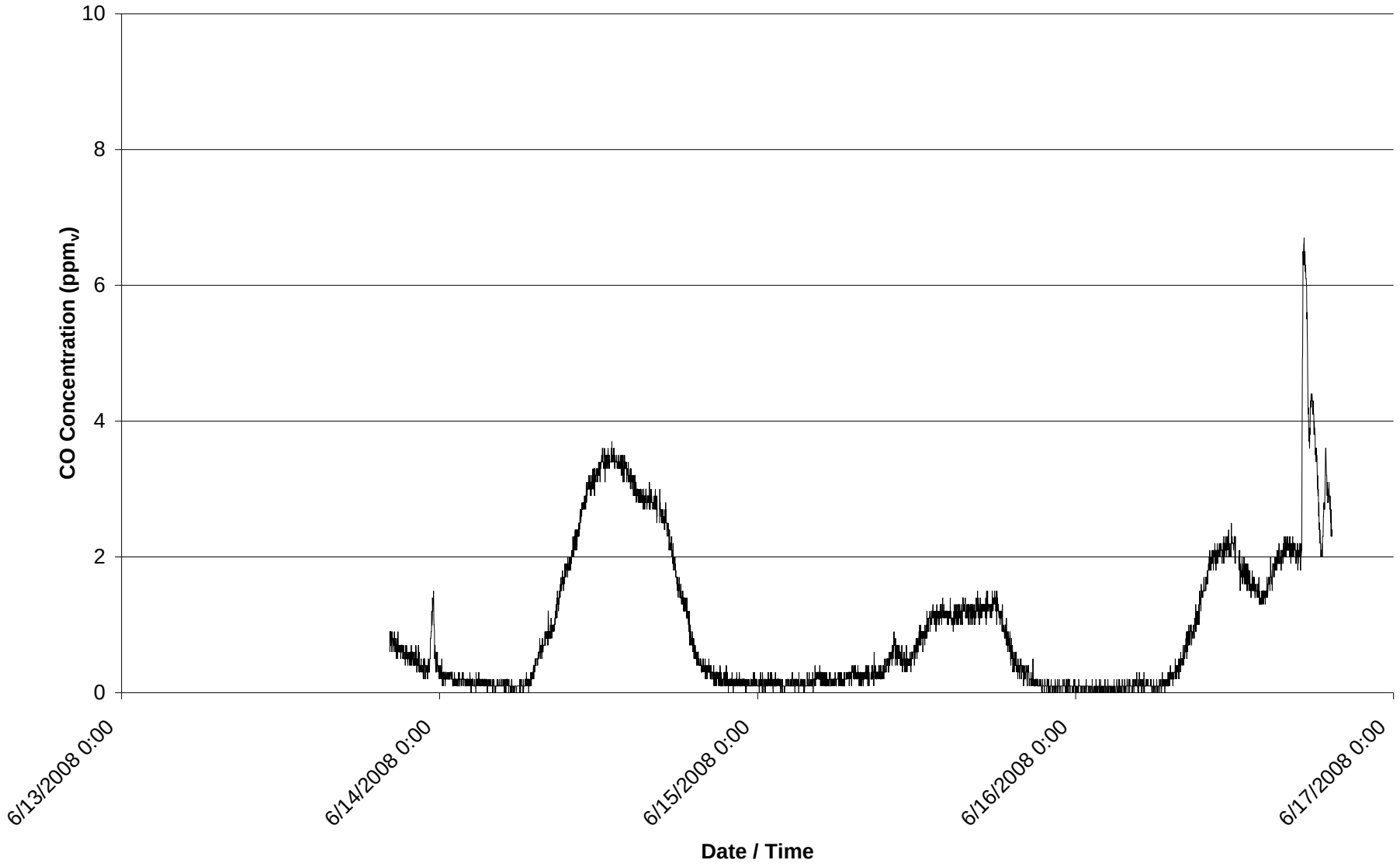
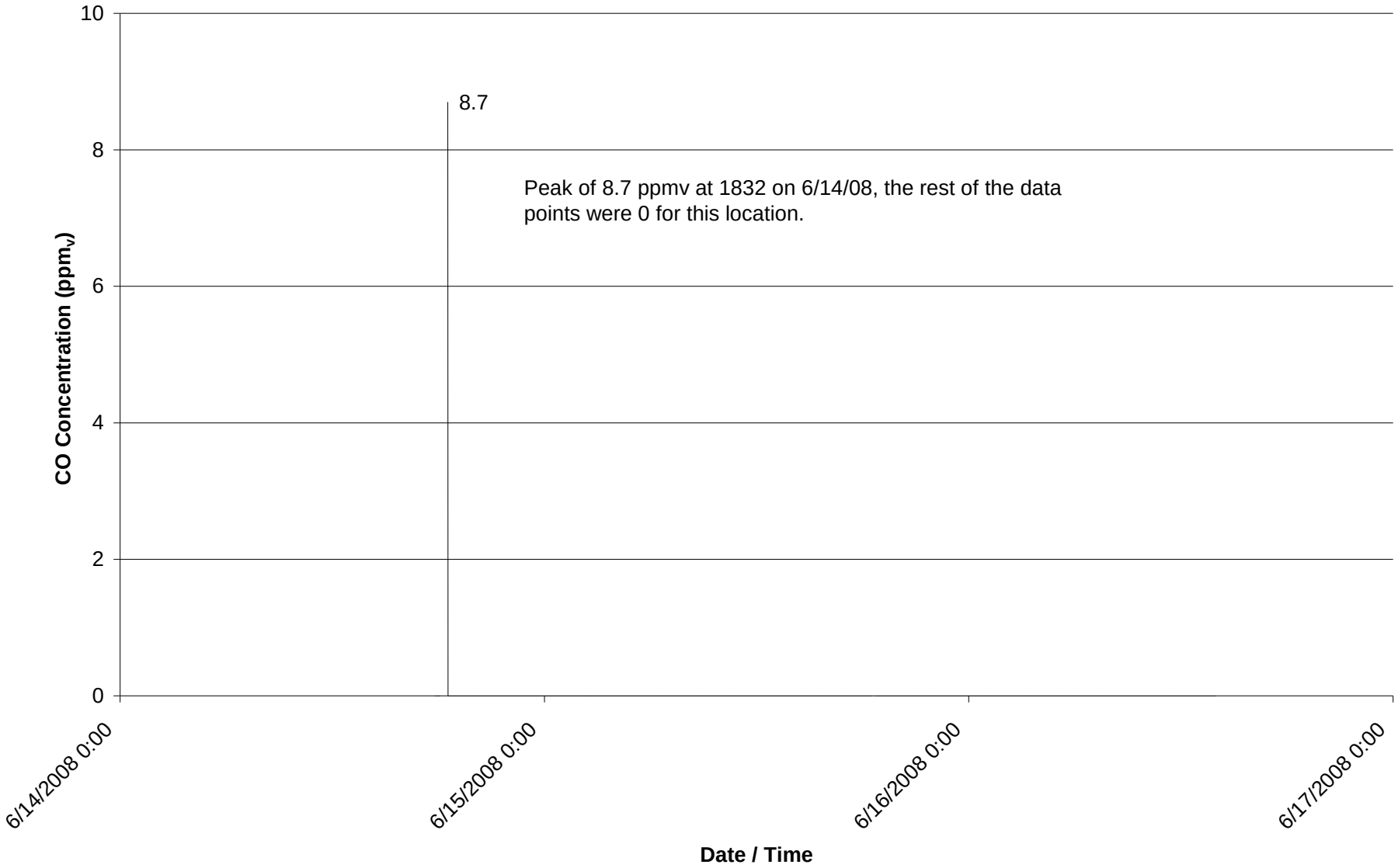


Figure E5. Carbon Monoxide (CO) Concentrations (ppm_v) for June 14-16, 2008 at Fairfield NC



Appendix E - EBAM Monitor Graphs for 1-hr, 24-hr and 24-hr Rolling Average Concentrations

Table of Figures

Figure F1. PM_{10} and $PM_{2.5}$ Concentrations (ug/m^3) for June 12-19, 2008 at Belhaven, NC
EBAM Monitor

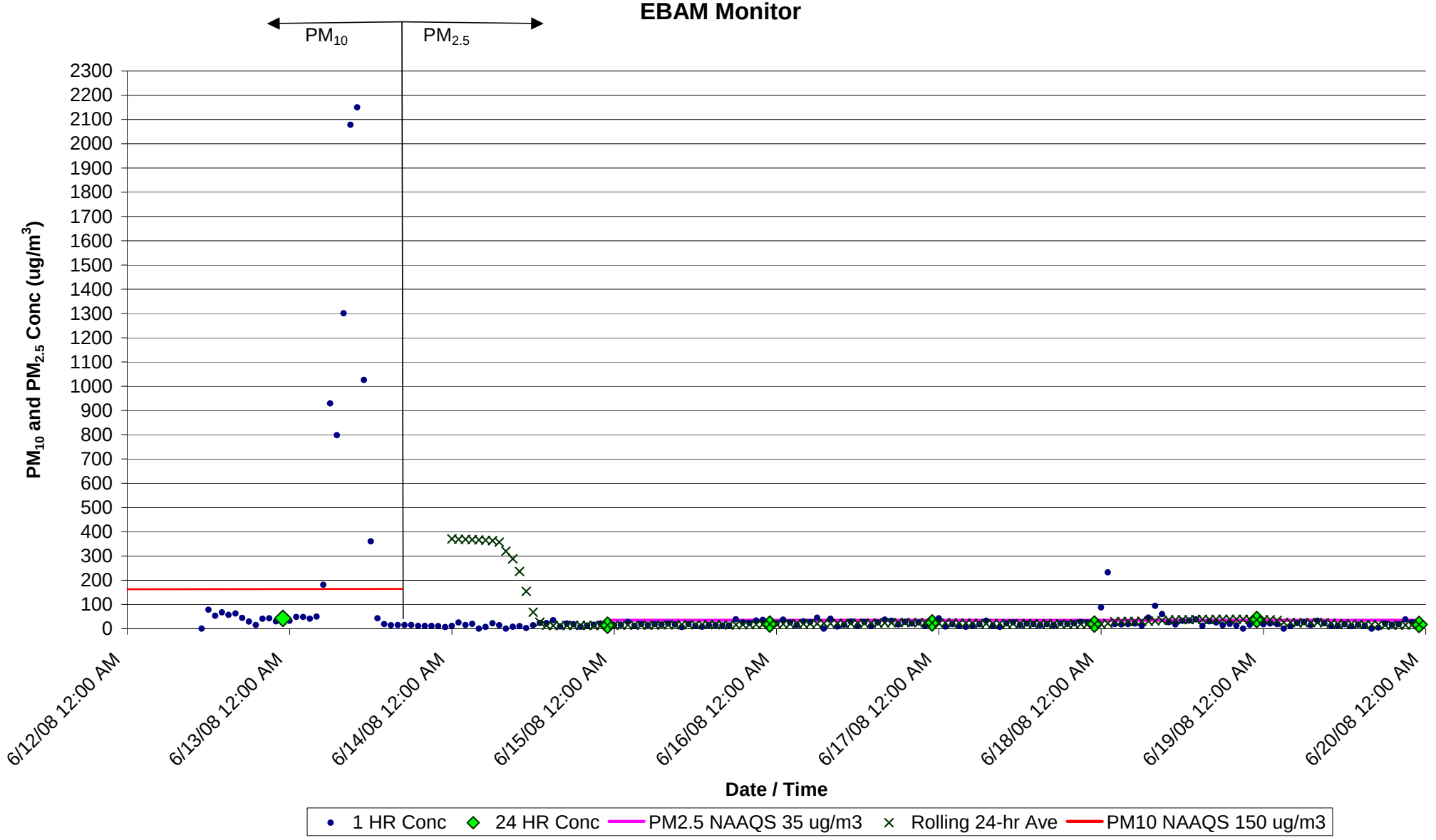


Figure F1a. PM_{10} and $PM_{2.5}$ Concentrations (ug/m^3) for June 12-19, 2008 at Belhaven, NC
EBAM Monitor

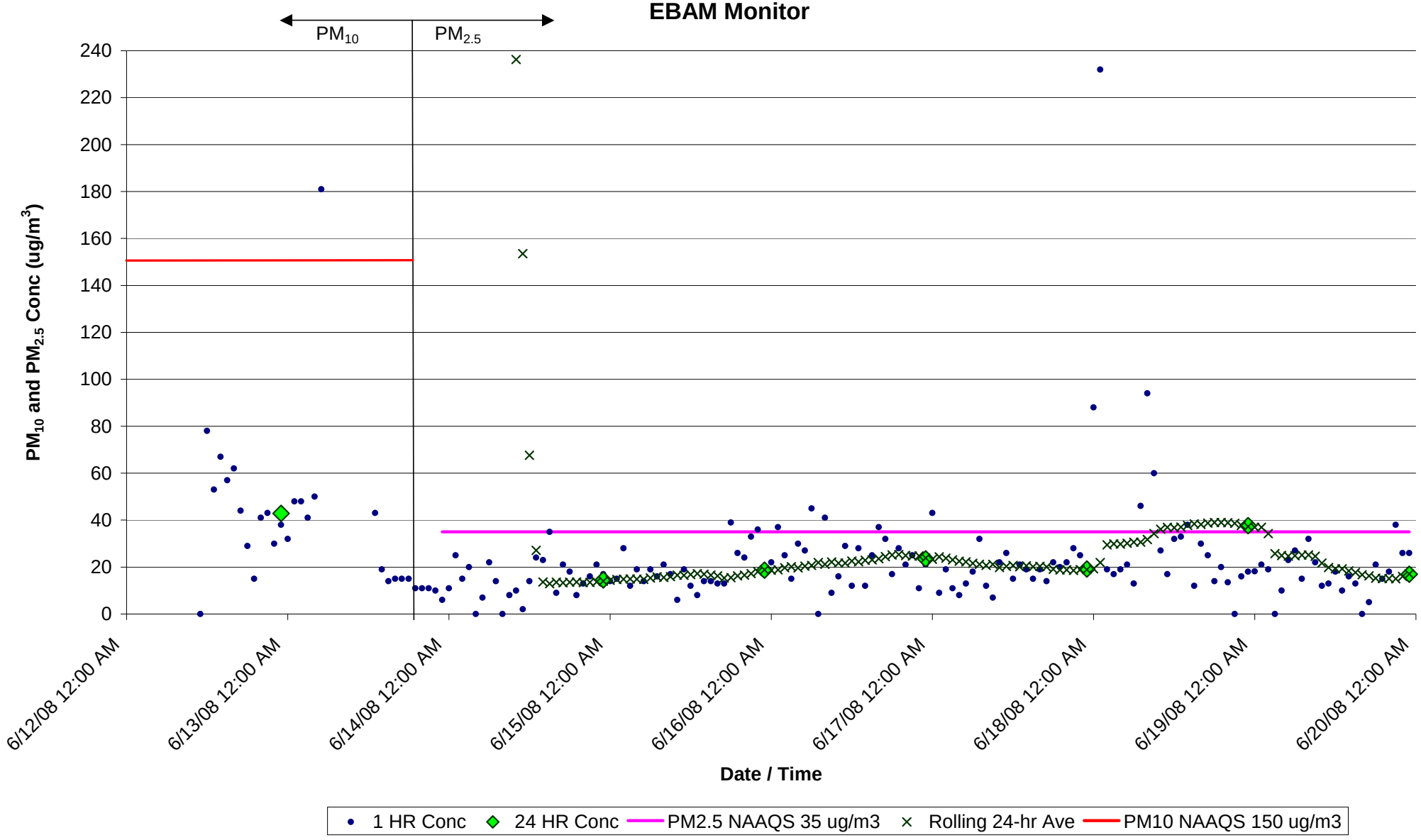


Figure F2. $PM_{2.5}$ Concentrations (ug/m^3) for June 20-27, 2008 at Belhaven, NC
EBAM Monitor

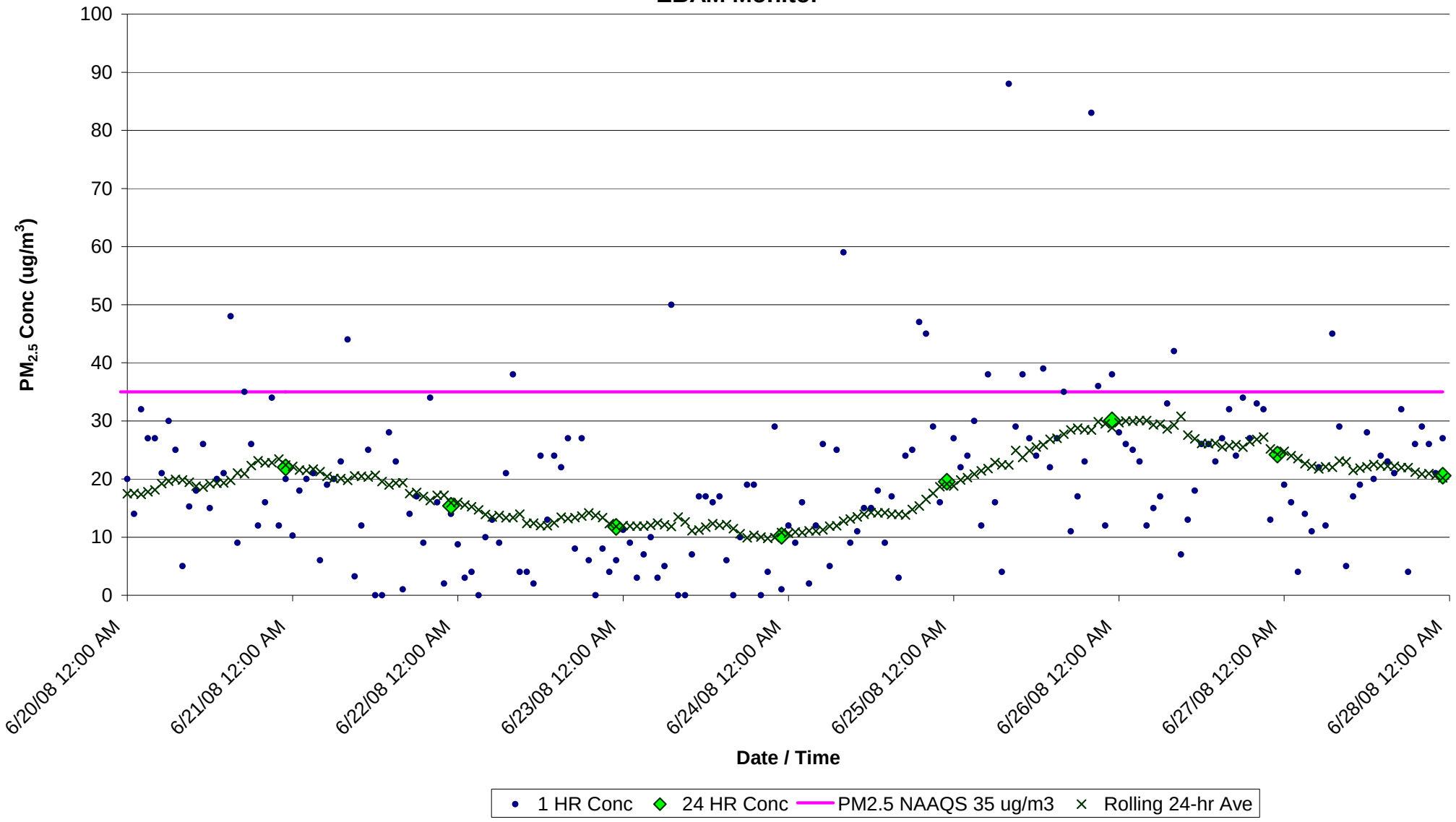


Figure F3. $PM_{2.5}$ Concentrations (ug/m^3) for June 28-July 4, 2008 at Belhaven, NC
EBAM Monitor

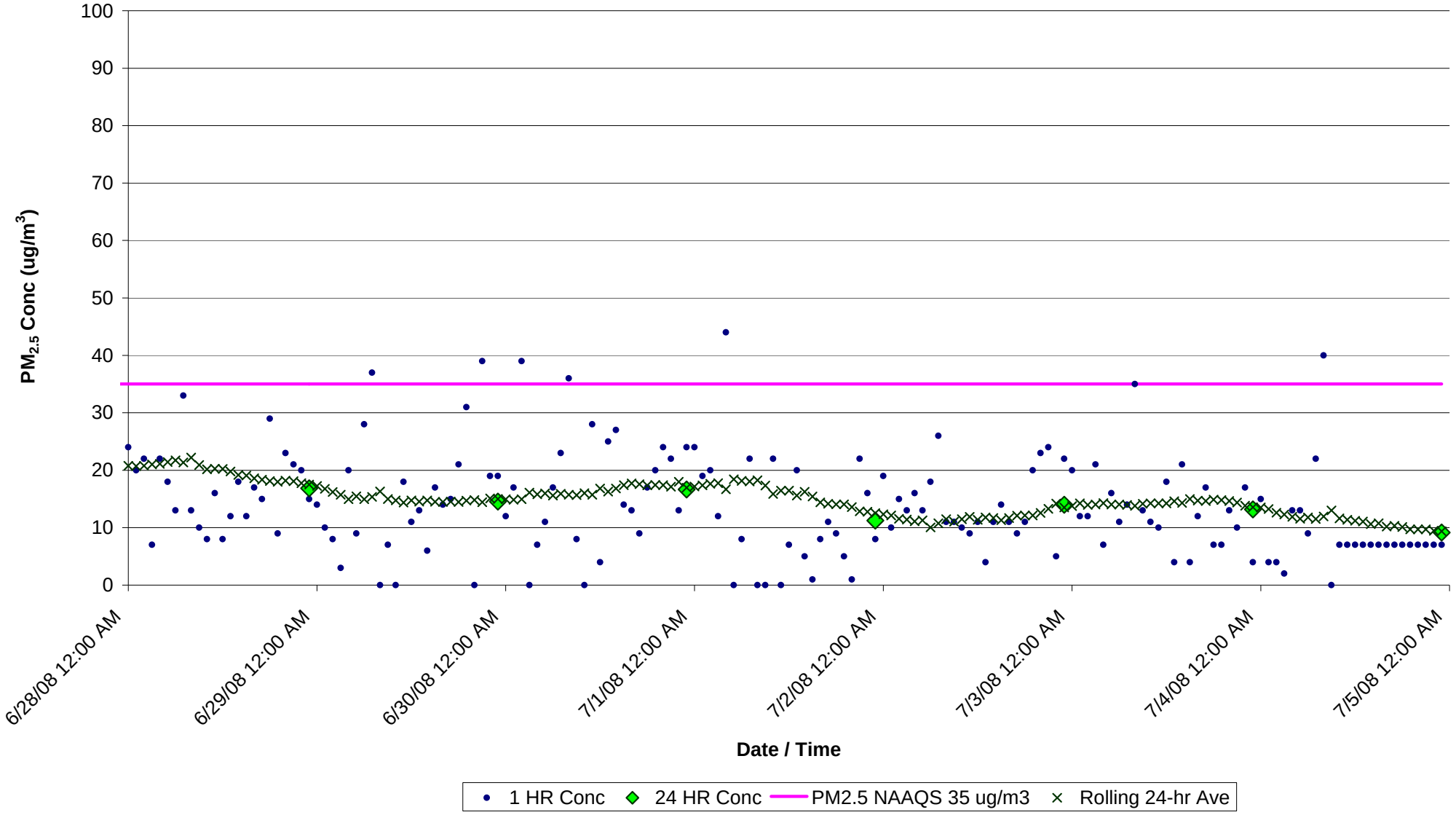


Figure F4. $PM_{2.5}$ Concentrations (ug/m^3) for July 5-11, 2008 at Belhaven, NC

