



STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES  
AND ENVIRONMENTAL CONTROL

OFFICE OF THE  
SECRETARY

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September 1, 2004

Mr. Donald S. Welsh (3RA00)  
Regional Administrator  
U. S. Environmental Protection Agency  
Region III  
1650 Arch Street  
Philadelphia, PA, 19103-2029

Dear Mr. Welsh:

Thank you for your June 29, 2004 response to Delaware's February 17, 2004 letter regarding fine particulate matter (PM<sub>2.5</sub>) designations and non-attainment area boundaries. However, as documented in the attachment (Attachment 1), we do not agree with EPA's modification to Delaware's recommendation letter.

Therefore, I again request that the EPA establish the boundaries of New Castle County, Delaware, as the boundaries of a stand-alone annual PM<sub>2.5</sub> NAAQS non-attainment area and that New Castle County not be included as part of the Philadelphia C/MSA non-attainment area. This is consistent with our original request which is also attached (Attachment 2).

If you have any questions about this letter, please contact Ali Mirzakhilili, Administrator of the Air Quality Management Section at (302) 739-4791.

Sincerely,

John A. Hughes  
Secretary

pc: John B. Blevins, DNREC AWM  
Ali Mirzakhilili, DNREC AQM  
Judith Katz, EPA Region III  
David Arnold, EPA Region III

**RECEIVED**

**SEP 02 2004**

EPA, REGION III  
OFFICE OF REGIONAL ADMINISTRATOR

*Delaware's Good Nature depends on you!*

## Attachment 1 – Supporting Discussion

Delaware has made considerable progress in understanding the causes of our PM<sub>2.5</sub> non-attainment problem and what it will take to fix the problem. Unlike ozone, our PM<sub>2.5</sub> non-attainment problem is caused by local emissions, exacerbated by intra- and inter-state PM<sub>2.5</sub> and PM<sub>2.5</sub> precursor transport (i.e., urban excess puts the City of Wilmington over the standard)<sup>1</sup>. We believe this is not unique to New Castle County and believe that, in the case of New Castle County, Delaware, it is appropriate to address PM<sub>2.5</sub> non-attainment as a local problem. Delaware's intent is not to minimize the significance of PM<sub>2.5</sub> related transport, rather we are indicating that there is not a relationship between transport and non-attainment boundaries, and PM<sub>2.5</sub> and PM<sub>2.5</sub> precursor transport must be addressed at a larger regional level similar to what has been identified in EPA's proposed Clean Air Interstate Rule (CAIR).

The remainder of this discussion is to further substantiate our position relative to non-attainment boundaries and transport.

### **Non-attainment Boundaries:**

In Delaware's February 17, 2004 letter (Attachment 2 to the letter) we presented an analysis of data from the four New Castle County air monitors and the nearby monitors in Pennsylvania, Maryland and New Jersey. This analysis showed that the City of Wilmington's PM<sub>2.5</sub> concentrations range from 1.0 to 2.4 micrograms per cubic meter higher than the other attaining New Castle County monitors located north-east, west and south of the downtown Wilmington monitor, and that the relatively high downtown concentrations drop off quickly to below the NAAQS within the boundaries of New Castle County. The area of non-attainment is clearly limited to New Castle County.

Because air quality monitoring sites are densely located around the City of Wilmington, and between Wilmington and Philadelphia, additional air quality dispersion modeling and/or additional data interpolation techniques are not necessary to assess the geographic area violating the standard; monitoring data reveals that the area of non-attainment is clearly limited to New Castle County.

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<sup>1</sup> Ozone and ozone precursor transport are of such magnitude that it is not possible for ozone non-attainment problems to be solved locally. Air modeling done by the Ozone Transport Commission reveal that significant regional volatile organic compound (VOC) and nitrogen oxides (NO<sub>x</sub>) reductions are needed, and Delaware believes these reductions will be realized only if a large, regional area is subject to CAA non-attainment provisions. Unlike ozone, Delaware's PM<sub>2.5</sub> non-attainment problem is distinct and segregable from the transport issue.

### **PM<sub>2.5</sub> and PM<sub>2.5</sub> Precursor Transport:**

EPA appears to have used a Weighted Emission Score (WES) to address, in a limited sense, transport within Consolidated Metropolitan Statistical Area (C/MSA) borders<sup>2</sup>. This approach appears to have been used to determine if counties that are in and adjacent to a C/MSA should be classified as non-attainment and included within the C/MSA non-attainment boundaries, primarily due to transport. Given the nature of transport, Delaware believes that this approach is arbitrary and only partially and inadequately addresses the transport issue<sup>3</sup>. Transport is a regional scale problem, not a C/MSA scale problem. This statement is supported by, among other things, EPA modeling associated with the CAIR.