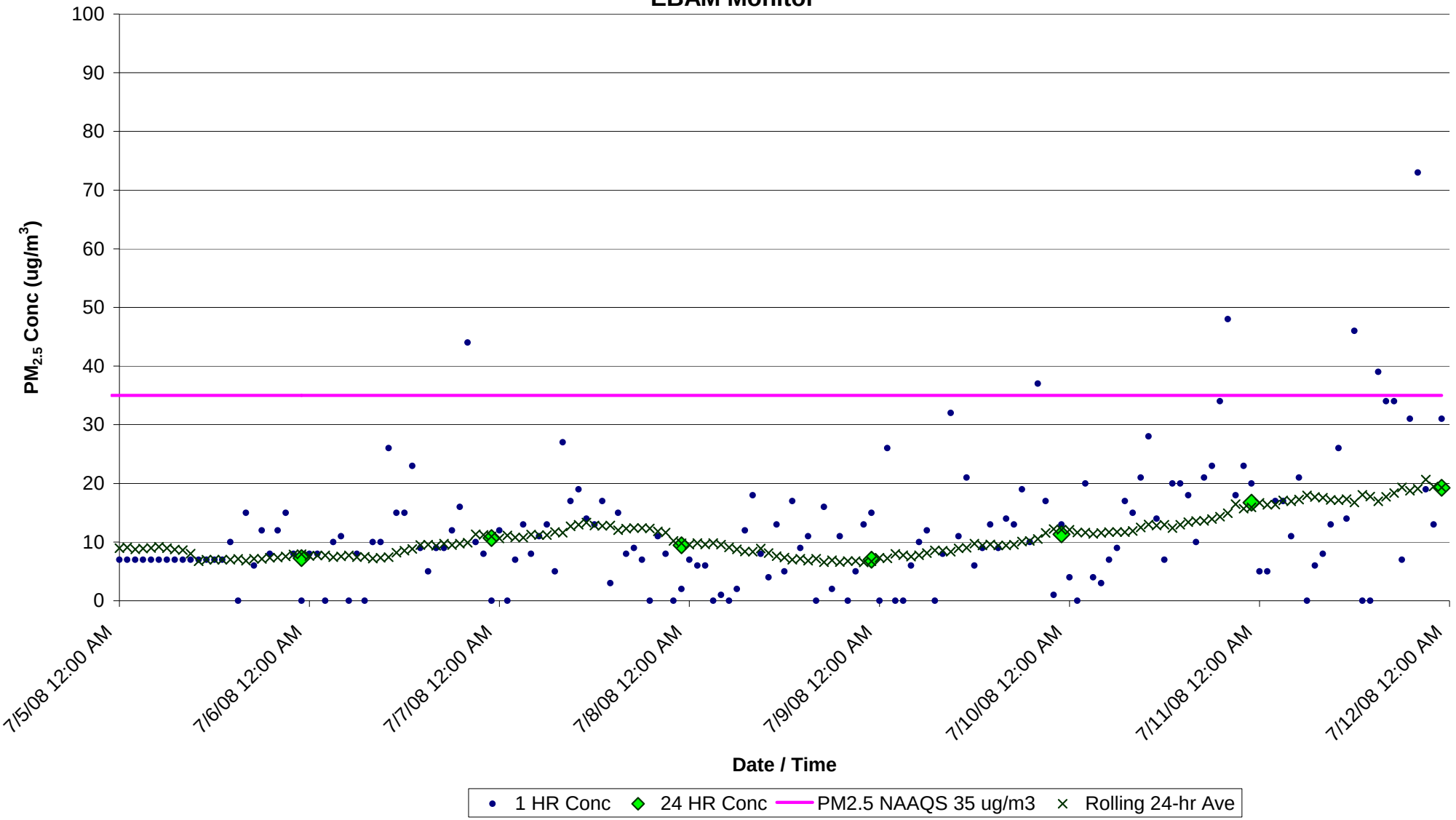


Figure F5. $PM_{2.5}$ Concentrations (ug/m^3) for July 12-18, 2008 at Belhaven, NC
EBAM Monitor

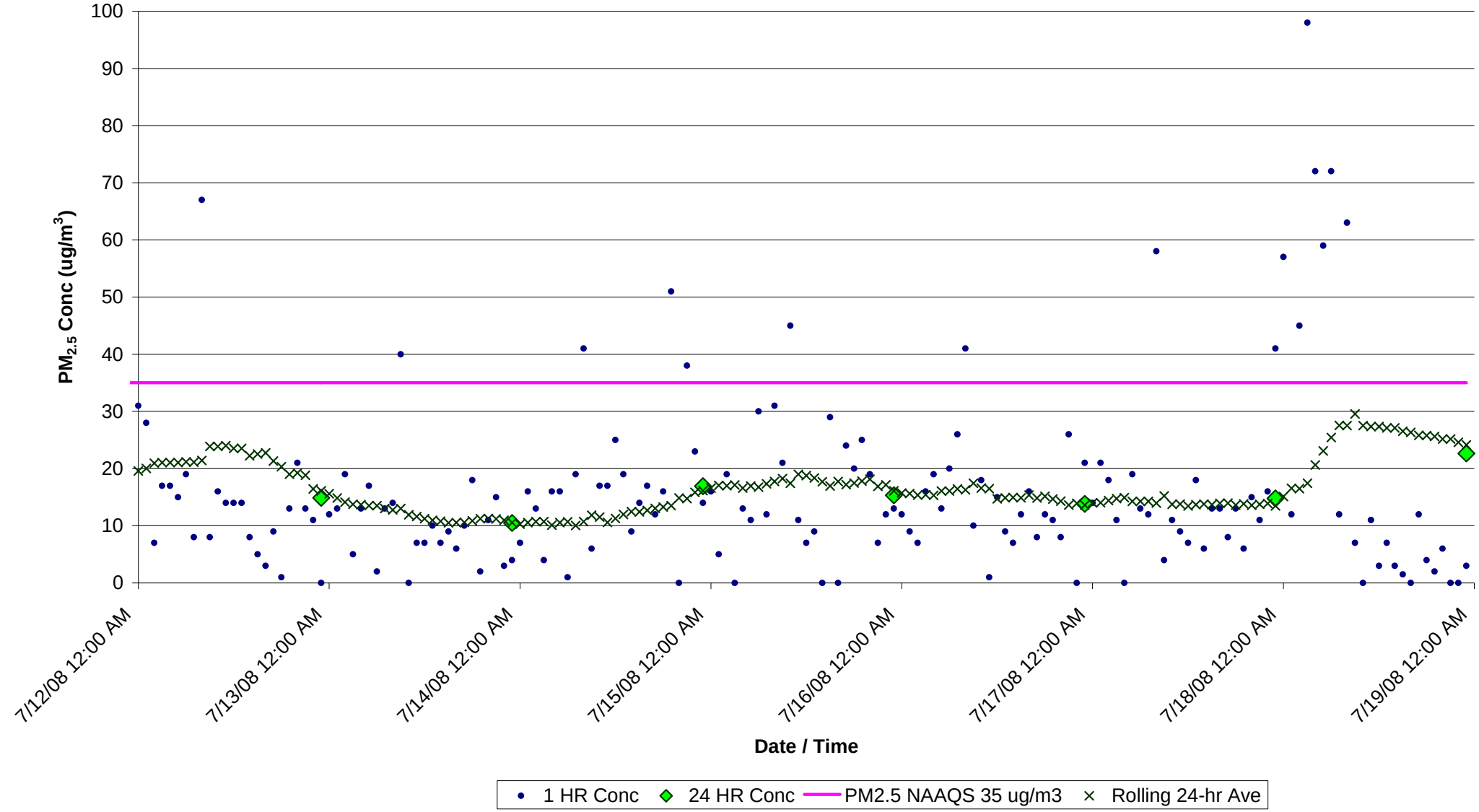


Figure F6. $PM_{2.5}$ Concentrations (ug/m^3) for July 19-25, 2008 at Belhaven, NC
EBAM Monitor

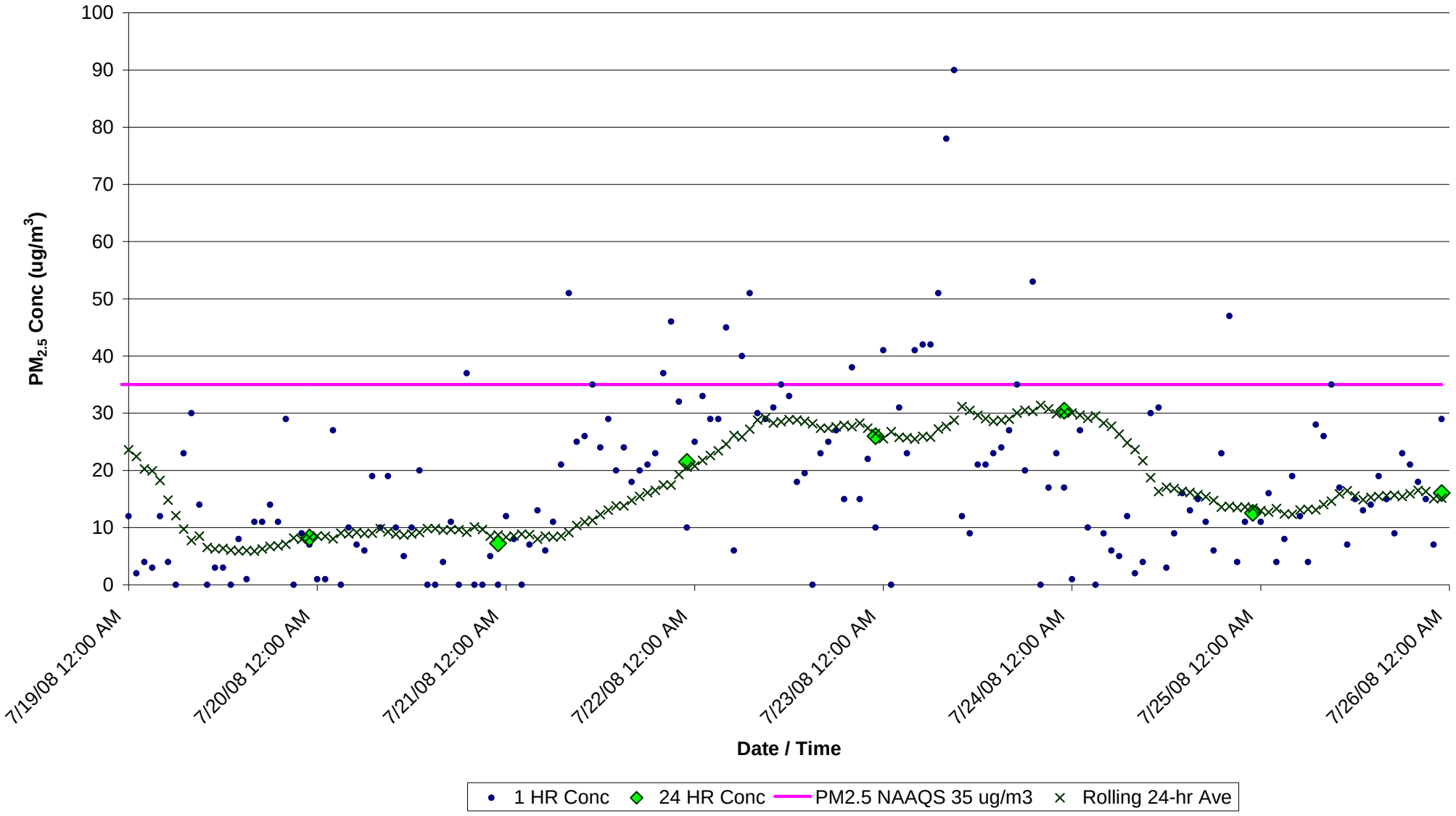


Figure F7. $PM_{2.5}$ Concentrations (ug/m^3) for July 26-Aug 4, 2008 at Belhaven, NC
EBAM Monitor

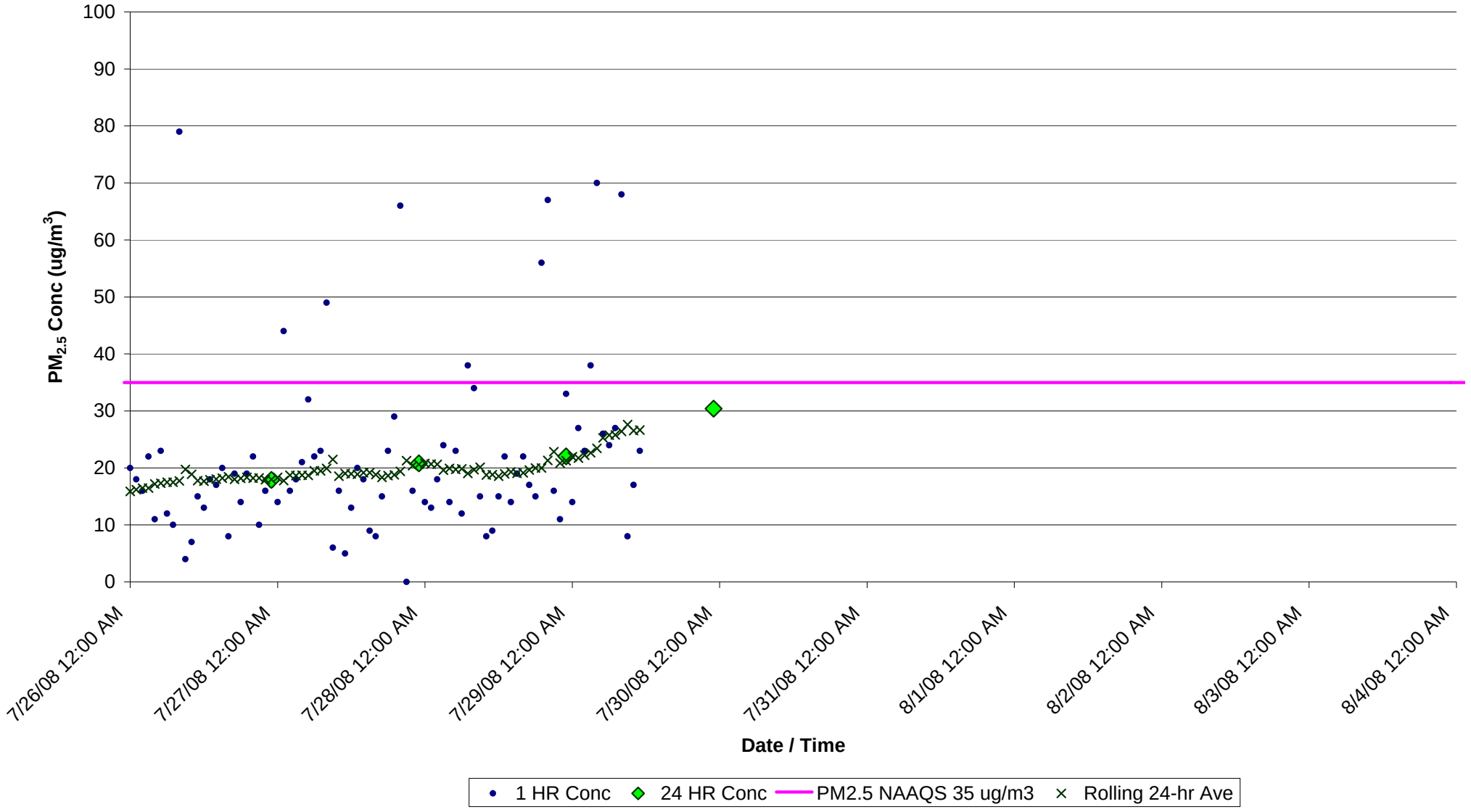


Figure F8. PM_{10} and $PM_{2.5}$ Concentrations (ug/m^3) for June 12-19, 2008 at Columbia, NC

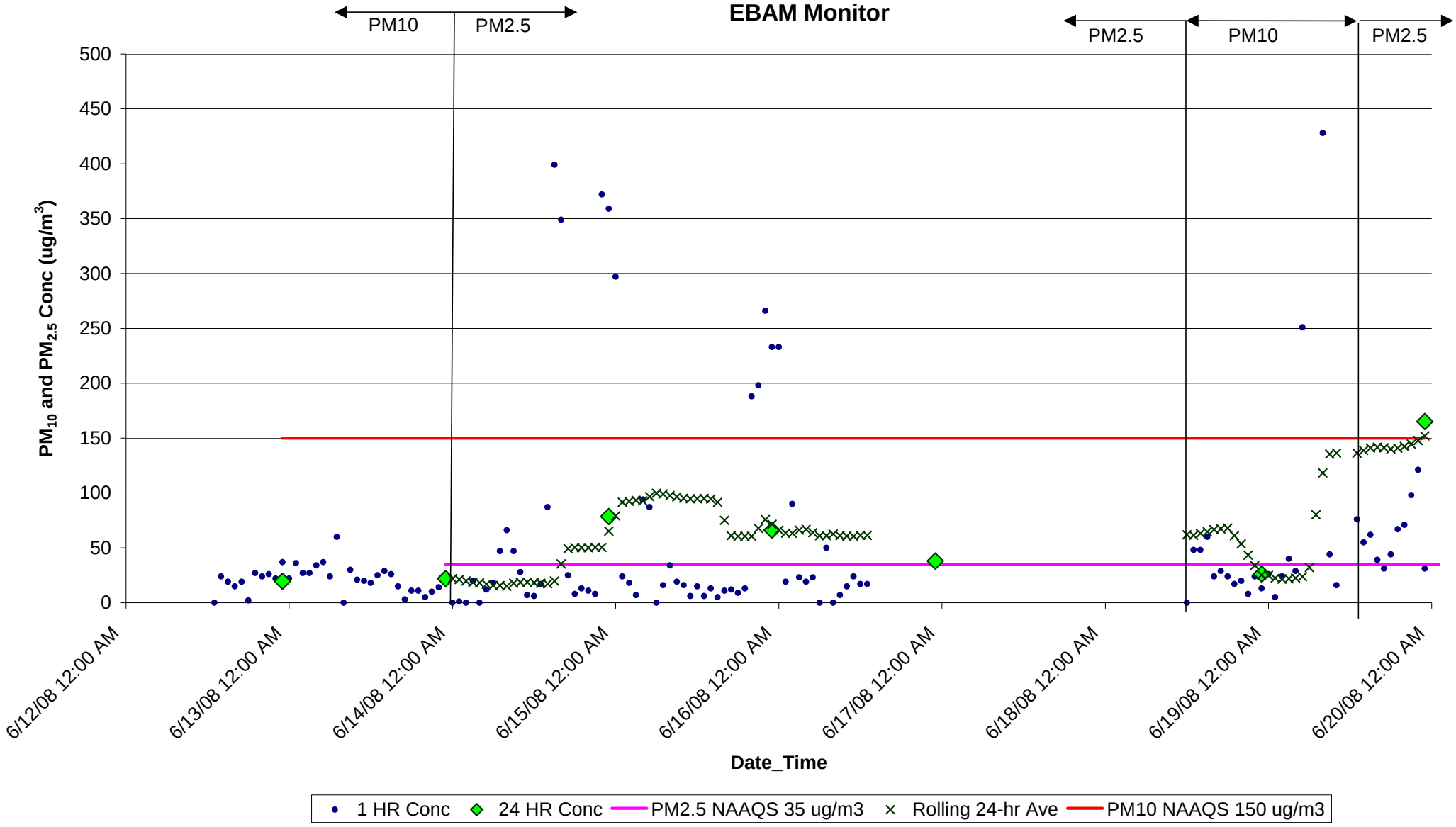


Figure F9. $PM_{2.5}$ Concentrations (ug/m^3) for June 20-27, 2008 at Columbia, NC
EBAM Monitor

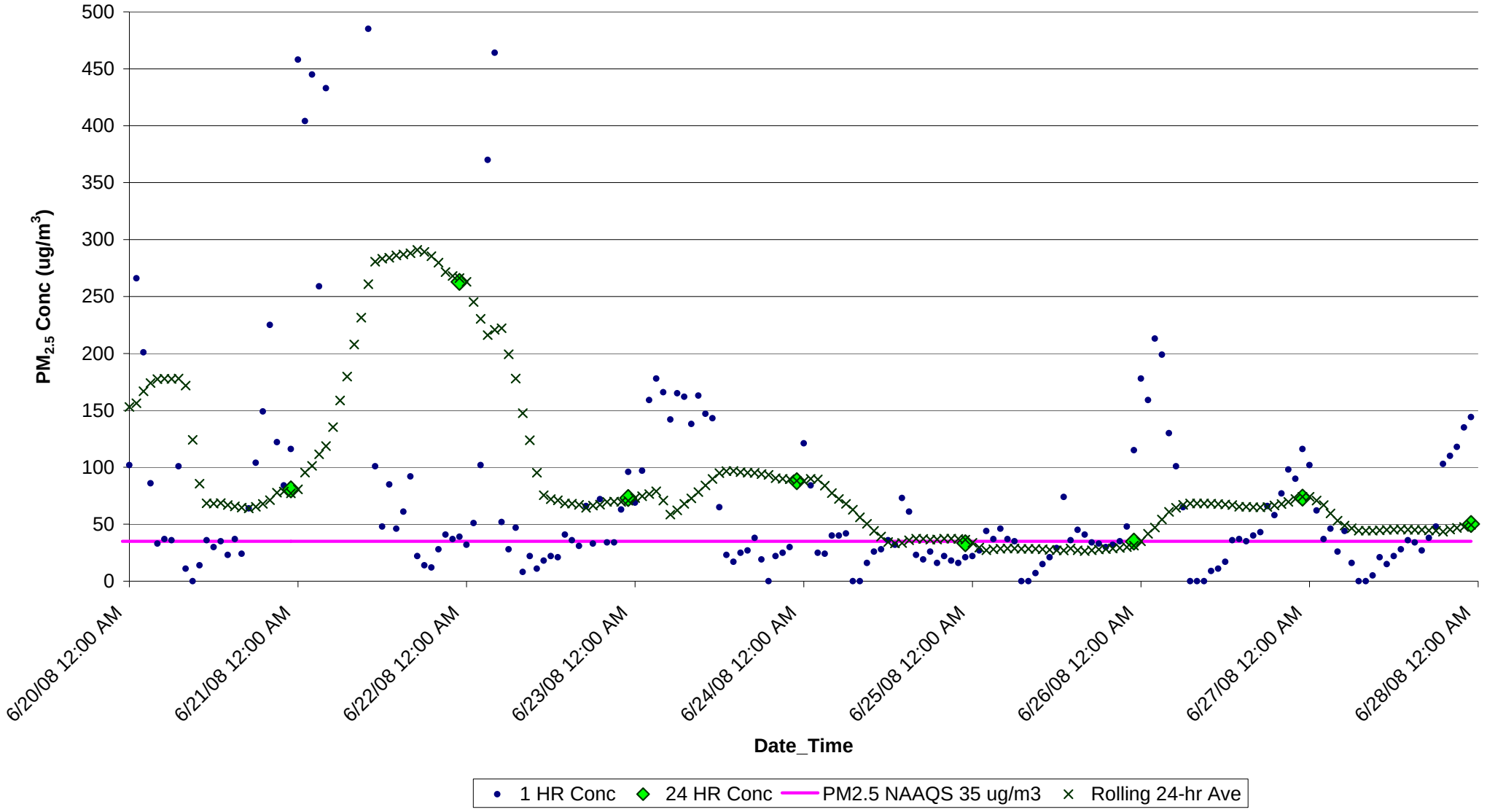


Figure F10. $PM_{2.5}$ Concentrations (ug/m^3) for June 28-July 4, 2008 at Columbia, NC
EBAM Monitor