EPA issued a proposed rule to address interstate transport entitled, "Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone; Proposed Rule [69 FR 4565]," on January 30, 2004. Associated with this proposed rule, EPA assessed the impacts of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) emissions from upwind States on downwind PM<sub>2.5</sub> concentrations. Table 1 below lists the states that, based on CAIR modeling, significantly impact Philadelphia County and New Castle County.

**Table 1. Upwind States effects on Philadelphia County vs. New Castle County**  
*(Values are PM<sub>2.5</sub> in ug/m<sup>3</sup>)*

<b>Upwind State</b>	<b>Maximum Contribution to Philadelphia County</b>	<b>Maximum Contribution to New Castle County</b>
MD/DC	0.44	0.57
OH	0.46	0.52
VA	0.33	0.35
NY	0.34	0.33
NJ	0.45	0.27
WV	0.23	0.26
MI	0.22	0.23
IL	0.18	0.19
IN	0.16	0.18
NC	0.15	0.15
PA	2.35	1.18
DE	<i>less than the 0.15 significance threshold</i>	0.24

Note that:

<sup>2</sup> Specific thoughts on EPA's WES are discussed at the end of this document. Delaware rejects EPA's use of WES as a means to address transport.

<sup>3</sup> The C/MSA approach has been used in the ozone planning process for more than 30 years. These 30 years of experience have proven that attempting to address transport at the C/MSA scale is wholly inadequate.

- Air quality in both New Castle County and Philadelphia County are significantly impacted by a geographically large area, not by the small C/MSA scale area. The EPA modeling shows that emissions from the states of Maryland, Ohio, Virginia, New York, New Jersey, West Virginia, Michigan, Illinois, Indiana, North Carolina, Pennsylvania, and the District of Columbia all significantly impact New Castle and Philadelphia County.
- Delaware emissions contribute little to the PM<sub>2.5</sub> concentrations in Philadelphia County. The EPA modeling shows that Delaware significantly impacts only one county nationwide (i.e., 0.17 µg/m<sup>3</sup> contribution to Berks County, Pennsylvania)<sup>4</sup>.
- The contribution from counties within the Philadelphia C/MSA to that C/MSA's PM<sub>2.5</sub> non-attainment are significantly less than the contribution from counties outside that area (*note that the concentrations in Table 1 for Pennsylvania and New Jersey include both the counties within and outside the Philadelphia C/MSA*).

These conclusions based on the CAIR modeling are opposite to the conclusions that the EPA reached based on the WES approach explained in your June 29, 2004 letter. The WES, as explained in your June 29, 2004 letter, requires that New Castle County be included in a non-attainment area that encompasses the Philadelphia C/MSA area because it heavily impacts that area. In fact, New Castle County is given the highest WES in the Philadelphia C/MSA (i.e., a WES of 18.6; Philadelphia County is the next closest with a WES of 14.0). Based on the WES approach New Castle County impacts the C/MSA more than any other county. Also, under the WES approach, the impacts to the C/MSA from areas outside the C/MSA are ignored, presumably because the EPA has determined as a national policy that such outside area impacts are less significant. All these conclusions gleaned from the WES approach are opposite to what appears to be the CAIR modeling results (see above).

Delaware believes that techniques like the WES should be considered only when more sophisticated tools, such as modeling are not available. EPA CAIR modeling is far superior to the WES analysis. EPA CAIR modeling indicates that the PM<sub>2.5</sub> transport problem is a regional problem, and explicitly demonstrates that it is not a C/MSA scale problem. Delaware does not believe that it is reasonable for the EPA to use a WES in the manner proposed in the June 29, 2004 letter (i.e., as an arbitrary and inadequate means to address transport), especially when superior tools and historical experience prove otherwise.

In conclusion, Delaware reiterates that New Castle County's PM<sub>2.5</sub> non-attainment problem is separate from other PM<sub>2.5</sub> non-attainment problems in the Philadelphia

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<sup>4</sup> Delaware has enforceable measures in place that will reduce New Castle County SO<sub>2</sub> emissions from a 2002 base year by more than 55%, and state-wide SO<sub>2</sub> emissions by more than 40%. This, along with upcoming state-wide and national PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub> initiatives will mitigate all significant impact of Delaware emissions on downwind areas. Delaware is committed to continue to work cooperatively with the EPA and other states to aggressively address the transport problem.