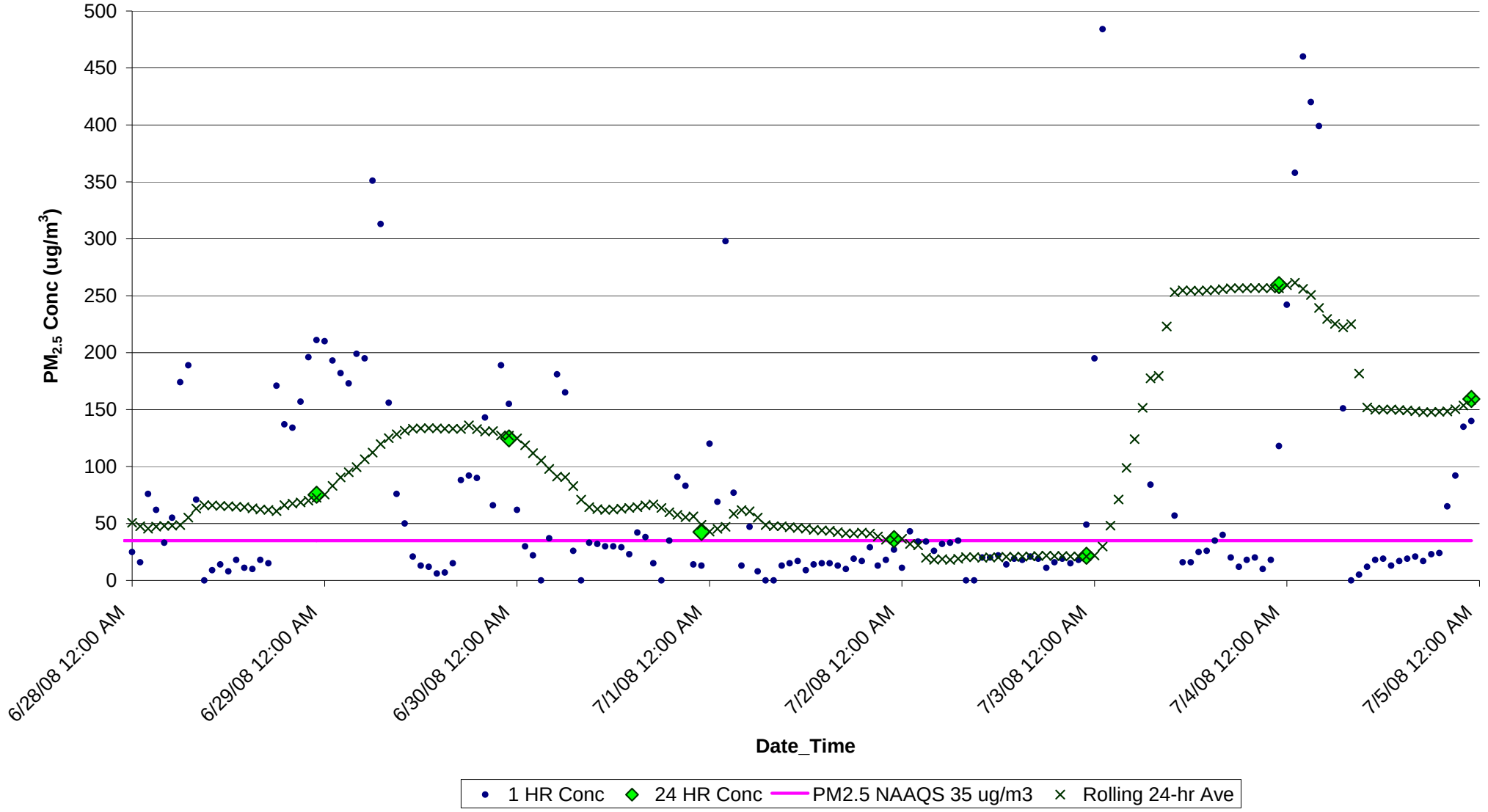


Figure F11. $PM_{2.5}$ Concentrations (ug/m^3) for July 5-11, 2008 at Columbia, NC
EBAM Monitor

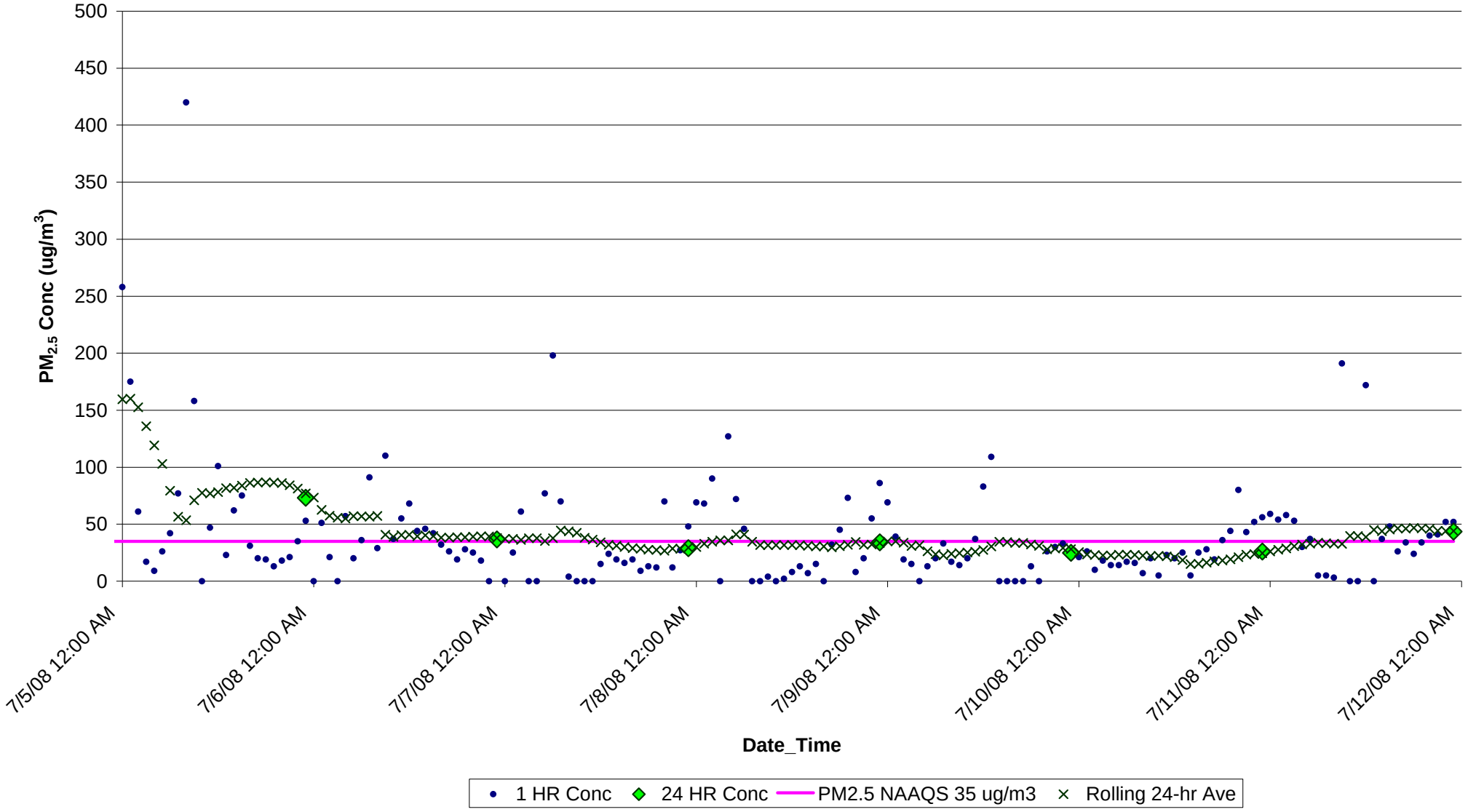


Figure F12. $PM_{2.5}$ Concentrations (ug/m^3) for July 12-18, 2008 at Columbia, NC
EBAM Monitor

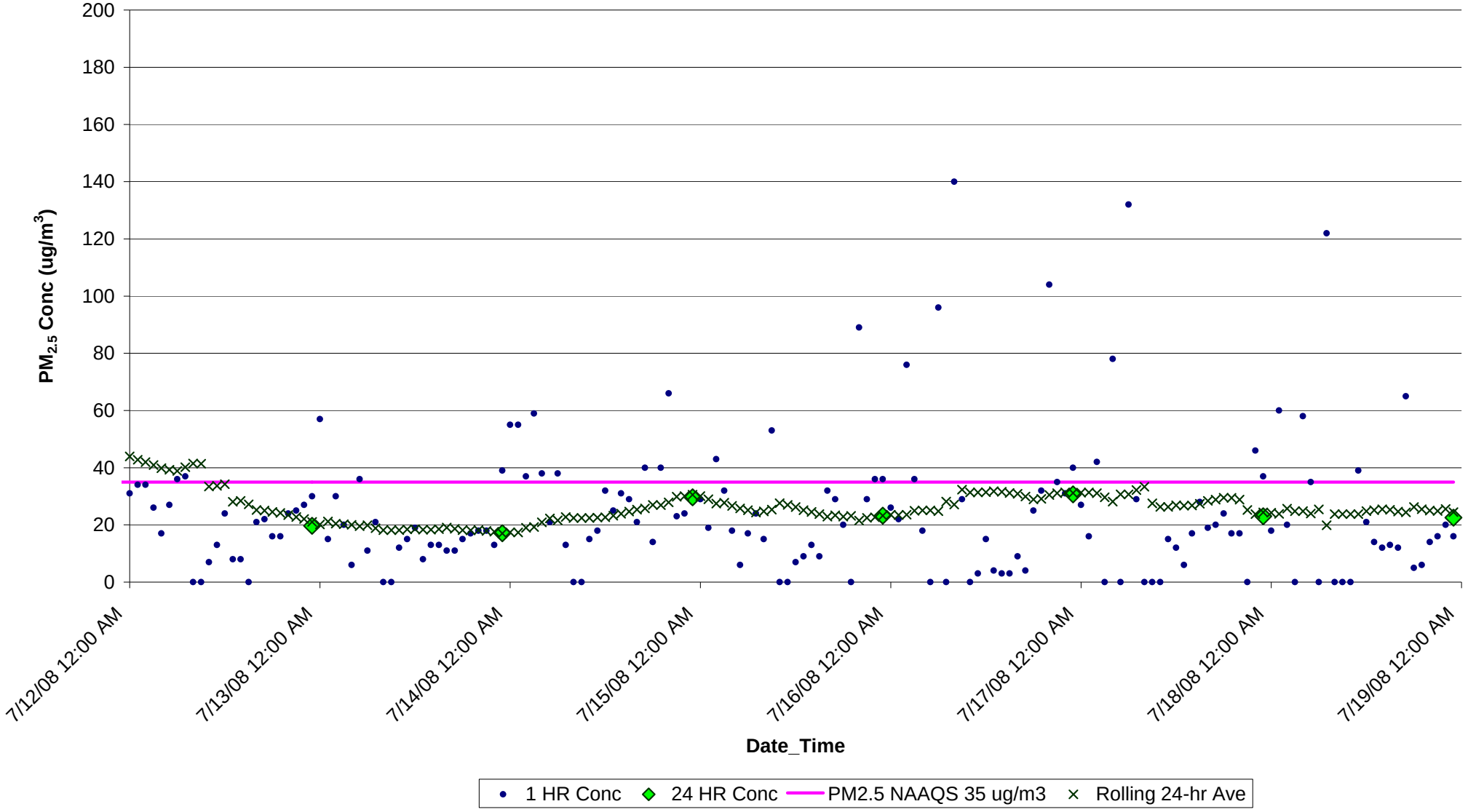


Figure F13. $PM_{2.5}$ Concentrations (ug/m^3) for July 19-25, 2008 at Columbia, NC
EBAM Monitor

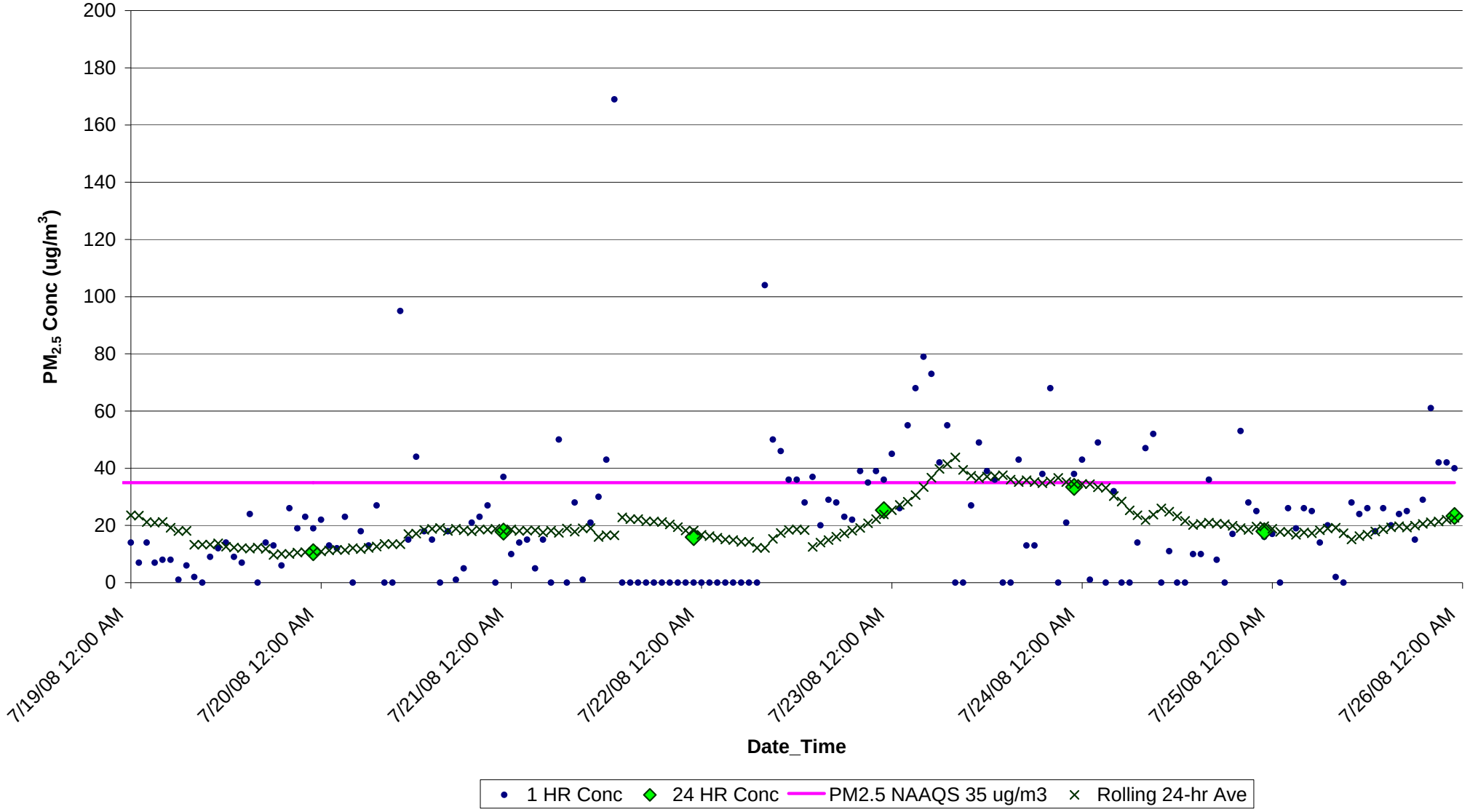


Figure F14. $PM_{2.5}$ Concentrations (ug/m^3) for July 26-Aug 4, 2008 at Columbia, NC
EBAM Monitor

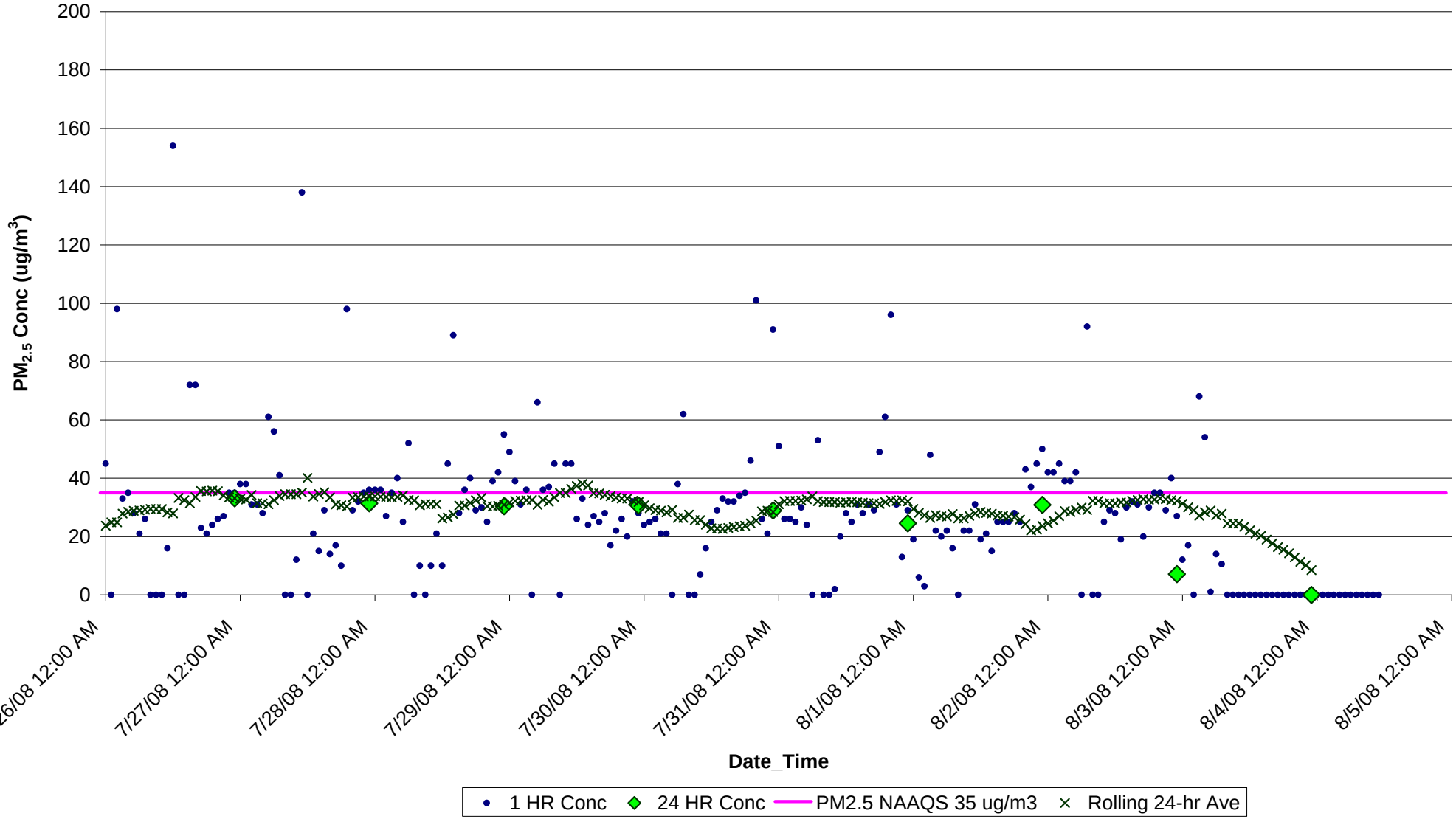


Figure F15. $PM_{2.5}$ Concentrations (ug/m^3) from June 12-19, 2008 for Fairfield, NC
EBAM Monitor

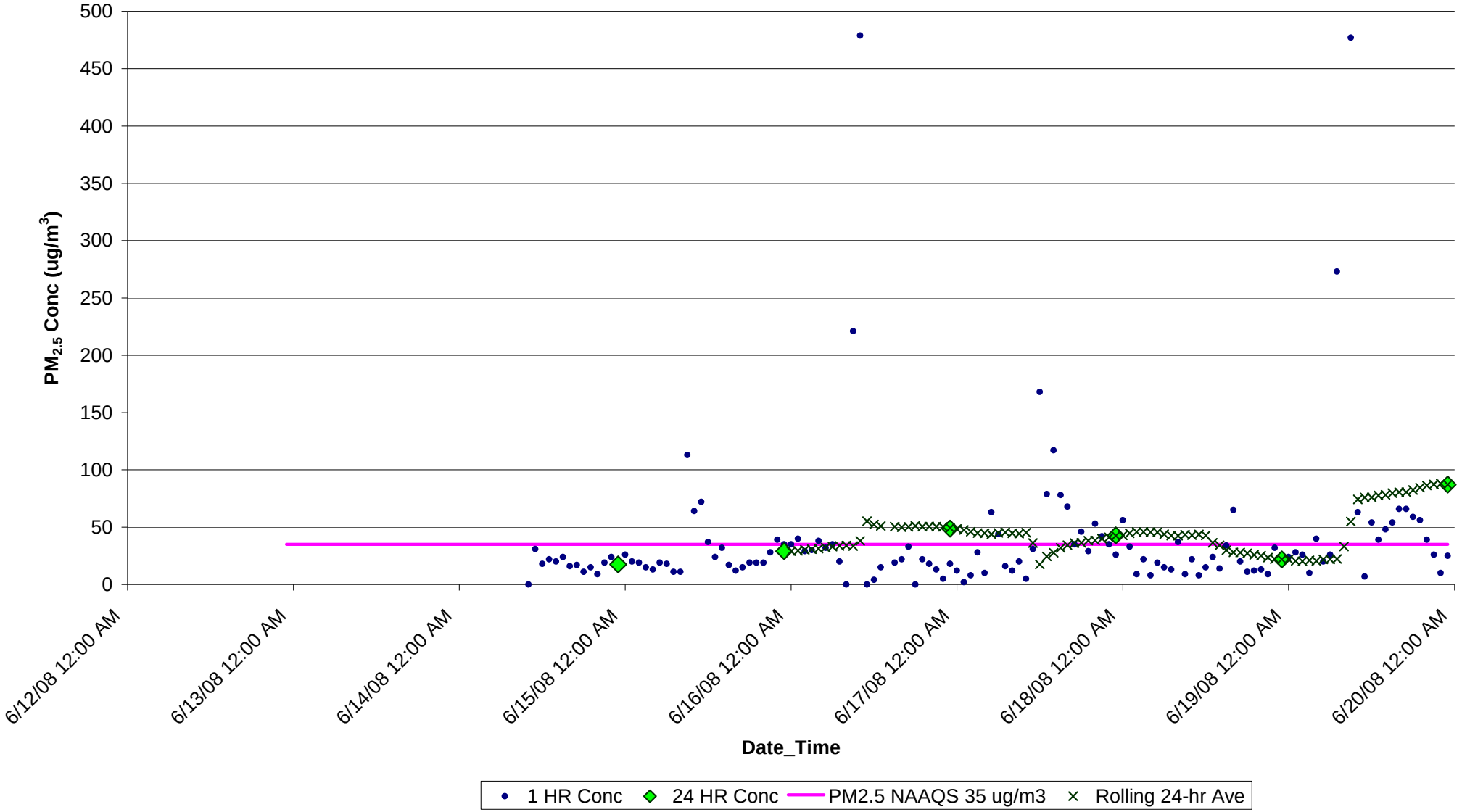


Figure F16. $PM_{2.5}$ Concentrations (ug/m^3) from June 20-27, 2008 for Fairfield, NC
EBAM Monitor