C/MSA. 1) The boundaries of New Castle County encompass the full area that is violating the standard, based on monitoring, 2) Delaware emissions do not significantly impact any part of the Philadelphia C/MSA, based on EPA modeling, 3) Emissions from a broad area encompassing the states of Ohio, Indiana, Pennsylvania, Michigan, West Virginia, New York, Maryland, District of Columbia, New Jersey, North Carolina, and Illinois impact Delaware (i.e., an area much broader than the Philadelphia C/MSA boundaries), based on EPA modeling, 4) while New Castle County, and the Philadelphia C/MSA, and all other areas in the region share a transport problem, there is no evidence that supports the linking of transport mitigation to small C/MSA scale areas, and 5) a zeroing out of emissions in the localized area (around the MLK monitor) appears to more than adequately address the non-attainment problem at that monitor, thus bringing New Castle County into attainment.

### **WES assessment of New Castle County's contribution to the C/MSA**

Factors used in the WES were: emissions, air quality, population, population density, VMT, number of commuters, growth rate and meteorology and geography/topography. Of those, EPA heavily relied on New Castle County population density, number of commuters, and growth rate as the primary reasons for including New Castle County in a C/MSA based non-attainment area.

- **Population Density:** Although population density can be a useful indicator of emissions, it can be misleading. For instance, most area source emissions are calculated on a per capita emission factor, which uses population numbers without regard to density. Area source emissions using emission factors such as consumer solvents and AIM coatings have been shown to be significant portions of inventories. We disagree that population density alone is a convincing reason to include New Castle County in a C/MSA based non-attainment area.
- **Commuters:** Contrary to the high rating EPA assigned Delaware for this factor, New Castle County ranks ninth in the C/MSA, with 27,598 commuters. The next lowest is Cecil (which is attainment), numbering 16,195 commuters. Although New Castle County's rank is higher than Cecil's, it is much less so than the number of the commuters in the immediately higher ranking non-attaining county of Burlington, which has 60,278 commuters. So, in this table, New Castle County is "closer" to counties designated attainment by EPA than those designated non-attainment and placed in the C/MSA. We, therefore, wholly disagree that commuting should be used as one of the three rationales to place New Castle County in the C/MSA based non-attainment area.

**Growth:** New Castle County's VMT growth rate change (from 1996) ranked 5<sup>th</sup> and 6<sup>th</sup>, is equal to or less than Cecil, Atlantic, Cape May and Cumberland counties. Those four counties were recommended attainment by EPA. For that reason, the use of growth also doesn't appear to include New Castle County in a C/MSA based non-attainment area.



**State of Delaware  
Office of the Governor**

**Ruth Ann Minner  
Governor**

February 17, 2004

Mr. Donald S. Welsh (3RA00)  
Regional Administrator  
U. S. Environmental Protection Agency  
Region III  
1650 Arch Street  
Philadelphia, PA, 19103-2029

Dear Mr. Welsh:

This letter fulfills Delaware's obligations under Section 107 of the Clean Air Act for states to recommend attainment status designations for its counties under the daily (24-hour) and the annual national ambient air quality standards (NAAQS) for fine particulate matter (PM<sub>2.5</sub>). For designation letter purposes the EPA has requested that States use 2000 through 2002 air monitoring data, with the understanding that 2001 through 2003 data will be used in the final designations when such data becomes available. This letter also recommends the placement, with rationale, of New Castle County (the only county in Delaware monitoring non-attainment relative to a PM<sub>2.5</sub> NAAQS) in a non-attainment area.

***Attainment Status – Daily Standard***

The daily, or 24-hour based, PM<sub>2.5</sub> NAAQS is 65 micrograms per cubic meter (µg/m<sup>3</sup>), calculated as the 3-year average of the 98<sup>th</sup> percentiles (i.e., the daily values out of a year of monitoring data below which 98 percent of all daily values fall). The Delaware-monitored average 98<sup>th</sup> percentile daily values and site information for 2000 through 2002 are attached (see Table 1 in Attachment 1 to this letter).

All 3-year averages of the 98<sup>th</sup> percentile daily values are well below the PM<sub>2.5</sub> NAAQS. Therefore, Delaware recommends that all three of its counties be designated attainment for the 24-hour PM<sub>2.5</sub> NAAQS.

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***Attainment Status – Annual Standard***

The annual PM<sub>2.5</sub> NAAQS is 15.0 µg/m<sup>3</sup>, annual arithmetic mean, based on the average of 3-years of data. The Delaware-monitored values and site information for 2000 through 2002 are attached (see Table 2 in Attachment 1 to this letter).

The annual NAAQS design values for New Castle, Kent and Sussex counties are 16.3 µg/m<sup>3</sup>, 13.1 µg/m<sup>3</sup> and 14.0 µg/m<sup>3</sup>, respectively. Based on this, Delaware recommends that Kent County and Sussex County be designated attainment, and that New Castle County be designated non-attainment for the annual PM<sub>2.5</sub> NAAQS.

***Placement of New Castle County in a Non-attainment Area***

There are four PM<sub>2.5</sub> monitoring sites located in New Castle County Delaware (see Attachment 2 to this letter).

- The Martin Luther King (MLK) Boulevard monitor is situated downtown, in the southern part of the City of Wilmington in a low-lying 0.035 square mile “triangle” formed by MLK Boulevard, an elevated section of I-95, and the AMTRAK rails (see Attachment 3 to this letter). Also located within this “triangle” is the DART bus depot that services 250 busses. This monitor is sited to record the highest PM<sub>2.5</sub> concentrations in the State, and it has a 2000-2002 design value of 16.3.
- The other three New Castle County monitors, Newark, Bellefonte, and Lums Pond, are located to the west, northeast, and southwest, of the MLK monitor, and have 2000-2002 design values of 15.2, 15.0, and 13.9 respectively.

The EPA is recommending that Metropolitan Statistical Areas or Consolidated Metropolitan Statistical Areas (C/MSA) serve as the presumptive boundaries for PM<sub>2.5</sub> NAAQS non-attainment areas. Over the past two years the Delaware Department of Natural Resources and Environmental Control (DNREC) staff has conducted in-depth studies relative to PM<sub>2.5</sub> in New Castle County, and the results clearly demonstrate that the PM<sub>2.5</sub> non-attainment status for New Castle county is caused by a combination of interstate transport, intrastate transport and local urban emissions of PM<sub>2.5</sub> and its precursors. Delaware does not agree that this presumptive C/MSA boundary should be applied to New Castle County.

First, DNREC has found that the three New Castle County monitors outside the downtown area of the City of Wilmington, and the nearby monitors in Pennsylvania, Maryland and New Jersey indicate that, moving away from the downtown Wilmington area, the relatively high downtown concentrations drop off quickly to below the NAAQS within the boundaries of New Castle County. This indicates that the area of non-attainment is limited to New Castle County, Delaware. Because

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air quality monitoring sites are densely located around the City of Wilmington, and between Wilmington and Philadelphia (the center of the presumptive C/MSA), DNREC believes additional air quality dispersion modeling and additional data interpolation techniques are not necessary to help assess the geographic area violating the standard; the area of non-attainment is clearly limited to New Castle County.

Second, in addition to the violating area being limited to New Castle County, DNREC has found that intra- and interstate transport are significant contributors to ambient PM<sub>2.5</sub> concentrations in Delaware. This has been confirmed by EPA emission modeling. Recently EPA issued a document on interstate transport entitled "Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Interstate Air Quality Rule)." In this document EPA, based on modeling, assessed the impacts of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) emissions from upwind States on downwind PM<sub>2.5</sub> concentrations. This modeling indicates that:

- Delaware emissions contribute little to the PM<sub>2.5</sub> concentrations in other States, or to the Philadelphia C/MSA. The EPA modeling shows that Delaware significantly impacts only one county nationwide (i.e., 0.17 µg/m<sup>3</sup> contribution to Berks County, Pennsylvania). Delaware has enforceable measures in place that will reduce statewide SO<sub>2</sub> emissions from a 2002 base year by more than 40%. This, along with upcoming state and national PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub> initiatives will mitigate all significant impact of Delaware emissions on downwind areas.
- Delaware air quality is significantly impacted by a geographically large area, not by the small C/MSA area. The EPA modeling shows that emissions from the states of Ohio, Indiana, Pennsylvania, Michigan, West Virginia, New York, Maryland, District of Columbia, New Jersey, North Carolina, and Illinois significantly impact Delaware.

The above clearly establishes that New Castle County's PM<sub>2.5</sub> non-attainment problem is separate from the PM<sub>2.5</sub> non-attainment portion of the Philadelphia C/MSA. 1) The boundaries of New Castle County encompass the full area that is violating the standard, based on monitoring data. 2) Delaware emissions do not significantly impact any part of the Philadelphia C/MSA, based on EPA modeling. 3) Emissions from a broad area encompassing the states of Ohio, Indiana, Pennsylvania, Michigan, West Virginia, New York, Maryland, District of Columbia, New Jersey, North Carolina, and Illinois impact Delaware (i.e., an area much broader than the Philadelphia C/MSA boundaries), based on EPA modeling.

April 1, 2003 EPA guidance, "Designations for the Fine Particle National Ambient Air Quality Standards," indicates that the EPA will consider requests for urban non-attainment area definitions that deviate from the Office of Management and Budget's (OMB) metropolitan area definitions on a

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case-by-case basis, considering nine specific factors. Delaware believes these nine factors are more applicable to devising and applying the proper control strategies for specific counties or zones within the non-attainment area **after** the non-attainment area is established, or are appropriate only for evaluating areas being removed from a C/MSA and designated **attainment**. Either way, these criteria should be considered as secondary to the above mentioned monitoring and modeling studies when designating non-attainment area boundaries. Regardless, these nine criteria are addressed at Attachment 4 to this letter.