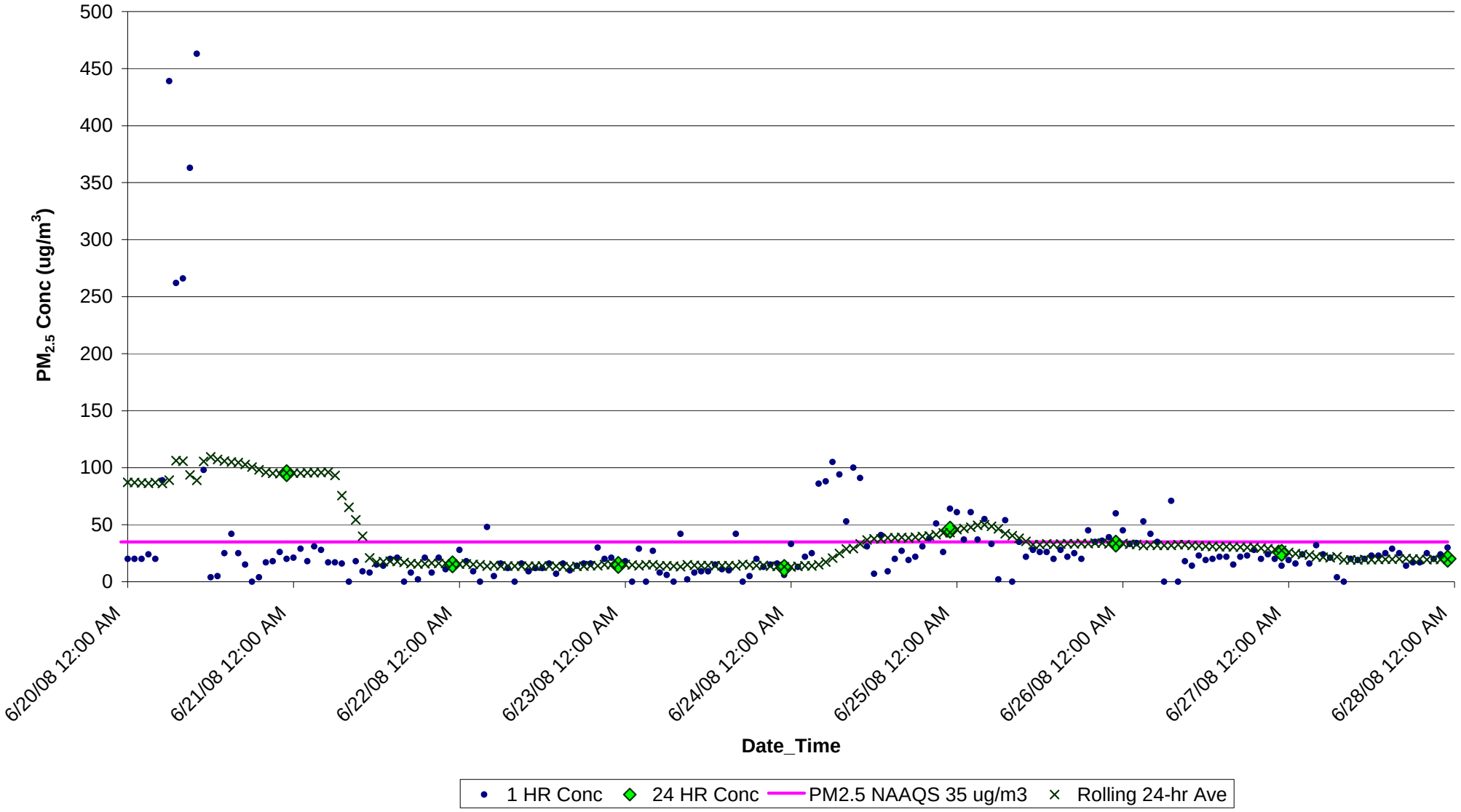


Figure F17. $PM_{2.5}$ Concentrations (ug/m^3) from June 28-July 4, 2008 for Fairfield, NC EBAM Monitor

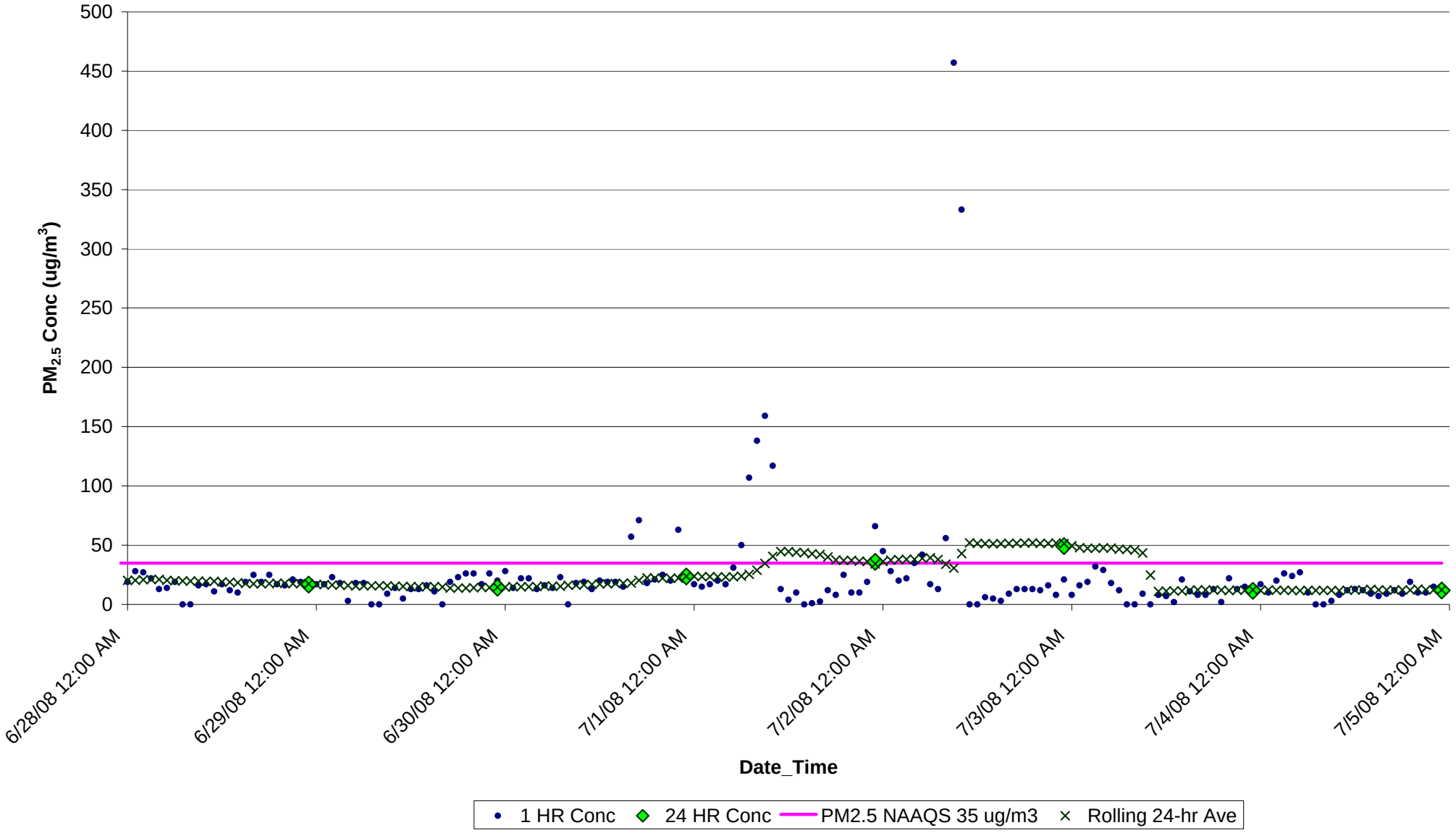


Figure F18. $PM_{2.5}$ Concentrations (ug/m^3) from July 5-11, 2008 for Fairfield, NC
EBAM Monitor

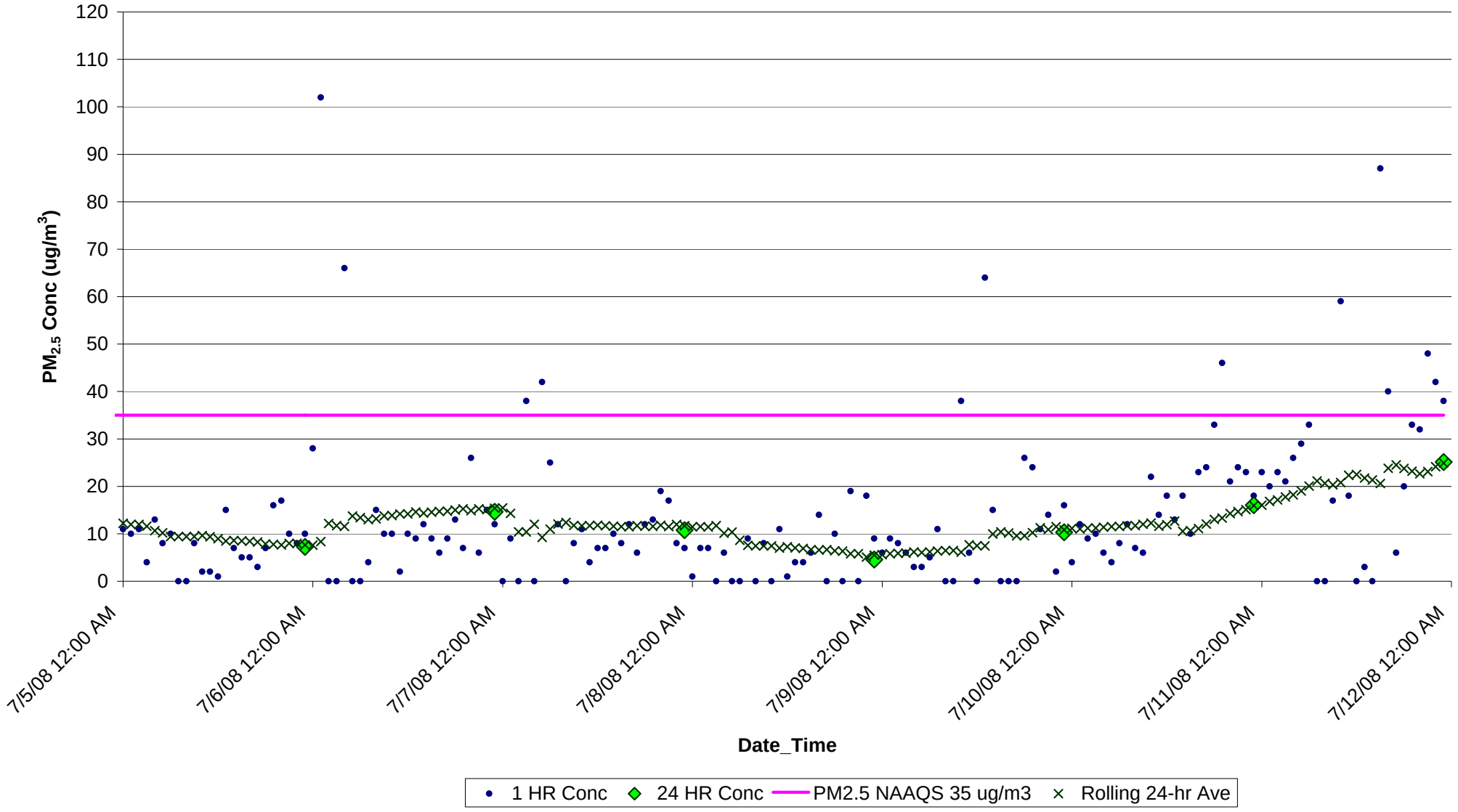


Figure F19. $PM_{2.5}$ Concentrations (ug/m^3) from July 12-18, 2008 for Fairfield, NC
EBAM Monitor

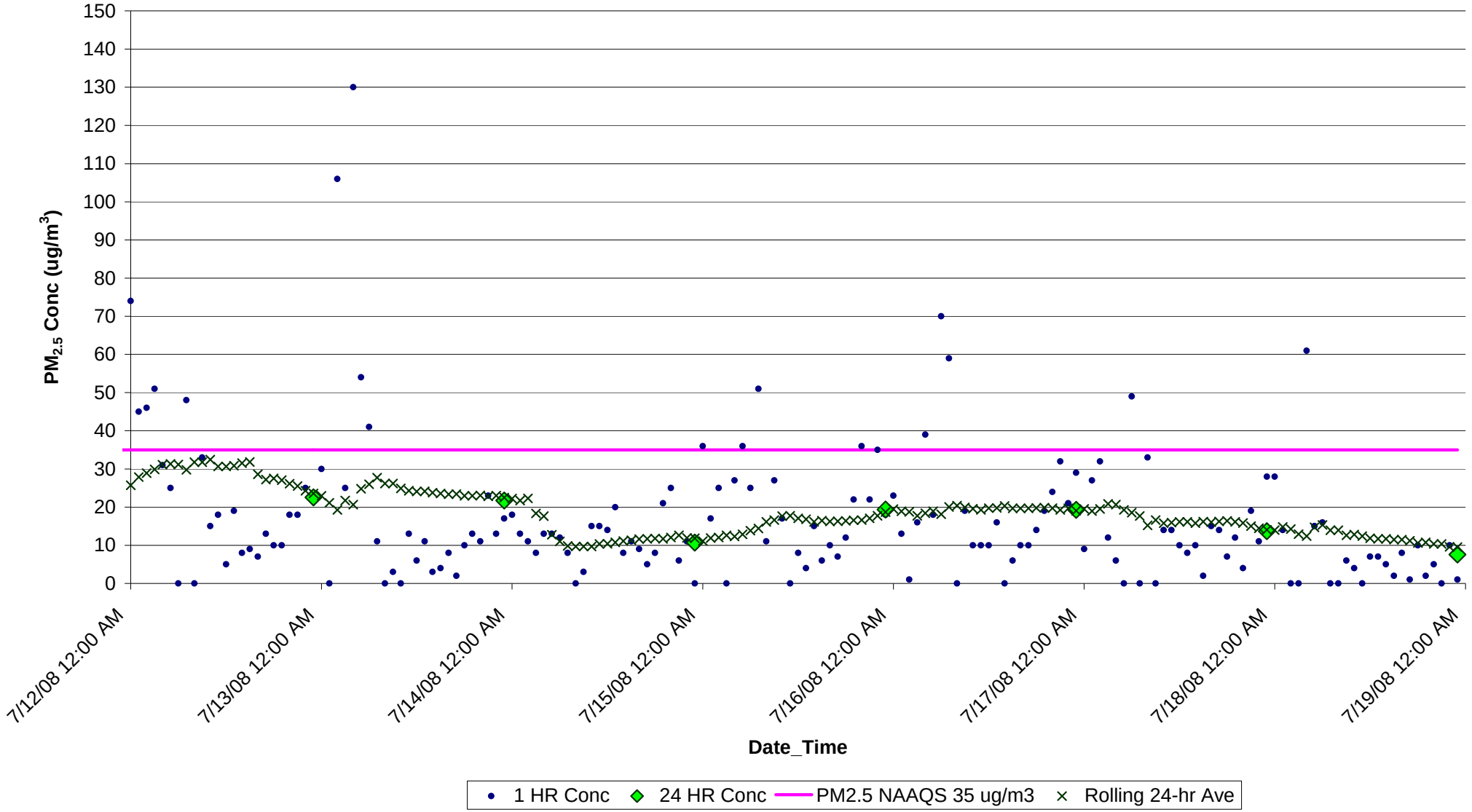


Figure F20. $PM_{2.5}$ Concentrations (ug/m^3) from July 19-25, 2008 for Fairfield, NC
EBAM Monitor

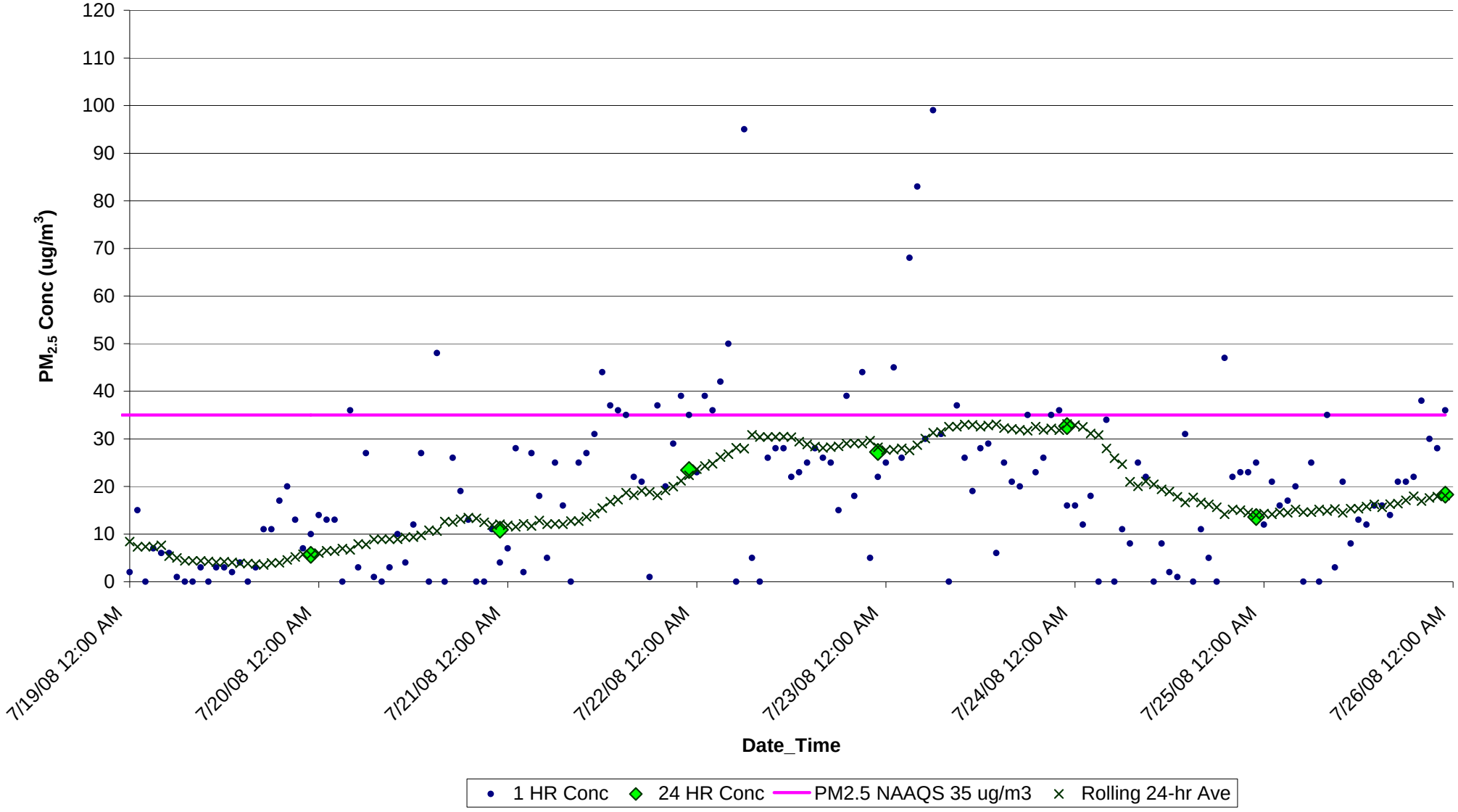


Figure F21. $PM_{2.5}$ Concentrations (ug/m^3) from July 29-Aug 4, 2008 for Fairfield, NC EBAM Monitor

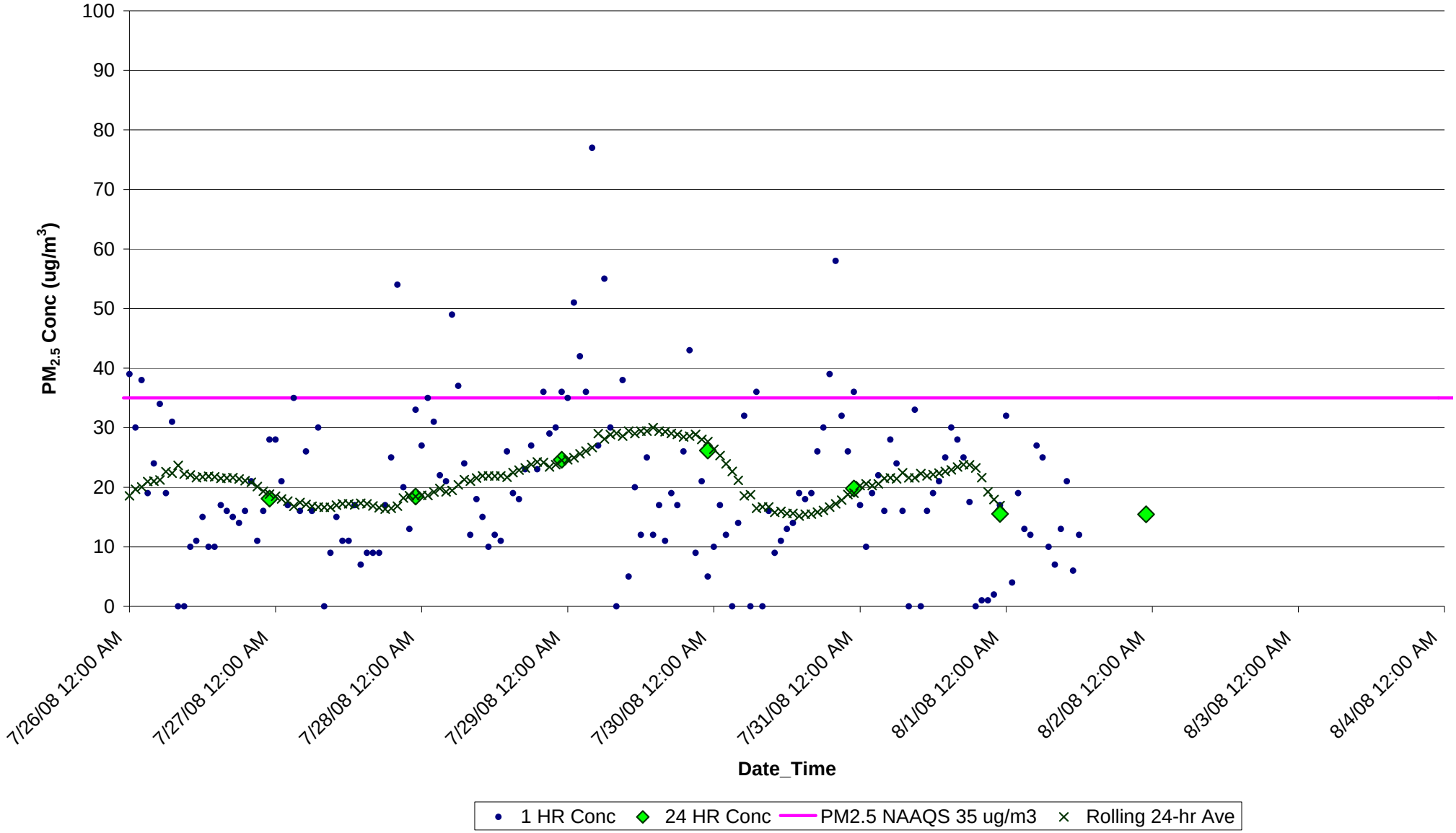


Figure F22. $PM_{2.5}$ Concentrations (ug/m^3) from June 12-19, 2008 for Manteo, NC
EBAM Monitor