Delaware hereby recommends that the boundaries of New Castle County, Delaware form the boundaries of the annual PM<sub>2.5</sub> NAAQS non-attainment area, and that New Castle County not be included as part of the Philadelphia C/MSA non-attainment area. In addition, Delaware recommends that the EPA address the significant transport that is impacting Delaware, and looks forward to working cooperatively with the EPA to address the local contribution impacting the New Castle County non-attainment area. Thank you for your consideration of these recommendations. If you have any questions concerning this submittal or would like to discuss it further, please contact John Hughes, DNREC Secretary, or Ali Mirzakhali, Administrator of the Air Quality Management Section at (302) 739-4791.

Sincerely,

  
Ruth Ann Minner  
Governor

pc: John A. Hughes, DNREC Secretary  
John B. Blevins, DNREC AWM  
Ali Mirzakhali, DNREC AQM  
Judith Katz, EPA Region III  
David Arnold, EPA Region III

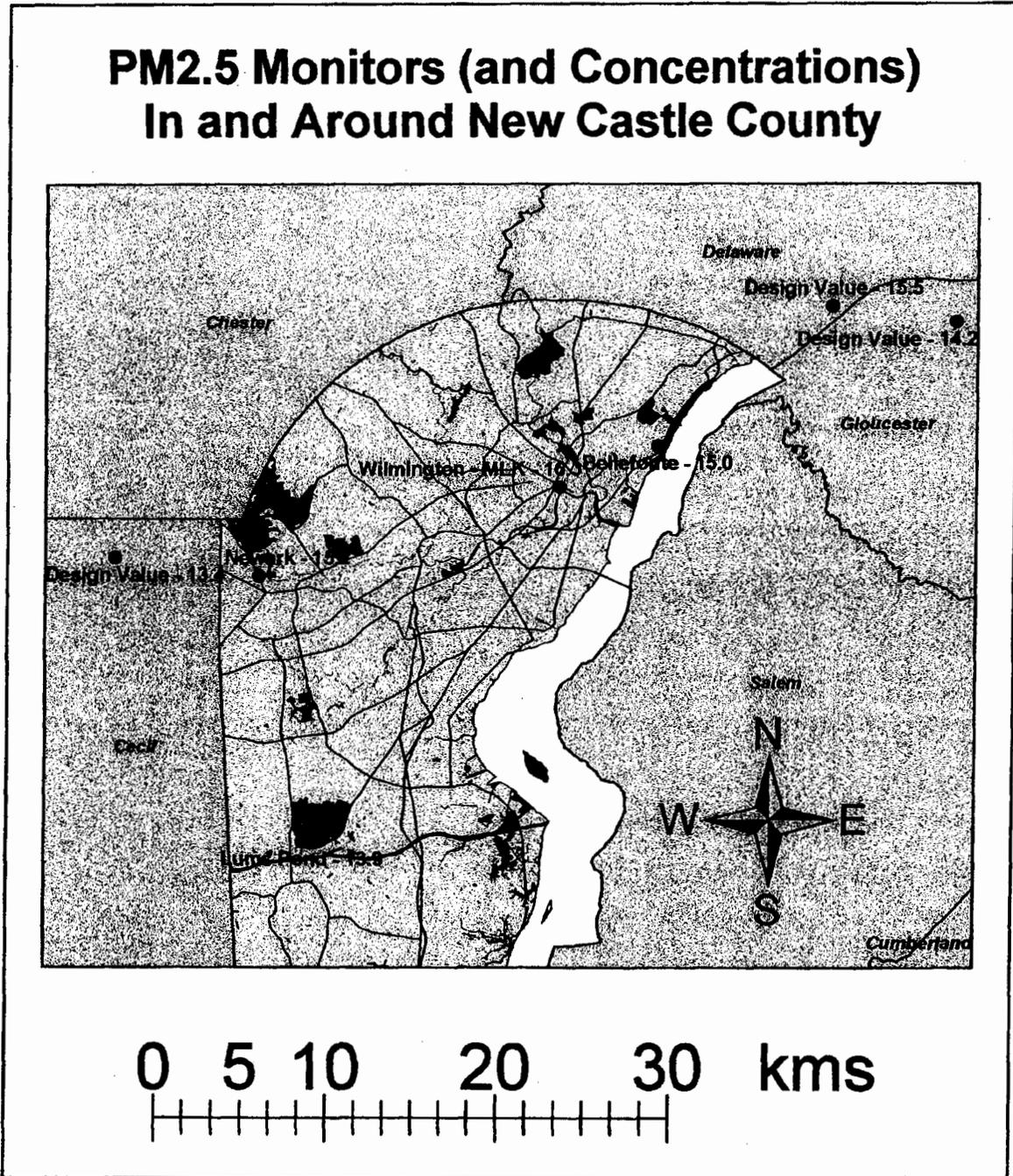
**Attachment 1: Delaware Air Monitoring Data****Table 1: PM<sub>2.5</sub> 24-hour 98th Percentile  $\Phi\text{g}/\text{m}^3$ ; NAAQS = 3-year average 65  $\Phi\text{g}/\text{m}^3$** 

Site Name and ID Number	2000	2001	2002	3-year Average
Bellefonte 10-003-1003	38.2	40.7	33.8	37.6
MLK 10-003-2004	39.3	43.2	36.8	39.8
Newark 10-003-1012	39.8	39.5	39.3	39.5
Lums Pond 10-003-1007	36.4	35.9	30.6	34.3
Dover 10-001-0003	27.8	31.5	35.5	33.9
Killens Pond 10-001-0002	34.4	41.5	37.1	35.3
Seaford 10-005-1002	36.0	42.5	42.2	39.9

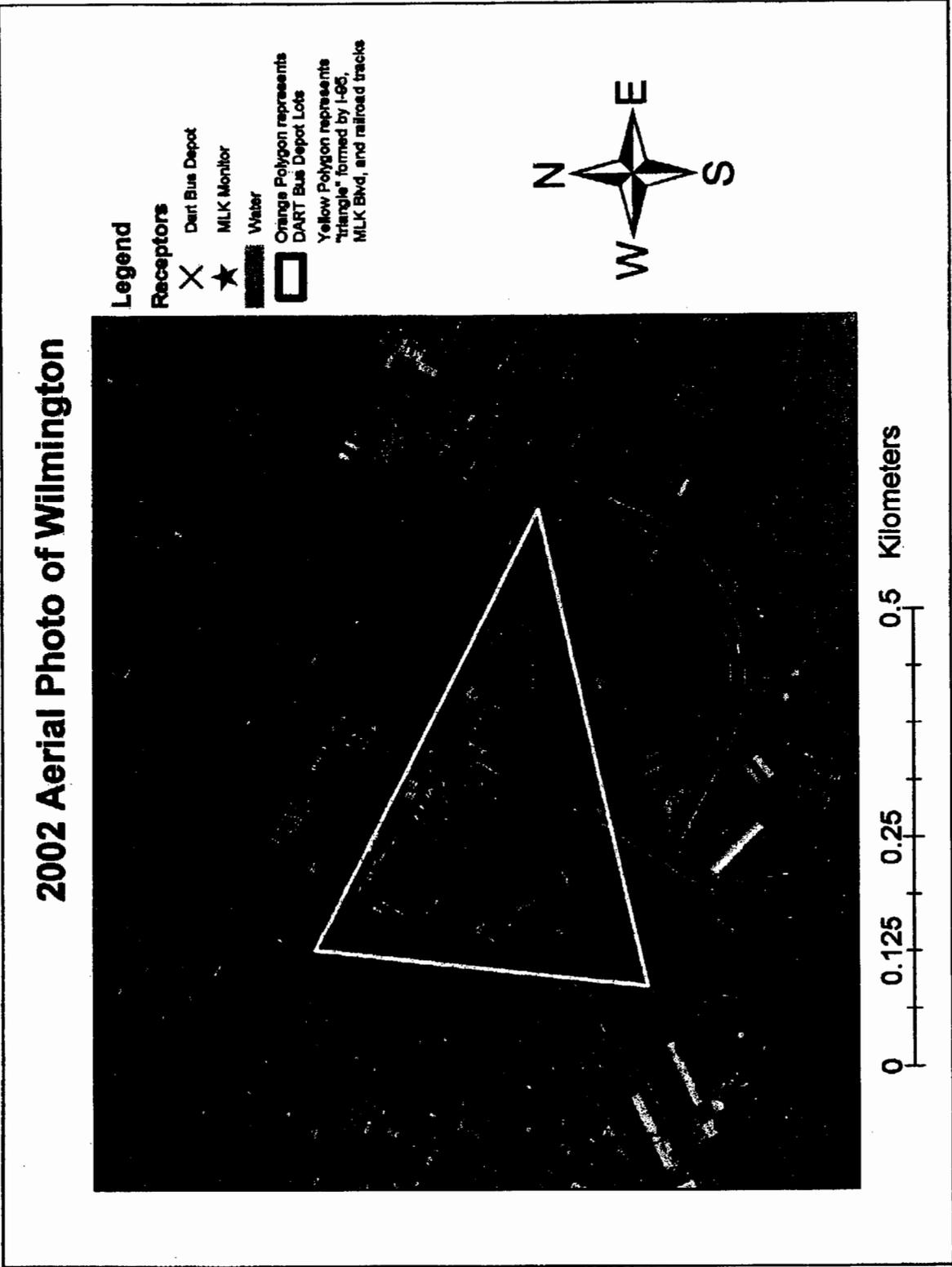
**Table 2: PM<sub>2.5</sub> Annual Averages in  $\Phi\text{g}/\text{m}^3$ ; NAAQS = 3-year average 15.0  $\Phi\text{g}/\text{m}^3$** 