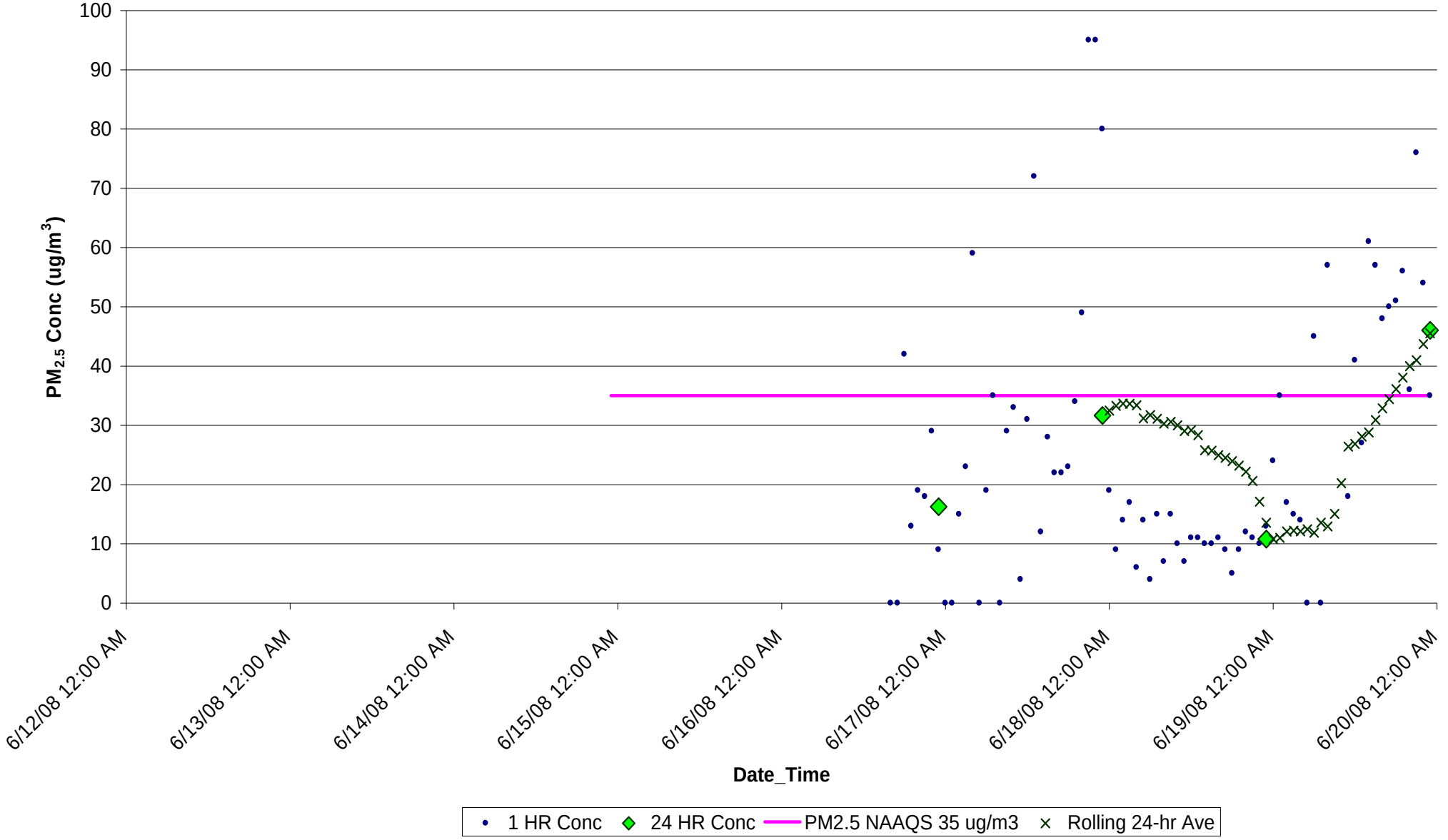


Figure F23. $PM_{2.5}$ Concentrations (ug/m^3) from June 20-27, 2008 for Manteo, NC
EBAM Monitor

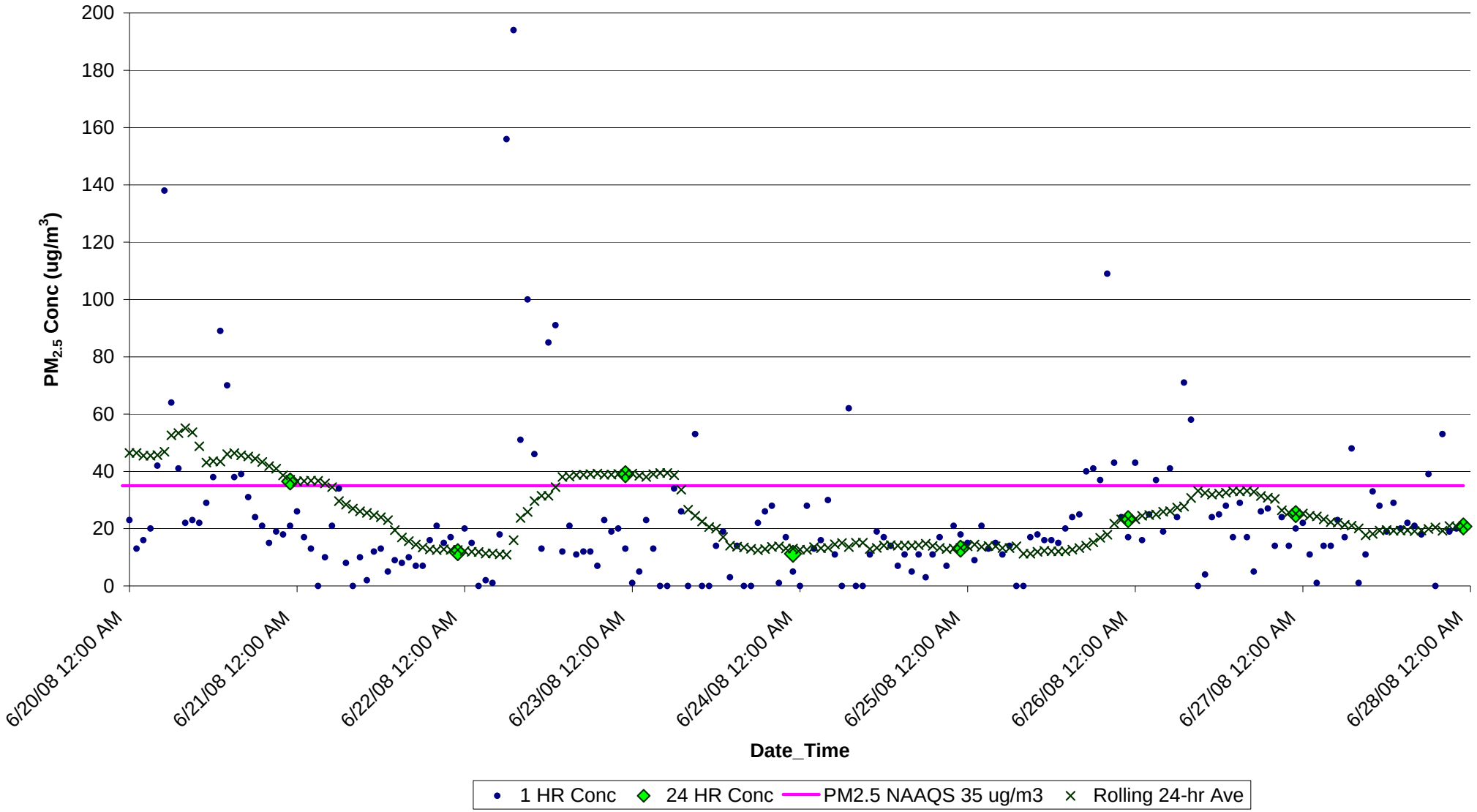


Figure F24. $PM_{2.5}$ Concentrations (ug/m^3) from June 28-July 4, 2008 for Manteo, NC
EBAM Monitor

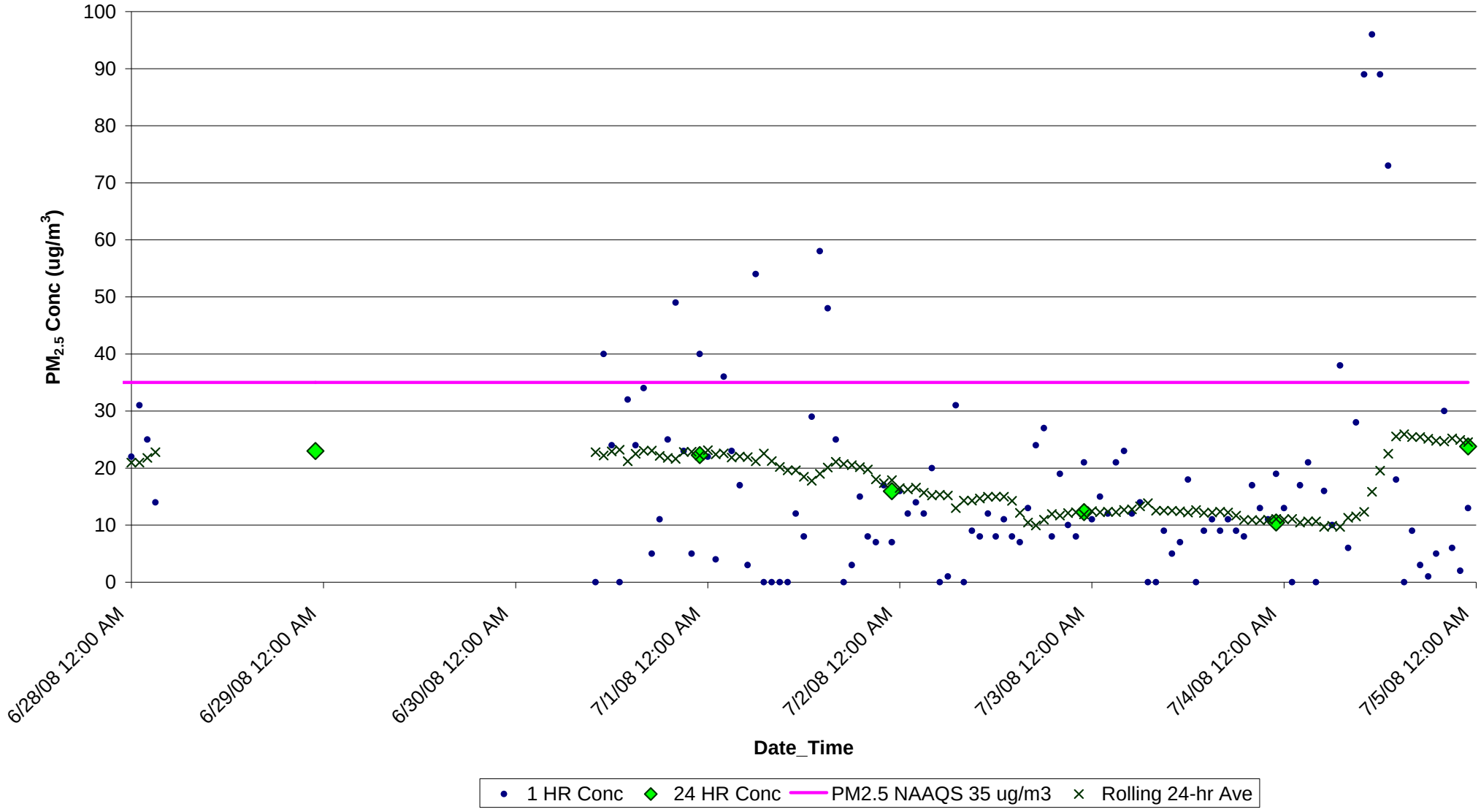


Figure F25. $PM_{2.5}$ Concentrations (ug/m^3) from July 5-11, 2008 for Manteo, NC EBAM Monitor

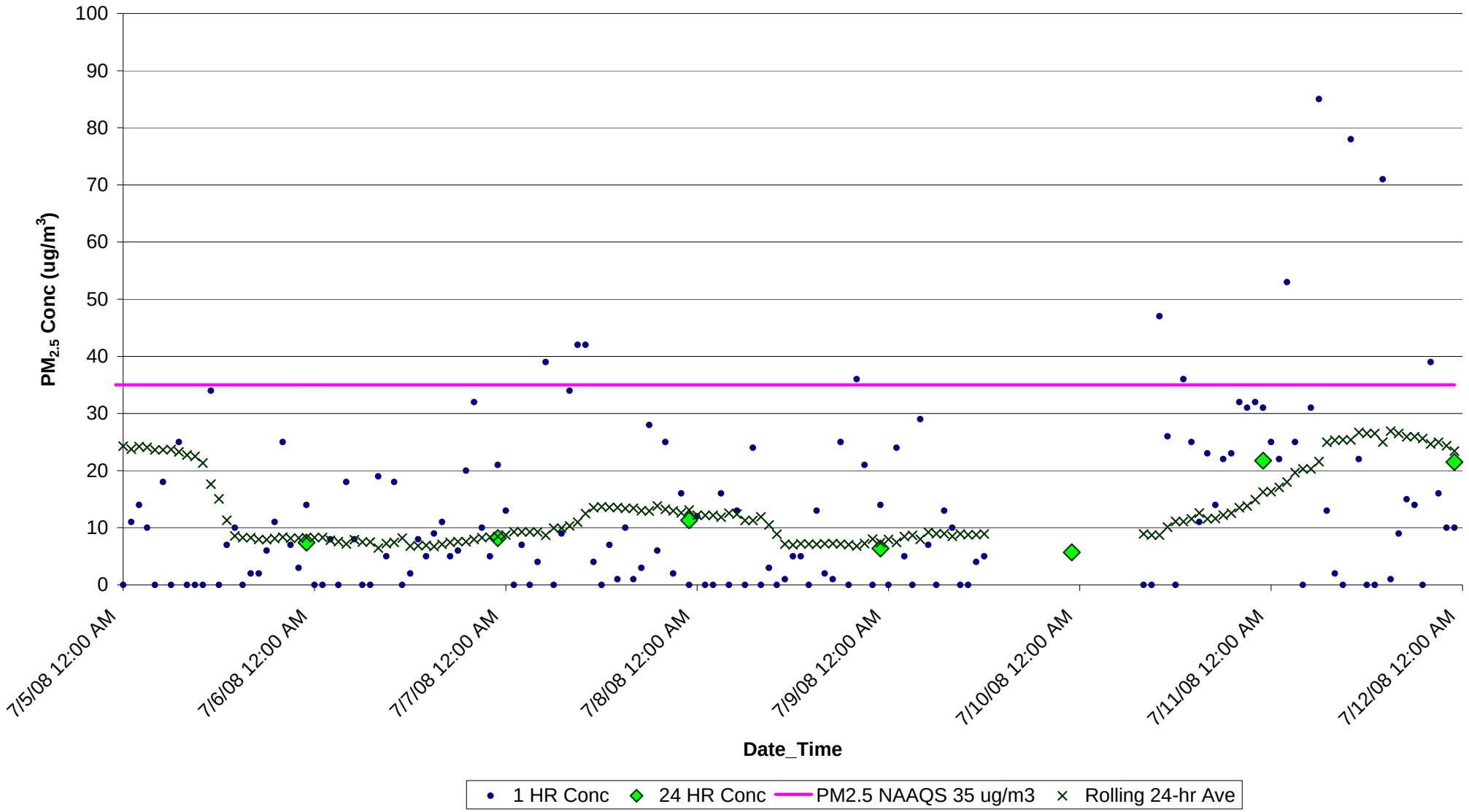


Figure F26. $PM_{2.5}$ Concentrations (ug/m^3) from July 12-18, 2008 for Manteo, NC
EBAM Monitor

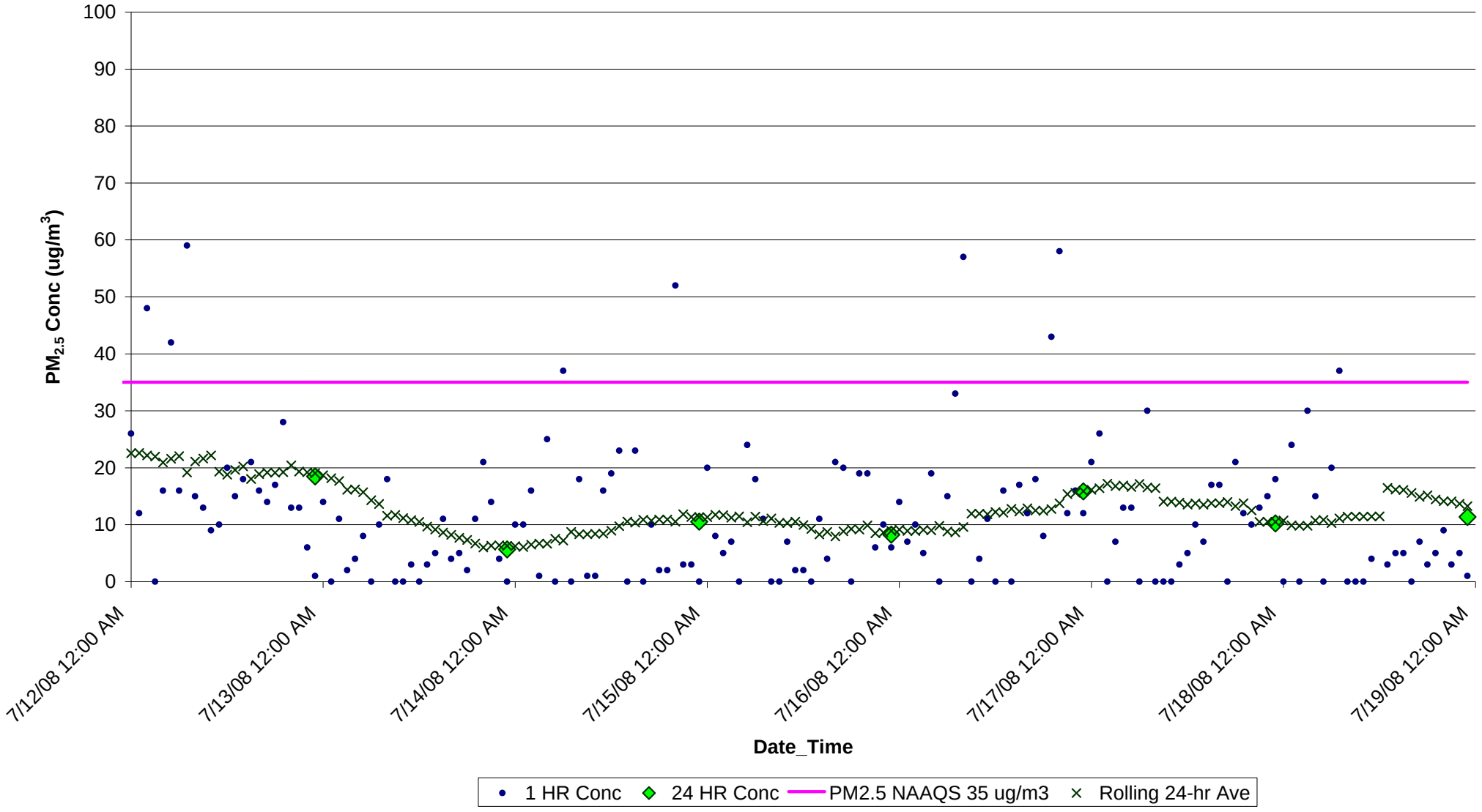


Figure F27. $PM_{2.5}$ Concentrations (ug/m^3) from July 19-25, 2008 for Manteo, NC
EBAM Monitor