Site Name and ID Number	2000	2001	2002	3-year Avg.
Bellefonte 10-003-1003	15.4	15.6	14.0	15.0
MLK (Wilmington)10-003-2004	16.4	17.6	14.8	16.3
Newark 10-003-1012	15.4	15.8	14.3	15.2
Lums Pond 10-003-1007	14.2	14.5	13.0	13.9
Dover 10-001-0003	12.9	14.0	12.4	13.1
Killens Pond 10-001-0002	13.2	13.0	12.4	12.9
Seaford 10-005-1002	14.3	14.4	13.2	14.0

**Attachment 2: Delaware PM<sub>2.5</sub> Air Monitoring Locations**



**Attachment 3: MLK Monitor Location**



#### **Attachment 4: Nine Criteria in April 1, 2003 "Designations for the Fine Particle National Ambient Air Quality Standards" Guidance**

April 1, 2003 designation guidance signed by Jeffrey R. Holmstead indicates that the EPA will consider the following factors in assessing whether to exclude portions of a metropolitan area as part of the designated non-attainment areas. Delaware believes these nine factors are more applicable to devising and applying the proper control strategies for specific counties or zones within the non-attainment area **after** the non-attainment area is established, or are appropriate only for evaluating areas being removed from a C/MSA and designated **attainment**. Regardless:

- ***Emissions in areas potentially included versus excluded from the non-attainment area*** – No areas will be excluded from the non-attainment "umbrella." New Castle County, the "excluded area" will be subject to the PM<sub>2.5</sub> non-attainment provisions of the Clean Air Act in the same manner and to the same extent as any other non-attainment portion of the Philadelphia C/MSA.

This indicates that there will be no difference in the treatment of emissions between New Castle County being part of the Philadelphia C/MSA or being separate from the Philadelphia C/MSA. Also, Delaware emissions do not significantly impact the Philadelphia C/MSA, and the Philadelphia C/MSA is only part of a large geographic area whose emissions significantly impact Delaware (see discussion on meteorology - transport patterns below).

- ***Air quality in potentially included versus excluded areas***

PM<sub>2.5</sub> concentrations near the MLK monitoring site are significantly higher than the other three (3) monitors in New Castle County. The monitor at Bellefonte, approximately 6 miles to the northeast of MLK is showing attainment at 15.0 µg/m<sup>3</sup>. The monitor at Newark is approximately 11 miles to the west from MLK, and is barely above the standard at 15.2 µg/m<sup>3</sup> (preliminary 2003 data indicates the 2001-2003 design value will be attainment). Furthermore, the monitor in Cecil County, MD to the west of Newark is showing attainment. The Lums Pond monitor to the south is showing attainment.

These air quality monitors indicate that the geographic area violating the PM<sub>2.5</sub> NAAQS, relative to Delaware, is limited to New Castle County, and that the New Castle County non-attainment area is separate from the Philadelphia C/MSA non-attainment area.

- ***Population density and degree of urbanization including commercial development in included versus excluded areas***

Again, no area is being proposed for exclusion from a non-attainment designation. Delaware believes that areas exceeding the PM<sub>2.5</sub> NAAQS are primarily associated with the urban areas in New Castle County.

The population density in urban areas of Philadelphia County is almost 4 times greater than in New Castle County (4323 people/ sq. km versus 1000 people/sq. km, respectively), and including all areas, Philadelphia County's population density is higher by over 10 times (4337 people/sq. km versus 453 people/sq. km, respectively). While Philadelphia County is very urbanized, (95% of the county is urban), only 37% of New Castle County, the "excluded area," is urban.

- ***Traffic and commuting patterns***

The monitor defining New Castle County's non-attainment status is adjacent to one of Wilmington's busiest roads (Martin Luther King Boulevard), which is only 38 meters from the monitor, and handles an average of 14,609 vehicles per day. Annual average daily traffic of Philadelphia's two highest roads are more than 70,000 vehicles per day.