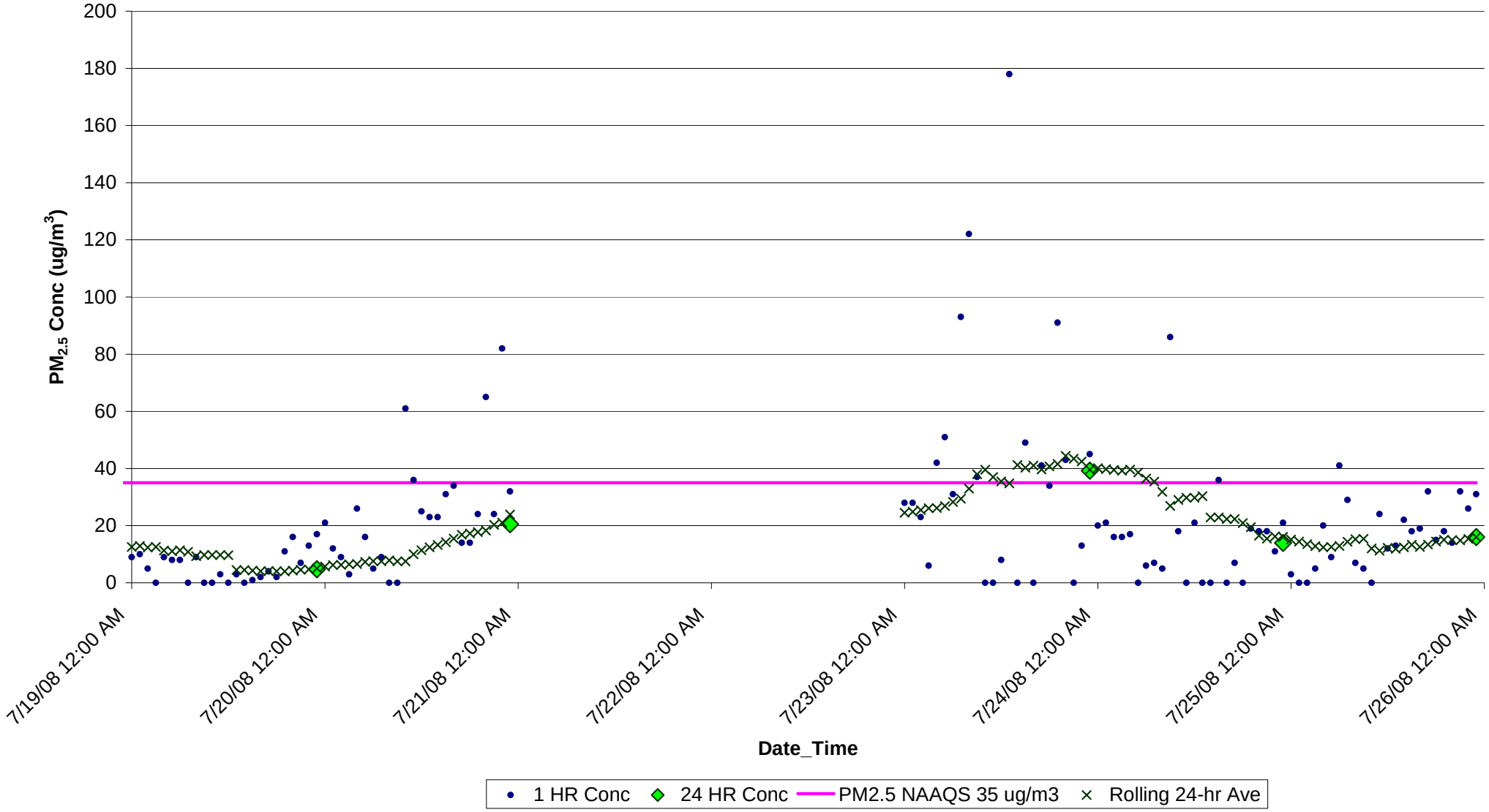


Figure F28. $PM_{2.5}$ Concentrations (ug/m^3) from July 26-Aug 4, 2008 for Manteo, NC
EBAM Monitor

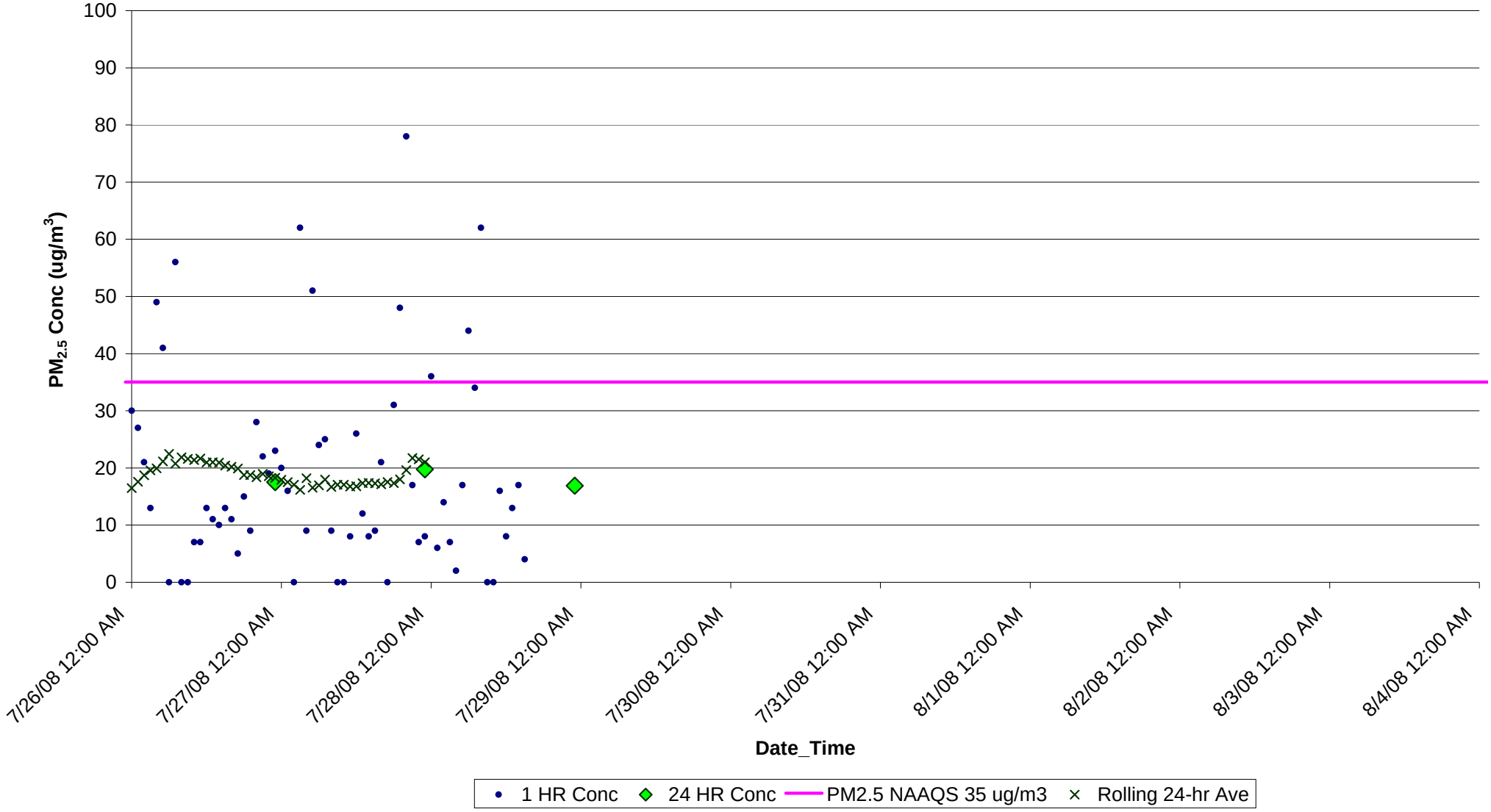


Figure F29. $PM_{2.5}$ Concentration (ug/m^3) from June 12-19, 2008 for Plymouth, NC
EBAM Monitor

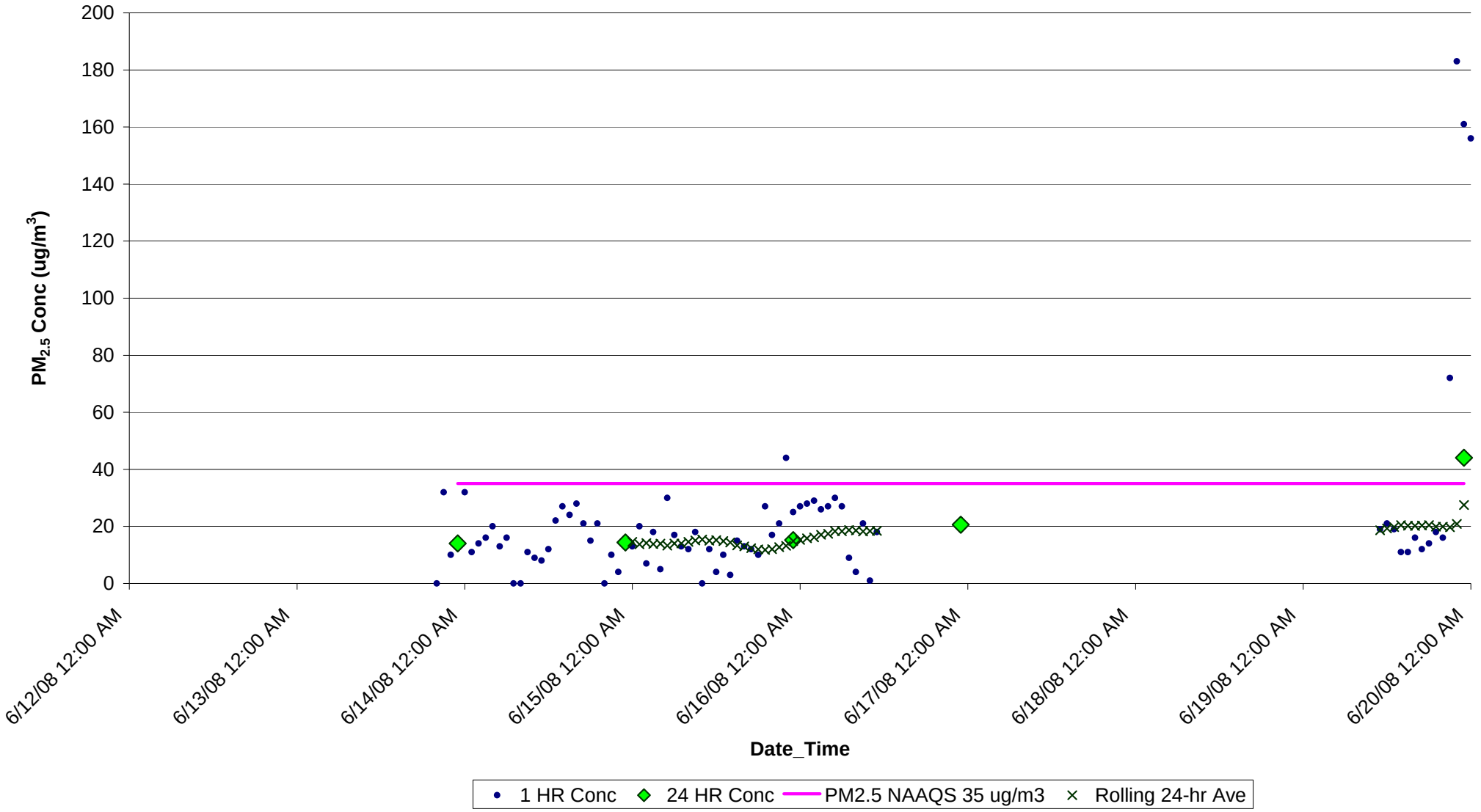


Figure F30. $PM_{2.5}$ Concentration (ug/m^3) from June 20-27, 2008 for Plymouth, NC
EBAM Monitor

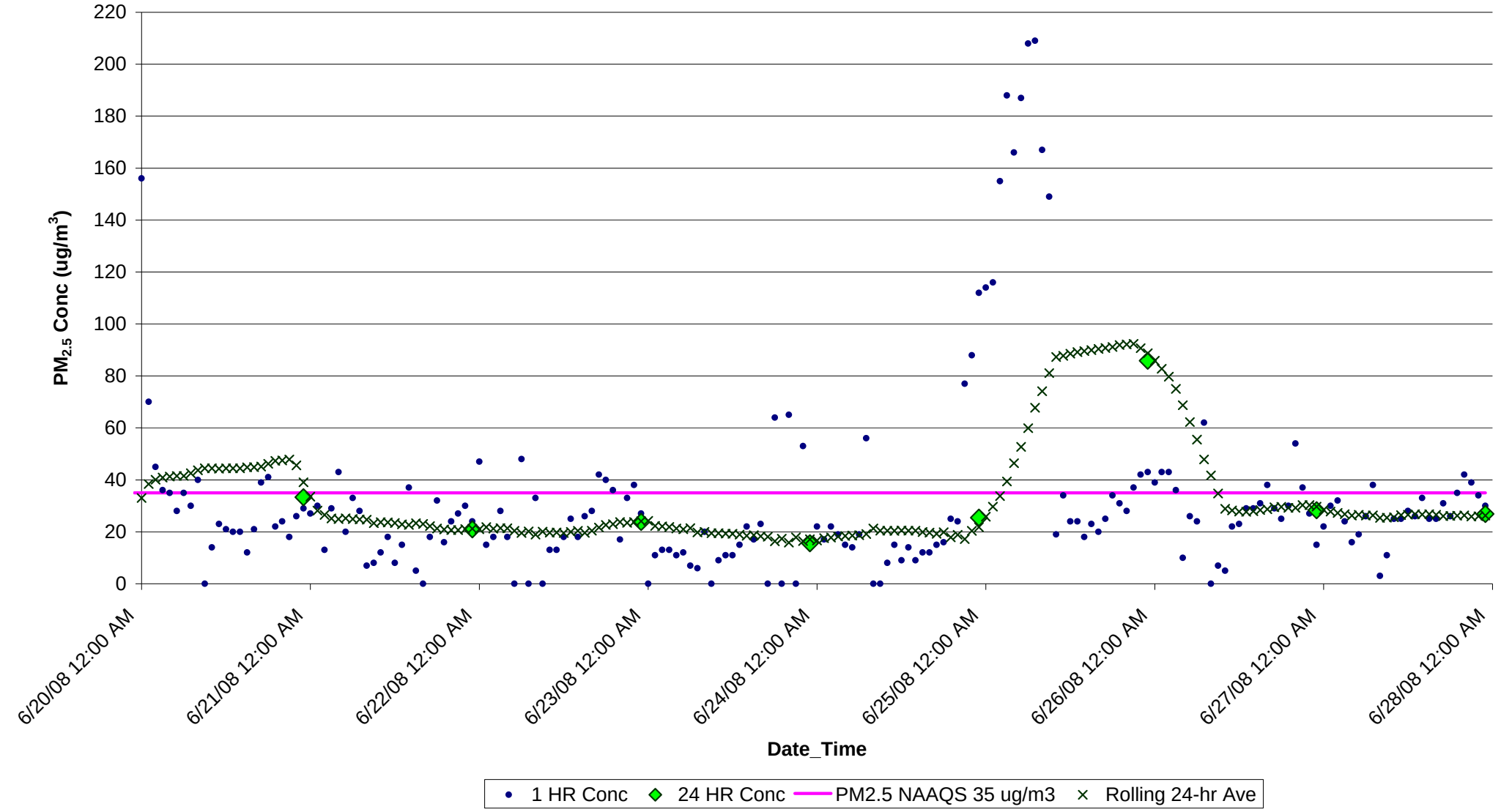


Figure F31. $PM_{2.5}$ Concentration (ug/m^3) from June 28-July 4, 2008 for Plymouth, NC
EBAM Monitor

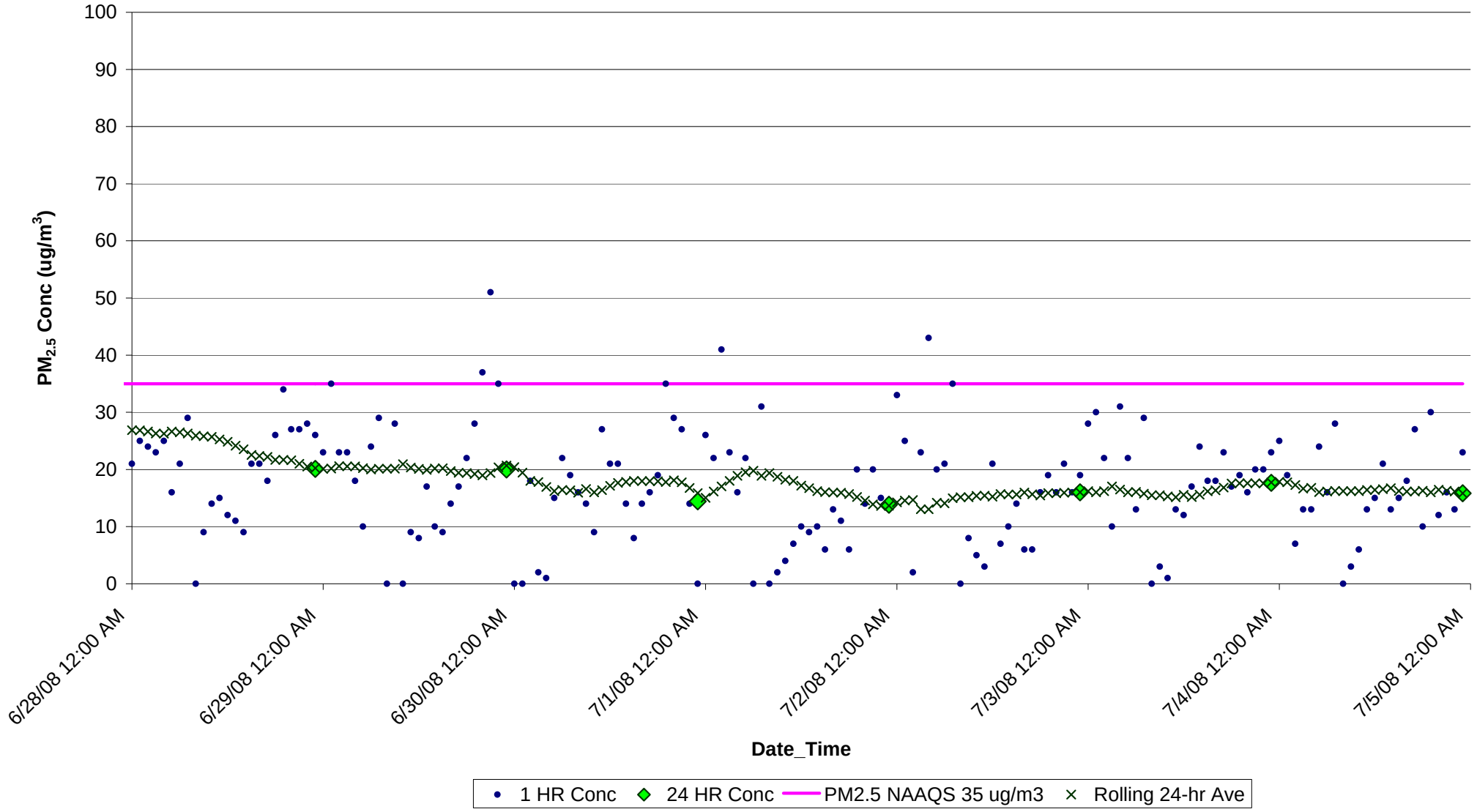


Figure F32. $PM_{2.5}$ Concentration (ug/m^3) from July 5-11, 2008 for Plymouth, NC EBAM Monitor

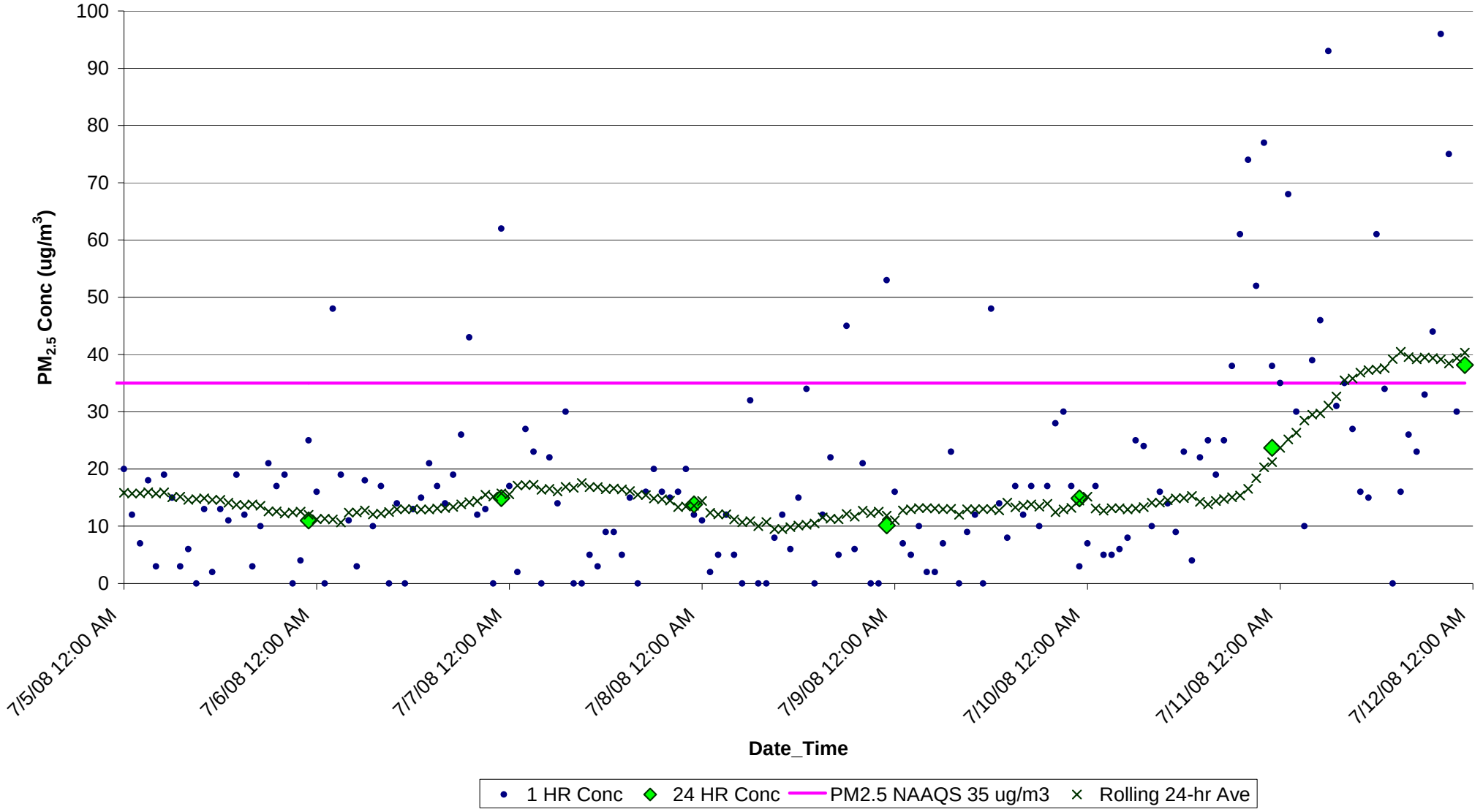


Figure F33. $PM_{2.5}$ Concentration (ug/m^3) from July 12-18, 2008 for Plymouth, NC
EBAM Monitor