Delaware studies indicate there is a significant link between traffic and PM<sub>2.5</sub> concentrations in urban areas. Delaware believes this is one of the main reasons for the air quality differences (see above), and further demonstrates that the New Castle County non-attainment area is separate from the Philadelphia C/MSA.

- ***Expected growth (including extent, pattern and rate of growth)***

As indicated throughout this document, separating New Castle County from the Philadelphia C/MSA will not exempt any area from being under the "non-attainment umbrella." Therefore, all aspects of growth in the excluded area, New Castle County, will be subject to the PM<sub>2.5</sub> non-attainment provisions of the Clean Air Act in the same manner and to the same extent as any other non-attainment portion of the Philadelphia C/MSA.

Further, growth in New Castle County is likely to be regulated beyond most other areas because of Delaware's existing environmentally protective programs. These include Delaware's New Source Review (NSR) program that incorporates the dual source definition of a stationary source (sources cannot "net out" of non-attainment NSR, Delaware's Coastal Zone Program, where offsets are required for any increase in emission (no de minimis), and the Livable Delaware initiative which is designed to promote smart growth principles.

- ***Meteorology (weather/transport patterns)***

Over the past two years the Delaware Department of Natural Resources and Environmental Control (DNREC) staff has conducted in-depth studies relative to PM<sub>2.5</sub> in New Castle County, and the results clearly demonstrate that the PM<sub>2.5</sub> non-attainment status for New Castle County is caused by a combination of interstate transport, intrastate transport and local urban emissions of PM<sub>2.5</sub> and its precursors.

Regarding transport, recent EPA modeling associated with the "Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Interstate Air Quality Rule)" indicates that:

- Delaware emissions contribute little to the PM<sub>2.5</sub> concentrations in other States. The EPA modeling shows that Delaware significantly impacts only one county nationwide (i.e., 0.17 µg/m<sup>3</sup> contribution to Berks County, Pennsylvania). Delaware has enforceable measures in place that will reduce statewide SO<sub>2</sub> emissions from a 2002 base year by more than 40%. This, along with upcoming state and national PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub> initiatives will mitigate all significant impact of Delaware emissions on downwind areas.
- Delaware air quality is significantly impacted by emissions from Ohio, Indiana, Pennsylvania, Michigan, West Virginia, New York, Maryland, District of Columbia, New Jersey, North Carolina, and Illinois. The upwind areas that significantly impact Delaware is broad, and must be addressed by the EPA.

The above clearly establishes that New Castle County's PM<sub>2.5</sub> non-attainment problem is separate from the PM<sub>2.5</sub> non-attainment portion of the Philadelphia C/MSA; Delaware emissions do not impact the Philadelphia C/MSA, and the area impacting Delaware is much larger than the Philadelphia C/MSA.

- ***Geography/topography (mountain ranges or other air basin boundaries)***

Delaware ranks 49<sup>th</sup> in the nation with a total area of 1,982 square miles. New Castle County is 438 square miles. Kent County is 594 square miles. Sussex County is 950 square miles. Delaware is 96 miles long and varies from 9 to 35 miles in width. The highest elevation in the state is 447.85 ft. above sea level near Ebright Road in New Castle County. The lowest is sea level along the coast.

Note that the highest reading monitor (MLK) is positioned in such a way to be at the bottom of a "bowl", e.g. elevation of 300 ft. sloping 3 miles to the northwest, and 300 ft. sloping 3 miles to the NE. This would tend to concentrate emissions at the monitor during summer inversions and most of the winter, times when emissions are recorded at their highest.

The high PM<sub>2.5</sub> concentrations in the "bowl" indicate the New Castle County non-attainment area is separate from the Philadelphia C/MSA.

- ***Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)***

All of New Castle County is under the jurisdictional authority of the State of Delaware. All air quality issues are handled by a single agency, the Delaware Department of Natural Resources and Environmental Control. Separating New Castle County from the Philadelphia C/MSA will simplify administrative and legal authorities relative to non-attainment requirements. Delaware will continue to actively interact with the neighboring jurisdictions, and participate in regional organizations.

- ***Level of control of emission sources***

Again, no areas will be excluded from the non-attainment "umbrella." New Castle County, the "excluded area" will be subject to the  $PM_{2.5}$  non-attainment provisions of the Clean Air Act in the same manner and to the same extent as any other non-attainment portion of the Philadelphia C/MSA. All Delaware emission sources are regulated to the extent required of a severe 1-hour ozone non-attainment area (RACT, general and transportation conformity,  $NO_x$  SIP Call, etc.), and will also be subject to the 8-hour ozone non-attainment provisions of the clean air act.

Analyses of these factors suggest that non-attainment boundaries relative to the annual  $PM_{2.5}$  NAAQS are the boundaries of New Castle County, Delaware.