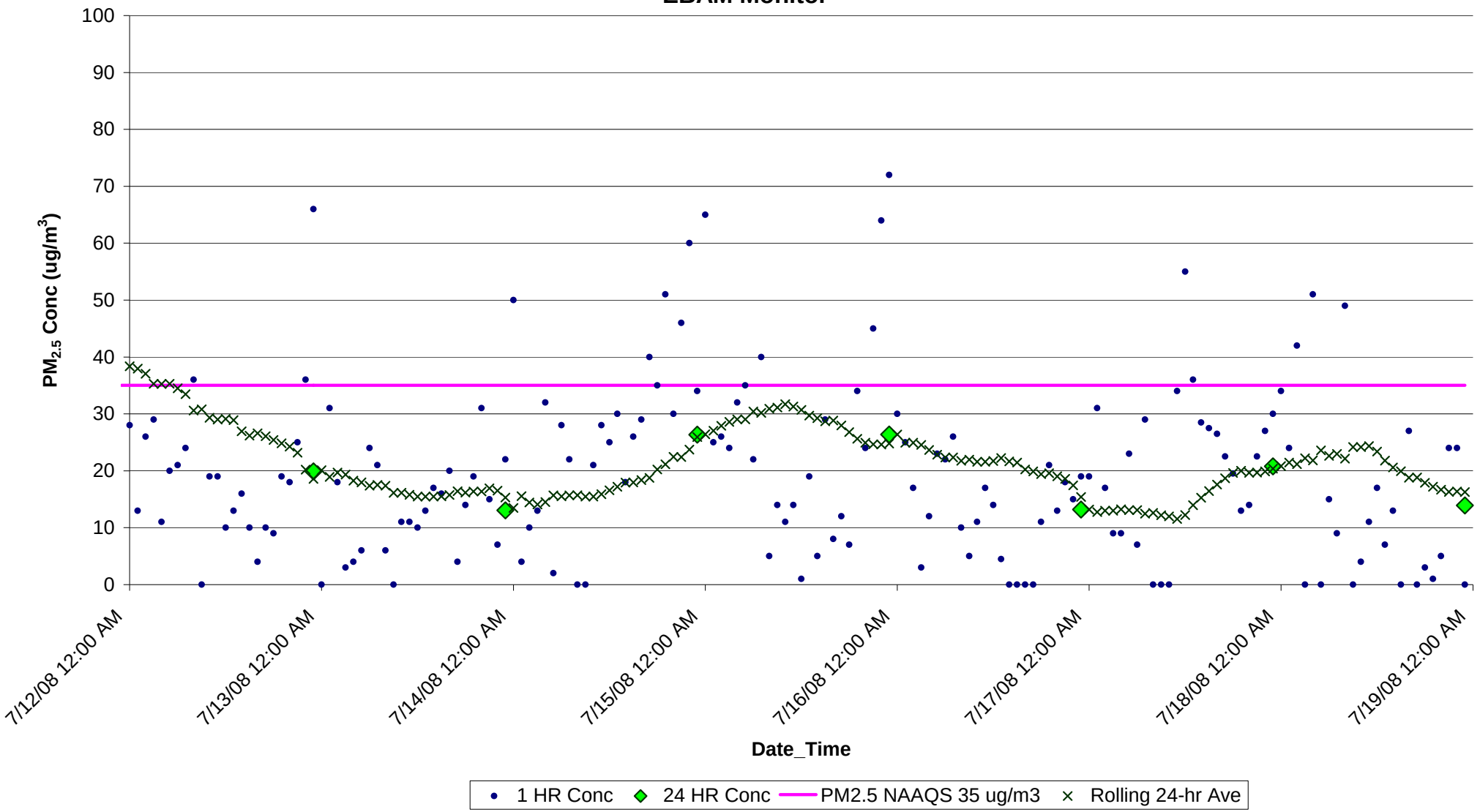


Figure F34. $PM_{2.5}$ Concentration (ug/m^3) from July 19-25, 2008 for Plymouth, NC
EBAM Monitor

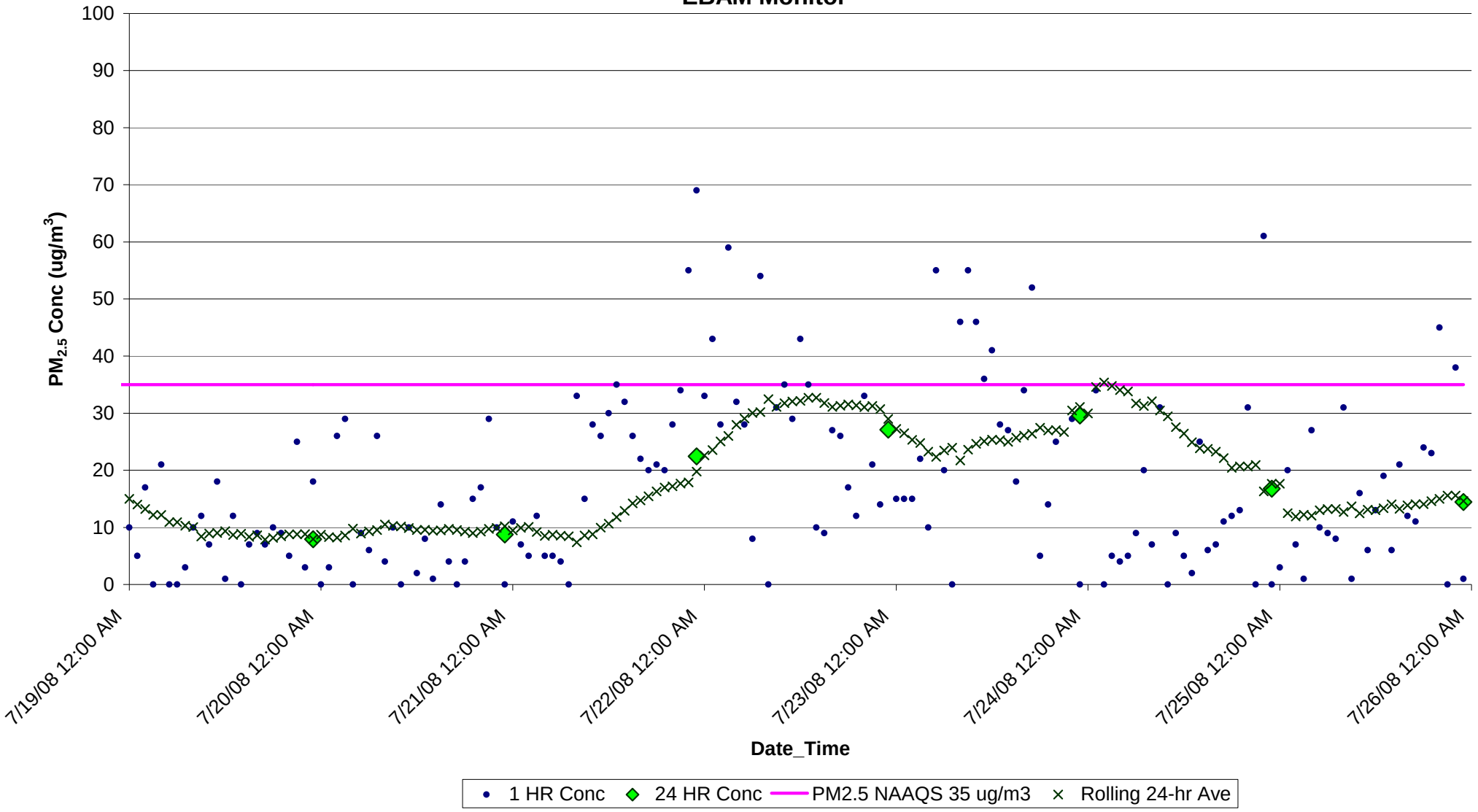


Figure F35. $PM_{2.5}$ Concentration (ug/m^3) from July 26-Aug 4, 2008 for Plymouth, NC
EBAM Monitor

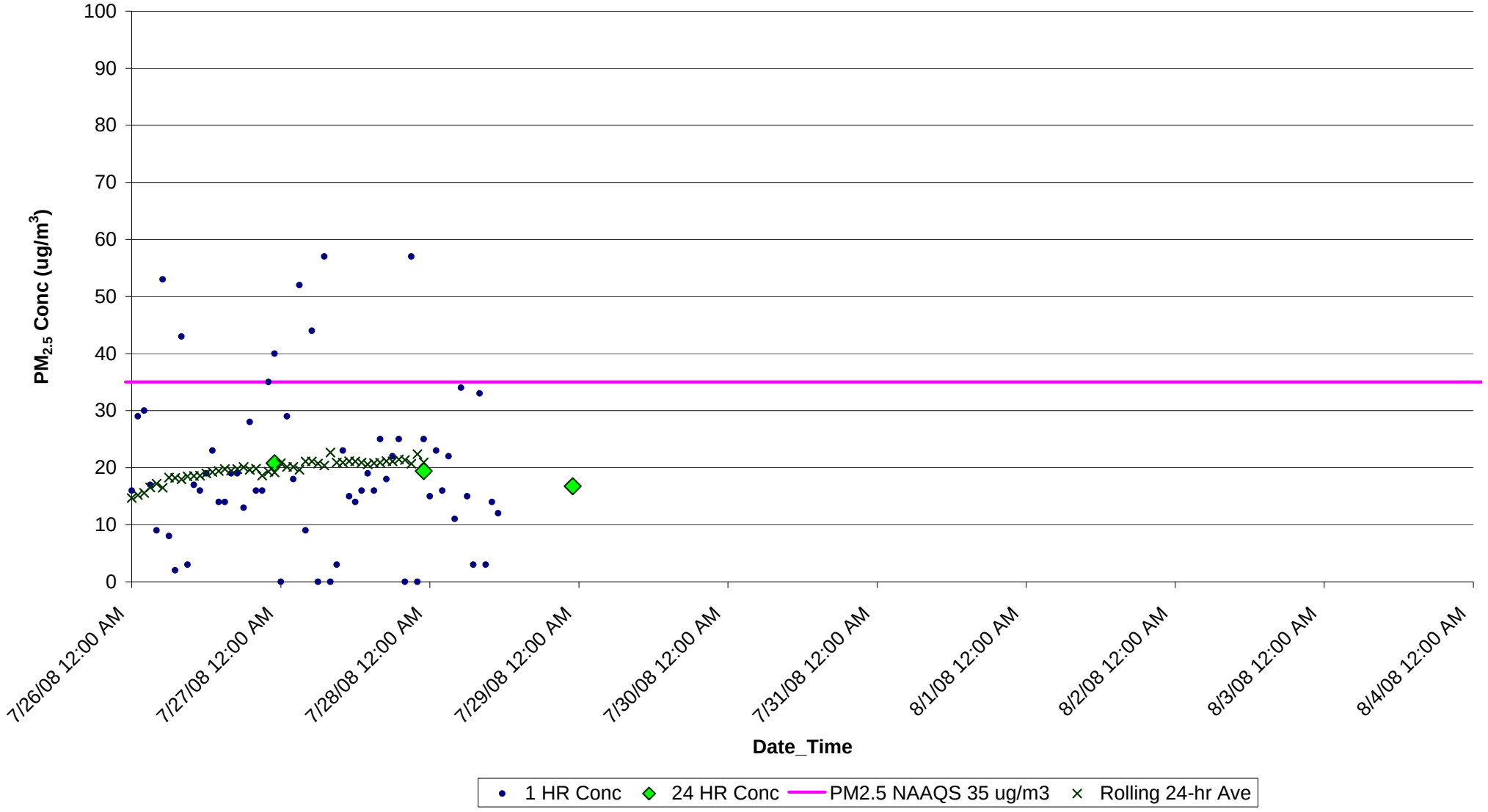


Figure F36. PM_{10} and $PM_{2.5}$ Concentrations (ug/m^3) from June 12-19, 2008 for Washington, NC EBAM Monitor

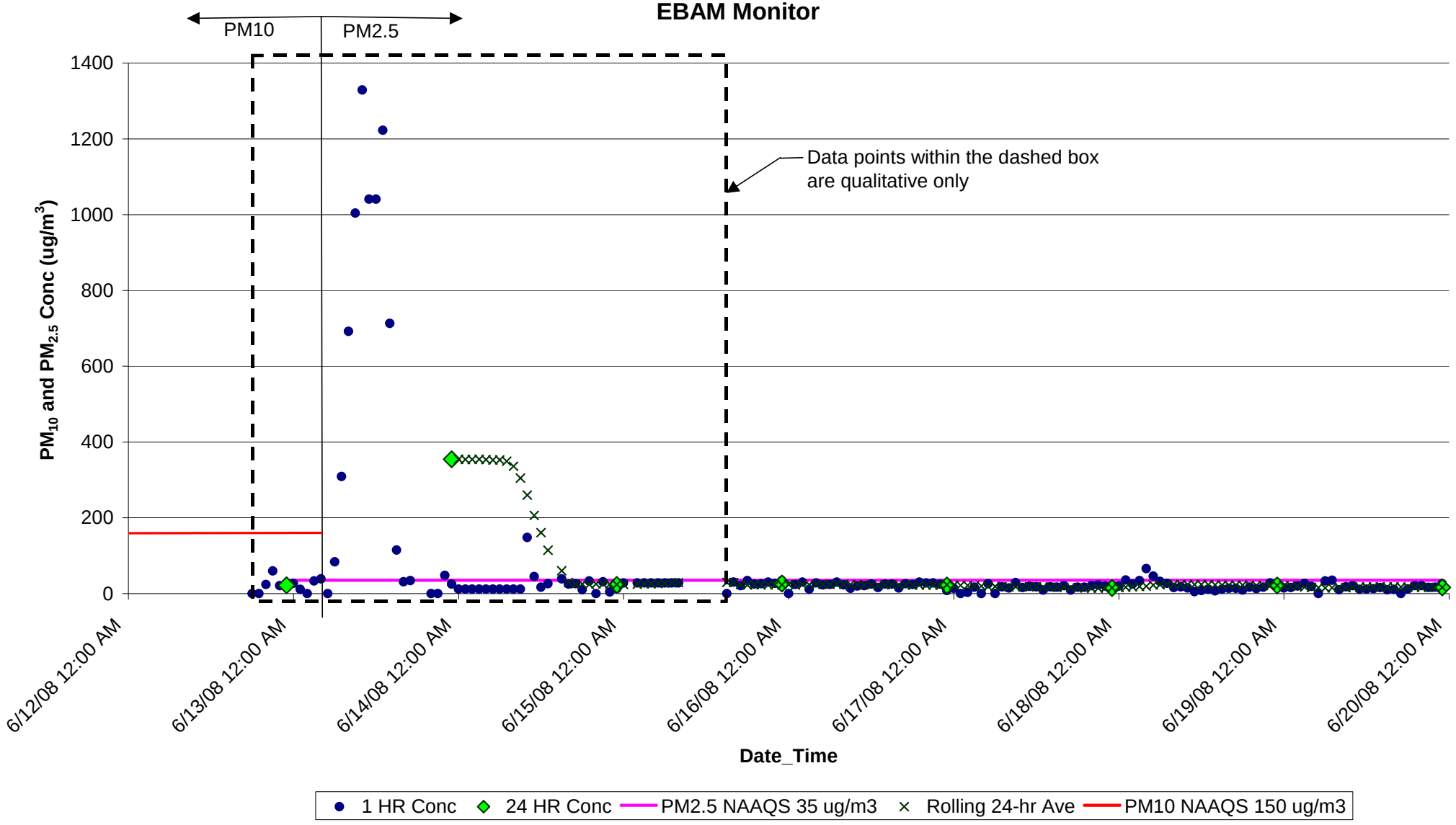


Figure F36a. PM_{10} and $PM_{2.5}$ Concentrations (ug/m^3) from June 12-19, 2008 for Washington, NC EBAM Monitor

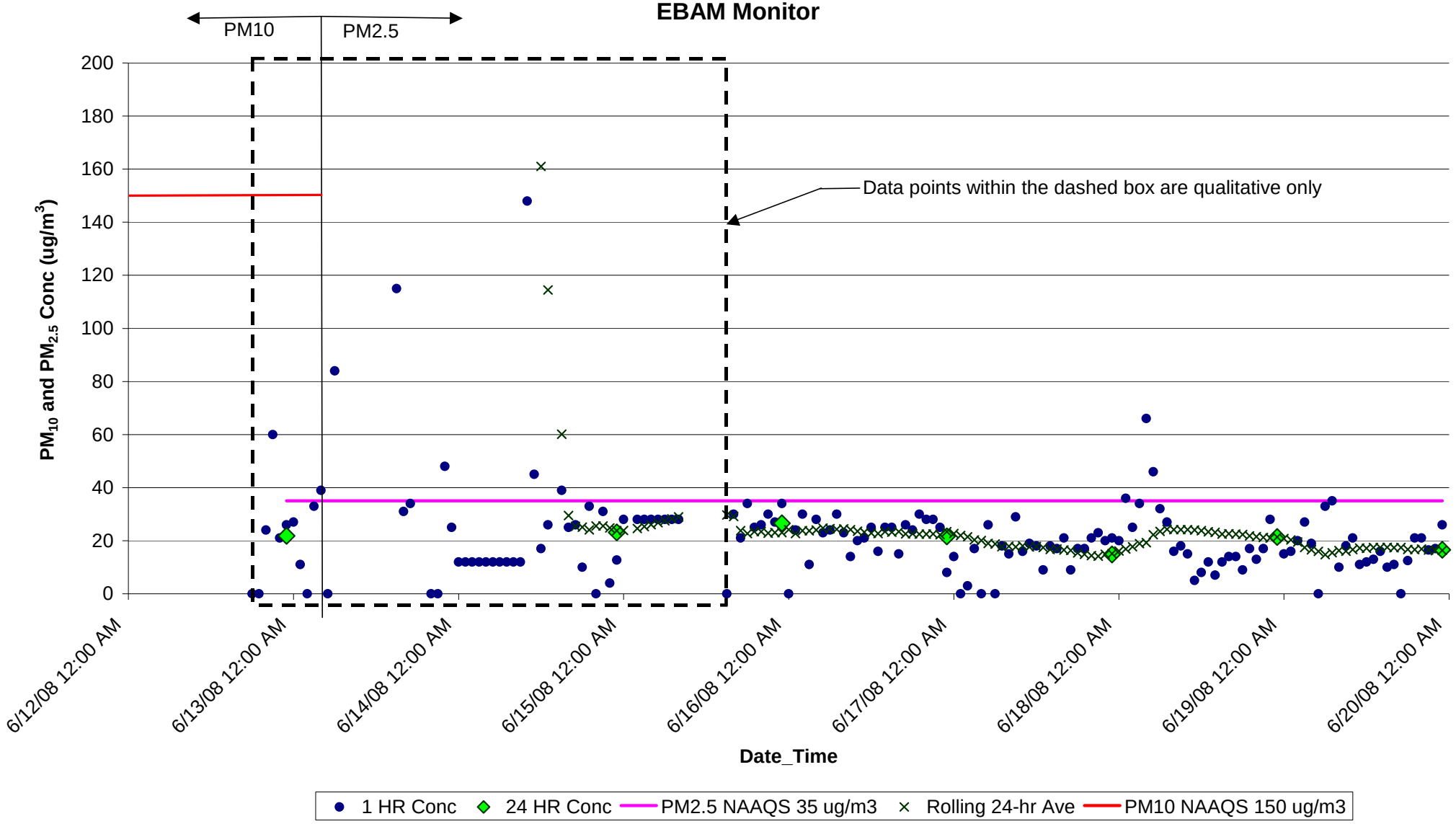


Figure F37. $PM_{2.5}$ Concentrations (ug/m^3) from June 20-27, 2008 for Washington, NC
EBAM Monitor

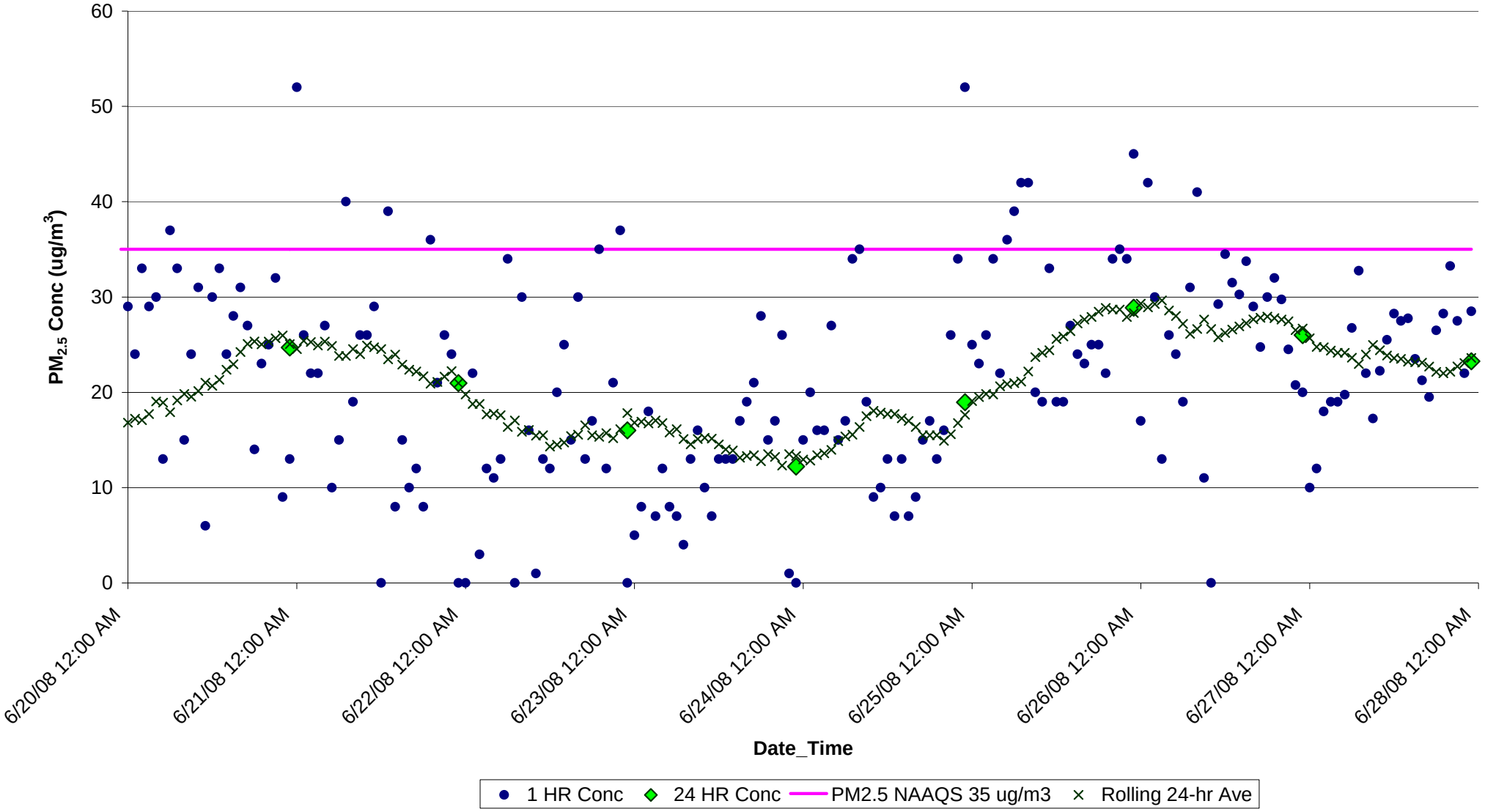


Figure F38. $PM_{2.5}$ Concentrations (ug/m^3) from June 28-July 4, 2008 for Washington, NC EBAM Monitor

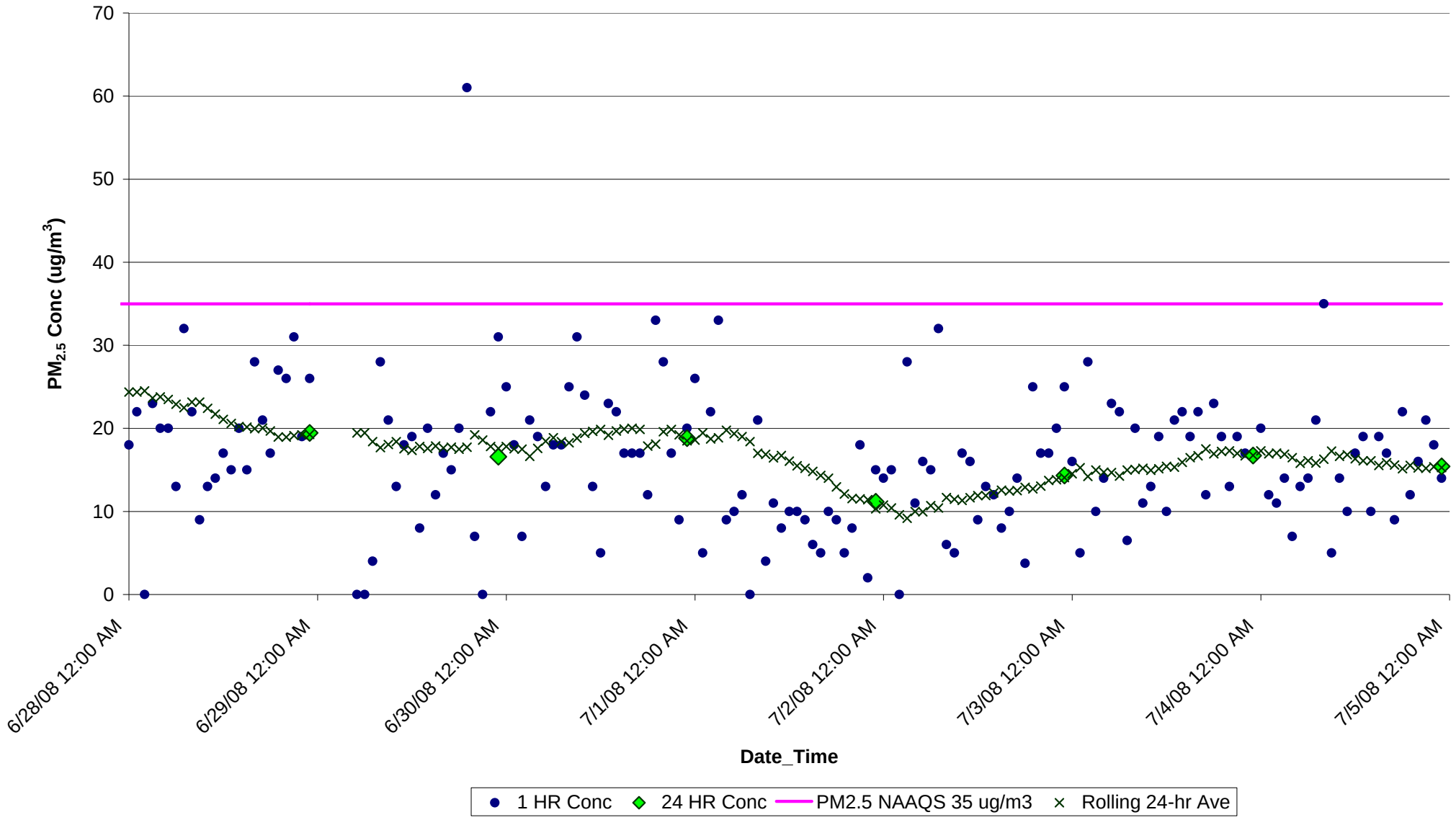


Figure F39. $PM_{2.5}$ Concentrations (ug/m^3) from July 5-11, 2008 for Washington, NC
EBAM Monitor

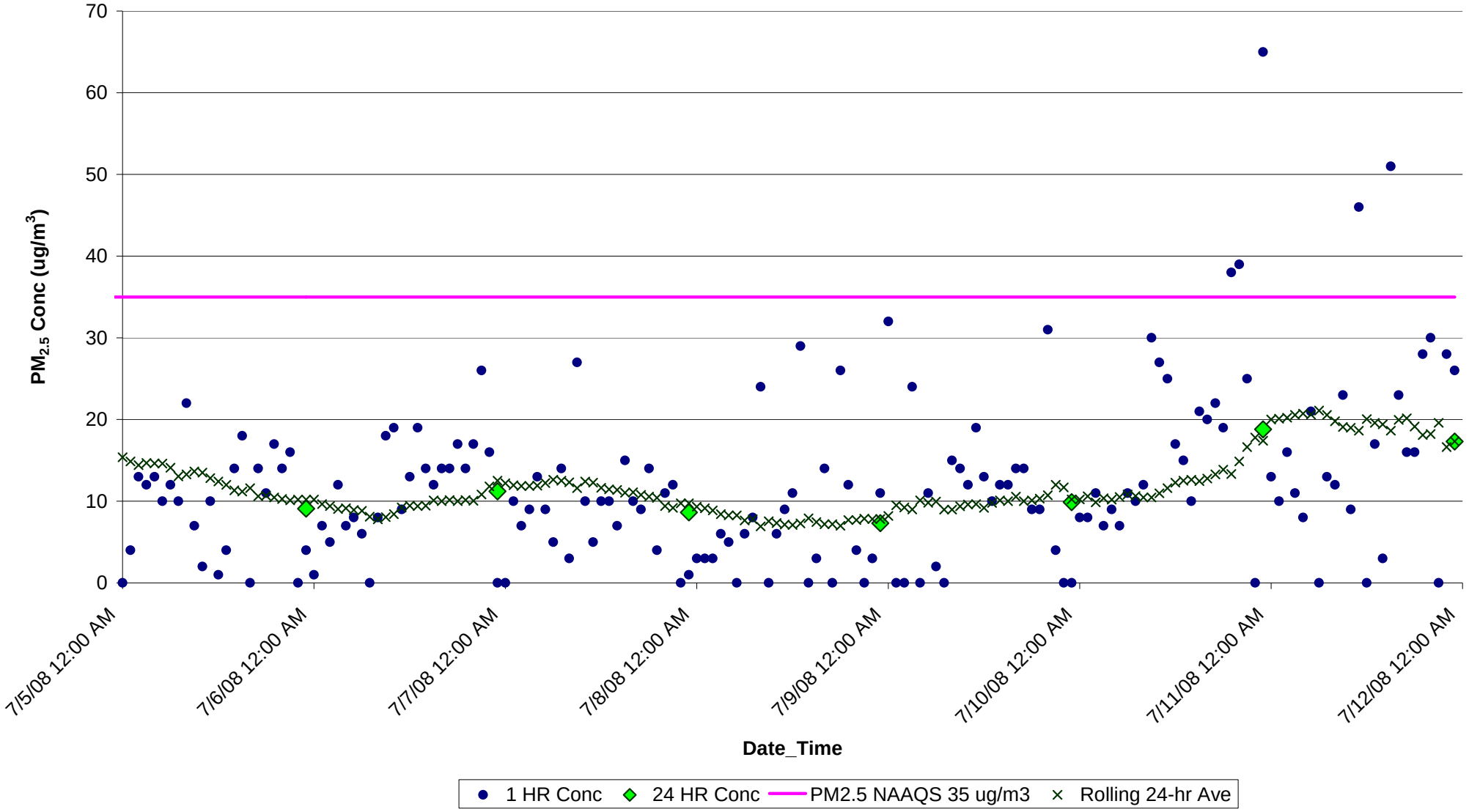


Figure F40. $PM_{2.5}$ Concentrations (ug/m^3) from July 12-18, 2008 for Washington, NC
EBAM Monitor

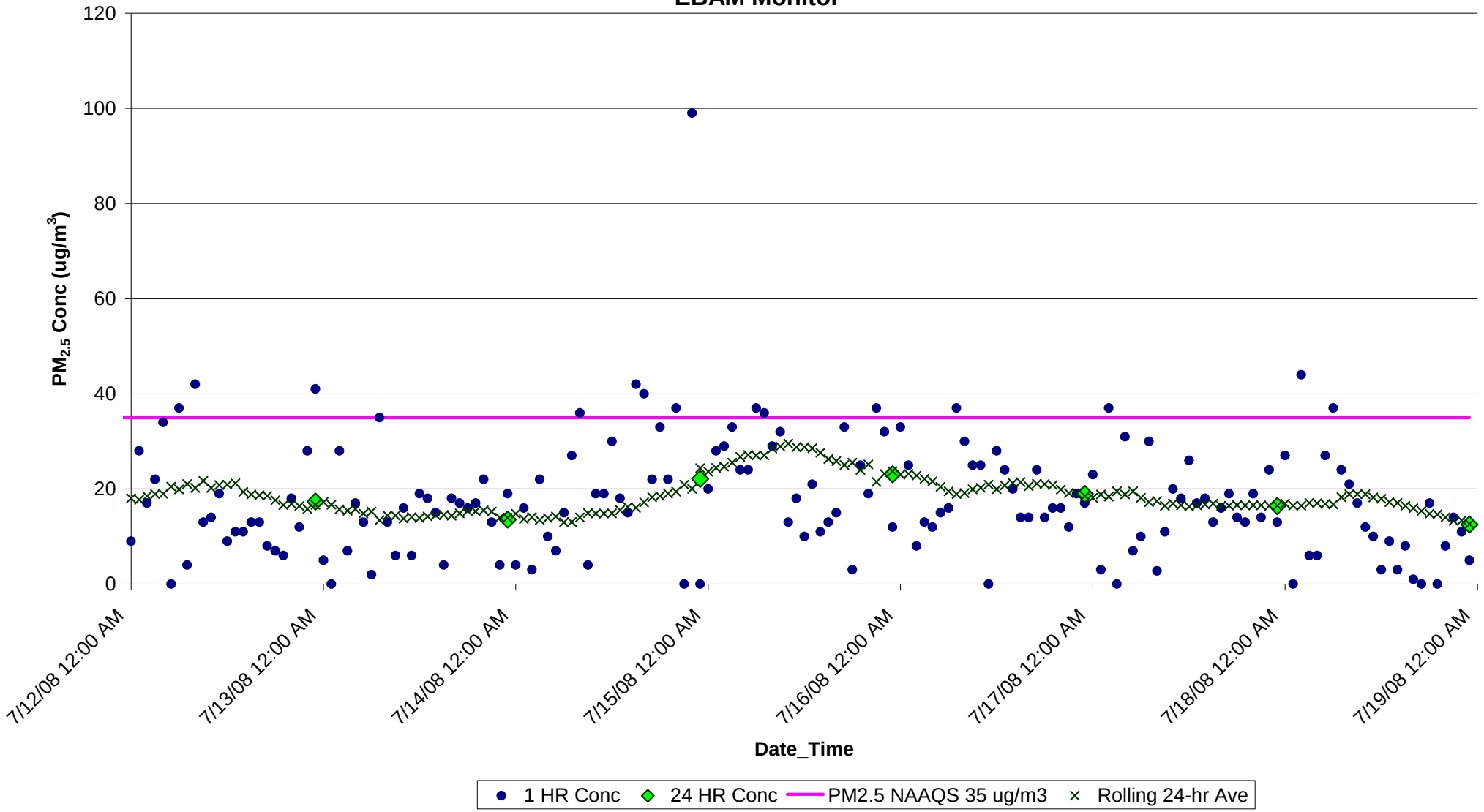


Figure F41. $PM_{2.5}$ Concentrations (ug/m^3) from July 19-25, 2008 for Washington, NC
EBAM Monitor

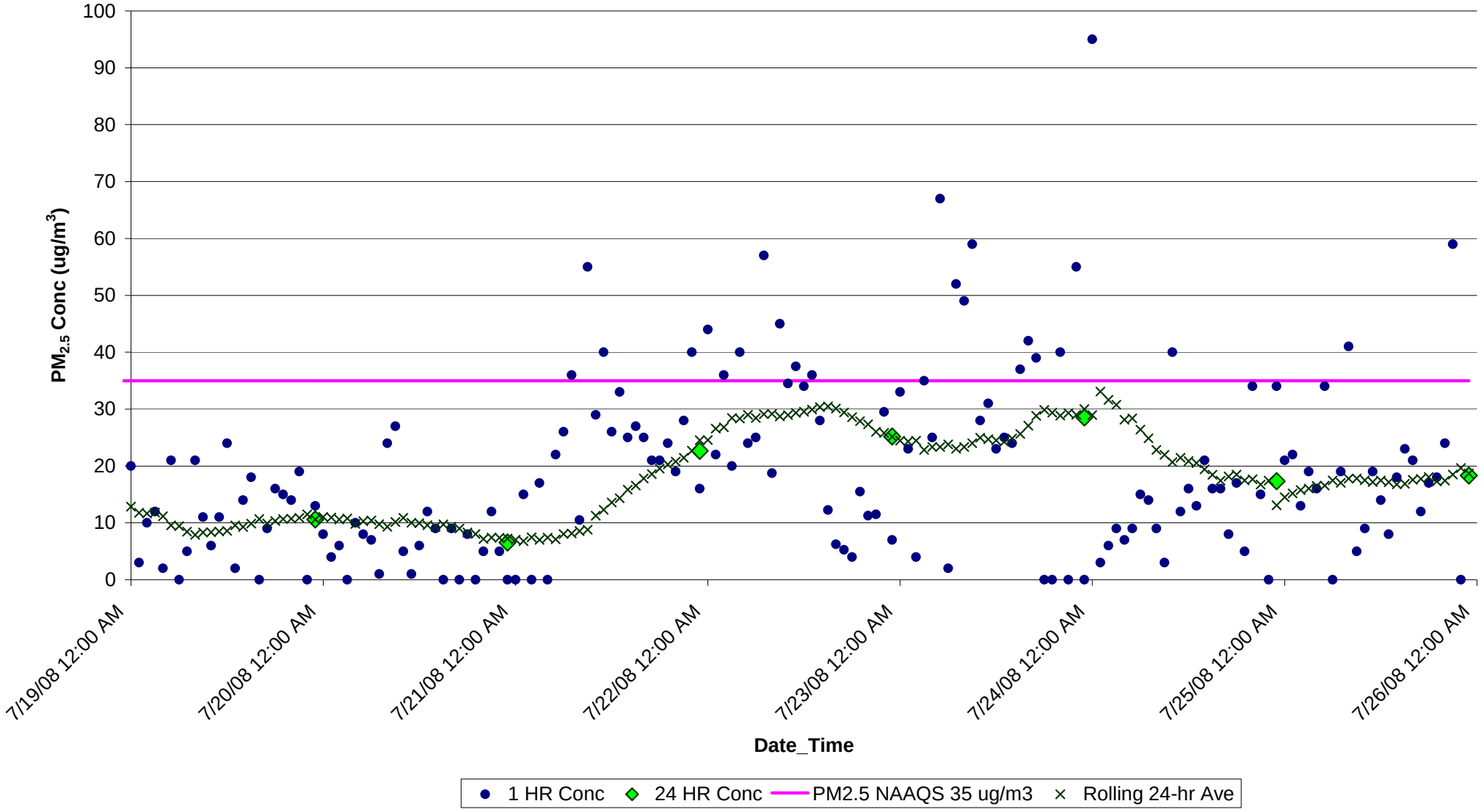
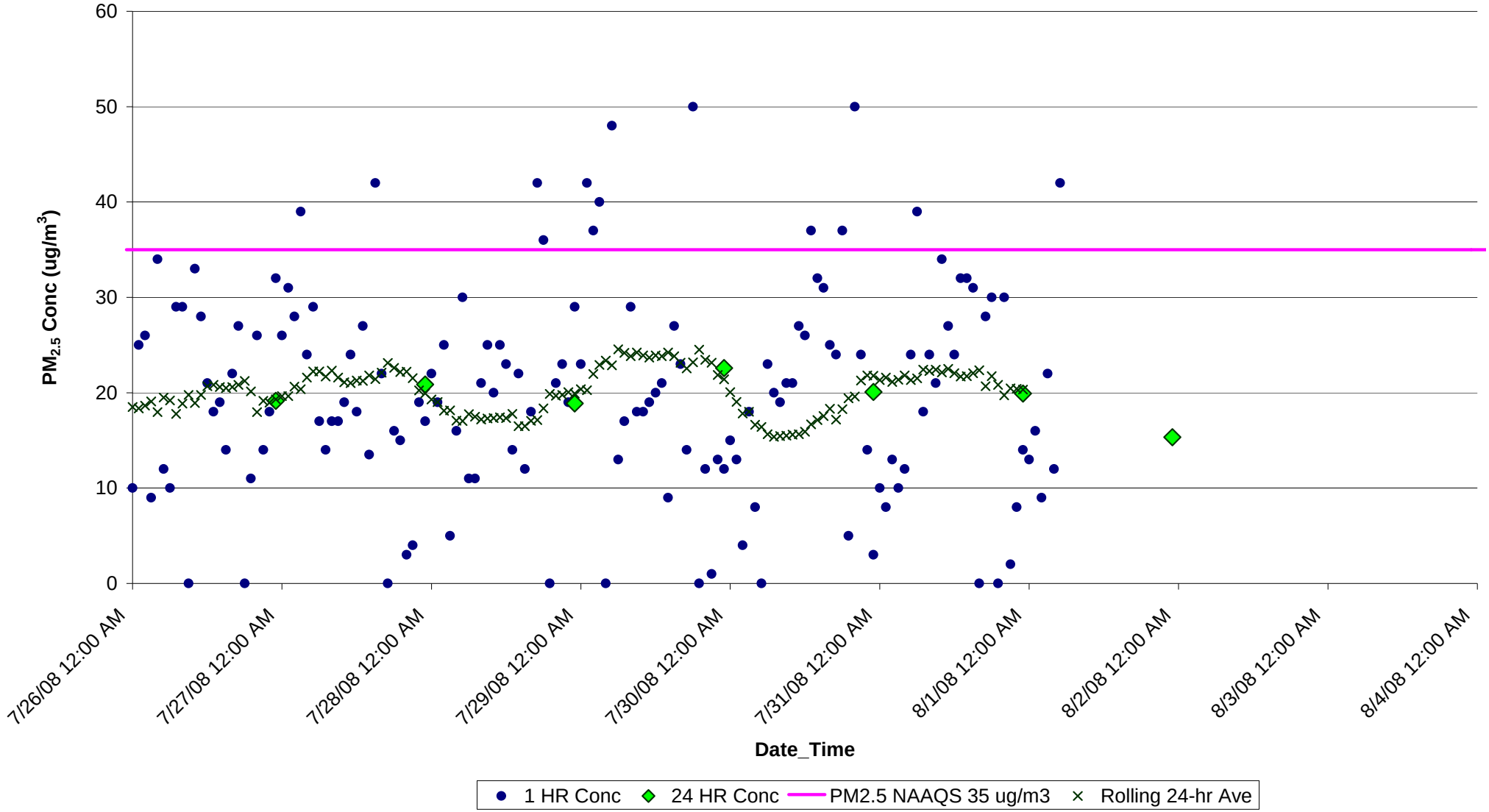


Figure F42. $PM_{2.5}$ Concentrations (ug/m^3) from July 26-Aug 4, 2008 for Washington, NC
EBAM Monitor



Appendix H - Quality Control (QC) / Quality Assurance (QA)

H.0 Introduction

Several steps were taken to assure the quality or validity of the data in this report. Instruments were checked before deployment or as they were deployed. Their data were given a quick reality check as first received. Audits or calibration checks of the instruments were performed periodically during this study. And a more thorough examination was applied to the data as time permitted. The following sections describe these QC/QA activities.

H.1 Field QA Procedures and Criteria

The field QA procedures and criteria were conducted using an E-BAM Operator Checklist provided by Air Resource Specialists, Inc. The items on the checklist included:

- Alarms,
- Tape thickness,
- Audits of temperature, pressure, and flow
- Leak check
- and data retrieval.

A more detailed description of field QA procedures and criteria can be found in the E-BAM Operation Manual.[1]

H.2 Data Validation Procedure Applied to E-BAM Data

The raw data sets from the E-BAM instruments were initially TXT files either directly downloaded from the instrument or downloaded from the web site. These files were opened with MS EXCEL and saved as EXCEL workbooks. The date and time were combined into a single column containing the EXCEL date/time value. The times were adjusted, as needed, to Eastern Daylight Time. The ConcRT and ConcHR values were converted, as needed, to micrograms per cubic meter. Columns containing the temperatures in degrees Fahrenheit were deleted if they were part of the data set. The criteria listed below were applied to the appropriate columns of data by applying conditional formats to the cells marking them conditionally red or yellow. The data were then manually scanned with the red and yellow markings indicating which parameters were outside the criteria. Based on the those indications and considering that the ConcHR values were computed from the past hour's data, a new column was created and filled manually according to the table of "QA Flags in QA Flag Column of E-BAM Data Files."

H.2.1 Data Validation Criteria applied to Evans Road Fire E-BAM Data

Time

The date/time field was marked yellow if the difference from the previous time was greater than the nominal time interval of the data (15, 30, 60 min.) or less than or equal to the previous date/time. This allowed the quick identification of gaps or duplications in the data.

[1] E-BAM Operation Manual. Met One Instruments, Inc. 1600 NW Washington Blvd. Grants Pass, Oregon 97526

To mark gaps in the data a blank line was inserted. Several of these gaps were filled in when directly downloaded data became available.

Particulate Matter (PM) ConcRT and ConcHR
The PM concentrations were marked red if the flow was less than 13.36 or greater than 20.4 or the relative humidity inside (RHi) was greater than 50. The manual suggests that the RHi be kept at or below 45 to prevent tearing of the tape which collects the PM. Some units came to us adjusted to maintain RHi at or below 50 rather than 45. The PM concentration was marked yellow if the flow was less than 15.03 or greater than 18.37 or RHi was greater than 45. ConcRT values when flows are in the red range were flagged as invalid. ConcRT and ConcHR values marked red solely due to RHi or Delta T values were considered acceptable unless there were other factors. Conc values marked yellow are acceptable unless other factors from the site logs or data sheets indicate a problem or interference. Additional ConcHR values were manually marked red and invalid because the flow during the preceding hour when the PM value was being averaged were in the red zone due to improper flow.

Internal Humidity (RHi)
The RHi column was marked yellow if greater than 45 and marked red if greater than 50. The operation manual recommends that the humidity be kept at 45 or less to prevent the tape from tearing. The instrument attempts to keep the internal humidity below a set point by applying heat inside the instrument to the area where the tape is collecting PM. Some of the units appear to have a set point higher than the recommended 45. This may be acceptable as long as the tape did not tear.

Alarm
Any value other than zero is an alarm and was marked red or yellow; the alarm table should be checked for the meaning of the alarm number. Most alarms resulted in data being flagged red or invalid.

Delta T
Delta T is the difference between exterior ambient temperature AT(C) and interior filter temperature FT(C); the operation manual recommends that this difference be 8º C or less. This value can be adjusted in the set-up and apparently had been adjusted higher in some units, probably in an attempt to keep the RHi at or below 45 or 50. The Delta T was marked yellow if greater than 8º C and marked red if greater than 10º C. It probably had little or no effect on the PM data in these units.

Other Data
Other data were manually marked red to indicate invalid data, for example some ambient temperatures below 15º C including negative values were marked red and invalid.

Table H.2 QA Flags in QA Flag Column of E-BAM Data Files

QA Flag	Meaning
Cell is blank or empty	Data is valid
AT invalid	AT value is invalid

AT & Conc invalid	AT and both Conc values are invalid
Conc Invalid	Both Conc values are invalid
ConcHR Invalid	ConcHR value is invalid
ConcRT Invalid	ConcRT value is invalid
Record Invalid	All data in the record is invalid